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SOMMARIO

Saggi

THE KOS ARCHAEOLOGICAL SURVEY PROJECT AND THE SITE OF AYIOS PANTELEIMON IN THE NORTHEAST KOAN REGION*

Salvatore Vitale – Toula Marketou – Calla McNamee – Maria Michailidou

Riassunto. Questo articolo presenta i risultati preliminari delle campagne 2018 e 2019 del Kos Archaeological Survey Project - Επιφανειακή Έρευνα στο νησί της Κω (KASP). Particolare attenzione è riservata alla scoperta del sito, precedentemente inedito, di Ayios Panteleimon, il più grande insediamento preistorico mai identificato sull'isola di Coo. Gli esiti della ricognizione sono discussi in sei sezioni, concentrate sui seguenti argomenti: i principali temi delle ricerche in corso; la metodologia del progetto; il lavoro portato a termine nel 2018 e nel 2019 nella regione nord-orientale di Coo; Ayios Panteleimon e i materiali preistorici rinvenuti nell'area del sito; Ayios Panteleimon nel più ampio contesto delle traiettorie insediative e socio-culturali di Coo nel Tardo Bronzo (TB); i risultati preliminari del progetto e i piani per le indagini dei prossimi anni a Ayios Panteleimon. Le informazioni presentate in questo articolo dimostrano il ruolo di preminenza economica e politica esercitato da Ayios Panteleimon nella regione nordorientale di Coo durante il TB. I dati indicano che Ayios Panteleimon si distingue per le sue ricche e diverse relazioni culturali con altre aree del Mediterraneo orientale, tra cui il sudest dell'Egeo e le coste sudoccidentali dell'Anatolia, Creta, le Cicladi e la Grecia continentale. Particolarmente degne di nota sono le connessioni con le tradizioni ceramiche del Tardo Minoico (TM) IA e TM IB, che includono forme di origine cretese, importate o di manifattura locale, e vasi della cosiddetta classe Dipinta Semifine e Impasto *Light on Dark* e *Dark on Light*, appartenente alla tradizione mista di Coo. L'importanza di queste connessioni dimostra il carattere speciale di Ayios Panteleimon nel panorama di Coo durante le fasi iniziali del TB. Il loro significativo impatto sulla cultura materiale del sito suggerisce che Ayios Panteleimon ebbe un ruolo unico nelle relazioni con Creta, inaugurando quegli intensi processi di interazione con l'Egeo occidentale, che condussero alla creazione di una identità micenea a Coo nelle fasi tarde del II millennio a.C., in particolare dal Tardo Elladico (TE) IIIA2 al TE IIIC.

Περίληψη. Το άρθρο αυτό παρουσιάζει τα προκαταρκτικά αποτελέσματα των αποστολών των ετών 2018 και 2019 του Kos Archaeological Survey Project - Επιφανειακή έρευνα στο νησί της Κω (KASP). Ιδιαίτερη προσοχή δίνεται στην ανακάλυψη του αδημοσίευτου πριν χώρου του Αγίου Παντελεήμονα, του μεγαλύτερου προϊστορικού οικισμού που έχει ταυτιστεί στο νησί. Τα αποτελέσματα της επιφανειακής έρευνας συζητούνται σε έξι τμήματα, επικεντρωμένα στα παρακάτω θέματα: τα κύρια θέματα των διεξαγόμενων ερευνών, η μεθοδολογία του προγράμματος, η εργασία που αποπερατώθηκε το 2018 και το 2019 στο βορειοανατολικό τμήμα της Κω, ο Άγιος Παντελεήμων και το προϊστορικό υλικό που ήλθε στο φως στον χώρο, ο Άγιος Παντελεήμων στο γενικότερο πλαίσιο των οικιστικών και κοινωνικο-πολιτιστικών διαδρομών της Κω κατά την Ύστερη Χαλκή εποχή (ΥΕΧ), τα προκαταρκτικά αποτελέσματα του προγράμματος και τα σχέδια για τις έρευνες τα επόμενα χρόνια στον Άγιο Παντελεήμονα. Οι πληροφορίες που παρουσιάζονται σε αυτό το άρθρο αποδεικνύουν τον ρόλο οικονομικής και πολιτικής υπεροχής του Αγ. Παντελεήμονα στη βορειοανατολική περιοχή της Κω κατά την ΥΕΧ. Τα δεδομένα δείχνουν ότι ο Άγ. Παντελεήμων διακρίνεται λόγω των πλούσιων και διαφόρων πολιτιστικών επαφών με άλλες περιοχές της Ανατολικής Μεσογείου, ανάμεσα στις οποίες το νοτιοανατολικό τμήμα του Αιγαίου και οι νοτιοδυτικές ακτές της Ανατολίας, την Κρήτη, την ηπειρωτική Ελλάδα και τις Κυκλάδες. Ιδιαίτερα άξιες μνείας είναι οι διασυνδέσεις με τις κεραμικές παραδόσεις της Ύστερης Μινωικής (ΥΜ) ΙΑ και ΥΜ ΙΒ, που περιλαμβάνουν σχήματα κρητικής καταγωγής, εισηγμένα ή τοπικής παραγωγής, και αγγεία της λεγόμενης Γραπτής Ημι-λεπτότεχνης και Επιχρισμένης κεραμικής Ανοιχτής επί Σκοτεινού και Σκοτεινής επί Ανοιχτού, που ανήκει στη μικτή παράδοση της Κω. Η σημασία αυτών των διασυνδέσεων αποδεικνύει τον σημαντικό χαρακτήρα του Αγίου Παντελεήμονα στο πανόραμα της Κω κατά τη διάρκεια των αρχικών φάσεων της ΥΕΧ. Η σημαντική επίδρασή τους στον υλικό πολιτισμό του χώρου υποδεικνύει ότι ο Άγιος Παντελεήμων είχε μοναδικό ρόλο στις επαφές με την Κρήτη, εγκαινιάζοντας εκείνες τις έντονες διαδικασίες αλληλεπίδρασης με το δυτικό Αιγαίο, που οδήγησαν στη δημιουργία μιας μυκηναϊκής ταυτότητας στην Κω κατά τις ύστερες φάσεις της 2ης χιλιετίας π.Χ., ιδιαίτερα από την Ύστερη Ελλαδική (ΥΕ) ΙΙΙΑ2 μέχρι την ΥΕ ΙΙΙΓ.

Abstract. This article presents the preliminary results of the 2018 and 2019 field seasons of the Kos Archaeological Survey Project - Επιφανειακή Έρευνα στο νησί της Κω (KASP). Special attention is devoted to the discovery of the previously unknown

* The authors would like to thank their friends and colleagues of the Koan office of the Ephorate of Antiquities of Dodecanese, especially M. Chalkiti and F. Seroglou, for providing valuable assistance during the 2018 and 2019 field seasons. Logistical and field support were also provided by the INSTAP Study Center for East Crete and its Director T. Brogan; the students of the University of Pisa, Department of Civilizations and Forms of Knowledge; and the members of the "Serraglio, Eleona, and Langada Archaeological Project" (SELAP), a research endeavor under the scientific aegis of the Italian Archaeological School at Athens. For support received by the University of Pisa, we thank M.L. Gualandi and G. Graziadio. For supporting SELAP, we are grateful to Emanuele Papi, Director of the Italian Archaeological School at Athens. The authors are also grateful for the many observations and suggestions for improvement provided by the journal's Editor, the journal's anonymous referees, Jack L. Davis, and I. Tzonou.

site of Ayios Panteleimon, by far the largest prehistoric settlement ever identified on the island of Kos. The Koan survey is discussed in six sections, which focus on the following subjects: KASP's research questions; the project's methodology; the work accomplished during the 2018 and 2019 field seasons in the northeast Koan region; Ayios Panteleimon and its rich prehistoric finds; Ayios Panteleimon within the broader context of the Koan Late Bronze Age (LBA) occupational and socio-cultural developments; and KASP's preliminary results and goals for future research at Ayios Panteleimon. The evidence presented in this article demonstrates the leading economic and political role played by Ayios Panteleimon in northeast Kos during the LBA. KAPS's current data show that this settlement stands out for its rich and diverse cultural connections with other areas of the eastern Mediterranean, including the southeast Aegean-southwest coastal Anatolian region, Crete, the Cyclades, and the Greek mainland. Particularly remarkable are the ceramic connections with Late Minoan (LM) IA and LM IB potting traditions, which include locally manufactured and imported Cretan-type shapes, as well as Painted Medium-Coarse to Coarse Light on Dark and Dark on Light vessels of the so-called Koan Entangled Tradition. The high incidence of these classes indicates the unique character of Ayios Panteleimon within early LBA Kos. It also suggests that this site had significant contacts with Minoan Crete, thus setting the way for the intense processes of cultural entanglements with the western Aegean that eventually led to the creation of a regional Mycenaean identity on Kos during the late 2nd Millennium B.C., especially from Late Helladic (LH) IIIA2 to LH IIIC.

Introduction

This article presents the preliminary results of the 2018 and 2019 field seasons of the Kos Archaeological Survey Project - Επιφανειακή Έρευνα στο νησί της Κω (KASP)[1]. Emphasis is placed on the extraordinary discovery of the previously unknown site of Ayios Panteleimon. Ayios Panteleimon is by far the largest prehistoric center ever found on Kos and future research at this location is bound to dramatically change our current understanding of the island's cultural trajectories during prehistory, especially the local Late Bronze Age (LBA) phases (Tab. I).

The Koan survey is discussed in six sections. The first and the second present KASP's main research questions and clarify the project's methodology. The third section provides a summary of the work accomplished by KASP in 2018 and 2019. The fourth part is focused on Ayios Panteleimon and its rich prehistoric finds. The fifth part places Ayios Panteleimon in the broader context of Koan LBA occupational patterns and socio-cultural developments. Finally, the sixth and last section summarizes the results of KASP's first two field seasons and the project's goals for future research at Ayios Panteleimon.

Salvatore Vitale

1. Research Questions and Survey Area

KASP is a five-year survey project directed by M. Michailidou and T. Marketou (Ephorate of Antiquities of Dodecanese) in collaboration with S. Vitale and C. McNamee (University of Pisa; Wiener Laboratory, American School of Classical Studies at Athens). KASP is ongoing and was initiated on Kos in 2018 (Fig. 1)[2]. It is the first survey on the island to incorporate modern methodologies and it is providing high resolution data from prehistory to modern times.

KASP's research agenda is organized around five interrelated subjects, which include cultural heritage, archaeology, geoarchaeology, environment, and ethnography. Specific questions within these topics are summarized in Tab. II. This research design is conceived to provide a comprehensive understanding of the relationship between local environmental characteristics, settlement choices, sociopolitical developments, and cultural transitions. The integration of these diverse subjects offers a multidisciplinary and holistic approach to Koan natural and human landscapes.

KASP's core areas of interest and the survey boundaries (Fig. 2) were established to address the five interrelated questions outlined in Tab. II. The main study region is Area A, located in the northeastern

[1] KASP's 2018 and 2019 field seasons were made possible through generous grants from the Institute for Aegean Prehistory (INSTAP) and the Rust Family Foundation. Digital support was made possible thanks to the tireless efforts of H. Indgjerd and E.V.R. Campbell. We also appreciate the hard work of our field and laboratory teams, particularly F. Bianchini, I. Camici, K. Dudlik, S. Horáček, J. Morrison, M. Moukazi, F. Nani, A. Peterková, A. Querci, S. Regio, M. Rossin, Š. Rückl, and P. Zeman. Maps throughout this article were created using ArcGIS® software by Esri. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri® software, please visit www.esri.com.

[2] For a first publication of the findings of KASPS's 2018 and 2019 field seasons, specifically focused on the use of anthropogenic bedrock modifications to manage environmental challenges, see McNamee *et alii* 2021. For a preliminary report on the overall results of the project's initial two years, see Marketou *et alii* forth.

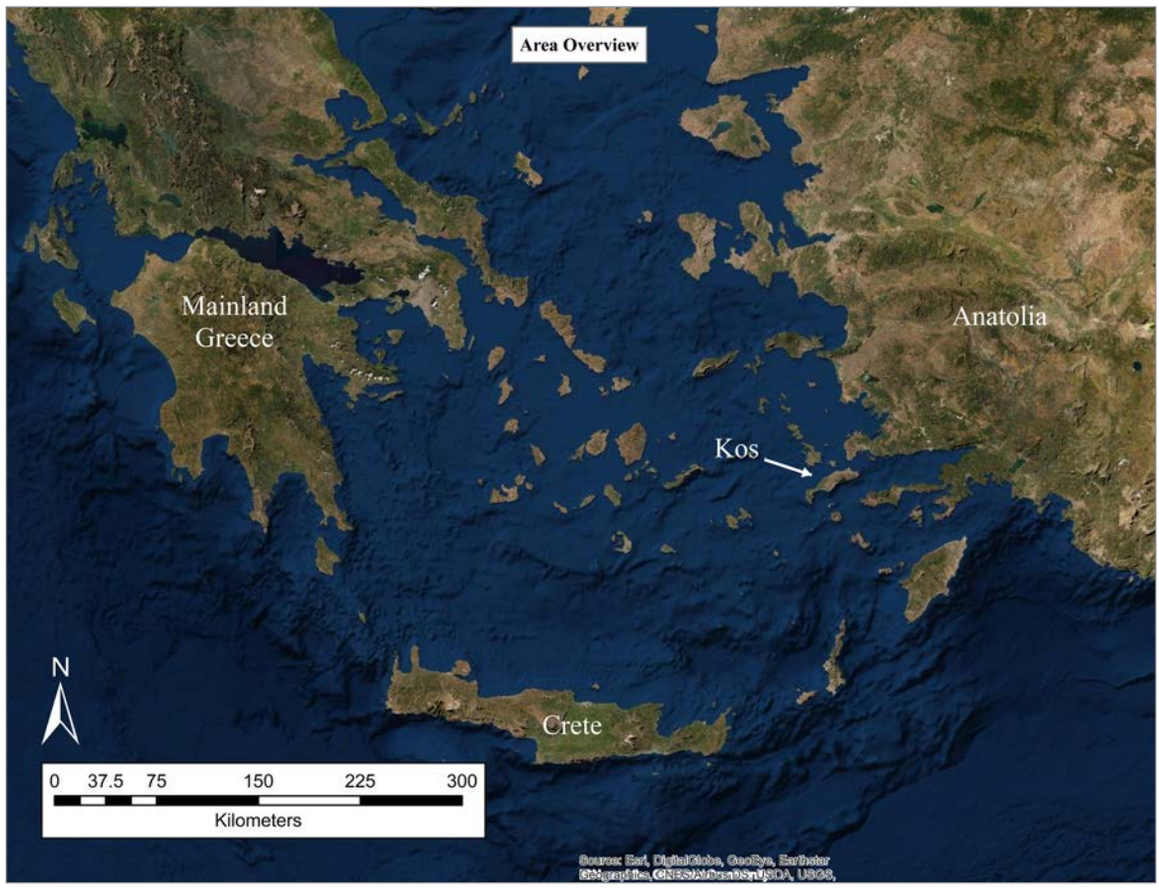

Fig. 1. Kos in the wider Aegean and eastern Mediterranean context (el. C. McNamee - S. Vitale).

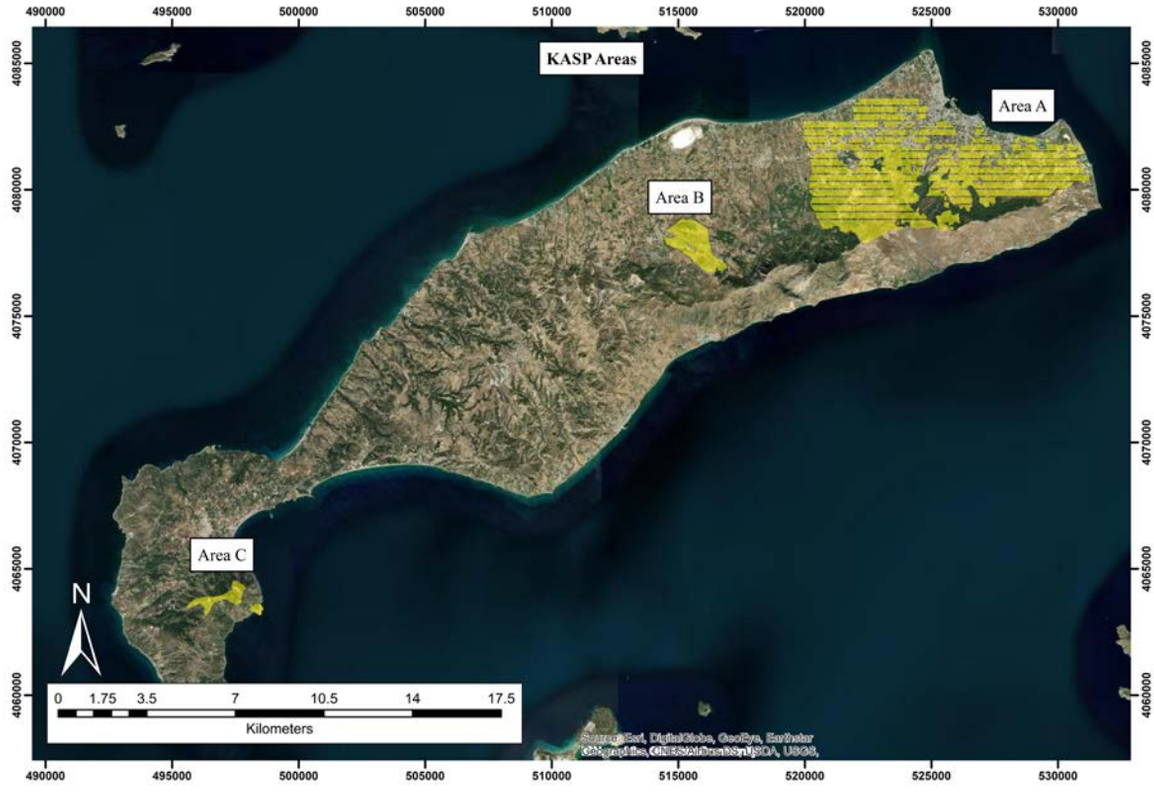

Fig. 2. Overview of KASP's Areas A, B, and C (el. C. McNamee - S. Vitale - T. Marketou).

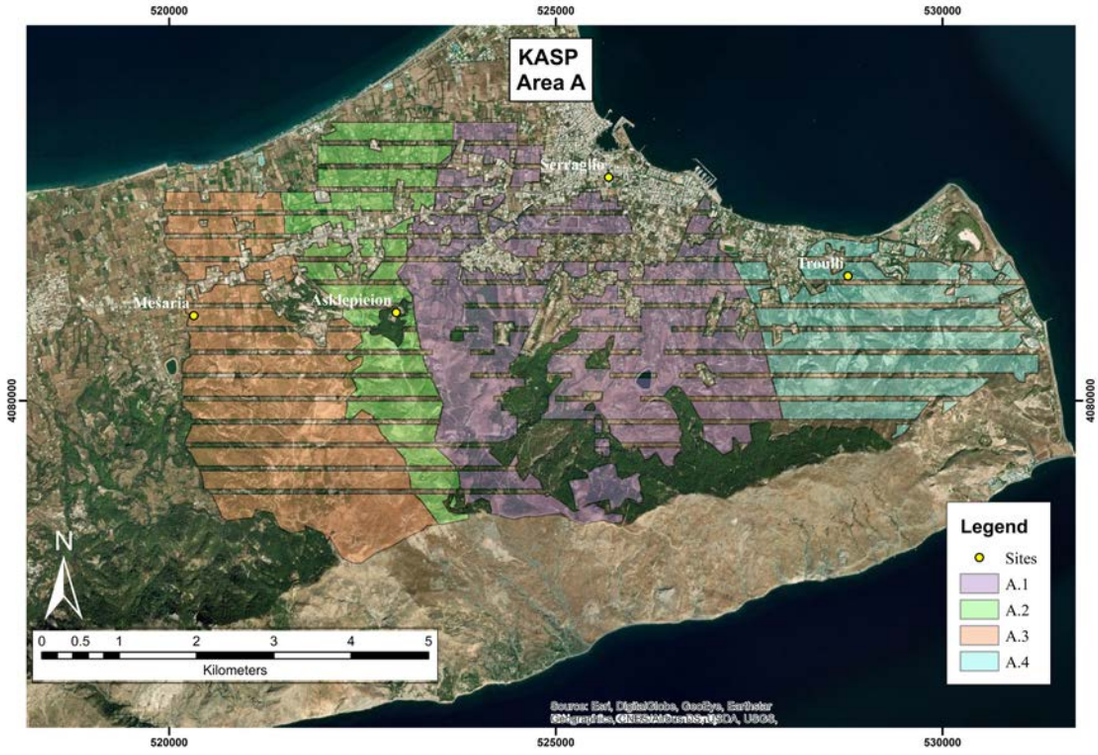

Fig. 3. Close up of KASP's Area A (el. C. McNamee - S. Vitale - T. Marketou).

sector of the island (Fig. 3). It measures 2642 hectares and is bounded by the sea to the north, the Dikaios range to the south, the Mesarias River to the west, and Cape Louros to the east. Within this rather large area, four smaller sub-areas were demarcated, centered around previously known archaeological sites and with their boundaries defined based on natural topographic breaks in the landscape. Sub-Area A.1 is centered around the "Serraglio", Sub-Area A.2 around the Asklepieion, Sub-Area A.3 around Mesaria, and Sub-Area A.4 around Troulli (Fig. 3)[3]. For comparative purposes, two smaller sectors, Areas B and C, were also incorporated in the survey (Fig. 4). Area B, which measures 250 hectares, is centrally located on the island around the site of the Kastro at Palaio Pyli[4]. Area C, which measures 108 hectares, is in the southwest corner of the island near the bay of Kephalos and the site of the Aspri Petra Cave[5].

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2. Methodology

This section summarizes KASP's methodology for archaeological fieldwork and pottery analysis, including a discussion on the development of the project's database and the integration of photogrammetry on a landscape and localized scale[6]. The project's approach to these subjects incorporates many ideas originally developed in the context of the Antikythera survey by A. Bevan and J. Conolly, especially as far as fieldwork and the spatial resolution for establishing artifact density are concerned[7]. KASP's methodology also places significant emphasis on the analysis of the natural environment in which material culture is embedded, as well as the natural and anthropogenic geomorphic processes that impact human-environmental interactions[8].

[3] For previous research on the northeast Koan region in prehistoric times, see Marketou 2004; 2010, 762-766; Vitale 2012; Vitale *et alii* 2017 (all with previous bibliography).

[4] On the Kastro at Palaio Pyli, see Hope Simpson-Lazenby 1970; Vitale *et alii* 2017, 234, 238-241; Vitale 2021, 536, 553-555, figs. 9-10.

[5] On the Aspri Petra Cave, see Levi 1929; Marketou 2004, 17-19.

[6] For a more detailed discussion of KASP's methodology, see Marketou *et alii* forth.

[7] Bevan-Conolly 2013, especially 12-18. For other significant methodological contributions to the development of all aspects of intensive surveys in the Aegean see, among others, Renfrew-Wagstaff 1982; Cherry 1983; Cherry *et alii* 1991; Bintliff-Snodgrass 1985; Wright *et alii* 1990; Mee-Forbes 1997; Davis *et alii* 1997; Alcock-Cherry 2004; Broodbank-Kiriatzi 2007; Farinetti 2011; Whitelaw 2012; Kiriatzi-Broodbank 2014.

[8] For a recent contribution to the theoretical debate on human-environmental interaction, see Steel 2018 (with previous bibliography).

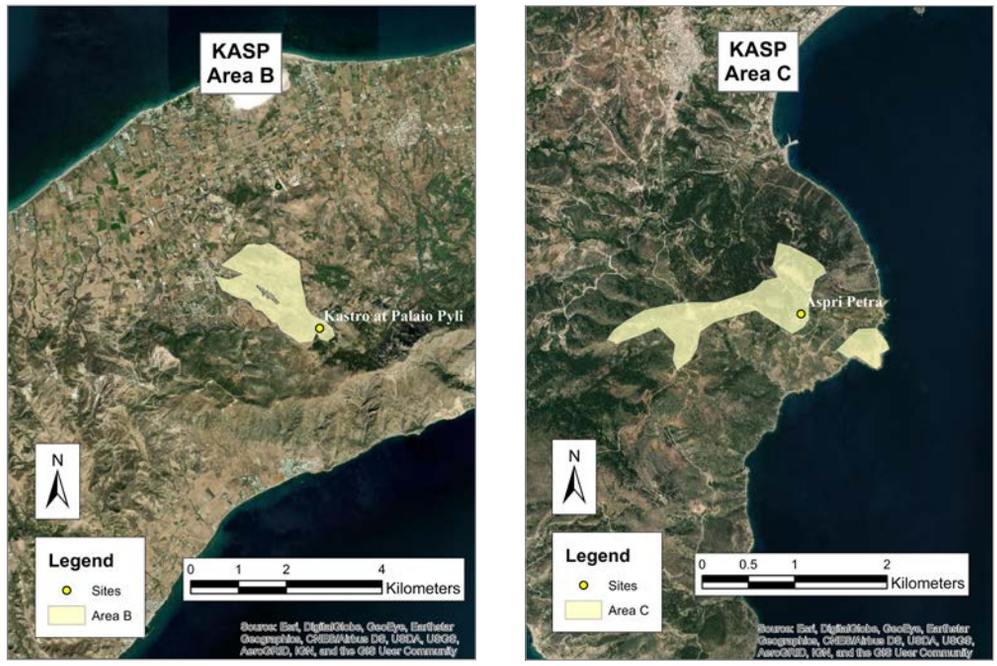

Fig. 4. Close up of KASP's Areas B and C (el. C. McNamee - S. Vitale - T. Marketou).

Overall, the project's approach is the result of the combined efforts of Michailidou, Marketou, Vitale, and McNamee. Significant insights were also provided by the specialists, who participated in KASP's 2018 and 2019 field seasons, particularly H. Indgjerd for archaeological fieldwork, spatial analysis, and database design, Indgjerd and E.V.R. Campbell for photogrammetry, and Š. Rückl for pottery analysis [9].

Salvatore Vitale

2.1 Archaeological Fieldwork

The archaeological fieldwork on Kos is organized to capture data on artifact density and distribution, as well as the relationship of cultural materials to the natural environment. For this purpose, the survey areas and sub-areas mentioned in the previous section have been sub-divided into smaller units that decrease in scale and include tracts, walker lines, and segments (Fig. 5) [10]. Each tract is 100 meters in length east to west and 60 meters in width north to south. Surveyors, spaced 15 meters apart along four set walker lines (A-D), walk east to west or west to east along the length of each tract. Walker lines are further subdivided into segments of 10 meters in length [11]. In addition to the collection of finds, data documented at the segment level include artifact counts (documented within one meter on either side of each walker using a clicker), visibility, built features, and photograph locations. Collected objects include all diagnostic pottery, a representative sample of non-diagnostic pottery, and all other identified archaeological artifacts, such as terracotta, lithic, groundstone, metal, and glass objects. Diagnostic pottery consists of all painted sherds and all unpainted feature sherds (rims, handles, bases, spouts, discs, etc.) [12], as well as all unpainted body sherds that can be identified and/or dated based on fabric.

Besides tracts, walker lines, and segments, two larger geographic units exist: landform areas (LFAs) and Places of Interest (PoIs) [13]. LFAs capture information related to the natural environment. They are

[9] Important insights in the development of the methodology used for KASP's archaeological fieldwork and database design were also provided by D. Nenova.

[10] See Bevan-Conolly 2013, 12-18.

[11] A high resolution for establishing artifact density provides precise spatial control and allows for the fine scale mapping of archaeological resources across the landscape (see *ibid.*, 13-14). Within KASP, tracts, walker lines, and segments are laid out in ArcGIS in WGS 1984 UTM coordinates. Team leaders are provided with iPads equipped with MAP plus software and loaded with aerial imagery and tract grids. GPS positioning is enabled on the iPads through a cellular data plan. Individual walkers, on the other hand, are provided with handheld GPS units to identify their position within individual segments.

[12] See Bevan-Conolly 2013, 14.

[13] KASP's definition for PoIs mostly overlaps with the term POSI («places of special interest»), as used by J.L. Davis and his colleagues within the context of the Pylos Regional Archaeological Project (see Davis *et alii* 1997, 401).

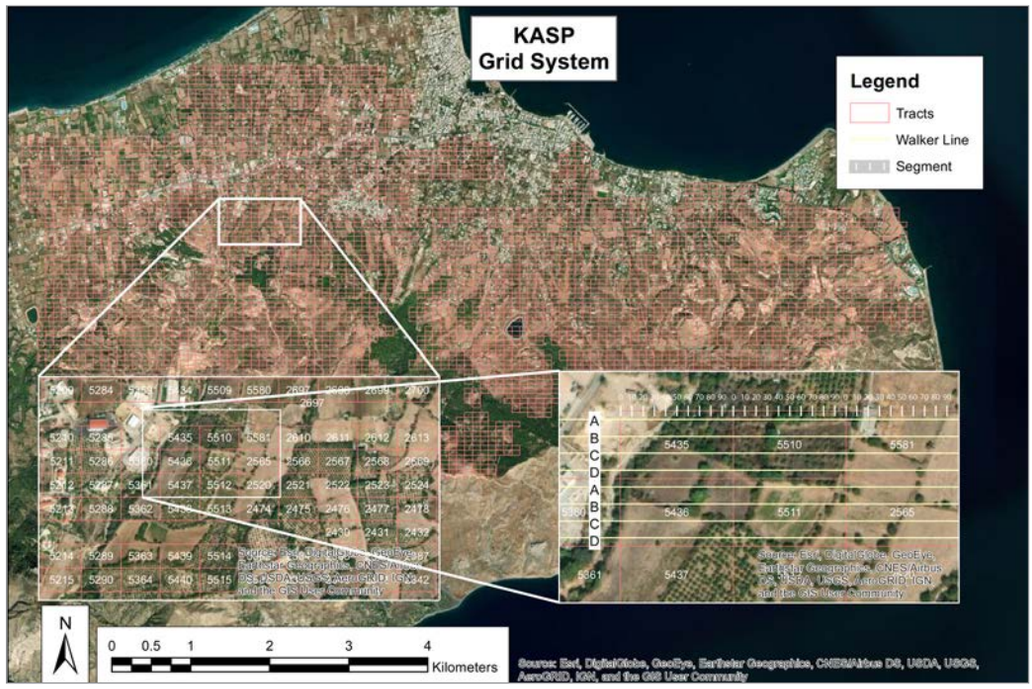

Fig. 5. KASP's grid system, showing tracts, walker lines, and segments (el. C. McNamee - S. Vitale - T. Marketou).

demarcated by changes in geomorphology, vegetation, and/or land use and are thus not necessarily restricted spatially by the grid system.

PoIs are areas that contain evidence for some form of human impact. As LFAs, PoIs are also not necessarily restricted spatially by the grid system. They are identified based on artifact density and/or the presence of structures, irrigation devices, wells, military installations, terracing, boundary markers, and other miscellaneous built features. PoIs are mapped in GIS based on their central GPS location and associated in the database with relevant tracts.

PoIs may equate to the traditional notion of an archaeological "site"[14], while large sites may also be defined as cultural landscapes. The latter are extensive locations where material culture is so densely and continuously represented that no clear boundaries can be drawn to define multiple and discrete PoIs. Among others, typical examples of cultural landscapes are the wider Asklepieion area (PoI 19) and the site of Ayios Panteleimon (PoI 95), which forms the main subject of this article (Figs. 6-8).

Besides data collected along walked tracts, KASP's field methodology includes two further levels of analysis[15]. The first involves additional documentation by senior staff of all identified PoIs, which are revisited and reassessed in terms of the types of archaeological resources present, the landscape, the natural and built environment, and the potential function (Figs. 7-8). The second additional analytical level concerns sites/cultural landscapes deemed to have significant archaeological potential. This final level includes site gridding and full collection of the materials from half of the grid squares, with the aim of achieving a high resolution assessment of the finds and their spatial distribution[16].

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2.2 Pottery Analysis

KASP's pottery analysis is recorded on two separate sheets: a quantification and a catalogue form. The former contains data from all collected materials, while the latter is specifically dedicated to inventoried pieces. Both forms represent adaptations of analytical tools previously developed in the context of the

[14] For critical discussions of the traditional use of the term "site", see Dunnell-Dancey 1983; Davis *et alii* 1997, 401, with fn. 27; Bevan-Conolly 2013, 100-103 (all with previous bibliography).

[15] Two analytical steps are used in the Antikythera survey (see *ibid*., 16-18).

[16] KASP's final level of analysis can be compared with the second analytical stage implemented in the Antikythera survey (see *ibid*.).

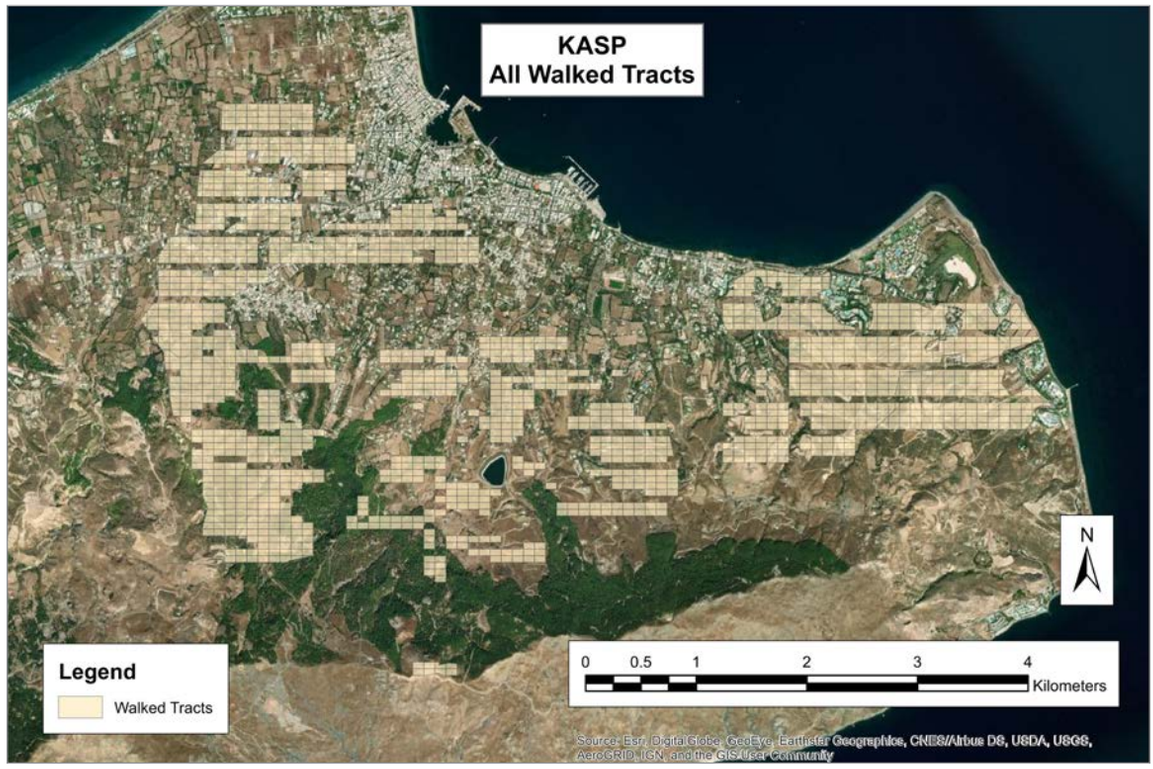

Fig. 6. Tracts walked during KASP's 2018 and 2019 field seasons (el. C. McNamee - S. Vitale - T. Marketou).

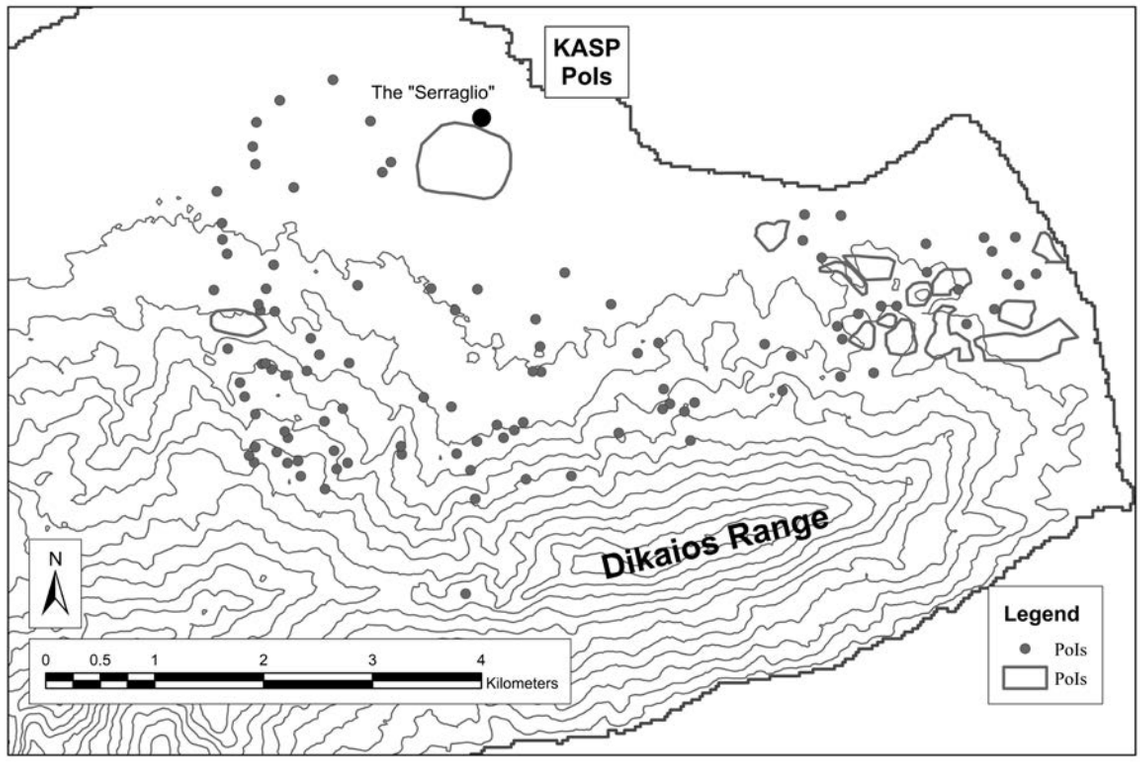

Fig. 7. PoIs identified during KASP's 2018 and 2019 field seasons (el. C. McNamee - S. Vitale - T. Marketou).

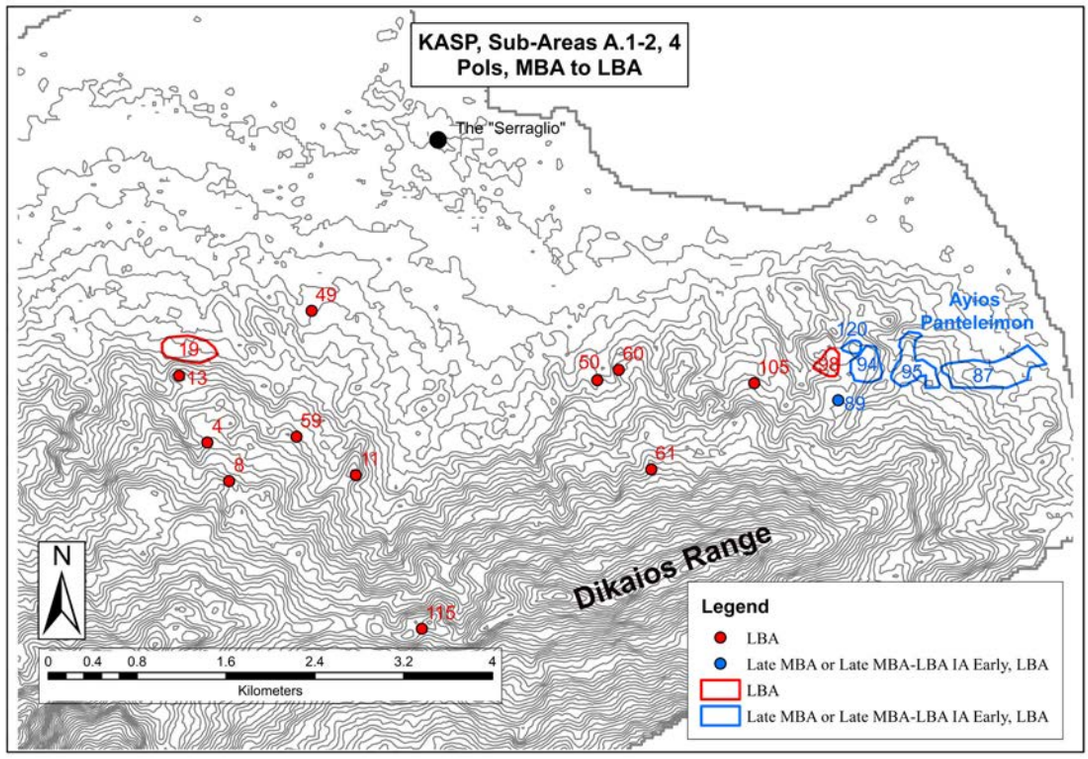

Fig. 8. LBA PoIs identified during KASP's 2018 and 2019 field seasons in Sub-Areas A.1-2, 4. PoIs 4, 50, and 120 have funerary functions (el. C. McNamee - S. Vitale - T. Marketou).

Serraglio, Eleona, and Langada Archaeological Project (SELAP), a research endeavor directed by Vitale and McNamee under the scientific aegis of the Italian Archaeological School at Athens [17].

In KASP's quantification form, pottery fragments are analyzed based on the tract, walker line, and segment (TLS) in which they were originally recovered. Each entry may include single sherds or groups of homogeneous sherds. In both cases, the following features are recorded: (a) Spatial information; (b) Sherd and vessel counts; (c) Chronological range; (d) Maximum size of inclusions; (e) Typology (decoration, shape, and vessel part); (f) Potting tradition; (g) Macroscopic fabric group; (h) Function; (i) Size; (j) Degree of wear; and (k) Weight. To sort the materials into size categories, a simple chart with squares ranging from 2x2 to 20x20 centimeters is used. The categories are set as: small = 2x2 centimeters; small-medium = 4x4 centimeters; medium = 6x6 centimeters; medium-large = 9x9 centimeters; and large = >9x9 centimeters.

Within KASP's catalogue form, the following data are recorded for each inventoried piece: (a) Spatial information; (b) Dimensions of the fragment; (c) Form and decoration; (d) Chronological range; (e) Maximum size of inclusions; (f) Visible inclusions; (g) Potting tradition; (h) Macroscopic fabric group; (i) Surface treatment; (j) Forming technique; (k) Colors of surfaces, paints, and fractures, according to the Munsell Soil Color Charts; (l) Percentage of preserved parts; (m) Hardness, according to Moh's scale; and (n) Degree of wear.

Through this methodology, pottery analysis provides significant data on typology, chronology, potting tradition, function, fabric, and taphonomy. This way, ceramics represent a prominent tool to address KASP's research questions, especially transitions in settlement patterns, land use, and cultural trajectories [18].

Salvatore Vitale

[17] Within SELAP, these research tools were implemented to process the materials from the excavations conducted on Kos during the 1930's and 1940's by L. Morricone (Morricone 1967; 1975; Vitale 2012, 1245, with fn. 36; Vitale *et alii* 2017, 255-260). The quantification form is also reminiscent of the pottery form developed at Pylos by S. Vitale and S.R. Stocker in the context of the Palace of Nestor Excavations (www.griffinwarrior.org). For published results based on the use of SELAP's forms, see Vitale-Morrison 2018.

[18] For other approaches to the analysis of ceramics from survey, see, among others, Davis *et alii* 1997; Moody *et alii* 2003; Broodbank-Kiriatzi 2007; Bevan-Conolly 2013, 18-19, 46-84; Kiriatzi-Broodbank 2014.

2.3 Database and Photogrammetry

Filemaker layouts have been implemented to record relevant information on tracts, LFAs, PoIs, and artifact analysis, with individual fields within each layout designed to address the project's primary research questions. Dropdown values exist for all fields in order to maintain recording consistency, facilitate queries, and standardize the study of the data set. All database layouts are linked to high resolution landscape or artifact photographs and are relational, enabling the automatized population of interconnected fields, as well as the easy and fast performance of complex queries.

Data concerning tracts and LFAs, as well as PoIs and sites, are recorded on site by field staff on iPads equipped with Filemaker Go. Similarly, pottery quantification and catalogue forms are filled out by ceramic specialists directly on iPads provided with Filemaker Go during the processing of the artifacts at the project's storerooms. All iPads used to record fieldwork and artifact data are synced into an updated master file daily. Finally, artifact counts for all tracts, lines, and segments, recorded on a paper form by field walkers, are manually entered in Microsoft Excel, exported in a database format, and then linked with the spatial data in QGIS to produce density maps.

Documentation, mapping, and recording of the Koan landscape also relies significantly on photogrammetry, which is implemented through digital single-lens reflex cameras or unmanned aerial vehicles (drones). Agisoft Photoscan software is used to produce orthomosaics and digital elevation models, which provide accurate three-dimensional images of LFAs, PoIs, and built features. These data are synthesized with GIS allowing for precise measurements and interpretations of spatial relationships. Photogrammetry is a useful and time-efficient tool that aids not only in assessing site significance and management needs, but also in providing a method for long-term site monitoring.

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3. Work Accomplished in KASP's 2018 and 2019 Field Seasons

During the 2018 and 2019 field seasons, KASP covered 804 hectares, all in Sub-Areas A.1-2 and A.4 (Fig. 6). The overall number of PoIs identified and recorded equates to 120 (Fig. 7). For all these locations, a density map was produced from ceramic counts per TLS and used to assist in documenting the new PoIs.

Based on current data, the most important phases of human activity in the surveyed area include, in chronological order: the Final Neolithic (FN) 1 to Early Bronze Age (EBA) 2 periods, with a total of 25 PoIs; the LBA period (Fig. 8), with a total of 18 PoIs; the Hellenistic to Late Roman periods, with a total of 55 PoIs; and the Modern period, with a total of 64 PoIs[19]. PoIs with pottery fragments attributable to the EBA 3, Middle Bronze Age (MBA), Early Iron Age (EIA), Archaic, Classical, and Byzantine periods are less common. Because of the difficulty in isolating these phases in the materials from the survey, the identification of some of these phases at the site of Ayios Panteleimon (see below, Sub-Sections 4.2, 4.4) and a few other locations investigated in 2018 and 2019 greatly enhanced our knowledge of the island's cultural history. A detailed report on the current results of KASP, including all identified chronological periods, will appear soon in a separate article[20].

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4. The Site of Ayios Panteleimon (PoI 95)

Ayios Panteleimon (PoI 95) was discovered by KASP during the fall of 2019 (Figs. 8-9). With some possible gaps (see above, Section 3; below, Sub-Section 4.2), this important site was used from the local FN 1 to Modern times. This section of the article is focused on the rich LBA occupational phases, with special attention on location, chronology, potting traditions, pottery typology, and site function. Ceramic data

[19] These counts reflect KASPS's current data set. While all identified prehistoric materials have been at least partially processed, not all recovered pottery from the survey has been fully analyzed. For this reason, it is likely that the numbers provided here will change in the future, especially as far as PoIs postdating the LBA are concerned. Because some PoIs have long phases of use and/or multiple phases of occupation, the total of periods represented does not equate to the total number of PoIs.

[20] Marketou *et alii* forth.

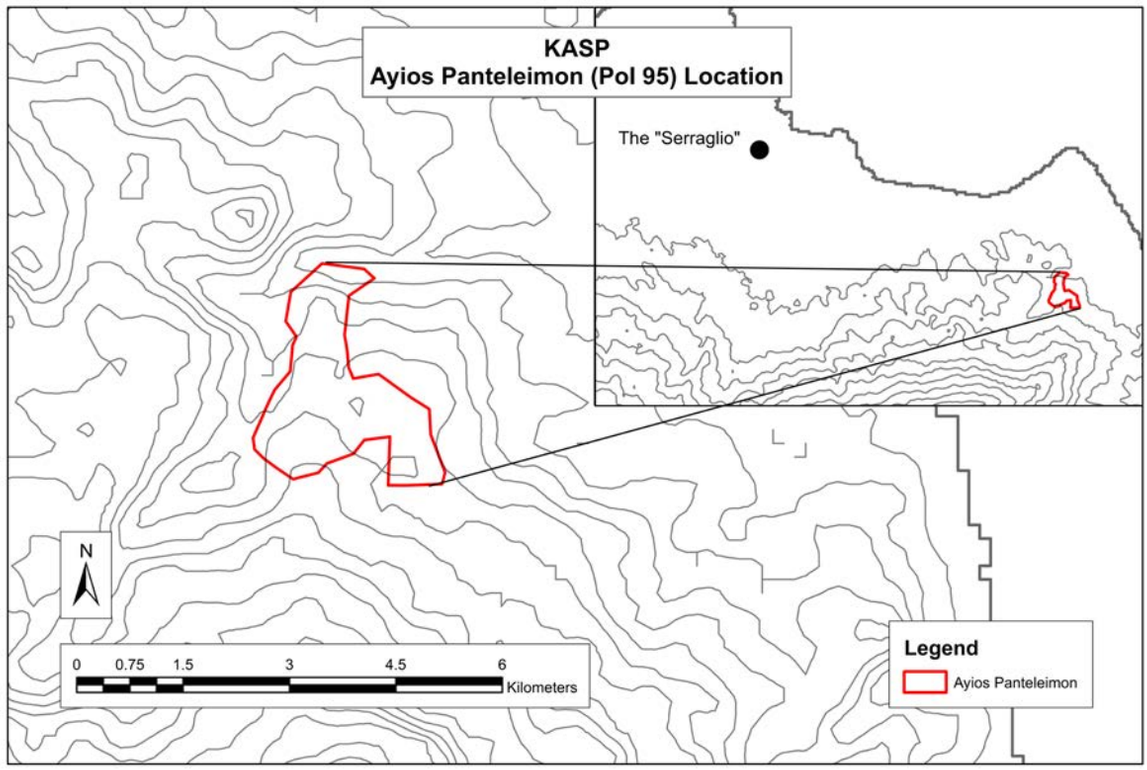

Fig. 9. Location of Ayios Panteleimon, PoI 95 (el. C. McNamee - S. Vitale - T. Marketou).

reflect full quantification of the materials from the LBA core area of the site that, based on artifact counts, includes Tracts 3570-3572, 3621, and 3594-3597 (Fig. 10) [21].

4.1 Location

Ayios Panteleimon lies in KASP's Sub-Area A.4, in close proximity to the east end of the wide gulf extending between Cape Ammoudia, also known as Lambi, and Cape Louros (Figs. 9-11). The site consists of two elevated landforms, which are located at the very end of the Dikaios' pediment area and are currently separated by a drainage running in a southeast to northwest direction. It is bordered on the south by the foothills of the Dikaios range and on the west by a branch of the River Pseftos, which separates Ayios Panteleimon from the hill of Kastello. To the north and the east, the site's landforms gradually transition into the coastal plain.

Previously known sites in the area of Ayios Panteleimon include the Mycenaean chamber tomb of Kastello, located circa 500 meters to the northwest; three Hellenistic tombs, located to the north; and the remains of a Byzantine settlement, located to the northeast [22]. To these sites, one can now add the 37 PoIs, which were identified during KASP's 2019 season and show evidence of occupation between the FN 1 and the Late Roman periods, as well as in Historical to Modern times (Figs. 7-8). Based on our current knowledge, Ayios Panteleimon extends over an area of 10.8 hectares, which makes it one of the largest sites/cultural landscapes identified through the Kos survey. Based on artifact distribution, Ayios Panteleimon is also by far the largest LBA site ever discovered on Kos, being almost double the size of the "Serraglio", which totaled circa 6 hectares according to Morricone or 7.5 hectares according to Marketou [23].

The viewshed from the core area of Ayios Panteleimon covers the east end of the north coastal plain of Kos, Cape Louros, and the channel between Kos and Anatolia, including the area of Halicarnassus (Fig.

[21] Data from these tracts are based on the quantification of materials collected along survey transects (see above, Sub-Section 2.1). Full collection, proposed for KASP's 2021 field season, will further enhance our understanding of the site.

[22] For Kastello, see Papazoglou 1981. The other sites were discovered by L. Laurenzi, during the period of the Italian occupation of Kos, but were never fully published.

[23] Morricone 1975, 388; Marketou 2010, 763.

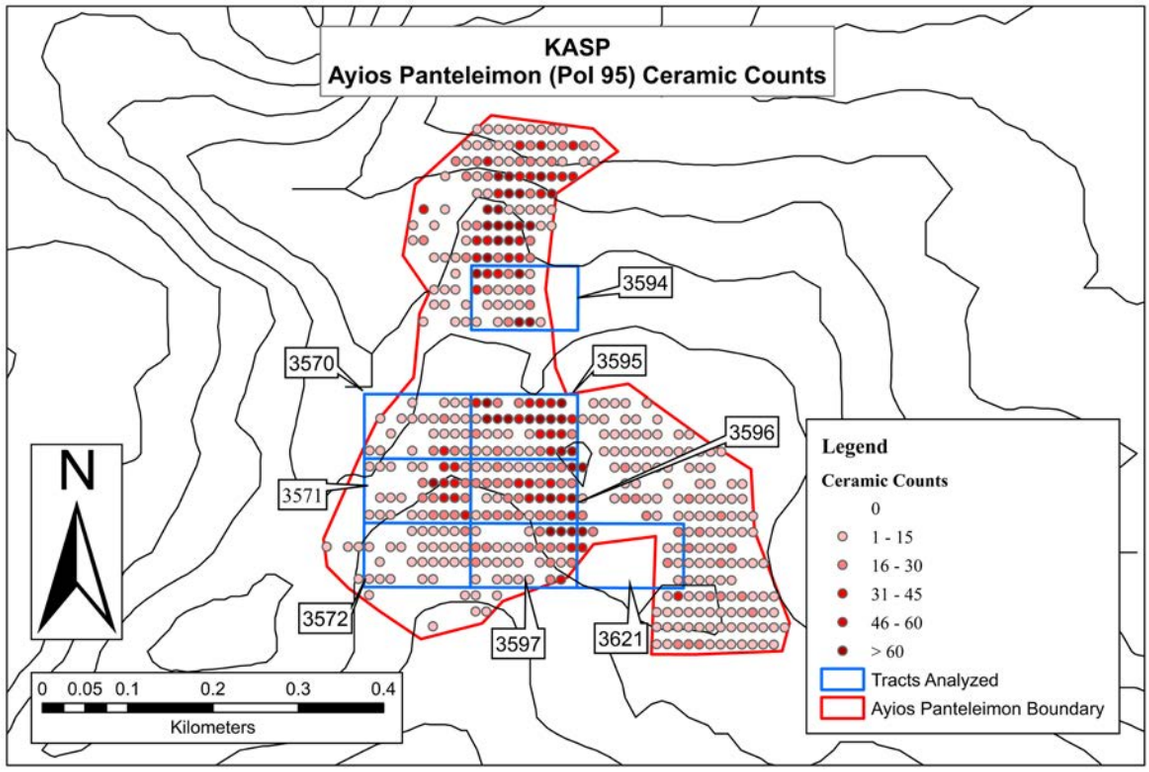

Fig. 10. Core area of Ayios Panteleimon, PoI 95, during the LBA. Ceramic counts reflect pottery of all phases (el. C. McNamee - S. Vitale - T. Marketou).

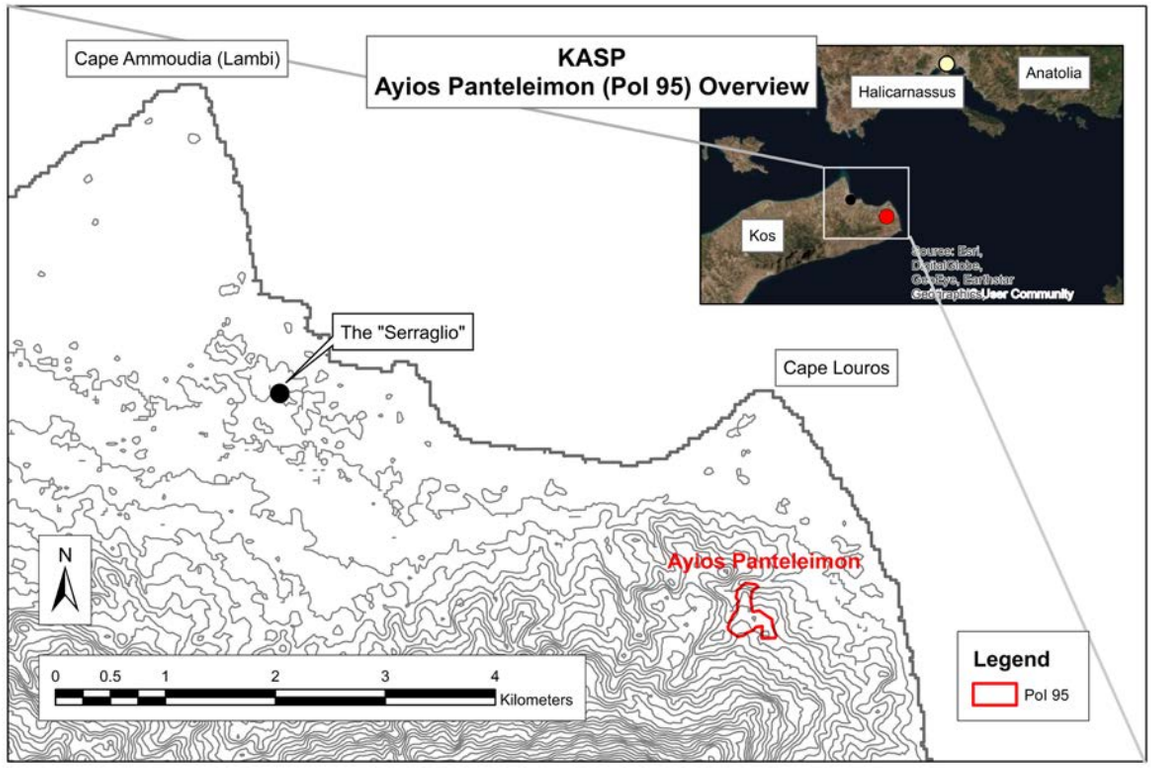

Fig. 11. Location of Ayios Panteleimon, PoI 95, and the "Serraglio" in the northeast Koan region (el. C. McNamee - S. Vitale - T. Marketou).

11). This strategic position of the site may account for its prosperity during the LBA, as well as in the Hellenistic to Late Roman periods. On the one hand, Ayios Panteleimon may have benefited from the agricultural and grazing resources provided by the coastal plain. On the other, the position of the site may have granted control over the maritime routes connecting the southern islands of the Dodecanese, especially Rhodes, with other sites located to the north in the southeast Aegean to southwest coastal Anatolian region (SASCAR), such as Iasos, Tavşan Adası, Miletus, and the Samian Heraion.

A first attempt to identify a possible harbor in close proximity to Ayios Panteleimon, conducted by A. Querci, a team member with a research specialty in ancient navigation, was inconclusive. Today, the coastline immediately to the southwest of Cape Louros is slightly concave and repaired from the winds, making it a better candidate than the area immediately to the southeast, which is straighter and more exposed to sea storms. Both stretches, however, are sandy, a feature that is not ideal for a natural port.

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4.2 Chronology

The materials from Ayios Panteleimon fall into two main chronological periods: Prehistory and Classical Antiquity (Tab. III). Within these phases, much finer chronological distinctions are possible, because of the exceptional degree of preservation of the pottery (Fig. 12). As far as Classical Antiquity is concerned, all phases between the EIA and the Late Roman periods are attested, with Hellenistic to Late Roman being the most intense phases of use (Tab. IV).

As far as Prehistory is concerned, all the phases from the local FN 1 to the end of the LBA are attested, except the EBA 3 and the early MBA (Tabs. I, V) [24]. Such a gap corresponds to a previously known pattern on the island, represented also at other sites (see above, Section 3), the most prominent of which is the Asklupis [25]. After this potential occupational hiatus, human activities at Ayios Panteleimon were resumed from the end of the MBA, or the late MBA to LBA IA Early transition, and continued uninterrupted throughout Late Helladic (LH) IIIC. The LBA is by far the most represented of all prehistoric periods at the site. Both the first and the second halves are well documented, with possible peaks in LBA IA to LBA IB and LH IIIA2 to LH IIIB (Tabs. VI-VII).

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4.3 Potting Traditions

In the last 40 years, research by Marketou and SELAP has provided fine grain data about the interplay between local, Minoan, and Mycenaean cultural features on LBA Kos [26]. This research has also produced a detailed classification system for Koan locally manufactured ceramics (Tab. VIII), which reflects the dynamic interaction between different potting traditions on the island [27]. Shifts in the representation of locally made pottery classes and changes in the proportions of imports are crucial for understanding cultural transitions in the northeast Koan region.

Based on ceramic data from the core area of the site, throughout the LBA, the proportions of locally produced and imported vessels at Ayios Panteleimon remain roughly constant, with imports representing slightly more than 10.0% of the assemblage (Tabs. IX-X) [28]. This is an unusually high number, which illustrates the intense participation of Ayios Panteleimon and the island of Kos in processes of connectivity and

[24] A body sherd from a possible MD shallow rounded bowl recovered outside of the walked transects is currently the only evidence for sparse EBA 3 activities at Ayios Panteleimon. For EBA 3 shallow rounded bowls from the "Serraglio" on Kos, see Marketou 1990b, 41, fig. 1; 2004, 37, fig. 8:ε.

[25] For a discussion of FN to MBA settlement patterns on Kos before KASP, see *Ead*. 2004; 2010, 762-763; Vitale 2013a; 2018, 98-99, 108-109; Vitale-Morrison 2018; Vitale *et alii* 2017, 226-229, 236-238, tabs. I-II (with previous bibliography). For Kos during the EBA 3 and the MBA periods, see Marketou 1990a, 101-102; 1990b; 2004, 25-27; 2009; 2010, 763.

[26] Marketou 1990a; 1990b; 2004; 2009; Vitale-Hancock Vitale 2010; 2013; 2016; 2017; 2018; Vitale-Morrison 2017; 2018; Vitale *et alii* 2017; Vitale-McNamee 2019; McNamee-Vitale 2020.

[27] For a thorough discussion of the ceramic classification system used in the contexts of SELAP and KASP, see Vitale 2017; 2018; 27-32, tabs. 1-2; Vitale *et alii* 2017, 255, tab. XV.

[28] At the current stage of research, the distinction between locally produced and imported pottery is based on macroscopic fabric analysis. For Koan prehistoric macroscopic pottery groups and their exact definitions, see Vitale 2018, 32-34, tab. 3; Vitale-Morrison 2017, 85-90, tabs. 8.4-5; 2018, 50-56, tabs. XI-XII; Vitale *et alii* 2017, 255-260, tabs. XVI-XVII.

Fig. 12. LBA materials from Ayios Panteleimon, PoI 95 (photo K. Dudlik - S. Vitale).

mobility of people, goods, and ideas. In addition to the SASCAR, Crete, and the Greek mainland, other areas, such as Aegina and the Cyclades are also represented (see below, Sub-Section 4.4). The high number of imports suggests the prominent economic position of Ayios Panteleimon in the wider northeast Koan region.

As far as potting practices are concerned, during the first half of the LBA (Tab. XI), Local Tradition vessels represent the most common component of the site's assemblage. In the second half of the LBA, on the other hand, the pottery repertoire is dominated by locally and imported Mycenaean Tradition shapes (Fig. 12:f-h; Tab. XII). In this context, the occurrence of a Mycenaean anthropomorphic figurine is intriguing (Figs. 12:i; 13), as very few of these items were found in circa nine years of intensive and systematic excavations by Morricone (only three from the "Serraglio" and four from Eleona and Langada) [29].

While shifts in the proportions of potting traditions at Ayios Panteleimon reflect general trends previously established at the "Serraglio" [30], the data also show two potentially significant differences, at least as far as the early part of the LBA is concerned. The first difference is the extremely high incidence of locally produced and imported Minoan Tradition vessels, which represent 31.6% of the LBA IA to LBA IIIA1 pottery from the core area of Ayios Panteleimon (Fig. 12:a-e; Tab. XI) and appear to occur in distinctively

[29] Morricone 1967; 1975.

[30] Vitale 2016, 86-87; Vitale *et alii* 2017, 278-279.

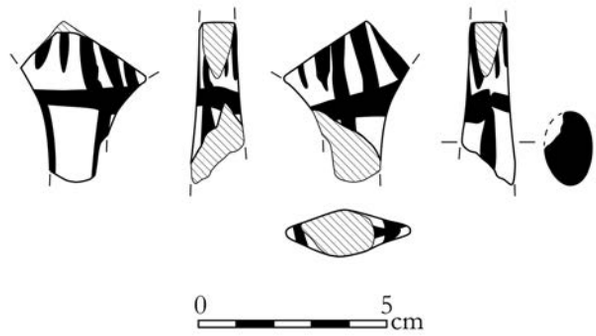

Fig. 13. Mycenaean figurine from Ayios Panteleimon, PoI 95 (el. M. Rossin - T. Ross).

larger quantities at this site than at the "Serraglio" [31]. Imported Minoan Tradition vessels found on Kos may represent true imports from Minoan Crete or pottery imported from other Minoanized centers in the Aegean. The widespread presence of Cretan locally produced and imported pottery types at Ayios Panteleimon, especially between LBA IA and LBA IB, may have dramatic implications to our current understanding of Minoan cultural impact on Kos, as well as to the investigation of the different roles that Ayios Panteleimon and the "Serraglio" may have played in the northeast Koan region during the early LBA.

The second possible difference between Ayios Panteleimon and the "Serraglio" concerns the underrepresentation at the former site of Mycenaean Tradition shapes during the phases between LBA II and LBA IIIA1. In the "Serraglio" area, this time span coincides with the construction of the cemetery of Eleona and a first general increase of Mycenaean cultural diacritics [32]. Rather than being real, however, this second difference may simply reflect biases in the ability of isolating ceramics dating exclusively within these time periods. In fact, other features point to the existence of important early contacts between Ayios Panteleimon and the Greek mainland, including the presence of LBA IA/LH I to LBA IB/LH IIA imports and the occurrence of locally produced Mycenaean type goblets FS 263/270 beginning in LBA IB/LH IIA (see below, Sub-Section 4.4).

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4.4 Pottery Typology

Within this sub-section, the prehistoric pottery from the core area of Ayios Panteleimon is briefly presented in chronological order. The materials are sub-divided into three broad groups: FN 1 to EBA 2 and Late MBA or Late MBA to LBA IA Early; LBA IA to LBA IIIA1; and LH IIIA2 to LH IIIC. An outline catalogue of all illustrated pieces is provided in Tabs. XIII and XIV, where all the primary abbreviations used for Koan local and imported pottery classes are also spelled out (for additional abbreviation keys, see Tab. VIII).

4.4.1 FN 1 to EBA 2 and Late MBA or Late MBA to LBA IA Early

The early phases of occupation at Ayios Panteleimon are currently represented by a limited number of sherds, almost exclusively belonging to Koan Local Tradition classes (Tab. XIII). FN 1 to EBA 2 vessels include UPMC and UPC pithoi, cups/dippers (Fig. 14:a) [33], and miscellaneous open and closed shapes (Fig. 14:b). Late MBA or Late MBA to LBA IA Early vessels include a MD beaked jug (Fig. 14:c); an UPF beaked jug; an UPMC open shape (Fig. 14:d); a locally produced MiUMC closed shape, representing one of the earliest signs of Minoan influence on Koan ceramics; and a MiImpUF conical cup (Fig. 14:e) coming from the Cyclades.

[31] Vitale 2016, 77-82; Vitale *et alii* 2017, 278.
[32] Vitale 2016, 87 (with previous bibliography).
[33] A good parallel for the cup/dipper from Ayios Panteleimon comes from the EBA 2 cemetery at the Asklupis (*Id.* 2013a, 55-57, No. 1271, fig. 5:2).

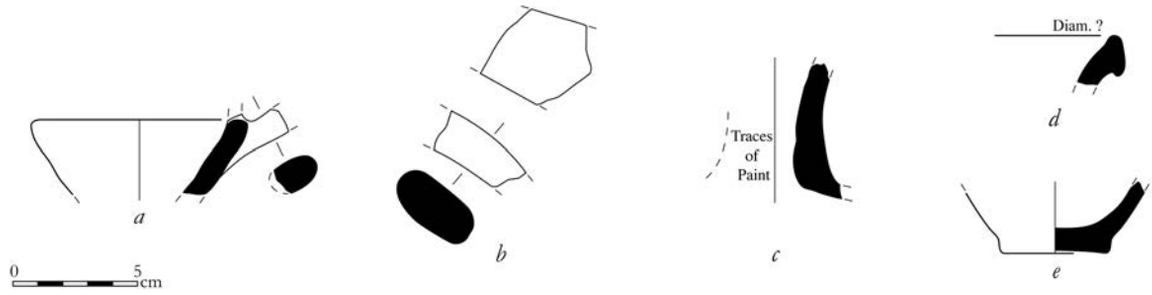

Fig. 14. FN 1-EBA 2 and Late MBA or Late MBA to LBA IA Early pottery from Ayios Panteleimon, PoI 95. a-d: Local Tradition. e: Minoan Tradition Cycladic import (el. M. Rossin - T. Ross).

4.4.2 LBA I to LBA IIIA1

As stated previously, between LBA I and LBA IIIA1, there is a wide range of locally produced and imported classes, reflecting a variety of potting practices (Tab. XIII). Local Tradition vessels from the core area at Ayios Panteleimon consist of MR and MD miscellaneous closed (Fig. 15:a) and open shapes; UPF and UPMC hole-mouthed/bridge-spouted jars, jugs (Fig. 15:b), pithoi (Fig. 15:c), and bowls; and other UPF and UPMC miscellaneous closed and open shapes, including cooking, utilitarian, and storage vessels. As expected, Entangled vessels, mixing Local and Minoan Tradition features, exclusively consist of closed shapes (Fig. 15:d), among which the only securely identified shape is a fragment from a PMC LoD bridge-spouted jar [34].

LBA I to LBA IIIA1 locally produced Minoan Tradition vessels from Ayios Panteleimon comprise MiUF and MiUMC conical cups (Fig. 16:a-b) and straight-sided cups (Fig. 16:c), in addition to miscellaneous closed and open shapes, including cooking and utilitarian vessels. Imported Minoan Tradition vessels consist of MiImpPF and MiImpPMC bowls (Fig. 16:d), bridge-spouted jars (Fig. 16:e), and other miscellaneous closed shapes (Fig. 16:f-h). Mycenaean Tradition vessels include locally produced MyUF goblets (Fig. 16:i), as well as imported MyImpPF and MyImpUF goblets (Fig. 16:j-k). An imported Aeginetan Painted and Burnished krater (Fig. 16:l) also occurs.

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4.4.3 LH IIIA2 to LH IIIC

As stated previously, between LH IIIA2 and LH IIIC, the range of locally produced and imported classes dramatically decreases and the pottery assemblage at Ayios Panteleimon is basically restricted to Local Tradition, locally produced Mycenaean, and imported Mycenaean vessels (Tab. XIV). LH IIIA2 to LH IIIC Local Tradition vessels include MD and MB closed shapes; UG kylikes (Fig. 17:a); UG closed shapes; and miscellaneous UPF and UPMC fragments, including cooking and storage vessels (Fig. 17:b).

Locally produced Mycenaean Tradition painted vessels include a variety of MyPF closed and open shapes. The former consist of piriform jars (Fig. 18:a), amphorae/jugs/hydriae (Fig. 18:b), stirrup jars (Fig. 18:c), and other miscellaneous closed shapes (Fig. 18:d-g). The latter include stemmed, ring-based, and spouted kraters (Fig. 19:a-b), cups or deep bowls, kraters or basins, kylikes (Fig. 19:c-e), deep bowls (Fig. 19:f-g), basins, stemmed bowls (Fig. 19:h-i), and idiosyncratic Dodecanesian bowls decorated with double wavy bands (Fig. 19:j) [35]. Locally produced Mycenaean Tradition unpainted vessels comprise MyUF and MyUMC amphorae/jugs/hydriae, kraters, kylikes (Fig. 20:a-b), kylikes/shallow angular bowls, and various types of cooking pots, including jugs/amphorae/tripods (Fig. 20:c-f).

Finally Mycenaean imports, mostly coming from the Argolid, consist of MyImpPF amphorae/jugs/hydriae (Fig. 21:a) and other miscellaneous closed shapes, as well as stemmed kraters, kylikes (Fig. 21:b-c), deep or stemmed bowls, stemmed bowls (Fig. 21:d), shallow angular bowls, and other miscellaneous open shapes.

As previously mentioned, Mycenaean Tradition materials also include a fragmentary figurine, which may belong either to the Phi or the Psi type. Macroscopic fabric observations suggest that this piece was

[34] For Koan pottery classes of the Entangled Tradition, see Marthari *et alii* 1990; Vitale 2018 (both with previous bibliography).

[35] For a discussion of Dodecanesian bowls, see Mountjoy 1998, 39, 56, figs. 5, 19.

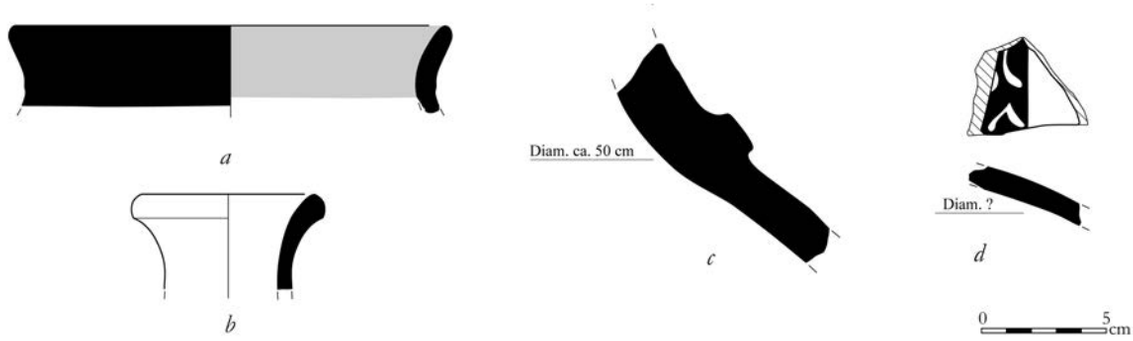

Fig. 15. LBA IA to LBA IIIA1 pottery from Ayios Panteleimon, PoI 95. a-c: Local Tradition. d: Entangled Tradition (el. M. Rossin - T. Ross).

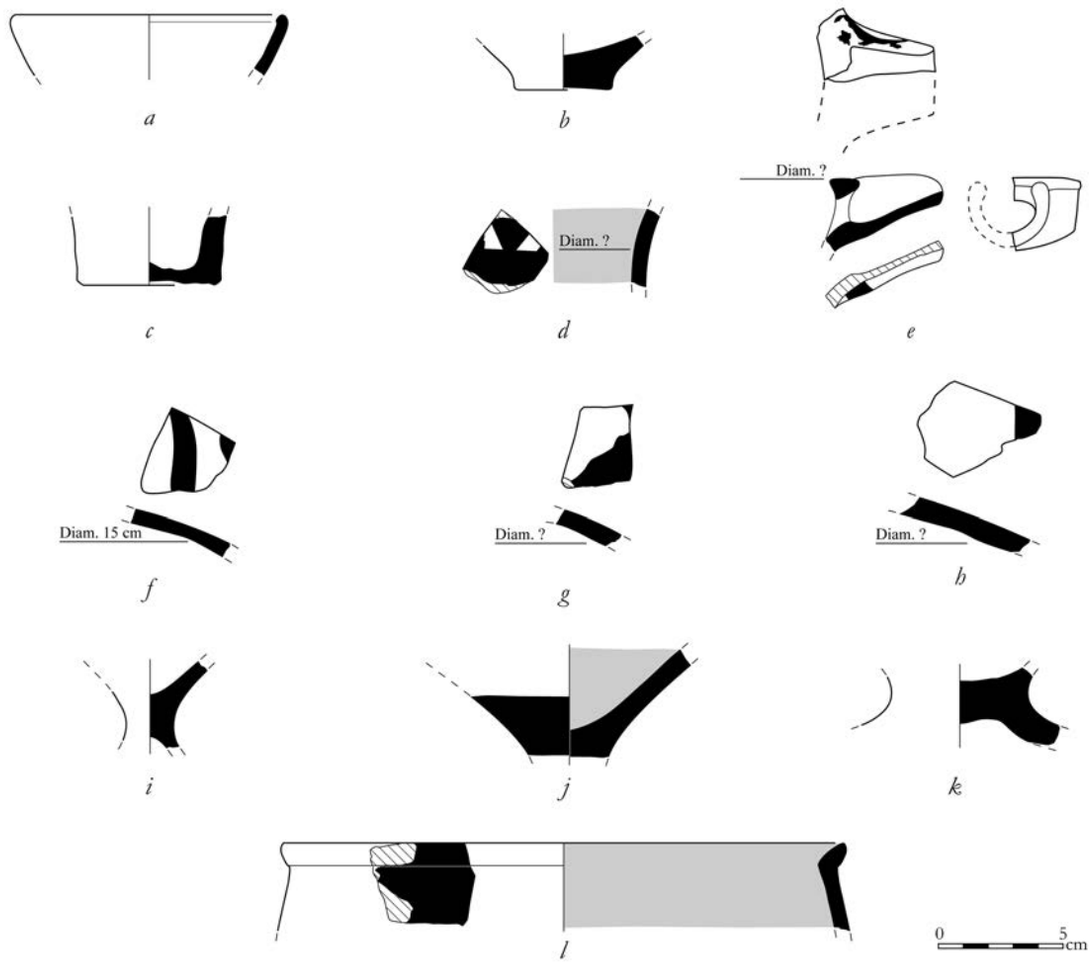

Fig. 16. LBA IA to LBA IIIA1 pottery from Ayios Panteleimon, PoI 95. a-h: Minoan Tradition. i-k: Mycenaean Tradition. l: Aeginetan import (el. M. Rossin - T. Ross).

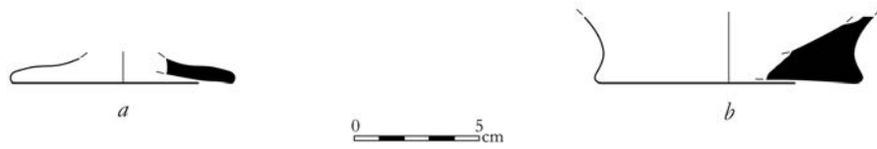

Fig. 17. LH IIIA2 to LH IIIC Local Tradition pottery from Ayios Panteleimon, PoI 95 (el. M. Rossin - T. Ross).

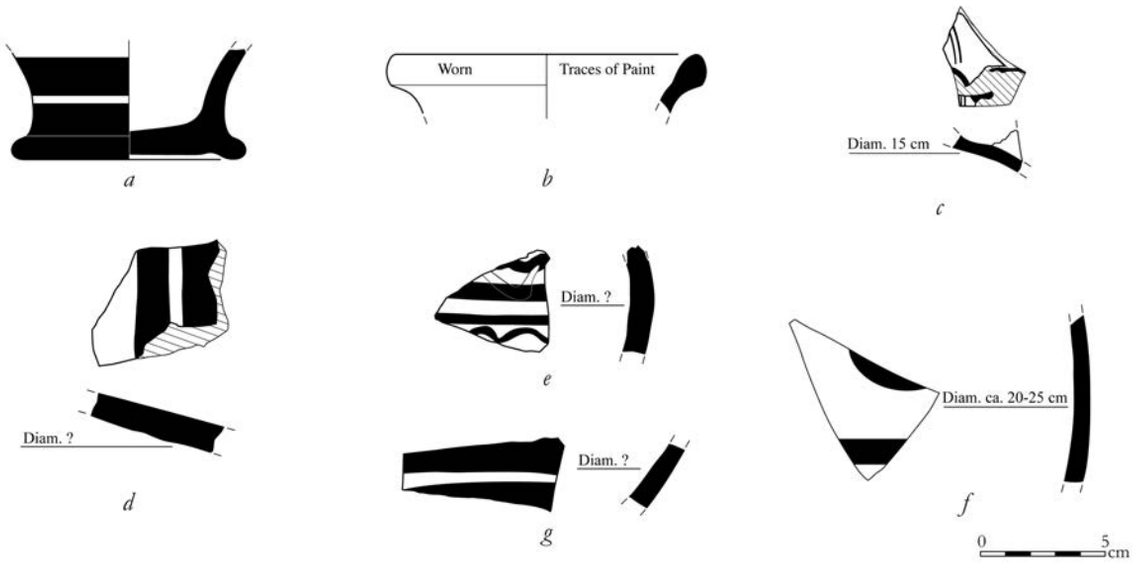

Fig. 18. LH IIIA2 to LH IIIC Mycenaean Tradition pottery from Ayios Panteleimon, PoI 95 (el. M. Rossin - T. Ross).

locally made, an interesting feature considering how uncommon Mycenean figurines are on Kos (see above, Sub-Section 4.3). The decoration, executed in a slightly lustrous brown paint, consists of wavy lines FM 53 on the upper body and a band around the waist. Based on these data, the figurine from Ayios Panteleimon should be assigned between LH IIIA2 and LH IIIB [36].

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4.5 Site Function

The LBA materials from the core area of Ayios Panteleimon indicate that the site must have been a settlement. This conclusion is evident, when one considers the general distribution of functional classes and the occurrence of specific shapes (Tab. XV). As far as the former, the settlement use of the area is demonstrated by the quantity of domestic utilitarian pottery, representing 32.3% of the total. As to the latter, the habitation function is confirmed by the occurrence of typical settlement shapes such as stemmed and ring-based kraters FS 7/8/9/281/282 and basins FS 294. The significance of these data is clear, when compared to the evidence from the Koan Mycenaean cemeteries of Eleona and Langada, where domestic utilitarian pottery is less than 5.0% and not a single specimen can be assigned to kraters or basins [37].

While the overall quantity of domestic utilitarian pottery is consistent with the numbers represented in LBA settlement contexts from the Greek mainland, the high incidence within this functional group of vessels primarily used for storage purposes (19.8%) is an interesting feature of the assemblage from Agios Panteleimon (Tab. XV) [38]. This feature may be explained by the prominent economic role the site could

[36] See French 1971, 116-123, 128-142.

[37] See Morricone 1967.

[38] In ordinary domestic contexts, storage pottery usually constitutes circa 10.0% of the overall assemblage (see Thomas 2005, 457-460, tab. 2; Vitale 2013b, 124, 129, tabs. 1-2; Vitale-Van de Moortel 2020, 20, 27-28, tabs. II:b, IV:b, all with previous bibliography).

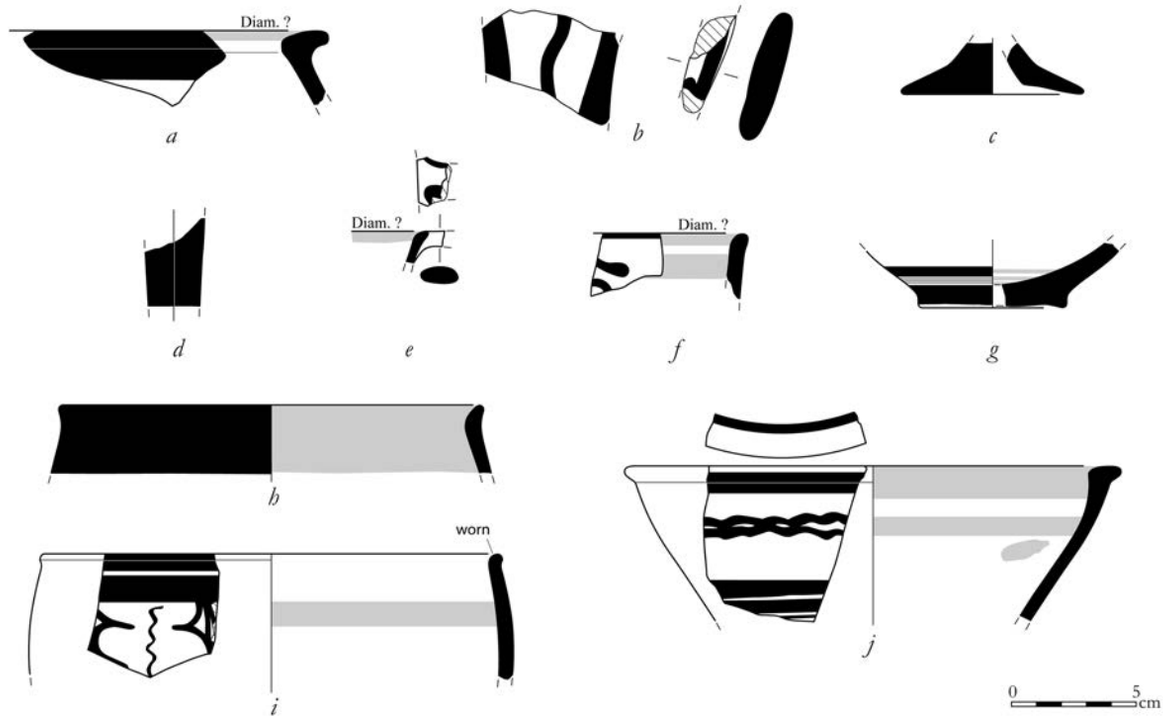

Fig. 19. LH IIIA2 to LH IIIC Mycenaean Tradition pottery from Ayios Panteleimon, PoI 95 (el. M. Rossin - T. Ross).

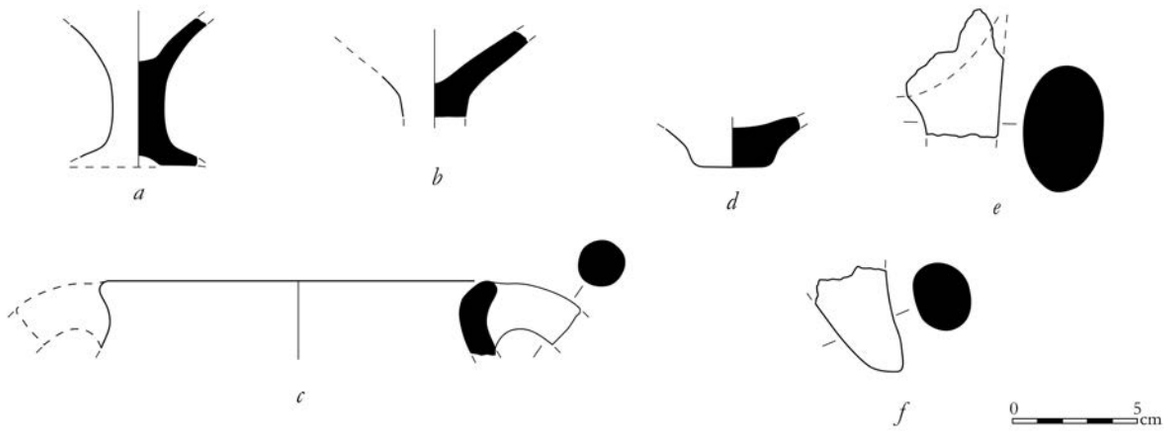

Fig. 20. LH IIIA2 to LH IIIC Mycenaean Tradition pottery from Ayios Panteleimon, PoI 95 (el. M. Rossin - T. Ross).

have had overlooking the maritime trade routes between the south and north sides of Kos (see above, Sub-Section 4.1). In fact, previous studies demonstrate that in the southeast Aegean storage shapes were regularly used also as transport containers for the circulation of local commodities [39]. On the other hand, abundant storage supplies may also indicate a significant concentration of subsistence resources and thus demonstrate the prominent political role of Ayios Panteleimon in the northeast Koan region during the LBA.

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[39] Vitale 2018, 94-95.

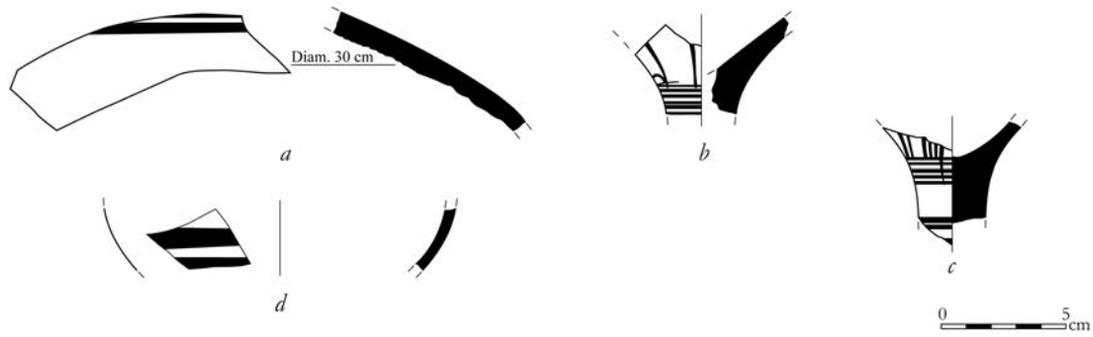

Fig. 21. LH IIIA2 to LH IIIC Mycenaean Tradition pottery from Ayios Panteleimon, PoI 95 (el. M. Rossin - T. Ross).

5. Broader LBA Context

Only two of the 18 LBA PoIs identified during KASPS's 2018 and 2019 field seasons were known before the beginning of the project (Figs. 8, 22) [40]. The 16 new locations discovered during the survey's first two years represent an important addition to our knowledge of the northeast Koan region in this period.

The positions of the PoIs dating to the LBA reflect a diverse range of landscape settings and functions, including both settlement and funerary activities (Fig. 8). Most of KASP's LBA PoIs are located on the ridge, northern slopes, foothills, and pediment areas of the Dikaios Range. Only one location, PoI 87, lies in the coastal plain. The underrepresentation of this type of environmental setting is likely the result of biases in the data set. On the one hand, coastal areas are more intensely built today and thus a significant portion of them could not be included in KASP. On the other, in stark contrast with upland locations, where erosional processes are predominant, the thickness of alluvial deposits in the coastal plain tends to obscure archaeological resources, especially those dating to prehistory [41].

The number of LBA PoIs and their diverse environmental settings indicate a significant growth from the EBA 3 to MBA phases. These data possibly reflect a demographic expansion at major sites, such as the "Serraglio" and Ayios Panteleimon, and a noticeable increase in the use of rural and hilly landscapes, especially during the time span corresponding to the Palatial and Postpalatial periods of Mycenaean civilization (LH IIIA2 to LH IIIC) [42]. This enhanced diversity from previous phases may in turn signify a more intense and varied exploitation of the island's resources. Besides the rich agricultural supplies and maritime trade opportunities provided by the coastal plain, locations in pediment and hilly areas provided access to additional farming and grazing lands, raw materials for the manufacture of pottery and stone tools, and wild game hunting opportunities [43].

Within this broader context, Ayios Panteleimon emerges together with the "Serraglio" as one of the most prominent centers in northeastern Kos (Figs. 8, 22). As stated previously, the location of Ayios Panteleimon provided key strategic advantages. In this respect, Ayios Panteleimon may have had a similar role to that exerted by the Kastro at Palaio Pyli at the opposite end of the fertile northeast Koan coastal plain. The latter is a stronghold built in a dominant position with the purpose of controlling both subsistence resources and the trade routes towards Miletus and other rich sites in the SASCAR [44]. A noticeable difference, however, is that while Ayios Panteleimon possibly played a leading economic and political role throughout the LBA, the Kastro at Palaio Pyli may have had a prominent role for a much shorter duration, particularly concentrated in the Palatial phase of Mycenaean civilization.

[40] Sites known before KASP include the Asklupis (PoI 11) and Kastello (PoI 120). The "Serraglio" is located in the heart of the modern town of Kos and thus was not included in the survey area. No LBA material was found while surveying the area of Eleona and Langada, possibly because of the important anthropogenic impact at this location, which resulted in a deep change of land use (see McNamee-Vitale 2020, 216, fig, 11:2).

[41] For an outline description of the main geomorphic processes at play in the northeast Koan region, see Vitale *et alii* 2017, 234-236.

[42] See Vitale 2016, 84-87; 2021; Vitale *et alii* 2017, 238-241, 278-279.

[43] See *ibid*. and 263-269.

[44] See *ibid*., 234, 238-241; Vitale 2021, 536 and 553-555, figs. 9-10 (both with previous bibliography).

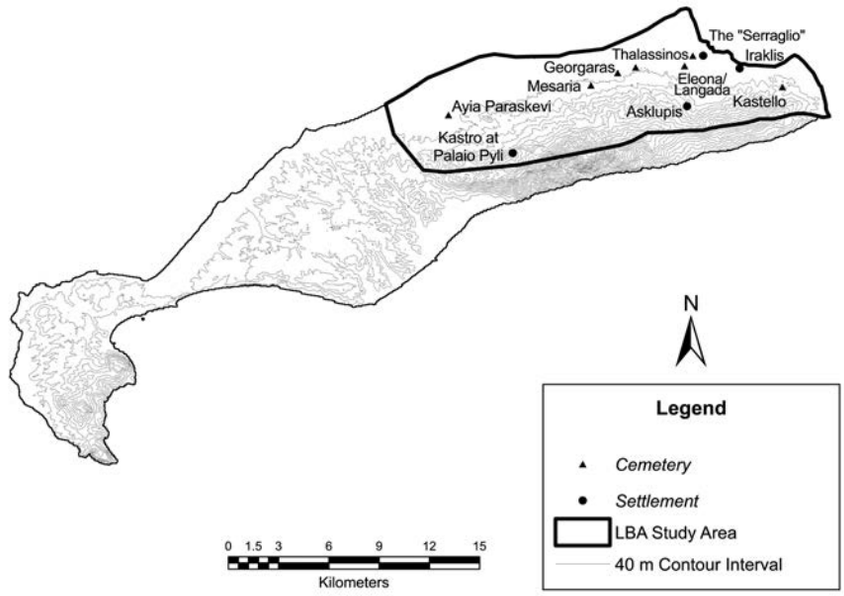

Fig. 22. Main LBA sites in the northeast Koan region known before the beginning of KASP (el. C. McNamee - S. Vitale).

Future research is required at Ayios Panteleimon to determine whether the high quantitative distribution of Minoan and Mycenaean pottery tradition classes in the core area of the site (Tracts 3570-3572, 3621, and 3594-3597) reflects a site-wide trend or if this sector had a special function within the settlement. Whatever the case, Ayios Panteleimon already stands out for the rich and diverse cultural connections with other areas of the LBA Aegean. Particularly striking is the impact of ceramic connections with Late Minoan (LM) IA and LM IB potting traditions, which includes locally manufactured and imported Cretan-type shapes, as well as PMC-C LoD/DoL pottery of the Koan Entangled Tradition. The high incidence of these classes underlines the unique character of Ayios Panteleimon within early LBA Kos. It also raises the possibility that this site played a key role in contacts with Minoan Crete, thus setting the way for the intense processes of cultural entanglements with the western Aegean that eventually led to the creation of a regional Mycenaean identity on the island during the late 2nd Millennium B.C. (LH IIIA2 to LH IIIC) [45].

Salvatore Vitale - Toula Marketou - Calla McNamee - Maria Michailidou

6. Concluding Remarks and Future Research

The discovery of Ayios Panteleimon marks a major turning point for our knowledge of prehistoric Kos. KASP's research clearly demonstrates the prominent economic and political role of this site in the northeast Koan region during the LBA. Continued work at Ayios Panteleimon is expected to produce a refined picture of occupational sequences, settlement patterns, subsistence strategies, and cultural transitions on Kos and within the wider SASCAR. Instrumental to these goals is the implementation of a finer spatial resolution of the data set, which involves gridding and full collection of archaeological materials from the site (see above, Sub-Section 2.1).

Future work is particularly important to clarify human impact and land use in northeast Kos, as well as to establish the relationships between Ayios Panteleimon and other known major and minor sites in the area. The study of the processes of entanglements between local, Minoan, and Mycenaean cultural

[45] Vitale 2016, 86-87; Vitale *et alii* 2017, 278-279; Vitale-McNamee 2019; Vitale-Morrison 2017, especially 92-93; McNamee-Vitale 2020, especially 240-244.

traditions on Kos is crucial to address these questions. For example, KASP's preliminary results suggest that at Ayios Panteleimon the impact of Minoan influence in the material culture may have been more complex and pervasive than at the "Serraglio". Further investigation of this aspect and other potential differences between Ayios Panteleimon and the "Serraglio", such as those outlined in this article, will provide an enhanced comprehension of prehistoric Kos and the dynamic role exerted by the island in the LBA eastern Aegean.

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Morricone 1975	Vitale-Marketou (Vitale *et alii* 2017, with revisions)		Approximate Synchronisms	
The Asklupis				
Building Phases	**Building Phases**	**Suggested Chronology**	**Crete**	**Greek Mainland**
-	I	FN 1-EBA 2	FN I-EM IIB (beginning)	FN I-EH IIB (beginning)
-	GAP	EBA 3-MBA	EM IIB-MM IIIA	EH IIB-MH III Early
-	II:1	LBA IA Early-LBA IA Mature	MM IIIB-LM IA	MH III Late-LH I
-	GAP (?)	LBA IB-LBA IIIA1	LM IB-LM IIIA1	LH IIA-LH IIIA1
-	II:2	LH IIIA2-LH IIIB	LM IIIA2-LM IIIB	LH IIIA2-LH IIIB
-	GAP (?)	LH IIIC Early	LM IIIC Early	LH IIIC Early
-	II:3	LH IIIC Middle/Late	LM IIIC Late-Subminoan	LH IIIC Middle-EPG
The "Serraglio"				
Building Phases	**Building Phases**	**Suggested Chronology**	**Crete**	**Greek Mainland**
-	I:1	EBA 3 Early	EM IIB-EM III	EH III
-	1:2	EBA 3 Late		
-	II	MBA	MM IA-IIIA	MH I-III Early
Settlement Preceding City I, First Sub-Phase	III:1.a	LBA IA Early	MM IIIB or LM IAEarly-Advanced*	MH III Late
Settlement Preceding City I, Second Sub-phase	III:1.b	LBA IA Mature	LM IA or LM IA Final*	LH I
City I	III:2	LBA IB	LM IB	LH IIA
City II, First Sub-phase	III:3.a	LBA II-LBA IIIA1	LM II-LM IIIA1	LH IIB-LH IIIA1
City II, Second Sub-phase	III:3.b	LBA IIIA1	LM IIIA1	LH IIIA1
City III, First Sub-phase	III:4.a	LH IIIA2-LH IIIB1	LM IIIA2-LM IIIB1	LH IIIA2-LH IIIB1
City III, Second Sub-phase	III:4.b	LH IIIB1-LH IIIB2 Late	LM IIIB1-LM IIIB2	LH IIIB1-LH IIB2 Late
City IV	III:5	LH IIIC Early-Middle/Late	LM IIIC Early-Subminoan	LH IIIC Early-Late**

Keys
Kos. FN: Final Neolithic; EBA: Early Bronze Age; MBA: Middle Bronze Age; LBA: Late Bronze Age.
Crete. FN: Final Neolithic; EM: Early Minoan; MM: Middle Minoan; LM: Late Minoan.
Greek Mainland. FN: Final Neolithic; EH: Early Helladic; MH: Middle Helladic; LH: Late Helladic.
* See Van de Moortel 2001; Rutter-Van de Moortel 2006.
** LH IIIC Phases 1-5, according to Rutter 1977; Rutter 1978.

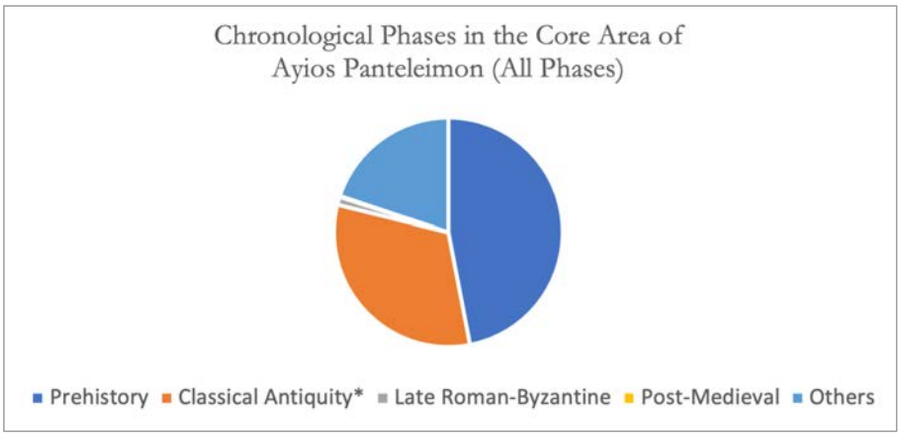
Tab. I. Koan FN 1 to LBA Sequence Based on the Settlements of the Asklupis and the "Serraglio".

Cultural Heritage, Archaeology, Geoarchaeology, Environment, and Ethnography
Cultural Heritage (a) To identify new sites of potential archaeological significance; (b) To map them and preserve them from destruction or obliteration.
Archaeology *to investigate...* (a) The occupational history of the survey areas, i.e. the chronological phases represented and the locational trends; (b) Changes in site distribution through time and the correlation to known cultural and historical changes on the island, *e.g.* the processes of Minoanization, Mycenaeanization, Hellenization, Romanization, and Christianization of Kos; (c) The impact of nucleation processes around major sites, such as: the "Serraglio" during prehistory; the Asklepieion in the Hellenistic to Roman periods; the Kastro at Palaio Pyli and the Castle of the Knights of Saint John in Kos town during Byzantine and Medieval times; (d) Changes in land use strategies; (e) The effect of human impact to the landscape of northeast Kos.
Geoarchaeology *to understand...* (a) Major trends in site formation processes and landscape transformations; (b) The impact of alluvial and colluvial processes on site surface visibility, especially within the large coastal/alluvial plain that characterizes the northeast sector of the island.
Environment *to examine...* (a) The location, availability, and seasonality of natural resources, such as water, arable land, grazing locations, and native edible plants; (b) The distribution of relevant vegetation.
Ethnography *to investigate...* (a) The traditional knowledge of Koan plants and their modern uses; (b) Place names, their history, and importance; (c) Current perceptions on the landscape and their impact on modern land use strategies, particularly agricultural and grazing activities.

Tab. II. Summary of KASP's Research Questions.

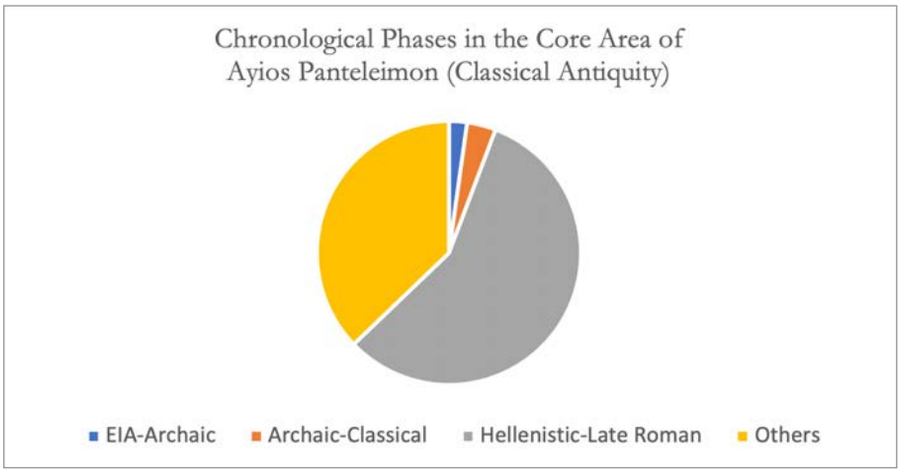
Phase	Absolute Nos.	Percentage
Prehistory	333	47.0%
Classical Antiquity*	226	31.9%
Late Roman-Byzantine	8	1.1%
Post-Medieval	1	0.1%
Others	141	19.9%
Total	709	100.0%
* Historical Greek to Late Roman Periods (see Tab. IV).		

Tab. III. Chronological Phases in the Core Area of Ayios Panteleimon (All Phases).



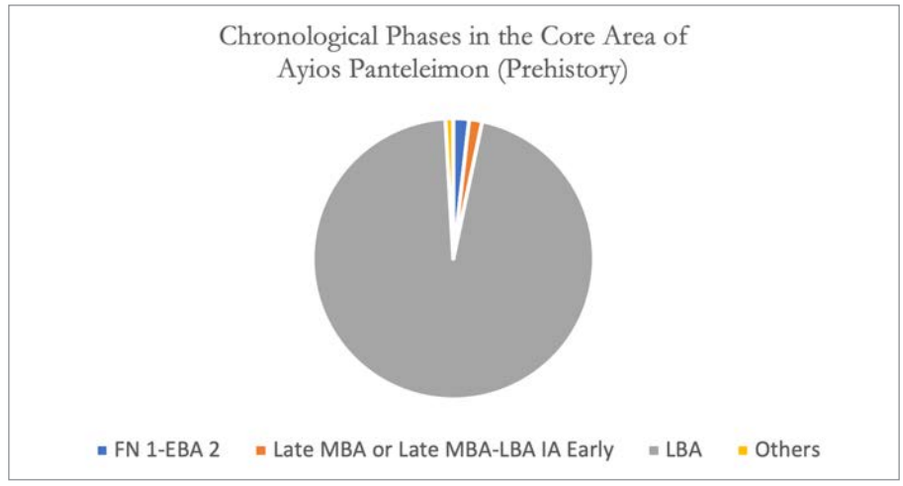
Phase	Absolute Nos.	Percentage
EIA-Archaic	5	2.2%
Archaic-Classical	8	3.5%
Hellenistic-Late Roman	129	57.1%
Others	84	37.2%
Total	226	100.0%

Tab. IV. Chronological Phases in the Core Area of Ayios Panteleimon (Classical Antiquity).



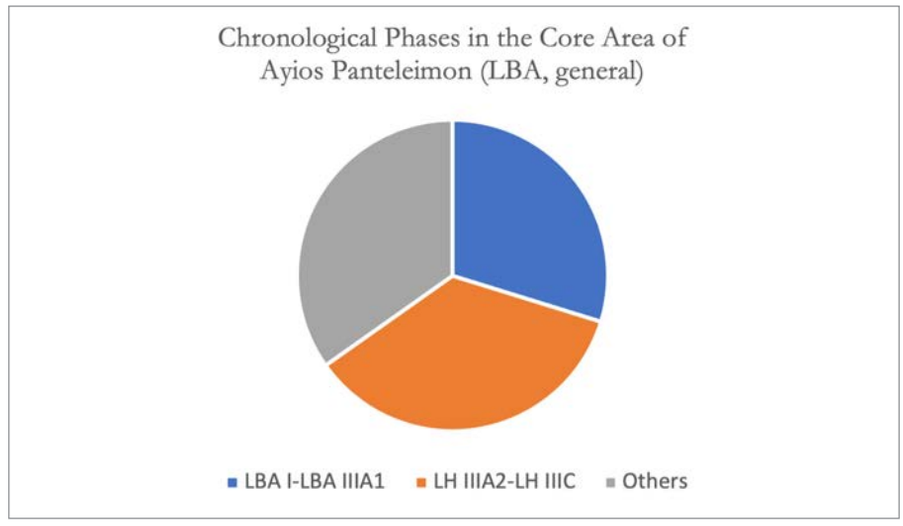
Phase	Absolute Nos.	Percentage
FN 1-EBA 2	6	1.8%
Late MBA or Late MBA-LBA IA Early	5	1.5%
LBA	319	95.8%
Others	3	0.9%
Total	333	100.0%

Tab. V. Chronological Phases in the Core Area of Ayios Panteleimon (Prehistory).



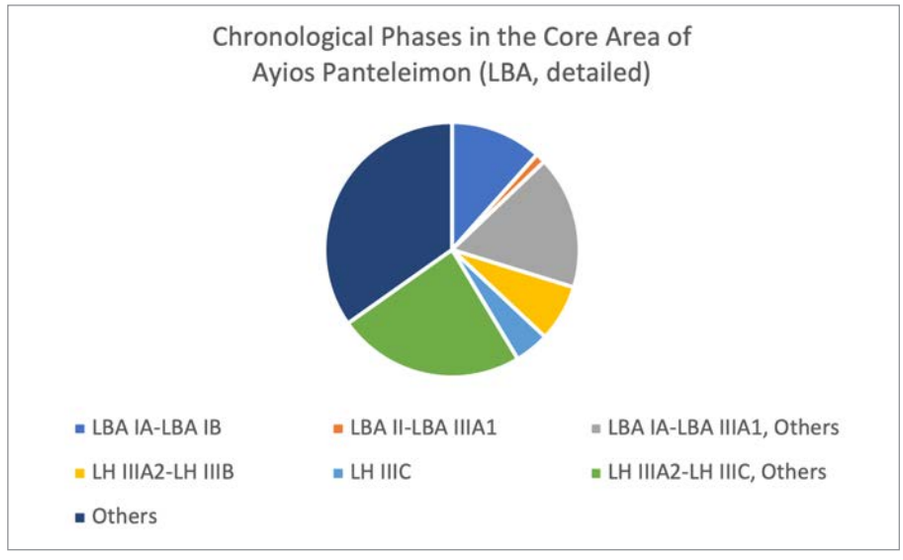
Phase	Absolute Nos.	Percentage
LBA I-LBA IIIA1	95	29.8%
LH IIIA2-LH IIIC	113	35.4%
Others	111	34.8%
Total	319	100.0%
Dates reflect the maximum date range for each considered fragment (see Tabs. XIII-XIV).		

Tab. VI. Chronological Phases in the Core Area of Ayios Panteleimon (LBA, general).

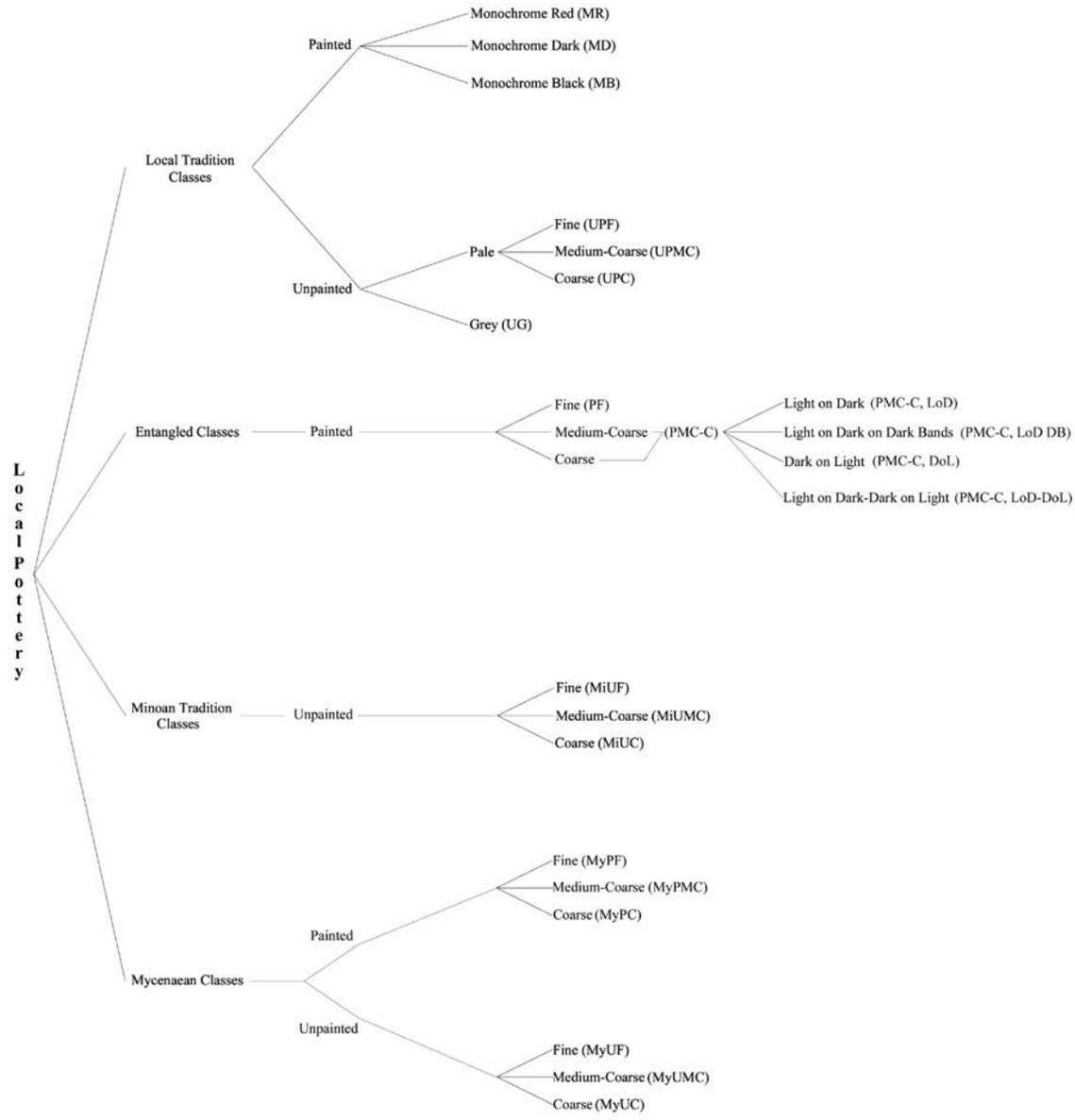


Phase	Absolute Nos.	Percentage
LBA IA-LBA IB	37	11.6%
LBA II-LBA IIIA1	4	1.3%
LBA IA-LBA IIIA1, Others	54	16.9%
LH IIIA2-LH IIIB	23	7.2%
LH IIIC	14	4.4%
LH IIIA2-LH IIIC, Others	76	23.8%
Others	111	34.8%
Total	319	100.0%
Dates reflect the maximum date range for each considered fragment (see Tabs. XIII-XIV).		

Tab. VII. Chronological Phases in the Core Area of Ayios Panteleimon (LBA, detailed).



Potting Traditions, Local Classes, and Their Chronological Distribution*



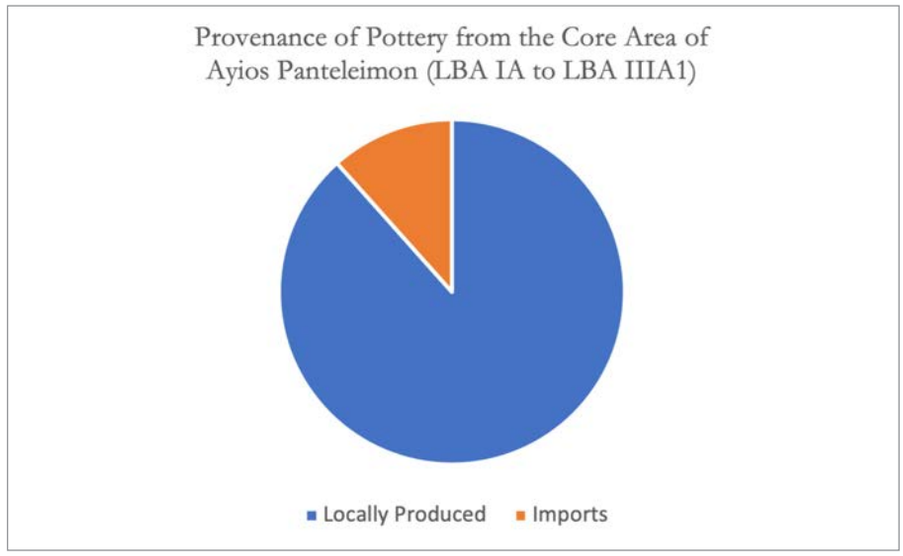
* Lifespan of Koan locally made ceramic classes:

Local Tradition Classes: FN to LH IIIC;
Entangled Tradition Classes (Local + Minoan Traditions): LBA IA Early to LBA IIIA1;
Minoan Tradition Classes: LBA IA Early to LBA IB (except for conical cups that continue until LH IIIC);
Mycenaean Tradition Classes: LBA IB to LH IIIC.

Tab. VIII. SELAP's and KASP's Koan Ceramic Classification System.

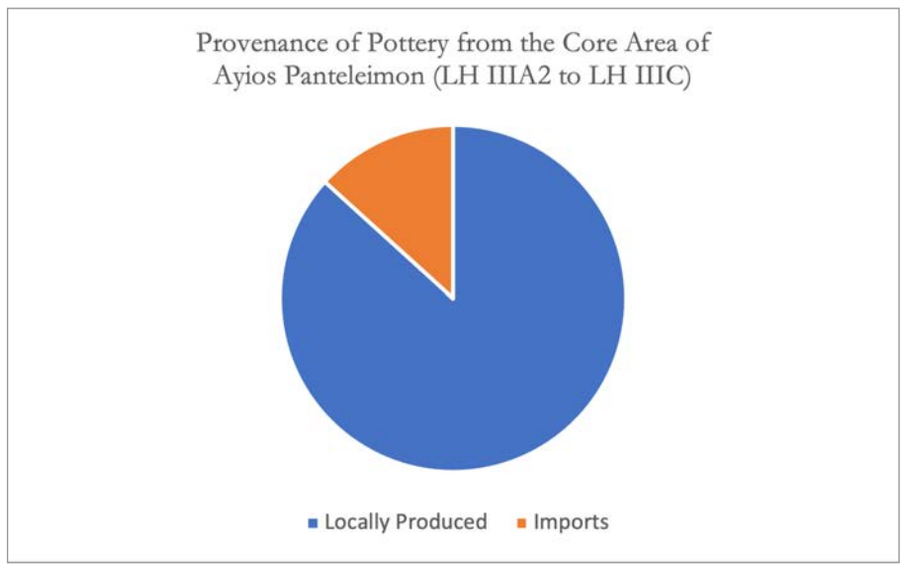
Provenance	Absolute Nos.	Percentage
Locally Produced	84	88.4%
Imports	11	11.6%
Total	95	100.0%
Based on macroscopic fabric analysis.		

Tab. IX. Provenance of Pottery from the Core Area of Ayios Panteleimon (LBA IA to LBA IIIA1).



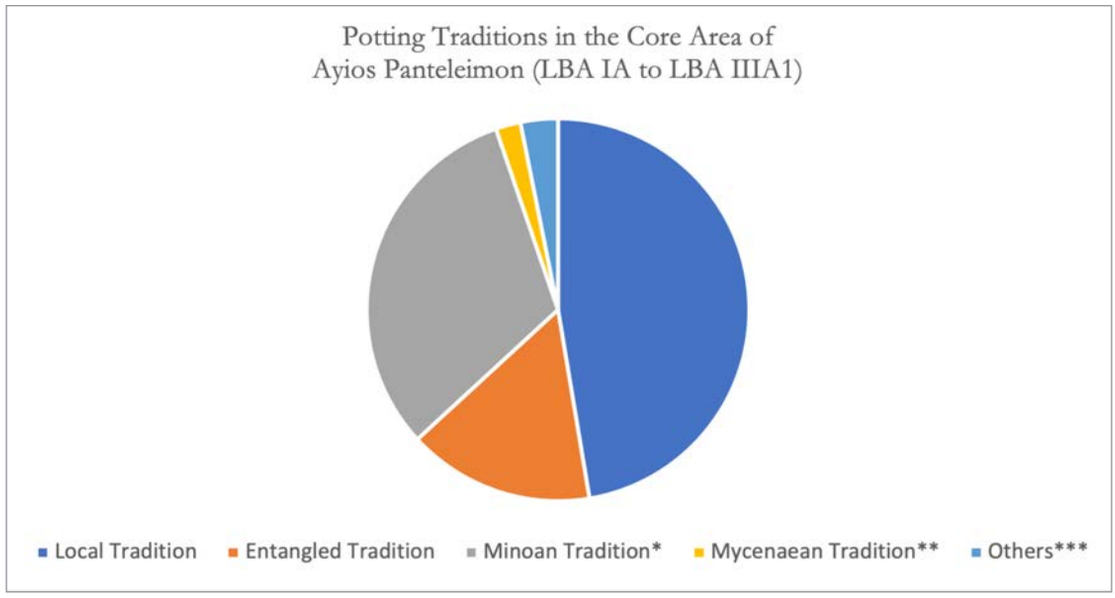
Provenance	Absolute Nos.	Percentage
Locally Produced	98	86.7%
Imports	15	13.3%
Total	113	100.0%
Based on macroscopic fabric analysis.		

Tab. X. Provenance of Pottery from the Core Area of Ayios Panteleimon (LH IIIA2 to LH IIIC).



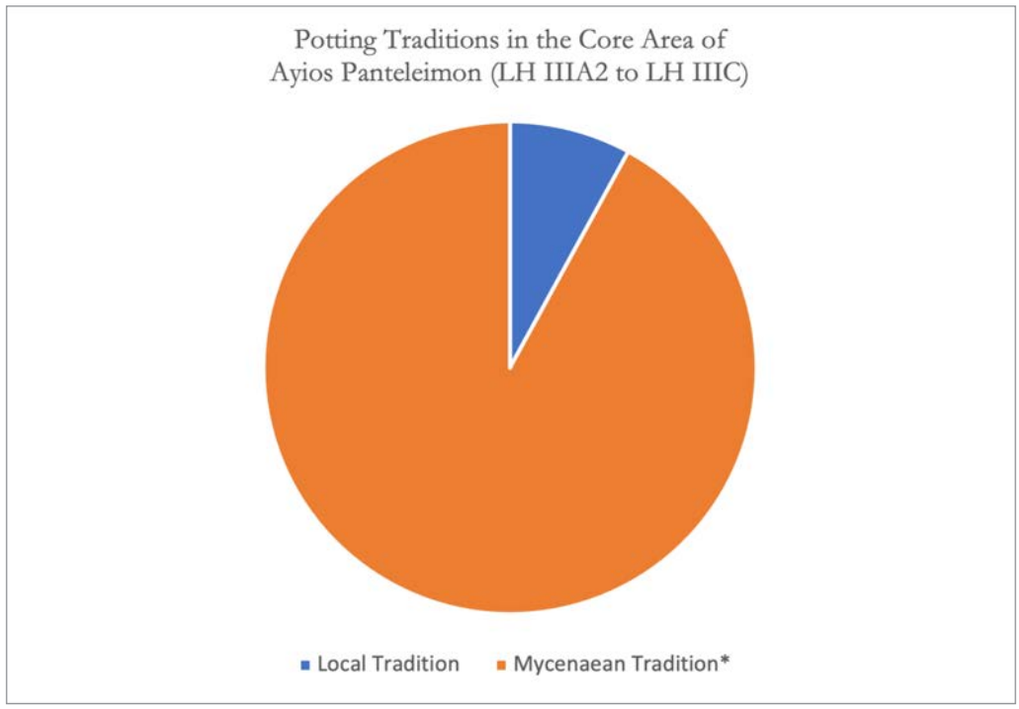
Traditions	Absolute Nos.	Percentage
Local Tradition	45	47.4%
Entangled Tradition	15	15.8%
Minoan Tradition*	30	31.6%
Mycenaean Tradition**	2	2.1%
Others***	3	3.2%
Total	95	100.0%
* 21 locally produced vs. 9 imports		
** 1 locally produced vs. 1 import		
*** 2 locally produced vs. 1 import		
Dates reflect the maximum date range for each considered fragment (see Tabs. XIII-XIV).		

Tab. XI. Potting Traditions in the Core Area of Ayios Panteleimon (LBA IA to LBA IIIA1).



Traditions	Absolute Nos.	Percentage
Local Tradition	9	8.0%
Mycenaean Tradition*	104	92.0%
Total	113	100.0%
* 89 locally produced vs. 15 imports		
Dates reflect the maximum date range for each considered fragment (see Tabs. XIII-XIV).		

Tab. XII. Potting Traditions in the Core Area of Ayios Panteleimon (LH IIIA2 to LH IIIC).



Shape	Furumark Shape	Decorative Treatment	Furumark Motif	Maximum Date Range		Most Likely Date	Tradition - Provenance	Class	Inventory Number	Figure Number
Cup/Dipper	NO	Unp.	NO	EBA 2	EBA 2	EBA 2	LT - Local	UPMC	3595-C-75-01	14:a
Closed Shape	NO	Unp.	NO	FN	EBA 2	FN-EBA 2	LT - Local	UPMC	3597-B-25-02	14:b
Beaked Jug	NO	Mon.	NO	L MBA	LBA IB	L MBA-LBA IA E	LT - Local	MD	3571-B-65-05	14:c
Open Shape	NO	Unp.	NO	L MBA	LBA IB	L MBA-LBA IA E	LT - Local	UPMC	3571-C-85-07	14:d
Conical Cup	204	Unp.	NO	L MBA	LBA IB	L MBA-LBA IA E	Min - Imported	MiImpUF	3596-D-75-02	14:e
Jar	NO	Mon.	NO	LBA IA	LBA IIIA1	LBA IA-IIIA1	LT - Local	MD	3571-D-95-04	15:a
Closed Shape	69/105/128 (?)	Unp.	NO	LBA IA	LBA IIIA1	LBA IA-B	LT - Local	UPMC	3596-D-75-01	15:b
Pithos	NO	Unp.	NO	LBA IA	LH IIIC M/L	LBA IA-IIIA1	LT - Local	UPMC	3596-C-45-03	15:c
Closed Shape	NO	Patt.	64	LBA IA	LBA IIIA1	LBA IA Mature	EN - Local	PMC LoD	3571-A-75-13	15:d
Conical Cup	204	Unp.	NO	LBA IA	LBA IIIA1	LBA IA-B	Min - Local	MiUF	3571-A-75-02	16:a
Conical Cup	204	Unp.	NO	LBA IA	LBA IIIA1	LBA IA-B	Min - Local	MiUF	3571-D-95-01	16:b
Straight-Sided Cup	224	Unp.	NO	LBA IA	LBA IB	LBA IA-B	Min - Local	MiUMC	3596-C-5-02	16:c
Bowl	NO	Patt.	61A	LBA IA	LBA IB	LBA IA-B	Min - Imported	MiImpPF	3594-C-35-01	16:d
Bridge-Spouted Jar	101	Patt.	?	LBA IA	LBA IB	LBA IA-B	Min - Imported	MiImpPF	3571-C-75-07	16:e
Closed shape	NO	Lin.	NO	LBA IB	LBA IB	LBA IB	Min - Imported	MiImpPF	3594-C-35-02	16:f
Closed shape	NO	Patt.	53	LBA IA	LBA IB	LBA IA-B	Min - Imported	MiImpPMC	3597-C-5-03	16:g
Closed shape	NO	Lin.	NO	LBA IA	LBA IB	LBA IA-B	Min - Imported	MiImpPF	3597-C-5-04	16:h
Goblet	263/270	Unp.	NO	LBA IB	LBA II	LBA IB	Myc - Local	MyUF	3571-D-95-02	16:i
Goblet	263	Lin.	NO	LBA II	LH IIIA2 E	LBA II-IIIA1	Myc - Imported	MyImpPF	3571-B-75-07	16:j
Goblet	263/270	Unp.	NO	LBA IA	LBA IB	LBA IA-B	Myc - Imported	MyImpUF	3571-B-75-15	16:k
Krater	7	Mon.	NO	LBA II	LBA IIIA1	LBA II-IIIA1	Aeg - Imported	AegImpPF	3597-B-15-01	16:l

Keys
Decorative Treatment. Patt.: Patterned; Lin.: Linear; Mon.: Monochrome; Unp.: Unpainted.
Furumark Motif. 53: Wavy Line; 61A: Triangles; 64: Foliate band.
Tradition. LT: Local Tradition; EN: Entangled (Local-Minoan); Min: Minoan; Myc: Mycenaean; Aeg: Aeginetan.
Maximum Date Range/Most Likely Date. E: Early; M: Middle; L: Late.
Class. UPMC: Unpainted Pale Medium-Coarse; MD: Monochrome Dark; MiImpUF: Minoan Imported Unpainted Fine; PMC LoD: Painted Medium-Coarse Light on Dark; MiUF: Minoan Unpainted Fine; MiUMC: Minoan Unpainted Medium-Coarse; MiImpPF: Minoan Imported Painted Fine; MiImpPMC: Minoan Imported Painted Medium-Coarse; MyUF: Mycenaean Unpainted Fine; MyImpPF: Mycenaean Imported Painted Fine; MyImpUF: Mycenaean Imported Unpainted Fine; AegImpPF: Aeginetan Imported Painted Fine.

Tab. XIII. Tabular Catalogue of FN-EBA, late MBA-LBA IA, and LBA IA-LBA IIIA1 Illustrated Fragments.

Shape	Furumark Shape	Decorative Treatment	Furumark Motif	Maximum Date Range		Most Likely Date	Tradition - Provenance	Class	Inventory Number	Figure Number
Kylix	264/265	Unp.	NO	LH IIIA1	LH IIIC E	LH IIIA2-B	LT - Local	UG	3571-B-75-11	17:a
Jug/Amphora	65/66/67	Unp.	NO	LH IIIA1	LH IIIC M/L	LH IIIA2-C M/L	LT - Local	UPMC	3571-C-75-15	17:b
Piriform Jar	35/37	Lin.	NO	LH IIIA2	LH IIIC M/L	LH IIIA2-C E	Myc - Local	MyPF	3571-C-75-10	18:a
Amphora/Jug/Hydria	69/105/106/128	Mon.	NO	LH IIIC E	LH IIIC M/L	LH IIIC E-M/L	Myc - Local	MyPF	3571-B-85-02	18:b
Stirrup jar	174/175/176	Patt.	?	LH IIIC E	LH IIIC M/L	LH IIIC E-M/L	Myc - Local	MyPF	3571-B-75-16	18:c
Closed Shape	69/105/106/128 (?)	Lin.	NO	LH IIIC E	LH IIIC M/L	LH IIIC E-M/L	Myc - Local	MyPF	3571-A-45-01	18:d
Closed Shape	69/105/106/128 (?)	Patt.	53	LH IIIC M	LH IIIC M/L	LH IIIC M/L	Myc - Local	MyPF	3571-B-65-09	18:e
Closed Shape	69/105/106/128 (?)	Patt.	41	LH IIIA2	LH IIIC M	LH IIIA2-C M	Myc - Local	MyPF	3571-A-65-02	18:f
Closed Shape	69/105/106/128 (?)	Lin.	NO	LH IIIA2	LH IIIC M	LH IIIA2-C M	Myc - Local	MyPF	3571-A-65-03	18:g
Krater	8/9	Lin.	NO	LH IIIA2	LH IIIC E	LH IIIA2-C E	Myc - Local	MyPF	3571-B-75-01	19:a
Krater	8/9	Patt.	53	LH IIIA2	LH IIIC E	LH IIIA2-C E	Myc - Local	MyPF	3571-A-75-10	19:b
Kylix	264/265	Mon.	NO	LH IIIA2	LH IIIB1	LH IIIA2-B1	Myc - Local	MyPF	3570-D-75-02	19:c
Kylix	264/265	Mon.	NO	LH IIIA2	LH IIIB1	LH IIIA2-B1	Myc - Local	MyPF	3571-C-55-01	19:d
Kylix	258B	Patt.	?	LH IIIB1	LH IIIB1	LH IIIB1	Myc - Local	MyPF	3571-A-75-01	19:e
Deep Bowl	284	Patt.	58	LH IIIC M	LH IIIC M/L	LH IIIC M/L	Myc - Local	MyPF	3571-A-65-01	19:f
(...continues on next page...)										

Tab. XIV. Tabular Catalogue of LH IIIA2-LH IIIC Illustrated Fragments.

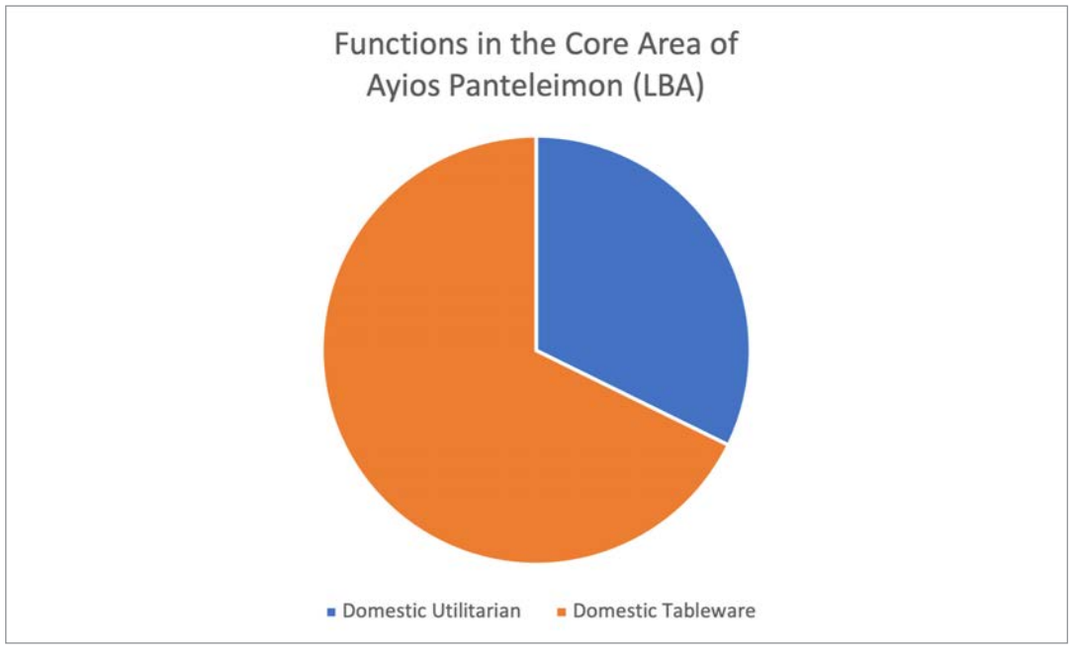
Shape	Furumark Shape	Decorative Treatment	Furumark Motif	Maximum Date Range		Most Likely Date	Tradition - Provenance	Class	Inventory Number	Figure Number
Deep Bowl	284	Lin.	NO	LH IIIB	LH IIIC E	LH IIIB-C E	Myc - Local	MyPF	3571-A-75-14	19:g
Stemmed Bowl	304/305	Mon.	NO	LH IIIA2	LH IIIB	LH IIIA2-B	Myc - Local	MyPF	3571-A-65-04	19:h
Stemmed Bowl	305	Patt.	53 + 73	LH IIIB	LH IIIC E	LH IIIB	Myc - Local	MyPF	3572-A-95-01	19:i
Bowl	NO	Patt.	53	LH IIIA2	LH IIIC E	LH IIIA2-C E	Myc - Local	MyPF	3571-B-65-01	19:j
Kylix	264/265/266/267	Unp.	NO	LH IIIA1	LH IIIC E	LH IIIA2-B	Myc - Local	MyUF	3571-C-75-14	20:a
Kylix	264/265	Unp.	NO	LH IIIA1	LH IIIC E	LH IIIA2-B	Myc - Local	MyUF	3570-D-75-01	20:b
Jug/Amphora/Tripod	65/66/320	Unp.	NO	LH IIIA2	LH IIIB	LH IIIA2-B	Myc - Local	MyUMC	3571-B-75-09	20:c
Jug/Amphora	65/66/67	Unp.	NO	LH IIIA1	LH IIIC M/L	LH IIIA2-C M/L	Myc - Local	MyUMC	3597-A-85-02	20:d
Tripod	320	Unp.	NO	LH IIIA1	LH IIIC M/L	LH IIIA2-C E	Myc - Local	MyUMC	3571-A-75-16	20:e
Tripod	320	Unp.	NO	LH IIIA1	LH IIIC M/L	LH IIIA2-C E	Myc - Local	MyUMC	3596-D-65-01	20:f
Amphora/Jug/Hydria	69/106/128	Lin.	NO	LH IIIC M	LH IIIC M/L	LH IIIC M/L	Myc - Imported	MyImpPF	3570-B-65-01	21:a
Kylix	258B	Patt.	23	LH IIIB1	LH IIIB1	LH IIIB1	Myc - Imported	MyImpPF	3571-B-65-07	21:b
Kylix	258B	Patt.	?	LH IIIB1	LH IIIB1	LH IIIB1	Myc - Imported	MyImpPF	3571-C-75-08	21:c
Stemmed Bowl	304/305	Lin.	NO	LH IIIA2	LH IIIC E	LH IIIA2-B	Myc - Imported	MyImpPF	3571-B-65-02	21:d

Keys
Decorative Treatment. Patt.: Patterned; Lin.: Linear; Mon.: Monochrome; Unp.: Unpainted.
Furumark Motif. 23: Whorl shell; 41: Circles; 53: Wavy Line; 58: Chevrons; 73: Lozenge.
Maximum Date Range/Most Likely Date. E: Early; M: Middle; L: Late.
Tradition. LT: Local Tradition; Myc: Mycenaean.
Class. UG: Unpainted Grey; UPMC: Unpainted Pale Medium-Coarse; MyPF: Mycenaean Painted Fine; MyUF: Mycenaean Unpainted Fine; MyUMC: Mycenaean Unpainted Medium-Coarse; MyImpPF: Mycenaean Imported Painted Fine.

Tab. XIV. Tabular Catalogue of LH IIIA2-LH IIIC Illustrated Fragments.

Function	Absolute Nos.	Percentage	Broader Functional Classes	Absolute Nos.	Percentage
Cooking	29	9.1%	Domestic Utilitarian	103	32.3%
Miscellaneous Utilitarian	11	3.4%			
Storage	43	13.5%			
Storage/Transport	1	0.3%			
Storage/Tableware	19	6.0%			
Tableware/Storage	36	11.3%	Domestic Tableware	216	67.7%
Tableware	178	55.8%			
Ritual/Cultic	2	0.6%			
Total	319	100.0%	Total	319	100.0%

Tab. XV. Functions in the Core Area of Ayios Panteleimon (LBA).



Salvatore Vitale

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