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Economies in Transformation: A Zooarchaeological Perspective from Early Iron Age Arslantepe (Southeastern Türkiye)

FEDERICO MANUELLI – GIOVANNI SIRACUSANO*

Abstract

The transition from the Late Bronze to the Iron Age is considered a period of great turmoil and profound changes in the whole eastern Mediterranean. Large political and cultural transformations are attested as well as mobility and interrelations of human groups. But how these affected the subsistence economy of the societies involved is a topic that has not yet been precisely discussed in the literature. Recent excavations carried out at the site of Arslantepe have generated interesting new data that can shed fresh light on this question. This article presents the main characteristics of the Early Iron Age zooarchaeological remains unearthed at Arslantepe. A diachronic analysis of the Late Bronze Age material and comparisons with other sites and regions will help to highlight wider potential transformations in agropastoral habits and associated craft productions during the last centuries of the second millennium BC. The contribution improves our understanding of the changes that occurred in the agro-production patterns of a site that was

Öz

Geç Tunç Çağı'ndan Demir Çağı'na geçiş, tüm Doğu Akdeniz Havzasında büyük kargaşa ve köklü değişimlerin olduğu bir dönem olarak kabul edilir. Büyük siyasi ve kültürel dönüşümler, insan gruplarının yoğun hareketliliği ve aralarındaki ilişkilerle doğrulanmaktadır, ancak bunların ilgili toplumların geçim ekonomisini nasıl etkilediği literatürde henüz tam olarak tartışılmamış bir konudur. Arslantepe Höyüğü'nde yapılan son kazılar, bu soruya ışık tutabilecek ilginç yeni veriler ortaya çıkardı. Bu makale, Arslantepe'de ortaya çıkarılan Erken Demir Çağı zooarkeolojik kalıntılarının temel özelliklerini ortaya koymaktadır. Böylelikle, Geç Tunç Çağı materyalinin diakronik analizi, diğer alanlar ve bölgelerle yapılan karşılaştırmalar, MÖ 2. binyılın son yüzyıllarında gerçekleşen tarım ve hayvancılık biçimleri ve ilişkili zanaat üretimlerinde daha geniş potansiyel dönüşümleri anlamaya yardımcı olacaktır. Ayrıca, Erken Hitit etki alanının sınırında ve daha sonra etkin, bağımsız Demir Çağı krallıklarından birinin başkenti olan bir yerleşimin,

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The authors are very grateful to Marcella Frangipane (Rome) who has allowed them to publish the material presented here, as well as for her constant support and encouragement. We are thankful to the anonymous reviewers for their excellent advice and suggestions for improvement. Federico Manuelli wrote the introduction and the presentation to the site; Giovanni Siracusano wrote the archaeozoological analysis and the discussion. Both authors contributed to writing the conclusions. Part of this research has been realized in the framework of the project "Beyond the Crisis" funded by the German Research Foundation (DFG project #324049112).

first at the margin of the Hittite sphere of influence and later the capital of one of the most influential independent Iron Age kingdoms.

Keywords: Euphrates, Arslantepe, Iron Age, Hittite, zooarchaeology, continuity and change

tarımsal üretim kalıplarında meydana gelen değişiklikleri anlamamıza katkı sağlayacaktır.

Anahtar Kelimeler: Fırat, Arslantepe, Demir Çağı, Hitit, zooarkeoloji, süreklilik ve değişim

Transformations in the Subsistence Economy at the End of the Second Millennium BC in the Syro-Anatolian Region

The beginning of the Iron Age in the eastern Mediterranean region is a period characterized by widespread transformations. The breakdown of the Late Bronze Age palace economies and the establishment of the new independent local powers, which occurred during the last centuries of the second millennium BC, have been analyzed by scholars from many perspectives and with different aims.[1] Archaeological and philological evidence coming from the Syro-Anatolian territory, i.e., the area including southeastern Türkiye and northern Syria, show that the emerging Iron Age societies arose by combining enduring aspects of the Bronze Age cultures with completely innovative elements. This is particularly evident when we consider the Euphrates region. Indeed, during the Late Bronze Age, this area was deeply influenced by the expansion of the Hittite civilization, while later became the core region where some of the main local Iron Age polities (the so-called Neo-Hittite Kingdoms) originated and developed, thereby inheriting the cultural legacy of the empire.[2]

This intertwining of continuity and change, derived from the blend of local and foreign agencies, also affected the political economy of the communities involved in this process. In this context, the diachronic analysis of zooarchaeological remains represents an essential instrument for understanding the social and economic status of the Syro-Anatolian societies during the tumultuous last centuries of the second millennium BC. Indeed, the analysis of animal bones represents the most tangible evidence of changes in human-animal interaction, since they are directly interrelated with the reconstruction of pastoral patterns.[3] Moreover, identifying processes of transformations in animal husbandry and exploitation at the Late Bronze Age-Iron Age transition can provide significant information on how the staple economy developed in a moment of political change and turmoil, as well as offer answers to questions such as: What visible traces might political changes leave on our archaeological records? What do these data tell us about the relationships between political and economic systems? Was the primary economy used by the ruling classes as a possible means of control and power?

These topics have usually been investigated in terms of various categories of remains. Pottery is certainly the class of material that, due to its nature, abundance and long-lasting tradition of study, is mostly used to provide answers related to the socio-economic conditions of ancient societies.[4] However, the analysis of subsistence strategies largely drawing on faunal, archaeobotanical and paleo-environmental remains is gradually contributing to improving our knowledge of the economic, political and climatic changes in the Syro-Anatolian region during these crucial centuries.

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1 Knapp and Manning 2016.

2 Hawkins and Weeden 2016; Brown and Wilkinson 2017.

3 Greenfield 2005.

4 Mielke 2016.

The combination of archaeological investigations, philological studies, and natural science has allowed over the years to reconstruct the ecological and economic background of the Hittite civilization.[5] The existence of large-scale storage facilities brought to light at many of the Hittite sites within the Anatolian plateau certainly implies the existence of a centralized system based on the accumulation and redistribution of staple products.[6] At the same time, the geographical features of the region, which is divided by mountain ranges into small topographic units, and the clear limitation of long-distance commodities trading suggest that the subsistence economy of the Hittites cities was mostly organized on a regional scale.[7] The situation is rather more difficult to trace when we move outside of the main urban centers of the central Anatolian plateau. Indeed, the subsistence strategies of rural settlements and sites located at marginal areas under the Hittite influence could strictly be affected by local differences and aspects of regionalism.[8] Because of the above-mentioned geographic conditions and the increasing necessity of "feeding" large cities, the Hittite economic system has been always considered very fragile.[9] It is nowadays evident that this instability, gradually worsened by climatic, political, demographic, and ideological difficulties, was one of the stress factors that brought about the abrupt collapse of the Hittite civilization at the turn of the 12th century BC.[10]

The political vacuum created by the disappearance of the Hittite power had the consequence of pushing some of its former peripheries, especially those in south and southeastern Anatolia as well as western Syria, to move towards local autonomy and prosperity. Indeed, the Late Bronze Age crisis only marginally affected these decentralized regions, giving their ruling classes an opportunity to take advantage of the lack of a central authority.[11]

To some extent the economic dimension of the new Iron Age independent kingdoms was certainly rooted into the previous Hittite tradition, as is shown by the partial survival of practices of centralization of staple products.[12] Nonetheless, the fragmented political framework of the Iron Age realms unquestionably suggests the presence of spatial variations and small-scale organizations.[13] Indeed, analyses of animal exploitation and crop cultivation from sites in southern Anatolia and northern Levant show a situation mostly marked by regional and local traits.[14] Unfortunately, to date a chronic lack of published data and the many chronological issues related to the discrepancies when matching the sequences of ongoing projects with the results of old excavations have rarely allowed the research to go beyond intra-site scales of analysis and to properly compare and define the various aspects of Late Bronze Age continuity and the imposition of new patterns.

The situation of the Euphrates territory is emblematic in this regard. Investigations on the Late Bronze and Iron Age levels at the main sites of the region were mostly conducted during the first decades of the 20th century AD, generally focusing on their abundant artistic

5 Dörfler et al. 2011; Dörfler 2018; Corti 2020.

6 Mielke 2011, 176-78; Diffey et al. 2017; Seheer 2018, 66-73, 85-87.

7 Schachner 2017, 42-43.

8 Berthon 2017.

9 Schachner 2020, 391-97.

10 De Martino 2018.

11 Manuelli and Mori 2016, 229-34.

12 Castellano 2018.

13 Kabatiar 2019-2020.

14 Karakaya and Riehl 2019-2020, 137-41; Riehl and Nesbitt 2003; Ikram 2003.

heritage.[15] The recent resumption of excavations and the establishment of new projects and lines of research are gradually allowing the scholarship to shift focus towards a comprehensive understanding of the manifold aspects of development that affected these societies during the late second and early first millennium BC.[16]

This article presents the main characteristics of the Early Iron Age zooarchaeological remains recently brought to light at the site of Arslantepe. A diachronic analysis of the Late Bronze Age material and comparisons with other sites and regions will also offer the possibility to better comprehend the changes that occurred in the agro-production patterns of a site that was first at the margin of the Hittite sphere of influence and later the capital of one of the most influential independent Iron Age kingdoms.

The Early Iron Age at Arslantepe: A Sketch of its History and Excavations

The mound of Arslantepe is located in eastern Anatolia (Malatya, Türkiye), a few kilometers from the Euphrates river. The site lies between the Taurus and the Anti-Taurus chains at 912 meters above sea level at the southern margin of the fertile Malatya plain (fig. 1). The first round of excavations was conducted at the site during the 1930s by a French team directed by Louis Delaporte, which brought attention to the importance and monumentality of the Iron Age settlement.[17] The Italian Archaeological Expedition in Eastern Anatolia (MAIAO) began working at Arslantepe in 1961, continuing and deepening the investigations on the northern slopes of the mound started by the French and reaching the Late Bronze Age phases.[18] In 1971 the activities switched to the southern slopes of the site where a long-lasting project of excavations was able to unearth over the years a sequence stretching from the end of the fifth millennium BC to the Byzantine era, including the astonishing and unique remains of the renowned Late Chalcolithic palace that recently led to the site's inclusion in the UNESCO Heritage List.[19] This provoked a gradual decrease of interest in the historical phases of the site, which have been investigated only sporadically.

In 2008 a new project of excavation and study of the Late Bronze and Iron Age levels started with the intent of shedding fresh light on the development of the site during these crucial centuries.[20] As a matter of fact, the historical relevance of Arslantepe during the late second and early first millennia BC was almost exclusively recognized by scholarship because of the remains of the "Lions Gate" discovered by Delaporte and its extraordinary set of figurative bas-reliefs as well as contemporaneous inscriptions distributed in the countryside west of the site.[21] The in-depth study of the Luwian hieroglyphic inscriptions carved on many of these monuments has allowed scholars to assign to Arslantepe and its territory a very significant role within the formation of the Neo-Hittite realms.

In summary, during the Late Bronze Age the site was attested only sporadically in the Hittite cuneiform texts with the name of Maldiya/Malitya (14th-13th century BC).[22] On the

15 Bryce 2012, 83-121; Blanchard 2019.

16 Osborne 2021, 19-29.

17 Delaporte 1940.

18 Pecorella 1975.

19 Frangipane 2019a, 2019b.

20 Liverani 2012; Frangipane and Liverani 2013.

21 Hawkins 2000, 282-329.

22 De Martino 2012; Manuelli 2013, 413-18.

other hand, the local Early Iron Age sources often reference the powerful kingdom of Malizi and its namesake capital, i.e., Arslantepe (12th-10th century BC), whose domain extended to the vast valleys surrounding the Malatya plain.[23] The relevance of Arslantepe to the Late Bronze-Iron Age transition is further underlined by the fact that the first Iron Age rulers at the site were genealogically related to the sovereigns of Karkemiš, whose bloodline was the same as the last kings of the Hittite Empire.[24] During the first centuries of the first millennium BC, the site gradually acquired more relevance, finding its own independence from Karkemiš and being internationally acknowledged with the name of Melid (ninth-seventh century BC), as is known from Assyrian and Urartian sources.[25]

The recent results of the new project of excavations have, on the one hand, confirmed the reconstruction of the historical events established through the study of the above-mentioned sources and, on the other hand, produced detailed new data for the creation of a more comprehensive picture of the history of the site. The excavation - carried out from 2008 to 2010 and again in 2015 and 2016 in the F-G sector, which adjoins and partially overlaps the old trenches investigated by the French and the first Italian expeditions - identified three main Early Iron Age archaeological levels.[26] This allowed some of the old discoveries to be integrated into the new excavation sequence. The latter has been also recently provided with a quite large set of radiocarbon dates that have been used to establish an accurate absolute chronology of the beginning of the Iron Age, stretching from 1250 to 850 BC (fig. 2).[27]

Level IIIA.1 (ca. 1250-1200 BC) represents a proper intermediate and transitional phase between the advanced Late Bronze Age and the beginning of the Iron Age. It is characterized by the presence of two large rooms with thick walls made of greenish-colored mud bricks (the so-called "green buildings").[28] No traces of a final destruction by fire have been recognized, and the rooms were intentionally filled, probably following their collapse. Underneath the rooms, traces of a round structure filled with mud-brick pieces, probably the remains of a tower related to a fortification system, have been discovered. Despite the fact that the exact relationship between the two rooms and the tower is not completely clear yet, the use in all structures of green-colored bricks and the absence of any burnt traces suggest the existence of one single level characterized by several phases of construction.

The "green buildings" have been found sealed by a mud-plastered floor associated with an imposing fortification wall of mud-bricks and stone foundations, which represents the main structure of level IIIA.2 (ca. 1200-1000 BC).[29] The wall was four meters wide and has been preserved for a length of 40 meters and a height of up to four meters including the foundation. The downfall of the fortification was particularly catastrophic, as a thick layer of heavily burnt debris stemming from its collapse has been found over a large area. A monumental gate was probably to be found in the vicinity of the excavated portion of the wall, as is corroborated by the discovery of two figurative bas-reliefs on the floor surface associated with the fortification.

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23 Hawkins 2000, 282-88; Bryce 2012, 98-106.

24 Hawkins and Weeden 2016, 9-13; Manuelli and Mori 2016, 212-16; Simon 2020, 152-56.

25 Hawkins 2000, 284-86; Di Filippo and Mori 2018, 46-47.

26 Frangipane et al. 2020, 77-86.

27 Manuelli et al. 2021.

28 Frangipane et al. 2020, 77-78; Manuelli 2020, 115-17.

29 Frangipane et al. 2020, 79-80. Manuelli and Mori 2016, 216-22.

During the following IIIB level (ca. 1000-850 BC), the fortification wall was reused after destruction, but a complete new set-up of this part of the settlement appears.[30] A series of large silos and pits, cutting the collapse layer of the fortification wall, has been discovered. The silos had circular or roughly elliptical shapes and were up to four meters in diameter. Their inner surface shows traces of a thick chaff plaster and of internal partitions and installations, indicating a probable use for storing cereals and suggesting that the entire area close to the city wall was devoted in this period to storage activities. However, silos and pits have both been found filled with earth and debris, which means that the area was later used as dump.

From 2008 onwards the field activity was also accompanied by an intensive study and reappraisal of materials and architectures from old excavations. This led firstly to the reconstruction of an even longer occupation of this part of the site and a better understanding of the earlier Late Bronze Age phases.[31] Indeed, level IIIA.1 directly overlaps the final destruction of the so-called Hittite imperial gate and related fortification wall of the 14th and early 13th centuries BC (level IV), marking the existence of an unbroken sequence and implying that the citadel of Arslantepe was continuously fortified for at least 500 years. Moreover, the analysis allowed a more detailed comprehension of the development of the material belonging to these phases.[32] The material culture and especially the pottery production from level IV testify to a clear connection with the typical Hittite central Anatolian sphere of influence. Aspects of continuity of this tradition as well as the introduction of completely new cultural features are visible in material from level IIIA.1 and IIIA.2. A new set of pottery shapes, especially trefoil jugs, handled jars, small squat body cooking-pots and neckless pithoi, as well as the conspicuous appearance of clay spool-shaped loom weights, reflect remarkable connections with material dated from the end of the Late Bronze Age to the Iron Age I in the Levantine region. Connections with the Levant increase in level IIIB, as is especially shown by the introduction and subsequent spread of red-slip wares.

The results of the archaeozoological remains brought to light from the above-mentioned Early Iron Age levels excavated in the F-G sector at Arslantepe will be presented in the following pages. A set of contemporary material coming from the old Italian excavations at the site, selected because of their reliability and the fact that they can be unequivocally associated with the new excavated levels, has been also integrated into the analysis. Moreover, the already published Late Bronze Age zoological material will be used to highlight wider transformations in agropastoral habits during the last centuries of the second millennium BC.[33]

A couple of important remarks should be stressed before entering into the details of the analysis. First of all, the Iron Age sequence at Arslantepe is longer than the section taken into consideration for this study. Indeed, on top of the structures belonging to level IIIB, important remains of the Middle and Late Iron Age (ca. 850-650 BC) have been discovered.[34] Moreover, from 2016 a new excavation sector (H-I) has been opened towards the inner citadel to investigate the Iron Age sequence in the innermost area of the site.[35] Here during the 2019 campaign the monumental remains of structures likely dated to the late 11th and the 10th century BC,

30 Frangipane et al. 2020, 81-86.

31 Manuelli 2013.

32 Manuelli 2018.

33 Bartosiewicz et al. 2013.

34 Liverani 2012; Frangipane et al. 2020, 86-92; Manuelli 2020, 113-18.

35 Frangipane et al. 2019, 27-30; 2020, 72-92.

which are coeval to the final-level IIIA.2 and to level IIIB of the F-G sector, have been brought to light. Despite their relevance for the development of the site during these centuries, the remains coming from these layers have not been included in this analysis and will be the focus of future contributions.

The Archaeozoological Analysis

Assemblage and Methods

A total amount of 5,415 bone fragments, belonging to levels IIIA.1, IIIA.2, and IIIB excavated in the F-G sector, have been analyzed. Each fragment has been hand-collected directly from the field, labelled and classified taxonomically and anatomically as well as tabulated in an Excel worksheet. Those bones, whose provenance was archaeologically or stratigraphically unreliable, were discarded. The collection was also enriched by the integration of the data from the old excavations processed in the past by Sàndor Bökönyi. This allowed us to reach a total amount of 6,880 specimens (table 1). Inter-observer bias was already appraised in Early Bronze Age and Late Bronze Age animal remains from Arslantepe. Differences in previously unrecorded patterns of fragmentation as well as varying levels of taxonomic resolution have been noted, but always yielded to comparable and reliable results.[36]

The method chosen to reconstruct the amount of different animal taxa is based on the Number of Identifiable Specimens (NISP), which provides a more direct and reliable approximation of the original data.[37] When the bones clearly constitute a substantial portion of the same skeleton, they were counted as a single unit in the NISP. In case of concrete difficulties in distinguishing closely related species, samples have been considered within the same taxonomic unit as sub-family (e.g., Caprines for Capra vs. Ovis) or family (e.g., Cervids or Equids).[38]

Standard criteria have been applied for bone measurements and epiphyseal fusion determinations,[39] while age estimation was done using the eruption and wear stage from the lower and upper teeth of sheep, goats, pigs and cattle.[40] Age groups have been distinguished by means of two different graphic systems: First, the kill-off pattern, based on the mandibular tooth eruption and the reduction of tooth crown heights, which allows us to highlight the size of the killed individual or population of a flock or herd;[41] second, the survival curve derived from the analysis of the fusion of the epiphyses for caprines, which shows the effects of selective eliminations by analyzing the surviving individuals that are *in vivo* on a given animal population.[42]

In order to obtain greater details on food preferences and edibility, body parts have been grouped in different sets of anatomical portions. Finally, sex ratio has been, first of all, determined for those bones which allowed morphological evaluation and then were integrated with the bimodal distribution of portions of fused bones. This allows us to show sexual dimorphism, with smaller individuals representing the females and the larger ones the

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36 Bartosiewicz 1998, 228-29; Bartosiewicz et al. 2013, 275-76.

37 Grayson 1984, 202; Lyman 2008, 348.

38 Boessneck 1969; Payne 1985; Halstead et al. 2002.

39 von den Driesch 1976, 148; Eisenmann 1986; Bullock and Rackham 1982.

40 Payne 1973; Deniz and Payne 1982; Vigne and Helmer 2007, 17, table 1; Grant 1982; Bull and Payne 1982.

41 Cribb 1984, 161; Payne 1973; Ducos 1968, 233-37; Vigne and Helmer 2007, 20-21, fig. 2.

42 Zeder 2001, 2006.

males.[43] The overlaps have been controlled by taking into consideration those measurements that formed clearly separate sets of data.[44]

Animal Husbandry

Subsistence livestock in ancient Anatolia and throughout the history of Arslantepe was always dominated by flocks, mostly represented by sheep. The impact of the Hittite expansion on the territories of the upper Euphrates had clear effects on the animal husbandry.[45] The contact with the Hittite culture, which began during the second quarter of the second millennium BC, is manifested at Arslantepe (level IV), especially with the increase of cattle breeding.[46] Although there are no relevant variations suggesting radical changes in the pastoral economy, one interesting find is the increase of pigs, previously rare, which reach 9% of herds in this period.[47] Another important point is the appearance during the Late Bronze Age of horses and donkeys.[48] Despite the fact that it was probably not linked to the consumption of meat, their presence represents a revolutionary novelty in the pastoral economy of the territories of the upper Euphrates during the period of Hittite expansion.

The transition to the Iron Age (Arslantepe IIIA.1) as well as to the Early Iron I and II levels (Arslantepe IIIA.2 and IIIB) show in general a strong continuity with what has been just described, and no major variations are detectable in the pastoral and subsistence economy of Arslantepe between the Late Bronze and the Early Iron Age assemblages (fig. 3). Compared to the Late Bronze Age II, the clearest changes are the progressive decrease of pigs and a fluctuation in the ratio of cattle to caprines. Indeed, in level IIIA.1 an increase of the flocks, mainly due to a rise of sheep over goats (ratio 4:1), is noticeable. In level IIIA.2 there is instead a return to the proportions between cattle and goats observed at the end of the Late Bronze Age, while in level IIIB a return to the conditions of the transitional period has been seen. In addition, the ratio of sheep to goats progressively halves over time, reaching about 2:1. As for equids, while in level IIIA.1 there is a substantial numerical balance between horses and donkeys, in levels IIIA.2 and IIIB the number of donkeys clearly exceeds that of horses.

Mortality Rates and Survivorship

The analysis of the age classes of caprines, identified by dental growth and wear as well as by epiphyseal fusion, shows rather interesting results (table 2).[49] In order to integrate into the analysis the data elaborated in the past by S. Bökönyi so as to provide a greater numerical consistency in the sample used, it was decided to consider the ages of individual bones by assigning them to four general age classes: J (infant-juvenile, <12 months), Sb (subadult-immature, one-two years), A (adult, two-six years), and M (mature-senile, >six years).[50]

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43 Makarewicz 2009.

44 O'Connor 2006.

45 Bartosiewicz et al. 2013.

46 Bartosiewicz et al. 2013, 276-80, fig. 6.1.

47 Bartosiewicz et al. 2013, 276-78, fig. 6.1.

48 Bartosiewicz et al. 2013, 276-80, fig. 6.1.

49 As far as dental wear is concerned, we applied Payne's method (1973) for the mandibular teeth integrated with Vigne and Helmer's approach (2007, table 1) for the crown height of the cheek teeth, and Ducos (1968) for the upper teeth. The data on epiphyseal fusion from post-cranial elements of sheep and goats have been calculated following Redding's "fusion score" (1981, 248) per skeletal element multiplied by 100 according to Zeder (1991, 91).

50 Greenfield and Arnold 2008, 838.

It is first of all interesting to point out that during the Late Bronze Age mortality profiles based on dental analysis showed a wide range of use of caprine products. In this period and in continuity with the earlier phases at the site, a culling of lambs between three and 12 months has been acknowledged, as well as a growth exploitation of the secondary products.[51] The kill-off patterns of levels IIIA.1 and IIIA.2 show a consistent selection of animals in adulthood, roughly corresponding to the time when, for females, milk production tends to decline (fig. 4). In level IIIB, on the other hand, an early increase in the culling between one and two years is observed, with relative shifting of the production interest towards the consumption of younger and more tender meat.

These data emphasize, first of all, a strong continuity with what has already been observed during the Late Bronze Age and confirm how the breeding practices during the second half of the second millennium BC at Arslantepe were not only addressed to the exploitation of meat and milk but also to the production of wool. This is demonstrated by the constant persistence in the flock of a high number of adult individuals. It is also noted that, despite the fact that in level IIIB this trend partially changes because of considerable growth in the quantity of eliminations of juveniles, the culling of adults always remains high. Furthermore, when we compare the mortality trend of each of the three examined phases with the average of the entire period using the Size Log Index (SLI),[52] the evolution of cull management becomes even more evident (fig. 5). In levels IIIA.1 and IIIA.2, in fact, a situation of continuity with what was observed during the Late Bronze Age emerges and might be associated with a predominant interest in wool exploitation.[53] The logarithm changes instead significantly in level IIIB, when the interest of caprine production seems to shift more towards meat consumption.

Body-Size and Sex Ratio

As far as sheep are concerned, an average size between 60 and 65 cm at withers height has been found and falls within the standard of these species in the region and the earlier periods of Arslantepe.[54] On the other hand, the height at withers of cattle is between 120 and 130 cm.[55] In this case the measurements are slightly lower than those already noted at Arslantepe during the Early Bronze Age but similar to those of the Middle Bronze Age. This testifies once again to the uniformity of cattle breeding and pastoral practices during the second millennium BC.[56]

The age at slaughter shows that the vast majority of animals were males (table 3). According to the morphological characteristics and the sexual dimorphism visible in the measurements of both cattle and goats (Bd/Bt humerus and Bd/Dd metapodius above all),[57] some change can be observed between levels IIIA and IIIB. As far as cattle are concerned, there is an increase in the number of females compared to males, which goes from 33% in level IIIA.1 to 43% in level IIIB. In the case of caprines, it is interesting to observe a difference between goats and sheep. In fact, for the former there is a predominance of males throughout the examined periods, while for the latter a drastic increase of females can be observed over time. However, it

51 Bartosiewicz et al. 2013, 282, fig. 6.5.

52 Meadow 1999.

53 Payne 1973; Cribb 1984.

54 Zeder 2008; Siracusano 2020, 593; forthcoming.

55 The height at withers has been calculated following the coefficients of Matolcsi (1970) for cattle and Teichert (1975) for sheep.

56 Bökönyi 1983, 585; Siracusano 2020, 593.

57 Ruscillo 2014, 8003-6; Davis 2000, 374.

should be noted that for those samples from level IIIB where an association between sex and age was possible, young and sub-adult caprines were represented only by males, while adults were both male and female.

Body Portions

Skeletal body categories have been identified by assigning three values of meat production (A, B, and C) to each portion of the carcass.[58] The grouped bones have been placed in logarithmic relationship with anatomical proportions of a whole skeleton; the positive value indicates a greater presence of the skeletal structure (fig. 6).[59] The analysis shows some similarity between the distribution of these categories in levels IIIA.1 and IIIA.2. In fact, the bone remains reveal a prevalence of the most nutritionally important portions, while the portions with less edible value, such as the autopods (phalanx, carpal and tarsal bones), have a low incidence. It is certainly not unusual to assume that the smaller bones (autopods) of small ungulates (almost exclusively O/C) might have been easily dispersed by multiple taphonomic factors and be less represented compared to those of larger animals. However, the lower incidence of small bones is also detectable among large ungulates, suggesting that the analyzed bones belonged mostly to meal remains. This appears even clearer when we observe what happens in level IIIB, where a flattening of the histograms is observable. Indeed, the bone portions from this level correspond almost perfectly to those belonging to intact skeletons. Taking into consideration a more detailed subdivision in which the most delicious body portions consisting of forequarters and hindquarters are highlighted (fig. 7), it clearly appears that we are dealing with proper food waste. In fact, these remains represent the discards of whole carcasses, including both eaten and previously discarded portions, as if they had been slaughtered and consumed on site and then their remains all collected and dumped.

The Wild Taxa

The presence of wild animals at Arslantepe has always been sporadic. In general, wild taxa, mostly high-quality game such as deer, aurochs and wild caprines, do not exceed 3% of the total of NISP. However, it should be stressed that deer hunting has always been attested at the site.[60] The percentage of deer remains in levels IIIA.1 and IIIA.2 is in fact 60-70% of the wild animals (table 1). In level IIIB there is instead a decrease of deer to 40% with an increase of hares, aurochs, and wolves.

Big game hunting has been always marked at Arslantepe by the presence of exotic animals acknowledged for their value and rarity, such as bears (*Ursus arctos* L. 1758), lions (*Panthera leo* L., 1758), leopards (*Panthera pardus* L., 1758), elephants (*Elephas maximus* L., 1758) and even cheetahs (*Acinonyx jubatus cf. venaticus* Schreber, 1775), together with many other species of mammals and exotic birds. This has often suggested the presence at the site of elite hunting activity,[61] a phenomenon motivated not by food needs, but by the acquisition of prestige in the social sphere.

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58 Uerpmann 1973. Category A consists of the most valuable parts, like humerus and femur (stylopodium), vertebrae, pelvic and scapular girdle. Category B consists of the skull bones (neurocranium), jaws, ribs, and zeugopodium (radius, ulna, tibia, fibula). Category C consists of the less valuable parts, like splancnocranium (without mandibles), loose teeth and autopodium (carpal and metacarpal, tarsal and metatarsal bones, phalanges), as well as horn cores.

59 Meadow 1999.

60 Bökönyi 1993; Bartosiewicz 2010; Bartosiewicz et al. 2013.

61 Bökönyi 1985; Bartosiewicz 1998, 225; Siracusano 2012.

At the beginning of the Iron Age, besides the already mentioned presence of deer, we should also note the relatively large number of bears in level IIIA.1 and of wolves in level IIIB. It seems therefore that elite hunting mostly concerned deer during the Iron Age and probably aimed as well at the elimination of dangerous predators that could be a threat to domestic livestock. The increasing presence in level IIIB of hares - animals typical of cereal steppes - might confirm the greater intensity and extension of agricultural activities.

Agropastoral Economy at the Late Bronze-Iron Age Transition

In Hittite Anatolia the pastoral economy was based on the breeding of flocks.[62] Their composition shows the strong prevalence of sheep over goats and marks a well-determined orientation towards the exploitation of primary and secondary products that supply well-being and prestige through the production of rams, milk and wool. Cattle are in general less represented but still comprised around 30% of domestic animals. The ratio of cattle to caprines is overall less than 1:2.[63]

Outside the central Anatolian plateau the situation is much more variable. At Kilise Tepe, for instance, goats and sheep represent the vast majority of domestic animals, but goats predominate over sheep.[64] At Arslantepe the ratio between cattle and caprines is less than 1:2. But the contribution of the former is still quite consistent, suggesting that beef must have made up well over half of the meat consumed.[65] The fact that along the Euphrates cattle breeding was a more consolidated practice is also confirmed at Lidar Höyük, where their incidence ranges from 22 to 30% of domesticated animals.[66] On the other hand, cattle are generally much less attested in the western and southern territories, as confirmed at Gordion, Kilise Tepe and also at Tell Afis where they only account for about 10%.[67]

Pig can be considered a sensitive cultural indicator, probably even more than cattle and caprines. Pigs were actually not popular in the Hittite world, as shown by the data from Boğazköy where in the Lower Town they had an incidence of 7%[68] and Kuşaklı where they did not reach 5%.[69] However, their presence had a certain relevance at Kaman-Kalehöyük, where they constituted 23% of the domestic animals[70] and also at Çadır Höyük where they reached 20%.[71] In the southern, eastern and western Anatolian regions, pigs rarely reached 10%, as is shown at Kinet Höyük, Lidar Höyük, Korucutepe, Gordion, as well as at Tell Afis.[72] This is also confirmed at Late Bronze Age Arslantepe where pigs range between 7 and 9%.

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62 von den Driesch and Pöllath 2004, 22-23.

63 von den Driesch and Boessneck 1981, 77; von den Driesch and Pöllath 2004, 79; Hollenstein and Middea 2016; Berthon 2017.

64 Baker 2008.

65 Bartosiewicz et al. 2013.

66 Kussinger 1988.

67 Zeder and Arter 1994; Baker 2008; Wilkens 1998, 443, table 1.

68 Boessneck and von den Driesch 1975.

69 von den Driesch and Vagedes 1997.

70 Hongo 1993.

71 Arbuckle 2014; Steadman et al. 2019, 109-12; Ross et al. 2019.

72 Kabatiar 2017, 314-19; Kussinger 1988; Boessneck and von den Driesch 1975; Zeder and Arter 1994; Wilkens 1998, 443, table 1.

As mentioned, one of the main novelties observed among the bone collection of Arslantepe is the presence of equids. Although their incidence as meal remains does not exceed 1.5% within the Hittite sites, it seems well-established that the demand for horses, mules and donkeys must have been quite high both as mounts and beasts of burden.[73] Moreover, as the burials of horses and donkeys at Osmankayası show, these animals must certainly have had some sort of special consideration within the Hittite world.[74]

It is also interesting to note that mortality rate and survivorship analysis shows at Late Bronze Age Arslantepe a widespread maintenance of adult caprines. This probably pertains mostly to the production of wool. Stocking many males after their economically favorable age for meat production is actually a practice already attested in Anatolia during the Middle Bronze Age at Acemhöyük, where it was interpreted as a sign of intensive wool production.[75] Moreover, it is well-known that wool and woolen textiles were an essential component of the Old Assyrian Colony period.[76] A similar pattern also continues during the Hittite era, as can be seen in the Lower Town of Boğazköy where caprines in their second to fourth year predominate.[77] Similarly, at Kinet Höyük the major kill-off occurred in the two to three year-old group with a secondary kill-off seen for animals four to eight years age.[78]

The geopolitical changes that followed the end of Hittite rule in Anatolia also testify to a rearrangement of the socioeconomic situation. From the point of view of subsistence, greater heterogeneity can be observed, especially in the most peripheral sites that had previously been only marginally touched by Hittite influence. At Arslantepe, the general structure of the livestock during the transitional IIIA.1 level does not show many changes compared to the Late Bronze Age II phase and is characterized by the scarcity of pigs and the abundance of cattle. Moreover, during the whole IIIA period the delay in caprine slaughter seems to emphasize, even more than in the Late Bronze Age, the exploitation of wool, which follows a trend that is similar to other Iron Age sites (table 4).

Unfortunately, there are limited comparisons available for the transitional period between the Late Bronze and Iron Age. At Arslantepe the ratio of cattle to caprines is the highest of the contemporaneous sites and comparable to Kinet Höyük and Kilise Tepe.[79] These animals therefore played a substantial role in the economy of these sites, and agriculture had a prominent importance. At Tell Sheikh Hamad, the ratio of cattle to caprines turns completely in favor of the second group.[80] But this may obviously stem from the fact that the site is located in the Syrian Jezirah region that is not only very distant from the other compared settlements but also lies within a different environmental system. In any case, it is interesting to note that all the available information led to the conclusion that the structure of the flocks everywhere clearly favored sheep. Besides being important for its direct meat consumption, this animal was indeed a valuable source of exchange for both its primary and secondary products. In fact, sheep seem to have less difficulty in moving along the numerous hydrographic basins and streams

73 Dörfler et al. 2011.

74 von den Driesch and Vagedes 1997, 131.

75 Arbuckle 2006.

76 Michel and Veenhof 2010.

77 von den Driesch and Boessneck 1981, 35.

78 Kabatiar 2017.

79 Kabatiar 2017; Baker 2008.

80 Becker 2008.

that characterize the Anatolian plateaus compared to goats. As a consequence, they offer greater chances of trade. Despite the fact that they only occasionally represent a food remain, the presence of equids is also significant in most of the above-mentioned sites.[81] At Arslantepe, 80% of the equid remains have been identified as belonging to horses or donkeys. During the Late Bronze Age II, horses and donkeys were attested in about the same quantity (ratio 0.94:1), while in Arslantepe IIIA.1 a prevalence of the latter is noted (ratio 0.82:1). This could indicate, together with the presence of cattle, the importance of the rural context at the site.

Comparisons with the Early Iron Age are much more abundant than for the transitional phase. At Arslantepe IIIA.2 a strengthening of the above-mentioned pastoral practices is in general noticeable. Interesting affinities in the ratio between cattle and caprines are visible at Büyükkaya, while Gordion contrarily turns out to be the site where flocks have absolute dominance, representing over 90% of the livestock.[82] At Karkemiš cattle are represented at 60%, but we must also consider that the numerical shortage of the sample is not sufficient for the result to be entirely comparable.[83] Once again, at Arslantepe as well as in the contemporaneous sites, flocks consist mainly of sheep (in a ratio of 3:1 to goats), with the exception of Tell Tayinat where goats prevail.[84] As far as equids are concerned, Arslantepe IIIA.2 still shows a clear predominance of donkeys, while at Karkemiš and Büyükkaya horses are in the majority.[85]

The affinity in the amount of cattle previously outlined with Büyükkaya is still visible during Arslantepe IIIB. In general, caprines continue to be abundant and predominant everywhere, especially at Gordion, which shows again the lowest number of cattle.[86] The ratio of sheep to goats across all the contemporaneous sites favors sheep, to the extent of about 2-3:1, but with a clear increase in the number of goats compared to the previous periods. An exception is represented by Ziyaret Tepe, where goats are represented at about 75%. But it must be considered that the available data are rather limited.[87] Moreover, it is also interesting to note that at Arslantepe the ratio between horses and donkeys continues to be definitively in favor of the latter (ratio 1:4).

The development in caprine culling indicates that at Arslantepe IIIB the slaughter of subadult males mostly took place between the age of one and two years, while data from contemporaneous sites show an older age (table 4). However, considering that subadult males were already capable of producing a sufficient amount of wool,[88] their kill-off could testify to an attempt of optimizing the exploitation of fiber production before culling.[89] Moreover, the situation of Arslantepe IIIB does not show a distinct demographic profile dominated by adult rams and ewes, further suggesting an optimization towards wool production.[90]

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81 Kabatiar 2019-2020; Baker 2008; Becker 2008.

82 von den Driesch and Pöllath 2004, 79; Zeder and Arter 1994.

83 Maini et al. 2018.

84 Welton et al. 2019.

85 Maini et al. 2018, 373-83; von den Driesch and Pöllath 2004, 79.

86 Zeder and Arter 1994.

87 Greenfield-Jongsma and Greenfield 2013.

88 Halstead 1998.

89 Payne 1973.

90 Helmer at al. 2007.

Concluding Remarks

Despite the significant political transformations that occurred at the site towards the end of the second millennium BC, the agro-pastoral economy of Arslantepe does not show substantial changes during the centuries that encompass the end of the Bronze Age and the beginning of the Iron Age. The analyzed data indeed displays a strong continuity in the ratio of cattle to caprines and in the main characteristics of the herds, i.e., mortality, sex, and size, despite some obvious fluctuations between the phases under consideration. The few detectable variations in the presence of wild animals also seem to indicate that the territory surrounding the site was not affected by substantial changes.

However, when compared to the cases of other Anatolian sites and regions, some significant variability emerges. During the Late Bronze Age the Euphrates area shows that cattle breeding was well-established, partially differing from what is known from other regions of the Anatolian world. The relevance of equids at Arslantepe is also worth noting, which contrasts to the lower numbers of the Hittite core. However, on the other hand, pigs are interestingly attested in all the Anatolian territories taken into consideration. During the Early Iron Age there is more heterogeneity between the areas previously under the Hittite domain. In any case, it is remarkable to note that the general structure of the flocks tends to prefer the exploitation of sheep and that the presence of equids is attested at all the sites considered. At Arslantepe the low number of pigs continues over time. It is especially very significant to note the stability that characterizes cattle numbers and their culling profile throughout the examined period. In this regard, an important affinity with Büyükkaya is emphasized by the high amount of cattle remains. In more detail, body portions analysis shows at Arslantepe a perfect continuity between the end of the Late Bronze and the Early Iron Age. In levels IIIA.1 and IIIA.2, animal bones are predominantly characterized by the presence of the most edible portions. Therefore, it seems that the food remains can be attributed mainly to daily consumption, as is also supported by their contexts, which are almost exclusively fillings. On the other hand, in level IIIB the remains seem to represent almost entirely whole skeletons, i.e., entire carcasses of slaughtered animals and food remains accumulated over time. This is again further confirmed by the stratigraphy since, as mentioned, the silos of level IIIB were found filled with waste. This confirms that the entire area was used, in its final phase, as a proper dump. Yet these results might also reflect a progressive tendency at the site towards better use and organization of animal exploitation.

However, the most interesting result is certainly related to the mortality curve. In general, between the end of the Late Bronze and the Early Iron Age, great importance given to secondary products of livestock exploitation can be seen throughout the Anatolian world.

In Arslantepe IIIA.1 and IIIA.2 an important quantitative elimination of mature caprines can be observed. This corresponds to the time when milk production in females tends to decrease, following a pattern already attested at the end of the Late Bronze Age and also shared with other Early Iron Age sites. It testifies to the fact that, in addition to the interest in meat and milk, the production must have been strongly oriented towards a conspicuous use of wool. In Arslantepe IIIB, on the other hand, an early culling of caprines between one and two years of age shows an interest in the consumption of tender meat. However, the general trend of adult elimination continues.

In this respect, it is remarkable that starting with Arslantepe IIIA.1 and throughout the Early Iron Age levels at the site, there is a massive spread of tools for textile production. As

mentioned above, these are the so-called clay spool-shaped objects traditionally interpreted as loom weights for warp-weighted looms,[91] although their multifunctional employment for many practices related to the use of the thread is plausible.[92] Notably, these objects see an exponential increase throughout the whole eastern Mediterranean region during the Iron Age.[93] The simultaneous increase in the production of wool and weaving tools obviously cannot be a mere coincidence, but rather represents an important socio-economic aspect of Iron Age Arslantepe. The topic will be the focus of future research, but some interesting parallels and considerations already deserve to be introduced here.

The importance of textile activities and products, and especially the link between an increasing exploitation of animal fibers and the use of warp-weighted looms, has been seen in Iron Age Levant as a form of political and economic centralization and wealth construction as well as the proliferation of production and possible change in techniques.[94] From an historical viewpoint, it has been mostly interpreted in terms of satisfying the demands of Assyrian kings, whose appreciation for textiles produced by Levantine local industries was well-known.[95] A fascinating comparison with the case discussed here can be also noted with Early Chalcolithic Tell Sabi Abyad (ca. 5500-5000 BC) in northern Syria, where an increase in the age of slaughter of sheep and goats is accompanied by an abundance of spindle whorls.[96] Albeit very far in the past, it suggests a relationship between a caprine management that targets the fiber of adult animals and the development of spinning and weaving technologies.[97]

Further implications for this topic can also been pursued at Arslantepe by looking at the change over time in the ratio between sheep and goats, with the latter becoming more prevalent towards the end of the Early Iron Age. That flocks in general were mainly composed of sheep is probably due to the gentle and gregarious nature of these animals, which made movement and exchange easier compared to goats. Indeed, the prominent role of goats in nomadic herds or small household contexts has usually been related to the possible exploitation of some specific products, such as milk or fleece for weaving tents and tarps.[98] However, it should be considered that the wool from goats could also be employed for high-quality products such as carpets, curtains, bags and other furnishings. Indeed, despite the fact that goat wool is thought to be coarser than that from sheep, the quality mostly depends on the age, sex, condition, and health of the animals instead of the species. And goat wool can also be very fine.[99] Moreover, the finest wool is not necessarily the best, since different types of wool can be associated with different types of fabric.[100] In this framework, it is very important to recall that the analysis of a textile fragment coming from the so-called "Royal Tomb" at Arslantepe dated to 3100-3000 BC demonstrated that the raw material was goat wool produced with an extremely fine fiber diameter and used in a very symbolic and highly prestigious context.[101] Therefore, it is

91 Cecchini 2011.

92 Siennicka and Ulanowska 2016; Laurito and Manuelli 2020.

93 Ramhstorf 2011.

94 Nelson 2020.

95 Boertien 2013, 27-31; Lumb 2014, 147-49.

96 Arbuckle and Hammer 2019, 411.

97 Russel 2010.

98 Ryder 1993.

99 Spinazzi Lucchesi 2018, 19; Andersson Strand 2014, 43-45; Schier and Pollock 2020.

100 Andersson Strand 2012, 31.

101 Frangipane et al. 2009, 19-20.

probably not surprising that in a situation such as the final Early Iron Age at Arslantepe, in which there was an increase in the textile industry within a political context that facilitated exchanges and movements not only on an extra-local but also an extra-regional scale, there was an optimization in the use of wool as well as the exploitation of sheep and goats.

In conclusion, this study has shed new light on the still partially obscure ecological and economic background of the Syro-Anatolian society of the late second millennium BC. The analysis of the archaeozoological remains from Early Iron Age Arslantepe shows the importance of the accuracy and detail of taxonomic studies on faunal remains and the value of associating analyzed assemblages with contemporaneous craft artifacts in order to reconstruct more exact historical situations. On the one side, some significant transformation involved life in Iron Age Arslantepe, whose inhabitants were breeding more sheep and producing more wool, presumably for textile and carpets as well as acquiring more equids. This may also be related to the transport of these goods. On the other side, it should be noted that the subsistence economy of the site shows a general pattern of stability and firm continuity with the past. Indeed, the results obtained do not seem to evidence any drastic changes from the period when the site was under the political and cultural sphere of the Hittites to when it became the capital of the independent reign of Malizi/Melid. Rather, the analysis confirms the complex and multifaceted nature of this transitional phase in which agro-pastoral habits and human-animal interactions were marked by strong elements of continuity with the past. At the same time, it was affected by significant aspects of economic and behavioral transformations that characterized the whole eastern Mediterranean region at the turn of the first millennium BC.

Bibliography

Andersson Strand, E. 2012. "The Textile Chaîne Opératoire: Using a Multidisciplinary Approach to Textile Archaeology with a Focus on the Ancient Near East." *Paléorient* 38.1-2:21-40.

Andersson Strand, E. 2014. "Sheep, Wool and Textile Production. An Interdisciplinary Approach to the Complexity of Wool Working." In *Wool Economy in the Ancient Near East and the Aegean. From the Beginnings of Sheep Husbandry to Institutional Textile Industry*, edited by C. Breniquet and C. Michel, 41-51. Ancient Textiles Series 17. Oxford / Philedelphia: Oxbow Books.

Arbuckle, B.S. 2006. "The Evolution of Sheep and Goat Pastoralism and Social Complexity in Central Anatolia." Ph.D. diss., Harvard University.

Arbuckle, B.S. 2014. "The Rise of Cattle Cultures in Bronze Age Anatolia." *Journal of Eastern Mediterranean Archaeology & Heritage Studies* 2.4:277-97.

Arbuckle, B.S., and E.L. Hammer. 2019. "The Rise of Pastoralism in the Ancient Near East." *Journal of Archaeological Research* 27:391-449.

Baker, P. 2008. "Economy, Environment and Society at Kilise Tepe, Southern Central Turkey – Faunal Remains from the 1994-1998 Excavations." In *Archaeozoology of the Near East 8. Actes des Huitièmes Rencontres Internationales d'Archéozoologie de l'Asie du Sud-Ouest et des Régions Adjacentes / International Symposium on the Archaeozoology of Southwestern Asia and Adjacent Areas, Lyon 28 juin - 1er juillet 2006 / Lyon, June 28th-July 1st, 2006*, *Aswa 8,* edited by E. Vila, L. Gourichon, A.M. Choyke, and H. Buitenhuis, 2:407-30. Travaux de la Maison de l'Orient Méditerranéen 49. Lyon: Maison de l'Orient et de la Méditerranée.

Bartosiewicz, L. 1998. "Interim Report on the Bronze Age Animal Bones from Arslantepe (Malatya, Anatolia)." In *ICAZ. Archaeozoology of the Near East 3*: *Proceedings of the Third International Symposium on the Archaeozoology of Southwestern Asia and Adjacent Areas*, edited by H. Buitenhuis, L. Bartosiewicz, and A.M. Choyke, 221-32. ARC Publicaties 18. Groningen: Centre for Archeological Research and Consultancy.

Bartosiewicz, L. 2010. "Herding in Period VI A: Development and Changes from Period VII." In *Economic Centralisation in Formative States. The Archaeological Reconstruction of the Economic System in 4th Millennium Arslantepe*, edited by M. Frangipane, 119-48. Studi di Preistoria Orientale 3. Rome: Sapienza Università di Roma.

Bartosiewicz, L., S. Bökönyi, and G. Siracusano. 2013. "Animal Husbandry." In *Arslantepe: Late Bronze Age. Hittite Influence and Local Traditions in an Eastern Anatolian Community,* edited by F. Manuelli, 275-84. Arslantepe 9. Rome: Sapienza Universitá di Roma.

Becker, C. 2008. "Der Tierknochenfunde aus Tall Šēḫ Ḥamad/Dūr Katlimmu: Eine zoogeoraphisch-haustierkundliche Studie." In *Umwelt und Subsistenz der assyrischen Stadt Dūr-Katlimmu am Unteren Ḫābūr*, edited by H. Kühne, 61-132. Berichte der Ausgrabung Tell Šēḫ Ḥamad / Dūr-Katlimmu 8. Wiesbaden: Harrassowitz.

Berthon, R. 2017. "Faunal Remains of the Hittite and Byzantine Periods from Middle Plateau." In A*usgrabungen und Forschungen in der westlichen Oberstadt von Hattuša II: Ausgrabungen auf dem Mittleren Plateau zwischen Sarıkale und Yenicekale (2006-2009)*, edited by A. Schachner, 255-67. Boğazköy-Hattuša 25. Berlin: De Gruyter.

Blanchard, V. 2019. "Arslantepe, capitale du royaume de Malizi/Melid." In *Royaumes oubliés de l'Empire hittite aux Araméens*, edited by V. Blanchard, 186-203. Paris: Lienart.

Boertien, J. 2013. "Unravelling the Fabric: Textile Production in Iron Age Transjordan." Ph.D. diss., University of Groningen.

Boessneck, J. 1969. "Osteological Differences between Sheep (*Ovis aries* Linné) and Goat (*Capra hircus* Linné)." In *Science in Archaeology. A Survey of Progress and Research*, edited by D. Brothwell and E.S. Higgs, 331-58. Rev. and enl. ed. London: Thames and Hudson.

Boessneck, J., and A. von den Driesch. 1975. "Tierknochenfunde vom Korucutepe bei Elâzig in Ostanatolien (Fundmaterial der Grabungen 1968 und 1969)." In *Korucutepe: Final Report on the Excavations of the Universities of Chicago, California (Los Angeles) and Amsterdam in the Keban Reservoir, Eastern Anatolia, 1968-1970*. Vol. 1, edited by M.N. van Loon, 1-220. Studies in Ancient Civilization. Amsterdam: North-Holland.

Bökönyi, S. 1983. "Late Chalcolithic and Early Bronze I Animal Remains from Arslantepe (Malatya) Turkey: Preliminary Report." In *Perspectives on Protourbanization in Eastern Anatolia: Arslantepe (Malatya). An Interim Report on 1975-1983 Campaigns*, edited by M. Frangipane and A. Palmieri, 581-98. Origini. Preistoria e protostoria delle civiltà antiche 12.2. Rome: Universitá degli Studi "La Sapienza".

Bökönyi, S. 1985. "Subfossil Elephant Remains from Southwestern Syria." In *Paléorient* 11.2:161-63.

Bökönyi, S. 1993. "Hunting in Arslantepe, Anatolia." In *Between the Rivers and over the Mountains: Archaeologica Anatolica et Mesopotamica Alba Palmieri Dedicata*, edited by M. Frangipane, H. Hauptmann, M. Liverani, P. Matthiae, and M. Mellink, 341-60. Rome: Dipartimento di Scienze Storiche Archeologiche e Antropologiche dell'Antichità, Universitá di Roma "La Sapienza".

Brown, M., and T.J. Wilkinson. 2017. "The Euphrates States and Elbistan: Archaeology." In *Hittite Landscape and Geography*, edited by M. Weeden and L.Z. Ullmann, 146-58. Handbook of Oriental Studies. Section 1: The Near and Middle East 121. Leiden / Boston: Brill.

Bryce, T. 2012. *The World of the Neo-Hittite Kingdoms: A Political and Military History*. Oxford / New York: Oxford University Press.

Bull, G., and S. Payne. 1982. "Tooth Eruption and Epiphyseal Fusion in Pigs and Wild Boar." In *Ageing and Sexing Animal Bones from Archaeological Sites*, edited by B. Wilson, C. Grigson, and S. Payne, 55-71. BAR-BS 109. Oxford: British Archaeological Report.

Bullock, D., and J. Rackham. 1982. "Epiphyseal Fusion and Tooth Eruption of Feral Goats from Moffatdale, Dumfries and Galloway, Scotland." In *Ageing and Sexing Animal Bones from Archaeological Sites*, edited by B. Wilson, C. Grigson, and S. Payne, 73-80. BAR-BS 109. Oxford: British Archaeological Report.

Castellano, L. 2018. "Staple Economies and Storage in Post-Hittite Anatolia: Considerations in Light of New Data from Niğde-Kınık Höyük (Southern Cappadocia)." *Journal of Eastern Mediterranean Archaeology & Heritage Studies* 6.4:259-84.

Cecchini, S.M. 2011. "Loomweights and the Textile Industry in North Syria in the Early Iron Age." In *On Cooking Pots, Drinking Cups, Loomweights and Ethnicity in Bronze Age Cyprus and Neighbouring Regions. An International Archaeological Symposium held in Nicosia, November 6th-7th 2010*, edited by V. Karageorghis and O. Kouka, 195-202. Nicosia: A.G. Leventis Foundation.

Corti, C. 2020. "The Grain of the King: Agricultural Landscape of the Hittite Festival and Land Management in Late Bronze Age Anatolia and the Northern Levant." In *Cult, Temple, Sacred Spaces. Cult Practices and Cult Spaces in Hittite Anatolia and Neighbouring Cultures. Proceedings of the First International HFR Symposium, Mainz, 3-5 June 2019*, edited by S. Görke and C.W. Steitler, 231-52. Studien zu den Boğazköy-Texten 66. Wiesbaden: Harrassowitz.

Cribb, R. 1984. "Computer Simulation of Herding Systems as an Interpretative Heuristic Device in the Study of Kill-Off Strategies." In *Animals and Archaeology*. Vol. 3, *Early Herders and Their Flocks*, edited by J. Clutton-Brock and C. Grigson, 161-70. BAR-IS 202. Oxford: British Archaeological Report.

Davis, S.J.M. 2000. "The Effect of Castration and Age on the Development of the Shetland Sheep Skeleton and a Metric Comparison between Bones of Males, Females and Castrates." *JAS* 27.5:373-90.

Delaporte, L. 1940. *Malatya: fouilles de la mission archéologique française. Arslantepe*. Vol. 1, *La Porte des Lions*. Mémoires de l'Institut Français d'Archéologie de Stamboul 5. Paris: De Boccard.

De Martino, S. 2012. "Malatya and Išuwa in Hittite texts: New Elements of Discussion." In *Proceedings of the Conference "Fifty Years of Excavations and Researches at Arslantepe – Malatya (Turkey). The Contribution of La Sapienza University to the Study of the Earliest Centralized Societies", Rome, December 5-7,* edited by M. Frangipane, 375-83. Origini. Preistoria e protostoria delle civiltà antiche 34. Rome: Gangemi.

De Martino, S. 2018. "The Fall of the Hittite Kingdom." *Mesopotamia* 53:23-48.

Deniz, E., and S. Payne. 1982. "Eruption and Wear in the Mandibular Dentition as a Guide to Ageing Turkish Angora Goats." In *Ageing and Sexing Animal Bones from Archaeological Sites,* edited by B. Wilson, C. Grigson, and S. Payne, 155-205. BAR-BS 109. Oxford: British Archaeological Report.

Diffey, C., R. Neef, and A. Bogaard. 2017. "The Archaeobotany of Large-Scale Hermetic Cereal Storage at the Hittite Capital of Hattuša." In *Innovation versus Beharrung: Was macht den Unterschied des hethitischen Reichs im Anatolien des 2. Jahrtausends v. Chr.? Internationaler Workshop zu Ehren von Jürgen Seeher, Istanbul, 23-24. Mai 2014,* edited by A Schachner, 185-201. Byzas 23. Istanbul: Ege Yayınları.

Di Filippo, F., and L. Mori. 2018. "How Difficult? Mountain Roads and Pathways Reaching Ancient Melid (Malatya) in South-Eastern Anatolia: A Reconsideration." *SMEA NS* 4:41-61.

Dörfler, W. 2018. "The Bronze Age in the East – The Hittites and Their Environment." In *Past Landscapes. The Dynamics of Interaction between Society, Landscape, and Culture*, edited by A. Haug, L. Käppel, and J. Müller, 291-310. Leiden: Sidestone Press.

Dörfler, W., C. Herking, R. Neef, R. Pasternal, and A. von den Driesch. 2011. "Environment and Economy in Hittite Anatolia." In *Insights into Hittite History and Archaeology*, edited by H. Genz and D.P. Mielke, 99-124. Colloquia Antiqua 2. Leuven / Paris / Walpole, MA: Peeters.

Ducos, P. 1968. *L'origine des Animaux Domestiques en Palestine.* Publications de l'Institut de préhistoire de l'Université de Bordeaux, Mémoire 6. Bordeaux: Delmas.

Eisenmann, V. 1986. "Comparative Osteology of Modern and Fossil Horses, Half-Asses and Asses." In *Equids in the Ancient World.* Vol. 1, edited by R.H. Meadow and H.-P. Uerpmann, 67-116. Beihefte zum Tübinger Atlas des Vorderen Orients, Reihe A (Naturwissenschaften) 19.1-2. Wiesbaden: Ludwig Reichert.

Frangipane, M. 2019a. "Arslantepe. The Rise and Development of a Political Centre: From Temple to Palace to a Fortified Citadel." In *Arslantepe. 1. Uluslararası Arkeoloji Sempozyumu Bildirileri / Arslantepe. Proceedings of the I. International Archaeology Symposium,* edited by N. Durak and M. Frangipane, 71-104. İnönü Üniversitesi Yayınları 71. Malatya: İnönü Üniversitesi Matbaası.

Frangipane, M. 2019b. "The Secularization of Power: A Precocious Birth and Collapse of a Palatial System at Arslantepe (Malatya, Turkey) in the 4th Millennium BC." In *Der Palast im antiken und islamischen Orient: 9. Internationales Colloquium der Deutschen Orient-Gesellschaft, 30 Marz – 1 April 2016, Frankfurt am Main,* edited by D. Wicke, 43-60. Colloquium der Deutschen Orient-Gesellschaft 9. Wiesbaden: Harrassowitz Verlag.

Frangipane, M., and M. Liverani. 2013. "Neo-Hittite Melid: Continuity or Discontinuity?" In *Across the Border: Late Bronze-Iron Age Relations between Syria and Anatolia. Proceedings of a Symposium held at the Research Center of Anatolian Studies, Koç University, Istanbul, May 31-June 1, 2010*, edited by K.A. Yener, 349-71. Ancient Near Eastern Studies Suppl. 42. Leuven / Paris / Walpole, MA: Peeters.

Frangipane, M., E. Andersson Strand, R. Laurito, S. Möller-Wiering, M.L. Nosch, A. Rast-Eicher, and A. Wisti Lassen. 2009. "Arslantepe, Malatya (Turkey): Textiles, Tools and Imprints of Fabrics from the 4th to the 2nd Millennium BC." *Paléorient* 35.1:5-29.

Frangipane, M., F. Balossi Restelli, G.M. Di Nocera, Y.S. Erdal, F. Manuelli, and L. Mori. 2019. "Recent Late Chalcolithic and Iron Age Discoveries at Arslantepe: the 2017-2018 Campaigns." In *The Archaeology of Anatolia.* Vol. 3, *Recent Discoveries (2017-2018)*, edited by S.R. Steadman and G. McMahon, 15-32. Cambridge: Cambridge Scholars Publishing.

Frangipane, M., F. Balossi Restelli, F. Di Filippo, F. Manuelli, and L. Mori. 2020. "Arslantepe: New Data on the Formation of the Neo-Hittite Kingdom of Melid." *News from the Lands of the Hittites* 3-4:71-111.

Grant, A. 1982. "The Use of Tooth Wear as a Guide to the Age of Domestic Ungulates." In *Ageing and Sexing Animal Bones from Archaeological Sites,* edited by B. Wilson, C. Grigson, and S. Payne, 91-108. BAR-BS 109. Oxford: British Archaeological Report.

Grayson, D.K. 1984. *Quantitative Zooarchaeology: Topics in the Analysis of Archaeological Faunas.* Studies in Archaeological Science 12. New York: Academic Press.

Greenfield, H.J. 2005. "A Reconsideration of the Secondary Products Revolution in South-Eastern Europe: On the Origins and Use of Domestic Animals for Milk, Wool, and Traction in the Central Balkans." In *The Zooarchaeology of Fats, Oils, Milk and Dairying. Proceedings of the 9th Conference of the International Council of Archaeozoology, Durham, August 2002*, edited by J. Mulville and A.K. Outram, 14-31. Oxford: Oxbow Books.

Greenfield, H.J., and E.R. Arnold. 2008. "Absolute Age and Tooth Eruption and Wear Sequences in Sheep and Goat: Determining Age-at-Death in Zooarchaeology Using a Modern Control Sample." *JAS* 35.4:836-49.

Greenfield-Jongsma, T.L., and H.J. Greenfield. 2013. "Bronze and Iron Ages Subsistence Changes in the Upper Tigris: Zooarchaeology of Operation E at Ziyaret Tepe, South-Eastern Turkey." In *Archaeozoology of the Near East X: Proceedings of the Tenth International Symposium on the Archaeozoology of South-Western Asia and Adjacent Areas*, edited by B. De Cupere, V. Linseele, and S. Hamilton-Dyer, 121-44. Ancient Near Eastern Studies Suppl. 44. Leuven / Paris / Walpole, MA: Peeters.

Halstead, P. 1998. "Mortality Models and Milking: Problems of Uniformitarianism, Optimality and Equifinality Reconsidered." *Anthropozoologica* 27:3-20.

Halstead, P., P. Collins, and V. Isaakidou. 2002. "Sorting the Sheep from the Goats: Morphological Distinctions between the Mandibles and Mandibular Teeth of Adult Ovis and Capra." *JAS* 29.5:545-53.

Hawkins, J.D. 2000. *Corpus of Hieroglyphic Luwian Inscriptions.* Vol. 1, *Inscriptions of the Iron Age.* 3 vols. Untersuchungen zur indogermanischen Sprach- und Kulturwissenschaft NF 8.1-3. Berlin / New York: De Gruyter.

Hawkins, J.D., and M. Weeden. 2016. "Sketch History of Karkamish in the Earlier Iron Age (Iron I-IIB)." In *Carchemish in Context: The Land of Carchemish Project, 2006-2010*, edited by T.J. Wilkinson, E. Peltenburg, and E. Barbanes Wilkinson, 9-21. Themes from the Ancient Near East BANEA Publication Series 4. Oxford / Philadelphia: Oxbow Books.

Helmer, D., L. Gourichon, and E. Vila. 2007. "The Development of the Exploitation of Products from Capra and Ovis (Meat, Milk and Fleece) From the PPNB to the Early Bronze in the Northern Near East (8700 to 2000 BC cal.)." *Anthropozoologica* 42.2:41-69.

Hollenstein, D., and G. Middea 2016. "The Faunal Remains from the Square Building Horizon in the Valley West of Sarıkale, Boğazköy-Ḫattuša, Turkey (16th/15th Century BC)." In *Ausgrabungen und Forschungen in der westlichen Oberstadt von Ḫattuša I*, edited by A. Schachner and J. Seeher, 147-215. Boğazköy-Ḫattuša 24. Berlin: De Gruyter.

Hongo, H. 1993. "Faunal Remains from Kaman-Kalehöyük, Turkey: A Preliminary Analysis." In *Archaeozoology of the Near East: Proceedings of the First International Symposium on the Archaeozoology of Southwestern Asia and Adjacent Areas,* edited by H. Buitenhuis and A.T. Clason, 67-77. Leiden: Universal Book Service.

Ikram, S. 2003. "A Preliminary Study of Zooarchaeological Changes between the Bronze and Iron Ages at Kinet Höyük, Hatay". In *Identifying Changes: The Transition from Bronze to Iron Ages in Anatolia and its Neighbouring Regions. Proceedings of the International Workshop, Istanbul, November 8-9, 2002*, edited by B. Fischer, H. Genz, É. Jean, and K. Köroğlu, 283-93. Istanbul: Türk Eskiçağ Bilimleri Estitüsü.

Karakaya, D., and S. Riehl. 2019-2020. "Subsistence in Post-Collapse Societies: Patterns of Agroproduction from the Late Bronze Age to the Iron Age in the Northern Levant and Beyond". In *The Iron Age I in the Levant. A View from the North*. Part 1, *Prologue,* edited by H. Charaf and L. Welton, 136-63. Archaeology & History in the Lebanon 50-51. London: The Lebanese British Friends of National Museum.

Kabatiar, R. 2017. "Life on the Periphery, Life at the Crossroads: A Zooarchaeological Perspective on Late Bronze and Early Iron Age Animal Utilization at Kinet Höyük (Turkey)." Ph.D. diss., University of Toronto.

Kabatiar, R. 2019-2020. "Dark Age Dwellers in Light: Subsistence Strategies at Kinet Höyük (Turkey) in the Early Iron Age." In *The Iron Age I in the Levant. A View from the North*. Part 1, *Prologue*, edited by H. Charaf and L. Welton, 48-69. Archaeology & History in the Lebanon 50-51. London: The Lebanese British Friends of National Museum.

Knapp, A.B., and S.W. Manning. 2016. "Crisis in Context: The End of the Late Bronze Age in the Eastern Mediterranean." *AJA* 120.1:99-149.

Kussinger, S. 1988. "Tierknochenfunde vom Lidar Höyük in Südostanatolien (Grabungen 1979-86)." Master's thesis, Ludwig-Maximilians-Universität München.

Laurito, R., and F. Manuelli. 2020. "A Spools Enigma. The Iron Age Case at Arslantepe (Malatya, South-Eastern Turkey)." In *Redifining Ancient Textile Handcraft: Structures, Tools and Production Processes. Proceedings of the VIIth International Symposium on Textiles and Dyes in the Ancient Mediterranean World (Granada, Spain 2-4 October 2019*), edited by M. Bustamente-Álvarez, E.H. Sánchez Lopez, and J. Jiménez Ávila, 521-28. Purpureae Vestes 7. Granada: Universidad de Granada.

Liverani, M. 2012. "Melid in the Early and Middle Iron Age: Archaeology and History." In *The Ancient Near East in the 12th-10th Centuries BCE. Culture and History. Proceedings of the International Conference held at the University of Haifa, 2-5 May, 2010*, edited by G. Galil, A. Gilboa, A.M. Maeir, and D. Kahn, 327-44. Alter Orient und Altes Testament 392. Münster: Ugarit-Verlag.

Lyman, R.L. 2008. *Quantitative Paleozoology*. Cambridge Manuals in Archaeology. New York: Cambridge University Press.

Lumb, D. 2014. "Textile Traditions of Northwest Syria During the Early Iron Age." In *Textile Trade and Distribution in Antiquity / Textilhandel und -distribution in der Antike*, edited by K. Droß-Krüpe, 141-50. Philippika, Altertumskundliche Abhandlungen 73. Wiesbaden: Harrassowitz.

Maini, E., M.L. Carra, S. Di Cristina, A. Erol, K. Ferrari, N. Marchetti, S. Pizzimenti, and F. Zaina. 2018. "The Zooarchaeological Evidence." In *Excavations at Karkemish*. Vol. 1, *The Stratigraphic Sequence of Area G in the Inner Town,* edited by F. Zaina, 373-94. OrientLab Series Maior 3. Bologna: Ante Quem.

Makarewicz, C. 2009. "Complex Caprine Harvesting Practices and Diversified Hunting Strategies: Integrated Animal Exploitation Systems at Late Pre-Pottery Neolithic B 'Ain Jamman." *Anthropozoologica* 44.1:79-101.

Manuelli, F., ed. 2013. *Arslantepe: Late Bronze Age. Hittite Influence and Local Traditions in an Eastern Anatolian Community*. Arslantepe 9. Rome: Sapienza Universitá di Roma, Dipartimento di Scienze dell'Antichità.

Manuelli, F. 2018. "Drifting Southward? Tracing Aspects of Cultural Continuity and Change in the Late 2nd Millennium BC Syro-Anatolian Region." *Studia Eblaitica* 4:139-86.

Manuelli, F. 2020. "The Regeneration of the Late Bronze Age Traditions and the Formation of the Kingdom of Malizi." In *Formation, Organisation and Development of the Iron Age Societies. A Comparative View. Proceedings of the Workshop held at the 10th ICAANE in Vienna, April 2016*, edited by A.E. Sollee, 109-30. Oriental and European Archaeology 15. Vienna: Österreichischen Akademie der Wissenschaften.

Manuelli, F., and L. Mori. 2016. "The King at the Gate. Monumental Fortifications and the Rise of Local Elites at Arslantepe at the End of the 2nd Millennium BCE." *Origini. Preistoria e protostoria delle civiltà antiche* 39:209-41.

Manuelli, F., C. Vignola, F. Marzaioli, I. Passariello, and F. Terrasi. 2021. "The Beginning of the Iron Age at Arslantepe: A 14C Perspective." *Radiocarbon* 63.3:885-903.

Matolcsi, J. 1970. "Historische Erforschung der Körpergröße des Rindes auf Grund von ungarischen Knochenmaterial." *Zeitschrift für Tierzüchtung und Züchtungsbiologie* 87.2:89-137.

Meadow, R.H. 1999. "The Use of Size Index Scaling Techniques for Research on Archaeozoological Collections from the Middle East." In *Historia animalium ex ossibus: Beiträge zur Paläoanatomie, Archäologie, Ägyptologie, Ethnologie und Geschichte der Tiermedizin: Festschrift für Angela von den Driesch zum 65. Geburstag*, edited by C. Becker, H. Manhart., J. Peters, and J. Schibler, 285-300. Internationale Archäologie: Studia honoraria 8. Rahden, Westph.: Vertrag Marie Leidorf.

Michel, C., and K.R. Veenhof. 2010. "The Textiles Traded by the Assyrians in Anatolia (19th-18th centuries BC)." In *Textile Terminologies in the Ancient Near East and Mediterranean from the Third to the First Millennia BC*, edited by C. Michel and M.-L. Nosch, 210-71. Ancient Textiles Series 8. Oxford: Oxbow Books.

Mielke, D.P. 2011. "Hittite Cities: Looking for a Concept." In *Insights into Hittite History and Archaeology*, edited by H. Genz and D.P. Mielke, 153-94. Colloquia Antiqua 2. Leuven / Paris / Walpole, MA: Peeters.

Mielke, D.P. 2016. "Produktion und Distribution von Keramik im Rahmen der hethitischen Wirtschaftsorganisation." In *Wirtschaft als Machtbasis. Beiträge zur Rekonstruktion vormoderner Wirtschaftssysteme in Anatolien*, edited by K. Piesker, 155-85. Byzas 22. Istanbul: Ege Yayınları.

Nelson, T. 2020. "Fibres, Fabrics and Looms: A Link between Animal Fibres and Warp-Weighted Looms in the Iron Age Levant." In *The Competition of Fibres. Early Textile Production in Western Asia, South-East and Central Europe (10000-500 BC)*, edited by W. Schier and S. Pollock, 39-48. Ancient Textiles Series 36. Oxford: Oxbow Books.

O'Connor, T.P. 2006. "Vertebrate Demography by Numbers: Age, Sex, and Zooarchaeological Practice." In *Recent Advances in Ageing and Sexing Animal Bones. Proceedings of the 9th Conference of the International Council for Archaeozoology, Durham, August 2002,* edited by D. Ruscillo, 1-8. Oxford: Oxbow Books.

Osborne, J.F. 2021. *The Syro-Anatolian City-States. An Iron Age Culture.* Oxford Studies in the Archaeology of Ancient States. Oxford: Oxford University Press.

Payne, S. 1973. "Kill-Off Pattern in Sheep and Goats: The Mandibles of Aşvan Kale." *AnatSt* 23:281-303.

Payne, S., 1985. "Morphological Distinctions between the Mandibular Teeth of Young Sheep, Ovis, and Goats, Capra." *JAS* 12.2:139-47.

Pecorella, P.E. 1975. *Malatya III: Rapporto preliminare delle Campagne 1963-1968. Il Livello Eteo Imperiale e quelli Neoetei.* Orientis antiqui collectio 12. Rome: Centro per le Antichità e la Storia dell'Arte del Vicino Oriente.

Ramhstorf, L. 2011. "Handmade Pots and Crumbling Loomweights: 'Barbarian' Elements in the Eastern Mediterranean in the Last Quarter of the 2nd Millennium BC." In *On Cooking Pots, Drinking Cups, Loomweights and Ethnicity in Bronze Age Cyprus and Neighbouring Regions. An International Archaeological Symposium held in Nicosia, November 6th-7th 2010,* edited by V. Karageorghis and O. Kouka, 315-30. Nicosia: A.G. Leventis Foundation.

Redding, R.W. 1981. "Decision Making in Subsistence Herding of Sheep and Goats in the Middle East." Ph.D. diss., University of Michigan.

Riehl, S., and M. Nesbitt. 2003. "Crops and Cultivation in the Iron Age Near East: Change or Continuity?" In *Identifying Changes: The Transition from Bronze to Iron Ages in Anatolia and its Neighbouring Regions. Proceedings of the International Workshop, Istanbul, November 8-9, 2002*, edited by B. Fischer, H. Genz, É. Jean, and K. Köroğlu, 301-12. Istanbul: Türk Eskiçağ Bilimleri Estitüsü.

Ross, J.C., S.R. Steadman, G. McMahon, S.E. Adcock, and J.W. Cannon. 2019. "When the Giant Falls: Endurance and Adaptation at Çadır Höyük in the Context of the Hittite Empire and Its Collapse." *JFA* 44.1:19-39.

Ruscillo, D. 2014. "Zooarchaeology: Methods of Collecting Age and Sex Data." In *Encyclopedia of Global Archaeology,* edited by C. Smith, 8000-10. New York: Springer.

Russel, A. 2010. "Retracing the Steppes: A Zooarchaeological Analysis of Changing Subsistence Patterns in the Late Neolithic at Tell Sabi Abyad, Northern Syria, c. 6900 to 5900 BC." Ph.D. diss. University of Leiden.

Ryder, M. 1993. "The Use of Goat Hair. An Introductory Historical Review." *Anthropozoologica* 17:37-46.

Schachner, A. 2017. "Hattusa and Its Environs: Archaeology." In *Hittite Landscape and Geography*, edited by M. Weeden and L.Z. Ullmann, 37-49. Handbook of Oriental Studies. Section 1: The Near East and Middle East 121. Leiden / Boston: Brill.

Schachner, A. 2020. "The 14th and 13th Centuries BC in the Hittite Capital City Hattuša: A (Re-) Assessment." In *Anatolia between the 13th and the 12th Century BCE*, edited by S. de Martino and E. Devecchi, 381-410. Eothen 23. Florence: LoGisma.

Schier, W., and S. Pollock. 2020. "Introduction." In *The Competition of Fibres. Early Textile Production in Western Asia, South-East and Central Europe (10000-500 BC). International Workshop Berlin, 8-10 March 2017,* edited by W. Schier and S. Pollock, 1-3. Ancient Textiles Series 36. Oxford: Oxbow Books.

Seheer, J., ed. 2018. *Büyükkaya II: Bauwerke und Befunde der Grabungskampagnen 1952-1955 und 1993-1998*. Boğazköy-Ḫattuša 27. Berlin: De Gruyter.

Siennicka, M., and A. Ulanowska. 2016. "So Simple yet Universal. Contextual and Experimental Approach to Clay 'Spools' from Bronze Age Greece." In *Textiles and Dyes in Antiquity. Textiles, Basketry and Dyes in the Ancient Mediterranean World. Proceedings of the Vth International Symposium on Textiles and Dyes in the Ancient Mediterranean World (Montserrat, 19-22 March, 2014)*, edited by J. Ortiz, C. Alfaro, L. Turell, and M.J. Martínez, 25-35. Purpureae Vestes 5. Valencia: Universitat de València.

Simon, Z. 2020. "The Formation of the Neo-Hittite States in Karkemish, in its Successor States and in the Breakaway Territories: An Overview of Political History." In *Formation, Organisation and Development of Iron Age Societies. A Comparative View. Proceedings of the Workshop held at the 10th ICAANE in Vienna, April 2016*, edited by A.E. Sollee, 151-71. Oriental and European Archaeology 15. Vienna: Österreichischen Akademie der Wissenschaften.

Siracusano, G. 2012. "An Amazing Discovery at Arslantepe (East Anatolia): Unusual Find of a Cheetah in an EBA III Level." In *Proceedings of the General Session of the 11th International Council for Archaeozoology Conference (Paris, 23-28 August 2010)*, edited by C. Lefèvre, 165-81. BAR-IS 2354. Oxford: Archaeopress.

Siracusano, G. 2020. "Preliminary Faunistic Research of the Middle Bronze Age (V-A) at Arslantepe." *Pathways through Arslantepe. Essays in Honour of Marcella Frangipane*, edited by F. Balossi Restelli, A. Cardarelli, G.M. Di Nocera, L. Manzanilla, L. Mori, G. Palumbi, and H. Pittman, 591-98. Rome: Sapienza Università di Roma.

Siracusano, G. Forthcoming. "From Shepherds to Farmers at Arslantepe (Eastern Turkey) during Early Bronze Age II and III, from 2750 to 2000 BC." In *Proceedings of the ASWA XVIIth International meeting, 3rd to 7th of June 2019 Barcelona.* Oxford: British Archaeological Report.

Spinazzi Lucchesi, C. 2018. *The Unwound Yarn. Birth and Development of Textile Tools between Levant and Egypt.* Antichistica 18. Studi Orientali 8. Venice: Edizioni Ca' Foscari.

Steadman, S.R., G. McMahon, T.E. Serifoğlu, M. Cassis, A.J. Lauricella, L.D. Hackley, S. Selover, B. Yıldırım, B.S. Arbuckle, M. von Baeyer, Y. Heffron, K. Tardio, S. Adcock, E. Dinç, G. Özger, B. Selvi, S. Offutt, and A. Hartley. 2019. "The 2017-2018 Seasons at Çadır Höyük on the North Central Plateau." *Anatolica* 45:77-119.

Teichert, M. 1975. "Osteometrische Untersuchungen zur Berechnung der Widerristhöhe bei Schafen." In *Archaeozoological Studies: Papers of the Archaeozoological Conference 1974, Held at the Biologisch-Archaeologisch Instituut of the State University of Groningen*, edited by A.T. Clason, 51-69. Amsterdam: North-Holland Pub. Co. / New York: American Elsevier.

Uerpmann, H.-P. 1973. "Animal Bone Finds and Economic Archaeology: A Critical Study of 'Osteo-Archaeological' Method." *WorldArch* 4.3:307-22.

Vigne, J.-D., and D. Helmer. 2007. "Was Milk a 'Secondary Product' in the Old World Neolithisation Process? Its Role in the Domestication of Cattle, Sheep and Goats." *Anthropozoologica* 42.2:9-40.

von den Driesch, A. 1976. *A Guide to the Measurement of Animal Bones from Archaeological Sites*. Peabody Museum Bulletins 1. Cambridge: Harvard University Press.

von den Driesch, A., and J. Boessneck. 1981. *Reste von Haus- und Jagdtieren aus der Unterstadt von Boğazköy-Ḫattuša: Grabungen 1958-1977*. Boğazköy-Ḫattuša 11. Berlin: Gebr. Mann Verlag.

von den Driesch, A., and K. Vagedes. 1997. "Archäeozoologische Untersuchungen in Kuşaklı." *MDOG* 129:122-34.

von den Driesch, A., and N. Pöllath. 2004. *Vor- und frühgeschichtliche Nutztierhaltung und Jagd auf Büyükkaya in Boğazköy-Ḫattuša, Zentralanatolien*. Boğazköy-Berichte 7. Mainz am Rhein: Philipp von Zabern.

Welton, L., T. Harrison, S. Batiuk, E. Ünlü, B. Janeway, D. Karakaya, D. Lipovitch, D. Lumb, and J. Roames. 2019. "Shifting Networks and Community Identity at Tell Tayinat in the Iron I (ca. 12th to Mid 10th Century B.C.E.)." *AJA* 123.2:291-333.

Wilkens, B. 1998. "The Faunal Remains. Tell Afis (Siria)." In *Tell Afis (Siria). Scavi sull'acropoli 1989-1992 / The 1988-1992 Excavations on the Acropolis*, edited by S.M. Cecchini and S. Mazzoni, 433-50. Ricerche di Archeologia del Vicino Oriente 1. Tell Afis 1. Pisa: ETS.

Zeder, M.A. 1991. *Feeding Cities: Specialized Animal Economy in the Near East*. Smithsonian Series in Archaeological Inquiry. Washington, D.C. / London: Smithsonian Institution Press.

Zeder, M.A. 2001. "A Metrical Analysis of a Collection of Modern Goats (*Capra hircus aegargus* and *C. h. hircus*) from Iran and Iraq: Implications for the Study of Caprine Domestication." *JAS* 28:61-79.

Zeder, M.A. 2006. "Reconciling Rates of Long Bone Fusion and Tooth Eruption and Wear in Sheep (Ovis) and Goat (Capra)." In *Recent Advances in Ageing and Sexing Animal Bones. Proceedings of the 9th Conference of the International Council for Archaeozoology, Durham August 2002,* edited by D. Ruscillo, 87-118. Oxford: Oxbow Books.

Zeder, M.A. 2008. "Animal Domestication in the Zagros: An Update and Directions for Future Research." In *Actes des huitièmes Rencontres internationales d'Archéozoologie de l'Asie du Sud-Ouest et des régions adjacentes,* edited by E. Vila, L. Gourichon, A.M. Choyke, and H. Buitenhuis, 1:243-77. Archaeozoology of the Near East 8. Travaux de la Maison de l'Orient Méditerranéen 49. Lyon: Maison de l'Orient et de la Méditerranée.

Zeder, M.A., and S.R. Arter. 1994. "Changing Patterns of Animal Utilization at Ancient Gordion." *Paléorient* 20.2:105-18.

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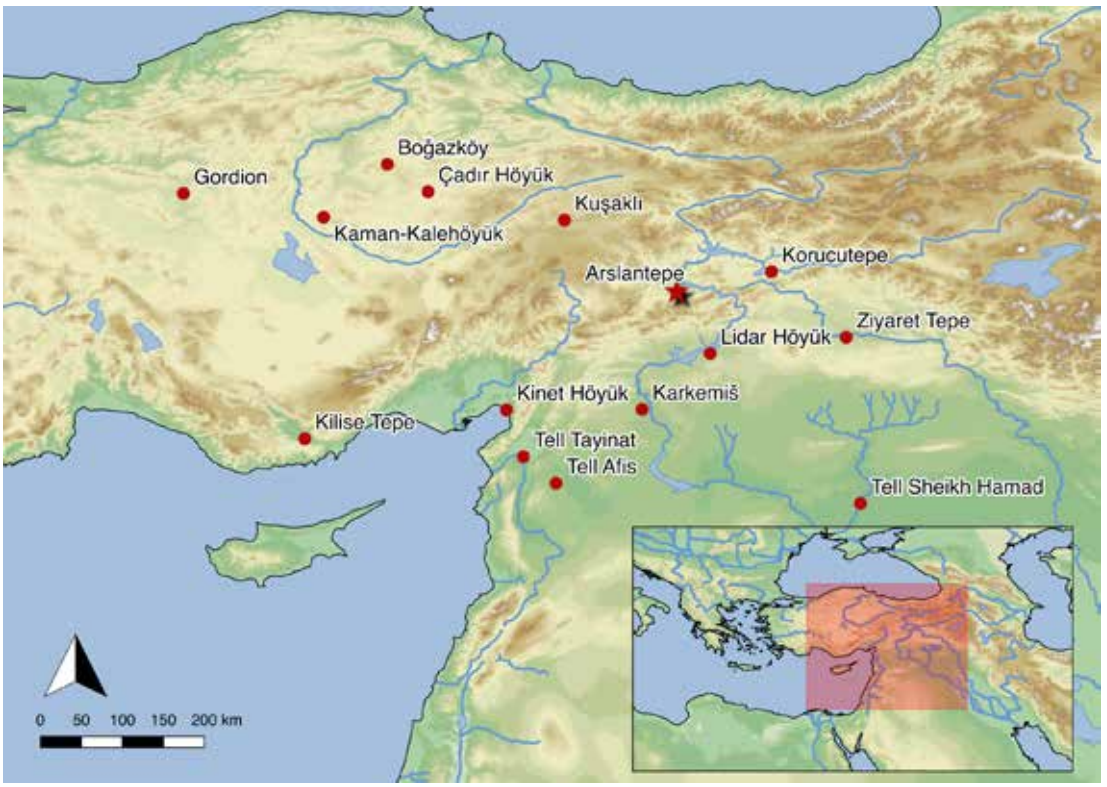

FIG. 1 Map of Anatolia and northern Syria with the main sites mentioned in the text (modified data courtesy of National Centers for Environmental Information – ETOPO1: doi:10.7289/V5C8276M, Natural Earth and Geo Network opensource).

FIG. 2 Arslantepe, Early Iron Age monumental sequence (Photo: R. Ceccacci, ©MAIAO).

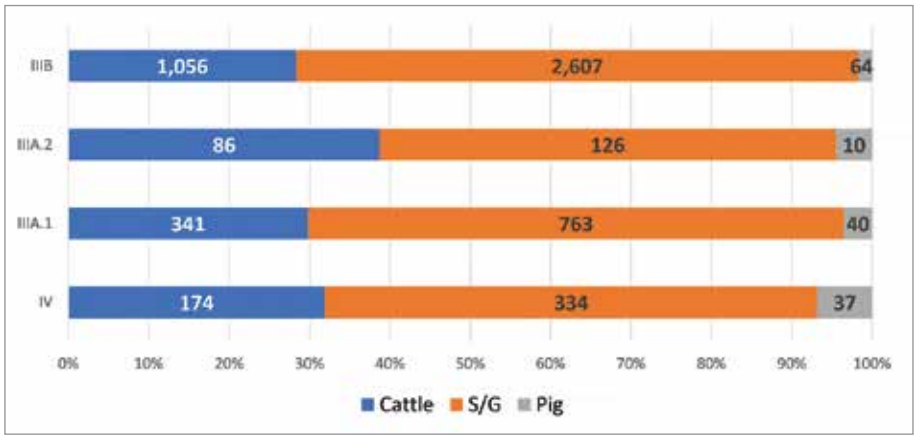

FIG. 3
Arslantepe, percentages of domestic ungulates (NISP) from Late Bronze Age II (Arslantepe IV) to Early Iron Age II (Arslantepe IIIB).

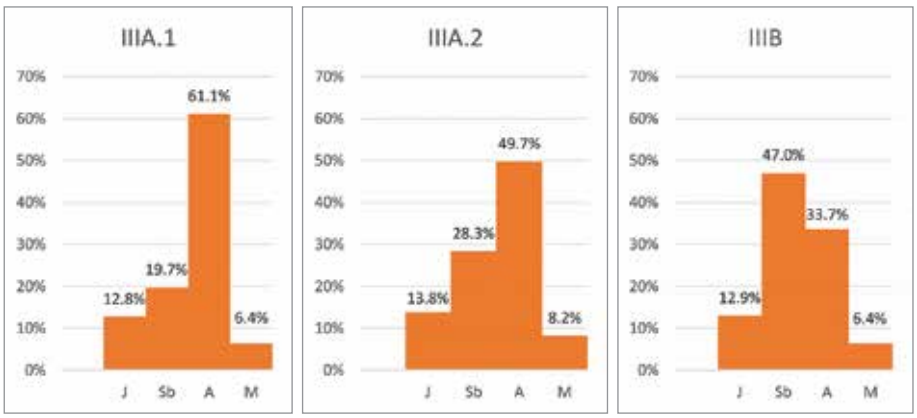

FIG. 4
Arslantepe, kill-off pattern histogram of caprines according to four general age classes: J (infant-juvenile <12 months), Sb (subadult-immature one-two years), A (adult two-six years), M (mature-senile > six years) distributed over the three analyzed levels (IIIA.1 = 203 specimens; IIIA.2 = 159 specimens; IIIB = 551 specimens).

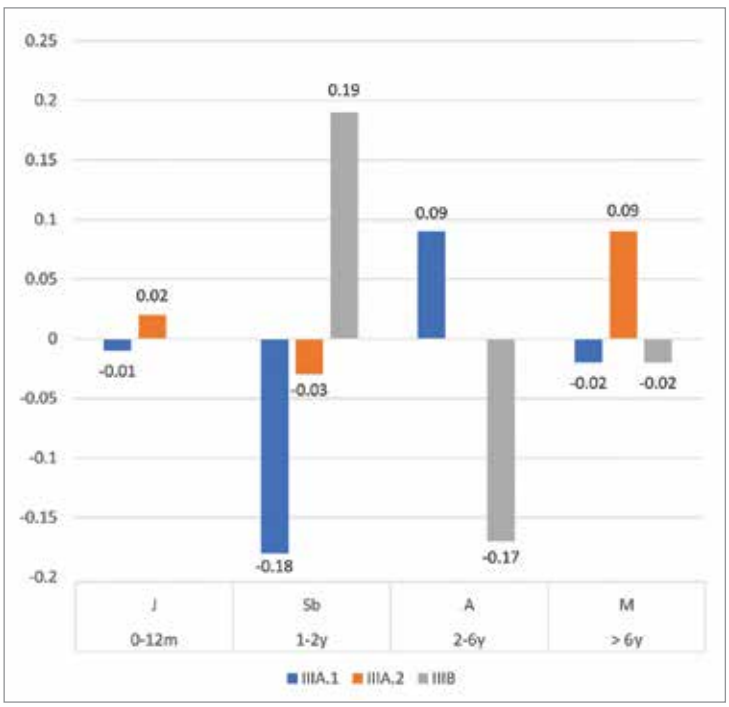

FIG. 5
Arslantepe, logarithm comparing the mortality trend of each of the three examined phases with the average of the entire period using the Size Log Index (Meadow 1999). The x-coordinate 0 references the whole examined period.

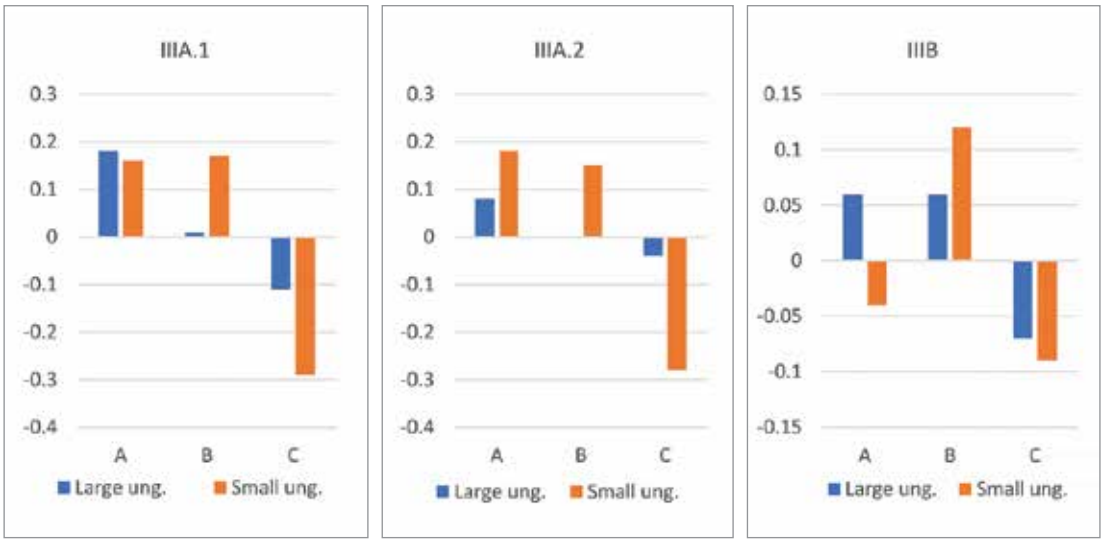

FIG. 6 Arslantepe, logarithm of the incidence of each meat category (A, B, C) in respect of an intact skeleton distributed over the three analyzed Early Iron Age levels.

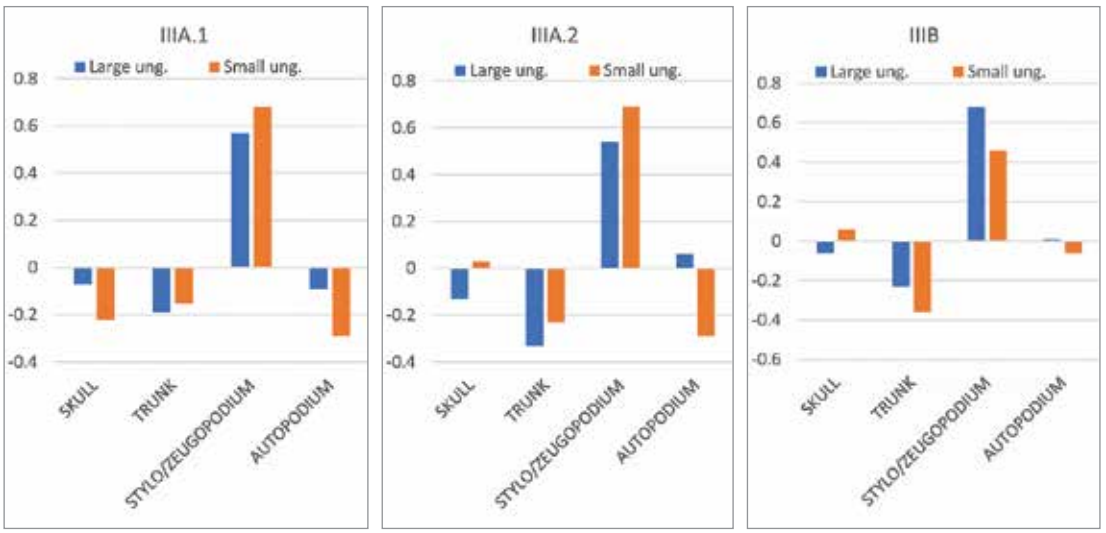

FIG. 7 Arslantepe, logarithm of body portion incidence distributed over the three analyzed Early Iron Age levels.

TAXA	ARSLANTEPE IIIA.1			ARSLANTEPE IIIA.2			ARSLANTEPE IIIB		
	NUM	%IIIA.1	%DOM	NUM	%IIIA.2	%DOM	NUM	%IIIB	%DOM
Horse (*Equus caballus*)	19	1.3%	1.5%	1	0.1%	0.1%	1	0.0%	0.0%
Donkey (*Equus asinus*)	22	1.5%	1.7%	23	2.1%	2.4%	4	0.1%	0.1%
Equids	8	0.5%	0.6%	6	0.6%	0.6%	15	0.3%	0.4%
Cattle (*Bos taurus*)	382	25.3%	30.2%	343	31.9%	35.7%	1,056	24.6%	28.1%
Sheep *(Ovis aries*)	131	8.7%	10.4%	88	8.2%	9.1%	330	7.7%	8.8%
Goat (*Capra hircus*)	35	2.3%	2.8%	29	2.7%	3.0%	154	3.6%	4.1%
S/G unid.	591	39.1%	46.8%	445	41.4%	46.3%	2,123	49.5%	56.5%
Pig (*Sus scrofa domesticus*)	55	3.6%	4.4%	23	2.1%	2.4%	64	1.5%	1.7%
Dog (*Canis lupus familiaris*)	20	1.3%	1.6%	4	0.4%	0.4%	13	0.3%	0.3%
TOTAL DOMESTIC	1,263		DOM/WILD 92.0%	962		DOM/WILD 93.1%	3,760		DOM/WILD 98.3%
			%WILD			%WILD			%WILD
Aurochs (*Bos Primigenius*)	2	0.1%	1.8%	1	0.1%	1.4%	4	0.1%	6.2%
Wild caprine	4	0.3%	3.6%	10	0.9%	14.1%	4	0.1%	6.2%
Red deer (*Cervus elaphus*)	75	5.0%	68.2%	43	4.0%	60.6%	23	0.5%	35.4%
Roe deer (*Capreolus capreolus*)	1	0.1%	0.9%	0	0.0%	0.0%	2	0.0%	3.1%
Fallow deer (*Dama dama*)	7	0.5%	6.4%	8	0.7%	11.3%	1	0.0%	1.5%
Cervids	0	0.0%	0.0%	2	0.2%	2.8%	1	0.0%	1.5%
Wild boar (*Sus scrofa*)	5	0.3%	4.5%	1	0.1%	1.4%	2	0.0%	3.1%
Hare (*Lepus capensis*)	1	0.1%	0.9%	6	0.6%	8.5%	11	0.3%	16.9%
Brown bear (*Ursus arctos*)	13	0.9%	11.8%	0	0.0%	0.0%	8	0.2%	12.3%
Wolf (*Canis lupus*)	2	0.1%	1.8%	0	0.0%	0.0%	9	0.2%	13.8%
TOTAL BIG GAME	110			71			65		
Rodents	0	0.0%		0	0.0%		7	0.2%	
Aves sp.	2	0.1%		0	0.0%		9	0.2%	
Pisces sp.	0	0.0%		0	0.0%		10	0.2%	
Turtle (*Testudo graeca*)	3	0.2%		0	0.0%		7	0.2%	
TOTAL SMALL WILD	5			0			33		
TOTAL IDENTIFIED	1,378			1,033			3,858		
Large mammals	107	7.1%		29	2.7%		279	6.5%	
Large/medium mammals	31	2.1%		14	1.3%		144	3.4%	
Small mammals	1	0.1%		0	0.0%		44	1.0%	
TOTAL BONES	1,512			1,076			4,292		

TABLE 1 Arslantepe, Early Iron Age number of identifiable specimens (NISP) and their relative percentages. The specimens are grouped by levels (IIIA.1, IIIA.2, and IIIB) and sub-totals of taxa sets (domestic animals, big game hunting, small wild animals, and undefined mammals).

Age Category	Age Class	IIIA.1	%	IIIA.2	%	IIIB	%
A	0-2m	6	**6%**	0	**0%**	0	**0%**
B	2-6m	3.6	**4%**	0	**0%**	3.3	**1%**
C	6-12m	9.6	**9%**	8	**12%**	67.4	**17%**
D	1-2y	17.4	**17%**	11	**16%**	136.4	**34%**
E	2-3y	31.6	**31%**	22	**32%**	121,5	**30%**
F	3-4y	21,3	**21%**	22	**32%**	38.1	**9%**
G	4-6y	9.1	**9%**	4,4	**6%**	21.9	**5%**
H	6-8y	2.25	**2%**	1.35	**2%**	10.8	**3%**
I	8-10y	0.25	**0%**	0.75	**1%**	3.5	**1%**

TABLE 2 Arslantepe, caprine tooth wear and eruption following Payne (1973) and Vigne and Helmer (2007).

Period	Sex	Cattle	%	Sheep	%	Goat	%
IIIA	♂	24	66.7%	32	86.5%	15	71.4%
	♀	12	33.3%	5	13.5%	6	28.6%
TOT	RATIO ♂/♀	36	2.00	37	6.40	21	2.50
IIIB	♂	54	57.4%	39	55.7%	17	65.4%
	♀	40	42.6%	31	44.3%	9	34.6%
TOT	RATIO ♂/♀	94	1.35	70	1.26	26	1.89

TABLE 3 Arslantepe, sex ratio based on morphological features and sexual dimorphism.

Age Category	Age Class	Arslantepe IV	Lidar Höyük LBA	Arslantepe IIIA.1	Kinet Höyük 14-13	Kilise Tepe IId	Arslantepe IIIA.2	Arslantepe IIIB	Kinet Höyük 12	Kilise Tepe IIe	Kaman IId	Büyükkaya Eisenzeit	Çadır Höüük EIA
J	0-12m	14.5%	23.0%	13.0%	19.0%	42.0%	14.0%	13.0%	7.7%	38.0%	5.0%	17.3%	22.0%
Sb	1-2y	30.4%	21.0%	20.0%	19.9%	12.0%	28.0%	47.0%	13.8%	10.0%	15.0%	33.2%	18.0%
A	2-6y	49.3%	57.0%	61.0%	52.0%	38.0%	50.0%	34.0%	73.5%	50.0%	73.0%	45.7%	47.0%
M	> 6y	5.8%	0.0%	6.0%	9.2%	8.0%	8.0%	6.0%	5.1%	2.0%	8.0%	3.8%	13.0%

TABLE 4 Age classes grouped by period and compared to other sites quoted in the texts (data from Kussinger 1988; Kabatiar 2019-2020; Baker 2008; Hongo 1993; von den Driesch and Pöllath 2004; Ross et al. 2019).

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Inscribed Ostotheks, Sarcophagi, and a Grave Stele from Phaselis

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Abstract

This article presents inscribed funerary monuments consisting of two ostotheks, two sarcophagi, and a grave stele discovered during investigations carried out since 2015 in the necropoleis of the ancient city of Phaselis. The ostotheks date from the Hellenistic period based upon the letters of the inscriptions. One belongs to a physician named Hermas, while the other to the daughter of Lysanias. The grave stele, of which only the lower profile and the last line of the inscription has survived, also dates to the Hellenistic period. From their inscriptions the sarcophagi belonged to a citizen of Phaselis named Epaphrodeitos and to a person named Kougas. Both were dated to the second-third centuries AD. The funerary monuments discussed here provide new data on the onomastics of the city through their epigraphic data, and allow an evaluation of the inhumation and cremation tomb types of the city. This article provides a fresh contribution to studies of the city's tomb types and funerary inscriptions about which, up to this point, very limited information is known. In the first part of the study, the inscriptions on the funerary monuments are discussed, and the locations of the inscribed monuments within the city's necropolis are evaluated. The necropoleis of Phaselis are examined concerning tomb types in the evaluation and conclusion.

Keywords: Phaselis, necropolis, sarcophagus, ostothek, grave stele, funerary inscriptions

Öz

Burada ele alınan makalede, 2015 yılından itibaren Phaselis antik kenti nekropolislerinde sürdürülen yüzey araştırmalarında tespit edilen yazıtlı iki ostothek, bir stel ve iki lahitten oluşan mezar anıtları tanıtılmaktadır. Taşıdıkları yazıtların harf karakterleri dolayısıyla Hellenistik Dönem'e tarihlendirilen ostothek anıtlarından birinin Hermas adlı bir hekime; diğerinin ise Lysanias'ın kızına ait olduğu öğrenilmektedir. Sadece alt profili ve son satırındaki yazıtı korunmuş olan mezar steli de Hellenistik Dönem'e aittir. Üzerindeki yazıtlardan Epaphrodeitos adında bir Phaselis vatandaşı ile Kougas adında başka birine ait olduğu öğrenilen lahit mezarlar, MS 2-3. yüzyıllara tarihlendirilmiştir. Burada ele alınan söz konusu mezar anıtları, epigrafik verileri aracılığıyla kentin onomastik birikimine yeni veriler sunmanın yanı sıra kentin inhumasyon ve kremasyon mezar türlerine dair değerlendirmeler yapmayı mümkün kılmaktadır. Makale, konu edindiği mezar anıtları ve yazıtlar aracılığıyla, günümüze kadar hakkında oldukça sınırlı bilgiye sahip olunan kentin mezar türleri ve yazıtlarına ilişkin çalışmalara ademik bir katkı sunmayı amaçlar. Çalışmanın ilk kısmında, mezar anıtlarının üzerindeki yazıtlar ele alınacak; değerlendirme ve sonuç kısmında ise mezar türleri açısından Phaselis nekropolisleri irdelenerek, yazıtlı anıtların kent nekropolisleri içindeki konumları değerlendirilecektir.

Anahtar Kelimeler: Phaselis, nekropolis, lahit, ostothek, mezar steli, mezar yazıtı

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There are three necropoleis in Phaselis, designated by their location as northeast, northwest, and west. Outside the peninsula where the settlement pattern is densest, the necropoleis spread west to northeast.[1] The studies conducted to date have documented examples of sarcophagi, vaulted tombs, ostotheks, chamosoria, rock tombs, and monumental tombs. The final number has not yet been determined as studies are still ongoing. Still, due to the ongoing documentation work, it is known that there are hundreds of tombs within the necropoleis of Phaselis. The number of epitaphs from them known so far is disproportionate to the number of tombs identified. The first reason for this is that the sarcophagi were made of low-quality limestone and covered with plaster in antiquity. The inscriptions belonging to this type of tombs must have been written with paint on the plastered surface. The plaster remains found on some graves also indicate this situation. Another reason is that no excavation work has yet been performed in the necropolis areas of the city. A total of 13 epitaphs from the city have been published to date, including one grave stele dated to the Late Classical / Early Hellenistic period,[2] three grave steles from the Hellenistic period,[3] one ostothek dated to the Hellenistic period,[4] seven epitaphs from the Roman period inscribed on the sarcophagus,[5] and one epitaph on a tomb altar.[6] It is assumed that the number of early (Classical / Hellenistic) grave stelae and ostotheks, which are thought to have been used mainly in monumental tombs, will increase with ongoing research in the city.

1. Epitaph of Lysanias Daughter Nē..

The ostothek numbered 3KD.01 was discovered on the eastern edge of the city's northern settlement in a burial chamber with destroyed walls during studies in 2016.[7] The ostothek is rectangular, of limestone, and broken and missing from the beginning of the ash-container. Its lid is not present. The front and sides of the ostothek are smooth while the back was left rough. On its front there is a three-line inscription. Its dimensions are 0.44 m in width, 0.31 m in length, and 0.26 m in depth. On the inscribed obverse, two rows of wiping profiles are carved in the lower part of the stone.

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1 Gürel 2016, 281.

2 Adak et al. 2005, 16-17, no. 13 ([. . . .]άρεος τοῦ | [Δ]αμοκράτεος).

3 *TAM* 2.3, 1218 (Δωρί[ων]ος | τοῦ | Νυμφοδότου); Adak et al. 2005, 17, no. 14 (Ἐπικρατίδας | Ἀναξι[κρ]άτευς | Ῥόδιος) and 17-18, no. 15 ([Μ]ενέδαμος | [Τ]ιμακλείδα).

4 Tüner-Önen 2015a, 32-33, no. 5 (Ναΐδος | τᾶς | Ἀθανίωνος | γυναικός).

5 *TAM* 2.3, 1211 (Αὐρ(ήλιος) Τροκόνδας τὴν | σορὸν ἑαυτῷ· [ἐὰν δέ] | τις ἕτε[ρος ἐνταφῇ, ἐκ]|τείσ<ε>[ι ὁ θάψας τῷ ἱε]||ρ<ω>τά[τῳ ταμείῳ] | φ΄); 1212 (Αὐρ(ήλιος) Μόλη<ς> Τροκόν[δου] | τὸν τύμβον κατεσ[κεύασεν] | ἑατῷ καὶ τῇ γεν[ομένῃ γυναι|κ]ί μου Ἀφφαροῦτ<ι κ>[αὶ τῇ νῦν] | οὔσῃ μοι γυ{γυ}<ναι>κὶ Ἀφφι[ανῇ | κ]αὶ τῷ ἀδελφῷ μο[υ Αὐρ(ηλίῳ) - -] | καὶ ᾧ ἂν ἐνγράφως συ[νχωρή|σω· ἄλλ]ῳ δὲ οὐδενὶ ἐξὸ[ν ἔσται, | ἢ] ὁ ἐνκηδεύσας [τ]εί[σει προστεί]||μου ἱερ[ὰ - -]); 1216 (– – – | κηδευθῆνε δ[ὲ ἐν τῷ ὑπο?]|σορ<ίῳ> τὰ Ἑκα[…… καὶ?] | τὰ Ἀμφ[ι - - - θρεπτά].); Blackman 1981, 148-49, no. 8 (Ἀριστίωνος | τοῦ | Κανώπου); Tüner-Önen 2008, 355-56, no. 45 (Ἡρόφιλος ΑΝ..Ο. …… . ΟΑΣ | ΔΕΜΕ κατέσκ[ευασ]α τὸ α[νγε]ῖον | μ[οι] καὶ γυναικὶ μου [κ]αὶ τέ<κ>ν[ῳ] | Ἡροφίλῳ καὶ γυναικὶ [τ]οῦ Ἡ|ροφίλου Ἰόλῃ καὶ τοῖς τέ[κ]νοις | Ἀμμίᾳ καὶ Ἡροφίλῃ [ἄ]λλῳ | δὲ οὐ[δ]ενί . εἰ δὲ τις [ἄ]λλος | ἐνκηδευθείη ἀποτείσε | [τῇ γλ]υ[κ]υτάτῃ πατρίδι πρὸς | τε[ίμο]ν Ж πεντακόσια); 358-59, no. 48 (Ἐλπιδη[φόρ]ος . . Ε. . . . Ο. . . . ΗΛΗ | ποσι [. . .c.8 Ὀλυμπ]ηνὸς [κα]τεσ[κ]ε[υ]α|σεν [τ]ὸ ἀνγ[εῖο]ν [- -- - - -] τε [. .5-6 . .] | μηνατι ἑαυτῷ καὶ [γυναικὶ καὶ τέκνῳ Εὐ]||τυχιανῷ ΛΕΛ[. . .c.5 . .]σ[- - - - - - - - - Ὀ|λυμπηνῇ καὶ τ[έ]κνοις ἐ[ξ ἀυτῶν μό]νο[ις]· | ἐπὶ τῷ μηδένα ἕ[τερ]ο[ν] ο[ἰξει]ν ἐ[ξ]ο[υ]||σίαν κηδεῦσαι [τι]ν[α,- - - - - - - - - - - - - - . | ἐά[ν] δέ [τ]ι[ς] εὐ[ρεθείη] τ[ινα] τ[ιθ]ῶν, ἀ|ποδ[ώ]σει ἰε[ρ]ω[τάτῳ φίσκῳ] . σ [. . . .]σια); 359-60, no. 49 (Σομνη . . Ν[- - - - - - -] | Εὐτυχής . . . Δ[- - - - - - -] | ΤΑΤΑΙΙ . ΝΛΙ . . ΔΕΜΗΝ . Λ[- - - - - - -] | ΑΔΕΙΜ . Ν . . Υ . καὶ τέκνοις [καὶ ἐνγό-]||νοις κα[ὶ] ΑΣΜ . ΝΑ . Λ . ΙΑΙΝΗΜΕΝ οὐδ|ετέρου ἔχοντος ἐξουσίαν ἐνκη|δεῦσαί τινα ἢ ἀποδώσει τῶ[ι] [ἱ]ε[ρω]||τάτῳ φί]σκω[ι] ,α).

6 *TAM* 2.3, 1217 (Ναΐς Φρόκλου | ἀνέστησεν ἀνδρ[ὶ] | Αὐξάνοτι (*sic.*) μνή|μης χάριν).

7 Arslan and Tüner-Önen 2017, 186.

Letter height: 0.02 m (Ο: 0.025, Θ: 0.03 m)

Date: Hellenistic period according to the dialect and lettering.

Νη[….]ς
τᾶς Λυσανία
θυγατρός

Lysanias daughter Ne[. . .]'s (grave)

L. 1: The name expected in *femininum genetivus casus* in the first line should contain at least six, but not more than eight letters. It is very likely that the second letter of the name, whose first letter is clearly pronounced, is eta (η) because the lower part of two adjacent straight lines is clearly visible. In this case, names like Νησιάς (gen.: Νησιάδος), Νηληΐς (gen.: Νηληΐδος), Νηρεΐς (gen.: Νηρεΐδος), Νηλώ (gen.: Νηλοῦς)… etc. can be suggested.

L. 2: The inscription was written in the Doric dialect.[8] For the first time, the name Lysanias is documented in the city. The name in question is usually conjugated in Lycia as Λυσανίας, ου, while in continental Greece and the islands it is conjugated as Λυσανίας, α.[9] The second usage is also seen in Phaselis.

2. Epitaph of the Physician Hermas

This ostothek (?) numbered 3KD.O17 was discovered during the investigations in the northeastern necropolis in 2019. It was identifited as spolium inside the remains of a temenos wall during research carried out on the sarcophagus with hyposorion number 3KD.L15. It is located in a place rich in tomb types and density of the northeastern necropolis, where different tomb types such as sarcophagus, vaulted chamber tomb, and ostothek can be seen together. The wall was built with rubblestones and mortar, and extended to the west of the tomb. In the masonry, the ostothek's body (numbered 3KD.O17) was employed as spolium. It measures 0.28 m wide and 0.18 m high; however, the other parts of the block built against the wall with the inscription facing forward cannot be seen. As a result, it is uncertain whether it was an ostothek. Still, the inscription's content and the presence of an inscribed ostothek used as a spolium on the wall of a tomb in the same area led to its classification as an ostothek. The letters were partially damaged because they were covered with mortar during the masonry work.

Letter height: 0.016-0.020 m

Date: Hellenistic period according to the lettering (ξ Μ).

Ἑρμ[ᾶς] υἱὸς
[Ἐμ]βρομίου
ἰατρὸς χαῖρε.

Physician Hermas, son of Embromios, Farewell!

[8] For the displacement of α' with η in the Doric dialect, see Buck 1955, 21 and 37. Phaselis was a Doric colony and therefore the Doric dialect is seen; see Adak 2007, 41-42.

[9] Λυσανίας, for ου cf. *TAM* 2.2, 592, 2.3, 862, 938, see also *LGPN* 5B, 266; Λυσανίας, for α cf. Blinkenberg 1941, 705; *IG* 12.1, 197; *SEG* 39, 783c; see also *LGPN* 1, 292.

Hermas was the first recorded physician of Phaselis. To date, 17 inscriptions recording physician's names have been published from the cities of Lycia and Pamphylia, documenting a total of 15 physicians. In Lycia one inscription each is known from Oinoanda, Kadyanda, Lydai, Aperlai, and Khôma; two from Tlos and Xanthos; three from Rhodiapolis; and four from Sidyma.[10] In Pamphylia, only one physician from Perge is epigraphical documented.[11] These inscriptions, with the exception of that from Perge of the physician Asklepiades of Perge dated to the second century BC, all date from the Roman Imperial period. The earliest inscriptions in Lycia are associated with the physician Tib. Claudius Epagathos from Sidyma and date from the reign of Emperor Claudius.[12] Surprisingly, no epigraphic trace of a physician has been found dating before the middle of the first century AD in Lycia. Inscriptions of physicians are more common in the Hellenistic cities in Caria and Ionia. In the majority of honorary inscriptions from this period, the physicians functioned as ἰατροὶ δημόσιοι (= public physicians).[13] Usually, ἰατρός refers to a private physician; ἰατρὸς δημόσιος or ἀρχίατρος to a public physician. Therefore, it can be assumed that Hermas was a private physician.

Whether the physician Hermas mentioned in Phaselis was from Phaselis or not is not stated specifically, but the name of his father Ἐμβρόμιος is so far attested only in Arykanda.[14] This name may be connected with the names Εμβρομος and Ενβρομος, a local nomenclature documented in Phaselis and especially in eastern Lycian cities.[15] The inscription on an altar found at Mnara near Phaselis is the only example of this name (Εμβρομος) from the Hellenistic period in this region.[16] For this reason, Hermas must also be someone who is rooted in this region.

A votive inscription recovered from the city shows that the god Apollo Iatros was worshiped in Phaselis in the fourth century BC.[17] Since the fifth century BC, with the spread of the cult of Asclepius, the said god, whose worship decreased and disappeared over time, was intensively worshipped in Milesian colonies on the western and northern coasts of the Black Sea. The name of the god in the votive inscription recovered from Phaselis is given in the Doric dialect, like in the epitaph of Hermas (in Ionian dialect, *Ietros* = Ἰητρός). The god in question, whose origin is associated with Ionia or Thrace and the Scythians,[18] is compared by Aristophanes in *The Birds* to doctors who are paid like civil servants: "Apollo can heal them because he is a doctor and is paid for it."[19] It is unknown whether the god, also described as a "prophet,"[20] was worshiped in Phaselis as a healer or as a prophetic god. The inscription of Hermas could indicate that the healing aspect of the god prevailed in the city.

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10 Oinoanda (Holleaux 1886, 216, no. 1); Kadyanda (*TAM* 2.2, 663); Lydai (*TAM* 2.1, 147); Aperlai (*IGRR* 693); Khôma (Samama 2003, 396, no. 288); Tlos (*TAM* 2.2, 590 and 595); Xanthos (*TAM* 2.1, 339 and 369); Rhodiapolis (*TAM* 2.3, 906 and 910; *SEG* 56, 1777); Sidyma (*TAM* 2.1, 178, 184, 221 and 224); cf. Samama 2003, 387-99, nos. 276-90 and 439, no. 341; cf. Rémy and Delrieux 2007, 264-66.

11 Perge (Şahin 1999, 14-16, no. 12).

12 *TAM* 2.1, 178 and 184.

13 Massar 2001; 2005, 29.

14 Şahin 1994, 138-39, no. 177.

15 For these names see Zgusta 1964, 161-62, § 332-1 and 2. For those documented in Phaselis see also Tüner-Önen 2015b, 50; Gürel et al. 2019, 420.

16 Şahin 2014, 300.

17 Adak et al. 2005, 4-5, no. 2.

18 For assumptions about Ionic origin, see Ehrhardt 1989; On Thracian and Scythian origin, see Ustinova 2009, 245-87.

19 Ar. *Av.* 584: εἶθ' ὅ γ' Ἀπόλλων ἰατρός γ' ὢν ἰάσθω· μισθοφορεῖ δέ.

20 For the definition of God as both a "doctor" and a skilled "physician," see Ar., *Plut.* 8-12.

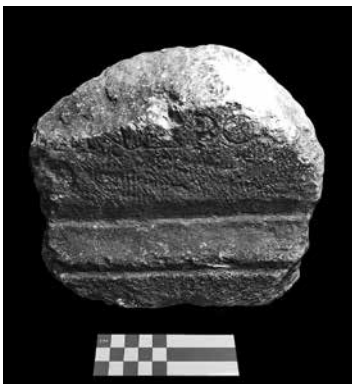
3. Grave Stele

It was discovered as a surface find near the temple tomb in the Northern Necropolis in 2019. The upper part of the limestone stele profiled from below is broken, and only one line of the inscription is preserved.

Dimensions: Height: 0.18 m; width: 0.19 m; depth: 0.10 m; letter height: 0.025 m

Date: Hellenistic period (because of form and size of the stele).

It is not easy to estimate the height of the stele, as it has been transversely broken in the middle. However, based on the width and depth dimensions, it is possible to estimate a maximum height of 0.40-0.50 m.



. . ΝΔΡΟ.

Therefore, the inscription on the stele should at most be 2-3 lines long. However, it should be remembered that there may also be a shorter and single-line inscription. In the case of a single-line inscription on the stele, a name in the *nominativus* or *genetivus casus* with a maximum of six letters can be considered. Both usages are found on grave stelae of the Hellenistic period. It may be completed as [Ἄ]ν̣δρο[ς] / [Ἄ]ν̣δρο[υ] based on the letters read on the stone. If the inscription on the stele extended over more than one line, the father's name of the grave owner is expected in the last line. For this reason, the name here can only be completed in *genetivus casus*. Since with this name, which should correspond to the father's name, a name can be considered that continues from the top line. Many names ending in -άνδρου can be suggested: Ἀρίστανδρος/Κλέανδρος/Ἀλέξανδρος/Μέναν̣δρος ...etc.[21]

4. Epitaph of Epaphrodeitos and Dositheia

The sarcophagus numbered 3KD.L29, discovered during investigations in the Northeast Necropolis in 2019, is located on the eastern edge of the Northern Settlement. It is on the highest elevation compared to other tombs discovered so far. This area has a sloping topography. Possibly the sarcophagus fell on its front during an earthquake, and the lid slipped three meters in front of the sarcophagus. The sarcophagus and its saddle roof lid are preserved intact. During the cleaning and arrangement works carried out in the area, the body of the sarcophagus was raised from where it was, and the 14-line inscription on the obverse was recovered. The tomb is made of limestone, and the surface has been ruined due to the erosion of the stone's structure. The inscription is difficult to read due to decay and fragmentation on the surface of the tabula. It was determined that the inscription on the tabula extends onto the tabula frame on the right side.[22]

The sarcophagus was situated in a northeast-southwest direction as indicated by the cutting into the bedrock directly behind its findspot. To maintain the height of the bedrock, a wall was created from rubblestones in some areas. The sarcophagus measures 1.03 m in width, 2.24 m in length, and 1.10 m in height. The internal depth is 0.66 m, and the cushion arrangement is not visible. The lid in saddle roof form is 1.07 m wide, 2.29 m long, and 0.56 m high. The lid,

[21] For the nomenclatures of the Classical and Hellenistic periods documented in Phaselis, see Tüner-Önen 2015b, 40-43.

[22] Arslan and Tüner-Önen 2019, 453-54.

solid and upside down, has two consoles on the long sides and one console on each narrow side. These consoles have been left unprocessed.

Table dimensions: Height: 0.75 m; width: 1.05-0.62 m; letter height: 0.04 m

Date: Second-third centuries AD

Ἐπαφρόδειτος Ἀπολ-
λωνίου τοῦ Ἕρμωνος
Φασηλείτης [κα]ὶ Δωσιθέα
Ἀρισταινέτας τὸ μν[η]–
μεῖον ἑαυτοῖς κατεσκεύ-
ασαν ἐπὶ τῷ αὐτοὺς εἰς αὐ-
τὸ τεθῆναι καὶ Μόλην τὸν
ἠλευθερώμενον ὑπὸ τοῦ
Ἐπαφροδείτου καὶ ἄν τεινα
ποιήσω, ἀλλῷ δὲ μηδενὶ
ἐξεῖναι ταφῆναι ἐν τουτῷ
τῷ μνημεί[ῳ], ἐὰν δέ τις τολ-
μήσῃ θ[άψαι] ὀφει[λέσ]ει ἱε-
ρὰ Ἀθηνᾷ Πολιάδι * ˏα[φ΄].

Epaphrodeitos of Phaselis, son of Apollonios, son of Hermon, and Dositbea, daughter of Aristaineta, built this tomb for themselves under the condition that they (i.e. Epaphroditos and Dositbea) be buried in it and Moles, who was freed by Epaphrodeitos, and whoever I will indicate, to be put into it. No someone else shall be allowed to bury in this tomb; if anyone dares, he will pay to the Athena Polias a thousand [five hundred] denarii.

L. 1-2: The name Epaphrodeitos is mentioned for the first time in Phaselis and its territory. It is frequently documented in cities in Southwest Anatolia and Lycia.[23] The name of the father Apollonios is also a first from the city, but it is a name common both in the area and in the region.[24] Although the name of the grandfather Hermon is widely documented in the cities of Caria and Western Lycia, it is recorded for the first time in the city and its territory.[25] It is noteworthy that the names of all three generations are *theophoric*.

L. 3-4: The name of Δωσιθέα is also documented here for the first time in the city. Although the masculine form of this name Δωσίθεος is frequently recorded in the Lycian region, the feminine form is less frequently used.[26] Dosithea has created a matrilineal order by taking her mother's

23 Cf. *LGPN* 5B, 137-38.

24 Cf. Tüner-Önen 2015b, 46; *LGPN* 5B, 41-47.

25 *LGPN* 5B, 154-55.

26 Cf. *LGPN* 5B, 127. The masculine form of the aforementioned name was mostly used in the Hellenistic period, especially by Jews; see *CPJ* 1, 19.

name instead of her father's, in addition to her own. With this aspect, the inscription is the first inscription so far showing a matrilineal order in Phaselis. In the passage in which he gives information about the Lycians, Herodotus mentions that the most notable tradition among the Lycians was that they took their names from their mothers and not from their fathers.[27] Herodotus also said when a Lycian man was asked about his ancestry, he named his mother's name after his name and then listed his maternal ancestry. This passage from Herodotus has caused much controversy in modern research.[28] Here, of course, the term "matrilineal" should not be confused with the term "matriarchy." The situation in Lycia to which Herodotus refers does not indicate a form of social organization in which power resides with women. In addition, there is no definite data on a specific type of inheritance in which ownership is passed down through the female line. Only in some inscriptions from the Roman period are there records referring to maternal descent.[29] Dosithea's maternal name Ἀρισταινέτα is first documented in Phaselis. The cognate masculine form Ἀρισταίνετος, on the other hand, is documented on two Hellenistic-period coins.[30] At the same time, a local historian who lived in the Hellenistic-Roman period and is recorded to have written a book entitled *On Phaselis* (περὶ Φασήλιδα) carries the same name.[31]

L. 4-5: That the tomb was built by its owners is indicated by the expression τὸ μν[η]||μεῖον. The origin of this word, which means "monument, memorial, memorial, etc." is based on the verbs "remember" (= μνάομαι) and "recall" (μιμνήσκω). It is also used in the sense of "grave" because it preserves after death the memory of the people who died.[32] This word, which can be applied to both monumental and simple tombs, most likely relates not only to the sarcophagus in which the burial took place but also to the location of the sarcophagus. So far, the words τὸ ἀγγεῖον have been recorded on two sarcophagi in the urban necropolis, τὸ σορόν on a sarcophagus, and τὸ τύμβον on a tomb monument. However, the type could not be precisely determined, as E. Kalinka recorded it as a rectangular block of marble.[33] On the other hand, it shows that the term ἡ σωματοθήκη (= sarcophagus) is extensively used on the sarcophagi of the territory.[34] It is hard to see the difference between these names, each carved on the sarcophagus. It can be only said that all the sarcophagi found in territory of the city are very richly decorated compared to those in the necropoleis of Phaselis.

L. 5-9: Between these lines, the grave owners recorded who will be buried in the grave. First, they emphasized only themselves, then noted the name of Moles whom Epaphrodeitos freed. They left open the case of people they could add to these. The name of Moles is documented for nine people in the city and its area.[35] Moles is the first freedman to be laid by his master in his tomb at Phaselis. Four other freedmen are known to honor their lord Moles on an earlier honorary inscription.[36] τεινα = τινα.[37]

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27 Hdt. 1, 173.

28 See Pembroke 1965.

29 *TAM* 2.1, 53, 223, 2.2, 438, 442, 453, 601, 605, 611, 629, 693, 2.3, 802, 855, 872, 886. For known examples from Olympos, the neighboring city of Phaselis, see *TAM* 2.3, 952, 955, 965, 984, 1000, 1028, 1042, 1049, 1053, 1058, 1083, 1113, 1121, 1122, 1130, 1148, 1151, 1162; also cf. Pembroke 1965, 221.

30 Heipp-Tamer 1993, 134, nos. 93-94, table 5; 158, no. 357, table 28.

31 Steph. Byz., s.v. Γέλα.

32 *LSJ*[9], 1139, s.v. μνημεῖον.

33 τὸ ἀγγεῖον: Tüner-Önen 2008, 355-56, no. 45 and 358, no. 48; τὸ σορόν: *TAM* 2.1, 211; τὸ τύμβον: *TAM* 2.3, 1212.

34 Ormerod and Robinson 1914, 32, no. 48 (Kocaköy); *SEG* 51, 1829 (Yarbaşçandır); *SEG* 6, 735 (Zindanyakası); Tüner-Önen et al. 2017, 349, no. 1 (Yaylakuzdere), 353, no. 2a (Beşiktaş mevkisi), 357, no. 3a (Kırtepe); Çelik et al. 2018, 191 (Hisarçandır); *SEG* 52, 1412 (Armutçuk) and 1413 (Fillara).

35 Tüner-Önen 2015b, 57-58; Çelik et al. 2018, 191.

36 *TAM* 2.3, 1210: Μόλητα | Κολαλήμεος τοῦ Ἐν|βρόμου, Φασηλίτην, | [Τ]ροκόνδας καὶ Δε|[μ]ετρία καὶ Σύρος | καὶ Τρέβημις οἱ ὑ|πὸ αὐτοῦ ἐλευθε|ρωθέντες, καθὼς | διέθετο.

37 On using the diphthong ει instead of the letter iota, see Gignac 1976, 190, 249.

L. 10-14: The prohibition statement starts from the tenth line. The temple treasury of the goddess Athena Polias was depicted as a punishment vault. Although it is known that Athena Polias, the chief goddess of the city, was respected in Phaselis from the fifth century BC to the Roman Imperial period, had a temple, and agons were arranged in her name, a temple treasury is documented here for the first time.[38] During the 2018 territory work, a record of the goddess' treasury was discovered on a sarcophagus at Palamutlar.[39] It is noteworthy that this burial penalty is higher than the other penalties recorded in the city.[40]

5. The Tomb of Kougas

In the sarcophagus numbered 3KD.L23, discovered in 2019 in the Northern Necropolis, the remains of a podium, a sarcophagus, and a hipped-roofed lid were documented. It is one of the few examples of a tomb documented in the city's necropoleis together with a podium sarcophagus and a lid. The tomb faces the sea and was built of limestone. The podium block has a slightly concave slope from the base and projects outward at the top, ending with a 0.07 m flat, molded profile. The sarcophagus and lid were probably detached from each other during an earthquake. The inscribed front of the sarcophagus was knocked over while it leaned against the earthen fill to the south, and the lid was turned upside down. Since the sarcophagus was tilted over the opening where the lid was closed, the remains of the lower podium step can be seen inside the sarcophagus. The long side of its rear is broken in half and missing. Most of the lid is under the earth fill; the parts that can be seen along its length are preserved in a monolithic form. On the front of the sarcophagus is an inscribed tabula ansata. Because the inscribed surface is on the ground, it is difficult to take an estampage and read it. Only a three-line inscription was recorded in the tabula ansata carved on the front of the tomb, which is quite large. Probably the lower part was left vacant.

Podium: 0.40 m high and 0.60 m deep. The length is unknown due to the break. The sarcophagus measures 1.13 m in width, 2.46 m in length, and 1.25 m in height. Its internal depth is 0.85 m. The lid is 2.50 m long; other dimensions could not be taken due to the earth filling.

Dimensions: Height: 0.43 m (tabula); width: 1.25-0.79 m (tabula); letter height: 0.045-0.05 m

Date: Third century AD (from the lettering)

Κουγας Ασα δίς
τὸ μνημε[ῖ]ο[ν]
κατέστη[σε].
vac.

Kougas, the son of Asas the second, built this tomb.

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[38] For detailed information about the worship of Athena Polias in Phaselis, see Tüner-Önen and Yılmaz 2015. Vaults have been documented previously in urban necropoleis: ἱερώτατον ταμεῖον (*TAM* 2.3, 1211), ἱερώτατος φίσκος (Tüner-Önen 2008, 358-60, nos. 48-49) and γλυκυτάτης πατρίς (Tüner-Önen 2008, 355-56, no. 45); cf. Avcu 2014, 24, 28, 32.

[39] The recipient institutions (treasuries) of fines authorized in the territory to date were recorded as: Ζεὺς Σολυμεύς (*SEG* 51, 1829), Φασηλιτῶν πόλις (*SEG* 6, 735), Φασηλιτῶν δῆμος (Tüner-Önen et al. 2017, 357, no. 3a) and τὸ ἱερὸν ταμεῖον (Tüner-Önen et al. 2017, 353, no. 2a).

[40] The amount of the fines recorded in the city so far was: 500 (*TAM* 2.3, 1211 and Tüner-Önen 2008, 355-56, no. 45) and 1000 (Tüner-Önen 2008, 359, no. 49) denarii. In its territory: 500 (Tüner-Önen et al. 2017, 353, no. 2a), 2500 (*SEG* 6, 1829 and Tüner-Önen et al. 2017, 349, no. 1) and 5000 (Tüner-Önen et al. 2017, 357, no. 3a) and 5500 (*SEG* 6, 735) denarii.

The tomb owner Kougas is already known from both the city and the area.[41] To date, Ασας, the names of his father and grandfather, have not been documented anywhere other than at Trebenna and Onobara.[42] The tomb of Kougas was also identified as τὸ μνημεῖον. The inscription does not contain any information about another who should be buried in the tomb other than Kougas. Such a practice is found in another inscription carved on a sarcophagus at Phaselis, although there the name of the tomb owner was written in *genetivus casus*.[43]

Evaluation and Conclusion

The ostothek tombs 3KD.01 and 3KD.O17 and the inscribed grave stele discussed in this article are dated to the Hellenistic period based on their form features and lettering. The presence of ostotheks suggests that cremation burials occurred in Phaselis throughout the Hellenistic period. The burial of the ashes and bone remains of the deceased in stone ostotheks is a burial tradition that continued in Hellenistic and Roman times.[44] It is not yet known when the inhabitants of Phaselis began to use cremation. However, the city, located at the intersection of Lycia, Pamphylia, and Pisidia, is seen close to Pamphylia and Pisidia insofar as the preference for cremation is concerned.[45] Although sarcophagi were produced intensively in the region of Pamphylia from the second century AD, it is known that the use of the ostothek continued.[46] In the region of Pisidia, there are a large number of ostotheks.[47] On the other hand, the Lycian region shows that the region known for its many cemeteries and variety of tombs is not rich in ostotheks.[48] In addition to the use of the ostothek in Asia Minor, that Phaselis was a port city

41 Tüner-Önen 2015b, 55.

42 *LGPN* 5B, 71.

43 Blackman 1981, 148-49, no. 8.

44 Asgari 1965, 392. Koch divides the Asia Minor ostotheks into local groups, with examples showing different trunk forms, depictions, or decorations. For more information on ostothek workshops in Asia Minor and ostothek tombs grouped by local elements, see Koch 2010, 29-34.

45 Gürel 2022.

46 For detailed information about the ostotheks in Pamphylia and Rough Cilicia, see Korkut 2006. For detailed information about ostotheks, see also Korkut 2013. Hellenkemper and Hild 2004, Pamphylia, note that especially in the mountainous settlements in the Taurus Mountains the use of the ostothek continued until the end of the Roman Imperial period, as well as the sarcophagus; Hellenkemper and Hild 2004, 1:204.

47 Pisidian ostotheks are characteristic of this region, especially with their decorative program consisting of shields and other weapons, eagles, and standing figures. For detailed information see Koch 2010, 31-32, figs. 49-51.

48 Asgari states that almost no examples of ostotheks were found in Lycia, a very important center of funerary art; see Asgari 1965, 382, 388; On the subject, see also Çelgin 1990, 456-507, 521. Koch notes the Lycian region is not included in the Asia Minor ostothek groups; for other regions see Koch 2010, 29-34.

and played an active role in Mediterranean trade also influenced the socio-cultural structure of the city and thus the variety of tomb types and burial elements. The tomb inscriptions on the ostotheks are shorter than the inscriptions on the sarcophagi and have survived to the present day as epigraphic data that contains only information about the identity of the person who owns the tomb. Because neither ostothek is in situ, no information on their location within the necropolis or placement on the land or in the tomb structure was obtained.

From a typological point of view, the sarcophagi of Phaselis were made in the form of a plain sarcophagus with lid. They do not seem to have adopted the sarcophagus form of any particular region, especially Lycia[49] and Pamphylia,[50] since it is located in the border region. This feature, characteristic of the typology of the sarcophagi in the city's necropolis, leads to a representation of the works that can be evaluated epigraphically and iconographically with a few examples. The number of sarcophagi with reliefs or inscriptions is very few. However, it appears that lids with saddle roof are preferred in sarcophagi with inscriptions. People who preferred the saddle-roof sarcophagus, also known as the Lycian type, had their inscriptions engraved on the front of the sarcophagus in accordance with the traditional tomb representation. In addition to the sarcophagus numbered 3KD.L29, which was examined in this study, there is an inscription on a saddle-roof sarcophagus, which was found before.[51] The sarcophagus numbered 3KD.L23, on the other hand, has a hipped roof and differs from general sarcophagus typology in the necropolis because of its lid shape and dimensions. The forms of tomb structures are regarded as symbols in necropoleis as indicators of the people's cultural and economic characteristics.[52] A different social status can explain this in society. When sarcophagus production was intense, the second and third century AD is considered the time when Phaselis was also prosperous, and its necropoleis reached their greatest expansion possibly with the growing population. Historical process can be used to trace the city's shrinking infrastructure after this period.[53] Two examples of saddle-roofed and hipped-roofed sarcophagi from Phaselis date to centuries second and third from their inscriptions, when sarcophagi were most frequently made. Accordingly, the sarcophagus numbered 3KD.L23 is dated to the third century AD, and the sarcophagus numbered 3KD.L29 to the second-third century AD. Since these tombs were completely exposed, no archaeological material or human bone remains were found in them.

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49 For detailed information about the Lycian sarcophagi, see İdil 1998, 8-9; Koch 2001, 254-56; Özer 2016, 422-33.

50 For detailed information about Pamphylian sarcophagi, see Turak 2011, 63-244.

51 Tüner-Önen 2008, 358-59, 293-94; Blackman 1981, 149-50, no. 9, table 73; *SEG* 31, 1304.

52 Toynbee 1971, 73.

53 Tüner-Önen 2008, 181-84.

Bibliography

Adak, M. 2007. "Die dorische und äolische Kolonisation des lykisch-pamphylischen Grenzraumes im Lichte der Epigraphik und der historischen Geographie." In *Griechische Epigraphik in Lykien. Eine Zwischenbilanz: Akten des internationalen Kolloquiums München, 24.-26. Februar 2005*, edited by Ch. Schuler, 41-50. DenkschrWien 354. Ergänzungsbände zu den TAM 25. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Adak, M., N. Tüner-Önen, and S. Şahin. 2005. "Neue Inschriften aus Phaselis." *Gephyra* 2:1-20.

Arslan, M., and N. Tüner-Önen. 2017. "2016 Yılı Phaselis Antik Kenti ve Teritoryumu Yüzey Araştırması." *AST* 35.2:181-97.

Arslan, M., and N. Tüner-Önen. 2019: "Phaselis Kenti'nde 2019 Yılında Gerçekleştirilen Yüzey Araştırmaları ve Kazı Çalışmaları." *Phaselis* 5:425-64. https://doi.org/10.18367/pha.19029

Asgari, N. 1965. "Helenistik ve Roma Çağlarında Anadolu Ostotekleri." Ph.D. diss., Istanbul University.

Avcu, F. 2014. "Lykia Bölgesi Mezar Yazıtlarında Cezalar ve Ceza Tahsil Kurumları." Master's thesis, Akdeniz University.

Blackman, D.J. 1981. "The Inscriptions." In *Phaselis. Beiträge zur Topographie und Geschichte der Stadt und ihrer Häfen,* edited by J. Schäfer, 138-63. *IstMitt*-BH 24. Tübingen: Ernst Wasmuth.

Blinkenberg, Ch. 1941. *Fouilles de l'Acropole 1902-1914.* Vol. 2, *Inscriptions: Publiées en grande partie d'après les copies de K.F. Kinch*. Lindos. Fouilles et recherches 1902-1914. Berlin / Copenhagen: Walter de Gruyter.

Buck, C.D. 1955. *The Greek Dialects. Grammar, Selected Inscriptions, Glossary.* 3rd ed. Chicago, IL: University of Chicago Press.

Çelgin, A.V. 1990. "Termessos Kenti Nekropol'leri." Ph.D. diss., Istanbul University.

Çelik, A., S. Atalay, and F. Büyükyörük. 2018. "Hisarçandır'dan Ele Geçen Marcus Aurelius Kamoas ve Ailesine Ait Lahit Mezar." *Phaselis* 4:181-98. https://doi.org/10.18367/pha.18012

Ehrhardt, N. 1989. "Apollon Ietros. Ein verschollener Gott Ioniens?" *IstMitt* 39:115-22.

Gignac, F.T. 1976. *A Grammar of the Greek Papyri of the Roman and Byzantine Periods.* Vol. 1, *Phonology.* Testi e Documenti per lo Studio dell'Antichità 55. Milano: Cisalpino-La Goliardica.

Gürel, B., A. Akçay, and N. Tüner-Önen. 2019. "Phaselis Teritoryumu'nda Kolalemis ve Ailesine Ait Khamosorion ve Çiftlik Yerleşimi." *Phaselis* 5:413-24. https://doi.org/10.18367/pha.19028

Gürel, B. 2016. "Phaselis Batı ve Kuzeybatı Nekropolis'leri." *Mediterranean Journal of Humanities* 6.2:279-97.

Gürel, B. 2022. "Phaselis Antik Kenti Ostothekleri." *Olba* 30:289-306.

Heipp-Tamer, Chr. 1993. *Die Münzprägung der lykischen Stadt Phaselis in griechischer Zeit.* Saarbrücker Studien zur Archäologie und alten Geschichte 6. Saarbrücken: Saarbrücker Druckerei und Verlag.

Hellenkemper, H., and F. Hild. 2004. *Lykien und Pamphylien.* TIB 8. 3 vols. DenkschrWien 320. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Holleaux, H. 1886. "Inscriptions d'Oenoanda." *BCH* 10:216-35.

İdil, V. 1998. *Likya Lahitleri.* 3rd ed. Türk Tarih Kurumu Yayınları 6.24. Ankara: Türk Tarih Kurumu Basımevi.

Koch, G. 2001. *Roma İmparatorluk Dönemi Lahitleri.* Translated by Z.Z. İlkgelen. Başvuru ve El Kitapları Dizisi 8. Istanbul: Arkeoloji ve Sanat Yayınları.

Koch, G. 2010. *Türkiye'deki Roma İmparatorluk Dönemi Lahitleri / Sarkophage der römischen Kaiserzeit in der Türkei.* Translated by B. Varkıvanç. AKMED Monografi Serisi 5. Antalya: AKMED.

Korkut, T. 2006. *Girlanden-Ostotheken aus Kalkstein in Pamphylien und Kilikien. Untersuchungen zu Typologie, Ikonographie und Chronologie,* edited by G. Koch, K. Fittschen, and W. Trillmich. Deutsches Archäologisches Institut Sarkophag-Studien 4. Mainz am Rhein: Philipp von Zabern.

Korkut, T. 2013. "Ostotheken oder Kindersarkophage." In *K. Levent Zoroğlu'na Armağan / Studies in Honour of K. Levent Zoroğlu*, edited by M. Tekocak, 405-13. Armağan Dizisi / Festschrift Series 3. Antalya: AKMED.

Massar, N. 2001. "Un savoir-faire à l'honneur. "Médecins" et "discours civique" en Grèce hellénistique." *RBPhil* 79.1:175-201.

Massar, N. 2005. *Soigner et servir. Histoire sociale et culturelle de la médecine grecque à l'époque hellénistique*. Culture et cité 2. Paris: De Boccard.

Ormerod, H.A., and E.S.G. Robinson. 1914. "Inscriptions from Lycia." *JHS* 34:1-35.

Özer, E. 2016. "Likya Lahitleri." In *Lukka'dan Likya'ya Sarpedon ve Aziz Nikolaos'un Ülkesi / From Lukka to Lycia. The Land of Sarpedon and St. Nicholas*, edited by H. İşkan and E. Dündar, 422-35. Yapı Kredi Yayınları Anadolu Uygarlıkları Serisi 5. Istanbul: Yapı Kredi Yayınları.

Pembroke, S. 1965. "Last of the Matriarchs: A Study in the Inscriptions of Lycia." *JESHO* 8.3:217-47.

Rémy, B., and F. Delrieux. 2007. "Les médecins dans les inscriptions de la province romaine de Lycie-Pamphylie." In *Scripta Anatolica: Hommages à Pierre Debord*, edited by P. Brun, 261-80. Études 18. Bordeaux: Ausonius.

Samama, É. 2003. *Les médecins dans le monde grec: Sources épigraphiques sur la naissance d'un corps medical*. Hautes études du monde Gréco-Romain 31. Sciences historiques et philologiques 3. Geneva: Librairie Droz.

Şahin, S. 1994. *Die Inschriften von Arykanda*. IK 48. Bonn: Rudolf Habelt.

Şahin, S. 1999. *Die Inschriften von Perge*. Vol. 1, *Vorrömische Zeit, frühe und hohe Kaiserzeit*. IK 54. Bonn: Rudolf Habelt.

Şahin, S. 2014. *Stadiasmus Patarensis. Itinera Romana Provinciae Lyciae / Likya Eyaleti Roma Yolları*. Gephyra Monografi Serisi / Monographs in Series 2. Istanbul: Arkeoloji ve Sanat Yayınları.

Toynbee, J.M.C. 1971. *Death and Burial in The Roman World*. Aspects of Greek and Roman Life. Ithaca: Cornell University Press.

Turak, Ö. 2011. "Roma Dönemi Pamphylia Lahitleri ve Atölye Sorunu." Ph.D. diss., Istanbul University.

Tüner-Önen, N. 2008. "Phaselis Antik Kenti ve Teritoryumu." Ph.D. diss., Akdeniz University.

Tüner-Önen, N. 2015a. "Yeni Buluntular Işığında Phaselis Epigrafi Çalışmaları." *Phaselis* 1:19-38. https://doi.org/10.18367/Pha.15002

Tüner-Önen, N. 2015b. "Annäherungen zur Geschichte der Stadt Phaselis auf onomastischer Grundlage: Ein Studium der Namen aus Phaselis und ihrem Territorium." *Phaselis* 1:39-67. https://doi.org/10.18367/Pha.15003

Tüner-Önen, N., and F. Yılmaz. 2015. "A New Athena Polias Votive Inscription from the Phaselis' Acropolis." *Adalya* 18:121-31.

Tüner-Önen, N., B. Gürel, and A. Akçay. 2017. "Phaselis Teritoryumunda Tespit Edilen Lahitlerin RTI Metodu Işığında Arkeolojik ve Epigrafik İncelemeleri." *Phaselis* 3:343-69. https://doi.org/10.18367/Pha.17021

Ustinova, Y. 2009. "Apollo Iatros: A Greek God of Pontic Origin." In *Die Griechen und ihre Nachbarn am Nordrand des Schwarzen Meeres. Beiträge des Internationalen archäologischen Kolloquiums, Münster 2001*, edited by K. Stähler and G. Gudrian, 245-98. Eikon 9. Münster: Ugarit-Verlag.

Zgusta, L. 1964. *Kleinasiatische Personennamen*. Monografie Orientálniho ústavu ČSAV 19. Prag: Verlag der Tschechoslowakischen Akademie der Wissenschaften.

Standard Reference Works

CPJ. Corpus Papyrorum Judaicarum. Vol. 1, edited by V.A. Tcherikover and A. Fuks. London: The Hebrew University / Harvard University Press, 1957.

IG 12.1. F.H. von Gaertringen, *Inscriptiones Graecae.* Vol. 12, *Inscriptiones insularum maris Aegaei praeter Delum.* Fasc. 1, *Inscriptiones Rhodi, Chalces, Carpathi cum Saro, Casi.* Berlin: Reimer, 1895.

IGRR. Inscriptiones graecae ad res romanas pertinentes. Ed. René Cagnat et al. 3 vols. Paris 1901-1927.

LGPN 1. *A Lexicon of Greek Personal Names.* Vol. 1*, The Aegean Islands, Cyprus, Cyrenaica*, edited by P.M. Fraser and E. Matthews. Oxford: Clarendon Press, 1987.

LGPN 5B. *A Lexicon of Greek Personal Names.* Vol. 5B, *Coastal Asia Minor: Caria to Cilicia*, edited by J.-S. Balzat, R.W.V. Catling, É. Chiricat, F. Marchand, and T. Corsten. Oxford: Clarendon Press, 2013.

LSJ[9]. H.G. Liddell et al., *Greek-English Lexicon.* 9th ed., revised and augmented. Oxford: Clarendon Press, 1996. Original edition, Oxford, Clarendon Press, 1940.

SEG. Supplementum Epigraphicum Graecum. Leiden, 1923-.

TAM 2. *Tituli Asiae Minoris.* Vol. 2, *Tituli Lyciae linguis Graeca et Latina conscripti*, ed. Ernst Kalinka. 3 fasc. Vienna 1920-1944. Fasc. 1, nos. 1-395, *Pars Lyciae occidentalis cum Xantho oppido* (1920); fasc. 2, nos. 396-717, *Regio quae ad Xanthum flumen pertinet praeter Xanthum oppidum* (1930); fasc. 3, nos. 718-1230, *Regiones montanae a valle Xanthi fluminis ad oram orientalem* (1944).

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From the *Miltos* / *Sinopis* of Ancient Sinope to the *Yoşa* of Modern Cappadocia

DOMINIQUE KASSAB TEZGÖR*

Abstract

The word *miltos* in Greek, and its synonym *rubrica* in Latin, were generic terms for red ochre. Red ochre was not rare, but the type called the *miltos* of Sinope was well-known in classical antiquity because of its exceptional quality. It was originally extracted in Cappadocia and traded from the harbor of Sinope, hence its name. However, probably at the end of the second century BC, the main trade route changed, and it was exported through Ephesus following the extension of the city's catchment inland thanks to the improvement of the road network under Roman rule. Although its exportation presumably stopped at the end of the third century AD, its fame continued, and the name *sinopis* or *sinopia* was subsequently given to red ochre of high quality but of various origins. The aim of this study is to combine the data provided by the ancient texts and the archaeological evidences in light of *yoşa*, a red pigment still extracted in Cappadocia. It is undoubtedly the same as the *miltos* of Sinope, and continued in use in the post-Classical period for the wall decorations of the region's Byzantine churches and later for its dovecotes also. Today it is used by the potters of Avanos for decorating their wares.

Keywords: Cappadocia, fresco, red ochre, *miltos*, Sinope, transportation

Öz

Yunancadaki *miltos* kelimesi ve eş anlamlısı olan Latince'deki *rubrica*, kırmızı aşıboyası için genel terimlerdi. Kırmızı aşıboyası nadir değildi, fakat, Sinop *Miltos*'u olarak adlandırılan tip, olağanüstü kalitesi sebebiyle Klasik antik dönemde iyi biliniyordu. Aslen Kapadokya'da çıkarılmıştır ve Sinop limanından ticareti yapılmıştır, nitekim ismini buradan alır. Ancak, muhtemelen MÖ 2. yüzyılın sonunda, ana ticaret yolu değişti ve Roma yönetiminde yol ağının gelişmesi sayesinde şehrin su toplama havzasının iç kısımlara doğru genişlemesiyle Efes üzerinden ihraç edildi. MS 3. yüzyılın sonunda ihracatı muhtemelen durmuş olsa da ünü devam etmiş ve *sinopis* veya *sinopia* ismi sonradan yüksek kaliteli ancak çeşitli kökenlerden kırmızı aşı boyasına verilmiştir. Bu çalışmanın amacı, Kapadokya'da hala çıkarılan kırmızı bir pigment olan yoşa ışığında antik metinlerin sağladığı verilerle arkeolojik kanıtları birleştirmektir. Şüphesiz ki Sinop *Miltos*'unun aynısıdır ve Klasik sonrası dönemde bölgenin Bizans kiliselerinin duvar süslemelerinde ve daha sonra güvercinliklerinde de kullanılmaya devam etmiş ve bugün Avanos çömlekçileri tarafından kaplarını süslemek için kullanılmaktadır.

Anahtar Kelimeler: Kapadokya, fresk, kırmızı aşıboyası, *miltos*, Sinope, nakliye

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Introduction

Thanks to its exceptional topographical and geographical location, Sinope was undoubtedly a prosperous place in antiquity. Situated on a perpendicular peninsula on the south Black Sea coast with two sheltered harbors on either side guaranteeing safe anchorages, it was excellently located for an active commerce which played a major role in its prosperity. One valued product that certainly played its part in this affluence was the so-called *miltos* of Sinope. Alternatively known as *sinopis*, this was a form of what is generically known as red ochre, which actually came from Cappadocia but which gained its alternative name *sinopis* from being traded from Sinope.

Road network between Cappadocia and Pontus (© Fabrice Delrieux).

We know of its existence and fame principally as a pigment through the texts of Theophrastus, *De Lapidibus*, Dioscorides, *De Materia Medica*,[1] Pliny, *Historia Naturalis*, books 33, 35 and 36, and Vitruvius, *De Architectura*, although it also had some curative virtues (Plin., *HN* 35.32; Dioscorides 5.96, 2).[2] This coloring agent were first evaluated by Hugo Blümner in

[1] Ten articles of Dioscorides on minerals are copied in *PLeid.*, l. 582-678, as published in Halleux 2019, 30. See further below.

[2] We have an indirect clue that the pigment carrying the name of Sinope was still known as a curative resource in the first and second centuries AD, since Aretaeus of Cappadocia in his treatise *De curatione acutorum morborum* clearly differentiates it as such from the red earths of Lemnos or Samos (Book 1, ch. 7 and Book 2, ch. 2). However, Galen does not cite it.

his section on the color red in his seminal *Technologie und Terminologie der Gewerbe und Künste bei Griechen und Römern* published in 1887.[3] Since Blümner's time, publications relative to the economic resources of Sinope often mention it, but have provided no new information and often display an ignorance of its exact nature and its precise origin. As such, its general description and identification as a red ochre is mostly accepted, although, as we shall see below, there have been other interpretations as to its nature. Yet, a red pigment is still exploited today in Cappadocia, where it is called *yoşa* (fig. 1).[4] There is little doubt that the *miltos* of Sinope and *yoşa* are one and the same. The presence of this coloring agent is visible everywhere in Cappadocia, most especially in the famous red rocks and red coloration of the silt of the ancient Halys, modern Kızılırmak River ("Red River"), so called to distinguish it from its northern neighbor, the classical Iris or Yeşilırmak ("Green River").[5] Today the most important supply of red ochre exploited in Cappadocia is at Özkonak, a village north of Avanos, well-known for its potteries and potters using the local clay for their wares. Another quarry is in Mucur, close to Kırşehir, where the pigment is considered of a deeper red color by the local craftsmen potters.

The aim of this article is to shine a new light on the *miltos* of Sinope by collecting and interpreting the information we have received from antiquity in the light of modern knowledge and studies. The *yoşa* of Cappadocia, which we consider as the original pigment, allows us to perceive better the specific qualities given to *miltos* in ancient texts, within the general framework of an interest in red ochre in general and Sinopean *miltos* in particular. After all, red ochre has long been a universally favored coloring agent, already used as such in Paleolithic times and found in prehistoric contexts worldwide.[6] As M. Pastoureau explained in his book dedicated to all the aspects of the color red: "Red is the archetypal color, the first color humans mastered, fabricated, reproduced, and broke down into different shades, first in painting, later in dyeing."[7] As we will see, the study of the *miltos* of Sinope illustrates well these aspects.

The *Miltos*

In ancient Greek texts the word μίλτος (*miltos*) is used to identify red ochre in its natural form or as a coloring agent as well as the red color obtained from it. However, it was not related to a specific provenance or quality.[8] By contrast, the English word "ochre" comes from the Greek word ὤχρα and referred to yellow ochre. The *miltos* we are concerned with here, however, was of a superior kind, as it was refined (διϋλίζεται) and brought (κατάγεται) to Sinope to be exported (Dioscorides 5.96.1).[9] For this reason, it was given the name of Σινωπική

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3 Blümner 1887, 4:478-99.

4 I am grateful to Tolga Uyar for his guidance during my research on Cappadocian *yoşa*, and indebted to Levent and Mehmet Düzgün, potters in Avanos (generally known as the İkizler), and Mükrimen Tokmak, a local historian, for the valuable information that they provided.

5 Before the construction of the Bayramhacı Dam in 2010, the Kızılırmak still flowed with a red color as far as Avanos.

6 Eastaugh et al. 2008, 326.

7 Pastoureau 2017, 7.

8 In this article *miltos* in italics refers to its mention in Greek-language texts, and *sinopis* and *rubrica* to the Latin texts. The word "ruddle" has been used in English since the beginning of the 20th century to translate the Greek word *miltos*; see Eastaugh et al. 2008, 334. On the different uses of the term *miltos*, see Cherry et al. 1991, 299; Photos-Jones et al. 1997, 359.

9 For the trade through Sinope, see below.

(Theophr. 8.52) with Strabo providing the name ἡ Σινωπικὴ λεγομένη μίλτος (12.2.10) and Dioscorides μίλτος Σινωπική (5.96.1).

Pliny goes further in distinguishing between *rubrica*, *sinopis* and Pontic *sinopis* in his classification of red ochre. He explicitly states that the Greeks use the name *miltos* as the equivalent of *rubrica* in Latin (*HN* 33.115). In his vocabulary, the word *rubrica* refers to red ochre in general, and *sinopis* to one kind of it (*rubricae genus*: *HN* 35.33). For that reason, he distinguishes in his text between *sinopis* and *rubrica* (*HN* 35.30; 33.117). However, because the red ochre exported from Sinope was a guarantee of high quality, he used the name *sinopis* for all the best quality types of *rubrica* (*HN* 35.31). When he wanted to refer specifically to the *sinopis* of Sinope though, he named it the Pontic *sinopis* (*sinopis pontica*), noting that the name *sinopis* comes from Sinope, where it was "discovered" (*inventa*) for the first time (*HN* 35.31).

In general, *miltos* was considered as an earth (γῆς), as was ochre (Theophr. 8.40), while Strabo (3.2.6.) calls it Σινωπικῆς γῆς. Dioscorides gives us a quite precise description of the *miltos* of Sinope: it is thick (πυκνή) and heavy (βαρεῖα), with a liver color (ἡπατίζουσα), without stones (ἄλιθος), and of a homogeneous hue (ὁμόχρους), and can be easily dissolved in water (πολύχυτος ἐν τῇ ἀνέσει) (5.96.1). Pliny also records that the inside of a block (*glaeba*) of the material is homogeneously colored, but the exterior surface is spotted (*maculosus*) (*HN* 35.31) (fig. 2). According to Theophrastus, *miltos* and (yellow) ochre were present, sometimes together, in mines (μετάλλοι) of silver and gold, but also of copper (8.52). The yellow ochre was found in block form (ἀθρόα), while *miltos* was extracted from rock veins (ῥάβδοι) (8.51). Pliny considered that the best quality adheres to the rocks (*saxa*) (*HN* 35.31). Dioscorides completes our information by mentioning that the *miltos* of Sinope was found in caverns (σπήλαια) in Cappadocia (5.96.1). Pliny also refers to hollows (*speluncae*) for the extraction of *sinopis* in Lemnos and in Cappadocia (*HN* 35.31).[10] Theophrastus mentions that the yellow ochre and the *miltos* were found in the same mines in Cappadocia. He comments that the work was dangerous (χαλεπός) for the miners, because they were rapidly exposed to a risk of suffocation (8.52).[11] These caverns are in fact adits - tunnels following the rock veins that provided the material - as is shown by the ancient mines of Keos (modern Kea).[12]

The ancient writers agreed that a high quality of red ochre (the *sinopis* of Pliny) was found in Egypt, the Balearic Islands, and Lemnos (Plin., *HN* 35.31; Vitr. 8.7.2). To these provenances, Dioscorides added Carthage (5.96.3) and Pliny, Africa (*HN* 35.32). Theophrastus also names the island of Keos (8.52) as a source of *miltos*; indeed, according to him, it is the best kind of all.[13] Caley and Richards, who have studied the sites where this was obtained, note that other writers do not mention this source and so suggest it was not in use at the time they were writing.[14] It could also be that it was not widely available because of a monopoly exercised by Athens on the supply of Keon *miltos*.[15]

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10 Pliny follows what Vitruvius says (7.7.2) on *rubricae*; see Croisille 1985, 152, n. 31.2.

11 This toxicity of the mining environment for *miltos* was the basis for the argument by Leaf (1916, 10-14) for identifying it as cinnabar. That hypothesis has since been refuted comprehensively and is best explained by the small space the men were working in and a common lack of safety precautions taken in mining in antiquity; see, e.g., Caley and Richards 1956, 176; Eichholz 1965, 123.

12 About the exploration of the mines, see Caley and Richards 1956, 176-77. See the photographs of the mining adits at https://sclawren.web.unc.edu/*miltos*/ (consulted 7/2021). On the *miltos* of Keos, see n. 13.

13 For recent fieldwork in Keos and analyses of the *miltos*, see Cherry et al. 1991, 300-3; Photos-Jones et al. 1997; Photos-Jones 2018, 427-29.

14 Caley and Richards 1956, 176.

15 See below regarding this monopoly.

In fact, as might be expected, the ancient writers were not in common agreement as to which *miltos* was the best of all. Theophrastus, for example, did not make a distinction between the *miltos* of Sinope and that of Lemnos, probably because he considered both of the same quality after that of Keos (8.52-53). For Strabo (12.2.10) and Dioscorides (5.111), the Sinopean was the best, but Strabo adds that it was challenged by that from the Balearics (12.2.10). For Pliny, the best *sinopis* was the Lemnian one (*HN* 35.31), although he does confuse the red ochre of Lemnos used for painting and the one used for medicinal purpose, since he describes it as packed in small, sealed quantities.[16] Vitruvius considered that all these *rubricae* are of the same high quality (7.7.2).

The Transportation from Cappadocia

Sinopean red ochre, like the others, was very much a "niche" product. That is to say it was in great demand by specialist artisans only, but one in which a small amount went very far in use in its actual application for whatever purpose. As such, it was perhaps not a viable product to trade in bulk by itself, but was more probably traded as a "piggy-back" cargo, an add-on to the trade of a more valued product, preferably a cargo with a guaranteed market. It is not possible to estimate the quantity of red ochre pigment exported from Sinope in antiquity, but probably it was not a negligible amount. It had a high reputation and was put to a large range of usages, albeit not forgetting, of course, that Cappadocia was not alone in producing a good quality of *miltos*.

As a niche product, Cappadocian red ochre would be included in a consignment of goods transported from there along with needed items from the same region and centers both close to home and further afield.[17] Metals mined in Cappadocia were most probably a part of the transport system as well as salt,[18] which was needed to salt fish presumably in Sinope or in its immediate surrounding for onward trade, but also for return to Cappadocia.[19] What is important here is that in a key sentence, Strabo (12.2.10) tells that *miltos* was transported from Cappadocia to Sinope until the Ephesian trade became accessible to these regions: "ὠνομάσθη δὲ Σινωπική, διότι κατάγειν ἐκεῖσε εἰώθεσαν οἱ ἔμποροι, πρὶν ἢ τὸ τῶν Ἐφεσίων ἐμπόριον μέχρι τῶν ἐνθάδε ἀνθρώπων διῖχθαι" ("It was named 'Sinopean' because the merchants were wont to bring it down thence to Sinopê before the traffic of the Ephesians had penetrated as far as the people of Cappadocia."[20] Thanks to recent research, we have a better knowledge of the road network in Anatolia which allows us to retrace in its main lines the potential road itineraries from the quarries of Cappadocia to Sinope and to Ephesus, before Strabo and in his own time as well as later. When we take into account new thoughts on Roman transport systems,[21] this allows us, to some extent, to partly reinterpret his text and establish why perhaps the focus of transport changed from Sinope to Ephesus.

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16 Caley and Richards 1956, 177-78. About *miltos* sealed for medical use and for recent fieldwork there, see Photos-Jones and Hall 2014; Photos-Jones et al. 2017; Christidis et al. 2020.

17 The distribution of Sinopean amphora points towards their contents being part of some regulated trade system. Sinope may also have exported goods from Cilicia, as is suggested by coin hoards (Thonemann 2011, 107).

18 Salt is still a resource exploited nowadays in Cappadocia, where a village is called Tuzköy (Salt Village).

19 Braund 2005, 124.

20 Translation of Jones 1928.

21 E.g., Adams 2012.

To begin, we learn from Strabo that Sinope was the original exporting harbor for *miltos*. By examining the road network of Northern Anatolia, it is possible to reconstruct the route taken in transporting *miltos* to Sinope. According to Strabo (12.2.10), a chain of mountains (Küre Dağları) was the natural border between Cappadocia and the region of Pontus. In a pioneer article on the *Roads in Pontus*, Munro identified two trunk routes crossing the Pontic kingdom, later integrated with the province of Pontus. One was the Pontus Road running east to west between the head of the river Lycos (Çürüksu Çayı) and the head of the river Amnias (Gök or Gökırmak river),[22] as used by Mithridates VI and Lucullus on their respective campaigns in this region in the early first century BC.[23] However, according to Bekker-Nielsen, only a part of that route was formalized before Pompey took control of the kingdom of Mithridates VI in 66 BC and reorganized it,[24] then establishing seven cities along this route.

The other route identified by Munro ran between the modern cities of Ladik and Havza, meeting the other and connecting Mazaka in Cappadocia (modern Kayseri) to Zela, Amaseia, and Amisus.[25] It was in fact the northern part of a major north-south trans-Anatolian route from the Cilician Gates to the Black Sea and of a great importance for trade and troop movements.[26] Such a route between Cilicia and Sinope is mentioned by Herodotus (1.72, 2.34.2),[27] while Strabo describes a route connecting Issos to Sinope or Amisus (14.3.1).[28] Leaf, in an article of 1916, demonstrates that "the terminus of this Pontic trade-route is not at Sinope but at Amisus."[29]

The wording of Strabo lets us suppose that the pigment was sent directly from Cappadocia to Sinope by crossing the Pontic chain and not through Amisus. The only direct access to Sinope from Cappadocia was via the South-North highway, passing Zela and Amaseia to reach the Pontic Road, this then being followed to the west. At the location of today's Osmanköy village was a junction to the road going across the Pontic mountains through the Dranaz pass.[30] This ancient route was upgraded in the later Roman period when the whole network was improved, as testified by milestones from the period between Diocletian and Constantius II and Constans.[31] It was still used by travelers in the 19th century. Cuinet wrote in the 1890s, stating that the only road in the region of Sinope was to Boyabat and from Boyabat to Amaseia.[32] The modern road also follows this line, but passes through the Dranaz tunnel at the level of the pass, which rises to 1365 m. In spite of the height, this road should not have been difficult for the pack animals transporting goods, except in case of excessively bad weather.[33]

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22 Munro 1901, 53-55; Leaf 1916, 7-8. Bryer and Winfield 1985, 69 and n. 8, 20-21.

23 Mitchell 1993, 127.

24 Bekker-Nielsen 2016, 43.

25 Munro 1901, 55; McGing 1986, 4.

26 Magie 1950, 1078-80, n. 25.

27 Debord 1999, 85 and 84, map 2; Thonemann 2011, 106-7. However, Herodotus's claim that distance involved could be covered in five days is an underestimate, as has been often noted; see, e.g., Thonemann 2011, 107 and n. 20; Godley 1926, 89, n. 1.

28 Braund 2005, 123. However, Magie 1950, 1076, n. 21, doubts the existence of this road.

29 Leaf 1916, 6-8.

30 Magie 1950, 1076-77, n. 21 and 1082, n. 30; Bekker-Nielsen 2016, 37 and 41.

31 For the road see Bryer and Winfield 1985, 39-40; Bekker-Nielsen 2016, 37 and 41; Olshausen 2014, 45. For the milestones see French 2013, 59-67, no. 21 (A-E). They were situated on the road C7: 20, map 5.1.1 and 173, map 5.2.1. See also Bekker-Nielsen 2016, 37 and n. 37; Mitchell 1993, 127, n. 69.

32 Cuinet 1894, 570-71.

33 Mitchell 1993, map 8, shows a route considered suitable for pack animals connecting the main road between

Some other itineraries were possible for transporting *miltos* from Cappadocia to the Pontic shore for onward trade, even if Strabo does not mention them. For example, an indirect route could have been via the south-north axis to join the Pontic road northeast to Amisus.[34] From there, the goods could have been transported to Sinope by sea, since the coastal road was more difficult that the waterway[35] and less expensive, since it was not necessary to feed a string of mules or other forms of land transport. Alternatively, the Halys (Kızılırmak), which flows through Cappadocia not far from the known quarry site used for extracting *miltos* today, could have offered a cheaper alternative to land transport, but only for some segments, since it was interrupted by cataracts and the level of the water fluctuated on a seasonal basis.[36] The part passing between Germanicopolis (Çankırı) and Tavium was navigable in antiquity while that between the modern cities of Çeltek and Bafra was still used in the 1960s.[37] A road along the riverbank probably existed, if only to haul the boats when the wind or water flow was not sufficient for navigation.[38] As a matter of fact, a mixed transport system combining river transport with animal haulage should have been the norm in Anatolia for the transportation of goods.[39]

Strabo tells us that *miltos* was transported from Cappadocia to Sinope for onward trade, and this explains how the material acquired its name. What then of his further statement that the transport of *miltos* for trade was directed to Ephesus? A major circulation axis in Anatolia in antiquity was the so-called Southern Highway, following the Maeander River eastward to Phrygia via Laodicea (near Denizli), continuing through Cappadocia, and then turning south to Cilicia.[40] Shortly after 129 BC, when the province of *Asia* was formed and Ephesus became the *de facto* capital,[41] milestones of the first governor of the territory, Manius Aquillius, show that the network of the roads in the region was improved immediately,[42] a fact presumably known to Strabo. However, was the enhancement of the road network in Asia province the only reason that the trade route for *miltos* changed, as this part of Strabo's text is often interpreted? On one hand, a route along the Maeander existed long before the Roman dominance of Anatolia began. In some parts the road was already in use in the Archaic period,[43] while in the Hellenistic period, a decree of Eumenes II or Attalus II stipulated that the road had to be maintained to be easily passable.[44] On the other hand, there is the importance also given to the roads in northern Anatolia since, as we have seen, the west-east road was already used in the Pontic kingdom and formalized under the authority of Pompey.[45] Therefore, at the time of Strabo, the roads in both directions were suitable for trade and transport.

Pompeiopolis and Neoclaudioplis to reach Sinope directly. On the common use of pack animals for transportation, see Adams 2012, 219, 230.

34 Olshausen 2014, 45.

35 Munro 1901, 54.

36 There were cataracts between Osmancık and Kargı; see Roelens-Flouneau 2018, 307. On the difficulties of river navigation in general, see Adams 2012, 227.

37 For navigation on the Halys, see Bryer and Winfield 1985, 18; McGing 1986, 6; Barat 2018, 225-26; Roelens-Flouneau 2018, 306-8, 317, fig. 12.

38 Roelens-Flouneau 2018, 306-7. See the map in Akkan 1962.

39 Adams 2012, 231.

40 Magie 1950, 40-41 and 789-93, n. 18. This road in some parts corresponded with the older Persian Royal Road; see also Magie 1950, 792; French 1998.

41 Külzer 2019, 149-152.

42 Külzer 2019, 152. See the maps of Asia west and east in French 2014, 25, 26.

43 Külzer 2019, 152; 2016, 5.

44 Magie 1950, 40-41.

45 Bekker-Nielsen 2016, 43.

A look at the distances is informative in this context. In a direct line, the distance from Ephesus to Cappadocia (Nevşehir) is 660 kilometers and by road today, which broadly follows the ancient route, it is 815 kilometers. Between Sinope and Cappadocia, and between Amisus (Samsun) and Cappadocia, the respective distance by direct line and by modern roads, which likewise broadly follow the ancient routes, are 375 and 550, and 320 and 455 kilometers respectively. The difference in distance is such that even if the road to Ephesus was easier since it was newly improved and there was no range of mountains to cross, it may not have been the main - or only - motivation for sending the Cappadocian pigment to Ephesus for onward trade. To which we should add that, whatever route was chosen, the problems of the differing factors of expense involved with land versus cheaper water transport, where this was possible, had to be taken into account.

One reason for a change in the direction of transport could be the commercial outreach of Ephesus. Aquillius's new road became a main trade route, and the quantity and the diversity of goods traveling there and back must have notably increased.

Other factors though could have played a role in shifting the transport of *miltos* to Ephesus, while taking obvious advantage of the better quality of the road. Given the extra expense of land transport with regard to the distance involved, it may have been compensated by the fact that *miltos* could be exported directly to the Aegean, Mediterranean and Western countries. It would have avoided to take the lengthier sea route from Sinope through the Bosporus, Marmara Sea, and Hellespont. The contract for the construction of the temple of Zeus Basileus at Lebadeia in Boeotia of before 172 BC, perhaps the 220s, states explicitly, for example, that Sinopean *miltos* (μιλτώ Σινωπίς) was to be used. This illustrates a clear use of the *miltos* of Sinope in mainland Greece.[46] Thus from Sinope, it had to traverse the southern Black Sea littoral and pass through the Bosporus, etc., to reach the Aegean. A point to be stressed here and also be kept in mind is that this water-borne route was not without its dangers and inconveniences. The Black Sea was especially known to be dangerous because of the currents and sudden changes of weather, making it possible that road transport, although more expensive by distance involved, was in some cases preferable.[47]

From what Strabo writes, however, it does not necessarily mean that the trade in *miltos* from Sinope was abandoned in favor of trade via Ephesus.[48] Sinope was the shorter way to reach the other Pontic cities that, without doubt, still needed to use red ochre. The Cappadocian one was more accessible compared to the other quality sources of the material. This trade route was active in the Roman period as with, for example, salted fish sent to the garrisons in Cappadocia, and it also supplied the inhabitants to help them during a food shortage.[49] Fragments of coarse ware pottery of a fabric similar to that of Sinope and Heraclea Pontica, and dated to the Late Roman or Early Byzantine period, have been found in the valley of Mecitözü. Here Euchaïta was located,[50] a city connected to Amisus on the north and Amaseia on the east.[51] Later in the first and second centuries AD, after the time of Strabo, the road network in all of Anatolia was fully organized, especially in the Flavian period; existing

46 See below, n. 93.

47 Adams 2012, 226, 230.

48 Leaf 1916, 13-14; Braund 2005, 124.

49 Curtis 1991, 126.

50 Vroom 2018, 138.

51 Euchaïta was at the crossway of major roads; see Craft 2018, 80-83 and 77, map 4.1.

roads were upgraded and new roads created.[52] The system hinged on four major routes across Anatolia, among which were the two major routes used to transport *miltos* north to Sinope and west to Ephesus. These were completed by less important roads.[53] Circulation could have been greatly facilitated by these improvements, and we can assume that the trade of *miltos* continued in the same way as before.

This leads us naturally to how the material was transported. Discoveries of small- or middle-sized blocks of red pigment are not rare. This pigment, abundantly used in the northern Black Sea, is often present in deposits of Berezan or Olbia.[54] The probability is high that the origin is from Cappadocia via Sinope. Some pigment remains are present in receptacles used as a "paint pot," such as the foot of an amphora, already broken, or was broken for that purpose. This habit is illustrated by the finds in the Athenian Agora:[55] one foot belongs to a vessel from the area of Clazomenae of the late sixth century (pigment was put inside the already broken bottom of the amphora), one is not identified, and a third one is from the north Aegean, both dated before 480 BC. Another bottom of a Corinthian B type amphora, a type dated to the end of the sixth century BC, has been recently discovered containing a red pigment together with a yellow one.[56]

These amphorae were reused ones, probably chosen by chance because they were available. Yet the broken foot could belong to vessel used as a container for the transportation of the pigment. Although it was certainly not the only mean of transportation, some finds show that amphorae were carrying pigments,[57] as was probably the case of the amphora found in Gorgippia.[58] Bearing in mind it is water soluble, then a fully waterproof container is more probable than sacks of whatever material to avoid it being affected by dampness. A few other objects containing red pigments have been found in the Athenian Agora,[59] often opened-shape vases. Another example is the fragment of kylix found in Olbia and dated to the early fifth century BC. It bore the graffito ΣΙΝΩΠ(…), which has been interpreted as a reference to the "Sinopean" red pigment inside.[60] This kylix may have been used to keep some *miltos*, and the inscription was written to serve as a label. However, except for the example of Olbia, if the interpretation is correct, the provenance of the pigment in other paint pots has not been identified.[61] The vessel itself does not give any clue about its origin and may well, because of its shape, have been chosen probably to be filled with the pigment, although it does provide a *terminus post quem* for when it was used.

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52 Mitchell 1993, 124, 127 and 129. For the involvement of successive emperors in improving the system, see Magie 1950, 570-71, 676-77, now outdated somewhat, but still of use in its general remarks.

53 Mitchell 1993, 127 and 129.

54 Vinogradov 1981, 80. See Braund 2005, 124, about its frequent use in the Northern Black Sea region.

55 Lawall and Jawando 2002, 416-17.

56 Lawall and Jawando 2002, 419.

57 Panagou 2016, 318.

58 Personal communication from Ekaterina Alexeeva, former director of the excavation of that city. The date and the origin of the amphora are not known.

59 Lawall and Jawando 2002, 419 and n. 14 (mid and late fifth century BC). Some fragments of ceramics with red ochre inside, dating from the sixth-fifth centuries to the first century BC, have also been found in the Athenian Agora; see Caley 1945, 153-54, table II.2, 3, 7, 9 and 12.

60 Vinogradov 1981, 80. The fragment is identified as an ostrakon in the article, because it belongs to a kylix which has been broken in antiquity. I am indebted to Nino Inaishvili for forwarding this article with the translation.

61 According to Caley, the pigment in the small objects of the Agora (see above n. 59) may be of local provenance since there is a good quality red ochre in Attica; see Caley 1945, 155.

The Uses of *Miltos* as a Pigment in Antiquity

One major question that naturally requires further analysis is whether these examples of *miltos* found at such sites are indeed the Cappadocian variety and not some other kind. To this end and to help future researchers studying these and similar artefacts, a sample of Cappadocian *yoşa* was subjected to a preliminary analysis by the MTA (Maden Tetkik ve Arama Genel Müdürlüğü / Mineral Research and Exploration General Directorate) to provide a broad base from which to work.[62] It was identified by XRD analysis as hematite, an iron oxide component of red ochre.[63] However, only trace analysis will provide the distinctive chemical signature of *yoşa* that would give us the necessary data to differentiate it from other red ochres. For example, it could allow for the pigment identified as red ochre on frescoes at Sinope, for example, at the Roman bath at Sinope-Balat, as coming from Cappadocia.[64] In some cases, it has been mixed with cinnabar or other pigments to obtain a brown or violet color.[65]

Thus, we cannot go farther as yet on this question, except to note how hematite has unsurprisingly been proposed by some translators and commentators of the texts that we have studied here as the material identified in antiquity as *miltos*.[66] Dioscorides (5.126.5), though, is the only author to specify that hematite is present in the *miltos* of Sinope (εὑβρίσκεται δὲ ἐν τῇ Σινωπική μίλτῳ). Other writers who mention *miltos* also knew of hematite as a mineral, but without indicating a link between them. For example, Theophrastus (8.37) describes hematite as "with a solid texture (πυκνή) (…); dull in color (αὐχμώδης), and in accordance with its name seems to be made of blood that has become firm and dry."[67] Pliny writes that hematite is found in mines and takes the color of *minium*[68] when it is roasted; it has red veins (*venae rubentes*) and is crumbly (*friabilis natura*) (*HN* 36.144-145). He divides hematite into five types, the fourth one "is known as the 'liver ore' (*hepatites*) in its natural state, and as 'ruddled ore' (*miltites*) when it is roasted" (*HN* 36.147-148).[69]

As for the manner in which red ochre-type materials were used in the past, archaeological evidence and ancient texts reveal that *miltos* / *sinopis* had a wide range of purposes from the artistic to the practical and even the esoteric. We shall limit discussion here to those uses documented by the texts and for some of them illustrated by archaeological evidence. We exclude some other well-known uses, not mentioned in the texts, such as the painting of sculptures, vases or terracottas, the infilling of inscriptions on stone, or the well-known *dipinti* on amphorae or other ceramics.

One use was in preparatory drawings for wall paintings. Red ochre, for example, was used in the later Bronze Age for drawing under sketches and outlines as seen by the frescoes of Akrotiri,[70] while from later times there is an interesting Hellenistic example from Herculaneum

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62 I am thankful to Sema Kaya in MTA for organizing this analysis in 2016.

63 The results of the analysis eliminate some other identifications such as cinnabar (see n. 11) or bole (see below).

64 Bakiler et al. 2016, 269-70, table 3, samples RIV-1, RIV-2, RIV-7 to RIV-9, RIV-32, RIV 33.

65 Bakiler et al. 2016, 270-72.

66 For example, Caley and Richards 1956, 177 and 180; Croisille 1985, 152, § 31.1.

67 Translation, Caley and Richards 1956, 53.

68 The *minium* is a pigment of bright orange-red color obtained by roasting white lead.

69 Translation, Eichholz 1962. See the comments of Caley and Richards 1956, 138-39.

70 Immerwahr 1990, 17; Angelidis et al. 2018, 365.

of such use on marble slabs.[71] Preparatory sketches in red ochre have been observed in Pompeii on paintings of the Pompeian second and third Style, in fashion from the second quarter of the first century AD.[72] Pliny may refer to such underlying sketches when he says that the *rubrica* from Aegyptus and Africa were the best for the workers because it is easily absorbed by the coating of the walls (*tectorium*) (35.35).[73] As we shall see below, this practice continued into the Middle Ages when it took the name of *sinopia*.

With only a few exceptions, we cannot know if the red ochre coming from Cappadocia had some specific uses. Pliny himself, who is our main source on the material and its usage in the classical period, does not unfortunately indicate how it was to be used in artwork.[74] Instead, he gives more importance to its color and price than to the region from where the pigment comes. Nevertheless, thanks to his description, we can understand what distinguished *sinopis* from the other *rubricae* and why it was highly appreciated. As is well known, he divides the colors into two categories: the dark ones (*austeri*) and the bright ones (*floridi*) (*HN* 35.30). The *sinopis* and the *rubrica* are among the *colores austeri*. Moreover, he classifies the *sinopis* and the *rubrica* among the colors which are natural (*nascuntur*) because they may be used directly, as opposed to the ones which are fabricated (*fiunt*) (Plin., *HN* 35.30) or manufactured from other sources. For example, the red pigment obtained by the firing of yellow ochre was fabricated, and for that reason was considered to be of lower quality compared with the red ochre found naturally (Theoph. 8.53).[75]

According to Pliny (*HN* 35.31), the red of *miltos* added a glow (*splendor*) to a painting but at the same time, it was less bright (*acris*) than the cinnabar and *minium* which were *colores floridi*. This is the main reason why it was preferred to these for monochrome painting (*HN* 33.39). Indeed, we can visualize it perfectly when comparing Cappadocian *yoşa* to samples of cinnabar (from which vermilion is obtained) and of *minium*. Another reason for its preference in monochrome artwork is that the other pigments required too much care in their application (*curatio magni operi erat*) (*HN* 33.117).[76] By that, Pliny probably refers to the repainting necessary if the color in an artwork was fading away.[77] Pliny also comments about the pigment's hue in detailing three types of *sinopis* - red (*rubra*), light red (*minus rubens*), and intermediary (*media*) (*HN* 35.31). As such he concurs with Theophrastus (8.53), possibly his source,[78] who states that in its natural state, *miltos* could be an intense red (ἐρυθρὰ σφόδρα), pale (ἔκλευκος) or medium (μέση), in which case it is "self-sufficient" (αὐτάρκης) because it "does not need to be mixed with anything," thus used without the addition of other pigments.[79]

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71 Although these were first interpreted as monochrome paintings, it is now understood they were in fact preparatory sketches since some overlying colors are still visible; see Barbet and Allag 1972, 1036 and fig. 52.

72 Barbet and Allag 1972, 1033-44.

73 However, in the text, *tectoriis* is sometimes read as *picturis*; see Croisille 1985, 154 (§ 35.1).

74 This may be the reason why some associate the *miltos* of Sinope with the use of *miltos* in general: see, e.g., Robinson 1906, 141-43.

75 Cherry et al. 1991, 302.

76 On the interpretation of the expression, see Zehnacker 1983, 204-5, § 117.3.

77 Repainting has been well observed on terracotta figurines; see Bourgeois and Jeammet 2014.

78 Caley and Richards 1956, 180.

79 Translation by Eichholz 1965, 77. According to the reading of the text, this description may concern any type of *miltos* or the one of Sinop. Eichholz 1965, 123, § 53 reads αὐτῆς as referring to *miltos* in general; Caley and Richards 1956 relate it to the *miltos* of Sinope. The intensity of the red depends on the quantity of iron oxide. We know from analysis that *miltos* was often mixed with other pigments when used in painting; see, for example above, the analysis of the frescoes of Balat, n. 65.

According to Theophrastus, *miltos* was used in paintings for depicting naked flesh because "it is found in every variety of shade" (παντοδαπής) (8.51).[80] This is certainly a reference to the different hues which he describes. Horace in one of his satires makes allusion to it when describing the legs of gladiators drawn in red (*rubrica picta*) or charcoal (*carbo*) (*Sat.* 2.7.95-100).[81] Famous painters, such as Apelles, Aetion, Melanthius and Nicomachus, all working in the fourth century BC, used Pontic *sinopis* for the red color in tetrachromy, a painting technique using only red, white, ochre and black as colors (*HN* 35.50).[82] Pliny tells us that the more expensive *sinopis*, used to paint with a brush or to paint wood, costs two *denarii* per *libra* (*HN* 35.31). The *sinopis* and *rubrica* were also used for the fashionable monochrome paintings (*monochromata*) mentioned above.[83] Pliny could see examples of these, since he specifies that they were still done in his time (*etiam nunc*) (*HN* 33.117).

Sinopis was also used for frescoes and the like, mural art being a common feature of Roman buildings as at Pompeii and Herculaneum. Pliny, *praefectus* of the fleet in nearby Misenum, describes its use in his own living environment. According to the hue, which was related to the origin of the pigment, it was used for different part of the walls. The *sinopis* of Africa (*cicerculum*), which was redder (*magis rubet*), was preferred for the panels (*abacus*). The dark one (*maximus fuscus*), called *pressior*, was reserved for the base of these panels (*basis abacorum*) (*HN* 35.32). Pliny tells us that *sinopis* entered into the composition of fabricated pigments, such as *leucophorum* made from a mixture of Pontic *sinopis*, bright ochre (*sil lucidum*),[84] and earth of Melos (*melinum*), which was used to apply gold to woodwork (*HN* 35.36). He notes also how *sandyx* was made of ceruse (*cerussa*)[85] and *rubrica* (*HN* 35.40).

Among the more practical uses, we can refer to Homer's statement that ship hulls were of the color *miltos* (μιλτοπάρῃοι) (*Iliad* 2.637; *Odysseus* 9.125).[86] Pliny refers to this comment of Homer's (*HN* 33.115), as probably does Herodotus also, when he says that in the past ships were covered with *miltos* (τὸ δὲ παλαιὸν ἅπασαι αἱ νέες ἦσαν μιλτηλιφέες) (3.58). Some wall paintings show us the ships with "vermilion cheeks," as we see for example on the famous miniature fresco of the ship procession in the west house of Akrotiri in Thera.[87] This red color on boat hulls has been discussed and interpreted in different ways.[88] Through a close examination of the texts and of the archaeological evidence, E. Lytle has convincingly demonstrated that *miltos*, which was efficient in agriculture to protect trees and vines against rot and woodboring beetle larvae, was also used to preserve the wood of ships.[89] When used together with pitch or mixed with it, as well as with wax, it resulted in μιλτόπισσα.[90] Thus the supply of

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80 Translation Eichholz 1965, 77.

81 Liou and Zuinghedau 1995, 155, 7.2.1. interpret the text as describing a drawing.

82 For ochre, Pliny uses the word *sil* (see below n. 84).

83 On such monochrome paintings see Zehnacker 1983, 204, § 117.1.

84 Pliny dedicated a chapter to *sil* (*HN* 33.56), translated as yellow ochre by N. Rackham in the Loeb edition. See Liou and Zuinghedau 1995, 154, 4 for a study of the *sil* used for the yellow / ochre color of the tetrachromy (see above).

85 For the reading of the text, see Croisille 1985, 158, § 40.2.

86 Usually it is translated as "vermilion cheeks" in a poetic, but inaccurate way as the vermillion is coming from the cinnabar.

87 Strasser 2010, 17, fig. 5.

88 For a summary of the discussions, see Lytle 2013, 520-23.

89 Lytle 2013, 524-50.

90 Lytle 2013, 537.

miltos was vital for Athens to maintain its fleet. This explains the reason for the monopoly that the city had imposed in the middle of the fourth century BC on the *miltos* of the island of Keos, where it was abundant and of a good quality.[91]

Miltos was commonly required to check the leveling of the stonework in masonry construction, [92] which implies - at the scale of monumental architecture in the classical world - a supply required in large quantities. Probably any form of *miltos* could have been used, preferably one exploited geographically nearby and cheaper. However, in the contract for the construction of the temple of Zeus Basileus at Lebadeia in Boeotia (referred to above), it is stated explicitly that Sinopean *miltos* was to be used (μίλτὼ Σινωπίς) mixed with pure olive oil. If it was not used, a fine would be levied.[93] Dioscorides treats separately the use of *miltos* proper for building, masonry and carpentry (τεκτονικὴ <μίλτος>) and says that it was of a lower quality than the one of Sinope (Dioscorides 5.96.3). According to him, the best ones for these purposes were from Egypt and Carthage, because they have a homogeneous texture without stones (ἄλιθος) and were easy to grind (εὐθρυβής). Hence it seems to be the same as the one used for decorating walls, as already mentioned.

Lastly, two papyri dated to the period of Constantine I at the beginning of the fourth century AD - one now at Leyden and one at Stockholm - provide information on the use of what must be *miltos*, which is recorded nowhere else.[94] The Leyden papyrus records some recipes for the use of "earth from Sinope" to create gold, in an early example of alchemy.[95] But the term might be used here synonymously for red ochre. The papyrus of Stockholm on the other hand tells us that it is used for dyeing wool "in a fine deep red purple,"[96] and could also dye a stone to make it like a sardonyx.[97]

Sinopis / *Sinopia* in the Post-Classical World

The surviving texts from late antiquity suggest that *miltos* pigment from Cappadocia was no longer known in the Western world, and so it was not traded abroad anymore. This does not mean that it was not exploited and used in a more restricted geographical area. The period in which it ceased to be exported cannot be determined precisely from these texts, but may have occurred in the second half of the third century AD. The decline of Ephesus in connection with the so-called Third-century crisis had begun, in part owing to the successive attacks

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91 For the monopoly see Cherry et al. 1991, 299-300; Photos-Jones et al. 1997, 359 and Photos-Jones 2018, 427; Lytle 2013, 549, n. 90. See above for the *miltos* of Keos. The text of Herodotus - mentioning that the red on the hull belongs to the past - implies that the use of *miltos* has been replaced for a time by another process. It should have been resumed at the time of the monopoly.

92 Concerning this technique, see Ginouvès and Martin 1985, 77, 41.1 (s.v. Sanguine, Ocre rouge). It is well explained in the commentary to the Lebadeia contract by Choisy 1884, 205-6. According to him, this technique was still used in the 19th century in France and was called "*dressage au rouge*."

93 *SIG*^{3}, 3:972-155-59; Pitt 2016, 196 and 199. This temple was never finished. Robinson 1906, 143 and n. 1, mentions some red marks on architectural blocks in other sites.

94 The exact purpose of these papyri and their date is discussed by Halleux 2019, 24-30.

95 *PLeid.*, l. 96 and 477, Halleux 2019, 88 and 104.

96 *PStock.*, l. 872 and 884; Halleux 2019, 142, 201, commentary of p. 142, n. 5 and 202, commentary of p. 142, n. 11. This should be differentiated from the purple manuscripts such as the famous *Codex Sinopensis* made in Syria and dating to the second half of the sixth century, preserved in the Bibliothèque Nationale, Paris (Supplément grec 1286): https://manuscripta.hypotheses.org/530? Its color was obtained from orchil, a dye extracted from lichens; see Aceto et al. 2020, 1275.

97 *PStock.*, l. 122; Halleux 2019, 114.

of the Goths and Sasanids.[98] Other facts could also have played a role, such as the successive territorial reorganizations of the Roman province of Cappadocia and the foundation in the early fourth century AD of the new capital of Constantinople, which changed the direction of trade in Anatolia. A deterioration of the road networks may also have contributed to a decline in trade westwards from Cappadocia as the road network declined progressively into the Late Byzantine period.[99]

Yet, even if the real appearance of the original *sinopis* has probably been forgotten soon after its export ceased, its reputation as a high-quality pigment and its origin from Cappadocia were not entirely lost, thanks to some Greek and Latin texts from late antiquity. The name remained in use to refer to a red ochre distinguishable by its quality. For example, it is noted by Isidore of Seville, who mentions *sinopis* in book 19, chapter 17 of his Etymologiae (*Etymologiæ*) dated to AD c. 590-636. He differentiates this red ochre (*sinopis*) from red earth (*rubrica*), and indicates that the first originated from Sinope while the second from *Pontus*. This confusion probably represents his reliance on written tradition without any reference to a tangible reality.

The work of Isidore of Seville was very popular in the Middle Ages and during the Renaissance, so may have contributed to keeping the name *sinopis* in currency, although the material per se was not used anymore. According to Thompson, Sinope in the Middle Ages was associated with red ochre pigment originating from places other than Cappadocia, and the Latin name *sinopis* or the Italian *sinopia* (pl. *sinopie*) became simply synonymous with high-quality red ochre.[100] That may be so, but as a language curiosity, if nothing else, it is worth mentioning how in the Middle Ages, the contemporary French word *sinople* developed from the Latin *sinopis* and was used originally for a red tincture in heraldry. After an unexplained shift of meaning, however, starting in the mid 14th century, it came to designate the *vert* (green) tincture.[101] The Florentine painter Cennino Cennini (c. 1357 / 1364-before 1427),[102] active in the Late Gothic period and considered a precursor of the Renaissance, wrote a treatise on painting called *Il libro dell'arte*. In chapter 38 he refers to a red pigment called *sinopia*, which he notes was used for frescoes (*a fresco* or *a secco*).[103] He adds that, together with his father Andrea Cennini, he found a cave in the region of Sienna in Tuscany where they were living, with veins of dark and light *sinopia* next to other colors (ochre, azure, white and black).[104]

More to the point, his account shows clearly how the name *sinopia* designated a pigment according to its color and quality, and no longer its origin. We can find this fact clearly stated

98 Merrifield 1846, XXXII, observes that the 16th-century painter Giovanni Paolo Lomazzo does not mention *Sinopia* in his treatise *Trattato dell'arte della pittura, scoltura et architettura* (1584). He supposes that it could be because the Ottoman Turks would not allow enough trade of that pigment to meet the need of European artists, as had been the case for Armenian blue according to Georgius Agricola. This cannot be true since the exportation of the pigment had already stopped in the late antiquity.

99 Külzer 2019, 151; Craft 2018, 77-78.

100 Thompson 1956, 98. The author confuses the *miltos* of Sinope and that of Lemnos which was the one sealed by a small quantity (see n. 16). See Loumyer 1998, 190-92 for the reference to the *sinopis* in medieval texts referring to different natures of red. We shall now use the name *sinopia*, which is commonly used today.

101 Pastoureau 2017, 200, n. 29.

102 Broecke 2015, 2 and 3.

103 Broecke 2015, 61. In that chapter, Cennini combines *cinabrese*, *sinopia* and *porphyre*: 61 and nn. 2 and 3.

104 Broecke 2015, 70-71, ch. 45. The "cave" location reminds us of that by Dioscorides of the source of *miltos* (see above).

for the first time in the *Discorsi* of the *De Materia Medica* of Dioscorides by Pietro Andrea Mattioli dated to 1544. In his commentary, he says that nobody could "show him" the real *Rubrica Sinopica*,[105] indicating that access to authentic *sinopia* was now lost. According to him the closest mineral to the ancient material then used in medicine was the Armenian *bole*,[106] and notes that it is called *Rubrica* or *Arcanne Sinopique*.[107] Later texts also mention that the pigment *sinopia*, per se, is no longer known. In the article dedicated to the *terre de Sinope* ("earth of Sinope") in Diderot's *Encyclopedia* of 1765, Jaucourt writes that the location of the red earth of Sinope is not known anymore, and also identifies it as *bole*, used as the base for gilding.[108] Victor Mottez, who was himself an oil and a fresco painter, published a French translation of Cennino Cennini's work in 1858.[109] There he commented on *sinopia* - that this color is not used anymore under this name nor the *cinabrese*, and cites Matteoli in confirmation of this observation.[110] Mary Merrifield, who published in 1846 *The Art of Fresco Painting*, studied in detail the nature of *sinopia* and other "natural red pigments" and made the following statement: "Rubrica, Sinopia, Cinabrese, Majorica, Terra Rossa d'Inghilterra, Bruno d'Inghilterra, Rouge Violet, Ferretta di Spagna, Almagra, Pabonazo (…) are merely different names for the same pigment, different merely in quality, intensity of color, or mode of preparation. That this pigment is in fact the Haematite (*sic*) or red ochre of the mineralogists."[111]

As we can see from the writings of Matteoli and Jaucourt, the origin and exact nature of the *miltos* of Sinope had long been lost by their time. Nevertheless, the name was sometimes understood as the equivalent of *bole* which was used for gilding but also had some medicinal virtues. However, Marry Merrifield in her study specifies that *sinopia* has been wrongly interpreted as Armenian *bole*.[112] In particular, what the works cited above show is that although the red earth of Sinope no longer came to Europe from its origin in Cappadocia, the use of *sinopia* in the Middle Ages and during the Renaissance demonstrates a practical continuity in art techniques linked to a red ochre of high quality. This was most obviously so in the technique of making the outlines of the figures and the underlying sketches on frescoes with the red ochre already mentioned that existed in antiquity. The pigment conventionally called *sinopia* gave its name to these drawings, and Cennino Cennini recommended its use for the underlying sketch of the face and whole figures, whether completed *a fresco* or *a secco*.[113] This freehand drawing in the *sinopia* method, however, was superseded in the middle of the 15th century by the use of a cartoon on which the drawing is done and then transferred to the wall by the pricking and pouncing method.[114]

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105 Du Pinet 1642, ch. 71.30.

106 Du Pinet 1642, ch. 71.20-60.

107 *Arcanne* is a red chalk used for setting out the framework in masonry construction.

108 *Encyclopédie* 15 s.v. "Sinope". The Armenian *bole* was used for its medicinal properties but also in art. The term "bole" alone refers to art.

109 He has added in his edition the foreword and comments of Chevalier G. Tambroni (1773-1824), an Italian diplomat.

110 Mottez 1858, 52-53, n. 2. See below for *cinabrese*.

111 Merrifield 1846, xxix. See also Eastaugh et al. 2008, 327.

112 Merrifield 1846, xxxiii-xxxiv. Some modern commentators also interpret *miltos* as *bole*, using that appellation as an equivalence of red ochre; see Lasserre 1981, 155, n. 1; Liou and Zuinghedau 1995, 155. Robinson 1906, 141 calls the *miltos* of Sinope "Red Earth or Bole"; see Eastaugh et al. 2008, 327.

113 Broecke 2015, 101, ch. 67; 113, ch. 72.

114 Mayer 1991, 375.

Cennini also reports that light red *sinopia* was used to dye paper a reddish or peach-color.[115] It was also used to manufacture a pigment *cinabrese*, which would be in the category of those described as *fiunt* by Pliny (*HN* 35.30). Cennini's recipe describes the mixing of the best and lighter category of *sinopia* with the so-called "Saint-John white," made of slaked lime.[116]

He indicates also how in painting, the uses of *sinopia* and *cinabrese* are mostly similar. The dark variety of *sinopia*, usually mixed with other colors, was good for the flesh tones to enhance the outline of the facial features and to detail the hair.[117] It could also represent the color of the wood.[118] However, for drapery or to represent silk, it needed to be mixed with black as a first layer, and then covered with other colors.[119] *Cinabrese*, on the other hand, was often mixed with additional "Saint-John white" and diluted, then used for the color and modeling of the lips and the cheeks.[120] For the folds in a cloth, it was also used in a pure state to create a *chiaroscuro* effect.[121]

From *Miltos* to *Yoşa*

Although the export of Sinopean red earth from Sinope and from Ephesus to the wider Roman Empire seems to have ended in the third century AD, within Cappadocia itself its use continued into the Byzantine period and beyond. The predominance of red in painting the Cappadocian churches, for one thing, is striking, without distinction of date, and the color used in figurative frescoes and in decorative patterns alike. In Göreme alone we might mention as good examples of its use the Saint Barbara Church (ca. 1100) (fig. 3), the façade of Karanlık Kilise (Dark Church) (mid-11th century) (fig. 4), and the Çarıklı Kilise (Sandal Church) (11th century) (figs. 5 and 6). It is also found in secular contexts, as with the simple geometric outline schemes on the facades of dovecotes. This is an integrant part of the canon of Byzantine residential architecture, but also associated with some churches.[122] The earliest dated examples belong to the 16th century,[123] with a resurgence of this practice in the 18th century, continuing into the 19th and a part of the 20th century.[124] Today, in the potter's town of Avanos, craftsmen are also using the locally obtained iron oxide which they call *yoşa* (fig. 7). They dilute it in water and dip their products inside, and when it is dry, burnish the surface before firing. Their aim is to give a more vivid color to the surface of their products, in a manner reminiscent of the technique used on Attic vases of antiquity,[125] although just as often they use the *yoşa* slip for decorative patterns on the otherwise non-slipped surface (fig. 8). In both cases, some clay is added to the water as a binder.

115 Broecke 2015, 42, ch. 20.

116 Broecke 2015, 62-63 and n. 2, ch. 39 and 84, ch. 58.

117 Broecke 2015, 102, ch. 67; 190-91, ch. 160; 192, ch. 161.

118 Broecke 2015, 119, ch. 82.

119 Broecke 2015, 119, ch. 83; 185, ch. 155.

120 Broecke 2015, 102, ch. 67.

121 Broecke 2015, 111, ch. 71.

122 Ousterhout 2005, 153-55, figs. 121 and 123. On the dovecotes in Cappadocia, see Gülyaz 1998. Dovecotes have been carved in the Karanlık Kilise (fig. 4).

123 Gülyaz 1998, 549.

124 Amirkhani et al. 2010, 48-50, 55-56, figs. 11-12. Many were constructed in the windows or doors of the churches.

125 Cohen 2006, 44-53.

Conclusion

Since antiquity, the red ochre from Cappadocia has been held in high esteem for use in a variety of ways. As seen in a series of texts from antiquity, through the Middle Ages and the Renaissance into early modern times, it is possible to follow the changes of its name reflecting its changing fortunes. What was known in antiquity as the *miltos* of Sinope or as the Pontic *sinopis* referenced precisely the pigment extracted from the mines of Cappadocia. In late antiquity, in the Middle Ages and later, *sinopis* or *sinopia* became synonymous with *miltos* or *rubrica*, that is red ochre. But the name was preserved from antiquity as one of distinction given only to high-quality versions of red ochre. The fact that it was called after the name of the city of Sinope was never forgotten nor its real origin, Cappadocia. Some online sites, for example, sell a pigment for painting called "sinopia" and correctly mention the origin of the name, even if the hue of the pigments called by that name varies.[126] Some companies have even chosen "Sinopia" as a brand name. By contrast, it is a chest of the less-rare *miltos* of Keos that features in the video game "Assassins Creed Odyssey,"[127] which if nothing else brings an awareness of the substance to a large, non-academic audience.

Today, on the web colors, the sinopia is equivalent to vivid reddish orange,[128] but it has been given the name "sinoper" in English, which corresponds to a different color.[129] However, the real pigment extracted in Cappadocia, which provides this name, has not circulated outside the immediate area since at least late antiquity. However, its mining has probably never ceased, so it is still traded in Türkiye. The exploitation of the quarries, the use of the material, and its trade and the name(s) given to the pigment during this long timespan would require detailed research, including the study of Byzantine and Ottoman texts. It is beyond the scope of this article's aim, although we might end by noting how the name *yoşa*, for what was once known generically as *miltos*, is of probably relatively recent origin.

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126 The name is given, as far as Japan, to a pigment sold as "red bolo (Sinopia)": https://pigment.tokyo/product/?q=Sinop&set_language=en (consulted 26/7/2021).

127 https://www.powerpyx.com/assassins-creed-odyssey-red-in-the-wreckage-side-quest-walkthrough/ (consulted on the 26/7/2021).

128 Its hexadecimal format is #cb410b (https://www.crispedge.com/color/cb410b) (consulted on the 26/7/2021).

129 Thompson 1956, 98. The hexadecimal format is #bb1111 (https://www.crispedge.com/color/bb1111) (consulted on the 26/7/2021).

Bibliography

Ancient Sources

Dioscorides. *Pedanii Dioscuridis Anazarbei. De Materia Medica*, *Libri Quinque*. Vol. 3, *Quo Continentur Liber V. Crateuae, Sextii Nigri Fragmenta, Dioscuridis liber De simplicibus*, edited and commented by M. Wellman in Latin. Berlin: Weidmannos, 1914.

Herodotus. *The Persian Wars*. Vol. 1, *Books I-II*, with an English translation by A.D. Godley. Revised and reprinted. Loeb Classical Library 117. Cambridge, MA: Harvard University Press, 1926.

Herodotus. *The Persian Wars*. Vol. 2, *Books III-IV*, with an English translation by A.D. Godley. Revised and reprinted. Loeb Classical Library 118. Cambridge, MA: Harvard University Press, 1938.

Horace. *Satires, Epistles, and Ars Poetica,* with an English translation by H.R. Fairclough. Revised and reprinted. Loeb Classical Library 194. Cambridge, MA: Harvard University Press, 1929.

Plin. *Pliny, Natural History*. Vol. 9, *Books 33-35*, with an English translation by H. Rackham. The Loeb Classical Library 394. Cambridge, MA: Harvard University Press, 1952.

Plin. *Pliny, Natural History,* Vol. 10, *Books 36-37*, with an English Translation by D.E. Eichholz. The Loeb Classical Library 419. Cambridge, MA: Harvard University Press, 1962.

Strabo. *Strabo, Geography*. Vol. 5, *Books 10-12*, with an English translation by H.L. Jones. The Loeb Classical Library 211. Cambridge, MA: Harvard University Press, 1928.

Strabo. *Strabo, Geography*. Vol. 6, *Books 13-14*, with an English translation by H.L. Jones. The Loeb Classical Library 223. Cambridge, MA: Harvard University Press, 1929.

Theophr. *Theophrastus, De lapidibus*, with an English translation and commentary by D.E. Eichholz. Oxford: The Clarendon Press, 1965.

Vitr. *Vitruve, De l'Architecture*, *Livre VII,* with a French translation by B. Liou, and M. Zuinghedau. Collection des Universités de France. Série latine - Collection Budé 327. Paris: Les Belles Lettres, 1995.

Modern Works

Aceto, M., E. Calà, A. Agostino, G. Fenoglio, M. Labate, C. Förstel, C. Denoël, and A. Quandt. 2020. "Non-Invasive Study on the Sinope Gospels." *Heritage* 3.4:1269-278.

Adams, C. 2012. "Transport." In *The Cambridge Companion to the Roman Economy*, edited by W. Scheidel, 218-40. Cambridge Companions to the Ancient World. Cambridge: Cambridge University Press.

Akkan, E. 1962. "Kızılırmak'ın Asağı Kesiminde Kayıkla Nakliyat." *Ankara Üniversitesi Dil ve Tarih Coğrafya Fakültesi Dergisi* 20.3-4:263-70.

Amirkhani, A., H. Okhovat, and E. Zamani. 2010. "Ancient Pigeon Houses: Remarkable Example of the Asian Culture Crystallized in the Architecture of Iran and Central Anatolia." *Asian Culture and History* 2.2:45-57.

Angelidis, P., E. Kalambouki, S. Sotiropoulou, and M. Hamaoui. 2018. "The Preliminary Designs in the Akrotiri Wall-Paintings." In *Χρωστήρες / Paintbrushes. Wall-Painting and Vase-Painting of the Second Millennium BC in Dialogue: Proceedings of the International Conference on Aegean Iconography, Akrotiri, Thera, 24-26 May 2013*, edited by A.G. Vlachopoulos, 359-69. Athens: University of Ioannina / Hellenic Ministry of Culture and Sports.

Bakiler, M., B. Kırmızı, Ö. Ormancı Öztürk, Ö. Boso Hanyalı, E. Dağ, E. Çağlar, and G. Köroğlu. 2016. "Material Characterization of the Late Roman Wall Painting Samples from Sinop Balatlar Church Complex in the Black Sea Region of Turkey." *Microchemical Journal* 126:263-73.

Barbet, A., and C. Allag. 1972. "Techniques de préparation des parois dans la peinture murale romaine." *MÉFRA* 84.2:935-1069.

Barat, C. 2018. "L'Halys, un fleuve structurant en Asie Mineure." In *Études des Fleuves d'Asie Mineure dans l'Antiquité*. Vol. 2, edited by A. Dan and S. Lebreton, 203-33. Arras: Artois Presses Université.

Bekker-Nielsen, T. 2016. "Trade, Strategy and Communication on the Roman North-East Frontier." *Cedrus* 4.1:31-46.

Blümner, H. 1887. *Technologie und Terminologie der Gewerbe und Künste bei Griechen und Römern*. 4 vols. Leipzig: Teubner.

Bourgeois, B., and V. Jeammet. 2014. "Peindre et Repeindre sur terre cuite en Grèce hellénistique." *Techně* 40:84-95.

Braund, D. 2005. "Across the Black Sea: Patterns of Maritime Exchange on the Northern Periphery of Roman Asia Minor." In *Patterns in the Economy of Roman Asia Minor*, edited by S. Mitchell and C. Katsari, 115-38. Swansea: The Classical Press of Wales.

Broecke, L., ed. and trans. 2015. *Cennino Cennini's Il Libro dell'Arte. A New English Translation and Commentary with Italian Transcription*. London: Archetype Publications Ltd.

Bryer, A., and D. Winfield. 1985. *The Byzantine Monuments and Topography of the Pontos*. 2 vols. Dumbarton Oaks Studies 20. Washington D.C.: Dumbarton Oaks Research Library and Collection.

Caley, E.R. 1945. "Ancient Greek Pigments from the Agora." *Hesperia* 14.2:152-56.

Caley, E.R., and J.F.C. Richards. 1956. *Theophrastus on Stones: Introduction, Greek Text, English Translation, and Commentary*. Graduate School Monographs. Contributions in Physical Science 1. Columbus, OH: The Ohio State University Press.

Cherry, J.F., J.L. Davis, E. Mantzourani, W. Rostoker, and J. Dvorak. 1991. "Miltos and Metallurgical Extraction." In *Landscape Archaeology as Long-Term History. Northern Keos in the Cycladic Islands, from Earliest Settlement until Modern Times,* edited by J.F. Cherry, J.L. Davis and E. Mantzourani, 299-303. Monumenta Archaeologica 16. Los Angeles, CA: Institute of Archaeology, University of California.

Choisy, A. 1884. *Études sur l'architecture grecque. 4e Étude: Un devis de travaux publics à Livadie*. Paris: Librairie de la société anonyme de publications périodiques.

Christidis, G.E., C.W. Knapp, D. Venieri, I. Gounaki, C. Elgy, E. Valsami-Jones, and E. Photos-Jones. 2020. "The Interweaving Roles of Mineral and Microbiome in Shaping the Antibacterial Activity of Archaeological Medicinal Clays." *Journal of Ethnopharmacology* 260. https://doi.org/10.1016/j.jep.2020.112894

Cohen, B. 2006. "Coral-Red Gloss." In *The Colors of Clay. Special Techniques in Athenian Vases*, edited by B. Cohen, 43-70. Los Angeles, CA: The J. Paul Getty Museum.

Craft, S. 2018. "Travel and Communication." In *Archaeology and Urban Settlement in Late Roman and Byzantine Anatolia. Euchaïta-Avkat-Beyözü and Its Environment*, edited by J. Haldon, H. Elton and J. Newhard, 70-96. Cambridge: Cambridge University Press.

Croisille, J.-M., trans. 1985. *Pline l'Ancien. Histoire naturelle, Livre XXXV (La Peinture)*. Collection des universités de France. Série latine - Collection Budé 272. Paris: Les Belles Lettres.

Cuinet, V. 1894. *La Turquie d'Asie; géographie administrative, statistique, descriptive et raisonnée de chaque province de l'Asie-Mineure*. Vol. 4. Paris: Ernest Leroux.

Curtis, R.I. 1991. *Garum and Salsamenta: Production and Commerce in Materia Medica*. Studies in Ancient Medicine 3. Leiden: Brill.

Debord, P. 1999. *L'Asie Mineure au IVe siècle (412-323 a.C.). Pouvoirs et jeux politiques*. Études - Ausonius 3. Bordeaux: Université / Paris: De Boccard.

Du Pinet, M.A. 1642. *Les Commentaires de M.P. André Matthiolus, Médecin Senois, sur les six livres de Pedacius Dioscoride Anazarbéen, de la matiere medecinale: Traduit de Latin en François, par M. Antoine du Pinet*. Lyon: Claude Prost. http://catalogue.bnf.fr/ark:/12148/cb309084

Eastaugh, N., V. Walsh, T. Chaplin, and R. Siddall. 2008. *Pigment Compendium: A Dictionary and Optical Microscopy of Historical Pigments*. Oxford: Butterworth-Heinemann.

Eichholz, D.E., trans. 1962. *Pliny, Natural History*. Vol. 10, *Books 36-37*. Loeb Classical Library 419. Cambridge, MA: Harvard University Press.

Eichholz, D.E., trans. 1965. *Theophrastus. De Lapidibus*. Oxford: The Clarendon Press.

Encyclopédie 15 Sinope. L. de Jaucourt, s.v. Sinope, *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers* 1765. Vol. 15, *Sen-Tch,* edited by D. Diderot and J.R. d'Alembert, 213. Paris: Samuel Faulche.

French, D. 1998. "Pre- and Early-Roman Roads of Asia Minor. The Persian Royal Road." *Iran* 36:15-43.

French, D.H. 2013. *Roman Roads and Milestones of Asia Minor*. Vol. 3, *Milestones*. Fasc. 3.4, *Pontus et Bithynia (with Northern Galatia)*. British Institute at Ankara Electronic Monograph 4. London: British Institute at Ankara. https://doi.org/10.18866/BIAA/e-04

French, D.H. 2014. *Roman Roads and Milestones of Asia Minor*. Vol. 3, *Milestones*. Fasc. 3.5, *Asia*. British Institute at Ankara Electronic Monograph 5. London: British Institute at Ankara. https://doi.org/10.18866/BIAA/e-05

Ginouvès, R., and R. Martin. 1985. *Dictionnaire méthodique de l'architecture grecque et romaine*. Vol. 1, *Matériaux, techniques de construction, techniques et formes du décor. CÉFR* 84.1. Athens / Rome: École Française de Rome.

Godley, A.D., trans. 1926. *Herodotus, The Persian Wars*. Vol. 1, *Books I-II*. Loeb Classical Library 117. Cambridge, MA: Harvard University Press.

Gülyaz, M. 1998. "Dovecotes of Cappadocia." In *Cappadocia*, edited by M. Sözen, 548-59. Istanbul: Ayhan Şahenk Foundation.

Halleux, R., trans. 2019. *Les Alchimistes Grecs*. Vol. 1, *Papyrus de Leyde, Papyrus de Stckholm, Recettes*. Collection des Universités de France. Série grecque - Collection Budé 281. Paris: Les Belles Lettres.

Immerwahr, S.A. 1990. *Aegean Painting in the Bronze Age*. University Park, PA / London: The Pennsylvania State University Press.

Külzer, A. 2016. "The Network of Communication Routes in Anatolia in Late Antiquity and Medieval Times, in International Symposium Culture and Communication in Anatolia: Past, Present and Future." Presented *Culture and Communication in Anatolia: Past, Present and Future Atılım University, Ankara, June 15-17, 2016*. International Symposium. https://www.academia.edu/27832584/The_Network_of_Communication_Routes_in_Anatolia_in_Late_Antiquity_and_Medieval_Times

Külzer, A. 2019. "Roads and Routes. Communication Networks in the Hinterland of Ephesos." In *Ephesos from Late Antiquity until the Late Middle Ages. Proceedings of the International Conference at the Research Center for Anatolian Civilizations, Koç University, Istanbul, 30th November-2nd December 2012*, edited by S. Ladstätter and P. Magdalino, 149-60. Österreichisches Archäologisches Institut Sonderschriften 58. Vienna: Holzhauser.

Lasserre, F., trans. 1981. *Strabon, Géographie*. Vol. 9, *Livre XII*. Collection des universités de France. Série grecque - Collection Budé 280. Paris: Les Belles Lettres.

Lawall, M., and A. Jawando. 2002. "Notes from the Tins 2: Research in the Stoa of Attalos." *Hesperia* 71.4:415-33.

Leaf, W. 1916. "The Commerce of Sinope." *JHS* 36:1-15.

Liou, B., and M. Zuinghedau, trans. 1995. *Vitruve, De l'Architecture. Livre VII*. Collection des Universités de France. Série latine - Collection Budé 327. Paris: Les Belles Lettres.

Loumyer, G. 1998. Reprint. *Les Traditions techniques de la peinture médiévale*. Genoa: Slatkine. Original edition, Bruxelles: G. van Oest, 1914.

Lytle, E. 2013. "Farmers into Sailors: Ship Maintenance, Greek Agriculture, and the Athenian Monopoly on Kean Ruddle (IG II^2 1128)." *GRBS* 53:520-50.

Magie, D. 1950. *Roman Rule in Asia Minor to the End of the Third Century after Christ.* 2 vols. Princeton, NJ: Princeton University Press.

Mayer, R. 1991. *The Artist's Handbook of Materials and Techniques.* Revised and updated by S. Sheehan. 5th ed. New York: Viking Penguin.

McGing, B.C. 1986. *The Foreign Policy of Mithridates VI Eupator, King of Pontus.* Mnemosyne, Suppl. 89. Leiden: Brill.

Merrifield, M. 1846. *The Art of Fresco Painting, as Practised by The Old Italian and Spanish Masters, with a Preliminary Inquiry into The Nature of the Colours Used in Fresco Painting, with Observation and Notes.* London: C. Gilpin / Brighton: Arthur Wallis.

Mitchell, S. 1993. *Anatolia. Land, Men, and Gods, in Asia Minor.* Vol. 1, *The Celts and the Impact of the Roman Rule.* Oxford: Clarendon Press.

Mottez, V., trans. 1858. *Traité de la peinture de Cennino Cennini: mis en lumière pour la première fois avec des notes.* Paris: Jules Renouard / Lille: L. Lefort.

Munro, A.R. 1901. "Roads in Pontus, Royal and Roman." *JHS* 21:52-66.

Olshausen, E. 2014. "Pontos: Profile of a Landscape." In *Space, Place and Identity in Northern Anatolia*, edited by T. Bekker-Nielsen, 39-48. Geographica Historica 29. Stuttgart: Franz Steiner.

Ousterhout, R. 2005. *A Byzantine Settlement in Cappadocia.* Dumbarton Oaks Studies 42. Washington, D.C.: Dumbarton Oaks Research Library and Collection.

Panagou, T. 2016. "Transport Amphoras and Their Contents." In *Ηχάδιν. Τιμητικός Τόμος Για τη Στέλλα Δρούγου,* edited by M. Giannopoulou and Ch.O. Kallini, 2:312-34. Athens: Ταμείο Αρχαιολογικών Πόρων και Απαλλοτριώσεων.

Pastoureau, M. 2017. *Red: The History of a Color.* Translated by J. Gladding. Princeton / Oxford: Princeton University Press.

Photos-Jones, E., A. Cottier, A.J. Hall, and L.G. Mendoni. 1997. "Kean Miltos: The Well-Known Iron Oxides of Antiquity." *BSA* 92:359-71.

Photos-Jones, E., and A.J. Hall. 2014. "Lemnian Earth, Alum and Astringency: A Field-Based Aproach." In *Medicine and Healing in the Ancient Mediterranean World*, edited by D. Michaelides, 183-89. Oxford / Philadelphia: Oxbow Books.

Photos-Jones, E., C. Edwards, F. Häner, L. Lawton, C. Keane, A. Leanord, and V. Perdikatsis. 2017. "Archaeological Medicinal Earths as Bacterial Agents: The Case of Basel Lemnian Sphragides." In *Geology and Medicine: Historical Connections*, edited by C.J. Duffin, C. Gardner-Thorpe, and R.T.J. Moody, 141-53. Geological Society Special Publication 452. London: Geological Society. https://doi.org/10.1144/SP452.6

Photos-Jones, E. 2018. "From Mine to Apothecary: An Archaeo-Biomedical Approach to the Study of the Greco-Roman Lithotherapeutics Industry." *WorldArch* 50.3:418-33. https://doi.org/10.1080/00438243.2018.1515034, consulted on the 26/7/2021

Pitt, R.K. 2016. "Inscribing Construction: The Financing and Administration of Public Building in Greek Sanctuaries." In *A Companion to Greek Architecture*, edited by M.M. Miles, 194-205. Blackwell Companions to the Ancient World. Chichester: Wiley-Blackwell.

Robinson, D.M. 1906. "Ancient Sinope." *AJP* 27.2:125-53.

Roelens-Flouneau, H. 2018. "Remarques sur la navigabilité des fleuves d'Asie Mineure dans l'Antiquité." In *Études des Fleuves d'Asie Mineure dans l'Antiquité.* Vol. 1, edited by A. Dan and S. Lebreton, 251-317. Arras: Artois Presses Université.

Strasser, T.F. 2010. "Location and Perspective in the Theran Flotilla Fresco." *JMA* 23.1:3-26.

Thompson, D.V. 1956. *The Materials and Techniques of Medieval Painting.* New York: Dover Publications.

Thonemann, P. 2011. *The Maeander Valley. A Historical Geography from Antiquity to Byzantium*. Greek Culture in the Roman World. Cambridge / New York: Cambridge University Press.

Vinogradov, Ju. G. 1981. "Sinopa i Ol'vija v V v. do n.è. Problema političeskogo ustrojstva. = Sinope und Olbia im 5. Jh. v.u.Z. Das Problem der Staatsordnung." *VDI* 156.2:65-90.

Vroom, J. 2018. "The Ceramics, Agricultural Resources and Food." In *Archaeology and Urban Settlement in Late Roman and Byzantine Anatolia. Euchaïta-Avkat-Beyözü and Its Environment*, edited by J. Haldon, H. Elton, and J. Newhard, 134-84. Cambridge: Cambridge University Press.

Zehnacker, H., trans. 1983. *Pline l'Ancien. Histoire naturelle. Livre XXXIII*. Collection des universités de France. Série latine - Collection Budé 266. Paris: Les Belles Lettres.

Standard Reference Works

PLeid. Papyrus of Leyden. Les Alchimistes Grecs. Vol. 1, *Papyrus de Leyde*, *Papyrus de Stockholm*, *Recettes*, with a French translation by R. Halleux. Collection des Universités de France. Série grecque - Collection Budé 281. Paris: Les Belles Lettres, 2019.

PStockh. Papyrus of Stockholm. See *PLeid.*

SIG^{3}. W. Dittenberger, *Sylloge inscriptionum graecarum*, re-edited by Friedrich Hiller von Gaertringen. 4 vols. 3rd ed. Leipzig: Apud Z. Hirzelium, 1915-1924.

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FIG. 1 Ground *yoşa* from Cappadocia (© A. Ramazanoğlu).

FIG. 2 Raw *yoşa* from the quarry (© A. Ramazanoğlu).

FIG. 3 Santa Barbara Church (© D. Kassab Tezgör).

FIG. 4 Karanlık Kilise (© D. Kassab Tezgör).

FIG. 5 Çarıklı Kilise (detail) (© D. Kassab Tezgör).

FIG. 6 Çarıklı Kilise (detail) (© D. Kassab Tezgör).

FIG. 7 Iron oxide (*yoşa*) used by potters (© D. Kassab Tezgör).

FIG. 8 Vase with a decorative pattern made with the *yoşa* slip (© D. Kassab Tezgör).

ADALYA 25, 2022

Big Brothers: Two North Pontic Amphorae of Type Zeest 83 / 89 found in Limyra

BANU YENER-MARKSTEINER – PHILIP BES*

Abstract

This article presents two large commercial amphorae from the ancient city of Limyra unearthed during the renewed excavations of the so-called Theater Baths in 2007-2010, a building located southwest of the ancient theater.

The large amphorae were identified as type Zeest 83 / 89, thought to have been produced in the northern Black Sea. To the authors' best knowledge, these two examples are the first specimens of this type to be identified at a Mediterranean site. This not only sheds light on connections between Limyra and the northern Black Sea during the Roman imperial period, but also highlights as a material culture their socio-economic character because of the content, which is suggested to have been a fish product.

Keywords: Limyra, Lycia, Roman Imperial amphorae, Bosporan Kingdom, fish products in antiquity

Öz

Bu makalede, Limyra antik kentinde, antik tiyatronun güneybatısında 2007-2010 yıllarında tekrar kazılmaya başlanan ve tiyatro hamamı olarak adlandırılan yapıda gün ışığına çıkartılmış iki büyük ticari amfora ele alınmaktadır.

Zeest 83 / 89 tipi olarak bilinen bu büyük amforaların Kuzey Karadeniz'de üretildiği düşünülmektedir. Yazarların bildiği kadarıyla Limyra'dan bu iki örnek, Küçük Asya'daki antik yerleşimlerde bulunmuş ilk Zeest 83 / 89 tipi amforalardır. Roma İmparatorluk Dönemi'nde Limyra'nın Kuzey Karadeniz Bölgesi ile ilişkisine ışık tutmanın yanı sıra, Limyra'da bulunmuş bu iki amfora balık ürünleri olarak tahmin edilen içerikleri nedeniyle materyal kültür bazında sosyoekonomik karakterleri ile dikkat çekerler.

Anahtar Kelimeler: Limyra, Likya, Roma İmparatorluk Dönemi amforaları, Bosporos Krallığı, Antik Dönem'de balık ürünleri

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Introduction

The remains of ancient Limyra are located on the lower slopes and in the plain at the foot of Tocak Dağı, whose summit is 1223 m above sea level, in southeast Lycia. It is situated some five km northeast of modern Finike, the site of Limyra's presumed harbor Phoinike or Phoinix. Architectural and artefactual remains testify to continuous occupation of Limyra's area from Classical to Ottoman times.[1]

During stratigraphic excavations in the Theaterthermen (Theater Baths) in 2009 two partially preserved amphorae of rather remarkable size and, above all, great rarity were brought to light. Following their restoration both could be identified as specimens of Zeest Type 83 / 89, presumably manufactured in the north Pontic area. Their archaeological context and particularly their rarity merit this contribution which discusses their findspot, characteristics of typology and fabric, and provenance.

Findspot

The two amphorae were uncovered during the excavations of a building complex located immediately outside the southwest corner of the Roman theater in the center of the ancient city (fig. 1). Excavations in this area were carried out in 1995 and 1996 and, after a hiatus of over ten years, were resumed in 2007 and concluded in 2010, although excavation of the complex has not been completed.[2] The results of these four campaigns showed that the building was constructed in the third century as a bath complex, though the question whether it was part of a private building or functioned as a public bath still cannot be answered (fig. 2). The plan of the building nevertheless presents the typical layout of a bath complex with three rooms in a row (frigidarium, tepidarium, caldarium, here Rooms II, III and IV respectively), a layout that is also known from other ancient cities in Lycia, albeit with smaller dimensions.[3] Sometime in the mid-fifth century the hypocaust rooms of the complex were filled, and the entire building lost its function as a bath.

In a subsequent phase of reutilization of the building that began in the second half of the fifth century, the complex was rebuilt, enlarged, and remained in use until the eighth century. Furthermore, a small amount of archaeological evidence indicates that parts of the building continued to be used until the 10th century.[4] Even though the function during this later phase is not exactly clear, archaeological evidence points to commercial and religious purposes. This suggests that it could have been the residence of a prominent person or an important authority, or perhaps a Christian charitable institution, for example, a *xenodochion*.[5] Since there is no archaeological evidence datable to the 11th to 13th centuries, the building was either abandoned prior to that time, or the upper layers were removed before or when the area was transformed into a burial ground in the 14th century, which remained in use until the 17th century.[6]

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1 All dates are AD and approximate unless otherwise noted.

2 Marksteiner and Schuh 2008, 42-45; Seyer and Schuh 2009, 45-47; 2010, 50-53; 2011b, 54-56; Schuh 2012a, 2012b; Baybo 2009.

3 Schuh 2012a, 288, 293; 2012b, 161-62, 166.

4 Yener-Marksteiner 2019, Yener-Marksteiner (forthcoming). For other bath complexes in Limyra, see Ganzert 1996; Sewing 2015.

5 Yener-Marksteiner 2016, 198-99.

6 Cf. an unpublished anthropological report from Jan Nováček and Kristina Scheelen. It cannot be ruled out that the area was used as a burial ground already prior to the 14th century. Only a small number of skeletal remains from

Both amphorae presented here were uncovered in Room VI (Q18-5) in the northeast part of the building complex during the excavation campaign in 2009.[7] Despite intensive construction activities in this part of the building in later centuries, stratigraphic data testifies that the northeast corner under the secondary walls of Room VI, as well as a canal running to Room II found below a mortar screed floor in this area, belonged to the complex's first phase.[8] The spectrum of pottery finds from the backfilling of the canal (find no. Li09-290) and from the layer below the mortar screed floor (find no. Li09-282)[9] is known from other contexts in Limyra and provides a *terminus ante quem* in the fourth century.[10] The small quantity of finds from the layer in which both amphorae were found (find no. Li09-308) is homogenous and of the same chronology. Yet the contamination of stratigraphically related layers in the same area (i.e., with residual and / or intrusive artefacts), caused by subsequent construction activities as well as use of the area as a burial ground, shows how deeply the layers were interfered with.[11] Here, reuse of one or both well-preserved amphorae can be plausibly considered when considering size, (im)mobility, and pragmatic usage of such large vessels, though neither amphora could be fully restored.

The Amphorae

Morphology and Typology

Indeed, neither amphora could be fully restored with the missing parts *in casu* fragments absent in the excavated layer. Missing from specimen 1 (object no. Li09-308-1), which is better preserved, are part of the rim, lower wall, and entire bottom. Essentially, however, it preserves most of its profile (figs. 3-4). This shows a rim with a diameter of ca. 20 cm that is offset from the broad neck by an exterior step, and with a strongly beveled interior lip. The two large handles are ear-shaped in profile and circular in section. Both handles are rather neatly attached, running from a few cm below the stepped rim to the middle of the shoulder (fig. 5). On both sides of the interior neck an indentation can be seen at the height where the handles are attached, which is where (presumably) a finger was pressed into the wall to ensure a firm attachment of the upper onset. This feature was not observed on the interior shoulder, i.e., at the lower onset, although this feature is observed on specimens found elsewhere.[12] The high and wide neck gently broadens from the rim downward where it curves into the shoulder. The overall body profile can be described as an inverted pear-shape. Even if the bottom and lower wall are missing, its typological identification (see below) suggests that the vessel's lower segment is probably to be reconstructed as a solid, somewhat pointed toe, which can nevertheless vary in profile, height, and width. Where preserved, the exterior - which is in fact heavily battered - is rather smooth. That the exterior is patchily preserved could point to an extended and / or intensive period of usage, perhaps exacerbated by the vessel being moved around on multiple occasions. The exterior surface color is 2.5YR 6 / 6-6 / 8 "light red", and it has a 2.5YR 6 / 6 "light red" fresh break with a 5YR 8 / 4 "pink" core.

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individuals were analyzed using ^{14}C, and not all burials were excavated since the excavations stopped in 2010. See also Schuh 2012a, 292.

7 Seyer and Schuh 2011a, 333.

8 Schuh 2012a, 291.

9 Unpublished material.

10 For Limyra's pottery repertoire of the first to third centuries, see Yener-Marksteiner 2020, 2021.

11 Publication of the excavations is in progress.

12 Kassab Tezgör 2020, 66, pl. 43, cat. nos. 137, 141.

Specimen 2 (object no. Li09-308-2) is less well-preserved, missing its wall from just below the vessel's widest point (figs. 6-7). Its overall profile and morphological details are, however, largely similar to those described for specimen 1 and require no repetition. Although the handles are still ear-shaped, one noticeable difference is that they are ever so slightly less curved in profile (fig. 8a-b). The second specimen has more of its original surface preserved, in particular that of both handles. It has a 5YR 8 / 4 "pink" exterior, and a fresh break shifts from 5YR 6 / 1 "gray" to 2.5YR 6 / 6 "light red".

Both specimens conform very well with what Zeest originally published under two separate type numbers, Types 83 and 89, both of which are labelled as "Pink clay amphorae with wide neck."[13] Despite separate type headings, Zeest already pointed to morphological similarities between the two types,[14] while at the same time grouping amphorae with different body profiles under one typological header, e.g., those illustrated as Type 83a (from Pantikapaion) and 83b (from Semenovka).[15] Despite such differences, there is good reason to classify both types under the moniker Type 83 / 89.[16] This is followed for both amphorae from Limyra, noting that both of these specimens conform best to type-variant 83b with regard to overall shape. Minor though they may be, morphological differences more generally should not be ignored nor downplayed. Such attributes can be chronologically significant, or represent different potters, workshops, and / or places of manufacture.[17] Dominique Kassab Tezgör also raised this point in her recent discussion of Zeest 83 / 89 amphorae, wherein she distinguishes two type-variants, taking rim, neck, and handle profile, rim diameter and general body shape and height into account, among others.[18] In so far as they are preserved, when considering rim diameter, neck-shoulder profile as well as overall body shape, the specimens from Limyra best match type-variant 2.

Manufacture and Provenance

A Zeest 83 / 89 specimen found in ancient Pergamon helps to understand aspects of this type's manufacturing technique.[19] First, the seam between the neck and shoulder of the Pergamon specimen is marked by a series of rather thick and irregular downward smears of clay, indicating that the neck was applied separately. Although this was common practice in the manufacture of closed vessels, these smears provide the first clue that this vessel was not wheel-made. Further clarifying the manufacturing technique are the smears, wipes, and indents on the Pergamon vessel's interior wall, which points to an absence of centrifugal force during its manufacture, and strongly suggests that it was hand-made instead. Presumably, this vessel was manufactured by coiling or slab building, techniques by means of which vessels were constructed in segments.[20] Such techniques were often applied in the construction of larger vessels such as pithoi, and it is perhaps no coincidence that Zeest 83 / 89 amphorae are indeed

13 Zeest 1960, 115, 117.

14 Zeest 1960, 115-17, 170, 172, pls. 34, 36.

15 Zeest 1960, 170, pl. 34.

16 Opaiţ 2007, 114-17, figs. 22-23; Kassab Tezgör 2020, 66.

17 Rim profiles published by Yermolin and Fedoseev (2013, 194-96, figs. 6-8) show a considerable variety in, for example, general profile and rim height.

18 Kassab Tezgör 2020, 66-68, 137-38, 165, pls. 25-26, 43.

19 To be published separately. We kindly thank Felix Pirson (German Archaeological Institute, Istanbul) and Güler Ateş (Celal Bayar Üniversitesi, Manisa) for their permission to mention the amphora here.

20 Rice 2015, 135-38.

referred to as "Amphores pithoi."[21] Furthermore, traces on the interior upper wall are conceivably indicative of pinching and drawing, techniques used in conjunction with coil or slab building. This aimed to obtain the desired thickness and firmly fix each individual segment onto the gradually growing vessel.[22] This irregular interior surface is in stark contrast with the smooth exterior, which presumably was achieved by paddling so as to obtain or enhance certain desired properties including strengthening the vessel's structural integrity.[23] Furthermore, it is reasonable to assume that the entire exterior was finished / smoothed by wiping it with a (wet) cloth including the handles.[24]

When permitting ourselves some degree of generalization, we may conclude that amphorae of Zeest 83 / 89 were manufactured without a wheel. Instead, they were hand-made, adding and fixing wall segments by coiling / slab building and kneading / paddling these in place. There is in fact a further clue that helps to understand their manufacture. Circular clay objects were found among what is interpreted as the remains of a workshop of these amphorae (see below), and which are interpreted as drying supports.[25] An indication for their use is provided by an irregular surface that is attested around the lower wall of Zeest 83 / 89 amphora fragments found among the workshop remains.[26] This irregular ring was caused by the amphora resting upright within such a support ring, which pushed some of the exterior clay of the lower wall upward because of the weight of the amphora (i.e. this happened before firing). This further caused the lower wall to become somewhat concave or dented. Since both specimens from Limyra are missing their lower wall, it cannot be verified whether they also had such traces. One (or two?) holes in the wall of these supports furthermore ensured that the vessel's lower wall and toe could dry at a more or less even pace with the rest of the vessel.[27] Given that these amphorae were completely manufactured by hand (see above), in combination with their size and shape (e.g., the pointed toe), the possibility cannot be excluded that these supports also functioned to stabilize vessels during (part of) their manufacturing process.[28] It is then plausible to think that an amphora, once finished, was left to dry on the very same spot where it was manufactured. Moving a finished amphora to a drying area must have been quite cumbersome given their size and weight.

Provenance

Concerning her Types 83 and 89, Zeest hinted at one or more places of manufacture within the Bosporan Kingdom,[29] and more specifically referred to the "Asian Bosphorus" for the origin of Type 89.[30] Kassab Tezgör follows this idea, specifically mentioning Zeest's association

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21 Kassab Tezgör 2020, 66.

22 Rice 2015, 137.

23 Rice 2015, 147-48, fig. 8.11.

24 Rice 2015, 149.

25 Yermolin and Fedoseev 2013, 187-88, 190-93, figs. 2-5.

26 Kassab Tezgör 2020, 67. The wall below this irregular ring was smoothed on specimens of her type-variant 2.

27 Yermolin and Fedoseev 2013, 192-93, figs. 4-5.

28 Rice 2015, 140.

29 This was a Hellenistic kingdom and subsequent client state of Rome located in the northeast part of the Black Sea. It comprised lands on both sides of the Cimmerian Bosporus (modern Kerch Strait), which connects the Black Sea with the Sea of Azov (ancient Lake Maeotis), that is, parts of the Crimean Peninsula, the Taman Peninsula, and the lands east of the Sea of Azov.

30 Zeest 1960, 117.

of her Type 83 with the area west of the Cimmerian Bosphorus, today the Kerch Strait.[31] One manufacturing center for Zeest 83 / 89 amphorae has now been identified at ancient Pantikapaion, modern Kerch,[32] one of several findspots of these amphorae that Zeest originally mentioned. Workshop activities are thought to have spanned the second half of the second and early third centuries, yet the grounds on which this date was established are not further explicated.[33] Surprisingly, the authors do not identify the amphorae from their excavation according to any existing and suitable (i.e., Zeest's) typology, and instead refer to these as Bosporan amphorae.

Although the excavation trench was small (2 x 1-2 m), the authors offer compelling clues for local manufacture: ash layers (some including charcoal fragments), beneath which "traces of repair of the kiln have been found out [sic]: fragments of the burnt clay, ceramic wasters […], fragments of kiln's parts."[34] Finds further include supports discussed above, in relation to which the authors mention the irregular ring on the lower wall of amphorae found in the same trench.[35] In addition, other nearby sondages revealed traces of dumps, while "[k]ilns were situated above on a slope and to the east".[36] The authors make further valuable observations. For example, they speak of a "light engobe" that covers "all vessels,"[37] which was not immediately observed for the specimens from Limyra. They also report that the amphorae were manufactured in two sizes: "rather small vessels with rim diameter of 16-20 cm (a transport variant) (figs. 6-7) and large vessels with a rim diameter of 22-28 cm intended for stationary storage of fish (figs. 8-10)."[38] No exact measurements were yet taken, but from the drawing and photographs it can be estimated that both specimens from Limyra have a rim diameter of ca. 20 cm. This indicates that both vessels just fall within the first group. The authors' hypothesis of two size-function groups requires testing, particularly so at consumption sites. While Yermolin and Fedoseev observe a "[v]isual resemblance between Bosporan and Chersonesos clays,"[39] it is assumed that the two amphorae presented here were manufactured in the north Pontic, plausibly in one or two workshops in the Bosporan Kingdom.

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31 Kassab Tezgör 2020, 66.

32 Yermolin and Fedoseev 2013. Golofast discusses amphorae found in two "cinder" layers in Pantikapaion that include a range of types, including examples of Zeest Types 83, 89 or similis (e.g., Golofast 2010, 123-24, figs. 14.16-17, 15.5-8, with varying rim profiles, some lacking the indentation on the interior neck at the height of the handle): "[s]ome fragments of rose-clay wide-necked amphorae of Bosporan make (about 7%)" (Golofast 2010, 110). Since Yermolin and Fedoseev (2013, 188) report that amphorae of the two types we are concerned with constitute about 90% of the finds, this may concern a different excavation. According to Kassab Tezgör (2020, 66, n. 48), none of the five amphorae catalogued by her "correspond à la description de la pâte des amphores produites dans l'atelier de Kertch".

33 Yermolin and Fedoseev 2013. A tentative clue for the appearance of these amphorae, however, is offered by other finds from Pantikapaion: "[s]ome quantity of light-clay narrow-necked amphorae of Vnukov C IVC type allows assigning the end of its formation ['cinder heap 1'] to the second quarter of the second century. Some fragments of rose-clay wide-necked amphorae of Bosporan make (about 7%) [i.e., Zeest Types 83, 89, and / so similis?] testify to the appearance of this amphorae type in the first half of the second century" (Golofast 2010, 110).

34 Yermolin and Fedoseev 2013, 187, 192, fig. 3.

35 Yermolin and Fedoseev 2013, 187-88, 190-93, figs. 2-5.

36 Yermolin and Fedoseev 2013, 188.

37 Yermolin and Fedoseev 2013, 188.

38 Yermolin and Fedoseev 2013, 188.

39 Yermolin and Fedoseev 2013, 186.

Fabric

Microscope photographs of the two specimens from Limyra, taken on a fresh break and magnified ca. 35 times using body sherds, show some differences. The question whether we are permitted to speak of two *different* fabrics - echoing Zeest's and Kassab Tezgör's notions of multiple workshops - can only be answered through archaeometrical analyses.[40] The fabric of the better-preserved specimen from Limyra shows an unevenly wavy colored matrix reminiscent of marble cake, or indeed what Opaiţ describes as "halva,"[41] which suggests that two different clays were mixed.[42] Colors encompass various hues of red and pink.[43] Within this matrix one can observe a fair amount of mostly tiny rounded and elongated pores and, possibly, secondary lime formed on these pores' edges. Additionally, some quartz can be recognized, as well as some reddish-brownish grits. A few nodules[44] and tiny light-colored grits complement this picture (fig. 9a-b). The second vessel shows a more evenly colored matrix. Besides some elongated and irregularly shaped pores of varying size, one can particularly observe a scatter of tiny lighter and darker greyish grits. In addition, there are some rounded brownish-red grits (fig. 10).

Chronology

Both types have been attributed to the second-third centuries and can be considered as members of a family of large to very large amphorae which further includes Zeest Types 75,[45] 80, and 85,[46] which are generally dated to the first to fourth centuries. For some of these types and / or variants thereof, a provenance in the area of the Bosporan Kingdom or the Black Sea area more generally has been established, or is suspected for good reasons. The area of origin of other types remains unresolved and therefore disputed. The provenance of Zeest Type 80, for example, is invariably sought somewhere in the Black Sea or Aegean areas. Whereas this type's common appearance at Hyettos and Tanagra (Boeotia, Central Greece) - together with a number of fragments belonging to Knossos Type 39, which shares the same fabric[47] - does not resolve the matter, such a quantitative argument could help clarify the question regarding its general provenance - perhaps a locality somewhere in the (northern?) Aegean.[48]

Content

These various aspects inevitably bring up the question as to their content. Zeest pondered that Type 83 could have been used to "store grain, salted fish and other food supplies."[49] Indeed, in a local / regional context it makes good sense to envisage the use of such vessels for the storage of a range of foodstuffs as well as perhaps non-food products.[50] What these amphorae

40 Samples of both amphorae are awaiting analyses and interpretation.

41 Opaiţ 2007, 115.

42 Degryse and Braekmans 2016, 254.

43 This recalls the "rosa-red" of fragments that were excavated in Pantikapaion; see Yermolin and Fedoseev 2013, 188.

44 Possibly those that Opaiţ (2007, 115) refers to as "large clay pellets (?)."

45 Opaiţ 2007, 108-13, figs. 11-19; Kassab Tezgör 2020, 62-65, 145-46, 164, 171, pls. 23-24, 42, 49, cat. nos. 131-35.

46 Zeest 1960, 113-16, 167, 169, 171, pls. 31, 33, 35; Opaiţ 2007, 113-15, fig. 21; Kassab Tezgör 2020, 68-69, 124, 148, pls. 2, 26, cat. nos. 142-43.

47 Hayes 1983, 154-55, 163, fig. 25, A91.

48 Bes (forthcoming).

49 Zeest 1960, 115.

50 Kassab Tezgör 2020, 66, n. 49.

carried in a wider economic-distributional context, however, could very well have been another matter. Their wide necks made them impractical to hold anything liquid such as wine or olive oil. Instead, these vessels were better suited to transport semi-liquid or solid foodstuffs, such as a kind of (thickish) fish sauce or salted fish, either whole or in chunks.[51] Various fish-based products from the Black Sea region did indeed have a reputation in pre-Roman and Roman times.[52] Archaeological remains that attest to the production of fish-based products in the northern Black Sea, such as salting vats (*cetariae*), have been brought to light at, for instance, Chersonesos, Tyritake, and Myrmekion.[53] We nevertheless remain uninformed as to the original content of both specimens found in Limyra, if only because reuse prior to their arrival cannot be ruled out.

Distribution and Wider Context

Zeest and more recently Opaiţ point out that the distribution of Zeest Type 83 / 89 is largely confined to the Bosporan Kingdom.[54] A fragment that preserves part of the rim and the upper handle segment was recently found at Callatis on the Black Sea coast in southeast Romania.[55] Besides the two specimens from Limyra and the one from Pergamon (see above), the authors to the best of their knowledge are not aware of any other Zeest Type 83 / 89 amphora found at an Aegean or Mediterranean site. Their size and weight (certainly when filled) must have made these vessels cumbersome to transport. It is also not unthinkable that fragments of these and similarly large-sized amphorae - body sherds in particular - were mistaken for pithos fragments. Yet, at this point we presume that these amphorae were rarely exported to the Aegean or Mediterranean, and that ultimately their distribution must have been very thin. The specimen from Pergamon also points out that consumers were not necessarily situated only on the coast; for that matter, Limyra is also not located directly on the coast.

If, for the sake of argument, we presume that both vessels still had their primary / original content by the time they arrived in Limyra, in a Lycian context the import of foodstuffs from the Black Sea is not a complete surprise. Lycia not only had a number of well-equipped ports such as Telmessos, Patara, Antiphellos, Andriake (Myra), Phoinix (Limyra), and Olympos, but also small landing stages which may have been used for more than just regional trade (fig. 11).[56] These harbors were among the important stopping points on the main maritime trade routes within the Eastern Mediterranean,[57] and *in extenso* connected it with the Western Mediterranean, North Africa, and the Black Sea. The evidence for Black Sea amphorae in Limyra and other sites in Lycia slowly but surely increases particularly for middle and late Roman times, for there is hardly any information available for early Roman imperial times

51 Opaiţ 2007; Theodoropoulou 2014, 220; Kassab Tezgör 2020, 66.

52 Højte 2005; Dumitrache 2015; Theodoropoulou 2014, 221-22; Čechová 2014.

53 Curtis 2005, 38; Højte 2005, 142-53, figs. 5-15; Vnukov 2017, 125.

54 E.g., Alekseeva 1997 (Gorgippia); Kamelina 2012, 52, 66, fig. 8.4 (Charax); Zinko et al. 2020, 431, 438, fig. 451.4-5 (Tyritake).

55 Opaiţ and Ionescu 2016, 69, 99, pl. 15.93. For the distribution of other Bosporan amphorae, see e.g. Matera 2011. For the apparent continuation of the production of fish-based produce in Chersonesos during late antiquity, see Jirouskova 2013. It remains unclear, however, in which amphora type(s) this produce was transported (66).

56 Hellenkemper and Hild 2004, 1:184-85; Brandt and Kolb 2005, 101-4.

57 Zimmermann 1992.

which in itself could be telling.[58] Although more quantified data is required to make more founded statements, so far their quantitative role may have been relatively modest.[59] Relations, economic and other, between Lycia and the Black Sea in Roman imperial times are furthermore reflected by ports on the Bosporus named after traders from Lycia.[60] We may also mention a third-century inscription, found on a sarcophagus in Olympos, which records the periodical voyage of a Lycian seafarer and trader named Eudemos to the Bosporus and Black Sea (fig. 12).[61]

Surprising, however, is the presence of amphorae of Zeest Type 83 / 89 in Limyra, given their presumed fish-based primary content. They are worth highlighting in the context of Limyra and Lycia. The seas off the Lycian coast were well known for their high fish yields, as recorded by ancient writers, inscriptions, and travel reports.[62] This is reflected archaeologically by workshops for making salted fish attested at the port of Timiousa, on Kekova Island, in Istlada, and probably also in Aperlai. These were in use from Roman imperial until late antique-early Byzantine times (fig. 13).[63] It has been calculated that the workshop complex in Timiousa alone had a processing capacity of over 500 tons of fish per year.[64] The capacity of the three best-preserved fish sauce workshops on Kekova Island are thought to have had a combined volume of ca. 177 m^3, while a combined volume of ca. 600 m^3 was calculated for all fish processing workshops registered on the island.[65] For Limyra, archaeozoological studies have shown that fish was an essential element of its inhabitants' diet - especially in Roman imperial contexts - as shown by the proportion of fish bones. Furthermore, species that have been identified point to close-shore fishing as well as in open sea,[66] so fishing played an important role in the local and regional economy.

It is needless to say that a regional tradition of fish processing would not have excluded the import of fish from elsewhere. One way to explain their import into Lycia, which on a yearly basis may have produced more fish-based products than the local market(s) could consume, is that northern Pontic fish products had a reputation of some culinary renown. In this light it is worth mentioning that some fish species have the Black Sea and Bosporus as their natural habitat and are not found in Mediterranean waters. Then, the content of both "big brothers" may have been enjoyed by some inhabitants of Limyra as a privileged delicacy. In a second life, we may imagine that both vessels were reused (to hold a similar content?), not only because of pragmatic but maybe also for representative reasons. Last, both Zeest 83 / 89 vessels are further testimonies to the extent and variety of Limyra's exchange relations, and of a community with a wish to acquire and consume a delicacy.

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58 For Roman amphorae from the Black Sea found mostly in late Roman-early Byzantine contexts in Lycia, see e.g., Lemaître and Yener-Marksteiner 2019, 262, fig. 5; Bes and Dolea 2020. Bes 2021 provides an overview of fourth- to seventh-century Black Sea amphorae in the Eastern Mediterranean.

59 Bes 2019, 236-37, table 3; Bes 2020, 234-35, table 1. Note the change in the quantification methods used.

60 Hellenkemper and Hild 2004, 1:185, n. 444; Adak and Atvur 1997, 17, n. 22.

61 Adak and Atvur 1997.

62 Hellenkemper and Hild 2004, 1:172-74; Brandt and Kolb 2005, 101-5.

63 Zimmerman 2003, 288-93; Aslan 2017; Marksteiner 2010, 142; Hohlfelder and Vann 2000, 132, fig. 8.

64 Zimmerman 2003, 292.

65 Aslan 2017, 182.

66 Galik et al. 2012, 165.

Bibliography

Adak, M., and O. Atvur. 1997. "Das Grabhaus des Zosimas und der Schiffseigner Eudemos aus Olympos in Lykien." *EpigAnat* 28:11-31.

Alekseeva, E.M. 1997. *The Ancient City of Gorgippia*. Moscow: Editorial URSS. (in Russian)

Aslan, E. 2017. "Three New Fish Sauce Workshops Detected in Kekova Island Research." *Phaselis* 3:175-85.

Baybo, S. 2009. "Late Antique / Early Byzantine Glass Vessels from Trench Q18 at Limyra: Excavation Seasons 2007-2009." In *Late Antique / Early Byzantine Glass in the Eastern Mediterranean*, edited by E. Laflı, 189-98. Colloquia Anatolica et Aegaea. Acta Congressus Communis Omnium Gentium Smyrnae 2. Dokuz Eylül University Faculty of Arts Department of Archaeology Division for Medieval Archaeology Publication Series 1. Izmir: Hürriyet Matbaası.

Bes, P.M. 2019. "Research on Late Roman and Early Byzantine Pottery in Limyra 2018." In M. Seyer, A. Dolea, P.M. Bes, D.Zs. Schwarcz, S. Baybo, A.K.L. Leung, U. Quatember, M. Wörrle, H. Brückner, F. Stock, A. Symanczyk, G. Stanzl, K. Kugler, and B. Yener-Marksteiner. "The Excavation at Limyra / Lycia 2018: Preliminary Report." *Anatolia Antiqua* 27:236-41.

Bes, P.M. 2020. "Fourth- to Eighth-Century Pottery at Limyra: Three Short Case Studies." In M. Seyer, A. Dolea, P.M. Bes, D.Zs. Schwarcz, G. Forstenpointner, K. Löcker, R. Totschnig, I. Uytterhoeven, E. Cayre, H. Öniz, C. Öztosun, and Z. Kuban. "The Excavation at Limyra (Lycia) 2019: Preliminary Report." *Anatolia Antiqua* 28:228-35.

Bes, P.M. 2021. "Late Roman Pontic Amphorae found in Limyra (Turkey) and Horvat Kur (Israel): Typology, Provenance, Context." In *Understanding Transformations: Exploring the Black Sea Region and Northern Central Anatolia in Antiquity*, edited by E. Sökmen and A. Schachner, 495-535. Byzas 26. Istanbul: Ege Yayınları.

Bes, P.M. Forthcoming. "Urban and Rural Hyettos: Late Hellenistic to Late Roman Pottery." In *Hyettos: The Origins and Afterlife of a Small Boeotian City*, edited by J.L. Bintliff and A.M. Snodgrass. Cambridge: McDonald Institute for Archaeological Research.

Bes, P. and A. Dolea. 2020. "Some Pontic Flavour on the Lycian Table. Pontic Amphorae in Limyra." *Pontica* 53:279-301.

Brandt, H., and F. Kolb. 2005. *Lycia et Pamphylia: Eine römische Provinz im südwesten Kleinasiens*. Sonderbände der antiken Welt. Zaberns Bildbände zur Archäologie. Orbis provinciarum. Mainz am Rhein: Verlag Philipp von Zabern.

Čechová, M. 2014. "Fish Products and Their Trade in Tauric Chersonesos / Byzantine Cherson: The Development of a Traditional Craft from Antiquity to the Middle Ages." In *Fish & Ships. Production and Commerce of Salsamenta during Antiquity / Production et commerce des salsamenta durant l'Antiquité. Actes de l'atelier doctoral, Rome 18-22 juin 2012*, edited by E. Botte and V. Leitch, 229-36. Bibliothèque d'Archéologie Méditerranéenne et Africaine 17. Aix-en-Provence: Maison Méditerranéenne des Sciences de l'Homme.

Curtis, R.I. 2005. "Sources for Production and Trade of Greek and Roman Processed Fish." In *Ancient Fishing and Fish Processing in the Black Sea Region. Proceedings of an Interdisciplinary Workshop on Marine Resources and Trade in Fish Products in the Black Sea Region in Antiquity, University of Southern Denmark, Esbjerg, April 4-5, 2003*, edited by T. Bekker-Nielsen, 31-46. Black Sea Studies 2. Aarhus: Aarhus University Press.

Degryse, P., and D. Braekmans. 2016. "Petrography. Optical Microscopy." In *The Oxford Handbook of Archaeological Ceramic Analysis*, edited by A.M.W. Hunt, 233-65. Oxford Handbooks. Oxford: Oxford University Press.

Dumitrache, I. 2015. "Ancient Literary Sources Concerning Fishing and Fish Processing in the Black Sea Region." *Studia Antiqua et Archaeologica* 21.1:69-77.

Galik A., G. Forstenpointner, and G. Weissengruber. 2012. "Archäozoologische Befunde zur Jagd und Viehwirtschaft in Limyra." In *40 Jahre Grabung Limyra. Akten des internationalen Symposions Wien, 3.-5. Dezember 2009*, edited by M. Seyer, 163-68. Forschungen in Limyra 6. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Ganzert, J. 1996. "Warmes Wasser an den 'Verborgenen Wassern' von Limyra. Beobachtungen aus den Jahren 1981 / 82 zur Thermenanlage in der östlichen Stadthälfte." In *Fremde Zeiten. Festschrift für Jürgen Borchhardt zum sechzigsten Geburtstag am 25. Februar 1996, dargebracht von Kollegen, Schülern und Freunden*. Vol. 1, edited by F. Blakolmer, K.R. Krierer, F. Krinzinger, A. Landskron-Dinstl, H.D. Szemethy and K. Zhuber-Okrog, 175-88. Vienna: Phoibos Verlag.

Golofast, L.A. 2010. "Amphorae from the Roman Cinder Heap uncovered at the Foot of Mithridates Mount in Kerch." *Materials in Archaeology, History and Ethnography of Tauria* 16:82-139 (in Russian).

Hayes, J.W. 1983. "The Villa Dionysos Excavations, Knossos: The Pottery." *BSA* 78:97-169.

Hellenkemper, H., and F. Hild. 2004. *Lykien und Pamphylien*. TIB 8. 3 vols. DenkschrWien 320. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Hohlfelder, R.L., and R.L. Vann. 2000. "Cabotage at Aperlae in Ancient Lycia." *IJNA* 29.1:126-35.

Højte, J.M. 2005. "The Archaeological Evidence for Fish Processing in the Black Sea Region." In *Ancient Fishing and Fish Processing in the Black Sea Region. Proceedings of an Interdisciplinary Workshop on Marine Resources and Trade in Fish Products in the Black Sea Region in Antiquity, University of Southern Denmark, Esbjerg, April 4-5, 2003*, edited by T. Bekker-Nielsen, 133-60. Black Sea Studies 2. Aarhus: Aarhus University Press.

Jirouskova, M. 2013. "The Fish Industry in the Northern Pontic Region (Cherson): Questions of Continuity and Prosperity in the Early Byzantine Period." In *SOMA 2010: Proceedings of 14th Symposium on Mediterranean Archaeology Taras Shevchenko National University of Kiev, Kiev, Ukraine 23-25 April 2010*, edited by Y. Morozova and H. Oniz, 63-69. BAR-IS 2555. Oxford: Archaeopress.

Kassab Tezgör, D. 2020. *Corpus des amphores romaines produites dans les centres de mer Noire: Collections des musées de la côte turque de la mer Noire (Ereğli, Amasra, Sinop, Samsun, Giresun, Ordu, Trabzon et Amasya)*. Archaeopress Roman Archaeology 74. Oxford: Archaeopress.

Kamelina, G.A. 2012. "Ceramic Complex from the Excavation of Charax Lower Defensive Wall." *Journal of Historical, Philological and Cultural Studies* 2:46-90 (in Russian).

Lemaître, S., and B. Yener-Marksteiner. 2019. "Faciès céramiques de l'Antiquité tardive dans la ville portuaire d'Andriake en Lycie (Turquie). Résultats d'une prospection près des horrea." In *De la Gaule à l'Orient méditerranéen. Fonctions et statuts des mobiliers archéologiques dans leur contexte*, edited by P. Ballet, S. Lemaître and I. Bertrand, 259-69. Collection Archéologie et culture. Bibliothèque générale 53. Rennes: Presses universitaires de Rennes / Cairo: Institut français d'archéologie orientale.

Marksteiner, T. 2010. *Lykien. Ein archäologischer Führer*. Vienna: Phoibos Verlag.

Marksteiner, T., and U. Schuh. 2008. "Limyra Kazı Çalışmaları 2007 / Excavations at Limyra in 2007." *Anmed* 6:42-46.

Matera, M. 2011. "A Tentative Analysis of Mass Amphora Material from the Warsaw University Excavations at Tanais." In *PONTIKA 2008. Recent Research on the Northern and Eastern Black Sea in Ancient Times, Proceedings of the International Conference, 21st-26th April 2008, Kraków*, edited by E. Papuci-Władyka, M. Vickers, J. Bodzek and D. Braund, 253-59. BAR-IS 2240. Oxford: Archaeopress.

Opaiţ, A. 2007. "A Weighty Matter: Pontic Fish Amphorae." In *The Black Sea in Antiquity. Regional and Interregional Economic Exchanges*, edited by V. Gabrielsen and J. Lund, 101-21. Black Sea Studies 6. Aarhus: Aarhus University Press.

Opaiţ, A., and M. Ionescu. 2016. "Contributions to the Economic Life of the City of Callatis in Light of New Ceramic Finds (2nd-6th Centuries AD)." *Arheologia Moldovei* 39:57-112.

Rice, P.M. 2015. *Pottery Analysis. A Sourcebook*. 2nd ed. Chicago: The University of Chicago Press.

Schuh, U. 2012a. "Die Theaterthermen von Limyra: Ergebnisse der Ausgrabungen 2007-2009." In *40 Jahre Grabung Limyra, Akten des internationalen Symposions Wien, 3.-5. Dezember 2009*, edited by M. Seyer, 287-300. Forschungen in Limyra 6. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Schuh, U. 2012b. "Die Ausgrabungen in den Theaterthermen von Limyra. Vorläufige Ergebnisse 2007-2009." In *Akten des 13. Österreichischen Archäologentages. Klassische und Frühägäische Archäologie, Paris-Lodron-Universität Salzburg vom 25. bis 27. Februar 2010*, edited by C. Reinholdt and W. Wohlmayr, 161-67. Vienna: Phoibos Verlag.

Sewing, K. 2015. "Die Südthermen (ehemals Bischofspalast) in Limyra. Bauaufnahme und Interpretation." *ÖJh* 84:213-57.

Seyer, M., and U. Schuh. 2009. "Limyra Kazı ve Araştırmaları 2008 / Excavations and Research at Limyra 2008." *Anmed* 7:45-48.

Seyer, M., and U. Schuh. 2010. "Limyra 2009." *Anmed* 8:50-54.

Seyer, M., and U. Schuh. 2011a. "Grabung an der Badeanlage im Westen des römischen Theaters." In M. Seyer et al. "Limyra 2009." *KST* 32.1:331-34.

Seyer, M., and U. Schuh. 2011b. "Limyra 2010." *Anmed* 9:54-58.

Theodoropoulou, T. 2014. "Salting the East: Evidence for Salted Fish and Fish Products from the Aegean Sea in Roman Times." In *Fish & Ships. Production and Commerce of Salsamenta during Antiquity / Production et commerce des salsamenta durant l'Antiquité. Actes de l'atelier doctoral, Rome 18-22 juin 2012*, edited by E. Botte and V. Leitch, 213-27. Bibliothèque d'Archéologie Méditerranéenne et Africaine 17. Aix-en-Provence: Maison Méditerranéenne des Sciences de l'Homme.

Vnukov, S.Iū. 2017. "Overseas Trade in the Black Sea Region and the Formation of the Pontic Market from the First Century BCE to the Third Century CE." In *The Northern Black Sea in Antiquity. Networks, Connectivity, and Cultural Interactions*, edited by V. Kozlovskaya, 100-38, 298-302, 318-23. Cambridge / New York: Cambridge University Press.

Yener-Marksteiner, B. 2016. "Limyra als Bischofssitz: Einblicke in die Keramik mit christlicher Symbolik." In *Angekommen auf Ithaka. Festgabe für Jürgen Borchhardt zum 80. Geburtstag*, edited by F. Blakolmer, M. Seyer and H.D. Szemethy, 185-99. Vienna: Phoibos Verlag.

Yener-Marksteiner, B. 2019. "Nachantike Keramik sowie Aufarbeitung des Keramikmaterials aus den Theaterthermen." In M. Seyer, A. Dolea, P.M. Bes, D.Zs. Schwarcz, S. Baybo, A.K.L. Leung, U. Quatember, M. Wörrle, H. Brückner, F. Stock, A. Symanczyk, G. Stanzl, K. Kugler, and B. Yener-Marksteiner. "The Excavation at Limyra / Lycia 2018: Preliminary Report." *Anatolia Antiqua* 27:249-50.

Yener-Marksteiner, B. 2020. *Studien zum kaiserzeitlichen Tafelgeschirr aus Limyra*. Forschungen in Limyra 8. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Yener-Marksteiner, B. 2021. "Die 'Ostlykische Ware' - Definition, Lokalisierung, Leitformen: Bestandaufnahme eines laufenden Forschungsprozesses." In *Magnis Itineribus. Festschrift für Verena Gassner zum 65. Geburtstag*, edited by R. Ployer and D. Svaboda-Baas, 341-65. Vienna: Phoibos Verlag.

Yener-Marksteiner, B. Forthcoming. "Die Rotekeramik aus den dunklen Jahrhunderten in Lykien."

Yermolin, A.L., and N.F. Fedoseev. 2013. "A Ceramic Amphorae Production Workshop of the First Half of the 3rd Century AD in Panticapaeum." In *Production and Trade of Amphorae in the Black Sea / Production et commerce amphoriques en mer Noire. Actes de la Table Ronde internationale de Constanţa, 6-10 octobre 2009*, edited by L. Buzoianu, P. Dupont and V. Lungu, 185-98. Pontica 46 Suppl. 2. Production and Trade of Amphorae in the Black Sea 3. Constanţa: National History and Archaeology Museum.

Zeest, I.B. 1960. *Keramicheskai͡a tara Bospora*. Materialy i issledovanii͡a po arkheologii SSSR 83. Moscow: Izd-vo Akademii nauk SSSR.

Zimmermann, M. 1992. "Die lykischen Häfen und die Handelswege im östlichen Mittelmeer. Bemerkungen zur PMich I 10." *ZPE* 92:201-17.

Zimmerman, M. 2003. "Hafen und Hinterland. Wege der Akkulturation an der lykischen Küste. Vorbericht über die Feldforschungen in den zentrallykischen Orten Tyberissos und Timiussa in den Jahren 1999-2001." *IstMitt* 53:265-312.

Zinko, V.N., A.V. Zinko, and L.Yu. Ponomarev. 2020. *Tyritake Excavation Trench 26*. Vol. 3, *Archaeological Complexes Two Second 3-7 cc. AD*. Simferopol / Kerch: IP Kifnidi Georgii Ivanovich.

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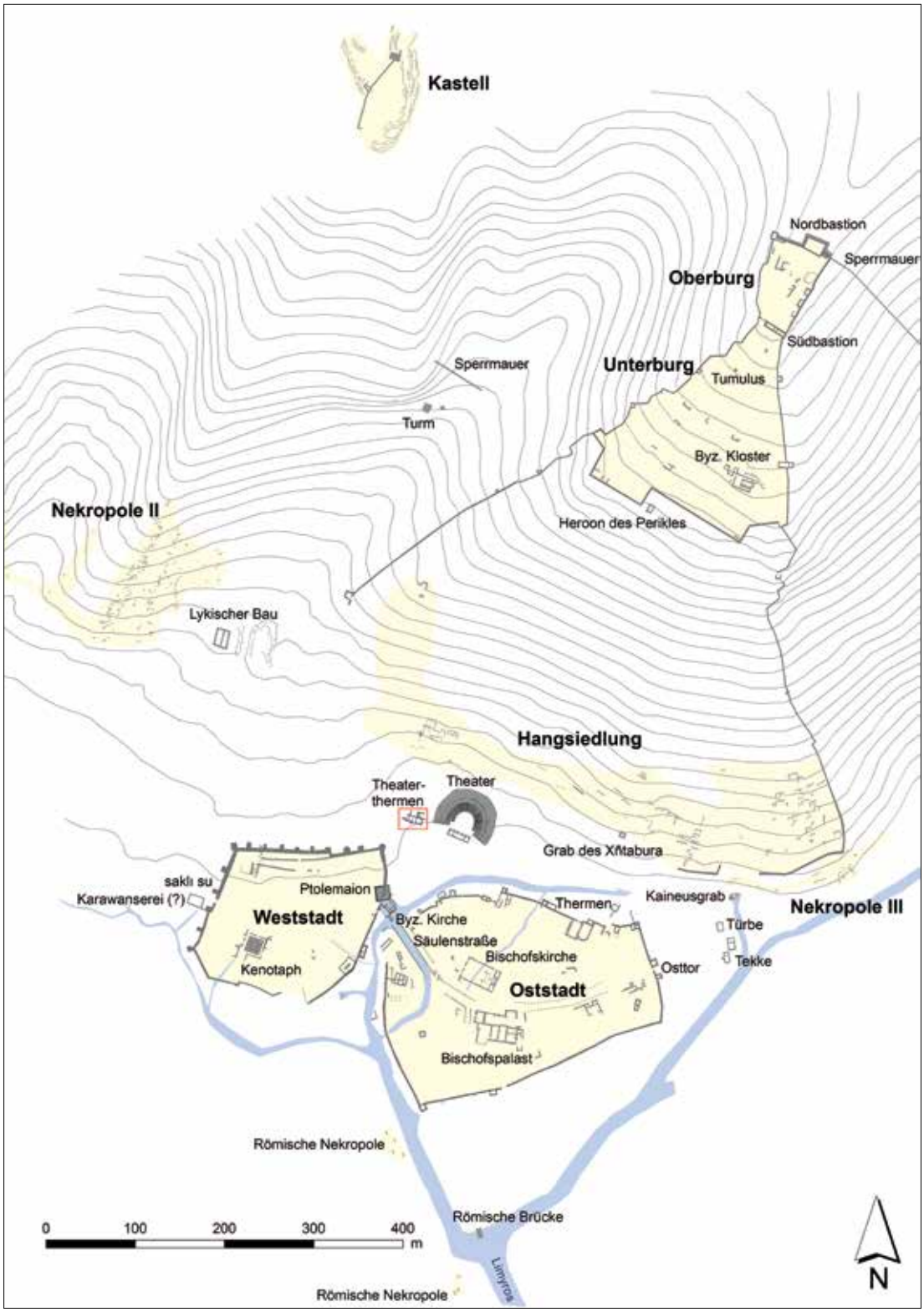

FIG. 1 Plan of the ancient remains of Limyra and the findspot of the two amphorae (© ÖAW-ÖAI / Lykien Archiv, Ch. Kurtze; digital image editing: B. Yener-Marksteiner).

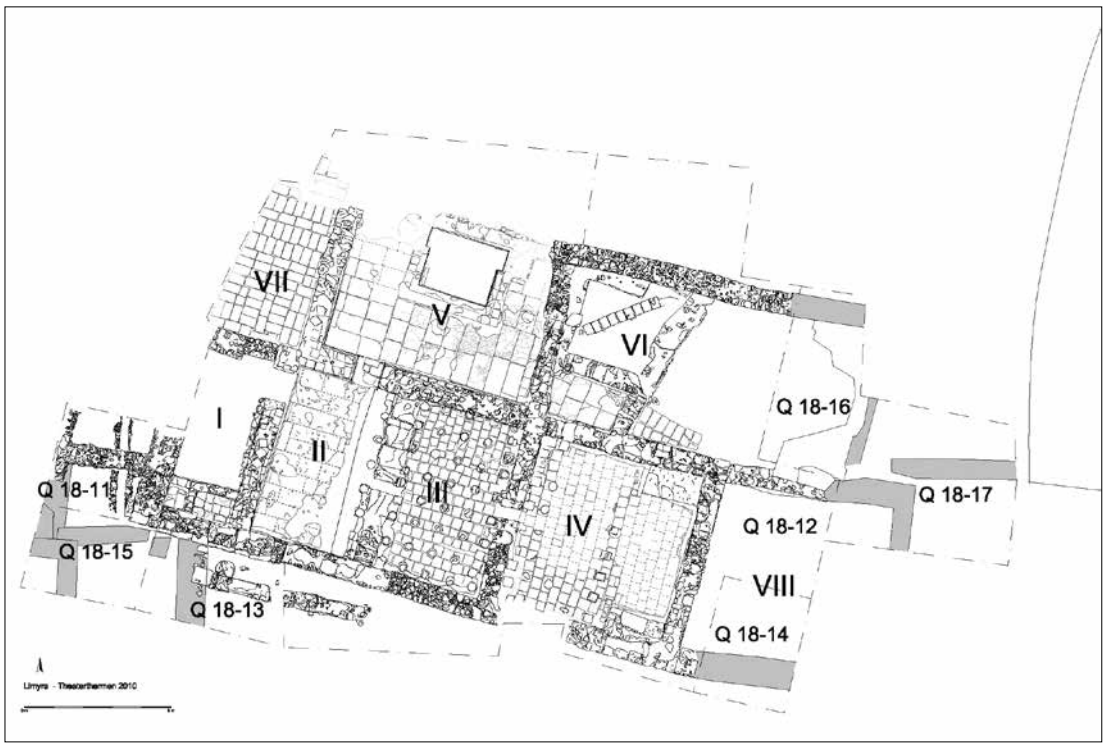

FIG. 2 Plan of the Theater Baths, with room numbers indicated (Schuh 2012a, 299, fig. 16).

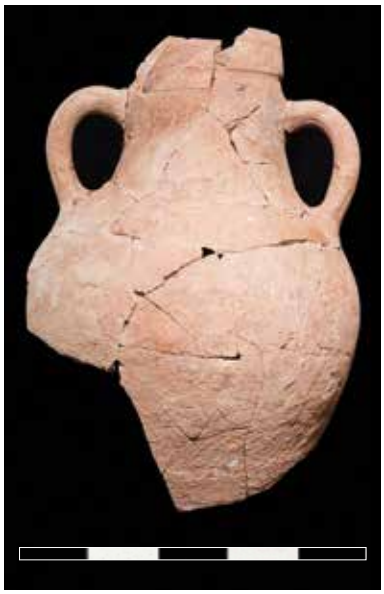

FIG. 3 Photograph of specimen 1 (object no. Li09-308-1) (© ÖAW-ÖAI / Lykien Archiv, R. Hügli; digital image editing: B. Yener-Marksteiner).

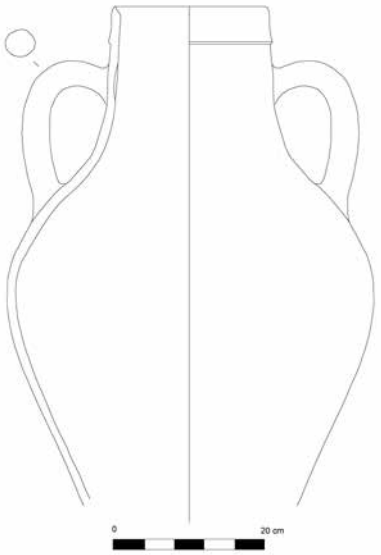

FIG. 4 Drawing of specimen 1 (© ÖAW-ÖAI / Lykien Archiv, B. Yener-Marksteiner).

FIG. 5 Detail of one handle of specimen 1 (© ÖAW-ÖAI / Lykien Archiv, R. Hügli; digital image editing: B. Yener-Marksteiner).

FIG. 6 Photograph of specimen 2
(object no. Li09-308-2)
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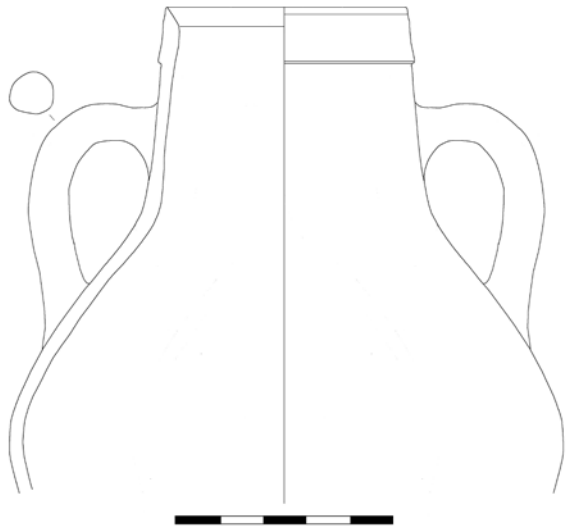

FIG. 7 Drawing of specimen 2
(© ÖAW-ÖAI / Lykien Archiv, B. Yener-Marksteiner).

FIG. 8a-b Details of both handles of specimen 2
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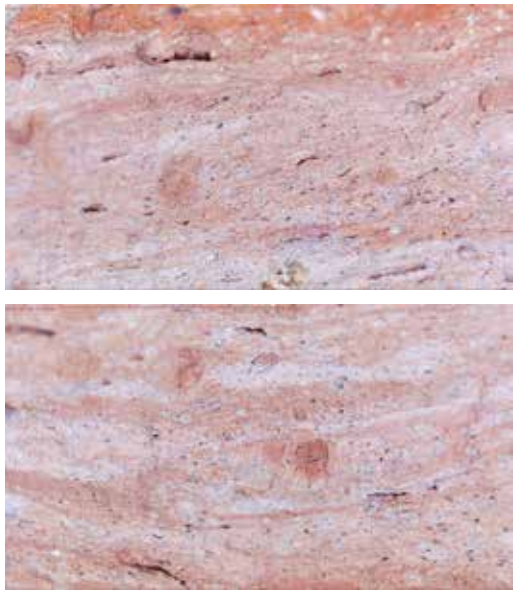

FIG. 9a-b Microscope photographs of a fresh break of specimen 1, magnified ca. 35 times
(© ÖAW-ÖAI / Lykien Archiv, Ph. Bes).

FIG. 10
Microscope photograph of a fresh break of specimen 2, magnified ca. 35 times
(© ÖAW-ÖAI / Lykien Archiv, Ph. Bes).

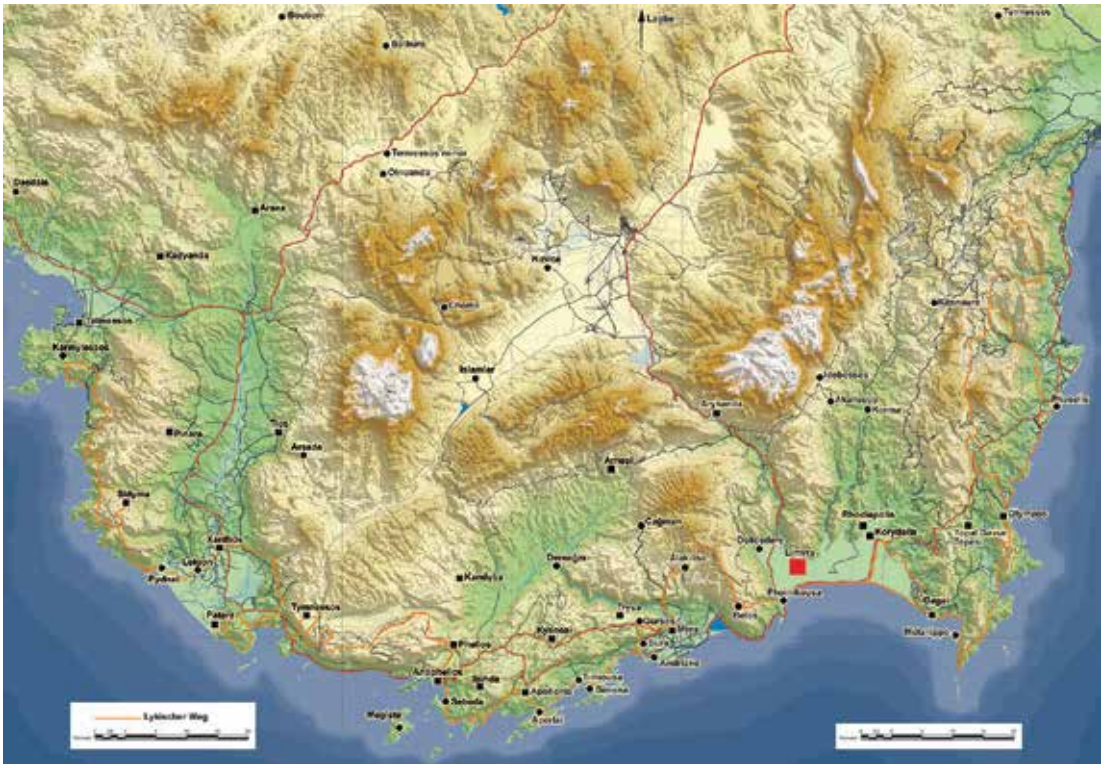

FIG. 11 Plan of Lycia with sites mentioned in the text (C. Steimel).

FIG. 12 Inscription on a sarcophagus from Olympos depicting a boat and mentioning Eudemos from Lycia (© B. Yener-Marksteiner).

FIG. 13 Sites in Lycia with workshops for fish-based products, indicated with blue circles (Plan: C. Steimel; digital image editing: B. Yener-Marksteiner).

ADALYA 25, 2022

Six Amuletic Gems in Ankara

MELİH ARSLAN – RICHARD GORDON – YAVUZ YEĞİN*

Abstract

Though often neglected, amulets on semi-precious stones, including the subclass of "magical amulets," provide important evidence not only for personal religious practice but also, indirectly, for networks of ritual specialists in the cities of the eastern Mediterranean during the Roman imperial period. This article presents six objects found in Asia Minor and held in Turkish collections. Two gems carry rare magical motifs - Isis comforting Harpokrates and Kronos / Saturn on a lion. Two non-magical items are likewise exceptional - Hermes / Mercury crowning Harpokrates and a set of four stones inscribed with an acclamation to Serapis.

Keywords: Amuletic gems, Anguipede, Egyptian deities, Turkish museum collections, Campbell Bonner Magical Gems Database

Öz

Sıklıkla ihmal edilse de "büyülü amuletler" grubunun da dahil olduğu yarı değerli taşlar üzerindeki amuletler, yalnızca kişisel dini uygulamalar için değil, aynı zamanda dolaylı olarak Roma İmparatorluk Dönemi'nde Doğu Akdeniz şehirlerindeki ritüel uzmanlarının birbirleriyle olan bağlantıları noktasında da önemli kanıtlar sağlar. Bu çalışma, Anadolu'daki Türk müze ve koleksiyonlarında bulunan altı objeyi tanıtmaktadır. İki sihirli taştan biri, Isis'in Harpokrates'i teselli ettiği bir ikonografi sunmaktadır. İkinci sihirli taş üzerinde, bir aslan üzerinde Kronos / Satürn'ün olduğu ve nadir bulunan büyülü motifler taşıyan bir sahne betimlenmiştir. Sihirli olmayan diğer iki taştan birinde Harpokrates'i taçlandıran Hermes / Merkür yer alır. Diğer örnek ise Serapis'e övgü yazan dört yüzlü taş boncuktur.

Anahtar Kelimeler: Muska (Amulet) Taşlar, Anguiped, Mısır tanrıları, Türk müze koleksiyonları, Campbell Bonner Sihirli Taşlar Veritabanı

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Introduction

Protective amulets made of degradable natural substances, such as herbs and animal parts, were employed in the Graeco-Roman world since time immemorial. In the later Hellenistic, and especially the Roman Imperial periods, however, with increasing literacy, improved communications and intercultural exchange, the range of amuletic types increased dramatically.[1] Prominent among these are semi-precious stones mainly set in rings and bearing a wide variety of divine images. Although any divine image might be considered to have protective or salvific value, even if primarily intended as a seal-stone, from the first century AD there developed in the interface between Egyptian and Greek culture a novel, highly-specialized type of protective glyptic known in modern scholarship as "magical amulets." This is an etic term not found in antiquity. Combining Greek technical resources with mainly Greek, Egyptian, and (to a smaller extent) Jewish iconographic motifs, such amulets proved a highly successful genre that for two centuries was widely favored, mainly in the eastern Mediterranean cultural area.[2]

Two aspects of this phenomenon are worth emphasizing here. The first is the role of market forces. One striking feature of these Graeco-Egyptian amulets is the variety of motifs and combinations of motifs with magical words (*voces magicae*) and signs (*charaktêres*). This interest in combination is a typical form of creativity in a visual medium. The ideal of the ritual specialist in this field was to create satisfying and coherent combinations of images and words that expressed the notion of directed efficacy. The demands of selling wares in a market freed such designers and their cutters from over-dependence upon existing patterns. Starting from the notion of a Graeco-Egyptian magical *koine*, the market thus encouraged a search for new types, not only within Egyptian and Greek traditions but also beyond. The most successful of all such innovations is, in fact, the type of the cock-headed Anguipede, which seems to have been developed indirectly from an esoteric Jewish tradition (see below).

The second aspect is the role of urban contexts. All known centers of Graeco-Roman gem-production are urban. The implied infrastructure of the mining of and trade in suitable stones, training the cutters who were presumably slaves (and thus in themselves a costly investment), and finding markets and buyers, required concentrations of capital and expertise only to be found in cities. Even if magical amulets constitute only a small proportion of all Imperial-period gem production, it is a reasonable assumption that their relative cost meant that they were primarily intended for urban customers who were, by implication, capable of understanding at least some of the intentionality of the exotic types to be worn on their fingers. Such calculated display of access to rare knowledge can be considered itself a distinctive form of urban culture.

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1 See especially Faraone 2018. Specifically on textual amulets in various media, see Kotansky 2019.

2 Bonner SMA, 22-44; an excellent recent introduction by Dasen and Nagy 2019; cf. also Nagy 2015. On possible distinctions between talismans and amulets as well as between protection, treatment, and personal advantage, which we ignore here, see, e.g., Canzobre Martínez 2017, 178-80.

Catalogue

A. Magical Amulets

1. Isis coming to the aid of Harpokrates[3] (fig. 1a, b)

Dark green and brown jasper. Two small chips at the top right edge caused by forcing the stone out of its setting.

Upright oval. Profile classification: Zwierlein-Diehl 2007, no. 8 = Henig 2007, flat 1.

Erimtan Archaeology and Arts Museum, inv. no. 1102.

Dimensions: 14.5 x 13 x 2 mm.

FIG. 1 a) Isis and Harpokrates; b) Seven Greek vowels.

Unpublished

Obverse: With his knees raised, Harpokrates ("Horus the child") squats facing left on a schematic stand or stool, wearing a solar disk on his head, kept in place by a band of material, and perhaps his characteristic sidelock of hair as worn by children. The young god is naked, with facial features clearly delineated. The index-finger of his right hand is raised, as usual, to his lips, while in his left he holds a schematic representation of a flail (*flagellum*).[4] Behind him kneels Isis, bent slightly forward, with her right hand gently touching her son's head.[5] She wears typical female garb, a "closed" *peplos* and a veil that billows out behind her. This, and the fact that her knees barely touch the podium or stool and her lower legs and feet are represented at an extreme angle, give the impression that she has just arrived in haste to help her child. Details of her profile, including the left eye, have been carefully indicated, the hair by means of tiny vertical grooves. The schematic feather-crown (*basileion*) is flanked, as usual, on either side by an equally schematic ear of grain and seems again to be held in place by a band.

Reverse (fig. 1b): A simple vowel (or note) sequence α ε η ι / ο υ ω.[6]

Discussion

It is a truism in iconographic studies that, whereas a single figure requires additional signs to communicate meanings or readings, just two interacting figures, as here, allow the viewer to infer a narrative, a denser form of communication that includes an inherently temporal dimension.[7] In our case, we have an implied *historiola*, a mythical "paradigmatic narrative of crisis and resolution" of the kind we also find in the Graeco-Roman magical papyri. This provides a mythical analogy with the force of a precedent or exemplum to be followed in the present case.[8] Procedures of Egyptian temple-medicine that invoke a *historiola* in which Isis heals her son of a headache are known already from the later New Kingdom (say 1300-1100 BC), while there are several analogous texts relating to scorpion stings on the Metternich stela of the late period

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3 Compare the four images of the same type so far catalogued in CBd, nos. 394, 1298, 1607, 1756.

4 These details are already found in Pharaonic and Ptolemaic images of young Horus (*Ḥr ḫrd*) / Harpokrates, who by the Late New Kingdom represents the first hours of the risen Sun; see Meeks 1977, 1003-4. The flail connotes the deity's close relationship to agrarian fertility thanks to his absorption of the earlier deity Neper. In the Graeco-Roman period, this sometimes led to his name being represented as Karpokrates.

5 The left hand overlaps with the groove representing part of the flail.

6 Despite their great potential interest as phonetic devices emptied of semantic significance, there is no systematic recent discussion of vowel sequences in the Graeco-Egyptian context, but see briefly Frankfurter 1994, 199-205; 2019a, 637-40; Dieleman 2005, 63-71 (emphasizing their adoption into Demotic formularies); see also Crippa 2015, 245-47.

7 Wolf 2003, 188-94 terms such images "depictions of frozen action," which suggest an immediate past and a possible future, and generally appeal to the viewer's wider cultural knowledge.

8 Frankfurter 2019b, 732-34, cf. 1995, 472-74.

(fourth century BC).[9] However, none of the recipes against headache in the magical papyri invoke this model.[10]

Only six other examples of this motif are known, and this one alone has a provenance of any kind.[11] All but one of the others are engraved on variations of (green / yellow or red) jasper.[12] All are faithful to the hypothetical model.[13] The sole variable is the treatment of the platform on which, in four of the examples, the action takes place. It seems to represent a wooden or wickerwork podium or stool (*Schemel* in German) or a wooden stand on which to place objects or offerings.[14] However, the version here - a rectangular frame apparently consisting of a top, two legs, and a base created by circumspect use of the wheel - is identical to that shown on one of the two examples in the Skoluda collection. This may suggest the use of a template deriving (ultimately) from the same pattern-book.[15] The major contrast between this example and the others, however, is the rudimentary text on the reverse (see above), whereas the rest carry fairly complex semi-fixed *logoi*, either entire or as abbreviated quotations, implying designer(s) with a wider range of rare knowledge.[16] It is, of course, possible that considerations of cost played a part in the choice here of such a perfunctory empowering text. Yet the quality of the execution on the obverse speaks against this.

2. Saturn (?) on lion (fig. 2a, b, c [obverse]; fig. 3 [reverse] and fig. 4 [bezel])

Granulated brown, green and yellow jasper.[17] Undamaged.

Upright oval. Profile classification: Zwierlein-Diehl 2007, no. 8 = Henig 2007, flat 1.

Erimtan Archaeology and Arts Museum, inv. no. 19.

Dimensions: 15.5 x 12.2 x 3.2 mm.

Published in Erimtan 191, no. 167 = CBd, no. 1150.

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9 Headaches: Borghouts 1978, nos. 44, 45; scorpion stings: nos. 91, 93, 94 (translations). On Egyptian texts against scorpions and ~-stings, including those on the Metternich stela, which were a specialty of the "scorpion-charmers" (*ḫrp-Srq.t*), see Maaßen 2015, 174-85.

10 PGM, 7.199-202, 18.2-3, 20.col. ii 1-2, 15-20, 65.4-5; SM, 1:14, l.5, 22, l.4, 2:72, ll.26-30; cf. Brashear 1995, 3499. Of these, only the last employs a *historiola* of any kind.

11 Listed by Michel MG, 298 §30.2b 1-6. Four carry the Iaeô-palindrome of (more or less) 58 letters on the reverse, while Skoluda, no. 11 carries: χυχ βαχυχ βαχαχιχυχ, an abbreviated version of a 42-letter *logos* only known from the amulets (see Michel BM 2, no. 15 s.v.). The only relatively routine text is Bonner SMA, 258, pl. 2, no. 35: βαινχωωωχ, (the Power of) Darkness, which is in fact the final element of the same *logos* (on the formula as a whole, see Mastrocinque 2004, 112). There is a magnificent example of the Iaeô-palindrome in SM, no. 48 §A, on which see Martinez 1991, 105-11.

12 The exception is again Bonner SMA, 258, pl. 2, no. 35 = Michel MG, 30.2, b3 (black jasper). For some reason, this is not entered in CBd.

13 Bonner SMA, 258, pl. 2, no. 35 suggested that the model was a well-known statue group, but none is known.

14 Michel BM 1, no. 15 lists some different suggestions by earlier authors: "boat," a "hieroglyph for water" (e.g. Gardiner 1988, 491, N36 or 37), and the coffin of Osiris. She herself there suggested a mat (appropriate for Bonner SMA, 258, pl. 2, nos. 34 and 35, which simply show the figures on a base-line), but elsewhere (Skoluda, nos. 11, 149) identifies the object as a podium ("*Podest*"). The object depicted in Skoluda, no. 149 looks very much like a wickerwork or even papyrus stand or stool, whereas that in Michel BM, no. 11 seems to represent a stand made of wood and decorated with a series of thin horizonal lathes. A couple of low stands of different materials can be found in Schulz and Seidel 1997, 351, fig. 44 (painting, 19th Dynasty, stuccoed and painted wooden podium); 399, fig. 119 (wooden stand, three racks, 18th Dynasty); 440, fig. 34 (podium for a statuette of mourning Isis, 26th Dynasty).

15 Skoluda, no. 149. On the use of pattern-books, see Dasen and Nagy 2019, 431-33. However, the design on the obverse of our amulet, particularly the impression of Isis' hasty arrival, is much more dramatic than in the Skoluda example, which shows her thoroughly settled behind Harpokrates.

16 See n. 11 above.

17 The original publication, described as "heliotrope," is simply repeated in the CBd entry.

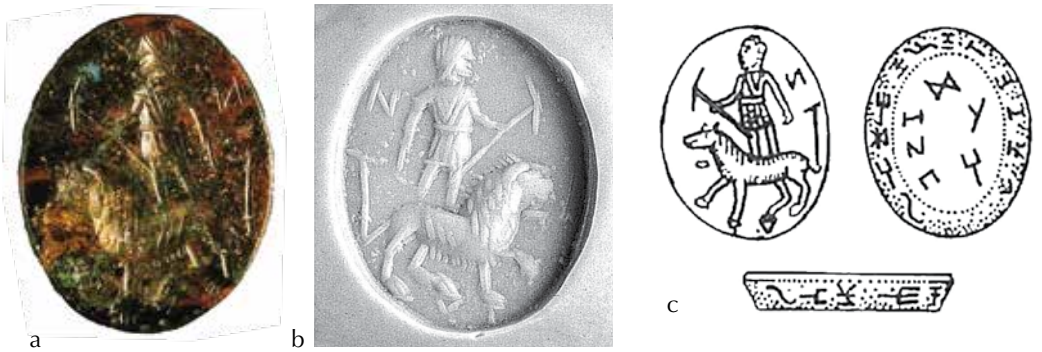

FIG. 2 a, b) Kronos / Saturnus (?) on lion; c) Reduced view of the *charaktêres* on reverse.

Although this amulet has been entered in the Campbell Bonner database, the description there follows the original entry closely (omitting the identification as Helios), with the sole addition of the claim that the figure is youthful, which we believe to be incorrect. The item therefore merits fuller discussion here.

Obverse: The mottling of the stone renders the details of the design difficult to make out, making a resort to the (reversed) impression (fig. 2b) unavoidable. A male figure, facing left and apparently bearded, is dressed in a belted tunic and wearing some sort of headgear or diadem. In his right hand he holds an object resembling a Roman-type double adze or hoe, although the haft seems to be rather long for such an instrument and there is an anomalous protuberance at the end. His left arm hangs down and holds a hooked object (visible only on the impression) turned towards his left leg. This object has no contact with the long T-shaped object on the extreme right of the field. No effort has been made to model the legs. In the field to the rear is a reversed "N." The figure stands still on the rump of a large maned lion, likewise facing left, with long raised neck and open jaws. Beneath each of the animal's two central paws is an (incomplete) star. To judge again from the impression, its tail is directly connected to the long straight object on the extreme right of the design, but this is probably unintentional. No ground-line exists.

Reverse: The field is inscribed with six unusually abstract (i.e., non-alphabetic) *charaktêres* arranged in the shape of a horseshoe (fig. 3).

The bezel carries 13 similarly abstract *charaktêres* (fig. 4).

Both sets would have been concealed when the stone was fitted into a ring.

Discussion

In the original publication, the motif was misidentified as Helios standing on a lion, although the standing figure bears no resemblance to the alleged comparanda.[18] This is, however, excusable, since the identification of the figure is problematic. The crucial features are the gender, the stance on a lion, and the object held in the right hand. Designs on magical amulets showing a deity standing on a lion

FIG. 3 Enlargement of the *charaktêres* on the reverse.

FIG. 4 Enlargement of the *charaktêres* on the bezel.

[18] See, e.g., Mastrocinque IM, no. 320 rev.: Helios wearing a solar crown, wielding a whip, and raising his hand in the usual gesture of blessing. Here the lion (with a star at the end of the tail) represents the zodiacal constellation Leo, the unique domicile of Helios. Moreover, the late-Egyptian name of Ra, Φρῆ(ν), appears in the field.

must be clearly distinguished from those on which the figure rides (or, like the Osiris-mummy, lies) on one.[19] Although motifs involving lions - entire or in part - are very common, the only well-recognized types of anthropomorphic male figures standing on lions are Helios / Helios-Horus-Miôs and a version of the "Pantheus"-type.[20] Our figure here bears no relation to either.

There seems to be just one possible parallel, although it differs in a number of significant details. This is a male figure dressed in a tunic and standing, or rather walking, on a lion on a serpentine in the British Museum, identified by Michel as Kronos / Saturn.[21] Although the head is disfigured by an unfinished drill-hole, it seems clearly to wear a kind of covering ("Kopftuch"). In the right hand the figure holds a rudimentary thunderbolt, and in the crook of his left arm a hooked object that must be a sketchy version of a semi-circular sickle (Gk. δρέπανον; Lat. *falx messoria*)[22] unmentioned in the original publication or in CBd. This is to be distinguished from the more elaborate type with a straight blade with a hook protruding halfway up (conventionally termed *harpê*; German *Sichelschwert*) that other magical gems associate with Kronos / Saturn.[23]

The combination in our amulet of headdress, tunic, sickle in the left hand, and stance on a lion make it virtually certain that the original model was similar: Kronos / Saturn as a cosmic power with specific responsibility for agrarian prosperity and so good fortune, whether or not it was also read as a reference to the reign of Kronos / Saturn in myth. The major anomaly is the object in the right hand.[24] On both of the two comparanda on magical amulets cited by Michel, Kronos / Saturn holds or supports a miniature crocodile in the right hand or arm.[25] In this type, lacking the stance on the lion, Kronos / Saturn is thus associated with the crocodile deity Sobek who, by the Graeco-Roman period, had become a universal deity widely worshiped throughout Egypt, especially Upper Egypt.[26] In the hymns to Sobek of Šedet found in the Ramesseum at Thebes, the god is said to be the most ancient god to have come into

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19 Figures riding on a lion include the type identified by Mastrocinque as Helios-Horus-Miôs of Leontopolis: Mastrocinque IM, nos. 49-54; one or two untypical types identified as Helios (e.g., Michel BM, nos. 282-84; Bonner SMA, no. 226) may also depict this deity; baboons/hamadryads: Michel MG, §42.4 (6 items). Very rare instances include an *akephalos* with seven snakes emerging from the shoulders and holding a flail (i.e., a Harpokrates variant), not riding the lion but squatting on his back (Michel MG, §42.4 with pl. 59.2); see also Juno Caelestis (Mastrocinque IM, no. 364) and Tyche (no. 433). For the Osiris-mummy (accompanied by Anubis), see, e.g., Mastrocinque IM, nos. 66-69; Skoluda, no. 4; Zweierlein-Diehl 2007, pl. 174, fig. 785.

20 Helios standing: e.g. Michel BM, no. 259; Michel MG, §22.2.d (7 items); Mastrocinque IM, nos. 272 rev., 320 rev., 393-94; Bonner SMA, no. 225; AG Wien 3, no. 2701a. For numerous non-magical types see AGDS 1.3, no. 2911b [footnote]). Helios-Horus-Miôs: Mastrocinque IM, no. 55; Zwierlein-Diehl 2007, pl. 174, fig. 783 (on three lions). "Pantheos": e.g., Michel BM, nos. 289-94; Michel MG, §41.5 (9 items) including Zwierlein-Diehl 2007, pl. 178, fig. 788; Mastrocinque IM, no. 165. Mastrocinque identifies a figure with four ibis heads standing on a lion as a decan with various names including Brysous (Mastrocinque IM, no. 471). This may simply be another indirect solar allusion.

21 Michel BM 1, 187, no. 296 obv. (with drawing); 2, pl. 44. Both deity and lion likewise face left.

22 On varieties of Roman sickles, see White 1967, 69-103, 205-11. In some images, however, the object held by Kronos / Saturn is more like a heavy billhook for clearing undergrowth.

23 Hook-like sickle: e.g., AG Wien 2, no. 1220; BM Gems, no. 1675a; probably AGDS 4, Hannover, no. 1427 (left). On some of the Kronos-types in the abundant Zodiac series issued by the mint of Alexandria under Antoninus Pius in AD 144-145, a bust of Kronos is shown veiled, with a solar orb on his head and a billhook over his shoulder (Dattari 1901, 1:192, nos. 2975, 2977 [in Aquarius]; 193, no. 2979 [in Capricorn]; see his pl. XXVI; see also Milne 1971, cat. no. 1824a). For Kronos, *capite velato*, with a solar orb on his head and holding a true *Sichelschwert*, see Michel MG, §35.1.a, pl. 58.2 (rev.) and 3.

24 We have no suggestion to make for the T-shaped object on the extreme right.

25 Both listed under Michel MG, §35.1.a.

26 Brovarski 1984, 1012.

existence in the primeval ocean, and on appearance to have taken over heaven and earth.[27] The stance on a lion, as in our case, would rather imply an esoteric reference to Kronos / Saturn as the Chaldaean Sun,[28] which at the same time enjoys the greatest power in the universe (just as the lion is king of the beasts).[29]

Although Kronos / Saturn is often represented *capite velato*, this is by no means always the case. The major irritant here is thus the object resembling a double adze or mattock with a long haft[30] held in the figure's right hand, which is unique both among magical amulets and in the wider iconography of Kronos / Saturn.[31] There are two possible hypotheses to account for it. The first is that our image was cut on the basis of a poor or indistinct *Vorlage*, representing the figure holding a thunderbolt in his right hand, as in the British Museum example. The cutter of our image understood this as an object held on a stick – creative interpretations occur frequently among magical amulets.[32] The alternative would be the deliberate introduction by the designer of a "hybrid" variant taken from another type.[33] In view of the fact that no gem known to us, magical or not, represents a similar object, and that all staffs held by male divine figures among Egyptianizing magical amulets are vertical, we conclude that the first hypothesis is more plausible.

3-4. Two Anguipede amulets

In view of the sheer familiarity of this type, we forego detailed descriptions of these two items, which are published here mainly as a gesture towards completing the inventory of the Campbell Bonner Database in Budapest.

We have nothing to add to the description in CBd, no. 1149 of a third Anguipede gem in the Erimtan

FIG. 5
Anguipede in the Erimtan Archaeology and Arts Museum, Ankara, inv. no. 754 = CBd, no. 1149.

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27 From the primeval ocean (*wbn m mwn*): Gardiner 1957, cols. 1 and 6-7; control: cols. 105-6; cf. Zecchi 2010, 95-97.

28 Diod. Sic., 2.30.3: (the Chaldaeans) Κρόνον... ἐπιφανέστατον δὲ καὶ πλεῖστα καὶ μέγιστα προσημαίνοντα, καλοῦσιν ἡλίου; cf. Hyg., *Poet. astr.* 2.24.2 (from Eratosthenes).

29 Cf. Tac., *Hist.* 5.4: *de septem sideribus qui mortales reguntur altissimo orbe et praecipua potentia stella Saturni feratur*; [Manetho] *Astr.* 4.14: πρῶτα μὲν οὖν Τίταν πάντος Κρόνος αἴθερος ἄρχει ....

30 Gk. δίκελλα, Lat. *bidens*. For Roman hoe-types, see White 1967, 36-47. Vitellozzi 2018, 215, no. 2.25 notes an entry in Socrates and Dionysius 50.2 (= Halleux and Schamp 1985, 176) describing a magical chalcedony showing a naked man holding a δίκελλα. However, no known gem corresponds to the description.

31 See the selection of images in Serbeti 1992. However, in one of the variants of the Kronos / Saturn type noted by Michel MG, §35.2, pl. 58.3 (= Mastrocinque SGG, 45, no. Fi 32, who interprets the figure as "Alexandrian Saturn or Sarapis"), in which the figure stands on a crocodile, he is represented as holding an elongated staff in his right hand, terminating in a single cross-bar above, a double one below, and a curved hook in the middle.

32 Nagy (2015, 215) writes: "Practically speaking no two magical gems are identical ... the gems remake established iconographic and textual motifs and conventions." Michel notes dozens of variations to dominant types under her headings "Sonstige," "Motivkombinationen," "Abwandlungen," and "Varia" (Michel MG, 237-345).

33 For many examples of hybridization of non-magical types see, e.g., Henig 2007, 27-42. Attilio Mastrocinque (pers. comm.) has suggested to us that the model might have been the long staff held by Persephone on South Italian vases, but these are surely too early. The angle is wrong, and our image is certainly masculine. There is an apparently unique example in Vienna of a three-headed and six-armed Hekate standing rigid on a lion, which itself stands on a subdued enemy / corpse; see AG Wien 3, no. 2182 = Zwierlein-Diehl 2007, pl. 173, fig. 778V.

collection, published as Erimtan 190, no. 166. It includes a reading of the vowel-sequences / *voces magicae* on the obverse (εη ω ξι ευωεηγεγ + beneath the snake-legs υη or perhaps ΗΛ [ηλ]), which was omitted from the original publication (fig. 5).[34]

However, we doubt the claim, repeated in the CBd entry, that it is made of glass.[35] And note that the unusual "interrupted" snake legs indicate that this type belongs to a small subset of Anguipede gems in which the legs do not form a single or a double undulation, as in the great majority of cases, nor a complete circle, as in a few others. Rather they are formed in two distinct sections (CBd offers some ten more or less good parallels, including nos. 580, 585, 590, 596, 1056, 1126, 1973, 3478).

3. White chalcedony.[36] Two chips at the top and one at the bottom, caused by forcing the stone out of its ring-setting (fig. 6a, b).

Upright oval.

Museum of Anatolian Civilizations, Ankara, inv. no. 9-199-72.

Dimensions: 23 x 20.2 x 5.1 mm.

Unpublished

Description

Obverse: Anguipede, facing right, snake legs undulated only once and no inscription on the interior of the shield. Instead, the letters of the name IAW are distributed below, to the left and to the top right of the figure. This entire design is set within an ouroborus denoting the cosmos.[37]

FIG. 6 a) Anguipede; b) *Charaktêres* in ┼ arrangement on reverse.

Reverse: Five *charaktêres* based on manipulated Greek letters and arranged in the form of a George cross (┼). A check of all 854 magical amulets with *charaktêres* listed in CBd suggests that, although such items are often treated less as "letters" than as elements of a design, this arrangement is unique (CBd, no. 1638 is a modern imitation). The usual "pommettes" - tiny circles at the ends of the long strokes of alphabetic *charaktêres* - have been replaced by simple wheel grooves.

[34] Note that all the Greek vowels except for omicron are represented at least once, but only two (or possibly three) consonants (ξ, γ, possibly λ).

[35] CBd lists just one magical amulet made of orange glass (no. 190) and just six of red, only one of which looks at all like this (no. 4106). However, this list does not include our amulet (which *is*, however, entered under "glass"), so the site's trawler-system is evidently given to omissions. For a very similar amulet of red-orange jasper, note Mastrocinque SGG, no. Ro 9 = CBd, no. 2232.

[36] So the Museum. One of the anonymous reviewers suggests a black jasper *vel sim* instead.

[37] Reemes 2015 argues that such interpretations of the Ouroboros post-date the Dynastic period.

4. Red-speckled lapis-lazuli,[38] set in an iron ring (fig. 7a, b).

Upright oval.

Museum of Anatolian Civilizations, Ankara, inv. no. 12-64-11.

Provenience: Juliopolis necropolis, tomb no. 148. Found together with a coin of Marcus Aurelius.[39]

Dimensions: 14.7 x 12.5 mm. Ring: 21.9 x 27.6 mm.

Unpublished

FIG. 7 a) Anguipede; b) As inserted in iron ring.

Description

Anguipede facing right, with the shield close up against the trunk in defensive position. The lash of the whip hangs down behind the figure's right shoulder. There is a single undulation of the snakes, who are depicted as basilisks with crown and beard.

Discussion

The Anguipede is by far the most common single type among the magical amulets.[40] The significance of the composition has always been a matter of debate. Even the simplest account, however, drawing attention to the association in the Greek world of the cockerel and the whip with the Sun and of snakes' legs with the Giants in the Underworld, understands the image as representing a magical deity of light and time, demiurge and world-ruler whose power spans the entire cosmos.[41] The most specific recent theory, based on earlier suggestions, contends that the image is to be understood more precisely as a visual rebus-image of the God of Israel based on different possible evocations of the Hebrew root GBR.[42] It is thus to be viewed as an "intellectual attempt to incorporate the God of Israel into the broader magical *koine* of the Roman Imperial period."[43]

Although such a development is most unlikely to have occurred within mainstream Jewish communities given their restrictions on graven images, it is thinkable that contacts in Alexandria between one or two learned Jews and Graeco-Egyptian specialists in gem design might have led to such a creation. Nevertheless, worries remain: the "popularity" of the image among designers / cutters is difficult to reconcile with such an esoteric Judeo-Egyptian origin. And it is impossible to conceive that all the known examples, with all their minor variants, can have been made in Alexandria. Would the mere name Iaô have been sufficient to cause the widespread adoption of the type throughout the eastern Mediterranean? Even if Nagy is right,

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38 Red-speckled lapis-lazuli is very rare; yellow speckling is more usual, e.g., CBd, nos. 557, 558, 659, 1127, 1941, 2335, 2352, 2959, 2960, 3304 (obv.), 3325; Bertolami Auc. 86, lot 211. Speckling may have been considered an additional value. One reviewer suggests a green jasper.

39 On the excavations of the necropolis of Juliopolis (Bithynia), see Arslan and Metin 2013.

40 CBd currently lists 395 items; Nagy 2019, 181 reports that in fact there are at least 708, with the total steadily growing.

41 Bonner SMA, 123-39; Michel BM 1, 115-17, s.v. no. 181 (commentary). There is unfortunately no connected discussion of the type in Michel MG. Zwierlein-Diehl 2007, 221-23 views the image as primarily solar, identified through the name Iaô with the Hebrew God, cf. AG Wien 3, no. 2231 (commentary).

42 This is argued most fully in Nagy 2002; cf. also the statistical arguments advanced in Nagy 2019.

43 Dasen and Nagy 2019, 417.

the Anguipede retains much of its enigmatic character, particularly in view of its extreme pragmatic polysemy.[44]

B. Conventional Divine Image

5. Hermes / Mercury crowning Harpokrates (fig. 8)

White chalcedony. Slight chip at 2.30 o'clock.

Horizontal oval.

Museum of Anatolian Civilizations, Ankara, inv. no. 50-2-74 (case 7, no. 53 b).

Dimensions: 13.4 x 15.4 x 2.7 mm.

Unpublished

Description

On the left, Hermes / Mercury stands, in slight *contrapposto*, facing the spectator's right. He wears what is conventionally known as a "lotus diadem" on his head, and holds the *kerykeion / caduceus* in the crook of his right arm, over which his chlamys / mantle is draped. With his left arm he offers a leafy crown to Harpokrates, who faces him. The groundline is broken.

FIG. 8 Hermes / Mercury (l.) honoring Harpokrates with a crown.

Discussion

This motif is a variant on the more common type of Hermes / Mercury crowning Tyche / Fortuna, an intaglio type in which their positions are usually reversed, with Hermes / Mercury on the spectator's right, facing left.[45] The figure to whom the crown is being offered here seems to have been intended as a free-standing Harpokrates, who is fairly often shown on intaglios holding a cornucopia and a draped mantle, sometimes against a tree.[46] The characteristic gesture of Harpokrates in this pose, as in other types, is the hand held up to the mouth. In adapting the free-standing model-type to the Hermes / Mercury crowning type, presumably at the wish of a customer, the cutter has ended up failing to take account of Hermes / Mercury's raised arm, and so been forced to render Harpokrates' right hand absurdly long. Moreover, the double-crown usually worn by Harpokrates in this pose has here been turned into a normal wreath. This perhaps suggests that the original model was in fact a Genius holding a patera, a type in which the figure holds a cornucopia and a draped mantle in the free hand in exactly the same manner.[47]

Hermes / Mercury as bringer of wealth and success in business is here linked to Harpokrates as a symbol of agrarian prosperity. This thereby creates a visual reduplication of a wish or prayer for personal well-being and good fortune. There is a further, more complex type in

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[44] There are a number of other Anguipede amuletic gems in Turkish museums; see, e.g., Altınoluk 2013; 2016, 246-47; Altınoluk and Atakan 2014.

[45] This is so the impression of the honorand (Tyche / Fortuna) will appear on the side of dignity, which is the right; e.g., AG Wien 2, nos. 1208-210; Henig and Whiting 1987, 14, nos. 93-95; AGDS 3, nos. 112, 165-66; AGDS 1.3, no. 2623; Fossing 1929, no. 1663; auctions: Bertolami E-Live Auc. 84, 106; probably Sotheby 1842, 367.

[46] AGDS 1.3, no. 2677 with 8 further examples; AGDS 4, Hamburg, no. 60 (against a tree), with numerous parallels; cf. AGDS 4, Hannover, no. 916 (facing front).

[47] Ringstones depicting a personal Genius, in which the figure is not depicted in a toga like the Genius p.R., but simply with cornucopia and patera, occur in small numbers, e.g., AGDS 1.3, nos. 2691, 3003-5; AGDS 3, no. 102; Henig 2007, nos. 104-8.

which Hermes / Mercury crowns Zeus / Jupiter, flanked by Tyche / Fortuna, a type that explicitly transfers the personal wish to the collective level.[48] We cannot however trace another gem in which this prosperity type is adapted to Harpokrates.

C. Pendant in Red Jasper

6. Neck ornament acclaiming Serapis (fig. 9)

Pale red jasper. Slight damage to nos. 1 and 3.

Four short parallelepipeds of slightly unequal lengths.

Museum of Anatolian Civilizations, inv. no. 64-42-11.

Provenience: Juliopolis necropolis, tomb no. 57.

Average dimensions: 17 x 4 x 4 mm. Not pierced through longitudinally.

Unpublished

Description

Four small parallelepipeds in pale red jasper were probably set into metal frames or woven holders. They would have been linked together either in a horizontal line as a choker, or one above the other, as a pendant over the upper chest, though other possibilities must remain open. Placed in sequence they read: 1: EIC 2: ZEYC 3: CEPA 4: ΠΙC.[49] This is the familiar acclamation εἷς Ζεὺς Σέραπις exalting Serapis as a Zeus and a *megatheos*, a deity who – here and now – is above all others in majesty and power.[50]

Discussion

Public and private acclamations of deities (and emperors) were a widespread feature of religious life in the eastern Mediterranean during the imperial period. It is now recognized that they are to be taken as ritualized expressions of homage to the τιμή of a specific deity, whether of local[51] or of "universal" importance, expressions especially favored in situations in which deities "compete" for omnipotence. Εἷς / μία acclamations are in principle no different from a range of other essentially communicative acclamation styles, such as μέγας / μεγάλη, μέγιστος / ~ίστη, μεγιστότατος, or μόνος / ~η, ὕψιστος, εἷς ἀπ' αἰῶνος.[52] Despite the apparent emphasis on the

FIG. 9 Collar from a tomb in Juliopolis (Bithynia) inscribed εἷς Ζεὺς Σέραπις.

[48] E.g., AGDS 4, Hannover, no. 1379, Hamburg, no. 59 with further references (Tyche / Fortuna broken away). Zeus / Jupiter is, of course, more usually crowned by Nike / Victoria, e.g., AGDS 1.3, no. 2445.

[49] The cutter seems to have made an error at the end of no. 4. The picking out of the letters in white paint is probably modern.

[50] Mastrocinque 2014, 163-67 has collected a small number of analogous "prisms."

[51] E.g., Apollo in the context of the Delphian Pythia: Chaniotis 2010, 123-27 ("superlativism") or Ephesian Artemis in *Act. apostol.* 19:34, with Chaniotis 2011, 272-76.

[52] Belayche 2010, 145-47; Chaniotis 2009; 2011, 266-67. H. Versnel has termed the general phenomenon "acclamatory-elative" (Versnel 2011, 299). The acclamation εἷς ἀπ' αἰῶνος was popular in the context of spectacles.

alterity of the deity, such utterances, chanted for minutes or even hours on end, sought to close the gap between the mortal and divine by establishing a subjective emotional closeness to the addressee, whether on the part of an individual, a small group or an (imagined) community.

Specifically in relation to "oneness,"[53] we need to distinguish between claims that a given deity is exceptional (which are frequent), and those that imply assimilation of other great gods (which are few), even if there can be no sharp division here.[54] The scrap of papyrus containing the remains of the "miracle of Pharos" ends with the direction that the narrative is to be kept in the libraries of the Alexandrian quarter Mercurius (or ~m), and that all those present (οἱ παρόντες) at the reading are to exclaim εἷς Ζεὺς Σέραπις![55] There can thus be no doubt that this acclamation owed its Mediterranean-wide distribution to regular cult practice in Roman Egypt. Richard Veymiers has collected nearly 70 rings inscribed with this and similar acclamations to Serapis.[56] Of these, the only close parallel to our set is a jasper parallelepiped, square in section, inscribed 1: EIC 2: ZEYC 3: CEPA 4: ΠΙC, an identical distribution of the letters to that of our case, albeit over the four faces of the amulet.[57]

Conclusion

Small finds lacking significant inscriptions have traditionally tended, with the obvious exception of imperial and civic coin issues, to be sidelined in writing the religious history of the Roman Empire. The increased attention now being paid to individual choice and innovation in religious practice, together with a focus on specifically urban religious styles, is beginning to alter this neglect. Moreover, the label "magical," despite being confessedly etic, has been especially detrimental to acknowledging the evidential value of amuletic gems that draw upon Graeco-Egyptian knowledge-practice and have traditionally been regarded as impenetrably arcane, so best left to small numbers of aficionados of the obscure. With the creation by Árpád Nagy of the digital Campbell Bonner Magical Gems database in Budapest, however, the accessibility of these tiny objects has radically improved. Very few "magical amulets" found in the area of modern Türkiye have so far been published. It is hoped that papers such as this may stimulate museum directors and field archaeologists to arrange for the publication of such finds, whether lurking in their storerooms or – of special interest – excavated in tombs or houses.

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53 P.Oxy 1382 col. ii translates: "There is one Zeus Sarapis"; cf. Veymiers 2011, no. A47: "Un est Zeus Serapis", whereas Chaniotis 2011, 269, n. 27, offers "unique." We would prefer a looser equivalent, "Zeus Serapis is tops!"

54 Versnel 2011, 296-303.

55 P.Oxy 1382, col. ii; cf. Jördens 2014; Chaniotis 2011, 269.

56 Veymiers 2009, 357-59, nos. VI DA 1-14; also 369-73, nos. A1-41; 2011, 255, nos. 42-9; 2014, 224, nos. 50-54.

57 Veymiers 2009, 372, no. A21 with pl. 72 (Hermitage Museum), L.17 mm (i.e., the very same length as our items). AG Wien 3, no. 2139 = CBd, no. 2419 is a single parallelepiped in red jasper (11.6 x 6 mm) carrying the same text (but with Σάραπις), set in a modern swivel ring.

Abbreviations

AGDS 1.3	E. Brandt, W. Gercke, A. Krug, and E. Schmidt, *Antike Gemmen in Deutschen Sammlungen*. Vol. 1, *Staatliche Münzsammlung, München*. Part 3, *Gemmen und Glaspasten der römischen Kaiserzeit sowie Nachträge* Munich: Prestel, 1972.
AGDS 3	V. Scherf, P. Gercke, and P. Zazoff, *Antike Gemmen in deutschen Sammlungen*. Vol. 3, *Braunschweig, Göttingen, Kassel*. 2 vols. Wiesbaden: Franz Steiner Verlag, 1970.
AGDS 4	M. Schlüter, G. Platz-Horster, and P. Zazoff, *Antike Gemmen in deutschen Sammlungen*. Vol. 4, *Kestner Museum, Hannover; Museum für Kunst und Gewerbe, Hamburg*. 2 vols. Wiesbaden: Franz Steiner Verlag, 1975.
AG Wien 2	E. Zwierlein-Diehl, *Die antiken Gemmen des Kunsthistorischen Museums in Wien*. Vol. 2, *Die Glaskameen, Nachträge zu Band 1; Die Gemmen der späteren römischen Kaiserzeit*. Munich: Prestel, 1979.
AG Wien 3	E. Zwierlein-Diehl, *Die antiken Gemmen des Kunsthistorischen Museums in Wien*. Vol. 3, *Die Gemmen der späteren römischen Kaiserzeit*. Munich: Prestel, 1991.
BM Gems	F.H. Marshall, *Catalogue of the Finger-Rings, Greek, Etruscan, and Roman in the Department of Antiquities, British Museum*. London: Trustees of the British Museum, 1907.
Bonner SMA	C. Bonner, *Studies in Magical Amulets, chiefly Graeco-Egyptian*. University of Michigan Studies, Humanistic Series 49. Ann Arbor: The University of Michigan Press / London: Oxford University Press, 1950.
CBd	Campbell Bonner Database: <cbd.mfab.hu>
Erimtan	K. Konuk, and M. Arslan, *Ancient Gems and Finger-Rings from Asia Minor: The Yüksel Erimtan Collection = Anadolu Antik Yüzük Taşları ve Yüzükleri: Yüksel Erimtan Koleksiyonu*. Ankara: Duduman, 2000.
Mastrocinque IM	A. Mastrocinque, *Les intailles magiques du département des Monnaies, Médailles et Antiques (Bibliothèque Nationale, Paris)*. Paris: Bibliothèque nationale de France, 2014.
Mastrocinque SGG	A. Mastrocinque, *Sylloge gemmarum gnosticarum*. Vol. 2. Bollettino di Numismatica, Monografia 8.2.2. Rome: Istituto Poligrafico e Zecca dello Stato, 2007.
Michel BM	S. Michel, *Die Magischen Gemmen im Britischen Museum*. 2 vols. London: British Museum Press, 2001.
Michel MG	S. Michel, *Die magischen Gemmen. Zu Bildern und Zauberformeln auf geschnittenen Steinen der Antike und Neuzeit*. Studien aus dem Warburg-Haus 7. Berlin: Akademie, 2004.
PGM	K. Preisendanz (ed., and trans.), *Papyri Graecae Magicae. Die griechischen Zauberpapyri*. Leipzig / Berlin: Teubner, 1928-1931; cited from 2nd ed., revised by A. Henrichs. Sammlung wissenschaftlicher Commentare, 2 vols. Stuttgart: Teubner, 1973-1974, repr. Munich and Leipzig, 2001.
Skoluda	S. Michel, *Bunte Steine – Dunkle Bilder: "Magische Gemmen." Ein Katalog*. Freiburger archäologische Museumsschriften 5. Munich: Biering and Brinkmann, 2001.
SM	R.W. Daniel, and F. Maltomini (ed. and trans.), *Supplementum Magicum*. Vols. 1-2. Abhandlungen der Rheinisch-Westfälischen Akademie der Wissenschaften. Papyrologica Coloniensia 16.1-2. Opladen: Westdeutscher Verlag, 1990-1992.

Bibliography

Altınoluk, S. 2013. "Batı Anadolu'dan İki Tılsımlı Obje: Abrasaks / Two Magical Objects from Western Asia Minor: Abrasax." In *Tarhan Armağanı: M. Taner Tarhan'a Sunulan Makaleler / Essays in Honour of M. Taner Tarhan*, edited by O. Tekin, M.H. Sayar and E. Konyar, 13-18. Istanbul: Ege Yayınları.

Altınoluk, Z.S. 2016. "Geç Roma İmparatorluk Dönemi'nde Batı Anadolu'daki Senkretik Büyü Uygulamalarına Bir Bakış: Iao, Abrasaks." In *Eskiçağ Yazıları* 10, edited by A.V. Çelgin, E.N. Akyürek Şahin and F. Onur, 239-52. Akron Eskiçağ Araştırmaları 13. Istanbul: Arkeoloji ve Sanat Yayınları.

Altınoluk, S., and N. Atakan. 2014. "Abrasax: A Magical Gem in the Istanbul Archaeological Museums." *Anatolia Antiqua* 22:219-23.

Arslan, M., and M. Metin, eds. 2013. *Kayıp Kent Juliopolis*. Ankara: Ankara Kalkınma Ajansı.

Belayche, N. 2010. "*Deus deum…summorum maximus* (Apuleius): Ritual Expressions of Distinction in the Divine World in the Imperial Period." In *One God: Pagan Monotheism in the Roman Empire*, edited by S. Mitchell and P. van Nuffelen, 141-66. Cambridge: Cambridge University Press.

Borghouts, J.F., trans. 1978. *Ancient Egyptian Magical Texts*. Nisaba 9. Leiden: Brill.

Brashear, W.M. 1995. "The Greek Magical Papyri: An Introduction and Survey; Annotated Bibliography (1928-1994)." *ANRW* 2.18.5:3380-684.

Brovarski, E. 1984. s.v. Sobek. *LÄ* 5, 995-1031.

Canzobre Martínez, I. 2017. "Magical Amulets User's Guide: Preparation, Utilization and Knowledge Transmission in the PGM." In *Magikè téchne: Formación y consideración social del mago en el Mundo Antiguo*, edited by E. Suárez de la Torre, M. Blanco Cesteros, E. Chronopoulou, I. Canzobre Martínez, 177-92. Madrid: Clásicos Dykinson.

Chaniotis, A. 2009. "Acclamations as a Form of Religious Communication." In *Die Religion des Imperium Romanum: Koine und Konfrontationen*, edited by H. Cancik and J. Rüpke, 199-218. Tübingen: Mohr Siebeck.

Chaniotis, A. 2010. "Megatheism: The Search for the Almighty God and the Competition of Cults." In *One God: Pagan Monotheism in the Roman Empire*, edited by S. Mitchell and P. van Nuffelen, 112-40. Cambridge: Cambridge University Press.

Chaniotis, A. 2011. "Emotional Community through Ritual: Initiates, Citizens, and Pilgrims as Emotional Communities in the Greek World." In *Ritual Dynamics in the Ancient Mediterranean: Agency, Emotion, Gender, Representation*, edited by A. Chaniotis, 264-90. Heidelberger Althistorische Beiträge und Epigraphische Studien 49. Stuttgart: Franz Steiner Verlag.

Crippa, S. 2015. "Les savoirs des voix magiques: Réflexion sur la catégorie de rite." In *Écrire la magie dans l'Antiquité. Actes du Colloque International, Liège, 13-15 oct. 2011*, edited by M. de Haro Sanchez, 239-50. Papyrologica Leodiensia 5. Liège: Presses Universitaires / Paris: de Boccard.

Dasen, V., and Á.M. Nagy. 2019. "Gems." In *Guide to the Study of Ancient Magic*, edited by D. Frankfurter, 416-55. Religions in the Graeco-Roman World 189. Leiden: Brill.

Dattari, G. 1901. *Moneta Imperiali Greche. Numi Augg. Alexandrini: Catalogo Completo della Collezione G. Dattari. Compilato dal Proprietario*. 2 vols. Cairo: Tipografia dell'Instituto Francese d'Archeologia Orientale.

Dieleman, J. 2005. *Priests, Tongues and Rites. The London-Leiden Magical Manuscripts and Translation in Egyptian Ritual (100-300 CE)*. Religions in the Graeco-Roman World 153. Leiden / Boston: Brill.

Faraone, Ch.A. 2018. *The Transformation of Greek Amulets in Roman Imperial Times*. Philadelphia: University of Pennsylvania Press.

Fossing, P. 1929. *The Thorwaldsen Museum. Catalogue of the Antique Engraved Gems and Cameos*. Copenhagen: G.E.C. Gad / London: Humphrey Milford, Oxford University Press.

Frankfurter, D. 1994. "The Magic of Writing and the Writing of Magic: The Power of the Word in Egyptian and Greek Traditions." *Helios* 21.2:189-221.

Frankfurter, D. 1995. "Narrating Power: The Theory and Practice of the Magical *Historiola* in Ritual Spells." In *Ancient Magic and Ritual Power*, edited by M. Meyer and P. Mirecki, 457-76. Religions in the Graeco-Roman World 129. Leiden / New York / Cologne: Brill.

Frankfurter, D. 2019a. "The Magic of Writing in Mediterranean Antiquity." In *Guide to the Study of Ancient Magic*, edited by D. Frankfurter, 626-58. Religions in the Graeco-Roman World 189. Leiden / Boston: Brill.

Frankfurter, D. 2019b. "Magic as the Local Application of Authoritative Tradition." In *Guide to the Study of Ancient Magic*, edited by D. Frankfurter, 720-45. Religions in the Graeco-Roman World 189. Leiden / Boston: Brill.

Gardiner, A.H. 1957. "Hymns to Sobk in a Ramesseum Papyrus." *RÉg* 11:43-56.

Gardiner, A.H. 1988. *Egyptian Grammar: Being an Introduction to the Study of Hieroglyphs*. 3rd ed. Oxford: Griffith Institute, Ashmolean Museum.

Halleux, R., and J. Schamp. 1985. *Les lapidaires grecs: Lapidaire orphique; Kérygmes lapidaires d'Orphée; Socrate et Denys; Lapidaire nautique; Damigéron-Évax (traduction Latine)*. Collection des universités de France Série grecque - Collection Budé 300. Paris: Les Belles Lettres.

Henig, M. 2007. *A Corpus of Roman Engraved Gemstones from British Sites*. 3rd ed. BAR-BS 8. Oxford: BAR.

Henig, M., and M. Whiting. 1987. *Engraved Gems from Gadara in Jordan: The Sa'd Collection of Intaglios and Cameos*. Oxford University Committe for Archaeology Monograph 6. Oxford: Oxford University Committee for Archaeology.

Jördens, A. 2014. "Wasser für Pharos." *ZPE* 190:69-75.

Kotansky, R.D. 2019. "Textual Amulets and Writing Traditions in the Ancient World." In *Guide to the Study of Ancient Magic*, edited by D. Frankfurter, 507-54. Religions in the Graeco-Roman World 189. Leiden / Boston: Brill.

Maaßen, I. 2015. "Schlangen- und Skorpionbeschwörungen über die Jahrtausende." In *Ägyptische Magie und ihre Umwelt*, edited by A. Jördens, 171-87. Philippika 80. Wiesbaden: Harrassowitz.

Martinez, D.G. 1991. *A Greek Love-Charm from Egypt (P.Mich. 757)*. Michigan Papyri 16. American Studies in Papyrology 30. Atlanta, GA: Scholars Press.

Mastrocinque, A. 2004. *Sylloge gemmarum gnosticarum*. Part 1. Bollettino di Numismatica, Monografia 8.2.1. Rome: Istituto Poligrafico e Zecca dello Stato.

Mastrocinque, A. 2014. "Fusiform Intaglios and Prisms." In *Les savoirs magiques et leur transmission de l'Antiquité à la Renaissance*, edited by V. Dasen and J.-M. Spieser, 157-67. Micrologus' Library 60. Florence: Sismel.

Meeks, D. 1977. s.v. Harpokrates. *LÄ* 2, 1003-11.

Milne, J.G. 1971. *Catalogue of Alexandrian Coins in the Ashmolean Museum*. Reprint with a suppl. by C.M. Kraay. Oxford: Spink & Son Ltd. Original edition, London: Oxford University Press, 1933.

Nagy, Á.M. 2002. "Figuring Out the Anguipede ('Snake-Legged God') and His Relation to Judaism." *JRA* 15:159-72.

Nagy, Á.M. 2015. "Engineering Ancient Amulets: Magical Gems of the Roman Imperial Period." In *The Materiality of Magic*, edited by D. Boschung and J.N. Bremmer, 205-40. Morphomata 20. Paderborn: Wilhelm Fink.

Nagy, Á.M. 2019. "Figuring out the Anguipes Gems, bis: A Statistical Overview." In *Magical Gems in Their Context. Proceedings of the International Workshop Held at the Museum of Fine Arts, Budapest, 16-18 February 2012,* edited by K. Endreffy, Á.M. Nagy, and J. Spier, 179-216. Studia Archaeologica 229. Rome: 'L'Erma' di Bretschneider.

Reemes, D.M. 2015. "The Egyptian Ouroboros: An Iconological and Theological Study." Ph.D. diss., University of California.

Schulz, R., and M. Seidel, eds. 1997. *Ägypten: Die Welt der Pharaonen*. Cologne: Könemann.

Serbeti, E.D. 1992. s.v. Kronos. *LIMC* 6.1:142-47; 6.2:64-67.

Versnel, H.S. 2011. *Coping With The Gods: Wayward Readings in Greek Theology*. Religions in the Graeco-Roman World 173. Leiden / Boston: Brill.

Veymiers, R. 2009. Ἵλεως τῷ φοροῦντι. *Sérapis sur les gemmes et les bijoux antiques*. Mémoires de la Classe des Lettres Collection 4.3.1. Brussels: Classe des Lettres, Académie royale de Belgique.

Veymiers, R. 2011. "Ἵλεως τῷ φοροῦντι. Sérapis sur les gemmes et les bijoux antiques. Supplément I" In *Bibliotheca Isiaca* 2, edited by L. Bricault and R. Veymiers, 239-71. Bordeaux: Ausonius.

Veymiers, R. 2014. "Ἵλεως τῷ φοροῦντι. Sérapis sur les gemmes et les bijoux antiques. Supplément II" In *Bibliotheca Isiaca* 3, edited by L. Bricault and R. Veymiers, 207-44. Bordeaux: Ausonius.

Vitellozzi, P. 2018. "Relations between Magical Texts and Magical Gems: Recent Perspectives." In *Bild und Schrift auf «magischen» Artefakten*, edited by S. Kiyanrad, C. Theis, and L. Willer, 181-254. Materiale Textkulturen 19, Schriftenreihe des SFB 933. Berlin / Boston: De Gruyter.

White, K.D. 1967. *Agricultural Implements of the Roman World*. Cambridge: Cambridge University Press.

Wolf, W. 2003. "Narrative and Narrativity: A Narratological Reconceptualization and its Applicability to the Visual Arts." *Word & Image* 19.3: 180-97.

Zwierlein-Diehl, E. 2007. *Antike Gemmen und ihr Nachleben*. Berlin / New York: De Gruyter.

Zecchi, M. 2010. *Sobek of Shedet: The Crocodile God in the Fayyum in the Dynastic Period*. Studi sull'antico Egitto 2. Todi: Tau.

Auction Catalogues

Bertolami Auc. 86: Bertolami Fine Art, Auction 86, Glyptics and Ancient Jewelry, London, 9 December, 2021.

Bertolami E-Live Auc. 84: Bertolami Fine Art, E-Live Auction 84, Glyptic, London, 20 June, 2020.

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Ares Reliefs and a New Votive Inscription to Ares in the Rural Highlands of Kabalis / Kabalia

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Abstract

In the Uylupınar (Early Kibyra) surveys conducted in the highlands of Kabalis / Kabalia since 2017, extensive archaeological traces of rural life of farmers and shepherds during the Roman period were found. The most important of these remains are the routes of roads, rock reliefs dedicated to different gods who protect water resources, permanent or seasonal settlements, and tomb types associated with settlements in the rural highlands. All these tangible cultural data remains stem from the holistic lifestyle established in the region during the Roman period. In 2017, an Ares relief in a cave and an eight-line Greek inscription right next to the relief were found in the Ballık Locality of Ambarcık Village, situated within the border of Balboura. The iconography of the relief, clearly understood to be Ares with this inscription, has enabled us to determine that other reliefs found in the region with similar iconography also represent Ares. In addition, the oracle inscription and the small relief next to it, in front of the cave's entrance, and the Ares relief in the cave on the same rocky hill are related to Ares, who gave the oracle.

Keywords: Ares, Kabalis / Kabalia, rock reliefs, iconography

Öz

2017 yılından itibaren Kabalis / Kabalia yüksek yaylalarında sürdürülen Uylupınar (Erken Kibyra) yüzey araştırmalarında, hareketli çiftçi ve çobanların kırsal yaşamlarına dair Roma Dönemi yoğun arkeolojik izleriyle karşılaşılmıştır. Bu izlerden en önemlileri, kalıcı ya da dönemsel yerleşimler, yüksek yayla kırsalında yerleşimlerle bağlantılı mezar tipleri yanında yol güzergahları ve su kaynaklarını koruyan farklı tanrılara adanmış kaya kabartmalarıdır. Bütün bu veriler, Roma Dönemi'nde bölgede yaratılan yaşam biçimi bütününün bıraktığı maddi kültür verileridir. 2017 yılında Balboura sınırı içerisinde yer alan ve bugün Ambarcık köyü Ballık mevkisinde bir mağara içerisindeki Ares kabartması ve kabartmanın hemen bitişiğindeki sekiz satırlık Hellence yazıtı tespit edilmiştir. Bu yazıt ile Ares olduğu net olarak anlaşılan kabartmanın ikonografisi, bölgede tespit edilmiş olan, benzer ikonografiye sahip diğer kabartmaların da Ares'i temsil ettiğini anlamamız için yol gösterici olmuştur. Ayrıca mağarada yer alan Ares kabartmasıyla aynı kayalıkta mağaranın girişinin önünde, kehanet yazıtı ve yanındaki küçük kabartmanın da, kehanet veren Ares ile bağlantılı olduğu anlaşılmıştır.

Anahtar Kelimeler: Ares, Kabalis / Kabalia, kaya kabartmaları, ikonografi

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The Uylupınar (Early Kibyra) surveys carried out between 2012 and 2021 had by 2017 concentrated on the highlands and rural areas of the Kabalis / Kabalia region[1] (fig. 1). During these studies, the seasonal settlement patterns detected in the highland countryside within the territory of Balboura attracted attention.[2] These settlements consist of small rectangular spaces with rubble stone foundations. These utilize a high cliff as a shield to the north and open like a fan to the south of the rock. Necropolises consisting of various types and mostly sarcophagi with reclining lion lid / chamosorion are found. Rock reliefs dedicated to different gods were found on the rock where the settlement had expanded.[3] This type of seasonal settlement is a reflection of an active economy in the highlands. In oral history studies, we find economic models and seasonal settlement types that were enabled by the local geography until recently. Herein animal husbandry and dynamic farming were conducted together. This practice is also consistent with the available archaeological data and settlement types we have identified in the Kabalis / Kabalia highlands during the Roman period.[4] The high economic useage of the highlands during the Roman period is understood from the large number of seasonal settlements. Migration routes between settlements, agricultural fields, and pastures in the highland can be drawn by following the rock reliefs protecting the water sources and from the roads.[5] The temple architecture observed in the cities is replaced in the countryside by gods carved into the rocks with those attributes representing them. In mountainous Pisidia and Lycia, reliefs and votive steles placed in niches were widely carved into the rocks. Local gods are numerous in these reliefs and votive steles. Although few in number, reliefs of Greek and Roman gods / demigods are also seen.

Within the territory of Balboura, the Dioscuri as local deities and goddess as well as the triple deities - Theoi Dikaioi / Theoi Agrioi / Theoi Skleroi - have been identified throughout most of the highlands.[6] In addition, the demigod Heracles is seen with all his attributes in both the territory of Balboura and in the rock reliefs of the Pisidian Region.[7] In Pisidia, sanctuaries consisting of rock reliefs of Kakasbos, a local equestrian god, become widespread. The name Heracles is read in some of the inscriptions found together with these reliefs of the equestrian god.[8] Apart from the local gods, reliefs of Zeus, Artemis Lagbene, and Ares originating from Greek mythology are the other reliefs observed in the highlands of Balboura's territory.[9]

The research carried out in the highland between Burdur, Çavdır, and Altınyayla has yielded very important results with the seasonal settlements, tombs, and sanctuaries briefly summarized above. From this, the rock reliefs related to rural settlements clearly reveal the difference between the Roman-period highland countryside and the city.

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1 On the Kabalis / Kabalia Region, see *RE* 10.2 s.v. "Kabalia"; Naour 1978; Zgusta 1984, §397: Κάβαλα, Καυαλα; Hellenkemper and Hild 2004, s.v. "Kabalia"; *Neue Pauly* 6 s.v. "Kabalis"; Coulton 2012, 43-60; Dökü and Baytak 2017b, 224-26; Doğan 2019, 90-95.

2 For the territory of Balboura, see Coulton 2012, 17-42; Doğan 2019, 96-104.

3 For highland settlement types, see Coulton 2012, 17-60; Dökü 2018, 2019b, 2020; Dökü and Harmanda 2020.

4 Dökü 2018, 2019b, 2020; Dökü and Harmanda 2020.

5 Dökü 2018, 2019b, 2020; Dökü and Harmanda 2020.

6 Smith 1997, 2011; Coulton 2012, 144-61; Talloen 2015, 1; Dökü 2018; Beceren 2018, 11-18, 27-30, 151-61, cat. nos. 128-43; 2019; Dökü 2019b, 2020; Dökü and Harmanda 2020; Özüdoğru 2020, 323-24.

7 Özsait 2006, 261; Labarre et al. 2006, 109; Özsait 2010, 131-32; Corsten and Hülden 2012; Kahya 2015; Dökü and Baytak 2017a, 646; Beceren 2018, 148-50, cat. nos. 125-27; 2019, 247-48; Dökü 2018, 263; 2019a, 517; 2020, 219; Özüdoğru 2020, 322, 324.

8 Delemen 1999, 151-63, nos. 213-78, fig. 16, pls. 14-16, see especially nos. 218, 230, 246, 257, 263, 271; Labarre et al. 2006, 107.

9 Beceren 2018, 19, 21, 32; Dökü 2019b, 63; Özüdoğru 2020, 324-25.

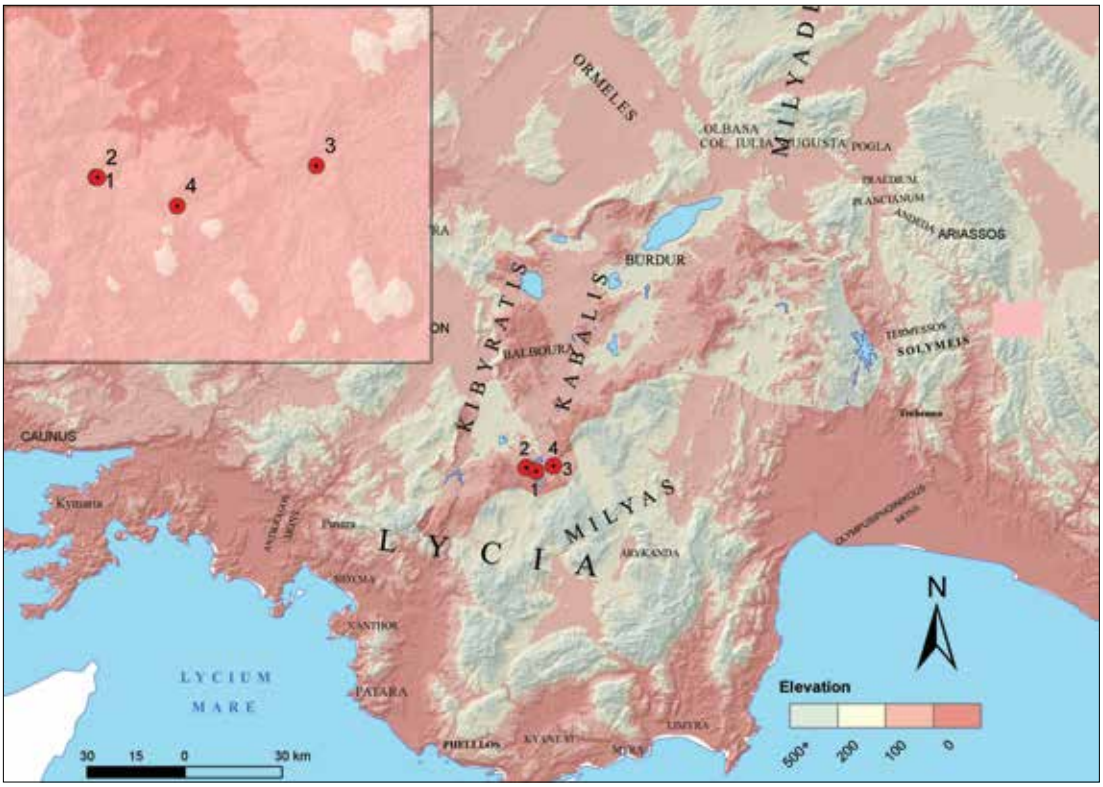

FIG. 1 Map of Ares sanctuary of Ballık Cave (1-2), Ares relief at Kelerli Yazılı Taş (3), Ares relief at Soğulgan Hill (4) by F. Adıgüzel.

Ares Sanctuary of Ballık Cave

In 2017 we carried out studies around Ambarcık Village in the Çavdır district of Burdur. A small and narrow valley is located at the southwest exit of the village on either side of the stream flowing through the high rocky hills. In the west of this area called Ballık, there are reliefs of the Dioscuri with goddess carved on the rock. First published by Th. Corsten, today they are upside down as a result of the fall of the rock mass. An inscription of two lines in a rectangular frame is carved into the bedrock beneath the relief depicting a dressed goddess in the middle of the Dioscuri with two horses.[10]

The facade of the Dioscuri with goddess relief faces the stream, and the narrow valley formed by the stream is today the pedestrian path connecting Ambarcık Village and Kozağacı. The valley widens in front of the reliefs of the Dioscuri with goddess. An oracle inscription, first identified by Th. Corsten, is on the high hill directly opposite the relief (fig. 2).[11] On the right side adjacent to the inscription panel, there is a relief that cannot be seen very well due to natural erosion. This relief depicts a standing, clothed man within a rectangular panel. It is clear that he is wearing a pointed conical hood / helmet, but the facial details can no longer be determined. It is understood from three-dimensional images that the figure, depicted in a short dress that reaches down to the knee, holds a shield in his left hand and a *phiale* (?) in

[10] *I.Kibyra* 88.

[11] *I.Kibyra* 97. See also Petzl 1997; Nollé 2007, 244-45.

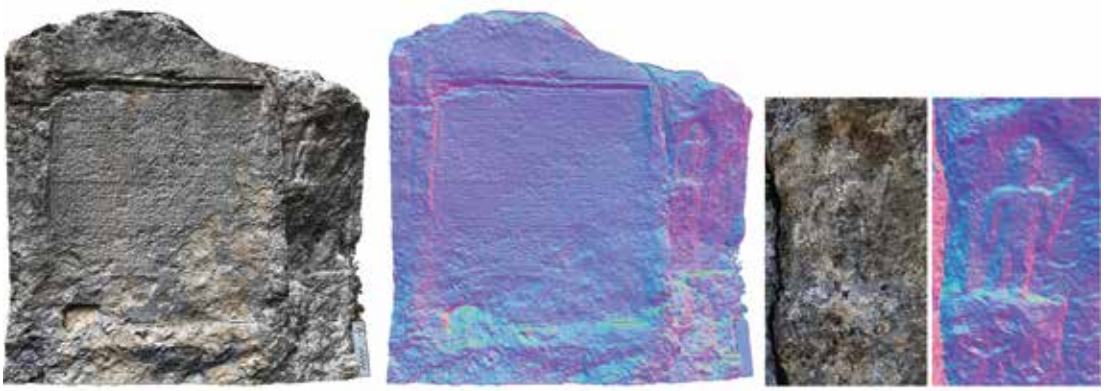

FIG. 2 3D View of oracle inscription and Ares relief in Ballık by A. Akçay.

his right hand (fig. 2). The details of the relief are not evident due to the erosion. A small cave entrance lies behind the relief. Although Th. Corsten determined that there were fragments of inscriptions also around this cave, he could not read them because the inscriptions were not carved deeply on the rough rock surface and did not follow a specific line.[12] Th. Corsten interpreted the object in the relief next to the oracle inscription as a scepter, stick, or sword. Then he associates this figure with the oracle inscription. There is no iconographic evidence for this identification as Apollo. Although Th. Corsten is not sure, he states that this figure may be Hermes, who gives an oracle though lesser than those of Apollo. Th. Corsten did not publish the inscription within the cave, possibly because he did not see the relief inside the cave and therefore the inscription.

There is another large cave, which can be entered through a natural opening near the summit of the rocky hill, where the oracle inscription and small relief are located. After passing two oval-shaped doors in the wide and high cave, a larger room is reached. During our 2017 surveys, a relief and an eight-line inscription randomly engraved on the natural rock were found in the lower left part of the relief on the eastern wall of the room. This is a natural formation on the sloping rock that was not arranged for the relief (fig. 3a-b).[13]

The relief figure in the cave[14] was made on a rough rock surface with an inclination of approximately 32 degrees. The floor was destroyed, and the relief was carved approximately 140 cm above this destroyed floor. The relief is 158 cm high and 50 cm wide. In the area of the depiction, a standing clothed male figure has been carved. Most of the right arm is missing, and both feet are almost unidentifiable. There has been great abrasion and destruction to the surface. Abrasions are on all facial details, such as small ruptures and damage to the nose, lips, and cheeks.

The body is depicted from the front. While the right leg can be viewed from the front, the left leg is damaged. However, the left leg is slightly bent from the knee to the left. Since the feet are destroyed, their position is unknown. He holds a rectangular shield in his left hand. His right arm was extended to the side, bent at the elbow at a right angle, and lifted upwards. It can be understood from the tip of the spear that he is holding an upright spear

12 *I.Kibyra* 98.

13 Dökü 2018, 262; 2019a, 515.

14 For the cultic records in caves, see Smith 1997, 6; Brixhe and Hodot 1988, 140-48, no. 46; Takmer and Gökalp 2005; Talloen 2015, 69 and n. 106; Takmer 2019, 89-90.

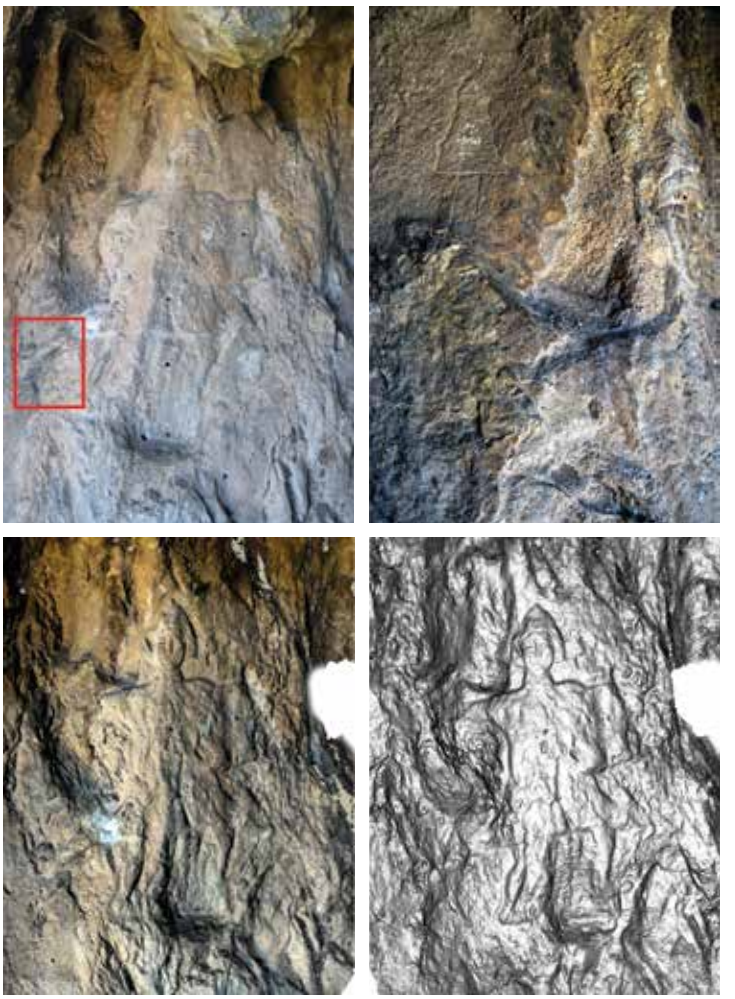

FIG. 3 a) Ares relief overview and inscription (left); Spear of Ares in detail (right) in Ballık Cave; b) 3D view of Ares relief in Ballık Cave.

in his right hand, which is quite worn. The lower part of the spear, expected to be seen under the right hand, is destroyed (fig. 3a). His head faces straight ahead; he is depicted as wearing a conical (tufted, Corinthian?) helmet and beardless. The helmet tapers upwards like a cone. It left the hair falling on the forehead exposed in the front and covered the ears along with the hair at the sides. The tufts of hair are separated by a triangular line in the middle, just above the forehead. They are indicated by thin and diagonal lines on the sides. The facial contour is depicted with a deep line, prominent and oval. The forehead is narrow; the eyes are deep and almond-shaped. The nose is thin, rectangular, and undetailed. The thick lips are separated by a deep groove. Although the details of the clothes cannot be clearly understood due to the destruction, it is understood from what is visible that he was wearing chest armor reaching below the waist. Under the armor, it can be seen that he was wearing a short tunic that stretched to his knees and opened at both sides.[15]

Th. Corsten does not mention the Ares relief in the cave in his publications. The relief mentioned in his book is the relief inside the small panel next to the oracle inscription.[16] It is certain that the helmeted, armored figure with shield and spear in the cave is Ares, not only from its attributes, but also from the inscription next to it. The attributes of the figure located next to the oracle inscription in the lower level on the same rock are today unknown due to natural destruction. On the other hand, it is clear from 3D images that the standing dressed male figure wears a pointed conical headdress, although the facial details cannot be seen clearly (fig. 2). Both arms hang down from the shoulder. He should be holding a shield in his

15 For Ares / Mars Type C see *LIMC* 2.1, 520, nos. 90-107, 2.2, 389, nos. 91, 93, 95, 102.

16 *I.Kibyra* 97.

left hand, similar to the relief inside the cave. A *phiale* (?) is seen in his right hand. Although the details of the clothing cannot be seen, there is armor, similar to the relief, inside the cave (fig. 3a-b) on the upper body. However, its details cannot be determined. A short tunic can easily be seen reaching down to the knee.[17] The legs are upright and facing forward, but the stance from the feet cannot be determined. This relief was carved in a very primitive manner with local craftsmanship, and the relief depiction inside the cave should depict the same god. Therefore, this rocky cave is a sanctuary for Ares, who gave the oracle. This sanctuary is in the region where the narrow valley, which contains the route connecting the settlements, widens. It probably constituted a ceremonial area. The presence of the above-mentioned Dioscuri with goddess reliefs on the rock almost opposite the oracle inscription, again facing the road and the stream bed, also indicates that this area was specially selected for use in cult practices. It is important that we find this same unity of Ares, the Dioscuri with goddess reliefs at Kelerli Yazılı Taş, explained below.

New Votive Inscription to Ares

The inscription was randomly carved next to the right leg of Ares on the relief inside the cave mentioned above. The area where the inscription is located is naturally quite rough and indented. The inscription was carved irregularly on an area approximately 43 cm high and 40 cm wide, over the concave and convex indentations of the bedrock (figs. 3a, 4). The inscription was destroyed by scratching the letters with a hard object. Therefore, there are changes and distortions in the letters, while there is a loss in the fifth line. The letters are written in lunar form (C, ω, Є), while the letter Y has a short leg in the fourth and seventh lines, and long legs in the other lines (fig. 4).

Findspot: Ballık, in the village of Ambarcık, territory of Balboura.

Measurements: Lh.: 0.02-0.04 m.

Date: Roman Imperial period (probably second-third centuries AD).

Τρω[ΐ̈]-
λος δ′
Πολυ-
4 δ *v.* εύκους
ΑḴ[- *ca. 1 / 2* -]ΔΑ
τ *vv.* ὸν Ἀ-
ρέα *v.* εὐ-
8 χήν.

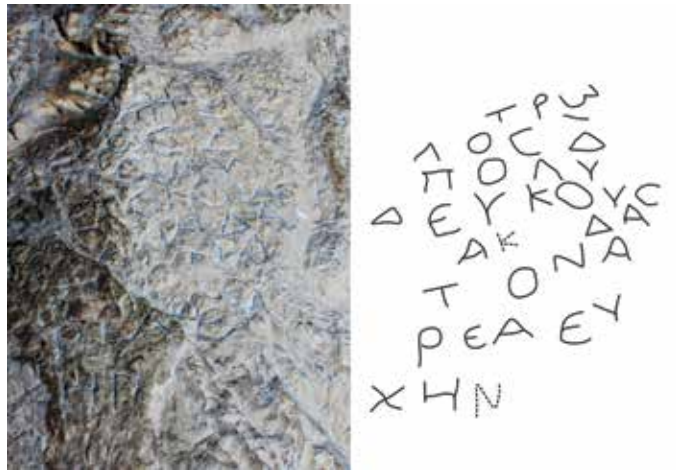

FIG. 4 Inscription on the lower left part of the Ares relief.

Troilos the fourth, son of Polydeukes, son of A…das dedicated the Ares.

LL. 1-2: The letter iota could not be seen. It was either lost among the cracks over time or forgotten in carving. This letter can also be placed as the first letter of the second line. The letter Δ in the second line appears to have the letter T on it because of the indentation. But there is a straight line on Δ symbolizing a

17 For Ares / Mars types with holding *phiale*, cf. *LIMC* 2.1, 516, 2.2, 390, nos. 112, 114, 115, 118.

number ($\bar{\Delta}$). The number four ($\bar{\Delta}$) here indicates the fourth generation of the very common family name Troilos.[18]

LL. 3-4: The first name is of Polydeukes (Lat. Pollux), a boxer from the twin sons of Zeus, the father of Troilos. The name Polydeukes is known especially from Kibyra,[19] Balboura,[20] Bubon,[21] and the territories of these cities in the Kabalia Region,[22] as well as in the geographical area where the twin gods were frequently worshipped in the religious sense.[23]

L. 5: Since the letters evidence many modern scrape marks, there is extensive destruction (fig. 4). In the fifth line, although the characters can be seen as A, K, Δ, and A respectively, only the first letter /α-/ and the last /-δα/ can be read clearly. This part probably contains the name of Polydeukes' father. In the area between /α-/ and /-δα/, a suspicious letter /κ/ can be seen just to the right of the alpha, but other areas cannot be read clearly due to modern vandalism. According to the last two letters (-δα), the nominative form of the noun should have the ending -δας. Based on the traces on the surface of the inscription, there is a possibility that the letter /ρ/ and the letter /ι/ or just /ι/ are on the rock. There is also the possibility that the letter /ρ/ is a natural formation on the rock. If the existence of these letters is accepted, Akridas (ΑΚΡΙΔΑΣ) or Akidas (ΑΚΙΔΑΣ) can be suggested for the name. Among these names, Akridas is a name that has not been identified before; however, the name Akidas (Ἀκίδας) was recorded at Thasos.[24]

LL. 6-7: The expression τὸν Ἀρέα emphasizes the relief right next to the inscription. Troilos (4), the great-grandson of Polydeukes, fulfilled his vow and made a relief of Ares.

The epigraphic materials in Asia Minor regarding the god Ares were previously collected and evaluated by M. Gonzales.[25] Ares is also worshipped as *megistos theos*[26] in Bubon, *theos tauropolites*[27] in Oinoanda, *theos megalos*[28] in Kyaneiai, *epekoos*, *megalos*, and *meizon*[29] in Phaselis, and with the epithets *epekoos*[30] in Perge, as well as the river god *Meizoares* (ποταμὸς Μειζοάρης).[31] There are also inscriptions about Ares in Xanthos,[32] Sidyma,[33] Syedra,[34] and Side.[35]

L. 8: The letter N has been destroyed by scraping (fig. 4).

Dating: The characters are sometimes wide and sometimes short due to the use of the bedrock without flattening the surface. The random writing of the letters on the bedrock according to its

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18 For the records see *LGPN* 5C.

19 *I.Kibyra* 47, 87, 410.

20 *LBW* 1221; Heberdey and Kalinka 1897, 38, no. 51 and 51.2.

21 *I.Bubon Schindler* 12.

22 See for more *LGPN* 5C.

23 Robert 1987, 404, no. 10; French 1994, 88; Delemen 1995, 317-18, nos. 27-29; *I.Kibyra* 87-89; Corsten 2009, 94-95; Beceren 2018, 125-38, cat. nos. 94-110; Dökü 2018, 261-62; 2019a, 515.

24 In the inscription found in Thasos, the genitive case is Ἀκίδου, which is either Akidas or Akides, see Pouilloux 1954, 263-64, no. 28. See also *LGPN* 1 s.v. "Akidas" or "Akides".

25 Gonzales 2004, 372-477. See also Farnell 1909, 413.

26 *I.Bubon Schindler* 3-4 (after 212 AD).

27 Heberdey and Kalinka 1897, 53, no. 76; Milner 1998, 3, no. 2 (second-third century AD).

28 *IGRR* 3, 700; *CIG* 4303h1 (reign of Antoninus Pius).

29 İplikçioğlu 2002, 130; 2003, 73; Arslan and Tüner Önen 2018, 315; 2020, 269-71. See also Talloen 2015, 62, 233-34 (Roman Imperial period).

30 *I.Perge* 234-35 (second-third century AD).

31 İplikçioğlu 2002, 130.

32 *TAM* 2.1, 264 (early first century BC).

33 Bean 1978, 81; *SEG* 37, 1228 (Roman period?).

34 Robert 1966, 96-97; Gonzales 2004, 436 (200-86 BC?).

35 *I.Side* 377-78. These two inscriptions found in Side and dated to the late Roman Imperial period contain data on Ares giving an oracle (χρηματισθείς). For the oracle of Ares, see also Hdt. 7.75; Gonzales 2005. For the relation of the oracle with Phrygian rock-cut divinations, see also Berndt-Ersöz 2006, 143-205.

indentations and folds makes dating difficult. Due to the inscription's characteristic features, it must be dated within the Roman Imperial period. However, the majority of the inscriptions on Ares are dated to the second-third centuries AD. Due to factors such as the lunate form of the letters seen in some inscriptions in the Kabalis / Kabalia Region and Kibyratis, and the shortening of the leg of the upsilon letter, a date range in the second-third centuries AD can be suggested.[36]

Kelerli Yazılı Taş Reliefs of Ares, and the Dioscuri with Goddess

Rock reliefs can be seen on the pedestrian road connecting the village of Yazır Village in Çavdır District with the town of Söğüt, and on the road followed by the herds called Tırnaklı Road and near the water source. T.J. Smith first published the relief panels in the area called Kelerli Yazılı Taş (fig. 5).[37] Reliefs of the Dioscuri with goddess can be seen in the rectangular naiskos frame under the gable roof, of which acroteres can be seen. In this depiction the goddess is shown in the middle, frontal and standing. With her head covered, she wears a himation over a chiton. Her left hand holds a piece of her skirt while her right hand is on her chest. On both sides of the goddess, there are the Dioscuri wearing a tunic on their horses, holding the horse's reins in one hand, and a club? / sword? in the other. On the pediment, a beardless male head with short hair and triangular facial features is visible.

To the left of the relief of the Dioscuri with goddess, there is a male figure carved within a rectangular naiskos with a gable-roof frame, standing, frontal and dressed (fig. 5). His height is 46 cm and width 10 cm. He wears a conical helmet, and the details on his oval face, eyes and mouth are highly primitive. He wears armor and a plain, pleated short tunic that goes above the knee, beneath the armor. The figure is holding an upright long spear with its arm bent at a right angle upwards from the elbow. In his left hand, he holds a square shield. His legs and feet are frontal. The relief is on a raised base above the ground. The frame with the inscription to the left of these reliefs has been destroyed.

FIG. 5 Kelerli Yazılı Taş, reliefs of Ares, and Dioscuri with Goddess (left: Smith 1997, 50, pl. 1.b).

This standing relief is iconographically identical to the relief found inside the cave in Ballık, in terms of its stance and weapons such as a high conical helmet, armor, shield and spear.[38] In addition, it is noteworthy that both, Ares is seen next to the Dioscuri with goddess on this

[36] See the related footnotes above. For some examples of the lettering, see Horsley 2007, 32-33, no. 31, pls. 34, 56-57, nos. 81-83, pls. 79-81.

[37] Coulton 1994; Smith 1997, 5, 7, 19, 21, 30, fig. 1b; Beceren 2018, 38, 109-11, cat. no. 76; Dökü 2020, 221, fig. 2F.

[38] For Ares / Mars Type C see. *LIMC* 2.1, 520, nos. 90-107, 2.2, 389, nos. 91, 93, 95, 102.

rock, and among the reliefs of the Dioscuri with goddess, mentioned above, in Ballık. As a result, this relief likewise is a depiction representing Ares.

T.J. Smith, who published these relief panels, focused more on the reliefs of the Dioscuri with goddess. He defines the figure depicted with a helmet, spear, and rectangular shield and carrying all the attributes of Ares. However, he does not dwell on what or which god this relief represents.[39]

J.J. Coulton detected a relief depiction on a block within the borders of Fethiye Karaçulha Village (fig. 6).[40] He mentions that this description is related to the relief published by T.J. Smith and described above. However, it is not a funerary stele, but a widely used votive relief.[41] Nevertheless, he does not mention to which god this votive relief was dedicated. The Karaçulha votive relief depiction is similar to both the Ballık and Kelerli Ares reliefs. The male figure in armor and armed is standing on a rectangular base. Although his head is broken, it is understood that he is wearing a high helmet. The armor worn by the figure is evident. The strap holding the sword and descending from the right shoulder is directed to the back over the waist. Under the armor, a two-layered short tunic descends to the knee with straight and parallel folds. The legs are straight and frontal. The right arm is lowered and depicted as holding a *phiale* in his hand. His left arm is invisible behind the round shield he is holding. He holds a long spear behind the shield in the same hand. As J.J. Coulton mentioned, all this iconographic depiction indicates it is a votive relief rather than a tomb stele. It is similar to the Kelerli Ares relief since it stands on a high podium and is depicted as a heavily armed warrior in armor, and in stylistic expression. However, here he holds a *phiale* in his right hand. A similar depiction is also seen in the relief (fig. 2) next to the Ballık oracle inscription. All of these iconographic attributes allow us to argue that this relief is an Ares relief.

FIG. 6 Ares relief in Karaçulha Village (Coulton 2012, 452, fig. E61.Kç.14a).

Ares Cult Areas in Kabalia, Pisidia, and Pamphylia

The geography of the Pisidia Region consists of high, rocky mountains and relatively broad plains in between. This rough topography is the biggest factor in tracking different settlement patterns in both urban and rural areas. The rock reliefs and sanctuaries formed in the rural settlements mentioned above under this geographical influence are more prevalent and more common than in other regions.

The practice of depicting gods on rock in reliefs constituting rock sanctuaries, known since the Bronze Age in Anatolia, begins with the Hittites. As M. Darga mentioned, the presence of rock reliefs with depictions of Hittite kings and gods, situated on natural road routes, borders

39 Smith 1997, 5, 7, 19, 21, 30, fig. 1b.

40 Coulton 2012, 452 EL4.Kc.14a, fig. E.61.

41 Smith 1997, 5, 7, 19, 21, 30, fig. 1b; cf. Coulton 2012, 452 EL4.Kc.14a, fig. E.61.

and rocks at water sources, was important during the Great Hittite Kingdom.[42] In addition to the Yazılıkaya sanctuary, the reliefs of Gavurkalesi related to the settlement and tomb became the sanctuary of the Hittite gods. In the Iron Age, the tradition of depicting gods and kings as reliefs on rocks continued in Neo-Hittite art.[43] Similar geography and perception appear in mountainous Phrygia in the Iron Age. Here, too, the rocky areas around the plains are documented with different types of settlements.[44] In mountainous Phrygia, rock temples of the mother goddess, which are connected with the road routes between its cities and rural settlements, are in abundant evidence.[45] The Phrygians perceived the goddess in the rocks.[46] The Hittites built the monumental masterpieces of the rock relief tradition, which the Phrygians took from Late Hittite art and concept.[47] After the Phrygians, the rock reliefs of gods or kings are almost never seen. However, a change is observed with the increase in the number of rural settlements where the economic use of the highlands increased in the mountainous regions of Kabalis / Kabalia, Pisidia, and Lycia during the Roman Imperial period. The common point among these different types of rural settlements is the presence of rock reliefs at open-air sanctuaries or votive steles of local gods placed in niches cut into the rocks.

In the Pisidia Region, the southern neighbor of Phrygia, reliefs and sanctuaries dedicated to different gods were formed in connection with Roman-period rural settlements, road routes, and water resources. In this period, the region where rock reliefs are most intensely seen is Kabalis / Kabalia, where rural life is documented with all its economic activity. In the highland of the region, the Dioscuri with goddess depictions are the most common gods carved into the rocks. Then, the triad gods - Theoi Dikaioi / Theoi / Theoi Agrioi / Theoi Skleroi - not found much outside these highlands, were identified with relief depictions, either individually or in groups.[48] Among the local gods, the absence of rock reliefs of the equestrian god Kakasbos / Heracles, common in Pisidia, is important. From this emerges the important question of whether it actually defines the territory of the Dioscuri and the triad gods of Kabalis / Kabalia or only of Balboura. Although they are few in number, reliefs of Zeus and his lightning bolt, Ares, Artemis (Artemis Lagbene),[49] and reliefs of the demigod Heracles[50] and Nymphe,[51] who are not as common as in Pisidia, are also found.

In this region, reliefs of the local equestrian god Kakasbos / Heracles are widely found in settlements, rural areas associated with the *necropolis*, seasonally used areas, and communication watchtowers.[52] Apart from these common god reliefs, the most common is the demigod

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42 Darga 1992, 174-87.

43 Tiryaki 2001-2002; Işık 2012, 23-60.

44 Emilie Haspels 1971; Berndt-Ersöz 2006; Işık 2012, 275, 292.

45 Emilie Haspels 1971; Berndt-Ersöz 2006; Işık 2012, 275, 292.

46 Işık 2012, 275, 292.

47 Işık 2012, 275, 292.

48 Frei 1990, 1828-829; Smith 1997, 3-5, 10-11; Milner 2004, 59; Coulton 2012, 148-49; Talloen 2015, 193, 214; Beceren 2018, 27-28; Dökü 2018, 264-67; 2019b, 63-65; 2020, 219-23.

49 Petersen and von Luschan 1889, 168, no. 207; Robert 1983, 594-96; Smith 1997, 8-9; Karayaka 2007, 97; Coulton 2012, 145, 333, 340, 400, 403; Beceren 2018, 19, 21, 32-33; Dökü 2019b, 63; 2020, 223; Özüdoğru 2020, 324-25.

50 Labarre et al. 2006, 109; Özsait 2006, 261; 2010, 131-32; Corsten and Hülden 2012; Kahya 2015; Dökü and Baytak 2017a, 646; Beceren 2018, 148-50, cat. nos. 125-27; 2019, 247-48; Dökü 2018, 263; 2019a, 517; 2020, 219; Özüdoğru 2020, 322, 324.

51 Naour 1976, 129, no. 20, pl. 8.20; Tiryaki 2018.

52 Delemen 1999, 151-63, nos. 213-78, fig. 16, pls. 14-16, see especially nos. 218, 230, 246, 257, 263, 271; Labarre et al. 2006, 107.

Heracles.[53] The number of reliefs of Apollo,[54] Dionysus,[55] and Ares[56] originating from Greek mythology are quite few. On the other hand, reliefs of the Dioscuri with goddess are not found as relief figures in Pisidia.

Soğulgan Hill Ares Relief

On the road to the highland of the village of Ambarcık in the territory of Balboura, south of the Ambarkaya, there is a high, small plain surrounded by small hills. It was discovered during the Uylupınar (Early Kibyra) survey in 2017.[57] Two relief panels were seen on the route from the entrance to the area today called Ovacık. In the south of the same area, the Dioscuri with goddess relief can be observed facing the road. The name of the settlement hill, surrounded by terrace walls and populated with extensive Roman-period ceramic finds, is Soğulgan Hill. Different types of tombs have been discovered around this hill.

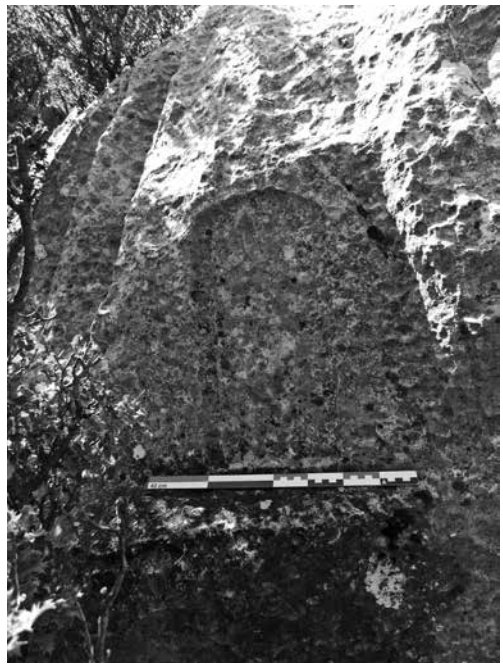

FIG. 7 Ares relief at Soğulgan Hill.

On Soğulgan Hill, a rock relief 39 cm high is carved into the bedrock and faces east. Depicted within an arched frame, its details, however, cannot be seen precisely due to destruction. The relief depicts a standing male figure with a spear and armor. He holds a spear in his right hand, one end of which is on the ground, while a high conical headgear and oval face are broken. In the left hand, the round shield is almost imperceptible. He is wearing a short tunic, and both legs are frontal[58] (fig. 7). Therefore, this depiction is similar to those on all the standing Ares reliefs mentioned so far. In the immediate vicinity of this rock relief and next to a Heracles relief was found another relief panel dedicated to the triad gods, Theoi Dikaioi / Theoi Agrioi.

Soğulgan Hill in Ovacık would serve as the seasonal settlement of active farmers using the small plain. While a part of the rocky hill upon which the settlement is located is surrounded by terrace walls, elsewhere on the rocky area open-air sanctuaries were formed with stele nests and votive relief panels. This Ares relief is also among these votive reliefs.

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53 Labarre et al. 2006, 109; Özsait 2006, 261; 2010, 131-32; Corsten and Hülden 2012; Kahya 2015; Dökü and Baytak 2017a, 646; Beceren 2018, 148-50, cat. nos. 125-27; 2019, 247-48; Dökü 2018, 263; 2019a, 517; 2020, 219; Özüdoğru 2020, 322, 324.

54 Işın 2014.

55 Özsait 2007, 466; Dökü and Baytak 2017a, 647; Beceren 2018, 23-24.

56 Heberdey and Kalinka 1897, 53, no. 76; Coulton 1994; Smith 1997, 5, 7, 19, 21, 30, fig. 1b; Milner 1998, 3, no. 2; Beceren 2018, 38, 109-11, cat. no. 76; Dökü 2019a, 515; 2020, 221, fig. 2F.

57 Dökü 2018, 263.

58 For Ares / Mars Type C see. *LIMC* 2.1, 520, nos. 90-107, 2.2, 389, nos. 91, 93, 95, 102.

Inscriptions Dedicated to Ares at Boubon

C. Kokkinia mentions two statue bases dedicated to Ares with inscriptions on their pedestals found during the Boubon surveys; these were from the cities of Kabalis / Kabalia.[59] The first inscription, number 71, is said to be related to Kale Tepe, a rural settlement on the Boubon - Balboura road.[60] Inscription number 72, found in Boubon on a statue base, was also dedicated to Ares. It is not known what type(s) of Ares statue was on the inscribed bases. However, both inscriptions are not related either to war or the oracle. These statues of Ares are interesting in that they were erected by those who served as clerk of the market inspectors (*agoranomos*) for their city.

The Reliefs of Ares on Horseback at Taşlıpınar Village (Zekeriyaköy)

In eastern Pisidia, 18 km southwest of Amblada, at the border of the modern village of Taşlıpınar (formerly Zekeriyaköy), are seen seven reliefs of Ares wearing a high helmet and armor and riding a horse.[61] The inscriptions of these reliefs were dedicated to Ares.[62] As an equestrian god, Ares is not commonly seen in Greek iconography. Ares depictions are generally of a heavily armed hoplite, as in the Ares depictions found in Ballık and Kelerli. Therefore, L. Robert stated the Taşlıpınar Ares reliefs are of Ares combined with a local warrior god.[63] The striking point of these Ares figures is that not all the Ares reliefs have the same iconography. What they have in common is that they wear a high helmet and ride horses. They have different clothing and weapons. While some of these figures have short swords / daggers, others hold the reins of the horse in both hands. However, in the relief given by İ. Delemen, Ares is seen on the horse with a spear held parallel to the ground.[64]

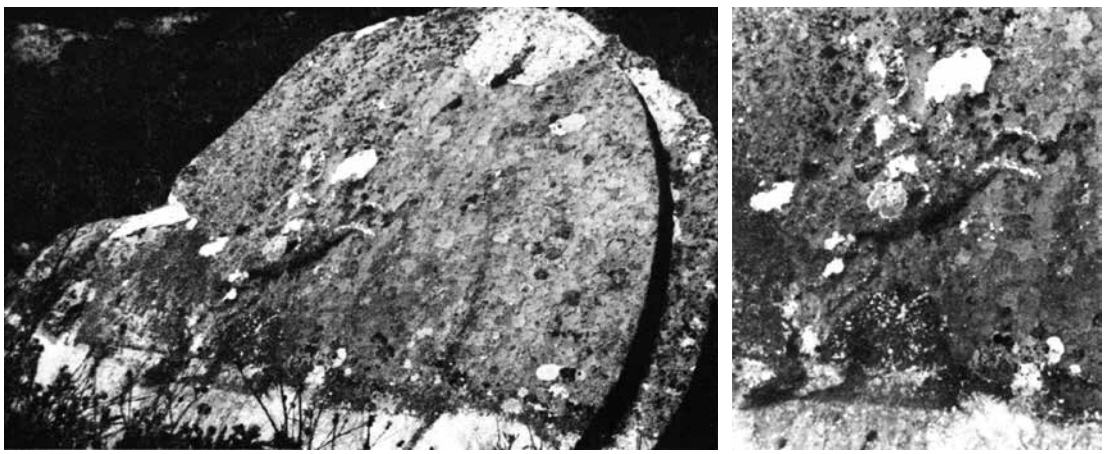

FIG. 8 Ares on horseback? on a shield relief in Kayabaş Village (Naour 1976, 141, pls. 8.25 and 10.25).

59 Kokkinia 2008, 101-6, nos. 71-72; see also page 172.

60 Kokkinia 2008, 102.

61 Sarre 1896, 49, 51; Swoboda et al. 1935, 46, fig. 101; Delemen 1993, 74-76, 299-303, cat. nos. 375-81, pls. 101-7; 1999, 69-70, 194-97, nos. 371-80; Talloen 2015, 96-97, 234, fig. 65.

62 Sarre 1896, 49, 51; Robert 1955, 72-78; Delemen 1999, 69-70.

63 Robert 1955, 72-78; Delemen 1999, 69-70.

64 Delemen 1999, 195, no. 373.

Similar iconography was discovered by C. Naour in the middle of a round shield in the village of Kayabaş within the border of Balboura (fig. 8).[65] There is a warrior figure with a high helmet standing alone on the rocky area. He holds a round shield and sits on a rearing horse that moves to the right. However, due to damage, the kind of weapon he holds in his hand cannot be determined. The shield is the attribute of Ares. So it seems possible that the warrior on horseback on this shield represents Ares when it is compared to the Taşlıpınar Ares reliefs. However, it is difficult to be certain about this.

Ares Sanctuary: Mizir Locality and Ekizce Highland

The sanctuary in the Tahtacı Cemetery (Karabalçık Cemetery) of the Ekizce Highland in Üçoluk Mahallesi in Kemer, 48 km northwest of Phaselis, is known firstly from a series of inscriptions published by B. İplikçioğlu in 2012.[66] In the work carried out within the scope of the Phaselis Surveys in this highland area since 2017, nearly a hundred votive inscriptions, many uninscribed, as well as figured stele and various ceramics, terracotta pieces, spearheads and coin finds have been documented.[67] In the cult center located on a rocky area in the highland on the borders of the cities of Termessos and Phaselis, Ares is especially mentioned with the epithets of *epekoos* and *megalos*. While some of the steles found in the area only carry carvings of spearheads, others still have traces of lead. It is thought that these traces belong to the attachment of the spearhead on the steles.[68] There is an undetailed relief on a high rectangular podium on the lower part of a votive stele found during the work on the Ekizce Highland. The lower part of the relief, starting from the bust, is clearly preserved. On the right side of the figure, who is stepping on the podium with both legs, there is probably the trace of a long thin spear while on the left there is the trace of a shield[69] (fig. 9).

FIG. 9 Ares depicted on a stele at Ekizce (Arslan and Tüner Önen 2019, 75, fig. 116).

In the Mizir locality in Ovacık Village, not far from the Ekizce Highland and 37 km northwest of Phaselis, Ares is glorified as *meizon*. A river god *meizoares* (ποταμὸς Μειζοάρης) is also seen.[70] In addition, although it is stated that there is a relief of a horseman on an inscribed stele buried on the outer wall of a house, the details of this relief are not known.[71]

Ares on the Coins of the Kabalia / Kabalis Region

While the earliest depictions of Ares are disputed in the Kabalis / Kabalia Region, they can be seen on the obverse of Hellenistic Kibyra silver drachmas. On the obverse of these coins, the helmeted beardless male bust should be Ares.[72] On the reverse, there is a young

65 Naour 1976, 131, pls. 8, 10; Mitchell 1996, 73, ill. 6; Coulton 2012, 441 EE3, fig. E 40.

66 İplikçioğlu 2002, 130; 2003, 73. See also Talloen 2015, 62, 233-34.

67 Arslan and Tüner Önen 2018, 315; 2020, 269-71.

68 Arslan and Tüner Önen 2020, 269-70.

69 Arslan and Tüner Önen 2019, 74-75 and fig. 116.

70 İplikçioğlu 2002, 130; cf. Şahin and Adak 2013, 304, n. 594. For the arguments on the river god Meizoares see Şahin and Adak 2013, 305 and nn. 599-601a.

71 Arslan and Tüner Önen 2019, 75.

72 Özüdoğru 2020, 351-61, 381-83.

beardless cavalryman depicted on horseback with a helmet, armor, sometimes with a shield, and holding his spear parallel to the ground in one hand (fig. 10). This cavalry figure on the reverse is almost the archetype of the Taşlıpınar Ares figures on horseback mentioned above and dated to the Roman period. Therefore, all attributes indicate this figure may also be an Ares figure on horseback.[73] In addition, the cavalryman in the middle of the shield, found in Kayabaş village within the border of Balboura and described above dating to the Roman period, should also be evaluated among these types of Ares on horseback.

Ares is also depicted on the reverse of the Hellenistic-period bronze didrachmae of Oinoanda, another important city in the region (fig. 10).[74] Here, behind the head of Hermes with diadem and wings on the obverse, is the caduceus. On the reverse, a standing helmeted, armored male figure holds his round shield in one hand, which is propped up on the ground. He is holding the spear end resting on the ground in his other hand, which is bent up from the elbow. This type is also similar to the Mars Ultor typology widely used in the Roman period. R.H.J. Ashton compares the depiction of Ares on Oinoanda coins with a rock relief in the urban territory.[75] On this relief there is a male figure with a high conical - possibly Corinthian - helmet, a beardless face, armored and wearing a short tunic under his armor, with a frontal stance. While holding his spear in his right hand, he grasps the round shield propped down in his left hand. His stance and clothing is not different from examples of the Ares iconography observed in the region. The relief here is identified as Ares Tauropoleites (fig. 11).[76]

Ares depictions are seen on the coins of the city of Sillyon, which stands out with its warriors among the cities of the Pamphylia region.

FIG. 10 Kibyra silver tetradrachm (above: *SNG Fitzwilliam Museum* 4.6, 4950; *SNG von Aulock Phrygien* 3701; GHN 275, 3920); and Ares depiction on Oinoanda coin's Reverse (below: Ashton 2005, 86, pl. 5.2).

FIG. 11 Relief of Ares Tauropoleites in Karaçulha (Ashton 2005, 87, pl. 6.B).

73 Özüdoğru 2020, 351-61, 381-83.

74 Ashton 2005, 86, pl. 5.1-7.s.

75 Ashton 2005, 77, 87, pl. 6.B.

76 Ashton 2005, 77, 87, pl. 6.B.

According to B.Ş. Özdemir and M. Taşkıran, the portrait of Ares is depicted in profile on the obverse of Sillyon coins from the fourth-third centuries BC into the early Roman Imperial period. Another Ares type seen among the Roman provincial coins of Sillyon has Mars Ultor iconography on the reverse.[77]

Conclusion

By 2017, the Uylupınar (Early Kibyra) surveys were focused on the rural area of the Balboura highland. As a result of these surveys, small seasonal settlements were observed within the region due to the upland economy formed by active farmers and shepherds. During the field work, the ceramics found in these settlements are roughly dated to the Roman Imperial period. Also from this period are found numerous rock reliefs delineating the territorial boundaries of small settlements and marking the routes of roads, water resources, and possibly villages. On reliefs, there are many local deities such as the Dioscuri with goddess and triad gods (Theoi Dikaioi, Theoi Agrioi). In addition to the reliefs of these local gods, depictions identified as Zeus and his lightning bolt, Heracles and Nymphe originating from Greek mythology, and the reliefs depicting Ares are dominant when compared to depictions of the other gods. During the surveys, a relief differing from other reliefs in the region in its dimensions and iconographic expression was seen on the rough rock surface in a cave located on the rocky hill in the Ballık locality within the borders of Ambarcık village. This relief, 1.58 m high, is of human height. The helmeted figure in armor holds a rectangular shield in one hand and a spear in the other. The relief with all the attributes suggests that it depicts the god Ares. The eight-line inscription next to the relief, supports this iconographic depiction, described in detail above, which also states the depiction is of Ares. Under the cave, next to the oracle inscription identified by Th. Corsten, a helmeted figure holding short sword / shield in his left hand? and a *phiale* in the other hand should also represent Ares, the lord of the rock and giver of oracles. Based upon this, those reliefs having other similar attributes found by previous researchers in the region are also the subject of this study. The relief depiction next to the Dioscuri with goddess identified in Kelerli locality described above, and the reliefs depicted with other local gods on the same rock in Soğulgan area, depicted with helmets, armor and heavy weapons, should also represent Ares. The warrior figures with similar iconography that J.J. Coulton discovered during his research in the territory of Balboura confirm this supposition. Apart from these relief depictions, the fact that the name of Ares was read on two statue bases in the Boubon surveys, which C. Kokkinia also mentioned, indicates the depictions of Ares from the region are not limited to rock reliefs. All these relief descriptions were related to the routes and settlements, and the ceramics found in the research in the area did not date from before the Roman Empire period. On the other hand, Ş. Özüdoğru mentioned that there may be the head of Ares on the obverse of the Kibyra Hellenistic silver tetradrachmas and the cavalryman with a spear and armor on the reverse may represent Ares.[78] This cavalry iconography is also observed in the Roman period Taşlıpınar Ares reliefs in the Pisidia Region. A similar depiction is also found on the round shield in the rocky area identified by C. Naour in the Kabalis / Kabalia region. Therefore, it can be understood that Ares was a god worshipped in Kibyra by the Hellenistic period and his cult existed not only in the cities but also in the countryside, without losing its importance in the Roman Imperial period.

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77 Özdemir and Taşkıran 2021.

78 Özüdoğru 2020, 351-61, 381-83.

As the Ares reliefs described above were depicted in the local style and heavily damaged, an analogical dating cannot be made. In contrast, the iconography is similar to the Ares / Mars iconographies of bronze statuettes quite common in the Roman world. Reliefs and votive steles dedicated to local gods found in rural Kabalis / Kabalia, Pisidia and Lycia were also generally dated to the period of the Roman Empire. Additionally, regarding our subject Ares, besides the date of the inscriptions seen with the reliefs, the archaeological material found during local research indicates that the reliefs cannot be dated before the Roman period.

In the middle of the 12th century, the etymological dictionary, *Etymologicum Magnum* (s.v. Σόλυμοι), whose author is unknown, recorded that Solymos, the ancestor of the Solyms, was the son of Ares. Strabo (13.4.17) states that the Solym language was spoken in Kibyra, hence in the Kabalis / Kabalia Region. However, there is no other ancient writing or epigraphic data to support this information dating from a very late period. Again, where Strabo describes the people of Kibyra and the unity of the city of Kabalia, he conveys the military power of the city and of the region. It is not surprising that the people of this militaristic and warlike region respected the god Ares. But it is insufficient to explain the prevalence of the Ares reliefs described above in the highland countryside of the Roman Imperial period. In addition, the warrior character in the iconography of the reliefs is important, although associated with an oracle in the Ballık locality. The fact that the person who dedicated the Ares statue is recorded as an agoranomos on the Boubon statue bases suggests that Ares cannot be interpreted solely in connection with war, warfare, and military power in the region. In order to explain this situation, it will be useful for us to understand both the recent and distant past, with the oral history carried out during our surveys. In the accounts of the last witnesses of the periods when geography was destiny and technology had not yet entered the region, an economy different from the lifestyles created by the active economy - whose archaeological traces we found in the Roman period - was not mentioned. Until recently, it has been reported that there was constant conflict between the mobile farmers and herders for the use of the highland and the territorial rights. In addition, it was surprising to us that the reliefs found on the highland were used while delineating the borders of the villages in the recent past. Therefore, can the existence of these Ares reliefs dating from the Roman Imperial period in the distant past be interpreted within the context of the conflicts between rural settlers fighting for land-use rights? The answers to these questions will hopefully be provided through new research and excavations, especially in the cities of Balboura and Kabalis / Kabalia.

Bibliography

Arslan, M., and N. Tüner Önen. 2018. "Phaselis, 2017 Yüzey Araştırmaları ve Kazı Çalışmaları." *Phaselis* 4:295-323. https://doi.org/10.18367/Pha.18018

Arslan, M., and N. Tüner Önen. 2019. "Phaselis Antik Kenti'nde 2018 Yılında Gerçekleştirilen Yüzey Araştırmaları ve Kazı Çalışmaları." *Phaselis* 5:43-83. https://doi.org/10.18367/Pha.19003

Arslan, M., and N. Tüner Önen. 2020. "Phaselis 2020 Yılı Kazı ve Yüzey Araştırmaları." *Phaselis* 6:251-76. https://doi.org/10.18367/Pha.20017

Ashton, R.H.J. 2005. "The Coinage of Oinoanda (with Appendix 3 by N.V. Sekunda)." *NC* 165:65-84.

Bean, G.E. 1978. *Lycian Turkey: An Archaeological Guide*. London: Ernest Benn.

Beceren, N. 2018. "Kibyratis ve Çevresi Kaya Kabartmaları." Master's thesis, Mehmet Akif Ersoy Üniversitesi.

Beceren, N. 2019. "Pisidia ve Kibyratis Bölgesi Kaya Kabartmaları." In *7. Türkiye Lisansüstü Çalışmalar Kongresi Bildiriler Kitabı*. Vol. 3, *İşletme - Mimarlık ve Şehircilik - Psikoloji - Sanat, 9-12 Mayıs 2018, Burdur*, edited by B. Yuvalı and T. Eğri, 243-60. Ankara: Sage Yayıncılık.

Berndt-Ersöz, S. 2006. *Phrygian Rock-Cut Shrines. Structure, Function, and Cult Practice*. Culture and History of the Ancient Near East 25. Leiden / Boston: Brill.

Brixhe, C., and R. Hodot. 1988. *L'Asie mineure du nord au sud: inscriptions inédites*. Études d'archéologie classique 6. Nancy: Presses universitaires de Nancy.

Corsten, Th. 2009. "Zwei Inschriften zur frühen Geschichte von Kibyra." In *Ancient History, Numismatics and Epigraphy in the Mediterranean World. Studies in Memory of Clemens E. Bosch and Sabahat Atlan and in Honour of Nezahat Baydur*, edited by O. Tekin, 91-98. Istanbul: Ege Yayınları.

Corsten, Th., and O. Hülden. 2012. "Zwischen den Kulturen. Feldforschungen in der Kibyratis. Bericht zu den Kampagnen 2008-2011." *IstMitt* 62:7-117.

Coulton, J.J. 1994. "Balboura Research Project 1992." *AST* 11:429-36.

Coulton, J.J. 2012. *The Balboura Survey and Settlement in Highland Southwest Anatolia*. Vol. 1. British Institute at Ankara Monograph 43. London: British Institute at Ankara.

Darga, A.M. 1992. *Hitit Sanatı*. Akbank Kültür ve Sanat Kitapları 56. Istanbul: Akbank Kültür ve Sanat Yayınları.

Delemen, İ. 1993. "Anadolu'da Atlı Tanrılar. Lykia, Pisidia, Lykaonia, Isauria, Phrygia, Lydia ve Karia Bölgelerinde Taş Eserler Üzerine Bir İnceleme." Ph.D. diss., Istanbul University.

Delemen, İ. 1995. "Lykia - Kabalia - Pisidia Bölgesinden Roma Dönemi 'Dioskurlar ve Tanrıça' Kabartmaları." *Belleten* 59.225:295-321.

Delemen, İ. 1999. *Anatolian Rider-Gods: A Study on Stone Finds from the Regions of Lycia, Pisidia, Isauria, Lycaonia, Phrygia, Lydia and Caria in the Late Roman Period.* AMS 35. Bonn: Habelt.

Doğan, Y. 2019. "Antik Veriler Işığında Milyas ve Kabalia Bölgelerinin Tarihi Coğrafyası, İdari, Sosyokültürel ve Dini Yapısı." Ph.D. diss., Akdeniz University.

Dökü, F.E. 2018. "Report on the 2017 Surveys at Uylupınar (Early Kibyra) / 2017 Yılı Uylupınar (Erken Kibyra) Yüzey Araştırması Raporu." *Anmed* 16:260-67.

Dökü, F.E. 2019a. "2017 Yılı Uylupınar (Erken Kibyra) Yüzey Araştırması Raporu." *AST* 36.1:513-30.

Dökü, F.E. 2019b. "Report on the 2018 Surveys at Uylupınar (Early Kibyra) / Uylupınar (Erken Kibyra) Yüzey Araştırmaları 2018 Yılı Raporu." *Anmed* 17:63-68.

Dökü, F.E. 2020. "Uylupınar (Erken Kibyra) Yüzey Araştırmaları 2018 Yılı Raporu." *Phaselis* 6:217-35. https://doi.org/10.18367/Pha.20014

Dökü, F.E., and A.İ. Harmanda. 2020. "Roma Dönemi Kibyratis - Kabalis Kırsal Yerleşimleri Ekonomisi." In *Pisidia ve Yakın Çevresinde Üretim, Ticaret ve Ekonomi. Uluslararası Sempozyum Bildirileri, 31 Ekim - 03 Kasım 2018, Isparta, Türkiye / Production, Trade and Economy in Pisidia and its Surrounding Areas, International Symposium Proceedings, 31 October - 03 November 2018, Isparta, Turkey,* edited by A. Mörel, G. Kaşka, H. Köker, M. Kaşka, M. Fırat, and S.O. Akgönül, 20-36. Pisidia Araştırmaları 2 / Pisidian Studies 2. Isparta: Süleyman Demirel Üniversitesi.

Dökü, F.E., and İ. Baytak. 2017a. "2015 Yılı Uylupınar (Erken Kibyra) Yerleşimi Yüzey Araştırması." *AST* 34.2:641-69.

Dökü, F.E., and İ. Baytak. 2017b. "Kabalis Bölgesi Demirçağ Yerleşim Tipleri ve Gözetleme / Haberleşme Kaleleri." *MJH* 7.2:223-42.

Emilie Haspels, C.H. 1971. *The Highlands of Phrygia: Sites and Monuments*. 2 vols. Princeton: Princeton University Press.

Farnell, L.R. 1909. *The Cults of the Greek States*. 5 vols. Oxford: Clarendon Press.

Frei, P. 1990. "Die Götterkulte Lykiens in der Kaiserzeit." *ANRW* 2.18.3:1729-864.

French, D. 1994. "Isinda and Lagbe." In *Studies in the History and Topography of Lycia and Pisidia: In Memoriam A.S. Hall,* edited by D. French, 53-92. British Institute of Archaeology at Ankara Monograph 19. Ankara: British Institute at Ankara.

Gonzales, M. 2005. "The Oracle and Cult of Ares in Asia Minor." *GRBS* 45.3:261-83.

Gonzales, M.P. 2004. "Cults and Sanctuaries of Ares and Enyalios: A Survey of the Literary, Epigraphic, and Archaeological Evidence." Ph.D. diss., University of California.

Heberdey, R., and E. Kalinka. 1897. *Bericht über zwei Reisen im südwestlichen Kleinasien, ausgeführt im Auftrage der Kaiserlichen Akademie der Wissenschaften*. DenkschrWien 45. Vienna: C. Gerold's Sohn.

Hellenkemper, H., and F. Hild. 2004. *Lykien und Pamphylien*. TIB 8. 3 vols. DenkschrWien 320. Vienna: Verlag der Österreichische Akademie der Wissenschaften.

Horsley, G.H.R. 2007. *The Greek and Latin Inscriptions in the Burdur Archaeological Museum*. Regional Epigraphic Catalogues of Asia Minor 5. The British Institute at Ankara Monographs 34. London: The British Institute of Archaeology at Ankara.

I.Bubon Schindler Schindler, F. 1972. *Die Inschriften von Bubon (Nordlykien)*. Sitzungsberichte der DenkschrWien 278. Vienna: Österreichische Akademie der Wissenschaften.

I.Kibyra Corsten, Th. 2002. *Die Inschriften von Kibyra*. Vol. 1, *Die Inschriften der Stadt und ihrer näheren Umgebung*. IK 60. Bonn: Dr. Rudolf Habelt.

I.Perge Şahin, S. 1999. *Die Inschriften von Perge*. Vol. 1, *Vorrömische Zeit, frühe und hohe Kaiserzeit*. IK 54. Bonn: Dr. Rudolf Habelt.

I.Side Nollé, J. 2001. *Side im Altertum. Geschichte und Zeugnisse*. Vol. 2, *Griechische und lateinische Inschriften (15-16) - Papyri - Inschriften in sidetischer Schrift und Sprache - Ergänzungen und Berichtigungen - Konkordanzen - Epigraphische Indices*. IK 44. Bonn: Dr. Rudolf Habelt.

Işık, F. 2012. *Uygarlık Anadolu'da Doğdu*. Istanbul: Ege Yayınları.

Işın, G. 2014. "The Sanctuaries and the Cult of Apollon in Southern Pisidia." *Anadolu / Anatolia* 40:87-104.

İplikçioğlu, B. 2002. "Doğu ve Kuzeydoğu Lykia-Güneybatı Pisidia Epigrafik-Tarihî Coğrafî Yüzey Araştırmaları Projesi 2000 Yılı Çalışmaları." *AST* 19.2:127-32.

İplikçioğlu, B. 2003. "Batı Pamfilya ve Doğu Likya'da Epigrafya Araştırmaları 2001." *AST* 20.2:71-75.

Kahya, T. 2015. "Düver - Yarım Ada Kaya Kabartmaları." *Cedrus* 3:129-39. https://doi.org/10.13113/CEDRUS.2015011399

Karayaka, N. 2007. *Hellenistik ve Roma Döneminde Pisidya Tanrıları*. Istanbul: Ege Yayınları.

Kokkinia, C., ed. 2008. *Boubon. The Inscriptions and Archaeological Remains; A Survey 2004-2006*. Research Centre for Greek and Roman Antiquity National Hellenic Research Foundation. ΜΕΛΕΤΗΜΑΤΑ 60. Athens: Diffusion de Boccard.

Labarre, G., M. Özsait, and N. Özsait. 2006. "Les reliefs rupestres de Tefenni (Pisidie)." *Anatolia Antiqua* 14:89-115.

LBW Le Bas, P., and W.H. Waddington. 1870. *Voyage archéologique en Grèce et en Asie Mineure, fait par ordre du gouvernement français pendant les années 1843 et 1844*. Part 2, *Inscriptions grecques et latines recueillies en Grèce et en Asie mineure*. Vol. 3.1, *Textes*. Paris: Firmin-Didot frères, fils et cie.

Milner, N.P. 1998. *An Epigraphical Survey in the Kibyra-Olbasa Region conducted by AS Hall*. Regional Epigraphic Catalogues of Asia Minor 3. British Institute of Archaeology at Ankara Monograph 24. London: British Institute of Archaeology at Ankara.

Milner, N.P. 2004. "Ancient Inscriptions and Monuments from the Territory of Oinoanda." *AnatSt* 54:47-77.

Mitchell, S. 1996. "1994 Yılı Oinoanda ve Batı Pisidia'da Yüzey Araştırmaları." *AST* 13.2:71-80.

Naour, Ch. 1976. "Inscriptions et reliefs de Cibyratide et de Cabalide." *ZPE* 22:109-36.

Naour, Ch. 1978. "Tyriaion en Cabalide." *ZPE* 29:91-114.

Nollé, J. 2007. *Kleinasiatische Losorakel. Astragal- und Alphabetchresmologien der hochkaiserzeitlichen Orakelrenaissance*. Vestiga. Beiträge zur Alten Geschichte 57. Munich: Verlag C.H. Beck.

Özdemir, B.Ş., and M. Taşkıran. 2021. "Sillyon'da Ares Kültü." *Arkhaia Anatolika* 4:109-22.

Özsait, M. 2006. "2004 Yılı Burdur İli Yüzey Araştırmaları." *AST* 23.2:259-68.

Özsait, M. 2007. "2005 Yılı Burdur İli Yüzey Araştırmaları." *AST* 24.2:463-78.

Özsait, M. 2010. "Isparta ve Burdur 2009 Yılı Yüzey Araştırmaları / Surveys in Isparta and Burdur in 2009." *Anmed* 8:127-35.

Özüdoğru, Ş. 2020. *Kibyra. Kibyra Maior / Caesarea Cibyra*. Kibyra Kazı ve Araştırmaları Monografi Serisi 1. Istanbul: Arkeoloji ve Sanat Yayınları.

Petersen, E., and F. von Luschan. 1889. *Reisen in Lykien, Milyas und Kibyratis*. Reisen im südwestlichen Kleinasien 2. Vienna: Carl Gerold's Sohn.

Petzl, G. 1997. "Nochmals zum neuen Buchstabenorakel." *EpigAnat* 29:127-28.

Pouilloux, J. 1954. *Recherches sur l'histoire et les cultes de Thasos*. 1, *De la fondation de la cité à 196 avant J.-C*. Études thasiennes 3. Paris: De Boccard.

Robert, L. 1955. *Hellenica*. Vol. 10. Paris: Adrien-Maisonneuve.

Robert, L. 1966. *Documents de l'Asie mineure méridionale: inscriptions, monnaies et géographie*. Centre de recherches d'histoire et de philologie 3. Hautes études du monde gréco-romain 2. Geneva: Librairie Droz.

Robert, L. 1983. "Documents d'Asie Mineure." *BCH* 107:497-599.

Robert, L. 1987. *Documents d'Asie Mineure*. Bibliothèque des Écoles Françaises d'Athènes et de Rome 239.2. Athens / Paris: École française d'Athènes / De Boccard.

Sarre, F.P.T. 1896. "Reise in Phrygien, Lykaonien und Pisidien." *Archäologisch-epigraphische Mitteilungen aus Österreich-Ungarn* 19:26-57.

Smith, T.J. 1997. "Votive Reliefs from Balboura and its Environs." *AnatSt* 47:3-49.

Smith, T.J. 2011. "Highland Gods: Rock-Cut Votive Reliefs from the Pisidian Survey." *AnatSt* 61:133-50.

Swoboda, H., F. Knoll, and J. Keil. 1935. *Denkmäler aus Lykaonien, Pamphylien und Isaurien*. Vienna: Deutsche Gesellschaft der Wissenschaften und Künste für die Tschechoslowakische Republik in Prag. Brünn.

Şahin, S., and M. Adak. 2013. *Stadiasmus Patarensis: Itinera Romana Provinciae Lyciae*. Istanbul: Ege Yayınları.

Takmer, B. 2019. "The House of Hermogenes of Kagrai: The Rural Elites and the Micro-Economy in the Upper Melas Valley." *Philia* 5:87-106. https://doi.org/10.36991/PHILIA.201910

Takmer, B., and N. Gökalp. 2005. "Inscriptions from the Sanctuary of ΜΗΤΗΡ ΘΕΩΝ ΟΥΕΓΕΙΝΟΣ at Zindan Mağarası 1." *Gephyra* 2:103-13.

Talloen, P. 2015. *Cult in Pisidia. Religious Practice in Southwestern Asia Minor from Alexander the Great to the Rise of Christianity*. SIMA 10. Leuven: Brepols Publishers.

Tiryaki, G. 2001-2002. "İvriz Kabartması Işığında Anadolu'da Şarap-Tanrı Anlayışı ve Bu Anlayışın Gelişimi Üzerine." *Adalya* 5:59-71.

Tiryaki, S.G. 2018. "The Sanctuary with the Relief of the 'Twelve Gods' in the Elmalı Highlands: On the Iconography of 'Leto, Her Children, and the Nymphs' in Ancient Southwest Anatolia." *Adalya* 21:135-50.

Zgusta, L. 1984. *Kleinasiatische Ortsnamen*. Beiträge zur Namenforschung, Neue Folge, Beiheft 21. Heidelberg: Carl Winter Universitätsverlag.

Standard Reference Works

LGPN 5C *A Lexicon of Greek Personal Names*. Vol. 5C, *Inland Asia Minor,* edited by J.-S. Balzat, R.W.V. Catling, E. Chiricat, and Th. Corsten. Oxford: Clarendon Press, 2018.

LGPN 1 *A Lexicon of Greek Personal Names*. Vol. 1, *The Aegean Islands, Cyprus, Cyrenaica,* edited by P.M. Fraser and E. Matthews. Oxford: Clarendon Press.

Neue Pauly 6 Kabalis. Th. Drew-Bear, s.v. Kabalis, *Neue Pauly* 1999. Vol. 6, 199, 123.

RE 10.2 Kabalia. W. Ruge, s.v. Kabalia, *RE* 1919. Vol. 10.2, 1394-395.

SNG Fitzwilliam Museum 4.6. *SNG Fitzwilliam Museum 4, Fitzwilliam Museum, Leake and General Collections*. Vol. 6, *Asia Minor - Phrygia*, by H. Milford. London: Oxford University Press.

SNG von Aulock Phrygien. *SNG Deutschland 1, Sammlung Hans von Aulock*. Vol. 9, *Phrygien*, by Hans-Werner Ritter. Berlin: Verlag Gebr. Mann.

TAM 2.1. *Tituli Asiae Minoris* 2. *Tituli Lyciae linguis Graeca et Latina conscripti*, edited by E. Kalinka. Fasc. 1, nos. 1-395, *Pars Lyciae occidentalis cum Xantho oppido*, Vienna, 1920.

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Ancient Quarries in the Vicinity of Başara and a Local Roman Grave Stele Workshop

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Abstract

In course of the excavations and surveys carried out in recent years at the village of Başara in Eskişehir province, ancient quarries exploited in the Roman Imperial period have been discovered. Four sites with open-air quarries have been observed where extraction traces can still be seen on metamorphic rock in the vicinity of the ancient settlement. Grey-colored marble was used in the construction of two Byzantine churches unearthed at the excavations and for the grave steles found by us. That the votive stele, discovered at the excavations and providing the name for the settlement Atyie / Atyia, had been dedicated by stonecutters (*Λατυποί*) provides epigraphic support for the existence of the surrounding quarries. The excavations carried out in Han, not far from Başara (c. 4.5 km), and the surveys conducted in the region present reliable evidence that in the second-third centuries AD the main production of the workshop or workshops utilizing marble extracted from the quarries was doorstone grave steles.

Keywords: Phrygia, Başara, ancient quarries, doorstone funerary stele, heroon-facade grave monuments

Öz

Eskişehir, Başara köyünde, geçmiş yıllarda gerçekleştirilen kazılarla eş zamanlı olarak yapılan yüzey araştırmalarında, yakın çevrede Roma İmparatorluk Dönemi'nde işletildiği anlaşılan Antik Çağ taş ocakları keşfedilmiştir. Antik yerleşimin güneyindeki kayalık yamaçlarda, ana kaya yüzeyinde taş çıkartma izleri açıkça gözlemlenen dört ocak sahası tespit edilmiştir. Köyde, daha önce farklı araştırmacılar tarafından kaydedilenler dahil olmak üzere, kazılarda açığa çıkartılan Bizans Dönemi kiliselerinde spolien olarak kullanılan mezar stellerinin tümü yakın çevredeki taş ocaklarından çıkartılan gri renkli mermerden yapılmıştır. Kazılarda ele geçen ve yerleşim adı veren (Atyie / Atyia) Roma İmparatorluk Dönemi'ne ait bir adak stelinin taşcılar (*Λατυποί*) tarafından adanmış olması, yakın çevredeki mermer ocaklarının varlığını epigrafik olarak desteklemektedir. Ayrıca Başara'dan çok uzak olmayan (yak. 4,5 km) Han ilçesindeki Roma-Bizans nekropolü yakın çevresi ve yerleşim içinde dağınık olarak bulunan mezar stelleri, MS 2.-3. yüzyıllarda Başara yakınlarındaki taş ocaklarından çıkartılan mermeri işleyen atölye veya atölyelerin başlıca üretimlerinin kapı tipi mezar stelleri olduğu ve bunların yakın çevredeki diğer yerleşimlere dağıldığını gösteren güvenilir kanıtlar sunmaktadır.

Anahtar Kelimeler: Phrygia, Başara, antik taş ocakları, kapı tipi mezar steli, heroon cepheli mezar anıtları

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Introduction

The existence of an ancient settlement near the village of Başara (Başaran / Başören), located 4.3 km southeast of the Han district of Eskişehir province, was first suggested by W. M. Ramsay in the late 19th century. Initially Ramsay associated the toponym Κακκαβωκομη (Kakkabokome), mentioned on a Roman inscription he found in Han, with Başara. But later he changed his mind in favor of Han, where the inscription was originally recorded.[1] Although the Roman-Byzantine grave steles and architectural blocks related to them, recorded by W.M. Calder in Başara in 1925, proved the existence of an ancient settlement in the immediate vicinity, however, its location remained uncertain until recently.[2] Some architectural remains were unearthed in 2005 during the construction of a water reservoir and canals to provide water to the village. The directorate of the Eskişehir Archaeology Museum decided to conduct research to understand the remains, so rescue excavations were carried out under the museum and the scientific direction of this author between 2006 and 2009.[3] Excavations conducted on the northern and southern slopes of a shallow valley formed by a gully 300 m west of the modern settlement unearthed Early and Middle Byzantine churches near each other and some chamber tombs to the southwest, thus forming a necropolis.

The Quarries

Parallel to the excavations carried out on the site, ancient quarries were discovered during the surveys conducted in the immediate vicinity. Three of these were close to one another on the rocky slopes of Yörükyurdu Tepe (1283 m) 300 meters south of the settlement. Another one was found on the northern slope of Habalı Tepe 2.5 km away (fig. 1).

At the first quarry, the smooth surface of the bedrock of the extracted stone blocks, deep canals, and traces of the stonecutters' tools can be clearly seen. (fig. 2). Also, crosses and circles, carved possibly by a Christian stonecutter, were observed at the first quarry area. At the second quarry site, located on the north bank of the now dry Çırpılı rivulet and 250 m east of the former, the traces of quarrying are much clearer. Preserved are the edges of the impression of an extracted block measuring approximately 2.00 x 1.00 m on the rock outcrop and the traces of the short and long crowbars used to extract the block (fig. 3). Here also deep circular bore holes to the left of the bedrock can be seen. These must be related to previous quarrying activities. The third quarry site is shaped like a large rock outcrop. The smooth surface of the bedrock of the extracted stone blocks measures of 4.00 x 2.00 m (fig. 4).

The last quarry site located on the slopes of the Habalı Tepe (1394 m) is reached by a 2.5 km-long pathway. The clear abrasion traces on the path, which may have been caused by the long-term use of oxcarts or carriages, suggest that the path may have been used in ancient times (fig. 5). The quarry site has a stepped form on the slopes close to the top of the hill, and the rock formation has horizontal and vertical fractures (fig. 6). Although no clear traces can be seen on the rock surface related to extraction, rough blocks scattered around the site and two Roman grave steles were found here (fig. 7). The rock formation around the ancient settlement is made up of gray, white-veined, non-porous or slightly porous, and partly fractured metamorphic marble.

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1 Ramsay 1887, 500-1; 1890, 233.

2 Calder 1928, 207-11, nos. 398-403.

3 Alp and Çağlar 2009, 193-97.

Contrary to expectations, the excavations carried out within the settlement instead of the quarry sites provided the most important evidence for when the quarries were in use. A votive stele, made of the local gray marble and found in the "South Church," bears a dedication inscription to *Zeus Bronton* by the stonecutters of *Ατυηνοί* (Atyie / Atyia). This is important evidence, since it gives the name of the ancient settlement and also that the quarries near the settlement were in use in the Roman Imperial period (fig. 8).[4]

Λατύποι Ἀτυιῆνοί
Διί βροντῶντ[ι]
εὐ[χήν]

Trans: The stonecutters of *Atyie / Atyia* (dedicated this) to *Zeus Bronton*

Another votive stele with the very similar toponym, devoted to the Mother Goddess (Cybele), was found in the village of Çaykoz near Pessinus. The name of the settlement (Ἀτυην) is the same as in the Başara inscription, except for the letter iota.[5] The evidence and possibilities offered by the inscriptions for the localization of the settlement will not be discussed here in detail, since it is beyond the scope and purpose of this article.

Grave Stele Workshop

At this point, the first question that comes to mind regarding the inscription is what kind of production the stonecutters were making. Further evidence came not from the quarries but from the excavations we carried out by chance. On two rectangular blocks used as a spolia in the Early Byzantine period in the walls of the "South Church," panels of doorstone which were started but were never finished can be seen (fig. 9). These blocks, processed from the marble extracted in the quarries nearby, indicate that grave steles constituted an important part of the quarry products. In addition to these unfinished blocks, more than 10 doorstones made of the local gray marble in the "North" and "South" churches, scattered throughout the village, and many architectural blocks related to the grave structures have also been found.

Another center where the production of this grave stele workshop can be followed is 4.5 km north of the village at our other excavation site in Han. Over 20 grave steles were found in the immediate vicinity of the Roman-Byzantine necropolis located southwest of the district center, where more than 150 tombs were uncovered. Some were reerected in the necropolis (fig. 10). As in the other excavation areas in Han, the rock formation of the necropolis and its immediate vicinity is wholly volcanic tuff. This suggests that the gray marble grave steles must have been brought from somewhere nearby. The doorstones found in the Han Necropolis are very similar to the samples in Başara in terms of their type, dimensions, and execution. The four-panel door steles ending with a triangular pediment reflect a scheme that can be considered a standard for the entire Phrygia region.

The high finial with the bull and lion reliefs symbolize the soul of the deceased and protective posture. These along with the figures of the tomb owners depicted standing on a

[4] The stele is broken in two pieces (height: 0.73 m, width: 0.35 m, thickness: 0.11 m, height of letters: 2 cm). The sides of the pediment and the bottom right are broken. At front is found a bust of Zeus with beard and right hand across his chest in high relief. In the triangular pediment is an eagle with open wings.

[5] Strubbe 2005, 188-89, no. 171. He stated that Ἀτυηνοί seems more likely to be an ethnic.

protruding horizontal plane can be considered as the distinctive characteristics of the Başara grave stele workshops.

In this regard, among the grave steles in the Han necropolis, the one with a relief of a cart pulled by a couple of oxen carrying a cubical load is remarkable (fig. 11). Since there is no inscription on the stele, the only clue to the occupation of the tomb owner is this relief. The inscription λεκτεικάριος, the Greek form of the Latin *lecticarius*, on a Roman grave stele exhibited in the Afyonkarahisar Archaeological Museum (inv. no. 1552/29), which depicts marble blocks on a cart pulled by a couple of oxen on its lower panel, indicates that the tomb owner engaged in stone transportation.[6] If the load depicted in the Han examples is a stone block, the stele should belong to a person engaged in the transportation or trade of the material extracted in the Başara quarries.

Types of Doorstone Funerary Steles and Heroon Facade Grave Monuments

More than 30 grave steles have been found in Başara and Han, which can be considered a sufficient number for a proposal of typology. Considering the numbers of forms and panels, there are three main types (fig. 12). The first type, consisting of longitudinal rectangular single-panel steles with a triangular pediment, are the most common, and similar steles can be found all across the Phrygia region. These are flat at the bottom and top, and protruding at the upper part, thus creating an image of a high bomos. Some of these steles end with lion-bull reliefs on high finials, which give them a monumental appearance. The second type includes doorstones with two or more latitudinally rectangular panels. Some examples have inscriptions on the profiled upper border and reliefs of the tomb owner/s. Basically, the third type is a combination of the first two types. This type, which can be called as grave monument, consists of two protruding steles on the sides and middle slab with door-type panels between them. In this combination, the blocks on the sides are defined as bomos-shaped by M. Waelkens and called "Pilastersteine" by Th. Drew-Bear and T. Lochmann. Across the Phrygia region today, none of the monumental tombs defined as "Type K" by M. Waelkens[7] and as "Kleinen Heroa" or "Heroon Fassade" called by Th. Drew-Bear and T. Lochmann have survived *in situ*.[8]

In 1925 W. M. Calder observed steles used in heroon-type monumental tombs in two areas – one 300 m east of Başara and the other at the beginning of the road connecting the village to Han. Very close to them were terrace-formed substructures on which the steles stood.[9] Although no traces can be seen at the first area today, the missing parts of the steles found scattered in the second area west of the village were detected by Th. Drew-Bear and T. Lochmann. A reconstruction drawing was made for the inscriptions and monumental tomb.[10] Accordingly, the monumental tomb consists of bomos-shaped, thicker and protruding steles with reliefs of a reclining bull and lion group on the finial. Three panels with the relief of the tomb owners are on the middle panel (fig. 13). Our excavations in the area originally observed by W.M. Calder are very close to the stele pieces which he considered to be a platform on which the steles stood. The excavations indicated that a wall about 11 m in length and

6 Buckler et al. 1933, 10, no. 32; Waelkens 1977, 288; 1986, 196, no. 486, table 75.

7 Waelkens 1986, 9, table 107.

8 Drew-Bear and Lochmann 1996, 117; Kelp 2008, 76-77, fig. 3; 2015, 72, table 19.1.

9 Calder 1928, 208-9, nos. 399-401.

10 Drew-Bear and Lochmann 1996, 115, 125-26, fig. 5.

consisting of five large blocks ran in a straight line from east to west. This should be considered as a platform on which the grave steles were placed, thus confirming the opinions of previous researchers (fig. 14). However, no grave related to the steles could be found in the excavations in the area.

During the excavations of the "South Church," two doorstone grave steles were found. These were used as spolia when the church was rebuilt in the Middle Byzantine period (10th or 11th centuries) (fig. 15). While the first stele comprised three door-type panels and had the tomb owners on their reliefs at its center, the second stele has two panels.[11] The steles lateral, nearly square rectangular forms of relatively narrow thicknesses and without any inscription, suggest that they were not originally independent. But as Th. Drew-Bear and T. Lochmann indicated, they were middle slab completed by bomos-shaped steles at the sides (fig. 16).

Heroon facade grave monuments were not limited by the Başara examples. Similar steles exist – one in the quarry site near the settlement and the other in the Han Necropolis. The intact grave stele found in the former on the slope of the Habalı Tepe provides more reliable clues regarding heroon facade monumental tombs (fig. 7 left). The monolith stele, made of gray marble extracted in this quarry, consists of a slightly higher *bomos* at the sides and a middle slab with two door-type panels. On the steles at the Han necropolis, clamp sockets on the sides and top of some grave steles indicate that they were also used in heroon facade monumental tombs consisting of three or four blocks, the same as those in Başara (fig. 17). It seems that some steles with a finial with bull-lion relief were clearly more prestigious and costly with their high relief figures. Some of uninscribed and *bomos* shaped steles, would then be expected to form the sides of a three-partite stele group where the inscription would have been on the middle slab.

Conclusion

The epigraphical and archaeological research carried out in Phrygia so far has clearly revealed that there was an unprecedented increase in the production of grave and votive steles in the second and third centuries AD. Meeting this demand required that operational local quarries, some of which were already available or newly opened, along with many workshops to process these materials existed. In fact, some of the local quarries and workshops discovered in the Upper Tembris Valley of Phrygia not only meet the needs of their immediate surroundings, but also produced for distant regions such as Rome on special order.[12]

The examples from Başara are remarkable among the local grave stele workshops from the Roman Imperial period which can be found across the Phrygia region. For it is one of the few centers where the stone sources, stele types, and the distribution of products in the immediate vicinity can be tracked. In conclusion, the doorstone funerary steles were the primary products of the stonecutters from Atyie / Atyia. The stonecutters processed the marble extracted in the quarries in the second and third centuries AD and left reliable archaeological and epigraphic evidence which suggest that the workshop can be distinguished from the heroon facade grave monuments. This shows that they can be regarded as more monumental than the others.

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[11] The dimensions of the steles are respectively: Stele 1: height 0.71 m, width 1.39 m, thickness 0.30 m; Stele 2: height 1.36 m, width 1.34 m, thickness 0.37 m.

[12] Waelkens 1985.

Finally, it should be noted that the large number of architectural and liturgical elements made of gray marble in the Early Byzantine period recorded in Başara and Han by us show that the quarries in the vicinity of Başara continued to be intensively exploited after the Roman Imperial period.

Bibliography

Alp, A.O., and D. Çağlar. 2009. "Eskişehir-Han İlçesi ve Başara Köyü Kazıları (2004-2007)." *KST* 30.1:189-200.

Buckler, W.H., W.M. Calder, and W.K.C. Guthrie, eds. 1933. *Monuments and Documents from Eastern Asia and Western Galatia*. MAMA 4. Publications of the American Society for Archaelogical Research in Asia Minor. Manchester: Manchester University Press.

Calder, W.M., ed. 1928. MAMA. Vol. 1. Publications of the American Society for Archaelogical Research in Asia Minor. London: Manchester University Press.

Drew-Bear, Th., and T. Lochmann. 1996. "Grabreliefs aus Amorion, Orkistos und der antiken Siedlung von Bağlıca. Zeugen verlorengegangener Grabbauten." *Arkeoloji Dergisi* 4:109-34.

Kelp, U. 2008. "Das Phänomen der Türfassaden in Phrygien. Zu lokalen Identitäten anhand einiger Grabtypen römishen Zeit." In *Neu Funde und Forschungen in Phrygien,* edited by E. Schwertheim and E. Winter, 69-91. AMS 61. Bonn: Habelt.

Kelp, U. 2015. *Grabdenkmal und lokale Identität. Ein Bild der Landschaft Phrygien in der römischen Kaiserzeit.* AMS 74. Bonn: Habelt.

Ramsay, W.M. 1887. "The Cities and Bishoprics of Phrygia II." *JHS* 8:461-519.

Ramsay, W.M. 1890. *The Historical Geography of Asia Minor.* Royal Geographical Society Suppl. Papers 4. London. John Murray.

Strubbe, J. 2005. *The Inscriptions of Pessinous.* IK 66. Bonn: Habelt.

Waelkens, M. 1977. "Phrygian Votive and Tombstones as Sources of the Social and Economic Life in Roman Antiquity." *Ancient Society* 8:277-315.

Waelkens, M. 1985. "From a Phrygian Quarry: The Provenance of the Statues of the Dacian Prisoners in Trajan's Forum at Rome." *AJA* 89.4:641-53.

Waelkens, M. 1986. *Die kleinasiatischen Türsteine. Typologische und epigraphische Untersuchungen der kleinasiatischen Grabreliefs mit Scheintür.* Mainz am Rhein: Philipp von Zabern.

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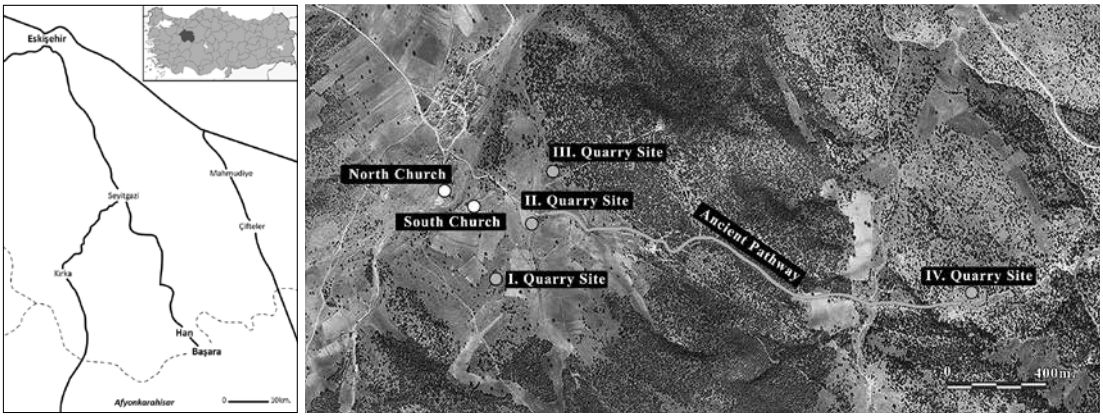

FIG. 1 Locations of quarry sites near Başara (Drawing: G. Işık).

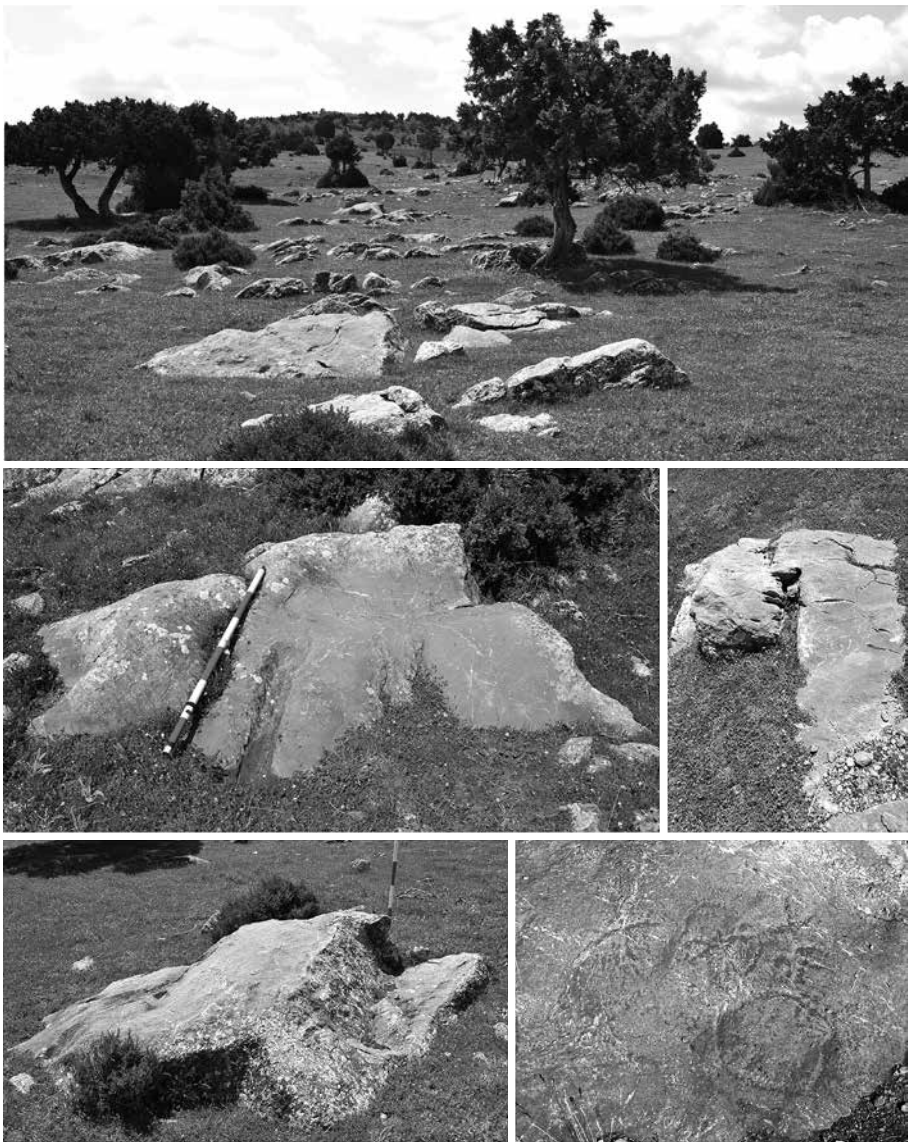

FIG. 2
First quarry site, general view and exploitation traces on bedrock (Photo: A.O. Alp).

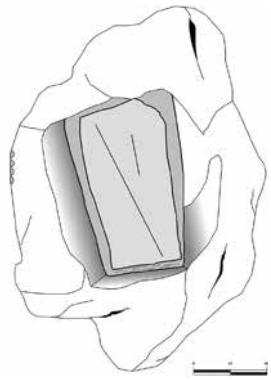

FIG. 3 Second quarry site (Photo: A.O. Alp, Drawing: G. Işık).

FIG. 4
Third quarry site
(Photo: A.O. Alp).

FIG. 5
Ancient pathway to
lead fourth quarry site
(Photo: A.O. Alp).

FIG. 6 Fourth quarry site at northern slope of Habalı Tepe (Photo: A.O. Alp).

FIG. 7
Grave steles near fourth quarry site (Photo: A.O. Alp).

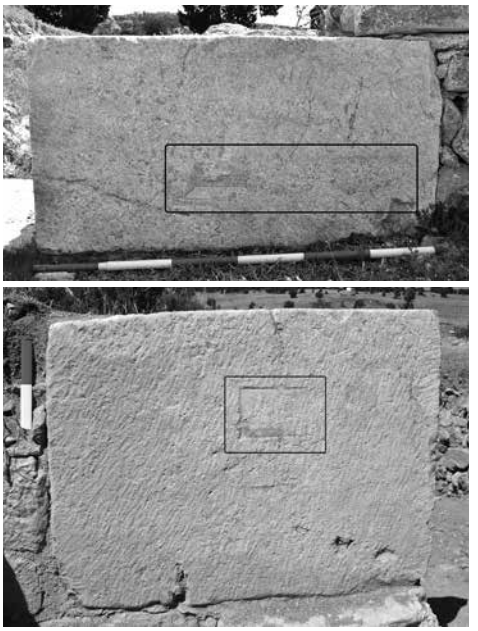

FIG. 9
Unfinished "doorstone" grave steles reused in "South Church" walls (Photo: A.O. Alp).

FIG. 8 Votive stele dedicated by stonecutters (Photo: A.O. Alp).

FIG. 10
Reerected Roman grave steles in Han necropolis (Photo: A.O. Alp).

FIG. 11 Grave stele with oxen cart relief in Han necropolis (Photo: A.O. Alp).

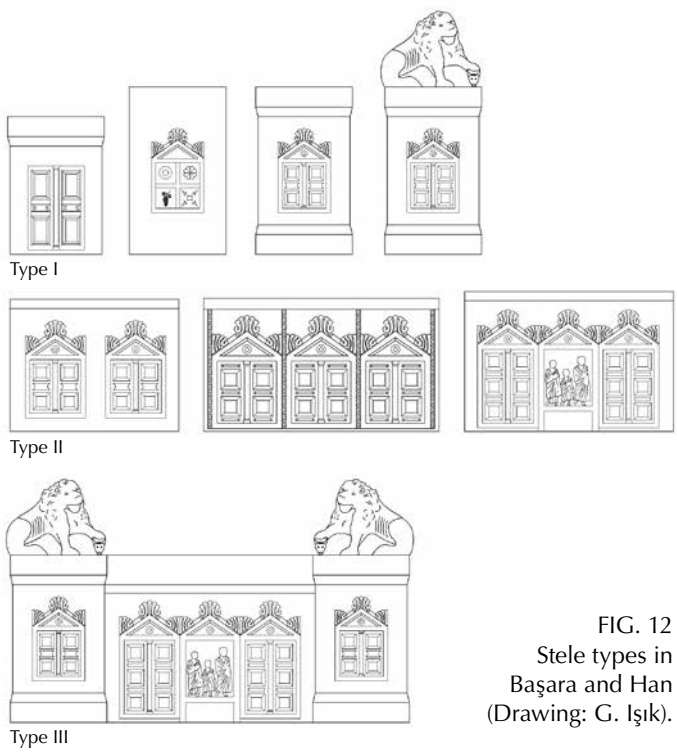

FIG. 12
Stele types in Başara and Han (Drawing: G. Işık).

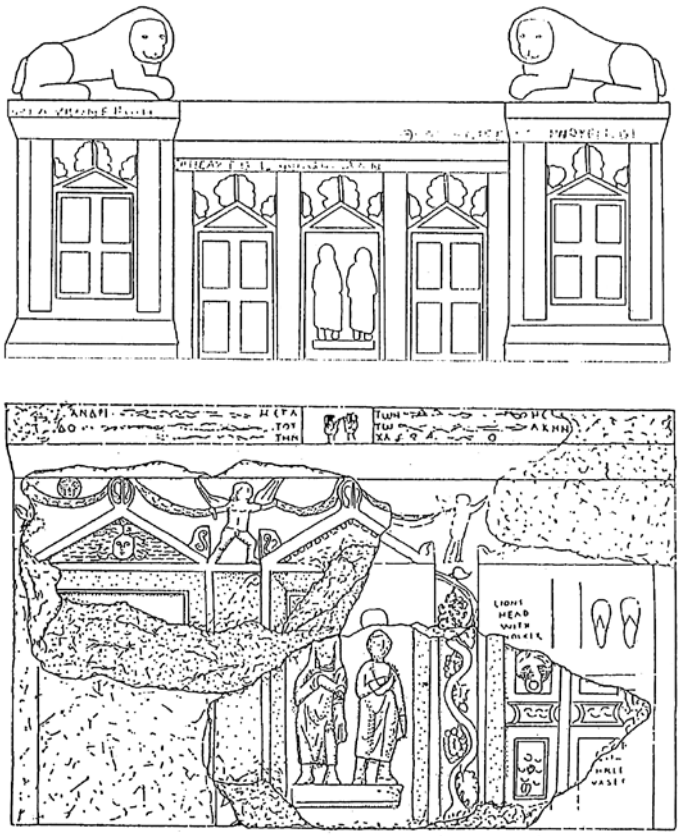

FIG. 13
Reconstructions of Heroon facade grave monument in Başara (bottom, Calder 1928, no. 399a; top, Drew-Bear and Lochmann 1996, figs. 4-5).

FIG. 14 Podium of Heroon facade grave monuments in Başara (Photo: A.O. Alp).

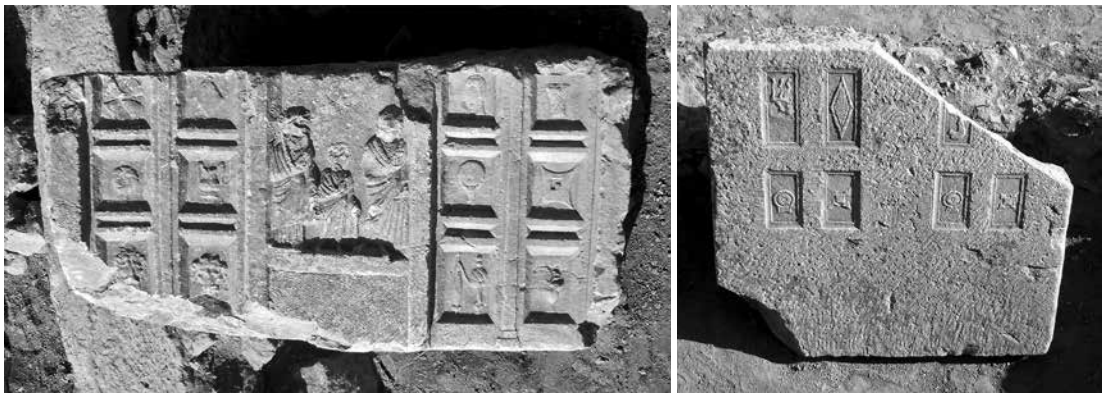

FIG. 15 Middle slabs of Heroon facade grave monument uncovered in "South Church" (Photo: A.O. Alp).

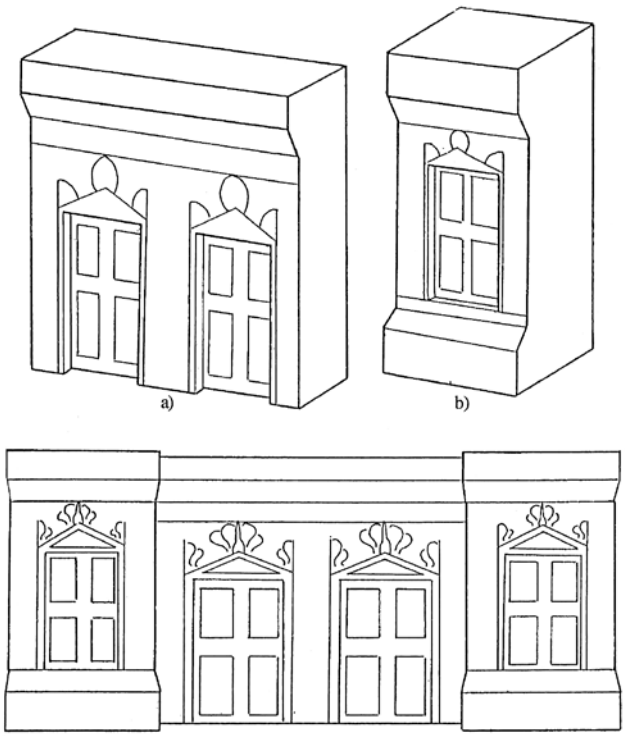

FIG. 16
Main components
of Heroon facade
grave monument
(Drew-Bear and Lochmann
1996, figs. 2-3).

FIG. 17 Doorstone grave steles in Han necropolis (Photo: A.O. Alp).

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Late Antique Industry in the Urban Public and Private Spaces of Asia Minor

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Abstract

The ubiquity of industrial activities and their movement into what were once public buildings have been seen as defining features of late antique urban change. This paper presents a current synthesis on the material evidence of late antique (late third through seventh centuries AD) industry in Asia Minor, in both public and private contexts. Drawing together a dataset of over 100 production contexts in 39 cities, this article identifies large-scale trends in the archaeological record of urban industry in order to address some fundamental questions regarding: the degree to which this was a region-wide phenomenon, the phasing of this process in different building forms, and the evidence of different industries in this process. In so doing, it then considers the results of this study in relation to the wider debate concerning the slow and phased trends of continuity and change in late antique urbanism.

Keywords: ancient industry, Asia Minor, late antiquity, urban development, ancient housing

Öz

Geç Antik Dönem'deki kentsel değişimin belirleyici özellikleri arasında endüstriyel faaliyetlerin yaygınlığı ve bu faaliyetlerin bir zamanlar kamu binaları olan yapılarda yürütüldüğü görülmektedir. Bu makale, Küçük Asya'daki Geç Antik Dönem (MS 3. yüzyıl sonu ve 7. yüzyıl arasında) endüstrisinin hem kamusal hem de özel bağlamdaki maddi kanıtları üzerine güncel bir sentez sunmayı amaçlamaktadır. Makalede 39'dan fazla şehirde bulunan 100'ün üzerindeki üretim bağlamından oluşan veri kümesi tasvir edilmektedir. Bir araya getirilen veri kümesi ile birlikte bu eğilimlerin bölge çapında bir fenomen olma derecesi, farklı yapı tiplerindeki bu gelişimin aşamaları ve farklı endüstrilerin bu süreçteki kanıtları ile ilişkili bazı temel sorunları ele alabilmek için kentsel endüstrinin arkeoloji kayıtlarındaki büyük ölçekli eğilimleri belirlenecektir. Bahsedilen verilerin ışığında, bu çalışmanın sonuçları Geç Antik Dönem şehirciliğinde yavaş ve aşamalı süreklilik eğilimleri ile ilgili daha geniş tartışmalarla değerlendirilecektir.

Anahtar Kelimeler: antik endüstri, Küçük Asya, Geç Antik Dönem, kentsel gelişim, antik konutlar

Introduction

The appearance of workshops encroaching upon streets and agorae, ceramic kilns established in public bathhouses, and press installations in what were once luxurious urban mansions, in the cities of Asia Minor between the late third and seventh centuries AD, all have been seen

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as typical features of the changing cityscapes of late antiquity and have been cited on various sides of the late antique urban resilience versus decline debate.[1] Often having received limited attention compared to other types of interventions related more directly to imperial, civic, military, or Church institutions,[2] the ever-growing corpus of workplaces associated with the daily lives of trades and craftspeople in late antiquity is nonetheless beginning to receive closer inspection in several regions of the Mediterranean world, and is drawing these small-scale archaeological contexts into more nuanced debates on urban development of the period.[3] Especially in the last three decades, scholars have demonstrated a growing interest in the non-monumental aspects of late antique urban life, paying attention to the sub-elite sections of ancient society and thus offering insights into the daily activities of late antique city dwellers of all socio-economic standing.[4]

Whether the processes of spreading industry and craft activity index urban decline, stagnation, or growth, however, is far from clear and almost certainly not so simply classified.[5] Among some scholars, the presence of industry in the heart of the city has been seen as exemplifying the breakdown of urban life, as weakened civic institutions lacked the political will or means to enforce zoning rules and public property rights.[6] According to others, industry and its continued presence in cities has been viewed as being supported by traditional institutions - either as a strategic means by which civic authorities attempted to exact rents or as an expression of their encouragement of urban economic investment through professional associations.[7] On all sides of these debates concerning urban change, the appearance of industry within the former civic hearts of cities has associated spatial reorganization of economic activity with the changing character of late antique urban life.

The difficulties of easily characterizing late antique urban development is likewise paralleled in the literature on economic performance and development of the period. Traditionally, the time had been characterized as one of economic difficulty - affected by various crises and the breakdown of large-scale, long-distance trade networks. However, it is increasingly clear that the economic prospects of different regions underwent highly heterogeneous processes of economic development, and many regions, particularly in the eastern Mediterranean, experienced periods of relative prosperity from the fourth through sixth centuries AD.[8] In the urban contexts of Asia Minor, like other regions of the eastern Mediterranean, there also is recognition for an increase in the number and visibility of small shops and workshops, and this phenomenon has been used to evidence a vibrant local economy.[9] Indeed, scholars have emphasized that the presence of so much industry seemingly maintained by full-time, specialized craftspeople should be interpreted as evidence for the persistence of thriving urban economies and even a growing commercial and industrial character of these late antique cities.[10]

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1 For this debate and further references, see Grig 2013; Lavan 2020a, 1-4.

2 Ward-Perkins 1999.

3 Dark 2004.

4 Bes 2007 (with further references). See also Lavan 2020a, 4-5.

5 This section is not intended to be a literature review on late antique urbanism in Asia Minor, but rather a brief introduction to the ways that industry has been interpreted within the framework of urban change.

6 Haldon 1999, 9; Liebeschuetz 2001, 297-98.

7 Ward-Perkins 1999, 242-43; Saradi 2006, 166-68.

8 Giardina 2007, 745-48.

9 Lavan 2012.

10 Alston 2002; Carrié 2002, 322-24; Brogiolo 2006, 272; Zanini 2006, 403-4.

Given the conspicuousness of industry in these economic processes, understanding their place and role in transforming urban building and economic lifeways is vital. Yet, while industry's widespread presence has been well-noted, most studies have tended to handle the spaces where it occurred in general terms, evaluating industry encroachment as a singular phenomenon (often lumped together with domestic 'squatter' contexts); focusing narrowly on its appearance in once public buildings, while overlooking private contexts (i.e., occupation in earlier shops, workshops, and houses);[11] and failing to appreciate the variable roles of different industries. Moreover, studies and archaeological reports paying attention to the role of industry in the late antique cityscape have focused on individual archaeological sites, without considering broader (regional or supra-regional) processes that may express large scale trends and developments.

This article presents the first comprehensive and systematic archaeological study (based on the current published record) of late antique industry in Asia Minor. Integrating the evidence of public and private contexts, it identifies general patterns in where, when, and by whom they were transformed and what this might have meant for urban lifeways. It also contributes to a growing body of regional studies of this sort that collectively evaluate change in urban building use at the regional scale for different parts of the late antique world. Such attempts at synthesis serve two purposes. First, they demonstrate patterns and help to identify outliers. While there have been several high quality studies that address changes in urban space in late antiquity (e.g., Kibyra,[12] Tripolis ad Maeandrum,[13] Laodikeia,[14] Sardis,[15] Aphrodisias,[16] Anemourion,[17] Patara[18]), these might be understood as microhistories. By contrast, in the region of Asia Minor, there have been fewer attempts made that take a particular feature of those changes (i.e., the movement of industry into public and private urban spaces) and consider the wider patterns of that process. The latter is important because it helps to track broader trends, surpassing the individual site level, as well as identify local outliers.

Second, attempts at synthesis for Asia Minor provide a means of contextualizing the regional trends within the larger late antique world - highlighting regional specific features of this phenomenon as well as more general patterns. Indeed, similar observations of widespread industry movement into public and private buildings during late antiquity have been noted in several western provinces (i.e., Britain,[19] North Africa,[20] Italy,[21] Spain[22]). This growing collection of regional studies increasingly highlights how different regions of the Mediterranean experienced variable trends in urban development during late antiquity[23] and is helping to nuance our understanding of these processes.[24]

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11 This situation for late antique Asia Minor and the Near East notably contrasts recent work on household industries in classical Greece (Larsson Lovén 1998, 2013) and Roman Italy (Flohr 2012).

12 Özüdoğru 2018.

13 Duman and Koçyiğit 2019.

14 Şimşek 2013; Şimşek and Bilgin 2018.

15 Rautman 2011.

16 Ratté 2001.

17 Russell 2002.

18 İşkan 2019.

19 Rogers 2011.

20 Leone 1999; Stirling 2001; Leone 2007.

21 Christie 2006. For late antique baths in Italy, Northern Africa, and Palestine, see Maréchal 2020.

22 Kulikowski 2004.

23 Potter 2011, 247-48.

24 For examples, see Saradi 2006; Zanini 2006.

Such regional studies demonstrate that these urban changes were not exclusive to any region, yet each underwent a regionally specific process. Fitting Asia Minor into these wider trends is extremely important, as it is a region with a long history of urbanism as well as an extended research tradition. Having been among the most urbanized regions of the Roman Empire[25] and having hosted some of the preeminent cities of the classical and late antique worlds (e.g., Ephesos, Pergamon, Miletos, Perge, Side), Asia Minor[26] provides an important, large, and chronologically robust archaeological dataset with which to investigate industry's urban place during the Late Antique period.[27] Furthermore, the archaeological record of late antique urban industry has been attracting greater attention in recent years with a tangible upswing in the number of archaeological projects across Turkey reporting on late antique production contexts, particularly at smaller regional centers,[28] and affording a relatively robust dataset. Similarly, the increasing focus on ancient housing studies in the region has revealed new information on late antique domestic architecture and private living practices, revealing that industry and crafts were frequently integrated in house contexts. Alongside the better known upper class residences that have recently been investigated (e.g., at Sagalassos,[29] Hierapolis,[30] Tripolis,[31] Aphrodisias[32]), new data on more modest house forms, often integrating productive and commercial activities, has become available too.[33] As a result, a regional study on industry in late antique public and urban contexts in Asia Minor is timely.

Questions, Dataset, and Challenges

The agora, basilica, theater, baths, bouleuterion, and stadium characterized the urban armature of Roman-period cities in Asia Minor.[34] Defined according to their classical forms and functions, it is widely held that these building types - once intimately associated with classical civic life - began in late antiquity to be extensively appropriated for, amongst other activities, industry and manufacturing.[35] Alongside these public structures, late antique industrial activities also started to become visible within large elite urban mansions that had been built in the fourth and fifth centuries AD, sometimes with multiple types of economic activity co-existing within the same house.[36] This raises a series of questions that have yet to be fully or systematically evaluated. Namely, how widespread was this urban phenomenon? Is the evidence from Sardis or Anemourion, which is so widely cited in secondary

25 The Barrington Atlas (Talbert 2000) cites 176 major cities for Asia Minor, while Willet (2015) has documented 446 autonomously governed settlements and communities.

26 For the development of the cities of Asia Minor in late antiquity, see Jacobs 2012, 2013; Niewöhner 2017.

27 This has, also and in more general terms, been suggested earlier by Zanini (2006, 399).

28 This trend in reporting on production sites is evidenced, for instance, in *Anmed* - an international, bilingual journal covering the archaeological reports of Turkish Mediterranean regions, published annually by AKMED since 2003. An increasing number of excavated sites is similarly seen in the yearly reports of the symposium on excavation results, organized by the Turkish Ministry of Culture and Tourism since 1979 *(Kazı Sonuçları Toplantısı)*.

29 Uytterhoeven et al. 2014.

30 Zaccaria Ruggiù 2019b.

31 Duman and Koçyiğit 2019.

32 E.g., Lockey 2016; Berenfeld 2019.

33 See also Flohr 2016, 149. For the growing interest in residential / commercial / productive structures in the last years, see Zanini 2006, 373-74.

34 Parrish 2001.

35 Haldon 2006, 617-18.

36 Uytterhoeven 2018, 2019.

literature,[37] unusual or indicative of wider patterns in Asia Minor or even in the broader late antique world? Was this an *ad hoc* and individual process of industry moving into buildings and appropriating them, or can some degree of patterning be seen that reflects more strategic decision making and cultural practice?

In answer to the scale of this phenomenon, it is clear that the occupation of public and private buildings was widespread across many cities and that it occurred in great numbers. In fact, our dataset of late antique industry[38] now contains information on 99 craft production contexts, 19 shop rows, 10 food production contexts (mills, presses, bakeries, fish processing), and four service industry contexts (inn, *taberna*, stables). These were found in 86 renovated buildings dated to the Late Antique or Early Byzantine periods (from the late third through the seventh centuries AD). These contexts derive from 39 cities, with western and southern Anatolia better represented (due to regional research biases). Classifications of craftspaces were defined according to the type of material worked (stone, glass, ceramics, metal, textile, woodworking, pigment production) (fig. 1). Additional subdivisions were made when very different production methods and technologies were utilized for working the same material category. This occurred in the case of stoneworking (stone cutting differentiated from lime burning) and in the case of metalworking (sub-classified according to casting or smithing). This resulted in contexts representing seven major (material) craft industries (fig. 2).

Dating of archaeological contexts is known to be problematic for this period,[39] particularly for the late sixth to eighth centuries AD.[40] The dating of most contexts employed in this analysis is based on stratigraphic association (*terminus post quem*) with coins or known pottery types, while sometimes the phasing or types of building techniques can also give some chronological indications.[41] In some cases, the products of the workshops are datable and are well established in chrono-typological terms. These offer a close association between the activities of the worksite and the dated material (e.g., Elaiussa-Sebaste LR1 amphora kilns, Antiochia ad Cragum amphora kilns, Sagalassos ceramic workshops). Occasionally, the phasing of a building (including its late phase prior to the appearance of industry) is supported by the *terminus post quem* of an epigraphically attested date (e.g., Sagalassos' Roman baths,[42] Sardis' synagogue[43]). Given the often local character of pottery types and the nuances of stratigraphic associations, we have relied on the dating provided by the excavators, who are most familiar with their contexts and regional sequences, on the understanding that future additional finds may lead to refinements of the current chronological framework. Moreover, in order to ensure that we are discussing contexts with reliable chronological associations, only in-situ contexts associated with reused structural remains have been included in the subset for analysis.

A caveat remains in that, despite the growing corpus for Asia Minor, studies on urban industry continue to be confronted with challenges related to both the limitations of the

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37 Saradi 2006; Lavan 2012; Commito 2019, 125-28.

38 Published sources include site publication volumes (Aphrodisias, Laodikeia, Sardis, Sagalassos, Hierapolis, Elaiussa-Sebaste, Tripolis, Patara), as well as regional journals *(Anmed*, *Adalya*, *Anatolica, Anatolia Antiqua, Cedrus, Colloquium Anatolicum, Olba)* and the yearly reports of the *Kazı Sonuçları Toplantısı*, mentioned above.

39 For a discussion, see Wickham 2005; Lavan 2009, 804-5.

40 Vroom 2005; Armstrong 2009; Vionis et al. 2009; Elton and Jacobs 2019, 6; Lavan 2020b, 1-8.

41 For the dating of private houses based on these criteria, see e.g., Duman and Koçyiğit 2019, 79-100; Zaccaria Ruggiù 2019c, 12-16.

42 Waelkens et al. 2010, 252.

43 Rautman 2011, 11-13.

archaeological record of industry, as well as prevailing archaeological research designs. As regards the former, certain craft industries are more conspicuous archaeologically. Trades such as leatherworking or carpentry, known from contemporary textual sources, are rarely identified. By contrast, industries dependent on high-temperature heat treatment have left furnaces, scorched earth, wasters, charcoal, and ash deposits, and activities reliant on major infrastructure involved basins, water systems, and tanks. All are highly visible in the archaeological record with dozens of these worksites identified (see figs. 1 and 2 for relative counts).[44] Additionally, major renovations of earlier workshops and urban mansions during the Late Roman and Early Byzantine periods often obliterated earlier phases of occupation[45] - consequently, late antique and early Byzantine workshop sites are better represented archaeologically than comparable sites dated to the earlier Roman period in the region. This makes directly comparing earlier placement and structural organization of Roman industry sites to those of the Late Antique period problematic. Despite these limitations, the corpus compiled for Asia Minor offers new and significant observations.

Building Types and Industry Appropriation

The reuse of earlier buildings, particularly by industry, has been viewed as a 'pragmatic' response to increasing numbers of abandoned buildings falling into ruin.[46] One of the motivations for repurposing such buildings (both public and private) was probably, in part, an interest in acquiring centrally-placed locations with a suitable layout, while avoiding the costs of demolishing and leveling standing structures.[47] Indeed, industrial appropriation of public and private buildings was widespread, and few building types (agora, basilica, theater, temple, baths, stadium, and mansion) appear to have been wholly spared of industry occupation at some time between the late third and seventh centuries AD. Also, there are no clear correlations between individual industries and specific building types; that is, there was no public or private building type that, across the region, was more consistently appropriated by a particular type of industry.

Patterns observed in our dataset, however, suggest that there may have been additional factors at play influencing which buildings were occupied and when. Using the dataset of industrial contexts, it was possible to establish the earlier function of 76 buildings that were renovated for late antique industry. This subset of the total database represents all of the instances for which the earlier phase of the building's use has been identified.[48] The subset also only accounts for single buildings; thus, while there are several instances in which multiple units or contexts were renovated in the same structure, each building that was given over to industry was counted as a single example of changing function.

Based on the available documented cases, it is clear that some building types more frequently have been reported with industry renovation (fig. 3). Bath complexes (N=18) were over three-times more likely, and agorae (N=11) were nearly two-times more likely, to have

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44 Yet even when such materials are preserved, industry attribution is not always straightforward. This is illustrated, for example, by problems identifying oil versus wine installations; see Brun 1993; Foxhall 1993.

45 This is especially the case with shops, which tended to be reused in the later periods, as well as with houses, which frequently remained in use for many generations.

46 Haldon 2006, 617. For examples to the contrary, see Ward-Perkins 1999, 240-44.

47 Barker 2010.

48 The earlier building function is unknown or unrecorded for 10 cases.

hosted late Roman and early Byzantine industry than other public building types, such as temples, theaters, *odeia*, and stadia (fig. 3).[49] This suggests that agorae and bath complexes may have been preferentially viewed as suitable (or even desirable) for the installation of industry. Indeed, even when excluding demolition and recycling activities, agorae and especially baths still remain by far the most commonly utilized public spaces for industrial appropriation. When considering private building contexts, urban mansions and shops were also commonly renovated for industry use. Most notably all of the large elite residences (investigated thus far) underwent substantial structural and infrastructural interventions in the sixth and seventh centuries AD,[50] and most of them acquired some kind of industrial activity (N=11).

Shops and Small-Scale Production: Some smaller-scale private buildings continued in their earlier economic use and appear to have offered a model that was little adapted for the changing economic needs of the fourth to seventh centuries AD. This is particularly evident with regard to rows of shop spaces (N=15), but also independent workshops (N=3).[51] Regardless of their location (e.g., in commercial agorae, along streets), shop rows tended to be continually used for commerce and industry from the Roman through the Early Byzantine periods, with changes sometimes made to the dimensions, arrangements, and construction types of the partitioning walls and floors of the shop units, as well as to their infrastructure. Distinguishing the function of such spaces (craft production, commercial sale, food and drink establishments) is notoriously difficult.[52] In several cases, however, these spaces appear to have been used for production activities, including glassworking, dye / pigment production, metalworking and smithing, as well as ceramic manufacturing.

Roman-era shops therefore continued to be used as late antique shops, as attested at, for instance, Laodikeia,[53] Knidos,[54] Sagalassos,[55] or Soloi-Pompeiopolis.[56] Yet during these later periods, other types of buildings were also adapted in ways that converted them into shop-like spaces. For example, the design of a small, one- to two-room space, often with a front portico, was exploited for the adaptation of other public buildings. This scenario has been observed in the outer gallery of the Theater at Side[57], the portico of the 'Small Temple' at Kyme,[58] and in the 'Sacred Stoa' at Priene.[59] In this renovation process, design features and areas of earlier buildings, particularly *stoai* and porticos, were segmented from the rest of the larger building complex by inserting partitioning walls. It is difficult to assess the extent to which the number of commercial spaces may have increased in the Late Antique period, as it is not possible to discern whether these represent more urban producers and sellers in the city or whether these were simply shopkeepers and small-scale producers moving across the city-scapes.

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49 This is based on a subset of the dataset (N=44) with clear identification of the building type and for which centurial dating is available.

50 Uytterhoeven 2019.

51 The distinction between shops (as commercial units) and workshops (as production units) is to some extent necessarily arbitrary, as these spaces were often cleared before abandonment leaving little trace as to their specialized economic function.

52 Baird 2007; Holleran 2017; Ellis 2018.

53 Şimşek 2016.

54 Doksanaltı et al. 2017; Doksanaltı 2020.

55 Poblome et al. 2015.

56 Yağcı 2015; Yağcı and Yiğitpaşa 2016.

57 Alanyalı 2010.

58 La Marca 2017, 243.

59 Fildhuth 2017, 51-54.

Furthermore, the majority of shops were not only maintained, but some of their porticos were embellished with mosaic pavements,[60] e.g., the 'Alytarchos Stoa' at Ephesos;[61] the 'Byzantine Shops' of Sardis,[62] and the 'Library East' workshops of Sagalassos.[63] The use of statuary in such contexts has similarly been documented, e.g., along the 'North-South Colonnaded Street' at Sagalassos.[64] Thus, at a time when earlier public buildings were being repurposed for activities such as industry, these public passageways were often being embellished - perhaps speaking to the sorts of new urban aesthetics described by Jacobs[65] being applied to street contexts,[66] or to the growing role of production and commercial activities among the daily life practices of the city's inhabitants.[67] Whether any or all of these factors may have influenced the persistence of this building form, is challenging to ascertain, yet it is undeniable that at a time of major urban reworking, these buildings were not only being curated, but also elaborated.

Building Types and Chronology of Industry Occupation: Apart from shops, most other urban building forms were also undergoing renovation in late antiquity. It seems that the spatial properties of certain buildings made them more or less suitable for industry. However, this process appears to have happened across several centuries, and in order to track these changes, a subset of the dataset (N=44 buildings) was selected for which centurial dates were provided by the excavators (figs. 4 and 5). A series of box-plots then was made for each building reflecting its dates of occupation by industry (fig. 5). Of course, across the region there are inconsistent styles of date reporting and differently reliable dating evidence. Consequently, projects variably reported to the century, half-century, or quarter-century. To accommodate these differences, a method was developed to track date ranges with multiple degrees of confidence. In cases of quarter-century or half-century reporting, these were indicated as simple 'boxes'. However, in cases with coarser dating, the greatest possible duration of occupation as reported by the excavators was presented as 'whiskers' on the box plots, while averaged start-dates and end-dates were used to define the 'box' indicating a more restricted date-range. For example, for an occupation dated by the excavators as *third through fifth centuries AD,* the 'whiskers' extended between AD200 and AD499, while a 'box' bracketed AD250 and AD450. In instances for which a single start or end date was not provided, a dotted line was provided from the known date. The chart therefore includes as many examples as possible, while accounting for variability in date reporting. This phasing is presented in figs. 4 and 5, and the results demonstrate a complex, multi-century process of industry occupying reused buildings.

In general, the repurposing of urban public buildings for industry at most sites began by the late third century AD and became common by the fourth century AD, with industrial occupation often continuing to move into new urban spaces into the early seventh century AD. Yet this repurposing seems to have occurred in different building types at different times. Industry occupation of theaters, for instance, is documented beginning in the late third / early fourth century AD; that of agorae in the late fourth / early fifth century AD, around the time that

60 Lavan 2020a, 48-51.

61 Quatember et al. 2009.

62 Crawford 1990, 5-6.

63 Poblome et al. 2015, 214-15.

64 Jacobs and Stirling 2017.

65 Jacobs 2013.

66 Indeed, the colonnaded street, as an architecturally elaborated street, was already a well-established architectural form in the region (Burns 2017).

67 Carrié 2002; Zanini 2006.

shops were also commonly renovated (in the early fifth century AD); and that of bath complexes in the mid / late sixth century AD. In late antique urban mansions, this can generally also be dated to the mid to late sixth century AD. Of all building types, agorae, bath complexes, and private residences offer the best insights in the introduction and development of late antique industries. In contrast, other building types are either under-represented in the dataset or present no clear chronological trend.[68]

In the case of the agorae, changes have been interpreted as reflecting an increasingly commercial character of these public spaces in late antiquity, drawing in traders in order to meet a concentrated consumer market.[69] Dual agorae had been a feature of many cities in Asia Minor since the Hellenistic period, when urban building programs separated administrative and ceremonial functions from commercial agorae.[70] Lavan suggests the abandonment of civic agorae in the East as an urban trend already by the fourth and fifth centuries AD,[71] with, on the other hand, many agorae continuing to be renovated and occupied into the sixth century AD.[72] The former is consistent with our findings,[73] but our results suggest that such industry interventions and occupation continued into the seventh century AD. Recent evidence also suggests that, in cities believed to have had only one agora (e.g., Xanthos,[74] Kyme,[75] Andriake[76]), these agorae were even occupied by industrial furnaces in the late fourth / fifth century AD.

Concerning the civic agorae, public buildings required renovations for their new commercial and industrial purposes. Such occurs at Priene, where the northern 'Sacred Stoa' of the civic agora was converted into shop units with front porticoes sometime after the fifth century AD.[77] In the case of commercial agorae with Roman-period shops, these also began to accommodate industries reliant on larger infrastructure (e.g., Ephesos' late fourth / early fifth centuries AD 'Tetragonas Agora' glass furnace;[78] Xanthos' *stoai* smithies;[79] Iasos' late Roman stoa furnaces;[80] Rhodiapolis' central court limekiln[81]). And in some cases, agorae underwent a more dramatic renovation whereby both indoor and outdoor areas were reorganized. At the 'North Agora' of Hierapolis, shop units running along the western and northern perimeters were renovated and transformed into ceramic workshops and adjacent outdoor areas were segmented for the installation of ceramic kilns in the fifth century AD,[82] while the eastern areas of the agora

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68 Temple reoccupation by industry offers no clear pattern, and the datasets for *odeia* and basilicae are too small at present to offer an interpretation.

69 Mango 2000, 191-92; Lavan 2006.

70 Mert 2016, 386-92.

71 Lavan 2006, 236; 2020a, 263-338.

72 Lavan 2006, 206, 224-30; 2020b, 339-73.

73 An exception to this is found at Sagalassos, however, where the civic agora ('Upper Agora') took on a more mixed, industrial / commercial character only in the mid sixth century AD, possibly in relation to the installation of a Christian basilica in the courtyard of the earlier Bouleuterion (Putzeys 2007, 289-385).

74 Varkıvanç 2013, 2014.

75 La Marca 2017.

76 Aygün 2017.

77 Fildhuth 2017, 51-54.

78 Czurda-Ruth 2005.

79 Varkıvanç 2013, 2014.

80 La Marca 2017.

81 Çevik et al. 2008.

82 Mastronuzzi and Melissano 2007; Semeraro 2017, 106-7.

court were used for lime burning and stone curation.[83] At Andriake, the entire 'Harbor Agora' was converted into a murex dye processing plant with both indoor and outdoor spaces.[84]

As noted, the Asia Minor data show that the industrial repurposing of public bath complexes became widespread by the mid sixth century AD (figs. 4 and 5), with evidence for industrial works for stripping the building and recycling its materials (i.e., liming of marble), as well as for workshops employing raw materials that would have been supplied from sources outside of the building (i.e., clays for ceramics). This is not to suggest that baths were continuously used for public bathing until the mid sixth century AD, however. At some sites, parts of the bath complexes had already been converted for other purposes. For instance, at Sagalassos, the bath industries were preceded by early sixth century AD communal dining in the former frigidarium[85], and it was only in the mid sixth century AD that this building was clearly taken over by industry. Similar evidence for large-scale dining activities (in this case, according to a *taberna* organization) has been proposed for the 'Bath-Palaestra Complex' at Metropolis and dated to the third century AD, with a glass workshop subsequently installed in the sixth century AD.[86] At Sardis, inscriptions in the 'Marble Court' suggest that the hall may have been used for late Roman civic meetings of the *Boulè* and *Gerousia*, and in the late third / early fourth century AD the south wing of the palaestra was converted into a synagogue.[87] The reorganization of these larger spaces in some cases appears to have taken place prior to the arrival of industry, with earlier phases of appropriation that were sometimes communal or semi-public in character (i.e., civic meetings, communal dining, religious meetings).[88] In the cases of the 'East Church complex' at Labraunda[89] and the 'Balatlar Church' at Sinope,[90] Roman baths likewise were converted for community use, but these were maintained through late antiquity, while, elsewhere, where the first renovated function was not maintained, the buildings may have been made available for industry use at these later dates.

As regards the late antique urban mansions, pinpointing the exact moment when the presence of industry started to become widespread is not easy and most of the dates remain rather imprecise. At many sites in western Anatolia, however, a substantial transition seems to have occurred around the mid sixth century AD,[91] coinciding with the period of industry occupation observed in the public bath complexes. Whereas the luxurious standards of the late fourth and fifth centuries AD seem to have been maintained into the early sixth century AD, this clearly changed later in the century, in spite of the fact that the occupation of the structures largely continued into the seventh century AD. All mansions investigated thus far show evidence for subdivision of the one-family residences into smaller living units for multiple

83 Arthur 2006, 117-18.

84 Aygün 2017.

85 This use as a dining hall is evidenced by a dedicatory inscription in the floor mosaic, see Waelkens et al. 2010, 252. For the faunal remains related to these dining activities; see De Cupere et al. 2015, 193.

86 Aybek 2016, 18-20.

87 Yegül 1986, 5, 16; see also Rautman (2011, 11-13) for a general discussion on continued civic investment in the 'Baths-Palaestra Complex'.

88 Lavan (2003, 180) has noted the use of buildings for new purposes in late antiquity as a widespread trend.

89 Blid 2016.

90 Köroğlu 2020, 227-28.

91 For the issue of dating interventions in house contexts, especially from the mid sixth century AD onwards; see Ellis 1988, 565.

families,[92] removal and recycling of building materials, and repurposing of spaces for storage, rural activities, and industrial production. In these renovated urban mansions (which continued to be primarily used for domestic purposes), industries involved in recycling building materials, especially for lime burning, were among the most commonly observed. Many different spaces within the structures were subjected to this industry use, including entrance vestibules, as shown by the lime kiln in Sagalassos' 'Urban Mansion'[93] (fig. 6) and the lime slaking activities organized in the southern residence in Sardis' 'Sector MMS / S'[94] and Tripolis' 'House with the Mosaics'.[95] However, most evidence comes from (formerly) large reception spaces and private baths. For instance, while stone dyeing / fulling basins were arranged in the apse of a representative hall of the late antique residence in 'Sector MMS / S' at Sardis[96] and marble and stucco were recycled in one of the earlier reception rooms and some neighboring spaces of the 'House of the Doric Courtyard' at Hierapolis,[97] the private baths of the 'Southern Roman Villa' at Laodikeia were transformed into a glass workshop.[98] Thus, for the late antique residences the currently available evidence allows broadly distinguishing between the 'heydays' of the mansions in the period between the late fourth / early fifth century AD and mid sixth century AD on the one hand, and their phase(s) of transformation between the mid sixth and mid seventh century AD on the other.

Discussion: General Trends in the Data

Several general observations can be made regarding the trends in the regional dataset for industry appropriation of public and private buildings. The phased relocation of manufacturing activities into different building types suggests that shifts in economic practices and civic priorities were significant, selective, and gradual. The phasing of industry renovations in different building types cannot simply be explained solely by urban depopulation models and opportunistic appropriation of abandoned structures - whereby one might expect a more arbitrary selection and timing of architectural renovation. Rather, the fact that there seems to be some loose chronological structure to the process and that industry moved into different building types with greater or lesser frequency at these times, suggests that this was not a random phenomenon. Rather, this structuring more likely reflects shifting uses and priorities concerning the availability of built environments, with large domestic mansions and bath complexes sometimes maintaining local uses until quite late (the mid sixth century AD) and only then being converted for industry use. Thus, some degree of social decision-making was directing this process, based on the perceived opportunities and changing priorities of the late antique urban communities. When it ultimately did occur, however, it happened at a particularly conspicuous scale.

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92 This is suggested by the construction of ovens and fireplaces at various places in the mansions, as is, for instance, attested in the 'Urban Mansion' at Sagalassos (fig. 6), the 'House with the Mosaics' at Tripolis (Duman and Koçyiğit 2019, 98-99) and the Late Antique houses in 'Sectors MMS and MMS / S' at Sardis (Rautman 1995, 62; Greenewalt and Rautman 2000, 653-54).

93 Uytterhoeven et al. 2014, 376.

94 Greenewalt and Rautman 2000, 648-49.

95 Duman and Koçyiğit 2019, 98-99.

96 *Archaeological Exploration of Sardis 1989-1990,* 52.

97 Zaccaria Ruggiù 2007, 219-21; Zaccaria Ruggiù and Cottica 2007, 157; Zaccaria Ruggiù and Canazza 2011, 219-20; Zaccaria Ruggiù 2019a, 48, 53-55. Stucco recycling seems to have also occurred in the neighboring 'House of the Ionic Capitals', see Bortolin 2019, 69; Zaccaria Ruggiù 2019a, 54, n. 89.

98 See further Şimşek 2009, 422; 2013, 302. The glass workshop is also discussed by Taştemür 2018, 217-18.

These developments are in line with observations made for other regions of the late antique world. In this sense, the pattern of building reuse and adaptation by industry is something observed more widely. However, regional comparisons also highlight local variations, especially regarding chronological patterns, that reinforce an image of regional heterogeneity in terms of economic development. Particularly informative is the study by Rogers of late Roman Britain, where the process began earlier and involved different types of buildings and industries. In this region, industrial production most commonly occurred in the forum-basilica complexes, with most documented cases related to metalworking industries. These seem to have taken place primarily from the late third through fifth centuries AD, with much evidence in the fourth century AD.[99] Additionally, the multi-regional comparative study by Underwood highlights urban changes in the western Mediterranean as following regional trends that can be observed already in the third century AD and involved the reuse of buildings for a range of activities, including industry works.[100] These local variations in time clearly indicate that the different regions of the late antique world underwent similar processes but were, nevertheless, characterized by a specific political, socio-economic, and cultural reality defining them.

Conclusion

Motivated by the growing interest in the daily lives of ancient city dwellers of different layers of the society, industrial transformations of public and private spaces have recently attracted much attention in urban studies - in part due to their sometimes stark contrast to the urban environments of earlier periods and in part due to the larger social and economic implications of these reorganizations. Large-scale regional studies conducted in different parts of the late antique world have also highlighted divergent chronologies and processes in these urban changes across the Mediterranean. In line with these regional approaches, this study intended to move beyond the individual site level, by focusing on broader trends and developments in one of the most urbanized regions of the late antique world. In laying out this corpus from Asia Minor, what is clear, based on the current evidence, is that these processes of industry appropriation of public and private space, including the stripping and recycling of building materials, as well as the repurposing of spaces for industrial production, occurred across the entire region. They have been observed in large late antique *metropoleis*, such as Ephesos, as well as smaller regional centers, such as Rhodiapolis and Kyme, following broadly similar chronological developments. They appeared everywhere in Asia Minor, regardless of geography - from the harbor cities of Anemourion, Elaiussa-Sebaste, and Patara, to the mountain sites of Sagalassos and Kibyra. The pattern is widespread.

This study has offered a view on the regional changes within the urban environments of late antique Asia Minor and the patterning of those changes - particularly in terms of the chronology of building transformations. Importantly, we have identified general trends across the region for industry use of specific architectural and infrastructural settings, with certain building types preferred. We have also demonstrated that this was a complex process in changing urban space, with parts of the structures occupied by industry, while other parts sometimes retaining earlier functions. Moreover, based on the currently available data, industry intruded into different types of public and private buildings at various moments in

99 Rogers 2011, 130-48.

100 Underwood 2019.

time between the late third / early fourth century AD (starting with theaters) and mid to late sixth century AD (ending with public baths and private mansions) and these chronological trends for specific building types are similar in many cities across Asia Minor. The image that consequently emerges is one that is complex and dynamic, reflecting a significant transition within cities of Asia Minor - a transition in which craftspeople and artisans clearly played a central role.

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Bibliography

Alanyalı, H.S. 2010. "Side Tiyatrosu ve Çevresi 2009 Yılı Çalışmaları / Work at and around Side Theatre in 2009." *Anmed* 8:94-103.

Alston, R. 2002. *The City in Roman and Byzantine Egypt*. London: Routledge.

"Archaeological Exploration of Sardis 1989-1990, Director's Report." *Harvard University Art Museums Bulletin* 1989-1990:50-53.

Armstrong, P. 2009. "Trade in the East Mediterranean in the 8th Century." In *Byzantine Trade, 4th-12th Centuries. The Archaeology of Local, Regional and International Exchange: Papers of the Thirty-Eighth Annual Spring Symposium of Byzantine Studies, St John's College, University of Oxford, March 2004*, edited by M. Mundell Mango, 157-78. Publications of the Society for the Promotion of Byzantine Studies 14. Farnham, Surrey / Burlington, VA: Ashgate.

Arthur, P. 2006. *Byzantine and Turkish Hierapolis (Pamukkale). An Archaeological Guide*. Istanbul: Ege Yayınları.

Arthur, P. 2012. "Hierapolis of Phrygia: The Drawn-Out Demise of an Anatolian City." In *Urbes Extinctae: Archaeologies of Abandoned Classical Towns,* edited by N. Christie and A. Augenti, 275-305. Farnham, Surrey / Burlington, VA: Ashgate.

Aybek, S. 2016. "Metropolis'te Bulunan Üç Roma Hamamı: Şehir Planlama, Mimari Özellikler ve Sosyal Kontekst Bakımından Kısa Bir Değerlendirme." *Arkeoloji ve Sanat* 153:109-24.

Aygün, Ç.A. 2017. *Andriake Mureks Boya Endüstrisi / Andriake Murex Dye Industry*. Adalya Suppl. 14. Istanbul: AKMED.

Baird, J.A. 2007. "Shopping, Eating and Drinking at Dura-Europos: Reconstructing Contexts." In *Objects in Context, Objects in Use. Material Spatiality in Late Antiquity*, edited by L. Lavan, E. Swift, and T. Putzeys, 413-37. Late Antique Archaeology 5. Leiden / Boston: Brill.

Barker, S.J. 2010. "Roman Builders - Pillagers or Salvagers? The Economics of Deconstruction and Reuse." In *Arqueología de la construcción*. Vol. 2, *Los procesos constructivos en el mundo romano: Italia y provincias: Certosa di Pontignano, Siena, 13-15 de noviembre de 2008, orientales,* edited by S. Camporeale, H. Dessales, and A. Pizzo, 127-42. Anejos de AESPA 57. Madrid: Istituto Arqueología / Mérida: Archivo Español de Arqueología.

Berenfeld, M.L. 2019. *The Triconch House*. Aphrodisias, Results of the Excavations at Aphrodisias in Caria Conducted by New York University 11. Wiesbaden: Reichert Verlag.

Bes, P. 2007. "Technology in Late Antiquity: A Bibliographic Essay." In *Technology in Transition A.D. 300-650*, edited by L. Lavan, E. Zanini, and A. Sarantis, 3-39. Late Antique Archaeology 4. Leiden / Boston: Brill.

Blid, J. 2016. *Labraunda*. Vol. 4, *Remains of Late Antiquity*. Stockholm: Swedish Research Institute in Istanbul.

Bortolin, R. 2019. "La Casa dei capitelli ionici." In *Le abitazioni dell'insula 104 a Hierapolis di Frigia*, edited by A. Zaccaria Ruggiù, 61-98. Hierapolis di Frigia 12. Istanbul: Ege Yayınları.

Brogiolo, G.P. 2006. "The Control of Public Space and the Transformation of an Early Medieval Town: A Re-examination of the Case of Brescia." In *Social and Political Life in Late Antiquity*, edited by W. Bowden, A. Gutteridge, and C. Machado, 251-83. Late Antique Archaeology 3.1. Leiden: Brill.

Brun, J.-P. 1993. "La discrimination entre les installations oléicoles et vinicoles." In *La production du vin et de l'huile en Méditerranée / Oil and Wine Production in the Mediterranean Area,* edited by M.-C. Amouretti and J.-P. Brun, 511-37. BCH Suppl. 26. Paris: Boccard.

Burns, R. 2017. *Origins of the Colonnaded Streets in the Cities of the Roman East*. Oxford: Oxford University Press.

Carrié, J.-M. 2002. "Les associations professionnelles à l'époque tardive: entre munus et convivialité." In *Humana Sapit: Études d'Antiquité tardive offertes à Lellia Cracco Ruggini*, edited by J.-M. Carrié and R. Lizzi Testa, 309-32. Bibliothèque de l'Antiquité Tardive 3. Turnhout: Brepols.

Christie, N. 2006. *From Constantine to Charlemagne. An Archaeology of Italy AD 300-800.* Aldershot: Ashgate.

Commito, A. 2019. "The Cities of Southern Asia Minor in the Sixth Century." In *Asia Minor in the Long Sixth Century: Current Research and Future Directions*, edited by I. Jacobs and H. Elton, 109-42. Oxford: Oxbow Books.

Crawford, J.S. 1990. *The Byzantine Shops at Sardis*. Archaeological Exploration of Sardis Monographs 9. Cambridge, MA: Harvard University Press.

Czurda-Ruth, B. 2005. "Glas aus Ephesos: Hanghaus 1 und eine Werkstätte des 6. Jahrhunderts n. Chr. auf der Agora." In *Annales du 16e Congrès de l'Association Internationale pour l'Histoire du Verre. London, 7-13 September 2003*, edited by M.-D. Nenna, 158-61. Nottingham: International Association for the History of Glass.

Çevik, N., İ. Kızgut, and S. Bulut. 2008. "Rhodiapolis Kazıları 2007 / Excavations at Rhodiapolis in 2007." *Anmed* 6:63-69.

Dark, K., ed. 2004. *Secular Buildings and the Archaeology of Everyday Life in the Byzantine Empire.* Oxford: Oxbow Books.

De Cupere, B., J. Poblome, S. Hamilton-Dyer, and S. Van Haelst. 2015. "Communal Dining in the Eastern Suburbium of Ancient Sagalassos: The Evidence of Animal Remains and Material Culture." *HEROM* 4.2:173-97.

Doksanaltı, E. 2020. "Knidos 'Liman Caddesi' Geç Antik Dönem Atölye / Dükkan ve Buluntuları." *Olba* 28:377-419.

Doksanaltı, E.M., İ. Karaoğlan, C. Özgan, and E. Aslan. 2017. "Knidos Kazı ve Araştırmaları: 2015." *KST* 38.3:461-82.

Duman, B., and O. Koçyiğit. 2019. *Tripolis ad Maeandrum*. 2, *Geç Antik Dönem Konut Kalıntıları ve Buluntuları*. Istanbul: Ege Yayınları.

Dündar, E. 2015. "The Ceramics from Patara: Investigations, Productions and Trade. Past Studies - Future Projections." In *Kum'dan Kent'e Patara Kazılarının 25 Yılı. Uluslararası Sempozyum Bildirileri, 11-13 Kasım 2013 Antalya / From Sand into a City: 25 Years of Patara Excavations. Proceedings of the International Symposium of 11-13 November 2013 Antalya*, edited by H. İşkan and F. Işık, 199-227. Patara 7.1. Istanbul: Ege Yayınları.

Ellis, S.J.R. 2018. *The Roman Retail Revolution. The Socio-Economic World of the Taberna.* Oxford: Oxford University Press.

Ellis, S.P. 1988. "The End of the Roman House." *AJA* 92.4:565-76.

Elton, H., and I. Jacobs. 2019. "Introduction." In *Asia Minor in the Long Sixth Century: Current Research and Future Directions*, edited by I. Jacobs and H. Elton, 1-8. Oxford: Oxbow Books.

Equini Schneider, E., and T. Ritti. 2015. "Elaiussa Sebaste 2014 Yılı Arkeolojik Araştırmaları / Elaiussa Sebaste 2014 Archaeological Research." *Anmed* 13:23-29.

Fildhuth, J. 2017. *Das byzantinische Priene: Stadt und Umland.* AF 37. Priene 5. Berlin: Reichert Verlag.

Flohr, M. 2012. "Working and Living Under One Roof: Workshops in Pompeian Atrium Houses." In *Privata Luxuria - Towards an Archaeology of Intimacy: Pompeii and Beyond. International Workshop, Center for Advanced Studies, Ludwig-Maximilians-Universität München (24–25 March 2011)*, edited by A. Anguissola, 1-22. Münchner Studien zur Alten Welt. Ludwig-Maximilians-Universität München 8. Munich: Herbert Utz Verlag.

Flohr, M. 2016. "Constructing Occupational Identities in the Roman World." In *Work, Labour, and Professions in the Roman World*, edited by K. Verboven and C. Laes, 147-72. Impact of Empire 23. Leiden / Boston: Brill.

Foxhall, L. 1993. "Oil Extraction and Processing Equipment in Classical Greece." In *La production du vin et de l'huile en Méditerranée / Oil and Wine Production in the Mediterranean Area*, *Actes du symposium international organisé par le Centre Camille Jullian et le Centre archéologique du Var. Aix-en-Provence et Toulon, 20-22 novembre 1991,* edited by M.-C. Amouretti and J.-P. Brun, 183-200. BCH Suppl. 26. Paris: Boccard.

Giardina, A. 2007. "The Transition to Late Antiquity." In *The Cambridge Economic History of the Greco-Roman World*, edited by W. Scheidel, I. Morris, and R.P. Saller, 741-68. Cambridge: Cambridge University Press.

Greenewalt, C.H., Jr., N.D. Cahill, and M.L. Rautman. 1987. "The Sardis Campaign of 1984." BASOR Suppl. 25:13-54.

Greenewalt C.H., Jr., and M.L. Rautman. 2000. "The Sardis Campaigns of 1996, 1997, and 1998." *AJA* 104.4:643-81.

Grig, L. 2013. "Cities in the 'Long' Late Antiquity, 2000-2012 - A Survey Essay." *Urban History* 40.3:554-66.

Haldon, J. 1999. "The Idea of the Town in the Byzantine Empire." In *The Idea and Ideal of the Town between Late Antiquity and the Early Middle Ages*, edited by G.P. Brogiolo and B. Ward-Perkins, 1-23. Leiden / Boston / Cologne: Brill.

Haldon, J. 2006. "Social Transformation in the 6th-9th c. East." In *Social and Political Life in Late Antiquity*, edited by W. Bowden, A. Gutteridge, and C. Machado, 603-47. Late Antique Archaeology 3.1. Leiden: Brill.

Harris, A. 2004. "Shops, Retailing and the Local Economy in the Early Byzantine World: The Example of Sardis." In *Secular Buildings and the Archaeology of Everyday Life in the Byzantine Empire*, edited by K. Dark, 82-122. Oxford: Oxbow Books.

Holleran, C. 2017. "Finding Commerce: The Taberna and the Identification of Roman Commercial Space." *PBSR* 85:143-70.

İdil, V., and M. Kadıoğlu. 2009. "2007 Yılı Nysa Kazı ve Restorasyon Çalışmaları." *KST* 30.3:499-520.

İşkan, H., ed. 2019. *Patara: City, Harbor, Cult*. General Publication 4670. Istanbul: Türkiye İş Bankası Yayınları.

Jacobs, I. 2012. "The Creation of the Late Antique City. Constantinople and Asia Minor during the 'Theodosian Renaissance'." *Byzantion* 82:113-64.

Jacobs, I. 2013. *Aesthetic Maintenance of Civic Space: The "Classical" City from the 4th to the 7th c. AD*. Orientalia Lovaniensia Analecta 193. Leuven / Paris / Walpole, MA: Peeters Publishers.

Jacobs, I., and L. Stirling. 2017. "Re-using the Gods: A 6th-c. Statuary Display at Sagalassos and a Re-evaluation of Pagan Mythological Statuary in Early Byzantine Civic Space." *JRA* 30:196-226.

Köroğlu, G. 2020. "Balatlar Kilise Kazısı 2018 Yılı Çalışmaları." *KST* 41.2:227-39.

Kulikowski, M. 2004. *Late Roman Spain and its Cities*. Ancient Society and History. Baltimore / London: Johns Hopkins University Press.

Ladstätter, S. 2011. "Bizans Döneminde Ephesos - Büyük Bir Antik Kentin Tarihinde Son Sayfa." In *Bizans Döneminde Ephesos,* edited by F. Daim and S. Ladstätter, translated by S. Gün, F. Öztürk, and B. Yener-Marksteiner, 3-28. Istanbul: Ege Yayınları.

La Marca, A. 2017. "La trasformazione dello spazio urbano nell'area centrale di Kyme Eolica / Aiolis Kyme'si Antik Kenti Merkezindeki Kentsel Alan Dönüşümü." *KST* 38.2:237-52.

Larsson Lovén, L. 1998. "Lanam Fecit: Woolworking and Female Virtue." In *Aspects of Women in Antiquity. Proceedings of the First Nordic Symposium on Women's Lives in Antiquity. Göteborg*

12-15 June 1997, edited by L. Larsson Lovén and A. Strömberg, 85-95. Studies in Mediterranean Archaeology and Literature 153. Jonsered: P. Åströms Förlag.

Larsson Lovén, L. 2013. "Textile Production, Female Work and Social Values in Athenian Vase Painting." In *Perspectives on Ancient Greece. Papers in Celebration of the 60th Anniversary of the Swedish Institute at Athens*, edited by A.-L. Schallin, 135-51. Acta Instituti Atheniensis Regni Sueciae 8.22. Stockholm: Swedish Institute at Athens.

Lavan, L. 2003. "Late Antique Urban Topography: From Architecture to Human Space." In *Theory and Practice in Late Antique Archaeology*, edited by L. Lavan and W. Bowden, 171-95. Late Antique Archaeology 1. Leiden: Brill.

Lavan, L. 2006. "Fora and Agorai in Mediterranean Cities during the 4th and 5th c. A.D." In *Social and Political Life in Late Antiquity*, edited by W. Bowden, A. Gutteridge, and C. Machado, 195-249. Late Antique Archaeology 3.1, Social and Political Life / Housing. Leiden: Brill.

Lavan, L. 2009. "What Killed the Ancient City? Chronology, Causation, and Traces of Continuity." Review of Saradi, Helen, *The Byzantine City in the Sixth Century. Literary Images and Historical Reality*. *JRA* 22:803-12.

Lavan, L. 2012. "From Polis to Emporion? Retail and Regulation in the Late Antique City." In *Trade and Markets in Byzantium*, edited by C. Morrisson, 333-77. Washington D.C.: Dumbarton Oaks.

Lavan, L. 2020a. *Public Space in the Late Antique City*. Vol. 1. *Streets, Processions, Fora, Agorai, Macella, Shops*. Late Antique Archaeology Suppl. Series 5.1. Leiden: Brill.

Lavan, L. 2020b. *Public Space in the Late Antique City*. Vol. 2, *Sites, Buildings, Dates*. Late Antique Archaeology Suppl. 5.2. Leiden: Brill.

Leone, A. 1999. "Change or No Change? Revised Perceptions of Urban Transformation in Late Antiquity." In *Proceedings of the Eighth Annual Theoretical Roman Archaeology Conference, Leicester 1998*, edited by P. Baker, C. Forcey, S. Jundi, and R. Witcher, 121-30. TRAC 98. Oxford: Oxbow Books.

Leone, A. 2007. *Changing Townscapes in North Africa from Late Antiquity to the Arab Conquest*. Bari: Edipuglia.

Liebeschuetz, J.H.W.G. 2001. *The Decline and Fall of the Roman City*. Oxford / New York: Oxford University Press.

Lockey, I. 2016. "The Atrium House: The Archaeology of a Late-Antique Residence." In *Aphrodisias Papers 5: Excavation and Research at Aphrodisias, 2006-2012*, edited by R.R.R. Smith, J. Lenaghan, A. Sokolicek, and K. Welch, 243-54. JRA Suppl. 103. Portsmouth, RI: JRA.

Mango, M.M. 2000. "The Commercial Map of Constantinople." *DOP* 54:189-207.

Maréchal, S. 2020. *Public Baths and Bathing Habits in Late Antiquity: A Study of the Evidence from Italy, North Africa and Palestine A.D. 285-700*. Late Antique Archaeology Suppl. 6. Leiden / Boston: Brill.

Mastronuzzi, G., and V. Melissano. 2007. "Le case bizantine sul lato ovest dell'Agorà (Regio I)." In *Hierapolis di Frigia 1: le attività delle campagne di scavo e restauro 2000-2003,* edited by F. D'Andria and M.P. Caggia, 541-81. Istanbul: Ege Yayınları.

Mert, İ.H. 2016. "Priene'deki Gıda Pazarı." *Olba* 24:365-418.

Niewöhner, P. 2017. "Urbanism." In *The Archaeology of Byzantine Anatolia. From the End of Late Antiquity until the Coming of the Turks,* edited by P. Niewöhner, 39-59. Oxford / New York: Oxford University Press.

Oransay, B.S.A. 2012. "Arykanda Antik Kentinde Madencilik Faaliyetleri ve Madeni Eşya Üretimi." *Anadolu Üniversitesi Sosyal Bilimler Dergisi* 12.4:141-49.

Özüdoğru, Ş. 2016. "Kibyra Kazı, Koruma ve Onarım Çalışmaları 2015 / Excavations, Conservation and Restoration Work at Kibyra in 2015." *Anmed* 14:55-64.

Özüdoğru, Ş. 2018. "Geç Antikçağ'da Kibyra / Cibyra in Late Antiquity." *Cedrus* 6:13-64.

Özüdoğru, Ş. 2020. *Kibyra. Kibyra Maior / Caesarea Cibyra.* Kibyra Kazı ve Araştırmaları Monografi Serisi 1. Istanbul: Arkeoloji ve Sanat Yayınları.

Özüdoğru, Ş., and F.E. Dökü. 2008. "Patara Seramik Fırınları." In *SERES'07. 4. Uluslararası Katılımlı Seramik, Cam, Emaye, Sır ve Boya Semineri, Eskişehir 26-28 Kasım 2007, Bildiriler Kitabı,* edited by B. Karasu, N. Ay, Z. Çobanlı, F.S. Alanyalı, and R. Yamaçlı, 399-411. Eskişehir: Türk Seramik Derneği.

Parrish, D. 2001. "Introduction: The Urban Plan and Its Constituent Elements." In *Urbanism in Western Asia Minor. New Studies on Aphrodisias, Ephesos, Hierapolis, Pergamon, Perge and Xanthos*, edited by D. Parrish and H. Abassoğlu, 8-42. JRA Suppl. 45. Portsmouth, RI: JRA.

Poblome, J., H. Uleners, I. Uytterhoeven, E. Marinova, and B. De Cupere. 2015. "The 2012 to 2014 Excavation Campaigns at Site LE, Sagalassos. The Structural Remains and General Phasing." *Anatolica* 41:203-40.

Polat, G., Y. Polat, and K. Yağız. 2007. "Antandros 2005 Yılı Kazıları." *KST* 28.2:43-62.

Polosa, A. 2016. "Elaiussa Sebaste 2015 Yılı Arkeolojik Araştırmaları / Elaiussa Sebaste 2015 Archaeological Research." *Anmed* 14:16-20.

Potter, D. 2011. "Cities of the Eastern Roman Empire from Constantine to Heraclius." In *Archaeology and the Cities of Asia Minor in Late Antiquity,* edited by O. Dally and C. Ratté, 247-60. Ann Arbor, MI: Kelsey Museum.

Putzeys, T. 2007. "Contextual Analysis at Sagalassos. Developing a Methodology for Classical Archaeology." Ph.D. diss., KU Leuven. http://users.telenet.be/diplodocus/Phd_CD/index.html.

Quatember, U., V. Scheibelreiter, and A. Sokolicek. 2009. "Die sogenannte Alytarchenstoa an der Kuretenstrasse von Ephesos." In *Neue Forschungen zur Kuretenstraße von Ephesos. Akten des Symposiums für Hilke Thür vom 13. Dezember 2006 an der Österreichischen Akademie der Wissenschaften*, edited by S. Ladstätter, 111-54. Archäologische Forschungen 15. DenkschrWien 382. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Ratté, C. 2001. "New Research on the Urban development of Aphrodisias in Late Antiquity." In *Urbanism in Western Asia Minor: New Studies on Aphrodisias, Ephesos, Hierapolis, Pergamon, Perge and Xanthos*, edited by D. Parrish and H. Abassoğlu, 116-47. JRA Suppl. 45. Portsmouth, RI: JRA.

Rautman, M. 1995, "A Late Roman Townhouse at Sardis." In *Forschungen in Lydien*, edited by E. Schwertheim, 49-66. AMS 17. Bonn: Rudolf Habelt.

Rautman, M.L. 2011. "Sardis in Late Antiquity." In *Archaeology and the Cities of Asia Minor in Late Antiquity*, edited by O. Dally and C. Ratté, 1-26. Kelsey Museum Publication 6. Ann Arbor, MI: Kelsey Museum.

Rens, R., and M. Waelkens. 2012. "Roma 'İmparatorluk' Hamamı." In M. Waelkens et al. "Sagalassos 2010 Yılı Kazı ve Restorasyon Çalışmaları." *KST* 33.3:241-42.

Rens, R., and M. Waelkens. 2013. "İmparatorluk Hamamları." In M. Waelkens et al. "Sagalassos 2011 Kazı ve Restorasyon Sezonu." *KST* 34.3:143-44.

Rockwell, P. 1991. "Unfinished Statuary Associated with a Sculptor's Studio." In *Aphrodisias Papers 2: The Theatre, a Sculptor's Workshop, Philosophers, and Coin-Types*, edited by R.R.R. Smith and K.T. Erim, 127-43. JRA Suppl. 2. Ann Arbor, MI: JRA.

Rogers, A. 2011. *Late Roman Towns in Britain: Rethinking Change and Decline*. Cambridge: Cambridge University Press.

Russell, J. 2002. "Anemourion." In *The Economic History of Byzantium: From the Seventh through the Fifteenth Century,* edited by A.E. Laiou, 221-28. Washington, D.C.: Dumbarton Oaks Research Library and Collection.

Saradi, H.G. 2006. *The Byzantine City in the Sixth Century: Literary Image and Historical Reality*. Athens: Society of Messenian Archaeological Studies.

Semeraro, G. 2017. "Phrygia Hierapolis'inde Üretim Arkeolojisi: Yeni Veriler ve Araştırma Perspektifleri / Archeologia della produzione a Hierapolis di Frigia: Nuovi dati e prospettive di ricerca." *Arkeoloji ve Sanat* 154:97-110.

Şimşek, C. 2009. "2007 Yılı Laodikeia Antik Kenti Kazıları." *KST* 30.2:409-36.

Şimşek, C. 2013. *Laodikeia (Laodicea ad Lycum)*. Laodikeia Çalışmaları 2. Istanbul: Ege Yayınları.

Şimşek, C. 2016. "2014 Yılında Laodikeia'da Yapılan Kazı ve Restorasyonlar." *KST* 37.1:481-508.

Şimşek, C., and M. Bilgin. 2018. "Laodikeia Geç Antik Çağ Seramikleri / Late Antique Pottery of Laodikeia." In *Geç Antik Çağ'da Lykos Vadisi ve Çevresi / The Lykos Valley and Neighbourhood in Late Antiquity*, edited by C. Şimşek and T. Kaçar, 175-99. Laodikeia Çalışmaları Ekyayın Dizisi Suppl. 1. Istanbul: Ege Yayınları.

Smith, R.R.R., and C. Ratté. 1998. "Archaeological Research at Aphrodisias in Caria, 1996." *AJA* 102.2:225-50.

Stirling, L.M. 2001. "The East Baths and Their Industrial Re-use in Late Antiquity: 1992 Excavations." In *Leptiminus (Lamta) Report no. 2: The East Baths, Cemeteries, Kilns, Venus Mosaic, Site Museum and Other Studies*, edited by L.M. Stirling, D.J. Mattingly, and N. Ben Lazreg, 29-73. JRA Suppl. 41. Portsmouth, R.I.: JRA.

Summerer, L. 2016. "Pompeiopolis (Paflagonya) 2014 Çalışmaları." *KST* 37.2:143-56.

Summerer, L., and F. Çevik. 2015. "Pompeiopolis 2013 Yılı Kazı Çalışmaları." *KST* 36.2:191-208.

Talbert, R.J.A. 2000. *Barrington Atlas of the Greek and Roman World: Map-By-Map Directory*. 2 vols. Princeton: Princeton University Press.

Taştemür, E. 2018. "Antik Cam Fırınları ve Anadolu Örnekleri / Ancient Glass Furnaces and Anatolian Examples." *TÜBA-AR* 22:203-29.

Uleners, H., and U. Altay. 2009. "The Upper Agora." Unpublished Internal Report of the Sagalassos Archaeological Research Project, KU Leuven.

Underwood, D. 2019. *(Re)using Ruins: Public Building in the Cities of the Late Antique West, A.D. 300-600*. Late Antique Archaeology Suppl. 3. Leiden: Brill.

Uytterhoeven, I., H. Kökten, M. Corremans, J. Poblome, and M. Waelkens. 2014. "Late Antique Private Luxury. The Mosaic Floors of the Urban Mansion of Sagalassos (Ağlasun, Burdur - Turkey)." *ÖJh* 82:373-407.

Uytterhoeven, I. 2018. "A 'Second Life': Transformation and Change in the Use of Space in the Late Antique Urban Elite Houses of Asia Minor." In *Abitare nel Mediterraneo Tardoantico. Atti del II Convegno Internazionale del CISEM. Centro Interuniversitario di Studi sull'Edilizia abitativa tardoantica nel Mediterraneo (CISEM) (Bologna 2-5 Marzo 2016)*, edited by I. Baldini and C. Sfameni, 273-80. Bari: Edipuglia.

Uytterhoeven, I. 2019. "A Change of Appearance. Urban Housing in Asia Minor during the Sixth Century." In *Asia Minor in the Long Sixth Century: Current Research and Future Directions*, edited by I. Jacobs and H. Elton, 9-28. Oxford: Oxbow Books.

Varkıvanç, B. 2013. "Ksanthos 2012 Yılı Kazıları / Excavations at Xanthos in 2012." *Anmed* 11:62-70.

Varkıvanç, B. 2014. "Ksanthos 2013 Yılı Çalışmaları / Excavations at Xanthos in 2013." *Anmed* 12:62-72.

Vionis, A.K., J. Poblome, and M. Waelkens. 2009. "The Hidden Material Culture of the Dark Ages. Early Medieval Ceramics at Sagalassos (Turkey): New Evidence (ca AD 650-800)." *AnatSt* 59:147-65.

Vroom, J. 2005. "New Light on 'Dark Age' Pottery: A Note on Finds from South-Western Turkey." *RCRFActa* 39:249-55.

Waelkens, M., J. Poblome, J. Claeys, M. Lefere, W. Van Neer, M. Corremans, and J. Baeten. 2010. "De Thermen (RB). Hoe de 'Keizerlijke Thermen' het oudste Romeinse badcomplex van Anatolië verbergen en zelf eindigden als banketzaal." In *Sagalassos-Jaarboek 2009. De Late Oudheid (ca. 200-450 / 455 n. Chr.). Het jaarverslag van de campagne van 2009*, edited by M. Waelkens and the Sagalassos Team, 224-58. Leuven: Peeters Publishers.

Ward-Perkins, B. 1999. "Re-Using the Architectural Legacy of the Past, Entre Idéologie et Pragmatisme." In *The Idea and Ideal of the Town between Late Antiquity and the Early Middle Ages*, edited by G.P. Brogiolo and B. Ward-Perkins, 225-44. Leiden: Brill.

Wefers, S., and F. Mangartz. 2011. "Ephesos Bizans Dönemi Atölyeleri." In *Bizans Döneminde Ephesos,* edited by F. Daim and S. Ladstätter, translated by S. Gün, F. Öztürk, and B. Yener-Marksteiner, 213-28. Istanbul: Ege Yayınları.

Wickham, C. 2005. *Framing the Early Middle Ages: Europe and the Mediterranean, 400-800*. Oxford: Oxford University Press.

Willet, R. 2015. "De verbondenheid tussen de steden van Romeins Klein-Azië." *Tijdschrift voor Mediterrane Archeologie* 54:6-12.

Yağcı, R. 2015. "Soli-Pompeiopolis 2014 Kazıları / Excavations at Soli-Pompeiopolis in 2014." *Anmed* 13:131-39

Yağcı, R., and D. Yiğitpaşa 2016. "2015 Soli Pompeiopolis Kazıları / Excavations at Soli Pompeiopolis 2015." *Anmed* 14:148-54.

Yegül, F.K. 1986. *The Bath-Gymnasium Complex at Sardis*. Archaeological Exploration of Sardis Reports 3. Cambridge, MA: Harvard University Press.

Zaccaria Ruggiù, A. 2007. "Regio VIII, Insula 104. Le strutture abitative: fasi e trasformazioni." In *Hierapolis di Frigia,* 1. *Le attività delle campagne di scavo e restauro 2000-2003,* edited by F. D'Andria and M.P. Caggia, 211-56. Istanbul: Ege Yayınları.

Zaccaria Ruggiù, A. 2019a. "Casa del cortile dorico." In *Le abitazioni dell'insula 104 a Hierapolis di Frigia*, edited by A. Zaccaria Ruggiù, 35-60. Hierapolis di Frigia 12. Istanbul: Ege Yayınları.

Zaccaria Ruggiù, A., ed. 2019b. *Le abitazioni dell'insula 104 a Hierapolis di Frigia.* Hierapolis di Frigia 12. Istanbul: Ege Yayınları.

Zaccaria Ruggiù, A. 2019c. "Introduzione." In *Le abitazioni dell'insula 104 a Hierapolis di Frigia*, edited by A. Zaccaria Ruggiù, 1-21. Hierapolis di Frigia 12. Istanbul: Ege Yayınları.

Zaccaria Ruggiù, A. and A. Canazza. 2011. "Scultura decorativa dal quartiere residenziale di Hierapolis." In *Roman Sculpture in Asia Minor: Proceedings of the International Conference to Celebrate the 50th Anniversary of the Italian Excavations at Hierapolis in Phrygia, held on May 24-26, 2007, in Cavallino (Lecce)*, edited by F. D'Andria and I. Romeo, 211-34. JRA Suppl. 80. Portsmouth, R.I.: JRA.

Zaccaria Ruggiù, A., and D. Cottica. 2007. "Hierapolis di Frigia fra Tarda Antichità ed XI secolo: L'apporto dello studio degli spazi domestici nell'Insula 104." *RdA* 31:139-89.

Zanini, E. 2006. "Artisans and Traders in the Early Byzantine City: Exploring the Limits of Archaeological Evidence." In *Social and Political Life in Late Antiquity*, edited by W. Bowden, A. Gutteridge, and C. Machado, 373-411. Late Antique Archaeology 3.1. Leiden / Boston: Brill.

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Craft Industry Classes	Number of Contexts
Ceramic	19
Glass	14
Metal	18
Metalworking	10
Smithing	8
Plaster & Pigment	3
Textile	4
Stone	26
Limeburning & slaking	23
Stonecutting & carving	3
Wood	1
Service Industry Classes	
Taberna	2
Inn	1
Stables	1
Food Production Classes	
Bakery	3
Press or Mill	6
Fish Processing	1

FIG. 1
Classifications and frequencies of Late Antique industry found in reused buildings (Murphy and Uytterhoeven).

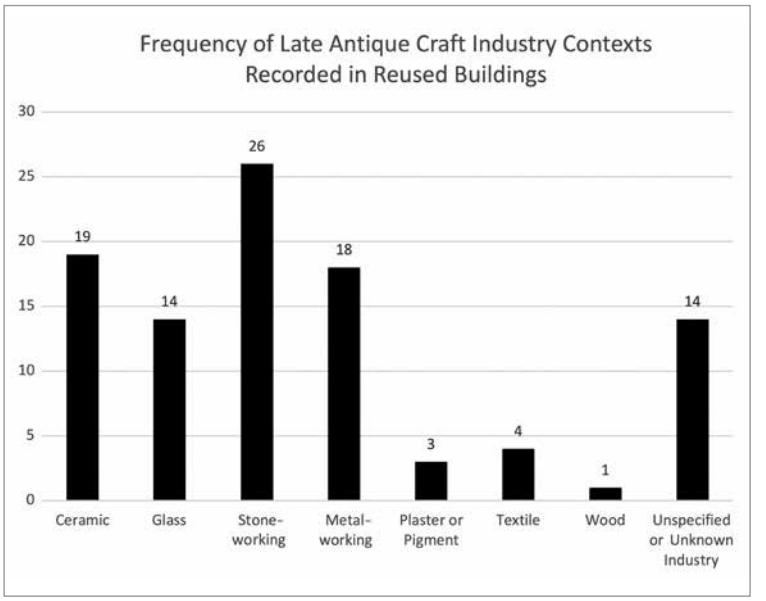

FIG. 2 Late Antique craft industries represented in the dataset (Murphy and Uytterhoeven).

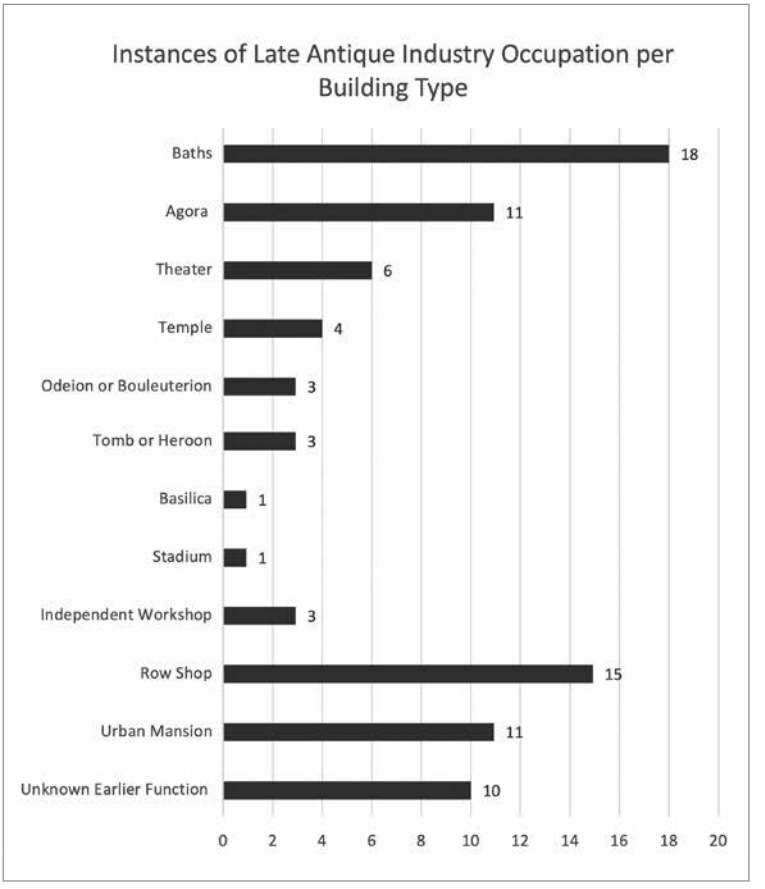

FIG. 3
Frequencies of Late Antique industries found in different building types (Murphy and Uytterhoeven).

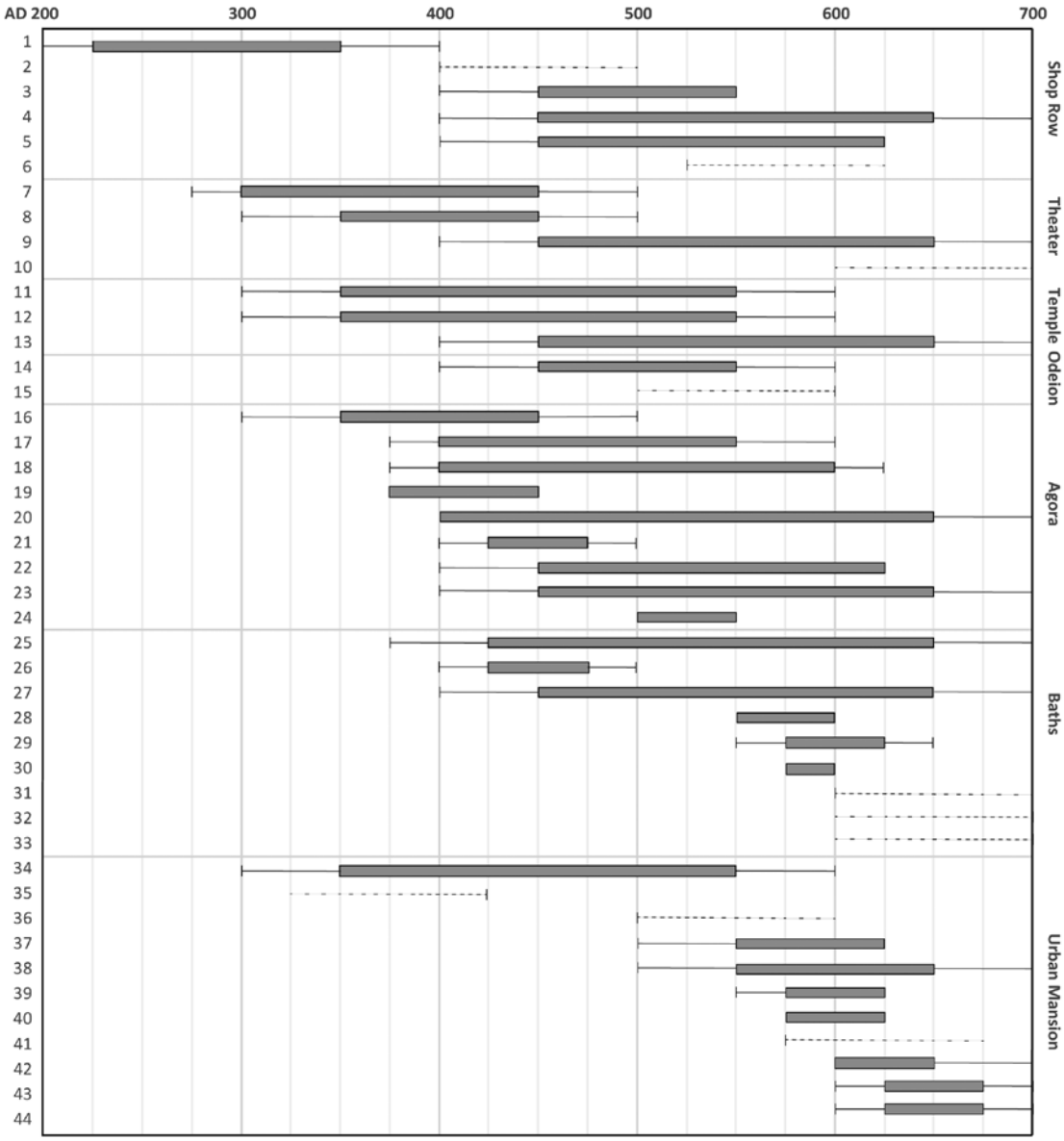

FIG. 4 Chronological trends in the movement of industry into building types (Murphy and Uytterhoeven).

Building Type	Chart Site ID	Ancient City	Excavation Designation	Published Reference	Industry Occupation Dates
Row Shop	1	Aphrodisias	Plaza backing Odeion	Rockwell 1991	early 3rd - 4th c.
	2	Laodikeia	Stadion Road	Şimşek 2016	5th c. - unspecified
	3	Sagalassos	East of Library - New Construction	Poblome et al. 2015	5th - mid 6th c.
	4	Kyme	Colonnade	La Marca 2017	5th - 7th c.
	5	Sardis	Byzantine Shops	Crawford 1990; Harris 2004	5th - early 7th c.
	6	Soloi-Pompeiopolis	Colonnaded Street	Yağcı 2015; Yağcı and Yiğitpaşa 2016	post - AD 525 - unspecified
Theater	7	Side	Theater	Alanyalı 2010	late 3rd / early 4th - 5th c.
	8	Rhodiapolis	Stoa	Çevik et al. 2008	4th - 5th c.
	9	Kyme	Theater	La Marca 2017	5th - 7th c.
	10	Pompeiopolis	Theater	Summerer and Çevik 2015	unspecified - 7th c.
Temple	11	Sardis	Wadi B Temple	Greenewalt et al. 1987	post 3rd - 6th c.
	12	Aphrodisias	Sebasteion	Smith and Ratté 1998	4th - 6th c.
	13	Laodikeia	Temple A	Şimşek 2013	5th - 7th c.
Odeion-Bouleuterion	14	Kibyra	Odeion-Bouleuterion	Özüdoğru and Dökü 2008	5th - 6th c.
	15	Anemourion	Odeion-Bouleuterion	Russell 2002	pre-7th c.
Agora	16	Nysa-ad-Maeandrum	North Portico of Agora	İdil and Kadıoğlu 2009	4th - 5th c.
	17	Ephesos	Tetragonos Agora	Czurda-Ruth 2005	late 4th / early 5th - 6th c.
	18	Hierapolis	Agora	Arthur 2012	late 4th / early 5th c. - late 6th / early 7th c.
	19	Andriake	Harbour Agora (*Plakoma*)	Aygün 2017	late 4th - mid 5th c.
	20	Kibyra	Agora (West Stoa)	Özüdoğru 2020	first-quarter 5th - 7th c.
	21	Kyme	Agora	La Marca 2017	5th c.
	22	Hierapolis	North Agora	Mastronuzzi and Melissano 2007	5th - early 7th c.
	23	Xanthos	West Agora	Varkıvanç 2013, 2014	5th - 7th c.
	24	Sagalassos	Upper Agora	Uleners and Altay 2009	first-quarter 6th c. - mid 6th c.
Baths	25	Patara	Harbor Baths - Palaestra	Dündar 2015	post - late 4th / early 5th c. - 7th c.
	26	Kibyra	Roman Imperial Bath Complex	Özüdoğru 2016	5th c.
	27	Metropolis	Bath-Palaestra	Aybek 2016	5th - 7th c.
	28	Sagalassos	Imperial Baths	Rens and Waelkens 2012, 2013	mid-6th - late 6th c.
	29	Elaiussa-Sebaste	Small Baths	Equini Schneider and Ritti 2015; Polosa 2016	second-half 6th - first-half 7th c.
	30	Anemourion	Baths-Palaestra Complex	Russell 2002	late 6th - pre 7th c.
	31	Sardis	Bath-Gymnasium Complex	Yegül 1986	7th c. - unspecified
	32	Anemourion	Small Baths - North of Palestra	Russell 2002	unspecified - 7th c.
	33	Pompeiopolis	Baths	Summerer 2016	unspecified - 7th c.
Urban Mansion	34	Sardis	House of Bronzes	Crawford 1990	4th - 6th c.
	35	Arykanda	Naltepesi Villa - Private Bath	Oransay 2012	unspecified - first-quarter 5th c.
	36	Laodikeia	Southern Roman Villa - Private Bath	Şimşek 2009, 2013	post- 5th c.
	37	Sardis	Sector MMS/S	Archaeological Exploration of Sardis 1989-1990	6th - early 7th c.
	38	Antandros	Terrace House	Polat et al. 2007	6th - 7th c.
	39	Tripolis	House with the Mosaics	Duman and Koçyiğit 2019	mid 6th - late 6th / early 7th c.
	40	Labraunda	Tetraconch - Private Bath	Blid 2016	late 6th - early 7th c.
	41	Ephesos	Terrace House 2	Ladstätter 2011; Wefers and Mangartz 2011	late 6th / early 7th c. - unspecified
	42	Laodikeia	House A - House 3	Şimşek 2009	early 7th c. - 7th c.
	43	Hierapolis	House of the Ionic Capitals	Bortolin 2019; Zaccaria Ruggiù 2019a	7th c.
	44	Hierapolis	House of the Doric Courtyard	Zaccaria Ruggiù 2007; Zaccaria Ruggiù and Cottica 2007	7th c.

FIG. 5 Listing of sites presented in fig. 4. This list represents a subset for which both centurial dating of industry occupation was reported and for which building type attribution was available. Dates reflect all industry occupation documented within a single building complex (even when located in separate spaces) (Murphy and Uytterhoeven).

FIG. 6 Aerial photograph of the Urban Mansion excavations at Sagalassos, with mid sixth and seventh centuries AD economic activities indicated (Image courtesy of the Sagalassos Archaeological Research Project - Adapted by Uytterhoeven and Murphy).

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New Inscriptions from Northeast Phrygia: The 2021 Survey

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Abstract

An epigraphic survey covering more than half of the province of Eskişehir in central Turkey commenced in 2014. Thus far it has yielded an abundance of new epigraphic evidence. This article includes all the inscriptions found during the 2021 survey and presents a wide range of unpublished Greek inscriptions such as epitaphs, Phrygian curse inscriptions, liturgical texts from the book of Psalms, and Byzantine prayers. It also includes different types of grave monuments such as stelai, columnar gravestones, and doorstones. The article begins with the historical geography of the survey area, followed by a catalogue of inscriptions with commentary.

Keywords: Eskişehir, Phrygia, Galatia, Phrygian curse inscriptions, doorstones, liturgical texts

Öz

2014 yılından bu yana Eskişehir ilinin Mihalıççık, Mahmudiye, Alpu, Çifteler, Beylikova ve Sivrihisar ilçelerinde yürütülen epigrafik yüzey araştırmalarında çok sayıda yeni yazıt tespit edilmiştir. Bu makale, 2021 yılı araştırma sezonunda bulunan tüm yazıtları içermekte ve mezar yazıtları, Frigce lanet yazıtları, litürjik metinler gibi çok çeşitli yayımlanmamış Eski Yunanca yazıtları ve ayrıca mezar stelleri, sütun mezar taşları ve kapı formlu mezar anıtları gibi farklı mezar anıt türlerini sunmaktadır. Makale, yüzey araştırması alanının tarihi coğrafyası ile başlamakta, yazıtları ve yazıtlara ilişkin yorumları içeren katalog bölümü ile son bulmaktadır.

Anahtar Kelimeler: Eskişehir, Phrygia, Galatia, Frigce lanet yazıtları, kapı formlu mezar stelleri, litürjik metinler

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The Epigraphic Survey Project in Eskişehir Province in the Districts of Mihalıççık, Mahmudiye, Alpu, Çifteler, Beylikova and Sivrihisar received approval from the Turkish Ministry of Culture and Tourism. We would like to express our sincere thanks to the Ministry and its representatives for their interest in and contribution to the successful outcome of the survey. We thank Ece Taşdemir (BA student, Mimar Sinan University) for her help in recording the inscriptions and the local people for their hospitality during the survey in 2021. We would like to thank the European Union's Horizon 2020 Research and Innovation Programme (under the Marie Skłodowska Curie grant agreement no 754513), the Aarhus University Research Foundation, and the Aarhus Institute of Advanced Studies for their support. We are much obliged to the anonymous referees and to the editorial advisory board of Adalya as well as Pawel Nowakowski (for nos. 8, 13, and 14) and Benet Salway (for no. 8) for their comments, which helped to improve the content of this article. For all remaining errors and shortcomings, we take responsibility.

I. Historical Geography

An epigraphic survey covering more than half of the province of Eskişehir in central Turkey commenced in 2014. Thus far it has yielded an abundance of new epigraphic evidence.[1] The area covered by the survey lies between the ancient cities of Juliopolis, Dorylaion, Gordion, and Amorion and includes the imperial estate of the Choria Considiana as well as the cities of Colonia Germa and Pessinus, Akkilaion, and Midaion.[2] Today this area encompasses the six districts of Mihalıççık, Alpu, Sivrihisar, Mahmudiye, Çifteler, and Beylikova. Juliopolis, a city located in modern Gülşehri two kilometers from Çayırhan in the province of Ankara, was the closest neighboring ancient city to Mihalıççık. To date, the inscriptions found in our survey and in the territory of Juliopolis do not reveal any territorial connection with Juliopolis.[3] In the Life of Theodore of Sykeon (7th century AD), it is indicated that the territory of Juliopolis was expanding towards Akreina (probably Kozlu village, Mihalıççık).[4] However, an epigraphic analysis conducted by S. Mitchell shows that Phyle (Beyköy village near Kozlu, Mihalıççık) and its surroundings were apparently part of another estate belonging to the Roman senatorial family of the Plancii. The estate was situated east of the Choria Considiana during the Roman Imperial period.[5] Most recently, B. Takmer has interpreted the fragmentary inscription MAMA 10, 255 found in Kusura (modern Esen) in the territory of Kotiaion. According to him, this inscription must refer either to the Choria Considiana or, more likely, to the Choria Planciana.[6] The inscription refers to the land in the Aslanapa plain as (praedia) [. . . .]cianorum. The genitive plural here derives from a nomen gentilicum or cognomen, which must be Praedia Plancianorum. This highlights the fact that the Plancian family based in Perge might have possessed an estate in the Aslanapa plain before it fell into imperial hands.[7]

The Choria Considiana, which constituted an estate originally owned by a family of Italic origin and then passed into imperial hands during the Principate, are named in a single inscription previously found in Yukarı İğde Ağaç in the district of Beylikova south of Mihalıççık.[8] This inscription records the erection of a temple and statues dedicated by Eutyches, oikonomos of the Choria Considiana under Marcus Aurelius and Commodus between AD 177 and 180. The estate under consideration, therefore, comprised the territory of at least seven villages and was run by an imperial slave serving as oikonomos.[9] However, a recently published inscription found in Mihalıççık and now in the Eskişehir Museum reads: διὰ τῶν Καίσαρος χωρίων κωμῶν and ἐν ταῖς τοῦ κυρίου ἡμῶν Καίσαρος κώμαις. This refers to the imperial estate, Choria

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1 See previous publications from the surveys: Güney 2016, 2018a, 2018b, 2018c, 2018d, 2019a, 2019b, 2019c, 2020a, 2020b, 2020c, 2021.

2 Talbert 2000, Phrygia, map 62: https://pleiades.stoa.org/places/609442 (11.05.2022).

3 Güney 2016, 128.

4 Vita of Theodore of Sykeon 1.79.24-27, 66-67.

5 Mitchell 1974; Belke 1984, 120, 175-76, 215.

6 Imp(eratoris) Caesaris Traiani Hadriani Aug(usti) termini [. . . .]cianorum per Papirium Paullinum procur(ante) Septembre Aug(usti) lib(erto); see Takmer 2018a, 431-32.

7 Takmer 2018a, 432.

8 The inscription found in the village of Yukarı İğdeağaç reads: τὸν ναὸν σὺ[ν]|| (2) τοῖς ἀγάλμ[α]|σιν κατεσ[κεύ]||(4) ασεν Εὐτύχη|<ς> Σεββ. οἰκόνο|(6){ν}μος χωρίων | Κωνσιδιανῶ[ν]|| (8) [σὺν Φα]υστε[ί]||νῳ καὶ Νεικε|(10) ρωτιανῷ, ου|έρναις [υ] ἱοῖς | (12) αὐτοῦ, ἀπο[ι|ε]ρουῦντος Κλα[υ]|| (14) δίου Οὐαλερια|νοῦ το[ῦ] κρατί[σ]|| (16) του ἐπιτρόπ[ου]. "Eutyches, the bailiff of the two Augusti of the Considian estate, with his sons the slaves Faustinus and Neikerotianos, constructed the temple with the statues, when the most powerful procurator, Claudius Valerianus, was priest" (trans. adapted from RECAM 2, 34).

9 For the names and locations of the seven villages, see Güney 2022.

Considiana.[10] Uzunoğlu dates the inscription to a period from the end of the second century to the first half of the third century AD. According to Uzunoğlu, the attestation of the *misthotai* (leaseholders) in the inscription specifies that the estate was not a compact estate run by an oikonomos without the supervision of a procurator. This inscription apparently records a letter issued by the imperial legate of the province of Galatia because of the illegal behavior of soldiers and some imperial staff in the Choria Considiana.

Therefore, the testimony of inscriptions found in Beylikova and Mihalıççık indicates that these districts belonged to the Choria Considiana during the Roman period. The Choria Considiana was roughly located south of Sarıyar Dam, north of the district of Sivrihisar, and east of the districts of Alpu and Mahmudiye in Eskişehir province. The Sangarius River probably separated the estate from Bithynia with the closest city being Juliopolis, on the Bithynian-Galatian border.

The Choria Considiana was in the province of Galatia, northeast of the ancient cities of Dorylaion (modern Eskişehir), Midaion, and Akkilaion.[11] After 25 BC and the creation of the imperial province of Galatia by Augustus, the border between the provinces of Asia and Galatia ran through this region. Akkilaion was the easternmost city of Asia. J.G.C. Anderson has proposed that Akkilaion was located at Uyuz Tepe, today near the village of Yeşildon, and situated between Alpu and Beylikova.[12] However, there is no further evidence to confirm this location. The city of Midaion was located 30 kilometers east of Eskişehir in Karahöyük near Alpu.[13] Finally, the villages of Babadat, Mülk, and Nasreddin Hoca, which are located east of the town of Sivrihisar, lay in the territory of Colonia Germa, which was in Galatia.[14]

Further south, Germa and Pessinus were neighboring cities in the district of Sivrihisar. Trokna (or Troknada) was a town located in Kaymaz, also in the same district. The city of Nakoleia was the neighbor of Trokna on the southwest. Inscriptions recording *procuratores provinciae Phrygiae* have been found in Trokna.[15] Unlike equestrian freedmen of the province of Asia who resided in Ephesus, freedmen procurators of Phrygia were *liberti Augusti* residing in Synnada.[16] Moreover, the records of Phrygia's freedmen procurators and their subalterns, members of the *familia Caesaris*, indicate that the procurators were responsible for all the imperial estates and marble quarries in the region. By this administrative integration, the agricultural products of the estates could be distributed more efficiently to meet the needs of the quarry workers.[17] Recent publications, based on new inscriptions from the city of Kotiaion, propose the existence of Phrygia as an administrative subdistrict of the *provincia Asia* during the reign of Claudius or Nero at the latest.[18]

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10 Uzunoğlu 2021.

11 Avram 2016; Güney 2019a, 157.

12 Anderson 1899, 90-91; Efe and Perello 2016, 41. Uyuz Tepe was recorded as Yeşildon Mound by the Eskişehir Council for Conservation of Cultural and Natural Heritage: https://kulturenvanteri.com/yer/yesildon/#16/39.731017/31.04225 (11.05.2022).

13 Belke and Mersich 1990, 341-42; Bilgen 2006.

14 Mitchell 1974; Niewöhner et al. 2013, 104.

15 CIL 3, 348; Christol 1991, nos. 1-2; Vitale 2015, 37; Dalla Rosa 2016, 324-25; Takmer 2018a, 437, 439.

16 Vitale 2015, 33-34; Takmer 2018a, 424-25.

17 Dalla Rosa 2016, 328-30; Takmer 2018a.

18 Vitale 2015; Dalla Rosa 2016; Türktüzün and Ünan 2017, 36-37, no. 1; Takmer 2018a, 2018b.

II. Catalogue

Abbreviations: H: height; W: width; T: thickness; L: letter size.

1. Epitaph of Karikos

Findspot: Old cemetery in Ortaköy village (ancient Orkistos), Inv. No. 133, Çifteler District (figs. 1-2).

Description: Grey marble doorstone with two panels, broken at the top and on the right and left sides; an annulet in the pediment and decorations at the top; a pruning hook, a key plate, a shovel, and a hammer on the left panel; a comb on the right panel. H: 137 cm; W: 84 cm; T: 21 cm; L: 3-3,5 cm.

Text:

1 ἀνέστησαν [Ἀμ]-
μία καὶ Ἀλ̣ο̣[- - -]
ἀδελφῷ̣ [- - - - - -]
ῳ̣ Καρικῷ̣ [μνή]-
5 μης [χάριν].

Translation: Ammia and so and so erected for their brother Karikos, in memory.

FIG. 1 Epitaph of Karikos found in Ortaköy, photo by H. Güney.

FIG. 2 Detail. Epitaph of Karikos found in Ortaköy.

L. 1-2: The name of the first dedicator is [Ἀμ]μία, a female name frequently attested in inscriptions from Phrygia. The name of second dedicator begins with Ἀλ̣ο̣[-, whose full name may be Ἄλοπος. This name was found in Pisidia and in Phrygia in the form of Ἄλυπος.[19]

19 LGPN 5C.

L. 3-4: If the lines are shorter, it can be read as ἀδελφῷ αὐτῶν, but the beginning of line 4 has an ending in the dative singular. It seems likely that it belongs to a proper name of which syllabification separates the *oxython* in the dative like Αὐρ-η-λί-ῳ or a similar praenomen. This does not mean that the proper name must be Αὐρήλιος. However, Αὐρήλιος is often attested with Καρικός in the region.[20]

Commentary: This doorstone monument was typical for the region.[21] The inscription survived as a fragment since the monument has been cut on the right side in the middle of a panel. This makes it difficult to read the entire text. The panel on the left displays male-related items, while the one on the right probably belonged to a woman since a comb can be identified.[22] There must be at least a male and a female deceased commemorated on this monument; however, we could only identify a male name. This indicates that the lines are generally longer. The proportion of the monument also indicates that there were in fact four panels: two on the right side and two on the left side as we have seen in no. 3 and no. 4 in this article. The number of deceased would then increase to four. The findspot, Orkistos, was an ancient town belonging to the territory Nacoleia. The town was granted city status under Constantine the Great in 331 after the inhabitants made a petition in 325.[23] The inscription was found in an old cemetery along with previously published inscriptions.[24]

2. A Phrygian curse

Findspot: Doğanay village, Inv. No. 134, Çifteler District (fig. 3).

Description: Grey marble lintel broken on the left side. H: 55 cm; W: 24 cm; T: 22 cm; L: 2,5 cm.

Text:

[ιος νι σεμον κνου]μανει κακον αδδακετ τιτετικ-
2 [μεν]ος ειτου.

Translation:…whoever does harm to this tomb, let him become accursed.

FIG. 3
Phrygian curse inscription found in Doğanay, photo by H. Güney.

L. 1: σεμον or σεμουν is a demonstrative pronoun meaning "this." κνουμανει is a noun meaning "tomb, memorial." αδδακετ is a verb meaning "to do, put, place" and is third person singular

20 RECAM 2, 32; MAMA 7, 212.

21 See Waelkens 1977, 1986.

22 Masséglia 2013, 101-2, 122-23.

23 Mitchell 1993, 1:179; 2:58, 60, 62.

24 MAMA 7, 304, 307-9.

indicative present active here.[25] Κακον is a noun meaning "harm." τιτετικμενος is a participle meaning "accursed."[26]

Commentary: This lintel belonged to a funerary monument, which was probably a doorstone. The lintel bears a new Neo-Phrygian inscription that partly includes a Phrygian curse. This curse is often found on doorstone monuments from Phrygia and Galatia. It has long been debated in current literature whether Phrygian was a spoken language or whether it was only found among curses like the one presented here with personal and place names.[27]

There is enough space to complete the protasis as follows: ιος νι σεμον κνου]μανει κακον. The expression δεως ζεμελῳς (gods and men) is usually found before τιτετικμενος ειτου in the apodosis.[28] In our example here, however, the apodosis is in shortened form. If we consider an omega in line 2 instead of an omicron, the apodosis can also be read as ιος νι σεμον κνου]μανει κακον αδδακετ τιτετικ-[μενος δεως ζεμελ]ῳς ειτου (whoever does harm to this tomb, let him be accursed in the sight of gods and men).[29] However, there is an exact parallel to this short curse form in another inscription found in Ortaköy and published by Pococke.[30] The findspot in the village of Doğanay must have been in the territory of ancient Orkistos, because Doğanay is only a few kilometers from Ortaköy. Our team was told that this lintel was recently unearthed during construction in the village and that the villagers had erected it in its current location. Not many Phrygian curses have survived in inscriptions today. We can now add one more Phrygian curse to the repertoire.[31]

3. An epitaph

Findspot: Courtyard in Sadıroğlu village, Inv. No. 135, Çifteler District (figs. 4-5).

Description: Grey marble doorstone broken on the left and right sides and at the top; divided into two panels, jugs on mensa tripes, a key plate (?), a plough, a hammer, and a pruning hook on the left panel and a basket, a mirror, a spindle, and a distaff as well as a comb on mensa tripes on the right panel. H: 117 cm; W: 115 cm; T: 30 cm; L: 2 cm.

Text:

[…]ος Μαξίμου ἰδίᾳ γυναικὶ Πυ[. . . .]τη[.]ο[-
2 [γ]λυκυτάτῃ μνήμης χάριν κὲ ἑαυτῷ ζῶν.

Translation: So and so, son of Maximos, for his own sweetest wife so and so, in memory, and while living for himself.

Commentary: The provenance of this inscription and no. 4 is the same. The findspot in the village of Sadıroğlu is a short distance from Orkistos. The beginning of both inscriptions did not survive. It is, thus, difficult to read the names. It seems two brothers, who were the sons of Maximos, erected the monuments for themselves and their wives. Although two inscriptions belonged to one funerary monument, the surface of the stone is more worn in no. 3 than no. 4. On both monuments, the iconography presents biographical props separating gender roles:

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25 Obrador-Cursach 2020, 157-59.

26 see the lexicon of the Phrygian inscriptions in Obrador-Cursach 2020, 154-411.

27 Brixhe 2002; Obrador-Cursach 2020, 1-7.

28 ιος νι σεμον κνουμανε κακον αδακετ δεως ζεμελως τιτετικμενος ειτου; see Brixhe 2002, 252-53; Waelkens 1986, nos. 505, 509.

29 Obrador-Cursach 2020, 133, 563, 296.

30 CIG 3822e: Αὐρ. Τύραννος Παπᾶ καὶ Ἰρήνη | ἡ γυνὴ αὐτοῦ ἑαυτοῖς ἐποίησαν | μνήμης χάριν. ιος σεμου κνου | μανε κακ[ον] <αδδακετ>, ετιτετεικμενος ειτο[υ].

31 For another fragmentary curse inscription recently found in the survey area, see Güney (forthcoming).

FIG. 4 Epitaph found in Sadıroğlu, photo by H. Güney.

FIG. 5 Detail. Epitaph found in Sadıroğlu.

women with carding/weaving tools and men with agricultural tools. It is known that the men were also presented as literate through depictions of scrolls, tablets, and styluses, while the women were attentive to personal grooming through depictions of perfume, combs, sandals, cosmetic vessels, and mirrors.[32]

4. An epitaph

Findspot: Courtyard in Sadıroğlu village, Inv. No. 136, Çifteler District (figs. 6-7).

Description: Grey marble doorstone broken on the left and right sides; a door knob, a key plate, a comb on mensa tripes, a standing figure (?) on the left panel; a door knob, a key plate, a hammer, a pruning hook, and a plough on the right panel. H: 110 cm; W: 132 cm; T: 33 cm; L: 3-3,5 cm.

Text:

[…]ος Μαξίμου Νιννα γυναικὶ γλυκυτάτη μνή[μης χάριν]
2 καὶ ἑαυτῷ ζῶν.

Translation: So and so, son of Maximos, for his sweetest wife Ninna in memory, and while living for himself.

Commentary: see no. 3. Ninna is a Lallname found in Galatia and Cappadocia.[33]

FIG. 6 Epitaph found in Sadıroğlu, photo by H. Güney.

FIG. 7 Detail. Epitaph found in Sadıroğlu.

32 Masséglia 2013, 101-2, 122-23.

33 Zgusta 1964, § 1040-49; LGPN 5C.

5. A votive column

Findspot: Cemetery in Beyyazı village, Inv. No. 137, Sivrihisar District (figs. 8-9).

Description: Grey marble column. H: 77 cm; D: 46 cm; L: 3-4 cm.

Text:

ΟΥ v v ☩ ὑπὲρ εὐ[χ]ῆς Δ̣Ι̣Ọ̣[- - -]

Translation: In fulfilment of the vow of…

FIG. 8 Votive column found in Beyyazı, photo by H. Güney.

FIG. 9 Votive column found in Beyyazı, photo by H. Güney.

Commentary: After ὑπὲρ εὐχῆς, one expects to read the word or name in genitive form. The column was damaged on the right side. A large cut and cracks start after Δ̣Ι̣Ọ̣ on the right side. If the reading of Δ̣Ι̣Ọ̣ is correct, one suggestion for the name in the genitive can be Διονυσίου. However, the fact that there is more space on the column indicates a longer line. The erection of a column dedicated "as a vow" to the god or saints for salvation, preservation, or safety was a common practice in Asia Minor and Greece.[34]

6. An epitaph

Findspot: Cemetery in Beyyazı village, Inv. No. 138, Sivrihisar District (figs. 10-11).

Description: Grey marble stele with moldings and triangular pediment with floral acroteria, pilasters on each side, a knob or a shield in the pediment. H: 147 cm; W: 52 cm; T: 30 cm; L: 2,5-3 cm.

Text:

[.]Α[.]ΟΣΖΩΥΙ
ΡΟΥ Ναναc
τῇ ἑαυτοῦ γυνα-
ικὶ ἀνέστησεν
μνήμης χά-
ρειν. Ναναc
ΑΜΝΕΛΕ [θ]-
υγατρὶ . . .
Νόνιος ἀ-
δελφὸς
Καικείλιος καὶ Νόνιος

FIG. 10 Epitaph found in Beyyazı, photo by H. Güney.

FIG. 11 Detail. Epitaph found in Beyyazı.

[34] Ogereau 2019, 628.

12 καὶ Χρῆστος καὶ Ἄμω[μ]-
ο[ς] ἀδελφοί (leaf).

Translation: So and so, son of so and so, erected (the stele) for his wife Nana (or Nanas) in memory. Nana for her daughter so and so, Nonios, brother. Kaikeilios, Nonios, Chrestos and Amomos, brothers.

L. 2: Ναναϛ seems to be in the dative case here.[35]

L. 7: The first epsilon in ΑΜΝΕΛΕ is slanting while the second one is lunate.

L. 8: Gamma is minuscule.

L. 9 and 11: The name Nonios as brother is mentioned twice.

L. 12-13: The name could also be Ἄμω[ν], a Semitic name found in the region.[36] Line 13 can be read as οἱ ἀδελφοί, the brothers. However, the article is also missing in line 9.

Commentary: The reading of lines 1-2 and 7 is highly problematic. The engraver did not use a ruler for lines 1-10. Moreover, the stone had been painted white when we discovered it. This makes it difficult to read the beginning of the inscription. The letters became a little bit more visible when we applied mud on the surface. The clumsy execution of the inscription on the lower part of the stone also indicates that the stone might have been reused in a later period, e.g. third century AD.[37] The family possesses Greek (Chrestos, Amomos) and Latin (Kaikeilios) names as well as Lallname (Nana).[38]

7. An epitaph

Findspot: Tekke outside Ahiler village, Inv. No. 139, Sivrihisar District (fig. 12).

Description: Grey marble doorstone monument broken on all sides with a key plate on the panel. H: 67 cm; W: 45 cm; T: 24 cm; L: 2.3 cm.

Text:

Π or Τ---- ΟΛΙΤΑ

Commentary: This fragment belongs to a doorstone monument. It seems that many funerary monuments were used in the tekke as spolia. Perhaps the area was first used as a Roman necropolis and later as a tekke including Muslim graves. Crystalized marble stone seems to have dissolved over time due to weather conditions. The fragment may be read as οἱ πολῖται or in the accusative / dative case, referring to the citizens/compatriots. The village of Ahiler must have belonged to the territory of Pessinus in the Roman period.

FIG. 12 Epitaph found in Beyyazı, photo by H. Güney.

35 The dative and nominative forms of the name Nana is usually the same in the inscriptions; see MAMA 7, 236. Nanas, as a name in the nominative form, was also found in the inscriptions from Phrygia; see SEG 32, 1282.

36 The name Amon is found in Gökçeayva village in the district of Beylikova of Eskişehir province; see RECAM 2, 39.

37 I would like to thank Birte Poulsen for her comment.

38 The name Amomos is found in Phrygia; see LGPN 5C.

8. An epitaph

Findspot: Boyalıözü outside İğdecik village; Inv. No. 140, Sivrihisar District (figs. 13-14).
Description: Grey marble column; its dimensions are not known because it is now lost.

Text:

ἐτείμησ-
αν Επατῳν
α σύνβιος Β-
αβου κὲ τέκ-
να αὐτῶν
Φοῖνιξ κὲ Μα-
μμη κὲ Τειμ-
όθεος μνῆ-
μης χάριν.

Translation: His wife Babou and his children Phoinix, Mamme and Teimotheos honored Epatonas or Epatorix in memory.

FIG. 13 Epitaph found in İğdecik, photo provided by the villagers.

FIG. 14 Detail. Epitaph found in İğdecik.

Commentary: This inscription and no. 9 are now lost. The villagers, however, provided us with three photos taken previously. Our team also visited the site outside the village where these inscriptions were found. The site was either a necropolis or a settlement because our team observed a few marble blocks and many accumulated stones used for construction, e.g. houses. The inscription is well preserved. Only the name of the deceased is uncertain; however, we have a few suggestions. Given that there is at least one ligature in μνήμης towards the end of the text, at the end of this line we might have a ligature between the cursive omega and nu, i.e. ΕΠΑΤΩΝΑ. The name Επατωνας is not attested. There are, however, many names ending in -ωνας. Therefore, it is perhaps slightly more plausible that it is a *hapax legomenon*. Another suggestion would be a rho instead of a nu after the omega, i.e. Επατωρας or even E<ὐ>πάτωρα. Linked with this suggestion, the final suggestion is a rho after the omega, which means that the name Επατωρα in the accusative case. The Celtic name Epatorix was previously identified in the survey area.[39] One would expect the accusative, Επατοριγα, but perhaps the engraver did not know the correct case form and used a different declension of this name. The family possesses Greek names - Phoinix and Teimotheos - and names like Babou and Mamme, which are registered in the onomastics of Anatolia.[40] καί is always cut as κέ with a ligature between kappa and epsilon. Finally, nu and eta are ligated in μνήμης.

[39] The village of Kavak is in the district of Mihalıççık in Eskişehir province; see RECAM 2, 85.

[40] Zgusta 1964, § 133-13 for Βαβου and § 850-12 for Μαμμη.

9. A fragment without context

Findspot: Boyalıözü outside İğdecik village; Inv. No. 141, Sivrihisar District (fig. 15).

Description: Grey marble fragment broken on all sides; its dimension are not known because it is now lost.

Text:

ΚΟΣΤΗΣ
2 ΔΙΟΝΗΣ

Commentary: It seems that the engraver did not use a ruler to carve this inscription (see no. 6), so it is difficult to define the context of the inscription. The letters in line 1 may belong to a word ending with -κοστῆς. In line 2, the omicron seems to be triangular in ΔΙΟΝΗΣ.

FIG. 15 Fragment without context found in İğdecik, photo provided by the villagers.

10. An epitaph

Findspot: Gravel pit outside Dümrek village; Inv. No. 142, Sivrihisar District (figs. 16-17).

Description: White marble stele with moldings and triangular pediment, palmette in acroteria and on the corners, broken at the bottom. H: 173 cm; W: 43 cm; T: 18 cm; L: 2.5 cm.

Text:

[Ἀ]λ̣εξανδρέα ΑΑΓ
2 - - - - Ṛ̣ΟΥ θυγάτ̣[ηρ]
- - - - - Σ̣ Ἀλ(ε)ξάν̣[δρῳ]

Translation: Alexandrea, daughter of so and so, for Alexandros…

FIG. 16 Epitaph found in Dümrek, photo by H. Güney.

FIG. 17 Detail. Epitaph found in Dümrek.

Commentary: Alexandrea could be either in the dative or the nominative case. The correct form in Greek is Ἀλεξάνδρεια. It must be nominative here since the formula starts with the name of the commemorator and then the name of the commemorated. The patronym could be a common name in the region – Agathemeros.[41] Thus, it must be Ἀγαθημέρου in lines 1-2. There are two alphas in line 1. The engraver perhaps mistakenly carved two alphas for the name Agathemeros. As seen in line 3, the name Alexandros is also missing an epsilon.

[41] LGPN 5C.

11. An epitaph

Findspot: Gravel pit outside Dümrek village; Inv. No. 143, Sivrihisar District (figs. 18-19).

Description: White marble grave stele with moldings, evenly cut at the top and on the right; a tongue for insertion into the socket of the pedestal is preserved. H: 100 cm; W: 26 cm; T: 15 cm; L: 2 cm.

Text:

ΕΠΟ [- - - - - - ἀνέστη]-
2 σεν Ι[- - - - - - μνήμης]
χάρ[ιν].

Translation: So and so erected for so and so, in memory.

Commentary: The inscription survived as a fragment since it was later cut from the top and the right side, perhaps due to reuse. The names Επόνη or Ἐποσσορις found in Galatia can be suggested as the name of the commemorator in line 1.[42]

FIG. 18 Epitaph found in Dümrek, photo by H. Güney.

FIG. 19 Detail. Epitaph found in Dümrek.

12. Epitaph of Marcus Antonius Teukros

Findspot: Gravel pit outside Dümrek village; Inv. No. 144, Sivrihisar District (figs. 20-21).

Description: White marble stele with moldings and a worn triangular pediment, a four-petal rosette in the pediment, invisible ornament in acroteria, an S-shaped curve on the right side of the stone; a tongue for insertion into the socket of the pedestal is preserved. H: 145 cm; W: 35 cm; T: 25 cm; L: 3 cm.

Text:

Μάρκῳ Ἀντω-
2 νίῳ Τεύκρῳ
εὐχαριστίας
4 ἕνεκα υἱοὶ
χαῖρε.

Translation: For Marcus Antonius Teukros, in gratitude the sons, farewell.

Commentary: The εὐχαριστίας ἕνεκα formula can also be found in two other inscriptions discovered in neighboring villages.[43] The tria nomina suggest that the family of Marcus Antonius Teukros obtained Roman citizenship from Mark Antony when the triumvir campaigned in the East.[44]

FIG. 20 Epitaph found in Dümrek, photo by H. Güney.

FIG. 21 Detail. Epitaph found in Dümrek.

42 LGPN 5C.

43 The village of Elcik in the district of Sivrihisar in Eskişehir province; see RECAM 2, 103; in Mesudiye Çiftlik in the same district; see RECAM 2, 93.

44 Majbom Madsen 2020, 185-86.

13. Fragment of a liturgical text

Findspot: Spolia in a fountain in Dümrek village; Inv. No. 145, Sivrihisar district (fig. 22).

Description: White marble lintel broken on all sides. H: 100 cm; W: 30 cm; L: 8 cm.

Text:

- - - ἐκέκρα]ξα φονὴν ἐν ἀλαλα[γμῷ
- - - - - - - ἔ]λαβα τροφὴν ἀπὸ μασθ[ῶν
- - - - - - - - -]. . ον τὴν κτήσην Θ[εοῦ…

L. 1: read φωνήν.

L. 3: read κτίσιν.

FIG. 22 Fragment of a liturgical text found in Dümrek, photo by H. Güney.

Translation: I uttered a loud cry…I was nourished from the breast…the creation of God…

Commentary: This fragment and no. 14 bear liturgical texts from the Greek version of the book of Psalms and in Byzantine prayers. Letter shapes indicate a date in the Middle Byzantine period (7th-11th centuries). Line 1 is probably based on the following psalms: Ps. 26:7: εἰσάκουσον, Κύριε, τῆς φωνῆς μου, ἧς ἐκέκραξα, Ps. 46:6: ἀνέβη ὁ θεὸς ἐν ἀλαλαγμῷ, and Ps. 32:3: καλῶς ψάλατε ἐν ἀλαλαγμῷ.

In line 2, ἔλαβα instead of ἔλαβον is not a correct Greek aorist of λαμβάνω, but it is present in later Greek and even the past tense of λαμβάνω in modern Greek.[45] Τὴν ἐπιστολήν σου ἔλαβα μασθός is a later form of μαστός, often used in the Septuagint.[46]

In line 3, -ον is an ending in the aorist first person singular (I … the creation, e.g. admired etc.). Moreover, one would expect here a verb in the first person, as in the above lines. One can also consider the aorist imperative στήριξ]ον, since it appears in Euchologion, Eccl., Hymn. et Liturg. Euchologium (e cod. Barb. gr. 336) in section 233 line 9: στήριξον τὴν κτίσιν (see TLG) [support the creation?]. However, there seems to be two more letters before –ον. They may be read as double nu (-ννον) or eta and nu (-ηνον).

This fragment and no. 14 were found in a field in the village of Dümrek along with a baluster and a panel. The inscriptions bearing liturgical texts from Psalms and Byzantine prayers may come from a lintel over the doorway of a church or from some other architrave inside it. They might also have been used in a cultic building.[47] There are, however, some marble fragments and architectural elements scattered in the field, which indicates there was a building nearby. In fact, a church dedicated in 897 by an official of the emperors Leo and Alexander to the saints Nicolaus, Basilius, and Hypatius was found in Mesudiye Çiftlik, less than 9 kilometers from Dümrek.[48] This stone was perhaps taken from Dümrek. Therefore, the location of the church must have been near Dümrek.

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45 Judges 1:24 70: ἔλαβαν αὐτὸν καὶ εἶπον αὐτῷ; Historia Alexandri Magni 94:10.

46 LSJ[9], s.v. μαστός and Ps. 21:10: ἡ ἐλπίς μου ἀπὸ μαστῶν τῆς μητρός μου.

47 A fragment of a sarcophagus cover found in the village of Memik, five kilometers from Dümrek, is dated to the same period. The context also fits the inscription presented here; see Güney 2021, 72-73, no. 13.

48 Mesudiye Çiftlik is in the district of Sivrihisar in Eskişehir province; see RECAM 2, 98. Another fragment found in the village of Kozlu in the district of Mihalıççık mentions Nicolaus' church; see Güney 2018a, 176, no. 12.

14. Fragment of a liturgical text

Findspot: Spolia in a fountain in Dümrek village; Inv. No. 146, Sivrihisar District (fig. 23).
Description: White marble lintel. H: cm 130; W: 45 cm; L: 7 cm.

Text:

ΤΜΟ - ΑΝ -
2 ΟΝΜΗΤΡΟΣ
- -Π or ΓΝ - -

Commentary: See no. 13. It is difficult to suggest anything specific, but perhaps it is related to the phrase εἰσήγαγον αὐτὸν εἰς οἶκον μητρός found in Song of Songs and often commented on by Christian writers.[49]

FIG. 23 Fragment of a liturgical text found in Dümrek, photo by H. Güney.

[49] Song of Songs 3:4: ἐκράτησα αὐτὸν καὶ οὐκ ἀφήσω αὐτόν, ἕως οὗ εἰσήγαγον αὐτὸν εἰς οἶκον μητρός μου καὶ εἰς ταμίειον τῆς συλλαβούσης με; Song of Songs 8:2: παραλήμψομαί σε, εἰσάξω σε εἰς οἶκον μητρός μου καὶ εἰς ταμίειον τῆς συλλαβούσης με.

Bibliography

Modern Works

Anderson, J.G.C. 1899. "Exploration in Galatia cis Halym. Part 2. Topography, Epigraphy, Galatian Civilisation." *JHS* 19:52-134.

Avram, A. 2016. "Propriétaires et citoyens à Dorylaion: enquête sur les citoyens romains et les villages sur le territoire." In *Propriétaires et citoyens dans l'Orient romain*, edited by F. Lerouxel and A.-V. Pont, 87-110. Scripta Antiqua 84. Bordeaux: Ausonius.

Belke, K. 1984. *Galatien und Lykaonien*. TIB 4. DenkschrWien 172. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Belke, K., and N. Mersich. 1990. *Phrygien und Pisidien*. TIB 7. DenkschrWien 211. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Bilgen, A.N. 2006. "2004 Yılı Midaion / Karahöyük Yüzey Araştırması." In *AST* 23.2:403-8.

Brixhe, C. 2002. "Interactions between Greek and Phrygian under the Roman Empire." In *Bilingualism in Ancient Society: Language Contact and the Written Text*, edited by J.N. Adams, M. Janse, and S. Swain. 246-66. New York: Oxford University Press.

Christol, M. 1991. "Les carrières de Dokimeion à l'époque sévérienne." *Epigraphica* 53:113-74.

Dalla Rosa, A. 2016. "From Exploitation to Integration. Imperial Quarries, Estates and Freedmen, and the Integration of Rural Phrygia." *Studi Ellenistici* 30:305-30.

Efe, T., and B. Perello. 2016. "Second Millennium Site Distribution and Pottery of Inland Northwestern Anatolia." *Anatolia Antiqua* 24:35-89.

Güney, H. 2016. "New Inscriptions from the Choria Considiana: Çalçak Roman Necropolis." *AnatSt* 66:125-39.

Güney, H. 2018a. "New Inscriptions from Northeast Phrygia." *EpigAnat* 51:167-83.

Güney, H. 2018b. "New Epigraphic Documents from Northeast Phrygia." *Philia* 4:55-66.

Güney, H. 2018c. "New Inscriptions from Northeast Phrygia: The Cult of Hosios and Dikaios." *Gephyra* 15:101-17.

Güney, H. 2018d. "Ancient Quarries and Stonemasonry in Northern Choria Considiana." In *Association for the Study of Marble & Other Stones in Antiquity. ASMOSIA XI. Interdisciplinary Studies of Ancient Stone. Proceedings of the Eleventh International Conference of ASMOSIA, Split, 18-22 May 2015*, edited by D. Matetić Poljak and K. Marasović, 621-31. Association for the Study of Marble & Other Stones in Antiquity. Split: Arts Academy in Split / University of Split / University of Split Faculty of Civil Engineering, Architecture and Geodesy.

Güney, H. 2019a. "The Sanctuary of Zeus Sarnendenos and the Cult of Zeus in Northeastern Phrygia." *AnatSt* 69:155-74.

Güney, H. 2019b. "Phrygia'dan Tanrı Apollon'a Sunulan Yeni Bir Altar Adağı." *CollAn* 18:55-64.

Güney, H. 2019c. "A New Dedication to Potamos from Parsibey in Northeast Phrygia." *Philia* 5:59-62.

Güney, H. 2020a. "New Funerary Inscriptions from Northeast Phrygia." *ZPE* 215:115-34.

Güney, H. 2020b. "New Votive Inscriptions from Northeast Phrygia." *ZPE* 216:147-55.

Güney, H. 2020c. "A New Zeus Epithet Found in Northeast Phrygia: Zeus of the Cedar Tree." *The Journal of Epigraphic Studies* 3:49-60.

Güney, H. 2021. "Some More Inscriptions from Northeast Phrygia." *Philia* 7:65-76.

Güney, H. 2022. "The Imperial Estate Choria Considiana and 'Zeus of the Seven Villages' in North-West Galatia." In *Galatian Victories and Other Studies into the Agency and Identity of the Galatians in the Hellenistic and Early-Roman Periods*, edited by A. Coşkun, 277-92. Colloquia Antiqua. Leuven / Paris / Bristol, CT: Peeters.

Güney, H. Forthcoming. "Some Remarks on the Relationship between the Phrygians and the Galatians in the Light of New Epigraphic and Archaeological Evidence." *Ancient West & East* 21:155-200.

Majbom Madsen, J. 2020. *From Trophy Towns to City-States: Urban Civilization and Cultural Identities in Roman Pontus*. Empire and After. Philadelphia: University of Pennsylvania Press.

Masséglia, J. 2013. "Phrygians in Relief: Trends in Self-Representation." In *Roman Phrygia*, edited by P. Thonemann, 95-123, Cambridge: Cambridge University Press.

Mitchell, S. 1974. "The Plancii in Asia Minor." *JRS* 64:27-39.

Mitchell, S. 1993. *Anatolia: Land, Men, and Gods in Asia Minor*. 2 vols. Oxford: Clarendon Press.

Niewöhner, P., G. Dikilitaş, E. Erkul, S. Giese, J. Gorecki, W. Prochaska, D. Sarı, H. Stümpel, A. Vardar, A. Waldner, A. Victor Walser, and H. With. 2013. "Bronze Age Höyüks, Iron Age Hilltop Forts, Roman Poleis and Byzantine Pilgrimage in Germia and its Vicinity: 'Connectivity' and a Lack of 'Definite Places' on the Central Anatolian High Plateau." *AnatSt* 63:97-136.

Obrador-Cursach, B. 2020. *The Phrygian Language*. Handbook of Oriental Studies. Section 1, Near and Middle East 139. Leiden: Brill.

Ogereau, J. 2019. "Soteriology in Early Christian Inscriptions from Asia Minor and Greece." In *Sōtēria: Salvation in Early Christianity and Antiquity: Festschrift in Honour of Cilliers Breytenbach on the Occasion of his 65th Birthday*, edited by D.S. du Toit, C. Gerber, and C. Zimmermann, 616-41. Supplements to Novum Testamentum 175. Leiden: Brill.

Takmer, B. 2018a. "Kotiaion Yazıtları Üzerine Notlar I - Kotiaion Civarında İmparator Azatlıları ve İmparator Arazileri." *Phaselis* 4:423-45.

Takmer, B. 2018b. "Kotiaion ve Synaos'tan Üç Yeni Yazıt." In *Kütahya Müzesi 2017 Yıllığı*. Vol. 5, edited by S. Ünan, 313-28. Ankara: Bilgin Kültür Sanat Yayıncılık.

Talbert, R.J.A., ed. 2000. *The Barrington Atlas of the Greek and Roman World with Map-By-Map Directory on CD-ROM*. Princeton N.J.: Princeton University Press.

Türktüzün, M., and S. Ünan. 2017. "Servi Mahallesi Kurtarma Kazısı." In *Kütahya Müzesi 2016 Yıllığı*. Vol. 4, edited by S. Ünan, 33-64. Ankara: Bilgin Kültür Sanat Yayıncılık.

Uzunoğlu, H. 2021. "Roman Soldiers and Imperial Properties in the Galatian-Phrygian Borderland: A New Inscription from the Eskişehir Museum." *Gephyra* 21:65-89.

Vita of Theodore of Sykeon. (Vie de Théodore de Sykéôn). 1970. 1. Texte grec. 2. Traduction, Commentaire et Appendice, translated by A.J. Festugière. Subsidia hagiographica 48. Brussels: Société des Bollandistes.

Vitale, M. 2015. "Imperial Phrygia: A 'Procuratorial Province' Governed by *liberti Augusti*?" *Philia* 1:33-45.

Waelkens, M. 1977. "Phrygian Votive and Tombstones as Sources of the Social and Economic Life in Roman Antiquity." *Ancient Society* 8:277-315.

Waelkens, M. 1986. *Die kleinasiatischen Türsteine*. Typologische und epigraphische Untersuchungen der kleinasiatischen Grabreliefs mit Scheintür. Mainz: Verlag Philipp von Zabern.

Zgusta, L. 1964. *Kleinasiatische Personennamen*. Monografie Orientálniho ústavu ČSAV 19. Prag: Verlag der Tschechoslowakischen Akademie der Wissenschaften.

Standard Reference Works

CIL 3 *CIL*. Vol. 3, pts. 1-2, edited by T. Mommsen, *Inscriptiones Asiae, provinciarum Europae Graecarum, Illyrici Latinae*. 2 vols. Berlin 1873. Vol. 3, Supplement, pts. [1], 1-2 & 2, edited by T. Mommsen, O. Hirschfeld, A. von Domaszewski, Inscriptionum Orientis et Illyrici latinarum supplementum. 4 vols. Berlin: G. Reimer, 1889-1902.

LGPN 5C *A Lexicon of Greek Personal Names*. Vol. 5C, *Inland Asia Minor*, edited by J.S. Balzat, R.W.V. Catling, É. Chiricat, and Th. Corsten. Oxford: Clarendon Press, 2018.

MAMA 7 *MAMA*. Vol. 7, *Monuments from Eastern Phrygia*, edited by W.M. Calder. Publications of the American Society for Archaeological Research in Asia Minor 7. Manchester: Manchester University Press, 1956.

MAMA 10 *MAMA*. Vol. 10, *Monuments from the Upper Tembris Valley, Cotiaeum, Cadi, Synaus, Ancyra, and Tiberiopolis*, edited by B. Levick, S. Mitchell, J. Potter, and M. Waelkens. JRS Monographs no. 7. London: Society for the Promotion of Roman Studies, 1993.

RECAM 2 *Regional Epigraphic Catalogues of Asia Minor*. Vol. 2, *The Inscriptions of North Galatia,* edited by S. Mitchell. Oxford: BAR, 1982.

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The Story of Storax in the Byzantine World: A Fragrant Resin of International Fame from Southern Anatolia

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Abstract

This article traces the story of storax resin in the Late Antique and medieval periods in the Eastern Mediterranean world. Storax is a resin extracted from the Latin *Styrax officinalis* (Eng. snowbell; Turk. tesbih / ayı fındığı) that was firm and golden, hence called "solid storax," and from *Liquidambar orientalis* Mill. (Eng. oriental sweetgum, Turk. sığla / günlük / buhur ağacı) that was sticky and less firm, hence "liquid storax." Both trees are indigenous to the Eastern Mediterranean region, especially southern Asia Minor. The resin coming from these trees was used in medicine, perfume making, liturgy, and magic throughout the ages. The historical sources usually do not differentiate between the resins of two species, calling both storax. One of the aims of this article is to distinguish between the two resins on the basis of an indirect and limited context provided in the sources. It has been assumed that solid storax of the Classical period was replaced by liquid storax in the Late Antique and especially medieval periods. However, the current study shows that solid storax continued to be used in these periods, although it became rarer and more expensive than liquid storax. Moreover, the data on the commerce of storax shows the degree of integration of Byzantine southern Asia Minor to commercial networks of the medieval Near East, while storax's frequent

Öz

Bu makale, Geç Antik Çağ ve Orta Çağ'da storaks ismi verilen reçine üzerinedir. *Styrax officinalis* L.'den (İng. snowbell, Tr. tesbih / ayı fındığı) elde edilen, sert ve altın rengi olan ve bu yüzden "katı storaks" diye adlandırılan bir türün yanında, *Liquidambar orientalis* Mill.'den (İng. oriental sweetgum, Tr. sığla / günlük / buhur ağacı) elde edilen, yapışkan ve daha az katı olan ve bu yüzden "sıvı storaks" olarak bilinen bir türü de vardır. Her iki ağaç da Doğu Akdeniz, özellikle Güney Anadolu'da yetişir. Tarih boyunca bu iki ağaçtan çıkarılan reçine, tıpta, parfüm yapımında, liturjide ve büyücülükte kullanılagelmiştir. Tarihsel kaynaklarda birbirine benzeyen bu iki reçine arasında genellikle bir ayrım yapılmaması, modern araştırmacıların işini zorlaştırmaktadır. Bu makalenin amaçlarından biri, metinlerdeki dolaylı ve kısıtlı referanslar üzerinden iki tür arasındaki ayrımı göstermektir. Klasik Dönem'de yaygın şekilde kullanılan katı storaksın, Geç Antik Çağ'da ve özellikle Orta Çağ'da yerini sıvı storaksa bıraktığı düşünülmektedir. Bu varsayıma karşın, hâlihazırdaki çalışma, daha az bulunur ve pahalı olsa da katı storaksın söz konusu geç dönemlerde de mevcut olduğunu kanıtlamaktadır. Ayrıca, storaks ticareti üzerine elde edilen veriler, bize Bizans Dönemi'nde Güney Anadolu'nun Yakındoğu ticaret ağlarının parçası olduğunu gösterir. Storaksın Bizans tıbbi

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appearance in Byzantine medical writing, magical texts, and religious and popular imagination point to the central role this resin played in Byzantine culture.

Keywords: Pharmacology, medicine, Byzantine-Islamic relations, Byzantine trade, Pamphylia, Lycia.

yazınında, büyücülük metinlerinde ve dini ve popüler imgelemde yaygın kullanımı, söz konusu maddenin Bizans kültüründe ne kadar önemli olduğuna işaret eder.

Anahtar Kelimeler: Farmakoloji, tıp, Bizans-İslam ilişkileri, Bizans'ta ticaret, Pamphylia, Likya.

Introduction

Throughout history, the Taurus Mountains and its valleys facing the Mediterranean Sea have played a crucial role in the communications of the Eastern Mediterranean. The coast of southern Asia Minor possesses accessible bays and suitable ports for the maritime routes between the Near Eastern and Egyptian coasts and the Aegean Sea, while the mountain passes of the Taurus connect the Anatolian plateau to the Syrian plains. In the Byzantine period, the area extending from the Dodecanese Islands and Caria to Cilicia through Lycia, Pisidia, Pamphylia and Isauria acted as a bridge for the exchange of commodities between the Byzantine and Islamic worlds, which sold their local products to the Near Eastern markets as well. For instance, according to Ibn Ḥawḳal, Attaleia was one of the two Byzantine cities (the other being Trebizond) producing substantial amounts of customs income for the Byzantine state by the third quarter of the 10th century, and ships arrived in Attaleia from Syria during that time.[1] There was a sizable Jewish community in Attaleia, and the capture of Jewish and Greek merchants from Attaleia and other ports in the region by Muslim pirates, as shown in the Genizah documents, attests to the commercial importance of Attaleia and its links to the Near East in the early 11th century.[2] To be specific about what was traded in and through Attaleia, we can go through the list of booty looted by Muslims from the Byzantine merchant ships anchored in Attaleia in 904: large amounts of merchandise, pieces of furniture, and vessels perhaps ceramic tableware.[3] Regarding the local products of the Pamphylian region, timber from the Taurus Mountains and the coast was a sought-after material among the Near Easterners, obtained through raids and trade.[4] Other than Byzantine silk from different regions of Asia Minor that passed to the Near Eastern markets through southern Asia Minor, the 11th-century Byzantine historian Attaleiates mentions tricolored silk cloths with borders in the Attaleia style.[5] Like Pamphylia, Cilicia on the eastern end of southern Asia Minor was a highway for the transportation of Islamic silk and spices to Constantinople, and for the export of Byzantine falcons and mastic to the Near Eastern markets. It also possessed local agricultural products and timber as well as textiles to sell to the other side of the frontier.[6]

Southern Byzantine provinces were especially prominent in the export of medicinal plants to the Islamic world. The pine-growing coastal regions of Asia Minor produced pine nuts; Crete exported medicinal plants such as wormwood; and northern Syria and Cilicia (centered around

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1 Ibn Ḥawḳal 197. The transliteration system used by *Oxford Dictionary of Byzantium* is adopted for Greek names and terms, while the *Encyclopaedia of Islam (Second Edition)* is consulted for Arabic names and terms.

2 Jacoby 1998, 91.

3 ʿArīb ibn Saʿd al-Qurṭubī 6; Grégoire and Canard 1950, 167.

4 Morrisson 2016, 113, 119-22; Zimmerman 2016, 71; Jacoby 2000, 36.

5 Attaleiates 129.

6 Durak 2013, 2018; Durak 2008, 228.

Antioch) exported wormwood, leopard's bane, and scammony.[7] To this list may be added the remark of the mid-12th-century al-Idrīsī that Ceramus in Caria produces aromatic plants as well as a physician's letter from Byzantine Seleukeia (1137) in which he mentions local mulberries, ribes / currants, barberries, and gentian sent as gifts to Egypt.[8]

The Story of Storax

One of the plants exported from southern Asia Minor was storax, a resin extracted from a tree, and used in medicine, perfume-making, liturgy, and magic throughout the ages. Research on the story of this substance in the Byzantine period is extremely limited. In a one-page treatment A. Dalby asks whether *zygiaia* in the 10th-century Book of the Eparch could be storax, while F. Hild and H. Hellenkemper mention storax as a product of Cilicia.[9] The aim of this article is to trace the story of storax in the Late Antique and medieval periods. By studying the extraction of storax resin, its commercial availability in Byzantium and its export to the Islamic world, as well as its uses - especially in the field of medicine in the Byzantine world - we hope to contribute to the study of the commercial history of southern Asia Minor as well as Byzantine medicine in the Middle Ages. We hope also to examine the place of this fragrant gum in the Byzantine popular imagination. The period covered in the present investigation starts with the Late Antique period (c. third to sixth centuries CE) when Anatolia prospered and the Eastern Mediterranean remained united under the new regime in Constantinople. The seventh century witnessed the expansion of the early Islamic armies into Cyprus and Northern Syria, turning southern Asia Minor into a frontier zone of confrontation and communication between the Byzantines and the mainly Islamic dynasties to the south, i.e., the Umayyads of Damascus (661-750), the Abbasids of Baghdad (effective rule 750-945), the Tulunids (887-905) and the Ikhshidids (941-969) of Egypt, and the Hamdanids of Aleppo (890-1004) in the seventh to 10th centuries. In the 11th and the 12th centuries, southern Anatolia under the Comnenian dynasty faced the rising power of the Armenian Kingdom of Cilicia, and interacted with the Crusader states of the Levant and the Fatimids of Egypt. The 13th century provides a terminus for the present study, when the Seljuks of Konya and the Turkish beyliks following the Seljuk demise conquered the central and western parts of southern Anatolia from the Byzantines while the Armenian Kingdom consolidated its hegemony in Cilicia and Isauria.

The story of storax began much earlier than the period covered in this study, and involves some uncertainty concerning the identification of two resinous substances from two different plants known as storax. Historical sources did not usually differentiate between the two resins, which has contributed to confusion in modern works. According to recent scholarship, *Styrax officinalis* L. (Eng. snowbell; Turk. tesbih / ayı fındığı) was the source of a resin that was firm and golden / sandy-brown in color, hence called "solid storax." However, *Liqudambar orientalis* Mill. (Eng. oriental sweetgum; Turk. sığla / günlük / buhur ağacı) is a tree that produces a liquid, sticky balsam that is reddish brown to black in color, hence "liquid storax."[10] Throughout this article, I will use the term "solid storax" for *Styrax officinalis* L. and "liquid

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7 Hild and Hellenkemper 1990, 1:108-12; Hellenkemper and Hild 2004, 1:156-69.

8 Idrīsī 1:304; Goitein 1964, 299.

9 Dalby 2007, 54-55; Hild and Hellenkemper 1990, 1:111, 113.

10 Amigues 2007, 262-82; Oflas 1972. See the commentary of F. Adams in his translation Paul of Aegina's medical work. Paul of Aegina 3:362; Nicolas 1978; Tanker and Sayron 1974, 108-9. For the earlier scholarship see Guibourt and Planchon 1876; Hanbury 1876, 129-45.

storax" for *Liqudambar orientalis* Mill. To complicate the subject more, modern scholarship of the last two hundred years distinguishes among a number of varieties of *Styrax officinalis* L. / solid storax, based on viscosity (from solid to semi-liquid) and on purity (from transparent to an opaque look with sawdust).[11] Moreover, based on the observations of western European travelers of the process of resin extraction from *Liqudambar orientalis* Mill. by the locals of southern Turkey (such as Yörüks) in the 19th and 20th centuries, it is possible to distinguish between true liquid storax (obtained by boiling bark with the resin on it, then skimming off the resin from the water), black liquid storax (obtained by boiling and pressuring the remaining bark repeatedly), and dried storax bark (already processed bark, dried and sold as incense).[12]

Styrax officinalis L. from the family *Styracaceae*, is a deciduous shrub 2-5 meters in height. It has fragrant flowers in clusters of three to six which appear in the late spring / early summer. It grows in alkaline soil, especially around pine forests. It has an expansive distribution in the Eastern Mediterranean, specifically Greater Syria, southern and western Turkey, Cyprus, and parts of Greece and the Aegean Islands.[13] According to Y. Vardar and S. Oflas, the resin from *Styrax officinalis* L., especially from Antakya, Karaisalı in Adana, and Kumluca in Antalya (all in southern Türkiye), is used in religious ceremonies by the locals.[14] *Liqudambar orientalis* Mill. from the family *Hamamelidaceae* is an aromatic tree that grows up to 30 meters tall with palmatifid leaves that resemble the leaves of a sycamore tree. It flowers in March and April and grows in flood plains, marshy places, and valleys near streams, up to 1800 meters above sea level. It is native to southern and southwestern Türkiye, and found most abundantly in Muğla and to some extent in the province of Antalya.[15]

The Classical and Late Antique Periods: The Gift of Syria to the World

Στύραξ (Lat. styrax) in the sources of the Classical Greek period refers to the plant and balsam of *Styrax officinalis* L. In this period this resinous shrub was either endemic to Greater Syria (including modern Syria, Lebanon, Israel, and Palestine), or perhaps present in Southeast Europe and West Asia in ancient times as it is today. However, the demand could only be fulfilled from the *Styrax officinalis* L. shrubs growing in the Greater Syria region, for Herodotus claims that the Phoenicians exported storax to Greece.[16] The association of storax with *Styrax officinalis* L. does not mean that *Liqudambar orientalis* Mill. as a balsam-producing plant was unknown to the ancient Greeks. S. Amigues and L. Casson suggest that it is likely that the

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11 Oflas 1972, 66-67; Nicolas 1978, 160; Amigues 2007, 269 (based on P. Gennadios' observations in 1914); Diapoulis 1952, 120; Hanbury 1876, 132.

12 The bark of *Liquidambar orientalis* Mill. is punctured to form oil ducts where the exudate forms, which then are collected in cans. Ciesla 2002, 44; Nicolas 1978, 159-60; Hanbury 1876, 136-42.

13 On *Styrax officinalis* L. see Schönfelder and Schönfelder 1997, 43; Davis 1972, 144; Hovaneissian et al. 2006, 1195. Polunin and Huxley 1987, 143-44; Diapoulis 1952, 119. For the distribution of the two plants in discussion and the other species of the genus *Styrax* in Central / Southern America and in South-East Asia, and *Liquidambar styraciflua* of Central America and *Liquidambar altingiana* of South-East Asia, see Hovaneissian et al. 2006, 1193-195; Oflas 1972, 43-48.

14 Oflas 1972, 66-67; Vardar and Oflas 1973, 145; N. Zeybek noted in 1970 that among the samples he collected in Türkiye, only the sample from Antakya produced resin.

15 Diapoulis 1952, 120; Akman et al. 1992; Efe 1987; Oflas 1972; Efe and Dırık 1992. For *Liquidambar orientalis* Mill. in southwestern Türkiye, see Davis 1972, 4:264. For the availability of *Liquidambar orientalis* Mill. in Bozburun, Antalya, see Fakir 2006; Grieve 1959, 2:775.

16 Hanbury 1876, 129-50 in his authoritative study on the source of storax in antiquity concluded that ancient storax must have been the solid / dry storax. For the same view, see Grieve 1959, 2:775; André 1985, 252; Herodotus 303. For storax in the Old and New Testament, see Sell 2019.

Classical world, especially by the Roman period, made use of liquid storax (i.e. *Liqudambar orientalis* Mill.).[17] It is the contention of modern scholars that the balsam of *Styrax officinalis* L. gradually became rarer, perhaps starting already from the fourth century BCE, as noticed by Galen in the second century CE. It was definitely much less common by the Late Antique period. The product was accompanied and later replaced by the more available balsam of *Liqudambar orientalis* Mill.[18] Investigations by later Classical and medieval sources including Islamic ones, with which I will engage, will tell us whether the resin of *Styrax officinalis* L. was unavailable by the end of the Late Antique period.

Before embarking on this investigation, the citation of a few major ancient authorities would provide a perspective on the complex use of storax during the Classical period. Herodotus informs his readers that Arabs used the fumes of *Styrax officinalis* L. to chase away snakes.[19] The scent of *Styrax officinalis* L., disturbing to animals but attractive to humans, earned its reputation as an aromatic plant. It is no wonder that the fourth-century BCE philosopher Theophrastus lists storax among the aromatic plants (ἀρώματα) in his *Enquiry into Plants*.[20] The same shrub was also a favorite fumigation material for religious ceremonies and festive events in this polytheistic age. Athenaeus of Naucratis in the Roman period refers in his *Deipnosophistae* to the burning of storax at the Dionysiac festivals for its pleasant smell.[21]

The Hippocratic corpus from the period between the fifth and third centuries BCE recommends the use of storax seven times in the gynecological treatises. Storax is used as incense or powder in these treatises, for which the solid form rather than liquid was appropriate.[22] The Greek-speaking geographer Strabo (d. 24 CE) from Roman Asia Minor provides the longest account of storax from the Classical period, though conflating information on the two separate resins. In his description of the Selge region in Pisidia, Strabo first writes: "it is the styrax-tree that is produced in greatest abundance there, a tree which is not large but grows straight up, the tree from which the styracine javelins are made…" The description of the tree fits the characteristics of *Styrax officinalis* L. However, as S. Amigues shows, the rest of Strabo's account, which concerns the process of resin extraction, represents the collecting of *Liquidambar orientalis* Mill.'s sap:

> And a species of wood-eating worm is bred in the trunk which eats through the wood of the tree to the surface, and at first pours out raspings like bran or sawdust, which are piled up at the root of the tree; and then a liquid substance exudes which readily hardens into a substance like gum. But a part of this liquid flows down upon the raspings at the root of the tree and mixes with both them and the soil, except so much of it as condenses on the surface of the raspings and remains pure, and except the part which hardens on the surface of the trunk

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17 Amigues 2007, 262. The use of *Liquidambar orientalis* Mill. as an additive can be traced back to the Bronze Age. Wine jars in a Middle Bronze Age wine cellar from a palace in Tell Kabri, Israel, contain traces of *Liquidambar orientalis* Mill. as an additive. Based on the observation that the current *Styrax officinalis* L. shrub does not produce a resin that would match the historical descriptions, some argue that storax of the ancients was actually the balsam of *Liquidambar orientalis* Mill. See *Encyclopaedia Judaica* 19 s.v. "Storax"; Koh et al. 2014, 5.

18 Hanbury 1876, 132; Oflas 1972, 65; Meikle 1985, 1089; Amigues 2007, 270, 286, 311, 313-14; Modugno et al. 2006, 298; Serpico and White 2000, 437.

19 Herodotus 303; Amigues 2007, 285-86.

20 Theophrastus 2:249.

21 Athenaeus Book 14.23.

22 Amigues 2007, 286; Totelin 2009, 146-47, 191.

> down which it flows, this too being pure. And the people make a kind of substance mixed with wood and earth from that which is not pure, this being more fragrant than the pure substance but otherwise inferior in strength to it (a fact unnoticed by most people), which is used in large quantities as frankincense by the worshippers of the gods.[23]

Leaving aside the wood-eating worms, which probably refer to insects such as moths that do not have any effect on the production of the resin, it is possible to distinguish three varieties of *Liquidambar orientalis* Mill. in the quotation above. The first is the purest that hardens on the surface of the trunk as it flows down; the second is a less pure resin that flows down the raspings and the soil mixing with them; the third is the most inferior variety that is mixed with wood and earth and used as incense in religious liturgy. Since the Selge region had both *Styrax officinalis* L. and *Liqudambar orientalis* Mill., it is natural that Strabo started describing the former, and continued by describing the latter.[24] Pliny the Elder's account on storax fifty years after Strabo's clearly depicts *Styrax officinalis* L., not only because of Pliny's comparison of this tree to quince in appearance, but also because of its location (primarily Syria, and Seleukeia; secondly Pisidia, Sidon, Cyprus, and Cilicia; thirdly the worst variety from Pamphylia and Crete) and its viscosity (*Styrax officinalis* L. could be unctuous and viscous but not liquid).[25]

Around the same time Dioscorides, the great pharmacologist of the Roman Imperial period (d. 90 CE), starts his narrative by likening storax tree to quince, meaning that he had solid storax in mind. He defines the best variety, which comes from Gabala (Lebanon), Pisidia, and Cilicia, as "yellow, fatty, and resinous; it has whitish lumps, its scent lasts for a very long time and when softened, it releases some honey-like moisture." This description suits the characteristics of *Styrax officinalis* L. He also notes a second variety, writing that "storax that is black, friable, and bran-like is inferior," befitting the description of black storax made from *Liquidambar orientalis* Mill. He adds, "There is also a sap resembling gum and which is translucent and myrrh-like; this, however, is scarce." This account again refers to *Styrax officinalis* L.[26]

Finally, Galen, another Greek physician of the Roman period and probably the greatest synthesizer of Classical medical knowledge, distinguishes between varieties of storax. The most active storax carries a light-yellow color and is produced in such small quantities in Pamphylia that Galen prefers using it for the emperor as well as those who can pay. This variety is definitely *Styrax officinalis* L. The inferior storax has a more or less brown color depending on the impurity content. Due to its darker color, this latter variety probably came from *Liquidambar orientalis* Mill.[27] In *Peri Antidotōn*, Galen again refers to the rarity of the storax *calamitis* (κᾰ̀λαμίτης : reed-shaped) from Pamphylia, and likens the superiority of this storax to that of Falerne wine over table wine. Calamitis might refer to the reed-shape of the resin *Styrax officinalis* L., or to the relatively semi-fluid nature of the same resin that would be carried in the knots of reeds.[28]

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23 Strabo 5:482-83.

24 Amigues 2007, 293.

25 Pliny the Elder 3:151-52. Amigues 2007, 309-10.

26 Dioscorides Book 1.59-60; Amigues 2007, 308-9.

27 Galen, De compositione, 13:954; Amigues 2007, 311. For Galen's description of the powers of storax as *materia medica* and the medical conditions for which storax is used, see Galen, De simplicium, 12:131.

28 Galen, De antidotis, 79. For the discussion on *calamitis*, see Amigues 2007, 314; Stephanus of Athens 104-5; Engler 1907, 12; Oflas 1972, 66; Hanbury 1876, 132.

In the Late Antique period - the first period of focus of this article - storax continued to be used both as incense and as a drug ingredient. The evidence allows us to claim that solid storax was still available, although it was more difficult to find than liquid storax. Although one cannot argue that ancient lexica reflected the most up-to-date information about material culture, the lexicon of Greek words by Hesychios from fifth- or sixth-century Alexandria defines storax as a tree out of which lance / spear heads were made and which was used as an incense. These famous lances were made from *Styrax officinalis* L.[29] Late antique information on the use of storax as an incense in churches and / or for religious purposes comes from the life of Symeon the Stylite the Younger (521-592). In the *vita* of this saint, who lived around Antioch, the future mother of Symeon goes to a holy man named John the Forerunner and prays for a son. John tells her that the Lord has responded to her prayers and gives her storax incense to burn in front of his holy icon.[30] Use of solid storax for liturgical purposes is confirmed in archaeological evidence too. The residual deposit of resin from an incense burner, found at North Necropolis in Antinoe, Egypt and dating to the fifth to seventh centuries CE, are proven to belong to *Styrax officinalis* L.[31] It is no wonder that storax incense was associated with prayer in the anonymous and undated *Theoretikon Paradeission*.[32] Late antique people saw storax as a quintessentially fragrant substance. The early Christian theologian Clement of Alexandria (d. 215) defines storax as having a "peasant odor" and being "the most pleasant of spices" in his theological discussions and comments on the Pentateuch concerning the subjects of smell and death, respectively. Cyril of Alexandria describes storax in his comments on Genesis in the Old Testament as "the most pleasant of ἀρώματα (aromatic plants)."[33] People of the period noted the fragrance of the flowers of the storax tree too. Theodoret of Cyrrhus, a fifth-century bishop from northern Syria, sent to a friend Cilician honey produced by "bees plundering the flowers of storax."[34] The color and fragrance of storax were associated with each other in the late antique popular mind. While speaking about the association of senses in the human mind, John Philoponos (d. c. 570), in his commentary on Aristotle's De Anima, gives the following example: "Having seen something yellow we say that we saw something fragrant; for I say seeing is associated / in harmony with the fragrant. And having smelled storax, I say that I smelled yellow."[35] Storax was used to perfume the hair too. Hair extracted from the mummified remains of a female in a sarcophagus from fourth-century CE Thessaloniki contains vanillin and cinnamates, which are found in *Liquidambar orientalis* Mill.[36]

Solid storax was probably a more expensive and rare resin than the liquid. While thanking his friend for a letter, Libanius, the great rhetorician of fourth-century Antioch, reveals that he found the letter even more agreeable than storax, which his friend complains is not received from Isauria anymore.[37] The rarity of solid storax was reflected in its price. The edict of Emperor Diocletian, which set maximum prices in 301, lists "storax of Cilicia" and "storax

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29 Hesychios Sigma, 2092.

30 In another instance, he tells her to take "this mass of storax," which she must burn with her hands in the church; see Bompaire 1954. chap. 3.10 and 2.8. For a recent translation, see van den Ven 1970.

31 Modugno et al. 2006, 303.

32 Littlewood 1992, 130.

33 Clement of Alexandria Book 8.9.31; Cyril of Alexandria 69:240.

34 Théodoret de Cyr. Letter 14.

35 *Ioannis Philoponi in Aristotelis de anima libros commentaria* 38.

36 Papageorgopoulou et al. 2009, 39.

37 Libanius 318.

of Antioch" as having the maximum prices of 500 denarius and 200 denarius per pound respectively, although storax oil was much cheaper at 30 denarius per pound. Referring to the distinction made by Classical authors like Galen and Pliny based on rarity and high price, M. Corbier and S. Amigues claim that the Cilician storax was probably the resin of *Styrax officinalis* L. while Antiochene storax was probably extracted from *Liquidambar orientalis* Mill.[38] The separate "50 lb. Isaurian storax" and "150 lb. of storax," listed among the gifts to St. Peter's Basilica in Rome by Constantine the Great in the early fourth century, may refer to a distinction between solid and liquid storax with the Isaurian storax being the former.[39] The presence of solid storax in the edict of Diocletian shows that *Styrax officinalis* L. was more expensive than it had formerly been, but it was still available by the early fourth century.

The export of storax from the southern Anatolian coast to the rest of the world must have been easy since it was very well connected to the rest of the Mediterranean in the Roman and Late Antique periods.[40] Traces of *Styrax officinalis* L. can be found in the material culture of southern Asia Minor. Some of the amphorae from Sagalassos in Pisidia, dating to the period between the fourth and seventh centuries, contain *Styrax officinalis* L. leaf impressions on their rims. The function of these leaf impressions is not clear, and the amphorae in question did not exclusively carry wine, although at one point they did. However, according to P.M. Bes and L. Vanhecke, the local producers of the amphorae may have been aware that storax would be used as a flavoring for wine.[41] Moreover, storax was sold in the city of Aphrodisias in western Asia Minor in the fourth and fifth centuries. A graffito from the city's Tetrastoon represents a list of goods traded there, including major consumption goods and "less certainly" storax.[42] By the first century CE, merchants traded storax to India via the Red Sea and the Gulf of Aden to northwestern India, because the route is described in *The Periplus of the Erithraean Sea*, a mid-first century CE account of commercial travel from the Roman world to Africa and India. According to this anonymous work, storax was carried on boats from Egypt to Muza, modern al-Mukha on the western coast of Yemen. The same boats must have sailed to the northwest Indian coast because storax was among the commodities brought to Barbarikon at the mouth of Indus in northwestern India and Barygaza, the main port of northwestern India close to modern Mumbai.[43] Unfortunately, we cannot determine which form of storax was mentioned in the Periplus.[44]

Storax was a Roman export to China in the Late Antique period.[45] Chinese sources prove that storax continued to be exported to India and the Far East during this period. The superb examinations of the Chinese sources, especially from the fifth and sixth centuries, by Berthold

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38 *Diokletians Preisedikt* 285-86; Mireille 1985, 97; Amigues 2007, 312. https://www.academia.edu/23644199/New_English_translation_of_the_Price_Edict_of_Diocletianus

39 *Liber Pontificalis* 1:177-78; Seland 2012, 120; Caseau 2007, 88-89.

40 On the connectivity of Lycia, see Foss 1994; Dündar 2016, 289-90; Zimmermann 1992.

41 Bes and Vanhecke, 2015, 107-66; Vroom 2018, 146. For a case of wine flavored by storax employed in late antique medical lore, see Oribasius 5.33.12. For aromatized wine appearing in late antique Egyptian papyri, see Trismegistos 64533 in https://papyri.info/. For the discussion on the representation of storax tree on the Hellenistic-period coins of Selge in Pisidia, see Amigues 2007, 294-308 and Bess and Vanhecke 2015, 127-28.

42 Lavan 2006, 229; Stroobants and Poblome 2015, 85.

43 Casson 1989, 66-67, 74-75, 80-81. For dating, see Casson 1989, 6.

44 For the historiography of the discussion on the nature of the storax sent to India and China, see Schoff 1912, 128-29; Casson 1989, 163-64; E.H. Warmington 1974, 266 identifies the storax sent to China as *Liquidambar orientalis* Mill.; cf. Hirth 1885, 263-66.

45 Ferguson 1978, 590; Mango 1996, 140; Whitfield 2018, 1:324.

Laufer and Lin Ying show that the storax in question (*suhe*) in this period was most probably solid storax. It was a precious item employed in making perfume and to a limited extent medicine. It was also transported via land routes between Parthian / Sassanid Iran and China.[46] However, the description of the production process of storax by a seventh century source, Liang shu, is more similar to that of liquid storax. In Liang shu, we read that *suhe* is not a natural product but a mixture of various fragrances. People gather and boil it, squeeze its juice out, and sell the dregs to traders. Another source dated prior to 527 - Kwan ci - speaks of "pressing the juice out of *suho[e]*" to make an aromatic substance.[47] Boiling and pressing as well as the use of dregs would seem to indicate the production of liquid storax. It is possible to trace the presence of both solid and liquid storax in the Chinese sources stretching from the Classical period to the early Middle Ages. However, as Ying warns, the subject requires further study.

Medical sources also testify to the availability of solid storax in the Late Antique period. Papyrus evidence from late antique Egypt also testifies to the use of storax in contemporary medical practice.[48] Storax is widely visible in the famous medical compilations of the era -Oribasios of Pergamon, Aetios of Amida, Alexander of Tralles, and Paul of Aegina. Compiled from ancient medical sources, these were voluminous but practical handbooks for their readers. Relatively rich information on storax's qualities and places of use can be gleaned from these handbooks, since they covered various topics ranging from diagnosis of diseases to pharmacology, and dietetics to surgery. Quoting verbatim from Dioscorides' *De materia medica*, Oribasios describes storax as a yellow, fatty, resinous substance coming from a tree similar to a quince tree and having heating, emollient, and digestive properties. It is used in compounds against coughs, catarrhs, discharges from the nostrils, hoarseness of voice, and menstruation-related problems. The description suits the resin of *Styrax officinalis* L.[49] Oribasios, in the sections of his *Medical Collections* where he prescribes various compound drugs for diseases, does not distinguish between the different varieties of storax nor does he give any provenance. However, it is not difficult to understand that he had solid storax in mind from the way the substance is expected to be employed. For instance, for a mixture called *Sturakaton*, the author asks the reader to skim the honey and grind the storax.[50] Likewise, for the preparation of a purgative medicine, he recommends the cutting of storax in a mortar.[51] Grinding or cutting could only be done to solid storax.

Aetios of Amida from the early sixth century repeats Dioscorides' observations about solid storax's properties and the medical areas for which it was used.[52] Unlike that of Oribasios, Aetios' medical treatise - *Tetrabiblos* - mentions different varieties of storax: *calamitis* / reed-shaped (καλαμίτης), high quality (πρώτειος), good (κάλος), yellowish / golden (ξανθός), and fatty / greasy (λιπαρός).[53] Since golden color, fatty texture, and high / good quality are defined as characteristics of *Styrax officinalis* L. by Classical authors, Aetios of Amida must have had solid storax in mind. This point is also proven by the way the storax is added into the compound

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46 Laufer 1919, 456-60; Ying 2004, 330-33.

47 Ying 2004, 333; Laufer 1919, 456.

48 p.coll.youtie.2.86, p.nyu.2.51, p.oxy.16.2053, p.oxy.54.3731, p.prag.1.88 in https://papyri.info/

49 Oribasius 12.σ.57; Oribasius *Synopsis* 2.56.55.

50 Oribasius 5, 33.12.

51 Oribasius 8, 43.1.

52 Aetius 7.3.

53 Aetius 1.123, 1.132, 8.75, 16.167, 16.175, 12.59.

drugs in his work. In various recipes, Aetios recommends softening the storax with saliva, cutting it into smaller pieces, melting it, and pounding it.[54]

Among the great compilers Alexander of Tralles from the sixth century, who wrote the twelve-volume *Therapeutics* and *On Fevers*, does not expand on the properties of storax *à la Dioscoride*. Paul of Aegina, who wrote his seven-volume *Epitome* in the seventh century, briefly recaps what Oribasios wrote about the properties and uses of solid storax.[55] Both authors recommend simply "storax" in some cases, but other times indicate specific varieties. For example, Paul of Aegina recommends storax (without further qualification) quite often especially for stomach and kidney problems as well as for coughing. However, he is more specific in three instances: fatty storax against scyrrhus; white storax (λευκός) for purging phelgm; and storax *calamitis* in the Peonian antidote.[56] Both Isaurian storax and storax *calamitis* must be solid storax resins, and the attributes "fatty" and "white" also indicate the solid form.[57] Alexander of Tralles also uses the generic term "storax" for his medical recipes to treat cough, reflux and stomach problems, and fever.[58] The method of mixing the storax nevertheless shows that he had the solid form in mind. For a compound against quartan fever he asks the physician to mix a number of *materia medica* including storax. He adds that one should spread the storax, dissolving it in honey and sprinkling the dry parts (τὰ ξηρά) on it. Similarly, in a recipe attributed to Galen, the author lists a number of simple drugs including spikenard, frankincense, and storax, and asks the preparer to soften the dry material in wine for a day. Defining storax as "dry" points to the use of the resin of *Styrax officinalis* L. [59] Concerning storax of different varieties, Alexander of Tralles warns his reader to use storax of good quality (καλοῦ) in a compound against quartan fever, Isaurian storax against abdominal induration, and storax *calamitis* twice - in a pill against coughing and in the Marciatum salve for stomach problems.[60] The good quality and the reference to Isaurian storax point more to *Styrax officinalis* L.

The association of storax with fragrant smells can be traced in medical writing too. Oribasios' suggestion of applying "bee-glue that is golden and fragrant, and smelling of storax" not only reminds us of Theodoret of Cyrrhus' description of Cilician honey, but also shows the use of this honey in medicine.[61] The same author recommends the use of soot obtained from storax, which he claims to be similar to the soot of frankincense. Paul of Aegina also makes use of the storax soot and recommends storax repeatedly in the section on compounds of perfume and cyphi, an ancient incense.[62]

Concerning provenance, Cilicia, Antioch, and Isauria were the major locations where storax could be found, as the primary sources quoted above show (Theodoret of Cyrrhus, Libanius, the Price Edict of Diocletian and Alexander of Tralles). The western-most distribution area seems to be Crete because Stephen of Byzantium refers in his sixth-century geographical

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54 Aetius 12.65.40, 1.131.18, 12.59.6, 12.67.48, 12.63.51.

55 Paulus Aegineta 7.3

56 Paulus Aegineta 4.32, 7, 4, 7.11.

57 Paulus Aegineta 4.32, 7.4, 7.11.

58 Alexander of Tralles 1.429, 2.77, 2.157, 2.181, 2.269, 2.435.

59 Alexander of Tralles 1.435, 2.295.

60 Alexander of Tralles 1.425, 2.303, 2.179, 1.401.

61 Oribasius 12.π.30: "Πρόπολιν παραληπτέον τὴν ξανθὴν καὶ εὐώδη, στύρακος πνέουσαν, …"

62 Oribasius 11.λ.7, 15.1.18; Paulus Aegineta 7.3, 7.22, *passim.*

dictionary *Ethnika* to a mountain called Sturakion in Crete where "the inhabitants are storax-makers."[63] Stephen of Athens, who wrote a commentary on Hippocrates' aphorisms in late sixth / early seventh centuries, gives the geographical origins of this hot and moist balm. He writes: "From Isauria bolt-shaped and reed-shaped storax, and such items" (ἀπὸ δὲ Ἰσαυρίας ὁ στύραξ ὁ γομφίτης καὶ ὁ καλαμίτης καὶ τὰ τοιαῦτα).[64] As this shows, Isauria was home to the resin of *Styrax officinalis* L. in various forms, two of which were most famous - the bolt-shaped / γομφίτης (*storax gomphytis*) and the reed-shaped (κᾰ̀λαμίτης). Stephen's elucidation of storax might mean that these varieties of *Styrax officinalis* L. were available in Hippocrates' time or in his own time.

A similar picture emerges when we look at medical works in the Latin-speaking Mediterranean in the Late Antique period. The writers in question do not usually specify the storax variety they have in mind. For instance, the writer of the *Medicina Plinii*, a reference book for travelers written before 400 CE, recommends simply storax, while Marcellinus from the Gaul, *magister officiorum* under Theodosios I in the late fourth century, includes storax in the compounds for stomach problems and coughing, and for problems with tendon nodules in his *De medicamentis*.[65] There was even a compound drug named *sturakinon*, described in the *Chronic Affections* of Cornelius Aurelianus in the fifth century.[66] Storax was always associated with a good scent. The writer of the fourth- / fifth- century medical poem titled *De medica* counts storax ("storacem") among aromatics emitting a fragrant smell.[67] A number of sources show that *Styrax officinalis* L. was still available during the Late Antique period. In Cassius Felix's *De Medicina* from the mid-fifth century, references to the best quality storax from Isauria and "styracis calamitae" point to *Styrax officinalis* L.[68] Isidore of Seville (d. 636), who used among others Pliny the Elder as a source for his *Etymologiae*, gives under the heading of "aromatic trees (de aromaticis arborus)" a definition of storax that is very close to those of Dioscorides and Pliny the Elder:

> The storax is a tree of Arabia, similar to the quince, whose shoots exude sap from their crevices during the rising of the dog star. When its distillate falls to the ground, it is unclean, but when it is preserved in its own bark, it is clean. The distillate clinging to rods and reeds is clean and whitish, but then becomes yellowed because of the sun. The storax itself is reedy, oily, resinous, of pleasant odor, and moist, and it emits a sort of honey-like liquid. Moreover, storax is so called because the sap of this tree flows and is solidified … [69]

Isidore does not differentiate between different varieties of storax as Discorides and Pliny the Elder do, but his description reflects the characteristics of *Styrax officinalis* L. completely.

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63 Stephan von Byzanz 588.

64 Stephanus of Athens 104-5, 156-57.

65 *Medicina Plinii* 2020, 72 (Latin text), 222. The storax in question is *Styrax officinalis* according to the editor. Marcellus Empiricus 154, 203, 208-10, 219.

66 Tecusan 2004, 229. According to Aetios of Amida 1935, 1.123, *sturakinon* was made by boiling "storax" and the best quality olive oil in the same pot; *Sturakaton* (στυρακᾶτον) was another compound made from storax, good-quality wine, and honey; cf. Nikolaos Myrepsos 935.

67 Cilliers 2018, 133.

68 Cassius Felix 133, 138.

69 Isidore of Seville 17.7-8. For the translation into English, see *Etymologies of Isidore of Seville* 14-15, 348.

In addition to Byzantine medicine, Byzantine magical practices involved the use of storax. In a late antique anonymous collection of magical recipes written in the fourth century, *The Kyranides*, the reader is told to rub storax into a concoction used for conceiving a baby.[70] The action of rubbing allows us identify the substance as solid storax. In the Greek magical papyri from Roman and late antique Egypt, storax appears frequently among *materia magica*. The plant is attributed to the god Kronos because it is heavy and fragrant. For instance, a lead plate with spells is "consecrated" with "bitter aromatics" like storax to restrain anything like chariots and demons. There is storax among the offerings for a "bear charm that accomplishes everything." Likewise, in a slender spell, an offering of Cretan storax is made.[71] The statement in a papyrus that the leaves of storax are twisted like a ram's horn brings to mind the leaves of *Styrax officinalis* L., which are curved.[72] Finally, in a letter with fictitious characters for satirical purposes, the Roman or late antique writer Alkiphron describes a woman from Phrygia with the knowledge of divination who prepares among other items, "tall / large? storax (στύρακα μακρὸν)" for purification purposes.[73]

In short, although we cannot be sure whether the generic term "storax" as used in the late antique medical compilations referred to the dry or solid forms, occasional references in Greek and Latin medical works to storax of good / high quality, storax *calamitis*, yellowish / golden storax, fatty / greasy storax, and Isaurian storax all point to the availability of and preference for solid storax in the period from the third to the seventh centuries. The archaeological evidence proves the use of both solid and liquid storax in the late antique Mediterranean.

Byzantine Period: "Pamphylia Full of Aroma"

The seventh century witnessed the end of the late antique political order. The late Roman and Sassanid political centers were replaced by the Umayyad and later Abbasid dynasties in the Near East and North Africa, and by the Byzantine state controlling the southern Balkans, Asia Minor, and parts of Italy. In the culturally and politically consolidated Byzantine empire, storax (στύραξ) continued to be used as perfume, incense, and *materia medica* until the late Middle Ages. A letter sent from Theodore, the Metropolitan of Kyzikos, to Constantine VII Porphyrogennetos in the 10th century contains an invaluable reference to storax. This shows that this fragrant substance was in high demand and made a suitable present from an emperor to a high-ranking member of the clergy at this time. In his letter, Theodore thanks the emperor for sending him the storax and talks of "the fragrant luxury of storax."[74] We find other references to the aromatic qualities of storax in two Byzantine lexica. *Etymologicum Gudianum*, a lexicon providing the origins of the words and their derivations from around the 11th century, defines storax as "a type of tree whose fruit is called by the same name."[75] Thomas Magister (d. 1328), who wrote a lexicon of Attic words and phrases, defines storax as incense

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70 *Die Kyraniden* 1.18. For other references, see "storax" in 3.1 and "storax *calamitis*" in 2.3.

71 *Papyri Graecae magicae. Die griechischen Zauberpapyri* 1973-1974, 13.18, 7.429, 4.1312, 4.2638. For translation, see *The Greek Magical Papyri Including the Demotic Spells* 1986, 63, 129, 87.

72 *Demotic Magical Papyrus of London and Leiden* 1904, verso, col. 4 / 6-19.

73 *Alciphronis rhetoris epistularum libri 4,* 4:19. The meaning of tall / large storax is unclear to me.

74 *Épistoliers byzantins du Xe siècle* 323.

75 *Etymologicum Graecae linguae Gudianum et alia grammaticorum scripta e codicibus manuscriptis nunc primum edita* 1818, 497.

(θυμίαμά).[76] While discussing the senses, Sophinias, a 13th- / 14th-century philosopher, defines storax together with aloe as having a biting taste but a sweet smell in his commentary on Aristotle's *On the Soul*.[77]

Other non-medical medieval sources not only show that Byzantines continued to value storax as an aromatic substance, but also give southern Asia Minor as the provenance of storax. Stephen of Byzantium's description of Crete as a storax-producing area in the sixth century is repeated by Eustathios of Thessalonica in his 12th-century commentary on Homer's *Iliad*.[78] Even though this piece of information might be an antiquarian repetition, the following sources leave no doubt that storax was exploited in southern Asia Minor from Lycia and Pamphylia to Isauria in the middle Byzantine period (7th-11th centuries). In his geography in Armenian, dated to the seventh century with a shorter version written not later than 800, Ananias of Širak writes the following for Pamphylia: "An aromatic gum is found here called storax which is formed in the hollows of trees eaten by worms." Similarly, for the Taurus Mountains in Isauria, he writes, "the mountains yield gum, storax, colophane,[79] obergomphis (gomphytis), and calamite; all of which flow from the trees and are produced by the boring of a yellow-colored worm with black markings, like a blight." He also locates in Lycia "an aromatic resin which flows from a tree like gum."[80] Both descriptions by Ananias of Širak bring to mind the naturally flowing gum of *Styrax offinicalis L.* Photios, the ninth-century Byzantine patriarch and intellectual, summarizes Philostrate's *On Apollonios* in the *Bibliotheka* and speaks of "Pamphylia full of aroma." He summarizes Philostrate's view that panthers, attracted to the scent of storax, came from Armenia and roamed across the Taurus Mountains. One may be suspicious of this information as reflecting the time of Photios, because the *Bibliotheka* is a list of book summaries of ancient authors. However, Photios himself first makes a contemporary reference to the Taurus Mountains by saying "the part of the Taurus Mountains that is in our country." He also confirms the truth of the statement about panthers by adding the expression "which I know (οἶδα)"[81] Neither Eustathios of Thessalonica nor Ananias of Širak nor Photios distinguish between solid and liquid storax. Fortunately, the observations of Abbot Daniel, a Russian pilgrim on his way to the Holy Land in 1106-1107, present invaluable information on this subject. Speaking on the production and export of storax from the Lycian coast between the towns of Makri and Myra, Abbot Daniel presents the preparation of "black gomphytis (*igofit*) *thumiama* (*timijan*) / incense": From a tree comes a sort of juice which is collected with a piece of iron. The tree resembles the alder and is called *zygia* (Rus. zykia). *Zygia* is mixed with the exude of a shrub resembling the aspen and called *raka / stourik*. Daniel concludes in Old Russian that "This [*stourik* resin] is gathered and mixed with the produce of the first tree [*zygia*] and the whole is then boiled in a copper. Thus, it is that they prepare the gomphytis incense, which is sold to the merchants in leather bottles [bags]." The first tree must be *Liquidambar orientalis* Mill. due to its resemblance to the alder and the liquidity of its exude, while the second is *Styrax officinalis* L. because it is a shrub as Daniel describes. Perhaps both liquid and solid storax were mixed to obtain a final product, contributing to the conflation of the two species

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76 *Thomae Magistri sive Theoduli monachi ecloga vocum Atticarum* 1832, 334.

77 *Sophonias*, *In libros Aristotelis Libros de anima paraphrasis* 91.

78 *Eustathii archiepiscopi Thessalonicensis commentarii ad Homeri Iliadem pertinentes* 1:432.

79 Pine resin. Lardos et al. 2011, 7, 12, 15.

80 Hewsen 1971, 187, 198-99; *Geography of Ananias of Širak* 1992, 52A, 54A. Both versions prove that storax was a commercial item in Lycia, Pamphylia, and Isauria.

81 Photius 5:172.

into one in the minds of the people. Or as Amigues claims, the sawdust from *Styrax officinalis* L. was added to liquid storax to solidify it.[82]

The use of storax in magical practices continues unabated in the middle and late Byzantine periods. *The Kyranides* - the late antique collection of magical recipes in which storax is listed as part of the *materia magica* - was consulted throughout the later periods. For example, Patriarch Athanasios I (d. 1310) protested against the use of *The Kyranides*.[83] The Magical Treatise of Solomon, also known as *Hygromanteia*, was a textbook for magical practices such as instructions on how to prepare magical spells, charms, and amulets. *Hygromanteia* contains material as old as the sixth century, although Ioannes Marathakis finds the 13th to 15th centuries as more plausible for dating the work. In this collection from twelve manuscripts, storax appears many times as an ingredient, mostly as incense.[84]

An examination of Byzantine medical sources proves the continued use of storax in the middle and late Byzantine periods. An iatroposhion, specifically devoted to "the Diseases and Cures of Women" and attributed to a period between the sixth to the 11th centuries (possibly the seventh), contains a significant number of references to the use of storax.[85] The unknown female author of this iatrosophion named Metrodora employs the burning of storax (in its absence, to be replaced by resin or frankincense) to figure out whether a woman is sterile or not. The verdict is that the woman is not sterile if she can smell the scent from her mouth.[86] A similar fumigation containing "storax" to find out whether a woman is sterile or not is also recommended by Theophilos Protospatharios, who dates to the seventh to 11th centuries.[87] Leo the Iatrosophist, traditionally dated to the ninth century, recommends the fumigation of the lower parts of the female body by "fragrant substances for ion such as storax and similar substances." For the treatment of "the ascent [anadrome] of the womb" supposedly causes the suffocation of the organ in question.[88] Similarly, Paul of Nicaea, approximately dated to the seventh to 10th centuries, mentions storax twice in his medical compendium: in a liquid remedy to be drunk at night against coughing and a drink with a storax base. Likewise, Theophanes Nonnos from the 10th century uses storax in a compound against coughing. However, most of Paul's information is based on previous works, especially that of Paul of Aegina, making his suggestions a repetition of already available knowledge rather than original contributions.[89]

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82 *Pilgrimage of the Russian Abbot Daniel in the Holy Land* 1895, 6-7; Amigues 2007, 275-76; Dalby 2007, 54-55. The identification of *zygia* as the resin of *Liquidambar orientalis* Mill. is significant because if the term "zugaia" (ζυγαίαν, acc.), which appears among the commodities traded by the dealers in aromatics and dyes (μυρεψοι) in the Book of Eparch (a 10th century document regulating the commercial life of Constantinople), corresponds to *zygia* of Abbot Daniel, then we have a proof of liquid storax finding its place among the important aromatics / *materia medica* in the shops of 10th century Constantinople. However, the most recent editor of the Book of the Eparch, Johannes Koder, *Das Eparchenbuch Leons des Weisen* 110-11, reads *zugaia* as any substance that can be weighed in a beam balance rather than liquid storax.

83 Koiranides 1991, 2:1136-137.

84 *Magical Treatise of Solomon, or Hygromanteia* 99, 136, 156, 177, 260, 272, 324, 343, 358.

85 Storti 2018.

86 *Il libro di Metrodora* 55. Storax was an ingredient in a number of incense / fumigtation (θῦμίημα), *Il libro di Metrodora* 64. Not totally related to women's diseases, Metrodora recommends a theriac which contains storax against the bites of animals and for those suffering from colic and dysentery. Storax was frequently employed in this work, especially in compound drugs against cough and stomach problems. *Il libro di Metrodora* 65, 85, 79-80, 69, 87-88.

87 Theophilus Protospatharius 2:476. In an anonymous 10th-century collection of recipes, we encounter "storax" among the ingredients of a gastric plaster; cf. Rance 2017, 86.

88 Leo Medicus 201.

89 Paolo di Nicea 115, 156; Bio 1992; *Theophanis Nonni Epitome de curatione morborum graece ac latin*, vol. 1. 1794, 386. For the employment of storax in a poultice containing storax in a therapeutical text dating to the period

From the late Byzantine period come a number of medical works with references to storax. Two 13th-century works make abundant use of this substance. John the Physician's *Therapeutics* is a practical work containing medical recipes in over two hundred chapters from the Aegean or Cyprus. The writer recommends storax in a compound against vomiting in the learned version of the text (א) and in three different compounds against coughing in the popular version of the text (*ω*).[90] Likewise, Pepagomenos' *Iatricon*, a catalogue of diseases with remedies, contains a number of compound drugs / pills with storax to be used against coughing and stomach problems as well as a fumigation menstruation. Storax also appears as part of an aphrodisiac in the *Iatricon* since the resin was considered "hot" in quality.[91]

Next to the medical compilations that combined the medical heritage of the past and the need to be practical, that is to say, to offer their readers practical and up-to-date solutions to their health problems, there were also *xenon* (meaning "hospital" in medieval Greek) texts that were written in the hospital context by and for the doctors in these institutions with the sole purpose of healing patients. These texts - Θ text dating from the period between the 10th to 12th centuries and Xenon remedies attributed to Michael Aktouarios between 1050 and 1204 - list various combined drugs organized into chapters by disease. Although storax does not appear to be one of the most frequently employed *materia medica* in these texts, storax appears not surprisingly in an electuary against coughing.[92] Storax had its place not only in the Byzantine pharmacological lore, but also in dietary calendars too, although diet and drugs were not two independent spheres but two congruent means to sustain a healthy life. Hierophilos' well-known and well-read text is witness to the ubiquity of storax in texts that provided readers with the most appropriate food items for each month / season. Hierophilos, dated tentatively to 11th-13th centuries, recommends people with strong constitution / stomach to drink a dry decoction made of storax (ξηρόζεμα πίνειν διὰ … στύρακος) in January, a month when one should not mind consuming hearty food and thick, heavy mixtures.[93]

As seen up to this point, Byzantine sources do not usually differentiate between solid and liquid storax in their vocabulary, using simply the term στύραξ. However, in *De remediis*

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postdating the 10th / 11th centuries, see Jeanselme 1930, 155. The *Hippiatrica* from the period of Constantine VII Porphyrogennetos contains more than forty-five references to storax. This shows the use of this substance not only in human medicine but also in animal treatments in the 10th century. For example, a reference appears in a formula for the treatment of intestinal pain in horses; pounded opopanax and storax are added to the formula. *Corpus hippiatricorum Graecorum* 1:196. For the use of "balsam of storax" for the treatment of dental problems in horses, see *Corpus hippiatricorum Graecorum* 2:206. For other references, see *Corpus hippiatricorum Graecorum* 1:108. I did not attempt to document here the forty-five plus references to storax in the work. Another reference to the use of storax in horse medicine comes from the *Sylloge Tacticorum*. The writer of this early tenth-century military manual, who incorporated his own contemporary observations and practical needs while imitating previous examples of military manuals, warns his reader that the juice of storax (ὁ τοῦ στύρακος χυλός) makes horses ill. This reference not only shows that juice was made out of storax, but also consolidates the argument that storax in the Hippiatric corpus discussed above had contemporary relevance. *Sylloge Tacticorum quae olim "Inedita Leonis Tactica" dicebatur* ch. 66.1. For the practical aspect of the information contained in the *Sylloge Tacticorum*, see Chatzelis and Harris 2017, 5, 7-8.

90 John the Physicians's Therapeutics 88, 246, 283, 316. A short medical encyclopedia dating to the period between the second half of the 11th to the 15th centuries, Cod. Plut. 7.19 in Biblioteca Medicea Laurenziana, has eleven references to storax; cf. Litavrin 1971, 1993.

91 Demetrio Pepagomeno 63, 69, 75, 76, 82, 110.

92 Bennett 2003, 434, 405. A manuscript entitled "Therapeutic medical treatments set in order by various doctors according to the order of classification of the hospital" (Oxford MS. Barocci 150), which Bennett dates to a period between the ninth and 11th centuries, gives a recipe for a nonspecific counter-irritant plaster. Storax is included among the ingredients of the plaster; cf. Oxford, Bodleian Library, MS. Barocci 150, fols. 29r-32v. in Bennett 2000, 289.

93 *Anecdota Atheniensia et alia* 2:456-57; Jeanselme 1924, 218, 228-29.

parabilibus / On Remedies Easily Procured, whose authorship has been attributed to Galen but was written sometime between the fourth and 12th centuries, the author recommends the use of liquid storax (στύρακα τὴν ὑγρὰν) mixed with wine to combat pain on one side of the head.[94] This is the most direct reference to the differentiation between liquid and solid storax in Byzantine writing. Nevertheless, the fact that Byzantine writers talk about varieties of storax can be taken as a proof of the differentiation between liquid and solid storax. That Metrodora asks the doctor to use the best-quality storax in an antidote against quartan fever and internal ailments indicates that there were varieties of storax that differed in quality in the middle Byzantine period.[95] Metrodora recommends storax *calamitis* twice and Isaurian storax (Στύρακος ἰσαυρικοῦ) once, both of which are traditionally associated with *Styrax officinalis* L.[96] Likewise, in a xenon text from the period between 1050 and 1204, we find "pure storax *calamitus*" (στύρακος καλαμίτου ἀκράτου gen.) in an emplaster against coldness of the stomach and kidney.[97] In a pill against coughing, Pepagomenos adds "yellow storax" (στύρακος ξανθοῦ gen.) to the mixture. *Xanthos* (ξανθός) as yellow of various shades "with a tinge of red, brown, auburn" is a major characteristic of *Styrax officinalis* L.[98] We encounter the same yellow storax again, this time twice (as "fatty yellow storax" in the second instance) in the *Dynameron* of the 13th-century physician Nikolaos Myrepsos.[99] In over 2500 recipes found in the *Dynameron*, we encounter storax in its simple form, and particular varieties are also mentioned very frequently: over 300 times we find references to "storax," over 50 times "storax *calamitis*,"[100] seven times "storax of the highest-quality,"[101] four times "fatty storax," [102] twice "red storax" and "red storax of good-quality," and once "storax ouzing out in drops / viscous (στακτός nom.)."[103] Because the quality of fattiness, the color yellow, viscosity, and the term *calamitis* and *staktos* were all associated with *Styrax officinalis* L. in ancient and medieval medicinal writing, we can argue that some of the storax varieties in the works of Pepagomenos and Nikolaos Myrepsos were solid. It is difficult to identify the basis for the differentiation between regular and pure storax, or among regular storax, good-quality storax, and highest-quality storax, since it might refer to the difference between liquid and solid storax, the latter of which was deemed to be more valuable and rarer. Or it might be related to varieties of the resin of *Liquidambar orientalis* Mill., whose purity or quality was determined by the amount of raspings and soil in the resin, as ancient writers claimed. To summarize, evidence from Byzantine writing not only proves that storax was widely employed in Byzantine medicine until the 14th century when southern Asia Minor was in the hands of Seljuks of Konya or the beyliks, but also proves that solid storax

94 Pseudo-Galenus 398. For the date of the Pseudo-Galenic text, see Totelin 2021, 31-37; 2017, 107-9. The work of Brodersen 2020, which I could not obtain, is the most recent and extensive study on *De remediis parabilibus*.

95 *Il libro di Metrodora* 90.

96 *Il libro di Metrodora* 87-88.

97 For dating, see Bennett 2003, 405.

98 Demetrio Pepagomeno 69.

99 Nikolaos Myrepsos 590, 774. In the medical lexicon of Pseudo-Galen, a synonym of xanthion (ξάνθιον / Xanthium strumarium), a plant used for dyeing hair yellow, is given as storax. The similarity of the words xanthion and xanthos (yellow) might explain the association of two plants in the lexicon; see *Anecdota Atheniensia et alia* 2.391: ξάνθιον ἤτοι στύραξ.

100 Nikolaos Myrepsos passim.

101 Nikolaos Myrepsos 83, 119, 155, 171, 470, 501, 623.

102 Nikolaos Myrepsos 541, 545, 590, 622.

103 Nikolaos Myrepsos 39, 69. Even though some scholars identified staktos with *Liquidambar orientalis* Mill., this view has been refuted; see *Un glossaire de matière médicale* 1940, 113; Sell 2019, 89-92.

was still available in the middle and late Byzantine periods. It is probable that the common, undefined "storax" in Byzantine writing was from *Liquidambar orientalis* Mill.

The distribution area of the two species of storax was right on the frontier zone between the Byzantine and Islamic worlds in the Middle Ages. This land and sea frontier was a porous one, allowing the international trade of storax. The border in question changed through the decades of the 10th century due to new military developments. For this reason, it is worth tracing the story of storax in the Islamic Near East by examining Arabic sources of the period.

Islamic World: Storax as a Byzantine Product

It should be stated at the outset that medieval Arabic writers distinguished between solid and liquid storax, corresponding to *Styrax officinalis* L. and *Liquidambar orientalis* Mill. respectively.[104] They discuss storax under the terms *mayʿa*, *labnī* and *astarak* together, believing that these terms refer to varieties of the same tree. The great physician of the Middle Ages, Ibn Sīnā (d. 1037), discusses storax under the terms *mīʿah*, *labnī*, and *astarak*.[105] His account of *mayʿa* can be divided neatly into two sections. He begins: "According to some physicians, the variety in which the drug exudes by itself like gum is considered fresh. Its other variety is obtained by the process of decoction. The first one is yellow in color. On becoming old, it turns golden yellow in color. It is now considered to be very valuable." The fresh, yellow or golden yellow exudate, which is very expensive and obtained without much processing, is definitely *Styrax officinalis* L. In the second section, Ibn Sīnā writes "The variety, which is obtained after peeling of its barks, is black in color." The reference to the process of decoction and to the blackness indicates that this second variety is actually the gum of *Liquidambar orientalis* Mill. The writer conflates the two distinct resins by ascribing them to the same tree: "The variety obtained by decocting the bark is called liquid storax while the remaining part or sediment and oil cake constitute dry storax." Ibn Sīnā defines *astarak* as a variety of *mayʿa* and borrows from Discorides in describing the characteristics of *Styrax officinalis* L. For instance, he refers to its clear white color and greasy texture, its odor like that of myrrh, and its unavailability. However, in the entry on *lubnā*, the Persian scholar describes *lubnā* as "*mayʿa,* which is also called *saʾila, ʿasl al-lubnā*, and *astarak*," confusing the two distinct resins again. His description of *lubnā* as a gum of the tree similar to quince, yellow in color, fragrant as honey, and resembling myrrh makes one think of *Styrax officinalis* L. He also states that the oil of *lubnā* is found in Syria, the main distribution area of *Styrax*. On the other hand, his references to the liquid nature of *lubnā*, and his description of it as a Roman tree (*s̱ẖaḏjara rūmiyya*) are clear references to *Liquidambar orientalis* Mill. since *Liquidambar* grew in Asia Minor.[106]

A contemporary of Ibn Sīnā and another Persian scholar writing in Arabic, this time from the Ghaznavid east is al-Bīrūnī. He provided valuable information on various *materia medica* in *Kitāb al-ṣaydala fi 'l-ṭibb* (*The Book of Pharmacy in Medicine*). His views are very similar to those of Ibn Sīnā in seeing two varieties of *mayʿa*: a flowing (*al-saʾila*) kind called *ʿasl al-labnī,* which is red as well as white in color, and another variety that is dry / solid (*al-yā bis*). Quoting from Abū D̲jurayḥ, al-Bīrūnī describes *al- saʾila* variety as a tree brought from *al-Rūm* (Byzantium) with its bark, which was cooked and squeezed. This medieval process

104 Levey 1961, 408; *Un glossaire de matière médicale* 1940, 113.

105 The English translators mistakenly identify all three entries (*mayʿa, labnī, and astarak*) as *Styrax officinalis*; see Ibn Sīnā 1998 edition 449.

106 Ibn Sīnā 390, 577-78, 594. For the English text published in 1998 see Ibn Sīnā, 1998 edition 63-64, 410.

is remarkably similar to the boiling and pressing of *Liquidambar orientalis L.* bark to obtain the liquid resin in modern Turkey. Quoting from Cato and Dioscorides, al-Bīrūnī shows his reader how solid storax is better than the liquid, blackish one (maybe referring to the black storax), how it grows in Cilicia, and how difficult it is to find, pointing out the rarity of *Styrax officinalis* L. by the Middles Ages.[107]

Both liquid and dry storax were commonly-used medicinal items in the pharmacopoeia of medieval Islamic civilization, which proves the contemporary availability of the items. Sābūr b. Sahl, the ninth-century Abbasid court Nestorian physician and pharmacist, recommends in his *al-Aḳrābāḏ̲īn* (*The Dispensatory*) *mayʿa saʾila* (liquid storax) in sixteen different compound drugs, and *mayʿa yābis* (solid storax) in three compound drugs. He asks his reader to pound and strain liquid and solid storax, in addition to other *materia medica*, in a preparation against abdominal pains and coldness of the body.[108] The presence of liquid and dry storax both in Arabic medical sources shows that both *Liquidambar orientalis* Mill. and *Styrax officinalis* L. were available for consumption.

Islamic geographers too are replete with references to dry and liquid storax as medicinal items coming from Byzantium. Islamic geographers are unanimous in locating the provenance of these items in the "Roman lands." Ibn al- Faḳīh, a Persian geographer from the early 10th century in his *Muḵ̲taṣar kitāb al-buldān* (*The Concise Book of Lands*), provides a fairly similar account of *mayʿa* and claims that *al-Rūm* (representing Byzantines in his understanding) possesses "among perfumes (ʿiṭr), *mayʿa* and mastic."[109] Two other geographers from the 10th / 11th centuries are more precise about the exact provenance of *mayʿa*. The ambitious traveler and probable merchant Ibn Ḥawḳal, who wrote his *Kitāb ṣūrat al-arḍ* (*The Shape of the Earth*) in 977 and edited it again in 988, states the following about storax (*mayʿa*) in the section on the Byzantine Empire, more specifically on the coast extending from Cilicia to Attaleia: "This region (Aklimiya),[110] a neighbor of the district of Adjya (Aigia in Cilicia), is a source of storax (*mayʿa*) which is exported to the whole world by land and sea from this region and its environs." The mountains belonging to the Byzantines, which Ibn Ḥawḳal refers to as Aklimiya, are the Taurus Mountains, the traditional distribution area of both liquid and solid storax.[111] It is important to note that storax was carried both by land and sea, and Aigia was probably among the ports for transportation by sea, since the city was on the Cilician coast. Facing south, it acted as a natural entrepôt for goods from Cilicia and Isauria. Repeating al-Iṣṭaḵ̲ẖrī, Ibn Ḥawḳal gives the following information for Cyprus, which was conquered by the Byzantines prior to the time when he composed his work: "The distance between D̲jabala (on the Syrian coast) and Cyprus is a travel of two days. The distance from Cyprus to Asia Minor is the same. Cyprus produces excellent mastic, abundant storax (*mayʿa*), silk, and linen."[112]

A second geographical work, *Kitāb ġ̲arāʾib al-funūn* (*Book of Curiosities of the Sciences*) confirms what Ibn Ḥawḳal wrote. Written in Egypt between 1020 and 1050, this cosmological

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107 Bīrūnī 594. According to Hanbury 1876, 149-50, black storax was a less valuable mix of incense made from olibanum and liquid storax made into cakes / plaques.

108 Ibn Sahl passim recommends storax (*mayʿa*) 14 times, liquid storax 16 times, and solid storax (*mayʿa yābis*) 3 times. For the preparation against abdominal pains and coldness of the body, see Ibn Sahl 35.

109 Ibn al- Faḳīh 148.

110 The mountains of Aklimiya are the Taurus Mountains extending eastwards from the Antalya region to Cilicia, most of which was under Byzantine rule in the early Middle Ages.

111 Ibn Ḥawḳal 201.

112 Ibn Ḥawḳal 204.

work presents a commercial and geographical map of the Eastern Mediterranean Sea in light of the new political realities of the 11th century. By then, the Byzantine forces had consolidated their gains under the reigns of Phokas and Tzimiskes and near masters of the Eastern Mediterranean Sea. In this anonymous work that pays particular attention to ports and sea routes, we read that "from this island (Cyprus) gum mastic, *lāḏẖan*, dry and fresh storax (*mayʿa al-yābis wa al-ṭarīyya*), vitriol, blue-green vitriol, white vitriol, and all other provisions imported from Byzantium."[113] Although Cyprus produced ladanum and vitriol locally, mastic was a product of Chios, meaning that not all the products listed had to originate from Cyprus. Moreover, the reference to "all other provisions imported from Byzantium" shows that Cyprus was a stepping stone for many commodities originating from Asia Minor and Greece. It is likely that merchants sailing from the Cypriot port of Soloi arrived at southern Anatolian ports such as Aigia to buy storax from the locals.[114]

In short, medieval Islamic writers do not differentiate between the plants that produce storax, but rather see the resins as varieties from one tree. The main two varieties in their view are the liquid (*mayʿa al-saʾila*) and dry or solid / congealed storax (*mayʿa al- yābis* or *al-ḏjāmida*). As seen in Ibn Sīnā's account, many believed that liquid storax was acquired by decocting the bark of the tree while solid storax was the sediment from the decoction. However, the characteristics of liquid storax defined as flowing and red to black in color, depending on the amount of residue in it, point to *Liquidambar orientalis* Mill. However, the characteristics of solid storax, namely white to golden yellow in color, more valuable and more difficult to find, point to *Styrax officinalis* L. By the turn of the first millennium CE, both forms seem to have been imported into the Near Eastern markets from the Byzantine Empire, because Crete, Cyprus, and southern Asia Minor - the distribution area of *Liquidambar* - along with Pisidia, Cilicia, and northern and western Syria - the distribution area of *Styrax* - were under Byzantine control.

Conclusion

A resin known as "styrax" in Greek and most commonly as "mayʿa" in Arabic was employed in medicine, magic, perfumery, and incense-making in the Near East and Mediterranean from ancient times to the Middle Ages. Storax was collected in southern Asia Minor in a region extending from Rhodes in the west to the area around Antioch in the east. This balm, known to be hot and moist according to humoral theory, was a common item in the Byzantine and Islamic *materia medica*. It had antiseptic effects, and was used especially to combat respiratory and gastrointestinal problems. It was even an eponym for the compound drugs named *sturakinon* and *sturakaton*. Byzantine magicians, calling storax bitter and heavy, made use of it in slander spells and charms, mostly as incense throughout the centuries. The aromatic characteristic of storax was the cause of its fame in the popular culture of the Classical and medieval periods. Byzantine and Islamic writers refer to its fragrance almost without exception. While the sixth-century philosopher Philiponos sees the yellow color and fragrant smell of storax as the most conspicuous characteristic of the resin, the late Byzantine philosopher Sophinias describes storax as having a bitter taste but a sweet smell. While people of the Eastern Mediterranean flavored their wine with storax, bees were attracted to the balm of storax, producing the famous

113 *An Eleventh-Century Egyptian Guide to the Universe; The Book of Curiosities* 2014, 1, 116 [A Fol. 36b], 476.

114 The writer of the Book of Curiosities remarks: "Sulīs (Soloi); protects from the Notos wind; in it are the ships of the merchants of Cyprus." *An Eleventh-Century Egyptian Guide to the Universe; The Book of Curiosities* 2014, 114 [A Fol. 36b], 478.

Cilician honey. Even panthers were drawn to its smell in the Taurus Mountains in the words of the Constantinopolitan bishop Photios. Storax could be found both in religious imagination and actual religious space. Theological writers associated it with prayer and the heavens, and believers burned this fragrant gum in front of icons and in cemeteries. Moreover, storax was an appropriate gift among the members of the elite, as in the case of Constantine the Great's donation to the St. Peter Church in the fourth century or Constantine VII's gift to the bishop of Kyzikos in the 10th century.

Our duty would have been much easier if we could identify the storax in the historical records precisely with one plant species. Two resins from two different trees have been named storax throughout history. Their almost identical medical uses, olfactory traits, and provenance in addition to their resemblance in material and appearance makes them very difficult to distinguish in the historical sources, especially when these sources did not generally differentiate between the two resins. According to modern scholarship, a firm and golden / sandy-brown storax - traditionally called solid storax - was obtained from *Styrax officinalis* L., while a liquid and sticky balsam, reddish brown to black in color - traditionally called liquid storax - was obtained from *Liqudambar orientalis* Mill. On top of this complication, one should add that the ancients differentiated among varieties of *Styrax officinalis* L. resin based on viscosity (from solid to semi-liquid), purity (from transparent to opaque), and shape (bolt-shaped, reed-shaped). Likewise, they distinguished among varieties of *Liqudambar orientalis* Mill. resin, preferring the most liquid form with the least impurities over the other varieties. One should also keep in mind that storax was mixed with many other substances for adulteration or enhancement, as proven by the statements of Dioscorides and Pliny the Elder from the Classical period and Islamic sources from the medieval period.[115] Abbot Daniel's statement that solid and liquid storax were mixed to produce black gomphytis incense in 12th-century Lycia attests to the possibility of the two species of storax being traded as one product. As a general rule, we can speak of two "pure" resins from two species: yellow / golden storax with a fatty, honey-like texture that came from Isauria, Cilicia, and Syria is more likely to be the resin of *Styrax officinalis* L. whereas liquid, sticky, reddish storax resin or resinous bark was more likely from *Liqudambar orientalis* Mill. However, there were many varieties of this resin called storax in medieval markets, owing to differences in the exudation process, extraction and production methods, as well as adulteration and enhancement.

Modern scholarship holds that solid storax of the Classical period was replaced by liquid storax in the Late Roman and especially medieval periods, although no explanation is given for the disappearance of solid storax.[116] However, this study shows that solid storax continued to be used in later centuries. Material as well as written evidence points to the availability of the resin of *Styrax officinalis* L., although it was rarer and more expensive than that of *Liquidambar orientalis L.* As we have attempted to show, the high price and rarity of solid storax can be traced in late antique archeological and written evidence, for example, in Diocletian's Price Edict and Libanius' complaint in a letter. It is true that the writers of the late-antique medical compilations from the Greek East and Latin West rely on Classical writers such

115 Dioscorides 1.28, 1.40, 1.59-66; Levey 1961, 408; Pliny the Elder 3:151-52. For aduleration with sand and ashes in the 19th century, see Hanbury 1876, 141.

116 A. Dalby 2007, 54-55 suggests that *Liquidambar oritentalis* Mill. was exploited in southern Asia Minor after Syria was lost to the Muslims in the early Middle Ages. This argument does not explain why solid storax became rare in the whole medieval Mediterranean world and why the Near Eastern buyers were ready to buy the Byzantine liquid storax enthusiastically.

as Strabo and Dioscorides when they describe the qualities of storax, thus feeding into the confusion about the surrounding solid versus liquid storax already present in the Classical sources. However, the same writers are very practically oriented when they recommend compound drugs for ailments in their works. The fact that they ask their readers to use "white," "yellow," "golden," "fatty" storax on certain occasions, or to cut or grind storax proves that these compilers had solid storax in mind, probably next to the liquid storax. In the Byzantine period too, direct evidence from the pilgrimage account of Abbot Daniel and various references to "liquid (ὑγρὰν, acc.)," "yellow," and "fatty" storax as well as "storax in drops" in medical sources show that solid storax was available in medieval markets. Its existence is confirmed in medieval Arabic sources too. Islamic geographical and medical sources clearly distinguish between the liquid (*al-sa'ila*) and the solid (*al-camida*) forms, although many thought that they came from the same tree.[117]

In the Middle Ages storax harvested in southern Asia Minor was consumed both within the borders of the Byzantine Empire and in foreign markets. After being harvested and processed between June and October,[118] it was ready to be traded in winter, and most likely reached its destination by spring when the mountain and sea routes were fully open. It was not transported in amphorae. As al-Bīrūnī and Abbot Daniel state, dry storax was transported in small wooden boxes while liquid storax was carried in leather bags.[119] Until the Byzantine expansion into Islamic Cilicia and Syria in the second half of the 10th century, Byzantine storax came from Caria, Lycia, Pamphylia, and Isauria. It was exported to the Islamic world via the Taurus land border and Cyprus. After the Byzantine expansion, the two other centers of storax exploitation, Cilicia and northern Syria, were added to the Byzantine territory, making Byzantium the sole provider of storax in the international markets. In the 12th to 14th centuries, when southern Asia Minor was largely under Turkish and Armenian rule, storax from this region could still be found in the markets of the gradually diminishing Byzantine Empire. The story of storax in this later period, though not drastically different from that in the Byzantine world in terms of provenance and production methods, is the subject of another investigation to be pursued by the medievalists of Turkish Asia Minor.

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117 A separate examination of the Arabic sources on storax is planned by the author of the present article.

118 Nicolas 1978, 159-60.

119 Bīrūnī 594. This information is confirmed by Daniel the Abbot's description less than a century later; see *Pilgrimage of the Russian Abbot Daniel in the Holy Land* 1895, 7.

Bibliography

Primary Sources

Aetius. *Aetii Amideni libri medicinales,* 1-4, edited by A. Olivieri. Corpus Medicorum Graecorum 8.1. Leipzig / Berlin: In aedibus B. G. Teubneri. 1935.

Alciphronis rhetoris epistularum libri, 4. Edited by M.A. Schepers. Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana. Leipzig: In aedibus B. G. Teubneri. 1905.

Alexander of Tralles. *Alexander von Tralles: Original-Text und Übersetzung nebst einer einleitenden Abhandlung. Ein Beitrag zur Geschichte der Medicin*, edited by T. Puschmann, 2 vols. Vienna: Wilhelm Braumüller. 1878-1879.

An Eleventh-Century Egyptian Guide to the Universe: The Book of Curiosities. 2014. Edited and translated by Y. Rapoport and E. Savage-Smith. Islamic Philosophy, Theology and Science. Texts and Studies 87. Leiden / Boston: Brill.

Anecdota Atheniensia et alia, vol. 2. *Textes grecs relatifs à l'histoire des sciences.* Edited by A. Delatte, 2 vols. Liége: Faculté de philosophie et lettres / Paris: E. Droz (impr. de J. Duculot). 1939.

ʿArīb ibn Saʿd al-Qurṭubī. *Tabarî continuatus: Ṣilat tāʾrīḫ al-Ṭabarī*, edited by M.J. de Goeje. Leiden: Brill. 1897.

Athenaeus. *Athenaei Navcratitae Dipnosophistarvm libri* 15, edited by G. Kaibel, 3 vols. Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana. Leipzig: B. G. Teubneri. 1887.

Attaleiates. P. Gautier, "La Diataxis de Michel Attaliate." *RÉByz* 39:5-143. 1981.

Bīrūnī. Abu-ʿr-Raiḥān Muḥammad Ibn-Aḥmad al-Bīrūnī. *Kitāb aṣ-ṣaidana fi ʿṭ-ṭibb = Kitāb al-saydana fi ʿl-tibb.* Markaz-i Našr-i Dānišgāhī 572. Tārīḫ-i ʿilm 3. Tehran: Markaz-i Našr-i Dānišgāhī. 1991.

Bompaire, J. 1954. "Abrégés de la Vie de saint Syméon Stylite le Jeune." *Hellenika* 13:71-110.

Cassius Felix. Cassii Felicis, *De medicina ex Graecis logicae sectae auctoribus liber translatus.* Sub art-abure et calepio consubilus (anno 447), edited by V. Rose. Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana. Leipzig: In aedibus B. G. Teubneri. 1879.

Clement of Alexandria. Clemens Alexandrinus, 3. *Stromata, Buch* 7 *und* 8; *Excerpta ex Theodoto; Eclogae prophetica; Quis dives salvetur; Fragmente*, edited by O. Stählin and L. Früchtel. Die griechischen christlichen Schriftsteller der ersten Jahrhunderte 17. 2nd ed. Berlin: Akademie-Verlag. 1970.

Corpus hippiatricorum Graecorum. Edited by K. Hoppe and E. Oder, 2 vols. Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana 66. Leipzig: B. G. Teubneri. 1927.

Cyril of Alexandria. *Glaphyra in Pentateuchum*, edited by J.-P. Migne. In Opera Omnia, Patrologiae Cursus Completus (Series Graeca) 69. Paris: Imprimerie Catholique. 1857-1866.

Das Eparchenbuch Leons des Weisen. Edited by J. Koder. Corpus Fontium Historiae Byzantinae 33. Vienna: Verlag der Österreichischen Akademie der Wissenschaften. 1991.

Demetrio Pepagomeno. *Prontuario medico, testo edito per la prima volta, con introduzione, apparato critico e indice*, edited by M. Capone Ciollaro. Naples: Bibliopolis. 2003.

Die Kyraniden. Edited by D.B. Kaïmakēs. Beiträge zur klassischen Philologie 76. Meisenheim am Glan: A. Hain. 1976.

Diokletians Preisedikt. Edited by S. Lauffer. Texte und Kommentare 5. Berlin: Walter de Gruyter. 1971.

Dioscorides. *Pedanii Dioscuridis Anazarbei de materia medica libri quinque*, edited by M. Wellmann, 3 vols. Berlin: Weidmann. 1907.

Épistoliers byzantins du Xe siècle. Edited by J. Darrouzès. Archives de l'Orient chrétien, 6. Paris : Institut français d'études byzantines. 1960.

Etymologies of Isidore of Seville. Edited and translated by S.A. Barney, W.J. Lewis, J.A. Beach, and O. Berghof. Cambridge: Cambridge University Press. 2006.

Eustathii archiepiscopi Thessalonicensis commentarii ad Homeri Iliadem pertinentes: ad fidem codicis Laurentiani editi. Edited by M. van der Valk, 4 vols. Lugundi Batavorum: Brill. 1971-1991.

Galen. *De simplicium medicamentorum temperamentis ac facultatibus*, edited by C.G. Kühn. Claudii Galeni Opera Omnia 11-12. Leipzig: Libraria Car. Cnoblochii. 1826.

Galen. *De compositione medicamentorum per genera*, edited by C.G. Kühn. Claudii Galeni Opera Omnia 13. Leipzig: Libraria Car. Cnoblochii. 1827a.

Galen. *De antidotis*, edited by C.G. Kühn. Claudii Galeni Opera Omnia 14. Leipzig: Libraria Car. Cnoblochii. 1827b.

Geography of Ananias of Širak (Ašxarhacoyc): The Long and the Short Recensions. 1992. Translated by R.H. Hewsen. Beihefte zum Tübinger Atlas des Vorderen Orients. Reihe B. Geisteswissenschaften 77. Wiesbaden: Reichert Verlag. 1992.

Herodotus. *Herodoti Historiae: Libri* 1-4, edited by N.G. Wilson. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford: Oxford University Press. 2015.

Hesychios. *Hesychii Alexandrini Lexicon,* vol. 3. *[Pi - Sigma]*, edited by P.A. Hansen and K. Latte. Sammlung griechischer und lateinischer Grammatiker 11. Copenhagen: E. Munksgaard. 1953.

Ibn al-Faḳīh. *Mukhtaṣar Kitāb al-Buldān,* edited by M.J. de Goeje. Bibliotheca Geographorum Arabicorum 5. Leiden: Brill. 1967.

Ibn Ḥawḳal. *Kitāb Ṣūrat al-arḍ,* edited by M.J. de Goeje. Bibliotheca Geographorum Arabicorum 2. Leiden: Brill. 1967.

Ibn Sahl. Sābūr Ibn Sahl, *The Small Dispensatory*. Translated by O. Kahl. Islamic Philosophy, Theology and Science. Texts and Studies 53. Leiden: Brill. 2003.

Ibn Sīnā. Hakim Ibn-Sina, *Canon of Medicine, Book* 2. *Materia Medica. English Translation of the Critical Arabic Text*. New Delhi: Hamdard University. 1998.

Ibn Sīnā. *El-Ḳānûn fi't-ṭibb*. Edited by I. al-Qashsh, 4. vols. Beirut: Muassasat Izz al-Din. 1987.

Idrīsī. *Géographie d'Edrisi*. Translated by P.-A. Jaubert, 2 vols. Recueil de voyages et de mémoires publié par la Société de géographie, Paris 5-6. Paris: Imprimerie royale. 1837.

Il libro di Metrodora. *Il libro di Metrodora sulle malattie delle donne e Il ricettario di cosmetica e terapia: testo greco e traduzione italiana*. Edited by G. Del Guerra. Milano: Ceschina. 1953.

Ioannis Philoponi in Aristotelis de anima libros commentaria. Edited by M. Hayduck. Commentaria in Aristotelem Graeca 15. Berlin: Reimer. 1897.

Isidore of Seville. *Etymologiarum sive Originum libri* 20. Edited by W.M. Lindsay, 2 vols. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxonii: E Typographeo Clarendoniano / New York : Oxford University Press. 1911.

Jeanselme, E. 1930. "Sur un aide-mémoire de thérapeutique byzantin contenu dans un manuscrit de la Bibliothèque Nationale de Paris (Supplément Grec 764). Traduction, notes et commentaire." In *Études sur l'histoire et sur l'art de Byzance: Mélanges Charles Diehl. Premier volume: Histoire*, 147-70. Paris: Ernest Leroux.

John the Physicians's Therapeutics. *John the Physicians's Therapeutics: A Medical Handbook in Vernacular Greek*. Edited by B. Zipser. Studies in Ancient Medicine 37. Leiden / Boston: Brill. 2009.

Leo Medicus. *Conspectus medicinae*. In *Anecdota medica Graeca*, edited by F.Z. Ermerins. Amsterdam: Hakkert. 1963.

Levey, M. 1961. "Ibn Māsawaih and His Treatise on Simple Aromatic Substances: Studies in the History of Arabic Pharmacology 1." *Journal of the History of Medicine and Allied Sciences* 16.4:394-410.

Libanius. *Libanii Opera: Epistulae 1-839,* vol. 10, edited by R. Förster. Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana 38. Hildesheim: George Olms. 1963.

Liber Pontificalis. Le Liber Pontificalis: Texte, Introduction et Commentaire. 1886. Edited by L.M.O. Duchesne and C. Vogel, 2 vols. Bibliothèque des Écoles françaises d'Athènes et de Rome. 2. sér., 3. Paris: E. Thorin. 1886.

Magical Treatise of Solomon, or Hygromanteia. Edited and translated by I. Marathakis. Sourceworks of Ceremonial Magic Series 8. Singapore: Golden Hoard Press. 2011.

Marcellus Empiricus. *De medicamentis liber*, edited by G. Helmreich. Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana. Leipzig: In aedibus B. G. Teubneri. 1889.

Medicina Plinii Latin Text, Translation, and Commentary. 2020. Edited by Y. Hunt. Scientific Writings from the Ancient and Medieval World. London: Routledge.

Nikolaos Myrepsos. *Dynameron. Critical Edition*, edited by I. Valiakos. Heidelbrg: Propylaeum. 2020.

Oribasius. *Synopsis ad Eustathium*. *Libri ad Eunapium,* edited by J. Raeder. Corpus Medicorum Graecorum 6.3. Berlin: Teubner. 1926.

Oribasius. *Collectionum medicarum reliquiae,* vol. 1. *Libri 1-8,* vol. 2, *Libri 9-16*, edited by J. Raeder, 4 vols. Corpus Medicorum Graecorum, 6.1.2. Leipzig / Berlin: In aedibus B. G. Teubner. 1929-1933.

Paolo di Nicea. *Manuela Medico*, edited by A.M.I. Bio. Napoli: Bibliopolis. 1996.

Papyri Graecae magicae: Die griechischen Zauberpapyri. 1973-1974. Edited by A. Henrichs and K. Preisendanz, 2 vols. Sammlung wissenschaftlicher Commentare. Stuttgart: In aedibus B.G. Teubneri.

Paul of Aegina. *The Seven Books of Paulus Aegineta: Translated from the Greek. With a Commentary Embracing a Complete View of the Knowledge Possessed by the Greeks, Romans, and Arabians on all Subjects Connected with Medicine and Surgery*. Translated by F. Adams, 3 vols. London: Printed for the Sydenham Society. 1844-1847.

Paulus Aegineta. *Epitomae medicae libri septem*. Edited by J.L. Heiberg, 2 vols. Corpus medicorum Graecorum 9.1 and 9.2. Leipzig / Berlin: Teubner. 1921-1924.

Photius. *Bibliothèque*. Edited by R. Henry, 9 vols. Collection byzantine. Collection des universités de France. Paris: Société d'édition 'Les Belles lettres'. 1967.

Pilgrimage of the Russian Abbot Daniel in the Holy Land, 1106-1107 A.D. A. Daniel, *The Pilgrimage of the Russian Abbot Daniel in the Holy Land, 1106-1107 A.D*. 1895. Translated by C.W. Wilson. Library of the Palestine Pilgrims' Text Society 4. London: Palestine Pilgrims' Text Society.

Pliny the Elder. *The Natural History*. Translated by J. Bostock and H.T. Riley, 6 vols. Bohn's Classical Library. London: Henry G. Bohn. 1855-1857.

Pseudo-Galenus. *De remediis parabilibus libri* 3, edited by C.G. Kühn. Medicorum Graecorum Opera Quae Extant 14. Leipzig: Knobloch. 1965.

Sophonias, *In libros Aristotelis Libros de anima paraphrasis*. Edited by M. Hayduck. Commentaria in Aristotelem Graeca, 23.1. Berlin: Reimer. 1883.

Stephan von Byzanz. *Ethnika*, edited by A. Meineke. Graz: Akademische Druck- u. Verlagsanstalt. 1958.

Stephanus of Athens. *Commentary on Hippocrates' Aphrorisms, Sections 1-2*, edited by L.G. Westerink, J. Kollesch, and D. Nickel. Corpus medicorum Graecorum 11.1. 3. Berlin: Akademie Verlag. 1985.

Sylloge Tacticorum, quae olim '*Inedita Leonis Tactica' dicebatur*. Edited by A. Dain. Paris: Société d'édition 'Les Belles lettres'. 1938.

Strabo. *The Geography*, edited by H.L. Jones and J.R. Sitlington Sterrett, 8 vols. Loeb Classical Library. Cambridge, Mass.: Harvard University Press. 1961.

The Greek Magical Papyri, Including the Demotic Spells. Texts, vol. 1. 1986. Edited and translated by H.D. Betz. Chicago: The University of Chicago Press.

Théodoret de Cyr. *Correspondance,* 2. Edited by Y. Azéma. Sources chrétiennes 98. Paris: Éditions du Cerf. 1964.

Theophanis Nonni Epitome de curatione morborum graece ac latine, vol. 1. 1794. Edited by J.S. Bernard. Gothae: C.W. Ettinger.

Theophilus Protospatharius. *Scholia in Hippocratem et Galenum.* Edited by F.R. Dietz, 2 vols. Königsberg: Bornträger. 1834.

Theophrastus. *Enquiry into Plants.* Edited by A. Hort, 2 vols. Loeb Classical Library 70, 79. Cambridge, Mass.: Harvard University Press. 1916.

Thomae Magistri sive Theoduli monachi ecloga vocum Atticarum. 1832. Edited by F. Ritschl. Halis Saxonum: In libraria Orphanotrophei.

Un glossaire de matière médicale. 1940. *Un glossaire de matière médicale, composé par Maïmonide: Sarḥ asmāʾ al-ʾuqqār (l'explication des noms de drogues).* Edited by M. Meyerhof. Institut d'Egypte, Cairo. Mémories. Cairo: Imprimerie de l'Institut Français d'Archéologie Orientale.

van den Ven, P. 1970. *La vie ancienne de S. Syméon stylite le Jeune (521-592),* vol. 2. *Traduction et commentaire, vie grecque de sainte Marthe, mère de S. Syméon.* Subsidia hagiographica 32. Brussels: Société des Bollandistes.

Modern Works

Akman, Y., O. Ketenoğlu, and L. Kurt. 1992. "Fethiye-Marmaris ve Bucak Evrelerinde Yetişen Liquidambar orientalis Mill. Topluluklarının Floristik Yapısı." *Doğa, Türk Botanik Dergisi* 16.2:273-86.

Amigues, S. 2007. "Le styrax et ses usages antiques." *JSav* 2.1:261-318.

André, J. 1985. *Les noms de plantes dans la Rome antique. Collection d'études anciennes.* Paris: Les Belles Lettres.

Bennett, D. 2000. "Medical Practice and Manuscripts in Byzantium." *Social History of Medicine* 13.2:279-91.

Bennett, D.C. 2003. "Xenonika: Medical Texts Associated with Xenones in the Late Byzantine Period." Ph.D. diss., Royal Holloway, University of London.

Bes, P., and L. Vanhecke. 2015. "Turning over a New Leaf. Leaf Impressions of Styrax Officinalis L. and Vitis Vinifera L. on Late Roman Sagalassos Amphorae." *HEROM. Journal on Hellenistic and Roman Material Culture* 4.1:107-66.

Bio, L.M.I. 1992. "Per l'edizione dell'opera medica di Paolo di Nicea: il problema delle fonti." In *Tradizione e ecdotica dei testi medici tardoantichi e bizantini. Atti del I Convegno Internazionale, Anacapri 29-31 ottobre 1990*, edited by A. Garzya, 119-46. Collectanea 5. Naples: M. D'Auria.

Brodersen, K., ed. 2020. *Gut beschaffbare Heilmittel (Euporista).* Bibliothek der griechischen Literatur 91. Corpus Galenicum 1. Stuttgart: Anton Hiersemann Verlag.

Caseau, B. 2007. "Incense and Fragrances: from House to Church. A Study of the Introduction of Incense in the Early Byzantine Christian Churches." In *Material Culture and Well-Being in Byzantium (400-1453). Proceedings of the International Conference, Cambridge, 8-10 September 2001*, edited by M. Grünbart, E. Kislinger, A. Muthesius, and D.Ch. Stathakopoulos, 75-92. DenkschrWien 356 - Veröffentlichungen zur Byzanzforschung 11. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Casson, L., ed. and trans. 1989. *The Periplus Maris Erythraei: Text with Introduction, Translation, and Commentary.* Princeton, NJ: Princeton University Press.

Chatzelis, G. 2017. *A Tenth-Century Byzantine Military Manual: The Sylloge Tacticorum.* Translated by J. Harris. Birmingham Byzantine and Ottoman Studies. London: Routledge.

Ciesla, W.M. 2002. *Non-wood Forest Products from Temperate Broad-Leaved Trees.* Non-wood Forest Products 15. Rome: Food and Agriculture Organization of the United Nations.

Cilliers, L. 2018. "The De medicina, a 4th / 5th-Century Poem of Gallo-Roman Origin, Rediscovered." *Mnemosyne* 71:125-44.

Dalby, A. 2007. "Some Byzantine Aromatics." In *Eat, Drink, and Be Merry (Luke 12:19): Food and Wine in Byzantium*, *Papers of the 37th Annual Spring Symposium of Byzantine Studies, in Honour of Professor A.A.M. Bryer,* edited by L. Brubaker and K. Linardou, 51-57. Society for the Promotion of Byzantine Studies 13. Aldershot: Ashgate.

Davis, P.H., ed. 1972. *Flora of Turkey and the East Aegean Islands.* 11 vols. Edinburgh: University Press.

Demotic Magical Papyrus of London and Leiden. 1904. Edited by F.L. Griffith and H. Thompson. London: H. Grevel.

Diapoulis, Ch. 1952. "Le Styrax en Grèce." *Materiae Vegetabiles* 1:119-21.

Dündar, E. 2016. "Likya'da Seramik: Üretim ve Ticarete Genel Bir Bakış / Ceramics in Lycia: An Overview on Production and Trade." In *Lukka'dan Likya'ya: Sarpedon ve Aziz Nikolaos'un Ülkesi / From Lukka to Lycia: The Land of Sarpedon and St. Nicholas*, edited by H. İşkan and E. Dündar, 208-93. Yapı Kredi Yayınları 4681. Istanbul: Yapı Kredi Yayınları.

Durak, K. 2008. "Commerce and Networks of Exchange between the Byzantine Empire and the Islamic Near East from the Early Ninth Century to the Arrival of the Crusaders." Ph.D. diss., Harvard University.

Durak, K. 2013. "Traffic Across the Cilician Frontier in the Ninth and Tenth Centuries: Movement of People between Byzantium and the Islamic Near East in the Early Middle Ages." In *Byzantium and the Arab World, Encounter of Civilizations*, *Proceedings of the International Symposium, Thessaloniki, 16-18 December 2011*, edited by A. Kralides and A. Gkoutzioukostas, 141-54. Thessalonica: Aristotle University of Thessaloniki.

Durak, K. 2018. "The Cilician Frontier: A Case Study of Byzantine-Islamic Trade in the Ninth and Tenth Centuries." In *Center, Province and Periphery in the Age of Constantine VII Porphyrogennetos: From De Cerimoniis to De Administrando Imperio*, edited by N. Gaul, V. Menze, and C. Bálint, 168-83. Mainzer Veröffentlichungen zur Byzantinistik 15. Wiesbaden: Harrassowitz Verlag.

Efe, A. 1987. "Liquidambar Orientalis Mill. (Sığla Ağacı)'nın Morfolojik ve Palinolojik Özellikleri Üzerine Araştırmalar." *İstanbul Üniversitesi Orman Fakültesi Dergisi* 37.2:84-114.

Efe, A., and H. Dırık. 1992. "Une espèce peu connue de la forêt méditerranéenne: Liquidambar orientalis." *Forêt méditerranéenne* 13.2:91-5.

Encyclopaedia Judaica 19 Storax. J. Feliks, s.v., Storax, *Encyclopaedia Judaica* 2007. Vol. 19, 238. 2nd edition.

Engler, A., ed. 1907. *Das Pflanzenreich. Regni vegetabilis conspectus.* 4. 30 (Heft 28). Leipzig: Verlag von Wilhelm Engelmann.

Etymologicum Graecae linguae Gudianum et alia grammaticorum scripta e codicibus manuscriptis nunc primum edita. 1818. Edited by F.W. Sturz. Leipzig: Weigel.

Fakir, H. 2006. "Flora of Bozburun Mountain and its Environs (Antalya-Isparta-Burdur, Turkey)." *Turkish Journal of Botany* 30:149-69.

Ferguson, J. 1978. "Rome and China." *ANRW* 2.9.2:581-603.

Foss, C. 1994. "The Lycian Coast in the Byzantine Age." *DOP* 48:1-52.

Goitein, S.D. 1964. "A Letter from Seleucia (Cilicia): Dated 21 July 1137." *Speculum* 39.2:298-303.

Grégoire, H., and M. Canard., trans. and eds. 1950. *Byzance et les Arabes.* Vol. 2, *La dynastie macédonienne (867-959)* by A.A. Vasiliev. Part 2, *Extraits des sources arabes, traduits par Marius Canard.* Corpus Bruxellense Historiae Byzantinae 2.2. Brussels: Éditions de l'Institut de philologie et d'histoire orientales et slaves.

Grieve, M. 1959. Reprint. *A Modern Herbal, the Medicinal, Culinary, Cosmetic and Economic Properties, Cultivation and Folk-Lore of Herbs, Grasses, Fungi, Shrubs and Trees with all Their Modern Scientific Uses.* 2 vols. New York: Hafner. Original edition, New York: Hafner, 1931.

Guibourt, N.-J.-B.-G., and G. Planchon. 1876. *Histoire naturelle des drogues simples: ou Cours d'histoire naturelle professé a l'École supérieure de pharmacie de Paris.* Paris: J.-B. Baillière et fils.

Hanbury, D. 1876. *Science Papers, Chiefly Pharmacological and Botanical.* London: Macmillan and Co.

Hellenkemper, H., and F. Hild. 2004. *Lykien und Pamphylien*. TIB 8. 3 vols. DenkschrWien 320. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Hewsen, R.H. 1971. "The Geography of Pappus of Alexandria: A Translation of the Armenian Fragments." *Isis* 62.2:186-207.

Hild, F., and H. Hellenkemper. 1990. *Kilikien und Isaurien*. TIB 5. 2 vols. DenkschrWien 215. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.

Hirth, F. 1885. *China and the Roman Orient: Researches into Their Ancient and Medieval Relations as Represented in Old Chinese Records*. Leipzig: Kelly and Walsh.

Hovaneissian, M., P. Archier, C. Mathe, and C. Vieillescazes. 2006. "Contribution de la chimie analytique à l'étude des exsudats végétaux styrax, storax et benjoin." *Comptes Rendus Chimie* 9:1192-202.

Jacoby, D. 1998. "What do We Learn about Byzantine Asia Minor from the Documents of the Cairo Genizah?" In *Byzantine Mikra Asia (6. - 12. ai.) [Byzantine Asia Minor (6th-12th cent.], National Hellenic Research Foundation, Institute for Byzantine Research, International Symposium 6,* edited by S. Lampakes, 83-95. Athens: The Speros Basil Vrynois Center for the Study of Hellenism.

Jacoby, D. 2000. "Byzantine Trade with Egypt from the Mid-Tenth Century to the Fourth Crusade." *Thesaurismata* 30:25-77.

Jeanselme, E. 1924. "Les calendriers de régime à l'usage des byzantins et la tradition hippocratique." *Mélanges offerts à M. Gustave Schlumberger, membre de l'Institut, à l'occasion du 80e anniversaire de sa naissance (17 octobre 1924),* 217-35. 2 vols. Paris: Librairie Orientaliste Paul Geuthner.

Koh, A.J., A. Yasur-Landau, and E.H. Cline. 2014. "Characterizing Middle Bronze Palatial Wine Cellar from Tel Kabri, Israel." *PLoS One* 9.8:1-14.

Koiranides 1991. A.P. Kazhdan, A.-M. Mary Maffry Talbot, A. Cuter, T.E. Gregory, and N. Patterson Ševčenko, eds. 1991. "Koiranides." In *The Oxford Dictionary of Byzantium.* 3 vols., 1136-137. New York: Oxford University Press.

Lardos, A., J. Prieto-Garcia, and M. Heinrich. 2011. "Resins and Gums in Historical Iatrosophia Texts from Cyprus - A Botanical and Medico-pharmacological Approach." *Frontiers in Pharmacology* 2.32:1-26.

Laufer, B. 1919. *Sino-Iranica. Chinese Contributions to the History of Civilization in Ancient Iran. With Special Reference to the History of Cultivated Plants and Products.* Fieldiana. Anthropology 15.3. Field Museum of Natural History Publications 201. Chicago: eBook: Local Government Publication.

Lavan, L. 2006. "Fora and Agorai in Mediterranean Cities during the 4th and 5th c. A.D." *Late Antique Archaeology* 3.1:193-249.

Litavrin G.G. 1971. "Vizantijskij medicinskij traktat 11-14 vv. (po rukopisi Cod. Plut.7.19 Biblioteki Lorenco Medichi vo Florencii)." *Vizantijskij vremennik* 31:249-301.

Litavrin, G.G. 1993. "Malade et médecin à Byzance, XIe-XIVe siècles. Remarques sur le cod. Plut. VII 19 de la Bibliothèque de Lorenzo de' Medici à Florence." In *Maladie et société à Byzance*, edited by É. Patlagean, 97-101. Centro Italiano di Studi sull'Alto Medioevo. Collectanea 3. Spoleto: Centro italiano di studi sull'alto Medioevo.

Littlewood, A.R. 1992. "Gardens of Byzantium." *The Journal of Garden History* 12.2:126-53.

Mango, M.M. 1996. "Byzantine Maritime Trade with The East (4th - 7th centuries)." *ARAM Periodical* 8.1:139-63.

Meikle, R.D. 1985. *Flora of Cyprus*. Vol. 2. Kew: Royal Botanic Gardens.

Mireille, C. 1985. "Dévaluations et évolution des prix (Ier-IIIe siècles)." *RN* 27:69-106.

Modugno, F., E. Ribechini, and M.P. Colombini. 2006. "Aromatic Resin Characterisation by Gas Chromatography-mass Spectrometry; Raw and Archaeological Materials." *Journal of Chromatography* A 1134.1-2:298-304.

Morrisson, C. 2016. "Trading in Wood in Byzantium: Exchange and Regulations." In *Trade in Byzantium: Papers from the Third International Sevgi Gönül Byzantine Studies Symposium*, edited by P. Magdalino and N. Necipoğlu, 105-28. Koç University Research Center for Anatolian Civilizations. History / Art History / Archaeology / Byzantine Studies. Istanbul: Koç University Publications.

Nicolas, M. 1978. "Le Liquidambar de Turquie." In *Studies in Turkish Folklore in Honor of Pertev N. Boratav*, edited by I. Başgöz and M. Glazer, 157-65. Indiana University Turkish Studies 1. Bloomington: Indiana University.

Oflas, S. 1972. "Styrax officinalis L.'nın Batı Anadolu`da Dağılımı ile Fitososyolojik, Morfolojik, Anatomik Özellikleri ve Ekonomik Olanaklarıyla İlgili bir İnceleme." Ph.D. diss., Ege University.

Papageorgopoulou, C., N.I. Xirotiris, P.X. Iten, M.R. Baumgartner, M. Schmid, and F. Rühli. 2009. "Indications of Embalming in Roman Greece by Physical, Chemical and Histological Analysis." *JAS* 36.1:35-42.

Polunin, O., and A.J. Huxley. 1987. *Flowers of the Mediterranean*. London: Chatto Windus.

Rance, P. 2017. "An Unpublished Byzantine Medical Fragment (Parisinus Suppl. gr. 607): Pharmaceutical Knowledge and Practice in Tenth-Century Constantinople." *Parekbolai* 7:69-95.

Schoff, W.H. 1912. *The Periplus of the Erythraean Sea: Travel and Trade in the Indian Ocean by a Merchant of the First Century*. New York / London / Bombay / Calcuta: Longmans, Green, and Company.

Schönfelder, I., and P. Schönfelder. 1997. *Was blüht am Mittelmeer?* Darmstadt: Wiss. Buchges.

Seland, E.H. 2012. "The Liber Pontificalis and Red Sea Trade of the Early to Mid 4th Century AD." In *Navigated Spaces, Connected Places: Proceedings of Red Sea Project V held at the University of Exeter, 16-19 September 2010*, edited by D.A. Agius, J.P. Cooper, A. Trakadas, and C. Zazzaro, 117-26. BAR-IS 2346. British Foundation for the Study of Arabia Monographs 12. Oxford: Archaeopress.

Sell, C. 2019. *Perfume in the Bible*. Croydon: CPI Group.

Serpico, M., and R. White. 2000. "Resins, Amber and Bitumen." In *Ancient Egyptian Materials and Technology*, edited by P.T. Nicholson and I. Shaw, 430-74. Cambridge: Cambridge University Press.

Storti, G. 2018. "Metrodora's Work on the Diseases of Women and Their Cures." *Estudios bizantinos* 6:89-110.

Stroobants, F., and J. Poblome. 2015. "Buying and Selling in Late Roman Pisidia: A Hypothetical Framework of Coin Use in Sagalassos and Its Countryside." *RBN* 161:73-104.

Tanker, M., and E. Sayron. 1974. "Styrax Liquidus Üzerinde Farmakognozik Araştırmalar." *Ankara Eczacılık Fakültesi Mecmuası* 4:108-48.

Tecusan, M. 2004. *The Fragments of the Methodists. Methodism outside Soranus*. Vol. 1, *Text and Translation*. Studies in Ancient Medicine 24.1. Leiden / Boston: Brill.

Totelin, L.M.V. 2009. *Hippocratic Recipes: Oral and Written Transmission of Pharmacological Knowledge in Fifth- and Fourth- Century Greece*. Studies in Ancient Medicine 34. Leiden / Boston: Brill.

Totelin, L. 2017. "The Third Way. Galen, Pseudo-Galen, Metrodora, Cleopatra and the Gynaecological Pharmacology of Byzantium." In *Collecting Recipes: Byzantine and Jewish Pharmacology in Dialogue,* edited by L. Lemhaus and M. Martelli, 103-22. Science, Technology, and Medicine in Ancient Cultures Book 4. Boston: Walter de Gruyter.

Totelin, L. 2021. "Easy remedies - Difficult Texts: the Pseudo-Galenic Euporista." In *Pseudo-Galenica: The Formation of the Galenic Corpus from Antiquity to the Renaissance*, edited by C. Petit, S. Swain, and K.D. Fischer, 31-45. Warburg Institute Colloquia 34. London: The Warburg Institute.

Vardar, Y., and S. Oflas. 1973. "Preliminary Studies on the Styrax Oil." *Qualitas Plantarum et Materiae Vegetabiles* 22:145-48.

Vroom, J. 2018. "The Ceramics, Agricultural Resources and Food." In *Archaeology and Urban Settlement in Late Roman and Byzantine Anatolia: Euchaïta-Avkat-Beyözü and its Environment*, edited by J. Haldon, H. Elton, and J. Newhard, 134-84. Cambridge: Cambridge University Press.

Warmington, E.H. 1974. *The Commerce between the Roman Empire and India*. London / Delhi: Vikas Publishing House.

Whitfield, S. 2018. "China." In *The Oxford Dictionary of Late Antiquity*. 2 vols., edited by O. Nicholson, 323-24. Oxford: Oxford University Press.

Ying, L. 2004. "Ruler of the Treasure Country: the Image of the Roman Empire in Chinese Society from the First to the Fourth Century AD." *Latomus* 63.2:327-39.

Zeybek, N. 1970. "Liefert Styrax officinalis L. ein Harz?" *Bericht der Schweizerischen Botanischen Gesellschaft* 80:189-93.

Zimmermann, K. 2016. "Osmanlı Fethine Kadar Doğu Roma ve Bizans Dönemi'nde Likya / Lycia in the East Roman and Byzantine Period Up to the Ottoman Conquest." In *Lukka'dan Likya'ya: Sarpedon ve Aziz Nikolaos'un Ülkesi / From Lukka to Lycia: The Land of Sarpedon and St. Nicholas*, edited by H. İşkan and E. Dündar, 68-79. Yapı Kredi Yayınları 4681. Istanbul: Yapı Kredi Yayınları.

Zimmermann, M. 1992. "Die lykischen Häfen und die Handelswege im östlichen Mittelmeer. Bemerkungen zu PMich I 10." *ZPE* 92:201-17.

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