



## ABSTRAKTY / ABSTRACTS

### Panel 1:

### Deciphering ancient stonecutters: archaeology of the masons' marks

8.VI 2022, online

**Aleksandra Brzozowska-Jawornicka**

Faculty of Architecture, Wrocław University of Science and Technology

#### **Stone marks on pieces of architectural decoration in the Maloutena region of Nea Paphos**

Stone marks, usually in the form of shallow grooves, constitute a particular type of mason marks preserved on construction elements and pieces of architectural decoration. In the case of a destroyed building, they are an additional and at the same time extremely valuable and useful source of information about its original structure, which may support the process of the building reconstruction. The high level of destruction and poor condition of the ancient residences from the Maloutena region in Nea Paphos that are preserved, in most cases, only at the level of the foundations or the lower parts of the ground floor walls makes it very difficult to recreate their architecture. The aim of the paper is to present the process of a hypothetical reconstruction of some parts of the ancient Paphian houses, based on, among other, the studies and analyses of the stone marks preserved on many loose structural fragments found in the area of the houses.



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**Anna Kordas**

Faculty of Culture and Arts, University of Warsaw

### **The research on stone marks from the region of Alexandria, Cyprus and Cyrenaica: a case study of marks engraved on the Tauchira Gate in Ptolemais, Cyrenaica**

The research on stone marks used on public buildings erected from the Hellenistic period to Late Antiquity in the region of Alexandria, Cyrenaica and Cyprus, the two regions clearly influenced by Alexandrian architecture, aims to answer questions related to the technology of stone processing, as well as wider consideration of the flow of ideas and people within the Mediterranean Basin. The paper will focus on a case study of masons' marks engraved on the Tauchira Gate in Ptolemais in Cyrenaica, the best-preserved part of Ptolemais' fortifications. Although the building has been studied by many researchers, masons' marks engraved on masonry walls have remained undocumented so far. Inscribed on carefully joined stones of the high quality isodomic masonry, on the surface of rusticated blocks, provide a unique testimony about the stone masters engaged in this monumental construction. The analysis of the marks' distribution was possible thanks to drawings made based on photogrammetric models obtained from archival photographic documentation of the Polish Archaeological Mission to Ptolemais of the University of Warsaw. It demonstrates two different marking systems used in the Tauchira Gate: the first used in the lower part of the Gate represent ordinal numbers, and the second system is represented by marks in the form of sophisticated designed monograms, probably the names of workshops owners or individual stonecutters were abbreviated in them. It seems that the Gate was built in two phases, in the first one the marks refer to division of the works among unnamed, consecutive eight stonecutters' teams, while the second system refers to particular workshops or masons abbreviated by monograms. Probably these two identified systems of the marks reflect the organization of work and the methods of financing the masons.

**Arleta Kowalewska, Michael Eisenberg**

The Zinman Institute of Archaeology, University of Haifa,

### **Masons' Marks in Syria-Palaestina and Arabia – an Update from Hippos and the Region**

The Southern Levant is one of the regions with a long-standing tradition of stone building. The increase in building activity in the Roman period brought with it the use of masons' marks. Our previously published research on Roman-period masons' marks from Syria-Palaestina and Arabia distinguished two types of marks present on local stones in the region, both well-attested in Graeco-Roman world: construction marks (used to facilitate the assemblage of buildings), and workshop marks (used to ensure accurate payment for those who supplied the stone). The current presentation will focus on a few new additions of masons' marks to the previously published corpus, situating them among the other finds. Special emphasis will be put on the newly excavated marks at Hippos of the Decapolis. The marks on paving stones of a freshly exposed cardo are identical to marks previously recorded on the decumanus maximus and the forum. The last two years of excavations at the Flowers Mausoleum revealed additional evidence of meticulously sculpted architectural fragments (some with masons' marks) and allowed for a more precise dating of the building (end of the 1st century CE).





**Giulia Marsili**

University of Bologna – Gerda Henkel Foundation

**Stone and marble elements with multiple marks:  
new insights into their distribution, function and meaning**

Masons' marks can be defined as informative vectors aimed at communicating one or more pieces of information from stoneworkers or officials to other actors involved in the stone crafting and building process. As such, if assessed in their relevant archaeological context, they can shed light on artisanal and technical dynamics at play in the different stages of building sites. In Late Antiquity, alphabetic marks were usually carved at once on stone elements and shaped as single letter, multiple characters in ligature or monograms. Nevertheless, many instances may be double-numbered or, more rarely, multiple groups of marks maybe engraved on the same object. A thorough investigation of this phenomenon allows to track down data about the function of these signs and their meaning within the supply chain. In some cases, indeed, assembly or positioning marks are coupled with workshop marks, thus pointing to the need of conveying specific technical information by different groups of craftsmen. In others, more than one workshop is recorded on the same furnishing, providing data on the complexity of craftsmanship procedures, on the labour effort and thereby on the economic dimension of the project. An attempt will be made to reassess this phenomenon in its historical and geographical dimension, with reference to several archaeological cases across the Mediterranean and an in-depth inquiry into the exceptional case of St. Sophia basilica in Constantinople.

**Marcin Romaniuk**

Institute of Mediterranean and Oriental Cultures, The Polish Academy of Sciences

**Masons' marks from the Western Courtyard of the 'Hellenistic' House in Nea Paphos  
– methodological aspects of the research**

The paper focuses on the methodological aspects of the research on the masons' marks from the stone architectural elements of the Western Courtyard of the 'Hellenistic' House in Nea Paphos. Interpretation of this kind of finds – due to their enigmatic nature, usually incompleteness of the assemblage and/or poor state of preservation – poses many problems to archaeologists, requiring a complex methodological approach. The presented case constituted the group of seemingly unrelated Greek letters – often repeated in different stylistic forms – encountered on the dispersed stone members of the collapsed porticoes. To answer the questions about the function and chronology of these marks the combined methodology has been applied, including the archaeo-architectural, spatial, technological (stone-carving) and epigraphical analyses of the marks and their carriers, based on the 3D photogrammetric documentation and dedicated software for digital analyses. The results answered not only the research questions, but also expanded the knowledge of the construction process of the Western Courtyard, showing how useful research on the phenomenon of masons' marks can be.



## ABSTRAKTY / ABSTRACTS

### Panel 2:

Marble use, trade and distribution  
in the Eastern Mediterranean  
during Late Antiquity

8–9.VI 2022, online

**Isabella Baldini, Claudia Lamanna**  
University of Bologna

### **Marble use and reuse in Late Antique Gortyn, Crete**

**Keywords:** Gortyn, Crete, re-use, spolia, Late Antique and Byzantine period, Late Antique and Byzantine archaeology, decorative and architectural elements

The monumental development of Gortyn in Late Antiquity offers the opportunity to investigate the characteristics of the phenomena related to the use and reuse of marble in different contexts, in order to try to understand the dynamics of such interventions. Considering some of the contexts that are better known thanks to the archaeological research of the last decades, it is possible to outline different phenomena, in a time range between the second half of the 4th and the 8th century. In a first phase there is a reuse of the marbles in loco or from immediately surrounding areas, sometimes with different purposes. After the 5th century the reuse shows a tendency to lose the original function of the spolia. This second phase coincides with the phenomenon of systematic picking and reworking of marble for new buildings. Even different is the panorama offered by the buildings of the 8th century, when architectural elements and statues are reused in the walls, mostly in fragments.



**Ahmet Bilir<sup>1</sup> and Mustafa Şahin<sup>2</sup>**

<sup>1</sup>Düzce University Underwater Studies Application and Research Center,

<sup>2</sup>Bursa Uludağ University, Department of Archaeology

### **Marble shipwrecks originating from Proconnesos Island**

**Keywords:** Proconnesos, marble, shipwreck, Marmara, Navis Lapidaria

The subject of this study is the ships that sank on route to different parts of the Mediterranean shores from Proconnesos/Marmara Island, which was famous for its marble in the Antiquity. With this study, it is aimed to understand the in-situ data of shipwrecks known to contain Proconnesos Marble. As mentioned by ancient writers, specially designed ships were built to carry marble or stone. These ships were called *navis marmorum* or *navis lapidaria*. One of the earliest known examples of such a ship is the Kizilburun Shipwreck, which carried the architectural elements of the Temple of Apollo at Klaros, built in the 1st century BC. It is understood that the shipwreck, off the coast of Şile in the Black Sea, carried a column base, five Ionic capitals, two large blocks, a sarcophagus lid, several marble bowls, a female bust and an armored emperor statue. Unfinished Proconnesos Marbles, consisting of 67 pieces and estimated to weigh 350 tons, were recovered from the Capo Granitola A wreck (225–275 AD) on the Mediterranean coast of Sicily. Also discovered in the shallows of southern Italy, the Punto Scifo D shipwreck is dated to the first half of the 3rd century AD with context ceramics. The shipwreck was studied in detail and was recorded as the heaviest tonnage navis lapidaria ever known in the Mediterranean, with the 357,166 tons of Proconnesos Marble it once carried on its deck. The shipwreck, which was discovered in Sicily's Marzememi and called the "Church Wreck", is dated to between 500 and 550 AD. It is understood that this shipwreck carried pedestals, columns and column capitals to be used as a set in the construction of a basilica. As a result of the analysis, it has been confirmed that a shipwreck found near Vordonisi Island on the Anatolian side of Istanbul contains Proconnesos Marble, consisting of 18 pieces.



**Ceren Demirton**

Philipps University Marburg

### **The liturgical furnishings of the city basilica at Patara (Lycia): the templon arrangement and reconstruction suggestions**

**Keywords:** early Byzantine architecture, liturgical furnishings, templon arrangement, Patara

The main goal of this study is to investigate the templon arrangement recovered during the excavations (in 2013–2020) of the City Basilica dated to the second half of 5th century AD at Patara, detailing their motifs, dimensions and materials, comparing them with similar examples in early Byzantine architecture, determining their function and putting forward reconstruction suggestions. To date, ten churches and chapels have been identified in Patara. The City Basilica of Patara is a complex that was identified by the first excavators as an episkopeion with a central atrium and a monumental west entrance and its rich decoration. Architectural finds and liturgical furnishings indicate that the basilica's first architectural phase dates back to the second half of the 5th century AD.

In this study, the remains of the templon materials which are mostly marble, were evaluated and compared to similar examples in early Byzantine architecture and liturgical equipment, the characteristics of the decoration, dimension, style and materials of the templon arrangement. Eventually, the study examines how marble materials, such as liturgical furnishings, were transported to the Lycian region and Patara.

**Michael Eisenberg<sup>1,2</sup> and Arleta Kowalewska<sup>1</sup>**

<sup>1</sup>Zinman Institute of Archaeology and <sup>2</sup>German Protestant Institute of Archaeology

### **Imported stones in Byzantine Hippos – the Cathedral and other city churches**

**Keywords:** Decapolis, Hippos, cathedral, marble, granite, Byzantine architecture

Hippos of the Decapolis, situated above the Sea of Galilee, was one of the inland Graeco-Roman poleis of Provincia Syria that flourished through 1st–3rd centuries CE. At this time, the import of decorative stones, such as marbles and granites, for the construction of the public monuments reached its peak. In the Byzantine period, the city became exclusively Christian, with a bishop present as early as 359 CE. At least seven churches were built within the small space of the city walls. The churches seemingly made use of the ready architectural fragments left by the disused Roman public buildings, but they also included an array of church-specific products made of decorative stones. This





presentation gives an overview of the imported stones found in Byzantine Hippos – the architectural fragments and the church/liturgical furniture, many of which were sampled to study their provenance. Special attention is given to the city's cathedral, the largest and most prestigious among the churches, which was the focus of the 2021–2022 excavations at Hippos. A room was discovered abutting the southern wall of the church, where a small baptismal font was found, surrounded by marble furniture and liturgical objects, buried by the collapsed walls and roofing.

**Peter Gendelman<sup>1</sup> and Rivka Gersht<sup>2</sup>**

<sup>1</sup>Israel Antiquities Authority Excavations, Surveys and Research Department,

<sup>2</sup>Department of Classics — Greece and Rome, Tel Aviv University

### **Between private and public: the use of marble in Late Antique Caesarea Maritima**

**Keywords:** marble cargoes, wall facing, architectural members, marble sawing and recycling, pilaster capitals, champlévé reliefs, lattice screen panels, tabletops

Apart from the use of marble for sarcophagi and funerary inscriptions, enormous amount of marble was employed in Late Antique Caesarea in private, semi-public and public constructions. Walls were faced with plain, sculpted and *opus sectile* panels, and with pilasters, pilaster capitals and bases; floors were paved with *opus sectile* mosaics and quadrangular slabs, and rooms and courtyards were furnished with tables and screen panels. Many walls retain fragments of revetment marble and drilled clamp-holes; bronze clamps and marble spacers were found in all excavated areas. Marble arrived the anchorages of Caesarea before and after the 4th century, yet from more limited number of quarries during Late Antiquity. The marble cargoes arrived as either plain blocks or as half-finished or finished products. South of Kibbutz Sdot-Yam marine archaeologists found sunken cargoes of marble columns and bases from the Roman period and dozens of marble slabs from the Byzantine period.

Late Antique Caesarea was abound with marble architectural members of Roman dismantled buildings, which were either reused-as-is or reshaped. There is plenty of evidence that a large scale marble sawing took place in Caesarea during Late Antiquity; it included both, Roman architectural members and newly arrived plain blocks. There is also plenty of evidence that aside the use of imported products the Caesareans made use of locally carved products as pilaster capitals, champlévé reliefs and lattice screen panels.



**Hakan Göncü**

Karamanoğlu Mehmetbey University, Faculty of Literature, Department of Archeology

***Opus sectile* pavements and marble types of the late Roman  
bouleuterion/odeion of Smyrna**

**Keywords:** orchestra, early Christian architecture, Asia Minor, colored marbles

In this presentation, *opus sectile* pavements in the late Roman Period bouleuterion/odeion of the Ancient City of Smyrna will be introduced together with the marble types used and their motif features. In addition, marble and flooring features will be compared with the religious and public buildings of the early Christian Period in other important cities of Asia Minor.

**Mariusz Gwiazda**

Polish Centre of Mediterranean Archaeology, University of Warsaw

***Marmora Bizantina* online database**

**Keywords:** marble, Byzantine period, database

Over the past decades, excavations in the southern Levant have yielded thousands of marble objects from Byzantine period contexts. Information about those finds is scattered across hundreds of different publications, making it difficult to get a broader view of the scale, extent, and diversity of marble use in Late Antiquity in the area. The answer to the problem is an online open-access database of marble finds currently under development. Its geographical coverage includes ancient Phoenicia, Palestine and Arabia. Besides Byzantine objects, it also includes finds from the Roman period. This will enable an analysis of regional changes in the use of marble over several centuries. The purpose of the presentation is to show the form of the website and the system of data recording.

**Mariusz Gwiazda**

Polish Centre of Mediterranean Archaeology, University of Warsaw

**Marble utensils from Byzantine period Kom el-Dikka, Alexandria**

**Keywords:** marble, Byzantine period, Alexandria, mortars, table tops





Research on Byzantine marble objects focuses on architectural elements and liturgical furnishings of churches. This is related to the dominant use of this material in sacred contexts during this time. Less well recognized is the use of marble in non-religious contexts. Significant information on this subject is provided by unpublished material from the Polish excavations at Kom el-Dikka in Alexandria. Based on archival materials, the range of supply to this city of various utensils has been reconstructed. Among them are mortars, pestles and various table tops. The forms of these objects find excellent parallels at other sites in the Eastern Mediterranean. This allows us to conclude that such items were mass-produced in specialized workshops supplying Egypt, Syria, and Palestine during the Byzantine period.

**Basema Hamarneh**  
University of Vienna

### **Marble as votive offering: social agency in the post classical Levant**

**Keywords:** marble, social agency, south Levant, Late Antiquity, donation inscriptions

This paper, twinning archaeology and written sources, intends to focus the attention on marble votive offerings to Southern Levant churches in Late Antiquity. In particular, it will highlight whether there are interconnections between social position, patronage, audience, language and identity, and will also examine the role of the display of such offerings within the church. The substantial number of objects that have received carved inscriptions show that citations from the sacred scriptures are altered to simple dedications to saints, martyrs and prophets. The study thus aims to identify the typology of texts and objects receiving them, establish the relation between donation and donor, and provide an analysis of the distribution of such objects in the regional context of the churches of the Levant.

**Hany Kahwagi-Janho**  
Holy Spirit University of Kaslik (USEK)

### **Hundreds of Byzantine architectural decoration fragments re-discovered in Tyre, an overview of the finds**

**Keywords:** Tyre, architectural decoration, liturgical elements, Byzantine churches/chapels

In 2018, during the study and excavation works undertaken within the frame of the Franco-Lebanese mission of Tyre, an antique cistern full of marble fragments, mostly dating back to the



Byzantine period, was “re”-discovered. This stock was most likely organized during the extensive excavation works which uncovered the site during the 1960’s and 1970’s, leading to the discovery of a large thermal complex, two smaller baths, a residential quarter, all of them dating back to the Romano-Byzantine period, as well as a Frankish cathedral and several Byzantine chapels located within the residential quarters’ urban fabric. A large proportion of the 900 fragments assembled in the cistern belonged to the Byzantine religious buildings of the archaeological site. Although this stock was not mentioned in any record available at the Lebanese Directorate General of Antiquities, the identification of the original place of each of its fragments was easy to re-locate thanks to the marking, on each of them, of the grid sector number and the level in which they were found. The paper will present the finds of this discovery, the types of the fragments, their characteristics as well as their repositioning and re-attachment to their potential initial buildings.

**Ergün Lafli<sup>1</sup>, Maurizio Buora<sup>2</sup>, Gülseren Kan Şahin<sup>3</sup>**

<sup>1</sup>Division of Medieval Archaeology at Dokuz Eylül University, Izmir, <sup>2</sup>Società Friulana di Archeologia, Udine,

<sup>3</sup>Department of Archaeology at the University of Sinop

### **Marble use, trade and distribution in Lydia and Upper Cayster Valley (western Turkey) during Late Antiquity**

**Keywords:** Phrygian marble, Lydian marble, local marble sources, Lydia, Upper Cayster Valley, Manisa, Izmir, western Turkey

At the beginning of the Byzantine period, the use of architectural elements in marble became a major element of ecclesiastical architecture in Lydia, where the use of earlier architectural, sculptural and other remains as spolia is very common. Especially, the number of Byzantine marble ecclesiastical architectural elements and their re-use in later Ottoman buildings is very high in Lydia, even though Byzantine architectural monuments have not been studied in depth, and studies on the relationship of artistic developments to historical events of the Byzantine period are lacking in Lydia. But in any case, there must have been at least one local workshop in Lydia during the Byzantine period. The marble used for these elements is mostly of Phrygian or Lydian origin. Each Byzantine architectural plastic element that we were able to document in Lydia presents a different variant of traditional elements, a unique combination of both geometric and floral decoration and the individual stylistic expression of the sculptor. There are no extant examples of a particular decoration being replicated exactly on a second monument. The uniqueness of each monument suggests that the decoration, even though it appears repetitive and adheres to a set of general norms, was an element of consideration by both the sculptor and the patron, in most cases local churches. Also, most of these elements have not been found in datable archaeological contexts; therefore, their dates are not secure and their chronology remains a difficult issue. We have tried to date each piece, when the condition



and quality warrant, to a general stylistic milieu. The dates assigned here are conservative and should be considered as rough approximations. Although the original purpose of these ecclesiastical plastic elements was to decorate churches and monasteries, one can presume that if a need arose for pre-cut stone in later Turkish-Islamic periods, they were seen as having fulfilled their original function, and could be re-used. But the instances of re-using an earlier Byzantine-Christian element in a Turkish-Islamic monument have not yet been studied in Lydia.

**Diego Peirano**

Italian Ministry of Education, University and Research

### **Aesthetic of Iasian marble in 6th century pavements**

**Keywords:** use of marble, red cipollino, floorings, marbles matching

Among other studies, in recent years Iasos marble was considered in the light of its use in context and its relationship with other materials, mainly in the 6th century, the time of its floruit.

In Iasos the stone, otherwise little attested, was used in the agora basilica north narthex, alternated with white marble. In Gortyna cathedral Iasos marble marks a lane orthogonal to the path made of white marble linking the central entrance, ambo and presbytery. Tiles of Iasos marble alternating with white veined ones plated the synthronoi of the basilicas A and C of Nea Anchialos. In the latter the presbytery short sides were framed with medium-large slabs made of red cipollino with different length and width. However, such differences had to be hardly noticeable because the surviving *opus sectile* panels show intricate motifs and those lost should have had the same character. The presence of a ciborium and of high barriers should also have dissimulated these differences, respectively from within and from outside. Here, in the prostoion preceding the presbytery, green breccia is added to red and white marbles.

The wavy veins of red cipollino were also used to dramatize the Ephesus' St. John presbytery. Even if it is not possible to reconstruct the whole original elevation, the templon stylobate and the bases were made of Iasian marble, the remaining columns are made of green breccia and grey marbles; at least some of the slabs would have been of the open work type.



**Eirene Poupaki**

Hellenic Ministry of Culture and Sports, Directorate of Prehistoric and Classical Antiquities

**Early Byzantine vases from Halasarna (Kos, Dodecanese, Greece)  
carved in Proconnesian marble**

**Keywords:** Proconnesian marble, stone-carving, Halasarna, bowls, half-finished, marble cargo

The provenance of marble vases carved in Late Antiquity is not much studied. Indeed, based on the relevant bibliography, only the mensae martyrum carved in Proconnesian marble are well known. Some years ago, though, the archaeometric provenance studies of the University of Athens and the N.C.S.R. "Demokritos" proved that some vessels of the 5th and 6th cent. AD found during the excavation at Kardamaina (ancient Halasarna) of Kos were carved in Proconnesian marble, too. They are four handled bowls of a quite common type, whose grips are decorated with incised patterns, which had been considered as liturgical equipment and they had been further identified as 'chernives'. These Proconnesian products had been imitated in Koan stone-carving workshops, still active in the early Byzantine period, because similar vases carved in local Koan rocks (travertine, marble and limestone) have been found. The confirmed use of the Proconnesian marble not only for architectural parts, but also for liturgical artifacts of lesser use, during the 5th and 6th cent. AD, enables us to admit that among the Proconnesian products of the marble workshops of Constantinople imported to Kos, there were vases, too. Moreover, these imports must have lasted throughout the 5th cent. and could have been systematized after the earthquake of 469 AD which destroyed the island and prompted new building activity in its settlements (Mastichari, Antimacheia, Kefalos, etc.). These vessels could have been transported half-finished in cargoes of stone-carrying boats through the Mediterranean and the Black Sea, together with the architectural parts for the embellishment of the erected religious and secular buildings in the whole Byzantine Empire.

**Ehud Arkin Shalev, Roey Nickelsberg, and Assaf Yasur-Landau**

University of Haifa

**A unique Late Antique marble cargo from Dor**

**Keywords:** shipwreck, spolia, Late Antiquity, marble

Between 2018 and 2021, a submerged wreck site was surveyed off the coast of Tel Dor, Israel. The cargo wrecked at the site was a shipment of spolia consisting of previously used marble slabs and other architectural elements, along with several stone anchors. The small ceramic assemblage from the site hints at a late Byzantine or early Muslim dating for the site. This chronological range may



be further refined using  $^{14}\text{C}$  and OSL dating of biogenic marine deposits and sediments from the site, augmented by infrared spectroscopy used to delineate site stratigraphy. Initial macroscopic analysis and isotope analyses, coupled with historical evidence, suggest the marble's provenance may be in west central Anatolia. The trade in spolia was widespread throughout the Eastern Roman Empire, not in the least in Palestina which has no native marble of its own, yet this is the first documented instance of a maritime cargo of spolia. Its homogenous character presents a different model of sea-borne trade than the mixed cargos encountered in other shipwrecks of the eastern Mediterranean in the same period. This shipment likely originated from a single looted structure at Dor, or perhaps from nearby Caesarea. It joins other examples from Dor and elsewhere to highlight the intense reuse of marble and other types of stone in the region, most notably in the 4th to 8th centuries CE.

**Yana Tchekhanovets**

Department of Archaeology, Ben-Gurion University of the Negev

**Marble spolia in urban and rural sites:  
cases of the early Islamic Jerusalem and the Negev**

Keywords: spolia, Jerusalem, Negev, early Islamic period, city and countryside

The paper presents the study of marble circulation processes in Late Antiquity, based on recent archaeological research of urban and rural sites in Jerusalem and the Northern Negev. In Byzantine Jerusalem, the luxury imported marble was used both in private and ecclesiastic spheres, while in the rural landscape of the Negev, its use was restricted solely to the church architecture. In numerous cases, the original use of the discovered marble fragments can be identified: it is seen with a case of liturgical furniture fragments and often possible with simple floor slabs, details of *opus sectile* pavements, and panels of wall veneer. Various strategies of marble reuse and conversion of the early Islamic period builders will be discussed, based on analysis of a large marble assemblage discovered in an urban site, the Givati Parking Lot site in Jerusalem, where nearly 2500 marble fragments were found in secondary deposition, in the occupational layers dated from the Byzantine to the Abbasid periods. This large urban assemblage will be compared with marble finds from several Northern Negev farmhouses, dated to the Umayyad and Abbasid periods.





**Iwona Zych<sup>1</sup>, Maciej J. Bojanowski<sup>2</sup>, and Sara Mandra<sup>3</sup>**

<sup>1</sup>Polish Centre of Mediterranean Archaeology, University of Warsaw, <sup>2</sup>Institute of Geological Sciences, Polish Academy of Sciences, <sup>3</sup>Institute of Paleobiology, Polish Academy of Sciences

## **Marble embellishment of the Isis Temple in early Roman Berenike, Egypt**

**Keywords:** proconessian marble, Berenike, early Roman, marble trade

Marble revetment and floor tiles, not to mention some elements of broken statuary in marble, were recovered from the excavation of a 1st–2nd century AD temple in Berenike, a Graeco-Roman harbor on the Red Sea coast of Egypt. All the architectural elements are made of banded, gray to white marble with properties indicating a Proconnesian source. This marble exploited in Marmara Island and widely used throughout the Mediterranean, Egypt included, from the 2nd century AD. The statuary finds were of white marble representing at least three sources. Medium- to coarse-grained varieties were extracted in the islands of Paros (Aegean Sea) and Marmara, whereas fine-grained varieties were produced from high-quality, expensive Parian (Lychnites type) and Dokimian material. The archaeological study of these marble artifacts aimed at reconstructing the embellishment project for which this prized building stone was brought to Berenike, and the commercial ties and on-the-ground logistics involved in the process. It is suggested that the Proconnesian marble, for instance, could have been ordered from the marble depots in Alexandria, along with a team of Bithynian mastercraftsmen to work it, most likely for a project to beautify the main temple of the city in the times of the Emperor Hadrian.





## ABSTRAKTY / ABSTRACTS

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Marek Barański

Faculty of Civil Engineering and Architecture, Kielce University of Technology

Keywords: Palmyra, Bel Temple, construction

### **Limestone like marble. Some questions concerning designing the Bel Temple in Palmyra**

The construction of the Bel Temple, marked the beginning of the use of a new building material in the architecture of Palmyra – white hard crystalline limestone. What is interesting about this particular construction is the fact that a new material was used for the most ambitious project in a city experienced with traditional building techniques, and that this new material was used for the stone structure of the peristasis roof of the temple.



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Tomasz Barański

Polish Centre of Mediterranean Archaeology, University of Warsaw

**Keywords:** Islam, mosque, Arabic, epigraphy, inscriptions, Syria, Hauran

### **The epigraphical landscape of Izra (southern Syria) in the Islamic period**

Numerous Greek inscriptions were written in Hauran in Antiquity, including at Ezra', located on the western periphery of the rocky region of Trachonitis, known in Arabic as al-Lajā'. The most important of these inscriptions, concern two churches, that of St. George (Mār Ġirġis) and that of the Prophet Elijah (Mār Ilyās), both of which are dated to the 6th century AD. Both religious buildings, which are also in use in modern times, functioned in the landscape of this city in the time following the Arab conquest of the 7th century AD. Epigraphic material in Arabic at Ezra' is less numerous and concentrated primarily in one building. This architectural structure, the history of which is the focus of my research, is referred to as the Umar Mosque, a reference to the figure of the second of the so-called Righteous Caliphs, who ruled from 634 to 644 AD. However, the first certain evidence of the existence of a mosque at this site is a much later, Ayyubid inscription from the mid-13th century AD. Other sources including epigraphic texts and later travel accounts suggest that this building served commercial purposes and perhaps even as a Christian church. However, the most surprising epigraphic monument in this building is an Arabic inscription commemorating a birth from the 222nd year of the Muslim calendar, i.e. 837 AD. This unique commemoration invites to put forward several hypotheses about the reason for the construction of this monument. These inquiries are intended to identify the person or social group interested in this type of commemoration.

Piotr Bieliński

Polish Centre of Mediterranean Archaeology, University of Warsaw

**Keywords:** Oman, Iron Age, Eastern Arabia

### **A supposed Iron Age II ceremonial precinct on the site of QA3 in Northern Oman. An attempt of reconstruction**

During five consecutive seasons of excavations of the Omani-Polish Archaeological Mission in the Qumayrah Valley, work continued in the southern part of the QA 3 site near the village of Ayn Bani Saidah. The remains of a strange building complex of Iron Age II date were exposed there; they had been erected at least partly on the ruins of a Bronze Age (Umm an-Nar culture) tower. Stone blocks from the tower were used in the Iron Age for construction of the precinct's outer walls as well as for construction of a square, single-roomed structure built on the top of the ruined tower. This



building should be considered as the focal point of the whole new complex. From the entrance, situated at the southern end of the complex, one can reach the square building only passing through a ramp leading to two consecutive terraces, a setting which stresses the importance of the square structure. The Iron Age II inhabitants of the site also rearranged the area to the north of the square building where they poured off a kind of an artificial mound. All these arrangements suggest a special function of the precinct.

Nazarij Buławka

Faculty of Archaeology, University of Warsaw / CAA Poland

**Keywords:** Central Asia, Turkmenistan, landscape archaeology, water management, BMAC, Bronze Age, Iron Age, Tedjen river

### **Contributions of satellite-based remote sensing into the studies of the Bronze Age and Iron Age water management in Tedjen alluvial fan and Serakhs in Turkmenistan**

During the late 3rd and the early 2nd millennia BC, southern Central Asia and eastern Iran witnessed the rise and fall of the so-called Bactria-Margiana Archaeological Complex (BMAC). BMAC is an urban culture with monumental architecture, rich graves equipped with luxurious objects, seals and vessels made of precious materials. In the late 2nd millennium BC, archaeologists observed gradual changes in economy and culture, linked with the coexistence of the settled BMAC population with mobile pastoralists. Those changes became evident in the Iron Age (Yaz periods, 1500/1350–300 BC) because all the typical BMAC artefacts and characteristics vanished.

The paper will focus on the Tedjen alluvial fan and Serakhs oasis located in southern Turkmenistan, near the border with Iran and Afghanistan. Only one BMAC settlement was known in this area, but this has changed recently. Over the last twenty years, the Polish team's studies also significantly contributed to understanding Iron Age sites' settlement dynamics. The discovery of new sites and mapping of the alluvial fan's unexplored parts made us reconsider the development of settlement patterns in the Bronze and Iron Ages.

The paper aims to study the changes in water management using satellite remote sensing. The landscape will be analyzed using CORONA KH-4B satellite imagery, geological maps, and the Copernicus DEM GLO-30 digital elevation model. The analysis will allow us to reconstruct the ancient riverbeds that possibly functioned in various phases of the Bronze Age and Iron Age.



Tomomi Fushiya and Eleanna Avouri

Polish Centre of Mediterranean Archaeology, University of Warsaw

Keywords: Nea Paphos, collaborative archaeology, engagement program, heritage, emotive

### **A new collaborative archaeological research project at Nea Paphos**

This presentation gives a brief overview of a new collaborative archaeological project that was instigated in March 2022 in Paphos, as a part of the Maloutena-Agora Project (MAP). The project comprises research and archaeological engagement programs. The research explores emotive roles of archaeological heritage with Nea Paphos Archaeological Park as a case study. The project also designs and implements different engagement program together with other MAP members, to actively engage with the public about archaeology and the Park, and to create opportunities for the public to learn and think about the local heritage. The presentation reports the activities of the first season of the project.

Krzysztof Jakubiak<sup>1</sup> and Ashot Piliposian<sup>2</sup>

<sup>1</sup>Faculty of Archaeology, University of Warsaw,

<sup>2</sup>Service for the Protection of Historical Environment and Cultural Museum-Reservations

Keywords: Urartu, post-Urartian period, Metsamor, Armenia, excavations

### **Urartian and post-Urartian periods transition based on recent excavation in Metsamor**

Recent excavations conducted in Metsamor brought to light new evidence concerning the settlement's functioning during the Urartian times and new information about the site's existence after the collapse of the Urartian Kingdom. Noteworthy is a large Urartian-period house that had initially been used as a small shrine. This discovery shows that among the ordinary dwelling structures in the area of the so-called lower town, there were also shrines – the sacred spaces giving religious hope to the town dwellers. Based on the current evidence, we believe that this shrine was active during the early Urartian period. It is difficult to judge what brought about the abandonment of this religious structure but this process can be associated with some other dynamic changes which shall be shown during our lecture. The most important and fascinating aspect is, that the remains of the small temple were reoccupied and the spoils from this sacral structure were used as part of a dwelling house. This rearrangement most possibly happened at the end of the 8th century BC. This house is believed to have survived the downfall of the Urartian kingdom and was still used during the time of the early



Achaemenid domination. Judging by the artifacts discovered during the excavations the Metsamor settlement seems to have survived untouched and was harmoniously crossing the borderline from Urartian to Persian domination. The destruction of the settlement happened slightly later than it was previously assumed. The analysis of the changes recorded in the Urartian and post-Urartian periods shall be the main topic of the lecture.

Piotr Kołodziejczyk, Marek Nowak, Marcin Czarnowicz, Barbara Witkowska,  
Jacek Karmowski, Agnieszka Brzeska-Zastawna, Michał Wasilewski, Justyna Zakrzeńska

Institute of Archaeology, Jagiellonian University

Keywords: Jordan, Bronze Age, prehistory, South Jordan, dolmens

### **Southern Jordan between the Neolithic and Bronze Age. Recent research of the Jagiellonian University**

This presentation will discuss the status of the research conducted since 2017 by the Jagiellonian University (Poland) team in southern Jordan, with a special focus on the excavations carried out between 2019 and 2021. During this time, the Polish team conducted excavations at three sites located in southern Jordan. New data from this work allow us to draw new conclusions about the human groups that functioned in southern Jordan during the Late Prehistoric period, or to revise some old theories. The excavations (sites: Umm Tuweyrat, Huseinya, Wadi Feynan 101) paint a new picture of human presence in the area, showing not only their daily activities, but also elements of their spiritual culture and their relationship to the surrounding landscape. At one site, a dolmen field with burials was investigated, and at the two remaining sites, residential and household structures were examined. A wealth of environmental data was obtained that allows for in-depth analyses of this important period. In this presentation, we attempt to interpret these data, describe the ways in which people functioned from the Chalcolithic to the Bronze Age, and point out gaps in our knowledge, which, however, are being filled with each year's passing.



Paulina Komar<sup>1</sup> and Andria Rogava<sup>2</sup>

<sup>1</sup>Cardinal Stefan Wyszyński University, <sup>2</sup>The National Museum in Tbilisi

Keywords: amphorae, transportation, fort, Black Sea, Apsaros (Gonio)

### **Amphorae food supply of Apsaros (modern Gonio, Georgia) in the Roman and Byzantine periods**

Apsaros (now Gonio) is a Roman fort in the Colchis region forming part of the Pontic limes, which has been studied since 2014 by the Polish-Georgian Gonio-Apsaros Expedition. The excavations so far have yielded 1243 diagnostic fragments of amphorae from the Roman as well as Byzantine periods, which provide us with insights into the fort's supply system and allow us better to understand how Roman and Byzantine transport networks functioned in the Black Sea basin.

The aim of this presentation is to outline the current results of the study of the Apsaros amphorae, as well as the prospects for further research planned within the framework of the REM: Roman Military Economics project (NCN no. 2021/41/B/HS3/01155).

Michał Kuźmiński

Faculty of Archaeology University of Warsaw

Keywords: gemma, intaglio, Sassanids, Hermitage, Pahlavi

### **From Paris to Petersburg – the history of a Sassanian gem**

Among the artefacts from the Middle East in the State Hermitage Museum there is an inscribed Sassanid intaglio purchased by order of Catherine II. It has been repeatedly published and reproduced in gem cast collections. However, its interpretation posed many difficulties and for a long time it was incorrect. The gem depicts a bust of a man with hairstyle and figure modelling characteristic for Persian gems of the 3rd and 4th centuries. Until the beginning of the 20th century, the figure was interpreted as a representation of a Persian king.

Around the bust of the man there is an inscription in Middle Persian, which was first read relatively accurately by Andreas Mordtmann in 1864. It was not until the first half of the 20th century that the whole inscription was read correctly by Andrei Borisov. However, he did not attempt to clarify the doubtful elements of the inscription. Borisov's translation of the inscription reads "Khosrow mage, son of Aturfarnbag". Its appearance may indicate that the inscription has been reworked, which earlier





scholars have not mentioned at all. It seems that at least the patronymic of the Zoroastrian priest is the result of a later alteration, since the original inscription was probably somewhat shorter.

The study of these alterations broadens the knowledge of the history of this object and may have implications for its interpretation and dating. Furthermore, the example of this intaglio sheds more light on the general problem of alteration of inscriptions on Sassanian gemstones, which has not been intensively studied so far.

Michał Michalik<sup>1</sup>, Małgorzata Kajzer<sup>2</sup>, Urszula Wicenciak-Núñez<sup>3</sup>, Kamila Niziołek<sup>1</sup>, Jerzy Oleksiak<sup>4</sup>, Anna Kubicka-Sowińska<sup>5</sup>, Łukasz Misk<sup>3</sup>, Wojciech Ostrowski<sup>5</sup>,  
and Ewdoksia Papuci-Władyka<sup>3, 6</sup>

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<sup>6</sup>Institute of Archaeology, Jagiellonian University in Kraków

**Keywords:** Nea Paphos streetscape, Maloutena excavations, pottery analysis, stratigraphic analysis, procedural modeling

### **Nea Paphos season 2021.**

#### **Preliminary remarks on the stratigraphy and pottery of the Trial Trench III located in the Maloutena district**

Nea Paphos, a city located in the southwest part of Cyprus, is a prime example of early Hellenistic urbanism in the island, a city organized within the framework of a regular street grid. The main goal of the MA-P project is the evaluation of the city landscape taking advantage of the major scientific contribution of Polish archaeologists to the site reconstruction, and interdisciplinary analysis based on the noninvasive and quantitative methods, GIS, and procedural modeling. The archaeological component of the project includes i.a. trial excavations that allow insight into the construction of Paphian streets and the dynamics of their development.

In this paper, we would like to present the workflow and results of the Trial Trench III (TT.III) opened in the Maloutena district during the summer season of 2021. Excavation works in this area allowed us to unearth the remains of Hellenistic street A sewer and the foundations of superseding Roman villas. Special attention will be paid to the analysis of the pottery and its value as a chronological indicator in the establishment of site stratigraphy. Subsequently, the results of the dynamics of architectural reorganization attested in the Trench will be pictured as a 3D reconstruction.



The project: "MA-P Maloutena and Agora in the Paphos Urban Plan: Modeling the cityscape of the Hellenistic and Roman Capital of Cyprus" directed by E. Papuci-Władyka is financed by the National Science Centre Grant NCN OPUS 18 no 2019/35/B/HS3/02296.

Francisco J. Núñez and Urszula Wicenciak- Núñez

Polish Centre of Mediterranean Archaeology, University of Warsaw

Keywords: Tyre, sacral areas, temples, ancient rituals, city organization

### **The sacral quarter of Tyre**

Recent excavations in the south part of Tyre have revealed the existence of a series of temples, shrines, and cemeteries, whose chronology covers the Late Iron Age/Persian, Hellenistic, Roman, Byzantine, Crusader, and Fatimid period, arriving until today. The concentration of sacred buildings and spaces in this part of the ancient island points to its sacral character, which probably contrasts with the more commercial nature of areas located to the north, close to the harbor. This presentation aims at a brief analysis of those remains as well as their evolution and role within the city of Tyre through the ages.

Patryk Okrajek

Jagiellonian University

Keywords: Metsamor, Hellenistic-Roman Period, Kingdom of Armenia, Orontids, Artaxiads, Arsacids

### **Metsamor in the Hellenistic-Roman period**

The plain of Ararat lies between Aragac in the north and Ararat in the south, in the middle course of the Aras River. The attractive natural conditions and fertile land contributed to the birth and development of the most important centers of the Kingdom of Armenia during the Hellenistic-Roman period, such as Armavir, Artashat and Ervandashat. The rise and flourishing of these cities is known primarily from texts by ancient writers, but also from the archaeological research conducted there. In the shadow of these centers of power, there are smaller sites, such as Metsamor, excavated since 2013 by the Armenian-Polish Archaeological Mission. The analysis of the archaeological material from these excavations allowed to outline the role that Metsamor may have played in the Hellenistic-Roman period. The analysis of artefacts such as pottery also offers a glimpse into the daily life of the population living outside the capital centers of the Kingdom of Armenia.



Jerzy M. Oleksiak<sup>1</sup> and Seth Priestman<sup>2</sup>

<sup>1</sup>Interdisciplinary Doctoral School of University of Warsaw, <sup>2</sup>Durham University

Keywords: Saudi Arabia, Thaj, Amphora, Hellenistic Era, Gulf

### **Drinking Wine in the Oasis – Mediterranean imports in Thaj**

Transport amphorae of Aegean and Eastern Mediterranean origin appear sporadically in the Hellenistic period coastal sites of the Gulf. The last five years of excavations and surveys at Thaj (aš-Šarqiyya, Saudi Arabia) carried out by CNRS (UMR 8167 Orient et Méditerranée) and the Saudi Heritage Commission, with the support of the French Ministry of Europe and Foreign Affairs, produced a significant pottery assemblage of imported Mediterranean wares. Ceramic evidence from 4th to 2nd c. BC layers from Thaj, an inland site situated above 100 km from the coastline, shows a surprisingly broad spectrum of classes and types of transport amphorae. These finds suggest strong long-distance economic connections with the centre of the Hellenistic world and a significant influence of the Mediterranean culture on the city of Thaj in the Hellenistic era. The aim of this paper is to present this unique assemblage of imported wares and to raise a discussion over possible routes by which Mediterranean goods reached the site, taking into account other finds of transport amphorae at sites of the Gulf and South Arabia.

Micaela Sinibaldi

Polish Centre of Mediterranean Archaeology, University of Warsaw

Keywords: Petra; Islamic-period settlement; archaeological excavation; mosques

### **The Islamic Baydha Project: reconstructing the post-urban phase of Petra**

The Islamic Baydha Project, directed by Micaela Sinibaldi since 2014, is part of the broader Late Petra Project, that aims at reconstructing the history of the Islamic period in Petra. This research has demonstrated, over the past years, that, contrary to what was commonly thought in the past, there were never significant chronological gaps in the occupation of the Petra region and valley after the Byzantine period.

The rural village investigated by the Islamic Baydha Project consists of the most substantial available evidence in the region for the Islamic period and includes the only two mosques ever excavated in the Petra area. This ongoing project has so far concluded that the occupation at the village spans from the Byzantine period to the Modern one, and has reconstructed the original architecture of the two mosques and of some of the village houses. Studies of the artifacts and



archaeobotany, as well as laboratory analyses to refine the chronology of phases of occupation are currently in progress.

The Islamic Baydha Project is a project of research, community engagement and archaeological training for Jordanian and international archaeologists. Its most characterizing aspect is the tight connection and the synergic organization of all its components.

Anna Smogorzewska

Faculty of Archaeology, University of Warsaw

Keywords: Arabia, Ubaid Ware, Coarse Red Ware, ICP-MS, provenance analysis

### **Neolithic pottery traditions in the Gulf. A question of provenance**

Excavations at Bahra 1 conducted by the Kuwaiti–Polish Archaeological Mission from the Polish Centre of Mediterranean Archaeology University of Warsaw and the Kuwaiti National Council for Culture, Arts and Letters, has provided new data on the pottery traditions in the Neolithic Gulf. This site is critically important for establishing a provenance of the pottery since it has provided a large collection of pottery (c. 16,000 pottery sherds have been recorded so far) which constitutes a varied assemblage. Two distinct groups of pottery, Ubaid Ware and Coarse Red Ware, were identified at the site. These two pottery groups were also recognized at other Ubaid-related sites in the Gulf, from Kuwait to Oman, e.g., Abu Khamis, Ain Qannas, Khursaniyah, al-Markh, al-Da'asa, Umm al-Quwain and others.

Provenance analyses proved that the Ubaid-style pottery found in the Gulf originated from southern Mesopotamia, while the co-called Coarse Red Ware is believed to have been of local manufacture. However, clay sources matching the chemical composition of Coarse Red Ware have yet to be identified. Archaeological evidence supported by laboratory analysis is used here to discuss the provenance of these two pottery groups. The large number of finds and variety of forms support the idea that Coarse Red Ware vessels could have been produced locally at Bahra 1 (or generally in the northern Gulf). Clay sources identified in the vicinity of the site also support the possibility of the local manufacture of Coarse Red Ware.



Maciej Sobczak

Independent Researcher

Keywords: XRF analysis, pottery, Iron Age, Metsamor

### **View on socio-cultural relations in Metsamor from an analytical perspective. The results of XRF analysis of Iron Age pottery**

The studies of ceramics and the possibilities offered by modern analytical methods provide tools that enable an attempt to recreate socio-cultural relations. One such method is the XRF spectrometry. It allows to determine the chemical composition of pottery vessels, which, combined with traditional ceramic analysis, can be the basis for tracing these relationships.

The subject of the research are vessels dating back to the Iron Age from the Metsamor site. 166 different fragments were used for the analysis, both in terms of chronology and morphology. The analyses were performed using a Bruker Tracer 5 portable X-ray fluorescence spectrometer. The results in combination with the ceramological analysis allowed us to distinguish certain chronological groups of pottery that gave basic results on their provenance.

The results confirmed the lack of rapid changes in the composition of the population living in the settlement, evidenced by the continuation of the pottery tradition, while the Urartian imports remained luxury goods. These results can provide a solid basis for an insight into the development of the settlement at Metsamor during the Iron Age.

Łukasz Sokołowski

University of Konstanz

Keywords: the art of Palmyra, Palmyrene iconography, Roman Syria, Roman military tombstones, Upper Euphrates

### **Local auxiliary units in Roman Syria. Iconography and social background**

The soldiers of auxiliary forces were depicted in the arts of Roman Syria. Specifically Dromedarii from Palmyra, in local dress, armed with bows and lances, and riding horses or camels were shown in detail. These combat units operated long ahead of the Roman annexation. In Palmyra, the internal units of the local militia were also tolerated by the Roman authorities. These units, described in modern scholarship as meharistes, used to patrol the desert and protected the caravans. During the second century this practice continued and so did the iconography described above. At





the same time, at least from the reign of Lucius Verus, the auxiliary forces were stationing in Palmyra. Initially, they were shown like the meharistes. Further, Legio VIII Scythica was stationed in Zeugma, whilst veterans of Legio III Cyrenaica settled in Auranitis. Their representations share some similarities with those from Palmyra. Units from all over Syria were stationed also on the northern limes, their tombstones with particular elements of decoration and epigraphy have been preserved in Danubian provinces. But the third century brought a revolution in their imagery. Syrian soldiers were portrayed in a new, more unified way, though still with local traits, now shared regionally. The fresco of tribune Julius Terentius from Dura Europos associates military units with the imperial cult, while the funerary representations from Palmyra resemble the portraits of Syrian emperors, namely Caracalla and Philip Arab. This suggests the emergence of a new, strong military class, defending Syria against the Sasanid threat. It was the group, from which came Odainath, corrector totius orientis, husband of Zenobia and father of Wahballat.

Agnieszka Szymczak and Mateusz Iskra

Polish Centre of Mediterranean Archaeology, University of Warsaw

Keywords: Oman, Iron Age II, excavations, settlement, pottery

### **An Iron Age II village in the Hajar Mountains: the first results of excavations at QA 21, Qumayrah Valley (Oman)**

The site of QA 21 near the village of Ayn Bani Saidah in north-west Oman was recognized as an Iron Age II settlement based on surface pottery collection. In 2021, the first excavation of the site was conducted as part of the project: "Development of settlement in the mountains of northern Oman in the Bronze and Iron Ages", directed by Prof. Piotr Bieliński. From the PCMA UW and Dr. Sultan al-Bakri from the MHT. The aim of the work was to investigate the character of the settlement at QA 21 and its relation to the nearby, previously excavated, site of QA 3, of which it may have been an integral part. Excavations of three buildings of two different types established a stratigraphic sequence encompassing at least three architectural phases. They also shed light on the structures' functions and construction techniques, and offered preliminary insights into changes in site topography. The first systematic analysis of pottery showed very diverse material in terms of functional and technomorphological types. Since bulk of the sherds were found in secured and stratified deposits it is possible to determine the process of pottery consumption within a single domestic unit.





Joanna Trębicka<sup>1</sup>, Arkadiusz Sołtysiak<sup>2</sup> and Tabasom Ilkhan<sup>3</sup>

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**Keywords:** caries frequency, subsistence strategy, Central Plateau, Iran

### **The use of inter-tooth pattern of dental caries in the study of subsistence strategy in the Central Iranian Plateau**

Dental caries is an infectious disease closely related to human diet. Its frequency is usually interpreted as a proxy for archaeological investigations to distinguish between foodstuff categories, preparation techniques, and subsistence practices. In the present research we compare the general frequency of dental caries and inter-tooth patterns between three cemeteries located in the western part of the Iranian Central Plateau: Tappeh Poustchi (Late Islamic cemetery), Estark (Late Bronze Age and Iron Age cemetery) and Kafarved (Early Bronze Age site complex). Despite similar frequencies of dental caries among the three studied sites, deeper analysis of inter-tooth patterns revealed significant differences. At Estark second molars are less affected and caries developed not only at cemento-enamel junction as at Tappeh Poustchi and Kafarved but also at the occlusal side of the crown. It may be the effect of differences in diet and in masticatory behavior between pastoralists buried at Estark and farmers buried at two other sites. Our research shows the necessity to study not only overall frequencies of dental caries but also intra-tooth distribution of the carious lesions.

Katarzyna Zalewska<sup>1</sup>, Kajetan Oglaza<sup>1</sup>, Barbara Woronko<sup>1</sup> and Mateusz Iskra<sup>2</sup>

<sup>1</sup>Faculty of Geology, University of Warsaw,

<sup>2</sup>Polish Centre of Mediterranean Archaeology, University of Warsaw

**Keywords:** SEM, microstructure of ceramics, petrography, Metsamor,

### **Initial results of SEM-EDS analysis of Iron II pottery from Metsamor**

Scanning electron microscopy (SEM) with linked energy dispersive spectrometry (EDS) are analytical techniques used for analysis of ancient ceramics from the Metsamor archaeological site. The SEM-EDS analysis performed on pottery thin sections provides necessary data on the mineralogical and elemental structure of each analysed fragment. From the perspective of ceramological studies, results of SEM-EDS are usually implemented in chaîne opératoire and provenance analysis. Despite its popularity, the SEM-EDS method was previously rarely used in the case of pottery from the South Caucasus. In this regard, the presented research is the first archaeometric characterisation of pottery production in the case of a single site dated to the Iron II



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from the territory of modern-day Armenia. Analyses were conducted on eight sherds from Metsamor (phases IVb, IVa), macroscopically attributed to the Urartian Red Burnished Ware and Local Red Burnished Ware. The aim of this paper is to present the differences between these two groups visible on the petrographic and elemental level.



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