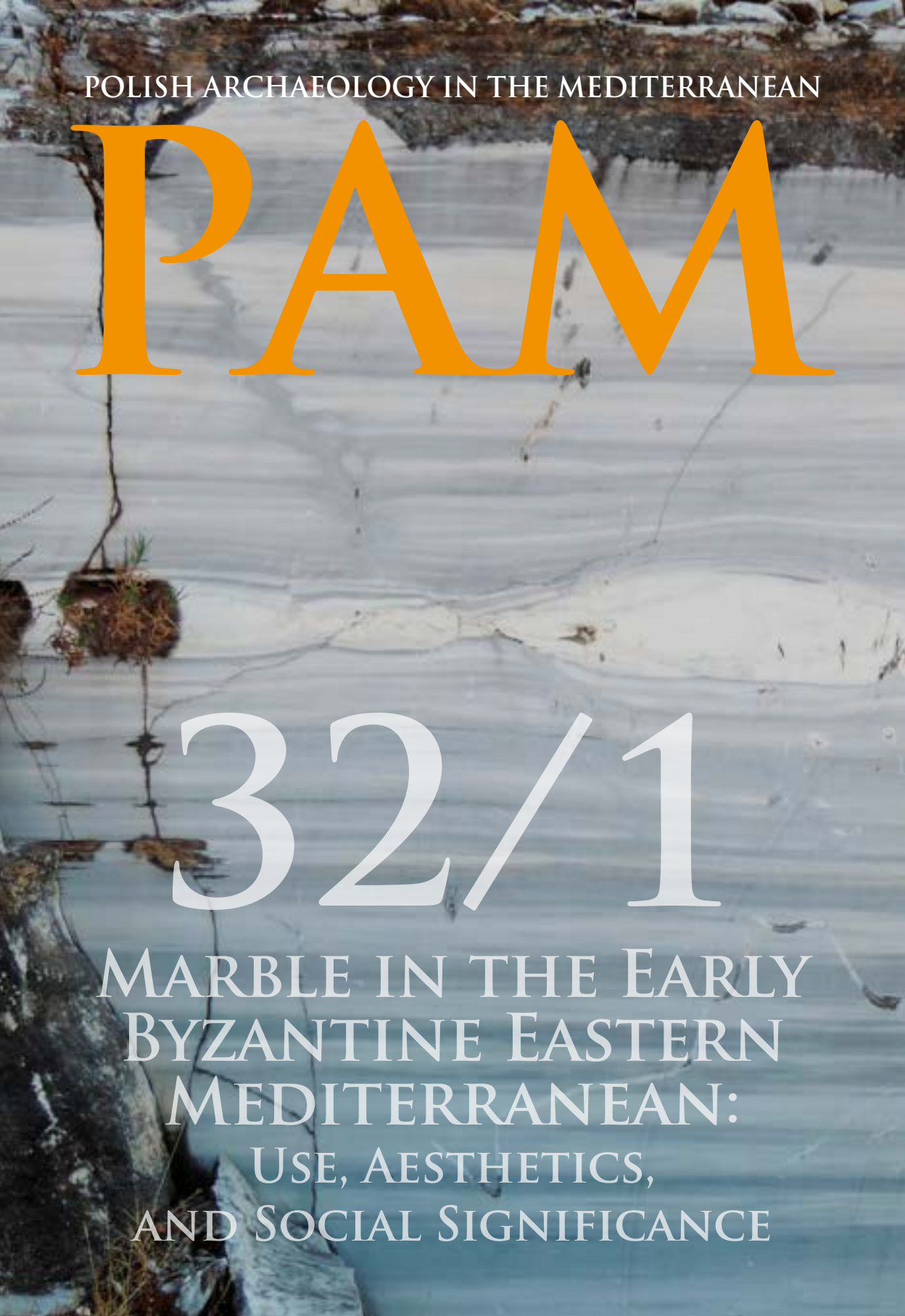

POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

PAM

32/1

Marble in the Early Byzantine Eastern Mediterranean: Use, Aesthetics, and Social Significance

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FOREWORD

This volume is the result of a panel held in Warsaw on 8 and 9 June 2022, during the annual conference "Poles in the Near East" organized by the Polish Centre of Mediterranean Archaeology and the Faculty of Archaeology at the University of Warsaw. The panel, entitled "Marble Use, Trade, and Distribution in the Eastern Mediterranean during Late Antiquity", consisted of 16 papers. Ten of them are included in the proceedings published herein as a special issue of the journal *Polish Archaeology in the Mediterranean*.

The volume focuses on marbles from the early Byzantine period (4th–7th century CE), from a wide geographical area covering the ancient territories of Egypt, Arabia, Palestine, Phoenicia, Asia Minor, and Greece [*Fig. 1*]. Studies devoted to the use of marble in Antiquity have developed exponentially in recent times and are now a major field of research in Classical Archaeology. Notably, however, research to date has focused primarily on the Greek and Roman periods. Several important papers on marbles from later centuries have been written in recent decades for multi-authored publications focusing on more general topics, such as the ASMOSIA Proceedings. However, collective publications devoted exclusively to marbles of the early Byzantine period are still lacking.

Fig. 1. Map of the Eastern Mediterranean showing the location of major sites mentioned throughout the volume (Processing M. Gwiazda)

The volume offers a vivid picture of the use of marble during the early Byzantine period relying on a variety of approaches and methodologies. It not only provides insights into recent discoveries from important sites, but also presents perspectives on the social function and appreciation of this material. Several papers contribute to a better understanding of the working processes of the craftsmen and the reasons underlying the selection of materials for specific objects or building projects. Others provide more detailed images, offering an opportunity to explore the diversity of marble objects in the light of various contexts and using different approaches. However, these contributions certainly do not fill all the research gaps, and much remains to be done in the investigation of early Byzantine marbles. One of the avenues to be pursued, for instance, is the study of the provenance of raw materials using archaeometric methods, which is well developed for artifacts from earlier periods.

We would, first of all, like to thank all the authors for their scientific contributions to this volume. All the papers submitted underwent a rigorous peer review process, and we would like to express our gratitude to the reviewers, who undertook this task *pro bono*, for their invaluable input and kind suggestions that have improved the articles. Special thanks go to Dorota Dzierzbicka and Agata Czamara, editors of *Polish Archaeology in the Mediterranean*, for their support at all stages of the preparation of this volume. The proofreading of the text was made possible thanks to funding from the Excellence Initiative – Research University Programme (IDUB) "Improvement of publishing capacities – increasing the international outreach of UW journals" (project No. BOB-661-46/2023). We would like to express our appreciation to Prof. Dr. hab. Zygmunt Lalak for the financial support from another IDUB project (BOB-661-664/2023), which enabled the graphic editing of the illustrations and offset the production costs. Last but not least, work on this volume was conducted as part of a project funded by the National Science Centre, Poland, dedicated to marble use in the secular and sacred space in the southern Levant during the early Byzantine period (4th–7th century AD) (grant No. 2020/37/B/HS3/00306).

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July 2023

Early Byzantine vases carved in Prokonnesian marble from ancient Halasarna (Kos Island, Dodecanese, Greece)

Abstract: The paper stems from archaeometric provenance studies, which proved that some vases from excavations at Kardamaina, ancient Halasarna, of Kos had been carved in Prokonnesian marble. The items under consideration are four-handled bowls whose grips are decorated with incised motifs. The proven use of Prokonnesian marble not only for architectural members, but also for smaller artifacts indicates that vases were among the Prokonnesian marble products imported to Kos from Constantinopolitan workshops. These imports are dated to the 5th and 6th centuries AD, a time of intense building activity not only in the town of Kos, but also in the island's seaside settlements (Kardamaina, Mastichari, Antimacheia, Kefalos, etc.). It remains, however, unclear if these vases were imported finished or semi-finished from Prokonnesos, together with architectural members, aboard stone-carrying ships sailing across the Mediterranean and the Black Sea.

Keywords: Halasarna of Kos, Prokonnesos, marble, quarries, bowls

INTRODUCTION

Macroscopic observation led to the view that fine-quality marble quarried in Kos was used for Koan vases throughout Antiquity (Poupaki 2011a: 28, note 48), and therefore these stone vessels were products of Koan marble-carving sculpture workshops. This assumption was based on visual observation and on the fact that sev-

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eral other Koan rock types were used for carving vessels. However, archaeometric analysis of marble samples collected from vases found in Halasarna (Poupaki 2011a: Nos 18–22) has shown that they were in fact carved in Prokonnesian marble.

ACTIVITY OF PROKONNESIAN QUARRIES: A HISTORICAL OUTLINE

The beginnings of marble exploitation on Marmara Island (ancient Prokonnesos) in the Marmara Sea have generally been traced back to the Archaic period. Indeed, the earliest sculptures considered to have been carved in Prokonnesian marble are the torsos of Kore (No. ΜΘ 929) and Kouros (No. ΜΘ 930) from the Rhaidestos collection in the Archaeological Museum of Thessaloniki, both dated to the Archaic period (Chatzinikolaou 2016: 177). Isotopic analysis of marble samples from the grave stele of Phanodikos from Sigeion (550–540 BC), now in the British Museum (Walker 1985: 58), proved that grave monuments in the Thracian Peninsula and northern Asia Minor had been carved in Prokonnesian marble since Archaic times (Kokkorou-Alevras et al. 2005: 161–162). Additionally, the building material of the Archaic temple of Artemis in Ephesos has also been attributed to Prokonnesos (Walker 1985: 58, note 4).

During the Classical period, Prokonnesian marble continued to be used for sculpture (Kokkorou-Alevras et al. 2005: 164–165; Chatzinikolaou 2016: 177–178). Its use for architectural purposes outside the island, formerly considered uncertain, has been confirmed with archaeometric methods at the Maussoleion of Halikarnassos (Walker and Matthews 1997), although it should be reexamined further.

In Hellenistic times, the Prokonnesian quarries were taken over by the rulers of Pergamon, the Attalids, who employed the marble widely not only for the erection of monuments in Pergamon, but also for edifices erected elsewhere under their patronage (Hoepfner 1997: 25–26, notes 20–21; Cramer 1998; Cramer, Germann, and Heilmeyer 2002; Cramer 2004; Poupaki 2011b/A: 204–205).

During the Roman era, the quarries of Prokonnesos produced huge quantities of marble subsequently distributed across the Empire. For more than three centuries (from the 1st to the 3rd century AD), the Roman imperial marble trade guaranteed the supply of the best-quality building material, and marble, a symbol of prosperity and wealth, was shipped throughout the Empire (Kokkorou-Alevras et al. 2005: 167–173). However, the distribution of marble in the Roman Empire cannot only be seen as "part of a cargo of booty or tribute", but also as "the transport of imperially owned products for imperial use", and as the usual "trade in goods that were made available to the general public" (Strauss 2006: 167). That is why the low-priced Prokonnesian marble was largely exported to the Italian Peninsula, as indicated in Diocletian's Edict on Maximum Prices (Lauffer 1971; Giacchero 1974). Following a radical reorganization of the quarries in the Flavian period, Prokonnesian products

started to rapidly dominate over Carrara and Pentelic ones in Asia Minor, and in the Imperial period they circulated widely throughout the empire (Waelkens, De Paepe, and Moens 1988: 20; 1990: note 81; Attanasio 2003: 21; Kokkorou-Alevras et al. 2005: 168; Fischer 2007: 254). These items were stored in large quantities in special deposits on Prokonnesos, as well as in *stationes marmorum* (Hirt 2010: 344–356; Russell 2013: 51–52) at the most important harbor sites of the Empire, for instance Ephesos (Bouras 2011) and Ostia (Rickman 2002; Pensabene 2007; Keay 2012). They were shipped, mainly in unfinished state, to the remotest parts of the Empire.

By the end of the 3rd century AD, the financial crisis brought about a general decline in the marble industry throughout the Empire. However, it did not seem to affect the marble quarries of Prokonnesos. They probably remained under imperial management, as in the age of Hadrian, to whom the Prokonnesian quarries had belonged directly. The establishment of Tetrarchic seats in Nikomedia and later in Constantinople proved to be a crucial stimulator for the activity of the Prokonnesian quarries. Indeed, in the 5th and 6th centuries AD Prokonnesos became the principal source of building material used in the entire Byzantine Empire, as proven mainly by the archaeological research of Nuşin Asgari in the Prokonnesian quarries, where various products have been found in situ (Asgari 1978; 1990; 1994).[1] Moreover, the increased circulation of Prokonnesian marble products in the Mediterranean during that period was related to the interference of Imperial authorities, whether secular or ecclesiastical, in their distribution. Theodosius and Justinian imposed special laws to ensure constant supply of quarry products of the island to the new capital following the Roman organizational model (Asgari and Drew-Bear 2002: 17–18). Inscriptions at several quarries of the island indicate that they belonged directly to monasteries, and that some of them provided the necessary material for specific buildings, including churches (Asgari and Drew-Bear 2002: Nos 7, 40). The Prokonnesian quarry products, some of which still remain in the ancient quarries, would be used for the erection of basilicas, whose architectural decoration was commissioned exclusively from these quarries. The fact that "this sort of marble was characterized by its availability, good quality, and low price" (Al-Bashaireh, Abudanah, and Driessen 2020: 25) explains why stone-carrying ships transporting Prokonnesian marble artifacts for Byzantine churches have been traced all over the Mediterranean. Numerous prefabricated architectural members, liturgical furnishings,

Fig. 1. Semi-carved four-handled bowl at Panormi, Prokonnesos Island (Photo Eir. Poupaki)

1 For a full discussion, see Kokkorou-Alevras et al. 2005: 173–181.

and sarcophagi can be seen nowadays in open-air museums of Prokonnesos (Asgari 1978; 1995). These products were the main cargo of stone-carrying ships crossing the Mediterranean[2] and the Black Sea (Beykan 1988; Carlson 2006). A huge variety of Prokonnesian semi-finished or complete architectural members has been revealed during underwater research at investigated shipwrecks discovered on major maritime transport routes of the Empire (Beykan 1988; Minchev 2012; Barsanti and Paribeni 2016; Marano 2016). In the times of Theodosius and Justinian, professional quarrymen and stonemasons were officially forbidden to leave Prokonnesos to travel elsewhere (*Cod. Theod.* XI, 28.9; *Cod. Iust.*, *Corpus Iuris Civilis* II, 430 XI.VII). However, it should be further examined whether they may have traveled after all, with official permission, to the final destinations of the marble cargoes, where they would have been able to imbue the sculptural works with a Constantinopolitan flavor and share their technical skills with other stone carvers.

PROKONNESIAN MARBLE USE IN THE MANUFACTURE OF VASES: AN OVERVIEW

The use of Prokonnesian marble has thus far been attested mainly for architectural elements and sculptural decoration of secular and religious buildings, as well as for funerary monuments: tombstones and sarcophagi. There are rare mentions of use of Prokonnesian marble for minor objects, such as vases (Harrison 1986: 234; Asgari 1990: Fig. 10; Kokkorou-Alevras et al. 2005: 188, No. K. 25, Pl. 13β; Carlson 2006: Fig. 8), or for liturgical equipment, such as *mensae* (Asgari 1994: 104; Kokkorou-Alevras et al. 2005: 191, No. K. 61, Pl. 13β), and other related artifacts. Asgari (Asgari 1990: Fig. 10) published a photo showing a group of semi-carved mortars, *holmoi*, used for crushing cereals, found on Marmara Island and probably dated to the Late Roman or Byzantine period. An unfinished four-handled bowl was found close to the modern marble workshop of Panormi [*Fig. 1*], and marble mortars of various shapes [*Fig. 2*] were also recorded by a team from the University of Athens during their visit to Marmara Island in 2003 (Kokkorou-Alevras et al. 2005: 182).

Vases in the shape of bowls were also produced in Prokonnesian quarries since the Hellenistic period, as attested by the discovery of a roughed-out four-handled bowl in the Kızılburun shipwreck south of Chios, dated to the 1st century BC (Carlson 2006: Fig. 8). These items also reached the Western provinces of the Empire in the Roman period, as corroborated by the discovery of several vases of Prokonnesian marble in the form of simple basins (used as *perirrhanteria* or *louteria*[3]). Other such finds are round tables of the 1st century AD at the House of

2 For the Adriatic, see Marano 2016.

3 For the use of these vases, see Poupaki 2002.

the Vettii in Pompeii (Fant et al. 2002), as well as bowls in the Roman oppidum of Bibracte in Burgundy, France (Verbrugghe, Jaccottey, and Boyer 2019) and at the Şile shipwreck site in the Black Sea, dated to AD 100–125 (Beykan 1988: 127). Notably, the use of Prokonnesian marble for Roman funerary urns (containers for ashes of the deceased), like the ones from the Sedgwick Museum of Earth Sciences, was fairly rare (Watson 1916: 245).

From the early Byzantine period, however, known examples of vases carved in Prokonnesian marble are quite rare, too. An example is a plate from a Byzantine church in south Jordan (Al-Bashaireh, Abudanah, and Driessen 2020: No. 21), a region where Prokonnesian marble was otherwise widely used during the Roman and Byzantine periods (Al-Naddaf, Al-Bashaireh, and Al-Waked 2010: 76, 81).

EARLY BYZANTINE VASES OF PROKONNESIAN MARBLE FROM HALASARNA

Thus far, identification of the marble used for making the vases mentioned above has been based only on visual observation of the material, and specimens investigated using state-of-the-art archaeometric methods were few. Some

Fig. 2. Semi-carved mortars in the Palatia (Saraylar) open-air museum, Prokonnesos Island (Photo G. Kokkorou-Alevras)

years ago, however, optical examination and analytical techniques (Electron Paramagnetic Resonance (EPR) and Isotope Ratio Mass Spectroscopy (IRMS)) applied to samples of marble vases, specifically early Byzantine marble bowls from excavations at Kardamaina (ancient Halasarna) on Kos Island (Dodecanese, Greece –*Fig. 3*), proved that five [*Figs 5:a, b, d, e* and *6:a*] out of eight early Byzantine specimens examined had been carved in Prokonnesian marble (Poupaki 2011a: Nos 18–19, 21–22; Tambakopoulos and Maniatis 2017: 219–220, 235, Table 12).[4] The obtained provenance results have indicated, therefore, that the bowls were imports from the famous Constantinopolitan workshop of Prokonnesos. The chemical analyses were undertaken at the Laboratories of the National Centre for Scientific Research "Demokritos". The methodology adopted, and the data obtained as a result of this archaeometric study, were discussed in a relevant article of Yannis Maniatis and Dimitris Tambakopoulos published by the University of Athens in the 6th volume of the *ALASARNA* monograph series (Tambakopoulos and Maniatis 2017).

Excavations of the University of Athens in Halasarna began in 1985 following illicit construction activity at a seaside hotel complex, which had caused irreversible damage to the center of the ancient deme of Halasarnitae, the location of the site's most important Hellenistic public buildings and sanctuaries and the early Byzantine structures overlying the Hellenistic and Roman

Fig. 3. Kos Island, Dodecanese, Greece (Basemap: Google Earth; processing W. Dzierzbicki)

4 For vases Nos 18 and 21 [*Figs 4:a* and *5:a*], the analyses also indicated Miletos, besides Prokonnesos, as a possible place of origin, but due to the lack of adequate documentation, that assumption was rejected.

phases of the excavation, which belonged to a prosperous seaside settlement that flourished from the Late Roman period until the 7th century AD. Its acme was reached in the 5th and 6th centuries AD, a time of prosperity also for other early Byzantine

Fig. 4. Aerial view of the excavation at Kardamaina (ancient Halasarna), Kos Island (Photo G. Kokkorou-Alevras)

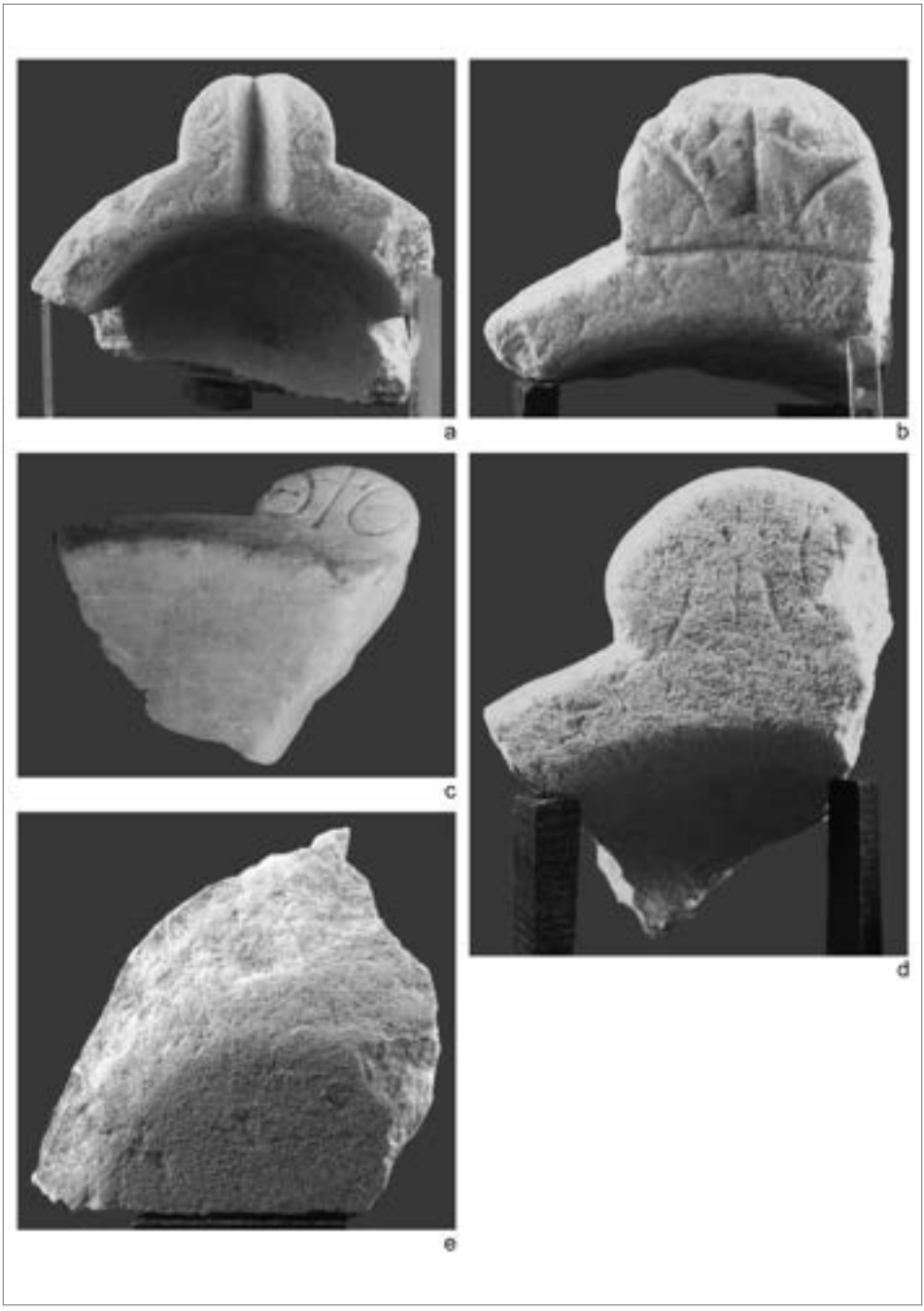

Fig. 5. Vase fragments of Prokonnesian marble at Kardamaina: a – embedded in a wall of an early Byzantine residence, late 4th – late 6th century AD; b – found at the Hellenistic temple (building Γ), 7th century AD; c – found at an early Byzantine residence, 7th century AD; d, e – found close to the Hellenistic temple (building Γ), late 4th – late 6th century AD (Photos N. Antoniadis)

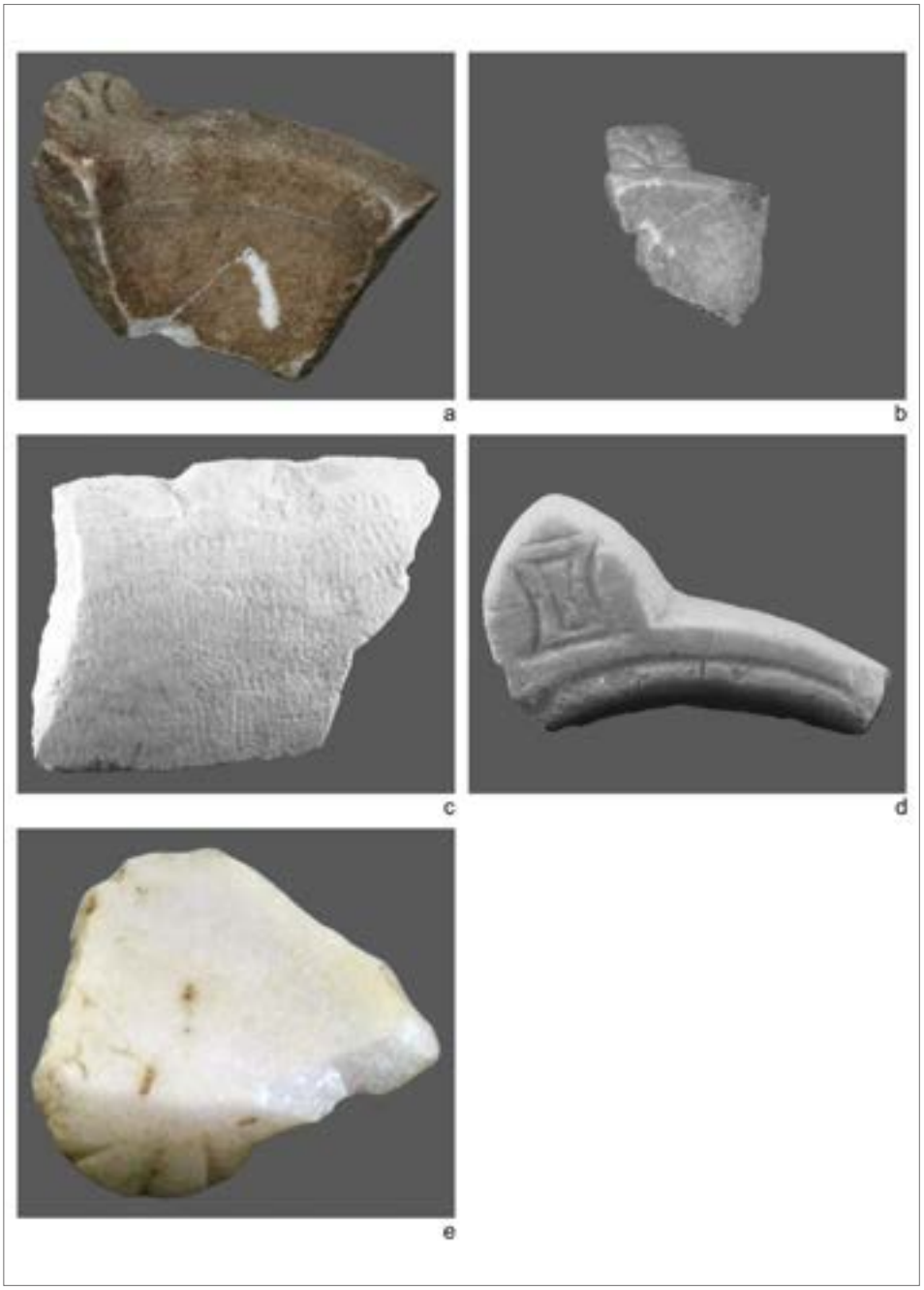

Fig. 6. a, b – vase fragments of Prokonnesian marble (identification tentative in case of b) found at an early Byzantine residence at Kardamaina, late 4th – late 6th century AD (Photos Eir. Poupaki); c, d – vase fragments of Koan limestone from Kardamaina, 3rd century AD (Photos N. Antoniadis); e – vase fragment of Koan marble from Kardamaina, 3rd century AD (Photo Eir. Poupaki)

settlements (Kardamaina, Mastichari, Antimacheia and Kephalos) and a period of economic growth on Kos, which many scholars associate with its demographic expansion and the spread of the Christian cult.

The most important structures discovered during the archaeological investigation of the site are the ruins of a 3rd century BC distyle *in antis* temple of Apollo Pytheus (building Γ), a smaller Roman temple, also a distyle *in antis* (building Δ), probably associated with the Imperial cult, as well as two unidentified late Hellenistic buildings (buildings A and B), a part of a propylon (building E), and a stoa (building Z)[5] [*Fig. 4*].

Fragments of the marble vases in question were found, among others, in the Hellenistic temple (Poupaki 2011a: No. 19 [*Fig. 5:b*]), or just beside it (Poupaki 2011a: Nos 21–22 [*Fig. 5:d–e*]), and either in Byzantine residences (Poupaki 2011a: No. 98 [*Fig. 6:a*]) or embedded in their masonries (Poupaki 2011a: No. 18 [*Fig. 5:a*]). They are fragments of four-handled or three-handled spouted bowls. The handles are usually quarter-spherical with the exception of a parallelepiped one, decorated with linear or geometric motifs, which are also rarely found on their rims or spouts and are probably patterned after the decoration of metalwork. The most typical decorative patterns are: radiant lines, a perpendicular line interposed between a pair or pairs of curved lines, and a cross interposed between curved lines. These marble vases are generally dated between the late 4th and the late 6th centuries AD (Poupaki 2011a: Nos 18, 21–22, see *Fig. 5:a, d, e*) and into the 7th century AD (Poupaki 2011a: No. 19, see *Fig. 5:b*) based on stratigraphic context data and published parallels.[6] The studied marble vases are the most representative group not only in the ancient deme of Halasarna, but also on the whole island during the early Byzantine period. Nearly all the studied artifacts are fragments of a rim with a handle or spout; in fact, among them there are only two plain wall fragments, one of which is carved in Prokonnesian marble (Poupaki 2011a: No. 21, see *Fig. 5:e*) and the other in Koan limestone (Poupaki 2011a: No. 17, see *Fig. 6:c*).

Vessels of the described type occur rather commonly in the whole Byzantine Empire from the 4th until the 10th and 11th centuries AD. They adopt and modify the well-known type of Hellenistic/Roman bowls,[7] but the early Byzantine vessels have thicker walls and a coarser sculpturing (Poupaki 2017b: 73–74). The final elaboration of their external surfaces is achieved with a tooth-chisel (ντισιλίδικο), their grips are less carefully worked, bigger and quarter-spherical, while the internal and upper sur-

5 For a short description of the monuments of Halasarna, see Kokkorou-Alevras, Kalopissi-Verti, and Panayotidi-Kesisoglou 2010. For up-to-date reports, see Kokkorou-Alevras 2020; Kalopissi-Verti and Panayotidi-Kesisoglou 2020 (with earlier literature).

6 From Salone (modern-day Solin) in Dalmatia (Croatia) (Brøndsted 1928: 93, 99–101), Lindos on Rhodes (Dyggve 1960: 312–313, 523–525, Fig. VII. 43, 46), Corinth (Davidson 1952: 125, Nos 827, 829, Pl. 61.827, 829), Samos (Hiesel 1967: 95, No. 128, 96, Pl. 19.128) and Palestine (Bliss and Macalister 1902: 202, Pl. 90).

7 Similar vases were carved in neo-Attic workshops in the Hellenistic and early Roman periods: Poupaki 2017b: 74–75; 2020b: 340 (with bibliography).

faces of the lip and the grip are usually smoothed with a flat chisel (γλώσσα / σμίλη). Their characteristic features are engraved decorative patterns, some of which are commonly found also on their Koan Roman counterparts.[8] In addition to the described motifs identified on the Halasarna vases, more decorative patterns appear on vase handles from other sites of the Byzantine Empire.[9] They were also adopted as handle decoration in bigger vases of the same type, such as *phialae* and *perirrhanteria*, whose rims additionally bear short inscriptions (Niewöhner 2006: 452, No. 76; Poupaki 2019b: 226–227, No. 23, Figs 4–6).

The aforementioned vases are usually interpreted as mortars, that is, household utensils for grinding spices or grains and fruits, as well as bowls for processing pigments and cosmetic or medicinal substances. However, after a thorough investigation of the Halasarna material, its archaeological context and decoration of the grips, it seems fairly probable that the Halasarna marble bowls were in fact used as *chernives*, ritual water containers. Rinsing hands or fingers in water was a ritual act of priests during the Christian liturgy. As containers for holy water, these vases were also used during the Rite of Benediction. Bigger vases of the same type, known as *phialae* or *perirrhanteria*, contained holy water, wherein, upon entering a Christian church, worshippers would dip their hands in a symbolic gesture echoing pagan practice (Poupaki 2019a: 158–160).

The marble of the Halasarna vases is white with scarce, fine, gray veins, and indeed does not look like typical Prokonnesian marble, which has a gray tinge or gray veins. On the contrary, the Prokonnesian marble used for Koan vessels is of higher quality, whiter and very coarse. Marble like that had been quarried at many sites on the island. White, fine-grained and translucent marble, suitable for mosaics, was quarried in Badalan of Prokonnesos (Marmara) Island, whereas coarse-grained and light blue marble without veins, suitable for sculpture, was extracted from various sites elsewhere on the island (Asgari 1978: 468). This explains why the Prokonnesian marble used for the Halasarna vases has a lighter tinge, and thus, macroscopically, can easily be confused with Koan.

With the above in mind, two more fragments of the Halasarna vases may be assumed to have been carved in Prokonnesian marble: one with a quarter-spherical grip decorated with a cross between curved lines (Poupaki 2011a: No. 20, see ***Fig. 5:c***), and a vase with a parallelepiped grip decorated with radiant lines (Poupaki 2017b: No. 11, see ***Fig. 6:b***). Some other early Byzantine vases from the town of Kos were carved in similar marble (Poupaki 2019a: Nos 18, 10, 22–24, 29). Identifying marble

8 For Roman-period examples, see Poupaki 2011a: No. 23; 2017b: No. 7; 2019a: No. 3.

9 From Saraçhane at Constantinople (Harrison 1986: 234), Thessaloniki (Tzitzibassi 2000: No. 5), Sparta (Poupaki 2019b: 226–227, Nos 23–24), Emborio of Chios (Ballance et al. 1989: 124, Fig. 49), Lindos of Rhodes (Dyggve 1960: 312–313, Fig. VII. 43, 46), Sardis (Crawford 1990: Figs 59 and 333), Ephesos (Quatember 2003: Nos M104, M44, M33, M50, Pls 59–60), etc.

provenance based solely on visual observation is indeed a challenge. Macroscopic features of Koan marble vary depending on the quarry (Poupaki 2017a): the marble from the Marmara region, close to Kardamaina, is grayish with dense blue or gray veins, while the stone from Kakoskali on Dikaios Mountain is white and translucent or gray with dark veins. The graph showing relative values of carbon and oxygen isotopes may be considered characteristic for these marbles (Tambakopoulos and Maniatis 2017: 212) despite the fact that it differs from the isotopic graphs published earlier by Lazzarini and Malacrino (2010) from the area of Marmara close to Kardamaina.[10] The affinity of the Koan marble from Marmara to the Prokonnesian marble used for the Halasarnian vases is remarkable. The latter marble is grayish or whitish, of low translucency, with dark parallel veins or bands (Tambakopoulos and Maniatis 2017: 219).

IMPORTS OF ARCHITECTURAL MEMBERS AND ARTIFACTS OF PROKONNESIAN MARBLE TO KOS

Despite the lack of archaeometric analyses, an early date for imports of Prokonnesian marble artifacts to Kos, already in the Archaic period, seems plausible given the Koan commercial relations with the Black Sea region (Sherwin-White 1978: 137, note 292; 118, note 188; 243–244). Sea routes connected Kos with Prokonnesos for centuries, enabling trade in raw material and semi-finished artifacts. Kos was a transshipment hub for Byzantine merchant ships carrying cereals from Egypt to Constantinople (Poupaki 2011b/A: 227, notes 1820–1822). Imports of architectural elements and other artifacts made from Prokonnesian marble were fairly common in Kos since the Hellenistic age. As mentioned above, Prokonnesian quarries were exploited under the Attalids, whose policy towards Kos led to the rebuilding of the town after the catastrophic earthquake of 198 BC with use of Prokonnesian marble in addition to Koan marble, travertine, and volcanic rocks (Poupaki 2011b/A: 166–167). The use of Prokonnesian marble in Kos continued in Roman times, too. Generally, it is assumed that the circulation of Prokonnesian marble in the Roman Empire began in the Flavian period and remained dominant from the mid-Hadrianic period onward (Sodini 2002: 129), except for the Italian Peninsula, where the Prokonnesian imports were limited in the 1st century AD, while in the 2nd century AD they surpassed even the use of Luna marble (Bald Romano et al. 2018: 272). Even for the Severan restorations of earlier structures it continued to be an excellent choice (Russell 2013: 186). Overall, based on the evidence provided by the study of imported marbles in Kos,

10 Lazzarini and Malacrino (2010) only visited the Marmara region close to Kardamaina, where the modern quarry lies. However, the most important quarry —probably active from the Hellenistic and Roman periods onwards— is found in Kakoskali on Dikaios Mountain. It was fully published in Tambakopoulos and Maniatis 2017 and Poupaki 2017a.

during the 2nd and 3rd centuries AD Prokonnesian marble remained a product of choice for the Koans (Poupaki 2020a: 225). Prokonnesian marble seems to be the most favored imported material in Kos even in the late 4th century AD. Intensive building activity attested in many settlements of the island (Kardamaina, Mastichari, Antimacheia, Kephalos) in the wake of the massive earthquake of AD 469 prompted substantial imports of products carved in the Prokonnesian quarries. Indeed, the most important monuments of the island dated to the 4th and 5th centuries AD, as its renowned basilicas, boast Prokonnesian ecclesiastical furnishings (Poupaki 2011b/A: 166–172).

PLACE OF MANUFACTURE

The four-handled or three-handled marble spouted bowls are common not only in Kos, but also on the Greek mainland and on other Aegean islands, from the Hellenistic and Roman periods until the 11th century AD, as in the rest of the Byzantine Empire. Visual observation has shown that while many Koan examples were carved in Prokonnesian marble (Poupaki 2019a: Nos 8, 9, 10, 11, 12, 13 and 25), some were also executed in local limestone (Poupaki 2019a: No. 28 [*Fig. 6:c*]), Koan marble (Poupaki 2019a: Nos 5 [*Fig. 6:e*], 11–12), and travertine (Poupaki 2019a: No. 19). Affinities detected between these vases and the ones carved in Prokonnesian marble attest to the role of the latter in spreading prototypes and influencing contemporaneous workshops in other areas.[11] Oddly, a fragment of a vase [see *Fig. 6:e*] carved in Koan marble and dated, according to its archaeological context, to the 3rd century AD bears the same decorative pattern of radiant lines on its grip as its Prokonnesian counterparts. In turn, a marble vase of the 4th century AD [see *Fig. 6:d*] bears on its grip a fairly rare motif of a double spool, unattested on early Byzantine vases of the same type. Both Roman vases referred to above are well elaborated and their surfaces are carefully smoothed. By comparison, the Koan vases of early Byzantine date, carved in Prokonnesian marble, feature thicker walls and larger, decorated handles, whereas the spout —when present— lacks artistic conception, but is decorated with incised patterns. The Koan vases of the 5th and 6th centuries AD, carved in Koan marble (Poupaki 2019a: Nos 11–13) and limestone [see *Fig. 6:c*], do not differ in form and surface elaboration from contemporaneous imports from Prokonnesos; for instance, the typical marks of the tooth-chisel (ντισιλίδικο) and the thickness of the walls are also characteristic for the Prokonnesos vases.

Prokonnesian marble products were generally transported in rough condition by stone-carrying ships sailing the Mediterranean and the Black Sea. Incidentally, however, they may have been carved in Kos during the elaboration of uncarved plinths of Prokonnesian marble transferred there, as those discovered at the Correnti ship-

11 For instance, Lakonian vases were carved in gray marble of Taygetos Mountain (Poupaki 2019b: Nos 23–24).

wreck near Syracuse, dated to AD 280–350 (Kapitän 1961: 287, Fig. 2, 288; 1971; Bartoli 2008: 58–65), and the Granitola shipwreck, close to the southwestern coast of Sicily, dated from the 3rd to the 5th century AD (G. Purpura 1977; V. Purpura 2008: 28–30). Both shipwrecks contained various unworked blocks of Prokonnesian marble, probably intended for further elaboration in local workshops of the Italian peninsula or North Africa. The same practice was also attested during the Roman period, both in Italy (e.g., the shipwreck of Punta Scifo A: Bartoli 2008: 105–107) and in the Black Sea region (e.g., blocks carried to Odessos: Minchev 2012: 49).

Another aspect requiring further investigation is the reuse of spolia of Prokonnesian marble (Gwiazda 2014: 530) for the carving of vases. This, however, cannot be corroborated for the Koan examples due to a lack of evidence.

The Koan vases discussed here are in the final state of workmanship and bear a strong resemblance to their Constantinopolitan counterparts. Unfinished vases of Prokonnesian marble are lacking in Kos. However, several semi-finished vases carved in Koan marble have been identified (Poupaki 2011b/B: Nos Hμ1, Hμ2, Hμ15; 2011b/C: Figs 491–493). Bearing in mind the lack of half-finished vases carved in Prokonnesian marble, one may assume the studied vases were made in the stone-carving workshops of Prokonnesos and subsequently transferred to Kos in a finished state. This is further confirmed by the close similarity of the studied vases to their counterparts from other sites,[12] which indicates the common provenance of the material from the same workshop rather than their manufacture in different workshops following the same principles and prototypes.

The shipment and subsequent use of semi-finished architectural members carved in Prokonnesian marble at the monuments of Kos is, however, well documented (Poupaki 2011b/A: 193–194). Generally, most of the architectural members used for the main basilicas of Kos were Prokonnesian. They were imported in an unfinished state and sometimes placed inside the erected buildings "αἰσθητικώς ἀνεπεξέργαστα" (=unworked) (Bouras 2002) for their special artistic qualities. These semi-finished Prokonnesian products were often used alongside Koan ones, which were probably elaborated together with Prokonnesian artifacts in the Koan workshops. That is why numerous, though minor, differences can be detected between architectural elements of the same type carved either in Koan or in Prokonnesian marble. In fact, the imported Prokonnesian capitals gained their final shape in Koan workshops, and they were transformed into various types according to the stone carver's taste. The stonemasons managed to adopt and assimilate Constantinopolitan influences, as is made clear by the close examination of the architectural elements used in Koan basilicas. It may be assumed that in case of accidental damage or probable deficiency the Prokonnesian imported products may have been replaced with Koan ones, thus both Prokonnesian and Koan architectural elements can appear side by side in one monument (Poupaki

12 See notes 6 and 9.

2011b/A: 193–194). Certain ecclesiastical furnishings carved in Koan marble, e.g., innovative decorative patterns of Koan ambos, distinguish the Koan sculptors from those of neighboring areas, e.g., Knidos (Poupaki 2011b/A: 123–125).

THE KOAN MARBLE WORKSHOP IN THE 5TH AND 6TH CENTURIES AD

In Kos, imported decorative elements can be traced in architecture and sculpture of the 5th and 6th centuries AD. Sculpted products from Constantinopolitan workshops were used mainly for architectural purposes and embellishment of majestic basilicas and luxurious residences erected not only in the town of Kos, but also in other places across the island, on the ruins of ancient buildings damaged by the devastating earthquake of AD 460 or 467/468 (Poupaki 2011b/A: 23, notes 205–206, with bibliography). Despite the catastrophe, the Koans managed to rebuild their town and the seaside settlements, which flourished in the age of Justinian. Testimony to their splendor is the display of wealth at the Koan religious buildings and mansions, featuring high-quality mosaics, outstanding frescoes and rich architectural decoration (Poupaki 2011b/A: 23–24).

However, the island's prosperity was seriously affected by the severe earthquake of AD 554, which destroyed the whole island. It caused a tidal wave, which flooded the seaside settlements, taking many lives, according to the historian Agathias (*The Histories* 2,16), and led to a general economic and demographic decline. Subsequently, the tremendous disaster resulted in ultimate abandonment of the major complexes of the town of Kos (Asklepieion, Western Quarter, Harbor Quarter, etc.), the general decline of the Koan stone workshops and, finally, the abandonment of the marble quarries. From this point on, the demand for stone was met by reclamation of building material from the ancient and Late-Antique buildings (Poupaki 2011b/A: 223).

CONCLUSION

To sum up, the marble bowls with four handles or with three handles and a spout are fairly popular in the early Byzantine period. Archaeometric analysis (Electron Paramagnetic Resonance — EPR and Isotope Ratio Mass Spectroscopy — IRMS) proved that most of the early Byzantine marble vases from Halasarna had been carved in Prokonnesian marble. The vases originated from Constantinopolitan workshops of Prokonnesos and were brought to Kos in a finished state of workmanship. This reflects the general tendency among the Christian population, even in remote areas of the Empire, to import precious items intended for ritual purposes (Poupaki 2011a: 56–59; 2019a: 159) and to refrain from producing their own artifacts despite their high level of craftsmanship and creativity.

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References

Al-Bashaireh, K., Abudanah, F., and Driessen, M. (2020). Provenance analysis of marble ecclesiastical elements from the extra-mural Byzantine Church of Udhruh (South Jordan). *Archaeological and Anthropological Sciences*, 12, 26. https://doi.org/10.1007/s12520-019-00975-5

Al-Naddaf, M., Al-Bashaireh, K., and Al-Waked, F. (2010). Characterization and provenance of marble chancel screens, northern Jordan. *Mediterranean Archaeology and Archaeometry*, 10(2), 75–83

Asgari, N. (1978). Roman and Early Byzantine marble quarries of Proconnesus. In E. Akurgal (ed.), *The proceedings of the Xth International Congress of Classical Archaeology, Ankara–Izmir 23.–30.IX.1973*, I (pp. 467–480). Ankara: Türk Tarih Kurumu

Asgari, N. (1990). Objets de marbre finis, semi-finis et inachevés du Proconnèse. In M. Waelkens (ed.), *Pierre éternelle: du Nil au Rhin. Carrières et préfabrication* (pp. 106–126). Brussels: Crédit communal

Asgari, N. (1994). Prokonnesos-1993 Çalışmaları. In *12. Arastirma sonuçlari toplantisi* (pp. 99–121). Ankara: Kültür ve Turizm Bakanlagi

Asgari, N. (1995). Proconnesian production of architectural elements in Late Antiquity, based on evidence from the marble quarries. In C. Mango, G. Dagron, and G. Greatrex (eds), *Constantinople and its Hinterland. Papers of the Twenty-Seventh Spring Symposium of Byzantine Studies*, Oxford, April 1993 (=*Publications of the Society for the Promotion of Byzantine Studies* 3) (pp. 263–288). Aldershot: Ashgate Publishing

Asgari, N. and Drew-Bear, T. (2002). The quarry inscriptions of Prokonnesos. In J. Herrmann, N. Herz, and R. Newman (eds), *ASMOSIA 5: Interdisciplinary studies on ancient stone. Proceedings of the Fifth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Museum of Fine Arts, Boston, 1998* (pp. 1–19). London: Archetype

Attanasio, D. (2003). *Ancient white marbles: Analysis and identification by paramagnetic resonance spectroscopy* (=*Studia Archaeologica* 122). Rome: "L'Erma" di Bretschneider

Bald Romano, I., Goette, H.R., Attanasio, D., and Prochaska, W. (2018). Two imperial monuments in Puteoli: Use of Proconnesian marble in the Domitianic and Trajanic periods in Campania. In D. Matetić Poljak and K. Marasović (eds), *ASMOSIA XI: Interdisciplinary studies on ancient stone. Proceedings of the Eleventh International Conference of ASMOSIA, Split, 18–22 May 2015* (pp. 267–273). Split: Arts Academy

Ballance, M., Boardman, J., Corbett, S., and Hood, S. (1989). *Excavations in Chios, 1952–1955: Byzantine emporio* (=*British School of Archaeology at Athens Supplementary Volume* 20). London: British School at Athens; Thames & Hudson

Barsanti, C. and Paribeni, A. (2016). La diffusione del marmo proconnesio nelle Marche in età classica e paleocristiana: il ruolo del porto di Ancona. *Hortus Artium Medievalium*, 22, 200–214

Bartoli, D.G. (2008). *Marble transport in the time of the Severans: a new analysis of the Punta Scifo a shipwreck at Croton, Italy* (Ph.D. diss.). Texas A&M University

Beykan, M. (1988). The marble architectural elements in export-form from the Şile shipwreck. In N. Herz and M. Waelkens (eds), *Classical marble: Geochemistry, technology, trade* (pp. 127–137). Dordrecht: Kluwer Academic

Bliss, F.J. and Macalister, R.A.S. (1902). *Excavations in Palestine during the years 1898–1900*. London: Committee of the Palestine Exploration Fund

Bouras, Ch. (2002). Hēmierga architektonika melē se mesovyzantinous elladikous naous. In *220 Sympoosio Vyzantinēs kai Metavyzantinēs Archaiologias kai Technēs, Athēna, 17, 18 kai 19 Maiou 2002* (pp. 70–71). Athens: Christianikē Archaiologikē Etaireia

Bouras, C. (2011). La circulation des pierres et le port d'Éphèse. In P. Jockey (ed.), *Leukos lithos: marbres et autres roches de la Méditerranée antique, études interdisciplinaires* (pp. 495–508). Paris: Karthala

Brøndsted, J. (1928). La basilique des cinq martyrs à Kapljuc. In *Recherches à Salone* I (pp. 33–186). Copenhagen: Schultz

Carlson, D.N. (2006). a monumental cargo: The Roman column wreck at Kızılburun, Turkey. *INA Quarterly*, 31(1), 3–10

Chatzinikolaou, K. (2016). The "Rhaidestos Collection" at the Archaeological Museum of Thessaloniki. The sculptures. In P. Adam-Veleni, E. Tsangaraki, and K. Chatzinikolaou (eds), *Rhaidestos – Thessaloniki: Antiquities in a refugee journey* (pp. 177–187). Thessaloniki: Archaeological Museum of Thessaloniki

Cramer, T. (1998). Die Marmore des Telephosfrieses am Pergamonaltar. *Berliner Beiträge zur Archäometrie*, 15, 95–198

Cramer, T. (2004). *Multivariate Herkunftsanalyse von Marmor auf petrographischer und geochemischer Basis* (Ph.D. diss.). Technische Universität Berlin

Cramer, T., Germann, K., and Heilmeyer, W.-D. (2002). Petrographic and geochemical characterization of the Pergamon Altar marble in the Pergamon Museum, Berlin. In L. Lazzarini (ed.), *ASMOSIA 6: Interdisciplinary studies on ancient stone. Proceedings of the Sixth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Venice, June 15–18, 2000* (pp. 285–291). Padua: A. Ausilio; Bottega d'Erasmo

Crawford, J.S. (1990). *The Byzantine shops at Sardis* (=*Archaeological Exploration of Sardis Monographs* 9). Cambridge, MA: Harvard University Press

Davidson, G.R. (1952). *Corinth* XII. *The minor objects*. Princeton, NJ: American School of Classical Studies at Athens

Dyggve, E. (1960). *Lindos: fouilles de l'Acropole 1902–1914 et 1952*, III.2. *Le sanctuaire d'Athana Lindia et l'architecture lindienne*. Berlin: Walter de Gruyter

Fant, J.C., Cancelliere, S., Lazzarini, L., Martinez, M.P., and Turi, B. (2002). White marble at Pompeii: Sampling the Casa dei Vettii. In L. Lazzarini (ed.), *ASMOSIA 6: Interdisciplinary studies on ancient stone. Proceedings of the Sixth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Venice, June 15–18, 2000* (pp. 309–315). Padua: A. Ausilio; Bottega d'Erasmo

Fischer, M. (2007). Marble imports and local counterparts: Luxury business in Roman Palestine. In M. Sartre (ed.), *Productions et échanges dans la Syrie grecque et romaine: actes du colloque de Tours, juin 2003* (=*Topoi Supplement* 8) (pp. 249–269). Lyon: Maison de l'Orient Méditerranéen

Giacchero, M. (1974). *Edictum Diocletiani et collegarum de pretiis rerum venalium: in integrum fere restitutum e latinis graecisque fragmentis*. Genoa: Istituto di storia antica e scienze ausiliarie

Gwiazda, M. (2014). Marble vessels from Jiyeh (Porphyreon). *Polish Archaeology in the Mediterranean*, 23/1, 527–542

Harrison, R.M. (1986). *Excavations at Saraçhane in Istanbul* I. *The excavations, structures, architectural decoration, small finds, coins, bones and molluscs*. Princeton, NJ–Washington, DC: Princeton University Press; Dumbarton Oaks Research Library and Collection

Hiesel, G. (1967). *Samische Steingeräte* (Ph.D. diss.). University of Hamburg

Hirt, A.M. (2010). *Imperial mines and quarries in the Roman world organizational aspects, 27 B.C.–A.D. 235*. Oxford: Oxford University Press

Hoepfner, W. (1997). The architecture of Pergamon. In R. Dreyfus and E. Schraudolph (eds), *Pergamon: The Telephos Frieze from the Great Altar* II (pp. 23–58). San Francisco: Fine Arts Museums of San Francisco

Kalopissi-Verti, S. and Panayotidi-Kesisoglou, M. (2020). Trianta chronia anaskafēs ston oikismo tēs prōimēs vyzantinēs periodou stēn Alasarna tēs Kō: syntomē episkopēsē. In G. Kokkorou-Alevras, S. Kalopissi-Verti, and M. Panayotidi-Kesisoglou (eds), *Hē Archaia Alasarna tēs Kō: opseis tēs istorikēs diadromēs enos archaiou dēmou apo tēn proïstorikē eōs kai tēn prōimē vyzantinē periodo. Praktika diēmeridas "Archaia Alasarna tēs Kō", Kōs, 21–22 Oktōvríou 2017* (pp. 189–208). Kos: Kentro Grafikōn Technōn.

Kapitän, G. (1961). Schiffsfrachten antiker Baugesteine und Architekturteile vor den Küsten Ostsiziliens. *Klio*, 39(1), 276–318

Kapitän, G. (1971). Esplorazioni su alcuni carichi di marmo e pezzi architettonici davanti alle coste della Sicilia Orientale. In *Atti del III Congresso internazionale di archeologia sottomarina: Barcellona, 1961* (pp. 296–309). Bordighera: Istituto internazionale di studi liguri

Keay, S. (2012). The port system of Imperial Rome. In S. Keay (ed.), *Rome, Portus and the Mediterranean* (=*Archaeological Monographs of the British School at Rome* 21) (pp. 33–67). London: British School at Rome

Kokkorou-Alevras, G. (2020). Anaskafē sto iero tou Apollōna Pythaiou-Pythaeōs stēn archaia Alasarna (sygchronē Kardamaina) tēs Kō. In G. Kokkorou-Alevras, S. Kalopissi-Verti, and M. Panayotidi-Kesisoglou (eds), *Hē Archaia Alasarna tēs Kō: opseis tēs istorikēs diadromēs enos archaiou dēmou apo tēn proïstorikē eōs kai tēn prōimē vyzantinē periodo. Praktika diēmeridas "Archaia Alasarna tēs Kō", Kōs, 21–22 Oktōvríou 2017* (pp. 43–58). Kos: Kentro Grafikōn Technōn

Kokkorou-Alevras, G., Kalopissi-Verti, S., and Panayotidi-Kesisoglou, M. (2010). *Kardamaina – ancient Halasarna on the Island of Kos: a guide*. Athens: Tasos Vagenas

Kokkorou-Alevras, G., Poupaki, E., Efstathopoulos, A., Kopanias, K., and Chatziconstantinou, A. (2005). Ta archaia latomeia Prokonnēsou stēn Propontida. *Archaiognōsía*, 13, 155–196

Lauffer, S. (ed.). (1971). *Diokletians Preisedikt*. Berlin: Walter de Gruyter

Lazzarini, L. and Malacrino, C.G. (2010). The white marble of Kos, its quarries and archaeometric characterisation. *Marmora*, 6, 57–70

Marano, Y.A. (2016). The circulation of marble in the Adriatic Sea at the time of Justinian. In J. Herrin and J.L. Nelson (eds), *Ravenna: Its role in earlier medieval change and exchange* (pp. 111–132). London: Institute of Historical Research, University of London

Minchev, A. (2012). From Proconnesos to Odessos: Unfinished Roman marbles from Odessos and Marcianopolis (2nd–3rd c. A.D.). *Histria Antiqua*, 21, 49–60

Niewöhner, P. (2006). Frühbyzantinische Steinmetzarbeiten in Kütahya: zu Topographie, Steinmetzwesen und Siedlungsgeschichte einer zentralanatolischen Region. *Istanbuler Mitteilungen*, 56, 407–473

Pensabene, P. (2007). *Ostiensium marmorum decus et decor: studi architettonici, decorativi e archeometrici* (=*Studi Miscellanei* 33). Rome: L'Erma di Bretschneider

Poupaki, E. (2002). Lithina Loutēria, Perirrantēria kai Kardopoi tēs Klasikēs Archaiotētos. *Archaiognōsía*, 11, 273–306

Poupaki, Eir. (2011a). *ALASARNA* II. *Lithina aggeia, cheiromyloi kai alla technerga apo to Iero tou Apollōna kai tou Ēraklē kai ton Palaiochristianiko Oikismo*. Athens: University of Athens

Poupaki, Eir. (2011b). *Kōakoi lithoi kai Kōakē Lithoxoïa kata tēn klasikē archaiotēta: chrēsē topikōn lithōn, topoi exoryxēs, technikes kai diamorfōsē gnōrismatōn kōakēs lithoxoïas, mnēmeía (architektonikē, glyptikē, technerga)* (Ph.D. diss.). University of Athens. Retrieved from https://phdtheses.ekt.gr/eadd/handle/10442/27083 (accessed: 05.07.2023)

Poupaki, Eir. (2017a). Ancient koan marble quarries and the distribution of koan marble in antiquity: Results of the recent archaeological research. In P. Triantafyllides (ed.), *To archaiologiko ergo sta nēsia tou Aigaiou. Diethnes epistēmoniko synedrio, Rodos, 27 Noemvriou – 1 Dekemvriou 2013*, III (pp. 205–222). Mytilene: Hellenic Ministry of Culture and Sports, General Secretary of Aegean and Island Policy

Poupaki, Eir. (2017b). Lithina aggeia, cheiromyloi kai alla antikeimena apo to iero tou Apollōna Pythaiou/Pythaeōs kai ton Prōimo Vyzantino Oikismo stēn archaia Alasarna (sīmerinē Kardamaina) tēs Kō. In G. Kokkorou-Alevras (ed.), *ALASARNA* VI. *To iero tou Apollōna Pythaiou/Pythaeōs kai o oikismos prōimōn vyzantinōn chronōn stēn archaia Alasarna tēs Kō. Glyptikē, Lithotechnia, Epigrafes* (pp. 67–118). Athens: University of Athens

Poupaki, Eir. (2019a). Early Byzantine marble vases from Kos Island, Dodecanese, Greece. In C. Diamanti, A. Vassileiou, and S. Arvaniti (eds), *En Sofia mathēteusantes: Essays in Byzantine material culture and society in honour of Professor Sophia Kalopissi-Verti* (pp. 157–170). Oxford: Archaeopress

Poupaki, Eir. (2019b). Marmarina kai alla lithina aggeia apo tē Spartē. *Athens University Review of Archaeology*, 2, 219–244

Poupaki, Eir. (2020a). Kos and the Roman marble trade network: Imported building material in Kos (Dodecanese, Greece) and possible exports of local architectural members during the Roman era. *Thiasos*, 9(2), 217–230

Poupaki, Eir. (2020b). Marmarina hēmierga skeuē apo ta aporrimmata enos Neoattikou ergastēriou stis ypōreies tēs Akropolēs tēs Athēnas. In K. Kopanias and G. Doulfis (eds), *Technēs empeiria: nea Archaiologika Eurēmata kai Porísmata. Timētikos tomos gia tēn Kathēgētria Geōrgia Kokkorou-Aleura* (pp. 345–360). Athens: Kardamitsas

Purpura, G. (1977). Un relitto con un carico di marmo a Capo Granitola (Mazara). *Sicilia Archeologica*, 33, 55–59

Purpura, V. (2008). I relitti con manufatti marmorei in Sicilia. *Archaeologia Maritima Mediterranea*, 5, 23–44

Quatember, U. (2003). Marmorinventar. In C. Lang-Auinger (ed.), *Hanghaus 1 in Ephesos: Funde und Ausstattung* (=*Forschungen in Ephesos* 8/4) (pp. 121–152). Vienna: Verlag der Österreichischen Akademie der Wissenschaften

Rickman, G. (2002). Rome, Ostia and Portus: The problem of storage. *Mélanges de l'École française de Rome*, 114(1), 353–362

Russell, B. (2013). *The economics of the Roman stone trade*. Oxford: Oxford University Press

Sherwin-White, S.M. (1978). *Ancient Cos: An historical study from the Dorian settlement to the Imperial period*. Göttingen: Vandenhoeck & Ruprecht

Sodini, J.-P. (2002). Marble and stoneworking in Byzantium, seventh–fifteenth centuries. In A.E. Laiou (ed.), *The economic history of Byzantium: From the seventh through the fifteenth century* (=*Dumbarton Oaks Studies* 39) (pp. 129–146). Washington, DC: Dumbarton Oaks Research Library and Collection

Strauss, E.J. (2006). *Roman cargoes: Underwater evidence from the Eastern Mediterranean* (Ph.D. diss.). University of London

Tambakopoulos, D. and Maniatis, Y. (2017). Determination of the marble source of sculpture and other objects found in Halasarna, Kos. In G. Kokkorou-Alevras (ed.), *ALASARNA* VI. *To iero tou Apollōna Pythaiou/Pythaeōs kai o oikismos prōimōn vyzantinōn chronōn stēn archaia Alasarna tēs Kō. Glyptikē, Lithotechnia, Epigrafes* (pp. 205–239). Athens: University of Athens

Tzitzibassi, A. (2000). Marble bowls for everyday use. *Museum of Byzantine Culture*, 7, 18–28

Verbrugghe, G., Jaccottey, L., and Boyer, F. (2019). *Late Iron Age and Roman stone mortars and pestles from the oppidum of Bibracte and the city of Autun (Burgundy, France)*. Poster presented during the 3rd Meeting of the Association for Ground Stone Tools Research, Copenhagen, September 2019. Retrieved from https://inrap.hal.science/hal-02442166/document (accessed: 05.07.2023)

Waelkens, M., De Paepe, P., and Moens, L. (1988). Quarries and the marble trade in antiquity. In N. Herz and M. Waelkens (eds), *Classical marble: Geochemistry, technology, trade* (pp. 11–28). Dordrecht: Kluwer Academic

Waelkens, M., De Paepe, P., and Moens, L. (1990). The quarrying techniques of the Greek world. In *Marble: Art historical and scientific perspectives on ancient sculpture. Papers delivered at a symposium organized by the Departments of Antiquities and Antiquities Conservation and held at the J. Paul Getty Museum, April 28–30, 1988* (pp. 47–72). Malibu, CA: J. Paul Getty Museum

Walker, S. (1985). The marble quarries of Proconnesos: Isotopic evidence for the age of the quarries and for *lenos*-sarcophagi carved at Rome. In P. Pensabene (ed.), *Marmi antichi: problemi d'impiego, di restauro e d'identificazione* (=*Studi Miscellanei* 26) (pp. 57–65). Rome: L'Erma di Bretschneider

Walker, S. and Matthews, K.J. (1997). The marbles of the Mausoleum. In I. Jenkins and G.B. Waywell (eds), *Sculptors and sculpture of Caria and the Dodecanese* (pp. 49–59). London: British Museum Press

Watson, J. (1916). *British and foreign marbles and other ornamental stones: a descriptive catalogue of the specimens in the Sedgwick Museum, Cambridge*. Cambridge: Cambridge University Press

Multiple stonecutters' marks on marble in the Late Antique Mediterranean: distribution, function, and meaning

Abstract: Masons' marks can be seen as informative symbols designed to convey one or more pieces of information from stonemasons or officials to other actors involved in the carving and building process. As such, when evaluated in their respective archaeological contexts, they can shed light on the artisanal and technical dynamics at play at different stages of work on building sites. In Late Antiquity, the alphabetic characters, usually carved on stone elements only once, had the form of single letters, multiple letters in ligature, or monograms. However, the marked objects were often double-numbered or, more rarely, engraved with multiple groups of marks. A thorough study of this phenomenon aims to explain the function of these marks and their significance for the workflow. In some cases, assembly or positioning marks are coupled with workshop marks, indicating the need of different groups of craftsmen to convey specific technical information. In other cases, more than one workshop is recorded on a single piece, providing data on the complexity of the craftsmanship, on the labor effort involved, and thus on the economic dimension of the project. This paper attempts to reassess the phenomenon of multiple masons' marks in its historical and geographical dimensions, with a focus on the building sites of the imperial capital and further reference to other archaeological examples throughout the Mediterranean.

Keywords: Late Antique and Early Byzantine marble furnishings, masons' marks, stonecutters' marks, multiple marks, stone workshops, building sites, Constantinople cisterns, Hagia Sophia

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INTRODUCTION

In Late Antiquity, the emergence of imposing sites for construction of both civic and religious buildings made the stone industry one of the most dynamically developing production sectors, supplying materials for masonry work and, above all, for furnishings. This progress led to an increase in the number of stone workshops in operation and to the reorganization of their management and work processes. Beginning in the mid-4th century AD, several local, quarry-based workshops began to operate in response to a variety of local architectural needs, and regional stonecutters' workshops flourished in association with them. The activities of these local workshops can be easily identified by investigating the petrographic characteristics of their products and their stylistic features. An example is a marble workshop in Nicopolis ad Nestum in Bulgaria, which was engaged in the production of distinctive architectural furnishings marketed both locally and in the neighboring regions (Vaklinova 1984; Petrova 2012: 338–348). In Ćurlina, Serbia, the study of Ionic impost capitals of an early Christian basilica has allowed the identification of a marble workshop that was active on many contemporary building sites in the province of Niš (Rakocija 2017). In northern Macedonia, a recent archaeometric analysis of marble objects from highland archaeological sites has confirmed the involvement of workshops associated with the Sivec quarries, which adopted the style and repertoire of the Prokonnesos and Dokimeion stone workshops for their products and disseminated them outside the Constantinopolitan and Anatolian marble networks (Niewöhner, Audley-Miller, and Prochaska 2013). In Lykia, in the district of Alacadağ, particular carving techniques identified on artifacts in local limestone from several sacral complexes can be traced to a single workshop that followed the stylistic and formal repertoire of Justinianic sculpture from Constantinople (Harrison 1963; Grossmann and Severin 2003: *passim* and 141–176). The artisanal vitality of the region is also confirmed by the architectural sculpture of the so-called Sun City Basilica in Ölüdeniz, where the presence of numerous unfinished architectural elements in local stone suggests that a dynamic sculpture workshop operating from the neighboring island of Lebissos was active in the coastal cities (Asano 2010). In Apamea, Syria, several residential and ecclesiastical complexes, including the "maison aux colonnes bilobées", the "maison des chapiteaux à consoles", the "église à atrium" and the "cathédrale de l'Est", featured artifacts in local limestone, sometimes painted red, testifying to the creativity of the district's stone workshops, which were not only skilled in carving local stone but also drew on models from other regions (Vanderheyde 2020).

In addition to regional quarries, some of the major extraction sites, such as Thasos (Sodini, Lambraki, and Kozelj 1980; Kozelj and Wurch-Kozelj 1995; Herrmann, Barbin, and Mentzos 1999; Herrmann Jr. and Newman 1999; Mentzos, Barbin, and Hermann 2002; Kozelj and

Wurch-Kozelj 1999; 2005), Dokimeion (Waelkens 1982; Kramer 1994; Herrmann Jr. and Tykot 2009; Niewöhner 2013; 2014), and Prokonnesos, which were active already in Imperial times, continued to be intensively exploited. Worth mentioning in the context of stonecutters' workshops is the emblematic case of the Marmara quarries, which managed to extract an enormous amount of stone during Late Antiquity and operated under a specific management system until at least the 7th century (Marsili 2019: 53–78, with further references) [*Fig. 1*]. In fact, due to their geographical proximity to the imperial capital, the Marmara quarries were exploited on an unprecedented scale from the end of the 4th century AD onwards, yielding products for the adornment of Constantinople as well as provincial cities. The quarries flourished because of their location by the sea and their close relationship with the capital. The same factors probably motivated the Prokonnesian workshops to develop a highly efficient operational chain, characterized by a progressive rationalization of the production technology, as well as an acceleration of the manufacturing process (Marsili 2023; Marsili and Lamanna 2023). In line with these changes, in the same period, marble furnishings began to be increasingly labeled with epigraphic marks that provide insights into the large workforce and the articulated craftsmanship of the marble industry.

STONECUTTERS' MARKS IN LATE ANTIQUITY: MORPHOLOGY, MEANING, AND MULTIPLE OCCURRENCES

Masons' or, rather, stonecutters' marks can be considered an important means of communicating technical information for work sites over long distances. They often consist of single letters, which, depending on the context, can be used as alphabetical or numerical indicators. Carved or painted, these initials, abbreviated names or monograms are used to label a wide range of architectural and liturgical artifacts originating from numerous Mediterranean contexts. Different actors involved in the construction chain, whether in artisanal or administrative tasks, were linked to these coded signs. In this system, the marks were intended to convey one or more pieces of information relevant for building or for accounting purposes. Thus, these marks are unique sources of information on the administrative organization of quarry districts and on the technical procedures used in carving and assembling stone furnishings. In addition, they shed light on the mode of operation of the workshops, their movement, and, on a broader scale, the functioning and economics of the stone industry in early Byzantium. A comparative analysis of the evidence related to the Prokonnesos quarries, amounting to some 3400 marks from several Mediterranean regions, has revealed the logic underlying their use. Essentially, it was possible to divide the marks into different groups based on their presumed purposes (Marsili 2019: 79–184). Marks carved by workers in or near quarry workshops played the following roles: indications related to the quality control carried out by *probatores*

(quality control officers) before export; destination or patrons' marks indicating the terminus or the person responsible for receiving the order; assembly or positioning marks, used as numerical guides for the correct positioning of architectural elements on the site. Workshop marks are closely linked to the activity and identity of artisanal units operating outside the quarries, probably in the vicinity of Constantinople, and primarily responsible for the initial roughing and dressing of the artifacts. Storage marks, which indicate the name of the owner of marble stocks, usually refer to a temporary deposit of artifacts awaiting their shipment to a final destination. In addition, there are disassembly marks, which can be considered as secondary marks, labeling the marble elements of dismantled buildings with the aim of reassembling them in secondary contexts (Marsili 2016: 153–154; Teatini 2019; Barker 2020: 124–142).

Alphabetic marks were usually carved on stone elements only once and had the form of single letters, ligatured characters, or monograms. However, it is noteworthy that many pieces are double-marked or, more rarely, several groups of marks are engraved on the same object. Evaluating them in their proper archaeological context makes it easier to determine the function and significance of these signs in the supply chain, as well as to illuminate the different stages of marble use that they track. To date, about 230 architectural elements in Prokonnesian marble, labeled with double or multiple marks, have been recorded from 34 different archaeological sites throughout the Mediterranean [*Fig. 2*]. Based on the methodological assumptions mentioned above, and taking into account the recognized function of each sign, these double or multiple marks can be divided into three main categories: 1)

Fig. 1. Marmara Adası, Saraylar harbor, semi-finished architectural elements (After Marsili 2019: 21, Fig. 8)

double series of alphanumeric marks; 2) numerals combined with other types of marks (mainly destination or workshop marks); 3) double series of workshop marks.

DOUBLE SERIES OF ALPHANUMERIC MARKS

In contrast to the Classical and Hellenistic periods, when stone carvers often used single letters to identify their workshops, in Late Antiquity isolated characters on stone usually had a numerical meaning. Only in rare cases can they be related to the identity of artisan groups. By and large, they were not used for quantitative purposes, for which stonecutters usually resorted to other strategies, such as the use of vertical tally marks [*Fig. 3*]. Rather, the individual letters served as positioning and assembly marks. This system uniquely embodies the customs deeply rooted in the laboriously developed collective technical knowledge of stonemasons. In earlier centuries, its primary purpose was to guide the assembly of adjacent marble segments, such as column drums or masonry blocks (Klimek 2013; Weber 2013; Kowalewska and Eisenberg 2019, all with references). In Late Antique architecture, the marking system was developed and adapted to fulfill two main technical purposes: when set in a sequence, the numerals were usually intended to assist in the proper spatial positioning of elements belonging to a series, such as components of architectural orders or parts of articulated liturgical furnishings. For example, in the episcopal church of Novae in Moesia Inferior, the pulpit is inscribed with five alphabetical signs set in a sequence, with spaces in between (Α, Δ, Ε, Ζ, Η) (Biernacki 1997: 72–76). In this context, the marks probably served as numerals to guide the assembly of the elements. At Philippi, the Π-shaped templon base in Basilica A, composed of adjoining pieces, bears a sequence of letters from E to Ξ (only Λ is missing) (Lemerle 1945: 396, Pls XXIV, XXXIII). When placed on adjacent

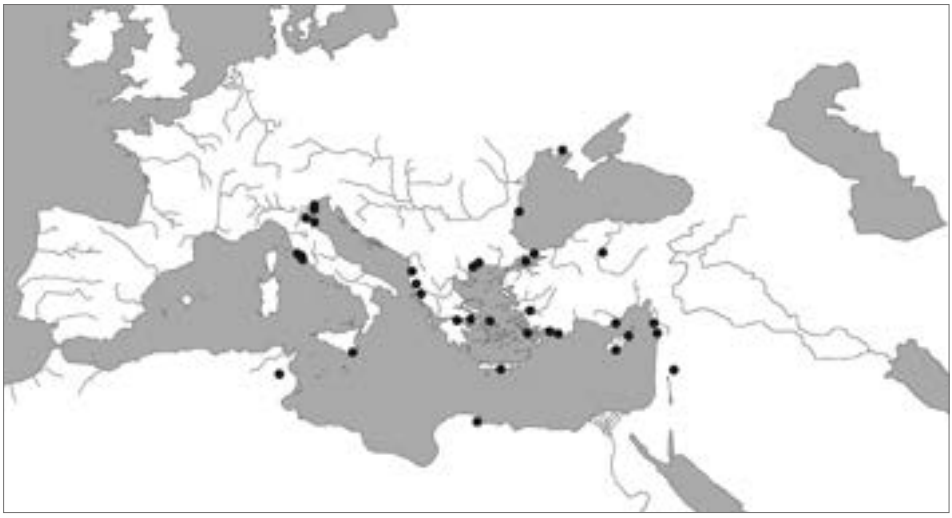


Fig. 2. Distribution of architectural elements inscribed with multiple marks (Processing G. Marsili)

pieces of furnishings to be assembled, the numerals were probably intended to guide the correct sequence of elements, as in the base–column–capital set, both in the nave order and in the mullions, or in segments of arcades and stylobates (for several examples, see Paribeni 2017; Marsili 2019: 100–114; for matching assembly instructions on elements of the order in the West Basilica in el-Atrun, see below, *Table 1*). In Late Antiquity, numerals are attested on more than 500 artifacts in different lithotypes from more than a hundred monuments located in 51 different archaeological contexts, and this number is likely to increase considerably in the future [*Fig. 4*]. Their distribution patterns attest to the existence of artisanal knowledge widely shared across regional boundaries. In addition, their technical characteristics reflect the existence of an organized workflow in quarries and worksites, as well as of an established system of communication between different actors of the construction industry.

Fig. 3. Burgaz Adası, semi-finished impost capital with tally marks (Deutsches Archäologisches Institut, negative No. D-DAI-IST-R8622)

Some information can be derived from the double series of single letters, which are clearly understood as numerals on the basis of their paleographic and epigraphic features. In this case, too, the practice differed from that of the Classical period, when double series of numerals usually reflected different

Fig. 4. Distribution of assembly/positioning marks (After Marsili 2019: 263, Pl. 2)

phases of construction and could be often interpreted as assembly and reassembly marks (Weber 2013: 339–349; Lippolis and Vallarino 2018: 179–188). In Late Antiquity, however, double numerals were likely intended to convey information about one construction episode and referred to the assembly and positioning of sets of furnishings. A column base and an Ionic impost capital stored in the "Casa Romana" on Kos, labeled with a lunate E on their upper and lower surfaces, respectively, are cases in point [*Fig. 5*]. The provenance of many of the architectural elements collected there is unknown (Militsi-Kechagia 2017; Baronio 2021). However, given the correspondence of the alphanumeric characters and the consistent sizes of the artifacts, it can be assumed that their assembly was guided by the letter E. Another letter, Γ, is carved on the upper surface of the column base, probably to provide additional guidance as to the exact location of the set, namely the third place in the colonnade.

In Istanbul, urban cisterns offer the second largest corpus of architectural elements bearing masons' marks, after the church of Hagia Sophia. According to a recent estimate, 209 covered cisterns have survived on the historic peninsula, most of them dating from the Late Antique period (Crow 2020). Their high number reflects the vital importance of this water provision system in sustaining the urban population and ensuring its survival with a sufficient water supply in case of siege or threats to the city's hinterland, where springs were located. The architectural features of most cisterns include reused columns, bases, and a variety of capitals, both finished and unfinished, damaged and relatively well preserved. Many of them probably came from old stocks

Fig. 5. Kos, "Casa Romana": a – a column base; and b – an Ionic impost capital inscribed with marks E and Γ (Photo G. Marsili)

and sometimes seem to have been recycled more than once, so only a holistic analysis of architectural sculpture, masonry style, and brick dimensions can provide information reliable enough to date the structures to which they belong (Altuğ 2018). The masons' marks on many of these elements have received little attention in the literature, with only sporadic mentions (Forchheimer and Strzygowski 1893: 247–258; Wulzinger 1913b; Mamboury and Wiegand 1934; Mamboury 1936; Deichmann 1976: 216–219; Marsili 2019: 79–173, *passim*). Nevertheless, they provide a ready means of detecting the different phases and strategies of use and reuse of the inscribed objects, especially when the pieces are marked more than once. A case in point is the Acımusluk Sokak cistern in the Fatih district, which dates from the middle Byzantine period, although it was built with reused materials (Altuğ 2013: 268–269). Partly explored by Ernst Wulzinger in the early 20th century (Wulzinger 1913a: 377–382), it consists of two rows of six columns surmounted by simple imposts of Prokonnesian marble. On the south side, three imposts are marked with the letters A, B, and Γ, probably to indicate their correct place in a sequence, given their corresponding first, second and third places in the row. A second mark, IA, carved upside down on the abacus of the third capital near the character Γ, can also be interpreted as a number (11). Its inverted position may suggest that it belonged to a different phase of the element's use and may have been related to the assembly or positioning of the capital when it was first mounted.

NUMERALS COMBINED WITH OTHER TYPES OF MARKS

The alphanumeric signs were frequently paired with other characters, such as destination or workshop marks. A prime example of the first category comes from the Kalenderhane Camii in Istanbul (Striker and Kuban 1997). The builders of this middle Byzantine church dedicated to the Panagia Kyriotissa made extensive use of materials salvaged from earlier buildings, probably not only from the early Christian church identified under the later structures, but also from neighboring districts. This is clearly indicated by three reused Corinthian capitals in the outer wall of the northern aisle, marked on their lower surfaces by two sets of marks conveying two different pieces of information [*Fig. 6*]. The first group, ΤΟΥ ΑΓΙΟΥ ΠΑΥΛΟΥ, was intended to indicate the final destination of the marbles, namely a church dedicated to St. Paul (for its hypothetical location: Berger 1997: 15–16). The second group consists of the numerals Γ, Δ, Ε, which can be interpreted either as accounting marks or as positioning marks. In the latter case, they may have indicated the exact position of the capitals within the building. Overall, the analysis of the combined groups of marks provides evidence for a single episode of dismantling the marble furnishings of a Late Antique religious complex and their reuse within a later ecclesiastical building, probably after an interval in storage.

A more common pattern is that of numerals combined with workshop marks. The latter consist of one or more letters —sometimes ligatured— and monograms, resolvable as personal names in

the genitive case (Marsili 2019: 120–184, with references). These marks appear with great frequency on Prokonnesian marble objects from the mid-5th century AD onwards, testifying to the impressive activity of the Marmara quarries, the structural organization of craftwork, and the internal management of stonecutters' workshops in Late Antiquity. What these marks meant in terms of the production and distribution dynamics of marble furnishings is still somewhat unclear, especially considering the ratio between marked and unmarked items. Nevertheless, both distribution patterns and comparative evidence suggest that they referred to the name of the chief stonemason, who supervised and vouched for the work of his team (Marsili 2019: 120–170). Thus, when a workshop marked a piece of marble, it can be assumed that the craftsmen of that workshop were involved in its dressing. The purpose of this marking system seems to go beyond the intention of declaring authorship out of concern for preserving the memory of individual involvement or for mere publicity purposes. Indeed, Late Antique stoneworkers achieved these goals in other ways, for example through extensive votive inscriptions (Marsili 2019: 86–87). Rather, the epigraphic, typological, and distributional characteristics of workshop marks allow us to infer more practical purposes, namely those related to record-keeping and production tracking. It goes without saying that these requirements were deeply interwoven with the economic and production background described above. In addition, the combined data on the manufacturing progress, the traces of tools, and the position of the marks suggest that these signs were usually carved after the rough dressing of the blocks. According to Nuşin Asgari's classification, this intermediate stage of processing was the first to be carried out by workshops located away from the quarries (Asgari 1992: Fig. 8II–III; 1995: Fig. 12C).

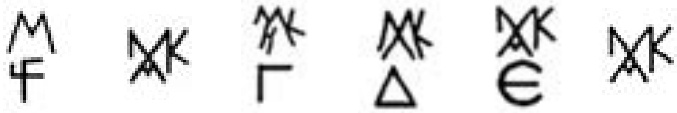
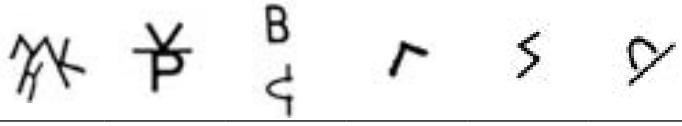
When unearthed in their original context of use, the primary meaning

Fig. 6. Istanbul, Kalenderhane Camii, Corinthian capitals with destination and positioning marks (Photo G. Marsili)

of alphanumeric signs combined with workshop marks is fairly easy to grasp and is usually related to placement. This is the case with some column bases from the upper order of the Western Basilica at El-Atrun, which are marked with the same workshop monogram on the lower band (MAK, in ligature) and the positioning signs Γ, Δ, E, set in sequence, on the upper surface (Ward-Perkins and Goodchild 2003: 29, 254–255) [*Table 1*].

The same pattern is documented in the basilica of St. John in Ephesos, where some column bases, located in the northern and southern aisles, are signed with the workshop mark ΓΕ/ΠΕ together with positioning marks, respectively Α, Δ and Γ, Δ (Marsili 2019: Cat. Nos 1762–1765) [*Fig. 7*]. Worth mentioning again is the case of the Constantinopolitan cisterns, where workshop marks are frequently coupled with numerals. In the cistern discovered in 1936 by Ernst Mamboury in Yeniçeriler Caddesi, Divanı Ali Sokak, four rows of six columns each are topped with roughed-out impost capitals and imposts. In 12 cases they are inscribed with the workshop marks **KY, ΙΩ, TP** (Mamboury 1936; Özgümüş 2008: 154; Altuğ 2013: 364–365) [*Fig. 8*]. Relevant is the instance of the sign **KY**, carved in ligature, which finds close parallels in the basilica of St. Polyeuktos (Mathews 1971: Pl. 39; Harrison 1986: Fig. H, n. 14c; Marsili 2019: Cat. No. 1412) and the church of SS. Sergius and Bacchus (Deichmann 1976: 217; Bardill 2017: 75; Marsili 2019: Cat. Nos 1413–1421). According to these pieces of evidence, the mark can be assigned to a stone workshop operating in the first three decades of the 6th century AD. In the cistern, the signature **KY** on imposts and impost capitals is repeatedly combined with one or two alphanumeric signs in a matching scheme: the numerals on the abacus of the impost capitals

Table 1. El-Atrun, Western Basilica, marks on architectural elements

	Workshop and assembly/positioning marks
Column bases (upper order)	
Column shafts (nave)	
Ionic impost capitals (nave)	
Corinthian capitals, type Kautzsch VII (nave)	

correspond to those on the imposts above them. In this case, then, the signs do not simply indicate the positioning of the object, but are primarily used for assembly purposes: the letters seem to be intended as a guide for the correct fitting of architectural elements inside the cistern, thus revealing clear clues as to the original design of the building, with a planned and calibrated arrangement of marble items. Furthermore, the uniformity of size and type of the marble elements, together with the corresponding stonecutters' marks, suggest that new materials were used in this cistern, as in a few others in the city, such as the Binbirdirek one (Wulzinger 1913b).

In fact, most of the Constantinopolitan water reservoirs were clearly built with reused marble items, as already noted. A good example is the Yerebatan cistern, which was built under the courtyard of the Stoa Basilica around 527, using a variety of heterogeneous materials (Altuğ 2013: 194–195; Marsili 2019: 113, 126–127). In this structure, 93 out of 107 Corinthian capitals belong to the Kautzsch VIII–Pralong III type, and 62 of them bear stonecutters' marks. In six cases, the workshop mark MA is accompanied by alphanumeric characters (Α: 1, Β: 2, ΛΘ: 39, Μ: 40, ΜΒ: 42, and ΜΔ: 44), while the workshop mark ΖΩ is combined with the numerals ΛS (36) and ΛΘ (39) (Marsili 2019: Cat. Nos 1078–1079, 1539–1546) [*Fig. 9*]. The position theoretically indicated by the marks is not reflected in the actual placement of the capitals inside the cistern. Moreover, given the high numerical value of most of the marks, their relation to the primary use of the elements

Fig. 7. Ephesos, basilica of St. John, column base with assembly/positioning and workshop marks (Photo G. Marsili)

seems unlikely. However, it is precisely the high numerical value that allows the assumption that in this case the numbers were actually used for tallying purposes. Given that the capitals were likely taken from storage areas, it is plausible that the marks were used for counting when sorting *spolia*. This practice, although not very popular, finds further archaeological attestations throughout the Mediterranean, for example in the case of counting marks on two Corinthian capitals from Gortyn in Crete (Gagliano and Marsili 2017).

DOUBLE WORKSHOP MARKS

This category has numerous attestations and can be divided into two different classes: duplication of the same workshop mark, and two or more engraved indicators of different workshops.

The doubling of the same workshop mark on a marble object could be explained either as a simple means of confirming the involvement of an artisanal unit in the workmanship, or as the participation of two different artisans from the same workshop in the rough-dressing process. In this regard, the paleography of the signs, which sometimes leave no doubt as to their execution by the same craftsman, provides clues. The marks on 40 column shafts, 109 drums and 69 impost capitals from the Binbirdirek cistern in Istanbul are emblematic examples of such peculiar epigraphic traits (Wulzinger 1913b). Evidence is also provided by the marks on a Corinthian capital in the Nakilbent cistern (Mamboury and Wiegand 1934: 48–49, Figs 21–22), a column base from the basilica in Lechaion [*Fig. 10*], and a column base from the Tetraconch in

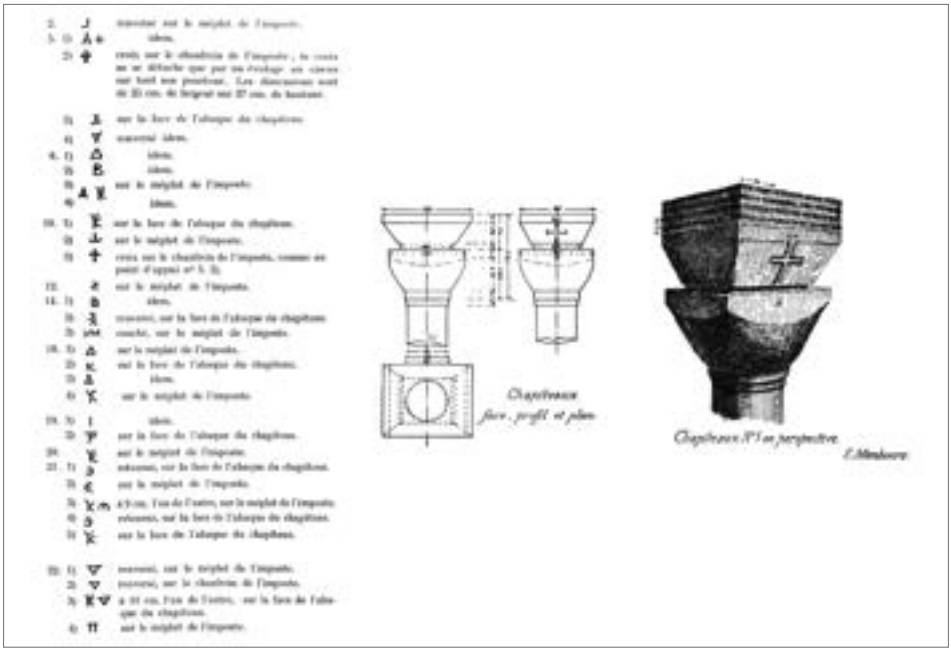


Fig. 8. Istanbul, cistern in Divanı Ali Sokak, stonecutters' marks recorded by Ernst Mamboury (After Mamboury 1936: 175)

Athens (Marsili 2019: Cat. Nos 997, 1080, Fig. 90).

Remarkable insights into the workings of the stone industry are provided by multiple marks of different workshops on the same object. Many examples come from archaeological sites throughout the Mediterranean, such as the Amrit shipwreck (Dennert and Westphalen 2004: 194, Cat. No. 35), the Marzamemi shipwreck (Kapitän 1980: 83–84, Figs 6, 8; Marsili 2015), the basilica of St. John in Ephesos (Deichmann 1976: 213; for inscribed objects collected in the courtyard of the Isa Bey mosque but originally belonging to the basilica of St. John, see Marsili 2019: Cat. No. 2233), the basilica of St. Leonidas in Lechaion (Deichmann 1976: 220; Marsili 2019: Cat. No. 1964); and the basilica of St. Panteleimon in Aphrodisias (Marsili 2019: Cat. No. 1853). In addition, several interesting examples come from the imperial capital. Scattered evidence has been documented in the basilicas of St. Polyeuktos (Marsili 2019: Cat. Nos 226, 307, 1960) and St. Irene (Marsili 2019: Cat. No. 110), the Hebdomon Palace (Marsili 2019: Cat. No. 1914), the *Forum Tauri* (Marsili 2019: Cat. Nos 758, 1400) [*Fig. 11*], Roumeli Hissar (Marsili 2019: Cat. No. 1570), Taşkasap (Marsili 2019: Cat. No. 616), and Çapa districts (Marsili 2019: Cat. No. 617), as well as on artifacts housed in the Archaeological Museum (Marsili 2019: Cat. Nos 121, 135, 433, 1510). In addition, many examples of imposts or Corinthian capitals from the Binbirdirek (Marsili 2019: Cat. Nos 184–186, 1451–1453, 1537) and Yerebatan cisterns (Marsili 2019: Cat. Nos 109, 120, 136, 156, 192–194, 247, 278, 293, 299, 308, 610, 691, 693, 812–813, 1079, 1309, 1383, 1436–1438,

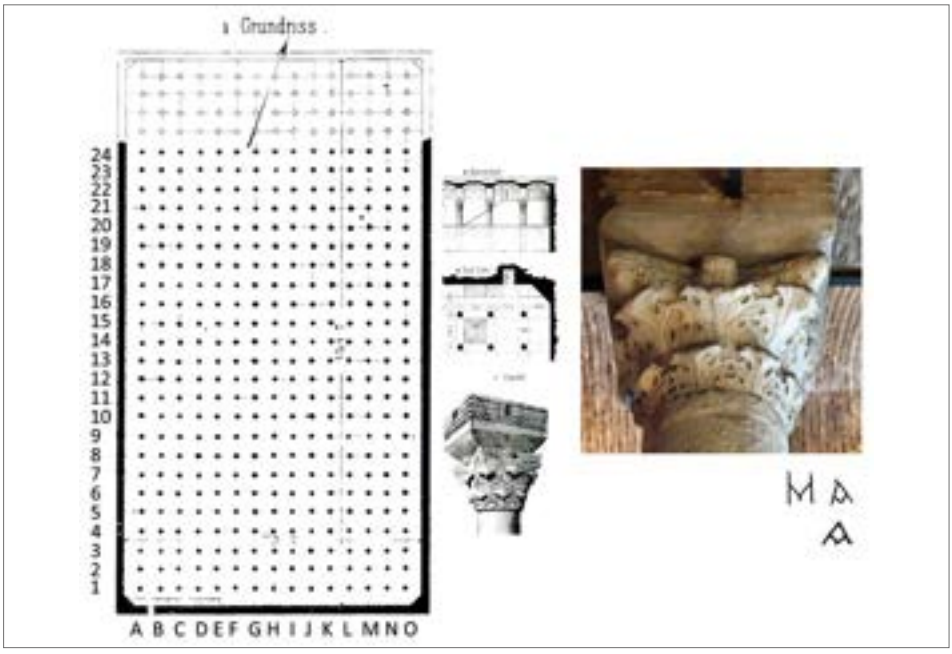


Fig. 9. Istanbul, Yerebatan cistern: left – layout of the cistern (After Marsili 2019: 127, Fig. 66); right – Corinthian capital in position D6 with a workshop mark and a numeric sign (Photo G. Marsili)

1488, 1496, 1545–1547, 1717, 1729, 1738, 1961) bear the signatures of different workshops. Considering that most of these marbles are in rough or semi-finished form, the high frequency of multiple workshop marks testifies to two different phenomena. On the one hand, it suggests that the craftsmen who inscribed their marks were responsible for the preliminary phases of the work. On the other hand, they show that the accounting, counting or sorting information they provided was mainly relevant to the early stages of processing and distribution.

The case of the church of Hagia Sophia, where multiple workshop marks label 47 cornices of the nave at both the ground and gallery levels, as well as 14 conch capitals, is relevant to the study of the dynamics of craftsmanship. With regard to the cornices, it was assumed, based on workmanship features of the blocks, that they went through at least five stages of carving from initial rough-hewing to finishing. They were largely modeled on the ground, and then

Fig. 10. Lechaion, basilica of St. Leonidas, column base with the very same workshop mark engraved on the plinth and the upper surface (Photo G. Marsili)

Fig. 11. Istanbul, Forum Tauri, multiple workshop marks on a column base (Photo G. Marsili)

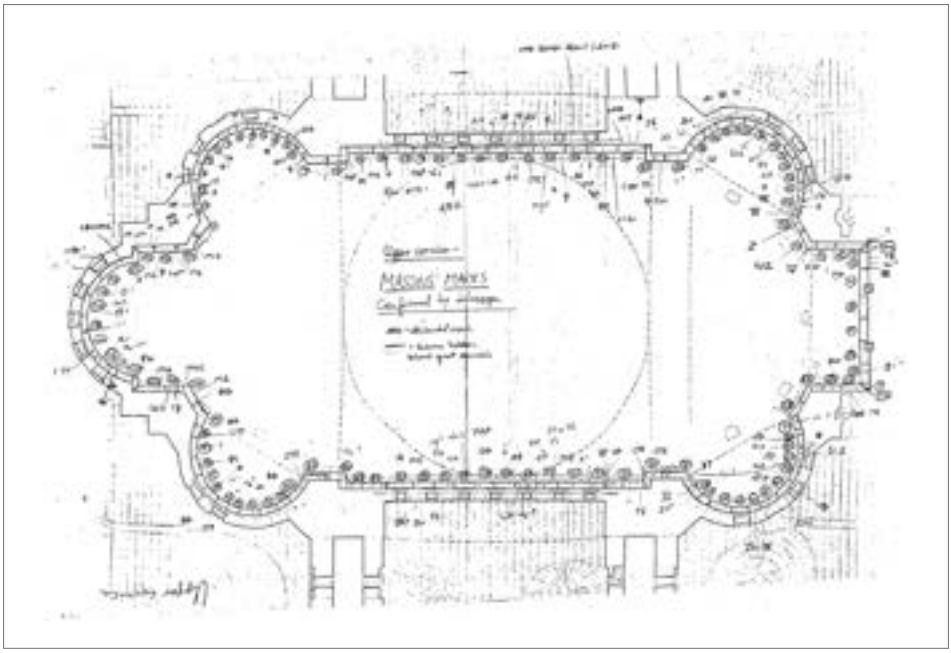


Fig. 12. Istanbul, Hagia Sophia church, distribution of workshop marks on ground cornices in a drawing from R. L. Van Nice's archive in Dumbarton Oaks (Courtesy of Dumbarton Oaks Institute. Robert Van Nice, Robert L. Van Nice records and fieldwork papers, ca. 1936–1989, Dumbarton Oaks, Trustees for Harvard University, Washington, D.C.)

Fig. 13. Istanbul, the church of Hagia Sophia: a – conch capitals in the gallery, southern side (Photo G. Marsili); b – detail of a conch capital from the nave with the mark AN (After Pedone 2022: 225, Fig. 127); c – detail of Van Nice's drawing with annotation of multiple marks on a capital of the north aisle (Courtesy of Dumbarton Oaks Institute. Robert Van Nice, Robert L. Van Nice records and fieldwork papers, ca. 1936–1989, Dumbarton Oaks, Trustees for Harvard University, Washington, D.C.)

the decorative details were finished after assembly. Moreover, the attention paid by the builders to this group of materials can be explained by the fact that these elements were placed in a part of the building that was crucial for static purposes and therefore had to be prepared and placed with special care (Butler 1992). The intervention of several hands, indicated by different signatures (up to four) on the same artifact, is documented for 39 cornice segments. They bear the following marks in various combinations: **ΑΝ, ΓΕ, ΕΦΘ, ΖΩ, ΖΚ, ΘΕ, ΙΩ, ΠΑ/ΠΑΡ, ΠΘ, ΠΙ, CI, CTE, TPY, ΦΘ, ΦΙ,** and **ΦΜ** (Butler 1989: 146–166; Marsili 2019: Cat. Nos 242, 243, 439, 446–458, 973, 974, 1062–1069, 1073–1076, 1155–1158, 1175, 1306, 1716, 1736) [*Fig. 12*]. Sometimes, different abbreviations were variants of the same signature, as in the case of **ΠΑ/ΠΑΡ** with the letters free-standing or ligatured. In some other cases, one or more marks appear upside down, indicating that they were carved by different craftsmen, at different stages of production, and when the block lay in inverted position during the carving process.

Fig. 14. Istanbul, the church of Hagia Sophia, unfinished detail of a capital in the southern aisle, ground floor (After Russo 2017: Pl. VI, Fig. 11)

On *Kesselkapitelle* (conch capitals), up to four marks from different workshops are recorded on each object (Marsili 2019: 132–136, with references). In this case, the marks were carved on different sides of the abacus, on the edges [*Fig. 13*]. They are often combined with single letters, probably intended as setting, counting or control marks. The reason for the involvement of a larger number of workshops is probably the fact that this type of furnishings was among the most sophisticated and challenging to carve. These pieces were installed in places that made carving difficult. They were intended to be finished after installation, as evidenced by a thorough examination of those left in rough form [*Fig. 14*]. Recent research has shown that these capitals went through five different stages of carving: 1) engraving of decorative motifs, 2) lowering of the background surface to bring out the motifs, 3) trimming of internal details, 4) delineation of motifs by drilling, and 5) removal of background and completion of the drilled details by chiseling (Russo 2017). By matching the data on the workflow with workshop marks, it can be concluded that in most cases these artifacts underwent the first or second stages of production in workshops located near the construction site and arrived on the spot in the form of roughly dressed impost capitals (Asgari 1995: 278, Fig. 12B). Once placed atop columns, they were finely chiseled by different highly skilled craftsmen, most likely working on one item at a time (Marsili 2019: 132).

Moreover, the scrutiny of the marks on the conch capitals and cornices in

Hagia Sophia shows that they often coincide, indicating that at least 18 workshops worked simultaneously and in close cooperation on the preparation of these two types of materials. The high degree of specialization of these workshops is also evidenced by the fact that 11 of the 18 marks used in combination on these objects recur exclusively on them and on no other furnishing element in the Great Church. The multiple marks may, therefore, be linked to highly qualified groups of craftsmen who were hired exclusively for the finishing of these two types of artifacts and who had to be capable of effective collaboration.

CONCLUSIONS

The study of double and multiple marks on marble furnishings confirms that these epigraphic signs always had a precise meaning in the production and construction sequence. In fact, each stonecutter's mark contained information that had to be passed on, either from one craftsman to another, or from the marble workshops to patrons or entrepreneurs. Understanding their meaning depends to a large extent on the possibility of studying them in close connection with their original archaeological contexts. Complementary data on the time of engraving are also provided by paleographic features which allow the identification of different hands, as in the case of the marks from the Binbirdirek cistern, the basilica of St. Leonidas in Lechaion and the Tetraconch basilica in Athens. The direction of writing is also worth noting: the upright or inverted position of several marks on the same object reflects their relevance to a particular stage or stages of construction. In the case of marks on objects in their primary context of use, the detection of different hands or the inverted position of letters makes it possible to trace the involvement of different workers, such as stone carvers responsible for dressing artifacts and craftsmen appointed to communicate information about the positioning and assembly of objects on site, as in the case of the cistern at Divanı Ali Sokak in Istanbul. In the case of marks on reused objects, the abovementioned variations can convey information encoded at different life stages of the objects, as in the case of the Acımusluk Sokak and Yerebatan cisterns. Finally, the case of multiple workshop marks on architectural furnishings is noteworthy, with the church of Hagia Sophia as a case in point. The construction site of the Great Church was exceptional in many respects, both for its impressive dimensions, architectural design solutions and the lavishness of its decorative elements. The analysis of the stonecutters' marks on its marble items reflects the size and complexity of the construction project: 1026 marble elements are inscribed with marks related to an estimated minimum of 142 working units (Marsili 2019: 131–132). The 61 cornices and conch capitals bearing multiple marks provide insights into the innovative and synergistic working techniques used in the carving of the most sophisticated architectural elements. These data further substantiate the idea that the Constantinopolitan

stone workshops, as well as the imposing construction sites opened between the end of the 5th and the first half of the 6th century AD, implemented novel measures to rationalize production and save on processing times, with significant improvements in manufacturing skills and organizational procedures.

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References

Altuğ, K. (2013). *İstanbul'da Bizans Dönemi Sarnıçlarının Mimari Özellikleri Ve Kentin Tarihsel Topografyasındaki Dağılımı* (Ph.D. diss.). Istanbul Technical University

Altuğ, K. (2018). Reconsidering the use of *spolia* in Byzantine Constantinople. In S. Pedone and A. Paribeni (eds), *"Di Bisanzio dirai ciò che è passato, ciò che passa e che sarà": scritti in onore di Alessandra Guiglia* I (pp. 3–16). Rome: Bardi edizioni

Asano, K. (2010). *The Island of St. Nicholas: Excavation and survey of the Gemiler Island area, Lycia, Turkey*. Osaka: Osaka University Press

Asgari, N. (1992). Observations on two types of quarry-items from Proconnesus: Column-shafts and column-bases. In M. Waelkens, N. Herz, and L. Moens, *Ancient stones: Quarrying, trade and provenance. Interdisciplinary studies on stones and stone technology in Europe and Near East from the prehistoric to the early Christian period* (=*Acta Archaeologica Lovaniensia. Monographiae* 4) (pp. 73–80). Leuven: Leuven University Press

Asgari, N. (1995). The Proconnesian production of architectural elements in late antiquity, based on evidence from the marble quarries. In C.A. Mango, G. Dagron, and G. Greatrex, *Constantinople and its hinterland: Papers from the Twenty-seventh Spring Symposium of Byzantine Studies, Oxford, April 1993* (pp. 263–288). Aldershot: Variorum

Bardill, J. (2017). The date, dedication, and design of Sts. Sergius and Bacchus in Constantinople. *Journal of Late Antiquity*, 10(1), 62–130

Barker, S.J. (2020). Reuse of statuary and the recycling habit of late antiquity: An economic perspective. In C.N. Duckworth and A. Wilson (eds), *Recycling and reuse in the Roman economy* (pp. 105–190). Oxford: Oxford University Press

Baronio, P. (2021). Capitelli corinzi a Kos tra V e VI secolo D.C. *Annuario della Scuola Archeologica di Atene e delle missioni italiane in Oriente*, 99(1), 371–403

Berger, A. (1997). Historical topography in the Roman, Byzantine, and Latin periods. In C.L. Striker and Y.D. Kuban (eds), *Kalenderhane in Istanbul: The buildings, their history, architecture, and decoration. Final reports on the archaeological exploration and restoration at Kalenderhane Camii, 1966–1978* (pp. 7–17). Mainz: Philipp von Zabern

Biernacki, A.B. (1997). Remarks on early Christian architectural details made of Proconnesian marble and found in Novae (Moesia Inferior). In A.B. Biernacki and P. Pawlak (eds), *Late Roman and early Byzantine cities on the lower Danube from the 4th to 6th century A.D. International conference, Poznań, Poland, 15–17 November 1995: Studies and materials* (pp. 71–80). Poznań: Instytut Historii Uniwersytetu im. Adama Mickiewicza w Poznaniu

Butler, L.E. (1989). *The nave cornices of Hagia Sophia in Istanbul* (Ph.D. diss.). University of Pennsylvania

Butler, L.E. (1992). Hagia Sophia's nave cornices as elements of its design and structure. In R. Mark and A.Ş. Çakmak (eds), *Hagia Sophia from the age of Justinian to the present* (pp. 57–77). Cambridge: Cambridge University Press

Crow, J. (2020). 'Still waters run deep': Cisterns and the hydraulic infrastructure of Constantinople and Alexandria. *Antiquité Tardive*, 28, 113–125

Deichmann, F.W. (1976). *Ravenna: Hauptstadt des spätantiken Abendlandes* II.2. *Kommentar*. Wiesbaden: Steiner

Dennert, M. and Westphalen, S. (2004). Säulen aus Konstantinopel: Ein Schiffsfund im antiken Hafen von Amrit. *Damaszener Mitteilungen*, 14, 183–195

Forchheimer, P. and Strzygowski, J. (1893). *Die byzantinischen Wasserbehälter von Konstantinopel: Beiträge zur Geschichte der byzantinischen Baukunst und zur Topographie von Konstantinopel* (=*Byzantinische Denkmäler* 2). Vienna: Verlag der Mechitharisten-Congregation

Gagliano, E. and Marsili, G. (2017). Due capitelli corinzio-asiatici dalle terme a sud del pretorio a Gortina di Creta. In P. Pensabene, M. Milella, and F. Caprioli (eds), *Decor: decorazione e architettura nel mondo romano. Atti del Convegno internazionale, Roma, 21–24 maggio 2014* (=*Thiasos Monografie* 9) (pp. 379–390). Rome: Edizioni Quasar

Grossmann, P. and Severin, H.-G. (2003). *Frühchristliche und byzantinische Bauten im südöstlichen Lykien: Ergebnisse zweier Surveys* (=*Istanbuler Forschungen* 46). Tübingen: Wasmuth

Harrison, R.M. (1963). Churches and chapels of central Lycia. *Anatolian Studies*, 13, 117–151

Harrison, R.M. (1986). *Excavations at Saraçhane in Istanbul* I. *The excavations, structures, architectural decoration, small finds, coins, bones and molluscs*. Princeton, NJ–Washington, DC: Princeton University Press; Dumbarton Oaks Research Library and Collection

Herrmann, J., Barbin, V., and Mentzos, A. (1999). The exportation of marble from Thasos in late antiquity: The quarries of Aliki and Cape Fanari. In C. Koukouli-Chrysanthaki, A. Muller, and S. Papadopoulos (eds), *Thasos: matière première et technologie de la préhistoire à nos jours* (pp. 75–90). Athens: École française d'Athènes

Herrmann, J.J., Jr. and Newman, R. (1999). Dolomitic marble from Thasos near and far: Macedonia, Ephesos and the Rhone. In M. Schvoerer (ed.), *Archéomatériaux: marbres et autres roches. Actes de la IV^ème^ Conférence internationale de l'Association pour l'étude des marbres et autres roches utilisés dans le passé, ASMOSIA IV, Bordeaux–Talence, 9–13 octobre 1995* (pp. 293–303). Talence: CRPAA; PUB

Herrmann, J.J., Jr. and Tykot, R.H. (2009). Some products from the Dokimeion quarries. In Y. Maniatis (ed.), *ASMOSIA VII: actes du VII^e^ colloque international de l'ASMOSIA, Thasos, 15–20 septembre 2003* (=*Bulletin de Correspondance Hellénique. Supplément* 51) (pp. 59–75). Athens: École française d'Athènes

Kapitän, G. (1980). Elementi architettonici per una basilica dal relitto navale del VI secolo di Marzamemi (Siracusa). *Corsi di Cultura sull'Arte Ravennate e Bizantina*, 27, 71–136

Klimek, A.U. (2013). A system of stonemason marks applied in columns of the tetrastyle courtyard in the House of Leukaktios in Ptolemais, Cyrenaica. *Światowit*, X(LI)/A, 11–22

Kowalewska, A. and Eisenberg, M. (2019). Masons' marks of Antiochia Hippos. *Tel Aviv*, 46(1), 108–127

Kozelj, T. and Wurch-Kozelj, M. (1995). Dragon-houses of southern Euboea: Military guard-places of the quarries. In Y. Maniatis, N. Herz, and Y. Basiakos (eds), *ASMOSIA 3: The study of marble and other stones used in antiquity* (pp. 17–31). London: Archetype

Kozelj, T. and Wurch-Kozelj, M. (1999). Les traces d'extraction à Thasos de l'Antiquité à nos jours. In C. Koukouli-Chrysanthaki, A. Muller, and S. Papadopoulos (eds), *Thasos: matière première et technologie de la préhistoire à nos jours* (pp. 49–53). Athens: École française d'Athènes

Kozelj, T. and Wurch-Kozelj, M. (2005). Les carrières de marbre à Thasos à l'époque protobyzantine: extraction et production. In F. Baratte, F. Déroche, C. Jolivet-Lévy, and B. Pitarakis (eds), *Mélanges Jean-Pierre Sodini* (=*Travaux et Mémoires* 15) (pp. 465–486). Paris: Association des amis du Centre d'histoire et civilisation de Byzance

Kramer, J. (1994). *Korinthische Pilasterkapitelle in Kleinasien und Konstantinopel: Antike und spätantike Werkstattgruppen* (=*Istanbuler Mitteilungen* 39). Tübingen: E. Wasmuth

Lemerle, P. (1945). *Philippes et la Macédoine orientale à l'époque chrétienne et byzantine: recherches d'histoire et d'archéologie*. Paris: Editions de Boccard

Lippolis, E. and Vallarino, G. (2018). La complessa storia dell'edificio circolare con la 'Grande iscrizione' nell'agorà di Gortina. In F. Camia, L. Del Monaco, and M. Nocita (eds), *Munus Laetitiae: studi miscellanei offerti a Maria Letizia Lazzarini* (pp. 167–203). Rome: Sapienza Università Editrice

Mamboury, E. (1936). La nouvelle citerne byzantine de Tchifté Sérail (Istanbul). *Byzantion*, 11(1), 167–180

Mamboury, E. and Wiegand, T. (1934). *Die Kaiserpaläste von Konstantinopel zwischen Hippodrom und Marmara-Meer*. Berlin: W. de Gruyter & Co.

Marsili, G. (2015). Sigle di lavorazione e atelier marmorari: nuove riflessioni sul relitto di Marzamemi. In R. Martorelli, A. Piras, and P.G. Spanu (eds), *Isole e terraferma nel primo cristianesimo: identità locale ed interscambi culturali, religiosi e produttivi. Atti XI Congresso nazionale di archeologia cristiana, Cagliari, 23–27 settembre 2014* (pp. 369–376). Cagliari: PFTS University Press

Marsili, G. (2016). Il riuso razionale: cantieri di smontaggio e depositi di manufatti marmorei nella documentazione archeologica ed epigrafica di età tardoantica. In M.C. Parello and M.S. Rizzo (eds), *Paesaggi urbani tardoantichi: casi a confronto. Atti delle Giornate gregoriane, VIII edizione (29–30 novembre 2014)* (pp. 149–156). Bari: Edipuglia

Marsili, G. (2019). *Archeologia del cantiere protobizantino: cave, maestranze e committenti attraverso i marchi dei marmorari*. Bologna: Bononia University Press

Marsili, G. (2023). From design to construction: integrated approaches for the study of ecclesiastical building sites in the early Byzantine Mediterranean. In A. Fiorini (ed.), *Archeologia del cantiere edile: temi ed esempi dall'antichità al Medioevo* (=*Archeologia dell'Architettura* 28.1). Sesto Fiorentino: All'insegna del Giglio

Marsili, G. and Lamanna, C. (2023). Digital approaches to ancient metrology: new insights into methods and tools for measuring and designing marble in late antiquity. In *2023 IMEKO TC-4 International Conference on Metrology for Archaeology and Cultural Heritage (Rome, Italy, October 19-21, 2023)* (pp. 376–381). Rome

Mathews, T.F. (1971). *The early churches of Constantinople: Architecture and liturgy*. University Park: Pennsylvania State University Press

Mentzos, A., Barbin, V., and Herrmann, J.J. (2002). Cathodoluminescence and isotopic analysis of Roman and early Byzantine architectural decoration in the Rotunda Museum, Thessaloniki. In J. Herrmann, N. Herz, and R. Newman (eds), *ASMOSIA 5: Interdisciplinary studies on ancient stone. Proceedings of the Fifth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Museum of Fine Arts, Boston, 1998* (pp. 316–327). London: Archetype

Militsi-Kechagia, E. (2017). Palaiochristianikē glyptikē Kō: symvolē stē meletēs tēs architektonikēs glyptikēs stēn Kō kata tēn palaiochristianikē periodo (40s–70s ai). *Dōdekanēsos: episēmon Deltion tōn en Dōdekanēsō Eparchiōn tou Oikoumenikou Thronou*, 1(9)(17), 17–494

Niewöhner, P. (2013). Phrygian marble and stonemasonry as markers of regional distinctiveness in late antiquity. In P. Thonemann (Ed.), *Roman Phrygia: Culture and society* (pp. 215–248). Cambridge: Cambridge University Press

Niewöhner, P. (2014). Production and distribution of Docimian marble in the Theodosian age. In I. Jacobs (ed.), *Production and prosperity in the Theodosian period* (pp. 251–271). Leuven–Walpole, MA: Peeters

Niewöhner, P., Audley-Miller, L., and Prochaska, W. (2013). Marbles, quarries and workshops on the highlands of northern Macedonia. *Archäologischer Anzeiger*, 2013/1, 95–145

Özgümüş, F. (2008). 2006 İstanbul Suriçi Arkeolojik Yüzey Araştırmaları. In *25. Arastirma Sonuçlari Toplantisi* III (pp. 154–155). Ankara: Kültür ve Turizm Bakanlagi

Paribeni, A. (2017). Modalità di assemblaggio e messa in opera delle membrature architettoniche nei cantieri romani e bizantini (I–VI sec. D.C.): stato della questione e nuovi contributi. In P. Pensabene, M. Milella, and F. Caprioli (eds), *Decor: decorazione e architettura nel mondo romano. Atti del Convegno internazionale, Roma, 21–24 maggio 2014* (pp. 743–752). Rome: Edizioni Quasar

Pedone, S. (2022). *Bisanzio a colori: la policromia nella scultura bizantina*. Rome: Bardi edizioni

Petrova, S. (2012). Nicopolis ad Nestum/Mestum. In R.T. Ivanov (ed.), *Roman cities in Bulgaria* I (pp. 289–361). Sofia: Prof. Marin Drinov Academic Publishing House

Rakocija, M. (2017). Mesto impost kapitela iz bazilike u Ćurlini u evoluciji jonskih impost kapitela i delatnost paleovizantijske skulptorske radionice u Nišu. In M. Rakocija (ed.), *Niš i Vizantija: četrnaesti međunarodni simpozijumh, Niš, 3–5 Jun 2016. Zbornik radova* (pp. 89–104). Niš: Univerzitet u Nišu

Russo, E. (2017). Sulla lavorazione dei capitelli di S. Sofia di Costantinopoli. *Bizantinistica*, 18, 49–113

Sodini, J.-P., Lambraki, A., and Kozelj, T. (1980). *Aliki* I. *Les carrières de marbre à l'époque paléochrétienne* (=*Études Thasiennes* 9). Athens: École française d'Athènes

Striker, C.L. and Kuban, Y.D. (eds). (1997). *Kalenderhane in Istanbul: The buildings, their history, architecture, and decoration. Final reports on the archaeological exploration and restoration at Kalenderhane Camii, 1966–1978*. Mainz: Philipp von Zabern

Teatini, A. (2019). Un cantiere di spoliazione a Thignica in età bizantina: indizi epigrafici e tracce archeologiche. *Cartagine. Studi e Ricerche*, 4. https://doi.org/10.13125/caster/3669

Vaklinova, M. (1984). Ateliers de décoration architecturale au V^{e} et VI^{e} siècle dans la région de Nicopolis ad Nestum (Bulgarie). In *Actes du X^{e} Congrès international d'archéologie chrétienne, Thessalonique, 28 septembre – 4 octobre 1980* (pp. 641–650). Vatican City: Pontificio Istituto di archeologia cristiana

Vanderheyde, C. (2020). Chapiteaux corinthiens inédits d'Apamée (Syrie). In D. Moreau, C.S. Snively, A. Guiglia, I. Baldini, L. Milanović, I. Popović, N. Beaudry, and O. Heinrich-Tamáska (eds), *Archaeology of a world of changes: Late Roman and early Byzantine architecture, sculpture and landscapes. Selected papers from the 23rd International Congress of Byzantine Studies (Belgrade, 22–27 August 2016) in memoriam Claudiae Barsanti* (=*BAR International Series* 2973) (pp. 277–290). Oxford: BAR Publishing

Waelkens, M. (1982). *Dokimeion: Die Werkstatt der repräsentativen kleinasiatischen Sarkophage. Chronologie und Typologie ihrer Produktion* (=*Archäologische Forschungen* 11). Berlin: Mann

Ward-Perkins, J.B. and Goodchild, R.G. (2003). *Christian monuments of Cyrenaica* (J. Reynolds, ed.) (=*Society for Libyan Studies Monograph* 4). London: Society for Libyan Studies

Weber, U. (2013). *Versatzmarken im antiken griechischen Bauwesen*. Wiesbaden: Harrassowitz

Wulzinger, K. (1913a). Byzantinische Substruktionsbauten Konstantinopels. *Jahrbuch des Kaiserlich Deutschen Archäologischen Instituts*, 28, 370–395
Wulzinger, K. (1913b). Die Steinmetzzeichen der Bin-bir-direk. *Byzantinische Zeitschrift*, 22(2), 459–473

Corinthian capitals from the Hellespontus

Abstract: The Hellespont area, owing to its key geographical location, played a dominant role in production, consumption, as well as trade contacts between the Black Sea and the Mediterranean during the Byzantine period. Despite the importance of this region, archaeological data from it is rather limited, hindering research on the history of the Hellespont in the Byzantine period. Archaeological surveys have been conducted in the valleys of the Hellespont catchment area in order to determine the location of Byzantine villages and to understand regional settlement patterns. An important group of objects identified as a result of this fieldwork were architectural members. The finds included numerous column capitals and fragments of liturgical furnishings. The present study examines Corinthian capitals, which constitute the most frequently occurring type of column capital, numbering 30 documented examples. All specimens were made from white or gray-veined white Prokonnesian marble. The general aims of research on this material are, firstly, to understand the nature of the now-lost buildings they came from, and, secondly, to contribute information on the location of settlements in the region. The specimens under consideration were identified during field surveys in Çanakkale, as well as during a query in the Çanakkale Archaeology Museum.

Keywords: Hellespontus, Çanakkale, Corinthian, column capital

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INTRODUCTION

During the Byzantine period (AD 324–1453), the Black Sea and the Mediterranean were important areas of economic activity. The Hellespont, a natural maritime channel oriented northeast–southwest, was of profound importance for the producer – consumer relations between these areas. The administrative borders of the Hellespontus region encompassed the European coast (the Gallipoli Peninsula – Thracian Chersonese), the Europa region and the Anatolian coast (the Biga Peninsula) [*Fig. 1*].[1] The strait was of vital importance for the production, consumption and trade relations in the Byzantine period thanks to the presence of economically relevant resources on its European and Asian coasts. Despite an abundance of historical data, the insufficient research on Byzantine settlements in the Hellespont and the progressing degradation of the archaeological record make the region difficult to understand. Relationships between the Black Sea and the Mediterranean on the one hand, and between the Marmara Sea and the Aegean on the other, escape thorough comprehension. To aid this situation, archaeological surveys of Byzantine settlements were

Fig. 1. Map of the Hellespont showing locations of sites mentioned in the paper (Basemap Mapbox, processing M. Momot)

1 These administrative districts, established by the emperor Diocletian (AD 285–305), retained their boundaries under Constantine (AD 306–337). The province of Hellespontus, established incorporating parts of ancient Mysia and Phrygia Minor, took its name from the Hellespont. A small portion of the strait at the Aegean mouth was within the boundaries of the province of Asia. Of the settlements in the studied area, Assos, Gargara and Argiza were episcopal centers of the province of Asia. Hellespont settlements established according to the rules of Byzantine urban planning were Gallipoli (Kallipolis) and Lampsakos in the upper section of the strait; Ilion was located in its lower part; Madytos, Coila (Coele), Abydos and Dardanos occupied the middle.

conducted in the valleys along the Hellespont (Türker 2012; 2014; 2015; 2016; 2018). As part of the survey works, queries were also carried out in the Çanakkale Archaeology Museum resulting in identification of some 1500 structural members in marble and other stones. Among these, a total of 154 column capitals belonging to eight different types were identified. They were mainly elements of Byzantine structures, churches as well as public buildings, which have not survived until the present day. In this study, the Corinthian capitals from the Hellespontus are examined, seeking to determine their place in Byzantine art. The general aims of research on this material are, firstly, to understand the nature of the now-lost buildings they came from, and, secondly, to contribute information on the location of settlements in the region.

The catalog presents 30 capitals identified during the archaeological surveys and museum queries. All dimensions are given in centimeters; abbreviations: L – length, UL – upper length, BL – bottom length, T – thickness, UT – upper thickness, BT – bottom thickness, D – diameter, UD – upper diameter, BT – bottom diameter, H – height, (b) – broken. All photos used in the article are from the author's archive.

CATALOG OF THE CAPITALS

1. Çanakkale Archaeology Museum [*Fig. 2:a*]
Inv. No. 2692
Gray-veined white marble
Dimensions and state of preservation: H 47, D 58; a part of the abacus and some parts of the faces of the capital are broken.
Description: The calathus features two rows of acanthus leaves. The lower one was cut during reuse and the capital was hollowed out, damaging the bottom part of the lower wreath of the calathus. The veins of the acanthus leaves are deeply carved. Eyelets indicating the use of a drill can be seen between the leaves. The helices and volutes emerge from the caulis bowl, which is chalice-shaped and carries a closed bunch of acanthus leaves. The bunches are damaged, as are the helices and volutes formed by plant stems emerging from between the leaves. The abacus flower stem is present; the part that held the abacus flower is broken.

2. Ezine, Gökçebayır village [*Fig. 2:b*]
White marble
Dimensions and state of preservation: UL 42(b); UT 44(b); H 35(b); D 36(b); the lower section of the capital is embedded in concrete affixing it to the ground. The base annulet of the calathus and part of the lower row of leaves are, therefore, obscured. The corners of the abacus are broken.
Description: The calathus features two rows of acanthus leaves with eight leaves in each row. Each caulis emerging from the upper wreath carries a closed bunch of leaves. Plant stems springing from these bunches form helices with incurved spirals. Plant stalks also extend towards the corners of the abacus, but the volutes are broken.

3. Biga, Bekirli village [*Fig. 2:c*]
White marble
Dimensions and state of preservation: UL 60(b); UT 64(b); H 56; D 42; since the lower section of the capital is embedded in concrete, the base annulet of the calathus and part of the lower row of leaves are obscured. The corners of the abacus are broken.
Description: The calathus has two rows of acanthus leaves, with eight acanthus leaves in each row. The plant stems form-

Fig. 2. Corinthian column capitals: a – Cat. No. 1, Çanakkale Archaeology Museum; b – Cat. No. 2, Ezine, Gökçebayır village; c – Cat. No. 3, Biga, Bekirli village; and d – Cat. No. 4, Çanakkale Archaeology Museum (Photos A. Çaylak Türker)

ing the helices and volutes spring from the caulis bowl. The abacus flower is broken, but a trace of its stem is visible on the calathus.

4. Çanakkale Archaeology Museum
[*Fig. 2:d***]**
White marble
Dimensions and state of preservation: UL 48(b); UT 45(b); H 18(b); the lower part of the calathus and the abacus are broken and incomplete. Fractures are visible on the abacus. An abacus flower may have been present, but the surface in this area is broken.
Description: The plant stems forming the volutes are visible on the caulis.

5. Çanakkale Archaeology Museum
[*Fig. 3:a***]**
Inv. No. 2691
Gray-veined white marble
Dimensions and state of preservation: H 45; D 38; the abacus, helix and volute sections are broken.
Description: The calathus has two rows of acanthus leaves. Each row contains eight leaves. The acanthi tips are pointed; however, they do not belong to the type of acanthi with thorny or serrated leaves. Spaces between the leaves feature drop-shaped drill marks. The helices and volutes spring out from above the bunches of unfurling leaves emerging from the caulis bowl. The calathus lip is visible.

6. Ezine, Bozköy village [*Fig. 3:b***]**
White marble
Dimensions and state of preservation: UL 58(b); UT 60(b); H 57(b); D 40(b); the base annulet of the calathus, the calathus, and the abacus are broken, as are the sections containing the volutes.
Description: The calathus has two rows of acanthus leaves. Each row contains eight leaves. Each caulis emerging from within the upper wreath carries a closed bunch of leaves. Some of these bunches are carved in detail, while others are roughly shaped and left uncarved. Traces of plant stems forming the helices and volutes are visible on the caulis bowl. The calathus lip has a convex profile.

7. Çanakkale Archaeology Museum
[*Fig. 3:c***]**
Inv. No. 5188, a specimen from the Biga-Çakırlı village
White marble
Dimensions and state of preservation: UL 47; UT 47; H 26; D 34; the lower section of the calathus was cut off. The abacus flowers are broken.
Description: The calathus has two rows of acanthus leaves, eight leaves in each row. The bunches of leaves opening in the form of chalices emerge from the upper wreath; however, the sections containing the caulis bowl are broken. The helices and plant branches extending towards the corners of the capital to form the volute are visible, but the volutes are broken. The calathus lip is visible under the abacus. The abacus flower stem is absent.

8. Çanakkale Archaeology Museum
[*Fig. 3:d***]**
Inv. No. 3257
White marble
Dimensions and state of preservation: UL 30; UT 30; H 25(b); the capital is preserved in two broken fragments. A cor-

ner of the lower section of the calathus is missing.
Description: The calathus has two rows of wide acanthus leaves. Each row contains eight leaves, sparsely placed and splayed on the surface. The stems of the volutes do not emerge from the caulis bowl but from the areas between the leaves of the upper wreath. Horn-shaped leaves, originating from volute stems, were rendered instead of helices.

9. Çanakkale, Kumkale village [*Fig. 4:a*]
White marble
Dimensions and state of preservation: H 39(b); D 39(b); only a fourth part of the

Fig. 3. Corinthian column capitals: a – Cat. No. 5, Çanakkale Archaeology Museum; b – Cat. No. 6, Ezine, Bozköy village; c – Cat. No. 7, Çanakkale Archaeology Museum; and d – Cat. No. 8, Çanakkale Archaeology Museum (Photos A. Çaylak Türker)

capital has been preserved. The lower section of the calathus is broken and incomplete. Volute stems springing from the upper wreath are visible, but the sections containing the volutes are broken.
Description: Leaf motifs were used instead of helices.

10. Çanakkale, Çıplak village [*Fig. 4:b*]
White marble
Dimensions and state of preservation: H 18(b); D 32; the lower section of the calathus has been preserved. The surface of the calathus is severely worn.
Description: The calathus has two rows

Fig. 4. Corinthian column capitals: a – Cat. No. 9, Çanakkale, Kumkale village; b – Cat. No. 10, Çanakkale, Çıplak village; c – Cat. No. 11, Biga, Danişment village; and d – Cat. No. 12, Ezine, Mehmet Yücel collection (Photos A. Çaylak Türker)

of acanthus leaves. Only the veins of the acanthi are visible, while the leaf sections are badly weathered.

11. Biga, Danişment village [*Fig. 4:c*]
White marble
Dimensions and state of preservation: H 15(b); the capital is broken; four of the acanthi are visible on the lower wreath of the calathus.
Description: The wreath probably comprised eight acanthi. The surface is broken in the part containing the upper row of leaves and only the stem of one leaf is visible. The veins of the leaves were deeply carved.

Fig. 5. Corinthian column capitals: a – Cat. No. 13, Halileli village cemetery; b – Cat. No. 14, Çanakkale, Tevfikiye village; c – Cat. No. 15, Çanakkale Archaeology Museum, originally from Alexandria Troas; and d – Cat. No. 16, originally from Bayramiç, Aşağı Şapçılar village (Photos A. Çaylak Türker)

12. Ezine, Mehmet Yücel collection [*Fig. 4:d*]
White marble
Dimensions and state of preservation: H 55; D 51; the lower section of the calathus and the abacus are broken. Damage to the faces renders the calathus details illegible.
Description: The available traces indicate that two wreaths were present on the calathus.

13. Halileli village cemetery [*Fig. 5:a*]
White marble
Dimensions and state of preservation: H 32; D 43.5; the abacus section is embedded in the ground. The base annulet of the calathus is broken.
Description: Two wreaths are visible on the calathus. The leaves were carved in high relief, with drop-shaped eyelets indicating the use of a drill present between the leaves.

14. Çanakkale, Tevfikiye village [*Fig. 5:b*]
White marble
Dimensions and state of preservation: UL 43(b); UT 50; H 38; D 32; the tips of the volutes are broken.
Description: The calathus has three rows of acanthus leaves. Each row contains eight leaves. The tips of the acanthi are pointed, but they do not belong to the type of acanthi with thorny or serrated leaves. The spaces between the leaves bear drop-shaped drill marks. One stem springs from above the second row of leaves and then curves inward towards the middle section, coiling under the calathus lip to form a helix; the other stem extends outward in a spiral under the corner of the abacus, forming a volute.

15. Çanakkale Archaeology Museum [*Fig. 5:c*]
Inv. No. 9392, a specimen from Alexandria Troas
White marble
Dimensions and state of preservation: UL 37; UT 37; H 20.5; D 27; the tips of the acanthi in the second and third wreaths are broken. The plant stems forming the corner helices and volutes, as well as the corners containing the volutes are not preserved.
Description: The leaves are thin and long, and their veins are carved fairly superficially. The tips of the acanthus leaves are pointed. Drop-shaped drill marks are visible between the lobes. The calathus lip has a convex profile.

16. Çanakkale Archaeology Museum [*Fig. 5:d*]
Inv. No. 5152, a specimen from Bayramiç, Aşağı Şapçılar village
White marble
Dimensions and state of preservation: H 24(b); D 29(b); the upper section of the calathus is broken.
Description: The calathus has two rows of acanthus leaves, with eight leaves in each row. Their tips bear drop-shaped drill marks.

17. Çanakkale Archaeology Museum [*Fig. 6:a*]
Inv. No. 377, a specimen from Troy
Gray-veined white marble
Dimensions and state of preservation: UL 34.5; UT 34.5; H 34; D 24.5; the annulet of the calathus is broken.
Description: Three faces of the capital were carved and one was left rough. Contours of the acanthus leaves and volute were outlined on the uncarved

face and its surface was retouched, but the veins of the leaves and other details were not rendered. The caulis bowl was left without retouching. The calathus has two rows of acanthus leaves with eight leaves each. There are superficial fractures on the lower wreath. Of the acanthi on the upper wreath, those at the corners extend as far as the area under the volute and their tips are formed to merge with it. The leaves were sparsely placed; the wide acanthus leaves are splayed on the surface. The stems of the volutes do not emerge from the caulis bowl but from the spaces between the leaves of the upper wreath. Horn-shaped leaves springing from volute stems were rendered instead of helices. The abacus flower stem was not carved; a trace of the abacus flower remains, but its surface is damaged.

18. Çanakkale Archaeology Museum [*Fig. 6:b*]
Inv. No. 4
Gray-veined white marble

Fig. 6. Corinthian column capitals: a – Cat. No. 17, originally from Troy; b – Cat. No. 18; c – Cat. No. 19 (all from Çanakkale Archaeology Museum); and d – Cat. No. 20, Ezine, Alemsah village (Photos A. Çaylak Türker)

Dimensions and state of preservation: UL 44; UT 44; H 40; D 40; the base annulet of the calathus is broken.
Description: Four large acanthus leaves are placed at the corners of the calathus. The external helices, located between the acanthi, emerge from the base annulet of the calathus and extend to form the volutes at the corners. Within the area bordered by these helices is the abacus flower stem. It has the form of a branch with leaves. The abacus flower protrudes from the surface but was not carved in detail.

19. Çanakkale Archaeology Museum [*Fig. 6:c*]
White marble
Dimensions and state of preservation: UL 45; UT 45; H 20(b); the lower section of the calathus is broken and incomplete.
Description: The upper parts of four large acanthus leaves are visible on the calathus. The leaves extend as far as the abacus. The volutes are missing. The roughly carved abacus flower extends towards the calathus.

20. Ezine, Alemşah village [*Fig. 6:d*]
White marble
Dimensions and state of preservation: UL 35(b); UT 34(b); H 25(b); the lower section of the calathus is broken.
Description: From the preserved fragment it is apparent that four large acanthus leaves covered the calathus. The leaves were carved in low relief and rather simply executed. The upper parts of the leaves curve slightly outwards at the corners of the abacus. The abacus flower is present.

21. Yakup Bey Inn, Çardak village [*Fig. 7:a*]
White marble
Dimensions and state of preservation: UL 45(b); UT 45(b); H 20(b); D 42(b); the base annulet of the calathus and the abacus section of the capital are broken; the item was reused as a column base inside the Yakup Bey Inn in Çardak.
Description: From the preserved fragment it is apparent that eight large acanthus leaves covered the calathus.

22. Çanakkale, Dümrek village [*Fig. 7:b*]
White marble
Dimensions and state of preservation: H 25(b); D 40(b); a fragment of the lower section of the calathus is preserved.
Description: Fragments of two large acanthus leaves are present on the calathus.

23. Çanakkale, Dümrek village [*Fig. 7:c*]
White marble
Dimensions and state of preservation: H 21(b); D 45(b); a fragment of the calathus is preserved.
Description: Fragments of two large acanthus leaves are present on the calathus.

24. Çanakkale, Dümrek village [*Fig. 7:d*]
White marble
Dimensions and state of preservation: H 22(b); a fragment of the calathus is preserved.
Description: Fragments of two large acanthus leaves are present on the calathus.

25. Çanakkale Archaeology Museum [*Fig. 8:a*]
White marble
Dimensions and state of preservation: UL 25(b); UT 23(b); H 37; D 22. The base annulet of the calathus is broken.

Description: Three faces of the capital were carved, while the fourth one was left unadorned. The fourth face bears an inscription indicating that the capital may be a re-carved older fragment. The four large acanthus leaves placed at the corners of the calathus cover its surface. The leaves have pointed tips, and their veins were carved superficially. The acanthi extend as far as the area below the abacus. There are no volutes at the corners, and the tips of the acanthi, curving upwards, replace the volutes. Despite the absence of volutes, bands representing their stems emerge from the space between the acanthi. The abacus flower stem is inverted and located between the helices, which spring from between the bands of volute stems and curve inwards.

26. Biga, Çeşmealtı village [*Fig. 8:b*]
White marble
Dimensions and state of preservation: UL 51(b); UT 50(b); H 26(b); D 44(b); the lower section of the calathus is broken and missing.
Description: The preserved fragment indicates that four large acanthus leaves were present on the calathus. Each leaf covered a corner of the calathus and ex-

Fig. 7. Corinthian column capitals: a – Cat. No. 21, Yakup Bey Inn, Çardak village; b – Cat. No. 22, Çanakkale, Dümrek village; c – Cat. No. 23, Çanakkale, Dümrek village; and d – Cat. No. 24, Çanakkale, Dümrek village (Photos A. Çaylak Türker)

tended as far as the abacus. The volutes are missing, but the extant volute stems emerge from the spaces between the acanthi. These spaces are V-shaped and filled with a stylized plant motif.

27. Yakup Bey Inn, Çardak village
[*Fig. 8:c***]**
White marble
Dimensions and state of preservation: UL 46; UT 46; H 50; D 42; the out-curved tips of the acanthi, extending as far as the area under the abacus, are broken.

Description: The calathus has two rows of acanthus leaves. The lower wreath contains five acanthi, and the upper one has four. The leaves are large and have pointed tips. The acanthi in the upper row cover the corners of the calathus. There are no volutes at the corners of the calathus, but the volute stems are visible emerging from the spaces between the acanthi. These spaces are V-shaped and decorated with a stylized plant motif that merges with the abacus flower.

Fig. 8. Corinthian column capitals: a – Cat. No. 25, Çanakkale Archaeology Museum; b – Cat. No. 26, Biga, Çeşmealtı village; c – Cat. No. 27, Yakup Bey Inn, Çardak village; and d – Cat. No. 28, Biga, Gümüşçay village (Photos A. Çaylak Türker)

28. Biga, Gümüşçay village [*Fig. 8:d*]
Gray-veined white marble
Dimensions and state of preservation: UL 52(b); UT 54(b); H 47; D 38; the outcurved tips of acanthi, which extended as far as the area under the abacus, are broken.
Description: The capital lies in front of the Gümüşçay hunting club. The calathus has two rows of acanthus leaves, with four leaves each. The leaves are large and splayed on the surface of the calathus. The acanthi in the upper row cover the corners of the calathus. There are no volutes at the corners of the calathus, but volute stems emerge from the spaces between the acanthi. The volute stems are "V-shaped" and the space between them is decorated with a stylized plant motif that merges with the abacus flower.

29. Çanakkale Archaeology Museum [*Fig. 9:a*]
Gray-veined white marble
Dimensions and state of preservation: H 28; D 26.5; the base annulet of the calathus, the volutes and the abacus are broken.
Description: The calathus has two rows of acanthus leaves. The acanthi are quite large and sparsely placed. The leaves represent the type of acanthi with fine serrations. Traces of a helix are visible in the preserved part of the caulis.

30. Çanakkale, Karacaören village [*Fig. 9:b*]
White marble
Dimensions and state of preservation: H 28(b); D 40(b); broken abacus and calathus, including the lower section and edge of the calathus. The sections containing the volutes are broken.
Description: The capital probably had two rows of acanthus leaves. The sparsely placed acanthi covered the volute corners. Palmettes were executed in low relief on the caulis bowl.

Fig. 9. Corinthian column capitals: a – Cat. No. 29, Çanakkale Archaeology Museum; and b – Cat. No. 30, Çanakkale, Karacaören village (Photos A. Çaylak Türker)

STYLISTIC FEATURES AND DATING OF THE CAPITALS

During the survey work in the Hellespontus, 30 examples of Corinthian column capitals were documented. All the capitals discussed are made from white or gray-veined white Prokonnesian marble. Prokonnesos, modern-day Marmara Adası, is situated in the eastern part of the Propontis (Marmara Sea). Gray-veined white marble is available throughout the island. Prokonnesian marble was in high demand in Roman times, especially for the manufacture of high-quality sarcophagi (Asgari 1978). Although the quarrying seems to have come to a halt at the end of the Roman period, the quarries, and the marble trade itself, regained importance after the foundation of Constantinople. From the 4th to the 6th century, a large number of marble capitals were shipped from Prokonnesos.[2] The export of finished products played a vital role in the spread of the new Prokonnesian style and sculptural repertoire typical for the 5th and 6th centuries. The Prokonnesian items were distributed throughout the Mediterranean via the Hellespont and around the Black Sea region via the Bosporos (Sodini, Barsanti, and Guiglia Guidobaldi 1998; Barsanti and Paribeni 2018).

One of the capitals documented in the Hellespontus was left unfinished.[3] The specimen is housed in the Çanakkale Archaeology Museum and originates from the ruins of Troy (Cat. No. 17). Three faces of this capital were carved and one was left rough. The contours of acanthus leaves and volute were outlined on the uncarved face, and its surface was retouched, but the veins of the leaves and other details were omitted. The caulis bowl was left without retouching.

In specimens with Cat. Nos 1–3, the calathus is encircled by two rows of acanthus leaves with the acanthi of the lower and upper wreaths intertwined. The stems of the acanthi in the upper row extend into the spaces between the leaves of the lower row. The leaf veins are deeply carved. The tips of the leaves are pointed, with drop-shaped eyelets in between. The helices and volutes emerge from a chalice-shaped caulis bowl that carries a closed bunch of leaves. The helices extending from within the bunch curve inwards. The volutes are broken. The sections containing the abacus flower are also damaged, but the abacus flower stem is intact. In Cat. No. 13, where only the lower section of the calathus has been preserved, the style of the acanthi in the lower wreath is akin to that of the above-mentioned examples. The stylistic features of these specimens find parallels in capitals dated to the mid-2nd century (Heilmeyer 1970: 88, Pl. 26.1; İdil 1976: 15, Pl. 8.2; Başaran 1997: 7, Fig. 3).

2 For archaeological evidence in the form of two shipwrecks see Beykan 1988 (Roman shipwreck on the Black Sea coast of Turkey near Şile) and Kapitän 1969 (6th-century shipwreck off the east coast of Sicily near Maezamemi). In addition, see Pensabene 1986: 287; Asgari 1988.

3 The phases of shaping the Corinthian-type capitals were also documented during research in the quarries at Prokonnesos, see Asgari 1978. In addition, for schematically rendered capitals, see Herrmann 1973; Pensabene 1986: 288, 290, 324–333, 387–394; Guiglia Guidobaldi 1990.

On capitals with Cat. Nos 5–7, the acanthi are placed more sparsely. The leaves of the lower and upper wreaths are intertwined. They have deeply carved veins and pointed tips with drop-shaped eyelets in between. The helices and volutes sprout above the bunch of unfurling leaves emerging from within the caulis bowl. The abacus flower stem is not visible, and the abacus flower is broken. The capitals resemble those dated to the second half of the 2nd century (Heilmeyer 1970: 88; İdil 1976: 15; Başaran 1997: 7).

On the capitals with Cat. Nos 14 and 15, three rows of acanthus leaves are present. The acanthi are wider and the lines indicating the leaf veins are more superficial. Drop-shaped eyelets are discernible between the leaves. The helices and volutes do not spring from the caulis bowl but from the upper row of leaves. The abacus flower stem is not visible. The capital with Cat. No. 16 preserves only the lower section of the calathus, but the style of the leaves resembles that of capitals with Cat. Nos 14 and 15. The stylistic features of these capitals point to a 3rd-century date (Pensabene 1986: Fig. 3; Başaran 1997), making it highly likely that they were pieces from the Roman Imperial period reused in Byzantine buildings (Greenhalgh 2009: 11–12).[4] The reuse of earlier architectural members was common in the early Byzantine period, as many ancient buildings had lost their original functions. Indeed, in a number of cities densely filled with ancient buildings, reuse was the rule, and newly carved elements were rare (Greenhalgh 2009: 5; Niewöhner 2021: 10, 32). The ancient buildings, used in turn as sources of readily accessible building material for new structures, rapidly disappeared (Hasluck 1910: 10; Vatin 2000: 314, 334; Greenhalgh 2009: 467–468).

In the capital with Cat. No. 17, two rows of acanthus leaves adorn the calathus. The sparsely placed acanthi are wide and splayed on the surface. The volutes do not emerge from the caulis bowl but from the spaces between the leaves of the upper wreath. Horn-shaped leaves springing from the volute stems were carved instead of helices, and the abacus flower stem is lacking. The use of leaves instead of helices was first recorded in the late 2nd century (Başaran 1997: 12–13), and the omission of the abacus stem became a standard in Corinthian capitals under the Severi (AD 193–235) (Başaran 1997: 19). The acanthus leaves used on the calathus belong to a type occurring under Theodosius (AD 379–395) (Kautzsch 1936: 52–53). However, the capital is not as large as the Theodosian specimens and should rather be placed among the examples from the 5th century. At that time, the import of Corinthian capitals to Rome decreased compared to the previous period. Given the limited number of examples in Rome, the Corinthian capitals from Ravenna are worthy of note (Pensabene 1986: 291).

Four large acanthus leaves placed over the corners of the calathus of the capital with Cat. No. 18 are carved in low relief. They differ from the natural-looking, full acanthus leaves plastically rendered on the capitals described above. The leaves

4 For the reuse of columns and capitals in Late Antique churches, see Deichmann 1975: 14, 19, 92–93; Brenk 1996; Peschlow 2004: 115–118; Pensabene 2015.

in this specimen are splayed flat against the surface of the calathus, covering its surface. The leaf veins are schematically carved. The tips of the leaves are pointed, and the spaces between them form wide, oval fields. The volute stems extend as far as the base annulet of the calathus. At the corners, the tips of the acanthus leaves merge with the volutes. The abacus flower stem springs from between the volute stems and is connected with the abacus flower. The flower, not carved in detail, is large and protrudes outward. In this capital, the elements defining the Corinthian capital type clearly dissolved and the modeling lost its plasticity. Two parallels to this piece are found at Basilica A of Nea Anchialos in Greece and in Salona in modern-day Croatia (Kautzsch 1936: 80). The Greek specimen is dated to the second half of the 5th century, and capitals of this kind are thought to have been executed around AD 500 (Kautzsch 1936: 79–80, Pl. 17.240).

The specimen with Cat. No. 25 also features four large acanthus leaves placed at the corners of the calathus. The leaves are wide and splayed on the calathus surface. The leaf veins are schematically carved. Nevertheless, its characteristic features are geometric clefts executed by carving deeply from the bottom in places where adjacent leaves touch each other. Such a way of carving the leaves was particularly common in Corinthian capitals of Constantinople in the first half of the 5th century, but also throughout the 6th century. This leaf type, along with the acanthus leaves that were represented fully and plastically rendered, was replaced with leaves that used the shadow-and-light effect and constituted more schematic ornamental motifs (Betsch 1977: 185–195, 207). Such a manner of carving resulted in strong contrasts between the lit surfaces and the background shadows, better suited for the dim lighting of church interiors (Niewöhner 2021: 39). The leaves extend as far as the area under the abacus. Volutes at the corners are absent, replaced by an out-curved tip of a leaf. Several bands resembling volute stems emerge from between the leaves. The abacus flower stem in the form of an upside-down palmette (*fleur-de-lis*) is placed between the in-curved helices emerging from these bands.

The capital with Cat. No. 26 is broken in its lower part. The four large acanthus leaves placed at the corners of the calathus are similar in style to Cat. No. 25. There are no volutes at the corners of this capital. Instead, the corner acanthus leaves extend as far as the area under the abacus. Although the volutes are missing, their stems are visible emerging from between the acanthi, which renders this specimen similar to Cat. No. 25. However, the section from which the volute stems emerge is decorated with a palmette motif, which does not reach the abacus flower. This type is akin to the "lyre-type" capitals widely used throughout the 5th century (Kautzsch 1936: 19; Betsch 1977: 208; Barsanti 1989: esp. 125).

Although no volutes were identified on the capital with Cat. No. 27, volute stems merging with the upper wreath were present. The area at the merge of the volute stems was left unadorned. The specimen resembles the capital with the "V-shaped" or "lyre-shaped" motif found in front of the Gümüşçay hunting club (Cat. No. 28) (Kautzsch 1936: 17–22). The

"lyre-type" capitals, medium in size, were produced in large numbers. Made mainly from Prokonnesian marble, during the 5th and 6th centuries they were traded into the provinces and used to decorate smaller basilicas, like the one at Ravenna, as well as colonnaded streets, e.g. at Miletos in Karia (Kautzsch 1936: 59–61; Niewöhner 2021: 40).

The capital with Cat. No. 28 features a calathus with two rows of acanthus leaves, exhibiting five acanthi in the lower wreath and four in the upper. The four acanthi of the upper wreath cover the corners of the calathus and extend as far as the abacus. No volutes are present at the calathus corners, but "V shaped" volute stems with a stylized plant motif are found in between the acanthi. This motif merges with the abacus flower. Several different types of the motif created by the volute stems were distinguished by Kautzsch according to whether this form curved in a sharper or rounder form. Type 5 was described as "V-shaped", while Type 6 was referred to as "lyre-shaped". Notably, Betsch (1977: 217) and Barsanti (1989: 125) considered this detail insufficient for distinguishing two different types and preferred to view these two groups as a single type. For the dating of these capitals, Kautzsch (1936: 17) indicated the period from the late 5th century to AD 530. However, Betsch (1977: 218, note 397) pointed out that the only reliably dated examples of these capitals were the specimens from the basilica of Sant'Apollinare Nuovo in Ravenna and dated them to AD 495–500. Parallels are also found in the Turan Beler collection (Peschlow, Peschlow-Bindokat, and Wörrle 2002: 476–477, Pl. 17a), and they should be dated to the 5th–6th centuries.

PROVENANCE

Ten of the Corinthian column capitals documented and discussed here come from the collection of the Çanakkale Archaeological Museum. One of them was found in Troy (Cat. No. 17). Eight were recorded in settlements of central Çanakkale. Seven of these were found in the villages of Kumkale (Cat. No. 9), Çıplak (Cat. No. 10), Halileli (Cat. No. 13), Tevfikiye (Cat. No. 14) and Dümrek (Cat. Nos 22–24). These capitals may have been used in buildings located within the boundaries of the Ilion bishopric [see *Fig. 1*]. Ilion/Troy, located in the northwestern corner of the ridge to the south of the Dümrek tributary, was identified as Hisarcık by Gouffier and Spratt, but as Hisarlık by Hammer and Turner. In addition, its name was mentioned as Kalafat or Kalafatlı in the late 18th century. However, some travelers who arrived in the region around 1800 identified Troy with a settlement close to the Çıplak village. Today, the village closest to the site is Tevfikiye, located about 300 m to the northeast of Troy. Ilion, an episcopal center from the mid-4th century onward, is localized at Hisarlık. Excavations on the site revealed a church from the early Byzantine period and Roman houses in the lower *polis* that were apparently restored and used in the Byzantine period

(Rose 2001: 280–281). The majority of the uncovered Byzantine-period coins are dated to AD 395, followed by groups of coins dated to the first half of the 5th century and to AD 457–518. Notably, the catalogue by Bellinger (1961) shows that the unearthed coins of Justinian constituted a much smaller group.

The eighth capital from central Çanakkale was documented in the village of Karacaören (Cat. No. 30), founded on the ancient settlement site of Abydos [see *Fig. 1*]. From the 5th century onward, Abydos was one of the bishoprics affiliated to Kyzikos, as indicated by the presence of Archbishop Hermias of Abydos at the Council of Kyzikos. Isidoros, a bishop of Abydos, was mentioned at the 6th ecumenical council that met in Constantinople in AD 680/81, whereas the names of Ioannes and Melissenos of the bishopric of Abydos are found in records dated to AD 691/92 (Angold 1995: 146; Lilie et al. 2000: 209). A seal belonging to Theodosios, a bishop and priest of Abydos, confirms that the settlement was a bishopric (Nesbitt and Oikonomides 1996: 87, Cat. No. 40.38). Abydos became a metropolis in AD 1084 (Darrouzès 1981: 123), as indicated by finds from the city, including seals of Michael and John Proedros, its metropolitans (Zacos 1984: No. 587; Nesbitt and Oikonomides 1991: 87, Cat. No. 40.37). The names of metropolitans of Abydos are mentioned in written documents until the 12th century (Oikonomides 1991). The piece from Karacaören, as well as at least a few of the capitals documented in the Çanakkale Archaeological Museum probably came from buildings of the episcopal see of Abydos.

Four capitals (Cat. Nos 2, 6, 12, and 20) were recorded in the villages of the Ezine district. Importantly, this area was once the location of the bishopric of Skamandros. Researchers focusing on Classical Greek cultures identified ancient Skamandros with the site of Adatepe in Akköy on the middle Scamander (Robert 1966: 102; Cook 1973: 355; Frisch 1975: 150; Schulz 2000: 26). Akköy is a village settlement affiliated to the town of Ezine in Çanakkale, located approximately 5 km from Ezine and around 3.5–4 km to the southeast of the Çanakkale – İzmir highway bridge over the Scamander. It lies on a low ridge on the southern side of a narrow valley along the Subaşı brook, which feeds into the Scamander.

Numerous examples of Byzantine architectural sculpture have been recorded at the village square and in the cemetery area in Akköy (Türker 2009). According to the majority of the oral testimonies collected in the village, the pieces originated from Adatepe, and Byzantine-period finds identified in Adatepe support these statements.

John M. Cook (1973: 277) also suggested that the items found in Akköy had been brought from Adatepe, located to the north of the village. Relying on pottery of the Late Roman period observed in Adatepe during his visit to the region in 1959 and 1968, he concluded that the site had been an important Byzantine settlement. From the people he had spoken to, he learned that stone for construction projects in Ezine had been supplied from this region. Having assumed that an inscription, found in Ezine and read by Bean, may have also been brought from this region, Cook related St. Tryphon, men-

tioned in the text, to a possible church in Adatepe (Türker 2018: 28). Based on this data, he localized the bishopric of Skamandros at Adatepe. Cook's suggestion was accepted by many scholars (Robert 1966: 102; Frisch 1975: 150; Schulz 2000: 26). However, Akarca (1978: 26) and Mannucci (1997: 283–284), who conducted research in the region, suggested that Skamandros was located between Akçaalan and Akköy instead of at Adatepe.

An inscription containing the word "Skamandros" was identified on a marble block found in the field, about 750 m to the southwest of the Akköy–Kaleyeri locality (Türker 2016: Fig. 7). This inscription, together with other archaeological data obtained, indicates that the bishopric of Skamandros might have been located on the slopes extending for about 2.5 km southwest from Adatepe, as far as the bank of the Scamander, in an area that also encompassed the Kaleyeri locality.

Five of the capitals (Cat. Nos 3, 7, 11, 26, and 28) were found in settlements in Biga, the ancient city of Parion [see *Fig. 1*]. Located in the modern-day village of Kemer within the borders of the Biga district, Parion was founded as a Greek colony at the end of the 8th century BC and boasted the status of a *colonia* during the Roman period. During the Byzantine period, not only did it keep its importance, but it also gained the rank of an episcopal see. The city subsequently became an archbishopric in AD 640 and maintained this status until the end of the 13th century AD (Oyarçin 2020: 619).

In conclusion, the capitals that are the subject of this study have stylistic characteristics similar to those produced in the Prokonnesos workshops. According to preliminary studies, they were used in buildings in Ilion, Skamandros, Abydos and Parion, the episcopal centers of the Hellespontus region.

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References

Akarca, A. (1978). Troas'ta Aşağı Kara Menderes Ovası Çevresindeki Şehirler. *Belleten*, 42(165), 1–52

Angold, M. (1995). *Church and society in Byzantium under the Comneni, 1081–1261*. Cambridge: Cambridge University Press

Asgari, N. (1978). Roman and Early Byzantine marble quarries of Proconnesus. In E. Akurgal (ed.), *The proceedings of the Xth International Congress of Classical Archaeology, Ankara–Izmir 23.–30.IX.1973*, I (pp. 467–480). Ankara: Türk Tarih Kurumu

Asgari, N. (1988). The stages of workmanship of the Corinthian capital in Proconnesus and its export form. In N. Herz and M. Waelkens (eds), *Classical marble: Geochemistry, technology, trade* (pp. 115–125). Dordrecht: Kluwer Academic

Barsanti, C. (1989). L'esportazione di marmi dal Proconneso nelle regioni pontiche durante il IV–VI secolo. *Rivista dell'Istituto nazionale d'archeologia e storia dell'arte*, 12, 91–220

Barsanti, C. and Paribeni, A. (2018). La scultura in funzione architettonica a Costantinopoli tra V e VI secolo: aspetti tecnici, tipologici e stilistici. *Acta ad Archaeologiam et Artium Historiam Pertinentia*, 30(16), 23–72

Başaran, C. (1997). Kyzikos Korinth Başlıkları. *Türk Arkeoloji Dergisi*, 51, 1–52

Bellinger, A.R. (1961). *Troy: The coins*. Princeton, NJ: Princeton University Press

Betsch, W.E. (1977). *The history, production and distribution of the late antique capital in Constantinople* (Ph.D. diss.). University of Pennsylvania

Beykan, M. (1988). The marble architectural elements in export-form from the Şile shipwreck. In N. Herz and M. Waelkens (eds), *Classical marble: Geochemistry, technology, trade* (pp. 127–137). Dordrecht: Kluwer Academic

Brenk, B. (1996). Spolien und ihre Wirkung auf die Ästhetik der *varietas*: zum Problem alternierender Kapitelltypen. In J. Poeschke and H. Brandenburg (eds), *Antike Spolien in der Architektur des Mittelalters und der Renaissance* (pp. 49–92). Munich: Hirmer

Cook, J.M. (1973). *The Troad: An archaeological and topographical study*. Oxford: Clarendon Press

Darrouzès, J. (1981). *Notitiae episcopatuum Ecclesiae Constantinopolitanae*. Paris: Institut français d'études byzantines

Deichmann, F.W. (1975). *Die Spolien in der spätantiken Architektur*. Munich: Verlag der Bayerischen Akademie der Wissenschaften

Frisch, P. (1975). *Die Inschriften von Ilion*. Bonn: Habelt

Greenhalgh, M. (2009). *Marble past, monumental present: Building with antiquities in the mediaeval Mediterranean*. Leiden–Boston: Brill

Guiglia Guidobaldi, A. (1990). I capitelli della basilica giustinianea della Theotokos, oggi die S. Caterina, sul Monte Sinai. In F. De Maffei, C. Barsanti, and A. Guiglia Guidobaldi (eds), *Costantinopoli e l'arte delle province orientali* (=*Milion* 2) (pp. 265–342). Rome: Edizioni Rari Nantes

Hasluck, F.W. (1910). *Cyzicus: Being some account of the history and antiquities of that city, and of the district adjacent to it, with the towns of Apollonia ad Rhyndacum, Miletupolis, Hadrianutherae, Priapus, Zeleia, etc.* Cambridge: Cambridge University Press

Heilmeyer, W.D. (1970). *Korinthische Normalkapitelle: Studien zur Geschichte der römischen Architekturdekoration*. Heidelberg: F.H. Kerle

Herrmann, J. (1973). *The schematic composite capital: A study of architectural decoration at Rome in the later Empire* (Ph.D. diss.). New York University

İdil, V. (1976). Anadolu'da Roma İmparatorluk Çağı Korinth Başlıkları. *Anadolu (Anatolia)*, 20, 1–49

Kapitän, G. (1969). The church wreck of Marzamemi. *Archaeology*, 22(2), 122–133

Kautzsch, R. (1936). *Kapitellstudien: Beiträge zu einer Geschichte des spätantiken Kapitells im Osten vom vierten bis ins siebente Jahrhundert*. Berlin: De Gruyter

Lilie, R.-J. et al. (eds). (2000). *Prosopographie der mittelbyzantinischen Zeit* I.2. *Georgios (#2183)–Leon (#4270)*. Berlin: De Gruyter

Mannucci, F. (1997). Alla ricerca di Scamandria. *Numismatica e Antichità Classiche*, 26, 277–286

Nesbitt, J.W. and Oikonomides, N. (1991). *Catalogue of Byzantine seals at Dumbarton Oaks and in the Fogg Museum of Art* I. *Italy, north of the Balkans, north of the Black Sea*. Washington, DC: Dumbarton Oaks Research Library and Collection

Nesbitt, J.W. and Oikonomides, N. (1996). *Catalogue of Byzantine seals at Dumbarton Oaks and in the Fogg Museum of Art* III. *West, northwest, and central Asia Minor and the Orient*. Washington, DC: Dumbarton Oaks Research Library and Collection

Niewöhner, P. (2021). *Byzantine ornaments in stone: Architectural sculpture and liturgical furnishings*. Berlin–Boston: De Gruyter

Oikonomides, N. (1991). Le kommerkion d'Abydos: Thessalonique et le commerce bulgare au IX^{e} siècle. In V. Kravari, J. Lefort, and C. Morrisson (eds), *Hommes et richesses dans l'Empire byzantin* II. *VIII^{e}–XV^{e} siècle* (=*Réalités byzantines* 3) (pp. 241–248). Paris: P. Lethielleux

Oyarçin, K. (2020). The Early Byzantine period of Parion in light of numismatic data. In V. Keleş (ed.), *Propontis ve çevre kültürleri = Propontis and surrounding cultures* (=*Parion Studies* 3) (pp. 619–628). Istanbul: Ege Yayınları

Pensabene, P. (1986). La decorazione architettonica, l'impiego del marmo e l'importazione di manufatti orientali a Roma, in Italia e in Africa (II–VI d. C.). In A. Giardina (ed.), *Società romana e impero tardoantico* III. *Le merci gli insediamenti* (pp. 285–429). Rome: Laterza

Pensabene, P. (2015). *Roma su Roma: reimpiego architettonico, recupero dell'antico e trasformazioni urbane tra il III e il XIII secolo* (=*Monumenti di Antichità Cristiana* 22). Vatican City: Pontificio Istituto di archeologia cristiana

Peschlow, U. (2004). Kapitell. In *Reallexikon für Antike und Christentum* XX (cols 57–123). Stuttgart: Hiersemann

Peschlow, U., Peschlow-Bindokat, A., and Wörrle, M. (2002). Die Sammlung Turan Beler in Kumbaba bei Şile (II) Antike und byzantinische Denkmäler von der bithynischen Schwarzmeerküste. *Istanbuler Mitteilungen*, 52, 429–522

Robert, L. (1966). *Monnaies antiques en Troade*. Geneva–Paris: Droz; Minard

Rose, B. (2001). Von Konstantin bis Mehmet II. Ilion in byzantinischer Zeit. In J. Latacz et al. (eds), *Traum und Wirklichkeit Troia* (pp. 280–288). Stuttgart: Konrad Theiss Verlag GmbH

Schulz, A. (2000). *Die Stadtmauern von Neandreia in der Troas* (=*Asia Minor Studien* 38). Bonn: Habelt

Sodini, J.-P., Barsanti, C., and Guiglia Guidobaldi, A. (1998). La sculpture architecturale en marbre au VI^e^ siècle à Constantinople et dans les régions sous influence constantinopolitaine. In N. Cambi and E. Marin (eds), *Acta XIII Congressus Internationalis Archaeologiae Christianae* (pp. 301–376). Vatican City–Split: Pontificio Istituto di Archeologia Cristiana; Arheološki muzej

Türker, A.Ç. (2009). Byzantine architectural sculpture from Akköy on the middle Scamander Valley in Hellespontus. *Edebiyat Fakültesi Dergisi*, 26(1), 201–218

Türker, A.Ç. (2012). Archaeological survey of early Christian–Byzantine period on the valleys that reached the Hellespont: 2010 research. In *29. Arastirma sonuçlari toplantisi* I (pp. 401–428). Ankara: Kültür ve Turizm Bakanlagi

Türker, A.Ç. (2014). An archaeological survey of early Christian–Byzantine period on the valleys that reached the Hellespont: 2012 research. In *31. Arastirma sonuçlari toplantisi* I (pp. 186–206). Ankara: Kültür ve Turizm Bakanlagi

Türker, A.Ç. (2015). An archaeological survey of early Christian–Byzantine period on the valleys that reached the Hellespont: 2013 research. In *32. Arastirma sonuçlari toplantisi* II (pp. 189–208). Ankara: Kültür ve Turizm Bakanlagi

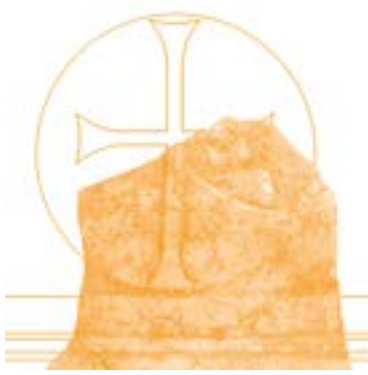
Türker, A.Ç. (2016). An archaeological survey of the early Christian–Byzantine period on the valleys that reached the Hellespont: 2014 research. In *33. Arastirma sonuçlari toplantisi* I (pp. 301–324). Ankara: Kültür ve Turizm Bakanlagi

Türker, A.Ç. (2018). *Byzantine architectural sculpture in Çanakkale*. Ankara: Bilgin Kultur Sanat Yaınları

Vatin, N. (2000). Notes sur l'exploitation du marbre et l'île de Marmara Adasi (Proconnèse) à l'époque ottomane. *Turcica*, 32, 307–362

Zacos, G. (1984). *Byzantine lead seals* II (J.W. Nesbitt, ed.). Berne: Benteli

Liturgical furnishings of the City Basilica at Patara (Lykia): Templon arrangement and its suggested reconstruction



Abstract: The City Basilica of Patara, which dates back to the second half of the 5th century AD, offers valuable evidence regarding the interior design of buildings of this type and the liturgical traffic-flow within them. Excavations conducted at the basilica have revealed diverse liturgical furnishings, including the templon, the altar, column bases associated with the ciborium, the sacred water well, the synthronon, and a section of the *opus sectile* flooring in the bema.
This study focuses on the analysis, evaluation, and indication of potential connections among the remains of templon elements found at the City Basilica of Patara, encompassing templon stylobates, bases, slabs, columns, and column capitals. Its primary objectives are to examine the marble objects excavated in the basilica, particularly those attributed to the templon, with the intention of proposing a reconstruction of the basilica's interior, as well as to describe these objects, especially their decorative motifs, and assess their resemblance to other examples of Byzantine art and architecture.
The remains of the templon in the City Basilica at Patara are carefully examined and compared to similar specimens. The analysis considers the characteristics of the decoration, dimensions, style, and materials used in the high templon arrangement. Based on this evaluation, the templon is assigned to the second half of the 5th century AD, which corresponds to the dating of the first phase of the basilica.

Keywords: early Christianity, Lykia, Patara, liturgical furnishings, templon

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INTRODUCTION

The liturgical furnishings in the City Basilica of Patara, dating back to the second half of the 5th century AD, are important for reconstructing the interior design of the structure and understanding the liturgical traffic-flow in the basilica. In this study, the liturgical furnishings found during excavations at the City Basilica have been identified and placed in the context of finds from other Byzantine archaeological sites. Reconstructions of the templon and other liturgical artifacts from the bema, such as the altar and the ciborium, are proposed.

Multiple architectural elements have been found in the basilica, including the templon stylobates, the altar, column bases belonging to the ciborium, a sacred water well located to the southwest of the altar, a synthronon with four steps, and a part of the *opus sectile* flooring in the bema. In this study, the remains of the templon: stylobates (*in situ*), bases, a slab fragment, columns, and column capitals are classified and evaluated, and possible parallels are indicated.

THE CITY BASILICA OF PATARA AND ITS TEMPLON ARRANGEMENT

The City Basilica has a reduced transept plan with a nave, two aisles, a semi-circular apse, and aisles surrounding the transept [*Fig. 1*]. The arms of the transept extend past the line of the walls by roughly half the width of the nave on both sides, and the aisles surround the transept and extend eastwards. Thus, the plan of the church belongs to the type designated as the "reduced cross transept" church (Krautheimer 1965: 85). It is the only basilica of this kind in the ancient city of Patara. The complex was identified by the first excavators as an *episkopeion* boasting a central atrium, a monumental western entrance, and rich decorations (Effenberger and Kunze 1995: 257; Ceylan and Erdoğan 2016). With dimensions of 61 m x 32 m, the City Basilica of Patara is one of the largest churches in the region of Lykia. Architectural elements and liturgical furnishings indicate that the first architectural phase of the basilica dates back to the second half of the 5th century AD (Ceylan and Erdoğan 2016; Demirton 2018: 134; Ceylan 2019).

TEMPLON STYLOBATES

The stylobates were found *in situ* on the edges of the bema (Cat. No. 1). A total of 16 stylobate blocks carved from limestone formed a Π-shape with lines on the north, south and west. Such an arrangement is commonly encountered in churches of the early Christian period. Each stylobate was embellished with outward-facing concave and convex profiles. Although some of the stylobate blocks are worn and broken on the surfaces, they still provide clear information regarding the arrangement of the templon.

The stylobates feature shallow depressions for housing quadrangular templon posts measuring 22 cm x 22 cm and 21 cm x 21 cm, as well as grooves for mount-

ing vertical slabs. Each depression has a circular dowel hole with a diameter of 3 cm in the center and a lead conduit measuring 1.5 cm in width [*Figs 2, 3*]. The upper surface of the stylobates is about 15 cm above the level of the original floor.

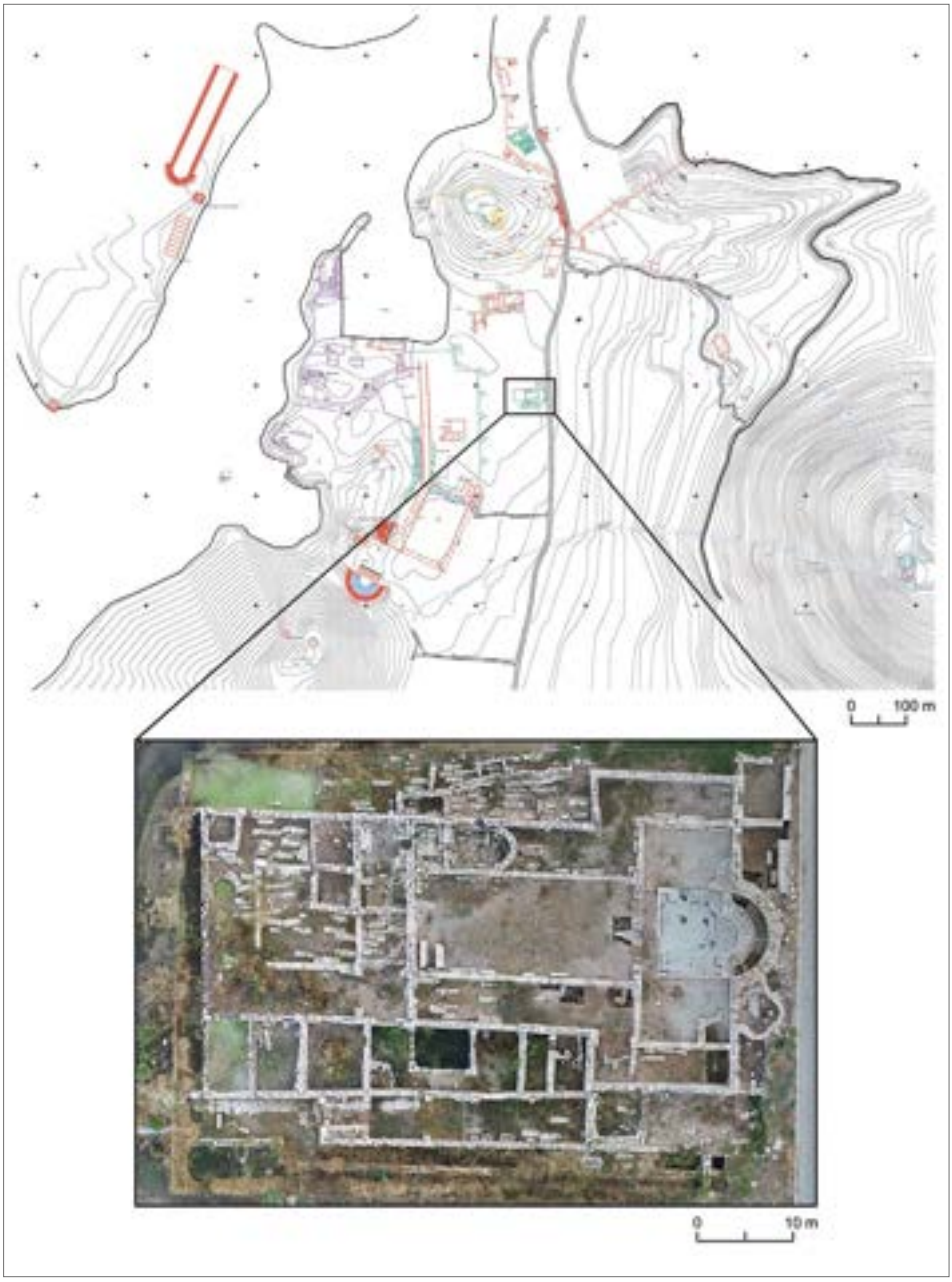

Fig. 1. The City Basilica of Patara and its location (Patara Excavation Archive)

TEMPLON POSTS

The templon posts, made of marble, have been recovered from different places in the basilica (Cat. Nos 2 [*Figs 4, 5*] and 3 [*Fig. 6*]). Two posts, which measure 108–110 cm in height, have been found in the corner room to the north of the apse [see *Fig. 4*]. Both posts are ornamented with soffits on the lateral faces, have plain rear sides and grooved fronts. There are two pieces of metal embedded in the ornamented lateral faces of the posts [see *Fig. 5*]. The posts, with their square sections of 22 cm x 22 cm, correspond in size with the quadrangular depressions found on the templon stylobates [see *Figs 2, 3*]. They were fixed to the north and south stylobates of the bema by mounting them in the depressions cut into the stylobate blocks [*Fig. 7*].

Similar examples of square-shaped posts and soffit decorations are frequently attested in the early Byzantine period. Urs Peschlow, in his work about the templons of Istanbul, identified templon posts made of marble, with soffit ornamentation, in many structures, including Yedikule, Burgaz Ada, Hagia Ireni, Kalenderhane Camii, Kasım Ağa Camii, and Mesih Paşa Sokak. All such posts are dated to the 5th and 6th centuries AD (Peschlow 1991: 1465, 1475). Soffit ornamentation akin to the one on the templon posts, discovered in Constantinople, can also be observed in different regions across Anatolia: the templon of the church of St. Nicholas in Myra (Peschlow 1990: 219, No. 29, Pl. 41), the basilicas in Priene (Westphalen 1998: 321, No. 89, Pl. 41), Miletos (Niewöhner 2016: 157–250), Aizanoi (Niewöhner 2007:

Fig. 2. Templon stylobates, slab and post grooves on the northern side of the bema, a view from the east, Cat. No. 1 (Photos C. Demirton)

Fig. 3. Templon stylobates on the southern side of the bema, a view from the east, Cat. No. 1 (Photos C. Demirton)

Fig. 4. Templon posts in the southern annex room of the basilica (Patara Excavation Archive)

256–259, Pl. 27), in the Çorum Museum (Keskin 2010: Figs 131–134), and in the church of Hagia Sophia in Iznik (Peschlow 1991: 1467). Similar soffit ornamentation has been found outside of Anatolia, for instance in the basilicas in Photeine, Greece (Talbot and Kazhdan 1994), and in Suvodol, Macedonia (Hoddinott 1963: Fig. 129), as well as in the basilica of Chersonesos in the Crimea (Biernacki 2009: 76, Pl. 206). The examples of concentrically striped templon posts with soffit motifs are dated to the 5th–6th centuries AD. The templon posts in the City Basilica at Patara exhibit a comparable arrangement of ornamentation, allowing to date these posts to the second half of the 5th century AD.

TEMPLON SLAB

During the excavations, two fragments of a templon slab were discovered in the basilica (Cat. No. 4). These slab pieces are of the same marble as the templon bases and have a thickness of 4 cm, matching both the width of the slab grooves found on the templon stylobates and a groove in a marble base located on the northern stylobate. Both sides of the slab are decorated with a Latin cross and framed with a simple, unornamented border [*Figs 8, 9*].

The Latin cross can be seen in various structures of the early Christian period, for example on the external walls of the Hagia Sophia basilica (Guiglia Guidobaldi 2004: 100–106, 114, 118, 122–124, 142–144, 148–198, FN.03–FN.06, FN.10, FN.12,

Fig. 5. Templon posts with soffit decoration on the templon stylobate, Cat. No. 2 (Photo C. Demirton)

FS.01, FS.02, FS.11, FS.12, FO.01–FO.26), the slab gallery of Hagia Irene (Peschlow 1977: 21, Figs 3, 18; Tezcan 1989: 150, Fig. 175), the church of St. Euphemia (Naumann and Belting 1966: 58, Pl. 21), the Archaeological Museum of Istanbul (Fıratlı 1990: 154–155, Pl. 94, Nos 306d, 307c), the Limyra episcopal church (Peschlow 1984: 419, Fig. 8), the Olympos episcopal church (Sertel 2017: 107, Cat. No. 3), and many other churches outside of Anatolia, especially in Greece (Paros church, Basilica D at Nikopoli), the church of St. Peter in Holz, the basilica of Chersonesos in the Crimea (Biernacki 2009: 66, Pls 162, 163, 165, 168–171, 176, 180, 181), and the Berlin Museum (Effenberger and Severin 1992: 112, 125, Cat. Nos 40, 42, Fig. 64).

Fig. 6. Templon post with a soffit, Cat. No. 3 (Photo C. Demirton)

The slab discovered at the City Basilica in Patara shares certain traits with the abovementioned examples. These similarities include the motif, technique, and material, indicating a possible dating of the slab to the second half of the 5th century AD.

TEMPLON COLONNETTES AND CAPITALS

Excavations in the basilica have yielded marble capitals belonging to the templon (Cat. Nos 5, 6, 7 [*Fig. 10*]). All of the column capitals that were part of the templon arrangement were carved in the Corinthian style. These capitals feature compositions consisting of four acanthus leaves with deeply carved veins and outer helices at the corners of the abacus. The capitals and shafts were carved together as monolithic pieces. The diameters of both the column capitals and upper parts of templon posts equal 16 cm.

Similar examples of capitals have been found in the Kalendarhane mosque in Istanbul (Peschlow 1991: 1470, Pl. 27), the Istanbul Archaeological Museum, the Bergama Museum (Dennert 1997: Pl. 40, Cat. No. 221), and the Silifke Museum (Durugönül et al. 2013: Cat. Nos 245, 246, 248, 249, 274–277, 281, 282), as well as Sudovol, Macedonia (Hoddinott 1963: 183, Fig. 129), and the basilica of Chersonesos in the Crimea (Biernacki 2009: 38, Pls 68, 69). The decorative motifs found on the capitals indicate that they were carved during the 5th–6th centuries AD. The specific decorative design observed in the templon arrangement of the City Basilica at Patara is also distinctive for capitals from the 5th–6th centuries AD. Considering the similarities in style, motifs and typology, the templon capitals of the basilica can be placed in the second half of the 5th century AD.

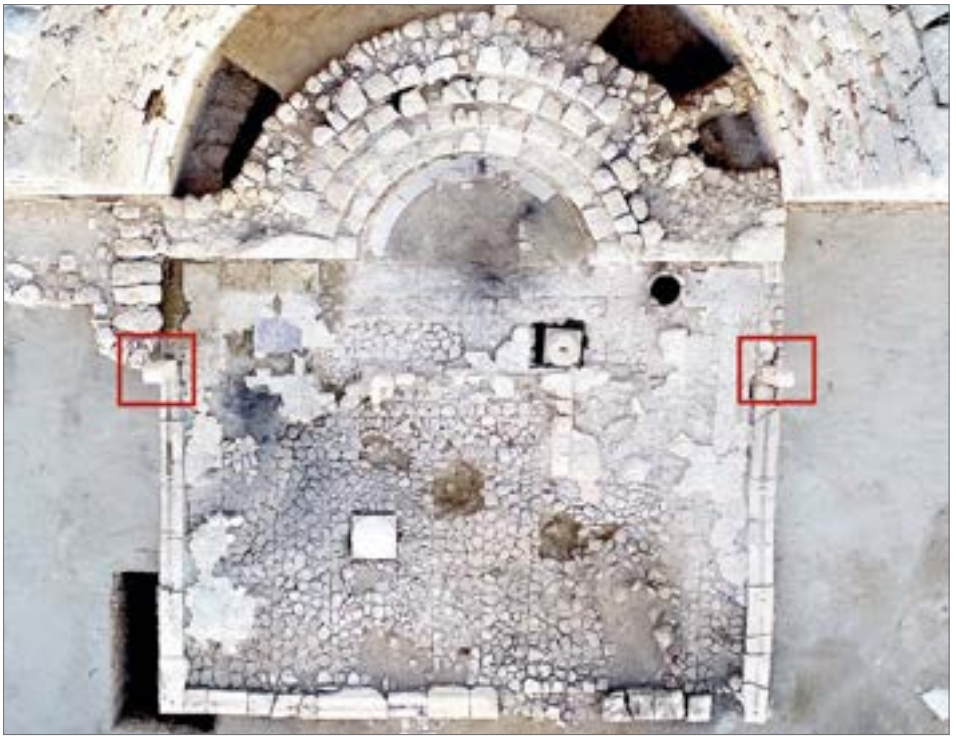

Fig. 7. City Basilica of Patara, bema and templon posts (Photo C. Demirton)

Fig. 8. Front and back sides of the templon slab, Cat. No. 4 (Photos C. Demirton)

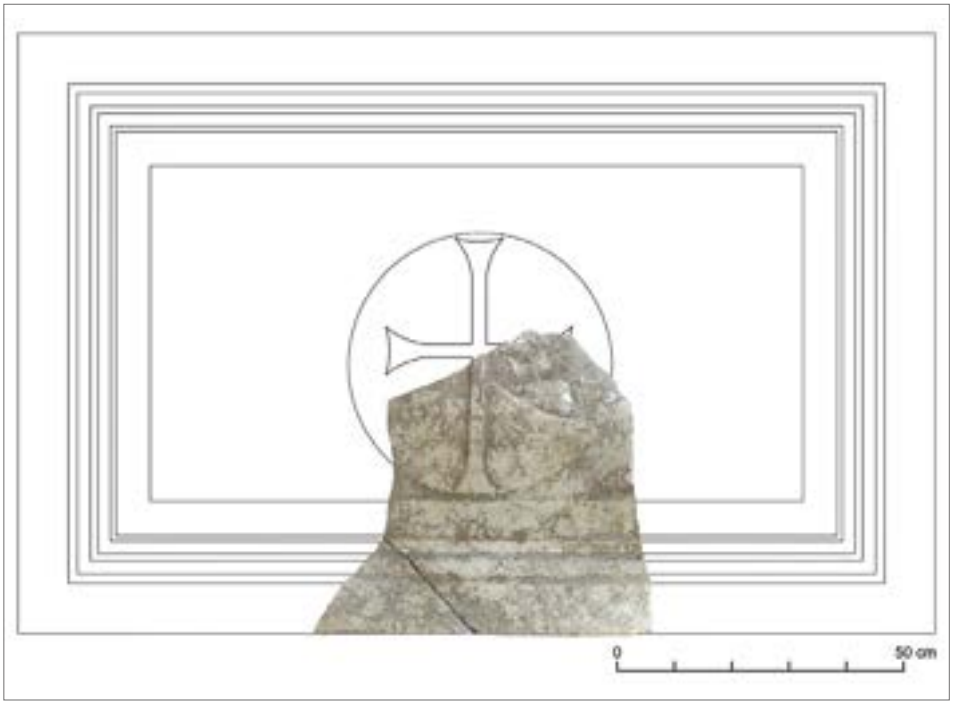

Fig. 9. Reconstruction of the templon slab (Processing C. Demirton)

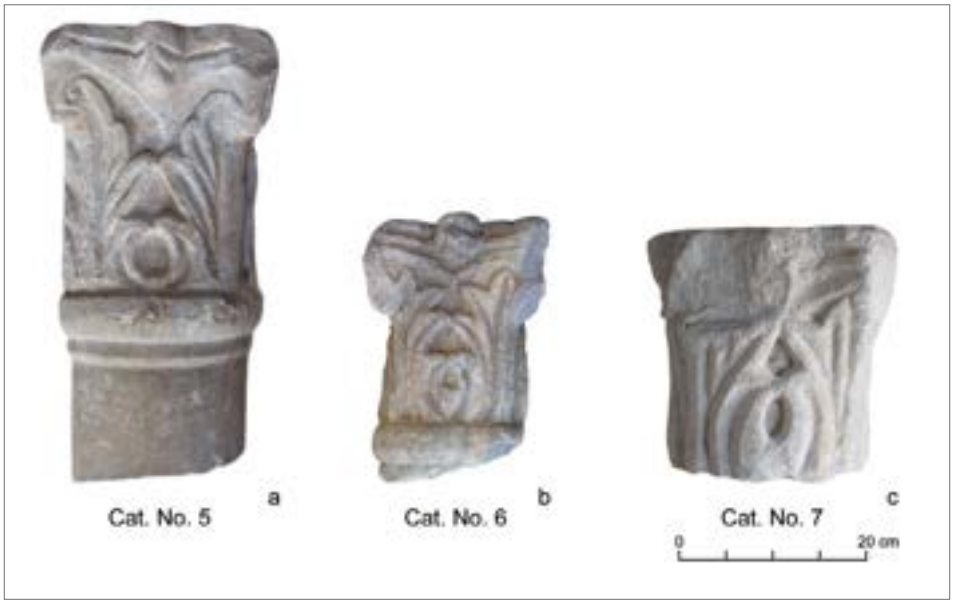

Fig. 10. Column capitals of the templon: a – Cat. No. 5; b – Cat. No. 6; and c – Cat. No. 7 (Photos C. Demirton)

LITURGICAL ARRANGEMENTS IN THE BEMA: ALTAR, CIBORIUM AND SACRED WELL

Altar

Fragments of the altar base, which are situated in the central part of the bema in the City Basilica at Patara, have a rectangular shape and measure 2.98 m x 1.51 m [*Fig. 11*]. The base of the altar, constructed from skillfully carved limestone, is positioned in a cut, directly overlying the ground layer beneath the *opus sectile* flooring of the bema. The altar was assembled from small limestone blocks arranged in a grid-like pattern. No other material, apart from soil, has been observed as a binding agent between the limestone blocks. The outline of the base structure is clearly defined and emphasized by the presence of a stone cladding that forms a frame on the southern, northern and eastern sides.

During the excavations, two fragments of the altar table were unearthed (Cat. No. 8) [*Fig. 12*]. Both are similar in measurements, profile, and material. The fragments are made of marble and have concave inner profiles. Similar examples of such altar fragments are commonly found in early Christian churches, particularly ones dating back to the 5th and 6th centuries AD, such as the basilica of San Giovanni in Ravenna (Braun 1924: 261), the church of St. Isidoros in Chios, Greece (Orlandos 1952: 449), the Kalenderhane mosque (Striker and Kuban 1997: Pl. 24), the church in Laodicea (Şimşek 2015: 42, Fig. 49), and the church in the Arykanda necropolis (Tekinalp 2006: 793).

Fig. 11. Bema: altar, ciborium, templon stylobates and posts, sacred well and *opus sectile* (Photo C. Demirton)

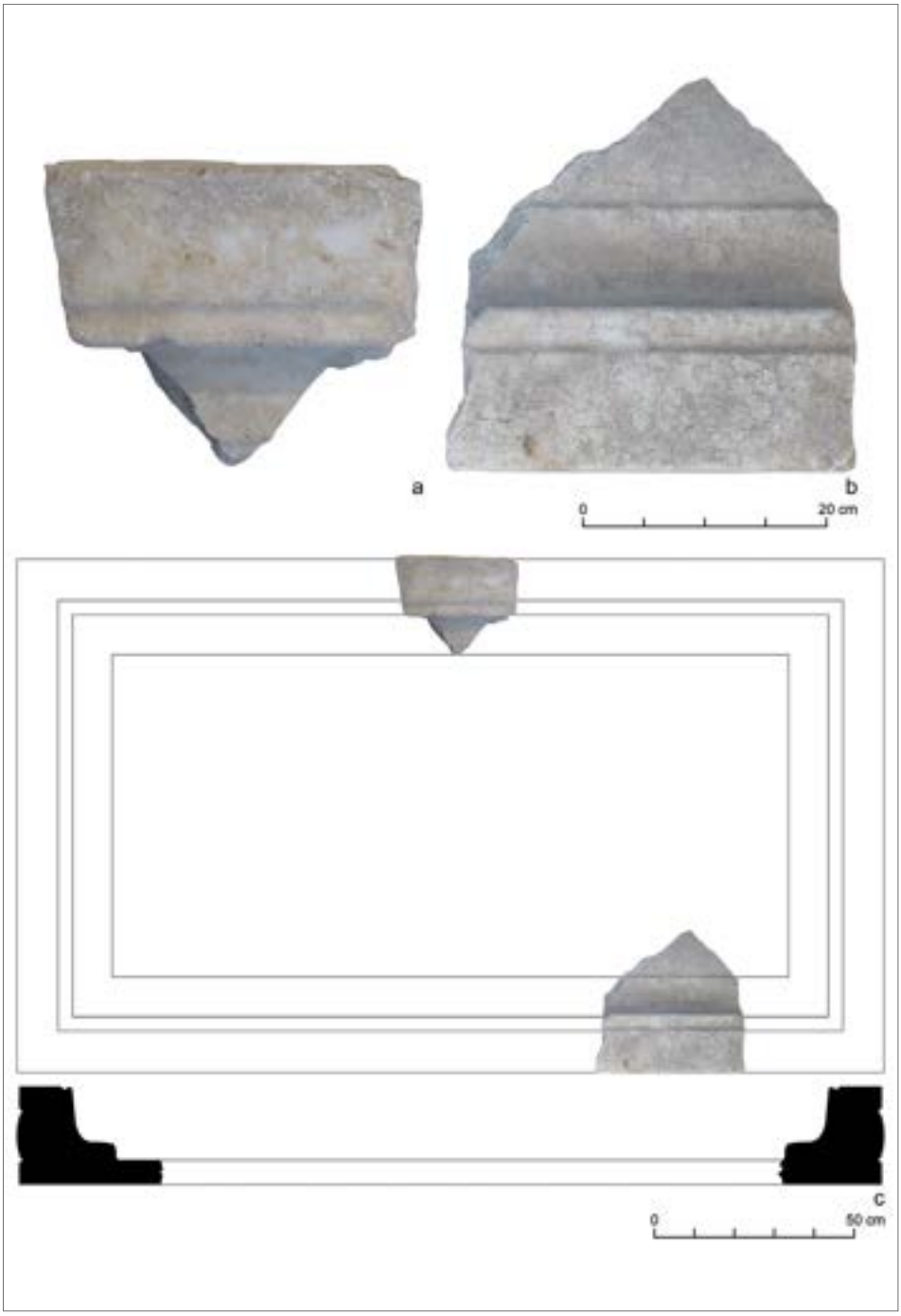

Fig. 12. The altar table: a, b – fragments of the edges, Cat. No. 8 (Photos C. Demirton); and c – reconstruction (Processing C. Demirton)

In addition, three colonnettes used as altar table supports have been excavated (Cat. Nos 9, 10) [*Fig. 13*]. All of them have the same dimensions: a base width of 13 cm, an abacus height of 3.5 cm, and a calathus height of 10.5 cm. The calathus section of the colonnettes is adorned with a single row of acanthus leaves forming a garland.

These colonnettes are specimens typical for the early Christian period. Similar altar colonnettes from the 5th and 6th centuries AD can be found in various locations, such as the Arykanda necropolis church (Tekinalp 2006: 793, Figs 9, 13), in Antioch of Pisidia (Ruggieri and Turillo 2011: 117, Figs 69–71), the Silifke Museum (Durugönül et al. 2013: 306, Cat. No. 292), the church of St. Pantaleon in Aphrodisias (Budde 1987: 39), and the episcopal church in Kourion, Cyprus (Loverance 1990: 237, Fig. 29). Based on the motifs, style, and profile, and considering the chronology of the original construction phase of the Patara City Basilica, the altar table and the colonnettes can be dated to the second half of the 5th century AD.

Ciborium

During the excavations at the Patara City Basilica, stone artifacts related to the altar ciborium have been discovered. Such artifacts are attested in the bema areas of churches dating from the early Christian period onwards.

The column bases, located approximately 11 cm southeast and northwest of the altar base, must have been part of the ciborium structure. They were *spolia* from the late Roman period. The southwest column base has a diameter of 46 cm and exhibits a rectangular joint hole measuring 3 cm in width. The other column base,

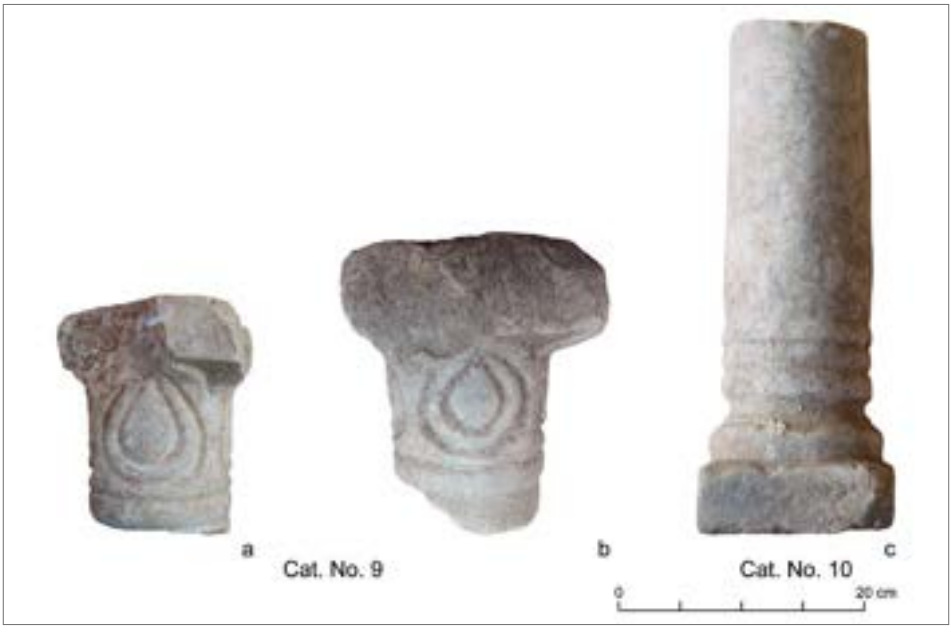

Fig. 13. Altar table colonnettes: a, b – Cat. No. 9; and c – Cat. No. 10 (Photos C. Demirton)

situated northwest of the altar base, has suffered damage to its upper part, leaving only the horizontally grooved torus section with a diameter of 56 cm. This base preserves a partially visible trace of a joint hole with a width of 8 cm [*Fig. 14*].

Based on reconstruction studies, it has been determined that the Patara City Basilica featured a ciborium structure located in the center of the bema, around the altar. The two supports that formed part of the baldachin are similar to elements of the altar ciborium found in the church of St. Nicholas in Myra (Doğan 2016: 241, Fig. 3). The column bases are directly positioned on the *opus sectile* floor of the bema, the plinth section of the column bases being situated below ground level. As a result, the *opus sectile* pavement of the bema floor, apparently executed as part of the groundwork, was directly connected with the plinth sections of the column bases.

There are very few examples of ciboria from the early Christian period. The discovery of an altar ciborium *in situ* in the church of Panagia Katapoliani in Paros, built in AD 550, is a vital source of detailed information about these structures. This altar ciborium, located in front of the apse, stands to a height of over five meters and is covered with a dome. It measures 2.5 m x 2.5 m (Jewell and Hasluck 1920: 51–52). Other notable parallels include the ambo and altar ciborium of the church in Kalabaka, Greece (Bogdanović 2008: 59), as well as depictions of the altar ciborium in the basilica of Hagia Sophia in Constantinople, which exhibited an eight-sided pyramidal roof structure according to ancient sources (Mango 1993: 1–13).

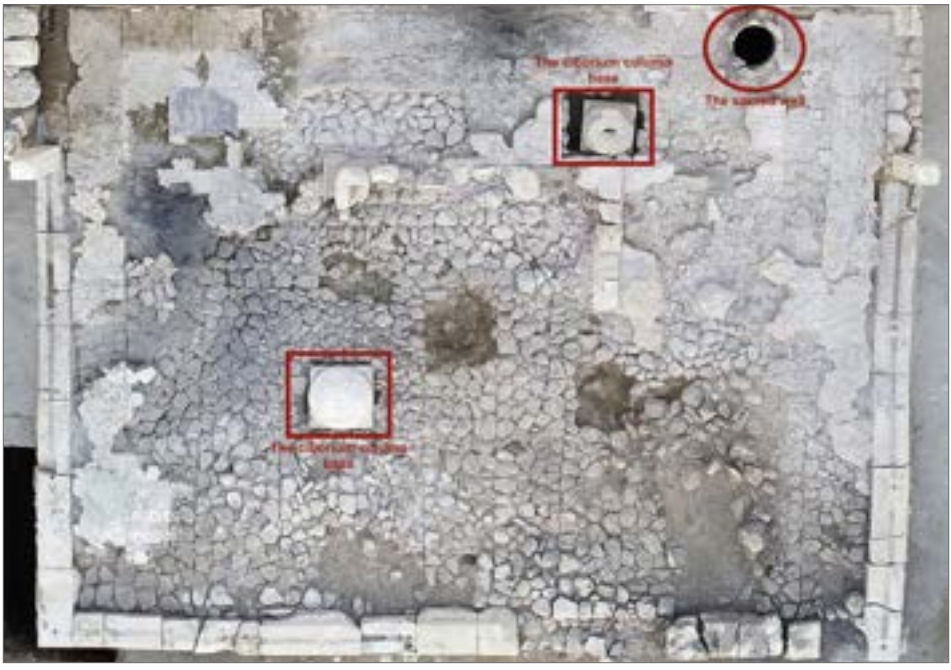

Fig. 14. Ciborium column bases and the well in the vicinity of the altar (Photo C. Demirton)

In Lykia, archaeological studies have provided evidence for ciborium columns in the Eastern Basilica in Xanthos, which dates back to the 5th century AD (Parrish 2002). The church in Alacahisar, dating from the late 5th century to the early 6th century AD, featured ciborium arches (Doğan 2003: 194, Figs. 2–9). Additionally, a spiral-fluted column found in Antalya–Kaleiçi represents an example of a ciborium column type of the early Christian period (Alpaslan 2000: 113, Fig. 3).

The dimensions of the altar base and the surrounding column bases of the ciborium in the Patara City Basilica indicate that the ciborium structure had a square shape and measured 3.00 m x 3.00 m. Drawing upon examples of ciboria from the early Christian period, it can be inferred that the roof of the altar ciborium in the Patara City Basilica was either conical or dome-shaped, and it was likely constructed using wood or stone materials.

Architectural arrangements such as the bema and the altar ciborium in the Patara City Basilica emphasize the building's significance as a sacred space and as one of the largest basilicas in the Lykian region. The ciborium structure in the basilica, along with other liturgical elements, was likely built concurrently with the construction of the basilica itself. Considering similar examples and the chronology of the initial construction phase of the basilica, the ciborium arrangement can be dated to the second half of the 5th century AD.

Fig. 15. Sacred well between the altar and synthronon to the southeast of the bema (Photo C. Demirton)

Sacred well

In the bema of the Patara City Basilica, there is a water well situated between the altar and the synthronon, to the southeast of the ciborium base. The mouth of the well has the shape of a circle inscribed into an external square. It was constructed by stacking two stone rings with a diameter of 52 cm to create the opening. The stone rings, each made of a monolithic piece of limestone, are carefully carved but lack decorative elements [*Fig. 15*].

The well in the Patara City Basilica was constructed using a stonemasonry technique that employs rubble stones at the bottom of the well, gradually built up as they transition to a narrower, cylindrical form. Presently, the well is filled with soil, and its depth amounts to 1.5 m. There are no visible traces of ropes on the sides of the stone rings. This observation raises the possibility that water may have been drawn from the well with use of a pulley system possibly placed on top, on a wooden support, which would leave no traces on the sides.

The deliberate alignment of the top surface of the upper ring of the well with the *opus sectile* floor level of the bema (+3.10 m a.s.l.) is a significant detail. The construction of the well on the same lev-

el as the bema floor, achieved by placing a double ring on top of the rubble stone masonry, suggests that both structures were planned and built concurrently, with careful consideration of their ground plan. This indicates a meticulous design and implementation process from very early stages of the construction of the basilica.

The position of the well is relevant for investigating the liturgical activity in the bema. Although water wells were attested in various locations and served different functions in churches during the early Christian period,[1] their presence in the bema adds a distinct dimension of liturgical significance to this sacred space.[2]

DISCUSSION AND CONCLUSIONS

The architectural and archaeological evidence shows that the templon arrangement of the City Basilica at Patara consisted of 12 templon posts, as indicated by their traces on the stylobate, as well as by fragments of capitals, columns, slabs, and templon posts themselves discovered during the excavations [*Fig. 16*]. Furthermore, the reconstruction study of the templon supports the notion that it was a "high-type templon" arrangement.

Examination of the archaeological data, including the templon stylobate, bases, slabs, columns, and capitals, has allowed to assess the height of the templon, excluding the architrave, at 3.07 m [*Fig. 17*].[3]

The presence of several elements: a dowel hole on the northern stylobate, a metal piece extending from the first step of the synthronon, and iron pieces interpreted as hinges on the lateral faces of the templon pillars, suggests the existence of two parallel wooden doors. This indicates the presence of northern and southern openings that provided direct access to the bema from the transept arms. Consequently, there were three entrances to the bema: one in the north, one in the south, and one in the west, the latter serving as the solea entrance [*Fig. 18*].

The remains of the templon in the City Basilica at Patara have been carefully examined and compared to similar structures. The analysis considered the characteristics of the decoration, dimensions, style, and materials used in the high templon arrangement. Based on this assessment, the templon in the basilica has been dated to the second half of the 5th century AD, which corresponds to the first phase of the building.[4] Additionally, some repairs of the bema floor can be observed; they were carried out during the second phase, dated to the 6th century AD (Ceylan and Erdoğan 2016; Demirton 2018: 8–19, 88; Ceylan 2019).

1 The Herakleia Perinthos basilica (Marmara Ereğlisi) in Kalekapı, constructed in the 5th century AD, features a circular water well and an ornamental fountain in the atrium (Westphalen 2016: 7).

2 For a comprehensive analysis of the well located in the bema of the Patara City Basilica, see Demirton 2023.

3 The templon architraves were probably made of timber; however, no wooden architrave remains belonging to the templon have been found during the excavations.

4 For plans of the construction phases I–V of the City Basilica in Patara, see Ceylan and Duggan 2022.

Reconstructions of various churches from the early Christian period, including those in Constantinople, have produced similar height estimates for templon arrangements. For example, in the reconstruction of the templon in the church of St. Euphemia (Naumann and Belting 1966: 99, Fig. 31), the height was estimated

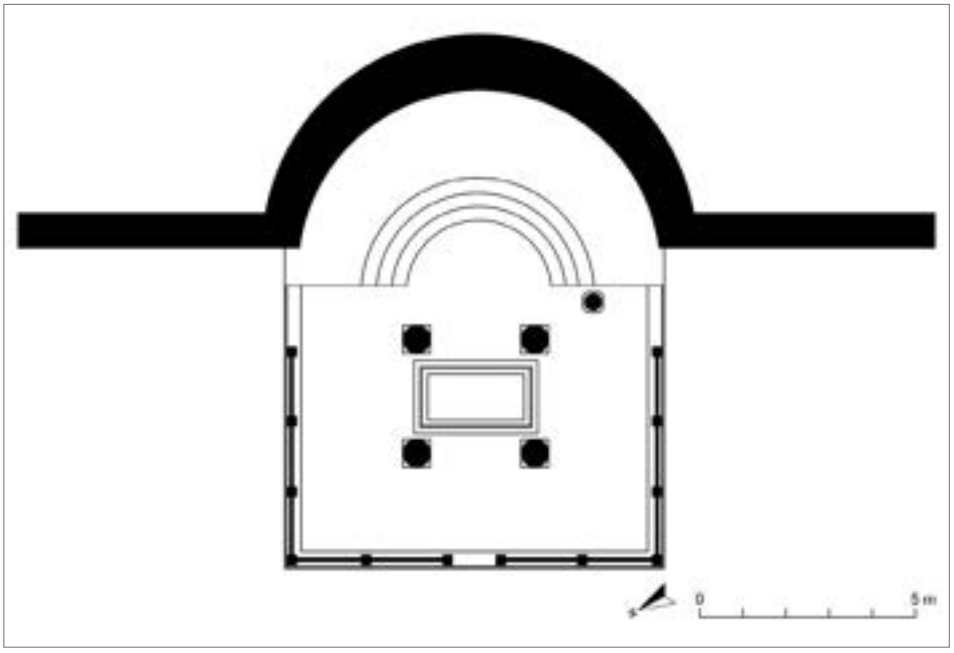

Fig. 16. Reconstruction plan of the bema: templon, altar, ciborium (Processing C. Demirton)

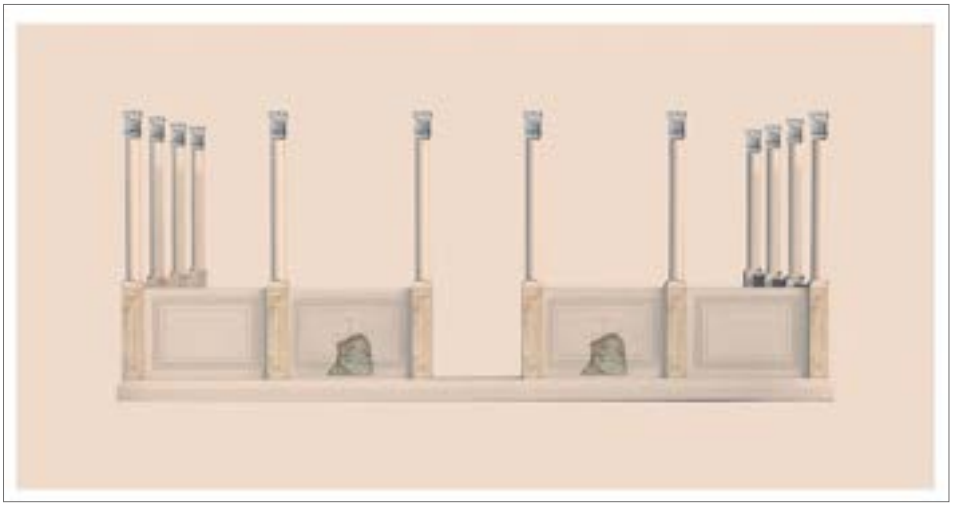

Fig. 17. Reconstruction of the templon, a view from the east (Processing C. Demirton)

Fig. 18. Metal pieces (hinges) in the synthronon and templon posts (Photos C. Demirton)

to 3.90 m including the architrave. In the case of the Katapoliani church in Paros, Greece (Mitsani 2006: 90, Fig. 25), the height without the architrave was 3.21 m. These examples demonstrate the range of heights observed in high templon arrangements during the early Christian period.

For the Lykian region, only two reconstructions of templon arrangements from the early Christian period have been attempted thus far: the church of St. Nicholas in Myra and the episcopal church of Olympos. The reconstruction of the templon in the church of St. Nicholas, dating from the late Byzantine period, offered a height of 2.80 m including the architrave (Peschlow 1990: 225, Fig. 3). In the episcopal church of Olympos, in turn, the reconstruction provided a templon height of 3.88 m including the architrave (Sertel 2017: 120). These rare reconstruction examples indicate that there was no fixed height of templons in the Lykian region. It suggests that the height of templons depended on the original arrangement and size of each specific church.

The reconstruction study provides valuable insights into the changes, liturgical activity, and movement within the basilica. The presence of two parallel doors, one to the north and one to the south of the bema, suggests a connection between the bema and the transept. A groove for a slab between the synthronon and stylobates indicates that the southern door of the bema was closed with a slab during the second phase of use of the basilica, possibly as a result of renovations following a major earthquake that struck Lykia in the 6th century AD (Duggan 2005: 358; Ceylan 2019). The presence of a sacred well in front of the south entrance may have been the reason for closing this door. These renovations likely led to changes in the liturgical movement within the bema.

The use of marble in the City Basilica of Patara, particularly in spaces of liturgical significance such as the bema, highlights the importance of these areas. Marble was used in the *opus sectile* pavement of the bema, the cladding of the synthronon in the apse, the altar, and the entire templon arrangement. This deliberate use of marble suggests an intention to emphasize the importance of these crucial spaces within the basilica.

CATALOG OF LITURGICAL FURNISHINGS

1. Templon stylobate blocks
[see *Figs 2, 3*]
Findspot: *in situ*, bema
Dimensions: Blocks of the west stylobate: width: 54 cm; thickness: 34–38 cm; height: 23 cm;
Blocks of the north stylobate: width: 48 cm; thickness: 34 cm; height: 25 cm;
Blocks of the south stylobate: width: 54 cm; thickness: 34 cm; height: 32 cm
Measurements were taken of the best-preserved blocks.
Material: limestone
Description: The stylobates that define the borders of the bema are arranged in a reversed Π shape. The western side is incomplete and damaged, consisting of four blocks in total. In the western stylobate, the first and second blocks from the north featured slab

grooves, while the third and fourth blocks were left plain. The widths of these slab grooves vary between 6 cm and 8.5 cm. On the western stylobate, quadrangular depressions for templon posts measuring 22 cm x 20 cm and 22 cm x 22 cm have been observed. Additionally, there are round dowel holes and lead channels carved within the depressions. The dowel holes measure 4.5 cm x 4.5 cm, while the lead channels are 1.5 cm wide.

On the northern side, there is a total of five stylobate blocks that form a continuous line along the bema. The first and second blocks from the east and west sides do not have slab grooves, but there are marks indicating where the slabs would have been placed on the western stylobate. The widths of the slab grooves on the northern stylobate range from 4 cm to 7 cm. There are four dowel holes on the stylobates. The average distance between the depressions for templon posts, of which one pair measures 22 cm x 22 cm, and the other 23 cm x 23 cm, is approximately 1.40 m.

On the southern side of the bema, there is a total of five contiguous stylobate blocks. The average width of the slab grooves on these blocks ranges from 4.5 cm to 8.5 cm. Depressions for templon posts measuring 23 cm x 23 cm and 22 cm x 22 cm are preserved on the stylobates. The average distance between them is approximately 140 cm.
Date: second half of the 5th century AD

2. Templon posts [see *Figs 4, 5*]
Findspot: room north of the apse
Dimensions: (a): width: 23 cm; thickness: 23 cm; height: 110.5 cm; diameter: 16.5 cm; (b): width: 22 cm; thickness: 22 cm; height: 108.5 cm; diameter: 17.5 cm
Material: marble
Description: The templon posts found in the basilica are monolithic and intricately carved with relief soffit decoration on their front and back faces. One side of the posts has a groove to accommodate a slab, while the other side is plain and devoid of decoration. The grooves on the posts measure 4 cm in width and have a rectangular section with a depth of 3 cm. Additionally, each post has a circular dowel hole 3 cm wide on the underside.
Parallels: Hoddinott 1963: 183, Fig. 129; Tezcan 1989: 45, 65, Figs 23, 30, 48, 50; Peschlow 1990: 219, No. 29, Fig. 41; 1991: 1465, Figs 16–26; Russo 1991: Figs 103, 124, 129, 131, 133, 134, Cat. Nos 77, 78, 97–99, 102, 104–106, 112; Westphalen 1998: 321, No. 89; Ousterhout and Akyürek 2001: 11, Fig. 16; Parman 2002: 126, Pls 50, 53; Doğan 2006: 223, Fig. 14; Niewöhner 2007: 256–259, Fig. 27; Biernacki 2009: 76, Pl. 206; Asano 2010: Pls 5–6; Keskin 2010: Figs 131–134; Niewöhner 2016: 157–250
Date: second half of the 5th century AD

3. Templon post [see *Fig. 6*]
Findspot: northern transept
Dimensions: width: 21 cm; thickness (broken): 14.2 cm; height (broken): 40 cm
Materials: marble
Description: The post is adorned with soffit decoration on two faces, while the sides feature slab grooves. The slab grooves on the two sides of the post measure 5 cm in width and 3 cm in depth.
Date: second half of the 5th century AD

4. Templon slab [see *Figs 8, 9*]
Findspot: southern annex room
Inv. No.: PTR-Mİ.2620
Dimensions: width (broken): 53 cm; thickness: 4 cm; height (broken): 46.5 cm
Materials: marble
Description: The marble slab discovered in the southern annex of the basilica is fragmented. One side of the slab features a plain border without any decoration. In the center of the slab, there is an arm of a Latin cross.
Parallels: Nussbaum 1965: Pl. 31, Fig. 1; Naumann and Belting 1966: 58, Pl. 21; Peschlow 1984: 419, Pl. 8; Tezcan 1989: 150, Fig. 175; Fıratlı 1990: 154, 155, Pl. 94, Cat. Nos 306d, 307c; Guidobaldi, Barsanti, and Guiglia Guidobaldi 1992: Figs 77, 82, 84, 88, 95, 97, 99, 109, 111, 115, 125; Effenberger and Severin 1992: 112, 125, Cat. Nos 40, 42, Pl. 64; Pülz and Ruggendorfer 2004: 70, Pl. 16; Niewöhner 2007: 249, 250, Cat. Nos 292, 293, Pls 98, 99; Biernacki 2009: 66, Pls 162, 163, 165, 168–171, 176, 180, 181; Hakan 2009: 62, 65, 66, Cat. Nos 42, 45, 46; Serin 2014: 78, Fig. 13; Çavdar 2014: 89, 90, Cat. Nos D1, D2
Date: second half of the 5th century AD

5. Templon colonnette and capital [see *Fig. 10:a*]
Findspot: southern transept
Inv. No.: PTR-Mİ.2559
Dimensions: height (broken): 41.6 cm; diameter: 16 cm
Material: marble
Description: The Corinthian column capital uncovered in the southern transept of the basilica is damaged. The capital, measuring 20 cm in width, features a single row of four acanthus leaves in the calathus section. The column shaft is broken at the base, but the surface of the capital is intricately carved and smooth.
Parallels: Hoddinott 1963: 183, Fig. 129; Peschlow 1991: 1470, Pls 27, 28, 31, 32; Dennert 1997: 121, Cat. No. 262; Niewöhner 2008: 312, Pl. 6; Biernacki 2009: 38, Pls 68, 69; Durugönül et al. 2013: 245, 246, Cat. Nos 274–277
Date: second half of the 5th century AD

6. Templon colonnette and capital [see *Fig. 10:b*]
Findspot: southern transept
Inv. No.: PTR-Mİ.2564
Dimensions: height (broken): 29.5 cm; diameter: 16 cm
Material: marble
Description: The column shaft crowned with a Corinthian column capital is fractured, and the damaged capital measures 19.2 cm in width. It is similar to Cat. Nos 5 and 7 but, unlike them, its acanthus leaves have deeply carved veins and sharp tips.
Date: second half of the 5th century AD

7. Templon colonnette and capital [see *Fig. 10:c*]
Findspot: southern transept
Inv. No.: PTR-Mİ.2560
Dimensions: width (broken): 23.4 cm; diameter: 18 cm
Material: marble
Description: The Corinthian column capital uncovered in the southern transept section of the basilica was part of the templon arrangement. The bottom surface of the capital is damaged. Its calathus features a single row of four acanthus leaves and outer volutes.
Date: second half of the 5th century AD

8. Altar table (*mensa*) fragments [see *Figs 11, 12*]
Findspot: triconch chapel
Dimensions: (a): width (broken): 26.2 cm; height (broken): 24.3 cm; lower thickness: 6 cm; upper thickness: 12.6 cm;
(b): width (broken): 31 cm; height (broken): 24.3 cm; lower thickness: 6 cm; upper thickness: 13.1 cm
Material: marble
Description: The pieces are central parts of edges of an altar table, which had a thickness of 12.6 cm at the outermost part. In the inner, concave section, the thickness decreased to 6 cm. The outer edges of the pieces form a smooth, convex border without any decorative elements. The back surfaces are plain and lack adornment.
Date: second half of the 5th century AD

9. Colonnette supporting the altar [see *Fig. 13:a, b*]
Findspot: northern transept
Dimensions: (a): width: 13 cm; height (broken): 15.5 cm; diameter: 10 cm;
(b): width: 13 cm, height (broken): 17.5 cm; diameter: 10 cm
Material: marble
Description: (a): The colonnette is carved as a single monolithic piece. The abacus has a width of 13 cm and a height of 3.5 cm, and the calathus—10.5 cm. The calathus of the colonnette, which was part of the base of the altar table, features a single row of acanthus leaves.
(b): The colonnette is carved as a single monolithic piece. It has a width of 13 cm, the abacus measures 5 cm in height, and the total height is 17.5 cm. The calathus section of the capital is adorned with a single row of acanthus leaves, which extend along the entire calathus, and on the bottom with a ring 2 cm thick.
Date: second half of the 5th century AD

10. Colonnette supporting the altar [see *Fig. 13:c*]
Findspot: southern annex room
Inv. No.: PTR-Mİ. 2586
Dimensions: width: 14 cm; height (broken): 38.5 cm; diameter: 10–11 cm
Material: marble
Description: The shaft of the colonnette, which was part of an altar table support, is smoothly carved. It features an Attic-style base comprising a plinth, a lower torus, a trochilus, and upper torus sections. The diameter of the colonnette is 11 cm. No decoration is present.
Parallels: Loverance 1990: 237, Fig. 29
Date: second half of the 5th century AD.

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References

Alpaslan, S. (2000). Antalya İli ve Likya Bölgesi'nde Bizans Dönemine Ait Taş Eserler 1999 Yılı Araştırmaları. In *18. Kazı Sonuçları Toplantısı* I (pp. 107–114). Ankara: Kültür ve Turizm Bakanlığı Yayınları

Asano, K. (2010). *The Island of St. Nicholas: Excavation and survey of the Gemiler Island area, Lycia, Turkey*. Osaka: Osaka University Press

Biernacki, A.B. (2009). *Wczesnobizantyjskie elementy i detale architektoniczne Chersonezu Taurydzkiego* (The early-Byzantine architectural elements and details of Chersonesus Taurica). Poznań: Wydawnictwo Poznańskie (English summary)

Bogdanović, J. (2008). *Canopies: The framing of sacred space in the Byzantine ecclesiastical tradition* (Ph.D. diss.). Princeton University

Braun, J. (1924). *Der christliche Altar in seiner geschichtlichen Entwicklung*. Munich: Alte Meister Guenther Koch

Budde, L. (1987). *St. Pantaleon von Aphrodisias in Kilikien* (=*Beiträge zur Kunst des christlichen Ostens* 9). Recklinghausen: Bongers

Ceylan, B. (2019). City Basilica. In H. İşkan (ed.), *Patara: City, harbor, cult* (pp. 318–329). Istanbul: Türkiye İş Bankası Kültür Yayınları

Ceylan, B. and Duggan, T.M.P. (2022). Patara Orta Çağı ve Kent Bazilikası (The Middle Ages of Patara and the City Basilica). In M. Demirel, M. Arslan, S. Atalay, and U. Orhan (eds), *Antalya Müzesi'nin 100. Yil Kitabı* (pp. 1081–1091). Ankara: Kültür ve Turizm Bakanlığı Yayınları (English summary)

Ceylan, B. and Erdoğan, O. (2016). The architecture and history of the City Basilica of Patara: A preliminary report on four seasons of excavations. In E. Dündar, Ş. Aktaş, M. Koçak, and S. Erkoç (eds), *Lykiarkhissa: Festschrift für Havva İşkan* (pp. 173–192). Istanbul: Ege Yayınları

Çavdar, M. (2014). *Kırklareli Vize'den Geç Antik – Bizans Dönemi Mimari Plastik Taş Eserler* (MA thesis). Istanbul Technical University

Demirton, C. (2018). *Patara Kent Bazilikası Litürjik Taş Eserleri* (MA thesis). Akdeniz University

Demirton, C. (2023). The liturgical furnishings of the City Basilica at Patara in the early Byzantine period: Division of the nave and monolithic slabs. *Istanbuler Mitteilungen*, 72, 170–193

Dennert, M. (1997). *Mittelbyzantinische Kapitelle: Studien zu Typologie und Chronologie* (=*Asia Minor Studien* 25). Bonn: R. Habelt

Doğan, S. (2003). Likya'da Alacahisar Kilisesi'nin Kiborium Kemerleri. *Hacettepe Üniversitesi Edebiyat Fakültesi Dergisi*, 20(1), 186–198

Doğan, S. (2006). Likya'da Bizans Taş Yapıtları. In K. Dörtlük, B. Varkivanç, T. Kahya, J. Des Courtils, M. Doğan Alparslan, and R. Boyraz (eds), *III. Likya sempozyumu 07–10 Kasım 2005, Antalya: Sempozyum bildirileri* (pp. 209–224). Antalya: Suna-İnan Kıraç Akdeniz Medeniyetleri Araştırma Enstitüsü

Doğan, S. (2016). Likya'da Bir Hac Merkezi: Myra Aziz Nikolaos Kilisesi. In H. İşkan and E. Dündar (eds), *Lukka'dan Likya'ya: Sarpedon ve Aziz Nikolaos'un ülkesi* (pp. 238–259). İstanbul: YKY

Duggan, T.M.P. (2005). Supplementary data to be added to the chronology of plague and earthquakes in Antalya Province and in adjacent and related areas. *Adalya*, 8, 357–398

Durugönül, S., Aydın, A., Kaplan, D., and Tepebaş, U. (2013). *Silifke Müzesi Taş Eserler Kataloğu: Heykeltıraşlık ve Mimari Plastik Eserler* (=*Kilikia Arkeolojisini Araştırma Merkezi Yayınları* 2). Mersin: Mersin Üniversitesi Kilikia Arkeolojisini Araştırma Merkezi (Kaam) yayınlarını

Effenberger, A. and Kunze, M. (1995). Kent Bazilikası. In *16. Kazı Sonuçları Toplantısı* II (pp. 253–282). Ankara: T.C. Kültür Bakanlığı

Effenberger, A. and Severin, H.-G. (1992). *Das Museum für Spätantike und Byzantinische Kunst*. Berlin: Die Museen

Fıratlı, N. (1990). *La sculpture byzantine figurée au Musée archéologique d'Istanbul*. Paris: J. Maisonneuve

Guidobaldi, F., Barsanti, C. and Guiglia Guidobaldi, A. (1992). *San Clemente. La scultura del VI. secolo* (=*San Clemente Miscellany* IV, 2). Rome: San Clemente

Guiglia Guidobaldi, A. (2004). I plutei delle finestre. In A. Guiglia Guidobaldi and C. Barsanti, *Santa Sofia di Costantinopoli: l'arredo marmoreo della grande chiesa giustinianea* (pp. 89–228). Vatican City: Pontificio istituto di archeologia cristiana

Hakan, G. (2009). *Kocaeli Müzesi'ndeki Bizans Devri Mimari Plastikleri* (MA thesis). Sakarya University

Hoddinott, R.F. (1963). *Early Byzantine churches in Macedonia and southern Serbia: A study of the origins and the initial development of East Christian art*. London–New York: Macmillan; St. Martin's Press

Jewell, H.H. and Hasluck, F.W. (1920). *The church of Our Lady of the Hundred Gates (Panagia Hekatontapyliani) in Paros*. London: Macmillan and Co.

Keskin, E. (2010). Çorum İlinde Bulunan 5–6. yüzyıllara Ait Attika Tipi Sütun Kaideleri. In S. Doğan and M. Kadiroğlu (eds), *Bizans ve Çevre Kültürler: Prof. Dr. S. Yıldız Ötüken'e Armağan* (pp. 228–234). Ankara: Hacettepe Üniversitesi

Krautheimer, R. (1965). *Early Christian and Byzantine architecture*. Baltimore: Penguin Books

Loverance, R. (1990). Early Byzantine marble church furnishings: Some examples from the episcopal basilica of Kourion in Cyprus. In R. Morris (ed.), *Church and people in Byzantium: Twentieth Spring Symposium of Byzantine Studies, Manchester, 1986* (pp. 225–243). Birmingham: University of Birmingham

Mango, C.A. (1993). On the history of the templon and the martyrion of St Artemios at Constantinople. In C.A. Mango, *Studies on Constantinople* (pp. 1–13). Aldershot: Variorum

Mitsani, A. (2006). The Early Christian templon-screen in the Katapoliani, Paros. *Deltion of the Christian Archaeological Society*, 45, 75–90

Naumann, R. and Belting, H. (1966). *Die Euphemia-Kirche am Hippodrom zu Istanbul und ihre Fresken*. Berlin: Mann

Niewöhner, P. (2007). *Aizanoi, Dokimion und Anatolien: Stadt und Land, Siedlungs- und Steinmetzwesen vom späteren 4. bis ins 6. Jahrhundert n. Chr.* Wiesbaden: Reichert Verlag

Niewöhner, P. (2008). "Mittelbyzantinische Templonanlagen aus Anatolien Die Sammlung des

archäologischen Museums Kütahya und Ihr Kontext", *Istanbuler Mitteilungen,* 58, 285–345

Niewöhner, P. (2016). *Bauwerke in Milet* XI. *Die byzantinischen Basiliken von Milet*. Berlin: De Gruyter

Nussbaum, O. (1965). *Der Standort des Liturgen am christlichen Altar vor dem Jahre 1000: eine archäologische und liturgiegeschichtliche Untersuchung*. Bonn: Hanstein

Orlandos, A.K. (1952). *Hē xylostegos palaiochristianikē basilikē tēs mesogeiakēs lekanēs* II. Athens: Athēnais Archaiologikē Hetaireia

Ousterhout, R. and Akyürek, E. (2001). The church of the Transfiguration on Burgazada. *Cahiers Archéologiques*, 49, 5–14

Parman, E. (2002). *Ortaçağda Bizans döneminde Frigya (Phrygia) ve bölge müzelerindeki Bizans taş eserleri*. Eskişehir: Anadolu Üniversitesi Basımevi

Parrish, D. (2002). An early Byzantine mosaic workshop based on Kos: Architectural context and pavement design. *Antiquité Tardive*, 9, 331–349

Peschlow, U. (1977). *Die Irenenkirche in Istanbul: Untersuchungen zur Architektur*. Tübingen: E. Wasmuth

Peschlow, U. (1984). Die Bischofskirche in Limyra (Lykien). In *Actes du X^e Congrès international d'archéologie chrétienne, Thessalonique, 28 septembre – 4 octobre 1980*, II (pp. 409–422). Vatican City: Pontificio istituto di archeologia cristiana

Peschlow, U. (1990). Materialien zur Kirche des H. Nikolaos in Myra im Mittelalter. *Istanbuler Mitteilungen*, 40, 207–258

Peschlow, U. (1991). Zum Templon in Konstantinopel. In G.M. Belenēs (ed.), *Armos: timētikos tomos stōn kathēgētē N.K. Moutsopoulos gia ta 25. chronia pneumatikēs tu prosphoras sto panepistēmio* III (pp. 1449–1475). Thessaloniki: Aristoteleio Panepistēmio, Polytechnikē Scholē, Tmēma Architektonōn

Pülz, A. and Ruggendorfer, P. (2004). Kaiserzeitliche und Frühbyzantinische Denkmäler in Limyra: Ergebnisse der Forschungen in der Oststadt und am Ptolemaion (1997–2001). *Mitteilungen zur Christlichen Archäologie*, 10, 52–79

Ruggieri, V. and Turillo, M. (2011). *La scultura bizantina ad Antiochia di Pisidia* (=*Edizioni Orientalia Christiana* 288). Rome: Pontificio istituto orientale

Russo, E. (1991). *Sculture del complesso eufrasiano di Parenzo*. Naples: Edizioni scientifiche italiane

Serin, U. (2014). Bizans Ankarası ve Kaybolan Bir Kültür Mirası: 'St. Clement' Kilisesi. *Middle East Technical University Journal of the Faculty of Architecture*, 31/2, 65–92

Sertel, S. (2017). *Olympos Piskoposluk Kilisesi ve Vaftizhanesi liturjik taş eserleri* (MA thesis). Pamukkale University

Şimşek, C. (2015). *Laodikeia Kilisesi: Lykos Vadisi'nde Hıristiyanlık*. Denizli: Denizli Büyükşehir Belediyesi

Striker, C.L. and Kuban, Y.D. (eds). (1997). *Kalenderhane in Istanbul: The buildings, their history, architecture, and decoration. Final reports on the archaeological exploration and restoration at Kalenderhane Camii, 1966–1978*. Mainz am Rhein: Philipp von Zabern

Talbot, A.-M. and Kazhdan, A.P. (1994). The Byzantine cult of St. Photeine. In A.R. Dyck and S.A. Takács (eds), *Presence of Byzantium: Studies presented to Milton V. Anastos in honor of his eighty-fifth birthday* (pp. 103–112). Amsterdam: Hakkert

Tekinalp, V.M. (2006). Arykanda Kenti Bizans Dönemi Mimari Plastik ve Liturjik Taş Eserleri. In *III. Likya sempozyumu, 7–10 Kasım 2005, Antalya* (pp. 789–799). Antalya: Suna-İnan Kıraç Akdeniz Medeniyetleri Araştırma Enstitüsü

Tezcan, H. (1989). *Topkapı Sarayı ve Çevresinin Bizans Devri Arkeolojisi*. Istanbul: Türkiye Turing ve Otomobil Kurumu

Westphalen, S. (1998). Die Basilika von Priene. Architektur und liturgische Ausstattung. *Istanbuler Mitteilungen*, 48, 279–340

Westphalen, S. (2016). *Die Basilika am Kalekapi in Herakleia Perinthos: Bericht über die Ausgrabungen von 1992–2010 in Marmara Ereğlisi* (=*Istanbuler Forschungen* 55). Tübingen: E. Wasmuth

Use and aesthetics of Iasian marble in presbyteries of the 6th century

Abstract: This paper offers a survey of the uses of Iasian marbles and their relationships with other stones. In the 6th century, these marbles were used for wall cladding and flooring, with an aim to alternate with or frame lighter marbles, as was the case in Iasos, in the Agora Basilica. Similar combinations were attested in the cladding of *synthronoi* of the basilicas A and C of Nea Anchialos. In the latter, the sides of the presbytery were framed with red *cipollino* slabs of different lengths and widths. In the *prostoon*, *verde antico* was added to red and white veined marbles.
Other examples seem to demonstrate the use of the red *cipollino* to mark thresholds and passageways, as was the case of the solea of Hagia Sophia and the presbytery of the basilica of St. John in Ephesos. There, the templon stylobate and bases made of Iasian marble supported columns of *verde antico* and gray marbles; some slabs would have been of the openwork type; thus, the variety of marbles, their textures and workmanship must have contributed to the deep impact of the arrangement.

Keywords: Iasian marble, use of marble, flooring, marble combinations, presbyteries

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INTRODUCTION

Marmor Iassense, blood-red in color, originated from the inland areas of Iasos, a Karian city located slightly north of the Halikarnassos Peninsula [*Fig. 1*]. Not far from the city, marble outcrops with traces of quarrying are still recognizable in gorges and on plateaus (Andreoli et al. 2002: 13–14). Around them, a number of recognized features, such as a sledge road and several buildings, testify to different stages of marble processing (Andreoli et al. 2002: 14; Berti and Peirano 2016: 180). Three main quarry areas are known to have provided the following marble types: monochrome, *brecciato* —both sometimes used in sculpture—, and *cipollino* (Attanasio et al. 2021: 25) [*Fig. 2*].

Initially used to manufacture small artifacts and architectural detail in the city and its *chora* (Berti and Peirano 2014: 45–55; Peirano 2018: 99–102), Iasian marble was also exported in the form of columns from the 2nd century AD onward (Baldoni 2005: 107), and as floor tiles starting from the 4th century (Lazzarini 2009: 24). It was in the 6th century, however, that it reached the peak of its popularity.

The last three decades have brought reports on a number of import destinations and places of primary use of Iasian marble, as well as information on its secondary use as reworked material (Lazzarini 2004: 110). In recent years, efforts have also been made to investigate Iasian

Fig. 1. Map of Karia showing the location of Iasos on the coast (Basemap: Mapbox, processing: M. Momot)

marble use in context, as well as its relationship with other materials, mainly in the 6th century (Berti and Peirano 2023: 7–9).

The aim of this paper is to collect evidence on the placement of Iasian marble in 6th-century church interiors, mainly in presbyteries, and to determine to what extent the aesthetic qualities of this stone influenced its use and combinations with other marbles.

EARLY USES OF IASIAN MARBLE

In the 6th century, the first evidence of use of Iasian marble comes from the churches of SS. Leontius, Sergius and Bacchus in Bosra, dated to before 512–513 (Masturzo 1995: 378), and of Hagios Polyeuktos in Constantinople, built between 524 and 527. In both structures, the monochrome as well as the veined types were used. In the first example, the small size of the fragments seems to indicate their use on walls as frames; the marble seems to have been used with the same intent in Hagios Polyeuktos, where Harrison recorded 150 "bars". They were in all likelihood fillets, as most measured between 5 and 5.5 cm in width and 13 of them had mitered ends (Harrison 1986: 179). In this church, Iasian marble was also used in *sectilia*, where six tiles (square and triangular in equal numbers) have been found (Harrison 1986: 179). They were, however, scattered around the building's foundations, making their original position hard to determine. The interior was furnished predominantly with Prokonnesian marble, which comprised three-quarters of the decorative stone material used.[1] The Iasian marble amounted to 6.5% of the share comprising all other, non-Prokonnesian marble types and slightly more than 1.5% of the total volume of marble used in the structure. It may have been used to create thin frames around panels made from other marbles. In such compositions, Iasian marble may have been combined with stone from Dokimeion (amounting to 24% of the non-Prokonnesian marbles), *giallo antico* (17%), green porphyry (15%), Thessalian marble (14.5%), and red porphyry (4.8%). In this church, Iasian marble also appears in the

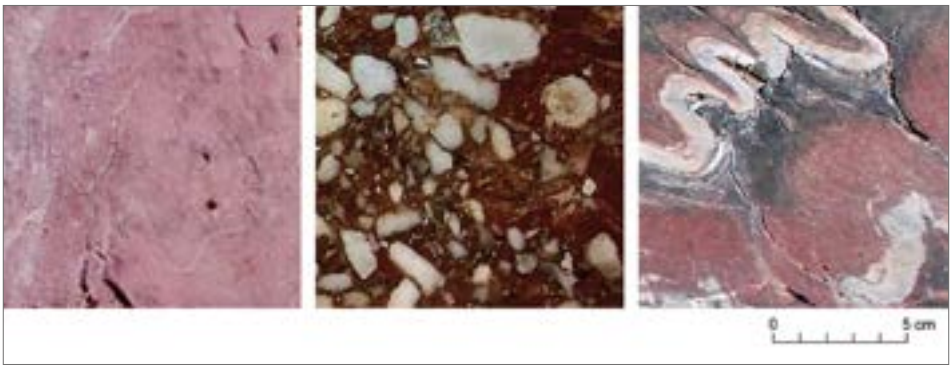

Fig. 2. Three types of Iasian marble (Photos D. Peirano)

1 This and the following percentages are based on Harrison 1986: 179–180.

flooring of the crypt: Harrison (1986: 168) recorded that it was paved "with a patterned marble floor of Proconnesian and Iasos slabs".

MARBLE PRODUCTION AND USE IN IASOS

In the times of Justinian, red marble started to be used for cladding some of the most prestigious religious buildings in the Mediterranean. 108 blocks waiting to be transformed into slabs have been found during excavations inside a monumental tomb referred to as Balık Pazarı in Iasos. The tomb, built in the 2nd century next to the city's aqueduct (Bruno 2012; Berti, Molinari, and Peirano 2022: 247–250), was, in the 6th century, converted into a workshop where marble blocks were sawn into slabs with use of a water-powered sawmill [*Fig. 3*].

A closer inspection of a block preserved in front of the marble workshop has indicated that not all blocks were cut using a water-powered saw. The pieces varied considerably in size and only the larger ones preserved saw marks, which averaged 0.9–1 cm in depth and were placed at a distance of 2.5 cm from one another. The reduced thickness can be explained by the need to follow the veins, which was a convenient way of obtaining pairs of almost identical slabs for use in book-

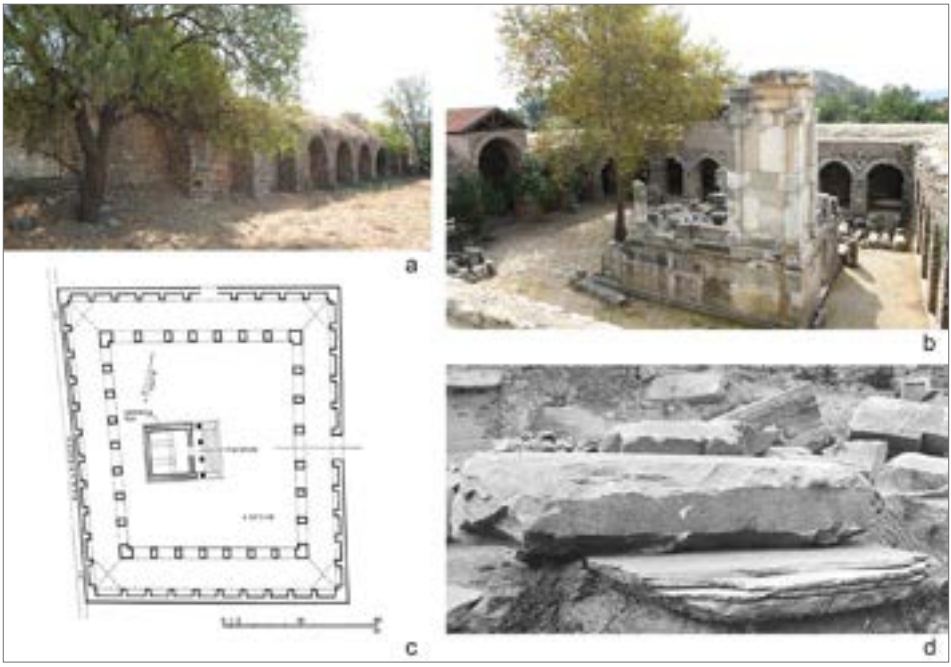

Fig. 3. Water-powered sawmill in the Balık Pazarı tomb: a – arcades of the aqueduct along the tomb (Photo D. Peirano); b – rooftop view of the tomb (photo M. Molinari); c – plan of the complex (Drawing F. Tomasello); d – several blocks found during excavations, the one in the foreground bearing saw marks (Italian School of Archaeology at Athens)

matched arrangements or groups of four for open-vein compositions. On the other hand, the pavement slabs were considerably thicker than those used as wall revetments and lacked saw marks: some of them had probably been broken away using wedges,[2] shaped with the usual carvers' tools, and finally polished; their undersides were merely roughened.

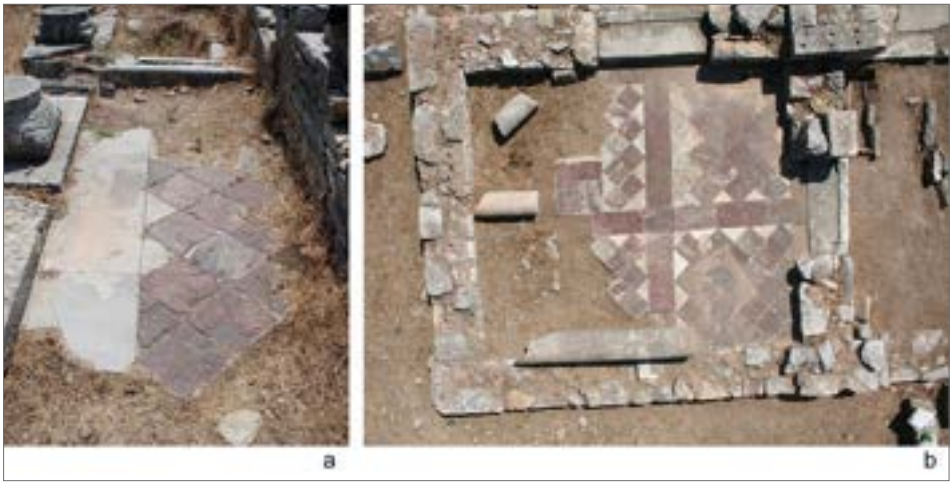

Fig. 4. Marble floors of the Agora Basilica in Iasos: a – monochrome marble tiles in the northern aisle (Photo D. Peirano); b – flooring of the north room accessed from the narthex (Photo M. Molinari)

Fig. 5. *Cipollino* slab marking the entrance from the narthex to the nave of the Agora Basilica in Iasos (Photo D. Peirano)

2 A slab 4.2 cm thick and only roughened on the underside is preserved *ex situ* in the Acropolis Basilica. See also the item referred to in note 3.

The Balık Pazarı marble workshop may have contributed to the increased availability of Iasian *cipollino* in the 6th century. However, it is conceivable that greater profits were obtained from the export of this stone than from its local use, as in Iasos itself there is scant evidence for use of the local marble. It was present only in the Agora Basilica, dated to the Justinianic era (Serin 2004: 101), where a small column made of Iasian *brecciato* was integrated into a wall of a middle Byzantine church erected within the nave. Some red *cipollino* was also present in the form of slabs of wall cladding 2.2 cm thick. In addition, monochrome tiles alternated with white marble were present in the nave and in the north room entered from the narthex [*Fig. 4*]. The use of red marble was probably a sign of importance of this annex, which linked the narthex to an open area to the north of the church. A large slab of red *cipollino* also marked the entrance leading from the narthex to the nave[3] [*Fig. 5*]. The narthex was, in contrast, mainly paved with reused marble slabs, and the space opposite to the north room had no flooring at all.

IASIAN MARBLE IN BASILICA FLOORS IN CONSTANTINOPLE AND BEYOND

In the 6th century, red marble seems to have been used to mark entrances and delineate spaces or paths. This was probably the case in the Gortyn cathedral, where Iasian marble was used to mark a passageway orthogonal to a path made of white marble linking the central entrance, ambo and presbytery (Farioli Campanati and Borboudakis 2005: 167). The passageway in Iasian marble seems to be related to a side entrance giving access to the baptistery.[4]

In the Justinianic era, red *cipollino* became widespread in the eastern Mediterranean (Peirano 2018: 102–104). Its diffusion map shows two roughly concentric circles with the Aegean Sea at their center [*Fig. 6*]. On the edge of the larger circle lies Poreč with its Cathedral of Euphrasius. In the apse this church, small tiles of red *cipollino* —square, rectangular and triangular— were used in parallel bands flanking the altar (seven to the south and five to the north) [*Fig. 7*]. Together with other dark stones, namely green and red porphyry, the *cipollino* was used to compose geometric patterns against a background of light-colored Prokonnesian marble (Terry 1986: 155–156). This may be recognized as a somewhat tentative attempt to use stark contrasts between light and dark stones around the altar within the presbytery. It cannot be excluded that these bands constituted place markers indicating the position of clerics during the liturgy. Given that the posi-

3 Preserved in front of the Agora Basilica in Iasos is a block of *cipollino* measuring 57 cm x 114 cm, with a height of 10.9 cm.

4 Confirmation is expected to appear in a forthcoming publication of the Gortyn cathedral excavations.

tion of the clergy within the *synthronon* was fixed (as was the seat), it may have likewise been set for clerics standing in front of the altar, with their places marked by marble strips. The use of marble *fascias* to mark the places of various actors of the liturgy during ceremonies has been an object of discussion in the last decades, especially in the context of Hagia Sophia (Majeska 1978; Barry 2007: 627–629, notes 8–9; Stichel 2010: 29–41).

In recent years, a number of studies have also inquired into the aesthetics of marble in Constantinople and beyond (see, among others: Pentcheva 2011; Kiilerich 2012; Schibille 2014: see mainly 99–106). It was in Justinianic times that Iasian marble began to appear in book-matched cornices and open-vein panels in the innovative ecclesiastical buildings of the Empire, such as Hagia Sophia and San Vitale; in flooring, single and book-matched panels made of red *cipollino* began to appear and, concurrently, strips and tiles of the same material were used to frame other marble panels.

In Hagia Sophia, red *cipollino* was used both on walls and in floor revetments. In addition to the book-matched *fascias* in the galleries and on the ground floor [*Fig. 8:a*], there were *cipollino* tiles in the gallery windows [*Fig. 8:b*] and panels of this stone in the endonarthex [*Fig. 8:c*]. Veined *marmor Iassense* is visible in the platform connecting the *qibla* and the *minbar*. The platform conceals traces of the original presbytery, as demonstrated by its flooring slabs that are —with the exception of the borders— aligned

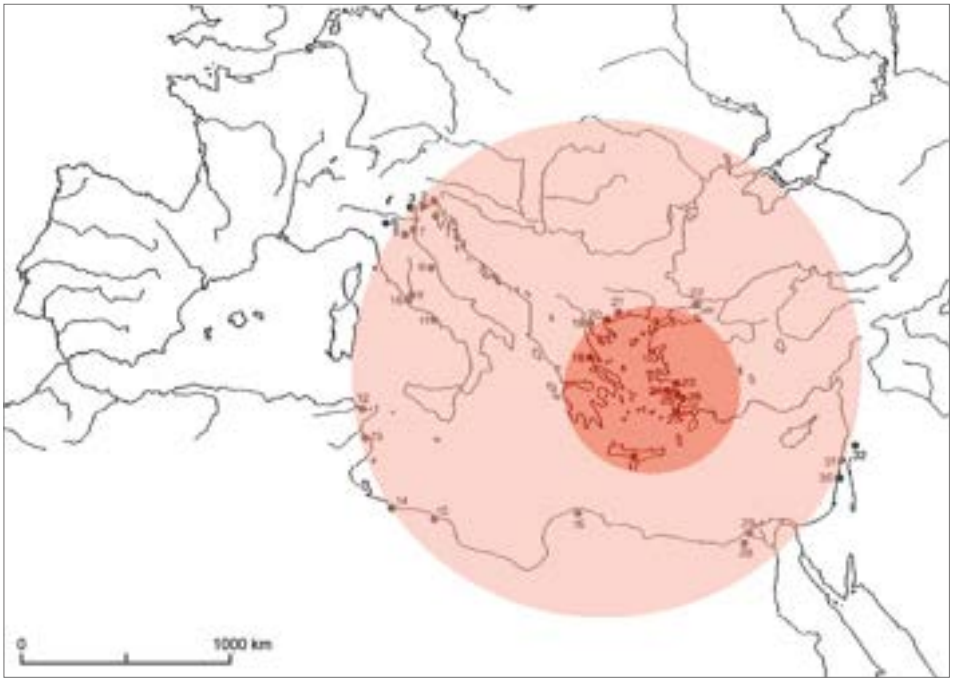

Fig. 6. Map showing the diffusion of red *cipollino* (After Andreoli et al. 2002: 18, Fig. 16, processing D. Peirano)

with those of the nave. Among them, a book-matched slab made of red *cipollino*, aligned with other marble panels, was originally placed in front of the altar, while strips of Iasian red *cipollino* framed on three sides two book-matched slabs of Prokonnesian marble, placed on the axis of the apse. The *cipollino* strips were cut by the oblique Turkish-era platform and thus, in all likelihood, had been part of the original setting of the presbytery, subsequently transformed by the Turks. A reconstruction of the presbytery barriers, solea and ambo proposed by Xydis (1947: 23–24, Fig. 32) some decades ago, as well as a more recent suggestion by Stichel (2010: 30, Fig. 3; 31, Fig. 4), assigned these elements to the solea that linked the presbytery and the ambo [*Fig. 9*].

Paul the Silentiary, in his description of the ambo of Hagia Sophia, provided information about the arrangement of marbles used in its furnishings. The screens enclosing the solea were made of *verde antico*, and the posts, cymatium, and stylobate of *pavonazzetto*.[5] His praise of the furnishings refers both to the entire composition, compared to a marble meadow (Mango 1972: 96, line 256), and to its details. The images invoked are vivid: coils in red and white, with an intermediate color in between, are compared to snakes twining and winding over a pale marble background (Mango 1972: 96, lines 267–269); a few verses further on, Paul admires "the natural markings of the stone that resemble in their changeful lines the moon and the stars" (Mango 1972: 96, lines 273–274).

A similar intent to mark and delineate sacred spaces and paths is recognizable in the stylobate of the templon in the basilica of St. John in Ephesos [*Fig. 10*]. The templon was built over the saint's tomb, bathed in light from many windows around the base of the central dome above it (Thiel 2005: 42–48, 110). Owing to its location at the intersection of the arms of the cruciform church, the templon was indisputably the focal point of the church layout. Here the wavy, horizontal veins of red *cipollino* were used not only to frame the sacred enclosure, but also to bolster its dramatic effect.

Fig. 7. Floor of the presbytery in the Cathedral of Euphrasius in Poreč (After Terry 1986: Fig. 2)

5 A post which Guiglia Guidobaldi has associated with the solea fence was reused in masonry that raised the entire area of the bema, transforming it into the Ottoman mihrab (Sodini, Barsanti, and Guiglia Guidobaldi 1998: 352, Fig. 40; Flaminio 2004: 620–621 contra Mathews 1971: 97).

Although a full reconstruction of the original elevation of the templon is impossible,[6] it is clear that the stylobate and bases, made of red *cipollino* with horizontal veins, were contemporary to the Justinianic church. They were designed to bear full-height columns and they match the lower diameters of the columns of *verde antico* and gray marbles preserved in the modern reconstruction. At least some screens between the columns were likely of the openwork type (Sōtēriou 1922: 174, Fig. 47). Their textures would have contributed to the profoundly dra-

Fig. 8. Iasian marbles in Hagia Sophia: a – wall cladding in the galleries with the upper *fascia* made of red *cipollino*; b – tiles in window archivolts of the galleries; c – book-matched panels in the endonarthex (Photos D. Peirano)

6 In fact, the templon blocks used in the contemporary reconstruction are dated to the 11th century; the column capitals too are evidently a late work.

matic visual impact of the templon arrangement.

In addition, the solea at the basilica of St. John was mainly made from *pavonazzetto* blocks [*Fig. 11*]. Research has shown that in some cases *pavonazzetto* was used as an alternative to red *cipollino*, particularly when the purplish cement in the *pavonazzetto* predominated over the white/cream clasts it enclosed (Berti and Peirano 2023: 9). Owing to the use of this material, the solea visually extended the red *cipollino* stylobate of the presbytery.

On the Greek mainland, some evidence of the presence of Iasian marble was found in Nea Anchialos, around or within the presbyteries of basilicas A (Berti and Peirano 2023: 9) and C.[7] Thanks to a collab-

Fig. 9. Hagia Sophia: a – remains of the solea in the later east platform (Photo D. Peirano); b – reconstruction of the original placement of red *cipollino* in the presbytery (After Mainstone 1988: 232–233, Fig. 252 (detail), processing D. Peirano)

Fig. 10. Presbytery of the basilica of St. John in Ephesos with the stylobate and bases made of red *cipollino* (Photo D. Peirano)

7 References to the basilicas are found in Karagiorgou 2001: 187–191 and related bibliography.

oration with the Archaiologiki Etaireia and the Ephorie of Magnesia, it was possible to study the Iasian marble slabs that decorated the presbytery of the basilica C [*Fig. 12*]. The presbytery, dating back to Justinian's time, was coeval with the second enlargement of the church (Lazaridēs 1988: 93). Located at the end of the large, three-aisle basilica, which was in all probability the city's cathedral, the presbytery was *pi*-shaped and preceded by a short solea (*prostoon*). Its short sides were paved with bands of white, veined marble framing medium-large slabs of red *cipollino*. The latter varied in length and width. However, as the preserved *opus sectile* panels featured intricate motifs, and those lost were likely similar in appearance, the differences in dimensions must have been almost imperceptible. The red marble (monochrome, *cipollino*) also appears in these panels as hexagons constituting central elements of radial motifs. The ciborium and high barriers probably also hindered perception of the size differences between the slabs within and outside the presbytery. The *synthronon* seems to have been covered with tiles of red *cipollino* alternated with white veined marble. At least some of the slabs were of Prokonnesian origin (Barbin et al. 2018: 313–314).[8] In the short solea preceding the presbytery, *verde antico* was added to the red and white veined marbles [*Fig. 13*]. The slabs, cut with a saw blade, were remarkably thin (2.7 cm). However, a comparison with the blocks preserved next to the workshop in which they probably had been sawn using a multi-blade water-powered saw (Berti, Molinari, and Peirano 2022: 248–250; see also above) has revealed that floor slabs made there were thicker (4–10 cm) and, rather than with a saw, were worked with a traditional carver's tool, leaving the underside rough. Thus, it seems that the Nea Anchialos slabs were originally conceived as wall revetments not necessarily intended for a paired arrangement. This may also explain their varied di-

Fig. 11. *Pavonazzetto* block in the solea of the basilica of St. John in Ephesos (Photo D. Peirano)

8 Prokonnesian marble was also used to make two fold-type impost capitals with à jour work found in the naos; they stood on Prokonnesian bases (Sōtēriou 1933: 50–51, Fig. 3; Karagiorgou 2013: 159, note 19).

mensions and the fact that the easternmost slabs on both sides each consisted of two pieces of marble. The slabs were ultimately used in flooring, but soon their reduced thickness and resulting fragility fostered the need for repairs [*Fig. 14*].

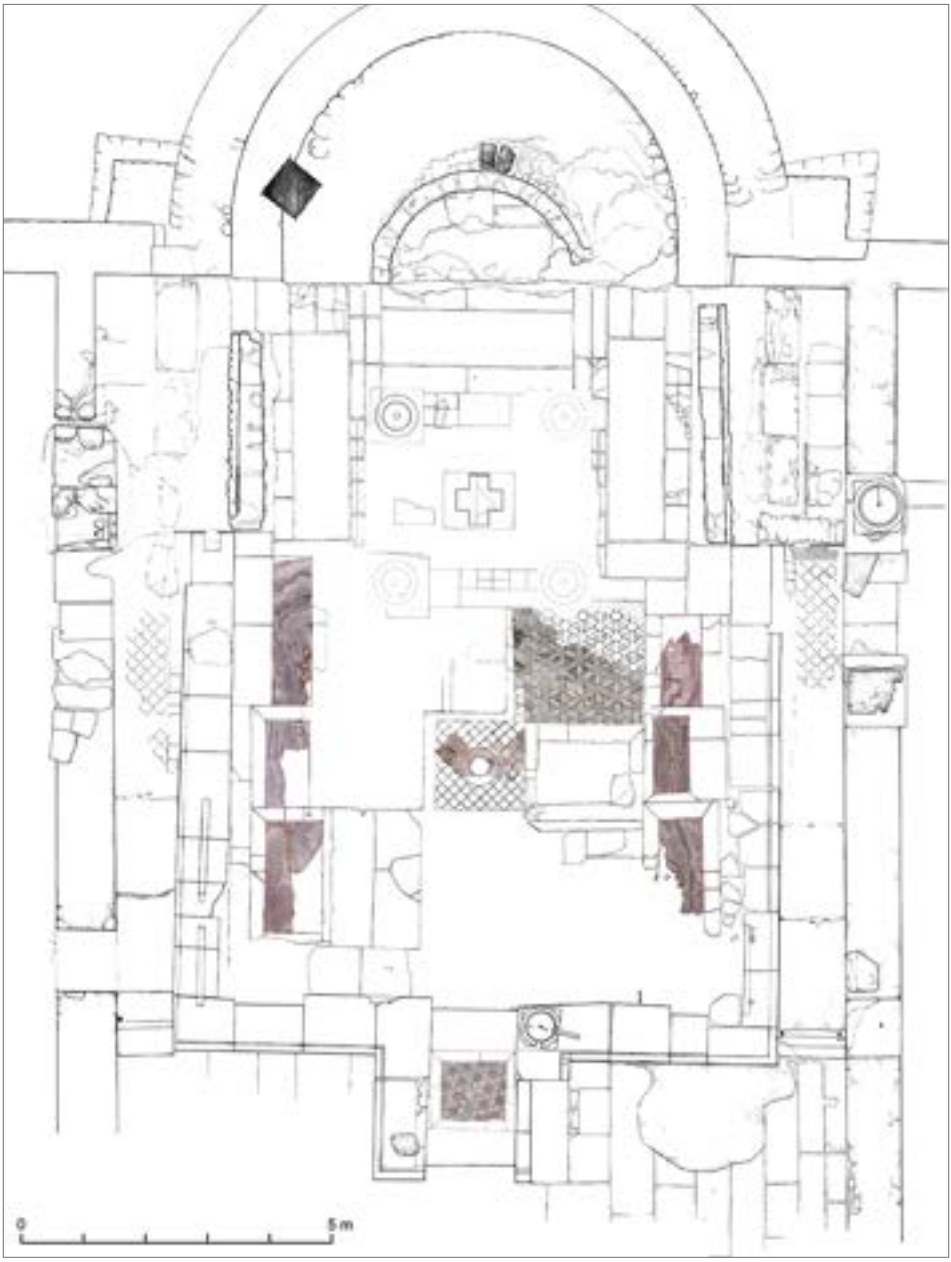

Fig. 12. Plan of the presbytery of basilica C in Nea Anchialos with photos of Iasian marble fragments overlaid (Drawing P. Lazaridis, photos D. Peirano)

CONCLUSIONS

In the Justinianic era, Iasian marble began to be used more frequently; in ecclesiastical complexes commissioned by eminent patrons, this stone was used not only in wall cladding, but also in flooring, sometimes as geometric tiles, in other instances as fillets or large slabs. The latter were used together with marble *listelli* to frame presbyteries and to delineate paths and boundaries. In the solea of Hagia Sophia, fillets made of *cipollino* were used together with barrier slabs to enclose a corridor typically reserved for readers, singers and presbyters. In two examples, basilica C in Nea Anchialos and St. John's basilica in Ephesos, large, red marble elements were used alongside high barriers to delimit areas reserved for presbyters. Generally, it seems that the vivid colors and wavy veins of Iasian marbles rendered these stones suitable for marking and delimiting space. Their use in compositions with other stones, especially colorful or clearly veined ones, as well as with openwork slabs, contributed to the dramatic effect achieved in the decoration of sacred precincts in churches.

Fig. 13. *Prostoon* preceding the presbytery of basilica C in Nea Anchialos (Photo D. Peirano)

Fig. 14. Slab from basilica C in Nea Anchialos presbytery showing ancient repairs (Photo D. Peirano)

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References

Andreoli, A., Berti, F., Lazzarini, L., and Pierobon Benoit, R. (2002). New contributions on Marmor Iassense. In L. Lazzarini (ed.), *Interdisciplinary studies on ancient stone: ASMOSIA VI. Proceedings of the Sixth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Venice, June 15–18, 2000* (pp. 13–18). Padua: Bottega d'Erasmo

Attanasio, D., Bruno, M., Prochaska, W., and Yavuz, A.B. (2021). *Göktepe marbles: White, black and two-tone*. Rome: "L'Erma" di Bretschneider

Baldoni, D. (2005). Una colonna a Leptis Magna: alcune considerazioni sul *marmor iassense*. *Libyan Studies*, 36, 107–116

Barbin, V., Herrmann, J.J., Mentzos, A., and van den Hoek, A. (2018). Calcitic marble from Thasos and Proconnesos in Nea Anchialos (Thessaly) and Thessaloniki (Macedonia). In D. Matetić Poljak and K. Marasović (eds), *ASMOSIA XI: Interdisciplinary studies of ancient stone. Proceedings of the Eleventh International Conference of ASMOSIA, Split, 18–22 May 2015* (pp. 311–320). Split: Arts Academy

Barry, F. (2007). Walking on water: Cosmic floors in Antiquity and the Middle Ages. *The Art Bulletin*, 89(4), 627–656

Berti, F., Molinari, M., and Peirano, D. (2022). L'acquedotto di Iasos (Caria) nella tarda antichità e la grande cisterna sull'acropoli, con alcune premesse sul sistema idraulico urbano. In E. Tamburrino (ed.), *Aquam ducere IV: Proceedings of the International Conference "Water and the Roman Cities and Settlements" (Feltre, 3rd–4th November 2017)* (pp. 241–256). Rasai di Seren del Grappa (BL): Edizioni DBS

Berti, F. and Peirano, D. (2014). Il marmo iasio e alcuni tra i manufatti a esso collegati. *Marmora*, 10, 45–57

Berti, F. and Peirano, D. (2016). Iasos di Caria e il rilancio del suo porto in età bizantina: il ruolo del marmo. *Hortus Artium Medievalium*, 22, 178–189

Berti, F. and Peirano, D. (2023). New research on Iasian marble. In A.B. Yavuz, B. Yolaçan, and M. Bruno (eds), *ASMOSIA XII. Proceedings of the XII. ASMOSIA International Conference of 8–14 October 2018, Izmir, Dokuz Eylül University, Desem Halls, İzmir-Türkiye* (pp. 3–12). Izmir: Dokuz Eylül University

Bruno, M. (2012). Quarry blocks in *marmor Iassense* from the Balık Pazarı at Iasos (Turkey). In A. Gutiérrez Garcia-M., P. Lapuente Mercadal, and I. Rodà de Llanza (eds), *Interdisciplinary studies on ancient stone: Proceedings of the IX Association for the Study of Marbles and Other Stones in Antiquity (ASMOSIA) Conference (Tarragona 2009)* (pp. 706–714). Tarragona: ICAC

Farioli Campanati, R. and Borboudakis, M. (2005). La decorazione pavimentale e parietale della Cattedrale di Gortyna (Creta): nuovi elementi di datazione del pavimento musivo della navata. In H. Morlier (ed.), *La mosaïque gréco-romaine IX* (pp. 165–171). Rome: École française de Rome

Flaminio, R. (2004). Gli elementi marmorei di reimpiego. In A. Guiglia Guidobaldi and C. Barsanti (eds), *Santa Sofia di Costantinopoli: l'arredo marmoreo della grande chiesa giustinianea* (pp. 533–634). Vatican City: Pontificio istituto di archeologia cristiana

Harrison, R.M. (1986). *Excavations at Saraçhane in Istanbul* I. *The excavations, structures, architectural decoration, small finds, coins, bones and molluscs*. Princeton, NJ–Washington, DC: Princeton University Press; Dumbarton Oaks Research Library and Collection

Karagiorgou, O. (2001). Demetrias and Thebes: The fortunes and misfortunes of two Thessalian port cities in late antiquity. In L. Lavan (ed.), *Recent research in late-antique urbanism* (=*Journal of Roman Archaeology Supplementary Series* 42) (pp. 183–215). Portsmouth, RI: Journal of Roman Archaeology

Karagiorgou, O. (2013). "Christian" or "Thessalian" Thebes: The port city of late antique Thessaly. In J. Albani and E. Chalkia (eds), *Heaven & earth: Cities and countryside in Byzantine Greece* (pp. 157–167). Athens: Hellenic Ministry of Culture and Sports; Benaki Museum

Kiilerich, B. (2012). The aesthetic viewing of marble in Byzantium: From global impression to focal attention. *Arte Medievale*, IV serie (2), 9–28

Lazaridēs, P. (1988). Anaskafē Phthiōtidōn Thēvōn. *Praktika tēs en Athēnais Archaiologikēs Hetaireias*, 143, 81–93

Lazzarini, L. (2004). *Pietre e marmi antichi: natura, caratterizzazione, origine, storia d'uso, diffusione, collezionismo*. Padua: CEDAM

Lazzarini, L. (2009). Specie lapidee: i marmi della Villa del Casale. *CRPR Informa*, 7/8, 22–24

Mainstone, R.J. (1988). *Hagia Sophia: architecture, structure and liturgy of Justinian's great church*. London: Thames and Hudson

Majeska, G.P. (1978). Notes on the archeology of St. Sophia at Constantinople: The green marble bands on the floor. *Dumbarton Oaks Papers*, 32, 299–308

Mango, C.A. (1972). *The art of the Byzantine Empire 312–1453: Sources and documents*. Englewood Cliffs, NJ: Prentice-Hall

Masturzo, N. (1995). Architettura siriana pre-giustinianea: la chiesa dei SS. Sergio, Bacco e Leonzio. Problemi interpretativi e di conservazione. In *XLI corso di cultura sull'arte ravennate e bizantina: Seminario internazionale sul tema: "Ravenna, Costantinopoli, Vicino Oriente", Ravenna, 12–16 settembre 1994* (pp. 369–386). Ravenna: Edizioni del Girasole

Mathews, T.F. (1971). *The early churches of Constantinople: Architecture and liturgy*. University Park: Pennsylvania State University Press

Peirano, D. (2018). Iasos and Iasian marble between late antique and early Byzantine times. In D. Matetić Poljak and K. Marasović (eds), *ASMOSIA XI: Interdisciplinary studies of ancient stone. Proceedings of the Eleventh International Conference of ASMOSIA, Split, 18–22 May 2015* (pp. 99–106). Split: Arts Academy

Pentcheva, B.V. (2011). Hagia Sophia and multisensory aesthetics. *Gesta*, 50(2), 93–111

Schibille, N. (2014). *Hagia Sophia and the Byzantine aesthetic experience*. Farnham: Ashgate

Serin, U. (2004). *Early Christian and Byzantine churches at Iasos in Caria: An architectural survey*. Vatican City: Pontificio istituto di archeologia cristiana

Sodini, J.-P., Barsanti, C., and Guiglia Guidobaldi, A. (1998). La sculpture architecturale en marbre au VI[e] siècle à Constantinople et dans les régions sous influence constantinopolitaine. In N. Cambi and E. Marin (eds), *Acta XIII Congressus Internationalis Archaeologiae Christianae* (pp. 301–376). Vatican City–Split: Pontificio istituto di archeologia cristiana; Arheološki muzej

Sōtēriou, G. (1922). Anaskafai tou Vyzantinou Naou Iōannou tou Theologou en Efesō. *Archaiologikon Deltion*, 7, 89–226

Sōtēriou, G. (1933). Peri tōn en Nea Agchialō Anaskafōn. *Praktika tēs en Athēnais Archaiologikēs Hetaireias*, 88, 46–57

Stichel, R.H.W. (2010). Die Hagia Sophia Justinians, ihre liturgische Einrichtung und der zeremonielle Auftritt des frühbyzantinischen Kaisers. In F. Daim and J. Drauschke (eds), *Byzanz—Das Römerreich im Mittelalter* II.1. *Schauplätze* (pp. 25–57). Mainz: Verlag des Römisch-Germanischen Zentralmuseums

Terry, A. (1986). The *opus sectile* in the Eufrasius Cathedral at Poreč. *Dumbarton Oaks Papers*, 40, 147–164

Thiel, A. (2005). *Die Johanneskirche in Ephesos*. Wiesbaden: Reichert

Xydis, S.G. (1947). The chancel barrier, solea, and ambo of Hagia Sophia. *The Art Bulletin*, 29(1), 1–24

Between private and public: The use of marble in Late Antique Caesarea Maritima

Abstract: Late Antique Caesarea was a city of marble. Marble cargoes continued to arrive at the port after the 4th century AD as plain blocks, half-finished or finished products; these constituted a significant addition to the available Roman marble products, which were used as-is or recycled in streets, as well as private, public, and semi-public constructions. Large-scale sawing, cutting and carving took place in Late Antique Caesarea. Craftsmen were employed in producing *opus sectile* panels, in paving, veneering, and carving architectural members, champlevé reliefs and lattice screen panels, and in mounting all marble products comprising the exterior and interior decoration of each complex. In all structures marble was used for similar purposes, although each was unique in terms of quantity, quality, and diversity of the material. The examples discussed show that at every stage of the city's existence the Caesareans were familiar with the most up-to-date fashions and were no less innovative than their counterparts in the region and beyond. The aesthetic principle of *varietas*, which became fashionable in Late Antiquity and was adopted by the Caesareans, found its way from the public to the private and semi-public spheres, and is manifested in most, if not all, of the complexes discussed in this paper.

Keywords: Colored marble stones, marble architectural members, pilasters, wall facing, champlevé reliefs, local production, *opus sectile* workshop, screen panels

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INTRODUCTION

Excavations conducted at Caesarea Maritima since the mid-20th century have yielded a huge amount of whitish, grayish, and colored marble stones, the majority of which were found in Late Antique contexts (5th–7th centuries AD). Extensive use of marble at Caesarea Maritima, a city built by Herod between 22 and 10 BC, started only around the middle of the 2nd century AD, after the city became the capital of the Syria Palaestina province; since then, until the 7th century AD, the use of diverse marble stones steadily increased.

As the amount of the material is enormous and surpasses the scope of one paper, we had to settle for a selection of finds —all from the excavations of the Israel Antiquities Authority (IAA)— with the aim to provide the most comprehensive overview attainable concerning the quantities and varieties of the stones and their usage in Late Antique Caesarea. We had to decide on which examples to focus and which to put aside. Ultimately, it was decided to exclude free-standing sculpture, tabletops and table supports, sarcophagi, and funerary inscriptions, and focus on architectural elements from public, private, and semi-public constructions. The structures chosen to demonstrate the public use of marble in Caesarea of the 5th–7th centuries are colonnaded streets, the Octagonal Church Complex [*Fig. 1:a*], and the portico of a partly excavated complex, probably a bathhouse [*Fig. 1:b*]. The use of marble in the private sphere is demonstrated by finds uncovered in two mansions: a seaside mansion in Insula W2S4 [*Fig. 1:c*], and one that occupied Insula E1S6, next to the theater [*Fig. 1:d*]. The Semi-public Complex in Insula W2S3 [*Fig. 1:e*], located between the Late Antique praetorium and Insula W2S4, closes the discussion.

Fig. 1. Map of Late Antique Caesarea: a – Octagonal Church Complex; b – late 5th century AD portico; c – mansion in Insula W2S4; d – mansion in Insula E1S6; e – Semi-public Complex in Insula W2S3 (Processing R. Gersht and P. Gendelman)

PUBLIC SPHERE

Discussing the public sphere requires a distinction between streets and their sideway porticoes, and public buildings that served Caesarea's communities.

COLONNADED STREETS

To date, it has been possible to identify only four colonnaded streets where marble was in use in Late Antiquity. In

the early 5th century AD, the calcareous sandstone (*kurkar*) column bases, drums and capitals of the Roman colonnade of Decumanus S3 were replaced with marble ones [*Fig. 2:a–b*], at least in the area excavated during the 1990s, between

Fig. 2. Decumanus S3: a, b – IAA 1990s excavations, *in situ* marble column and base (a: photo P. Gendelman; b: IAA | photo T. Sagiv); c – 2023 excavation (Photo P. Gendelman)

Insulae W2S3–W2S4 and W1S3–W1S4.[1] Two months after the submission of this article, another 14-meter-long section of Decumanus S3 between Insulae E1S3 and E1S4 was exposed by one of the authors (P.G.) [*Fig. 2:c*]. The corpus of finds from this recent excavation includes two complete and four fragmentary column shafts, six column bases *in situ* and one out of place, along with eight Corinthian capitals, all made of marble: white, dark gray, grayish with dark gray veins, and *cipollino verde* (*marmor Carystium*). In terms of style, the capitals belong to three different groups: two groups of two capitals each, and one group of four capitals, one of which is unfinished and heavily damaged. Next to the latter, a fragmentary column shaft, also crudely worked, was found. Since the Roman phase of this section of the street was not excavated, it is impossible to know whether the Roman colonnade, if it indeed existed, was made of calcareous sandstone (*kurkar*), as was the case in the previously excavated western parts of this decumanus.

Unlike Decumanus S3, both the Roman Decumanus Maximus, which served as a main east–west oriented street until the Crusader period (12th–13th century AD), and the Roman Cardo Maximus (Cardo 0; Levine and Netzer 1986: 182–183, Fig. 157; Mesqui 2014: 278), which ceased to function as the main north–south oriented street in the late 4th or early 5th century AD, had been adorned with marble architectural members already in the Roman period. However, as only small sections of these streets have been excavated, the number of original Roman elements that remained in use in Late Antiquity is impossible to determine.

Reliable evidence for paving streets in marble was found by Peter Gendelman in 2008. The excavation of a 14-meter-long section of the Cardo Maximus (E3) —dated to the 5th century AD— next to its intersection with the Decumanus Maximus, yielded dozens of recycled architectural members formerly belonging to one or more demolished Roman constructions. The sculpted pieces were mainly laid face-down (Gersht and Gendelman 2019: 55); many were notched with parallel lines, perpendicular to the direction of traffic, to prevent their surfaces from becoming slippery [*Fig. 3*].

The marble architectural members of the colonnaded streets have yet to be studied. However, a significant find worth mentioning is an unfinished, partly broken Corinthian capital (Gersht and Gendelman 2019: 55–56; Gendelman and Gersht 2010: 29–31, Fig. 4). The capital, recovered during the abovementioned 2008 excavation, was found lying on its upper face, next to the northern portico of the Decumanus Maximus. The outlines of its ornamentation were marked with rather deep incisions on all four sides, but the sculpting was not executed. Whatever the reason for leaving the capital unfinished, be it the stone's assumed fragility, insuf-

1 The preliminary observations made by Porath (1996: 114) during the "Caesarea after Two Millennia" symposium in January 1995, and referred to by Bejor (1999: 67), and Burns (2017: 132 and note 87), were offered a few years before the completion of the excavations in 1998; the conclusions, as presented in this study, are refined in the final report (Gendelman and Porath forthcoming).

Fig. 3. Cardo Maximus (E3): recycled marble architectural members as pavement (Photo P. Gendelman)

ficient funds, or lack of skilled craftsmen, the piece clearly manifests the practice of importing capitals in their quarry state, with the intention to complete the carving on the spot. It is impossible to know whether the capital was used at all, nor is it certain that other unfinished capitals were mounted on the street's column shafts, as the excavation exposed only a small section of the northern portico of the Decumanus Maximus.

OCTAGONAL CHURCH COMPLEX

Evidence of using marble in Caesarea's public buildings is much more comprehensive than in its streets. The Octagonal Church Complex, for example, which was built on top of the demolished Temple of Augustus and Dea Roma in the last decade of the 5th century AD, yielded an impressive quantity and variety of marble stones used for *opus sectile* paving, wall facing, screen panels, screen posts, columns, colonnettes, capitals, and bases. A fine corpus of finds uncovered by the Combined Caesarea Expedition (CCE) in the 1989–2003 excavations, conducted by the University of Maryland and the Haifa University, was recently published by Edna Dalali-Amos (2020). Yet the seven-year excavations of the IAA (2015–2021) conducted at the complex by Peter Gendelman, Uzi 'Ad and Muhamad Hater produced a much larger assemblage of marble objects, the majority of which was found within the collapsed vaults at the western façade of the Temple Platform [*Fig. 4*].

A preliminary study of this huge assemblage of marble finds has shown that the greatest variety of stones was employed for making *opus sectile* pieces [see below, *Table 1; Figs 34, 35*], while the slabs mounted on the walls were mainly

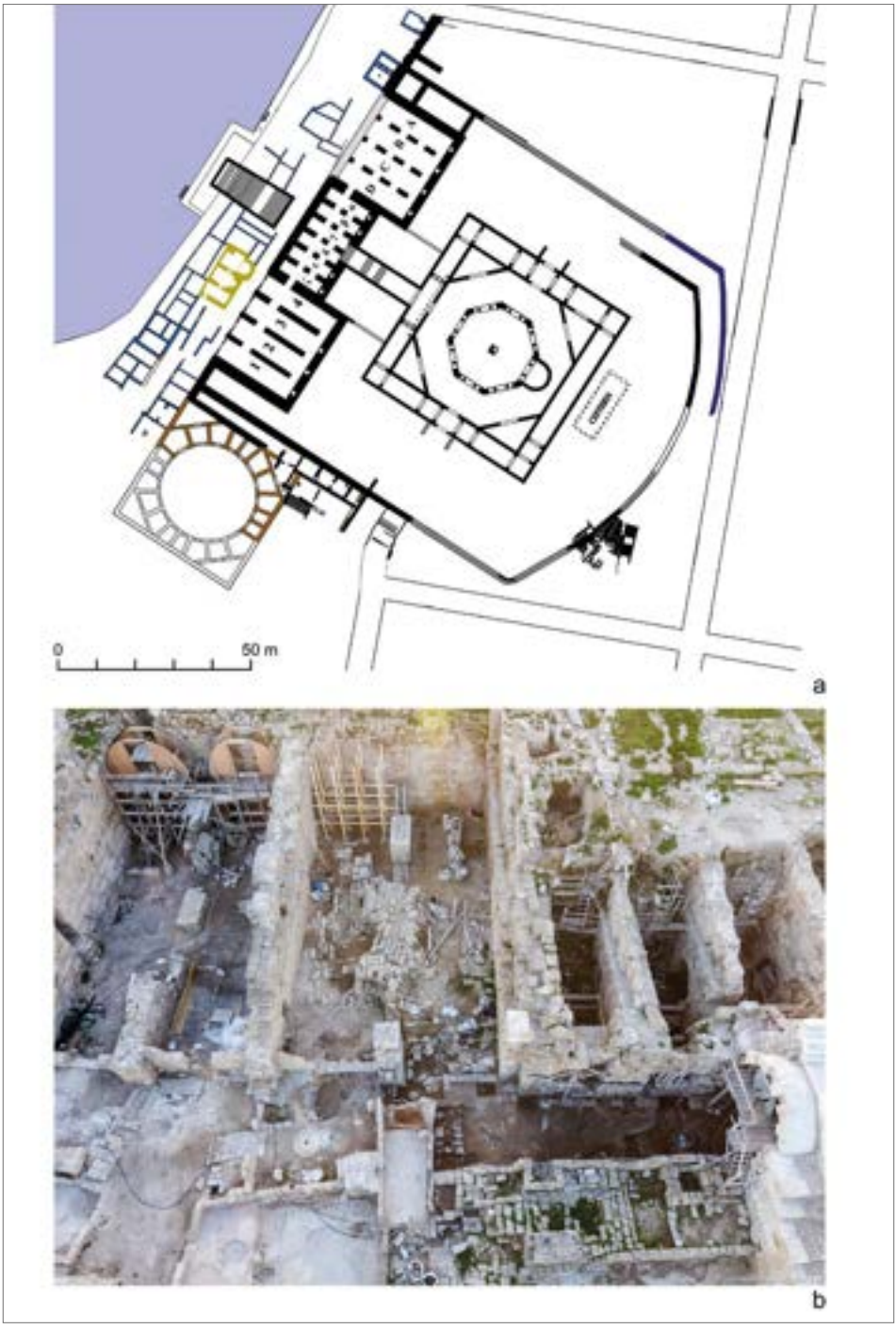

Fig. 4. Octagonal Church Complex: a – ground plan (Drawing A. Iamim and P. Gendelman); b – aerial view of the western façade vaults (IAA | photo A. Peretz)

of whitish and grayish marbles. Many of these slabs preserved dowel holes, some with traces of bronze clasps. Other finds included dozens of molded slabs used as fillet-spacers,[2] a number of fragmentary molded cornices, and champlevé reliefs (see Gersht 2022: 199–202, 205, Figs 7:6, 8, 10:3, 12:2, 13:1–2).

Champlevé reliefs

One of the champlevé reliefs [*Fig. 5:a*] is particularly remarkable, as it shows *peltae* arranged in pairs that alternately face towards and away from each other, forming intermediate spaces in the shape of bifid calyces. These are, likewise, arranged in pairs that alternately face and turn away from one another (Gersht 2022: 205, Fig. 13:1a–b). No other champlevé relief of the kind is known to us, although the pattern itself is attested by many tessellated Roman mosaics (e.g. Levi 1971: Pls 37a, 42a). The rounded upper rim of the relief precludes its use as wall veneer, and since the 2.8 cm thickness is not enough for a screen panel, it has been suggested by Gersht that the fragment belonged to the ambo, a preacher's pulpit, whose base was found in the Octagonal Church by the CCE team in 1998 (Stabler and Holum 2008: 30, Fig. 31; Dalali-Amos 2020: 260, Cat. No. 72).

Fig. 5. Octagonal Church Complex, champlevé reliefs: a – peltae relief and its proposed reconstruction (Photo and processing R. Gersht and P. Gendelman; drawing T. Meltsen); b – pilaster capital (Photo and processing R. Gersht and P. Gendelman)

Another fragmentary champlevé relief [*Fig. 5:b*] is part of a pilaster capital featuring a "mirrored trumpet", a motif also found on champlevé pilaster capitals from Antioch (Stillwell 1941: Pl. 26, Nos 461–462, 473, 477; for other examples from Caesarea, see Gersht 2022: 195–197, Fig. 3:4–7). Only the upper right corner of the Caesarea capital, ornamented with the trumpet motif and acanthus leaves in its lower part, has been preserved. Pilaster shafts and bases found within the collapsed vaults suggest that there were more pilaster capitals of this kind, as well as other ones in bas relief.

Pilaster shafts and bases

Of the fragmentary pilaster bases [*Fig. 6*], one [*Fig. 6:a*], although missing the plinth and upper torus, was unquestionably of the Attic type, akin to the specimen found in Insula W2S3 (see below). Another base

2 Revetment fillet-spacers (termed "projecting billets" by House and Megaw [2007: 217]) were placed both horizontally and vertically to separate and support the fields of wall revetments, always protruding about 1 to 2 cm from the revetment surface (cf. Gwiazda 2015: 129, Fig. 3; Marasović and Marinković 2018: 845–846, Figs 11–12).

[*Fig. 6:b*] preserved part of its plinth with a triangle-shaped left foot (cf. House and Megaw 2007: 206–207, Cat. Nos J35, J41 for similar plinths from the Episcopal Precinct, Kourion). The lower torus is flat, and it is unclear if it was followed by a scotia, or if the molding was composed of a series of bands separated by deep channels.

The pilaster shafts were either fluted or plain, as demonstrated by a fluted fragment of Phrygian *pavonazzetto* (*marmor Phrygium*) [*Fig. 6:c*] and by a plain pilaster carved as one piece together with its Attic-like type base [*Fig. 6:d*]. A fragment of a large Corinthian pilaster capital [*Fig. 7*], with dimensions that probably matched

Fig. 6. Octagonal Church Complex, pilaster shafts and bases (Photos and processing R. Gersht and P. Gendelman)

the size of the base with the plinth with triangle-shaped feet [see *Fig. 6:b*], was found in a destruction layer above a 6th–7th-century floor at the entrance to vault ζ. The capital had the shape of a calathus whose upper part flared to the sides, and it was ornamented with a whole acanthus leaf between two halves. The ridged stem crowned with the inflorescence bud of the acanthus occupies the area between the volutes, while the bud itself is placed at the center of the double-band abacus. Unfortunately, neither the aforementioned fragments nor the other architectural and decorative items excavated by the IAA were recovered *in situ*; the majority were found dumped into the collapsed vaults of the western façade of the Temple Platform.

Marble leftovers

Dozens of leftovers of sawed marble stones with parallel slits were also found within the collapsed vaults [*Fig. 8:a–d*] (Gersht and Gendelman 2019: 58–59).

Fig. 7. Octagonal Church Complex, pilaster capital (Photo and processing R. Gersht and P. Gendelman)

These leftovers showing variation in the width of the slabs indicate that at least a part of the marble slabs for flooring and wall facing were sawed on the spot. The device used for this purpose was a water-powered multi-blade sawing machine, perhaps like the one depicted in the Hierapolis relief, or the original structures fragmentarily preserved in Ephesos and Gerasa (Ritti, Grewe, and Kessener 2007; Kessener 2010: 284–290; 2012). The water needed for operating the machine(s) must have come from one of Caesarea's four aqueducts, either directly or indirectly, via a major water consumer such as a nymphaeum or a public bathhouse (both were available on the spot). The location of the device(s) has yet to be determined.

Not only raw material, but also column shafts were sawed into slabs using the water-powered machine. The slabs obtained were employed in wall revetments and pavements, as well as for manually shaped *opus sectile* pieces. We are convinced that fillet-spacers and cornices, just like the *opus sectile* pieces, were shaped on the spot. Pumice and sandstone abraders found in the area support this hypothesis [*Fig. 8:e–f*] (cf. Rockwell 1993: 48–49; Wootton, Russell, and Rockwell 2013: 9, Fig. 25).

Screen panels and posts

About 160 fragments of screen panels and six screen posts came from the IAA excavation of the Octagonal Church Complex. The largest group of fragments represents openwork panels [*Fig. 9:a–d*]. The lattice strips are sometimes bifid on one or both faces, and sometimes plain; they either intersect or merely touch each other. Based on the diversity of the

screens in terms of width and design, it seems that some, if not all, were made locally. Among the solid fragments, more than half are double-faced [*Fig. 9:e–g*]. The difference in quantity between openwork and solid fragments can be explained by their potential for reuse. The solid panels could easily be reused for flooring, while the lattice ones were only suitable for lime kilns.

Fig. 8. Octagonal Church Complex, marble leftovers and abrasive stones (Photos and processing R. Gersht and P. Gendelman)

In contrast to the large number of screen panels, the Octagonal Church Complex yielded very few screen posts. They differed in dimensions and marble colors: whitish green/*cipollino verde*, whitish gray, and gray [*Fig. 10*]. The small num-

Fig. 9. Octagonal Church Complex, marble screen panels (Photos and processing R. Gersht and P. Gendelman)

ber of screen posts can be explained, to a certain extent, by the deep slots cut into some column bases to receive the screen panels [*Fig. 11*] (for similar bases uncovered by the CCE, see Dalali-Amos 2020: 267, Cat. Nos 13–14). The other posts were likely sawed and reused; at least two posts —one of *cipollino*, and the other of grayish white marble with dark gray veins, perhaps of Prokonnesian origin— were found next to an Umayyad-period lime kiln, within vault D. Another fragmentary screen post uncovered by the CCE is interesting, as it has four grooves, one on each of its faces.

Fig. 10. Octagonal Church Complex, marble screen posts: a – *cipollino verde*; b – whitish-gray marble; c – gray marble (Photos and processing R. Gersht and P. Gendelman)

Edna Dalali-Amos (2020: 286, Cat. No. 77), who studied the piece, suggested that the post had two phases of use. In the second phase, two grooves were added, one in its molded face and the other in the back. How and where the post was used is unclear.

Capitals

Of the capitals uncovered by the IAA team within the Octagonal Church Complex, two groups are of special interest. One comprises medium-size Corinthian capitals bearing a cross either on the calathus in place of helices, or on the boss of the abacus. Neither the capitals, nor their crosses are identical to each other. The most impressive is the *crux gemmata* preserved on a capital boasting beautifully carved lower foliage with eyelets, made of whitish marble with wide, gray veins [*Fig. 12:a*]. In another capital, made of the same marble as the former, the cross is deeply carved into a medallion/shield occupying a large area of the calathus below the boss of the abacus [*Fig. 12:b*]. A cross on a medallion/shield, though carved in high relief, appears on other Corinthian capitals from the Temple Platform area: one was found by Negev, and the other by the CCE (Dalali-Amos 2020: 280–281, Cat. Nos 58–59). These capitals, as well as others from Caesarea with a plain medallion/shield (Fischer 2011: 71, Fig. 26:4–5), belong to a group of Corinthian capitals of the so-called "medallion" type. The type and the motifs adorning the medallion/shield are discussed by Barsanti (2014; 2017). The group of medium-size Corinthian capitals uncovered by the IAA team includes yet another capital, which, unlike the aforementioned ones, bears a cross deeply carved into the boss of the abacus [*Fig. 12:c*]. Assuming that the capitals comprising the group crowned columns encircling the naos of the Octagonal Church, it is plausible that the assortment was an expression of the aesthetic principle of *varietas*, which became fashionable at the time (cf. Niewöhner 2010: 413, 438–441, 447–456, 458–459; 2018).

Fig. 11. Octagonal Church Complex, column bases slotted for screen panels (Photos and processing R. Gersht and P. Gendelman)

Another interesting group of capitals uncovered by the IAA team comprises large basket-type capitals in a quarry state, incised with crosses [*Fig. 12:d*]. Apart from the sketchy crosses, the capitals are devoid of ornamentation.

Fig. 12. Octagonal Church Complex, Corinthian and basket capitals (IAA | photos A. Peretz; processing R. Gersht and P. Gendelman)

One would expect that in a complex as impressive as the Octagonal Church, the capitals, of which the shorter ones were probably used as imposts of an arched gallery, would have been richly ornamented, or at least polished or well smoothed.[3] As a matter of fact, Caesarea yielded several basket-type capitals that were skillfully ornamented with acanthus leaves. One was published by Fischer (2011: 71, Fig. 27), and another, only partly preserved, is on display in the Sdot-Yam Museum. Two more ornamented basket-type capitals were uncovered by the IAA team, one in the front of vault 1, and the other above the Late Antique pavement of Cardo 0, about 30–35 m north of its intersection with Decumanus Maximus and about 40–50 m east of the Octagonal Church Complex [*Fig. 12:e*]. The ornamentation of all four capitals is identical; thus, they undoubtedly formed a set that likely originated from the Octagonal Church Complex.

LATE 5TH-CENTURY PORTICO

While the abovementioned architectural members from the Octagonal Church Complex are all contemporary to the constructions they were part of, those uncovered in the partly excavated portico of a public complex from the late 5th century AD are all *spolia* [*Fig. 13:a*]. The portico, located northeast of the Sebastos port, next to the Northern Gate Tower of the Crusader city, was excavated in 2017–2018 by Uzi ʻAd and Peter Gendelman (ʻAd, Gendelman, and Hai 2020). It yielded four Corinthian capitals, eight column shafts and seven Attic-type column bases, all taken from one or more earlier structures. The capitals are all made of white marble with wide grayish veins, but they differ in ornamentation and relate to different groups or subgroups in Fischer's classification (Fischer 1990). The upper faces of two of the capitals are engraved with Greek letters, one with Θ and the other with ΙΘ.

Two of the capitals bore noticeable remains of red pigment. Some of it was extracted using a scalpel and subjected to SEM-EDS analysis in order to determine if the capitals were gilded.[4] The results showed no trace of gold, but identified the samples as iron oxide, one of the pigments used as a preparation or ground layer prior to gilding, as well as a component of red paint (cf. Zink and Piening 2009: 113; Grupče et al. 2010: 566–568, 571; Siotto 2019: 187, 194). In this case, it seems more likely that the iron oxide had been used as ground for the gilding, which disappeared over time. Analysis of additional samples will hopefully confirm this hypothesis.

Of the monolithic column shafts recovered, six are of grayish or grayish-white marble with dark gray veins, perhaps of Prokonnesian origin. Of the

3 For examples of ornamented capitals of this kind in Istanbul and on other sites, see Kautzsch 1936: Pls 37:586–588, 38:617–618, 630, 632, 39:651, 653, 41:675, 677; Firatli 1990: 118–119, 121–123, Cat. Nos 223–224, 227–231; Barsanti and Paribeni 2018: Figs 36, 37, 51.

4 The samples were collected by Ahuva Beeri and analyzed by Tomer Reuveni using a Quanta 200 FEG environmental scanning electron microscope at The Wolfson Applied Materials Research Centre, Tel-Aviv University.

other two, one is of Phrygian *pavonazzetto* marble, and the second is of red Aswan granite. Although in Caesarea these two stones are less common than Prokonnesian marble, they are attested in other architectural members, sculpture and *opus sectile* pieces recovered from the city ruins. Three of the column shafts that stood on the western side of the portico each bear two Greek letters on their undersides: ΚΓ, ΚΔ, ΚΕ.

The Attic-type bases are carved of grayish-white marble with dark gray veins. Two of the bases located on the

Fig. 13. Late 5th century AD portico: a – general view (IAA | photo A. Peretz); b – Attic-type base with a depression (Photo P. Gendelman)

western side of the portico each bear a pair of Greek letters, ΙΔ and ΚΗ, incised into their upper faces. On three of them, pairs of peculiar, shallow, elliptical depressions were cut into the lower tori [*Fig. 13:b*]. The purpose of these marks remains unexplained. Equally baffling are the rectangular holes cut into the scotia on one of these objects. Otherwise, the Attic-type bases are rather similar in profile and execution.

The assemblage of Roman architectural members associated with the colonnade of the portico dated to the 5th century AD is another illustration of the abovementioned aesthetic principle of *varietas*. The four pairs of letters —ΚΓ, ΚΔ, ΚΕ, and ΚΗ— on three column shafts and one column base suggest that the four members belonged to one set, while the Θ and ΙΘ on the Corinthian capitals and the ΙΔ on the column base belonged to one or two additional sets. The surviving non-consecutive marks and the absence of marks on the other twelve members uncovered in the excavation likely resulted from the reuse of marked Roman architectural members, and perhaps also from the fact that only a small part of the portico was excavated.

PRIVATE SPHERE

The large and spacious mansions of the elite, each boasting at least one triclinium, a peristyle court, a garden, and a private bath, were decorated with marble no less abundantly than the public constructions. In all mansions, floors were paved and walls were faced with *opus sectile* and marble panels, and the porticoes of the peristyle courts were supported by marble columns. All mansions yielded screen panels, but unlike those from the Octagonal Church Complex, the ones from private buildings were mainly solid, with one or both faces decorated, often with crosses and other emblems from the typical repertoire of Late Antique screen panels. They varied in dimensions and function; some were used to separate one space from another, to reduce the size of large openings, to hide potentially dangerous facilities, to line the edges of galleries, and to define areas within gardens and courtyards.

The tesserae and *sectile* pieces for floor- and wall mosaics of each mansion were cut and assembled on the premises. Evidence for this practice is a temporary *opus sectile* workshop that functioned in the first half of the 7th century AD in one of the rooms of the mansion occupying Insula W2S4 (Gersht and Gendelman 2019: 57, Fig. 5a; Gendelman and Porath 2022: 181, 190). The room was allocated for use as a workshop as part of the owner's preparations for a major renovation project planned for his property. However, the work stopped abruptly and the temporary workshop was sealed shortly before the house was abandoned. The abandonment may have been caused by one of the major events that affected Caesarea, the AD 614–628 Sassanian conquest of the province, or the conquest of Caesarea by the Muslims in AD 640/641; more likely the latter.

When the IAA team excavated the room, a large number of broken *opus sectile* panels, originally prepared for the

mansion's walls, were found lying on the floor along with stone and iron tools, a substantial quantity of tesserae, stone and glass raw materials, and *spolia* (mainly of marble) collected to produce *sectile* pieces and tesserae (Dray 2011; Gersht and Gendelman 2019: 57; 2021: 134).

MANSION OCCUPYING INSULA W2S4

The three-level mansion in Insula W2S4 (Porath 2008: 1660–1661; Gendelman and Porath 2022) was in use from the late 4th or early 5th century AD until the first, or more likely the second, quarter of the 7th century AD. It occupied most of the Insula (about 7200 m²) and yielded a huge amount of marbles in spite of continual stone looting activity and damage caused by later intrusions [*Fig. 14*]. Piles of marble items, intended either for lime kilns [*Fig. 15:a*], which the looters constructed within the triconch triclinium [*Fig. 14:3*], or for reuse in Caesarea or elsewhere, were found during the excavation of several spaces inside the mansion [*Fig. 15:b*]. Luckily, for obscure reasons, the robbers failed to carry out their intentions.

In both phases of the mansion's existence, all parts of the residential unit were paved with tessellated mosaics, in which the gray tesserae were of marble, and with *opus sectile* mosaics made using white marble and a large variety of gray and whitish marble pieces with gray veins [*Fig. 16*]. The northern entrance [*Fig. 14:1*], the pool [*Fig. 14:2*], the fountain of the peristyle court [*Fig. 14:4*], the "marble court" [*Fig. 14:5*], and the northern sidewalk of the pergola in the mansion's lower-level garden [*Fig. 14:8*] were all paved with marble slabs.

That the aesthetic principle of *varietas* found its way from the public to the private sphere is manifested by the architectural members of the peristyle court, where Prokonnesian and *cipollino* column shafts were mounted on Attic-type bases and crowned with Corinthian capitals. Some of the column shafts bear traces of ancient repair; a few are marked with Greek letters, but their small number allows no logical interpretation of their meaning.

Some walls of the mansion were decorated with plain revetment plaques, whose remains are still preserved in the triconch triclinium [*Fig. 14:3*], the lower-level garden pergola [*Fig. 14:7*], the peristyle court, and the "marble court" [see *Figs 14:4–5*]. However, more striking were the colored champlevé reliefs, which ornamented the walls of the mansion in both its phases. A large marble fragment, measuring about 0.60 m x 0.84 m when intact [*Fig. 17:a*], was found covering a gutter in the north part of the mansion (Gersht and Gendelman 2019: 62–63, Fig. 8b; Gersht 2022: 203, Fig. 11:2); it was likely one of the panels decorating the mansion in the early phase of its existence. The workmanship of this piece is rather good, but the overall design is imprecise. The pattern consists of two rhombuses, one within the other. The inner one is decorated with a flower that has four petals, two of which are elongated. The larger rhombus and the triangular spandrels, each housing a double-headed axe, are bordered with rows of spindles arranged in uneven zigzags.

Another large marble fragment was found lying on the floor of the western

apse of the triconch triclinium (Gersht 2022: 198–199, Fig. 7:2). Its decoration consisted of squares or rectangles bordered by a swastika-meander adorned with four-petaled flowers and a wide, plain outer band. The same pattern

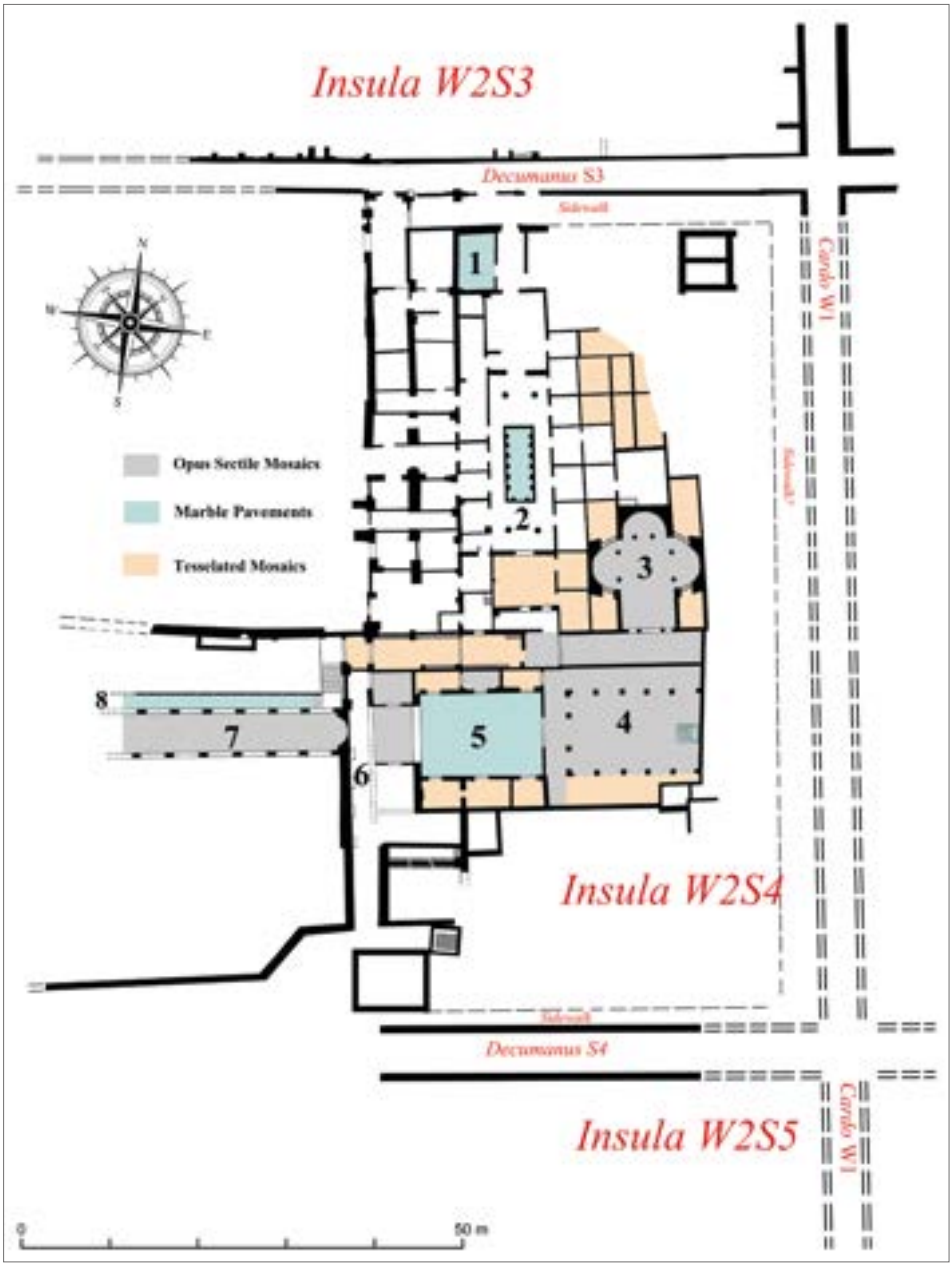

Fig. 14. Insula W2S4 mansion, ground plan (Drawing R. Mishaev and P. Gendelman)

appears on six additional champlevé fragments [*Fig. 17:b*], of which two were found in the peristyle court next to the triconch triclinium, and the other four in the vicinity of the northern entrance [see *Fig. 14:1*] and the pool [see *Fig. 14:2*].

Fig. 15. Insula W2S4 mansion, piles of looted marble items (a: IAA | photo T. Sagiv; b: IAA | photo A. Peri)

This pattern seems to be a simpler version of the double latchkey meander separating figural rectangles on a number of champlevé panels from Seleucia Pieria, Antioch (Stillwell 1941: Pls 20–21, Nos 395, 397, 401, and 404).

Fragments of several Corinthian pilaster capitals decorated in the cham-

Fig. 16. Insula W2S4 mansion, *opus sectile* pavements (Photos P. Gendelman)

Fig. 17. Insula W2S4 mansion, champlevé reliefs (Photos and processing R. Gersht and P. Gendelman)

Fig. 18. Insula W2S4 mansion: a–d – champlevé pilaster capitals; e – sunken relief depicting a krater with an emerging plant (Photos and processing R. Gersht and P. Gendelman)

Fig. 19. Insula W2S4 mansion, screen panels from the fountain in the peristyle court (a, b: photos and processing R. Gersht and P. Gendelman; c: IAA | photo T. Sagiv)

Fig. 20. Insula W2S4 mansion: a–c – screen panels from the "marble court" and exedra; d – ground plan and proposed reconstruction for the screens' display; e – Attic-type base; f – balustrade screen (a–d, f: photos and processing R. Gersht and P. Gendelman; e: IAA | photo A. Peri)

plevé technique [*Fig. 18:a–d*] indicate that at a certain point at least one space in the mansion was adorned with pilaster columns, bases, and capitals. In three of the fragments [*Fig. 18:a–c*], like in the champlevé pilaster capital

Fig. 21. Insula W2S4 mansion, screen panels and posts (Photos and processing R. Gersht and P. Gendelman)

from the Octagonal Church Complex [see *Fig. 5:b*], the abacus was ornamented with the "mirrored trumpet" motif. One of these pieces [see *Fig. 18:a*] retained one of the two crosses, which had originally occupied the areas between the volutes and the helices (Gersht 2022: 196, Fig. 3:4).

An interesting piece is a sunken relief depicting a krater with an emerging plant, of which only a part of the stem survived [*Fig. 18:e*]. The slanted position of the vase and of the bands bordering it suggests that it was part of a frieze framing an arch, and that a mirror image of the vase with the plant occupied its right side.

More than 20 ornamented and several plain screen fragments, some molded frames, a few pieces of openwork (lattice) screen panels, and a small number of screen posts came from this mansion. The corridor and the peristyle court in front of the triconch triclinium yielded a number of small fragments, of which two are carved on both faces. Large fragments of a pair of screens were found in the pool at the eastern end of the peristyle court [see *Fig. 14:4*]. One features a Maltese cross with *fleurs-de-lys* within a laurel wreath adorned with unfurled ribbons ending in ivy leaves [*Fig. 19:a*] (cf. the chancel screen from the monastery at Beth Shean in Russo 1987: Fig. 66). Of the other fragment, less than half survived, showing a part of a palm- or fishbone-like wreath and a ribbon terminating with an ivy leaf [*Fig. 19:b*]. Assumedly, the pair lined the north and south sides of the pool, which may explain why their inner faces lack decoration [*Fig. 19:c*].

The court west of the peristyle court yielded fragments of three screens with crosses. Assuming that the screens indeed belonged in this court, and given that two of the screens were about 2.5 times shorter than the third one, the most reasonable place for their original display would have been the entrance to the exedra, which measured 6.20 m in width [*Fig. 20:a–d*]. Such a wide opening required the support of two columns. It is thus possible that the wider screen was placed between the columns, while the narrow ones were attached to the lateral walls. This arrangement left enough room for entering and leaving the exedra on either side of the pair of columns.

The western portico [*Fig. 14:6*], which overlooked the garden, had pedestals attached to its outer wall. These pedestals carried marble column shafts placed on Attic-type bases with vertical channels in their sides to hold balustrade screens — either solid, plain ones or open ones with colonnettes [*Fig. 20:e–f*]. The latter type, of which only one fragment survived, could have also been used as a banister of the upper landing of stairs leading from the garden to the house [see *Fig. 15:b*]. The garden housed a pergola more than 26 m long [*Fig. 14:7*]. Rectangular ashlar pillars supporting its roof had cavities on their eastern and western faces, meant to hold wooden partitions for closing the pergola on its northern and southern sides. The stylobate of the sidewalk adjoining the pergola to the north, on the other hand, had a row of rectangular cavities cut every two meters to hold screen posts.

Four complete marble screen posts and at least two fragments of ornamented marble screens were found in the garden [*Fig. 21*]. One fragment [*Fig. 21:b*] is carved with a scallop shell motif on one face and with a knot composed of three interlaced eight-shapes on the other; each design is inscribed within a *clypeus*/shield. A fragment of another screen panel shows a small section of the lower part of a laurel wreath [*Fig. 21:c*].

The most challenging finds from the mansion in Insula W2S4 are two fragmentary marble items [*Fig. 22:a–b*] uncovered in the northern part of the complex, where the looters piled marble items taken from the southern and western parts of the mansion [see *Fig. 15:a*]. When intact, both had the shape of rectangles with four rounded corners, and each had a shallow channel on the long axis, which widened to a circular depression close to the edge.

Fig. 22. Enigmatic items in the shape of a rectangle with four rounded corners: a, b – Insula W2S4 mansion; c – Octagonal Church Complex (Photos and processing R. Gersht and P. Gendelman)

The item, the upper right side of which survived, had a deeply carved branch on each side of the channel [see *Fig. 22:a*]. The other item, of which the lower half was preserved, was ornamented with two crosses [see *Fig. 22:b*]. These two fragments are among six of the kind uncovered at Caesarea. Of the remaining four, one was found in the Semi-public Complex in Insula W2S3 [see below, *Fig. 32:a*], the second came from the Octagonal Church Complex [see *Fig. 22:c*], the third was recovered during Yeivin's 1951–1957 excavations at the so-called Byzantine Esplanade (unpublished), and the last one, whose findspot is unknown, came from Negev's 1959–1961 excavations (unpublished). An additional, fragmentary object of this type, decorated with a bird to the left of what looks like a tripod pedestal, was found in Jerusalem (Mazar and Peleg 1999: 71–72; Mazar 2003: 241, Photo III.47, Fig. III.13a–b). Attempts were made to determine the function and meaning of these enigmatic objects, but since none of them were found *in situ* and all efforts to find additional parallels have failed, the riddle seems impossible to decipher.

MANSION OCCUPYING INSULA E1S6

The two seasons of excavations (November 2013 and April–May 2015) conducted by Peter Gendelman and Uzi 'Ad did not permit to expose the whole complex within Insula E1S6 (Gendelman and 'Ad 2020). Still, the finds collected from the three excavated areas are enough to serve as convincing testimony to the impressive mosaic floors, wall decoration and immobile furniture the residence once had.

The excavations yielded fragments of five screen panels, but not a single fragment of a screen post. Three of the screen panels bore similar decoration, but the fragments of only one of them permit to appreciate its uniqueness. It is a large openwork panel bordered by dentils and ornamented with an elaborate design, to which no parallels have yet been found [*Fig. 23:a*]. Its 23 fragments, although comprising less than half of the original panel, turned out to be sufficient for reconstructing the whole design and for estimating the original dimensions of the panel [*Fig. 23:b*]. When intact, the screen panel featured two medallions, each consisting of two intersecting concave poised squares forming an inner concave octagon inscribed with a kind of barbed quatrefoil flower. Sixteen lotus flowers occupied the peripheral spaces formed by the intersection of the concave poised squares and by the inner margin of spindles. Smaller spindles separated from each other by hollow circles adorned the outer margin of each medallion and the whole area between the medallions.

The exact context of display of this extraordinary panel with the dentilled border, and of its two counterparts, is unknown. The findspot of the fragments, east of the frigidarium court of the bath unit, allows the assumption that the three screen panels belonged with the furnishings of the court dating from the late 5th/early 6th century AD. The court was paved with a colorful *opus sectile* mosaic, and its walls were faced with marble plaques, whose remnants were found piled in the south-

east corner of the court and next to its western wall. It thus seems reasonable to conclude that such a luxurious space would have been equipped with these elegant screen panels.

The *sectile* pieces uncovered in the frigidarium court and its immediate proximity were cut from a variety of stones. The ones found in destruction layers indicate that other rooms were also paved in the *opus sectile* technique. Walls not only retained fragments of grayish marble plaques, but also holes drilled to receive bronze clasps that

Fig. 23. Insula E1S6 mansion: a – large openwork panel (Photo and processing R. Gersht and P. Gendelman); b – reconstruction (Drawing T. Meltsen)

served to lock the plaques into position. Some of the large revetment fragments found in destruction layers have remains of such clasps on their edges. The protuberant molded borders [*Fig. 24:a*] were likely utilized as cornice and/or bottom margin segments, and the fillet-spacers with rounded fronts [*Fig. 24:b*] separated and supported the rows of marble plaques attached to the walls all the way from the bottom margin to the upper cornice. Fragments of a Corinthian pilaster capital and a champlevé relief indicate that not only plain marble plaques, but also reliefs were used for facing the mansion's walls.

Fig. 24. Insula E1S6 mansion: molded borders, fillet-spacers and pilaster capital (Photos and processing R. Gersht and P. Gendelman)

Although only the upper left corner remains of the pilaster capital [*Fig. 24:c*], it is obvious that the plaque was rectangular, whereas the capital, as evidenced by the slanted carving on the left, had the shape of an upturned isosceles trapezoid. Carvings of trapezoid pilaster capitals on rectangular plaques are attested already for the Roman period. An example from Aquileia is dated by Scrinari (1952: 28–29, Cat. No. 17) to the first decades of the 1st century AD. Another specimen of early Roman date is a limestone pilaster capital found in the ruins of the western cavea of Herod's circus at Caesarea, next to the sphendone (Gendelman and Gersht 2010: 29, Fig. 3a). Another Roman example is a pilaster capital from Via dei Molini at Ostia, dating to the mid-2nd century AD (Freyberger 1990: 93–94, Cat. No. 222, Pl. 33a). A later example, a 5th–6th century AD *kurkar* (calcareous sandstone) pilaster capital, was found at the entrance to the *horreum* located in Insula W2S4, Caesarea (Gendelman and Gersht 2010: 29, Fig. 3b). The findspot of the Insula E1S6 capital on top of the Late Antique mosaic pavement of room L1544, indicates that it was in use until the abandonment of the mansion in AD 640/641; it cannot be excluded that the capital belonged to an earlier setting before being reused in the room of its discovery.

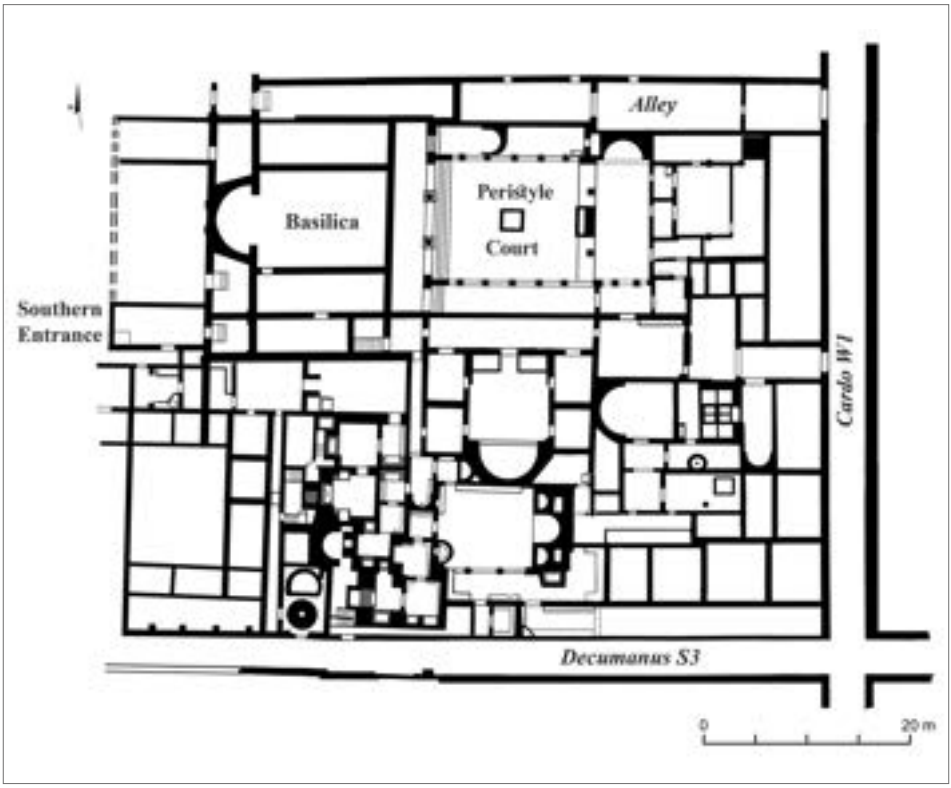

Fig. 25. Semi-public Complex in Insula W2S3, ground plan (Drawing R. Mishaev and P. Gendelman)

SEMI-PUBLIC SPHERE

The Semi-public Complex in Insula W2S3,[5] which probably served a *collegium* of the Christian community from the 5th to the 7th century AD [*Fig. 25*] (Gersht and Gendelman 2021), is the best illustration of the meaning behind the title of this paper, "Between private and public", in terms of marble use at Caesarea. In contrast to the other complexes discussed above, the Semi-public Complex was fully excavated. An enormous amount of marble was uncovered in this complex, and quite a lot was found *in situ*, mainly as part of floors and on the lower parts of walls. Still, this seems to be only a fraction of the quantities that the complex had originally contained before the stone robbery started. All architectural members: door posts, columns (bases, shafts, and capitals), pilaster capitals and bases, and most of the immovable furnishings —screen panels, screen posts, and fountain spouts— were made of white or gray marbles. The only exceptions are the dolomite pedestals of the peristyle court in front of the basilica.

The study of the massive amount of marble found in this complex led to observations akin to those for the Octagonal Church Complex: the largest variety of stones was used for producing *opus sectile* pieces, while the slabs of wall cladding were of whitish and grayish marble, with the exception of wall veneer in the main hall of the basilica, which was of *cipollino verde* (Gersht and Gendelman 2021: 105, 139, Figs 4, 32). Many of the slabs preserved dowel holes, some with traces of bronze clasps. Molded slabs used as pilaster bases, fillet-spacers, and cornices were also found, along with a number of plaques carved in the champlevé technique (e.g. Gersht and Gendelman 2021: Figs 5c–d, 6c, 9, 28b; Gersht 2022: 195, 198–199, 202, Figs 2, 6, 10:1).

PILASTER CAPITALS

A large number of pilaster capitals came from different parts of the complex. They represent several types varying in size, style and technique. A few fragmentary specimens [*Fig. 26:a–c*], essentially belonging to one type of rectangular capitals, were found in various parts of the complex. Each was adorned with a single row of lobed acanthus leaves —a whole leaf amid halves— above a narrow, recessed band. The tips of the lower lobes, V-shaped in section, by touching the tips of the adjacent lobes create two vertical rows of alternating lozenges and concave rectangles between the leaves, all deeply cut into the background. None of the rectangular capitals preserved its volutes, helices, or abacus. Due to the fragmentary state of preservation and scattering of the pieces, no reliable suggestions can be offered regarding the original location of the capitals.

A subtype of the rectangular pilaster capitals with a single row of acanthus leaves is represented by a pair of capitals that originally flanked the inner side of the main entrance to the hall of a large

5 The study of the Semi-public Complex in Insula W2S3 was made possible by generous research funding (Grant No. 31/10) granted to the authors by the Israel Science Foundation (ISF).

basilica [*Fig. 26:d–e*]. The basilica was demolished in Antiquity, but a substantial amount of its ornamentation was discarded into its ground floor, where it was found buried beneath late-7th century AD agricultural lots [see *Fig. 25*]. This subtype presents a bifid-band abacus, fleshy lobes with V-shaped sections, and a stylized bud filling the area between each volute and helix. The two capitals are similar in size but differ in details; the most prominent differences lie in the design of the volutes and probably also the helices, and in the deep, drilled holes accentuating the buds, which are present in the fragmentary capital, but absent in the almost intact specimen. The better-preserved capital retained red pigment and a few gold specks.

Bud-like elements are also present on two other pilaster capitals [*Fig. 26:f–g*], which belong to another type: larger, with wavy lateral faces, and with two rows of leaves. The original location of this pair of capitals was likely on both sides of the entrance to the apse in the main hall of the aforementioned basilica [see *Fig. 25*]; they are similar to one another in size and decoration, but the marble (so it seems) and the workmanship are different. The abacus of the better-preserved capital [see *Fig. 26:f*] is decorated with the beads-and-reels motif and a centrally placed Maltese cross within a medallion; a four-petal flower occupies the area between the helices and the acanthus leaves of the second row. Traces of gold are visible below the flower. The abacus of the second capital [see *Fig. 26:g*] is composed of two plain bands —one flat, and the other pointed— and likely also had a cross at its center, as well as a four-petal flower below. Traces of gold within and around the left volute indicate that this capital was likewise gilded.

Of eight pilaster capitals that originally ornamented the north and south walls of the basilica, only four are preserved [*Fig. 27*]. These specimens were also gilded, as indicated by laboratory analyses. Powder samples of red pigment, gold, and stone were collected from one of these capitals using a scalpel and subjected to SEM-EDS analyses.[6] The results showed that the capital was painted red (minium = lead oxide, or red lead, Pb_3O_4 = $Pb^{2+}2Pb^{4+}O_4$) and then coated with gold leaf (Au).[7]

The techniques of gilding objects sculpted in marble, whether free-standing statues or reliefs, were alike. Gold leaf could be laid directly on the marble or on top of one or even two preparation layers. In the case of two preparation layers, the first was a white ground, and the second consisted of yellow or red pigments. The latter imparted visual warmth to the gold, which otherwise would have had a greenish tinge (Abbe 2015: 179). Notably, in the capital from Insula W2S3, lead was detected where red pigment did not survive, therefore it may be assumed that in this case lead white ($2PbCO_3{\cdot}Pb(OH)_2$) was employed

6 The samples were collected by Ahuva Beeri and analyzed by Dr. Zhava Barkay at The Wolfson Applied Materials Research Centre, Tel-Aviv University, using a Quanta 200 FEG environmental scanning electron microscope.

7 On the use of minium as a base layer for gilding, see Abbe 2013: 109; Fink-Jensen 2013: 52.

Fig. 26. Semi-public Complex in Insula W2S3, pilaster capitals (Photos and processing R. Gersht and P. Gendelman; drawing M. Shuiskaya)

Fig. 27. Semi-public Complex in Insula W2S3, pilaster capitals (Photos and processing R. Gersht and P. Gendelman; drawing M. Shuiskaya)

Fig. 28. Semi-public Complex in Insula W2S3, pilaster bases (Photos and processing R. Gersht and P. Gendelman)

as an additional preparation layer under the red pigment.[8] However, more samples must be analyzed to verify this assumption.

Caesarea was not the only place where Late Antique Christian settings featured gilded architectural members. Over a dozen fragments of gilded pilaster capitals, which originally were part of the architectural decoration of a Byzantine church, were found at Athribis (now Benha), Egypt (Górecki 2017: 242). In addition, tiny fragments of gold leaf over a red ground layer were observed on two pilaster capitals uncovered in the Episcopal Precinct, Kourion (House and Megaw 2007: 204–205, Cat. Nos J26, J28).

In spite of the variety in pattern details, style and technique, all four surviving pilaster capitals that ornamented the north and south walls of the W2S3 basilica belonged to one type. In shape they resemble a calathus whose lower part is almost rectangular and the upper flares to the sides. Decoration survived in full on two capitals [*Fig. 27:a–b*]: on one it consists of two halves of leaves flanking a lattice-like flower, whose four petals are shaped like acanthus leaves; on the other, the halves of leaves flank two rows of lattice-like, toothed acanthus leaves. Of the other two pilaster capitals, only the left sides survived. In one [*Fig. 27:d*], a half of an acanthus leaf consists of three fleshy lobes with leaves V-shaped in section; in the other [*Fig. 27:c*], the trimmed tips of the lower lobe of a half of a serrated leaf touch those of the central acanthus leaf, thus forming three hollowed circles at the meeting points. In both capitals the central floral element was drilled to resemble latticework (cf. Kramer 1994: Cat. Nos 1, 24, Pls 1, 4). As no two capitals look exactly alike, they may definitely be interpreted as an additional case of *varietas* (cf. Niewöhner 2018: 240–241).

The search for parallels has shown that the four Caesarea plaques are part of a large group of pilaster capitals (Kramer 1994: Cat. Nos 1, 3–22, 24–25, 50–53, Pls 1–4, 9; Niewöhner 2010: Cat. Nos 10, 11, 18–20, 22–23; 2013a: 228–231; 2013b: 44–45, Figs 9–12; 2014: 253–255), which were produced in many variations in workshops or at destinations by craftsmen connected with the Dokimeion quarries (Herrmann and Tykot 2009: 63–64, Figs 7–8). The marble of the Caesarea pilaster capitals has not been analyzed, so their Dokimeian origin remains hypothetical.

PILASTER BASES

Four of the six pilaster bases selected for discussion [*Fig. 28:a–d*] came from the demolished basilica; the other two [*Fig. 28:e–f*] were found in the southeastern service area of the large bath, not far from a lime kiln; the place of their original display within the complex is unknown. Although only three of the six pilaster bases preserved their full or nearly full height, it is apparent that all fragments belonged to the Attic type, featuring a plinth surmounted by a lower and upper torus with a scotia in between. A whitish-gray marble base, preserved in two joining fragments that

8 For the use of lead white as a preparation layer in gilding sculpture, see Karydas et al. 2009: 821, 823; Abbe 2013: 109.

comprise three quarters of the complete plaque, retained all of these features [see *Fig. 28:d*]. In another base, made of the same marble and represented by three joining fragments, the plinth is missing and the sides of the scotia were supplemented with hemispherical ornaments, of which only one partly survived [see *Fig. 28:a*]. Unlike in the abovementioned base, in which the upper torus is thinner than the lower one [see *Fig. 28:d*], in this base both tori are alike in thickness. In contrast to the high molding of the fragmentary bases from the demolished basilica, the molding of the fragments from the southeastern part of the large bath is flat [see *Fig. 28:e–f*], although in one example [see *Fig. 28:f*] the drilled channels are deeper.

PILASTER SHAFTS

The lack of pilaster shafts that might complement the capitals and bases adorning the walls of the demolished basilica is worthy of a comment. A plausible reason for their absence is that they had plain faces, and their width was the same throughout their height; such features hinder their identification (Gersht and Gendelman 2021: 103).

A fragment of an ornamented pilaster shaft [*Fig. 29*] carved of gray marble with dark gray veins was found close to the southern entrance of the complex, which led via a portico to the ground-floor apodyterium. The entrance itself had been washed away by the sea, but a large part of the tessellated mosaic floor of the portico survived. The findspot and the width of the shaft (30.9 cm) permit to assume that the pilaster originally adorned the entrance. A three-band molding at the lower end of the fragment suggests that the pilaster shaft was placed on a base or, more likely, a pedestal. Both the base/pedestal and the capital that had crowned the shaft are missing. The only surviving trace of the shaft's ornamentation is a depiction of a lower part of a vase. It features a foot, composed of a globular element on top of a downturned, cup-like base, and a tiny section of the body. The depiction is somewhat distorted, possibly due to the craftsman's unskillfulness.

Fig. 29. Semi-public Complex in Insula W2S3, ornamented pilaster shaft (Photo and processing R. Gersht and P. Gendelman)

SCREEN PANELS

Apart from the screen panels discussed in an overview of the decorative program of the complex (Gersht and Gendelman 2021), the excavation yielded a number of fragments, mainly small ones, whose findspots provided no clues as to their original location within the Late Antique complex. One fragment shows a head of a dolphin, which likely occupied the whole length of the screen [*Fig. 30:a*]. Dolphins are rarely depicted on screen panels; an example of a dolphin depicted as the sole motif is found on one face of a screen panel reported from a church at Sussita (Russo 1987: 214–215, Fig. 75). Dolphins also appear

Fig. 30. Semi-public Complex in Insula W2S3, screen panels (Photos and processing R. Gersht and P. Gendelman)

Fig. 31. Semi-public Complex in Insula W2S3, screen panels (Photos and processing R. Gersht and P. Gendelman)

at the corners of a screen panel from the double basilica at Aliki, Thasos (e.g. Sodini and Kolokotsas 1984: 82, Fig. 85).

Another fragment of interest shows two stylized clusters of a laurel wreath and part of a third one, each emerging from the other [*Fig. 30:b*]. The hollow space within the wreath featured an openwork design, probably a double cross, as indicated by the smoothed spaces between the preserved parts of the motif. Examples of openwork in the centers of otherwise solid screen panels are known from other sites as well. In a chancel screen from Katalymata ton Plakoton in Cyprus, for example, the lattice design is of a double cross (Nicolaou 2013: 164, Fig. 5), and in a fragmentary chancel screen from the church of Bishop Johannes at Horbat Barqa, Gan Yavne, Israel, it likely depicted a Maltese cross with *fleurs-de-lys* between its arms (Habas 2016: 130*–131*, Figs 11–15).

A laurel wreath enclosing a Maltese cross with *fleurs-de-lys* between its arms appears on a solid panel screen uncovered in the western portico of the peristyle court facing the basilica in the Semi-public Complex (Gersht and Gendelman 2021: Fig. 15b). Like in the panel from Insula W2S4, each of the wreath's ribbons ends with an ivy leaf [*Fig. 30:c*].

Fig. 32. Semi-public Complex in Insula W2S3: a – enigmatic item in the shape of a rectangle with four rounded corners; b – waterspout with dolphins (Photos and processing R. Gersht and P. Gendelman)

A Maltese cross is depicted on the other face of the panel. Both the cross and the scallop shell, another Christian emblem, are recurring motifs on screen panels from the Semi-public Complex. On four panels, the cross is carved on top of a *clypeus*/shield; one screen has its other face decorated with a scallop shell encircled by a palm/fish-bone wreath [*Fig. 31:a*]. On another panel, the cross on top of the Golgotha hill is flanked by a pair of fallow deer with their heads lowered as if to drink water from invisible streams [*Fig. 31:b*].[9]

MISCELLANEA

The assemblage of marble fragments of unclear function and meaning found in the Semi-public Complex includes one specimen belonging to the aforementioned group of rectangular objects with four rounded corners [see *Fig. 22*]. About three-quarters of this item survived [*Fig. 32:a*]. In addition to the partially preserved shallow channel expanding into a circular depression, the fragment has a comma-shaped concavity in its lower part. A much larger depression occupied the upper part. A similar depression as well as a comma-shaped concavity must have been carved on the missing left side. Unlike the other fragments belonging to this group, this object has a crude underside with prominent tool marks.

All fountains and bathtubs in the Semi-public Complex had marble waterspouts, but only a few were found. These finds have the shape of a lion's head or of a furrowed, slanting shelf flanked by two leaping dolphins [*Fig. 32:b*]. Dolphin-shaped waterspouts were attested, but less common are the furrowed slanting shelf spouts flanked by diving dolphins. The Caesarea spout adorned with dolphins has two known parallels: one, found in 'En Ya'al, was reused in an early Islamic farmhouse built on top of the remains of a Byzantine building (Edelstein 1993: 116, figure on page 119). The second, a fragment made of limestone, was found in a bath south of the praetorium in Gortyn, Crete. It is unclear to which phase of the bath this spout belonged: the first phase dating to the second half of the 4th century AD, or the second phase dating to the second half of the 6th century AD (Bejor et al. 2016: 89–90, Fig. 35a–b). A 5th–6th century AD variant with two dolphins is known from Istanbul (Firatli 1990: 175–176, Cat. No. 357, Pl. 106); another example of a waterspout with a single depiction of a surfing dolphin on top of a cubic block of marble ornamented on three sides with fish carved in relief was found in Imperial-period Corinth (44 BC – early 3rd century AD; Robinson 2013: 377, Fig. 19).

CONCLUSIONS

Even today, no matter where one enters the archaeological site of Caesarea, the immediate impression is that it was a city of marble [*Fig. 33*]. Needless to say, what is observable there nowadays is only a fraction of what was found and even less of what had existed in Caesarea in Late Antiquity.

9 Cf. the panel with two gazelle bucks in Elbern 1979: 638.

We can safely conclude that after the 4th century AD marble cargoes continued to arrive in Caesarea as either plain blocks or as half-finished or finished products, although from fewer quarries than before. A sunken cargo of dozens of marble slabs from the Byzantine period found south of Kibbutz Sdot-Yam corroborates this conclusion. The reuse, recycling and reshaping of the marble obtained from Roman contexts broadened the choice of colored stones, enhancing the appearance of Late Antique public, private and semi-public constructions.

Sawing, cutting and carving of marble stones took place in Late Antique Caesarea on a large scale. All sorts of craftsmen worked simultaneously to

Fig. 33. Assortment of architectural members seen on the site (Photos P. Gendelman)

produce *opus sectile* panels, to pave, veneer and carve architectural members, champlevé reliefs, and lattice screen panels, and, finally, to assemble all marble components of the exterior and interior decoration of each complex. In all structures —public, private, and semi-public— marble was used for similar purposes, yet each structure was unique with regard to the quantity, quality and diversity of material.

The examples discussed show that at every stage of the Late Antique city's existence the Caesareans were familiar with the most up-to-date fashions, and were no less innovative than their contemporaries in the region and beyond. The aesthetic principle of *varietas*, which became fashionable in Late Antiquity, was also adopted by the Caesareans. The principle found its way from the public to the private and semi-public spheres, and manifested itself in most, if not all, of the complexes discussed above. The champlevé reliefs reveal a certain affinity with some of the reliefs found at Antioch, but the assortment of motifs is different and richer at Caesarea (for more examples, see Gersht 2022), suggesting that most, if not all, were carved on the spot.

An interesting feature is the large number of screen panels uncovered in private and semi-public complexes, contrary to other sites in the Land of Israel, where screen panels are mostly found in ecclesiastical contexts. Even more interesting is the disparity in the repertory of motifs, which are richer and more elaborate in the private and semi-public spheres compared to what was found in the Octagonal Church Complex. Symbols and compositions, such as the cross within a wreath, and the Golgotha hill flanked by a pair of animals, known from screens found in religious contexts at other sites, are found in private and semi-public constructions at Caesarea; those uncovered in the Octagonal Church Complex are mainly openwork panels.

The Attic-type column base, whether sculpted in the round or in relief, is the dominant type at Caesarea, as are Corinthian capitals. Among the latter, it was possible to identify imported fully carved items, contemporary with the complex of their display, *spolia*, and locally carved pieces.

As for the wall and floor decoration, there is a consistency in the kinds of stones used for different purposes. Slabs used as wall cladding, including the champlevé reliefs and pilaster columns, were mainly of whitish and grayish crystalline marbles, often with gray veins, but *cipollino* slabs were also used, as in the main hall of the demolished basilica in Insula W2S3. The greatest variety of stones was recorded among the *opus sectile* pieces. In addition to the white and gray marbles, the complexes discussed in this study yielded a rich assortment of colored stones. As the stones have not been analyzed, the identification of the examples [***Table 1***] is based on published identifications by Borghini, Corsi, Lazzarini, and others.[10]

The table presents 30 colored stones selected from a much larger number that had originally decorated various rooms of three complexes: the Octagonal Church Complex, the mansion in Insula E1S6, and the Semi-public Complex in Insula W2S3. The mansion occupying Insula W2S4 yielded

10 We are extremely grateful to Lorenzo Lazzarini and Dagmara Wielgosz-Rondolino for their enlightening and useful comments.

Table 1. Selected colored stones from the Octagonal Church Complex (OCC), the mansions in Insulae W2S4 and E1S6, and the Semi-public Complex in Insula W2S3

No.	Stone	OCC	W2S4	E1S6	W2S3	References
1	*Africano / marmor luculleum*	✓			✓	Borghini 1992: 133–135, No. 1; Corsi 2012: No. 110; Beltrame and Lazzarini 2020: Figs 7, 18
2	Alabaster of unknown provenance	✓	✓		✓	Cf. Corsi 2012: No. 316
3	Alabaster of unknown provenance, somewhat resembling *alabastro Palombara*	✓				Cf. Borghini 1992: 148, No. 8; Corsi 2012: No. 311
4	*Alabastro cotognino / lapis alabastrites, lapis onyx*			✓	✓	Borghini 1992: 140–141, No. 4; Corsi 2012: Nos 297–299
5	Brecciated limestone of unknown provenance	✓	✓			Cf. Lazzarini 2007: 108, Fig. 7; 2019: 385, stone 33; Corsi 2012: No. 132
6	*Bigio antico / marmor Lesbium*	✓	✓	✓		Corsi 2012: Nos 147–148
7	*Fior di pesco / marmor Chalcidicum*				✓	Lazzarini 2007: chapter 13
8	*Breccia nuvolata rosa*				✓	Borghini 1992: 176, No. 30; Lazzarini 2002: 58–60
9	*Cipollino rosso, marmor Iassense, marmor Carium* brecciated				✓	Borghini 1992: 289, No. 127; Corsi 2012: No. 389
10	*Breccia di Settebasi*	✓		✓	✓	Borghini 1992: 192–193, Nos 46a, 46c; Lazzarini 2007: chapter 11; Corsi 2012: Nos 405, 406
11	*Breccia corallina*	✓			✓	Borghini 1992: 166, No. 22a; Lazzarini 2002: 60–63; Corsi 2012: No. 404
12	*Breccia di Settebasi*				✓	Borghini 1992: 192–193, No. 46.b; Lazzarini 2007: chapter 11
13	*Broccatellone*			✓		Corsi 2012: No. 448; Younes and Lazzarini 2023: 308, Fig. 10d
14	*Cipollino rosso, marmor Iassense / marmor Carium*	✓		✓	✓	Borghini 1992: 207, No. 59a; Corsi 2012: Nos 95, 97; Younes and Lazzarini 2023: 310, Fig. 10g
15	*Cipollino verde / marmor Carystium, marmor Styrium*	✓	✓	✓	✓	Borghini 1992: 202–203, No. 56c; Lazzarini 2007: chapter 12; Corsi 2012: No. 90
16	*Africano / marmor luculleum*	✓			✓	Borghini 1992: 133, No. 1b; Beltrame and Lazzarini 2020: Fig. 7

Table 1. Continued

No.	Stone	OCC	W2S4	E1S6	W2S3	References
17	*Giallo antico / marmor Numidicum*	✓	✓		✓	Corsi 2012: No. 25
18	*Giallo antico / marmor Numidicum* brecciated	✓	✓		✓	Borghini 1992: 214–215, No. 65a; Corsi 2012: Nos 23, 32
19	*Granito del Foro / marmor Claudianum*	✓				Borghini 1992: 222–223, No. 72; Antonelli, Lazzarini, and Cancelliere 2010; Corsi 2012: Nos 847, 848
20	*Granito rosso antico*, sienite */ lapis pyrrhopoecilus, lapis Thebaicus*	✓				Borghini 1992: 225–226, Nos 74a, 74c; Corsi 2012: Nos 839, 840
21	*Granito verde a erbetta* or serpentinite			✓		Klemm and Klemm 1993: 376–378, color Fig. 13.2 (for serpentinite); Borghini 1992: 228, No. 76; Corsi 2012: No. 828 (for *granito verde*)
22	*Greco scritto*	✓		✓	✓	Attanasio et al. 2012: Fig. 3
23	Possibly *greco scritto* (Cap de Garde)	✓	✓		✓	Borghini 1992: 237, No. 83; Antonelli et al. 2009: Figs 1, 3; Corsi 2012: No. 100
24	*Lumachella antica, occhio di pavone bigio / marmor Triponticum*	✓			✓	Lazzarini 2002; Corsi 2012: 221
25	*Lumachella antica / occhio di pavone rosso / marmor Triponticum*				✓	Borghini 1992: 260–262, No. 107a; Lazzarini 2002; Corsi 2012: No. 220
26	*Pavonazzetto* (Afyon violet)	✓	✓		✓	Borghini 1992: 264–265, No. 109c; Corsi 2012: No. 123; Çelik and Sert 2020: Fig. 3c
27	*Porfido rosso antico / lapis Porphyrites*	✓	✓		✓	Borghini 1992: 274, No. 116; Corsi 2012: No. 783
28	*Porfido verde antico, serpentino antico / marmor Lacedaemonium, lapis Lacedaemonius, Krokeatis lithos*	✓	✓		✓	Borghini 1992: 279–280, No. 121a; Corsi 2012: No. 797
29	Possibly *Portasanta / marmor Chium*	✓				Borghini 1992: 285–287, No. 125b; Corsi 2012: No. 81
30	*Verde antico / marmor Thessalicum, lapis Atracius*	✓			✓	Borghini 1992: 292–293, No. 130; Corsi 2012: No. 566

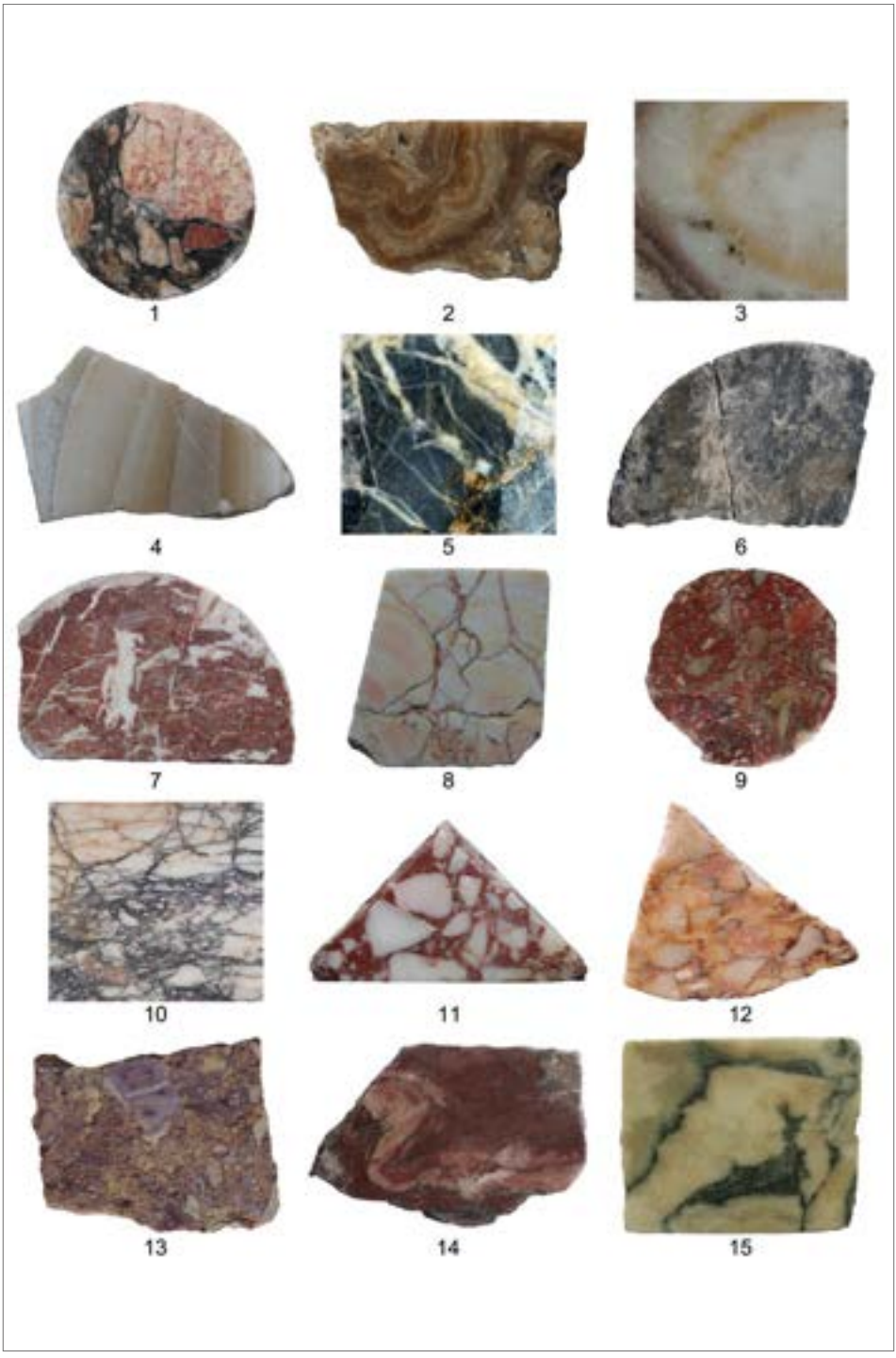

Fig. 34. Selected colored stones (Photos and processing R. Gersht and P. Gendelman)

Fig. 35. Selected colored stones (continued) (Photos and processing R. Gersht and P. Gendelman)

diverse white and gray marble stones but no evidence of *opus sectile* wall facing. Nonetheless, given that the *sectile* panels found in the W2S4 temporary workshop were intended for the decoration of the mansion, we decided to include in the table also the colored stones that we managed to identify among the workshop's broken panels.

Although these 30 examples do not provide a full picture of the inventory of colored stones in Late Antique Caesarea, they still allow some insights regarding the origin of the stones and their manifestations in the four complexes. Provided that the identifications of the marbles are correct, the table shows that most of the colored stones arrived at Caesarea from quarries in Asia Minor [*Figs 34–35:1, 8, 9, 11, 13, 14, 16, 22, 24, 25, 26*], mainland Greece and Aegean islands [*Figs 34–35:6, 7, 10, 12, 15, 28, 29, 30*], and Egypt [*Figs 34–35:4, 19, 20, 21, 27*]. A few arrived from the provinces of Africa and Numidia (modern Tunisia and Algeria) [*Fig. 35:17, 18, 23*]. The origin of Nos 2, 3 [*Fig. 34:2, 3*] and 5 [*Fig. 35:5*] in [*Table 1*] is unclear, and the origin of at least some of them might be confirmed by future archaeometric analyses. The pie chart [*Fig. 36*] shows the relative shares of the colored stones according to the aforementioned geographical regions.

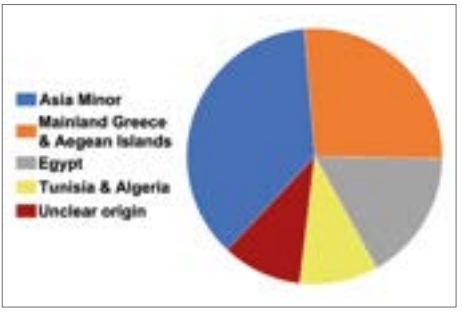

Fig. 36. Relative shares of colored stones according to geographical regions (Processing R. Gersht and P. Gendelman)

Table 1 also shows that the greatest variety of stones came from the public and semi-public complexes. The limited diversity of materials in the W2S4 workshop is due to the fact that most of the *sectile* shapes found there were cut out of white and grayish marbles, multilayered limestone, red silicified sandstone (probably from the quarries of Gebel Ahmar), and slate. All of these were also found among the *opus sectile* tiles uncovered in the Octagonal Church Complex, the mansion in Insula E1S6, and the Semi-public Complex in Insula W2S3. A fact worth mentioning in the context of the limited variety of colored stones from Insula E1S6 is that the mansion was only partly excavated, hence the colored stones in *Table 1* reflect only a fraction of what would have been found, had the mansion been excavated completely. It is also worthy of note that some of the colored marble stones listed above were also used for producing architectural members, mainly column shafts and screen posts, some of which are discussed in this study. The same, however, applies to tabletops, table supports, statues and reliefs, which, as explained in the introduction, were excluded from the discussion. Colored stones were, of course, already available in Roman Caesarea; they were imported as raw material, half-finished or finished products, many of which were used or reworked in Late Antiquity.

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References

Abbe, M.B. (2013). *The polychromy of Roman marble sculpture: Aphrodisias and Corinth* (Ph.D. diss.). New York University Institute of Fine Arts

Abbe, M.B. (2015). Polychromy. In E.A. Friedland, M.G. Sobocinski, and E.K. Gazda (eds), *The Oxford handbook of Roman sculpture* (pp. 173–188). Oxford: Oxford University Press

'Ad, U., Gendelman, P., and Hai, Y. (2020). Caesarea, Tower 1 and the Northern Crusader Bridge. *Hadashot Arkheologiyot*, 132. Retrieved from https://www.hadashot-esi.org.il/report_detail_eng.aspx?id=25785&mag_id=128 (accessed: 11.12.2022)

Antonelli, F., Lazzarini, L., and Cancelliere, S. (2010). 'Granito del Foro' and 'Granito di Nicotera': Petrographic features and archaeometric problems owing to similar appearance. *Archaeometry*, 52(6), 919–936

Antonelli, F., Lazzarini, L., Cancelliere, S., and Dessandier, D. (2009). Minero-petrographic and geochemical characterization of "*greco scritto*" marble from Cap de Garde, near *Hippo Regius* (Annaba, Algeria). *Archaeometry*, 51(3), 351–365

Attanasio, D., Yavuz, A.B., Bruno, M., Herrmann, J.J., Jr., Tykot, R.H., and van den Hoek, A. (2012). On the Ephesian origin of greco scritto marble. In A. Gutiérrez Garcia-M., P. Lapuente Mercadal, and I. Rodà de Llanza (eds), *Interdisciplinary studies on ancient stone: Proceedings of the IX Association for the Study of Marbles and other Stones in Antiquity (ASMOSIA) conference (Tarragona 2009)* (pp. 245–254). Tarragona: ICAC

Barsanti, C. (2014). Marmi costantinopolitani a Cipro. In M. Gianandrea, F. Gangemi, and C. Costantini (eds), *Il potere dell'arte nel Medioevo: studi in onore di Mario D'Onofrio* (pp. 261–272). Rome: Campisano Editore

Barsanti, C. (2017). Capitelli corinzi del tipo cosiddetto 'a medaglione' con inserti decorativi. In P. Pensabene, M. Milella, and F. Caprioli (eds), *Decor: decorazione e architettura nel mondo romano. Atti del Convegno internazionale, Roma, 21–24 maggio 2014* (=*Thiasos Monografie* 9) (pp. 391–400). Rome: Edizioni Quasar

Barsanti, C. and Paribeni, A. (2018). La scultura in funzione architettonica a Costantinopoli tra V e VI secolo: aspetti tecnici, tipologici e stilistici. *Acta ad Archaeologiam et Artium Historiam Pertinentia*, 30(16), 23–72

Bejor, G. (1999). *Vie colonnate: paesaggi urbani del mondo antico*. Rome: G. Bretschneider

Bejor, G., Lambrugo, C., Frontori, I., Mecozzi, P., Belgiovine, E., Capuzzo, D., Massara, D., Slavazzi, F., Gagliano, E., Panero, E., and Messina, C. (2016). *Gortyna*: le Terme a Sud del Pretorio (2003–2014). La storia dell'edificio nella storia della città. *Annuario della Scuola Archeologica di Atene e delle Missioni Italiane in Oriente*, 94(Serie III, 16), 59–106

Beltrame, C. and Lazzarini, L. (2020). Wrecked cargoes of *marmor luculleum* (*africano*) of the Roman period. An archaeological and archaeometrical study. *Oxford Journal of Archaeology*, 39(3), 290–318

Borghini, G. (ed.). (1992). *Marmi antichi*. Rome: Edizioni De Luca

Burns, R. (2017). *Origins of the colonnaded streets in the cities of the Roman East*. Oxford: Oxford University Press

Çelik, M.Y. and Sert, M. (2020). The importance of "Pavonazzetto marble" (Docimium-Phrygia/Iscehisar-Turkey) since ancient times and its properties as a global heritage stone resource. *Environmental Earth Sciences*, 79, 201. https://doi.org/10.1007/s12665-020-08943-2

Corsi, (2012). Corsi Collection of Decorative Stones. Retrieved from http://www.oum.ox.ac.uk/corsi/stones (accessed: 31.07.2023)

Dalali-Amos, E. (2020). Byzantine architectural elements from the Temple Platform in marble and other materials. In K.G. Holum (ed.), *Caesarea Maritima excavations in the old city, 1989–2003, conducted by the University of Maryland and the University of Haifa, Final reports* I. *The Temple Platform (Area TP), neighboring quarters (Area TPS and Z), and the Inner Harbor quays (Area I): Hellenistic evidence, King Herod's Harbor Temple, intermediate occupation, and the Octagonal Harbor Church* (pp. 249–300). Alexandria, VA: American Schools of Oriental Research

Dray, Y. (2011). *Opus sectile* workshop revealed in Caesarea. In Y. Porath, E. Ayalon, and A. Izdarechet (eds), *Caesarea treasures* II (pp. 141–148). Jerusalem: Keter (in Hebrew)

Edelstein, G. (1993). A Roman villa at 'En Ya'al. *Qadmoniot*, 26, 114–119 (in Hebrew)

Elbern, V.H. (1979). Altar implements and liturgical objects. In K. Weitzmann (ed.), *Age of spirituality: Late Antique and early Christian art, third to seventh century* (pp. 592–639). New York: Metropolitan Museum of Art

Fink-Jensen, P. (2013). An archaeometric study of lead pigments from a 1st century BCE Roman marble sculpture. In J.S. Østergaard (ed.), *Tracking colour: The polychromy of Greek and Roman sculpture in the Ny Carlsberg Glyptotek. Preliminary report 5* (pp. 36–62). Copenhagen: Ny Carlsberg Glyptotek

Firatli, N. (1990). *La sculpture byzantine figurée au Musée archéologique d'Istanbul*. Paris: J. Maisonneuve

Fischer, M. (1990). *Das korinthische Kapitell im Alten Israel in der hellenistischen und römischen Periode: Studien zur Geschichte der Baudekoration im Nahen Osten*. Mainz am Rhein: Philipp von Zabern

Fischer, M. (2011). Caesarea Maritima through its columns and capitals. In E. Ayalon and A. Izdarechet (eds), *Caesarea treasures* I (pp. 51–76). Jerusalem: Keter (in Hebrew)

Freyberger, K.S. (1990). *Stadtrömische Kapitelle aus der Zeit von Domitian bis Alexander Severus: zur Arbeitsweise und Organisation stadtrömischer Werkstatten der Kaiserzeit*. Mainz am Rhein: Philipp von Zabern

Gendelman, P. and 'Ad, U. (2020). Caesarea. *Hadashot Arkheologiyot*, 132. Retrieved from https://www.hadashot-esi.org.il/report_detail_eng.aspx?id=25864&mag_id=128 (accessed: 23.12.2022)

Gendelman, P. and Gersht, R. (2010). Crafts and craftsmen in Roman and Byzantine Caesarea. *Michmanim*, 22, 27–48, 33*–34* (in Hebrew with English summary)

Gendelman, P. and Porath, Y. (2022). The late antique mansion occupying Insula W2S4, Caesarea Maritima. In W. Atrash, A. Overman, and P. Gendelman (eds), *Cities, monuments and objects in the Roman and Byzantine Levant: Studies in honour of Gabi Mazor* (pp. 178–193). Oxford: Archaeopress

Gendelman, P. and Porath, Y. (forthcoming). *Insula W2S3: The domus of the Dioscurii. Late Roman Public Bathhouse and Byzantine Semi-public Complex. The Israel Antiquities Authority excavation project at Caesarea 1992–1998: Final reports* III (=*IAA Reports*)

Gersht, R. (2022). Champlevé reliefs from Caesarea Maritima. In W. Atrash, A. Overman, and P. Gendelman (eds), *Cities, monuments and objects in the Roman and Byzantine Levant: Studies in honour of Gabi Mazor* (pp. 194–207). Oxford: Archaeopress

Gersht, R. and Gendelman, P. (2019). Architectural decoration in Roman and late antique Caesarea Maritima and its periphery: Production, importation and reuse. In A. Lichtenberger, O. Tal, and Z. Weiss (eds), *Judaea/Palaestina and Arabia: Cities and hinterlands in Roman and Byzantine times* (pp. 53–66). Heidelberg: Propylaeum

Gersht, R. and Gendelman, P. (2021). An overview of the decorative programme of the Semi-public Complex in Insula W2S3, Caesarea Maritima. *Strata: Bulletin of the Anglo-Israel Archaeological Society*, 39, 97–144

Górecki, T. (2017). Remnants of a Byzantine church at Athribis. In G. Gabra and H.N. Takla (eds), *Christianity and monasticism in northern Egypt: Beni Suef, Giza, and the Nile Delta* (pp. 239–252). Cairo: American University in Cairo Press

Grupče, O., Simileanu, M., Raškovska, M.A., Dzidrova, L., Minčeva-Šukarova, B., Radvan, R., Šurbanovska, M., and Striber, J. (2010). Characterization of Roman marble bust using LIBS and μ-Raman spectroscopy: A case study. *Pontica*, 43, 563–572

Gwiazda, M. (2015). The marble decoration of the presbytery of the late antique basilica in Jiyeh (Porphyreon) – Lebanon. *Światowit*, 12(53)/A, 127–142

Habas, L. (2016). Fragments of liturgical furniture from the Church of Bishop Johannes at Horbat Barqa, Gan Yavne. *'Atiqot*, 84, 127*–141*, 133–135 (in Hebrew with English summary)

Herrmann, J.J., Jr. and Tykot, R.H. (2009). Some products from the Dokimeion quarries: craters, tables, capitals, and statues. In Y. Maniatis (ed.), *ASMOSIA VII: Actes du VII^e colloque international de l'ASMOSIA, Thasos, 15–20 septembre 2003* (=*Bulletin de Correspondance Hellénique. Supplément* 51) (pp. 59–75). Athens: Ecole française d'Athènes

House, G. and Megaw, A.H.S. (2007). Architectural sculpture and revetment. In A.H.S. Megaw, *Kourion: Excavations in the episcopal precinct* (=*Dumbarton Oaks Studies* 38) (pp. 179–233). Washington, DC: Dumbarton Oaks Research Library and Collection

Karydas, A.G., Brecoulaki, H., Bourgeois, B., and Jockey, P. (2009). In-situ X-Ray Fluorescence analysis of raw pigments and traces of polychromy on Hellenistic sculpture at the Archaeological Museum of Delos. In Y. Maniatis (ed.), *ASMOSIA VII: Actes du VII^e colloque international de l'ASMOSIA, Thasos, 15–20 septembre 2003* (=*Bulletin de Correspondance Hellénique. Supplément* 51) (pp. 811–829). Athens: École française d'Athènes

Kautzsch, R. (1936). *Kapitellstudien: Beiträge zu einer Geschichte des spätantiken Kapitells im Osten vom vierten bis ins siebente Jahrhundert*. Berlin: De Gruyter

Kessener, P. (2010). Stone sawing machines of Roman and early Byzantine times in the Anatolian Mediterranean. *Adalya*, 13, 283–303

Kessener, P. (2012). The mechanization of marble slab production. In R. Kreiner and W. Letzner (eds), *Spa: sanitas per aquam. Tagungsband des Internationalen Frontinus-Symposiums zur Technik- und Kulturgeschichte der antiken Thermen, Aachen, 18.–22. März 2009* (=*BABESCH Supplement* 21) (pp. 197–205). Leuven–Paris–Walpole, MA: Peeters

Klemm, R. and Klemm, D.D. (1993). *Steine und Steinbrüche im Alten Ägypten*. Berlin: Springer

Kramer, J. (1994). *Korinthische Pilasterkapitelle in Kleinasien und Konstantinopel: Antike und spätantike Werkstattgruppen* (=*Istanbuler Mitteilungen* 39). Tübingen: E. Wasmuth

Lazzarini, L. (2002). The origin and characterization of *breccia nuvolata*, *marmor sagarium*, and *marmor triponticum*. In J. Herrmann, N. Herz, and R. Newman (eds), *ASMOSIA 5: Interdisciplinary studies on ancient stone. Proceedings of the Fifth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Museum of Fine Arts, Boston, 1998* (pp. 58–67). London: Archetype

Lazzarini, L. (2007). *Poikiloi lithoi, versiculores maculae: i marmi colorati della Grecia antica. Storia, uso, diffusione, cave, geologia, caratterizzazione scientifica, archeometria, deterioramento* (=*Marmora. Supplemento* 1). Pisa–Rome: Fabrizio Serra

Lazzarini, L. (2019). Ancient Mediterranean polychrome stones. In G. Artioli and R. Oberti (eds), *The contribution of mineralogy to cultural heritage* (=*European Mineralogical Union Notes in Mineralogy* 20) (pp. 367–392). London: European Mineralogical Union; Mineralogical Society of Great Britain and Ireland

Levi, D. (1971). *Antioch mosaic pavements*. Rome: L'Erma di Bretschneider (Original work published 1947)

Levine, L.I. and Netzer, E. (1986). *Excavations at Caesarea Maritima, 1975, 1976, 1979: Final report* (=*Qedem* 21). Jerusalem: Institute of Archaeology, Hebrew University of Jerusalem

Marasović, K. and Marinković, V. (2018). Marble revetments of the Diocletian's Palace. In D. Matetić Poljak and K. Marasović (eds), *ASMOSIA XI: interdisciplinary studies on ancient stone. Proceedings of the Eleventh International Conference of ASMOSIA, Split, 18–22 May 2015* (pp. 839–853). Split: Arts Academy

Mazar, E. (2003). *The Temple Mount excavations in Jerusalem 1968–1978 directed by Benjamin Mazar: Final reports* II. *The Byzantine and early Islamic periods* (=*Qedem* 43). Jerusalem: Institute of Archaeology, the Hebrew University of Jerusalem

Mazar, E. and Peleg, O. (1999). 'The House of the Menorot' in the Temple Mount excavations: The earliest synagogue discovered in Jerusalem. *Cathedra*, 94, 55–74 (in Hebrew)

Mesqui, J. (2014). *Césarée maritime: ville fortifiée du Proche-Orient*. Paris: Picard

Nicolaou, D. (2013). Liturgical furnishings from early Christian basilicas of Cyprus (4th–7th century). *Cahiers du Centre d'Études Chypriotes*, 43, 155–174

Niewöhner, P. (2010). Der frühbyzantinische Rundbau beim Myrelaion in Konstantinopel Kapitelle, Mosaiken und Ziegelstempel. *Istanbuler Mitteilungen*, 60, 411–459

Niewöhner, P. (2013a). Phrygian marble and stonemasonry as markers of regional distinctiveness in late antiquity. In P. Thonemann (ed.), *Roman Phrygia: Culture and society* (pp. 215–248). Cambridge: Cambridge University Press

Niewöhner, P. (2013b). The Rotunda at the Myrelaion in Constantinople: Pilaster capitals, mosaics, and brick stamps. In A. Ödekan, N. Necipoğlu, and E. Akyürek (eds), *The Byzantine court: Source of power and culture. Papers from the Second International Sevgi Gönül Byzantine Studies Symposium, Istanbul, 21–23 June 2010* (pp. 41–52). Istanbul: Koç University Press

Niewöhner, P. (2014). Production and distribution of Docimian marble in the Theodosian age. In I. Jacobs (ed.), *Production and prosperity in the Theodosian period* (pp. 251–271). Leuven–Walpole, MA: Peeters

Niewöhner, P. (2018). *Varietas*, *spolia*, and the end of antiquity in east and west. In I. Jevtić and S. Yalman (eds), Spolia *reincarnated: Afterlives of objects, materials and spaces in Anatolia from antiquity to the Ottoman era* (pp. 237–257). Istanbul: Koç University Research Center for Anatolian Civilizations (Anamed)

Porath, Y. (1996). The evolution of the urban plan of Caesarea's Southwest Zone: New evidence from the current excavations. In A. Raban and K.G. Holum (eds), *Caesarea Maritima: A retrospective after two millennia* (pp. 105–120). Leiden: Brill

Porath, Y. (2008). Caesarea: The Israel Antiquities Authority excavations. In E. Stern (ed.), *The new encyclopedia of archaeological excavations in the Holy Land* V. *Supplementary volume* (pp. 1656–1665). Jerusalem: Israel Exploration Society

Ritti, T., Grewe, K., and Kessener, P. (2007). A relief of a water-powered stone saw mill on a sarcophagus at Hierapolis and its implications. *Journal of Roman Archaeology*, 20, 138–163

Robinson, B.A. (2013). Playing in the sun: Hydraulic architecture and water displays in Imperial Corinth. *Hesperia*, 82(2), 341–384

Rockwell, P. (1993). *The art of stoneworking: A reference guide*. Cambridge: Cambridge University Press

Russo, E. (1987). La scultura del VI secolo in Palestina: considerazioni e proposte. *Acta ad Archaeologiam et Artium Historiam Pertinentia. Series Altera in 8°*, 6, 113–248

Scrinari, V. (1952). *I capitelli romani di Aquileia*. Aquileia: Associazione nazionale per Aquileia

Siotto, E. (2019). Identification of gilding techniques on Roman marble sarcophagi. *Journal of Cultural Heritage*, 38, 186–194

Sodini, J.-P. and Kolokotsas, K. (1984). *Aliki* II. *La basilique double* (=*Études thasiennes* 10). Athens: École française d'Athènes

Stabler, J.A. and Holum, K.G. (2008). The warehouse quarter (area LL) and the Temple Platform (area TP), 1996–2000 and 2002 seasons. In K.G. Holum, J.A. Stabler, and E.G. Reinhardt (eds), *Caesarea reports and studies: Excavations 1995–2007 within the old city and the ancient harbor* (=*BAR International Series* 1784) (pp. 1–39). Oxford: Archaeopress

Stillwell, R. (1941). Catalogue of sculpture. In R. Stillwell (ed.), *Antioch-on-the-Orontes* III. *The excavations, 1937–1939* (pp. 116–134). Princeton, NJ: Princeton University Press

Wootton, W., Russell, B. and Rockwell, P. (2013). Stoneworking tools and toolmarks (version 1.0). In *The art of making in antiquity: Stoneworking in the Roman world*. Retrieved from http://www.artofmaking.ac.uk/content/essays/2-stoneworking-tools-and-toolmarks-w-wootton-b-russell-p-rockwell/ (accessed: 24.09.2022)

Younes, A. and Lazzarini, L. (2023). The provenance of coloured marbles and granites used for column shafts preserved at Byrsa (Carthage, Tunisia). In A.B. Yavuz, B. Yolaçan, and M. Bruno (eds), *ASMOSIA XII. Proceedings of the XII. ASMOSIA International Conference of 8–14 October 2018, Izmir, Dokuz Eylül University, Desem Halls, İzmir-Türkiye* (pp. 301–317). Izmir: Dokuz Eylül University

Zink, S. and Piening, H. (2009). *Haec aurea templa*: The Palatine temple of Apollo and its polychromy. *Journal of Roman Archaeology*, 22, 109–122

Marmora Bizantina: A digital corpus of marble finds from the southern Levant

Abstract: Archaeological excavations in the Levant have provided a significant number of marble finds dated to the early Byzantine period (4th – mid-7th century CE). Information on these objects is, however, scattered over numerous publications, hindering synthetic studies of marble imports that reached this part of the Mediterranean world. A way to address this problem was to create a database facilitating access to the dataset of marble finds from the southern Levant. This paper presents the *Marmora Bizantina* database, describes its content and interface, and discusses the geographic and chronological scope of the dataset. Some uses of the database are discussed, remarking on the limitations that need to be taken into account. The paper also provides information on the analytical tools available on the database website.

Keywords: archaeological database, marble, Levant, early Byzantine period, ancient trade

INTRODUCTION

The Eastern Mediterranean is a region devoid of marble outcrops. From the Achaemenid period onward, marble was, however, brought to this area and processed locally to produce finished products. Exponential

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growth in marble import began with the Roman conquest of the Near East and continued, on a large scale, throughout the early Byzantine period. Thus, finds from this part of the ancient world offer excellent research perspectives for analyzing large-scale marble consumption in a region that did not participate in its extraction. This aspect distinguished Arabia, Palestine, Phoenicia, and Syria from many other parts of the Mediterranean world, where the marble trade was dominated by locally or regionally quarried materials.

In the Levant, the study of marble objects has always been influenced by the art-historical approach, which has yielded important conclusions regarding artistic trends (e.g. Koçak and Kreikenbom 2023). The economic approach has also been popular, as exemplified by Moshe Fischer's (1998) pioneering analysis of the distribution of different categories of marble objects at Roman sites across Palestine. This research laid the groundwork for one of the best regional case studies in the recent in-depth analysis of the marble trade in the Roman Empire (Russell 2013).

Thus far, no similar research endeavor has been undertaken for the decorative stones imported into the southern Levant in the early Byzantine period (4th – mid-7th century CE). However, before such a synthesis can be attempted, it is necessary to inventory the marble objects scattered throughout the region. The rationale behind compiling such an inventory lies, among other things, in the fact that marble appeared on many more sites in the early Byzantine period than in the Roman period. This indicates an important change in trade patterns — a change that has yet to be explained.

To address this issue, a project was launched with an aim to compile a corpus of marble finds from the southern Levant [*Fig. 1*]. In addition to a simple online database in tabular form (Gwiazda 2022b), the collected data is also available for inquiry using various search modes and analytical tools. This online resource is intended to help achieve a better understanding of the cultural, social, and economic aspects of marble use in the early Byzantine period. Therefore, the dataset is not meant to be a mere catalog of finds, but is supposed to serve as a tool helping to provide answers to specific inquiries on the supply of marble to different types of sites. The need for such datasets is beyond doubt, given their increasing popularity in archaeological research. Over the past few years, several similar projects have been carried out to aid in the study of cultural (Gwiazda 2020; Patrich et al. 2020) and economic (Bes 2015; Bes et al. 2019) diversity and change in the Eastern Mediterranean.

This paper presents the rationale behind creating the *Marmora Bizantina* database, a research tool for the study of marble finds from the southern Levant. The geographic and chronological scope of the project, data collection principles, and the structure of the dataset are discussed below. Subsequently, the web-based application designed for analyzing the collected data and visualizing the results of various types of searches is introduced. The final section focuses on the identification of potential research avenues in which the dataset could be of use.

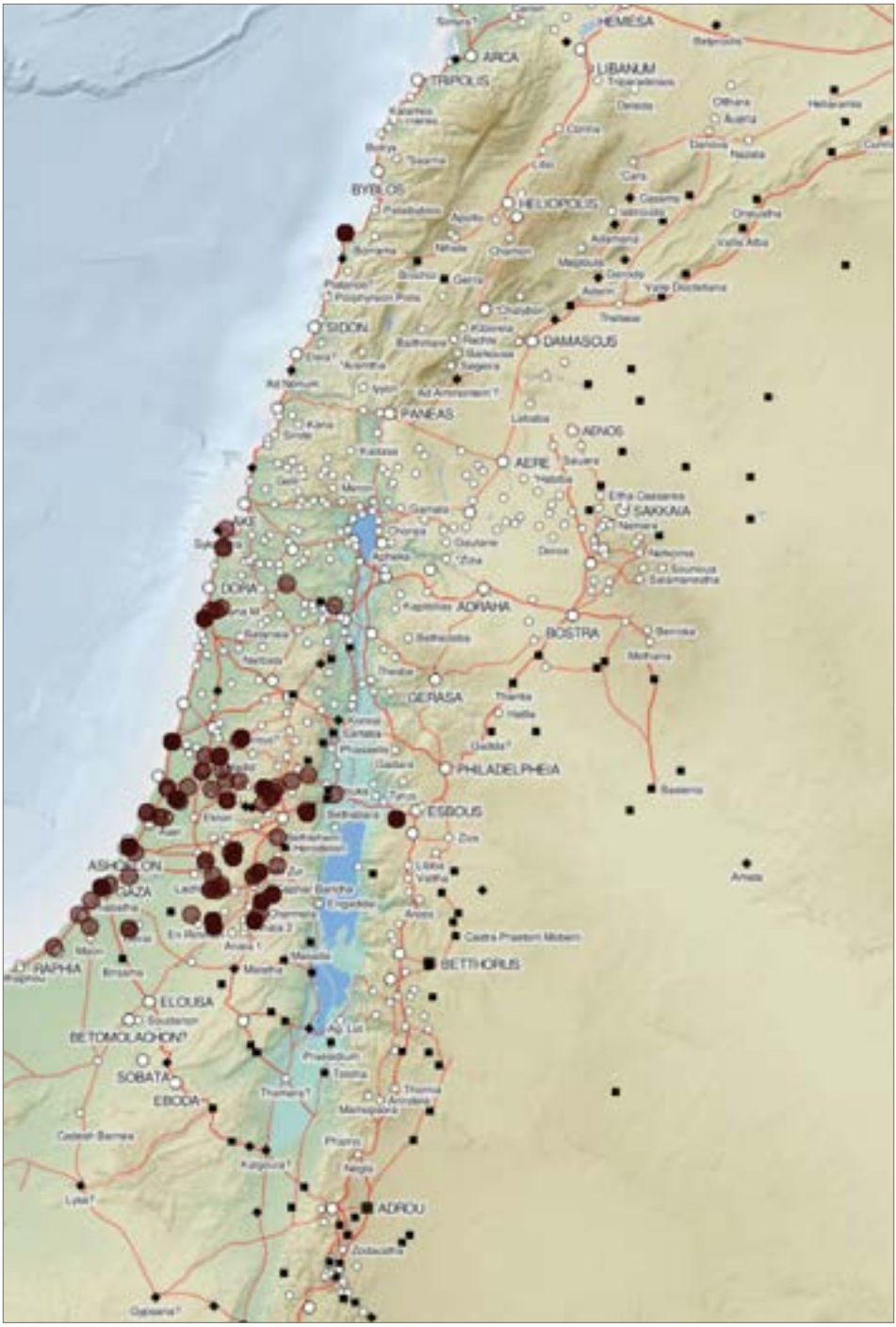

Fig. 1. A provisional map showing the southern Levantine sites that have yielded marble finds (Image M. Krawczyk and M. Gwiazda)

GEOGRAPHICAL AND CHRONOLOGICAL SCOPE OF THE DATASET

The dataset comprises finds from the southern Levant, where the state of archaeological research is much more advanced than in the northern part. The region encompasses the early Byzantine provinces of Arabia, Palaestina Prima, Palaestina Secunda, Palaestina Tertia, and Phoenicia Prima. This area coincides with the territories of the modern states of Israel, the Palestinian Authority, Jordan, and Lebanon.

As mentioned in the introduction, no marble deposits potentially important for supplying the local market have yet been identified in these areas. Thus, all the marble finds can be considered as imports from other parts of the Mediterranean. The main sources of marble for the Levant were the quarries located in Greece and western Asia Minor. Another key region for the extraction and export of decorative stones was Egypt, which mainly supplied varieties of granite. Therefore, the case of the southern Levant enables one to consider the stone trade solely from the perspective of trans-regional imports.

Although the primary objective of the project is to collect information on marble finds from sites dated to the early Byzantine period, the corpus also includes objects from both the Roman (1st century BCE – 3rd century CE) and the Islamic periods (up to the 10th century CE). Extending the chronological scope of the dataset enables application of a diachronic approach in analyses, providing an opportunity to identify any significant changes in the patterns of marble import between these periods. Additionally, finds of early Islamic date may be helpful, among other things, in reconstructing dynamics of decline in the use of marble after the Arabs took control of the Near East.

METHODS

STEPS IN DATA COLLECTION AND PROCESSING

Information on the marble finds included in the dataset has originated primarily from published excavation reports. The sources include available online databases, such as *The Archaeological Survey of Israel* (https://www.antiquities.org.il/survey/new/default_en.aspx), which provides information on numerous finds from surface surveys. However, only the objects datable to one of the three chronological periods key to the project (Roman, early Byzantine, and early Islamic) have been taken into consideration. The dating of individual objects is based mainly on their stratigraphic context. However, there is a large group of finds whose chronology relies on other factors. For example, sculptures and architectural details are most often dated on the basis of analogies and stylistic criteria. For some items of small size (e.g. table tops, mortars), parallels from other well-dated sites have been particularly helpful. Some objects bear inscriptions indicating the year of their creation,

while in other cases only paleographic criteria allow for an approximate dating. Lastly, the chronology of some of the marbles has been based on their function or the presence of decorative motifs. Examples of this group include church altars or chancel screens with depictions of the cross.

The inventory of marbles relies on all the publications known to the author. The only criteria used in their selection are those related to geography and chronology. For example, even well-dated marbles with inscriptions have been excluded from the dataset if information about their site of origin was lacking. For some publications predating the first half of the 20th century CE, the chronology of the archaeological contexts requires revision. For this purpose, indications deriving from research on oil lamps and ceramic vessels are taken into account. In recent decades, these two categories of artifacts have been the subject of numerous typo-chronological studies that enable establishing a more precise dating of the associated archaeological deposits.

Information derived from the published descriptions, as well as from accompanying drawings and photographs, is used to fill forms in FileMaker Pro Advanced 10, ensuring that each object is recorded in a standardized format. This has been achieved by introducing a limited set of descriptors focusing on the origin, function, and form of the individual finds. Some aspects of the marbles have been described using binary fields, where "0" corresponds to the absence, and "1" to the presence of a certain feature. In most cases, the precision of information about the geographic origin of the objects does not go beyond the level of the archaeological site. Therefore, such data cannot be used to analyze distribution in areas smaller than two square kilometers.

The collected data is subsequently exported to a table in .xls format. Following some updates, the dataset has been published on Zenodo, a repository developed as part of the European OpenAIRE program, which guarantees unrestricted access under the Creative Commons Attribution 4.0 International license. Each subsequent version of the uploaded data receives a new Digital Object Identifier (DOI) (Gwiazda 2022a). In parallel, the new version is uploaded to the *Marmora Bizantina* website, where the entire dataset is available for browsing and analysis (Gwiazda 2022b).

LIMITATIONS OF THE DATASET

A major issue to consider when analyzing the dataset is the highly variable state of research in different parts of the southern Levant. The differences become apparent upon comparison of historical regions. For example, the Galilee, located within the State of Israel, is much more thoroughly studied archaeologically than the neighboring Samaria, which is under control of the Palestinian Authority. The same problem applies to historical regions bisected by modern state borders. The southern part of Phoenicia, controlled by the State of Israel, is a case in point. It was excavated and surveyed much more extensively than the part of this region on the other side of the border.

A vexing problem is also the accessibility of the chronologically relevant material. For instance, the ancient city of Ptolemais (modern ʿAkkā), one of the most important sites in the region, provides little information of relevance to the database. This is due to the fact that most of the remains of urban architecture dated to the Roman and early Byzantine periods are located beneath structures erected in the Middle Ages and later. The same is true for Berytos (modern Beirut), which has been inhabited without any apparent interruption from the Bronze Age to the present day. In this case, however, large-scale urban excavations have uncovered numerous marbles, mainly associated with the Roman and, to a lesser extent, the early Byzantine phases of settlement. Nonetheless, the publication of this group of finds remains preliminary.

Another limitation to consider is the broad dating of some of the finds, sometimes exceeding a time span of two hundred years. This primarily applies to objects recovered from secondary deposits. However, even when dealing with churches with a secure founding date, one must be cautious about dating the marble liturgical furnishings found in them (e.g. chancel screens), as buildings of this kind tended to undergo modifications over the centuries of their use. In such cases, the evidence permitting to conclusively assign the finds to specific phases of use is often insufficient.

One must also keep in mind that marble was often reused. Evidence of this includes lime kilns with objects partly burned or prepared for burning, sometimes found in the vicinity (e.g. Tchekhanovets 2018: 224). Modifications impacting the functionality of the objects were also recorded. Examples of this practice include capitals reworked into mortars. However, as in the case of ceramic vessels, the durability of marble has greatly contributed to the preservation of these objects to our time, making them much more suitable for quantitative analysis than organic finds.

Lastly, a problem to consider is publication bias. It is common to find detailed descriptions of well-preserved objects that have artistic value (e.g. sculptures and reliefs) or carry inscriptions. This has led to an overrepresentation of some types, for example small marble tiles often used to record epitaphs in Late Antiquity (e.g. Ameling et al. 2014: 39–133, Nos 2174–2252). Descriptions of such objects are always accompanied by very detailed metric data. Items of the same type but without inscriptions were much more commonly used to decorate floors and walls of various buildings, yet publications merely record the fact of their discovery without providing metric and quantitative details. This is all the more surprising that at the same sites counting all fragments of pottery vessels is a standard procedure instrumental for reconstructing various aspects of local trade. Unique in this regard is the publication of marbles from churches in Humayma, which includes a catalog of all recovered fragments with detailed measurements (Schick et al. 2013). The observed biases necessitate a critical approach to the published data in order to benefit from its potential. However, with new discoveries, the quality of the published data will certainly improve, laying groundwork for more reliable hypotheses.

DATABASE CONTENT AND INTERFACE

The database uses a form with mutually independent object descriptors and metadata. By default, each object receives a separate description. The entries are devoted to marbles in the broader sense of the word, corresponding to the ancient understanding of this raw material, i.e. both genuine marbles (i.e. metamorphic rock composed of recrystallized carbonate minerals) and granites. None of the fields are relational, therefore the database structure itself is not discussed. The interface of the database is presented in detail below, defining the used terms and categories:

Catalogue no. records the unique inventory number assigned to each find (e.g. 0102, 3171, etc.). A single number is assigned to several marble fragments provided that they were certainly part of a single functional type. For instance, an altar partition broken into multiple fragments receives one inventory number. However, if the association of such fragments with a single object is uncertain, each is given a unique number. Separate numbers are also assigned to each of the columns, bases and capitals, which jointly formed, for example, a portico. This approach is due primarily to the fact that, in the early Byzantine period, the secondary use of columns that had originally been associated with various Roman-period buildings was fairly common. For the sake of consistency, this approach remains valid for *opus sectile* floors: each tile receives a separate inventory number enabling comparison of the number of tiles of various shapes and materials used in different pavements. The same rule applies to the floor tiles found in secondary deposits (e.g. trash dumps). However, publications rarely provide such detailed information. Therefore, in most cases considered thus far, it has only been possible to assign separate inventory numbers to groups of tiles characterized by the same shape, size, and material.

Country contains the name of the state that controls the territory in which the discovery was made.

Province refers to the early Byzantine unit of administrative division of the southern Levant (Arabia, Palaestina Prima, Palaestina Secunda, Palaestina Tertia, and Phoenicia Prima). However, it does not take into account the shifts in provincial borders during the Roman or Umayyad periods. Therefore, comparisons of assemblages from different periods should follow their geographic location rather than their historical administrative attribution.

Site name contains the modern and ancient names of the site, e.g. Beth She'an / Beisan / Skythopolis; Ascalon / Ashkelon.

Site type assigns the site to a type: village, town, monastery, and military settlement.

Port town is a binary field indicating whether the site is located directly on the Mediterranean coast. The privileged geographic position of such sites gave them easier access to imported marble. Therefore, they may be expected to have a marked overrepresentation of such finds compared to inland sites.

Pilgrimage site is a binary field indicating whether a given site was associ-

ated with places of religious significance for Christians, where pilgrimage traffic clearly contributed to economic development. Such places sometimes benefitted from funding by members of the imperial house. Therefore, the ability to exclude or include them when analyzing stone distribution permits to explore different aspects of marble use in imperial foundations. Both this field and the "Port town" field, described above, can be marked to distinguish sites that were simultaneously ports and pilgrimage sites.

Context allows to assign the place of discovery to a specific functional category: amphitheater, bathhouse, civic basilica, ordinary church, grave/cemetery, hippodrome, house, latrine, lime kiln, military camp, monastery, monastery church, nymphaeum, palace, pilgrimage church, press, public building, secondary deposit (e.g. trash dump), synagogue, theater, temple, and workshop. Surface finds and objects discovered during surveys fall into separate categories. In addition, it is possible to select the "no data" option from the list if publications do not provide information on where the object was found.

Context description provides space for a more detailed description of the object's findspot. For example, in the case of bathhouse complexes, it is possible to indicate the exact place in the complex where the marbles were discovered.

Color allows to select a single color that best characterizes the described object (e.g. black, white, gray-white, pink, etc.). The aim is to keep the list as concise as possible, so only primary colors and their combinations are included.

Provenance allows selection of one or more possible stone identifications (e.g. *Africano*, Aphrodisias, *cipollino verde*, Prokonnesos, etc.). The origin of a large number of colored stones is identifiable based on macroscopic observations. In the case of white marbles, on the other hand, archaeometric analyses are needed to determine their source. Therefore, white marbles are additionally distinguished from one another based on grain size, using a two-point scale (coarse and fine). It is also possible to classify the stones as unidentified marbles and granites.

Analysis is a binary data field used for indicating whether the object has been subjected to archaeometric analysis in order to establish the origin of the stone raw material.

Analysis results contains information about the type of archaeometric analysis carried out to identify the rock, and the results thereof.

Object type serves to assign the object to functional and/or formal categories. The possible choices are: altar, ambo, architectural element (e.g. lintel, seat, pier, archivolt, threshold, and doorjamb), architrave, baptismal font, capital, small capital, champlevé relief, chancel screen, chancel post, column, small column (i.e. altar support), column base, small column base, cornice, frieze, *intarsio*, menorah, mortar, *opus sectile*, pavement slab, pedestal, pestle, pilaster, plaque, reliquary, sarcophagus, sculpture, screen stela, table top, tesserae, tombstone, tympanum, wall revetment, weight, varia (e.g. mezuzah, medallion, door, stopper, etc.), and vessel. In the case of partly preserved objects, it is also possible to select the

"unidentified" descriptor. The list, though seemingly exhaustive, can be expanded further by adding new categories.

Reused is a binary data field for specifying whether the object was reclaimed for secondary use. Reuse may have involved a change of function by modification of the form, but a lack of change in the object's function or form was also possible, e.g. Roman sculptures decorating an early Byzantine building or an entire column reused in the construction of a wall.

Dimensions, recorded in centimeters, enable to calculate the approximate volume of the object (e.g. w. 110 x 100, h. 125 cm).

Volume (cubic meters) specifies the calculated volume of the object in cubic meters (e.g. 1.5125 or 0.004237) based on published data. In the calculations, the largest surface area of the object is multiplied by its height. The resulting value indicates the minimum volume of raw material used to create the object.

Inscription is a binary data field indicating the presence or absence of an inscription.

Object description is a text field in which, in the case of more complex objects, additional descriptions and indications of function may be added (e.g. round basin with plain rim).

Reference contains information on bibliographical data or internet resources used to create the description of the object.

Dating contains a time interval in which the object was created.

TPQ and *TAQ*, two separate fields, contain the *terminus post quem* and the *terminus ante quem* of the object's creation recorded in numerical form.

Centuries offers a choice of 11 binary data fields allowing to indicate the specific centuries to which the object has been dated. The earliest time interval is 100–1 BCE and the latest is 901–1000 CE.

Precise date, a binary data field, allows searching for objects with a precise dating, i.e., a narrow date range not exceeding 200 years.

WGS84 N and **WGS84 E** are two separate fields intended for recording the geographical coordinates of the object's find place. The spatial coordinates of sites are recorded in the World Geodetic System 1984 (WGS84) and expressed in decimal degrees.

Creation date contains the date when the record was created.

Modification date contains the date when the record was modified.

Record author contains the first and last name of the record author.

INTERNET INTERFACE

The dataset created using the defined criteria is presented on a dedicated website (Gwiazda 2022b), where individual entries, complete with illustrations of the objects and maps marking their sites of origin, can be browsed [*Fig. 2*]. The website comes with a number of additional features, including query and quantitative analysis tools.

Queries can be conducted using keywords or chronological criteria [*Fig. 3*]. It is also possible to search for specific

sites on a map with the aid of various filters. For example, this form of data visualization can show the distribution of sites with marble finds belonging to a particular category, in a specific type of building, over a specific time period. Once all the parameters have been specified, the map with the marked sites can be exported to .png format. This functionality is intended to be a kind of an open-access Geographical Information System for marble finds.

Another tool allows generation of bar graphs in .png format and presentation of the associated numerical data in tabular form (.xlsx format). Applying a single filter allows to produce a graphic representation of the number of occurrences of marble objects in various types of contexts. A two-filter query permits to add another criterion to the search [*Fig 4*]. It allows, for

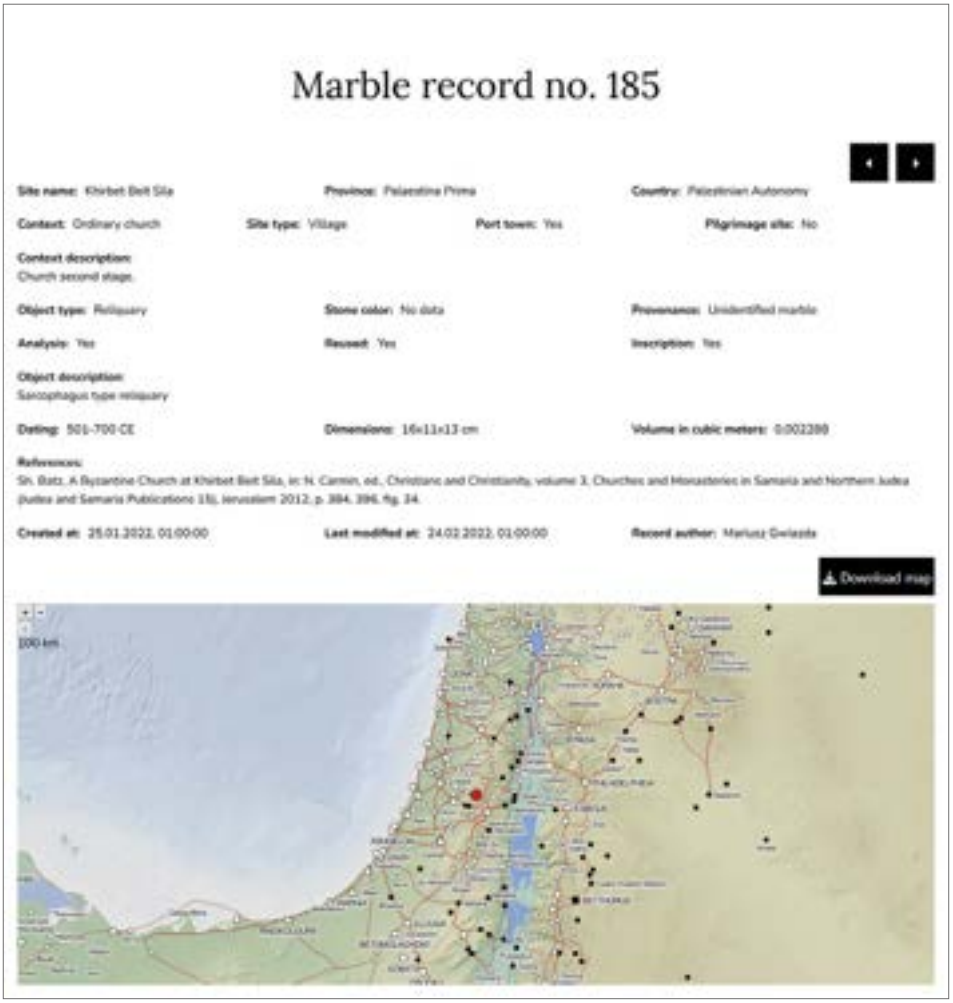

Fig. 2. An example of a record in the web application (Image M. Krawczyk and M. Gwiazda)

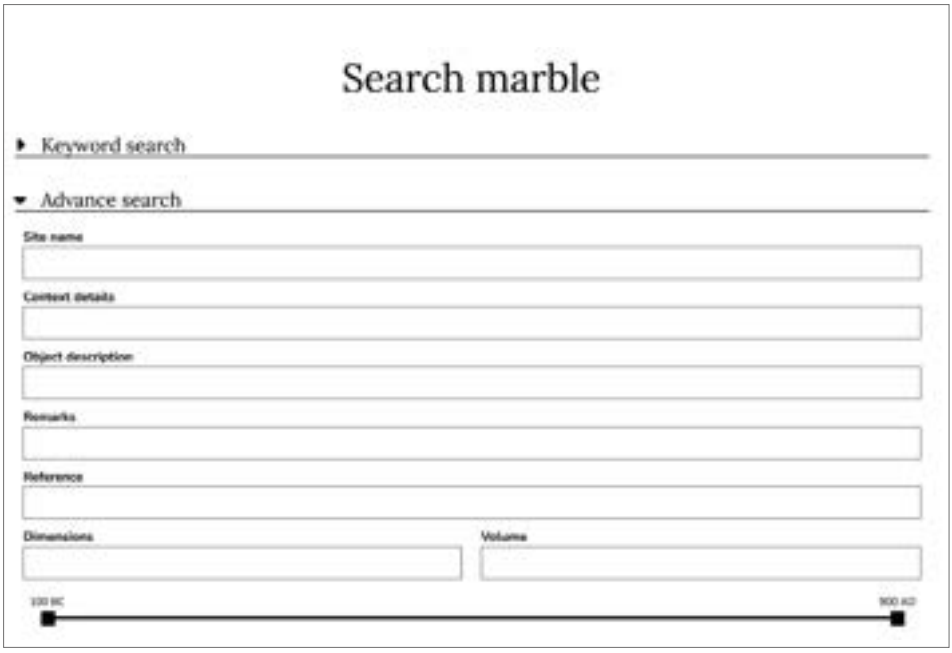

Fig. 3. Examples of search modes available in the web application (Image M. Krawczyk and M. Gwiazda)

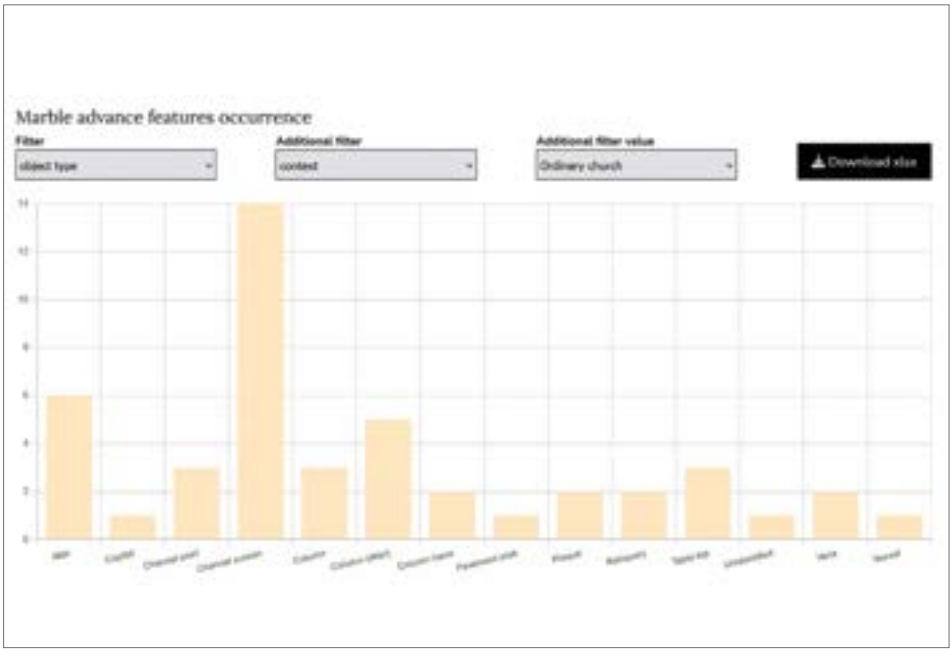

Fig. 4. An example of a graph obtained using the quantification tool available in the web application (Image M. Krawczyk and M. Gwiazda)

instance, to determine the number of columns associated with different types of buildings. The last two types of queries generate graphs showing the temporal distribution of the marble objects discovered, for example in different provinces, presenting the data separately or in combined form. These tools have a built-in statistical weighted date algorithm. The method has been applied successfully in quantitative analyses of large assemblages characterized by a varying precision of dating (Fentress and Perkins 1988; Fentress et al. 2004; Van Beek and Depauw 2013). This means that when an object is dated, for example, to the 3rd and 4th centuries CE, the value of 0.5 is assigned to each date, while in the case of only one date (e.g. the 3rd century), it receives the value of 1. This method of calculation gives more weight to finds with a narrow dating, e.g. an inscription that carries an annual date, and reduces the importance of objects with a less accurate dating.

POTENTIAL USES OF THE DATASET

The presented dataset is intended as a principal source of knowledge about marbles discovered in the southern Levant. It currently contains more than 4000 records, mostly concerning finds from Palestine, and it is growing steadily. It may be useful for comparative studies of similar finds from other parts of the Mediterranean and can also be linked to other large datasets collecting information on different groups of archaeological finds. Nevertheless, its primary purpose is to aid in research on the diversity of marble objects in the Levant. The studies may focus on the distribution of different categories of marble objects, considering factors like topography and distance from the Mediterranean ports in which the marble objects first arrived. The possibility to distinguish between various categories of finds, such as utensils (e.g. table tops), and elements of decorative (wall revetments and pavement tiles), structural (columns), and liturgical use (altars and chancel screens) may help to determine the prevalent categories of marble imports at different types of sites. Hypothetically, one may assume that marbles were more abundant in cities and on pilgrimage sites, but this assumption has not been proved so far. In addition, the dataset may help to investigate the diversity of marble assemblages dated to the early Byzantine period and discovered in cities and villages located far inland. Another potential field of research involves a variety of comparative analyses focusing on marble distribution and variation between the Roman and early Byzantine periods, leading to a better understanding of factors influencing exchange patterns in Late Antiquity. This should be possible after the quantification of various marble products, although no ready answers of historical significance are to be expected. The quantitative research may be treated as a point of departure for discussing problems related to the social dimension of the economy, considering the chronological and geographic context of the finds.

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References

Ameling, W., Cotton, H.M., Eck, W., Isaac, B., Kushnir-Stein, A., Misgav, H., Price, J., and Yardeni, A. (eds). (2014). *Corpus Inscriptionum Iudaeae/Palaestinae* III. *South Coast, 2161–2648*. Berlin–Boston: De Gruyter

Bes, P. (2015). *Once upon a time in the East: The chronological and geographical distribution of terra sigillata and red slip ware in the Roman East* (=*Roman and Late Antique Mediterranean Pottery 6*). Oxford: Archaeopress

Bes, P., Willet, R., Poblome, J. and Brughmans, T. (2019). *Inventory of crafts and trade in the Roman East (ICRATES): Database of tableware* [data-set]. York: Archaeology Data Service (distribution). https://doi.org/10.5284/1050900

Fentress, E., Fontana, S., Hitchner, R.B., and Perkins, P. (2004). Accounting for ARS: fineware and sites in Sicily and Africa. In S.E. Alcock and J.F. Cherry (eds), *Side-by-side survey: Comparative regional studies in the Mediterranean world* (pp. 147–162). Oxford: Oxbow Books

Fentress, E. and Perkins, P. (1988). Counting African Red Slip Ware. In A. Mastino (ed.), *L'Africa romana: Atti del V convegno di studio, Sassari, 11–13 dicembre 1987* (pp. 205–214). Sassari: Dipartamento di Storia, Università degli Studi

Fischer, M. (1998). *Marble studies: Roman Palestine and the marble trade* (=*Xenia* 40). Konstanz: Universitätsverlag Konstanz

Gwiazda, M. (2020). Dataset of Syro-Palestinian chamber tombs from the first millennium BCE and CE. *Journal of Open Archaeology Data*, 8(8). https://doi.org/10.5334/joad.68

Gwiazda, M. (2022a). Marmora Bizantina dataset. Zenodo repository: http://doi.org/10.5281/zenodo.7421480

Gwiazda, M. (2022b). Marmora Bizantina web page. https://marmorabizantina.pcma.uw.edu.pl/ (accessed: 30.06.2023)

Koçak, M. and Kreikenbom, D. (eds). (2023). *Sculptures from Roman Syria* II. *The Greek, Roman and Byzantine marble statuary*. Berlin–Boston: De Gruyter

Patrich, J., Backner, T., Burger, S., and Tarkhanova, S. (2020). Churches of the Holy Land. A new digital corpus: Introduction and some preliminary results. In A. Coniglio and A. Ricco (eds), *Holy Land: Archaeology on either side. Archaeological essays in honour of Eugenio Alliata, ofm* (=*Studium Biblicum Franciscanum. Collectio Maior* 57) (pp. 11–32). Milan: Edizioni Terra Santa

Russell, B. (2013). *The economics of the Roman stone trade*. Oxford: Oxford University Press

Schick, R. (2013). Ecclesiastical marble. In J.P. Oleson and R. Schick, *Humayma excavation project* II. *Nabatean campground and necropolis, Byzantine churches, and early Islamic domestic structures* (=*American Schools of Oriental Research Archaeological Reports* 18) (pp. 449–515). Boston: American Schools of Oriental Research

Tchekhanovets, Y. (2018). Recycling the glory of Byzantium: New archaeological evidence of Byzantine-Islamic transition in Jerusalem. *Studies in Late Antiquity*, 2(2), 215–237

Van Beek, B. and Depauw, M. (2013). Quantifying imprecisely dated sources: A new inclusive method for charting diachronic change in Graeco-Roman Egypt. *Ancient Society*, 43, 101–114

Byzantine marble fragments rediscovered in a Tyre cistern

Abstract: The Franco-Lebanese mission in Tyre identified a stone dump comprising more than a thousand fragments of architectural members and liturgical furnishings, located in an ancient cistern. These fragments, mainly of marble, but also of limestone, basalt and marine sandstone, had been collected during excavation works carried out on the site in the 1960s and 1970s. After their discovery, all the blocks were removed from the cistern, inventoried, documented and studied in order to identify their various functions and origins. A large part of these fragments seem to have belonged to various Byzantine religious monuments. The article presents the main types to which these fragments have been assigned, following a comparative approach.

Keywords: Tyre, Byzantine, marbles, church, chancel, decoration

INTRODUCTION

In 2017, the Franco-Lebanese archaeological mission working on the archaeological "City site" of Tyre [*Fig. 1*] discovered hundreds of fragments, mostly carved in marble, buried in one of the site's ancient cisterns [*Fig. 2*]. The cistern, located in the residential area of Tyre's "Maritime site" (Sector 7), about 40 m southwest of the monumental latrines, appears to have served as a dumping ground for a large number of fragments col-

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lected from various locations around the site. A total of approximately a thousand fragments was re-excavated. Their placement in the current location seems to date back to the time of major excavations on the site, i.e. the late 1960s and early 1970s (the results of which were never published). The director of the excavations at the time, Maurice Chéhab, seems to have decided to collect most of the carved fragments found on the site and to store them in the cistern. All the fragments were given double numbers referring to the square of the site grid and to the level from which they were excavated. This numbering, rarely erased or rendered illegible, made it possible to virtually redistribute all the blocks throughout the site, restoring them to their original contexts.

Most of the blocks recovered are carved in marble, with only a few in black basalt (fragments of mills and fulleries) and limestone (in particular catapult projectiles and fragments of small columns). Although rare, elements made of marine sandstone (e.g. a merlon) and chalk (a few fragments of basins) are also part of the assemblage. The marble fragments constitute about 85% of the assemblage.

The redistribution of the fragments according to their square numbers allowed the identification of two main groups: the IC/JE/KF group (41% of the total of fragments), and the D/E/H/I/J group, representing about 46% of the fragments. The

Fig. 1. Aerial view of Tyre with its main archaeological landmarks (Photo J. Yasmine; processing H. Kahwagi-Janho)

grid squares of the first group correspond to the so-called "large soundings" area, located to the west of the Frankish cathedral. Excavations carried out in this area revealed the presence of a basilica church preceded by a courtyard, the remains of

Fig. 2. Excavation of the cistern in 2017 (Photos H. Kahwagi-Janho)

which, consisting mainly of mosaic and marble pavements, were dismantled in order to carry out more in-depth soundings. The second group corresponds to the area southwest of the Stepped Monument. In its immediate vicinity, three small Byzantine chapels were discovered, including one in square H [see *Fig. 1*].

In October 2017 and 2018, all of these fragments were removed from the cistern, cleaned, drawn and documented. The assemblage was then supplemented with a number of finds from other sectors of the site, in particular from the area of the Martyrium (Sector 4). A classification of the blocks according to zones and types was then carried out, allowing their detailed study. A small selection of the most typical elements is presented below.

BYZANTINE MARBLE FRAGMENTS

The marble fragments found are dated to the Byzantine period and belong to two types: 1) fragments that usually constituted interior architectural décor (chancels, small columns, veneer, etc.), and 2) fragments of liturgical and utilitarian furnishings (mortars, tables, etc.). The present article examines a representative selection of these objects, divided into types.

ARCHITECTURAL DÉCOR

Elements of architectural décor —chancels with screens and posts, small columns, shafts of columns and capitals, as well as veneer— were part of interior furnishings. Most of these elements were found in a fragmentary state, which, however, did not prevent the recognition of their main characteristics and their detailed study.

Capitals

About 50 Byzantine capitals, mainly of the Corinthian type, were found in the cistern. Most of them were products of mediocre workmanship and their state of preservation was fragmentary. Their dimensions do not exceed 50–60 cm in length at the level of their abacuses, which may indicate that they were part of interior decoration sets (canopies, niches, etc.) rather than architectural elements of their respective monuments. Some of them were later reused for utilitarian or even liturgical purposes, as evidenced by their being hollowed out to make basins and mortars. Unlike the Byzantine types with elaborate decorative patterns, their compositions are simplified versions of conventional Corinthian models. Because of their small size, they usually have a single row of acanthus leaves, more rarely two, depending on their height. The leaflets of these leaves have no relief and adhere almost completely to the calathus. The extremities of their digits, which are two or three in number, touch each other, forming simple geometric patterns.

Capitals with two pairs of volutes/helices, resembling the standard form of the canonical Corinthian capital, are relatively rare [*Fig. 3:1*]. The stems of the volutes and helices emerge directly from the acanthus leaves rather than from the calices and caulicoli, as the latter are generally absent from these capitals. This

type of decoration is found not only on capitals of the Roman period in Lebanon (Kahwagi-Janho 2020: 162–164), but also on Byzantine capitals from other parts of the Eastern Mediterranean (Pralong 1993: 139, Fig. 10).

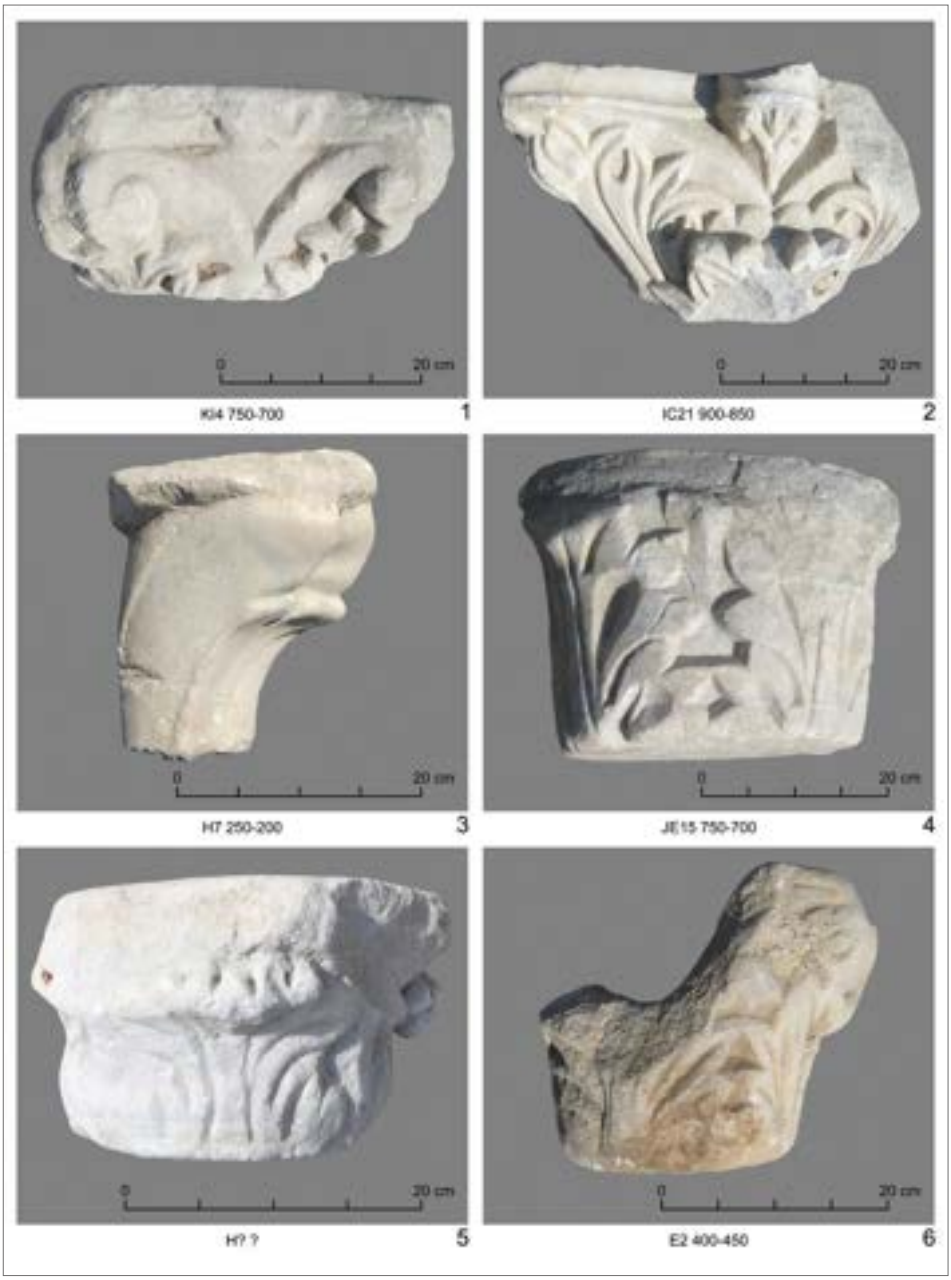

Fig. 3. Examples of Byzantine capitals (Photos H. Kahwagi-Janho)

Capitals without volutes and helices constitute the majority of those found in the cistern [*Fig. 3:2–6*]. They are also the most numerous on the entire site of Tyre. They combine two main characteristics: the presence of a single row of acanthus leaves and the absence of caulicoli, volutes, and helices. The majority of these capitals are completely fragmented. However, in most cases their preserved upper registers permit to identify their main characteristics. More complete examples of this type are preserved near the El-Bass area (Kahwagi-Janho 2012: 145, Fig. 146). In general, the leaves of these capitals have five leaflets (four lateral ones arranged in pairs on either side of the axis, and one on the apex), stem from the corners and unfold in such a way that each half covers one half of the face of the capital. Similar capitals have been recorded at Resāfa – Sergiopolis in the décor of the bema of the Basilica of the Holy Cross (Tchalenko 1979: 338, Fig. 533) and in Apamea (Vanderheyde 2020). In addition, a number of similar capitals from Alexandria and other Egyptian sites have been published by Pensabene (1993: 416–432, Pls 56–62).

The dating of the capitals ranges from the end of the Roman period (i.e. late 3rd – early 4th century) to the 6th century. Most of these objects, especially the small capitals without volutes or helices, are of poor quality. On the other hand, the variety of their forms contrasts sharply with the uniformity of the material in which most of them are carved, i.e. grayish Prokonnesian marble.

Bases

The material recovered from the cistern included about 15 bases, mostly in a fragmentary state, and some hollowed out to form mortars [*Figs 4:5; 5:1–2*]. They are relatively small: the largest one measures 65 cm at the base and 42 cm at the bedding, while the smallest ones have a diameter of up to 14 cm at the bedding and a height varying between 11 cm and 18 cm. The form of some of these bases follows the canonical Attic model, which consisted of a plinth surmounted by two tori with a scotia inserted between them and surrounded by two listels, the whole topped by a double upper torus. However, this scheme is simplified to varying degrees on other blocks, e.g. the scotia is missing on some bases, while on others the plinth is surmounted only by a chamfered torus and a band. Some of these bases also have unfinished splayed surfaces with clearly visible traces of cutting tools. Such bases with a simplified component sequence are typical of the Byzantine period. They are characterized by proportions that deviate from the canonical Roman model, as well as by the mediocre quality of the work, which is hasty and lacks precision.

Chancels

The chancel fragments found in the cistern comprise two main elements: posts and screens. The posts have been found in varying states of preservation, with occasional complete specimens; the screens, on the other hand, have mostly been found in a very fragmentary state, which makes their reconstruction rather hypothetical. However, the recovered fragments of chancel screens show a

Fig. 4. Examples of bases (Photos H. Kahwagi-Janho)

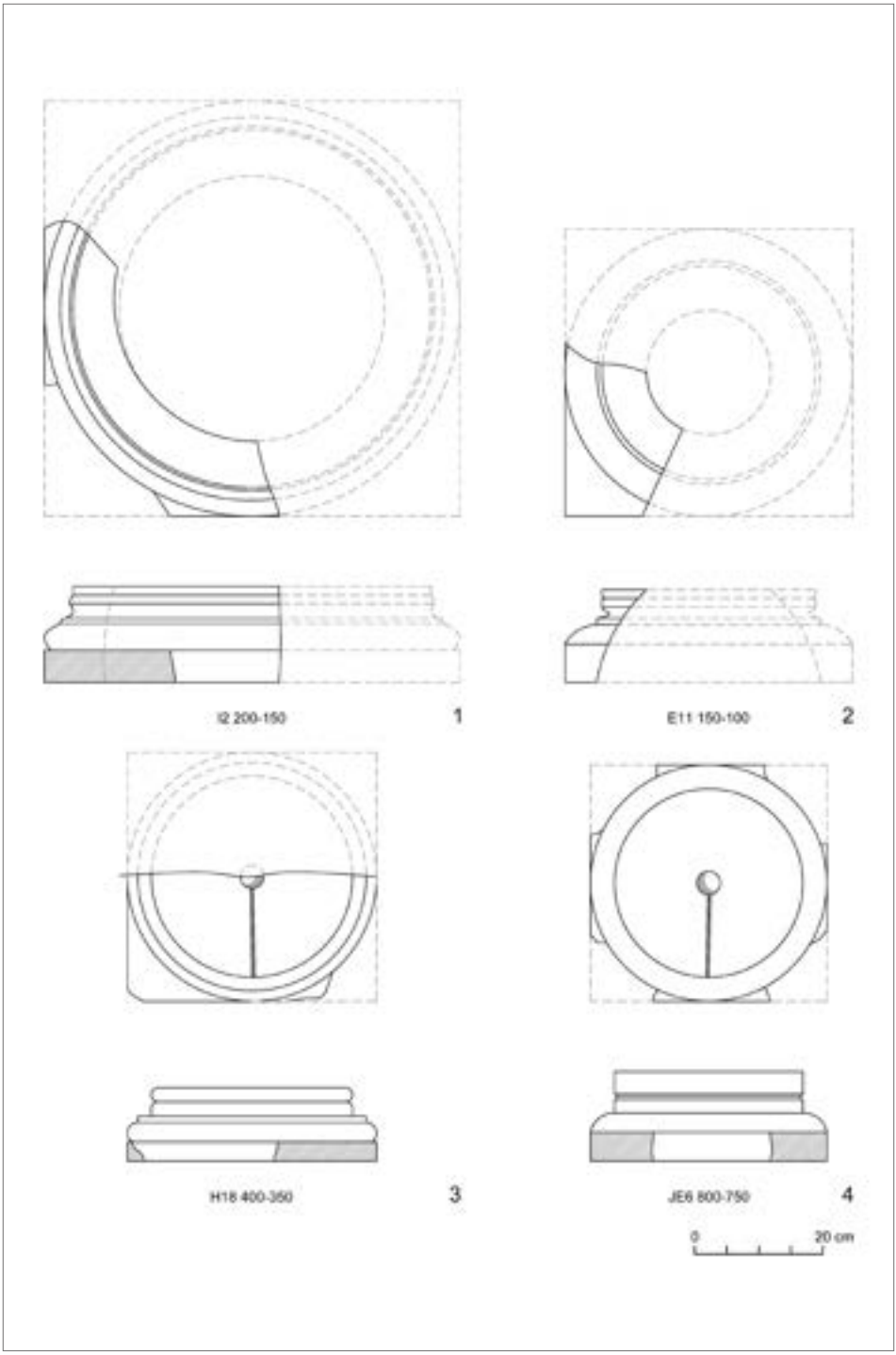

Fig. 5. Selected fragments of bases (Drawings H. Kahwagi-Janho)

wide variety of forms, unlike the fragments of posts, which represent fairly uniform types.

Posts

About 15 fragments of chancel posts were recovered from the cistern. They add to

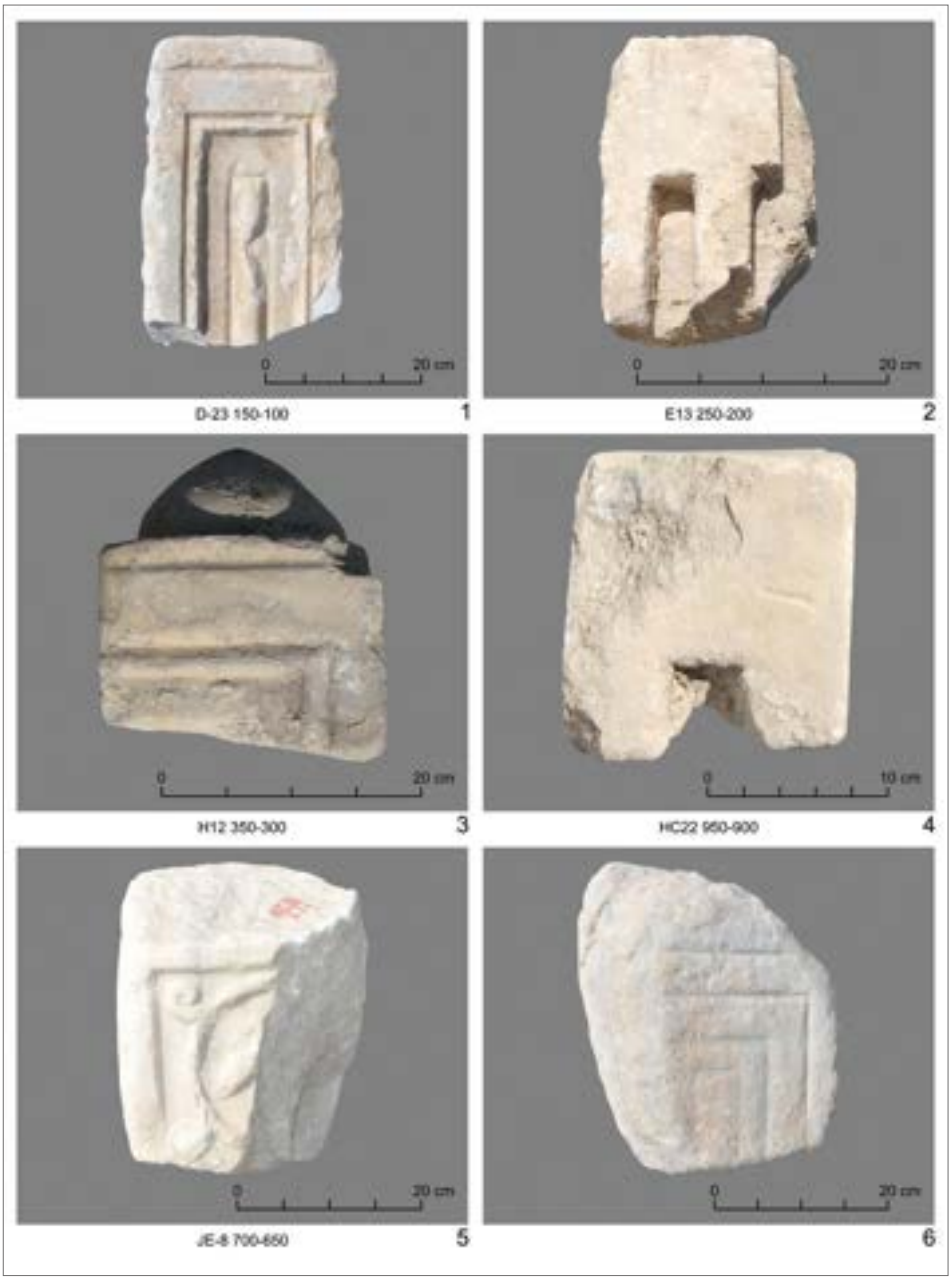

Fig. 6. Examples of chancel posts (Photos H. Kahwagi-Janho)

the large collection of posts found in several parts of the site, particularly in the area of the Martyrium. It is noteworthy that three posts are almost complete.

The width of the posts varies between 15 cm and 21 cm. Most of them are rectangular in section, while a few have an L-shaped section indicating their corner position [*Fig. 7:3*]. The faces of the majority of these posts are decorated with concentric rectangular geometric motifs, generally incised superficially. In rare cases they are carved to greater depths and represent work of higher quality. One of these blocks has one of its main faces decorated with a motif of a branch with foliage [*Fig. 6:5*]. The side faces of the vast majority of these posts have notches for affixing chancel screens. These notches, which range in width from 3.5 cm to 5 cm, are mostly longitudinal and carved to match the full height of the respective screens.

Contrary to the great uniformity of their decoration, the fragments of posts vary in size, hindering a precise typological classification. Among the posts with preserved tops, one can distinguish some with ends in the shape of a pommel [*Figs 6:3; 7:4*] (for similar examples, see Ward-Perkins and Goodchild 2003: 241, Fig. 180), while a few others show the lower parts of small columns (for parallels, Ward-Perkins and Goodchild 2003: 259, Fig. 201; 276, Fig. 221; 277, Fig. 222). The remaining blocks, however, can only be classified according to their size. Based on the width of their main faces, two groups can be distinguished: posts with a width of 19 cm to 21 cm, and those with a width of 15 cm to 17 cm.

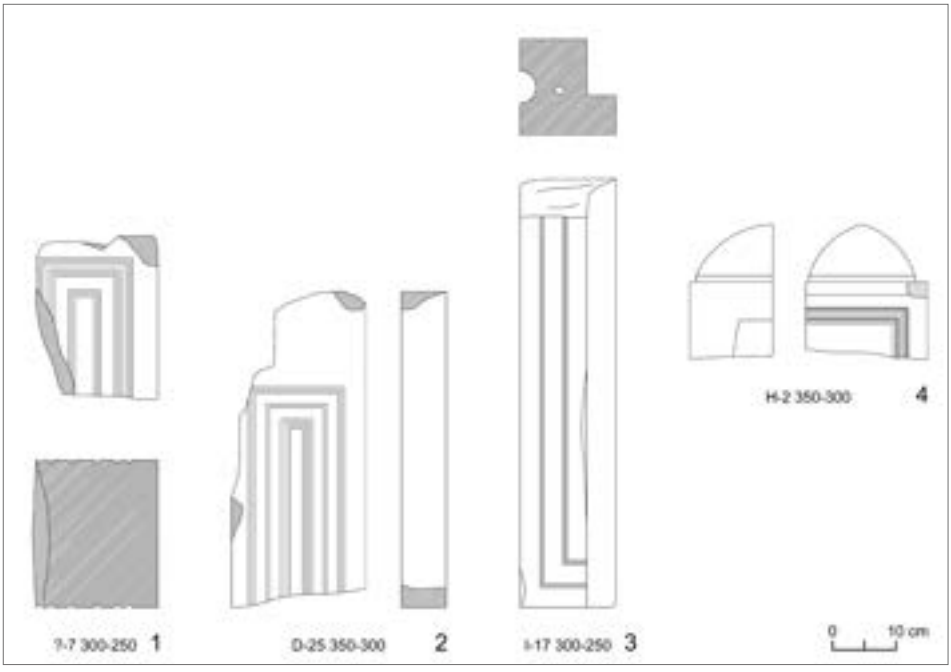

Fig. 7. Selected fragments of chancel posts (Drawings H. Kahwagi-Janho)

Screens

The screens are fairly varied in shape, appearance, and decoration. Three groups can be distinguished: solid screens, openwork screens, and double screens. They are mostly carved from Prokonnesian

Fig. 8. Examples of chancel screen fragments (Photos H. Kahwagi-Janho)

marble, while rare fragments from the Martyrium area (Sector 7) are made of a reddish marble.

a. Solid screens

Solid chancel screens are most commonly found as small fragments [*Figs 8:1–4; 9:2–3*]. The largest do not exceed 30 cm in size. Their thickness generally varies between 3 cm and 5 cm, while a few models have thicker profiles reaching 7 cm. Most are monofacial, rarely bifacial. The most common decorative motifs are parallel linear bands with either flat surfaces separated by notches or inclined surfaces articulated by fine incisions. As indicated by some corner fragments, these bands ran along the perimeter of their respective screens, forming a kind of rectangular frame. The panels within these frames were sometimes decorated with plant motifs, rectangles, or crosses. In the case of the bifacial screens, the patterns on the two sides were sometimes identical, but could also differ, particularly in the width and spacing of the peripheral bands.

b. Openwork screens

Openwork screens have only been recorded in two very fragmentary forms: as screen frames, which preserve attachments of the ribs that framed the openings, and as fragments of the ribs themselves [*Figs 8:5–8; 9:1*]. The frames usually range in height from 13 cm to 17 cm and in thickness from 5 cm to 9 cm. They often taper gradually, in two to three steps marked on both sides, to reach their minimum thickness at the point of attachment of the ribs. The preserved length of most fragments of this type does not exceed 50 cm.

Fragments of openwork screens are relatively rare, with about 20 found on

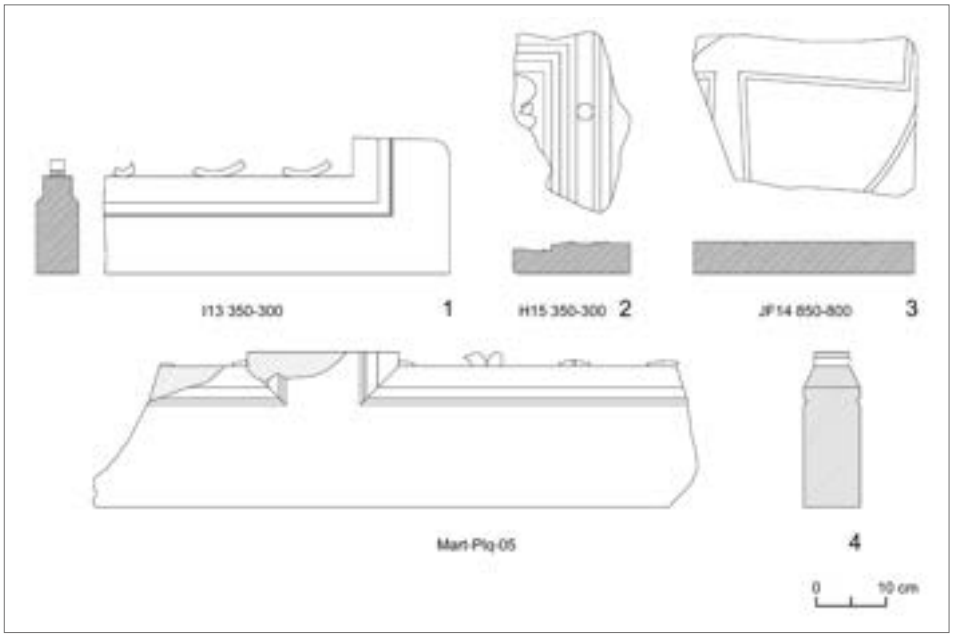

Fig. 9. Selected fragments of chancel screens (Drawings H. Kahwagi-Janho)

Fig. 10. Examples of small columns (Photos H. Kahwagi-Janho)

Fig. 11. Examples of decorated slabs (Photos H. Kahwagi-Janho)

the entire site. The largest pieces do not exceed 15 cm in size. Most of the fragments are circular in shape, with internal diameters corresponding to the voids of the openwork, measuring 8–9 cm on average. The ribs vary in thickness from 2.2 cm to 2.8 cm and their surfaces are mostly smooth. A minority of the fragments are rectilinear. The patterns they originally formed would have been composed of orthogonal and obtuse angles. Some fragments of this type have polygonal sections and their surfaces preserve concave linear reliefs and imbricated scales.

This type of decoration was rare in the churches of northern Syria, as demonstrated by Tchalenko (1979; 1990), who listed no openwork plaques. However, unlike the urban and Mediterranean assemblage at Tyre, Tchalenko's corpus was composed of fragments from village churches in the hinterland, where the decoration was mainly carved in local stones. On the other hand, several examples of openwork screens have been identified in Palestine, both in synagogues and in churches (Foerster 1989: 1812–1814). Similar examples have also been found in the Balkans and in North Africa (Ward-Perkins and Goodchild 2003: 152, Fig. 110).

c. Double screens

Among the screen fragments preserved in the cistern and in various sectors of the site of Tyre, some double screens have also been recorded. A fragment of an openwork screen found on the Martyrium site, measuring 86 cm, is unusually long compared to the other preserved blocks of this type [*Fig. 9:4*]. The central area of that fragment shows the beginning of a vertical partition that clearly divides it into two panels. Another fragment found in the cistern, but of unknown provenance, also seems to have been part of a double screen, as indicated by the duplication of its linear decoration on both sides of a wide band that forms the division between the two screen ar-

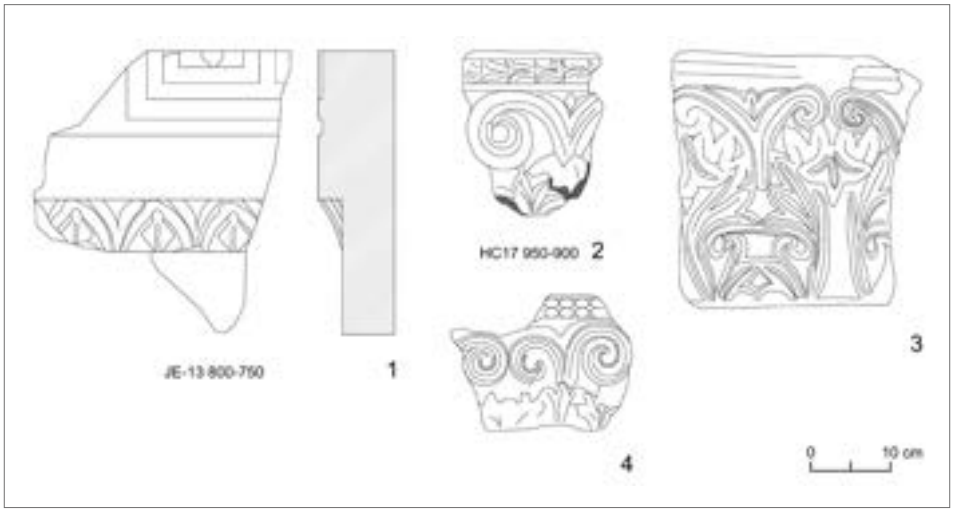

Fig. 12. Selected fragments of decorated slabs (Drawings H. Kahwagi-Janho)

eas. This type of double-paneled screen is fairly common in Byzantine architecture in northern Syria (Tchalenko 1990: 106, Fig. 182), as well as in parts of North Africa (Widrig 1978: Pl. 17).

Small columns

About 60 small columns were found in the cistern [*Fig. 10*]. They represent a wide variety of materials, shapes and sizes. However, they never reach a height of

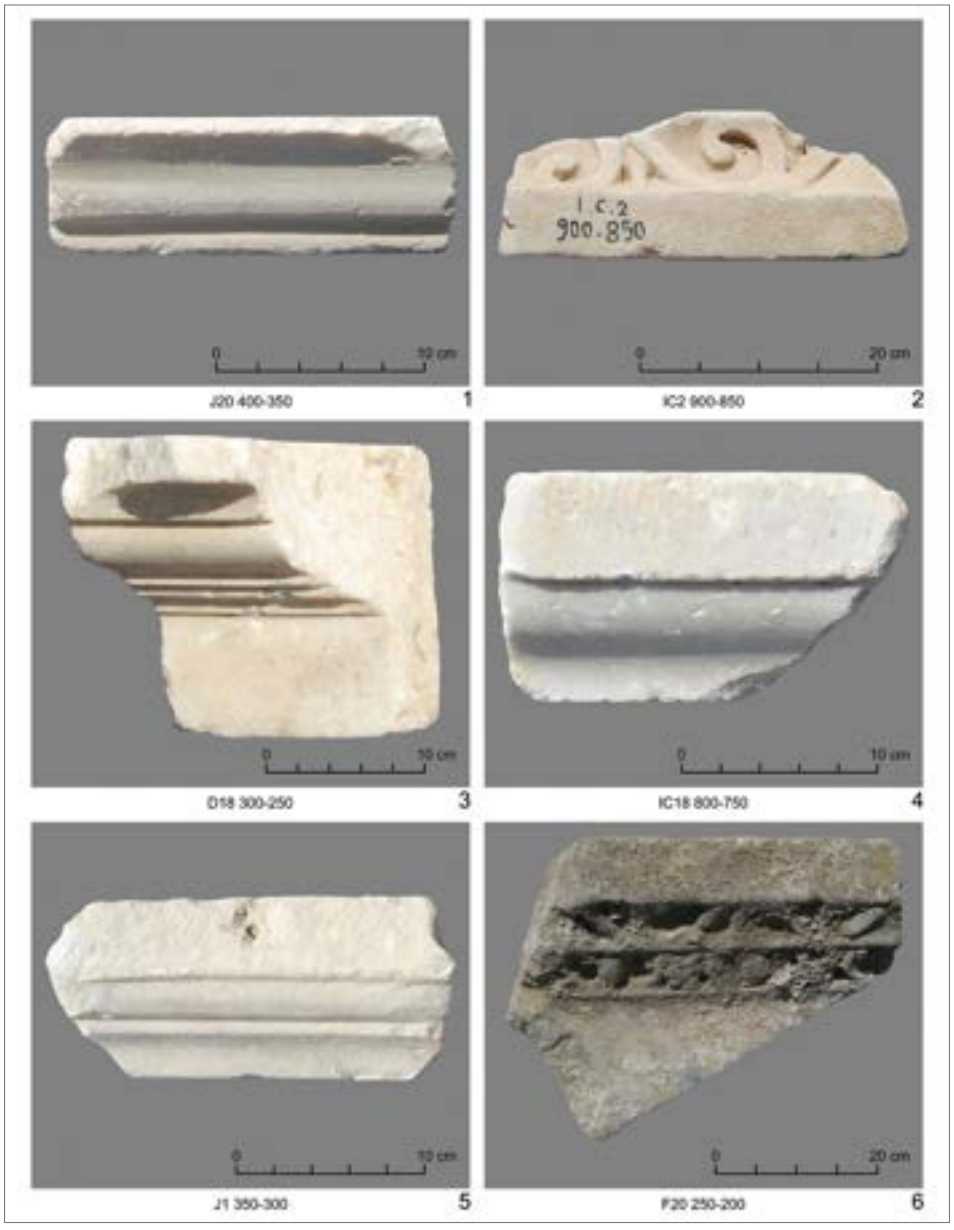

Fig. 13. Examples of small cornices (Photos H. Kahwagi-Janho)

more than 40 cm, with diameters ranging from 6 cm to 14 cm. The sections of these columns are typically circular, smooth and twisted, but several fragments have ovoid or even polygonal, smooth or fluted sections. Some of these fragments preserve their upper parts, including the capitals. The latter are simple, with incised decorations on smooth surfaces or, more rarely, light superimposed moldings. The materials of these columns are also varied (white, grayish, black, and greenish marble). The great diversity of these small columns in terms of size, shape and material attests to their provenance from several different installations within their respective monuments. While most of the elements were carved in the round, some seem to have been placed against walls, and others can be interpreted as elements that either supported the dozens of tables found in a fragmentary state in the same cistern (see Nicolaou 2013: 169), or surmounted the chancel posts (see Młynarczyk and Burdajewicz 2013: 207, 210).

Wall decorations

Wall decorations are among of the most important elements of interior decoration in the Byzantine churches and chapels of Tyre. They generally take the form of wall veneer panels, as well as architectural detail (pilasters, capitals, cornices, etc.). A number of these elements were found among the blocks recovered from the cistern. They include a set of pilaster capitals and fragments of small cornices.

Decorated slabs

The cistern contained 11 slabs from 4 cm to 10 cm thick, decorated with various geometric, vegetal and architectural motifs. They were carved with geometric patterns, most commonly meanders, hearts and darts, organized in superimposed registers reminiscent of entablatures [*Figs 11:6; 12:1*]. Vegetal motifs, on the other hand, typically adorned plaques forming pilaster capitals [*Figs 11:1–5; 12:2–4*]. The latter were inspired by decorations on Corinthian capitals and usually featured two pairs of volutes and helices surmounting acanthus leaves. These types of moldings were common elements of interior decoration in Byzantine churches, where they capped thin pilasters with an average width of 40 cm. Similar examples have been found

Fig. 14. Selected fragments of small cornices (Drawings H. Kahwagi-Janho)

in Cyrenaica, Libya (Ward-Perkins and Goodchild 2003: 122, Fig. 80 f), Syria (Vanderheyde 2003: 70–71, 80–82, Figs 18–22), as well as in Salamis, Cyprus (Roux 1998: 226, Fig. 266, and 227, Fig. 271), and in Egypt (Pensabene 1993: Pl. 63).

Fig.15. Examples of mortars (Photos H. Kahwagi-Janho)

Cornices

Dozens of fragments of small cornices were recovered from the cistern [*Figs 13–14*]. These are small elements ranging in height from 6 cm to 17 cm. One of the long sides is molded, usually forming a cavetto surmounted by a quarter round with an intervening band. The opposite side is usually smooth, allowing it to be pressed against a wall. Some of these pieces are pierced on their upper surface with small holes used to anchor the fixing cramps.

LITURGICAL AND UTILITARIAN FURNISHINGS

The liturgical and utilitarian furnishings, all found in a fragmentary state of preservation, consist mainly of mortars and tables. Each of these two groups comprises around 150 fragments in a wide variety of forms and materials.

MORTARS

Around 150 mortar fragments were found in the cistern [*Figs 15–16*], in addition to nearly 50 other fragments scattered throughout the site. Apart from the mortars carved from reused blocks (capitals, bases, etc.), the objects originally carved as mortars show a certain uniformity in their overall shape, with the body walls varying between 2 and 3 cm in thickness. Several shapes have been distinguished, the most common of which is a semi-ovoid shape with a flat or curvilinear base. Mortars of this type have a diameter that varies between 11 cm and 36 cm and a depth ranging from 5 cm to 18 cm. Most of the preserved fragments are handles with attached fragments of body walls. In rare cases, the mortar fragments preserve two orthogonally positioned handles, thus testifying to the presence of four handles on the entire perimeter. These handles usually bore incised decoration composed of lines in groups of three, following various directions, and were sometimes ear-shaped. Some of the handles were transformed into spouts by

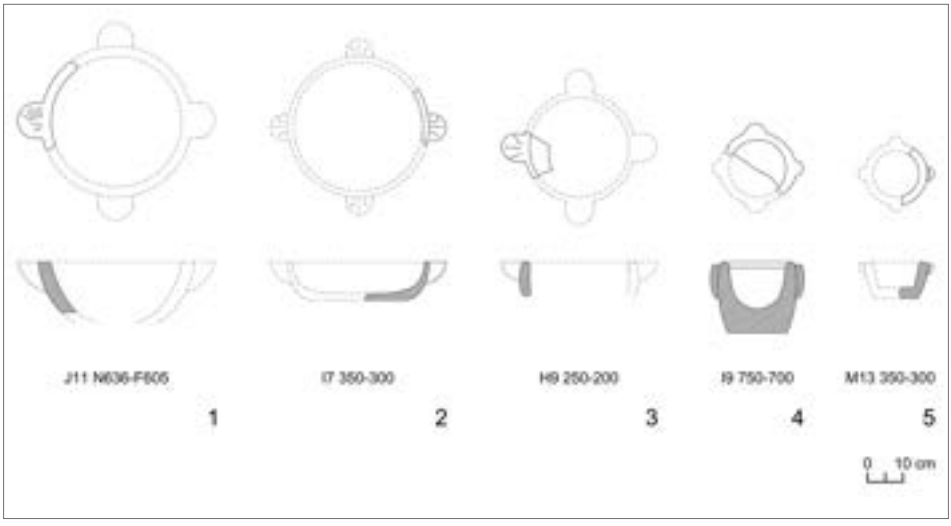

Fig. 16. Selected fragments of mortars (Drawings H. Kahwagi-Janho)

carving a thin channel that allowed water to flow out of the mortar. This type of mortar is very common on Byzantine sites in the region. Locally, similar examples have been found in Jiyeh (Gwiazda 2014: 528–531), Byblos (Dunand 1939: 39,

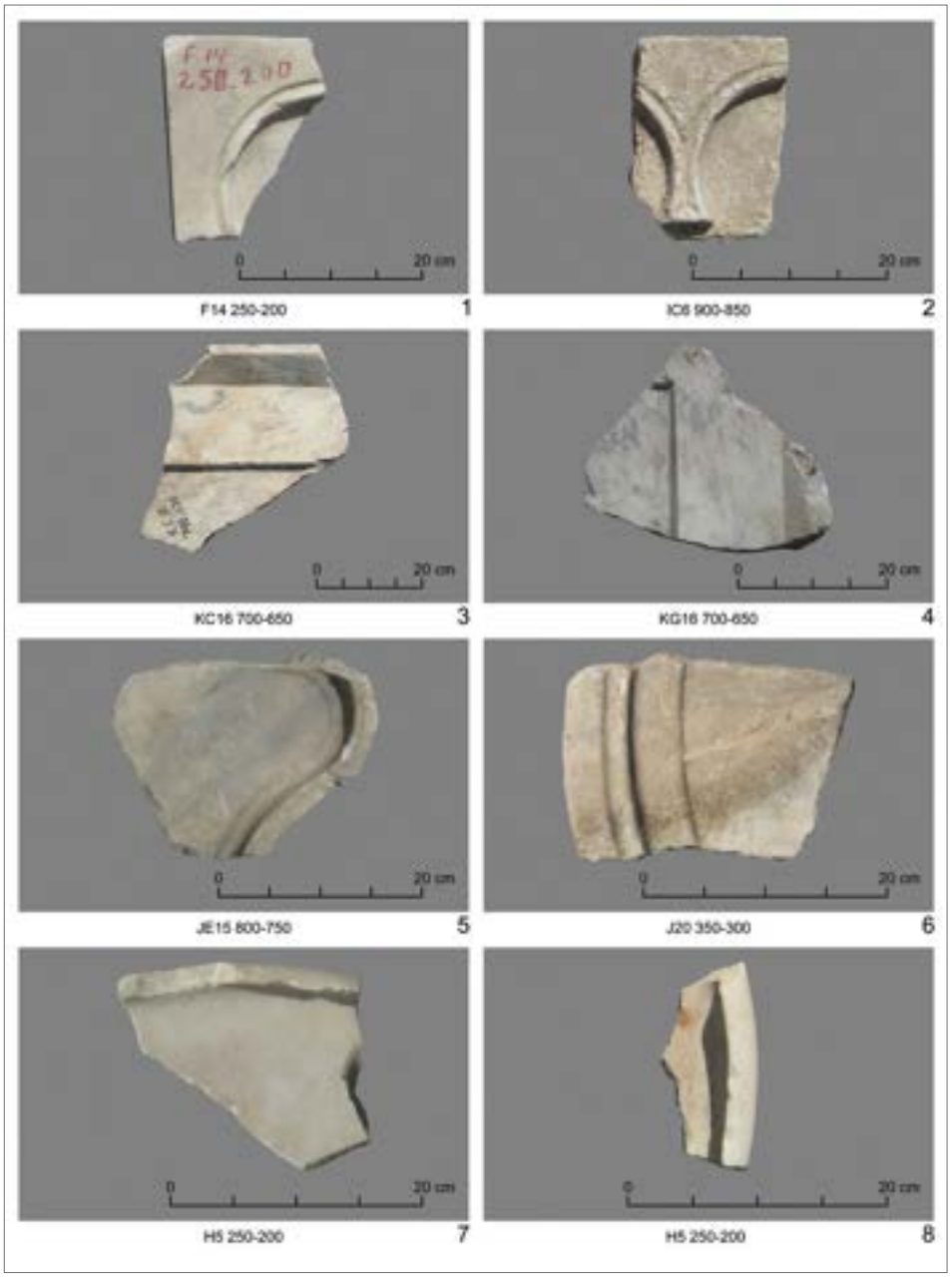

Fig. 17. Examples of tables (Photos H. Kahwagi-Janho)

no. 1197, Fig. 22; 1950–1958: 1048, Fig. 1157) and Beirut (Waliszewski 1997: 67–68). Regionally, several types have been found on many Palestinian, Syrian, and Greek sites (for an extensive list of these sites, see Gwiazda 2014: 528, for similar Syrian mortars from Apamea, Syria, see Vanderheyde 2003: 69–70, 76–78, Figs 9–12). The dating of similar mortars from sites in the region ranges from the 4th to the 7th century.

Apart from the ellipsoidal type, which was by far the most common, few specific types have been identified. Of note is a truncated pyramidal basin with faces decorated with stylized palms. A similar basin was found in the area of the Martyrium (Sector 4).

TABLES

More than 140 fragments of tables were found in the cistern [*Figs 17–19*]. They

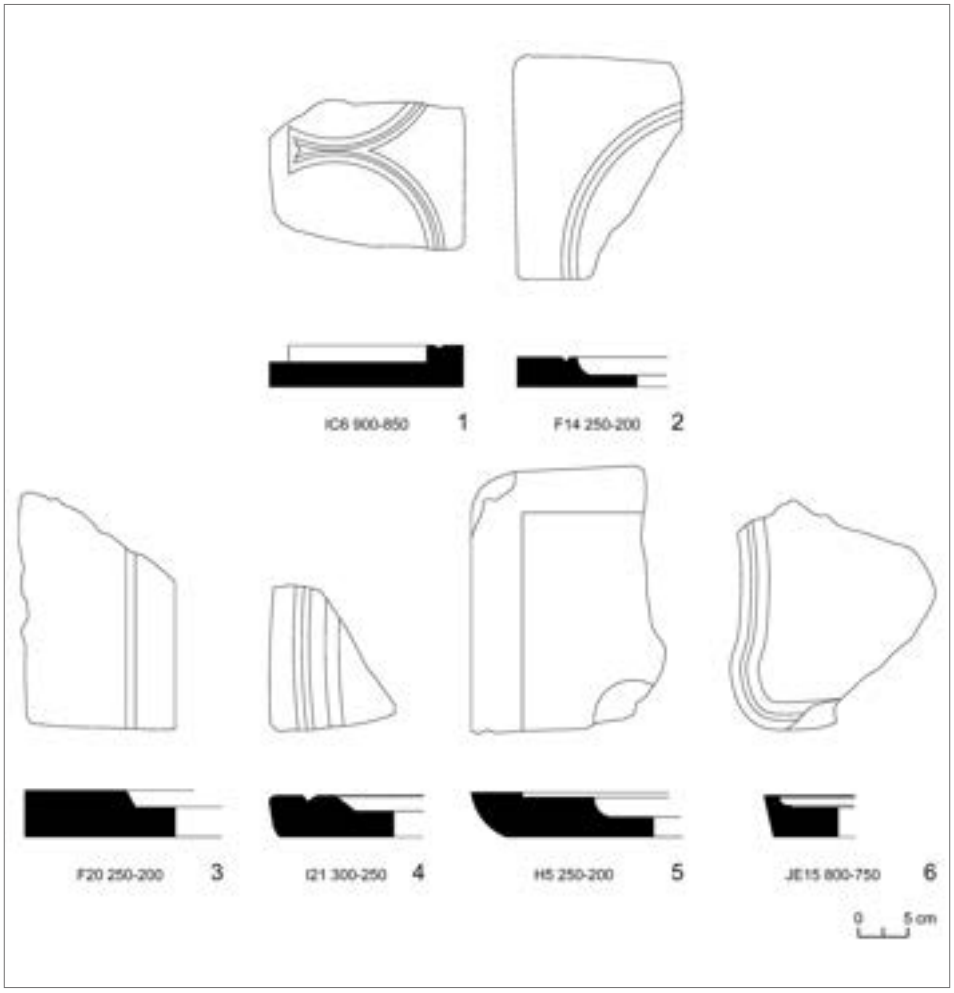

Fig. 18. Selected fragments of polylobed and enclosed tables (Drawings H. Kahwagi-Janho)

come in a wide variety of shapes and sizes and are made of three main materials: white marble, grayish-white marble and gray marble. They represent five main types: polylobed tables, enclosed (*clôturée*) tables with triangular rims, and tables with either molded, S-shaped or beak-shaped rims.

Polylobed tables

A dozen fragments of polylobed tables have been preserved in the cistern [*Figs 17:1–2; 18:1–2*]. They are largely carved in white marble. The pieces mostly comprise the walls of the lobes, whose thickness varies between 2 and 2.5 cm, more rarely the lobes themselves. These fragments are predominantly curvilinear, reflecting the circular or sigmoid shape of the tables. Other fragments correspond to the rectilinear, angular parts of this type of furnishings. Due to the fragmentary state of these objects, it is virtually impossible to determine the exact diameter and, therefore, the number of lobes per table. Several examples of this table type have been found in Greece, Bulgaria, and Cyprus (Roux 1973a: 134, Fig. 60; 169–174; 1973b: 141; Roux and Marcadé 1977: 455–457; Tenekedjiev 2014). They have between 7 and 14 lobes, 12 and 13 being the most common. According to Roux, this type of table is not earlier than the end of the 5th century (Roux 1973a: 173).

Enclosed tables with triangular rims

Several fragments of flat-rimmed enclosed tables were identified among the finds from the cistern [*Fig. 17:3–4*]. This type of table usually has a sigmoid shape. The fragments found are mostly flat and should therefore be assigned to the horizontal surfaces of their respective tables. The fragments, some up to 35 cm long, are divided into three zones: the bottom, with a total thickness varying between 1 cm and 2 cm, the peripheral band slightly raised above the bottom surface (0.5–1 cm) with an average width of 13 cm, and, finally, the rim with a triangular section 8 cm high and a sloping inner surface. This type of furnishing is usually cut in

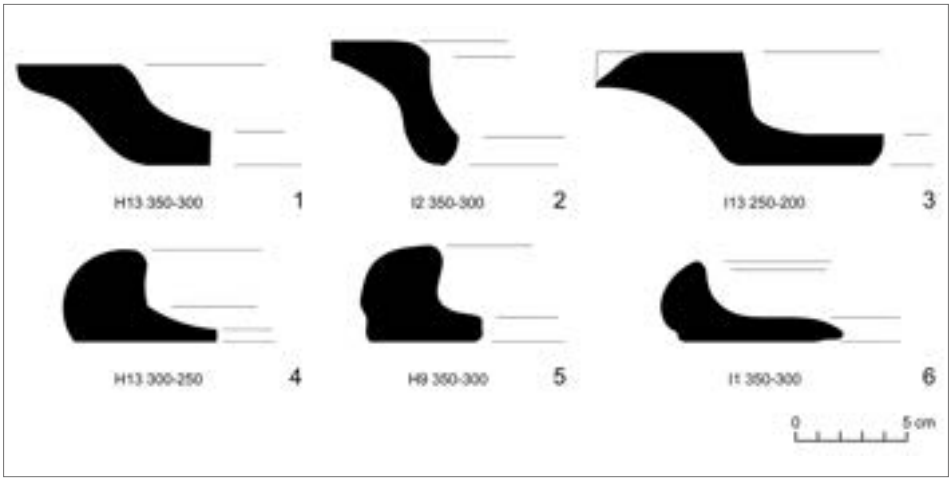

Fig. 19. Selected fragments of beak-shaped and S-shaped table rims (Drawings H. Kahwagi-Janho)

grayish or veined grayish-white marble. Looking to the specimens studied by G. Roux for comparison, it seems that this type of table generally had an almost square shape and its dimensions varied between 70 cm and 140 cm. The surfaces of all these tables are generally smooth and bear no traces of ornamentation. In contrast to the well-polished top surfaces of these fragments, their reverse sides are not always smooth, and they have been kept in a roughly polished state on some blocks.

Tables of this type have been excavated at several Greek, Cypriot, and Syrian sites (Roux 1973a: 159–169; 1973b: 138, 142). Similar specimens have also been found in Egypt (Pensabene 1993: 539–540, Pl. 110, Figs 1031–1033). They typically resemble those of Tyre on both formal and aesthetic levels. Roux estimates that this type of table was in use from the second half of the 4th century (Roux 1973a: 176).

Plates with molded rims

The first type of plate identified by the fragments of its rim is the type with a molded rim [*Figs 17:5–6; 18:3–6*]. These plates generally have slightly raised edges composed of two or three moldings, most often a band and a torus, separated by a miter groove. Fragments of this type, often rectilinear, are made of various types of marble. However, as with the previous type, plates carved in white marble are rare. The rims of these plates range from 2.5 cm to 8 cm in width. Examples of this type have been found in Delphi, Greece (Roux and Marcadé 1977: 460–462) and Salamis, Cyprus (Roux 1973a: 173, Fig. 92).

Plates with S-shaped rims

The second type of plate [*Fig. 19:1–3*] is related to the first, although its form is simplified: its rim is flat and horizontal, lacking the moldings usually found on specimens of the first type, and its profile is in the shape of an S. A fragment of a plate with a similar S-shaped rim was found in Jiyeh (Gwiazda 2014: 534). Several others have been found in Palestine, e.g. in Jerusalem (Mazar 2003: Pl. 1.13.3) and Avdat (Negev 1997: 143, Fig. 221). Most finds of this type are dated to the early Byzantine period.

Plates with beak-shaped rims

More than 50 fragments of beak-shaped rims were found in the cistern [*Figs 17:7–8; 19:4–6*]. They are made exclusively of white marble. None of these fragments is more than 10 cm in length, and in one case two joining fragments together measure 19 cm. Their height varies between 4 cm and 5 cm, their thickness between 0.6 cm and 1 cm. The profiles of these fragments are of two types: some have a curved outer profile that directly joins the flat bottom of the plate, while others slightly recoil in their lower part prior to reaching the flat surface. The rim surfaces are generally well polished, with rare exceptions in the areas between the rim and the flat bottom. All the fragments found are curved, attesting to the circular shape of these plates. The diameter, calculated in particular for the two joining fragments mentioned, reaches 105 cm. Like the types described above, several examples of this type have been found in Jiyeh (Gwiazda 2014: 531–533). On a regional level, many plate frag-

ments attributed to this type have been found in Syria (Gschwind and Hasan 2011: 224, Fig. 6), Palestine (Bagatti 1969: 203, Fig. 7.1–2), Cyprus (Roux 1973a: 179, Fig. 91), and Greece (Roux and Marcadé 1977: 457–459). Vessels of this type generally date from the early Byzantine period and are mostly found in religious buildings. The function of objects belonging to this group is still debated. Some hypotheses suggest that their main role was as side tables in auxiliary rooms and naves (Duval 1994: 199–200; Gwiazda 2014: 533).

CONCLUSIONS

In conclusion, the architectural decoration of the Byzantine religious monuments of Tyre has proved to be remarkably diverse and rich on both artistic and technical levels. The blocks are made of a wide variety of marbles. Barring the exceptional case of the tables with the beak-shaped rim, a particular type of furnishing was rarely carved in only one kind of marble. The cutting and polishing techniques are also diverse and vary from fragment to fragment, implying a variety of teams and craftsmen working on the site or even in the original workshops. For example, it is difficult to find two or more fragments of small columns that are similar or belong to the same series. The same is true for capitals, whether of free-standing columns or pilasters. On the other hand, we find greater uniformity in certain types of furnishings, such as small cornices or basins, at least as far as their shape and overall proportions are concerned. Despite this abundance and variety, the quality and richness of these objects remains far removed from the decorative types of Constantinople, especially during the Theodosian period. However, most of the Tyrian examples are similar to the most typical specimens from Cypriot, Greek, Syrian, Palestinian and North African religious sites.

The present study of the marbles found in the cistern and throughout the site of Tyre has focused on their artistic, decorative, and archaeometric aspects. It is hoped that it will lead to a better understanding of issues related to the production, importation and operation of manufacturing workshops. In the future, the geolocation of all the fragments will make it possible to reconstruct the architectural decoration of the various chapels and churches that existed in the districts of the Byzantine city.

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References

Bagatti, B. (1969). Nuovi apporti archeologici al "Dominus Flevit" (Oliveto). *Liber Annuus*, 19, 194–236

Dunand, M. (1939). *Fouilles de Byblos* I.2. *1926–1932: texte* (=*Bibliothèque Archéologique et Historique* 24/2). Paris: Geuthner

Dunand, M. (1950–1958). *Fouilles de Byblos* II.1–3. *1933–1938* (=*Études et Documents d'Archéologie* 3). Paris: P. Geuthner

Duval, N. (1994). L'architecture chrétienne et les pratiques liturgiques en Jordanie en rapport avec la Palestine: recherches nouvelles. In K.S. Painter (ed.), *Churches built in ancient times: Recent studies in early Christian archaeology* (=*Society of Antiquaries of London Occasional Papers* 16) (pp. 149–212). London: Society of Antiquaries of London

Foerster, G. (1989). Decorated marble chancel screens in sixth century synagogues in Palestine and their relation to Christian art and architecture. In N. Duval (ed.), *Actes du XI^e Congrès international d'archéologie chrétienne, Lyon, Vienne, Grenoble, Genève et Aoste (21–28 septembre 1986)* (=*Collection de l'École Française de Rome* 123) (pp. 1809–1820). Rome: École française de Rome

Gschwind, M. and Hasan, H. (2011). Ground penetrating radar (GPR) surveys conducted in Raphaneae in 2009. *Chronique archéologique en Syrie*, 5, 219–231

Gwiazda, M. (2014). Marble vessels from Jiyeh (Porphyreon). *Polish Archaeology in the Mediterranean*, 23/1, 527–542

Kahwagi-Janho, H. (2012). *L'hippodrome romain de Tyr: étude d'architecture et d'archéologie*. Bordeaux: Ausonius

Kahwagi-Janho, H. (2020). *Les chapiteaux corinthiens du Liban: formes et évolution du I^er au IV^e s. p.C.* Bordeaux: Ausonius

Mazar, E. (2003). *The Temple Mount excavations in Jerusalem 1968–1978 directed by Benjamin Mazar: Final reports* II. *The Byzantine and early Islamic periods* (=*Qedem* 43). Jerusalem: Institute of Archaeology, the Hebrew University of Jerusalem

Młynarczyk, J. and Burdajewicz, M. (2013). The Northwest Church complex. In A. Segal, M. Eisenberg, J. Młynarczyk, M. Burdajewicz, and M. Schuler, *Hippos-Sussita of the Decapolis: The first twelve seasons of excavations 2000–2011*, I (pp. 194–217). Haifa: Zinman Institute of Archaeology, University of Haifa

Negev, A. (1997). *The architecture of Oboda: Final report* (=*Qedem* 36). Jerusalem: The Institute of Archaeology, the Hebrew University of Jerusalem

Nicolaou, D. (2013). Liturgical furnishings from early Christian basilicas of Cyprus (4th–7th century). *Cahiers du Centre d'études chypriotes*, 43, 155–174

Pensabene, P. (1993). *Elementi architettonici di Alessandria e di altri siti egiziani*. Rome: L'Erma di Bretschneider

Pralong, A. (1993). Remarques sur les chapiteaux corinthiens tardifs en marbre de Proconnèse. In *L'acanthe dans la sculpture monumentale de l'Antiquité à la Renaissance* (pp. 133–146). Paris: Editions du Comité des Travaux Historiques et Scientifiques; Publications de la Sorbonne

Roux, G. (1973a). Tables chrétiennes en marbre découvertes à Salamine. In *Salamine de Chypre* IV. *Anthologie salaminienne* (pp. 133–196). Paris: de Boccard

Roux, G. (1973b). Une table chrétienne de Delphes. *Bulletin de correspondance hellénique*, 97(1), 137–144

Roux, G. (1998). *Salamine de Chypre* XV. *La basilique de la Campanopétra*. Paris: de Boccard

Roux, G. and Marcadé, J. (1977). Tables et plateaux chrétiens en marbre découverts à Delphes. In *Études delphiques* (=*Bulletin de Correspondance Hellénique. Supplément* 4) (pp. 453–465). Athens: École française d'Athènes

Tchalenko, G. (1979). *Églises de village de la Syrie du Nord: planches* (=*Bibliothèque Archéologique et Historique* 105). Paris: Librairie orientaliste P. Geuthner

Tchalenko, G. (1990). *Églises syriennes à béma: texte* (=*Bibliothèque Archéologique et Historique* 105). Paris: Librairie orientaliste P. Geuthner

Tenekedjiev, V. (2014). K"snoantična mramorna masa ot Abritus (Late antique marble table from Abritus). *Izvestiâ na Regionalen istoričeski muzej – Razgrad*, 1, 196–204 (English summary)

Vanderheyde, C. (2003). Objets et éléments décoratifs en pierre issus d'Apamée. *Bulletin des Musées royaux d'art et d'histoire*, 74, 63–106

Vanderheyde, C. (2020). Chapiteaux corinthiens inédits d'Apamée (Syrie). In D. Moreau, C.S. Snively, A. Guiglia Guidobaldi, I. Baldini, L. Milanović, I. Popović, N. Beaudry, and O. Heinrich-Tamaska (eds), *Archaeology of a world of changes: Late Roman and early Byzantine architecture, sculpture and landscapes. Selected papers from the 23rd International Congress of Byzantine Studies (Belgrade, 22–27 August 2016) in memoriam Claudiae Barsanti* (=*BAR International Series* 2973) (pp. 277–290). Oxford: BAR Publishing

Waliszewski, T. (1997). Stone objects from Caesarea Maritima in the Cracow Archaeological Museum. *Materiały Archeologiczne*, 30, 67–71

Ward-Perkins, J.B. and Goodchild, R.G. (2003). *Christian monuments of Cyrenaica* (J. Reynolds, ed.) (=*Society for Libyan Studies Monograph* 4). London: Society for Libyan Studies

Widrig, W. (1978). Two churches at Latrun in Cyrenaica. *Papers of the British School at Rome*, 46, 94–131

Marble as votive offering? Social agency in the post-Classical Levant

Abstract: This paper combines archaeology and written sources to examine the ways in which marble was used in the churches of the southern Levant in Late Antiquity. In particular, by analyzing the displays of these offerings within the church, and the types of texts engraved on them, it focuses on how, and to what extent, marble donations reflected social position, patronage, and identity. Most of the objects considered here bear inscriptions expressing devotion to saints, martyrs, and prophets, as well as a few quotations from Scripture, but overall, most reflect prayers and invocations by community members. The study therefore attempts to identify the genre of these texts and the objects they adorn to establish the relationship between donation and donor and to provide an analysis of the distribution of these objects within the church proper in the broader regional context of the Late Antique Levant.

Keywords: marble, votive inscriptions, Byzantine churches, southern Levant, patronage, donation

INTRODUCTION

In Late Antiquity, and especially in the second half of the 6th century, inhabitants of the provinces of the southern Levant invested heavily in church construction projects (Ashkenazi and Aviam 2014: 172–175; Aviam and Ashkenazi 2014; Ashkenazi 2018; Aviam and Ashkenazi

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2018). Over time, churches became the most important features of the Christian landscape, eclipsing pagan temples and secular public buildings in status and becoming spaces for community building, as well as displays of rank, wealth, and piety (Ashkenazi 2018: 726–727; Hamarneh 2021: 464). In addition to financial participation in construction projects, the contributions of lay donors in urban and rural communities in the Levant are most visible in inscriptions that register forms of veneration, devotion, and self-celebration in various media (especially mosaics and stone) (Hamarneh 1996; 1998; Jacobs 2020: 35). From a chronological point of view, the 6th century alone provides the most significant data, since more construction projects documented by inscriptions can be dated to this century than to any other. However, this number is not evenly distributed across the decades, and some fluctuations can be observed: significant building activity, mostly in cities, is recorded in the first half of the 6th century, followed by a suspension of building projects between AD 541 and AD 550;[1] thereafter, a resumption of activities related to church building is documented for the last two decades of the 6th and the beginning of the 7th century.[2] Most of the buildings belonging to the latter group were built in the countryside, testifying to the spread of interest in church building across a wide stratum of eastern Byzantine rural society (Di Segni 1999a: 162; 2017b: 293; Hamarneh 2022b: 88).

Church buildings and their decoration were likely modeled on or inspired by the lavish imperial foundations that had largely transformed the landscape and the topography of the Holy Land by the 5th and 6th centuries, significantly influencing the aesthetic tastes of the local provincial elites (both lay and ecclesiastic).[3] This shift, in turn, triggered an increasing demand for and importation of sophisticated decorative materials.[4] Among these, marble certainly stood out. Marble had a significant material and symbolic value in the architectural decoration and embellishment of buildings from a very early stage; its surface luster, smooth texture, and pleasing soft tones found great appreciation and visual appeal among various social groups.

The choice of a particular marble as a raw material depended on its intended

1 This notion has been rejected by Mordechai et al. (2019: 25548–25549). However, in the southern Levantine provinces, the fluctuation is evident from the dedicatory inscriptions of churches. See Hamarneh 2022b: 88.

2 Several factors had an impact on the fluctuation of settlements, such as periodic plague outbreaks, earthquakes, and climatic downturns which alternately contributed to recession or floruit, causing a gradual transformation of the social and economic fabric of the Levant (Hamarneh 2022b).

3 Church inscriptions document a large involvement of clerics of various ranks in the process of building and endowment of churches. Among the lay donors attested in inscriptions are merchants, estate administrators, soldiers and provincial officials (Hamarneh 2003: 230–238; Jacobs 2020: 43; Hamarneh 2022a: 613–616).

4 Especially consistent was the early contribution of senior female members of the imperial household and of members of the aristocracy (Whiting 2014: 73–75; Hamarneh 2021: 560–562).

use, since fine-grained and dolomitic marbles were preferred for sculpture, while coarser-grained marbles were used for architectural decorations and wall and floor revetments.[5] In addition, the degree of elaboration, design and style were determined by the intended placement and the level of proficiency of the workshop that was expected to finish the product. In terms of provenance, it is worth noting that several marble quarries, such as the renowned Prokonnesos, were effectively in imperial possession from the 1st century AD onwards; as such, the imperial authorities fostered and monopolized the marble trade, perhaps even nurturing the high demand for large quantities of marble all around the Mediterranean basin (Habas 2009: 104; Karagianni 2011–2012: 17–18). This centralized control ensured the availability of unfinished and semi-finished products of standard sizes for ecclesiastical projects, a large labor force, and advanced transportation methods. It cannot be ruled out that ecclesiastical authorities were encouraged by imperial middlemen to purchase marble, and that some later became personally involved in what proved to be a highly profitable business.

In fact, the marble found in excavated contexts in the Levant, at least that of the 6th century, seldom displays signs of reuse, which suggests that these pieces were not spolia but were deliberately purchased as new items. Other observations support the theory that marble elements were imported, since the types fall into categories with standard dimensions that are easy to obtain, given the "production line" principle practiced in the few workshops associated with marble quarries (Habas 2009: 104). Such pieces include: chancel screens, bema lateral slabs, altar and offering tables, small columns, chancel screen posts, reliquaries, small basins, as well as floor slabs, and components for *opus sectile*. However, field surveys on the island of Prokonnesos and the findings of roughly worked marble elements in shipwrecks (for example, at Marzamemi) strongly support the idea that these elements were most likely imported, sometimes finished and sometimes requiring refinement *in loco*.[6]

Such a working procedure is corroborated by the evidence provided by an inscription found in the northern corner of the eastern nave of the Hebron mosque. The reused inscription probably came from the earlier Byzantine church that had stood on the same spot. The text, engraved within a *tabula ansata*, was originally preceded by a cross, which was erased after the inscription was incorporated into the mosque. It invokes St. Abraham to "help his servant Nilus, the foreman of the marble workers, and Agathemerus and Hygia, and Omabis(?) and Thomasia, and Abdala and Anastasia" ([☩] Ἅγιε Ἀβραάμα, βοήθι τὸν δοῦλόν σου Νῖλον τὸν ˊ(πρωτο)ˎμαρμαράρην καὶ Ἀγαθήμερον καὶ Ὑγίαν καὶ ΩΜΑΒΙΣ καὶ Θωμασίαν καὶ Ἀβˊδˎαλα καὶ Ἀναστασίαν (Newbold 1846: 336–337; Vincent, Mackay, and Abel 1923: 160–161, Fig. 68). An inscription on a large limestone reliquary of unknown provenance,

5 Especially wall and floor *opus sectile* (Hamarneh 2018: 83–84).

6 Artisans may have also traveled on the vessels transporting marble across the Mediterranean. See Gargallo 1962: 196–197, Figs on p. 198; Kapitän 1969: 125–133, Figs on pp. 123, 127–131; McCormick 2001: 404–410; Habas 2009: 104; Karagianni 2011–2012: 21; Leidwagner, Greene, and Donnelly 2021: 297–299.

now kept at the Museum of Biblical Lands, mentions an offering to St. Sergius by Peter the marble worker:

† Θήκη τοῦ ἁγίου Σεργί[ου]· ὑπὲρ σωτηρίας Ἀνύσωνος τοῦ φιλοχρίστου τοῦ ποι⟨ή⟩σαντος

[? Μνήσθητι Κ(ύρι)ε Μαρί]ας κ(αὶ) Δανιὴλ [κ(αὶ) – κ(αὶ) Ἀθα]νασίας κ(αὶ) Σεργίου κ(αὶ) Πέτρου τοῦ μαρμαραρίου κ(αὶ) Ἀναί[α] (or Ἀνάν[ου])[7]

(Di Segni 2007: 132–133, no. 75; SEG 57 – 1860).

The existence of specific organized workshops is mentioned in the Life of St. John the Almsgiver, written by Leontios of Neapolis and dated around 610:

When an emperor is crowned, first of all the members of the guild of tomb builders have access to the royal presence while the whole Senate and the army are in attendance; directly after the crowning the builders of the imperial tomb come in and bring with them four or five small pieces of marbles of different colors and say to him: "Of which mineral does Your Majesty desire his tomb to be made?" thus suggesting to him that, as a corruptible mortal who soon passes away, he should take thought for his own soul, and govern his kingdom righteously. (*Life of John the Almsgiver* 19 [Dawes and Baynes 1977: 228–229]; Barry 2020: 149).

ARCHAEOLOGICAL CONTEXT

A multidisciplinary study of some collections of ecclesiastical marble, especially in the northern part of the province of Arabia and in Palaestina Tertia, allows to limit the provenance of such elements to Asia Minor, and in particular to Prokonnesos (Marmara, Turkey) as one of the major sources of marble[8] at least until the end of the 8th century (Al-Bashaireh 2021: 4). In particular, Prokonnesos-1 (Saraylar) marble was the most commonly used marble for church furnishings and the primary choice of stonemasons during the Byzantine period (Karagianni 2011–2012: 18–19), in contrast to the more limited use of Prokonnesos-2 (Çamlik) marble (Al-Bashaireh and Al-Housan 2015; Al-Bashaireh and Lazzarini 2016; Al-Bashaireh, Abudanah, and Driessen 2020: 26; Al-Bashaireh 2021: 4).

In terms of its placement, most of the marble was used for the interior decoration of churches, and especially for emphasizing the area of the bema or the presbyterium, where the enactment of the miracle of the Eucharist was performed. The bema was usually enclosed by a chancel screen that symbolically delimited the sacred space within the church and was usually made of marble panels, although less precious local materials (such as oil shale) were also employed. To ensure its visibility, the bema was raised by a few steps above the level of the nave; the uppermost step has generally preserved traces of the chancel screen structure, such as square sockets and grooves to secure the posts and panels of the screen (Michel 2001: 51–54) [***Fig. 1***]. In some cases, the walls of the apse and the columns of the

7 The reliquary is dated to the 6th or the 7th century.

8 Provenance from other regions, such as Paros, Miletos and Naxos, is also attested but in small quantities.

eastern colonnade of the nave were similarly grooved to hold the screen panels (Habas 2009). A closer look at the marble panels, and especially at their prominent position in the church, reveals that workshops began to produce entire series of liturgical furnishing elements, up to several dozen thematically related iconographic patterns, apparently to satisfy the demand of many private donors, both lay and ecclesiastical.

A considerable number of marble objects in churches received carved inscriptions reflecting personal agency; these fall roughly into two main categories: donations and votive offerings consisting of petitions and expressions of prayer and devotion to saints and martyrs. These texts share a number of features, such as placement in prominent locations within the church, even *ad sanctus*, in order to attract attention and ensure visibility.

Fig. 1. Presbyterium of the Church of Wa'il of Umm er-Rasas (SBF Jerusalem | photo M. Piccirillo)

Such texts were engraved on either the upper or the lower surface of the outer band of the moldings of chancel screens, offering tables, and ambos, and thus facing the nave (Michel 2001: 61–66, 70–72). In some cases, a cross would be placed at the beginning and end of the text for clearly apotropaic purposes.

The epigraphic formulas allowed for the acknowledgment of a donation, the identification of the donors, the self-promotion of the sponsor within the community, and the establishment of a close interaction between the readers of the text, the visitors to the church, and the Sacrum.

The texts often followed a standardized, concise formulation such as Κύριε μνήσθητι ("Lord, remember"), Κύριε βοήθει ("Lord, help"), or Κύριε ἐλέησον ("Lord, have mercy on") (Di Segni 2017a: 63). The wording as such cemented a dual function: on the one hand, it signaled the benefactor's involvement in the donation or construction of the sacred space and its decoration (as may be the case with some similarly worded inscriptions installed in public spaces); and, on the other hand, it served a mnemonic function, fixing the person's name in the sacred space to ensure his or her perpetual remembrance, similar to the apotropaic function of pilgrims' graffiti. Given the importance of this large category, it should be noted that the origin of such invocations seems to be rooted in the pagan or Jewish Septuagint tradition; according to Di Segni (2017a: 63–64), both μνησθῇ and βοήθει formulations were merely adopted by Christians.

An additional category of inscriptions includes prayers that mention a votive offering, such as προσφορά or καρποφορία, or the phrase "Lord, Saint, Martyr, accept the offering of", followed by a petition formula that explains its purpose: for salvation, succor, the remittance of sins, repose, remembrance, etc. (Di Segni 2017a: 65–66).

Various donor inscriptions were often introduced and concluded with a cross, the most appropriate apotropaic symbol meant to "seal" the intention and ensure its value within the sacred space of the church. The proximity of an inscription to the bema (or sanctuary) gave assurance that the plea would be accepted, a measure that Di Segni effectively called a "prayer-*cum*-contract" (Di Segni 2017a: 66; Leatherbury 2019: 245). As a result, the internal space of the church was shaped by a variety of offerings from members of the community.

EPIGRAPHIC ELEMENTS

In this regard, one of the two 6th-century inscriptions, recently uncovered during the excavations of Horvat Beth Shemesh, dated to 543, is a *unicum* of its genre. It states that Malchos, priest and abbot, in "giving thanks to God and to the Glorious Martyr" for his own salvation and memory, made "the mosaic pavement and the buildings and all the marble work [καὶ πᾶσαν μαρμάρωσ(ι)ν] in the most holy martyrium and the bronze gates of the crypt" (Di Segni in Storchan 2021: 36). As far as marble is concerned, the donation effort of this presbyter and *hegumenos* was consistent: it comprised wall revetments, chancel screens, and probably the marble reliquary. Indeed, during the excavation, Benyamin Storchan identified dotted bands of small holes in the walls,

vaults, and staircase of the main hall, as well as marble wedges and iron rods that were used to secure the revetment slabs on the walls (Storchan 2021: 33–34). This qualitatively and quantitatively significant investment was certainly befitting to celebrate the glory of the anonymous martyr to whom the church was dedicated and, in a broader sense, to ensure the *fama et memoria* of its main benefactor.

A comparable pattern of donation is described in a Greek inscription of the church at Bargylia (Karia, western Asia Minor) commemorating the fulfilment of a vow to the Apostle Peter by Auxibios, probably a prominent member of the city council. The vow was fulfilled by the benefactor also on behalf of his children and consisted in the paving of an aisle and the construction of a chancel screen [τοὺς κανκέλλους], although the inscription itself was written on a local stone rather than on marble (Traina 1990: no. 2, SEG 40 – 953; Feissel 2006: 95, no. 305).

The excavation of the monumental triconch church at Beer Sheva, dated to 552/553, revealed several dedicatory inscriptions in marble, both on liturgical furniture and on pavement slabs. The marble material is not homogeneous, suggesting different production phases or even the use of inscriptions from other buildings. However, according to Fabian and Ustinova, at least three incised marble slabs belonging to the pavement of the church are coeval in form and style and can be dated to the last decades of the 6th century, when the mosaic pavement was substituted with a marble floor. The texts, enclosed within oval medallions, were written in fine and evenly spaced characters. The first, arranged in six horizontal lines, refers to the works undertaken by Stephanos the *oikonomos* (Fabian and Ustinova 2020: 235); the second refers to other works during the time of Eulalios the priest (Fabian and Ustinova 2020: 236); and the third mentions a collective donation preceded by the words "Lord, remember all those who offered". Similar wording appears incised on a partially preserved large rectangular marble slab set in the pavement, referring to "those who donated and those who intended to donate". The text concluded with an olive branch and a cross (Fabian and Ustinova 2020: 239).

Additional evidence reflecting specific liturgical meaning is found in the quotations from Psalms found on an engraved marble slab that has been tentatively reconstructed as a part of a chancel screen. The incomplete marble slab contains, in large and well-designed letters carved along the edge of its upper frame, the first part of Psalm 25 (26:8), "O Lord, I have loved", originally followed by the words: "the beauty of thy house / and the place of the tabernacle of thy glory" (Fabian and Ustinova 2020: 237). However, one has the impression that this *pluteum* was intended to be reworked, since the fields of the molding are only incised. The wording from the psalm may allude to the liturgy performed during the consecration of churches and may have been prepared for such an occasion (Feissel 1983: 176; Felle 2006: 264). A good parallel is found in the 5th–6th century marble slab reused in the monastery of Iviron on Mount Athos, which features the same psalm, the name of the bishop and some ornamental work (Fabian and Ustinova 2020: 237).

Inscribed *plutea* from the triconch church also carry written petitions, such as the one set on the inside of the upper molding of an openwork chancel screen, its text in a square script and skilfully rendered letters. The inscription, flanked on both sides by crosses, is offered for the repose of Serapion. Another inscribed fragment of a chancel screen features a partially preserved inscription engraved on the upper frame, defining it as a gift for the salvation of a donor whose name is lost (Fabian and Ustinova 2020: 240). Offerings for salvation and repose are quite common as they largely reflect the expectations of the community. Such words are engraved on the lower edge of a slab found in the Horvat Karkur church in the northern Negev desert [***Fig. 2***]. One of the fragments includes the usual formula "for the salvation of", while at least two refer to an offering by a priest from ancient Malatha in Idumea, and are possibly dated around 554/555 (Figueras 2004b: 125–126, no. 2); other texts written on the chancel screen, including one mentioning a bishop, are incomplete (Figueras 2004b: 128–130, no. 6).

Smaller offerings of parts of liturgical furnishings reflect the consistent participation of the community at large in bearing the financial burden of the interior decoration of church buildings. Such offerings may include altar tables, marble legs, chancel posts, and columns.[9] The donations were duly designated as such in the inscriptions. However, since the space for text was limited due to the small surface area of these objects, they only bore the proper name of the donor or the person to be commemorated. The papyri of Nessana mention a column donated to the church of St. George by George the *hegumenos* and his wife (*P. Nessana* III: 7).[10]

This *modus operandi* is confirmed by several other examples, such as a small table leg found in the northern church of Oboda with two names, John and Elijah, carved on its sides (Negev 1978: 117–118, no. 37, Pl. 17.33; 1981: 40, no. 37, Pl. 14.33); a chancel post found *in situ* in the southern church of St. Theodore of Oboda with the name of Ennios (Negev 1978: 105, no. 15, Pl. 12.17; 1981: 28–29, no. 15, Pl. 7.17); an altar table donated for the salvation of Kasiseos and Viktor, son of Stephanos (Negev 1978: 116–117, no. 32, Pl. 16.32; 1981: 39, no. 32, Pl. 13.32); and a chancel screen with invocations to St. Theodore, to whom the church was dedicated (Negev 1978: 116, no. 31, Pl. 16.31; 1981: 38, no. 31, Pl. 13.31). Further evidence has been uncovered at the Monastery of Severianus at Khirbet el-Deir: an inscription carved on the long edge of a marble offering table, dated to the second half of the 6th century, attests the donation of the altar table by Alephaeos the deacon and Aianos the monk (Di Segni and Hirschfeld 1987: 373–377, 386, no. 2; Di Segni 1999b: 99, no. 2). At the Horvat Susiya synagogue, an Aramaic inscription carved on two adjacent sides of a chancel

9 Piecemeal donations are an additional confirmation of the high price of marble; mosaics were the more popular decorative and inscription medium, as they were less costly. According to Baumann, a small surface of donated mosaic would have cost between 0.25 and three solidi (Baumann 1999: 303–307; Jacobs 2020: 41).

10 This donation may also reflect an *ex voto* to the saint bearing the same name as the donor.

screen post shows a similar attitude towards minor donations. The text reads: "and Lazar | donation of | [the] sons of" (Yeivin 1974: 207).

A rectangular marble slab from the central church of Nessana was used as a platform on which a four-legged altar stood, as evidenced by the small unpolished squares near the two surviving corners. A small hole in the center of each square would have held an iron pin that secured the base of the colonnette to the platform. The platform is inscribed on two opposite sides. The inscription on the upper edge reads "[Lord, remember?] those who have donated, and Gadimos".

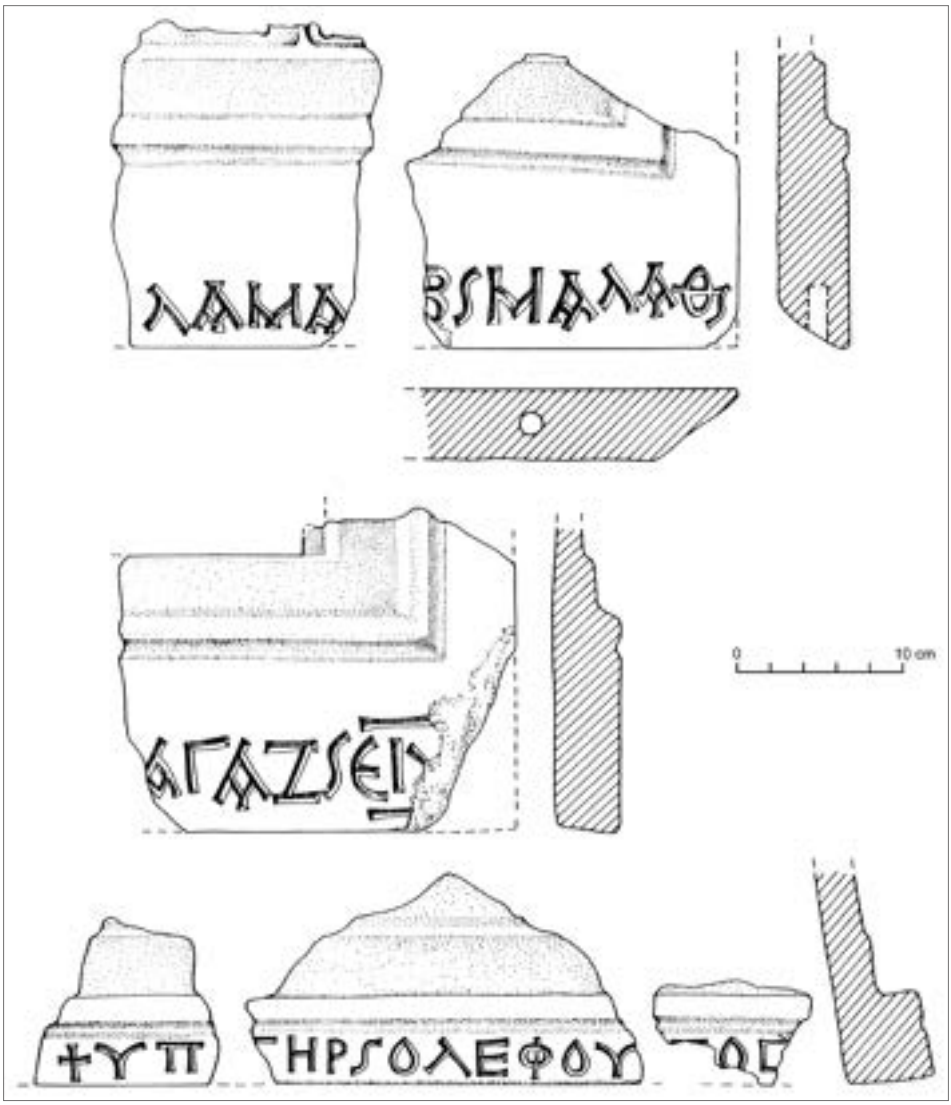

Fig. 2. Horvat Karkur, general view of the inscriptions (After Figueras 2004a: 124, Fig. 23)

According to Figueras, Gadimos can be identified as the stonecutter. The text on the lower edge, preceded by a cross, mentions that it was made "During the time of the most holy bishop Victor and Pau[lus? …]" (Figueras 2004a: 232–235, no. 6, Fig. 6; Feissel and Gatier 2006: 737, no. 480). At Khirbet Beit Sila, a similar marble altar base with an inscription was gifted "For the memory and repose of our Christ-loving brothers [and sisters] Peter, John, Mary, Anastasia, Mary, and Andrew", possibly in commemoration of members of the village community or as a family donation (Batz 2012: 383–385; Di Segni 2012: 412–416; Ashkenazi 2018: 721). The altar table itself was offered "for a vow of Chrysippus", ✠ Ὑπὲρ εὐχῆς Χρυ[σίππου? --] (Batz 2012: 383–385; Di Segni 2012: 413–414).

The practice described above was extremely common, as evidenced by coeval examples in Arabia, such as a panel from el-Deir at Ma'in bearing the incised dedicatory inscription: "+ Lord, remember in your mercy John, your servant, the sinner. +" (Piccirillo 1989: 246). The excavation of a synthronon in the Monastery Church of Moses on Mount Nebo yielded more marble fragments with inscriptions in Greek capital letters, allowing the inscription, first identified in the 1930 excavations, to be completed. The text, preceded by a cross, mentions an "offering by … priest and by Maximus" (Saller 1941: 268–269; Gatier 1986: 96, no. 85; Acconci 1998: 525–527, no. 150; Di Segni 1998: 435, no. 17; Bianchi 2021: 85, no. 84).

Votive invocations to saints are also attested on chancel screens, although the texts are seldom preserved completely. Examples include invocations to: St. Theodore in the southern church of Oboda (Negev 1978: 116, no. 31; 1981: 38, no. 31); St. Sergius in the church of al-Tuweiri on the northern plain of Akko (Acre) (Smithline 2007: Fig. 6); and at the monastery of Aaron on Jabal Harun (Lehtinen 2008: 201–202, Fig. 5a) [*Fig. 3*].

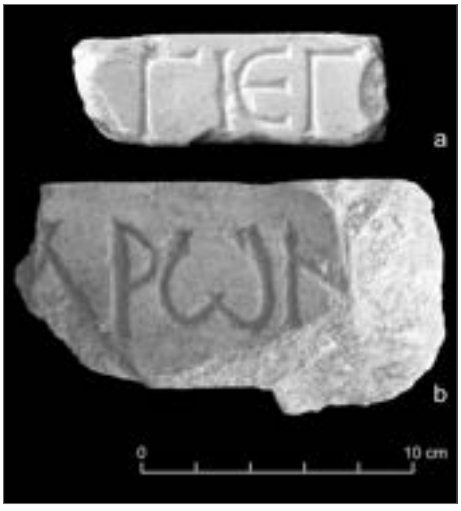

Fig. 3. Marble fragments from Jabal Harun: a – table slab with an invocation to St. George; b – upper edge of a chancel screen with an invocation to St. Aaron (Courtesy of Z.T. Fiema)

This pattern is common in synagogues of the same date, for example at Horvat Susiya. The chancel screen, made of Prokonnesian marble, bears a dedicatory inscription in Aramaic, incised on the upper part of its inner border, below a decoration consisting of a two-strand guilloche: "Remembered be for good Lazar and Isai sons of Simeon, son of Lazar". Most of the remaining parts of the slab show clear signs of efforts to deface the decorated relief. Only remnants of the intact relief at the upper right allow the scene to be reconstructed as that of Moses receiving the Law (Yeivin 1974: 207; Gutman and Yeivin 1981). Several other fragments of marble

chancel screens found at Horvat Susiya mention collective and private donations by the community (Yeivin 1974: 204).

The last category I wish to consider is ambo platforms, such as the one made of Prokonnesos marble, possibly from the Negev, preserved in the Terra Sancta Museum in Jerusalem. The hexagonal base bears a Greek inscription, preceded by a cross, running along four sides, most probably the sides visible from the nave. The text reveals its purpose: "For the salvation and the offering of Stephen, (son) of Valens, and the repose of the most blessed Arrobebos, (daughter) of Zenobios" (Pierri 2021: 367–371). Another hexagonal ambo base, formerly installed at the northwest corner of a chancel screen in the church of St. Theodore at Khirbet Beit Sila, now in the Good Samaritan Museum of Ma'ale Adumim, contains an inscription asking the Lord to "accept the offering of thy servant Peter the Priest" (Batz 2012: 383–385, Fig. 15; Di Segni 2012: 413–414, no. 4).

CONCLUSION

Economic prosperity and the rise of the provincial aristocracy, especially in the second half of the 6th century, led to intensive investment in church buildings, which is reflected in the use of imported marbles of various types and qualities. Inscribed liturgical furniture in marble had an important function, not only because churches were the main places where epigraphic practice found its new primary domain in Late Antiquity, but also as a reflection of personal agency. Lay donors were seldom recorded by title or profession (Ashkenazi 2018), which was certainly not necessary given the placement of the offering and its display in strategic locations of the bema and nave.

Further consideration should be given to the organizational dynamics and the distribution of inscribed marble liturgical furnishings in the regional context of the Levant, especially the methods of procuring the stone from various quarries, in particular from the island of Prokonnesos, which accounted for the majority of imports. The raw marble was undoubtedly collected in storage facilities, which must have been located near a port, a *statio marmorum* like the Roman Marmorata; although their existence is conceivable, no archaeological evidence has yet been found. The fact that most of the inscribed fragments have been discovered in Palaestina Tertia and the Negev area may suggest that the port of Gaza was one such *statio*. However, marble originating from the same quarries, sometimes with mason's marks but without inscriptions, has been identified on other sites in Arabia, especially at Mount Nebo, Hayyan al-Mushrif, Rihab, Gerasa, Umm el-Rasas, Humayma, etc., suggesting a regional circulation from the coast inland via the *cursus publicus* or secondary routes. Once the material reached its destination, it was probably refined and then fitted within a church space.

In conclusion, the use of marble in ecclesiastical settings cannot be viewed in isolation from its broader social and votive function. In this regard, the degree of involvement of ecclesiastical and imperial authorities in promoting the use of marble, given the great economic benefits they derived from it, cannot be overlooked and should be an important topic of discussion in the future.

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References

Acconci, A. (1998). Elements of the liturgical furniture. In M. Piccirillo and E. Alliata, *Mount Nebo: New archaeological excavations, 1967–1997* (=*Studium Biblicum Franciscanum. Collectio Maior* 27) (pp. 468–542). Jerusalem: Studium Biblicum Franciscanum

Al-Bashaireh, K. (2021). Ancient white marble trade and its provenance determination. *Journal of Archaeological Science: Reports*, 35, 102777

Al-Bashaireh, K., Abudanah, F., and Driessen, M. (2020). Provenance analysis of marble ecclesiastical elements from the extra-mural Byzantine Church of Udhruh (South Jordan). *Archaeological and Anthropological Sciences*, 12, 26

Al-Bashaireh, K. and Al-Housan, A.Q. (2015). Provenance investigation of white marbles of chancel screens from Rihab Byzantine churches, northeast Jordan. *Journal of Cultural Heritage*, 16(4), 591–596

Al-Bashaireh, K. and Lazzarini, L. (2016). Marbles, granites and basalt used in the cruciform basilica of Abila (Decapolis, Jordan): Archaeometric characterization and provenance. *Archaeological and Anthropological Sciences*, 8(3), 545–554

Ashkenazi, J. (2018). Family rural churches in late antique Palestine and the competition in the 'field of religious goods': A socio-historical view. *The Journal of Ecclesiastical History*, 69(4), 709–727

Ashkenazi, J. and Aviam, M. (2014). Small monasteries in Galilee in late antiquity: The test case of Karmiel. In G.C. Bottini, L.D. Chrupcała, and J. Patrich (eds), *Knowledge and wisdom: Archaeological and historical essays in honour of Leah Di Segni* (=*Studium Biblicum Franciscanum. Collectio Maior* 54) (pp. 161–178). Milan: Edizioni Terra Santa

Aviam, M. and Ashkenazi, J. (2014). Late antique pilgrim monasteries in Galilean *Loca Sancta*. *Liber Annuus*, 64, 559–573

Aviam, M. and Ashkenazi, J. (2018). Wirtschaftliche Entwicklung und materielle Kultur im christlich geprägten Galiläa der Spätantike. *Antike Welt*, 2, 45–49

Barry, F. (2020). *Painting in stone: Architecture and the poetics of marble from antiquity to the Enlightenment*. New Haven, CT: Yale University Press

Batz, S. (2012). A Byzantine church at Khirbet Beit Sila. In N. Carmin (ed.), *Christians and Christianity* III. *Churches and monasteries in Samaria and northern Judea* (=*Judea and Samaria Publications* 15) (pp. 373–408). Jerusalem: Israel Antiquities Authority

Baumann, P. (1999). *Spätantike Stifter im Heiligen Land: Darstellungen und Inschriften auf Bodenmosaiken in Kirchen, Synagogen und Privathäusern* (=*Spätantike – Frühes Christentum – Byzanz. Reihe B: Studien und Perspektiven* 5). Wiesbaden: Reichert Verlag

Bianchi, D. (2021). *A shrine to Moses: A reappraisal of the Mount Nebo Monastic Complex between Byzantium and Islam* (=*Archäologische Forschungen* 31). Vienna: Austrian Academy of Sciences Press

Dawes, E.A.S. and Baynes, N.H. (1977). *Three Byzantine saints: Contemporary biographies of St. Daniel the Stylite, St. Theodore of Sykeon, and St. John the Almsgiver*. Crestwood, NY: St. Vladimir's Seminary Press

Di Segni, L. (1998). The Greek inscriptions. In M. Piccirillo and E. Alliata, *Mount Nebo: New archaeological excavations, 1967–1997* (=*Studium Biblicum Franciscanum. Collectio Maior* 27) (pp. 425–467). Jerusalem: Studium Biblicum Franciscanum

Di Segni, L. (1999a). Epigraphic documentation on building in the provinces of *Palaestina* and *Arabia*, 4th–7th c. In J.H. Humphrey (ed.), *The Roman and Byzantine Near East: Some recent archaeological research* II (=*Journal of Roman Archaeology Supplementary Series* 31) (pp. 149–178). Porsmouth, RI: Journal of Roman Archaeology

Di Segni, L. (1999b). The inscriptions. In Y. Hirschfeld, *The early Byzantine monastery at Khirbet Ed-Deir in the Judean Desert: The excavations in 1981–1987* (=*Qedem* 38) (pp. 97–106). Jerusalem: Institute of Archaeology, the Hebrew University of Jerusalem

Di Segni, L. (2007). Reliquary for the relics of Saint Sergius. In J.G. Westenholz (ed.), *Three faces of monotheism* (pp. 132–133). Jerusalem: Bible Lands Museum

Di Segni, L. (2012). Greek inscriptions from the church at Khirbet Beit Sila. In N. Carmin (ed.), *Christians and Christianity* III. *Churches and monasteries in Samaria and northern Judea* (=*Judea and Samaria Publications* 15) (pp. 409–416). Jerusalem: Israel Antiquities Authority

Di Segni, L. (2017a). Expressions of prayer in late antique inscriptions in the provinces of *Palaestina* and *Arabia*. In B. Bitton-Ashkelony and D. Krueger (eds), *Prayer and worship in Eastern Christianities, 5th to 11th centuries* (pp. 63–88). London–New York: Routledge

Di Segni, L. (2017b). Late antique inscriptions in the provinces of *Palaestina* and *Arabia*: Realities and change. In K. Bolle, C. Machado, and C. Witschel (eds), *The epigraphic cultures of late antiquity* (=*Heidelberger Althistorische Beiträge* 60) (pp. 287–320). Stuttgart: Franz Steiner Verlag

Di Segni, L. and Hirschfeld, Y. (1987). Four Greek inscriptions from the monastery at Khirbet ed-Deir in the Judean Desert. *Orientalia Christiana Periodica*, 53(2), 365–386

Fabian, P. and Ustinova, Y. (2020). A monumental church in Beersheba: Architecture, mosaics and inscriptions. *Israel Exploration Journal*, 70(2), 221–245

Feissel, D. (1983). *Recueil des inscriptions chrétiennes de Macédoine du IIIe au VIe siècle* (=*Bulletin de Correspondance Hellénique. Supplément* 8). Athens: École française d'Athènes

Feissel, D. (2006). *Chroniques d'épigraphie byzantine: 1987–2004*. Paris: Association des amis du Centre d'histoire et civilisation de Byzance

Feissel, D. and Gatier, P.-L. (2006). Bulletin épigraphique: Syrie, Phénicie, Palestine, Arabie. *Revue des Études Grecques*, 119(2), 723–742

Felle, A.E. (2006). *Biblia epigraphica: la Sacra Scrittura nella documentazione epigrafica dell'orbis christianus antiquus (III–VII secolo)*. Bari: Edipuglia

Figueras, P. (2004a). Greek inscriptions from Nessana. In D. Urman (ed.), *Nessana: Excavations and studies* (pp. 222–242). Beer-Sheva: Ben-Gurion University of the Negev Press

Figueras, P. (ed.). (2004b). *Horvat Karkur 'Illit: A Byzantine cemetery church in the Northern Negev (final report of the excavations 1989–1995)*. Beer-Sheva: Ben-Gurion University of the Negev Press

Gargallo, P.N. (1962). Exploring off the coast of Sicily. *Archaeology*, 15(3), 193–197

Gatier, P.-L. (1986). *Inscriptions grecques et latines de la Syrie* XXI.2. *Inscriptions de la Jordanie. Région centrale (Amman – Hesban – Madaba – Main – Dhiban)* (=*Bibliothèque Archéologique et Historique* 114). Paris: Librairie Orientaliste P. Geuthner

Gutman, S. and Yevin, Z. (1981). Excavation in the synagogue at Horvat Susiya. In L.I. Levine (ed.), *Ancient synagogues revealed* (pp. 123–128). Jerusalem: Israel Exploration Society

Habas, L. (2009). The art of imported marble chancel screens and its influence on local production in the churches of the provinces of Palaestina and Arabia: A case study. In H. Oniz (ed.), *SOMA 2008: Proceedings of the XII Symposium on Mediterranean Archaeology, Eastern Mediterranean University, Famagusta, North Cyprus, 5–8 March 2008* (=*BAR International Series* 1909) (pp. 100–108). Oxford: Archaeopress

Hamarneh, B. (1996). Evergetismo ecclesiastico e laico nella Giordania bizantina ed ommayade nel V–VIII secolo: testimonianze epigrafiche. *Vetera Christianorum*, 33, 57–75

Hamarneh, B. (1998). Ritratti ed immagini di donatori nei mosaici della Giordania. In N. Cambi and E. Marin (eds), *Acta XIII Congressus Internazionalis Archaeologiae Christianae* II (pp. 411–422). Vatican City–Split: Pontificio Istituto di Archeologia Cristiana; Arheološki muzej

Hamarneh, B. (2003). *Topografia cristiana ed insediamenti rurali nel territorio dell'odierna Giordania nelle epoche bizantina ed islamica: V–IX sec*. Vatican City: Pontificio Istituto di Archeologia Cristiana

Hamarneh, B. (2018). Magnificenza, solidità, colore: pavimenti in opus sectile ad est del Giordano. Osservazioni preliminari. In S. Pedone and A. Paribeni (eds), *"Di Bisanzio dirai ciò che è passato, ciò che passa e che sarà": scritti in onore di Alessandra Guiglia* I (pp. 83–99). Rome: Bardi edizioni

Hamarneh, B. (2021). Christian art and visual culture in Umayyad Bilad al-Sham. In A. Marsham (ed.), *The Umayyad world* (pp. 464–485). London: Routledge

Hamarneh, B. (2022a). Rural properties in Byzantine and Islamic Arabia and Palaestina Tertia: Church, state, and the landowning élite. In F. Balaawi and P.P. Creasman (eds), *Studies in the history and archaeology of Jordan* XIV.2 (pp. 611–625). Amman: Department of Antiquities of Jordan

Hamarneh, B. (2022b). The Justinian renaissance in the East: Reality or illusion? In A. Castrorao Barba and G. Castiglia (eds), *Perspectives on Byzantine archaeology: From Justinian to the Abbasid age (6th–9th centuries AD)* (=*Archaeology of the Mediterranean World* 2) (pp. 81–92). Turnhout: Brepols

Jacobs, I. (2020). Village churches and donors at the end of Antiquity. In M.D. Lauxtermann and I. Toth (eds), *Inscribing texts in Byzantium: Continuities and transformations* (pp. 35–50). Milton: Routledge

Kapitän, G. (1969). The church wreck of Marzamemi. *Archaeology*, 22(2), 122–133

Karagianni, A. (2011–2012). The harbour of Proconnesus in Greco-Roman and Early Byzantine times: The marble trade, a source of financial and cultural development. *The European Archaeologist*, 36, 17–22

Leatherbury, S.V. (2019). *Inscribing faith in late antiquity: Between reading and seeing*. London: Routledge

Lehtinen, A. (2008). Marble furnishing and decoration. In Z.T. Fiema and J. Frösén (eds), *Petra, the mountain of Aaron: The Finnish archaeological project in Jordan* I. *The church and the chapel* (pp. 187–233). Helsinki: Societas Scientarum Fennica

Leidwanger, J., Greene, E.S., and Donnelly, A. (2021). The sixth-century CE shipwreck at Marzamemi. *American Journal of Archaeology*, 125(2), 283–317

McCormick, M. (2001). *The origins of the European economy: Communications and commerce, AD 300–900*. Cambridge: Cambridge University Press

Michel, A. (2001). *Les églises d'époque byzantine et umayyade de la Jordanie: V^e^–VIII^e^ siècle. Typologie architecturale et aménagements liturgiques* (=*Bibliothèque de l'Antiquité Tardive* 2). Turnhout: Brepols

Mordechai, L., Eisenberg, M., Newfield, T.P., Izdebski, A., Kay, J.E., and Poinar, H. (2019). The Justinianic Plague: An inconsequential pandemic? *Proceedings of the National Academy of Sciences*, 116(51), 25546–25554

Negev, A. (1978). The Greek inscriptions from ʿAvdat (Oboda). *Liber Annuus*, 28, 87–126

Negev, A. (1981). *The Greek inscriptions from the Negev* (=*Studium Biblicum Franciscanum. Collectio Minor* 25). Jerusalem: Franciscan Printing Press

Newbold, T. (1846). On the site of Ashtaroth. *The Journal of the Royal Geographical Society of London*, 331–338

Piccirillo, M. (1989). *Chiese e mosaici di Madaba* (=*Studium Biblicum Franciscanum. Collectio Maior* 34). Jerusalem: Franciscan Printing Press

Pierri, R. (2021). Base di un ambone d'epoca bizantina con iscrizione nel *Terra Sancta Museum*. *Liber Annuus*, 71, 343–380

Saller, S.J. (1941). *The memorial of Moses on Mount Nebo*. Jerusalem: Franciscan Press

Smithline, H. (2007). Eṯ-Ṯuweiri. *Hadashot Arkheologiyot*, 119. Retrieved from https://www.hadashot-esi.org.il/report_detail_eng.aspx?id=515&mag_id=112 (accessed: 23.06.2023)

Storchan, B. (2021). A glorious church for a mysterious martyr. *Biblical Archaeology Review*, 47(3), 30–39

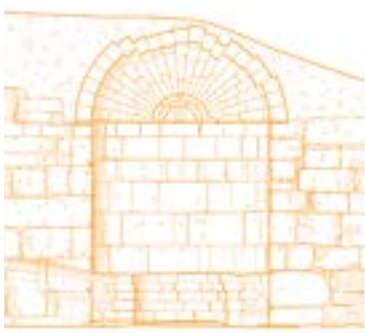
Traina, G. (1990). Iscrizioni bizantine de Bargylia (Caria). *Orientalia Christiana Periodica*, 56, 189–192

Vincent, L.-H., Mackay, E.J.H., and Abel, F.-M. (1923). *Hébron: Le Haram el-Khalîl. Sépulture des patriarches*. Paris: E. Leroux

Whiting, M. (2014). Asceticism and hospitality as patronage in the late antique Holy Land: The examples of Paula and Melania the Elder. In L. Theis, M. Mullett, M. Grünbart, G. Fingarova, and M. Savage (eds), *Female founders in Byzantium and beyond* (=*Wiener Jahrbuch für Kunstgeschichte* 60–61) (pp. 73–83). Vienna: Böhlau

Yeivin, Z. (1974). Inscribed marble fragments from the Khirbet Sûsiya synagogue. *Israel Exploration Journal*, 24(3/4), 201–209

Methods of quantitative and qualitative analyses of ancient marble finds assemblages. The cases of early Byzantine Hawara, Porphyreon, and Philoxenite



Abstract: Quantitative and qualitative analyses of marble finds at ancient sites are rare, one of the reasons being the lack of standard measures enabling comparison of different assemblages. The paper discusses the applicability and limitations of various methods of quantitative and qualitative analyses, which were tested on datasets of marble objects and excavation results from three medium-sized early Byzantine settlements: Hawara, Porphyreon, and Philoxenite. The tests involved the comparison of volume measurement results obtained for different functional and material-based classes of objects. The analyses confirmed a significant variability among the assemblages, which seems to have been related to the diverse geographic location and socio-religious significance of the settlements. Besides proving the applicability of the methods used, the study has indicated their potential for use in reconstructing consumption patterns in various types of settlements and investigating their intra- and supra-regional diversity.

Keywords: marble, quantification, early Byzantine period, Eastern Mediterranean, Philoxenite, Porphyreon, Hawara, archaeological methods

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INTRODUCTION

Excavations carried out year after year at ancient sites in the Mediterranean yield a significant number of marble objects, yet the exact quantity of these finds remains unknown. Meanwhile, collecting such quantitative data would enable comparison of the levels of supply of this material to different sites and to entire regions, enriching our knowledge of the changing economic patterns, the scale of the trade, and the factors that affected it. Therefore, marble finds are presently not exploited to their full research potential. By comparison, the fraction of amphoras, fine wares, and coins found at various sites is also small compared to their total numbers in circulation, yet their analyses consistently reveal patterns permitting to draw broad conclusions about trade in Antiquity. Nothing prevents marble finds from playing a similar role.

This paper discusses methods of quantifying marble finds and comparing assemblages of objects made of material procured from different quarries with datasets comprising detailed information on finds from three early Byzantine sites, which are used here as case studies. All three sites are medium-sized settlements, which makes them ideal for comparison. Of key importance are also their geographic location and function, assumed to have an impact on the diversity of the marble assemblages discovered during excavations. None of these settlements had direct access to marble deposits and thus needed to import this material from distant regions.

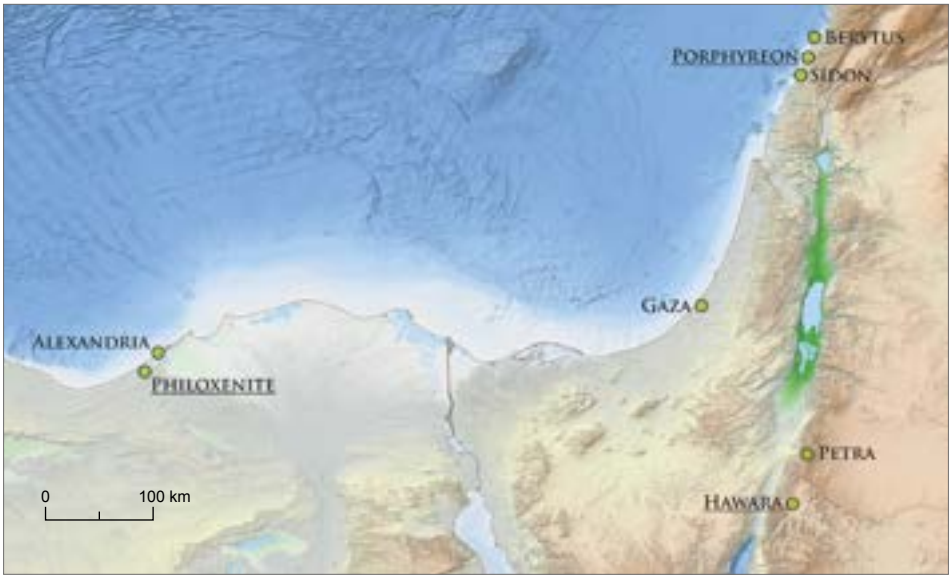

Fig. 1. Location of the sites of Porphyreon, Hawara and Philoxenite in the southeastern Mediterranean (Drawing M. Gwiazda)

The three sites under consideration are Hawara in Transjordan, Porphyreon on the Phoenician coast, and Philoxenite in the Mareotis region near Alexandria [*Fig. 1*]. Philoxenite stands out because it was established in the 6th century as a stop for pilgrims traveling to the Christian shrine of St. Menas. The other two settlements have a much longer history of permanent settlement stretching over a millennium.

The case studies presented in this paper are used to test the following hypotheses:

- Hawara had limited access to goods imported by sea due to its inland location. This should translate to a small number of functional classes of marble objects found at this site, the use of this material in few buildings, and a low level of diversity of its origins and colors.
- Porphyreon's location directly on the Mediterranean coast and near major port cities (Sidon and Berytos) is expected to have given its residents the opportunity to purchase larger quantities of marble due to low transportation costs. This privileged geographic location should have enabled access to marble products that are more diverse in terms of their form and origin.
- Philoxenite, although not located on the sea coast, was supplied with a large number of diverse marble products, most likely owing to the special socio-religious status of this settlement, which was frequented by Christian pilgrims.

Validation of these hypotheses will serve as confirmation of the usefulness of the methods of quantification and qualitative evaluation of marbles in analyzing their distribution. This, in turn, should lead to an increase in popularity of standardized quantitative studies on Mediterranean sites from the Roman and early Byzantine periods, thus enabling comparison of different assemblages.

METHODS

Three quantitative methods were applied in the analysis of the marble objects from Hawara, Porphyreon, and Philoxenite: fragment count, weight assessment, and volume assessment. The results obtained provide figures useful for presentations that focus on the qualitative diversity of the assemblages. The three quantification methods are simple enough to enable their widespread use. Some of them have been used in the past for marbles and other categories of archaeological objects (pottery, ceramic building materials, and bones).

FRAGMENT COUNT

A simple way to compare quantities of marbles from different sites is to count their fragments. The main problem with this method is the varying degree of fragmentation of marble objects at different sites and in individual archaeological deposits. For example, a column can break into hundreds of fragments or survive intact. Thus, depending on specific pre-depositional factors, the fragment count can lead to over- or underrepresentation of finds in a given assemblage. For example, a significant overrepresentation of broken objects can be expected at

multi-phase sites. One should also keep in mind that in Antiquity it was common practice to burn marble to produce lime for the construction of new buildings. This process involved crushing large objects into smaller pieces. The number of counted fragments also depends on the form of the marble finds: thin objects, such as wall revetment tiles, are likely to break into more pieces than thick ones like pavement slabs.

The fragment count is commonly used to quantify pottery sherds during archaeological surveys (see different chapters in Alcock and Cherry 2004). It primarily serves as a basis for identifying traces of settlements associated with different periods. Marble objects do not offer such a possibility due to the fact that they are rarely found on the surface and, in most cases, they do not constitute reliable chronological indicators. The fragment count has been used, alongside other methods, for quantifying different varieties of tiles from Piazza Armerina and Ravenna (Pensabene, González de Andrés, and Atienza Fuente 2015; Tůmová et al. 2016).

In addition to quantitative data, the fragment count can also provide interesting information on the degree of fragmentation of the identified marble objects. In order to calculate it, each object is divided by the number of fragments it broke into. In such cases, however, the resulting data can only be compared between objects of the same form and size. What is more, such a calculation is rarely possible in the field, where reconstructions are carried out primarily for selected objects of significant artistic value (e.g. sculptures) or special historical significance (e.g. inscriptions). Nonetheless, the example of reconstructed wall revetments from houses in Ephesos shows that such assessments can be attempted for other categories of marble objects as well (İlhan 2014). A prerequisite for success in such cases is the discovery of all fragments that had formed part of the object, while it is much more common to find incomplete assemblages that had been looted in the past.

WEIGHT ASSESSMENT

Another method of quantifying archaeological objects is weighing them. This approach, used primarily in the studies of pottery and ceramic building materials (Tomber 1993: 149–150), is effective because it reflects the real state of the material and provides comparable values. There is, however, a technical limitation to its use: while weighing smaller objects should not pose problems during documentation work, determining the weight of large architectural elements, especially when they are an integral part of buildings (e.g. floors and columns) may be challenging or impossible. In such cases, the specific gravity of the stone variety in question can be used. Multiplying it by the volume of the object allows to calculate its weight. Still, one has to bear in mind that the result of this calculation is merely an approximation. Another limitation of this method is a lack of tables listing specific gravities of all varieties of marble used in Antiquity.

VOLUME ASSESSMENT

The volume of an object can be determined on the basis of its metric measurements. Volume, as a measure of

three-dimensional space, was used in Antiquity for calculating the quantity of material used in marble columns and ashlars (Didymus, *Mensurae marmorum* 2–3; Gerstinger, Öllacher, and Vogel 1932: 17, 23, 27). Notably, however, wall revetments were quantified by way of measuring their surface areas (Corcoran and DeLaine 1994).

Calculating quantities of marble using volume should take into account one important issue. Finds uncovered during excavations are usually finished objects rather than unprocessed materials or semi-finished products worked by stonecutters. At least some of the objects were delivered from the quarries already in finished form.[1] An example of this practice is the cargo of one of the early Byzantine shipwrecks discovered off the Syrian coast (Dennert and Westphalen 2004). To the recipient, the original amount of stone processed was of secondary importance, so inquiries on the subject are of limited significance. In any case, more reliable figures for extracted marble are obtained by conducting measurements in the quarries (e.g. Wielgosz-Rondolino et al. 2020: appendix A). Leaving this debatable issue aside, an important practical premise is that only finished objects are measured in order to keep the figures comparable. This strategy was employed, for instance, when calculating the volume of different varieties of marbles in the Piazza Armerina (Pensabene, González de Andrés, and Atienza Fuente 2015). Given the issues associated with counting fragments and weight assessment, volume can be considered the best choice for quantification purposes.

RECONSTRUCTED QUANTITY

The minimum number of complete objects —ceramic vessels, ceramic building materials or marble specimens— can be reconstructed on the basis of their fragments. This method involves counting rims, handles, and bases in the case of ceramic vessels, and corners of roof tiles or bricks when reconstructing the number of ceramic building materials. For example, 57 handles indicate the original presence of at least 28.5 amphoras, while a corner of a roof tile or brick is considered equal to a fourth part of the entire object (Orton 1989; Mills 2013: 18–19). The number of vessels can also be estimated by calculating the percentages of the preserved rims (Gadot and Adler 2016). Basic specimen counts used in zooarchaeology can also be helpful. The number of identified specimens and the minimum number of individuals (Lyman 2008: 21–82) may be successfully used for quantifying distinctive forms of marble objects. For example, mortars usually have three lugs and one spout. Therefore, from the quantitative perspective, a single lug represents a third part of a mortar, while the spout alone is enough to reconstruct an entire mortar. A similar solution can be applied for rectangular altars and chancel screens. One surviving corner can be counted as a fourth part of the entire object. In the case of columns, their top and bottom ends can each count as half of the whole column. This method, helpful as it may

1 It is estimated that when marble was quarried, only 20% to 30% of the stone was used in further processing, while the rest was waste. See Röder 1971: 269; Attanasio, Bruno, and Yavuz 2009: 326.

be in determining the number of whole objects of a given type, does not account for their different sizes. Even a single site can contain columns and capitals of different heights and diameters. Therefore, reliable comparisons of quantitative data must also take into account their weight or volume.

A reconstruction of the amount of marble used can also be based on architectural traces of columns, pavement slabs, or wall revetments. For example, imprints of columns on the stylobates allow for a reconstruction of their original number in the building. When at least one object of this type is preserved, its dimensions can serve as a basis for reconstructing the volume of the entire set of columns. In addition, the thickness of decorative tiles and the area they originally covered enable the calculation of the volume of stone used to decorate the floors or walls. Notably, reconstructed values should be presented independently of the volume of the objects discovered during excavations in order to avoid duplication of figures.

FUNCTIONAL CLASSIFICATION

A large proportion of marble finds discovered during excavations can be assigned to functional classes, such as columns, chancel screens, table tops, floor slabs, etc. When analyzing an assemblage from a single site, a comparison of the weight or volume of objects belonging to different classes, for example columns to mortars, does not provide relevant information. On the other hand, the use of weight or volume as a measure provides important results when comparing the same classes of objects at different sites.

When comparing assemblages of finds from various sites, it is also useful to indicate the number of object classes discovered. A higher diversity of objects may indicate the settlement's complex social structure, its population's material status, or its privileged location on trade routes. In addition, the unique administrative or religious significance of some settlements may have contributed to an increased import of goods.

A similar method was used for quantifying marble finds in quarries on the island of Prokonnesos. The number of objects was given according to their class, demonstrating some local specifics of marble production (Asgari 1995: 265, Figs 2, 3). It should be noted, however, that this approach is of limited use in the case of floors and wall revetments, which consisted of many elements of different sizes.

COLORS AND VARIETIES OF MARBLES

In Antiquity, marble was defined as any rock that could be polished, meaning that not only genuine marble, but also granites and porphyries were included in this category. Marble itself, although mainly gray or white, varied greatly in color. Marbles of different colors were used not only to make a variety of goods, but were also selected intentionally for sculpture and architectural décor. Thus, it is reasonable to divide the marbles found at different sites according to different color classes. Such a quantification would indicate the market availability of, and the purchasers' interest in, different types of stones. A necessary prerequisite in this approach, due to a considerable heterogeneity of marble varieties in terms of color,

is the use of a simplified color palette, which would allow the assignment of individual finds to a limited number of groups. Failure to do so would result in an excessive number of color classes, each represented by few finds.

It is worth noting that a limited color palette may lead to the assignment of marbles of similar color but from different quarries to the same class. Examples are *serpentino verde* quarried in Krokees and *verde antico* coming from Thessaly; both stones can be classified as green, as their name indicates, but the differences between them are discernible to the naked eye. This method can, therefore, be refined by using classes corresponding to specific quarries. This approach works especially well for marbles with a wide color spectrum. A good example is the marble from Chemtou, which came in numerous color varieties, the most common being yellow and pink.

However, identifying the origin of many colored stones can be problematic. A case in point is the *breccia corallina*, which is a pinkish calcareous breccia extracted in various parts of Asia Minor, but also in Egypt (Klemm and Klemm 1993: 189–190; Lazzarini 2002). The same is true for *pavonazzetto*-like stones, whose main mining site was Dokimeion, but a macroscopically similar material was also mined in Aphrodisias, Milas, Teos, and Skyros (Attanasio et al. 2015).

Quarry-based classification of finds also cannot be applied to most white, gray, and black marbles, as their origin can only be determined by petrographic and archaeometric analyses. Such analyses are, however, impossible to perform for all finds of this type due to their high cost and labor intensity. Moreover, the results of such analyses do not always provide clear answers concerning the origin of the material. Another problem is that new marble quarries continue to be discovered (Bruno et al. 2012). Admittedly, these are usually small quarrying sites used rather for local needs than for interregional trade. Nevertheless, one must take into account the possibility of misidentifications resulting from gaps in our knowledge.

In the above cases, one can only assign marble finds to color groups, bearing in mind that they do not reflect their true origin. In the case of white marbles, an attempt can be made to classify them according to grain size. This simple method of petrographic characterization allows to distinguish some marbles as originating from different quarries. Keeping its limitations in mind, this method reveals the diversity of the marbles in the studied assemblages, providing information that is less abstract than the classification by color alone.

CLASSIFICATION OF CONTEXTS

Marble finds may also be classified on the grounds of context of their primary use. Context in this case is understood as the type of building or space performing a specific function in the settlement under study. Contexts include, e.g., bath complexes with wall revetments, street porticoes with columns, and houses with marble utensils. The greater the number of different places where such objects are discovered, the more likely it is that the settlement

was large or boasted a high administrative and/or social status. Conversely, low diversity in contexts with attested marble use is rather characteristic of villages and other small settlements, with monasteries as distinct examples. This approach provides qualitative rather than quantitative information.

It should be noted that this method is better suited for cities of the Roman period, which mainly consisted of houses and temples. Although this is also true for the early Byzantine period, the Roman period is characterized by a significant number of public buildings like civic basilicas and buildings for entertainment purposes (e.g. amphitheater, theater, and hippodrome), the use and construction of which decreased significantly in later periods.

DENSITY QUANTIFICATION

Another quantification method applicable to marble finds is a modified version of the approach used in archaeological surveys. During a survey, the number of pottery sherds found in a specific area is used to identify or determine the size of sites (for a critique of this approach, see Leibner 2014). However, surface finds of marbles are too rare to be of such use. Instead, the volume of the unearthed marble finds can be considered in relation to the space excavated in each archaeological trench. Such a ratio indicates the saturation of different parts of the site with marbles. Additionally, this approach allows quantifying marble not only from places of its original use, but also from secondary deposits.

CASE STUDIES

HAWARA

The first case study is Hawara (modern Humayma), a settlement located in southern Jordan, about 55 km south of Petra and about 190 km from the nearest Mediterranean port near Gaza. It is a multi-phase site whose history began in the 1st century BCE, with the youngest layers dated to the Mameluk period. Traces of occupation in the form of houses, a Roman fort, and at least five churches are associated with the early Byzantine period. The churches, built around the 5th and 6th centuries CE, have provided most of the marble finds. In turn, the excavations have yielded no marbles associated with earlier occupation phases, which indicates that most of this material must have been imported during the early Byzantine period. Traces of looting of marble furnishings in churches, as well as their secondary use in early Islamic houses, have been identified on the site (Oleson and Schick 2013; Schick et al. 2013).

The assemblage of finds from the site is limited to fragments of chancel screens, chancel posts, ambos, small altar columns, altars, pavement slabs, and a small number of vessels and table tops. They were made only of white marble, some with gray veining. The assemblage has been published in detail, with metric measurements and weight provided for each find (Schick et al. 2013). The dataset created on the basis of this information is available online (Gwiazda 2023a). The number of fragments discovered at the site was 287 in all, with a total weight of 232.216 kg and a volume of 0.226284 m^3.

PORPHYREON

Porphyreon (modern Jiyeh), a large village in the northern hinterland of Sidon, was located directly on the Mediterranean coast, close to two major ports that provided important trade links between Phoenicia and other regions. The site was occupied from the Bronze Age to the Early Islamic period (Waliszewski and Gwiazda 2015; Gwiazda et al. 2021). The best-examined remains date from the early Byzantine phase and are associated with the residential quarter and one of the largest churches discovered in Lebanon so far.

The catalogue of marble finds from the site includes 1110 fragments with a total weight of 268.8242 kg and a volume of 0.171473 m^3. However, the largest finds, such as columns and capitals, are underrepresented due to looting, which has occurred on the site since the 2nd millennium CE. The dataset also lacks the measurements of objects discovered during excavations conducted at the site in the second half of the 19th and first half of 20th centuries CE.

In addition to columns and capitals, the assemblage consists of wall revetments, pavement slabs, table tops, mortars, and a small number of liturgical furnishings. These finds are primarily related to the clearing and excavation work carried out at the site in the early 21st century.[2] They were documented in detail in 2009–2011 by the author of this article, but so far the entirety of this assemblage has not been published. This documentation was used to prepare an online dataset available for analysis (Gwiazda 2023c). Certainly, the assemblage does not constitute the complete set of objects discovered in Porphyreon; however, given its diversity, it reflects well the extent of the supply of this settlement during the early Byzantine period.

PHILOXENITE

Philoxenite (modern Hawwariya) was a town established in the 6th century CE, on the pilgrimage route from Alexandria to the shrine of St. Menas, directly on the shore of Lake Mareotis, which allowed easy transportation of people and goods from/to the southern port of Alexandria. The primary function of this settlement was to accommodate Christian pilgrims. Although remains dating to the Hellenistic and Roman periods have been found on the site (Gwiazda and Wielgosz-Rondolino 2019 with further references; Gwiazda, Derda, and Barański 2022), no related marble finds have been uncovered. Marble objects began to be imported only in the early Byzantine period, when the first church was erected there (Babraj, Drzymuchowska, and Tarara 2020). No earlier than in the mid-6th century CE, it was replaced by a much larger basilica, and the settlement itself expanded significantly (Gwiazda and Derda 2021). Occupation at the site ended in the second quarter of the 8th century CE, following modifications to the early Byzantine buildings and partial looting of their furnishings.

Most of the marble objects found at the site are associated with churches, four of which have been studied so far. However, marble finds have also been

2 The research at Porphyreon was directed by Tomasz Waliszewski.

found in bath complexes and houses. The recognized assemblage is very diverse and includes architectural elements such as columns, capitals, and wall and floor decorations. Most importantly, various utensils in the form of table tops and mortars, as well as a small number of liturgical furnishings (altars, altar partitions and posts, and small columns), have been identified.

Although excavations at the site began in the late 1970s, systematic documentation of the marble objects has been prepared only recently.[3] The author of this paper was responsible for recording the marble finds in the 2014–2021 excavation seasons, but that documentation has not been published thus far. Parallel to the publication of this article, a catalogue of the material from the site has been made available online (Gwiazda 2023b).[4] The dataset, however, does not include finds from the largest church (the so-called Great Basilica) and the bath complexes, which were excavated using a less accurate approach.

APPLICATION OF THE QUANTIFICATION METHODS TO THE MARBLE ASSEMBLAGES

RECONSTRUCTED QUANTITY METHOD

Excavations at Hawara do not provide sufficient data to reconstruct the amount of marble used on the site. This is primarily related to the lack of architectural remains and the dominance of broken chancel screens among the finds. Like at the other two sites, the fragmentary state of preservation of these objects makes it impossible to reconstruct their sizes. It is also unclear how many partitions were used in each church. In addition, the pavement slabs, present in large numbers, left no traces on the floors, hindering reconstruction of the surfaces they covered.

In the case of Porphyreon, it is possible to determine the approximate original area of the marble wall revetments in the presbytery of Basilica Q. The very good state of preservation of this part of the church is rare for the Levantine coast (Gwiazda 2015). Usually, the remains of such buildings are limited to the lower parts of the walls or their foundations. This is also largely true for the basilica in Porphyreon; however, its eastern wall, including the apse, was preserved almost in its entirety and reached 4.66 m above the level of the original floor. That wall also contains numerous impressions of attachments of marble wall revetments, permitting to determine the extent of this decoration [*Fig. 2*], which was 3.36 m high and covered the entire width of the eastern wall. The use of wall revetments is also attested inside the apse, but it is unknown whether the *synthronon* located in its interior was also decorated in this way. In addition, wall revetments were located on two east – west oriented walls that

3 This research is funded by the National Science Centre, Poland (grant no. 2017/25/B/H3/01841), and is headed by Tomasz Derda.

4 Finds at this site were not weighed.

delimited the presbytery on the northern and southern sides.

The total area of the marble-decorated walls in Basilica Q was 54.4 m² [*Table 1*]. Finds of marble tiles with holes for mounting hooks provided a basis for determining the thickness of the material used as wall cladding. The thinnest panels were 1.4 cm thick, and the thickest measured 3.8 cm. For the eleven tiles with extant hook holes, the average thickness was 1.9 cm. Thus, multiplying the decorated area of the walls by the average tile thickness yields a volume of the tiles used equal to 1.0336 m³. This value, however, was only a fraction of the total volume of the wall revetments used in the settlement, as indicated by the discovery of imprints from hooks on the walls in one of the rooms located on the southern side of the church. The room has not been excavated in its entirety, so it cannot currently be included in the reconstructions.

The assemblage discovered during excavations includes 523 fragments of wall revetment tiles with a total volume of 0.058737 m³. In addition, the assemblage of finds from Porphyreon includes 392

Table 1. Surface of the walls clad with marble wall revetments in Basilica Q in Porphyreon

Church part	Decorated surface (in square meters)
Presbytery, eastern wall – northern part	11.54
Presbytery, eastern wall – southern part	11.46
Apse	6.55
Presbytery, northern wall	12.76
Presbytery, southern wall	12.09
Total surface	**54.4**

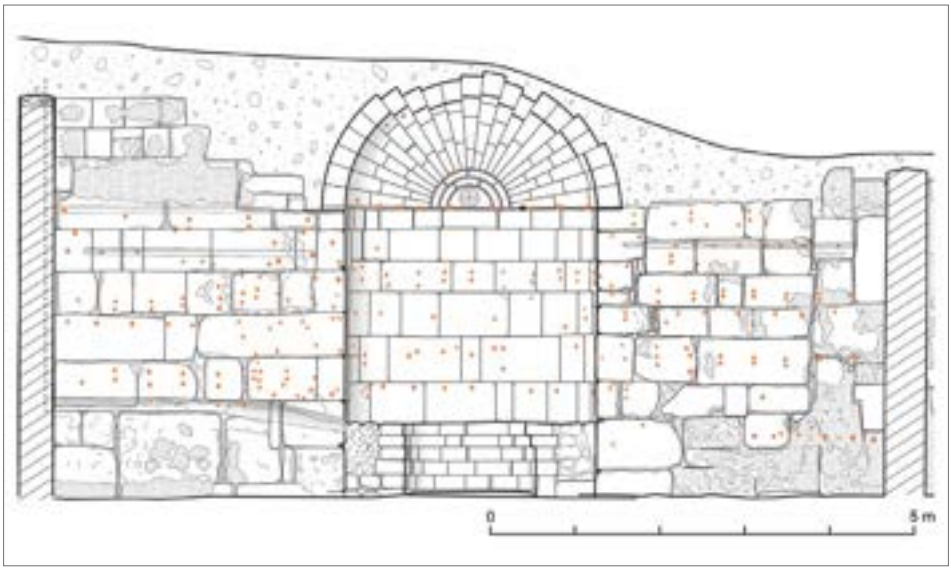

Fig. 2. Presbytery wall of Basilica Q in Porphyreon with the holes for wall revetment fasteners indicated with orange dots (PCMA UW | drawing M. Puszkarski and M. Gwiazda)

more fragments of uncertain function with a volume of 0.019409 m³. These could have been fragments of wall revetments, but they may as well have been remains of floor slabs. Nevertheless, these two figures indicate that the material recovered during the excavations constitutes no more than 5.7–7.6% of the original wall decorations in Basilica Q.

Another element of Basilica Q's furnishings that can be reconstructed with a high degree of probability in terms of quantity are columns and their capitals. The original presence of these elements is indicated by discoveries made during excavations of Georges Contenau (1920: 296, Fig. 92) and mentions in descriptions left by travelers visiting Porphyreon in the 18th and 19th centuries CE (Rekowska 2019–2020: 207). Fieldwork carried out on the site in the 21st century uncovered 24 fragments of columns. Their reconstructed dimensions indicate that they were parts of columns measuring 0.40 cm in diameter.

Most of the columns and capitals from the basilica were reclaimed for secondary use, a fact attested by the presence of at least three columns and one early Byzantine capital in a mosque located near the site [*Fig. 3*]. The columns reached a maximum height of 251 cm and measured about 42 cm in diameter, indicating a volume of 0.347746 m³ per column. Given that the church had three aisles, each with a length of 39 m, the columns would have been arranged in two rows of 14. Thus, the total volume of the columns would have been equal to 9.736888 m³. The capital from the mosque, in turn,

Fig. 3. Capital of an early Byzantine column reused in the mosque in Jiyeh, ancient Porphyreon (PCMA UW | photo M. Gwiazda)

had a volume of 0.151164 m^3. This value, multiplied by the reconstructed number of columns, gives a total of 4.232592 m^3. It follows that marble amounting to at least 15.00308 m^3 (=columns with capitals 13.96948 m^3 + wall revetments 1.0336 m^3) was used to build the Basilica Q in Porphyreon. Thus, the total volume of all objects included in the Porphyreon dataset (0.171473 m^3) represents about 1.1% of the minimum quantity of marble used in the settlement during the early Byzantine period.

In the case of Porphyreon, it is also possible to quantify various marble vessels, table tops and mortars. They include several distinctive types characterized by particular rim shapes (Gwiazda 2014). As for the quantity of small vessels, one rim and one base were identified, giving us a minimum value of one. Table tops represented three different forms, and the variants of their rims make it possible to identify at least 12 objects of this class. As for mortars, the minimum number of pieces of this type of utensil was two.

Similar reconstructions are also possible for Philoxenite. The most significant in this regard is the Grand Basilica. In this case, it is possible to calculate the original volume of the *opus sectile* floor in the narthex and of the columns with

Table 2. Functional class count in Hawara, Porphyreon, and Philoxenite assemblages

Class group	Class	Hawara	Porphyreon	Philoxenite
Liturgical equipment	Altar	+		+
	Ambo	+		
	Chancel screen	+	+	+
	Chancel post	+	+	+
	Column (small)	+		+
	Column base (small)		+	
Utensils	Table top	+	+	+
	Mortar		+	+
	Vessel	+	+	
	Pestle		+	
	Varia		+	
	Weight		+	
Decorations	Wall revetment		+	+
	Opus sectile		+	+
	Pavement slab		+	+
	Intarsio		+	+
	Plaque		+	+
Architectural members	Capital		+	+
	Column		+	+
	Column base			+
	Total	7	16	14

capitals from the church interior. The number of columns was 40, as indicated by impressions left on the stylobates separating the aisles. However, during excavations carried out in that building, only about a dozen columns and three capitals have been found (Jastrzębowska 2018–2019; Babraj, Drzymuchowska, and

Table 3. Marble varieties in Hawara, Porphyreon, and Philoxenite

Marble variety	Provenance	Hawara	Porphyreon	Philoxenite
Africano	Teos, Turkey (Ballance 1966)			+
Alabastro cotognino	Nile Valley, Egypt (Harrell 2016)		+	+
Breccia corallina	Turkey and Egypt (Lazzarini 2002)		+	+
Cipollino rosso	Iasos, Turkey (Berti and Peirano 2023)		+	+
Cipollino verde	Karystos, Euboea, Greece (Lazzarini, Masi, and Tucci 1995)		+	+
Fior di pesco	Chalkis, Greece (Lazzarini et al. 2002)			+
Giallo antico	Chemtou (Simitthus), Tunisia (G. Röder 1988)		+	+
Granito rosso	Aswan, Egypt (Klemm and Klemm 1993)			+
Greco scritto	Annaba, Algeria, and Ephesos, Turkey (Pensabene 2002; Attanasio et al. 2012)			+
Occhio di pavone rosso	Kutluca, Turkey (Borghini 1997)			+
Pavonazzetto	Dokimeion, Turkey (Pensabene 2002)		+	+
Porfido rosso	Gebel Dokhan (Mons Porphyrites), Egypt (Lucci 1964)			+
Portasanta	Chios, Greece (Borghini 1997)			+
Rosso antico	Mani Peninsula, Greece (Lazzarini 1990)			+
Serpentino verde	Krokees, Greece (Zezza and Lazzarini 2002)		+	+
Verde antico	Thessaly, Greece (Lazzarini 2007)		+	+
Unidentified white, gray and black	Possibly Dokimeion, Prokonnesos, Thasos, Ephesos, etc. (Pensabene 2002)	+	+	+
	Total	1	9	17

Tarara 2020: 12). The others were probably removed during the abandonment of the building in the early Islamic period. The columns were about 216 cm high and 35 cm in diameter, giving a total volume of 0.207816 m^3. As for the capitals, their volume is estimated at 0.077273 m^3. Thus, the total volume of the columns with capitals used in the Great Basilica equaled 11.40356 m^3.

The marble floor in the narthex, made of triangular and octagonal tiles, is preserved in fragments. Nevertheless, knowing the area of the room in which it was located, it is easy to determine the volume of the material used for its construction. The area is equal to 198.93 m^2 and the tiles averaged 2.4 cm in thickness, therefore the quantity of marble used for the narthex floor was equal to 0.477443 m^3. Similar calculations can be performed for marble floor surfaces in different parts of the N1 church [*Fig. 4*]. Such pavements were identified in the presbytery, in the auxiliary room behind the apse, and in a part of the baptistery.

Table 4. Occurrences of marble in different building types

Building type	Hawara	Porphyreon	Philoxenite
Church	+	+	+
Monastery			+
House		+	+
Bath			+
Total	1	2	4

Fig. 4. N1 church in Marea with remains of marble floors in the presbytery, baptistery, and auxiliary room behind the apse. A view from the west (Marea Archaeological Project | photo M. Gwiazda)

The total area of these spaces is equal to 25.9 m², which translates into approximately 0.06216 m³ of material used to cover them.

Thus, the reconstructed minimum volume of the marble used in Philoxenite adds up to 11.943163 m³, while the dataset of finds from Philoxenite represents 3.19% of that figure. One should bear in mind that two bath complexes identified in the settlement (el-Fakharani 1983; Szymańska and Babraj 2008) also made large-scale use of marble decoration (floor slabs and wall revetments). However, in their case, a reconstruction of the volume of marble used in the interiors was impossible due to insufficient architectural documentation prepared during the excavations. In addition, five table tops and one mortar were distinguished in Philoxenite. Each of these objects represented a different form.

QUANTIFICATION OF FUNCTIONAL CLASSES

A division of the finds from the three sites into functional classes demonstrates that assemblages discovered at Porphyreon and Philoxenite were more diverse than in Hawara [*Table 2*]. This confirms

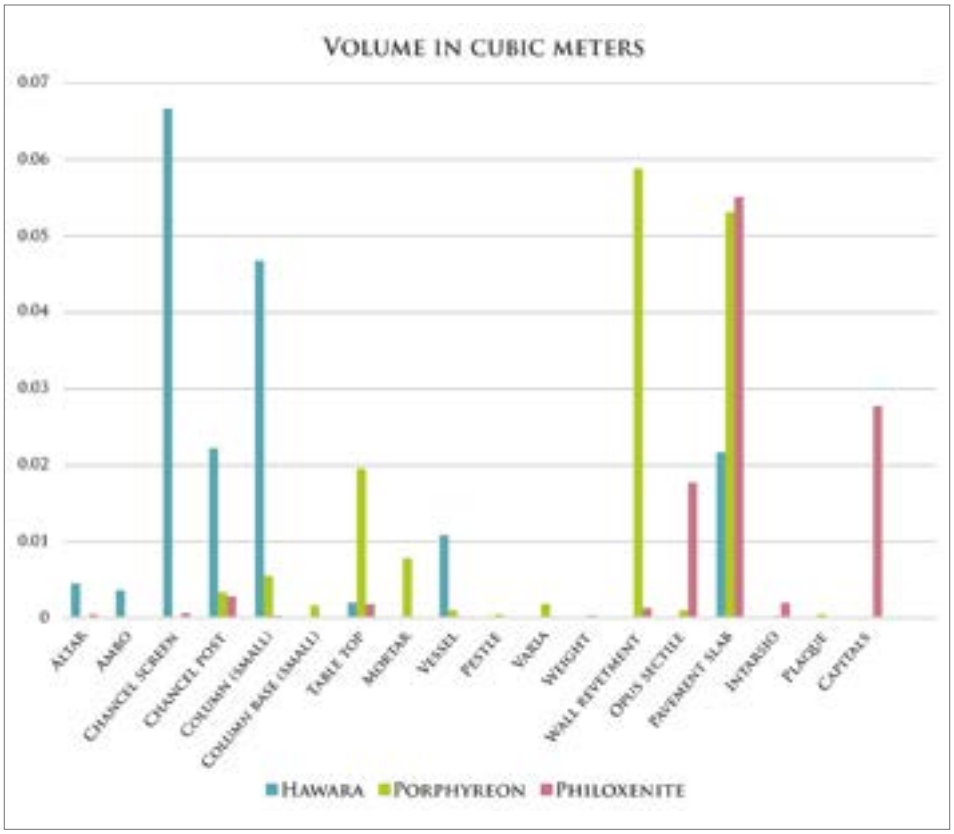

Fig. 5. Volume of different classes of functional objects in the assemblages from Hawara, Porphyreon, and Philoxenite. The volume of columns is not included (M. Gwiazda)

the hypothesis that pilgrimage sites and settlements located on the Mediterranean coast had better access to marble products than inland areas. In addition, *Table 2* shows that pieces of liturgical furnishings were found at all three sites. The use of marble in wall and floor decoration and architectural elements was also common in Porphyreon and Philoxenite. Of note is also the much greater diversity of utensils in Porphyreon. Some of them were certainly used outside the church, in the large residential quarter.

The quantitative analysis of the volume of marbles from the three sites taking into account their division into functional classes provides unexpected results. A much larger number of chancel screens were found in Hawara than in the other two settlements [*Fig. 5*]. This is related to the discovery of numerous churches in Hawara, each of which contained a relatively large number of such objects. On the other hand, in the case of Porphyreon, the liturgical furnishings of Basilica Q are definitely underestimated due to the long history of unsystematic excavations at the site. In Philoxenite, in turn, the majority of such objects were most likely looted and used for lime production. This hypothesis is confirmed by the discovery of at least two lime kilns within the settlement (Derda et al. 2021: 133). The same fate likely befell many architectural ele-

	Hawara	Porphyreon	Philoxenite
	Volume in cubic meters		
Architectural elements	0	0.003826	0.254219
Decorations	0.02158	0.013171	0.075858
Utensils	0.012559	0.030019	0.001715
Liturgical equipment	0.143147	0.010077	0.003795

Fig. 6. Percentage distribution of the volumes of different functional class groups in the assemblages from Hawara, Porphyreon, and Philoxenite (M. Gwiazda)

ments such as columns and capitals. The number of tiles used as wall revetments is also certainly underestimated in the case of Philoxenite. In this case, the difficulty lies in distinguishing them from the small and large tiles used for floor decoration.

Each analyzed dataset provides a different percentage distribution of objects between class groups [*Fig. 6*]. In the case of Porphyreon and Philoxenite, as noted above, this distribution is unreliable due to the underestimation of the largest objects (their volume was reconstructed in the previous section). Despite this fact, these two settlements show a much higher proportion of architectural elements and decorative tiles than Hawara.

QUANTIFICATION OF COLORS AND VARIETIES OF MARBLES

A comparison of the origins of marbles discovered at the three sites provides another illustration of the diversity of these assemblages [*Table 3*]. The table differentiates between colored marbles identifiable without archaeometric analysis. The material is the most diverse for Philoxenite, where the number of attested quarries almost doubles that of Porphyreon. Notably, the study sample for Philoxenite is almost half the size of the sample for Porphyreon in terms of the number of fragments. This difference is, therefore, not coincidental and indicates that Philoxenite was by far the more richly supplied site. The situation

	HAWARA		PORPHYREON		PHILOXENITE
GREEN, PINK, RED, YELLOW	0	0	0.001193	5.345	0.006199
BLACK	0	0	0.000015	0.038	0.002938
GRAY-WHITE	0.171833	156.636	0.109502	173.4352	0.354576
GRAY	0	0	0.002574	4.996	0.006154
WHITE	0.029256	28.615	0.058866	86.509	0.011404

Fig. 7. Percentage distribution of the volumes (in cubic meters) and weights (in kilograms) of different color classes (M. Gwiazda)

is completely different for Hawara, where no colored marble fragments have been found thus far.

However, great caution should be exercised when considering such calculations. For both Philoxenite and Porphyreon, the share of colored stones is negligible compared to that of unidentified white, gray, and black stones [*Fig. 7*]. This indicates that not only Hawara but all three sites were dominated by stones in the color spectrum between white and gray. Varieties in shades of green, pink, red, and yellow were used very rarely, primarily for the production of various types of tiles.

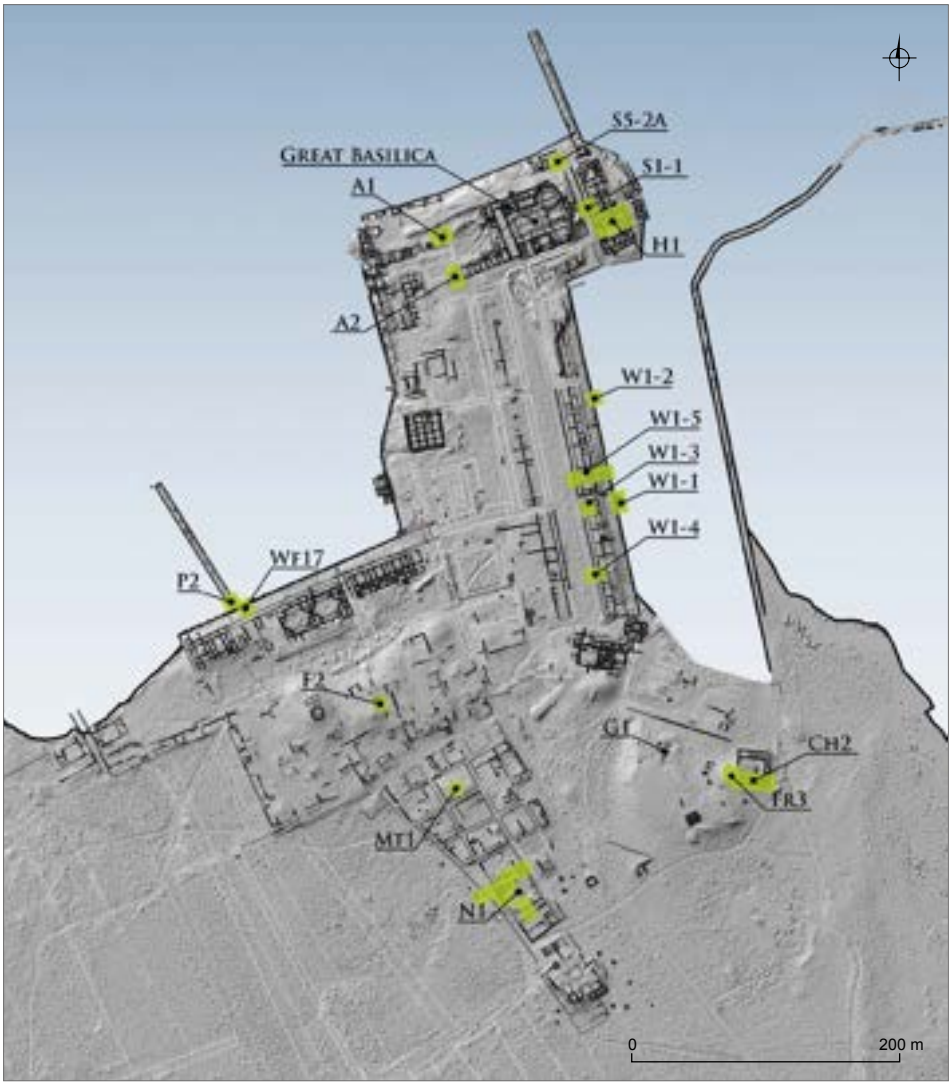

Fig. 8. Plan of Philoxenite indicating the locations of the excavations considered in the density quantification (Marea Archaeological Project | drawing M. Gwiazda, A.B. Kutiak, and M. Łuba)

CONTEXT TYPE COUNT

As noted above, focusing on the diversity of contexts of marble use in early Byzantine settlements is of limited use. Nevertheless, some regularities are apparent for the three sites. *Table 4* shows that in Philoxenite, compared to the other two sites, marble was used in more functionally diverse spaces. While in most settlements from the early Byzantine period marbles can be expected to be found primarily in churches, in Philoxenite they were also attested outside sacred spaces, including baths complexes, where the use of this material is attested on a massive scale. This demonstrates the unique nature of this settlement and its privileged place in the supply network.

DENSITY QUANTIFICATION

Of the assemblages at our disposal, the Philoxenite finds are best suited for density analysis, as they were collected during excavations in functionally diverse parts of the site. The most accurately inventoried marble material comes from excavations in streets, houses, trash dumps, and churches [*Fig. 8*]. Disregarding the largest church in the settlement and the bath complexes, which were not thoroughly documented, by far the largest number of marble finds is associated with the N1 church [*Fig. 9*]. In contrast, a much lower density of marble objects was recorded in trenches W1-5, H1, and W1-3, featuring structures with a residential function. The lowest number of finds

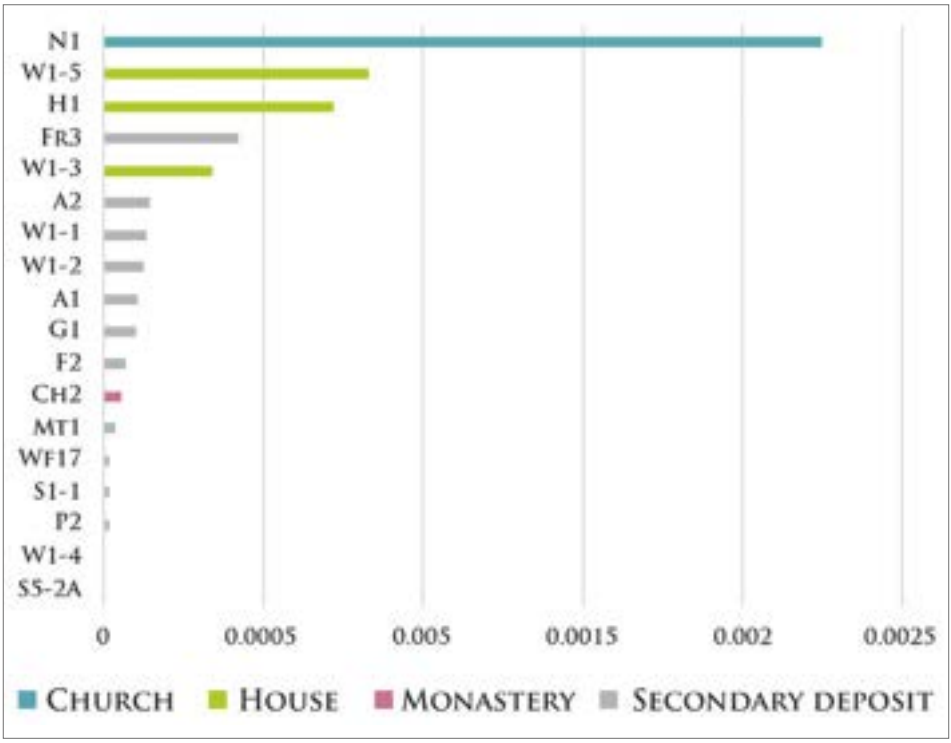

Fig. 9. Ratio of the volume of marble object finds to the volume of the total material excavated in Philoxenite (M. Gwiazda)

came from a trash disposal site recognized in trenches FR3, A2, W1-1, W1-2, A1, and MT1. Additionally, the CH2 monastery, located on the outskirts of the settlement, yielded a small number of marble finds. Philoxenite therefore emerges from the analysis as the place with the highest density of marble finds from trenches located in the places of their primary use. Although large-scale looting of marbles at that site during the early Islamic period has been confirmed, it was not associated with a concentrated secondary deposition. A similar situation occurred in Hawara, where most of the marbles were discovered in churches where they were used originally. This pattern distinguishes marble objects from pottery, which is usually found in large quantities in secondary deposits rather than at the places of their original use.

DISCUSSION

The quantitative and qualitative analyses of assemblages of marble finds from three sites of similar size and chronology have revealed the limitations of some of the applied methods. Firstly, the fragment count distorts the real quantities of different groups of objects. Instead, the use of weight and volume as measures is recommended for quantifying marbles. Importantly, only the latter measure can be used systematically for large assemblages collected during excavations. Volume may be used not only in analyses of recovered objects, but also in attempts to reconstruct their quantity based on architectural evidence.

The use of volume as a measure and a means of qualitative assessment permitted to verify the hypothesis as to the differences in supply of medium-sized settlements with different geographic locations and social importance. The analytical approaches used indicated the presence of marble assemblages more diverse in terms of form and material at sites located closer to the Mediterranean coast. Philoxenite was in an especially privileged position, as it was founded as a settlement linked to Christian pilgrims.

At the same time, the functional classification shows that a wider range of objects was available in Porphyreon. Most importantly, this was evident in the greater variety of discovered utensils that the residents of the settlement had used in their homes. This is also confirmed by the volume of the objects in this group, which is significantly larger in Porphyreon than in Hawara or Philoxenite. Both Porphyreon and Philoxenite showed, in turn, a much greater use of marble as architectural décor.

In Philoxenite, marbles generally occurred much more widely. Their use was not limited to the decoration of churches, as was the case in Porphyreon and Hawara, but also included bath complexes and houses. This pattern reflects the different characteristics of the settlements and the way they functioned. At the same time, it may be noted that of all the categories of buildings identified in the studied settlements, only churches invariably had marble furnishings. After the Roman period, they became the focus of pious donations and socially motivated investments.

Such observations can be particularly useful for sites with poorly recognized functions, permitting to reconstruct the consumption patterns of the associated communities. At the same time, one should bear in mind that the three examples discussed herein are not sufficient to reproduce a universal pattern characteristic of settlements of the early Byzantine period. To achieve such a goal, an analysis of a much larger number of assemblages is required, and the conclusions obtained on their basis will certainly have to take into account many exceptional cases.

In the case of Philoxenite, the method of calculating the ratio of the volume of the marble finds to the volume of the excavated trench space has provided precise information about the hierarchy of different spaces in the settlement. It indicates that the largest volume of marble was found in churches, followed by residential buildings and garbage dumps. At the same time, it is important to remember that the number of marble objects does not always have to be a simple indicator of the costs incurred. This material was available in different qualities and had a range of values, as indicated by Diocletian's Price Edict (*Edictum Diocletiani de Pretiis Rerum Venalium* 33.1). Thus, without archaeometric identification of the origin of the material, one must be cautious when drawing conclusions on the basis of such data.

Consideration of color diversity and origin of the marble material in the qualitative assessment indicates their widest range in Philoxenite. However, these results again come with a caveat. At all three sites, objects made of white, gray, or gray-white marbles account for more than 90% of the total volume of the assemblage. Determination of the origin of this type of stone also requires archaeometric analyses. The remaining stones, whose origin can be determined in many cases without laboratory methods, make up a much smaller portion of these assemblages. At the same time, it should be noted that, unlike at the other two sites, in Hawara no colored stone finds were recorded at all.

In the case of Philoxenite and Porphyreon, the use of a reconstructive approach taking architectural evidence into account permitted to determine the approximate minimum quantity of imported marble. The respective figures for these sites were 11.943163 m^3 and 15.00308 m^3. This helps imagine the orders of magnitude that should be taken into consideration in discussions of the quantities of marbles imported to settlements in the Eastern Mediterranean during the early Byzantine period.

For both Porphyreon and Philoxenite, the estimated recovery percentages for marble objects are slightly over 1%. This is a relatively high rate, considering that the representativeness of pottery finds in the archaeological record is estimated at less than 1% compared to the information provided by written sources (Allan 1983: 44). Nevertheless, even such incomplete assemblages can be considered meaningful, especially when they provide reproducible quantitative ratios for particular groups of objects at different sites.

Reconstructions of the quantities of material used at the sites allow to greatly expand the subject of analysis. This approach also helps to partially eliminate factors associated with the secondary use of marble, which was common in Antiquity,

but its scope is often difficult to determine. Reconstructed quantities should be considered separately from the values obtained for the objects discovered during excavations, but they also provide a means to assess the representativeness of the studied datasets.

The dominant approach in the study of ancient marbles to date has been to analyze their form, style, or iconography. Over the past four decades, laboratory analyses seeking to determine where the stone material was quarried have gained popularity. These two research spheres provide a solid foundation for a larger-scale development of another approach, which relies on the methodical quantification of marble objects. Previous efforts in this field have usually been limited to analyses of the number of finds from individual sites or individual buildings, and no attempt has been made to compare assemblages from different sites. Consequently, the recognition of the impact of various factors on the occurrence of marble on a given site was limited, as it was rarely founded on a measurable, and thus reliable, basis.

The absolute values obtained for the volume of marbles discovered during excavations can serve as a basis for meaningful comparisons. They could also be a point of departure for diachronic studies, which have not been attempted so far. At the same time, the presented marble quantification methods show that no single method is perfect. Quantitative and qualitative assessments should be used in parallel to achieve a more reliable picture of the past.

The use of the quantitative approaches described above makes it possible to more accurately measure the scale of imports of goods in different socio-cultural and geographic contexts. It represents a departure from simplistic quantifications that consider only the number of pieces of objects of each type disregarding their different sizes and fragmentary preservation. These methods can be used not only in micro scale, to compare assemblages from individual buildings or sites, but also in macro scale, to collect similar information from different regions.

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References

Primary sources

Didymus Alexandrinus, *Mensurae marmorum ac lignorum* (F.O. Hultsch, ed.). Berlin: Weidmannos, 1864

Secondary sources

Alcock, S.E. and Cherry, J.F. (eds). (2004). *Side-by-side survey: Comparative regional studies in the Mediterranean world*. Oxford: Oxbow

Allan, J. (1983). Some post-medieval documentary evidence for the trade in ceramics. In P. Davey and R. Hodges (eds), *Ceramics and trade: The production and distribution of later medieval pottery in North-West Europe* (pp. 37–45). Sheffield: Department of Prehistory and Archaeology, University of Sheffield

Asgari, N. (1995). The Proconnesian production of architectural elements in late antiquity, based on evidence from the marble quarries. In C.A. Mango, G. Dagron, and G. Greatrex, *Constantinople and its hinterland: Papers from the Twenty-seventh Spring Symposium of Byzantine Studies, Oxford, April 1993* (=*Society for the Promotion of Byzantine Studies Publications* 3) (pp. 263–288). Aldershot: Variorum

Attanasio, D., Bruno, M., Prochaska, W., and Yavuz, A.B. (2015). Analysis and discrimination of Phrygian and other *pavonazzetto*-like marbles. In P. Pensabene and E. Gasparini (eds), *Interdisciplinary studies on ancient stone: ASMOSIA X. Proceedings of the Tenth International Conference of ASMOSIA, Association for the Study of Marble & Other Stones in Antiquity, Rome, 21–26 May 2012* (pp. 753–764). Rome: "L'Erma" di Bretschneider

Attanasio, D., Bruno, M., and Yavuz, A.B. (2009). Quarries in the region of Aphrodisias: The black and white marbles of Göktepe (Muğla). *Journal of Roman Archaeology*, 22, 312–348

Attanasio, D., Yavuz, A.B., Bruno, M., Herrmann, J.J., Jr., Tykot, R.H., and van den Hoek, A. (2012). On the Ephesian origin of *greco scritto* marble. In A. Gutiérrez Garcia-M., P. Lapuente Mercadal, and I. Rodà de Llanza (eds), *Interdisciplinary studies on ancient stone: Proceedings of the IX Association for the Study of Marbles and other Stones in Antiquity (ASMOSIA) conference (Tarragona 2009)* (pp. 245–254). Tarragona: ICAC

Babraj, K., Drzymuchowska, A., and Tarara, D. (2020). The 5th-century Great Transept Basilica in "Marea", Egypt, and the 4th-century predecessor church discovered in 2018. In K. Myśliwiec and A. Ryś (eds), *Crossing time and space: To commemorate Hanna Szymańska* (pp. 11–34). Warsaw–Wiesbaden: IKŚiO PAN; Harrassowitz Verlag

Ballance, M.H. (1966). The origin of *africano*. *Papers of the British School at Rome*, 34, 79–81

Berti, F. and Peirano, D. (2023). New research on Iasian marble. In A.B. Yavuz, B. Yolaçan, and M. Bruno (eds), *ASMOSIA XII. Proceedings of the XII. ASMOSIA International Conference of 8–14 October 2018, Izmir, Dokuz Eylül University, Desem Halls, İzmir-Türkiye* (pp. 3–12). Izmir: Dokuz Eylül University

Borghini, G. (ed.). (1997). *Marmi antichi*. Rome: Edizioni De Luca

Bruno, M., Elçi, H., Yavuz, A.B., and Attanasio, D. (2012). Unknown ancient marble quarries of western Asia Minor. In A. Gutiérrez Garcia-M., P. Lapuente Mercadal, and I. Rodà de Llanza (eds), *Interdisciplinary studies on ancient stone: Proceedings of the IX Association for the Study of Marbles and other Stones in Antiquity (ASMOSIA) conference (Tarragona 2009)* (pp. 562–572). Tarragona: ICAC

Contenau, G. (1920). Mission archéologique a Sidon: quatrième article. *Syria*, 1, 287–317

Corcoran, S. and DeLaine, J. (1994). The unit measurement of marble in Diocletian's Prices Edict. *Journal of Roman Archaeology*, 7, 263–273

Dennert, M. and Westphalen, S. (2004). Säulen aus Konstantinopel: ein Schiffsfund im antiken Hafen von Amrit. *Damaszener Mitteilungen*, 14, 183–195

Derda, T., Gwiazda, M., Misiewicz, K., and Małkowski, W. (2021). Marea/Northern Hawwariya in northern Egypt: Integrated results of non-invasive and excavation works. *Archaeological Prospection*, 28(2), 123–136

el-Fakharani, F. (1983). Recent excavations at Marea in Egypt. In *Das Römisch-Byzantinische Ägypten: Akten des internationalen Symposions 26.–30. September 1978 in Trier* (=*Aegyptiaca Treverensia* 2) (pp. 175–186). Mainz am Rhein: Philipp von Zabern

Gadot, Y. and Adler, Y. (2016). A quantitative analysis of Jewish chalk vessel frequencies in early Roman Jerusalem: A view from the city's garbage dump. *Israel Exploration Journal*, 66(2), 202–219

Gerstinger, H., Öllacher, H., and Vogel, K. (1932). *Griechische literarische Papyri* I. Vienna: Österreichische Staatsdruckerei

Gwiazda, M. (2014). Marble vessels from Jiyeh (Porphyreon). *Polish Archaeology in the Mediterranean*, 23/1, 527–542

Gwiazda, M. (2015). The marble decoration of the presbytery of the late antique basilica in Jiyeh (Porphyreon) – Lebanon. *Światowit*, 12(53)/A, 127–142

Gwiazda, M. (2023a). Dataset of marble finds from Hawara. Zenodo repository: https://doi.org/10.5281/zenodo.7507983

Gwiazda, M. (2023b). Dataset of marble finds from Philoxenite. Zenodo repository: https://doi.org/10.5281/zenodo.7508068

Gwiazda, M. (2023c). Dataset of marble finds from Porphyreon. Zenodo repository: https://doi.org/10.5281/zenodo.7508024

Gwiazda, M. and Derda, T. (2021). Marea: A swan song of ancient urban planning. *Antiquity*, 95(382). https://doi.org/10.15184/aqy.2021.88

Gwiazda, M., Derda, T., and Barański, T. (2022). From Roman industrial center to early Islamic town: Archaeological excavations at 'Marea'/Philoxenite in the 2020–2021 season. *Polish Archaeology in the Mediterranean*, 31, 333–373

Gwiazda, M., Piątkowska-Małecka, J., Wicenciak, U., Makowski, P., and Barański, T. (2021). The Sidon's/Ṣaydā northern hinterland during the early Byzantine–early Islamic transition. *Bulletin of the American Schools of Oriental Research*, 385, 171–200

Gwiazda, M. and Wielgosz-Rondolino, D. (2019). 'Marea' on Lake Mareotis: A Roman amphorae dump, a Byzantine period house, and its early Islamic dwellers. *Journal of Egyptian Archaeology*, 105(2), 259–273

Harrell, J.A. (2016). *Table 2: Ancient Egyptian softstone quarries*. Retrieved from http://www.eeescience.utoledo.edu/Faculty/Harrell/Egypt/Quarries/Softst_Quar.html (accessed: 05.06.2023)

İlhan, S. (2014). Restaurierung im Marmorsaal 31. In H. Thür and E. Rathmayr (eds), *Hanghaus 2 in Ephesos: die Wohneinheit 6. Baubefund, Ausstattung, Funde* II (=*Forschungen in Ephesos* 8/9) (pp. 803–829). Vienna: Verlag der Österreichischen Akademie der Wissenschaften

Jastrzębowska, E. (2018–2019). Überlegungen zu spätantiken korinthischen Kapitellen aus Alexandria, ausgehend von neuen Funden in Marea (Ägypten). *Boreas*, 41–42, 89–104

Klemm, R. and Klemm, D.D. (1993). *Steine und Steinbrüche im Alten Ägypten*. Berlin: Springer

Lazzarini, L. (1990). *Rosso antico* and other red marbles used in antiquity: A characterization study. In *Marble: Art historical and scientific perspectives on ancient sculpture. Papers delivered at a symposium organized by the Departments of Antiquities and Antiquities Conservation and held at the J. Paul Getty Museum, April 28–30, 1988* (pp. 237–252). Malibu, CA: J. Paul Getty Museum

Lazzarini, L. (2002). The origin and characterization of *breccia nuvolata*, *marmor sagarium*, and *marmor triponticum*. In J. Herrmann, N. Herz, and R. Newman (eds), *ASMOSIA 5: Interdisciplinary studies on ancient stone. Proceedings of the Fifth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Museum of Fine Arts, Boston, 1998* (pp. 58–67). London: Archetype

Lazzarini, L. (2007). *Poikiloi lithoi, versiculores maculae: i marmi colorati della Grecia antica. Storia, uso, diffusione, cave, geologia, caratterizzazione scientifica, archeometria, deterioramento* (=*Marmora. Supplemento* 1). Pisa: F. Serra

Lazzarini, L., Antonelli, F., Cancelliere, S., Turi, B., and Varti Matarangas, M. (2002). Marmor Chalcidum (Fior di Pesco): Source, history of use and scientific characterization. In L. Lazzarini (ed.), *Interdisciplinary studies on ancient stone: ASMOSIA VI. Proceedings of the Sixth International Conference of the Association for the Study of Marble and Other Stones in Antiquity, Venice, June 15–18, 2000* (pp. 233–240). Padua: Ausilio Editore

Lazzarini, L., Masi, U., and Tucci, P. (1995). Petrographic and geochemical features of the Carystian marble, 'Cipollino verde', from the ancient quarries of Southern Euboea (Greece). In Y. Maniatis, N. Herz, and Y. Basiakos (eds), *ASMOSIA 3: The study of marble and other stones used in antiquity* (pp. 161–169). London: Archetype

Leibner, U. (2014). Determining the settlement history of Hellenistic, Roman, and Byzantine sites in the Galilee, Israel: Comparing surface, subsurface, and stratified artifact assemblages. *Journal of Field Archaeology*, 39(4), 387–400

Lucci, M.L. (1964). Il porfido nell'antichita. *Archeologia Classica*, 16, 226–271

Lyman, R.L. (2008). *Quantitative paleozoology*. Cambridge: Cambridge University Press

Mills, P. (2013). *The ancient Mediterranean trade in ceramic building materials: A case study in Carthage and Beirut* (=*Roman and Late Antique Mediterranean Pottery* 2). Oxford: Archaeopress

Oleson, J.P. and Schick, R. (2013). Analysis and conclusions. In J.P. Oleson and R. Schick, *Humayma excavation project* II. *Nabatean campground and necropolis, Byzantine churches, and early Islamic domestic structures* (=*American Schools of Oriental Research Archaeological Reports* 18) (pp. 547–554). Boston: American Schools of Oriental Research

Orton, C. (1989). An introduction to the quantification of assemblages of pottery. *Journal of Roman Pottery Studies*, 2(2), 94–97

Pensabene, P. (2002). Le principali cave di marmo bianco. In M. De Nuccio and L. Ungaro (eds), *I marmi colorati della Roma imperiale* (pp. 203–222). Venice: Marsilio

Pensabene, P., González de Andrés, L., and Atienza Fuente, J. (2015). A quantitative and qualitative study on marble revetments of service area in the Villa del Casale at Piazza Armerina. In P. Pensabene and E. Gasparini (eds), *Interdisciplinary studies on ancient stone: ASMOSIA X. Proceedings of the Tenth International Conference of ASMOSIA, Association for the Study of Marble & Other Stones in Antiquity, Rome, 21–26 May 2012*, I (pp. 641–649). Rome: "L'Erma" di Bretschneider

Rekowska, M. (2019–2020). From Beirut to Sidon: The coastal road described by Westerner travellers (17th–19th centuries). *Archaeology & History in Lebanon*, 50–51, 199–214

Röder, G. (1988). Numidian marble and some of its specialities. In N. Herz and M. Waelkens (eds), *Classical marble: Geochemistry, technology, trade* (pp. 91–96). Dordrecht: Kluwer Academic

Röder, J. (1971). *Marmor Phrygium*: die antiken Marmorbrüche von İscehisar in Westanatolien. *Jahrbuch des Deutschen Archäologischen Instituts*, 86, 253–312

Schick, R., Oleson, J.P., al-Bashaireh, K., Graf, D.F., Herz, N., and Rowe, G.D. (2013). Ecclesiastical marble, inscriptions, and miscellaneous stone finds. In J.P. Oleson and R. Schick, *Humayma excavation project* II. *Nabatean campground and necropolis, Byzantine churches, and early Islamic domestic structures* (=*American Schools of Oriental Research Archaeological Reports* 18) (pp. 449–515). Boston: American Schools of Oriental Research

Szymańska, H. and Babraj, K. (eds). (2008). *Marea* I. *Byzantine Marea: Excavations in 2000–2003 and 2006* (=*Biblioteka Muzeum Archeologicznego w Krakowie* 4). Kraków: Muzeum Archeologiczne w Krakowie

Tomber, R. (1993). Quantitative approaches to the investigation of long-distance exchange. *Journal of Roman Archaeology*, 6, 142–166

Tůmová, H., Augenti, A., Kuchařová, A., Cirelli, E., and Přikryl, R. (2016). Late antique marble trade: New insights obtained from stone artefacts from the San Severo complex (Ravenna, Italy). In R. Přikryl, Á. Török, M. Gómez-Heras, K. Miskovsky, and M. Theodoridou (eds), *Sustainable use of traditional geomaterials in construction practice* (pp. 35–46). London: The Geological Society

Waliszewski, T. and Gwiazda, M. (2015). Porphyreon through the ages: The fading archaeological heritage of the Lebanese coast. *Journal of Eastern Mediterranean Archaeology & Heritage Studies*, 3(4), 330–348

Wielgosz-Rondolino, D., Antonelli, F., Bojanowski, M.J., Gładki, M., Göncüoğlu, M.C., and Lazzarini, L. (2020). Improved methodology for identification of Göktepe white marble and the understanding of its use: A comparison with Carrara marble. *Journal of Archaeological Science*, 113, 105059. https://doi.org/10.1016/j.jas.2019.105059

Zezza, U. and Lazzarini, L. (2002). Krokeatis Lithos (Lapis Lacedaemonius): Source, history of use, scientific characterization. In L. Lazzarini (ed.), *Interdisciplinary studies on ancient stone: ASMOSIA VI. Proceedings of the sixth international conference of the Association for the Study of Marble and Other Stones in Antiquity, Venice, June 15–18, 2000* (pp. 259–264). Padua: Bottega d'Erasmo

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