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XXVIII 2024 2

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On the cover: the golden finger-ring from *Viminacium*, 3rd – 4th c. AD; see the paper of Redžić et al. in this issue; photo: G. Stojić.

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From Portrait to Divine Image: Two Statues from *Heraclea Sintica* in Roman Macedonia

Archaeologia Bulgarica
XXVIII, 2 (2024), 1-13

Arina KORZUN

Abstract: This article focuses on two statues found in Heraclea Sintica, an ancient city in southwestern Bulgaria. The first statue dates back to the second half of the 3rd – 4th c. AD and has been attributed to the type of female portrait known in the scientific literature as Small Herculaneum Woman. The second statue, dated to the 2nd – 3rd c. AD, has been interpreted as an honorific portrait statue, possibly depicting a girl from prominent family of the polis. The iconographic and typological analysis has allowed us to identify the sculptures' place within the artistic tradition of Roman Macedonia and to suggest an alternative interpretation of their meaning.

Key words: *palliatus*, Nemesis, Roman statuary, Heraclea Sintica, Roman Macedonia.

Preface

Numerous sculptures, dated to the Roman period, have been uncovered during the excavations at the ancient Heraclea Sintica[1] in southwestern Bulgaria over the last six years (2018/2024). These sculptures have been examined by Prof. L. F. Vagalinski and studied in several of his publications (Vagalinski 2020a; 2021; 2022a). It is striking that, in the context of insufficient archaeological evidence, on statuary workshops in southwestern Bulgaria the abundant sculptural material from Heraclea Sintica allows us to make several observations about local traditions and their relationship with the broader artistic heritage of the Roman province Macedonia, more generally Roman Greece.

We propose to focus on two statues found in Heraclea: Small Herculaneum Woman and female statue of so-called Niobid Louvre-Naples type (now in Petrich Historical Museum). Both were discovered in the forum area and argued to be honorific statues (Vagalinski 2020a, 28-33; 2021). The purpose of this paper is to contextualize these monuments within both local (Greek) and Roman artistic traditions.

Small Herculaneum Woman

The marble headless statue (H. preserved is 89 cm; **figs. 1a-d**) discovered in the pit during the 2019 excavation season and was identified as a statue of a woman of the Small Herculaneum type dated to the second half of the 3rd to 4th c. AD (Vagalinski 2020a, 29-30, figs. 31a-k).

The Small Herculaneum type, which originated in the Hellenistic period[2], became widespread from the Augustan period onwards and reached its peak popularity in the 2nd c. AD. It was usually an honorific statue – a female portrait, displayed in public contexts, representing members of the civic elite, members of benefactor's family, or proclaiming the domestic virtues of the woman: daughter, wife, mother (Vorster 2008b, 79-83; Feijfer 2008, 335-341).

This type of statue has a relatively consistent iconography, with variations typically affecting the stylistic aspects and different arrangements of the drapery. The statue depicts a standing female in a contrapposto pose, where the left foot bears the body's weight while the right is slightly bent at the knee. The woman is dressed in a chiton,

[1] Heraclea Sintica, also known as Herakleia on the Strymon, near modern village of Rupite, was founded by the Macedonians in the 4th c. BC. It became part of the Roman province of Macedonia and was abandoned in the 5th century AD during early Christian times (Vagalinski 2022a).

[2] For the discussion of the possible Classical origins of this type see: Vorster 2008a; Trimble 2000.

Fig. 7a. Nemesis (1) from Thasos, front view, Thasos Archaeological Museum (photo A. Korzun)

Fig. 7b. Nemesis (1) from Thasos, side view, Thasos Archaeological Museum (photo A. Korzun)

Fig. 7c. Nemesis (1) from Thasos, back view, Thasos Archaeological Museum (photo A. Korzun)

minted from the age of Augustus to the reign of Volusian, but it originated in sculpture from Hellenistic times (Corso 2014, 117-121).

Artemis appears standing with her left leg bent and her left foot resting on a pedestal. She should hold a bow in her left hand and extracting an arrow from her quiver with her right. Under her left hand there is an archaic xoanon of a standing draped goddess wearing a polos. The clothes of Artemis differ from those of the Heraclean girl. She wears a long chiton without a peplos, however there is a hip-bundled himation. This particular type is unknown in Roman Macedonia.

Thus, the statue from Heraclea represents a variation of a specific under life-size statuary type, assuming a support. Even without attributes, the style of dress is distinct, with the Heraclean girl being less revealing than Aphrodite and even Artemis, who has heavier draperies. Additionally, the statue from Heraclea does not possess of accentuated chiasmus and there is a difference in the pose.

The presence of a vertical support in the two types discussed suggests an additional attribute on the left side. It can be assumed that our statue also had a similar element. A very similar iconography, pose, clothing, and overall proportions (including the hidden support), can be observed in the statues of two Nemesis from the island of Thasos (**figs. 7a-c, 8**) dated to the 2nd c. AD (H preserved 1.05 m, 1.02 m, inv. 58 and 2106). The two statuettes were probably belonging the Odeon

Roman Provincial Coins of *Thracia* Found in *Parion* Excavations

Archaeologia Bulgarica
XXVIII, 2 (2024), 15-25

Vedat KELEŞ / Fatma KIZILYALÇIN OYARÇİN

Abstract: The Roman provincial coins of the Thracian Region found during the excavations at *Parion*, located in the village of Kemer within the borders of the Biga district of Çanakkale province, north of the Troad Region, constitute the subject of this article. A total of 355 Roman provincial coins belonging to 17 different cities were found in *Parion* between 2005 and 2020. Eighteen of these coins belong to the cities of *Coela* (13), *Perinthos* (2), *Byzantion* (2) and *Deultum* (1) in *Thracia*. Apart from the Thracian coins found, the archaeological data obtained from the *Parion* excavations also provide clues about the city's possible relations with *Thracia*. In addition to the coins in question, the article includes information about other numismatic and archaeological data between *Parion* and *Thracia*. Overall, the article posits that the relationship between *Parion* and *Thracia* can be traced back to the Archaic Period, reaching its zenith during the Roman Period. The coins unearthed constitute important data substantiating these historical connections.

Key words: Troas, *Thracia*, *Parion*, Roman province, coin.

Introduction

The city of *Parion* is located in the village of Kemer within the borders of the Biga district of Çanakkale province, north of the Troad Region, and the ruins of the city are concentrated on the Bodrum Cape, which extends like a tongue towards the sea to the northeast of the village, and on the coasts (Başaran 2005, 20; Keleş / Çelikbaş 2014, 76; Keleş / Oyarçin 2019a, 337; 2019b, 191; 2021, 392; 2022, 1). *Parion*, one of the important cities of the region thanks to its rich hinterland and geopolitical position, is located in an advantageous location on land as well as at sea (**fig. 1**; Keleş 2021, 450). This enabled *Parion* to be in constant interaction with the surrounding cities.

During the excavations conducted at *Parion* between 2005 and 2020, a total of 355 Roman provincial coins belonging to 17 different cities, including *Parion*, were recovered (Kızılyalçın Oyarçin 2023, 116). Eighteen of these coins were minted by four different cities in the *Thracia* Region (**figs. 2-3**). The numerical distribution of these coins according to the cities is as follows: *Coela*[1] (13), *Perinthos* (2), *Byzantion* (2), and *Deultum* (1).

The Thracian city represented by the highest number of coins at *Parion* is *Coela*, with 13 coins (**fig. 4**). *Coela*, which is very close to *Parion*, is located between the cities of *Sestos* and *Madytus* in the *Hellespontos*, now known as *Khersonessos Thracia* (RPC III Coela, 96). Although precise data on the foundation of the city of *Coela* is lacking, an inscription attributed to a bathhouse dating to AD 55 and another one dating to the 2nd half of the 1st century AD indicate that the city was a *polis* (Hauvette-Besnault 1880, 512-513; Yacı 2015, 180). *Coela* coins were recovered during the Parion excavations in many different sectors, including the Slope Bath, Chamber Tomb 5, Great Bath (Drilling 10), Odeion, Agora/Warehouse, and Theater. They were struck with the names of Caracalla (3), Severus Alexander

[1] The 9 *Coela* coins found during the *Parion* excavations between 2010-2014 were previously studied by Arif Yacı in the book chapter "2010-2014 Yılları Parion Kazılarında Bulunan Coela Sikkeleri" (Yacı 2015, 179-186).

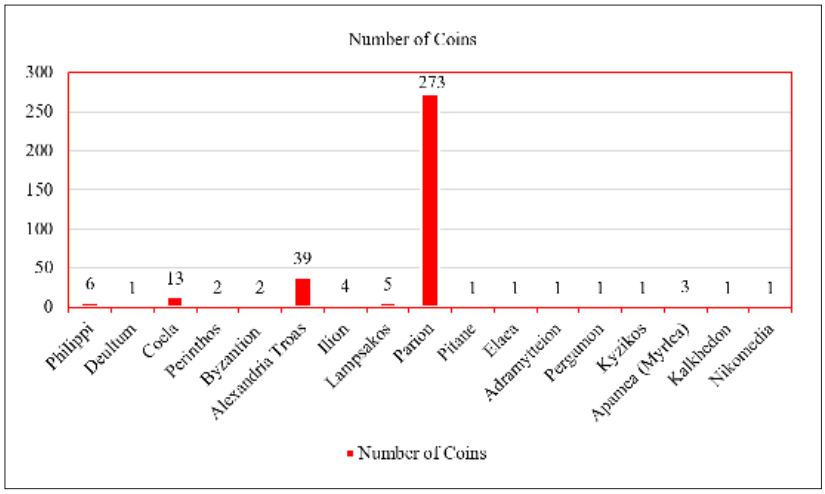

Fig. 3. The numerical distribution of Roman provincial coins found at *Parion* excavations according to mints

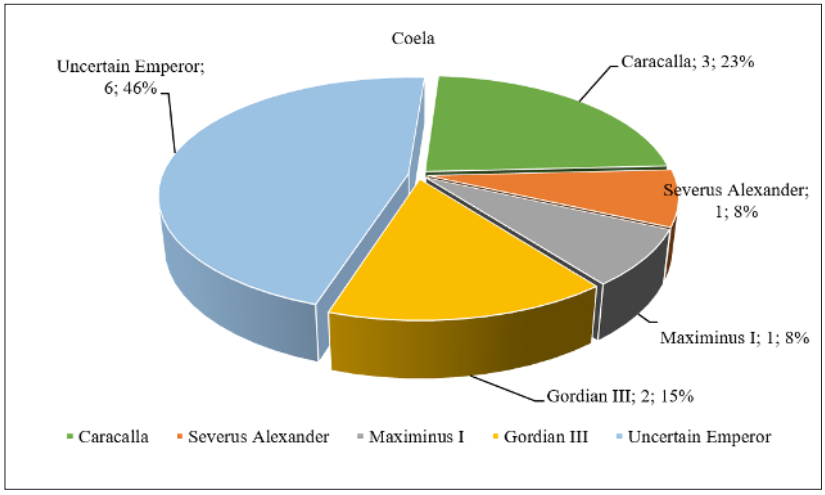

Fig. 4. The distribution of *Coela* coins according to Emperors

two Byzantion-minted coins recovered from the Roman bath and the Slope bath in *Parion* in 2018 depict Artemis on the obverse and a crescent moon and an eight-pointed star on the reverse (**cat. #17-18, plate 2/17-18**). There is no legend on the obverse of the coins, but the reverse bears the city ethnicon BYZANTIΩN.

Deultum, one of the cities of the Thracian Region, a Roman colony like *Parion*, is located in the southeastern Bulgaria, between the cities of Burgas and Sredets, approximately 350-450 km from *Parion*. *Deultum* (*Colonia Flavia Pacis Deultensium*) was one of the two Roman colonies in *Thracia*. It was founded as a colony by the *Legio VIII Augusta* veterans under Vespasian in AD 70 (RPC III Deultum, 94; Драганов 2006, 27; Vagalinski 2008, 352; Göker 2015, 43; Sharankov 2017, 37). There is only one coin from the city of *Deultum* in *Parion*. The coin in question, recovered during the excavation of the theater in 2013, measures 23 mm and 8.60 g and is dated to AD 238-244. The obverse shows the emperor's armored bust with laurel wreath, paludamentum, and facing right, while the reverse depicts Artemis holding a bow and arrow (**cat. # 1, plate 1/1**).

Parion and Thracia Relations in the Light of Archaeological and Numismatic Evidence

Archaeological and numismatic data from the *Parion* excavations offer compelling evidence regarding *Parion*'s connections with the Thracian region. Previous reaserch suggesting an interaction betwe-

Gold Finger-ring in the Form of an Oil Lamp Unearthed at *Viminacium*'s *Hypogeum*

Saša REDŽIĆ / Mirjana VOJVODA / Dragana GAVRILOVIĆ

Archaeologia Bulgarica
XXVIII, 2 (2024), 27-40

Abstract: During 2009, in the area to the east of the legionary fort and the city of Viminacium (Nad Klepečkom site), severely damaged late Roman monumental tomb (*hypogeum*) was discovered as a result of the Drmno coal strip-mine. Within the preserved section of the tomb, an exceptional gold finger-ring with a head shaped as an oil-lamp with two nozzles was found. Determining the date of the Viminacium finger-ring has posed several challenges due to factors such as the site's location and the conditions of the find, the limited number of other small finds, and the lack of analogies. The Viminacium gold finger-ring reflects an explicit Hellenistic influence, and it represents an import from one of the centres of the eastern Mediterranean. Based on architectural elements of the analogous tombs from Viminacium, its chronology is assumed to be within the 4th century, while the earliest dating of the gold finger-ring could be slightly earlier, from the 3rd century AD.

Key words: Roman Empire, Viminacium, Nad Klepečkom, *hypogeum*, gold finger-ring, lamp with two-nozzles, Hellenistic tradition.

Finding conditions

In the 19th century, archaeological research of the Viminacium cemeteries was initiated and it intensified from 1977, with the protective excavation especially focused on the area of the southern cemetery[1]. At the beginning of the 21st century, large-scale excavations of the eastern cemeteries, the *vici* and the *villae,* situated directly in the vicinity of the legionary fort, were initiated in this part, and they are still ongoing[2]. The entire area is endangered with the activities at the coal strip-mine Drmno and its greatest part was completely lost after the protective excavation had been carried out.

During 2009, in the area to the east of the legionary fort and the city of Viminacium (Nad Klepečkom site), activities of the coal strip-mine Drmno severely damaged a late Roman monumental tomb (*hypogeum*), marked as G-5. It was positioned to the east of the legionary fort, next to the ancient road that led towards *Pincum*. Along this road and further on towards the east, a *vicus* was excavated that developed to the north and south of the road and which was inhabited from the beginning of the 2nd to the middle of the 3rd century. Opposite the *hypogeum* (G-5), on the southern side of the ancient road, a complex of nymphaea (Building 1, Building 2) and parts of two aqueduct branches were discovered,[3] dated from the end of the 1st to the 3rd century. At the distance of 140 m to the west of the *hypogeum* (G-5), the so-called Building 3 was noted, suspected to have been a monumental above-ground tomb (**fig. 1**, **fig. 2**)[4].

Protective archaeological research of the damaged tomb was conducted immediately and it was confirmed that those were the remains of a late Roman *hypogeum* with a rectangular ground-plan and orientated east-west. Three tomb corners remained preserved and according to them, it was possible to determine its outer dimensions that

[1] Among the voluminous literature on the topic, we highlight the following: Зотовић / Јордовић 1990; Korać / Golubović 2009; Vojvoda / Mrđić 2015; Vojvoda / Mrđić 2017; Vojvoda et al. 2021; Golubović et al. 2022.

[2] Redžić et al. 2022.

[3] Subsequently, an older, third aqueduct branch was discovered, that was destroyed when the younger structure "Building 1" (**fig. 1**) was erected. In this older aqueduct, the water ran through a system of ceramic pipes.

[4] The tomb was discovered at the distance of 1.270 m (air-line) or 1.310 m (along the ancient route that led to *Pincum*) to the east of the legionary fort. The hypogeum G-5 was situated 35 m to the north of the here mentioned ancient road. The *vicus* is situated 1.050 m to the east of G-5 and stretches along the ancient road on both its northern and southern sides, at a length of 350 m. The complex of *nymphaea* was discovered 57 m to the south of the road and 90 m from the tomb G-5. The structure "Building 3" was situated to the north of the ancient road and 140 m to the west of G-5 (**fig. 1**). The here mentioned *vicus*, as well as the complex of *nymphaea*, have not been published.

Figs. 5-9. The finger-ring from Viminacium
(photos: Goran Stojić)

Comparative Study to Comprehend the Characteristics of Iranian and Turkish Arches and Vaults from 6000 BC to AD 1000 (Pre-Islamic to Early Islam)

Archaeologia Bulgarica
XXVIII, 2 (2024), 41-70

Ahad NEJAD EBRAHIMI / Mahya TOORANPOOR

Abstract: An architect envisions a design, initially contemplating the coverage of the ceiling. The historical development of arches is a crucial aspect of architectural design, especially in forming the covers of architectural openings. Essentially, an arch is a curved structural element used to cover architectural spaces, and in the past, it was also employed to cover spans. The pointed arch has been a common method of covering openings and spans since ancient times and served as the fundamental basis for concealing arch-shaped openings in Iran. This type of covering has traditionally manifested as elliptical shapes or combinations of ellipses. The origins of arch formation in Iran date back to ancient times, specifically to the first millennium BC and the Elamite period. In Iran, the "arch" is classified into two main categories: the "pointed arch"(or Tizeh-Dar in Persian) and the "elliptical arch"(or Mazeh-Dar in Persian). However, the presence of pointed arches with "pointed arch" characteristics in Iranian architecture has posed challenges. Some researchers attribute the formation of the "arch" with "pointed arch" characteristics to post-Islamic periods and sometimes trace its roots back to Turkish arches.

This research aims to identify the types of arches that have been formed in Iran both before and after Islam. To achieve this, geometric analysis methods have been applied, and mathematical relationships have been derived to improve the alignment of drawing methods with various arch shapes. By combining measurements, a reliable conclusion can be drawn. This study examines archaeological documents and library sources related to arches, utilizing various methods. Consequently, Iranian pointed arches were identified, which are based on ellipses and do not conform to the circular shape of Turkish arches. On the other hand, when comparing pointed arches with Turkish arches, which are drawn based on circles, it can be concluded that, with the exception of the Silak Mound in Kashan and the inner arch of the Samanid mausoleum, the remaining arches in Iran are of Iranian origin.

Key words: pointed arch, elliptical arch, Turkish arch, Iranian arch, vault.

Introduction

Around 3,500 to 4,000 years ago, architects ingeniously devised a solution for roof coverage by integrating a curved structural element called the "arch" to span across architectural openings. This architectural concept allowed architects to replace continuous enclosures and enclosed lower walls with four brick columns, resulting in a more spacious area above. The arch (Chafd in Persian), as the primary component, served to transfer external forces to the columns, while creating an open space between them. When architects conceptualize a structure, they simultaneously, or even beforehand, consider its covering (Memarian 2018).

The "arch" (or Chafd in Persian) is an important structural component utilized in Iran for curved coverings, playing a notable role in the geometric form and architectural character of different spaces. An arch can be seen as a curve that forms part of a specific geometric shape, such as a segment of a circle, hyperbola, or any other curved

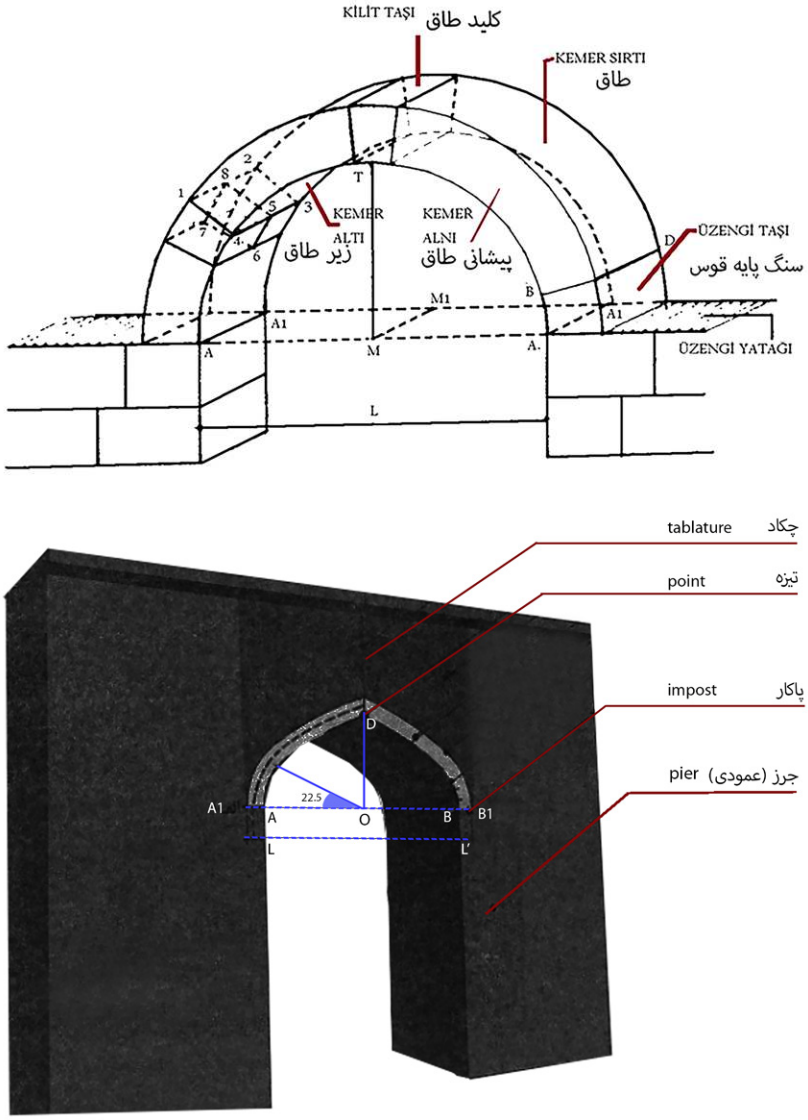

Fig. 2. Iranian components (**down**) (Memarian 2018), and Turkish components (**up**)

- Sang-e-Taq (arch Stone): This stone is placed at the beginning of the arch curve, signifying the starting point of the curve;

- Zire-e-Taq (Under the arch): This surface is formed by the arch stones facing the interior space. For a better understanding of these components, the images below have been provided.

It should be mentioned that the arch is weak at the angle of 22.5 degrees shown in the figure. There is a high possibility of the arch falling from this point, which must be strengthened.

3. Examining the Method of Drawing Arches

To identify the types of arches employed in pre-Islamic structures, an examination of the drawing methods associated with these buildings was necessary. It is noticeable that this study examines the geometric shape of the arches and vaults and studies the primary form of them. This manuscript does not investigate the structural behavior or the material cognition of the vaults. It is noticeable that in this research arches (a curved form found in architecture that can support itself) and vaults (a structural form used for support and created with multiple arches) are examined and, as mentioned, the form of these is important.

The Grand Vizier Ibrahim Pasha's Mosque in Razgrad (Bulgaria) and Its Waqf Deed from 1533

Archaeologia Bulgarica
XXVIII, 2 (2024), 71-96

Lyubomir MIKOV

Abstract: The paper deals with the Friday mosque in Razgrad (Northeastern Bulgaria), built in 1530s by command of the Grand Vizier Ibrahim Pasha who was one of the few representatives of the then Ottoman ruling elite with certain knowledge about European culture and art. As a result of his philanthropic deed, Yeniceköy – the village where the mosque was built – transformed into a larger settlement called Hezargrad-ı cedid, today's Razgrad. The mosque existed until c. 1600, when it was demolished for unknown reasons. In 1616-1617 a new mosque was built on its foundations by command of another Ottoman dignity. However, it was called after Ibrahim Pasha again because of its unchanged location.

The paper deals also with the mosque's waqf deed, dating from 940/1533 and preserved in the archive of the Topkapı Palace in Istanbul (# 7029). Its Arabic text is appended too. The deed provides information about the boundaries of the waqf property. Its most important part contains information about the conditions for the waqf management, the duties of the personnel, as well as its remuneration.

Key words: mosque, grand vizier, waqf, waqf deed.

Introduction: Ibrahim Pasha's Biography

Some Turkish historians suggest that Ibrahim Pasha was born in 1493. It is known for certain that he died in 1536. This means that Ibrahim Pasha probably lived for 43 years. He was born to a Christian family living in a village near Parga (today's Greece) – a small town in Epirus. At the age of six, he was kidnapped from his parents and converted to Islam. According to some legends, Ibrahim was kidnapped by Turkish pirates and sold as a slave to a rich widow who lived near Manisa. The widow became attached to the boy and paid great attention to his education. Due to her diligence, Ibrahim learned to read and write in Arabic and Persian, as well as to play violin (Бибикова 2013, 101). Later she gave him to Prince Suleiman (the future Sultan Suleiman the Magnificent), who as a prince also resided in Manisa (Gökbilgin 1971, 998; Emecen 2000, 333).

The information about Ibrahim's childhood is scarce and based mainly on legends, but his activities as a grand vizier are relatively well studied (Gökbilgin 1971; Emecen 2000; Миков 2015). On 27 June 1523, when Ibrahim was probably 30 years old, Sultan Suleiman the Magnificent (1520-1566) appointed him grand vizier (*sadrazam*) and governor (*beylerbeği*) of Rumelia. Then, in my opinion, Ibrahim was also awarded the title of pasha. The simultaneous appointment of Ibrahim to two of the most important and highest state positions was one of a kind in the history of the Ottoman state, and therefore M. Gökbilgin considers it unprecedented (Gökbilgin 1971, 998).

The next year, Ibrahim Pasha also became a member of the sultan's family, as in May 1524 he married Hatice Sultan – Sultan Suleiman's youngest sister. Before that, she had another marriage with a much older man who died (Бибикова 2013, 102). The wedding of Ibrahim

Fig. 1. 16th-century Ottoman miniature, depicting the coffin with Ibrahim Pasha's corpse, brought outside the palace in order to be put on a boat (after And 2014, I, 284)

stood in the Buda, before the bridge at the city gate. After the death of Ibrahim Pasha these three statues have been taken down and left somewhere forgotten. The Turks believe that Ibrahim, who was of Albanian origin and born to Christian parents, confessed Christianity secretly, and therefore erected the pagan statues and worshiped them" (Дерншвам 1970, 128).

An interesting legend about the death of Ibrahim Pasha was told by Stephan Gerlach, which was recorded in 1573 in his diary. "His [Ibrahim Pasha's] goal, writes Gerlach, was to become king of Hungary and had made some arrangements for this, but the Venetians betrayed him. Based on this information, the Sultan invited him to drink sherbet one evening, ordering the servants to put sleeping pills in the sherbet. However, they put in so much that when the pasha entered the Sultan's room, as he always did, he immediately fell fast asleep. The padishah's court servants did not approach the pasha so as not to disturb him, but then the pre-called executioner stabbed him with a dagger on the spot – in the room, or strangled him" (Gerlach 2006, 106).

Further Gerlach points out the following "scenario" according to which the murder of Ibrahim Pasha was carried out: "... at the time,

An Insight into Animal Exploitation During the Modern Period in Southwestern Serbia: Faunal Remains from the North Bastion of Novi Pazar Fortress (Excavation Campaign 2021)

Archaeologia Bulgarica
XXVIII, 2 (2024), 97-108

Teodora MLADENOVIĆ

Abstract: This paper presents the preliminary results of the archaeozoological analysis of the faunal material unearthed in the southeastern part of the North Bastion of the Novi Pazar fortress (Southwestern Serbia). Archaeofaunal assemblage was collected during rescue excavations in 2021, and it dates back to the period between the 16th and the 19th centuries. Primarily, these remains represent food leftovers, as indicated by the relative distribution of species and skeletal elements, bone fragmentation, butchery marks, and mortality profiles. In the analysed sample, different mammal, bird, and mollusc species are represented. Among mammals, remains of domestic species are dominant, with caprines being the most frequent. Apart from sheep and goat, cattle, horse, and cat specimens are present within the faunal assemblage. Wild mammals were relatively scarce, with remains of hare being the most common, although the presence of roe deer is also documented. The most frequent bird species is chicken, with occasional remains of domestic goose, domestic duck, and common buzzard. All molluscs belong to marine species – one rough cockle and one snail from the *Semicassis* genus.

Key words: faunal remains, archaeozoology, Modern period (16-19. centuries AD), North Bastion, Novi Pazar fortress, Serbia.

Introduction

The Novi Pazar fortress is located in the centre of Novi Pazar on the right bank of the Raška River in Southwestern Serbia (**fig. 1**). Covering an area of approximately two hectares, this fortification features an irregular triangular base, consisting of three corner bastions, known as *tabias*, connected by a defensive rampart. Among the many internal structures, only the Watchtower (Кула мотриља), situated between the northern and western bastion has remained wholly preserved. Following the Austro-Turkish conflicts at the end of the 17th century, palisades and courtyards were constructed in this area. Subsequently, in 1750, corner bastions of solid material were erected. The fortress underwent a significant transformation during the latter half of the 19th century when stone ramparts were added between the towers. The Novi Pazar fortress got its final form after the Berlin Congress (Премовић-Алексић / Вујовић 1999, 135-146; Premović-Aleksić 2012, 53; 2013, 35-42; Премовић-Алексић 2014, 278-279).

Rescue archaeological excavations of the North bastion were carried out between 2019 to 2021 to gather data for a future project of revitalisation and presentation (Vidosavljević / Bаćićanin 2019; 2020). In the 2021 campaign, excavations took place in the southeastern part of the bastion, with systematic collection of animal remains also being carried out (**fig. 1**). Based on the other artefacts, these remains could be dated to a period between the 16th and the 19th centuries (Видосављевић / Кајтез 2022, 85).

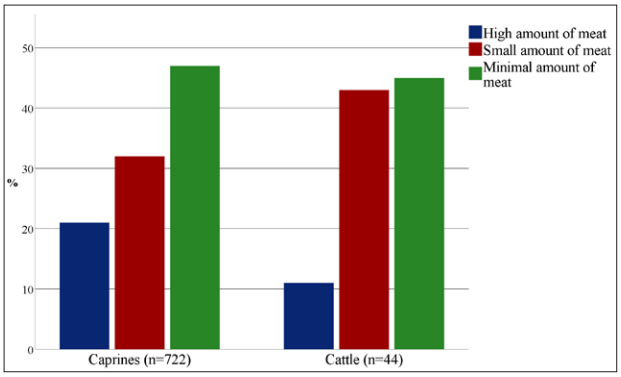

Fig. 4. Representation of skeletal elements of caprines and cattle based on the amount of meat they bear, in terms of %NISP (isolated teeth are not included in the total number of specimens) (T. Mladenović)

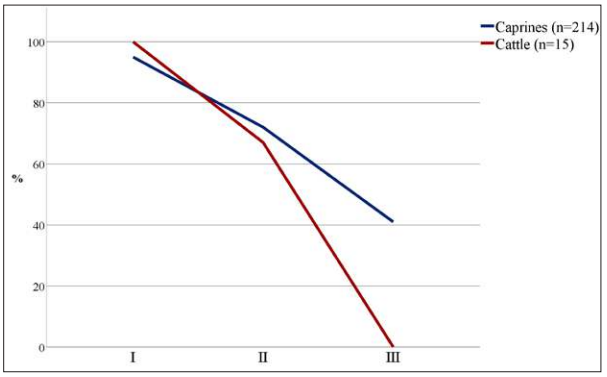

Fig. 5. Survivorship curves of caprines and cattle, based on the time of epiphyseal fusion of long bones, in terms of %NISP (I: 12 months of age for caprines and 24 months of age for cattle; II: 36 months of age for caprines and 42 months of age for cattle; III: more than 36 months of age for caprines and more than 42 months of age for cattle) (T. Mladenović)

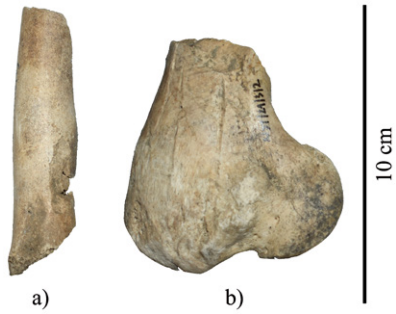

Fig. 6. Left caprine femur (a) and left cattle humerus (b) with butchery marks (T. Mladenović)

and Stari grad Barilović (Trbojević Vukičević / Kučko 2014) assemblages more subadult individuals are present. The North Bastion faunal sample differs regarding cattle exploitation. Namely, in the Doboj – Čaršija (Jašarević et al. 2021), Old Synagogue (Кокановић 2022), Stari Bar (Pluskowski / Seetah 2008), and Stari Grad Barilović (Trbojević Vukičević / Kučko 2014) mostly adult animals were noted, while in Novi Pazar fortress those were the subadults.

Traces of human activities, in the form of butchery marks, have been identified on the bones of sheep, goats, cattle, and hares. These marks are present on 8% of the faunal sample and were inflicted by axes, cleavers, and knives, during the skinning, disarticulation of the skeletons, and meat removal (**fig. 6**). The majority of traces are recorded on caprine bones, which is expected since the caprines form the greatest part of the faunal assemblage.

Only 6 bones from North Bastion show some pathological changes suggesting that animal health was relatively good. They were noticed on the bones of caprines (4 specimens) and cattle (2 specimens). Pathological change in the form of irregular teeth attrition was noticed on the one maxilla of caprines where the third permanent premolar (P3) and the fourth permanent premolar (P4) are worn out more than the first molar (M1). Irregular teeth attrition might be a consequence of inflammation or trauma, as well as losing teeth in the lower jaw (Bartosiewicz 2013, 176-182). Also, two caprine specimens had rotated the fourth permanent upper premolars (P4), most probably due to insufficient space for the proper development of all teeth (Brothwell 1991). On one cattle mandible, loss of mandibular the second premolar (P2) *ante mortem* was observed. This change could be the result of trauma or periodontal diseases (Baker / Brothwell 1980, 155; Bartosiewicz 2013, 176-182). Another pathology noted among cattle remains is the absence of the hypoconulid in one mandibular third molar (M3) (Argant et al. 2013). Some researchers have interpreted the occurrence of this atypical wear pattern as a result of occlusion problems, which may have been a consequence of the practice of keeping cattle in smaller breeding groups (i.e., Argant et al. 2013; O'Connor 2000). Aside from dental pathologies, one caprine rib

The Sounding Weight from Urdoviza: Investigating Artefact Biographies and Site Formation Processes within a Shallow-Water Shipwreck in the Western Black Sea

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Kroum BATCHVAROV / Andrew VIDUKA / Dana ZLATANOVA

Abstract: This article reports on the analysis of an archaeological artefact, recovered from the Urdoviza shipwreck, Kiten, Bulgaria, in 2022. The artefact is a 5.4 kg lead sounding weight discovered and recorded *in situ* on the vessel's stern cabin floor. Archaeological and multidisciplinary evidence is discussed against comparable cases to assess newly revealed information on the artefact's biography including its production, use and archaeological deposition within the broader framework of site formation processes of the Urdoviza shipwreck underwater archaeological site. The outcomes of the study reveal the high potential of the mixed methods approach to deliver valuable insights on the variety of events and environmental factors determining the condition of shallow-water shipwrecks and enhance our understanding of the nautical archaeology of the Western Black Sea.

Key words: *Urdoviza shipwreck, Black Sea, underwater archaeology, archaeochemistry, site formation*

Introduction

The western coast of the Black Sea is a nearly constant lee shore littered with well-preserved historic shipwrecks. Only three have been systematically excavated to date and little focused work has yet been published to elucidate the complex formation processes determining the condition of these significant underwater archaeological sites (Krause-Jensen et al. 2019). This article is the first of its genre in Bulgarian nautical archaeology. It confers a case study of multidisciplinary analysis of a lead sounding weight, recovered from the Urdoviza shipwreck in 2022. The results are discussed against a set of comparable examples in a variety of marine conditions (gentle, surging, reef and buried). The outcomes of the study reveal the high potential of our approach to deliver valuable insights on the mosaic of events and environmental factors contributing to the conservation of shallow-water shipwrecks in the Western Black Sea.

Sounding weights have been in use in the Mediterranean since at least the 7th century BC (Oleson 2008, 125), but perhaps as far back as the late 3rd millennium BC (Wachsmann 1998, 300). For thousands of years, they have been critical navigation aids for mariners under sail, allowing them to acquire life-saving information on the depth of water and seabed composition, thus enabling them to find the way through perilous seas. The earliest historical evidence for the use of sounding weights on the Black Sea dates to the 4th century BC, when ancient writers first referred to the *"unfathomable Deep of the Pontus"* suggesting that mariners had discovered the c. 2,200 m deep Black Sea abyssal zone through sounding, some time before. According to Aristotle (*Meteorologica* 1.13.351a):

"*…the so-called 'Deeps of Pontus'. This is a place of unfathomable depth in the sea: at any rate no one has yet been able to find bottom there by sounding.*"

Fig. 2. Location of the Urdoviza Shipwreck (Dragomir Garbov)

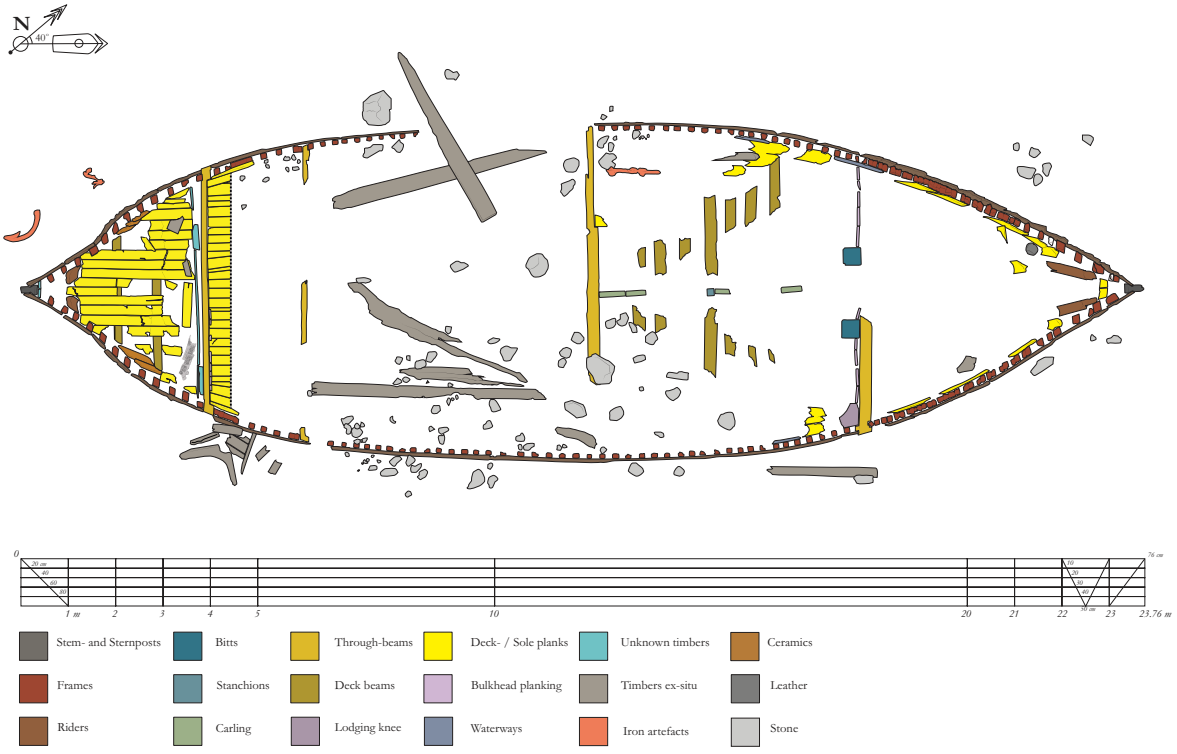

Fig. 3. Archaeological site plan of Urdoviza at the conclusion of the 2022 excavation season (Dragomir Garbov)

with a bearing of 40°tN along the centre line. Preliminary results from dendrochronological dating broadly align with artefact chronologies and point to a tentative date in the first half of the 19th century, with tentative dendrochronological *terminus post quem* for felling the hull's oaken timbers in 1829 (Гърбов et al. 2023).

Excavations

Two seasons of underwater archaeological excavation have been undertaken at Urdoviza in 2022 and 2023 under permits per Article 148 of the *Bulgarian Cultural Heritage Act* 2009 in accordance with the 2001 UNESCO *Convention on the Protection of the Underwater Cultural Heritage* and *Annex*. Investigations were focused on the ship's stern area, aiming to elucidate maximum evidence of hull structure, material culture and site formation at minimum impact cost to the un-

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