

POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

# PAM

29/2

FIELDWORK & RESEARCH

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## **POLISH ARCHAEOLOGY IN THE MEDITERRANEAN (PAM)**

Annual of the Polish Centre of Mediterranean Archaeology, University of Warsaw

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POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

# PAM

## 29/2

FIELDWORK & RESEARCH



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## **POLISH ARCHAEOLOGY IN THE MEDITERRANEAN (PAM)**

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**Volume 29/2: *Fieldwork & Research***

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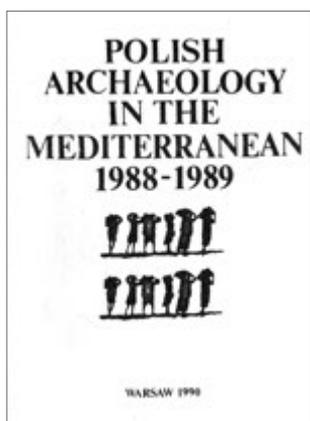
## ABBREVIATIONS

AJA	<i>American Journal of Archaeology</i>
ASAE	<i>Annales du Service des antiquités de l'Égypte</i>
AV	<i>Archäologische Veröffentlichungen</i>
BAH	<i>Bibliothèque archéologique et historique</i>
BAR IS	<i>British Archaeological Reports, International Series</i>
BdE	<i>Bibliothèque d'étude</i>
CRIPPEL	<i>Cahiers de recherches de l'Institut de papyrologie et égyptologie de Lille</i>
EtTrav	<i>Études et travaux</i>
FIFAO	<i>Fouilles de l'Institut français d'archéologie orientale</i>
GAMAR	<i>Gdańsk Archaeological Museum African Reports</i>
JARCE	<i>Journal of the American Research Center in Egypt</i>
JEA	<i>Journal of Egyptian Archaeology</i>
JJP	<i>Journal of Juristic Papyrology</i>
MDAIK	<i>Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo</i>
MIFA0	<i>Mémoires publiés par les membres de l'Institut français d'archéologie orientale</i>
OIP	<i>Oriental Institute Publications</i>
OMRO	<i>Oudheidkundige Mededelingen uit het Rijksmuseum van Oudheden te Leiden</i>
PAM	<i>Polish Archaeology in the Mediterranean</i>
SAOC	<i>Studies in Ancient Oriental Civilization</i>
SDAIK	<i>Sonderschrift des Deutschen Archäologischen Instituts, Abteilung Kairo</i>
SHA	<i>Scriptores Historiae Augustae</i>

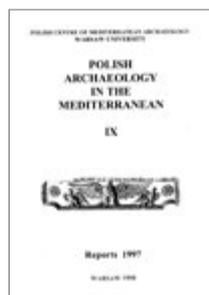
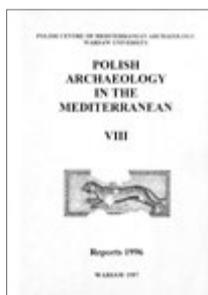
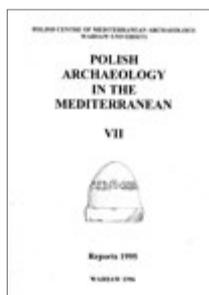
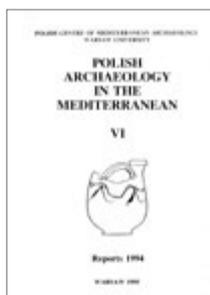
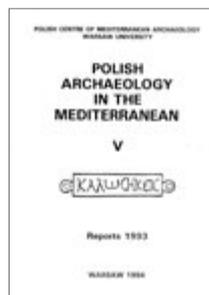
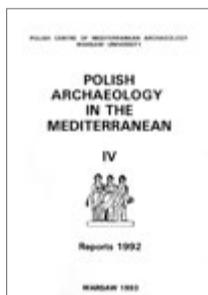
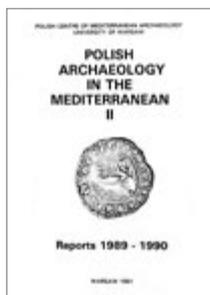
# THE CHANGING FACE OF PAM

## 30 YEARS OF THE JOURNAL

The Journal has served in its primary role of a platform for presenting the annual input of new archaeological data from Polish excavations in the Eastern Mediterranean and the Near East for the better part of 30 years. Nothing can stay the same too long and the journal has also undergone an evolution and transformation in an effort to rise to new challenges while sustaining the best of a long-standing and successful tradition. This is about the changing face of the Journal, the newest of which readers now hold in their hands.

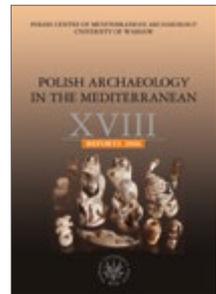
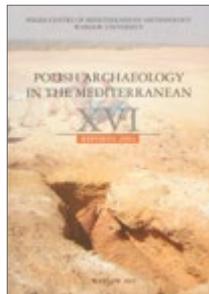
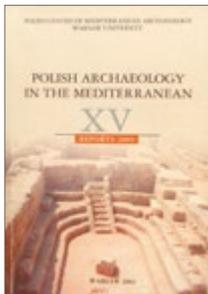
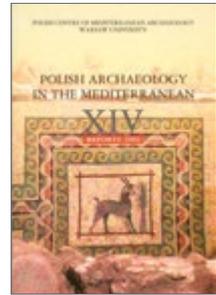
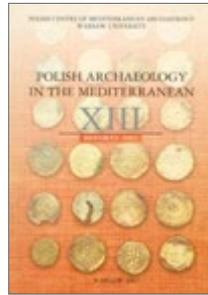
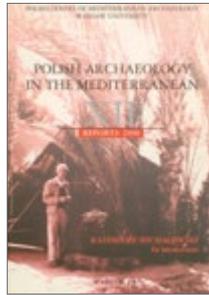
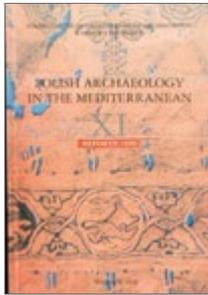
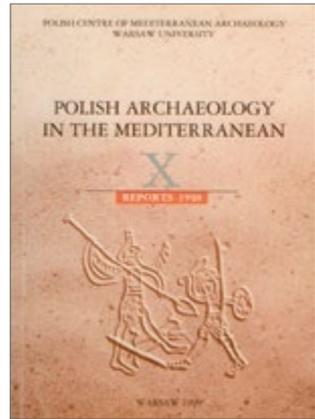


Readers are entitled to a brief historical explanation. Back in 1989 Wiktor Andrzej Daszewski and Michał Gawlikowski, then in charge of the Polish Centre of Mediterranean Archaeology, came up with the idea of a regular publication that would carry reports from the Centre's work (Gawlikowski and Daszewski 1990). That year a whirlwind of political events changed the geopolitical face of Europe and Polish archaeology abroad, in the Mediterranean, which then meant Egypt, Sudan, Iraq, Syria and Cyprus, changed as well. New perspectives opened up and the annual publication, aptly called *Polish Archaeology in the Mediterranean* was part of the changeover.



The idea was simple: all the work, whether archaeological, conservation or other studies, carried out in the preceding year (or rather archaeological season adapted to climate rather than the calendar) would find representation in short reports. The original requirement were 10 manuscript pages and 5–6 line drawings; the booklet, in a small notebook format, was prepared by the University's Graphic Design Department and reproduced on a copier, the first two issues in 200 copies, the third in 500 copies, *PAM* 9 already in 600 copies (today it is a run of 150 printed volumes and online open-access to all content). The cover of the first issue was designed by Andrzej Pilich, updated in the second volume by Tomasz Szmagier. The reporting year in the title, differing by one year from the publishing date (and sometimes more in the more difficult times at the end of the 2000s), turned out to be confusing for readers, until finally the tradition was dropped in *PAM* 23.

The journal was officially registered in 1994 under the number ISSN 1234-5407 (an online ISSN 2083-537X was added in volume 20). *PAM* 7 for the year 1995 was the last issue to be published parallel in Polish and English (the Polish title was *Raporty wykopaliskowe* [Excavation Reports]), the decision reflecting a growing conviction on the part of both management and researchers that English should be the primary language of the reports if Polish Mediterranean archaeology was to maintain and expand its role internationally (Poland would enter the European Union officially as a Member State in 2004).

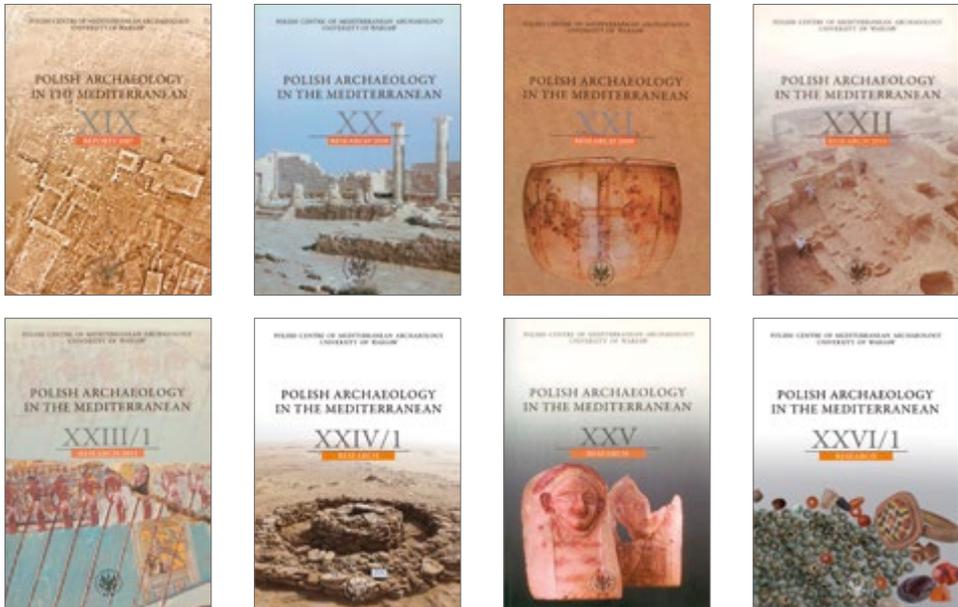


The desktop layout in the first issue was prepared by Rafał Koliński and he continued in this role for a few years before handing over to Anna Witecka, who managed the edition for the next four issues. Her last edition was the first volume to be illustrated quite extensively with black & white photographs thanks to partial financing from a KBN (Committee for Scientific Research of Poland) project grant No. 1 H101G 02809. Earlier volumes (notably volume 4) had also received support from the KBN.

With the departure of Witecka in 1997, Prof. Michał Gawlikowski, then Director of the Centre, had to find a new managing editor and his choice fell on the person, who had served in the position of English-language consultant for the journal ever since the third volume. A new managing editor in the person of the present author and Chief Editor and green light to introduce changes resulted in a major overhaul of the journal's format and graphic design. Jerzy Kowalski prepared an entirely new layout in B5 format, which has been retained until today, including a new cover design. DTP was taken over by an external company, MAK sp. z o.o. Warszawa, which resulted in nine years of a very successful and creative cooperation with Wojciech and Maria Nowakowski. *PAM* journal thus got its second face.

*PAM*, which had 235 pages in the last “small-format” issue and 218 pages in the first “new-format” issue swelled to an average of 700–800 pages by 2008. Volume 12, published in 2001, commemorated Kazimierz Michałowski, the founder of the Polish Centre in Cairo, the current PCMA UW. Michałowski died in 1981 before the journal was founded, and yet his presence continues to be felt (Kucharczyk 2019).

The *PAM* editorial team also grew and gained experience. In 2000, Ewa Czyżewska (today Czyżewska-Zalewska) joined the staff, taking on issues connected with proof-reading and digital processing of increasing complexity, plus the technical side of the



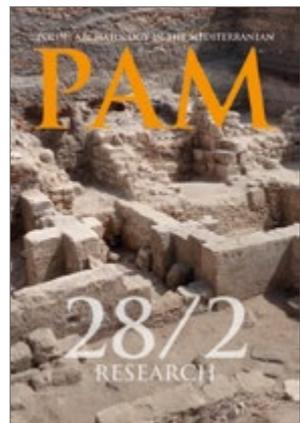
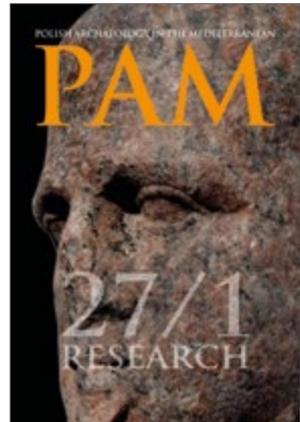
publication for which she was particularly well suited with her secondary education in book publishing and graphic design. The quality of PAM illustrations owe much to the artistic skills of PCMA documentalists Szymon Maślak, Marta Momot and Marek Puzzkarski, Puzzkarski being also the author of the collective map of all PCMA excavation sites past and present, which has appeared in every issue since PAM 19 (published in 2010). Other PCMA staff and associates have helped along the way: Robert Mahler, Artur Błaszczyk, and Łukasz Rutkowki.

The first color photos appeared in volume 15 (published in 2004); today the online edition of the journal is in full color and the printed editions is liberally sprinkled with color plates. The DTP process was moved in house, into the extremely capable hands of Ewa Czyżewska-Zalewska (assisted by Tomasz Szmagier in volume 21, Urszula Wicenciak in volume 23, and Agnieszka Dzwonek in volume 24).

With volume 17, published in 2007, the University of Warsaw Press became the official Publisher of the journal, bringing it out for PCMA; UWP editor Maria Szewczyk deserves credit for several years of patient supervision of the printing process on behalf of the Publisher. The journal is an institutional journal, funded by the PCMA, benefitting repeatedly from financial support of various government agencies: National Humanities Development Program for the years 2011–2012 (volumes 20 and 21) and the Ministry of Science and Higher Education grant for popularizing science No. 680/P-DUN/2018 (volumes 27 and 28).

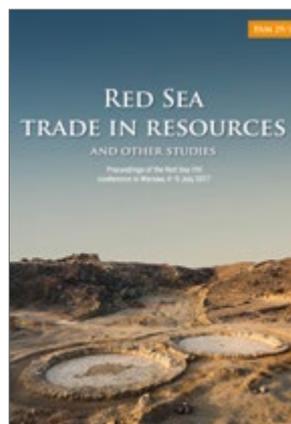
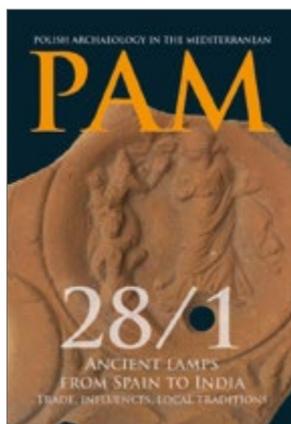
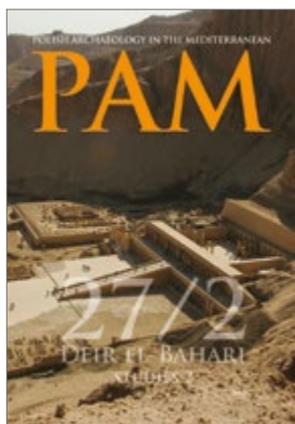
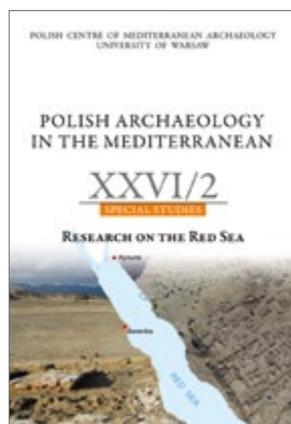
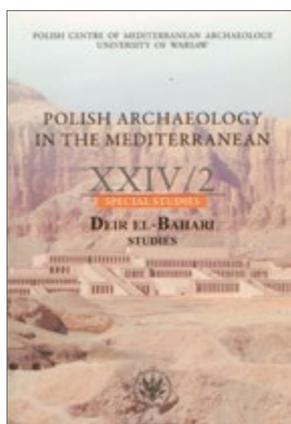
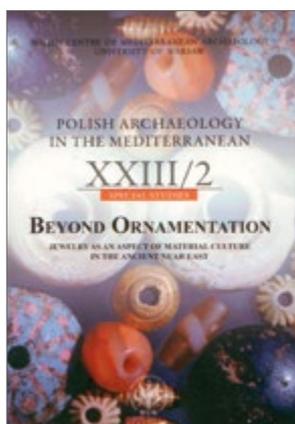
By 2018, however, the general feeling was that the layout design, updated along the way by Ewa Czyżewska-Zalewska, was in need of substantial change. Collaboration with a promising young graphic designer, Jan Kurzawa (<http://jankurzawa.pl>), resulted in a completely new look, both inside and outside—the third face of the journal. Kurzawa put his design into practice himself, doing the desktop layout for volume 27. Since then the desktop process, including digital processing of the illustrative material, is managed single-handedly and handsomely by Konrad Krajewski.

On the editing side, the present author has acted first as Managing Editor and with volume 23 as Chief Editor of the journal, expanding on the original tasks of English-language consultation and copyediting. Starting from volume 23, English language revision and pre-review evaluation of content is performed by Editorial Secretary Agata Czamara. Articles in French and German, occasionally produced in the journal, are language-proofed by Katarzyna Bartkiewicz and Martin Lemke



respectively. Peer-review was introduced in volume 23 (managed for the first few years by Urszula Wicenciak (now Wicenciak-Núñez). Copyediting assistance over the years has come in particular from Agnieszka Szymczak (from 2008 to 2014). Starting from 2009 Aleksandra Zych is the bibliographic editor of the journal.

A new development in the journal was the regular publication of Special editions edited by invited researchers. This reflected a process of turning away from a strictly reporting formula in favor of in-depth research studies. In volume 20, the Editorial Board of the journal approved a new formula, introducing research articles following the core section of field reports (Bieliński 2011). Such separate sections of studies on subjects related to the Mediterranean archaeology practiced in Poland were included in volumes 19 through 27. This trend blossomed into separate collections of studies issued as separate fascicles. The first was volume 23/2: *Beyond ornamentation. Jewelry as an aspect of material culture in the Ancient Near East*, edited by Amir Golani and Zuzanna Wýgnańska. Volumes 24/2 and 27/2, edited by Zbigniew E. Szafranski, were dedicated to studies revolving around Deir el-Bahari and the Temple of Hatshepsut in Western Thebes. Volume 26/2, edited by Iwona Zych, presented *Research on the Red Sea*, a volume of papers from an international



conference held in Cairo. Volume 28/1 was dedicated to *Ancient lamps from Spain to India*, guest-edited by Laurent Chrzanowski. Notably, it was the first instance of the special studies volume being presented as the first, leading fascicle. The present special volume, 29/1, returns to the theme of Red Sea studies, and it is produced in cooperation between the University of Warsaw Press and the London Publisher Archaeopress.

For a few years, starting with volume 23/1, the journal ran a rubric reporting PCMA field excavation and projects in a given year in an effort to keep track of archaeological and conservation work, as well as research carried out in a given year regardless of whether reports were published in *PAM* or elsewhere ([Zych] 2014; 2015; 2016; 2017; 2018). This practice has now been dropped in view of several other research centers in Poland undertaking independent work in the Near East.

The newest change of face reflected in the present volume is a new arrangement of the second fascicle, dedicated to fieldwork and research. Gone is the traditional organization of the content—collected under country headings like Egypt, Sudan, Syria etc—applied in the journal since volume 3. The arrangement is chronological instead, logically, from the earliest prehistory, passing down the ages to the most recent times. Articles are presented by sites, if they refer to sites, hence a general report from the Kom el-Dikka site in Alexandria is followed by specialist studies on new finds of glass artifacts or a hoard of coins revisited years after its discovery. Research not directly related to fieldwork appears in its respective time slot regardless of whether it concerns material studies or bioarchaeological remains, or conservation in the field. An exception is made for articles on new methodologies and heritage issues, these being classed under separate headings. Moreover, the journal now runs a budding section of book reviews.

What further changes of face does the future hold? It is either flight or fall.

Iwona Zych  
Chief Editor

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# The Nile Delta during the Early Dynastic and the Old Kingdom periods. Preliminary remarks on the evolution of settlement landscape



**Abstract:** The 3rd millennium BC appears to be a key period of development of the historical settlement landscape in ancient Egypt. The unification of the country speeded up significantly processes of transformation of the predynastic socio-political structures and the associated settlement patterns. Old chiefdoms declined and vanished along with their centers and elites. New settlement emerging in various parts of the country was often strictly related to central authorities and the formation of a new territorial administration. Neither was the climatic change, which resulted in a shifting ecumene, negligible. Although these changes were evolutionary in their nature, some important stages may be recognized. Data from surveys and excavations have demonstrated a number of considerably impoverished and/or abandoned sites from before the Old Kingdom and its very beginning, while some important Egyptian settlements emerged in the sources and began to build their prosperity during the Third and Fourth Dynasties. The written sources as well as recorded architectural remains indicate a growing interest on the part of the state in the hierarchy of landscape elements and the territorial structure of the country.

**Keywords:** Nile Delta, Early Dynastic, Old Kingdom, settlements, settlement landscape

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The article was intended as an introduction to project research undertaken by the author and was foreseen for publication elsewhere. Written at the turn of 2016, it forms a consistent whole and as such has not been updated. All additional data, analyses and results of the research for which it served as a starting point are planned for separate publication.

## INTRODUCTION

The Nile Delta, an alluvial land created by the branches of the river and the distributaries, is one of the largest deltas in the world, covering an area of 17,000 km<sup>2</sup>. About 58% of cultivated land in Egypt is in the delta today, corresponding roughly to the figures for ancient times (Butzer 1975: 1043; 2002: 84). Its agricultural potential as well as convenient location at the intersection of trade routes from the Levant to Upper Egypt and Libya made the Nile Delta one of the most attractive areas for human occupation.

Based on several decades of geological and geoarchaeological research (Attia 1954; Butzer 1976; van Wesemael, de Wit, and van Stralen 1988; Wunderlich 1993), it has been determined that the most suitable sites for settlement were the so-called “turtlebacks” or *geziras*, hillocks of coarse Pleistocene sands and gravels, rising above the Holocene-age alluvia, especially in the southern and eastern Nile Delta. The proximity to the agricultural floodplain influenced the founding of settlements on the edges of the turtlebacks, while their tops were sometimes occupied by cemeteries. Besides *geziras*, an important role in settlement geography was played by levees, high sand banks left by moving river beds (Butzer 1975: 1044–1045; 1976: 22–23).

Examination of Nile Delta settlement from the 3rd millennium BC is a problematic task especially in view of many cases of remains of Early Dynastic and Old Kingdom date being buried deep below thick alluvial deposits. Sites are located at the bottom of mounds that were formed over centuries of human activity in given places. Some of these sites can be dated to the Early Dynastic and Old Kingdom periods only on the basis of written sources. The capital city of Memphis is a case in point. Despite copious evidence in the form of administrative documents, royal and elite tombs and related special-purpose settlements, there are no archaeological remains of the Early Dynastic and Old Kingdom city itself (Jeffreys and Tavares 1994; Love 2003). In some cases, it is not certain whether a particular name is related to a specific locality or rather an area (see Xoïs; *Table 1*: No. 48).

Another factor is the state of investigation of individual sites, which is still unsatisfactory despite a significant increase in research over the past 30 years.<sup>1</sup> In-depth studies of the problem are further compromised by many tells from the 3rd millennium BC having been levelled or destroyed. Even had a site stood the test of time, the uppermost levels could have been lost, making a review of older surveys very difficult. The selective interests of researchers have also played a part. Most of the studies

1 Among others: Amsterdam University Survey Expedition to the North-Eastern Nile Delta; Munich East-Delta Expedition; Italian Archaeological Mission of the “Centro Studi e Ricerche Ligabue” Venice to the Eastern Nile Delta; Canadian Expedition – University of Toronto (Tell Gabbara, Tell Masha’la); the French Centre d’Antropologie, CNRS, Toulouse (Kom el-Khilgan, Tell el-Iswid); Institut Français d’archéologie orientale in Cairo (Tell el-Samarra); Polish Archaeological Expedition to the Eastern Nile Delta (Tell el-Farkha) and Polish Archaeological Expedition to the Northeastern Nile Delta (Tell el-Murra, Tell el-Halyat, Tell Akhdar, Tell Gezira el-Faras, Minshat Radwan).

have focused on the Predynastic and Early Dynastic periods, while the Old Kingdom continues to receive less attention. So far, only Edwin C.M. van den Brink (1987; 1988; 1993) and Karla Kroeper (1989) have taken up the issue of the Delta settlements

through the end of the Old Kingdom in any greater extent.

A review and reexamination of the available, published data 30 years later gives a solid base for more in-depth research to follow.

## METHODOLOGY

A review of the material has led to the identification of 96 sites<sup>2</sup> from different times in the 3rd millennium BC, located in the Nile Delta and the Memphite area<sup>3</sup> [Table 1]. Four of these sites were documented only on the basis of written records, while for another 18 written sources were a significant complement. Five sites are known thanks to chance discoveries or illicit digging, but only in two cases the dating is based on archaeological finds alone. Surveys including surface collection and/or core drillings identified 69 sites (the only source of data for 28 of them).<sup>4</sup> 57 sites were excavated, although in many cases only to a limited extent (i.e., test trenches) and/or results have not been fully published. In some cases, the results have never been published. About 30 sites might be considered as excavated and published properly; however only in 13 cases (Giza, Kom el-Hisn, Tell

Basta, Tell el-Fara'in, Tell el-Farkha, Tell el-Gabbara, Tell el-Iswid (N), Tell el-Iswid (S), Tell el-Masha'la, Tell el-Murra, Tell el-Rub'a, Tell el-Samarra, Tell Ibrahim Awad) were settlement structures uncovered on a wider scale.

About 34 sites were recognized as consisting of only settlement remains versus 21 sites with just sepulchral finds. In 30 cases, the site included both settlement remains and burials. Data from nine sites are not conclusive. Moreover, some of the sites were recognized based on characteristic pottery types, such as bread moulds or bowls and, less frequently, flint tools (see Junker 1928; Junker et al. 1930; van den Brink 1988; Kroeper 1989). In fact, the assumption based on available data and already recognized sites (i.e., Tell el-Farkha, Tell el-Murra, Tell el-Iswid (S), Tell el-Samarra, Tell Ibrahim Awad etc.) is that Delta settlements and cemeteries were

2 The following statistics do not include settlements known from written sources but not located on the ground. The exception is Memphis, which has been included in the analysis even though the exact location of the 3rd millennium BC remains is not known. A field of ruins in the area of Mit Rahina was considered as a reference point.

3 The analysis also does not take into account the distinctness of settlements located within the area of individual sites in the Memphite Necropolis. For this reason, Giza and Saqqara were counted as single sites despite the potential existence of separate "pyramid towns" or "workers' villages" within the perimeters of the modern archaeological sites. The southern extent of the study was set at Dahshur, which is the southernmost site included in the royal necropolis of Memphis.

4 Many of these sites, especially those in the Western Delta, were mentioned only once. This is particularly characteristic of sites recognized by Hermann Junker in the 1920s (Junker 1928; Junker et al. 1930).

situated usually in close relation to one another, occupying the same tell or kom.<sup>5</sup>

The presented sites are dated to the Early Dynastic and Old Kingdom periods. However, precise chronologies in the case of individual sites may be challenging. Much as the chronology of the Early Dynastic sites appears to be fairly well known, that of the Old Kingdom ones is still unclear. In many cases,<sup>6</sup> there is only a general note on the Old Kingdom remains, without any link to a specific dynasty or even an attribution to the early or late phase of the period. This leads to significant difficulties in recognizing the dynamics of change in the settlement pattern over such a long and important time. Keeping these restrictions in mind, the following analysis adopted a three-phase division of development in the 3rd millennium BC based on the available evidence: Early Dynastic (First–Second Dynasties), early Old Kingdom (Third–Fourth Dynasties), and late Old Kingdom (Fifth–Sixth Dynasties).

For some of the sites (e.g., Abu Sir Bana/Busiris, Damanhur or Sa el-Hagar/Sais), data from the written sources were decisive for establishing a chronological framework (based mainly on Zibelius 1978). As regards the sites identified on the basis of older and unpublished studies, Kroeper's dissertation (1989), in which she reexamined the archaeological material and verified available sources, greatly contributed to the present study. Her findings were supplemented by the results of more recent surveys, excavations and

studies. Extant lists of sites of respective chronology contributed significantly to the analysis (van den Brink 1987: Table 2; 1993: Fig. 5; Chłodnicki, Fattovich, and Salvatori 1992a: Table 1; Hendrickx and van den Brink 2002: Tables 23.1 and 23.2; Jucha 2016; EES Delta Survey database, <https://www.ees.ac.uk/delta-survey>). Moreover, the following procedures were followed in cases of uncertain chronology:

1. In doubtful cases, the rule was to assume no settlement hiatus if there was no reasonable indication. For example, sites undoubtedly occupied during the Early Dynastic Period and the late Old Kingdom, were assumed to be occupied also during the early Old Kingdom. The sites of the Memphite Necropolis were an exception, the occupational history there being governed by a different set of rules.

2. In the case of sites dated undoubtedly to the Early Dynastic period, where some amount of unclassified Old Kingdom material was found, it was assumed that the site was abandoned no later than during the early Old Kingdom.

3. If the earliest finds on a site were dated to the Old Kingdom and the site was occupied during the First Intermediate Period and the Middle Kingdom, the site was assigned to the late rather than early Old Kingdom.

4. If the dating was broadly to the Old Kingdom, the site would be assigned to both the early and the late Old Kingdom, although sometimes it could be identified as a site with unreliable chronology.

5 Sites located along the edges of the Delta could be an exception, but there is not enough data to verify this assumption.

6 It concerns especially older research, for example surveys made by Junker, but also later, see van den Brink 1987: Table 2; 1993: Fig. 5.

Table 1. The Nile Delta sites during the Early Dynastic and Old Kingdom period

Type: S – settlement; C – cemetery. Sources: SF – single finds; W – written sources; S – surveys (including drillings); E – excavations (including test trenches). Chronology: ED – Early Dynastic; EOK – early Old Kingdom; LOK – late Old Kingdom. Other: EES DS – Egypt Exploration Society Delta Survey

No.	MODERN NAME	ANCIENT NAME	SOURCE	TYPE	CHRONOLOGY
1.	Abu Ghalib	Unknown	W?, S, E	S, C	ED, EOK, LOK
2.	Abu Ghurab	Unknown	E	C	ED, LOK
3.	Abu Rowash	Unknown	E	S, C	ED, EOK, LOK
4.	Abu Sir Bana	<i>Ddw / Pr-wšjr / Busiris</i>	W, SF	S, C	LOK
5.	Abusir	Unknown	E	S, C	ED, EOK, LOK
6.	Ashmun	<i>Hrtj dḥwtj</i>	W	S	EOK
7.	Aulad Dawud	Unknown	E, S	S, C	ED, EOK, LOK
8.	Behbeit el-Hagar	<i>Ntrw</i>	W	S	EOK, LOK
9.	Beni Amir	Unknown	S, E	C	ED, EOK?
10.	Dahshur	<i>H'j Šnfrwj</i> (pyramid town of Snofru)	W, E	S, C	EOK, LOK
11.	Damanhur	<i>Dmjt / Dmjt (Hr) / Hermopolis Parva</i>	W, S, E	S	ED, EOK, LOK
12.	el-Baraniya	Unknown	S	C	EOK?, LOK
13.	el-Birqash	Unknown	S	C?	ED, EOK?, LOK
14.	el-Burdan ?*	<i>H3mwT</i>	W	S	LOK
15.	el-Masara	Unknown	E	C	ED, EOK
16.	el-Qatta	<i>Bwt ?</i>	W?, S, E	S, C	ED, EOK, LOK
17.	el-Shaqafiya	Unknown	S	?	ED
18.	el-Rubaiyin	Unknown	E	C	LOK
19.	Gebel el-Nahya	Unknown	S?	C	EOK?, LOK?
20.	Gezira Sangaha	Unknown	S, E	C	ED
21.	Giza**	Unknown	W?, E	S, C	ED, EOK, LOK
22.	Hamsa	Unknown	S	?	EOK, LOK

\* Location unknown. Area of Lake Mareotis, 3rd nome LE.

\*\* Kafr Ghattati and Kafr Batran included.

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Montet 1938; Klasens 1957; 1958a; 1958b; 1959; 1960; 1961; Kaiser 1964; Hawass 1980; Kessler 1982; Hendrickx and van den Brink 2002; Valloggia 2011	3.
Yoyotte 1958; Fischer 1976; Zibelius 1978; Kessler 1982; Kroeper 1989; EES DS No. 77	4.
Bonnet 1928; Kaiser 1964; von Beckerath 1975; Porter and Moss 1978; Jeffreys and Tavares 1994; Hendrickx and van den Brink 2002; Bárta 2002; 2013b; Verner et al. 2006	5.
Zibelius 1978	6.
Kroeper 1989; EES DS No. 664	7.
Zibelius 1978; EES DS No. 83	8.
Leclant 1973; 1976; Bietak 1975; Kessler 1982; Kroeper 1989; Krzyżaniak 1989; Abd el-Hagg Ragab 1992; Hendrickx and van den Brink 2002	9.
Fakhry 1959; 1961; Wildung 1975; Porter and Moss 1978; Zibelius 1978; Kessler 1982; Faltings 1989; Stadelmann et al. 1993; Alexanian and Seidlmayer 2002; Bárta 2013c	10.
Evers 1929; Kaiser 1964; Zibelius 1978; Kroeper 1989	11.
Junker 1928; Kessler 1982; Kroeper 1989	12.
Junker 1928; Kessler 1982; Kroeper 1989	13.
Zibelius 1978	14.
Larsen 1940a; 1940b; Kessler 1980; 1982; Hendrickx and van den Brink 2002	15.
Chassinat, Gauthier, and Piéron 1906; Junker 1928; Brunner 1952–1953; 1954–1956; Leclant 1950; 1952; 1953; 1954; Kaiser 1964; Kessler 1982; Gomaà 1984; Kroeper 1989; Hendrickx and van den Brink 2002	16.
Neuffer, Bittel, and Schott 1932; Kroeper 1989; EES DS No. 529	17.
Daressy 1902; Porter and Moss 1934; Kessler 1982; Kroeper 1989	18.
Jones 1995?	19.
Fischer 1958; Bietak 1975; Kessler 1982; van den Brink 1987; Kroeper 1989; Krzyżaniak 1989; Hendrickx and van den Brink 2002; Jucha 2009; EES DS No. 592	20.
Covington 1905; Daressy 1905; Petrie 1907; Hassan 1932; 1936; 1941; 1943; 1944; 1946; 1948; 1950; 1953a; 1953b; 1960; Kaiser 1964; Saleh 1974; Porter and Moss 1978; Kessler 1982; Engles 1990; Hendrickx and van den Brink 2002; Lehner 2002; Lehner, Kamel, and Tavares 2009; Lehner et al. 2011	21.
Brewer et al. 1996	22.

Table 1 (continued)

No.	MODERN NAME	ANCIENT NAME	SOURCE	TYPE	CHRONOLOGY
23.	Helwan	Unknown	E	C	ED, EOK
24.	Kafr Hakim (Barakat Drain)	Unknown	S, E	S	EOK?, LOK
25.	Kafr Hassan Dawud	Unknown	E	C	ED
26.	Kanasiyet el-Saradusi	Unknown	S	?	ED
27.	Kom Abu Awali	Unknown	S, E	?	ED, EOK
28.	Kom Abu Billo	<i>Pr-Ḥwt-Ḥr-(nbt)Mfk3t / Terenuthis</i>	E	C	LOK
29.	Kom Ausim	<i>Ḥm / Letopolis</i>	W, S	S, C	EOK, LOK
30.	Kom Aziza	Unknown	S	S?	LOK?
31.	Kom el-Ahmar I	Unknown	S	?	EOK, LOK
32.	Kom el-Ahmar II	Unknown	S	?	EOK, LOK
33.	Kom el-Hisn	<i>Ḥwt jh(w)t / Jmw / Jm3w / Momemphis</i>	W, S, E	S, C	ED, EOK, LOK
34.	Kom el-Khilgan	Unknown	S, E	S, C	ED, EOK
35.	Kom el-Qanatar	Unknown	S, E	S	ED
36.	Kom Om Sir	Unknown	S	S	ED, EOK
37.	Kufur Nigm / Ezbet el-Tell	Unknown	S, E	S, C	ED, EOK
38.	Maadi	Unknown	E	C	ED
39.	Masr Gedida	<i>Jwnw / Heliopolis</i>	W, S, E	S, C	ED, EOK, LOK
40.	Merimde Benisalame	Unknown	S, E	C	ED
41.	Minshat Abu Omar	Unknown	S, E	S, C	ED
42.	Minshat Ezzat	Unknown	E	C	ED
43.	Minshat Radwan	Unknown	S	?	ED
44.	Mit Rahina	<i>Jnb / Jnp ḥd / Jnbw ḥd / Memphis</i>	W, S, E	S	ED, EOK, LOK
45.	Old Cairo	<i>Ḥrj ḥ3 / Babilon</i>	W,	S, C	ED, EOK?
46.	Quesna	Unknown	S, E	C	EOK
47.	Sa el-Hagar	<i>S3w / Sais</i>	W, S, E	S	ED, EOK, LOK
48.	Sakha	<i>Ḥ3sw[w] / Xoïs</i>	W?	S	EOK?, LOK?
49.	Saqqara	Unknown	E	S?, C	ED, EOK, LOK

REFERENCES	No.
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Jones 1995	24.
Salim el-Hangary 1992; Bakr, Abd el-Moneim, and Selim 1996; Lovell 2001; Hendrickx and van den Brink 2002; van Wetering and Tassie 2003; Hassan et al. 2004; EES DS No. 221	25.
Kroeper 1989	26.
Daessy 1912; Kroeper 1989	27.
Leclant 1971; 1972; 1973; Farid 1973; Kessler 1982; Kroeper 1989; EES DS No. 729	28.
Junker 1928; Zibelius 1978; Kessler 1982; Kroeper 1989; EES DS No. 308	29.
EES DS No. 626	30.
Brewer et al. 1996; EES DS No. 176	31.
Brewer et al. 1996	32.
Zibelius 1978; Kessler 1982; Wenke et al. 1988; Kroeper 1989; Cagle 2003; Wenke, Redding, and Cagle 2016; EES DS No. 24	33.
Buchez and Midant-Reynes 2007; 2011; Tristant, De Dapper, and Midant-Reynes 2008; Hendrickx and van den Brink 2002; EES DS No. 607	34.
Scharff 1926; Kroeper 1989; Wilson and Grigoropoulos 2009; EES DS No. 385	35.
Chłodnicki, Fattovich, and Salvatori 1992a; Hendrickx and van den Brink 2002; EES DS No. 341	36.
Leclant 1963; 1964; 1983; Fischer 1963; Müller 1966; Bietak 1975; Kessler 1982; Leclant and Clerc 1985; 1986; 1991; Bakr 1988; 1994; 2003; Kroeper 1989; Krzyżaniak 1989; Hendrickx and van den Brink 2002; EES DS No. 193	37.
Brunton 1939; Kaiser 1964; Kessler 1982; Jeffreys and Tavares 1994; Hendrickx and van den Brink 2002	38.
Daessy 1916; Porter and Moss 1934; Zibelius 1978; Habachi 1984; Debono and Mortensen 1988	39.
Junker et al. 1930; Eiwanger 1979; Kessler 1982; Kroeper 1989	40.
Müller 1966; Kessler 1982; Kroeper 1988; 1992; 1994; Kroeper and Wildung 1985; 1994; 2000; Krzyżaniak 1992; 1993; Hendrickx and van den Brink 2002; EES DS No. 222	41.
El-Baghdadi 1999; 2007; Hendrickx and van den Brink 2002; EES DS No. 504	42.
Jucha 2011a; EES DS No. 663	43.
Kemp 1977; Zibelius 1978; Jeffreys and Tavares 1994; Love 2003	44.
Boghdady 1932; Zibelius 1978; Kessler 1982; Hendrickx and van den Brink 2002	45.
Rowland 2011a; 2011b; EES DS No. 639	46.
Zibelius 1978; Kroeper 1989; Wilson 2006; 2011; EES DS. No. 13	47.
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Table 1 (continued)

No.	MODERN NAME	ANCIENT NAME	SOURCE	TYPE	CHRONOLOGY
50.	Talya	Unknown	S	C	EOK, LOK
51.	Tell Abu Dawud	Unknown	S	S	EOK, LOK
52.	Tell Abu el-Halyat	Unknown	S	S, C?	ED, EOK
53.	Tell Abu Seifa	<i>msn</i>	W, S	S, C	EOK, LOK
54.	Tell Abu Shieisa	Unknown	S	C?	ED?, EOK?
55.	Tell Atrib	<i>km wr / kw wj / Athribis</i>	W, E	S	ED?, LOK
56.	Tell Basta	<i>B3št / Pr B3št / Bubastis</i>	W, E	S, C	ED, EOK, LOK
57.	Tell Bisintawi	Unknown	E	C	ED, EOK
58.	Tell el-Dab'a el-Qanan	Unknown	S, E	S, C	ED, EOK
59.	Tell el-Dib'a	Unknown	S	S?	ED, EOK, LOK?
60.	Tell el-Dirdir	Unknown	S	S	ED, EOK
61.	Tell el-Abbasiya	Unknown	S	S	ED, EOK, LOK
62.	Tell el-Ain	Unknown	S	S	ED, EOK
63.	Tell el-Akhdar	Unknown	S	S	ED, EOK
64.	Tell el-Balamun	<i>Sm3-n-bḥdt / Diospolis Inferior</i>	W, S, E	S	LOK
65.	Tell el-Fara'in	<i>P, Dp / Dbwt / Buto</i>	W, S, E	S	ED, EOK, LOK
66.	Tell el-Fara'on	<i>Jmt</i>	W, S, E	S, C	ED, EOK, LOK
67.	Tell el-Farkha	Unknown	S, E	S, C	ED, EOK
68.	Tell el-Gabbara	Unknown	E	S	ED
69.	Tell el-Ginidba / Tell Gandiya	Unknown	S, E	S	ED, EOK
70.	Tell el-Ginn	Unknown	SF, S	C	ED
71.	Tell el-Iswid North / Tell Neshed	Unknown	S, E	S, C	ED, EOK
72.	Tell el-Iswid South	Unknown	S, E	S, C	ED, EOK, LOK?
73.	Tell el-Khasna***	Unknown	S	S	ED, EOK
74.	Tell el-Masha'la	Unknown	S, E	S, C	ED, EOK

\*\*\* Considering the dating of the pottery finds, the site appears to have been abandoned during the early Old Kingdom and then reoccupied during the Middle Kingdom.

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Jucha 2011b; EES DS No. 735	52.
Zibelius 1978; Kroeper 1989; EES DS No. 213	53.
Chłodnicki, Fattovich, and Salvatori 1992a; EES DS No. 337	54.
Scharff 1929; Vernus 1980; Kroeper 1989; EES DS No. 56	55.
Habachi 1957; Zibelius 1978; El-Sawi 1979; Leclant and Clerc 1986; 1987; Kroeper 1989; Bakr 1989; Lange 2006; Lange, Ullmann, and Baumhauer 2016; EES DS No. 220	56.
Leclant 1976; Kroeper 1989; Wilson and Grigoropoulos 2009; EES DS No. 333	57.
Chłodnicki et al. 1992a; Brewer et al. 1996; Hendrickx, van den Brink 2002; el-Baghdadi 2008; EES DS No. 172;	58.
Chłodnicki, Fattovich, and Salvatori 1992a; EES DS No. 336	59.
van den Brink 1988; Kroeper 1989; EES DS No. 563	60.
van den Brink 1988; Kroeper 1989; EES DS No. 593	61.
van den Brink 1987; Chłodnicki, Fattovich, and Salvatori 1992a; Hendrickx and van den Brink 2002; EES DS No. 345	62.
van den Brink 1987; 1988; Kroeper 1989; Jucha 2009; 2012; EES DS No. 183	63.
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Table 1 (continued)

No.	MODERN NAME	ANCIENT NAME	SOURCE	TYPE	CHRONOLOGY
75.	Tell el-Murra	Unknown	S, E	S, C	ED, EOK, LOK
76.	Tell el-Shaqafiya	Unknown	S, E	S	ED
77.	Tell el-Yehudiyya	Unknown	S, E	S, C	ED, EOK
78.	Tell el-Retaba****	Unknown	S, E	S	ED?, EOK?, LOK?
79.	Tell el-Rub'a	<i>ḥnpt / Ddt / Mendes</i>	S, E	S, C	ED, EOK, LOK
80.	Tell el-Samarra	Unknown	SF, S, E	S, C	ED, EOK
81.	Tell el-Zragy	Unknown	S	S	ED, EOK
82.	Tell Gezira el-Faras	Unknown	S	S	ED, EOK, LOK?
83.	Tell Gherier	Unknown	S, E?	S	ED, EOK, LOK?
84.	Tell Hassanin	Unknown	S	S?	EOK, LOK
85.	Tell Ibrahim Awad	Unknown	S, E	S, C	ED, EOK, LOK
86.	Tell Nishabe	Unknown	S	S?	ED
87.	Tell Samud	Unknown	S	?	ED
88.	Tell Tebilla / Tell Billa	<i>R<sup>c</sup>-nfr / Onuphis*****</i>	S, E	S	LOK
89.	Tell Tennis	Unknown	SF	?	ED
90.	Tell Umm 'Agram	Unknown	S	S	EOK, LOK
91.	Tell Umm el-Zaiyat	Unknown	S	S?	ED, EOK, LOK?
92.	Tida ?	Unknown	SF	?	ED
93.	Tilul Moh. Abu Hasan	Unknown	S	S	EOK, LOK
94.	Tura	Unknown?	E	C	ED, EOK, LOK
95.	Wardan	Unknown	S, E	C	ED, EOK, LOK?
96.	Zawiyet el-Aryan	Unknown	E	C	ED, EOK

\*\*\*\* However, according to Hans Goedicke (1986: 353) as well as Polish-Slovak expedition (J. Hudec, personal communication), currently examining the site, there is no *in situ* remains older than the First Intermediate Period there.

\*\*\*\*\* Ancient name is known from the Middle Kingdom onward.

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Neuffer, Bittel, and Schott 1932; Kroeper 1989; EES DS No. 548	76.
Naville 1887; 1890; Petrie and Duncan 1906; Junker et al. 1930; Porter and Moss 1934; Kessler 1982; Zivie 1986; Kroeper 1989; Hendrickx and van den Brink 2002; EES DS No. 311	77.
Petrie and Duncan 1906; Neuffer, Bittel, and Schott 1932; Kroeper 1989; Hendrickx and van den Brink 2002; EES DS No. 219	78.
Hansen, Soghor, and Ochsenchlager 1967; De Meulenaere and MacKay 1976; Zibelius 1978; Holz et al. 1980; Kessler 1982; Kroeper 1989; Friedman 1992; Brewer et al. 1996; Hendrickx and van den Brink 2002; Adams 2009; Redford 2010; EES DS No. 178	79.
Kessler 1982; Kroeper 1989; Krzyżaniak 1989; Chłodnicki, Fattovich, and Salvatori 1992a; Brewer et al. 1996; Hendrickx and van den Brink 2002; El-Baghdadi 2008; Guyot 2016; EES DS No. 175	80.
Brewer et al. 1996; Hendrickx and van den Brink 2002	81.
van den Brink 1987; Chłodnicki, Fattovich, and Salvatori 1992a; Hendrickx and van den Brink 2002; Jucha 2009; 2011a; 2011b; 2016; EES DS No. 351	82.
van den Brink 1987; 1988; Kroeper 1989; Hendrickx, van den Brink 2002; Jucha 2009; 2016; EES DS No. 575;	83.
van den Brink 1987; 1993; Jucha 2016; EES DS No. 573	84.
van den Brink 1988; 1989; 1992; Kroeper 1989; van Haarlem 1996; 1998; 2000; Eigner 2000; Hendrickx and van den Brink 2002; EES DS No. 535	85.
Neuffer, Bittel, and Schott 1932; Kroeper 1989; Hendrickx and van den Brink 2002	86.
Neuffer, Bittel, and Schott 1932; Kroeper 1989	87.
Brewer et al. 1996; Mumford 2001; 2002; G. Mumford, personal communication; EES DS No. 156	88.
Kaiser 1964; Kroeper 1989; Hendrickx and van den Brink 2002; EES DS No. 153	89.
van den Brink 1988; 1993; EES DS No. 568	90.
van den Brink 1988; 1993; Kroeper 1989; Chłodnicki, Fattovich, and Salvatori 1992a; Hendrickx and van den Brink 2002; Jucha 2016; EES DS No. 344	91.
Porter and Moss 1934; Kroeper 1989	92.
van den Brink 1988; Kroeper 1989; EES DS No. 574	93.
Junker 1912; Porter and Moss 1934; Kaiser 1964; El-Khouli 1968; Leclant 1979; Yacoub 1981; Kessler 1982; Jeffreys and Tavares 1994; Hendrickx and van den Brink 2002	94.
Junker 1928; Larsen 1957; Kessler 1982; Kroeper 1989; Hendrickx and van den Brink 2002	95.
Barsanti 1901a; 1906; 1907; Reisner 1936; Kaiser 1964; Porter and Moss 1978; Dunham 1978; Kessler 1982; Jeffreys and Tavares 1994; Hendrickx and van den Brink 2002	96.

### RESULTS

The maps presented here show the distribution of sites in the Nile Delta and in the Memphite area at each of the three stages: Early Dynastic, early Old Kingdom and late Old Kingdom periods [Figs 1, 3, 5, respectively]. The course of the Nile branches, as reconstructed for the Old Kingdom by Karl W. Butzer (1975: Fig. 2) and Manfred Bietak (1975: Fig. 25), constitutes the physical setting of these maps. A different reconstruction of the water courses, based on the research of van den Brink (1993: Fig. 6) and van Wesemael, de Wit, and van Stralen (1988), was adopted for the area

of the northeastern Delta [Figs 2, 4, 6, for the respective stages]. Although the collected data are often ambiguous and the accepted methodology may cause some bias, a preliminary analysis of the results gives a general idea of the rate at which changes were occurring in the Nile Delta during the 3rd millennium BC.

#### EARLY DYNASTIC

To date, the number of recognized sites from the Early Dynastic period amounts to 70 [Fig. 1]. The chronology of three of these is not reliable (marked with triangles). Most of the Early Dynastic

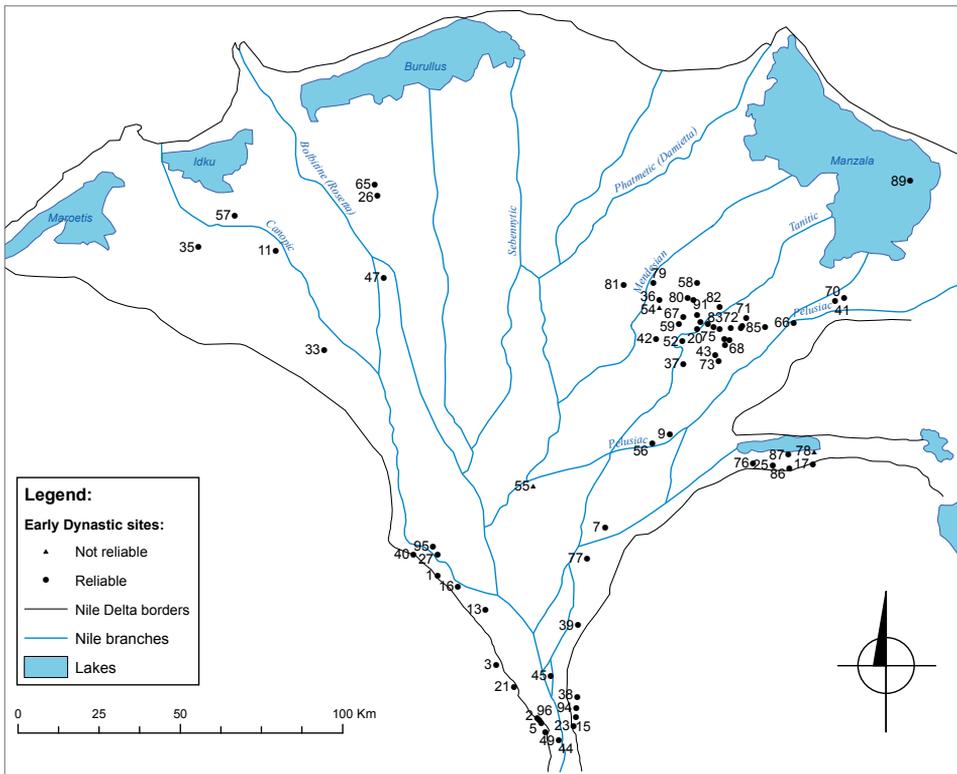


Fig. 1. The Nile Delta during the Early Dynastic period (After Bietak 1975: Fig. 25 | drawing N. Małacka-Drozd)

sites are located in the northeastern part of the Delta, in the area between the former Mendesian, Tanitic and Pelusiac branches of the Nile [Fig. 2]. The population density there appears to be the highest, with an average distance of less than 4 km between the tells. In some cases the distance is only 1–3 km. Other clusters of sites were observed in Wadi Tumilat, along the southwestern edge of the Delta and in the Memphite area.<sup>7</sup> Single, scattered settlements are visible in the northwestern part of the Delta.

The situation of particular sites during this stage is diverse.<sup>8</sup> A gradual decline of some settlements, especially those located in the northeastern Delta,

is observable from the times of the mid-First Dynasty (presumably the reigns of Djer to Den). Some of them were abandoned as early as the beginning of the Second Dynasty (Kroeper 1988; 2004), while others declined in size and significance. A good example is Tell el-Farkha, where the cult and administrative area on the Western Kom was abandoned, the settlement withdrawing to the Central and Eastern mounds (Chłodnicki 2014: 66).<sup>9</sup> At the same time, other settlements flourished, clearly supported by the crown. New administrative structures were built at Tell el-Fara'in/Buto, the so-called Palace (Hartung 2015: 61), and at Tell el-Rub'a/Mendes, a bakery

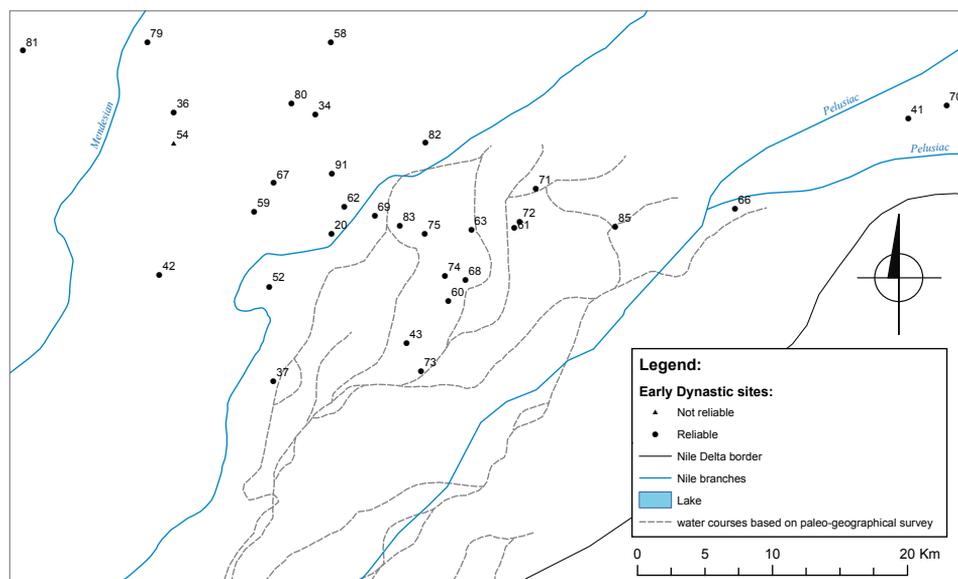


Fig. 2. The northeastern Nile Delta during the Early Dynastic period (After Bietak 1975: Fig. 25 and van den Brink 1992: Fig. 6 | drawing N. Malecka-Drozd)

- 7 It is not certain whether all local cemeteries should be associated with Memphis alone or rather with a greater number of smaller settlements scattered around the city.
- 8 Detailed analysis of the internal structure of settlements, both dated to the Early Dynastic and the Old Kingdom, will be the subject of a separate paper.
- 9 Probably *hwt* was established there.

area west of the temple (Adams 2009: 140–149). This could have coincided with a continuous enlargement of settlement size and specialization at least from the end of the Predynastic period (Hartung et al. 2009: 172–173; Adams 2009: 130; Redford 2010: 18–41). However, concerning the known Early Dynastic (as well as Old Kingdom) settlements in the Nile Delta, little can be said so far about the specifics of their use at the time because of the unsatisfactory level of archaeological investigation of these sites.

**EARLY OLD KINGDOM**

The number of sites dated to the period of the early Old Kingdom is also

70 [Fig. 3]. Nine of them are marked as chronologically unreliable (triangles). Occupation of 52 sites carried over from the Early Dynastic period and 18 sites appear in sources for the first time at the beginning of the Old Kingdom.

Changes were noted in the distribution of particular sites. In the Memphite area, only two sites located at its northern border: Abu Ghurab and Maadi, appear to be abandoned. However, a royal necropolis developed further south and encompassed Dahshur (and, further south, Meidum). Definitely more sites appeared along the southwestern edge of the Delta (six new ones versus one abandoned). In the western Delta,

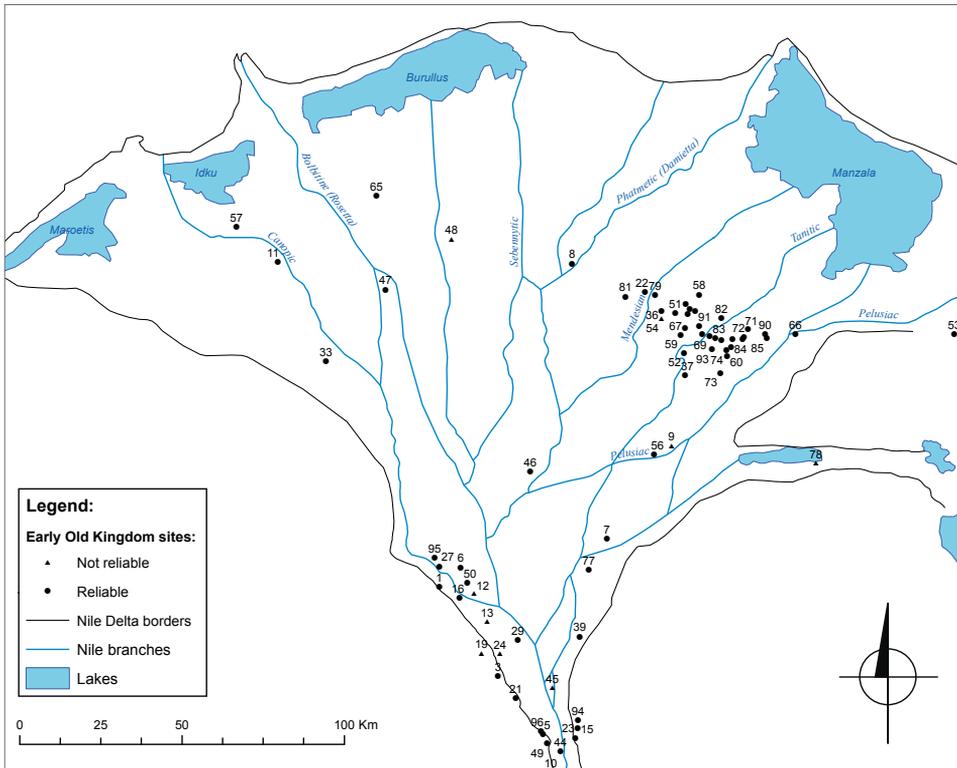


Fig. 3. The Nile Delta during the early Old Kingdom (After Bietak 1975: Fig. 25 | drawing N. Małecka-Drozd)

the situation seems to be more stable: two sites were abandoned, but probably a new one emerged in the sources (Sakha/Xois). Sites in the central Delta, along the Sebennyitic branch of the Nile (Quesna and Behbeit el-Hagar) appeared for the first time during the early Old Kingdom. In the northeastern Delta, the settlement network remained the densest, although some changes occurred [Fig. 4]. A slightly distant group of sites, located farthest to the northwest, along the lower Pelusiac River (Tell Tennis, Tell el-Ginn and Minshat Abu Omar), was finally abandoned. In the area of the greatest density, between the Mendesian, Tanitic and west to the Pelusiac branches, four sites disappeared and seven new ones emerged. A cluster of settlements previously present in Wadi Tumilat vanished. Only one site (Tell el-Retaba), albeit not reliable, is now marked in

the area. Sites probably situated along the upper Pelusiac branch and its distributaries, in the southeastern part of the Delta, continued to exist.

The early Old Kingdom is a time when many old settlements, especially those located in the northeastern Nile Delta, continued to decline and were ultimately abandoned. The most prominent example is Tell el-Farkha (Chłodnicki 2012: Table 1; 2014: 68), although this also applies to less-recognized sites, like Tell Abu el-Halyat (Jucha 2011b), now partly destroyed, but once of considerable size. Smaller settlements were affected by the same trend (Buchež and Midant-Reynes 2007; Midant-Reynes and Buchež 2014; Jucha 2012; Jucha et al. 2013; 2016; Guyot 2016). Nevertheless, there is evidence that some reconstruction took place in centers supported by the state already during the Early Dynastic period. The palace at Tell el-Fara'in/Buto

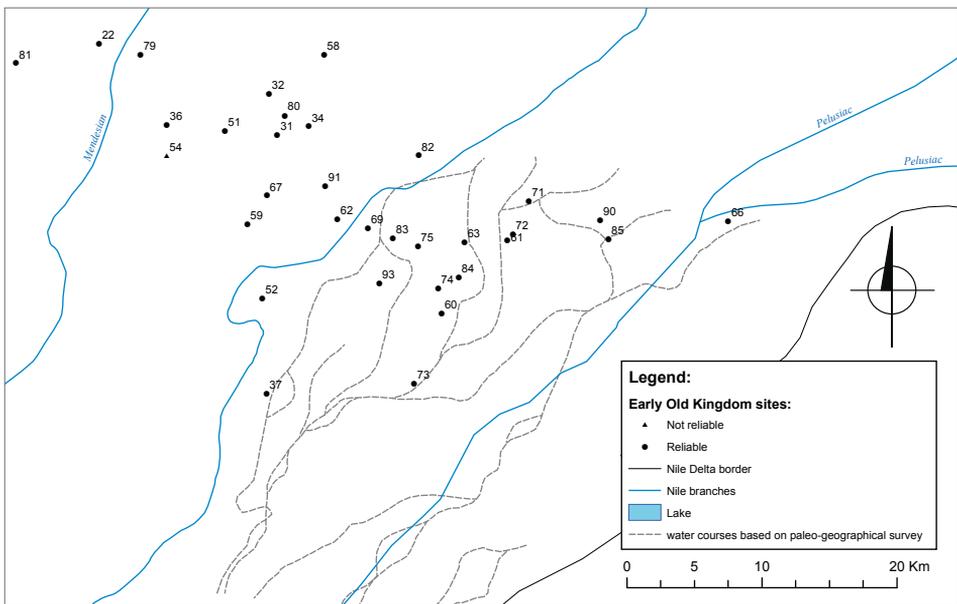


Fig. 4. The northeastern Nile Delta during the early Old Kingdom (After Bietak 1975: Fig. 25 and van den Brink 1992: Fig. 6 | drawing N. Malecka-Droz)

was deserted at the beginning of the Third Dynasty (Hartung, Engel, and Hartmann 2012: 96–97). There is also evidence of major work inside the later temple and cemetery area at Tell el-Rub'a/Mendes (Adams 2009: 198–200; Redford 2010: 18–24). The sanctuary of Tell Ibrahim Awad was significantly reorganized and reoriented at the beginning of the Old Kingdom and, after some reconstruction during the Fourth–Fifth dynasties, it lasted until the First Intermediate Period (Eigner 2000: 22–29). Finally, the earliest archaeological remains of the settlement and economic area discovered at Kom el-Hisn (Wenke et al. 1988; Wenke, Redding, and Cagle 2016), as well as a mastaba

recently uncovered at Quesna (Rowland 2011a; 2011b) were dated to the early Old Kingdom.

**LATE OLD KINGDOM**

More changes can be observed when comparing the Nile Delta Early Dynastic settlement landscape to that of the late Old Kingdom [Fig. 5]. The total number of sites during this period is only 53, although the chronology of ten of them is not entirely reliable (marked with triangles). 43 sites were occupied already during the early Old Kingdom and 28 of them have an uninterrupted settlement history from the Early Dynastic period. Only ten sites are believed to be new foundations or at least

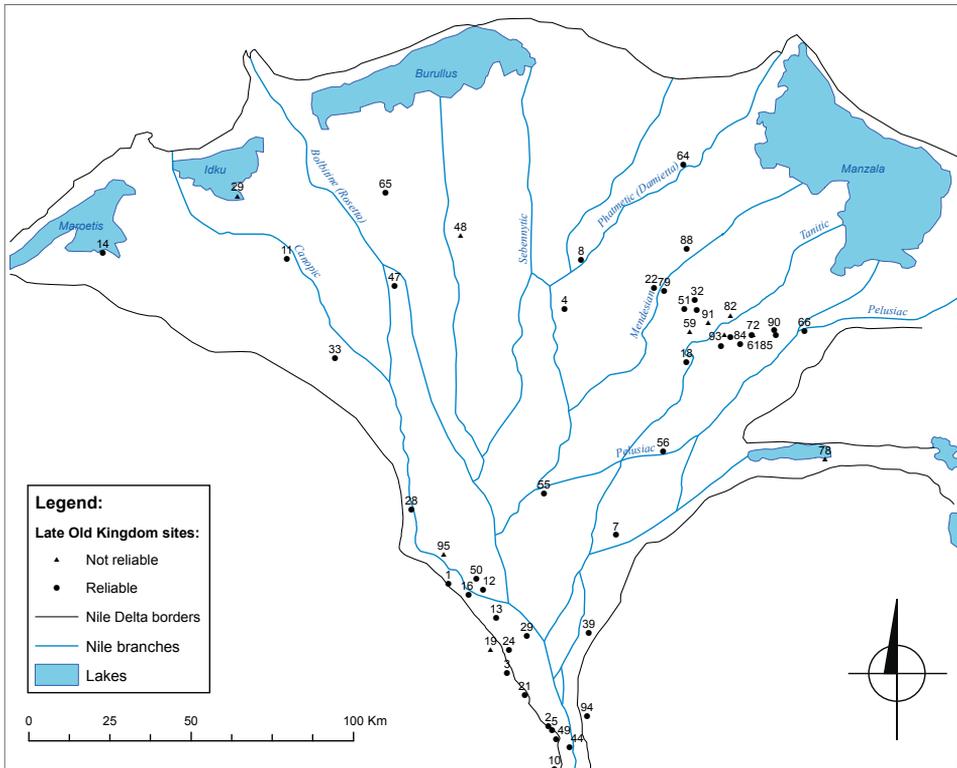


Fig. 5. The Nile Delta during the late Old Kingdom (After Bietak 1975: Fig. 25 | drawing N. Malecka-Drozd)

no earlier chronology has been confirmed in their case.

More changes in settlement patterns are evident in the late Old Kingdom period. In the Memphite area, three sites were abandoned and only one was reoccupied (Abu Ghurab, after a hiatus during the early Old Kingdom). As a result, only one late Old Kingdom site (Tura) is recognized on the present west bank of the river. Along the southwestern edge of the Delta, two sites were abandoned, and only one (Kom Abu Billo) appeared. In the northwestern Delta, only one site declined and two emerged, although one of them is present only in the written sources (el-Burdan). In the central Delta, more settlements have

been confirmed along the rivers, which were later known as the Sebennytic and Phatmetic branches. Settlement patterns in the southeastern Delta, as well as in Wadi Tumilat, did not change. However, a fairly remarkable decline is observable in the northeastern Delta, once probably the most densely occupied area in Lower Egypt. The 16 sites that had existed there during the Early Dynastic and early Old Kingdom periods were deserted. Only two sites (el-Rubaiyin in the southern and Tell Tebilla in the northwestern part of the area) emerged instead. The settlement network of the northeastern Nile Delta became more dispersed, with an average distance of about 5 km between sites.

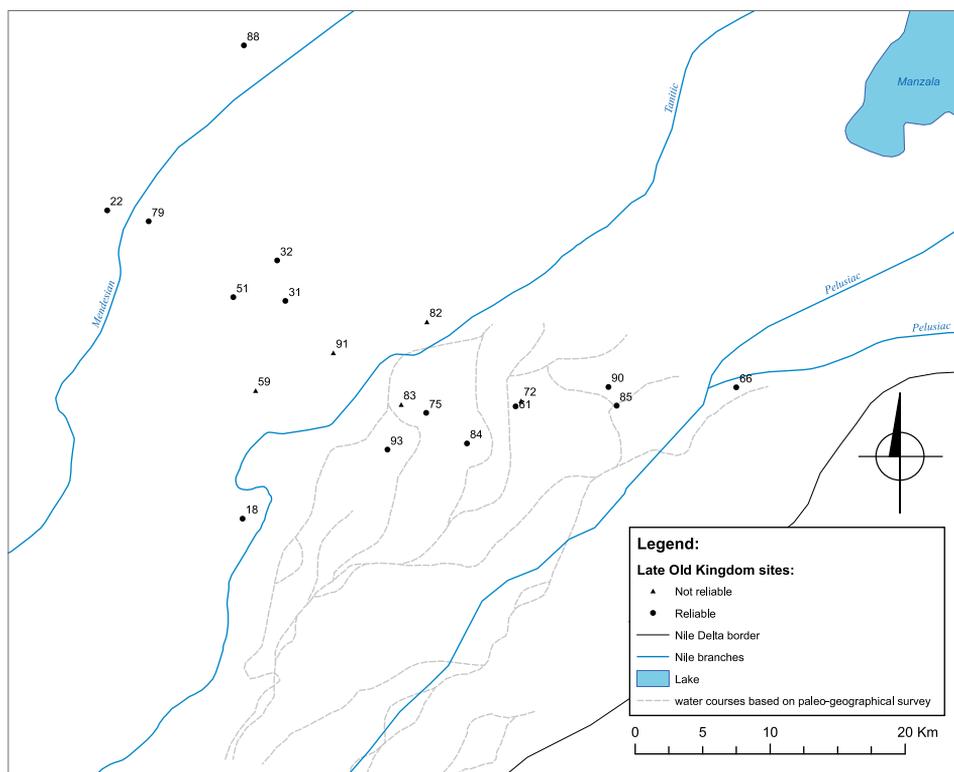


Fig. 6. The northeastern Nile Delta during the late Old Kingdom (After Bietak 1975: Fig. 25 and van den Brink 1992: Fig. 6 | drawing N. Malecka-Droz)

## DISCUSSION

Major evolutionary trends in settlement landscape can be recognized based on this overview of the Delta in the 3rd millennium BC (see Małecka-Drozd 2014). A shift from the densely populated northeastern Delta to the western and southern parts of the region was in place already during the Early Dynastic period. The most important manifestation of the phenomenon is the gradual decline of previously important centers, like Tell el-Farkha, and the rise of centers such as Mendes (the economic and administrative area west of the temple), Buto (the architecture of the so-called Palace), and Sais (the growing cult of Neith, see El-Sayed 1982; Schlichting 1982: 390). In terms of the number of sites, the early Old Kingdom appears to be a period of balance. Even if the number of sites remained the same as in the Early Dynastic period, their location and structure were changing. Some of the eastern Nile Delta sites were gradually abandoned as early as the second part of the Early Dynastic period (e.g., the area of Wadi Tumilat) and the process accelerated in the early Old Kingdom (e.g. Tell el-Farkha, Tell el-Samarra, Tell el-Iswid (N), Kufur Nigm etc.). Others seem at least to diminish in size (e.g., Tell el-Murra, probably also Tell el-Iswid (S)). In contrast to the eastern Delta, the central and western parts witnessed a steady development. The number of sites increased, especially along the southwestern edge of the Delta, although some of them are not chronologically reliable. These parts of Lower

Egypt seem to gain in significance from the beginning of the dynastic period when considering the status of towns located there. Buto (Zibelius 1978: 82–84, 259–262, 266–267; von der Way 1997: 128–129; Hartung 2015: 62), Sais (Zibelius 1978: 195–196; El-Sayed 1982) and Behbeit el-Hagar (Zibelius 1978: 132–133) were all important cultic centres. The mastaba revealed recently at Quesna confirms the existence of a local elite enjoying crown privileges. Kom el-Hisn flourished as a cattle breeding center and an important post in a border area controlling the western nomads (Moreno García 2015). Moreover, it is worth noting that most of the state-controlled estates and royal domains, founded in the beginning of the dynastic period, were indeed located in the western Nile Delta (Jacquet-Gordon 1962).

A significant change is to be observed around the mid-3rd millennium BC. The number of sites had already decreased by about 25% during the late Old Kingdom. The loss is evident primarily in the northeastern Delta. Most sites in the area, even those inhabited from the period of Lower Egyptian Culture (Chłodnicki and Geming 2012; Ciałowicz 2012a; Guyot 2016), were abandoned. Others, like Tell el-Murra (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 213; Jucha et al. 2016: 101–102), show signs of impoverishment. Continuity of settlement development is recognizable in the central and western parts of the Delta, along the Sebennytic (Damietta), Phatmetic, Bolbitine (Rosetta) and Canopic branches of the Nile.

However, the density of the settlement network there is still clearly lesser than in the eastern part of the Delta. The trend continued even after the end of the Old Kingdom period when many of the old northeastern Delta sites were abandoned and never settled again (van den Brink 1993: 288–289; Malecka-Droz 2014: 60).

The available data reveals the early Old Kingdom to be a period of crucial importance for the understanding of changes in the Nile Delta settlement landscape. Key questions concern, however, the reasons for the changes on the one hand and the reliability of the results obtained on the other.

The analysis is based on the count and chronology of sites investigated archaeologically, as well as settlements known from written sources that can be identified with a specific, modern locality. However, it should be noted that at least some of the settlements, which appeared in the written sources and the archaeological record for the first time at the beginning of the late Old Kingdom (especially those located in the central and the western Delta, e.g., Abu Sir Bana/Busiris), could have already existed earlier. This would put the number of Early Dynastic and/or early Old Kingdom sites higher than where it is now. If this were true, then the drop in settlement numbers in the late Old Kingdom would also be more pronounced. Moreover, including settlements known only from written sources in the analysis in the future will affect statistics and revise the current understanding.

One of the key issues is the nature of identified settlement clusters, as well as the changes that took place within these

clusters and between them. To some extent, the existence of some of these clusters could be due to the present state of research. Comprehensive research in selected areas (e.g., various surveys between Abu Kebir, Faqus and Simbillawein, Sharqiyyah and Daqahliyyah Governorates or the Junker survey along the upper Rosetta branch) could have falsified the view of settlement patterns (e.g., concentration of sites in the northeastern Delta or along its southwestern edge). However, surveys recently conducted in the central and western Delta by the Egypt Exploration Society (Rowland 2007; Rowland et al. 2009; Wilson and Grigoropoulos 2009; Spencer 2016) have not resulted in a particularly larger number of sites from the beginning of the 3rd millennium BC being recognized in the area. This gives grounds for considering this part of the Nile Delta as less populated, which is confirmed also by the results of recent studies on its geography, population, economic structure and administration (see Moreno García 2015).

The geography of the Nile Delta and the environmental conditions prevailing there certainly made a significant contribution toward establishing a specific settlement landscape and its progressing transformation. These included both climatic changes: gradual desiccation and decline in flood levels (see Bell 1971; Bárta and Bezděk 2008; Hamdan et al. 2016), as well as changes in the number and volume of Nile branches.

The Palermo Stone provides data on the variability of the Nile flood levels in the 3rd millennium BC (Bell 1970). After a time of high floods during the First Dynasty, there was a period of low floods

during the Second Dynasty. Another increase, although on a smaller scale, is noted at the beginning of the Old Kingdom. The flood levels remained more or less unchanged until the Fifth Dynasty, peaking during the reign of Sneferu. From the Sixth Dynasty there is a visible decrease in flood levels, which reached disastrous proportions in the terminal phase of the Old Kingdom and during the First Intermediate Period (Bell 1971; Butzer 1976: 28; Said 1993: 134–142). These data roughly correspond to the changes described above: decline of settlements at the end of the First Dynasty, temporary stabilization of some of them during the early Old Kingdom and further abandonment of sites at the end of the Old Kingdom, crowned by depopulation of at least part of the Delta during the First Intermediate Period (Simpson 2003: 160–161).

However, the flood-level hypothesis does not explain all the observed changes. Despite the stabilization of the Nile, the process of decline of sites in the eastern Delta continued during the early Old Kingdom. Moreover, a significant number of settlements failed before the Sixth Dynasty when there was a sudden drop in the Nile floods. Finally, it seems improbable that the flood levels affected only some settlement clusters, especially in the eastern Delta, and not others.

Part of the explanation could lie in the actual courses of the river distributaries flowing through Lower Egypt at the time. According to Butzer (1975: 1045–1046; 1976: Butzer 1976: 24–26), in the early Holocene the Nile had three major branches in the Delta. They split up in the vicinity of today's Minuf and Semmanud, covering to a greater or lesser

extent the later Phatmetic (Damietta), Bolbitine (Rosetta) and Sebennytic arms of the Nile. In terms of the volume of deposited sediments, the remaining branches known from historical sources—the Mendesian, Tanitic and Pelusiatic—were always of secondary importance. Different branches were active in different times and the most certain way of determining periods of river activity is to trace the presence of a greater number of settlements located along their banks (Butzer 1975; 1976: 24–25; Bietak 1975: 71–112; 1983).

For the beginning of the 3rd millennium BC, a larger number of settlements can be listed especially for the northeastern part of the Delta, where Early Dynastic and early Old Kingdom sites are known along the ancient Tanitic branch of the Nile and its distributaries (van den Brink 1988; 1993: 284–297; Jucha 2010: 379), but not along its lower section [see *Figs 1* and *3*]. Fewer sites were recognized along the Pelusiatic branch and especially along its lower course (Bietak 1975: 99–101; see *Figs 1–4*). However, there are no recognizable Early Dynastic and Old Kingdom sites along the classically reconstructed (see Bietak 1975: 99, *Fig. 25*; see *Figs 1* and *3*) course of the Pelusiatic River between Tell el-Fara'ön and Tell Basta. A linear array of sites can be seen further west, closer to the Tanitic branch. Site placement as well as a reconstruction of former water courses in the area (van den Brink 1993: *Fig. 6*) have demonstrated the secondary importance of the main riverbed of the Pelusiatic branch in this period. The Tanitic with its several branching watercourses was the main river in the

area. Some of these watercourses went on to combine with the lower stretch of the Pelusiac River and flowed into the Mediterranean Sea, probably via variant B/4 of the Pelusiac estuary (see Bietak 1975: 99). Since Bietak maintains (1975: 107) that the periods of activity of the Tanitic and variant B/4 of the Pelusiac mouths alternated over time, it is likely that during the Early Dynastic period the Tanitic and Pelusiac branches shared the same mouth. Over time, the Pelusiac branch of the Nile appeared to gain in importance, which could be confirmed by the probable earlier decline of some of the sites along the Tanitic River: marked as triangles [see *Figs 3–4, 5–6; Table 1*]: Tell el-Dib'a (59), Tell Umm el-Zawiyat (91), Tell Gezira el-Faras (82), and Tell Gherier (83) and a longer life span of some of the settlements located on the watercourses, which might be connected with the Pelusiac branch: Tell el-Abbasiya (61), Tell el-Murra (75), Tell Hassanin (84), Tell Ibrahim Awad (85), and Tell Umm 'Agram (90) [see *Table 1*]. During the First Intermediate Period, the internal colonization in this part of the Delta was already concentrated along the Pelusiac River, e.g., the state-planned settlements at Tell el-Dab'a and Ezbet Rushdi (Bietak et al. 1998; Czerny 2010; Moeller 2016: 232–262).

The stable development of Mendes from the Early Dynastic to the end of the Old Kingdom indicates that the Mendesian branch, running west of the site, was active during this period (Bietak 1975: 110; Redford 2010: 18–66). In this context, the absence of a greater number of sites along the upper course of the river should rather be linked to the unsatisfactory state of research in

the area. By contrast, the number and array of sites located between the Tanitic and Mendesian branches might suggest that other watercourses, branching out from both rivers, flowed through the area. The period of their greatest activity could have lasted until the early Old Kingdom, when many sites located there were finally abandoned: Kom el-Khilgan (34), Kom Om Sir (36), Tell Abu Shieisa (54), Tell el-Dab'a el-Qanan (58), Tell el-Farkha (67), and Tell el-Samarra (80) [see *Table 1*]. The heyday of Old Kingdom Mendes, as well as the emergence of settlement at Tell Tebilla on the lower course of the river (the town was later known as main harbor of Mendes), indicate that the Mendesian and Pelusiac branches took over the role of the main watercourses of the northeastern Nile Delta during the Old Kingdom.

The situation is more complicated in the central and western Delta, since the lower settlement density does not allow for such a precise reconstruction. According to Judith Bunbury (2013: 66, Fig. 3), two Nile channels ran through the Memphite area at the beginning of the Dynastic period; the western one of these two was initially more active (see Bunbury 2013: Fig. 5.C–D). The significance of the river flowing along the edge of the southwestern Delta continued into the Old Kingdom. Proof of this is found in the cluster of sites which developed in the area [see *Figs 1, 3, 5*]. Moreover, the location of sites in the northwestern Nile Delta determines the course of rivers known later as Canopic: Damanhur (11), Kom el-Hisn (33), Kom el-Qanatar (35), and Tell Bisintawi (57), as well as Bolbitine/Rosetta: Sa el-Hagar (47) and, to some extent,

also Kanasiyet el-Saradusi (26) and Tell el-Fara'in(65) [see *Figs 1, 3, 5; Table 1*], which were more or less stable throughout the 3rd millennium BC. The most problematic is the Sebennyitic River, considered as the third of the main Nile branches in the Delta (Butzer 1975: 1045–1046; 1976: 24–26). Its course could be confirmed not earlier than during the early and, especially, the late Old Kingdom: Abu Sir Bana (4), Behbeit el-Hagar (8), Quesna (46), Tell Atrib (55), and Tell el-Balamun (64) [see *Figs 3, 5; see Table 1*]. However, the significance of centers located in the area (e.g., Behbeit el-Hagar, Abu Sir Bana, Quesna, see above) permits the assumption that some of these settlements along the Sebennyitic branch existed already during the Early Dynastic period.

Linking settlement pattern change to the activity of individual rivers is justified only to a certain extent. Van den Brink (1993: 297–302) perceived an interesting array of northeastern sites along the east–west axis [see *Figs 2, 4*] as a possible “corridor”, part of the trade route overland from the Nile Delta to the Levant. Its further course may be determined on the grounds of a number of settlements located in the North Sinai and Palestine (Oren 1973). Despite the collapse of large-scale overland trade around the middle of the First Dynasty (Oren 1973: 204; Wilkinson 2001: 158–161; Jucha 2010: 386–387), the connection was used also during the Old Kingdom (Bárta 2010: 28). It cannot be ruled out that the settlements that survived in the northeastern Nile Delta continued to participate in this cross-border movement.

The collapse of intensive relations with Palestine via the northeastern Delta and northern Sinai was connected to some extent with the changing priorities of the united state's central authority. The sea connection between the Delta and Byblos (and the entire northern Levant) turned out to be more profitable, both politically and economically. The crown was also deeply interested in intensive use of fertile land in the Delta, as may be assumed from the number of agricultural domains and estates established in this region, starting from the beginning of the Early Dynastic period (Jacquet-Gordon 1962; Moreno García 1999; 2007). The economic significance of the Nile Delta could also be reflected in its political role. An indication of the extent to which rulers from Upper Egypt had to reckon with the elite of Lower Egypt is the creation of a dualistic monarchy and the inclusion of symbols and deities associated with cities of northern Egypt in the official title (Wilkinson 2001: 155–178). Further proof of the importance of the region is the fact that until the end of the Old Kingdom the central authorities took care to maintain direct control over the Nile Delta. The Herakleopolitan Dynasty of the First Intermediate Period inherited power over Lower Egypt (Moreno García 2013: 146–148).

At the beginning of the historical period in particular, the policy of the Memphite rulers towards the Delta was one of ‘divide and conquer’. The kings clearly cared about the development of some centers (like Buto, Sais and Mendes) at the expense of others (again, the decline of Tell el-Farkha) (Malecka-Drozd 2014). The province rebelled intermittently, primarily in the initial period.

Written sources point to significant disturbances during the Second Dynasty, suppressed ultimately by its last ruler, Khasekhemwy (Wilkinson 2001: 77–79). It cannot be excluded that these events resulted in the final decline of some of the sites, especially those that clearly deteriorated after the unification of Egypt.

The process of establishing the new state's territorial administration began already under the First Dynasty (Engel 2013: 27ff.). The reigns of Djer to Den appear to have been the most innovative period. The first *hwt* were established during the reign of Djer, somewhere in the Nile Delta (Wilkinson 2001: 123; Engel 2013: 27–28). The reign of Den witnessed the introduction of a new territorial organization based on a system of nomes, known from the Old Kingdom age (Engel 2006: 159–160; 2013: 31). These reforms may have been the true reason for the changes observed in some of the Delta settlements. This period saw the abandonment of the long-used cemetery at Minshat Abu Omar (Kroeper and Wildung 1994; 2000), the destruction of the cultic-administrative building at Tell el-Farkha (Ciałowicz 2012b: 180), the organization of an official bakery area at Mendes (Adams 2009: 140ff.) and the building of the Palace at Buto (Hartung 2015).

The process continued during the early Old Kingdom. Recent studies on Egyptian administration, the work of Juan Carlos Moreno García in particular (2007: 313–321; 2013: 87–107), seem to confirm the idea of major changes in the provinces during the Third and Fourth Dynasties. The Kings aimed to standard-

ize territorial administration for effective control of the entire state. A manifestation of these efforts was the policy of symbolically highlighting royal authority in the provinces. Huni, the last ruler of the Third Dynasty, and Sneferu, the first king of the Fourth Dynasty, had small step pyramids built around the country, in the most important regional centers (Elephantine, Edfu, Zawiyet el-Meitein, etc.). These were perceived as markers of central authority and perhaps also places of the royal cult in the provinces (Moreno García 2013: 92–93). However, no such pyramids were found in the Nile Delta. There must have been a different way to control local magnates (assuming they existed) and mark the royal presence in northern Egypt. The vast Nile Delta floodplain could have afforded different opportunities than the limited space of the long and narrow Nile Valley. Rulers may have interfered in existing settlement patterns and adapted them to their needs to a greater extent.

The royal annals inscribed on the Palermo Stone provide data on a policy of internal colonization pursued by Sneferu (Breasted 1906/2001: 65; Moreno García 2013: 95–96). There are some records attesting 35 *hwt* founded in a single year of his reign. In fact, many surviving historical toponyms preserve the name of this ruler, indicating considerable efforts on his part toward establishing new settlements. How many of these foundations were *in cruda radice* is difficult to say. At least some of them were associated with places with an earlier settlement history. One example is Abu Ghalib, a site inhabited already during the Early Dynastic period (Junker 1928: 5ff.), where a seal

impression with the name of Sneferu's domain was found in a Middle Kingdom context (Larsen 1936: 83ff.; Kroeper 1989). Old Kingdom pottery discovered at the site (Larsen 1936: Figs 13, 15) is proof of settlement in this period, and it is probable that it was re-established by Sneferu.

One reason for the intensive internal colonization during the reign of Sneferu was the availability of new land for agricultural use as a result of the maximum height of the Nile floods during the Old Kingdom. Hwt were established in areas where there was an abundance of arable land, often newly acquired. Another explanation is offered by the autobiography of Metjen, a high official in the reigns of Huni and Sneferu, preserved on the walls of his tomb. Metjen was a regional administrator in the Delta during this period. As an overseer of large swathes of land in Lower Egypt, he was involved in the process of founding new territorial units called *grgt* and *ḥt*. Moreover, he was responsible for replacing units described as *pr* with new types: *grgt*, *ḥt*, *ḥwt* and *ḥwt ʕt*. Toponyms containing *pr* were always associated with a personal

name (of local potentates or noblemen) (Moreno García 2007: 319–320), hence it might be appropriate to link them with an old elite, predynastic in its origin. New types of settlements were subordinated directly to the central government and were managed by officials, like Metjen, sent by a Residence. This permits provincial areas and settlements to be associated directly with the crown (Moreno García 2007: 318; 2013: 95–98). Densely populated and profiting from trade with southern Palestine as well as Syria (Byblos), providing evidence for a developed administrative structure (Ciałowicz 2009; 2012b) and a lively religious life (Ciałowicz 2009; Eigner 2000; Belova and Sherkova 2002), the region of the northeastern Delta is an ideal candidate for a region with such an elite. Therefore, it cannot be excluded that the policy of Sneferu and other rulers of the Third and Fourth Dynasties was aimed at abolition of the last relics of the Predynastic ownership structure. As such, it would be one of the main causes of transformation in the settlement patterns in Lower Egypt, especially in the eastern part of the Nile Delta.

## CONCLUSIONS

The early Old Kingdom appears to be a key period for change of settlement patterns in the Nile Delta. The question that one is faced with is whether the timing should be treated as a matter of coincidence or whether the individual factors described above constituted a cause-and-effect process. Were the administrative changes a derivative of the need for better, more effective territorial state organization and subordi-

nation to central authority of a potentially dangerous local Delta elite? Or were the administrative changes forced by progressive environmental changes and the need to adapt the economic potential to a rigid framework of offices and institutions? Did the process of organizing local settlements into an orderly, hierarchical state system make it possible to implement construction projects on an even larger scale, or was

it the other way round—a derivative of the construction plans of successive rulers? How important were the environmental changes or is their impact overestimated? No comprehensive answer to these questions is possible for now.

The probability that all of these phenomena contributed in one way or another to the evolution of the settlement network in the Nile Delta is significant. Further studies should include a detailed analysis of archaeological material from already investigated settlement sites. Progress in fieldwork should bring increased possibilities of linking sites with written sources and studies on the administration

of the period, enabling a preliminary reconstruction of Nile Delta settlement structure and its transformation over time. The combination and comprehensive development of geomorphological and geoarchaeological data from different parts of the Nile Delta, and their comparison, will provide a better understanding of the relationship between environmental changes and urban landscape. However, only further excavation of Early Dynastic and Old Kingdom sites will allow for a more precise reconstruction of Nile Delta settlement history in the 3rd millennium BC and the importance of deliberate state policy in this scope.

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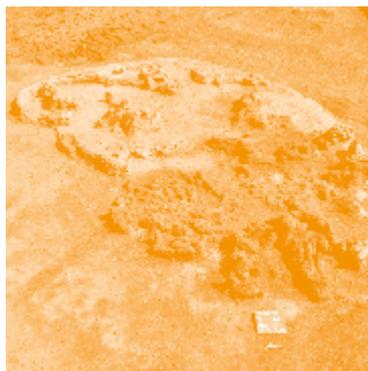
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# Tell el-Farkha Archaeological fieldwork 2018–2019



**Abstract:** The Tell el-Farkha site, which is under excavation since 1998, is formed of three tells. All three were excavated in the course of the two seasons, reopening already established trenches. Breweries discovered earlier on the Western Kom were explored, two completely, two in the early stages of exploration. Thick, poorly preserved mud-brick walls were unearthed northeast of one of the breweries. Remains of a multi-roomed structure continued to be cleared in the northern trench on the Central Kom. D-shaped red bricks in this area suggest the presence of a brewery in the vicinity. A Naqada IIB and IIC settlement was recognized in the southern trench: storage pits, postholes, and furrows from a big house built of wood. A part of a settlement dated to the Tell el-Farkha Phases 3 and 4 (Naqada IID2–mid IIIB) was explored on the Eastern Kom. Of greatest interest is a structure composed of rectangular rooms around an open space, probably a courtyard. Three graves were discovered including one dated to the Naqada IIIB with the first pottery coffin discovered at Tell el-Farkha.

**Key words:** Lower Egyptian culture, Naqada culture, Proto-dynastic, Early Dynastic

All three tells forming the site were excavated in the course of the two seasons, reopening already established trenches. Post-processing work was also conducted on the site, including analyses of the pottery, flint and other stone tools, as well as animal and botanical remains.

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## WESTERN KOM

The trench reopened in 2018 had been opened first in 2006, explored in 2007 and 2008, and extended north in 2009. Layers 39–45 were investigated in 2018 in the northern squares (63–64 and 53a–c; 54 a).

The most important feature that was excavated was a brewery (No. 342), which turned out to be similar to structure W47 discovered in the eastern part of Western Kom during the 2000 season (Chłodnicki and Ciałowicz 2001: 91–93; Ciałowicz 2012a: 155). Brewery W47, dated to the Tell el-Farkha Phase 2 (Naqada IID1–beginning IID2), was dug into a thick layer of mud covering older Lower Egyptian architectural remains.

Brewery 342 was also dug into a thick layer of Nile mud covering earlier struc-

tures. The feature was sectioned to better recognize its structure [Fig. 1]. It resembles in shape a three-leaf clover, the three circular parts overlapping. The core is constructed of mud bricks and is surrounded by a rim of burnt mud bricks forming a wall 0.20–0.30 m thick, no more than 0.40 m high. Each of the three main parts was a fireplace where the process of beer-making took place. An oblique row of bricks slanting toward the center surrounded each of these fireplaces. Low brick walls compartmentalized the inside of the structure. The pottery finds from the brewery included a lug handle of imported Southern Levantine Erani C pottery. Based on the pottery finds, the brewery is dated to Tell el-Farkha Phase 2/3 (Naqada IID–IIIA1).



Fig. 1. Western Kom. Brewery 342 (Tell el-Farkha Project | orthophoto M. Czarnowicz)

A cluster of single unburnt mud bricks was found in a regular configuration east of the structure. Poorly preserved mud-brick walls (approximately 1.40 m thick) were unearthed northeast of the brewery [Fig. 2]. The walls were destroyed by a Nile flood. Better visibility of the wall outlines was observed in the lower layers [Fig. 3]. The walls are on the same level (about 3.10 m asl) as walls discovered in the 2004 campaign, and are presumably part of the same enclosure that surrounded the oldest brewery center in the Delta (see Ciałowicz 2012a: 157–158). The remains can be dated to Naqada IIC–IID<sub>1</sub> and

should be connected with a later phase of Lower Egyptian culture.

The pottery discovered in 2018 consisted of 17 badly preserved pots, mostly jars of small size. Some of the fragments were decorated, mainly with incised zig-zags typical of Lower Egyptian culture, but two fragments of painted pottery were evidently imported from Upper Egypt. Layers 40–44 were dated by the pottery finds to a period contemporary with the final stage of Naqada IIC and Naqada IID<sub>1</sub>.

A high water table in the northern part of trench (squares 63–64 and 53–54) was a serious obstacle in the 2019 excava-



Fig. 2. Western Kom. Brewery 342 and outline of walls under a layer of Nile mud (Tell el-Farkha Project | orthophoto M. Czarnowicz)

tion season. Only one layer was explored, but enough to confirm the continuation of the mud-brick walls discovered in the previous season. A corner of the walls separated an area, in which the upper parts of another brewery could be seen

(square 64). The pottery, including five examples of lemon-shaped jars, is connected with Tell el-Farkha Phase 1, contemporary with Naqada IIB–IIC. Exploration was terminated by heavy rains and a high water table.



Fig. 3. Western Kom. Brewery 342 and walls northeast of it (Tell el-Farkha Project | orthophoto M. Czarnowicz)



Fig. 4. Western Kom. Brewery 296 in 2019 at the beginning of exploration, looking east (Tell el-Farkha Project | photo G. Bąk-Pryc)



Fig. 5. Western Kom. The oldest phase of Brewery 296, looking east (Tell el-Farkha Project | photo G. Bąk-Pryc)



Fig. 6. Western Kom. Stand for inserting a vat in Brewery 296 (Tell el-Farkha Project | photo G. Bąk-Pryc)



Fig. 7. Western Kom. Bag-shaped jar and snail shells (Tell el-Farkha Project | photo J. Skłucki)

Work shifted to squares 43–44 located in the central part of the excavated area. A brewery (No. 296), partly explored in an earlier campaign (Chłodnicki and Ciałowicz 2018: 125–127), was investigated in 2019, uncovering the two oldest phases dated to the Naqada IIIA phase [Figs 4–5]. A different method of mounting vats in the ovens proved of particular interest. To date, vats were known to be

set between diagonally inserted bricks; evidence to this effect came from breweries discovered previously (Ciałowicz 2012a: 149–155), as well as from the younger stages of Brewery 296. In the phases explored now, a few bricks lay horizontally, forming a kind of stand for inserting the vat, surrounded by bricks dug into the ground [Fig. 6]. Brewery 296 was erected on a Lower Egyptian layer featuring traces of wooden structures [see Fig. 5].

A small bag-shaped jar was found north of the brewery [Fig. 7]. Inside it were 283 shells of snails from the Galba family. Their purpose is difficult to understand, unless they were treated as beads for making a necklace.

An older brewery (No. 361) was located northeast of this feature. Its upper part was explored [Fig. 9]. It is older than the previous one, being probably from



Fig. 8. Western Kom. Flint arrowhead (Tell el-Farkha Project | photo J. Sklucky)



Fig. 9. Western Kom. Brewery 361, looking west (Brewery 296 in right foreground) (Tell el-Farkha Project | photo G. Bąk-Pryc)

the Naqada IID/IIIA period. A flint arrowhead with concave base was found on its southeastern fringe [Fig. 8]. It is only the second example of its kind found at

Tell el-Farkha. The pottery sherds from squares 43–44 are dated to Tell el-Farkha Phase 2 and beginning of Phase 3 (Naqada IID<sub>1</sub>–IID<sub>2</sub>/IIIA<sub>1</sub>). [KMC]

## CENTRAL KOM

In 2018 and 2019, the Central Kom continued to be explored in trenches located on the western slope of the mound: squares C83, C84ac, C93cd and C94c in the northern trench and C32ab, C42, C52bd, C53, C62cd and C63cd in the southern one.

Remains of a Naqada IIB and IIC settlement (Lower Egyptian culture) were observed in the southern trench. The older phase comprised storage pits, postholes, and mud-filled furrows that are interpreted as traces of a wooden structure. The furrows provided data on the organization of the settlement. A long furrow cutting

across the trench from the northwest to the southeast demarcated the so called “Lower Egyptian residence” explored north of it in the previous seasons [Fig. 10]. South of it there were traces of another big house of wood located in the southwestern corner of the trench. Smaller pits, postholes and mud pits were found inside the house. East of it, as well as in the eastern part of the residence, there were only storage and refuse pits [Fig. 11]. Some of these pits were sunk deep into the *gezirah* sand and below groundwater level. Similar storage pits were previously excavated in the eastern part of the residence, near the outer wall.



Fig. 10. Central Kom. Southern trench. Remains of wooden structures from the Lower Egyptian settlement (Tell el-Farkha Project | photo M. Chłodnicki)

The archaeological finds were few: an almost complete lemon-shaped jar [Fig. 12 top] and many potsherds from bigger pots (bowls and jars) and smaller vessels, some of them decorated with a zigzag pattern. A fragment of a copper object, an awl, square in section, almost 6 cm long, was found in one of the storage pits (CW.483). It is the oldest copper object found so far at Tell el-Farkha [Fig. 12 bottom], older than the copper knife found nearby in the Lower Egyptian residence (Czarnowicz 2012a: Pl. 1.10). It was found more than 0.50 m deeper (below the present water table, level 2.32 m).

Many mud pits were found in this trench. They consisted mostly of a solid bottom made of hard silt, sometimes with potsherds or even a whole pig shoulder-blade. The external furrow of the residence was observed to be much deeper (0.30 m) than the furrows inside the building (which were mostly 0.10–0.15 cm deep).

The southern part of a rectangular building, interpreted as the central warehouse of the Naqada village, started to be explored in 2019. The northern part of this building had been excavated earlier in the adjacent trench (Chłodnicki



Fig. 11. Central Kom. Southern trench. Level 50 (2.70 m asl) (Tell el-Farkha Project | photo M. Czarnowicz and J. Karmowski)



and Mączyńska 2018: 81–86). In search of the southern end of the building, the trench was extended 3 m south. Eight layers (0.80 m) were explored in square C42 (level 4.20–3.40 m asl) and 18 layers (level 5.70–3.40 m asl) in the extension.

The western and southern part of the structure was destroyed in ancient times. Multiple fragments of potsherds were found on the floor level in the preserved part of the building [Fig. 13]. Most of them belong to storage jars of the same kind (L30, according to Petrie), but complete small, globular jars were also found.

The building had no continuation to the south (there is no trace of it in the south trench wall). The length of the

Fig. 12. Objects from a Lower Egyptian Culture pit discovered in the southern trench on the Central Kom, top, lemon-shaped vessel; bottom, copper artifact (Tell el-Farkha Project | photo J. Skłucki)



Fig. 13. Central Kom. Southern trench. Remains of a Naqadian store (southern end) with crushed pottery on the floor (Tell el-Farkha Project | photo M. Chłodnicki)

building evidently did not exceed 21 m. It also seems that room CW.94 was not divided into two parts as earlier suggested (Chłodnicki and Mączyńska 2018: 85–86). It was a long chamber, longer than CW.57. Remains of another room with a fireplace inside it was found in the southeastern corner of the trench, surrounded by a thin wall (one-brick thick) with rounded corners [Fig. 14]. The building stood parallel to the storage structure, 2.00 m away from it, like the other houses. This suggests that a 2-m wide passage ran east of the building.

Successive layers were explored in the previously excavated part of the northern trench (for investigations in 2012–2017, see Chłodnicki and Ciałowicz 2015: 183–184; 2016: 240–242; 2018: 137–139). The density of D-shaped red bricks in the lowest levels reached in the lat-

est season (some were used also in wall construction, see below) suggested the presence of a brewery most probably east of the trench; the assumption is that it was either partly or completely dismantled [Fig. 15]. A similar situation was observed in an adjacent trench excavated in 2007–2008. Part of a brewery recorded there, dated to the end of Lower Egyptian occupation on the Central Kom, that is, Naqada IID1–IID2 (Chłodnicki and Ciałowicz 2010: 169–171; 2011: 159–160), had been dismantled for reuse in a wall (C.485) of a building raised in place of the Lower Egyptian residence (Chłodnicki 2010: 108, Fig. 32).

The building in which the D-shaped bricks were used alongside mud bricks consisted of several rooms (with walls 1.5 brick thick). It covered almost the entire area of the trench. In the northern



Fig. 14. Central Kom. Southern trench. Remains of a Naqadian building (Tell el-Farkha Project | photo M. Chłodnicki)

part of the building doors were observed between adjacent rooms. The function of this structure will perhaps become evident once the lower levels of this building are excavated [Fig. 16]. Remains of fireplaces were noted inside the rooms.

The levelling layers covering the building did not yield any architectural remains.

The upper layers 28–36 (level 5.20–4.40 m asl) are connected with the Protodynastic settlement (Naqada IIIA<sub>1</sub>–A<sub>2</sub>).



Fig. 15. Central Kom. Northern trench. Concentration of D-shaped red bricks (Tell el-Farkha Project | photo M. Chłodnicki)

Remains of a house with a courtyard, 4 m long and 6 m wide, were found in these layers in the eastern part of the trench. Long rooms were situated around this yard, with fireplaces in the interiors as well as in the area in front of the house.

The house walls were 0.40 m thick (corresponding to one brick and a half). A section of a circuitous wall was found west of the house [Fig. 18]. Two miniature vessels with handles were connected with this occupation level [Fig. 17]. [MCH]

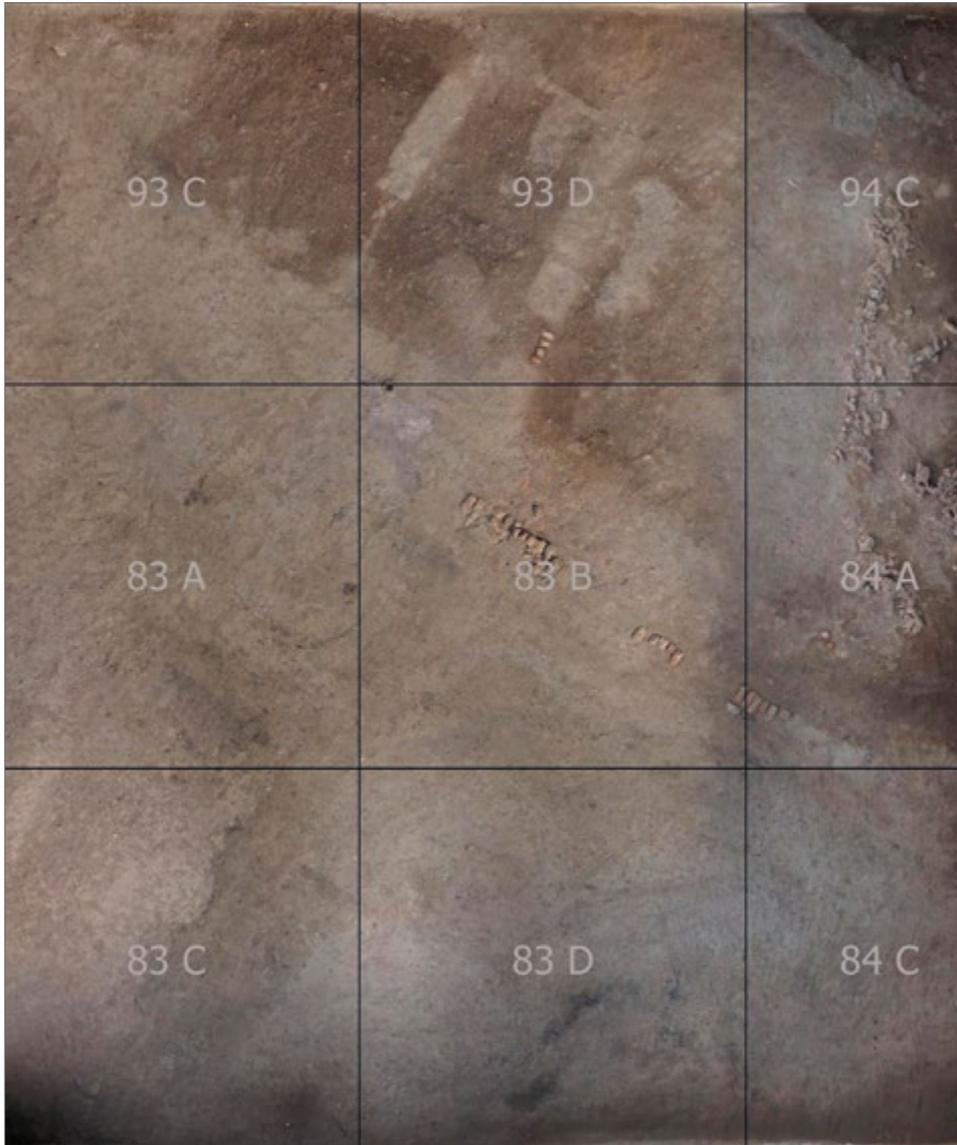


Fig. 16. Central Kom. Northern trench. Level 37 (4.40 m asl) (Tell el-Farkha Project | orthophoto M. Czarnowicz and J. Karmowski)



Fig. 17. Central Kom. Northern trench. Miniature vessels (Tell el-Farkha Project | photo J. Skłucki)



Fig. 18. Central Kom. Northern trench. Remains of a mud-brick building (Tell el-Farkha Project | photo M. Chłodnicki)



Fig. 19. Eastern Kom. Remains of mud-brick walls from Level 56/Phase 3 (Tell el-Farkha Project | photo G. Bąk-Pryc)



Fig. 20. Eastern Kom. Remains of structures from the beginning of Phase 4 (Tell el-Farkha Project | photo G. Bąk-Pryc)

## EASTERN KOM

Squares 36 a–b, 45a–b, 46; 47a,c, 55a–b, 56c–d, 57c were the main objective of the investigations in the course of the two seasons. Layers 42–47 and 48–56 were excavated uncovering remains of different phases of settlement. Pottery analyses have dated layers 48–56 (excavated during the 2019 campaign) to Tell el-Farkha Phase 3 and the beginning of Phase 3 (Naqada IID2–IIIA2). Layers 42–47 (season 2018) could be dated to Tell el-Farkha Phase 4 (Naqada IIIA2–middle of Naqada IIIB).

At the lowest level (layer 56) outlines of walls were discerned. They were covered by the layer of destruction, corresponding probably to a site-wide conflagration

that ended Tell el-Farkha Phase 3. [Fig. 19]. They were very badly preserved, the bricks being made of almost pure mud. This architecture is undoubtedly connected with the first southern Egyptian occupation of the Eastern Kom at Tell el-Farkha (Ciałowicz and Dębowska-Ludwin 2013). Excavations were stopped at about 2.80 m asl by a rising groundwater table.

The mud-brick structures in layers 48–52 represent a settlement from Tell el-Farkha Phase 3 and the beginning of Phase 4. Of greatest interest is a structure composed of rectangular rooms around an open space, the latter probably a courtyard with an entrance from



Fig. 21. Eastern Kom. Ovens from Level 46 (Tell el-Farkha Project | photo M. Gamrat)

the southeast [Fig. 20]. The entry leads to a narrow corridor with three small compartments arranged in one line. These have been provisionally interpreted as a storage area for goods kept in containers made of perishable materials (bags; baskets). Two other rooms were distinguished in the western part of the structure. The buildings stood on the layer of destruction described above.

In Tell el-Farkha Phase 4, the architecture consisted of a few rectangular rooms with walls of grey mud brick [Fig. 22]. Several ovens were dug into the floors of these rooms. Some of them still contained pottery vessels. The ovens intersected the older structures from the same phase with walls of a different kind of mud brick, yellow in color and with sand as temper [Fig. 21].

The cemetery from the Protodynastic and Early Dynastic phases yielded a few new graves. The Protodynastic graves are concentrated in the southern part of the excavated area, prompting expectations of more tombs extending south on the mound; the eastern border of this burial ground seems clear (Dębowska-Ludwin 2019: 115). A thick wall found about a meter east of the easternmost Grave 154 belongs already to the village that was apparently contemporary with the cemetery.

The graves fit the general description of the group already excavated at Tell el-Farkha (Dębowska-Ludwin 2018), presenting various typical features. Grave 153 is a small mastaba, 3.10 m by 2.70 m in size and with the superstructure preserved to a height of 0.45 m [Fig. 23]. The su-



Fig. 22. Eastern Kom. Building remains from Tell el-Farkha Phase 4 (Tell el-Farkha Project | photo M. Gamrat)



Fig. 23. Eastern Kom. Grave 153 (Tell el-Farkha Project | photo M. Gamrat)



Fig. 24. Eastern Kom. Grave 154 (Tell el-Farkha Project | orthophoto M. Czarnowicz)



Fig. 25. Eastern Kom. Incised decoration on a wine jar from Grave 154 (Tell el-Farkha Project | photo J. Skłucki)

per- and substructure were separated by a typical reed-mat roof, which was found collapsed inside the burial chamber. The chamber was 1.88 m by 1.35 m in plan and 1.33 m deep, with clearly sloping walls (Dębowska-Ludwin 2019: 116). The skeleton was of a male, about 40–50 years old (Szczepanek 2019: 149), laid in contracted position, on the left side, with head to the north. The body had been placed on a mat sprinkled with red ocher. A thick layer of ocher was recorded also below the body, in particular below the head.

The burial chamber was filled with brick rubble and intentionally covered with a thick layer of mud and mats on top. Consequently, the pottery vessels forming the grave equipment were mostly destroyed. It was possible to reconstruct 25 pottery vessels (mainly cylindrical jars). Also found around the body were two

travertine vessels, one cylindrical and the other a small bowl (Bąk-Pryc 2019: 146) as well as one rectangular greywacke palette decorated with three incised lines on all sides. The grave is to be dated to the Naqada IIIB period.

Grave 154 was rectangular, rather small (1.70 m by 0.93 m, 0.54 m deep) and simple. It did not have a brick superstructure but contained the first example of a pottery coffin to be found at Tell el-Farkha [Fig. 24]. It was heavily fragmented. The bottom was pierced with nine small holes. The skeleton was in very bad condition. It was a young person (20–25 years old), probably a woman (Szczepanek 2019: 149). The equipment comprised two stone bowls, one of basalt and the other of travertine, a small rectangular greywacke palette, 127 beads of carnelian and greywacke, and four pottery vessels. The most inter-



Fig. 26. Eastern Kom. Rounded northwestern corner of monumental mastaba (No. 10) (Tell el-Farkha Project | photo M. Gamrat)

esting of these is a wine-jar with an incised representation of two birds, probably herons, and a boat [Fig. 25]. On the left, there was another sign (a whip?). This grave was also dated to the Naqada IIIB period.

Grave 152 contained a very poorly preserved skeleton burial of a youth (16–18 years old), the head pointing north. There was no grave equipment. The dating thus is based on a stratigraphic analysis, presumably Tell el-Farkha Phase 6 (late part of the First Dynasty and beginning of the Second).

Investigations in the northwestern corner of the oldest Egyptian mastaba, aimed at studying the building techniques involved in its construction, brought highly interesting results. Sections through the edifice wall showed that it was composed of three different walls built of different types of bricks. The middle wall ran

a rounded corner. The main chamber of the mastaba evidently had rounded corners at the start. The wall of this phase was lined with another wall that stood on a layer of rubble [Fig. 26]. The middle wall was built of a dark mud brick in the upper layers and a yellow sandy brick in the lower parts [Fig. 27]. The building stood on a layer of destruction covered by Nile mud, a stratigraphic sequence known from other parts of the site, e.g., the so-called Naqada residence on the Western Kom, which was burnt and then flooded by the waters of the Nile (Ciałowicz 2012b: 168; 2018: 12–13). The destruction layer was levelled under the mastaba. A few ovens were discovered in the deepest strata under the mastaba corner [Fig. 28]. They were connected with the first occupation of the Eastern Kom in Tell el-Farkha Phase 3 (Naqada IID<sub>2</sub>/IIIA<sub>1</sub>).



Fig. 27. Eastern Kom. Section through the west wall of the mastaba (Tell el-Farkha Project | photo M. Gamrat)

A big lump of bitumen discovered in the corner of Room 183, dated to Tell el-Farkha Phase 4 (Naqada IIIA<sub>1</sub>–middle of Naqada IIIB) has substantiated yet again the importance of trade exchange for the inhabitants of the settlement at a time when trade with the Levant was pick-

ing up. The Northern Canaanite vessels that appear next to Southern Levantine ones (Czarnowicz 2012b: 247–251) are a reflection of contacts reaching far beyond the region of Southern Canaan where the major Naqada trade centres were located during the Early Bronze IB. [KMC]



Fig. 28. Eastern Kom. Layer of destruction and earlier ovens under northwestern corner of mastaba (Tell el-Farkha Project | photo M. Gamrat)

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# Saqqara: research 2020



**Abstract:** Fieldwork of the Polish–Egyptian Mission to Saqqara in the 2020 season continued on the eastern bank of the Dry Moat, resulting in the discovery of a rock-cut structure directly south of Corridor 1. Fieldwork also included exploration of a rock-cut chapel adjacent to the tomb of Merefnebef, part of the Sixth Dynasty funerary complex located south of the tomb. Both areas yielded new burials belonging to the so-called Upper Necropolis, which overlies the remains of late Old Kingdom funerary structures. Conservation work constituted an important part of the 2020 fieldwork program.

**Key words:** West Saqqara, Old Kingdom, Lower Necropolis, Third Dynasty, Netjerykhet, Djoser, Dry Moat, Step Pyramid, rock-hewn tombs, Upper Necropolis, mummies

## I. ARCHAEOLOGICAL RESEARCH

Previous research at the site had focused on the earliest phases of use attested to date (Kuraszkiewicz 2019). The archaeological excavation in the present season of fieldwork was conducted in two areas between the Dry Moat and the Step Pyramid enclosure [Fig. 1]:

- a) area along the eastern bank of the Dry Moat in grid squares 2010 and 2110;
- b) area south of the tomb of Merefnebef in grid squares 2106 and 2206.

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*Dates of work:* 18 February–16 March 2020

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*Architect/draftperson:* Karolina Kocyla (freelancer)

*Photographer:* Jarosław Dąbrowski (freelancer)

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The chief *rais* of the mission, Mr. Said Kereti, extremely dedicated and helpful as usual, was accompanied by the *rais* in charge, Mr. Imad Guburi.

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**OLD KINGDOM STRATA**

**Western section**

A 20-m-long section of the eastern bank of the western channel of the Dry Moat was unearched during fieldwork in 2018 (Kuraszkiewicz 2019). An earlier assumption concerning the alignment of the feature was thus verified, namely, that it originally formed a distinctly straight line (conforming in its alignment to the Step Pyramid complex, that is,  $4^{\circ}2'55''$  east of true north, see Lauer 1936: 68), with a markedly angular upper edge [see Fig. 1]. Another assumption that was verified was that, unlike the southern channel (Swelim 1988; 2006), it was inclined at an angle of approximately  $30^{\circ}$  rather than being vertical.

While the uppermost rock stratum in the area directly east of the Dry Moat is relatively hard and compact, although criss-crossed by intersecting clefs and fractures (Welc 2011), the underlying layer is much softer making it much more prone to erosion. These factors contributed to the collapse of two large rock fragments from the edge of the Moat. This is likely to have occurred before the Upper Necropolis was established in this area, as numerous intact burials have been found in the sand layer that accumulated over these two rocks. Their removal was essential in order to proceed with the exploration of rock-cut structures that were anticipated in the side of the Dry Moat (Kuraszkiewicz 2019). In 2020, the smaller, southern block (estimated weight 25 tons; the other block was estimated at 40 tons)

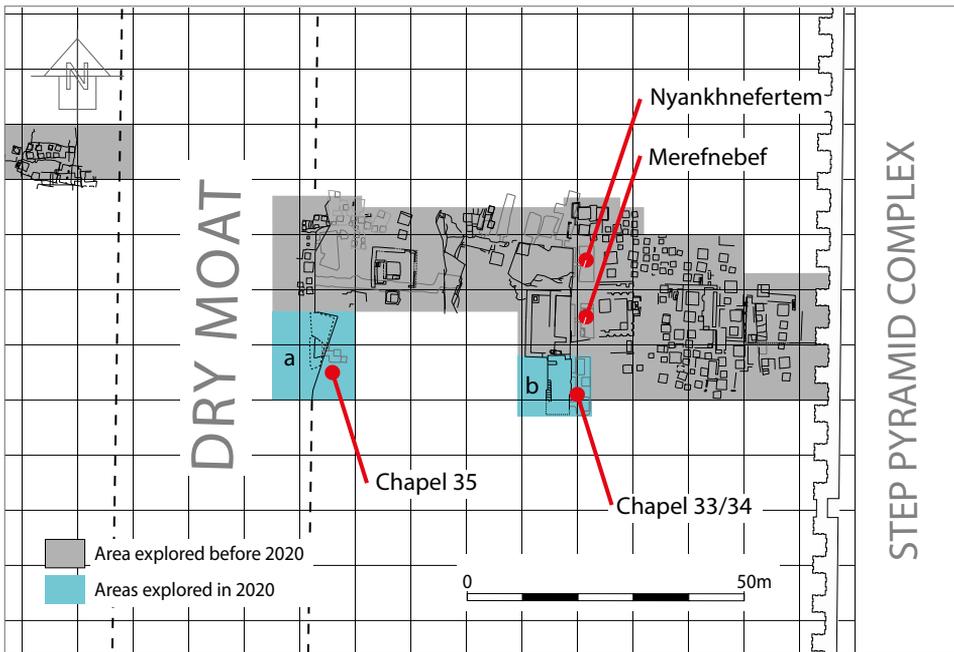


Fig. 1. General plan showing areas excavated in 2020 (University of Warsaw West Saqqara Project | drawing K.O. Kuraszkiewicz)



Fig. 2. Eastern bank of the western channel of the Dry Moat, looking south (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

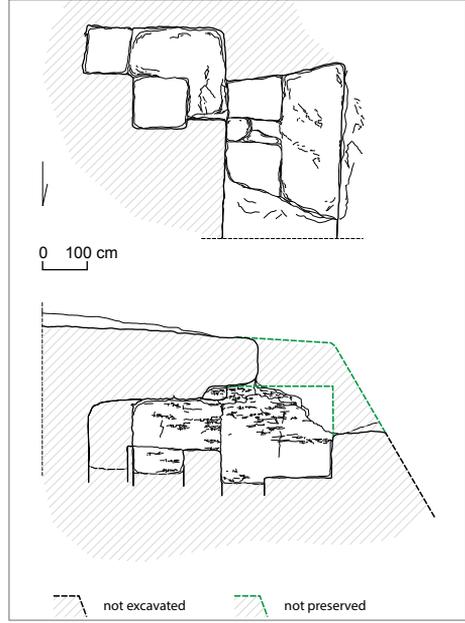


Fig. 3. Chapel 35 in the east bank of the Dry Moat: plan and east–west cross-section, with a reconstruction of the collapsed part (University of Warsaw West Saqqara Project | drawing K. Kocyla, modified K. Kuraskiewicz)



Fig. 4. Chapel 35: view from the southwest (University of Warsaw West Saqqara Project | photo J. Dąbrowski)



Fig. 5. Chapel 35: western part viewed from the northeast (University of Warsaw West Saqqara Project | photo J. Dąbrowski)



Fig. 6. Chapel 35: eastern part viewed from the northwest (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

was completely removed, while the northern block was significantly reduced in size (the work will continue in an upcoming season of fieldwork).

In the narrow space behind the southern block, an assemblage of animal bones was uncovered, including at least two heads of catfish (see below). The southern part of a rock-cut structure (Chapel 35) was revealed once the block was removed. The structure consisted of an irregularly shaped rectangular depression (originally a chamber, about 2 m high, measuring 2.70 m E-W and at least 3.60 m N-S) and a small room (approximately 2.00 m by 2.00 m, 1.20 m high) in its southeastern corner [Figs 3–5]. The room was evidently hewn in the soft rock, taking advantage of a harder layer for the roof, which was a common practice among the late Old Kingdom tomb builders at this cemetery (Kuraszkiewicz 2013a: 269–270). Considering the position of a major crack running NNW–SSW close to its eastern edge, the whole weight of the roof was propped up on a relatively thin (less than 1 m wide in its upper part) wall of soft stone. The disintegration of this support eventually led to the collapse of the two large rock fragments.

The structure should be identified as a funerary chapel; there are traces of whitewash on the walls and two rudimentary false doors, devoid of inscriptions, in the west wall, opposite the entrance

to the small room [see Fig. 5]. Outlines of two rock-cut shafts (1.00 m by 1.00 m at the mouth) could be traced in the floor, in the excavated part of the western room, and two shafts of a similar size are hewn in the floor of the smaller eastern room [Fig. 6]. The shafts will be explored in the next season, after the whole structure is fully excavated and documented.



Fig. 7. Chapel 33/34: courtyard viewed from the north (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

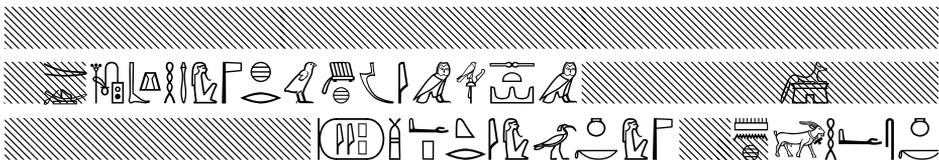


Fig. 8A. Inscription on the façade of Chapel 33/34, northern part (southern part shown continuously in Fig. 8B) (University of Warsaw West Saqqara Project | set by K. Kuraszkiewicz using JSesh software)

**Eastern section**

Exploration continued in a funerary complex situated south of that of Merefnebef. In 2018, a rectangular sunken courtyard (measuring at least 10 m N–S, its southern limit lying outside the excavated area, and approximately 4 m E–W) was partly cleared of sand. Similarly to the inner court of the tomb of Merefnebef (Kuraszkiewicz 2004: 61–63), the courtyard was hewn in bedrock in its lower part, and built of recycled mud brick and rough stones in the part rising above the bedrock surface. The floor is irregular with at least five different levels [Fig. 7].

Access from the upper level was by means of a narrow stairway in the south-western corner of the courtyard. The steps were built of irregular stones and plastered with *tafl* mortar. Two entrances in the rock shelf forming the eastern side of the courtyard lead to a single rock-cut room (Chapel 33/34). Remains of three lines of inscription are visible above the northern one of the entrances, running approximately from the door axis in both directions [Fig. 8A–B].

The northern part of the lintel reads:

1. [...] 2. [*hṯp ḏj(w) njswt hṯp ḏj(w)*] *Jnpw [...qrs.tj=f ...] m zmjt jmntt m jm3ḥw hr ntr 3 hrj h3bt zh3 [gs-dpt ...]*
3. *jnk zḥ mn[h ... ḥzjjw] ntr jnk 3ḥ jqr ʿpr Ppji [...]*

1. [...] 2. [An offering that the king gives and an offering that] Anubis [gives ... that he may be buried...] in the western desert as an honoured one by the great god, lector-priest, scribe [of (magic) protection (Fischer 1992: 59–63; Jones 2000: 877 [3212]) ...]
3. I am a potent dignitary [... favoured of the] god. I am an excellent and prepared akh, Pepy[-...]

The royal name, clear traces of which are visible in the third line, seems to be part of the owner’s name or a title associated with the royal funerary complex (of Pepy I or II) rather than a part of the preceding phrase (see Kloth 2002: 116–118). Even if its exact function in the text cannot be established, it sets the reign of Pepy I as *terminus ante quem non* for the inscription.

The southern part of the lintel reads:

1. [*hṯp ḏj(w) njswt hṯp ḏj(w)*] *Jnpw [...] jmj-wt nb t3-dsr qrs.tj=f nfr m jz pn hrjt-ntr smr wʿtj [...]*
  2. [*hṯp ḏj(w) njswt*] *ḏj(w) Wsjr nb ḏdw ḥntj jmntjw m 3bdw Wsjr ḥp=f hr w3wt nfrt [...]*
  3. *prj hrw n=f jm=f j3jw nfr wrt m wpt-rnpt ḏḥwtjt tpj-rnpt w3g m ḥ3b Zkr [...]*
1. [An offering that the king gives and an offering that] Anubis gives, who is in the embalming place,



Fig. 8B. Inscription on the façade of Chapel 33/34, southern part (northern part in Fig. 8A) (University of Warsaw West Saqqara Project | set by K. Kuraszkiewicz using JSesh software)

- lord of the sacred land, (namely) that he may be perfectly buried in this tomb (in) the necropolis (Lapp 1986: 46–47), sole companion [...]
2. An offering that the king gives and an offering that] Osiris gives, lord of Busiris, foremost of the Westerners in Abydos, Osiris, that he may travel upon perfect ways [...]
  3. May an invocation offering may be made for him in it (i.e., the tomb, Lapp 1986: 102) after he grows old perfectly, in the Opening of the Year festival, the festival of Thoth, the first day of the year festival, the Wag festival, the festival of Sokar [...]

Upon discovery, the chapel was almost completely filled with sand that had accumulated naturally, confirming that the chamber must have remained open for a prolonged period of time [Fig. 9]. The uppermost layer of the fill consisted of small fragments of rock detached from the

chapel ceiling. In the southeastern corner of the room, there was a small depression in the surface of the fill. Numerous animal bones were found within the depression and in its immediate surroundings. Animal feces found next to the depression suggest an animal den, possibly of a dog, jackal or fox [Fig. 10]. The faunal assemblage recovered from this area will be examined in the next campaign, but its contents is strikingly similar to that found in Corridor 1 (Ikram 2001: 128–132; Ikram 2004), both including the frontal parts of at least four catfish beside the mammal bones. As said above, a similar, but smaller assemblage was found behind one of the collapsed rocks in the Dry Moat. Such a considerable number of catfish remains found in the funerary structures is puzzling, considering their natural environment is nowhere near the cemetery and catfish was not traditionally part of funerary offerings. Therefore,



Fig. 9. Chapel 33/34: fill of the chamber looking north (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

there must have been a source of catfish leftovers somewhere nearby, accessible to animal scavengers. The refuse dumps of the nearby monastery of Apa Jeremias is a likely candidate (Clackson 2002; Brooks Hedstrom 2017: 192–193; Mossakowska-Gaubert and Wipszycka 2019: 162).<sup>1</sup> If the monastery was indeed the source of animal remains, it would mean that the presently excavated area was deserted at this time and that the upper part of the façade of Chapel 33/34 was still visible at some point between the late 5th and early 9th century when the monastic community was active (Quibell 1912: I–II).

The chapel itself is a large, rectangular room measuring 10.61 m (N–S) by 2.58 m (E–W), and 1.74 m high [Fig. 11]. Interestingly, there is a striking difference in the

quality of execution between the northern and southern sides of the room; while the northern and middle parts have regular, levelled walls and floor, with straight edges and right angles [see Fig. 9], the southern part (starting approximately a meter north of the southern entrance) is distinctly irregular [see Fig. 10].

False doors are hewn directly in the rock on both sides of the northern entrance in the west wall of the chapel. They are of similar size and layout (both being composed of two pairs of jambs flanking a wide niche, framed with a torus molding and crowned with a cornice) and both represent relatively good craftsmanship. The poor state of preservation is due to mediocre rock quality and severe erosion. The southern false



Fig. 10. Chapel 33/34: assemblage of animal bones on top of the fill in the southeastern corner of the chapel (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

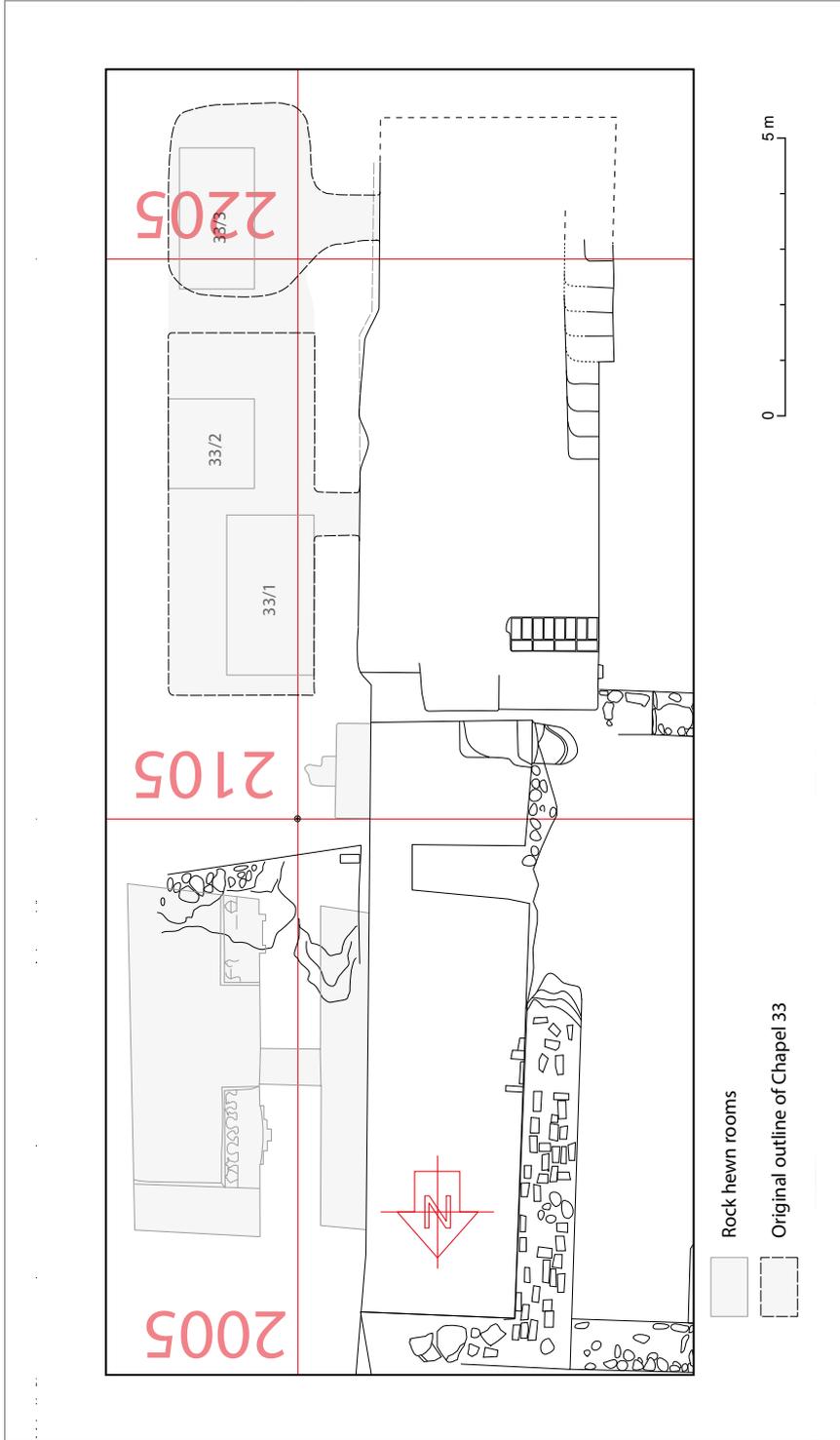


Fig. 11. Funerary complexes of Merefnebef (left) and Ptahhotep Ipi (right) with the proposed reconstruction of the original layout of the latter (University of Warsaw West Saqqara Project | drawing K. Kuraszkiwicz)

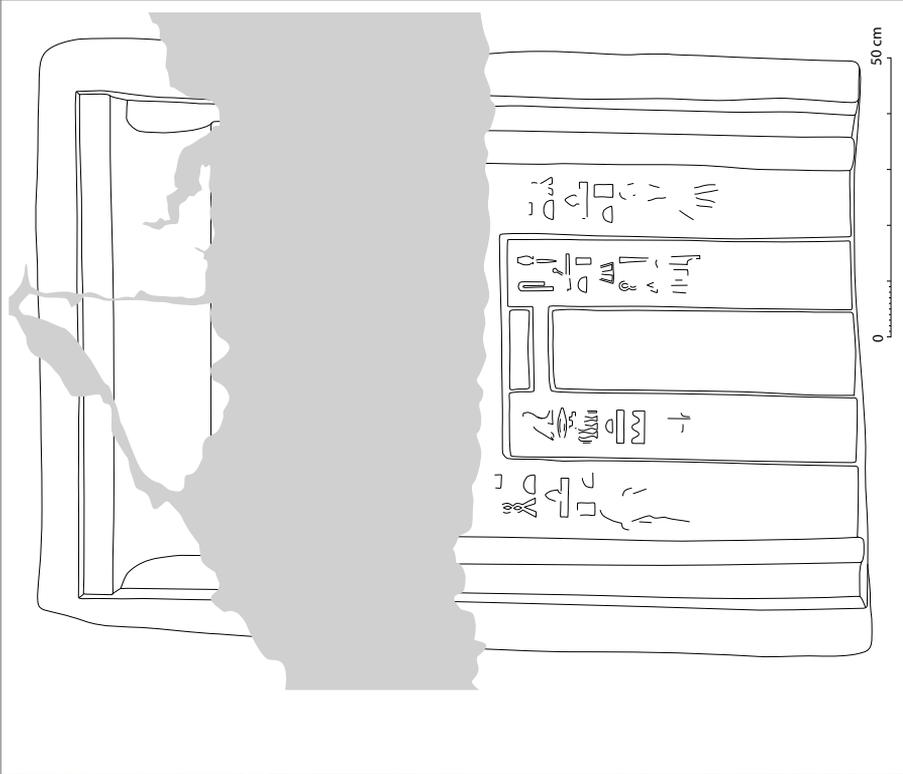


Fig. 12. False door of Ptahhotep Ipi (University of Warsaw West Saqqara Project | drawing K. Kuraszkiwicz; photo J. Dąbrowski)

door shows no traces of any decoration, while the northern one was inscribed with the names and titles of the owner [Fig. 12]. Each outer jamb bears a single column of text above a standing male figure depicted in a larger scale, facing the false-door axis: [...] *Pth-ḥtpw*, Ptah-hotep (Scheele-Schweitzer 2014: [233] 228–230). Although the preserved part might suggest an identical decoration on both outer jambs, the length of the lacunae in their upper parts indicates that the inscription on the right jamb was approximately one square longer than that on its left counterpart.

The full height of the inner jambs has been preserved; surface erosion has affected some of the signs, but the surviving traces enable a full reconstruction of the inscriptions:

1. Left inner jamb

*jmj-r3 ḥntj(w)-š Jpj* – Overseer of *khentyw-she* (Jones 2000: [709] 189) Ipi (Scheele-Schweitzer 2014: [2566] 228–230).

2. Right inner jamb:

*smr w'tj ḥrj-ḥ3bt Jpj* – Sole companion (Jones 2000: [3268] 892), lector-priest (Jones 2000: [2848] 781) Ipi.

The names and titles found on the false door were both quite popular in the Old Kingdom, and are attested in connection with numerous individuals, precluding a closer identification of the owner.

Three shafts are hewn in the chapel floor; upon exploration the middle (33/2) and southern (33/3) shafts turned out to be unfinished and empty. The premature termination of the campaign due to the Covid-19 pandemic prevented the exploration of the northern shaft (33/1).

While there are no direct dating criteria, the chronology of the tomb is suggested by several elements. The overall impression is of a project abandoned in the course of the work: the uneven surface of the courtyard and the irregular shape of the chapel are both telling in this respect. Taking into consideration the available evidence, it may be assumed that the chapel in its present form is an unfinished project to enlarge an existing tomb. The architectural features that can be seen attest to at least three stages of construction:

- A. The northern part of the present structure [Fig. 11; see also Fig. 9] was the original Chapel 33, with the entrance in the middle of the west wall; in size and layout, it resembled the chapels of Merefnebef and Nyankhnefertem (Kuraszkiewicz 2004: 60–61; Myśliwiec and Kuraszkiewicz 2010: 85–87). The chapel was cut in the rock, the walls roughly smoothed and made ready to receive the decoration.
- B. Work commenced in the smaller Chapel 34, but was abandoned before any regular form was achieved. The combination of a large main chapel and a smaller one added on the south finds a parallel in the funerary complex of Merefnebef (Kuraszkiewicz 2004: 60–61).
- C. The two chapels were connected, but the larger chamber thus created was never finished.

Considering the location of Chapel 33 in the cemetery, as well as the similarity of its design to that of the complex of Merefnebef, one should see it as roughly contemporary or even slightly earlier

than the later tomb which is dated to Phase Fa of the Sixth Dynasty cemetery (Kuraszkiewicz 2013a: 273–276). However, the name of Pepy attested in the inscription on the façade excludes the attribution. During the early years of Pepy I (Phase Fb), the importance of the cemetery decreased significantly, and the scale of Chapel 33 is inconsistent with the size and quality of the few small tombs that were built here during that period. Large tombs started to be built here again in the late part of the reign of Pepy I (Phase Fc). However, they have a markedly different orientation (Kuraszkiewicz 2013b). Thus, it seems that from an architectural point of view, Chapel 33 belongs to Phase Fa, while the inscription on its façade can be dated to Phase Fc or later.

It is not certain whether the inscription on the façade is to be attributed to the owner of the false door inside the chapel; that is, whether the modifications were made for the same owner or the tomb had changed hands. No name can be confidently identified on the façade, and the only titles that occur in both places (*smr w<sup>c</sup>tj* and *hrj-h3bt*) were too common in the late Old Kingdom to have any diagnostic value. However, it might be expected that the other functional titles on the façade, that is, *zh3 gs-dpt*, possibly of a member of the staff of a royal funerary complex, and the title *hntj-š* (although without attribution to any particular establishment) on the false door, were mentioned in both places. It should also be considered that the royal name on the façade was part of the owner's name. If so, the basilophorous name would be the third one

(beside Ptahhotep and Ipi) to be identified as belonging to the tomb owner. While three names for a single individual are attested, such cases were relatively rare (Junker 1928: 59–61; Scheele Schweitzer 2014: 20 and Note 7). Considering the above, it seems that the façade and the false door were inscribed for two different individuals, but none of them was the original owner of Chapel 33. Thus, it seems that the funerary complex including Chapel 33/34 had at least three subsequent owners:

1. An anonymous courtier, a contemporary of Merefnebef.
2. An official (perhaps named Pepy-[...]) bearing the title of *zh3 gs-dpt*, who lived not earlier than in the time of Pepy I. The title (scribe of (magic) protection) is of particular interest, because it assigns its bearer to relatively high-ranking, specialised staff, such as, for example, Ikhi Mery (Kuraszkiewicz, forthcoming). A connection to the latter, who participated in expedition(s) commissioned by Pepy I (Kuraszkiewicz 2014) should not be excluded, as magical protection must have played an important role during such dangerous undertakings (Fischer 1992: 59–63; Eichler 1993: 255–257).
3. Ptahhotep Ipi, whose apparently modest position in the administrative hierarchy seems to correspond to that of persons who buried here in the last phases (Fe–Fg) of cemetery use (Kuraszkiewicz 2013a: 276–284).

The exploration of Shaft 33/1, planned for the next excavation campaign, may shed further light on the identity of the ultimate tomb owner.

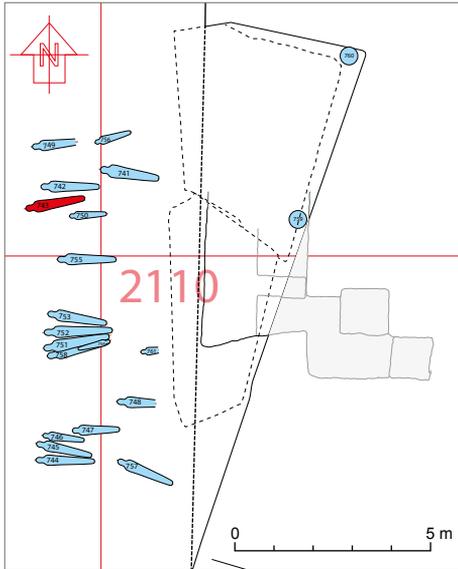


Fig. 13. Burials of the Upper Necropolis in the section of the Dry Moat explored in 2020 (University of Warsaw West Saqqara Project | drawing K. Kuraszkiewicz)

**POST-OLD KINGDOM STRATA – UPPER NECROPOLIS**

Both areas under investigation yielded further burials from the Late and Ptolemaic Periods, thus extending the recorded extent of the so-called Upper Necropolis. In total, 23 burials were excavated [Fig. 13], documented and examined (see below, section on human remains).

The east–west orientation of these burials, with the head toward the west, conforms to the predominant pattern of the later phase of the cemetery (Radowska et al. 2008: Figs 1–13). Most of the burials were deposited directly in the sand, without coffins or any funerary goods [Fig. 14]. Only one burial (No. 743) contained remains of the outer decoration consisting of a mask [Fig. 15], openwork collar, panel with a winged goddess



Fig. 14. Burials 751–754 of the Upper Necropolis (University of Warsaw West Saqqara Project | photo J. Dąbrowski)



Fig. 15. Head end of Burial 743 with remains of a gilded mask (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

and a rectangular shin panel. Imitating a cartonnage, the decorative elements did not have any underlying fabric layer, but were modelled instead in a very thin layer of plaster, applied directly onto the bandages, partly painted and partly covered with golden foil.

The location of the burials within the Dry Moat indicates that the feature was extensively used as a burial ground in the last centuries before the common era, without any concentration(s) that would suggest a preference for a specific area or structure. [KOK]

## II. HUMAN REMAINS

The 2020 excavation campaign yielded a further 23 human burials at the so-called Upper Necropolis of predominantly Ptolemaic date, bringing the total of unearthed inhumations at the site to 761 (the Upper and Lower Necropoleis combined).

Based on the initial *in situ* examination of the burials it was determined that all inhumations took place directly in the sand with the bodies laid in extended and supine (face-up) position, with their arms

either (a) extended and hands placed flat below the pelvis or on the thighs, or (b) crossed on the chest, with one exception. Burial 749 was found to demonstrate an unusual arrangement where the arms of the deceased (adult male) were fully flexed and the hands placed on the respective shoulders [Fig. 16]. All inhumations were found skeletonised and generally demonstrated a very good—often exceptional—state of preservation and



Fig. 16. Burial 749 of an adult male with an unusual arrangement of the arms (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

completeness, which greatly aided the reconstruction of a biological profile of the individuals. The few exceptions included Burials 740 and 759, which were severely disturbed and found to contain only loose and fragmentarily preserved human remains; as well as four, most likely truncated burials with only partly preserved skeletons (Burial 761 missing the legs; Burial 748 and Burial 749 missing the lower legs; Burial 739 missing the feet).

Fragments of linen—often just traces or imprints—found on the skeletal remains indicated that the bodies were wrapped prior to their inhumation. The quantity and quality of the linen used was often impossible to determine due to its poor state of preservation and fragility; however, in the case of Burial 744, it was possible to observe multiple layers of wrappings and differentiate between the coarse and fine weave fabric [Fig. 17]. The use of resin was evident in several burials,

mostly as a coating and adhesive agent on the wrappings (e.g., Burial 758) but in some cases also directly on the body. Burial 743 presented a case where molten resin was used quite liberally inside the body cavities as well as externally; although the intention was to preserve the body, the excessive application of resin made the remains brittle and prone to breakage.

Perforation of the ethmoid bone with occasional presence of resin residue inside the cranium (e.g., Burial 744) were indicative of brain removal as part of the post-mortem body treatment. Evisceration, or removal of the internal organs, was confidently ascertained in the mummified body in Burial 743; the empty chest and abdominal cavities were found heavily coated in resin and filled with resin-soaked scraps of linen. Similar treatment with the internal use of resin was also observed in Burial 753, which delivered another interesting finding.



Fig. 17. Burial 744: fragmentarily preserved mummy wrappings; note coarser and finer weave (University of Warsaw West Saqqara Project | photo I. Kozieradzka-Ogunmakin)



Fig. 18. Burial 758 with a palm leaf rib inserted into the spinal cavity of the upper thoracic vertebrae (University of Warsaw West Saqqara Project | photo I. Kozieradzka-Ogunmakin)



Fig. 19. Burial 745 (center) of a young adult male with non-anatomical skeletal order (University of Warsaw West Saqqara Project | photo I. Kozieradzka-Ogunmakin)

The skull of a young (15–17 years old) female in Burial 753 revealed a linen bundle placed inside her mouth cavity, as well as a fragment of a palm leaf rib wrapped in resin-soaked linen that was recovered from the cranial cavity. The latter was most likely part of a longer palm leaf rib that extended down to the neck and fragments of which were found inside the spinal canal of the cervical vertebrae of the skeleton; it was most likely used to reattach the previously disarticulated head to the body. The question as to why the head would have become disarticulated in the first place remains speculative; it could have been (a) accidental during the preparation of the body for burial and following a lengthy period of desiccation, which would have made the body more prone to damage; (b) intentional, to gain access to the cranial cavity via the foramen magnum at the base of the skull to remove the brain (an alternative method of excerebration to the one performed via the ethmoid bone); and (c) the result of natural decomposition. Burial 753 contained only skeletonised remains

of the deceased; it is, therefore, impossible to determine whether the separation of the head from the body occurred due to soft tissue decomposition (no evidence of larvae or insects found) or intentional human intervention (no evidence of cut marks on the cranial base or the vertebrae). Extensive post-depositional damage to the craniofacial aspect of the skull precluded examination of the ethmoid bone to verify the method of excerebration. The insertion of palm leaf ribs could be understood as part of the process of reinstating the body's physical integrity by providing stability for the remains during the wrapping process in preparation for burial. Similar findings were also recorded in Burial 758 (a palm leaf rib was inserted into the cranium and spinal cavity down to the level of the lower thoracic vertebrae) [Fig. 18] and Burial 760, as well as several other burials (e.g., Burials 415 and 563) previously excavated at the site (e.g., Kaczmarek 2008: 468). Future in-depth examination of all such cases recorded at the cemetery may yet provide more clues as to the nature of this practice.

Table 1. Age estimations for subadults based on dental development and diaphyseal length of the long bones (Processing I. Koziaradzka-Ogunmakin)

Burial ID	Dental age estimation	Diaphyseal length age estimation	Health Stressors
746	4–4.5 years	2.5–3 y	<i>cribra orbitalia</i> ; sinusitis; trauma
750	4–4.5 years	2.5 y	-
754	4–4.5 years	2–2.5 y	sinusitis; non-specific infection; malaria? (skeletal evidence)
757	-	4.5–5 y	-
759	-	4.5–5 y	-
761	5–6 years	3–3.5 y	<i>cribra orbitalia</i> ; sinusitis; non-specific infection

The inhumations were predominantly singular, although their stratigraphic density and spatial proximity would often give the impression that they were part of a larger contemporaneous group of burials. However, two such groups were indeed identified: Burials 744–746 and Burials 751–754. Burial 745 was found to contain skeletal remains of a young adult male. The bones were found in a non-anatomical order, but superficially arranged to resemble a human body in an extended position [Fig. 19]. It is possible that the inhumation was naturally or accidentally exposed and the skeleton disturbed, and the remains were later collected and reburied. The two other burials in this group contained intact inhumations of an adult female (Burial 744) and a young child (Burial 746). Similarly to Burial 745, a nearby Burial 747 was also found to contain skeletal remains in non-anatomical order. These and other remaining inhumations of adult individuals will be examined in detail during the next excavation campaign.

Adult individuals (18 years or over at the time of death) constituted the majority ( $n=15$ ;  $\%=65.2$ ) of the 23 burials excavated in 2020. A total of six inhumations ( $\%=26.1$ ) contained the remains of children aged between 4 and 6 years at the time of death, and a further two individuals ( $\%=8.7$ ) were aged between 12 and 17 years at the time of death. The osteological examination focused primarily on the remains of subadult individuals (18 years or over at the time of death) and included age estimation and skeletal health assessment. Sex estimation was not attempted in individuals younger than 15 years of age due to the lack of

currently accepted methods. In individuals approaching physical maturity (15–19 years), typically female characteristics of the bony pelvis could be confidently assessed as ‘female’; however, ‘male’ features of the adolescent bony pelvis should be considered inconclusive, because at this period of skeletal development the female features might not be present. The skull may retain a more feminine and gracile appearance during adolescence; therefore, only the skull presenting masculine characteristics could be confidently assessed as ‘male’ (Buikstra and Ubelaker 1994). Methods used in subadult age estimation included dental development and eruption (Al Qahtani 2009) and skeletal developmental timing and maturation stages (Schaefer, Black, and Scheuer 2008).

Out of a total of eight subadult individuals recovered in 2020, six were children aged between 4 and 6 years at the time of death. Due to skeletal incompleteness of Burials 757 and 759, age estimation was only possible using the diaphyseal lengths of the long bones present; in the remaining four burials (746, 750, 754 and 761) the preservation and completeness of the remains allowed for both dental (Al Qahtani 2009) and skeletal age estimation methods (Schaefer, Black, and Scheuer 2008) to be applied. The latter included assessment of skeletal development and maturation stages (e.g., epiphyseal fusion) in conjunction with the metric age estimation from the long bone lengths. All four cases demonstrated discrepancy in their age estimations, showing on average 1.5–2 years difference between their dental and skeletal ages [Table 1]. A similar observation was made in other subadult skeletons previously

excavated at Saqqara and other ancient Egyptian sites (e.g., Jerome Rose, personal communication; Rose 2006). In the Saqqara subadult individuals, dental age estimations corresponded to stages of skeletal maturation (e.g., union times).

Age-at-death estimation in subadults is considered more accurate when based on dental development and eruption versus skeletal indicators, because the former is less affected by potential environmental and health stressors, which can cause delayed growth in long bones, resulting in an age estimate that is younger than the individual's biological age (e.g., Ubelaker 2005; Cardoso 2007).

Three out of four subadults at Saqqara, whose age at death was estimated using both dental development and diaphyseal lengths of long bones, showed evidence of physiological stress likely caused by nutritional deficiency, infection, and/or environmental conditions [see *Table 1*].

One of the individuals (Burial 750), however, showed no such evidence yet still demonstrated a similar discrepancy in age estimations. It is, therefore, evident that biological age estimation based on diaphyseal length of long bones alone is likely to result in underestimation of age in ancient Egyptian subadults (particularly children <12 years of age at the time of death). This could be the case for the individuals from Burials 757 and 759 at Saqqara, whose biological age is likely to be slightly higher than estimated based on the diaphyseal length of the long bones.

The issue of chronological age estimation discrepancy observed in the ancient Egyptian subadult population warrants further investigation. Currently available age estimation methods need to be broadly tested on the ancient Egyptian population to determine their suitability, and new population-specific methods developed. [IKO]

### III. CONSERVATION WORK

The first task at the beginning of the campaign was to evaluate the state of preservation of the funerary chapels, focusing on the carved and painted wall decorations. The initial inspection, on February 18, revealed surface damage caused by salt efflorescence; the affected areas were subsequently treated to remove the salts and repair the damage.

#### FUNERARY CHAPEL OF MEREFNEBEF

Abundant salt efflorescence, resembling a soft fluff, found on the surfaces of the lintel, lateral walls of the façade and on the

walls of the unfinished southern room, were removed using soft brushes. Below the architrave, similar salt efflorescence occurred on areas without polychrome decorations. Also noticeable were the effects of salt concentration—in the form of small cracked bulges—that formed under the paint surface that was consolidated as a result of the longstanding conservation treatment.

Inside the chapel itself, the salt concentrations were sparse; for example, occurring on the false door in the northern part of the west wall. Noticeable were



Fig. 20. Conservation of cartonnage panels during exploration of the burial (University of Warsaw West Saqqara Project | photo J. Dąbrowski)



Fig. 21. Conservation of the wooden coffin of Burial 732 (University of Warsaw West Saqqara Project | photo J. Dąbrowski)

detachments of the paint together with a thin layer of rock, caused by under-surface salt crystallization (visible on the northern part of the east wall). This type of salt concentration does not cause damage to the decoration itself (such as detachments and cracks), but it is not always possible to correct the deformation caused to its surface.

Numerous, but not extensive detachments of the paint layer (on the façade, in the entrance and inside the chapel) were mounted using Primal E330 (water dispersion, about 7%) applied with syringes or small brushes. Prior to that, the affected areas were softened with a 1:1 mixture of ethyl alcohol with water, to lessen the surface tension and to facilitate the penetration of the binding solution. Following the removal (where possible) of salt efflorescence, partly detached fragments were mounted with a putty based on Primal AC33 (water dispersion 7–8%) with fillers: Remmers Fungosil KSE Füllstoff A and B; desalted, sifted fine sand and pigments (to obtain a color consistent with the local rock). This way, partly detached fragments of different sizes, as well as cracks and suspended edges of paint layer, were secured (without filling the empty spaces), to prevent their complete detachment from the rock surface.

#### **FUNERARY CHAPEL OF NYANKHNEFERTEM**

The conservation procedures applied herein were similar to those described above. The salt concentrations, however, were slightly different in nature. On the lintel, hard salt efflorescence was found, which had to be removed using a hard

brush. Inside the chapel, similar efflorescence formations were found on the southern part of the west wall and on the western part of the south wall. On the east wall, a new type of salt efflorescence was observed: small groups of hard, ramose structures resembling sea anemones. These were found in a single layer, approximately 150 cm above the floor level. Ferruginous veins that are visible in that wall were also covered with salt concentrations. It was possible to remove most of the salt concentrations using hard brushes, except for those on the east wall, where a scalpel had to be used. Numerous detachments and cracks of the pink, coarse-grained putty (that was originally used to fill cavities in the rock surface) and of the thin cream-coloured coating (whitewash?) on the southern part of the west wall and on the south wall at the southwestern corner were treated with Primal E330 (as in the chapel of Merefnebef), while larger cracks and detachments were filled with a putty based on Primal AC33 (as described above). In a similar way, a crack (resulting from a detachment of the rock layer) was filled on the northern side of the entrance.

It was not possible to complete the work in the funerary chapel of Nyankhnefertem; recent long-lasting intensive rainfall resulted in the flooding of the chapel, which left a layer of mud, up to 10 cm in thickness. Although the mud was removed, the rainwater had soaked into the bedrock which forms the chapel floor, the bottom parts of the walls and the offering table. In the tomb of Merefnebef, rainwater had not penetrated into the chapel. A large natural fissure running

diagonally through the courtyard prevented it from reaching the façade, and only its northern extremity was affected to some degree.

Due to unexpected, external circumstances (Covid 19 pandemia), fieldwork ended much earlier than planned. The massive rainwater influx and the fact that the chapels could not be dehumidified thoroughly before their closing is likely to have a significant impact on the condition of the monuments. The impact will be evaluated during the next campaign.

#### **THE FUNERARY CHAPEL OF IKHI-MERY**

The enormous pressure exerted by the rock above the chapel caused delamination and numerous cracks in the limestone blocks of the façade. The detached fragments of whitewash, plaster and paint were mounted using Primal E330 (as described above). Some detached fragments of stone were fixed using a solution of Mowilith 50 in acetone with chalk filler. This work, however, could not be completed due to the unexpected shortening of the season. In front of the façade, an additional construction was installed to support the rock ceiling. The construction should inhibit the rock from settling and thus prevent further damage. An additional, unexpected threat was posed by the huge amount of rainwater that soaked into the rock ceiling as a result of the unprecedented rainfall that occurred in mid-March 2020.

#### **BURIAL 743: CARTONNAGE DECORATION**

The decoration of the mummy consisted of a very thin (1–2 mm) layer of plaster, applied directly onto the bandages

(which were completely decayed upon discovery), partly painted and partly modelled and covered with golden foil. A severe deterioration of all technological layers of the decoration necessitated protective measures to be taken immediately [Fig. 20]. As the exploration progressed, the cartonnage was structurally reinforced by soaking it with a mixture (<5%) of Paraloid B82 in ethyl alcohol with a small addition of water (about 10%). This way, the layers of decoration were consolidated, and its form was preserved, including all the existing deformations (above all in the area of the mask and headdress). Following that, the decorative elements were coated with a solution of Paraloid B72 in acetone (<10%) and protected with Japanese paper glued with vinyl polyalcohol. Finally, the decoration was removed from the mummy. It will be placed on a new backing and the protective paper removed during the next campaign.

#### **BURIAL 732: PAINTED WOODEN COFFIN**

Conservation work on the coffin excavated in 2018 continued during the 2020 fieldwork season. The surface of the coffin was cleaned of dust and sand, and the technological layers were reinforced with a solution of Paraloid B82 in ethyl alcohol (up to 5%). Delamination and numerous detached fragments of whitewash were fixed with Primal AC33 (water dispersion, about 10%). A provisional protective layer of Japanese paper, applied in 2018 on the lid and sides of the coffin, was removed using hot water. The foot box was dismantled and the individual elements were cleaned using brushes, scalpels and

blowers, and additionally impregnated with the solution described above. The protective Japanese paper was removed from the side elements, but left on the plank decorated with two painted jackals. Having secured the sides of the coffin, the top elements of the lid were then removed. The lid, which consisted of relatively thin wooden planks

(compared to those used for side walls) attached with wooden pegs, survived in two severely cracked and deformed fragments. A significant amount of sand that accumulated inside the coffin was removed [Fig. 21]. The scope and schedule of further work on the object can be determined only after the mummy is removed from the coffin. ZG]

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# Tell el-Retaba (West)

## Season 2019



**Abstract:** Excavations in 2019 in Area 4 at the western edge of the site of Tell el-Retaba confirmed that the settlement activity, albeit different in nature, continued here from the Second Intermediate Period well into the Twentieth Dynasty of the late New Kingdom. This part of the site, which was a settlement in the beginning of the Second Intermediate Period (Phase G in the site chronology), was turned into a cemetery after it had been deserted, and used throughout phases G2 and G1 and into Phase F5, that is, into the early Eighteenth Dynasty. Despite this long period of use, only two cases of supraposition of tombs were recorded, both of them in 2019. In the Eighteenth Dynasty (Phases F4–F2), the excavated area was again a settlement of mud-brick houses. A rich assemblage of small finds and a battery of ovens bear testimony to a lively industrial activity or craftsmanship of its inhabitants and their long-distance contacts. The discovery of a walkway, dated to Phase D4, is an intriguing detail of Twentieth-Dynasty military architecture. Isolated finds from the Third Intermediate Period (Phase C) demonstrate the spread of the settlement, known from previous excavations, further east on the tell.

**Keywords:** Retaba, Second/Third Intermediate Period, New Kingdom, settlement, fortress, moat, cemetery

The Tell el-Retaba archaeological site, approximately 35 km west of Ismailiya, has been investigated by the Polish–Slovak Archaeological Mission since 2007. Having skipped a season in 2018, the team resumed excavation in the northwestern part of the tell. Fieldwork was concentrated in Area 4, located north of the Migdol,

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which was the western entrance gate to the fortress of Ramesses III. Continuation of research from 2017 in Squares X195-215/Y60-85 covered the following areas [Fig. 1].

The excavated area was limited by private modern houses and service areas in the north and west, remains of the northern tower of the Migdol in the south and a modern asphalt road running across the

tell in the east. The area itself is cut by a deep moat from the Nineteenth Dynasty fortress, reaching down to natural ground and separating the archaeological layers east and west of it.

The findings of the 2019 season are presented here in a diachronic sequence, from the earliest to the most recent (for the phasing, see *Table 1*).

## 1. SECOND INTERMEDIATE PERIOD (PHASE G)

The exploration of the Second Intermediate Period layers continued in 2019 in squares adjacent to those opened in 2017, under the Ramesside platform and in the deep moat (Hudec, Jarmužek et

al. 2018: 96–100). The settlement and successive cemetery, identified already in previous excavations, were further investigated. [see *Fig. 1*].

Table 1. Phasing of Area 4 (established after fieldwork in 2019)

Phase	Dating	Main features
G3	Second Intermediate Period (SIP)	Early open settlement and infant graves
G2	Second Intermediate Period	Cemetery
G1	Second Intermediate Period	Continuation of the cemetery
F5	Early Eighteenth Dynasty	Continued funerary activity in the cemetery in Area 4, but different burial practices
F4b	Early Eighteenth Dynasty	Cemetery overbuilt by a settlement
F4a	Early Eighteenth Dynasty	Settlement of the so-called Green Houses
F3b	Early Eighteenth Dynasty	Industrial activity between settlements of the so-called Green and Black Houses
F3a	Early Eighteenth Dynasty	Settlement of the so-called Black Houses
F2	Early Eighteenth Dynasty	Scattered settlement remains
F1	Late Eighteenth Dynasty	No archaeological record yet
E4	Nineteenth Dynasty	Earliest fortress of the Nineteenth Dynasty, core of Petrie's Wall 1, moats; infant burials
E3	Nineteenth Dynasty	Fortress of the Nineteenth Dynasty, extensions of Petrie's Wall 1; moats, infant burials
E2	Nineteenth Dynasty	Fortress of the Nineteenth Dynasty
E1	Nineteenth Dynasty	Settlement and cemetery in the ruins of the fortress
D4	Twentieth Dynasty	Ruins of the levelled Nineteenth Dynasty fortress; fortress of Ramesses III: Petrie's Wall 2
D3	Twentieth Dynasty	Fortress of Ramesses III: Petrie's Wall 3
C	Third Intermediate Period	Scattered settlement remains

### 1.1 OPEN SETTLEMENT: PHASE G3

An irregular oval pit <2929>, lined with mud bricks and mud mortar, may yet move the history of the tell deeper into the past. Some of the pottery fragments from the fill of this structure date to the end of the Middle Kingdom. These pottery fragments, along with other discoveries, suggest that the tell may have been occupied (perhaps intermittently) for at least 1500–1700 years. The irregular oval structure <2929> [Fig. 2] with a diameter of about four Egyptian cubits (over 2 m) could have served as a well.

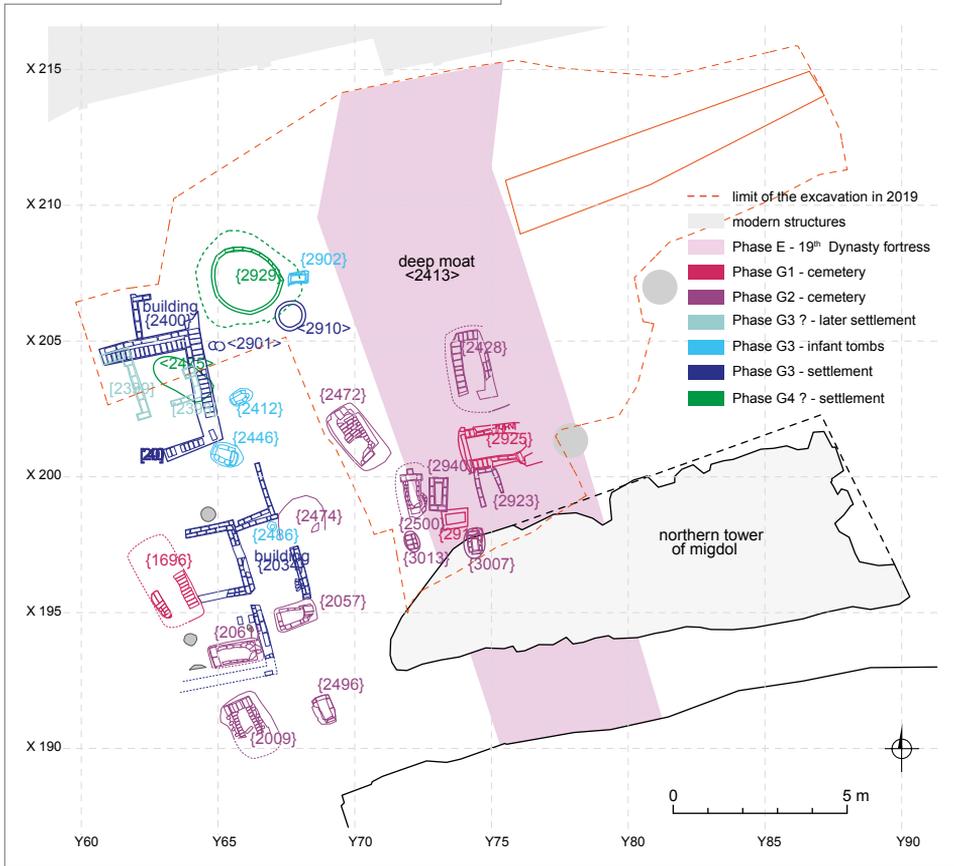
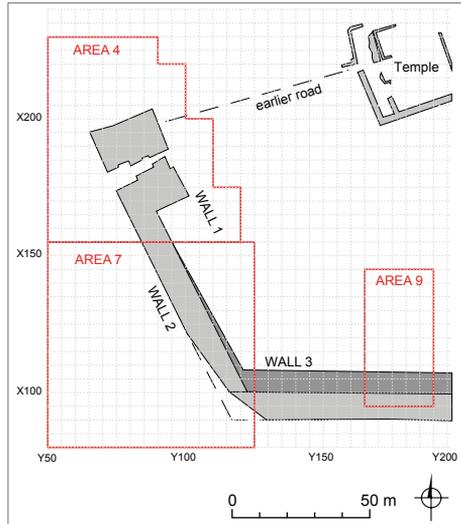


Fig. 1. Second Intermediate Period occupation in Area 4 investigated in 2019; inset, western part of the site with Area 4 (Tell el-Retaba Project | drawing L. Hulková)

It was dug into sandy gravel Nile deposits. Geologists and soil surveyors assume that there was a lake or wetland to the north of the settlement. From there water could have seeped into the well. Drinking spots, wells and cisterns are mentioned in ancient Egyptian written and iconographic sources. The decree of pharaoh Pepi I (23rd century BC) mentioned two types of wells: *shedet* and *enemet* (Driaux 2016: 45). Wells were still an important feature of the landscape in the Tumulat valley (wadi), where Tell el-Retaba is located, much later, in the 19th century. The eastern part of the wadi was even called “Valley of the Seven Wells” (Hudec, Fulajtár, and Stopková 2015: 248, Note 4).

The pottery from this structure was heavily fragmented and mixed with shells and animal bones. It was most

likely dumped here as rubbish. One of the sherds was worked probably into a kind of tool, maybe a shovel S3759 (SU 2929). There was also a spindle whorl S3740.

Further remains of Building {2400} were uncovered to the north (Hudec et al. 2019: 19). Walls [2884], [2889/2891] and [2888] were rather thick, although poorly preserved; they enclosed one room and what was probably an outer space to the north, filled with ashy deposits. There were almost no finds in these contexts except for pottery and one flint tool S3702. The scarcity of other settlement remains and the terrain sloping down to the northeast suggest that the outskirts of the Second Intermediate Period settlement have been reached in this part of the tell, an assumption that only further investigations can prove or disprove.



Fig. 2. Irregular oval structure (well?) <2929> (Tell el-Retaba Project | photo L. Hulková)

## 1.2 CEMETERY PHASE G2

After the buildings of Phase G3 were abandoned, the area was used intensively as a cemetery in the following phases, G2 and G1. Another seven mud-brick tombs were discovered in squares Y70/X195 and Y70/X200, as well as Y75/X200. The concentration of tombs in this area is surprisingly high. For the first time in this part of the tell the tombs were in direct supraposition. The well or the hydrological conditions may also have determined the northwest spread of Second Intermediate Period burials. Most of these were of very small children [see Fig. 1] and were therefore simple structures with small rectangular burial chambers under a gabled roof. They could sometimes have nothing but a gabled roof built of mud bricks, and only a few were larger structures.

### 1.1.1 Tomb {2902}

The small mud-brick tomb of a child is possibly one of the oldest structures in the cemetery, dating perhaps even to Phase G3 [Fig. 3]. It seems to stand over the edge of the well <2929>. The tomb consisted of three pairs of slanting bricks, covered with an approximately 3 cm thick bonding mass to form a gabled roof and a kind of small burial chamber at the same time (overall dimensions 76+x×50–62 cm, inner 55×29 cm). The chamber is longer (and wider?) than would be necessary, the part by the head apparently reinforced with extra bricks on the outside. Inside, the burial chamber was filled with a finer, sandy humus deposit. It was very sandy especially in the west of the chamber. The burial was of a newborn/foetus (less than 6 months), lying on its right side, the head to the east, facing north.



Fig. 3. Tomb {2902} (Tell el-Retaba Project | photo L. Hulková)

### 1.1.2 TOMB {2923}

The tomb {2923} was heavily damaged, most likely by the construction of the Ramesside moat [Fig. 4]. The preserved walls of the burial chamber (which measured 1.44 m by 0.92 m, inside dimensions 1.31 m by 0.68 m) consisted of a maximum

of three courses of mud bricks. Two individuals were buried in the chamber: a mature woman (40–60 years) and a newborn/foetus (2970). The position of the legs of the female skeleton (the rest was poorly preserved) suggests that the body was lying on the left side, the head to the



Fig. 4. Burial in Tomb {2923} (Tell el-Retaba Project | photo V. Dubcová)



Fig. 5. Burial in Tomb {2940} (Tell el-Retaba Project | photo K. Smoláriková)

south and the knees of the contracted legs pointing west. The foetus was placed in contracted position under the right leg of the woman lying on the left side, head to the southwest. The woman had a bronze ring S3752 on her finger.

### 1.1.3 TOMB {2940}

The tomb was found in 2017 (designated then as {2501}) but could not be opened then due to time constraints [Fig. 5]. It turned out to be a small, rectangular, mud-brick tomb with gabled roof (outer dimensions 1.30 m by 0.60–0.70 m; inner 0.85 m by 0.30–0.35 m). Sherds appear to have been wedged under the slanting roofing bricks to keep them in place. The chamber contained the skeleton of a small child (*infans*, about 7 years old) and the skull of another child (*infans*, 2–3



Fig. 6. Mud-brick structure of Tomb {3007} (Tell el-Retaba Project | photo K. Smoláriková)

years). A large red-polished jar contained the remains of a newborn/foetus (*circumnatale*, six months old). Also placed in the tomb was a handmade vessel.

### 1.1.4 TOMB {3007}

A small tomb with the burial chamber formed by four pairs of mud bricks propped against each other (outer dimensions 0.90 m by 0.50 m, 0.30 m high; inner 0.80 m long, 0.29 m high) [Fig. 6]. A brick standing on edge closed off the southern end of the chamber, slanting only slightly and bonded to the structure with a clay mass. The other end was closed off with another brick, probably standing on its longer side. The bricks were placed in whitish sand (natural?) at the bottom of the burial pit. The top ridge in the roof was not filled with either a bonding mass or brick fragments. The chamber was much too big for the burial, a child skeleton (newborn, *circumnatale*, less than six months old) located in the northern part of the space. It lay most likely on its back with the head to the south. The right arm was alongside the body, the left crossed over the abdomen. The legs might have been pulled up, but the bones are too badly preserved to be sure. A red-burnished juglet was found standing by the right side of the head. An animal skeleton, deposited as a part of the grave goods, was found in the southern part of the burial chamber. The chamber was filled with a loose yellowish brown fill (3008).

### 1.1.5 Tomb {3013}

The small and simple mud-brick tomb {3013} consisted of just three pairs of slanting mud bricks, propped against each other (outer dimensions approxi-

mately 0.65 m by 0.43, 0.35 m high; inner width 0.17 m). Buried in a shallow and narrow pit under this structure was the skeleton of a newborn/foetus (*circumnatale*, less than six months old), lying on a layer of whitish sand. It was on its back, the head to the south. A small red-burnished juglet lay on its side, directly over the chest and face of the skeleton.

## 1.2 CEMETERY: PHASE G1

The cemetery was used for a long time, stretching into the early Eighteenth Dynasty (Hudec, Jarmužek et al. 2018: 101–103). Two of the tombs explored this season were of clearly later date than the structures described above.

### 1.2.1 Tomb {2912}

Mud-brick tomb {2912} must be somewhat later than the rest of the burials because it partly overlies tomb {2940}. This structure oriented east–west was built for an infant and consisted of a rectangular burial chamber with gabled roof. The construction of the roof is irregular; it is made of three pairs of slanting bricks, the western part consisting of three bricks placed one over the other. The top was covered with a thick, roughly rectangular mass of bonding material (outer dimensions 0.91×0.77×0.42 m; inner 0.62×0.32 m). The skeleton {2915} was of a very small child (*circumnatale*, less than six months old). It was lying off the main axis of the burial chamber, on its back, with the head to the east, facing north.

### 1.2.2 Tomb {2925}

A large mud-brick tomb {2925}, it was also one of the later structures because it overlay tomb {2923}. The deep Ramesside

moat <2413> truncated it, but enough was preserved to reconstruct the architecture at least in part (outer dimensions of the tomb 2.40+x m by 1.51 m, 0.88 m high; inner dimensions of the burial chamber: 1.90–2.00 m by 0.82 m, 0.42 m high). The rectangular burial chamber was covered with an inclined barrel vault, backed against a western gable. Bricks were arranged in three courses with the fourth course, laid in a header bond along the long walls, extending some 0.20–0.22 m beyond the outline of the chamber to support the vault. The west wall of the burial chamber was higher, functioning also as the western gable, rising half-a-brick over the height of the whole. Most of the single layer vault had also been truncated by the moat. The extant part has backing bricks at the bottom of alternating rows, preserved only on the eastern side. They lie flat on a platform of headers, not askew as in some of the Tell el-Dab'a tombs (Forstner-Müller 2008: 29). At the eastern end, the vault was covered with standing bricks; three were visible inside the chamber, the east wall is the most irregular when seen from the inside of the chamber. The mud bricks are set in a thick layer of bonding mass, similar in composition to mud bricks, but containing more gravel. The vault is covered with a similarly thick layer of the bonding mass.

The fill of the burial chamber (2948), lying under a layer of mud-brick debris most probably from the destroyed vault, seems to have been intentional. It was a fine, well sorted, sandy layer different from the gravel filling the grave pit outside the chamber walls. Down by the skeleton and underneath it, the fill was less regular, consisting of broken bricks and blobs of bonding mass, as well as pockets of sand and fine white gravel.



Fig. 7. Burial with the grave goods in Tomb {2925} (Tell el-Retaba Project | photo L. Horáková)



Fig. 8. Two clappers S3727 and S3728 from Tomb {2925} (Tell el-Retaba Project | photo R. Rábeková)

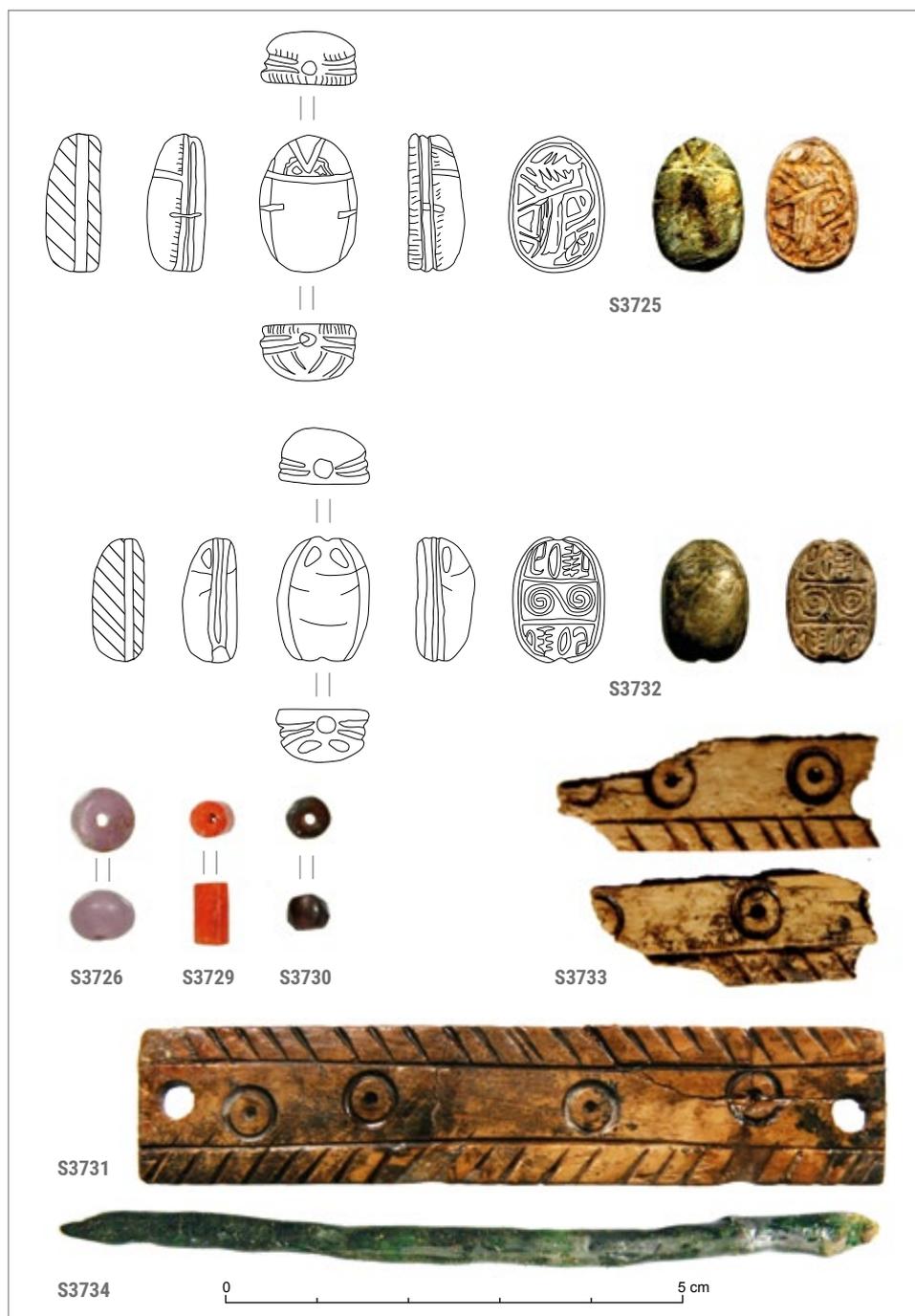


Fig. 9. Grave goods from tomb {2925}: beads S3726, S3729, and S3730, scarabs S3725 and S3732, toggle pin S3734 and two bone inlays with carved decoration S3731 and S3733 (Tell el-Retaba Project | photos R. Rábeková/drawings V. Dubcová)



ond scarab with ornamental decoration—a central spiral flanked by floral motifs at top and bottom (S3732) (Ben-Tor 2007: Pl. 36, No. 27, motif group 3E4: panels, cross bars on the margin and combining motifs with formulae (3C); the same in Brunton 1930: Pl. 19:23)—was found in the fill of the tomb [see *Fig. 9*].

The fill also yielded a toggle pin S3734 and two bone inlays with carved decoration S3731 and S3733 presumably from a wooden box [see *Fig. 9*]. Two ivory hand-shaped amulets, so-called clappers

S3727 and S3728, were deposited over the bones of the primary burial [*Fig. 8*]. The head of the goddess Hathor in profile can be recognized on the upper side of clapper S3727, despite heavy abrasion of the surface. Clappers were among the oldest rhythmic instruments of Ancient Egypt, but they also had a symbolic and magical meaning as an amulet associated with the goddess Hathor (Morris 2017). Items of this kind have parallels coming from the Middle Kingdom, Second Intermediate Period and New Kingdom.

## 2. EIGHTEENTH DYNASTY (PHASE F)

The Ramesside moat was partly uncovered already in 2017 (Hudec, Jarmužek et al. 2018: 101–106; Hudec et al. 2019: 27–39). The area east and west of it, explored in 2019 (squares Y75–85 X205–210), is limited on all sides: by the moat <2413> on the west, the modern road on the east, the Migdol on the south and modern private buildings on the north.

Several layers and structures from the Eighteenth Dynasty settlement appeared also on the other side of the moat, below the remaining part of the mud-brick platform of the Twentieth Dynasty fortress Wall 2 (squares Y60–65 X200–210) [*Fig. 10*].

Conditions in this part of the site were challenging. According to local informants, the area had been excavated early in this century. The documentation, however, is not available. A long trench, approximately 14 m long and 2 m wide, was traced through the area from the Ramesside moat <2413> to the asphalt road. Fieldwork started in 2017 was continued in 2019. Intensive building activity in later periods (Ramesside, as well as Third Intermediate Period) had either truncated or disturbed

earlier structures and layers. As observed elsewhere already, the surface here had been levelled under the fortress, obviously cutting away the upper parts of the downsloping ground to the north and east. Moreover, the disturbed surface material in this small area was mixed with material from layers that had been excavated close to 20 years ago. Even so, the fieldwork uncovered several structures that could be attributed to the settlement phases.

### 2.1 EARLIER SETTLEMENT PHASE (PHASE F3)

The earlier phase of the Eighteenth Dynasty settlement discovered in the eastern part of Area 4 (north of the Ramesside Migdol) can be attributed most likely to Phase F3. A few mud-brick structures were uncovered, most of them incompletely preserved, heavily damaged by the construction of the Ramesside moat <2413> as well as by later building activities (Phases D and C).

Excavations below a building from a later phase {2768} revealed the remains



Fig. 11. Ovens [2866] and [2897] from the Eighteenth Dynasty period (Tell el-Retaba Project | photo K. Smoláriková)



Fig. 12. Walls [2768] and [2934] most likely from a Phase F2 building (Tell el-Retaba Project | photo V. Dubcová)

of two silos, [2989] and [2986], as well as a low rounded wall [2982]. They seem to be contemporary with a larger building {2499}, discovered partly in 2017 (Hudec et al. 2019: 27, Fig. 20). The stratigraphic position and phasing will become clearer once the excavations have been completed. Other contemporary or slightly later structures were uncovered further north, together with a small rounded wall [2952], another wall or part of a building [2950] and some adjoining structures [2958] [see Fig. 10]. These structures cannot be clearly reconstructed because they were truncated or destroyed by the construction of the Ramesside moat. However, their disposition, including installations like grinding places and fireplaces, indicates domestic and/or minor craft activities. Below these structures were other architectural remains, which could not be completely investigated in 2019. Furthermore, there is another set of walls [2998] and [2999] and at least two ovens, [3002] and [3003], representing most likely an even earlier phase (F3b/F4?).

Two clay-lined ovens [2866] and [2897] were discovered in the western part of Area 4 (west of deep moat <2413>) [Fig. 11]. They most likely belong to the oven [2374] and its predecessor [2409] (excavated in 2017), thus forming a whole battery of ovens surrounded by a wall [2875] (Hudec et al. 2019: 37–39, Figs 38–39). Further ovens may be located to the south, below the Migdol and platform, since they are in line with an oven discovered already in 2011 [664] (Rzepka et al. 2014: 59, Fig. 30).

The western part of Area 4, below the remaining Ramesside platform, was intensively occupied also in the earlier phases of the Eighteenth Dynasty. Remains of a one-brick thick building delin-

ating two rooms [2374] were discovered below this structure. There was another badly preserved wall [2837] (earlier Phase 4?), from an even older structure.

## 2.2 LATER EIGHTEENTH DYNASTY REMAINS (PHASE F2)

The latest settlement remains, which can be attributed to the Eighteenth Dynasty, lay clearly above the remains belonging most likely to Phase F3a (the so-called Black Houses) and for this reason they can be attributed to Phase F2 of later Eighteenth Dynasty date. Only a small part of a major building (house?), lying directly below the Migdol, could be excavated. A wall [2768], one-brick-thick, was most likely part of a room with a later wall [2934] (half-brick thick) internally dividing the space [Fig. 12]. The excavated fill contained a lot of ashes (perhaps coming from the fireplace/oven below it) and pottery. This building [2768]/[2934] was associated with layers and mud-brick destruction covering several older structures. They have delivered a number of small finds attesting to different domestic and craft activities, e.g., a loom weight S3649, a fragment of an alabaster vessel S3701, several flint tools (seven items), small fragments of metal objects (four items), three faience beads and a fragment of a faience vessel S3667. There were also fragments of ostrich eggshell and one pierced shell bead or amulet S3681 (*Clypeomorus bifasciata*, *Cerithiidae* family).

Scattered remains of architecture were found below the Ramesside platform in the western part of Area 4. There was a longer wall [2799] and below it, small parts of two walls [2829], [2830], with associated layers. Only a few small finds could

be attributed with certainty to this phase, including one quern fragment, two flint tools and a metal fragment.

The phasing of Eighteenth Dynasty structures is still preliminary, but it is clear that it is more complex than previously thought as far as the early part of the period is concerned. It appears that at least Building {2767} and perhaps {2499} were individual houses. The other structures seem to be walls, courtyard enclosures and craft installations (silos, ovens). The small finds, such as grinders and querns, sometimes even *in situ*, numerous flint tools and pottery, demonstrate domestic

and craftworking function. Some luxury items were also discovered, such as a rectangular faience or steatite plaque S3698 decorated with a relief carving of the so-called formulae of *anra*-signs combined with branches (Keel 1995: § 433, 470, 479; Ben-Tor 2007: Pls 82–84: motif group 3C-formulae), a glass eye bead S3750 and four crude clay beads, fragments of alabaster and faience vessels with a painted sherd S3667 representing so-called lotus-bowls (or marsh bowls of Pinch 1993: 308–315).

The excavated area also produced some raw materials: ostrich eggshell, sea shells and pigments (four lumps of red ochre).

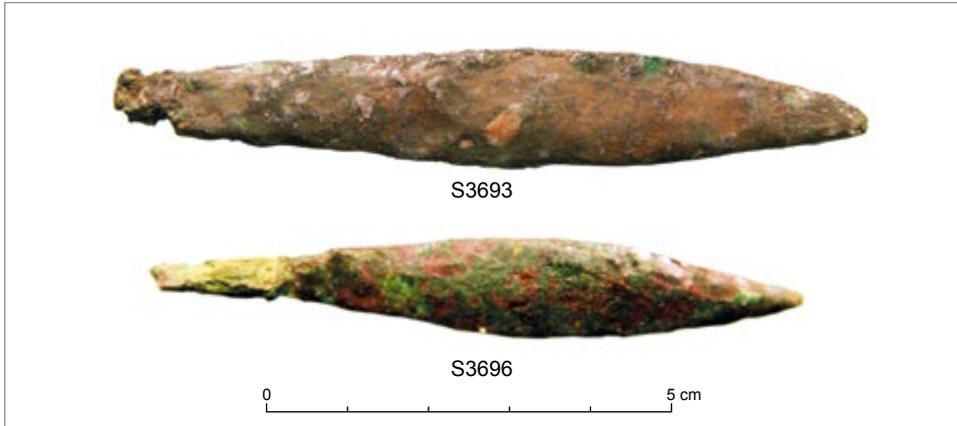


Fig. 13. Two arrowheads from Phase F2 in Area 4 (Tell el-Retaba Project | photo R. Rábeková)



Fig. 14. Mycenaean sherds from Eighteenth-Dynasty contexts in Area 4 (Tell el-Retaba Project | photo A. Wodzińska)

The presence of these raw materials indicates a network of long-distance contacts with other parts of the country, especially with the Red Sea area and the Sinai. A murex shell (Muricidae family, *Murex forskoehlii*) is one example, seldom present in the Gulf of Suez (Rusmore-Villaume 2008: 94–95), but quite frequent in the Mediterranean Sea (Alfaro and Mylona 2014). The numerous ostrich eggshell fragments could also represent a trading commodity, although local ostrich breeding cannot be excluded (Phillips 2000).

Links with the Mediterranean are further attested by three small sherds coming most likely from the Aegean. They are in all likelihood fragments of Mycenaean (Late Helladic) closed vessels with one item coming presumably from a rounded or straight-sided alabastron (Phase LH IIA–B) decorated with a rock pattern (Mountjoy 1986: 26, Fig. 22:1), another from the same phase

because of its fabric and the third perhaps with a multiple stem motif being probably a bit later (LH IIB/IIIA<sub>1</sub>) (Mountjoy 1986: 55, Fig. 61:6) [Fig. 14].

The importance of the settlement is further corroborated by a relatively high number of metal artifacts (rings, needles) and fragments, but especially weapons. Two arrowheads S3693 and S3696 have now been added to a dagger and a knife found previously in Black Houses 1 and 3 (Rzepka et al. 2014: 62–64) [Fig. 13]. They are of an elongated leaf-shaped form with a wooden shaft preserved on one of them; similar items are known from Gurob, Fadrus and Aniba, among others (Thomas 1981: Pl. 24, No. 529; Säve-Söderbergh and Troy 1991: 172–174, Pl. 43.3; Steindorff 1935: Pl. 64, Nos 6–7). A large copper-alloy shaft S3742, perhaps from a spearhead, was found in the vicinity of the Black House {2499}.

### 3. NINETEENTH AND TWENTIETH DYNASTIES (PHASES E AND D)

A structure consisting of a stretch of mud mortar about 2 m wide and about 20 cm thick (2360) was uncovered during the examination of the Rameses III defense wall (Petrie's Wall 2). It ran along the inner side of the wall, 2 m away from it. The mud mortar was reinforced with pieces of irregular greenish mud bricks [Fig. 15]. An irregularly high and wide, mud-stone mixed layer had been discovered earlier alongside the internal side of this wall, but its function at the time was ambiguous. It was previously interpreted as the border of the bottom line of a sand rampart (Hudec, Černý et al. 2018: 41).

Wall 2 was built on a sand-filled shallow moat from the Nineteenth Dynasty in Area 4. The inner side of the defense wall was aligned with the deeper moat underneath, which had been filled with drifting sand. Since walking on this windblown sand surface is difficult, it is assumed that the discovered structure (2360) constitutes the remains of a purpose-built transport route/walkway enabling workers and/or soldiers to deliver and distribute building materials. Transport in ancient Egypt is associated with the Nile River and sailing rather than with land (Förster and Riemer 2013). An ancient land road for

transporting building stone from Jebel Qatrani to Lake Moeris dates from the end of the Old Kingdom. The road was paved with fossilized tree trunks and was about 2.10 m (4 ancient cubits) wide (Harrell and Brown 1995). Closer to the Retaba road by structure and date was a slipway along the Second Cataract in Mirgissa, used from the 19th to the 15th century BC (Vercoutter 1970: 193, Fig. 1; Creasman and Doyle 2010: 20). This 4-m wide structure was built of wood, mud bricks and mud mortar. Wooden sledge tracks were evident on the slipway. Such traces were absent from the Tell el-Retaba transport route/walkway. Therefore, the

structure presumably was not intended for pulling cargo, but rather for materials brought on foot by workers and/or soldiers (as depicted in the tomb-chapel of Rekhmire, TT100) (Davies 1935).

Structures, which seem to be of later (Twentieth Dynasty or maybe even Third Intermediate Period) date because they are evidently built over the deep moat belonging to the Nineteenth Dynasty fortress (Wall 1) and into the sand rampart (Hudec, Černý et al. 2018: 42) include the remains of a silo [2789] with fragments of a mud-brick-built fireplace (or a small silo?) [2793] and associated mud-brick debris ([2795]–[2796]).

#### 4. THIRD INTERMEDIATE PERIOD (PHASE C)

Overlying the New Kingdom remains were several structures from the Third Intermediate Period, thus testifying to the continuity of site occupation in Area 4. There were two silos [2772] and [2773] (diameters of roughly 1.72–1.75 m)

and a fireplace enclosed with a mud-brick wall [2812]. All these structures were partly cleaned already in the 2017 season and were truncated by an earlier trench. Thus the material coming from them was largely mixed.



Fig. 15. Bottom line of a sand rampart (2360) (north is at bottom) (Tell el-Retaba Project | photo J. Hudec)

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# Two houses from the Third Intermediate Period settlement at Tell el-Retaba: a case study of activity-area analysis



**Abstract:** A Third Intermediate Period settlement continued to be excavated by a Polish–Slovak archaeological team working in Area 9 in Tell el-Retaba in 2019. Two houses, {1095} and {3111}, have been studied in detail, applying an activity-area analysis to determine the main occupation activities of the inhabitants in successive phases. The analysis is based on the archaeological assemblage recorded from these features, including small finds, pottery, and installations.

**Keywords:** Tell el-Retaba, Third Intermediate Period, settlement, household, activity-area analysis

## 1. INTRODUCTION

The Polish–Slovak Archaeological Mission has been exploring the site of Tell el-Retaba in northeastern Egypt since 2007. The site lies in the middle of Wadi Tumilat, approximately 35 km west of Ismailiya. In the 2019 season, attention was focused on Areas 4 and 9, west and east, respectively, of the modern road (for the location of both areas, see Hudec et al. 2020: Fig. 1, in this vol-

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ume). Unlike Area 4, where the remains of earlier occupation (Second Intermediate Period and New Kingdom phases, see Hudec et al. 2020, in this volume) can readily be explored, the investigations in Area 9 are challenging for archaeologists in view of the thickness of the deposits and substantial remains of multiphase Third Intermediate Period settlement architecture. Exploration started in 2010, gaining momentum in 2016–2019. More than a dozen houses and other structures from this Third Intermediate Period settlement were completely or partly uncovered in an area measuring approximately 2000 m<sup>2</sup>. Excavations were completed in

houses located in earlier seasons and several new houses and a new stable were discovered in 2019.

The present report considers two of the domestic structures in detail. A thorough and precise exploration of Houses {1095} and {3111}, with full documentation of installations, small finds and pottery discovered within, marshalled extensive data for a reconstruction of the daily life of the inhabitants. The methodology applied to the finds, involving activity-area and clean/unclean spaces analysis, is instrumental to this reconstruction. The results are discussed in the context of the usefulness of this particular approach.

## 2. MATERIAL DESCRIPTION OF THE HOUSES

### 2.1 HOUSE {1095}

A big part of House {1095} that was not covered by a Late Period Tower house {2074} was excavated in 2016 (Rzepka et al. 2017: 59–64). The rest of the building was explored once the southern part of the late house was dismantled in 2019 [Fig. 2]. Four phases of occupation were distinguished, corresponding to Sub-phases C2b2, C2b1, C2a and C1 of the general phasing system established for Tell el-Retaba (for the phasing system, see Jarmużek, Rzepka, and Ryś 2019: 53).

#### 2.1.1 Phase 1 (Subphase C2b2)

House {1095} has a trapezoidal ground plan, roughly 9.00 m by 7.70 m, which did not change over time [Fig. 1]. However, the interconnections between the five rooms underwent significant alterations. There were two entrances originally in the south

wall. The western entrance, 0.55 m wide, led into Room 1. The door recess was on the inside of the chamber, but without a door socket attested anywhere. The room measured 3.90 m by 5.20 m. It was connected with three other chambers. The doorway in the western section of the north wall led to Room 2. Another doorway, in the eastern part of the wall, opened into Room 5. The third doorway in the east wall led to Room 4. The doorway between these rooms was previously thought to be from a later phase (Rzepka et al. 2017: 64). Upon closer examination, however, it turned out that it had been there from the beginning, but was later blocked.

A greyish-white floor (2183) filled the room. There were no installations of any kind in evidence. The floor layer yielded some broken pottery, animal bones, a small amount of ash, and several small finds.

The entrance to Room 2 in the north-western corner of the house was recessed on the inside. The corner chamber measured 2.90 m by 2.40 m. The floor (3229) inside the room consisted of a series of grey and brown laminae. Some pottery sherds, animal bones and four small finds were found inside the unit.

The adjoining Room 5 measured 2.70 m by 2.50 m. Finds from the whitish-grey surface of floor (3251) inside the room included a small number of pottery sherds, some animal bones and a fragment of a stone vessel.

The eastern entrance to the building was relatively wide. It measured roughly

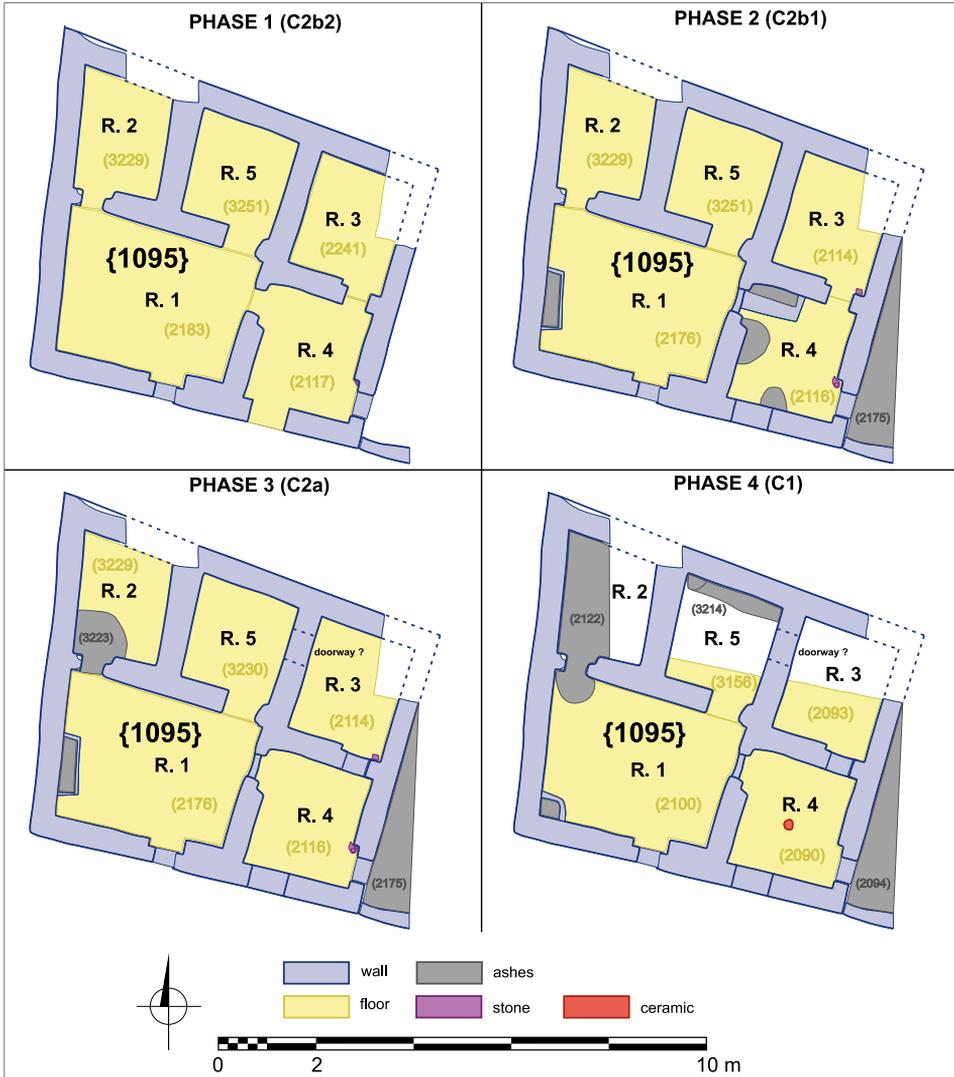


Fig. 1. The phasing of House {1095} (University of Warsaw Tell el-Retaba Project | drawing Ł. Jarmużek)

one meter and led to Room 4, which measured 2.60 m by 3.00 m. A grey cemented layer (2117) formed the floor in the whole room. The fill contained some ash, a small quantity of potsherds and animal bones, a grinder and a quern.

A doorway in the southern part of the east wall of the room led to a courtyard which was not excavated. A lime-

stone door socket was embedded in the northern recess. Another doorway, in the north wall of the room, gave access to Room 3. This room measured about 2.50 m by 3.00 m. Floor (2241) covered the entire room and there was no evidence of installations. There was no door socket inside the door recess inside Room 3.



Fig. 2. House {1095} after exploration (University of Warsaw Tell el-Retaba Project | orthophoto Ł. Jarmużek)

### 2.1.2 Phase 2 (Subphase C2b1)

Substantial changes, in terms of inter-connection between the rooms in House {1095} took place in this phase (Rzepka et al. 2017: 61–64). The eastern entrance to the building was blocked with mud bricks. A relatively thin wall screened off the doorway between Rooms 1 and 4. Thus, assuming no connection between Rooms 3 and 5, the eastern part of the house would have become a separate entity with its own entrance from the east through Room 4. The construction of the Tower house {2074} in the Late Period, which demolished the partition wall between the rooms, obliterated all evidence of a possible passage. The only thing arguing in favor of such a doorway between the rooms is the blocking of the doorway in the south wall of Room 3 in the following phase (see below). No other doorway could be traced in the standing walls of the room, hence the only possible location for a doorway in this phase was the west wall. Had this been so, then all the rooms in this building would have been accessible via the main entrance in Room 1.

The floor level in this phase was raised roughly 10–20 cm. New installations appeared in some of the rooms. Floor (2176) in Room 1 was a whitish-grey layer, filling the room and yielding a relatively small number of potsherds, animal bones and only four artifacts. A bin [2218] was found next to the west wall of the room, its walls only one-brick high. It measured 0.50 m by 1.70 m and was filled with an ash layer (2217) devoid of any finds. In case of Rooms 2 and 5, there were no new stratigraphic units which could be assigned to this phase. In Room 3, a new floor (2114) appeared; it consisted of a greyish brown

layer with some ash. Relatively insignificant amounts of potsherds and animal bones were found on the floor. The small finds counted 10 artifacts. There was also a door socket found *in situ* in the eastern recess of the doorway. Several bricks in the east wall bore traces of soot, but there was no clear layer of ash below them. In Room 4, structure [2157] was built in the northwestern corner. The narrow space between the structure and the wall of the room suggests that it was a kind of mastaba rather than a bin.

The room was covered with a new floor (2116), which contained much more ash than the floor from the previous phase. This is consistent with traces of fire use noted in several places inside Room 4. A semicircular layer of ash (2153) was found next to the west wall of the room. Some bricks in the wall above the layer were burned and bore traces of soot. It proves that unit (2153) was not just an ash dump, but a fireplace in its own right. A second similar unit of ash (2154), deposited along the south wall of the room, did not coincide with traces of fire on the wall above it, whereas several burned bricks and soot observed on the east wall of the room had no counterpart in any trace of a fireplace on the floor surface. The layout of four spots of soot on the wall suggests two fireplaces. The spots are paired, two each, one above the other, the gap between them probably the result of wall erosion caused by floor (2090) from Phase C1 (see below).

### 2.1.3 Phase 3 (Subphase C2a)

A major change in the layout of the building was the closing of the doorway between Rooms 3 and 4, the blocking [2207] being made of rather regularly laid bricks.

A cut through the west wall of Room 4 was first thought to assure access from Room 1 (Rzepka et al. 2017: 64), but the data collected last season belied this idea. Room 4 appears to have been cut off completely from the other rooms. The only way to get in was the entrance in the east wall, from the area which probably served as a courtyard. Like the alteration in House {311} (see below), these changes could have resulted from fluctuations in household size. Similarly, the issue of access to Room 3 remains unresolved. However, as stated above, the entrance to the room may have well been in the west wall.

The bin [2218] in Room 1 was probably still in use at the beginning of the phase. No new floor was noticed. The end of use of the room is marked by two layers of debris (2173, 2172). In Room 2, a layer of ash (3223) was found near the entrance. It was probably a dump rather than a fireplace. It is quite surprising that it was situated in the doorway between Rooms 1 and 2. Apparently, Room 2 was not considered as a clean space by the house inhabitants. A thick layer of debris marks the time when the room ceased to be used (3212).

In Room 5, a new whitish grey floor (3230) was found. The floor level yielded potsherds and animal bones, as well as four small finds. No traces of debris were found. Room 3 did not receive a new floor in this phase and the layer of debris (2234) shows that it was no longer in use. In Room 4, the floor (2116) from the previous phase finally covered the mastaba located in the corner of the room. Covering the floor was a thick layer of debris (2113), deposited at the end of the phase.

#### 2.1.4 Phase 4 (Subphase C1)

The general layout of the building and the interconnection between rooms probably did not change from the previous phase. New floors were introduced on top of the layers of debris in all of the rooms. The floor (2100) in Room 1 was made up of a cemented grey layer of whitish shade covering almost the entire room. The floor layer contained potsherds, animal bones and a relatively high number of small finds.

A fireplace [2209] was found in the southwestern corner of the room. It was lined with at least two layers of bricks. The fireplace was filled with a layer of ash (2208). The last occupation of the room is marked by debris (2091) containing a relatively high number of small finds. Room 2 was filled with a large amount of ash (2122), the space obviously being treated again as a dump. The ash may have come from the fireplace in the corner of Room 1.

A fragmentarily preserved floor (3156) was found in the southern section of Room 5. The middle part of the floor was destroyed during the construction of the Tower house {2074}. In the northern part, two thick ash layers (3213, 3214) lay alongside the wall. Judging by the soot on the walls, they appear to be the remains of fireplaces. The floor (2093) inside Room 3 corresponded to the same type of layer in other rooms. On top of this floor was a debris layer (2070), which covered House {1095} when it was ultimately abandoned. A cemented, whitish grey layer constituted the new floor (2090) in Room 4. Pottery vessel 2133 was found *in situ* in the middle of the

room, placed in a shallow circular cut in the floor. Several big pieces of pottery vessels were found in the floor level and several small pieces of iron were embedded in it. The level also contained several stone tools and other artifacts.

All the floors described above were made approximately 0.40–0.50 m above the original foundation level of the building. The height of walls from Phase 1 cannot be determined of course, but it seems very likely that the roof level in Phase 4 had to be raised.



Fig. 3. The phasing of House {3111} (University of Warsaw Tell el-Retaba Project | drawing Ł. Jarmużek)

## 2.2 HOUSE {3111}

The excavation of a building, which is the largest Third Intermediate Period house discovered so far in Tell el-Retaba [Figs 3, 4], was completed during the 2019 season. Three phases of occupation of the building were distinguished, corresponding to Subphases C4, C3b and C3a in the general phasing system of Tell el-Retaba.

### 2.2.1 Phase 1 (Subphase C4)

House {3111} consisted of two parts with independent entrances and an open space

(which became a closed courtyard in subsequent phases, see below) in the south-eastern part of the compound. The total surface of the area was at least 168 m<sup>2</sup>.

The eastern part of the building consisted of three rooms: a big room in front (Room 1, measuring 4.50 m by 2.90 m) and two smaller rooms (Room 2, measuring 2.00 m by 1.90 m; Room 3, measuring 2.20 m by 2.00 m) at the back [Fig. 5]. The entrance was probably in the south wall of Room 1. The wall was completely removed when the structure was recon-

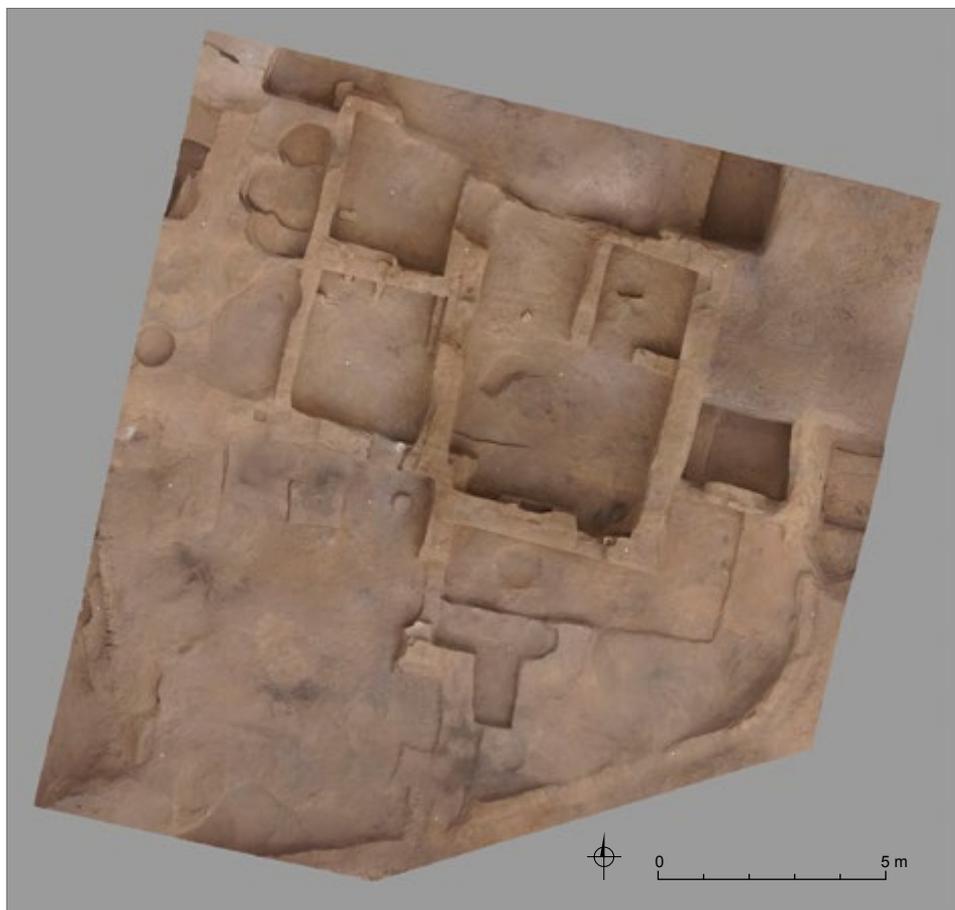


Fig. 4. House {3111} after exploration (University of Warsaw Tell el-Retaba Project | orthophoto Ł. Jarmużek)

structed at the beginning of the next phase (see below), thus the precise location of the entrance cannot be determined.

A thin, whitish-grey floor (3281) was found in Room 1. A circular fireplace [3267] lined with mud bricks, situated

roughly in the middle of the room, was one of three features on the floor surface. At least one mud brick abutted the west wall of the fireplace, forming a small platform. The space between the walls was filled with a layer of ash (3268). Pottery vessels (3269, 3271), *in situ*, were found in two cir-



Fig. 5. House {3111}: Rooms 1, 2 and 3 from Phase 1 (University of Warsaw Tell el-Retaba Project | orthophoto Ł. Jarmużek)

cular cuts nearby. With time, however, all these features were covered with a new greyish-white floor (3231). The floor level yielded a large quantity of pottery sherds and animal bones, and 17 artifacts. Two doorways in the north wall of the room led to Rooms 2 and 3. In the latter case, a limestone door socket was found *in situ*.

Floor (3249) in Room 2 contained numerous pottery sherds and nine small finds. Remains of soot were noted on the surface of the north wall of the room, indicating the position of a fireplace, although no significant traces of ash were found on the floor. The floor (3266) in Room 3 yielded few artifacts beside some pottery sherds and animal bones.

The western part of the building was rather irregular in layout and consisted of three or four rooms. The entrance was in the east wall of Room 6. The size of this room is difficult to determine. The south and west walls of this part of the building were destroyed probably during the reconstruction of the building in the next phase (see below). A fairly uniform unit (3327) was introduced, extending from the north wall of the room to the southern limits of the compound. This would suggest a width between 4.60 m and 5.77 m, and a length of at least 7.50 m. Had these been the actual dimensions, the room would have been too big to be roofed. Another room (7) could be assumed to the south and then the wall separating Rooms 6 and 7 could have been situated where the east wall of the building turns east. Remains of a fireplace lined with mud bricks [3390] and a pottery vessel (3393) placed in a cut were found on the floor surface (3327) in the northern part of the room.

Room 5 was entered through a doorway in the north wall with a limestone door socket still *in situ*. The room measured 3.20 m by 3.00 m. Three floors were detected inside the room. The first floor (3349) consisted of a series of grey and brown laminae and yielded a few pottery sherds, animal bones and four small finds. The second, whitish-grey floor (3312) had a few pottery sherds and animal bones, as well as four small finds. The third floor (3335) was preserved only in the northeastern corner of the room (the bigger part of the floor having been destroyed by a modern cut). It consisted of whitish-grey laminae devoid of any finds. A fragmentary bin [3318] was found on the surface, abutting the east wall.

The entrance to Room 4, which was 2.60 m by 2.70 m in size, was located in the northeastern corner. The earliest sand-rich, brown floor (3314) yielded numerous pottery sherds, animal bones and 15 small finds.

The space in the southeastern corner of the compound, probably an open courtyard, was covered with a layer (3419) composed of brown and greyish laminae. The eastern and southern limits of the courtyard have yet to be determined. The northern part of the courtyard was cut off also by a ruined Building (3130) from an earlier phase. A relatively well preserved wall from this older structure set off an area suitable for dumping rubbish (most probably used also in subsequent phases, see below). The layer (3126) there consisted of black and grey ash, approximately 0.70 m thick. Since the northern part of the unit has yet to be excavated, the overall size remains unknown. The excavated part of the unit (3126) yielded

a considerable quantity of pottery sherds and animal bones, along with 24 small finds (mostly fragments of stone vessels and grinding tools).

### Discussion

The rooms with mud-brick fireplaces and pottery vessels placed in cuts in

the floors, present in both parts of this building, can be identified as the main living rooms. The layout of the eastern part resembles Bietak's type B1 (Bietak 1996), comprising one main living room and two rooms at the back. The layout of the western part is rather irregular and may have resulted from space con-



Fig. 6. House {3111}: Room 5 from phase 2 (University of Warsaw Tell el-Retaba Project | orthophoto Ł. Jarmużek)

straints within the settlement. Textual sources indicate that ancient Egyptian households comprised both nuclear and extended families. Still it is difficult to trace any evidence of this in the archaeological record (Spence 2015: 84–86). The Amarna residential establishments were thought to exemplify this kind of social structure. They comprised a large main house (owned probably by the head of the household) and one or more small houses (used by the oldest son and/or servants), all within the same enclosure wall. The layout of House {3111} seems to comply with this general principle, although the lack of textual sources makes this assumption highly speculative.

### 2.2.2 Phase 2 (Subphase C3b)

House {3111} underwent a number of changes in Phase C3b. First, the south wall of Room 1 in the eastern part of the building was rebuilt. The dismantling of the old wall must have been complete because it left no debris. A new wall [3222], 0.60 m thick, was constructed about 0.80 m to the south, enlarging the room. A doorway with a limestone door socket still in position was set in the eastern part of this wall. A mud-brick bin [3293], 0.50 m wide and at least 1.20 m long, lined the northern face of the wall; its eastern part was destroyed. The bin was built directly on the floor (3231) from an earlier phase. With time, a new floor (3298) was put in place, abutting the walls of the bin. The unit yielded no artifacts. Another bin [3297], abutting the old one, was built on the surface of this floor. It measured 0.80 m by 0.70 m. A new, very thin, whitish-grey floor (3295) did not yield any artifacts. Rooms 2 and 3 remained

unchanged. A thick layer of debris (3224, 3165) in this part of the building marked the end of occupation in Phase C3b.

Changes were observed also in the western part of the building. In Room 6, a new floor (3330) covered the fireplace and a pottery vessel from the previous phase. The unit produced a large quantity of pottery sherds, a few animal bones and 12 small finds.

A new limestone door-socket was installed (on top of the previous one) in the doorway between Rooms 6 and 5. Mud bricks [3337] blocked the doorway between Rooms 5 and 4, cutting off Room 4 from this part of the building. While the reason behind this change is difficult to determine, it could have conformed with the overall evolution of the household structure. Numerous textual sources describe the lifecycles of households (e.g., from Kahun and Deir el-Medina), explaining the fluctuations of size (Muhs 2015). These changes may be visible in the archaeological record as subdivisions of the estate (e.g., House E13.3 at Amara West; Spencer 2014: 468–480).

In Room 5, a circular bin [3308] (0.63 m in diameter) was built next to the blocked doorway [Fig. 6]. A greyish-brown floor (3311) accumulated around this bin was extensively destroyed by a modern cut. A small section of the floor preserved in the northeastern corner yielded a relatively large quantity of pottery, animal bones, some shells, and 18 small finds. A bin [3318] from the previous phase was probably still in use. As already said, Room 4 could not be accessed from the western part of the building. An entrance, if it existed, would have been in the north wall, which was almost completely destroyed by a huge

modern cut. Also, the strata inside the room were almost completely destroyed by another modern cut. Only small fragments of the strata were preserved in the southeastern and northwestern corners of the room. In the southeastern corner, two sandy layers (3328, 3320) with fragments of bricks were found. In the northwestern corner, two layers of ash (3342, 3340) were separated by a layer of debris (3341). A floor-like, whitish-grey layer (3339) lay on top of the debris layer.

The area in the southeastern part of the compound was still used as a courtyard. A new layer (3282), similar to the previous one, covered the space and consisted of a series of thin brown and grey laminae. With time, the courtyard was closed by a semicircular wall. The wall [3286] was 0.46 m thick. The entrance to the courtyard was probably situated in the southern section of the wall. Another gap in the wall was found next to Building {3130}; however, it is possible that this part of the wall was destroyed by a nearby modern cut <3135>. The courtyard was 35 m<sup>2</sup> in area. Three fireplaces in the shape of a circular depression, filled with loose, grey ash (3273, 3275, 3277), were found in the western part. One of them (3275) contained a great deal of pottery sherds and seven small finds.

### 2.2.3 Phase 3 (Subphase C3a)

The layout of House {3111} changed significantly in the course of Phase C3a. The ground in the eastern part of the building was altered by the debris from the end of the previous phase. Moreover, the wall separating Rooms 1 and 3 was not rebuilt. Only two fragmentarily preserved floors were found.

Floor (3158) covered all of Room 2 and the northeastern corner of Room 1. It sloped down significantly from the south to the north. Large fragments of pottery vessels were found on the floor next to the east wall in Room 2. A pottery vessel (3160) was found placed in a cut in the southern part of the unit.

Another floor (3220) was found in the northwestern part of the building (Room 3 from the previous phases). The unit contained some pottery sherds and some large fragments of animal bones.

The western part of the building was enlarged by adding an entirely new wall, forming Rooms 7 and 8. The entrance to this part of the building was not found. It was probably somewhere in the east wall of Room 8. The room measured 3.80 m by 2.50 m. For unknown reasons, the inner part of the room was first filled with debris (3334) and then a floor (3333) was built on top of it. This poorly preserved unit yielded a few pottery sherds and a great number of fish bones. The poor state of preservation of the walls and a relatively higher level of the floor in this room made it impossible to trace the doorway between Room 8 and the inner rooms of the building.

Room 7 was 3.80 m long and probably 2.30 m wide (assuming that the destroyed wall of the room was aligned with the west wall of the building from the previous phase). The floor (3350) inside the room was relatively well preserved, but, apart from a few pottery sherds, contained virtually no other artifacts. The floor was approximately 0.25 m below the floor in Room 8. The entrance to Room 6 was located thanks to the door-socket found *in situ* in the north wall.

A thick layer of debris (3348) marked the end of occupation in this room. No new units in Rooms 5 and 6 could be assigned to this phase. Floors (3311, 3330) from the previous phase may have still been in use. Room 4 was still separate from the western part of the building. A fragment of the floor (3317) was found in the southeastern corner of the room.

The courtyard was probably still in use during this phase, but mostly as a dump. A thick layer of greyish black (3253) ash was found in the western part of the courtyard. It yielded a great deal of pottery sherds, animal bones and six small finds. Debris (3250) found on the surface of this floor came most probably from the collapse of Room 8.

### 3. METHODOLOGY

#### 3.1. ACTIVITY-AREA ANALYSIS

A method based on activity-area analysis was applied to the study of the installations and artifacts found inside the houses. A basic assumption of the activity-area analysis is that the distribution of objects in a specific context reflects the use of space through human action (Pfälzner 2015). Depending on the context of the discovery, the type of the assemblage and the type of deposition, activities can be identified at different levels. Activity-area analysis needs to be applied to all contexts under study and is based on a thorough study of the archaeological indicators of activities. Four main categories can be distinguished:

- objects in active positions: when it is clear that the objects must have been used where they were found;
- objects in passive positions: when objects are not found where they were used (broken and discarded, stored for later use);
- refuse: unusable items left in the position where the activity took place, important indicators of food preparation, consumption or craft activities. The context of discovery determined division into three categories: primary (left in the

position where it originated), secondary (discarded elsewhere) and tertiary (transported to other than primary or secondary refuse by later, post-depositional processes);

- installations: all fixed features built in order to fulfil certain actions.

Objects in active positions, primary refuse and installations are the strongest indicators of activities, and they allow conclusions regarding the range of activities taking place in specific rooms. In case of the artifact assemblages from Tell el-Retaba, most of the objects were not found where they had been used. However, they are still important indicators of activities. They permit a reconstruction of the more general and larger areas of specific occupation.

In view of the extensive object diversity and the large variety of activities represented, Ian Shaw's system of artifact classification from Tell el-Amarna (Shaw 2004: 95; 2012: 127–150) was applied with some modifications. The installations, small finds, and pottery from the houses were grouped into the following categories of activities: Storage, Household Equipment, Subsistence, Craftwork and Private Religion. The number of objects

Table 1. Distribution of artifacts in House {1095}

Key: SF – small finds, P – pottery, IN – installations; objects from debris contexts in parenthesis

\* – numbers for Phases 1 and 2 combined because of the difficulty of distinguishing between phases

\*\* – numbers for Phases 2 and 3 combined because of the difficulty of distinguishing between phases

	Storage		Transport		Household Equipment			Subsistence			Craftwork		Private Religion		
	IN	SF	P	SF	P	IN	SF	P	IN	SF	P	SF	P	SF	P
<b>Phase 1</b>															
Room 1			5		2					4*	53	4			3
Room 2										4	1*	1*			
Room 3			3		1					1	13				
Room 4			3		3					2	30				
Room 5			2*							1*	12*				
All rooms			13		6					12	109	5			3
<b>Phase 2</b>															
Room 1	1		5		6					1	78	3			
Room 2										4*	1*	1*			
Room 3			4		9			2		8	43	2			
Room 4			3		1	1	1	1	2		17				
Room 5			2*							1	12*				
Courtyard			2**								10**				
All rooms	1		16		16	1	1	3	2	14	149	6			
<b>Phase 3</b>															
Room 1	1		(3)		(1)					(1)	7 (10)				1
Room 2			(3)		(1)						3 (21)				
Room 3					(1)						(5)				
Room 4			(5)							(4)	(45)	(2)			
Room 5			4		3			1		2	34	1			
Courtyard			2**								10**				
All rooms	1		6 (11)		3 (3)					2 (5)	54 (81)	1 (2)			1
<b>Phase 4</b>															
Room 1			6 (14)		10 (16)				1	14 (9)	57 (42)	2			(2)
Room 2			2		4					(4)	44				
Room 3			2							1	19				
Room 4			16		8			1		6	121	2	2		
Room 5									1		17				
Courtyard			2								9				
All rooms			28 (14)		22 (16)			1	2	21 (13)	267 (42)	4	2		(2)

Table 2. Distribution of artifacts in House {3111}

Key: SF – small finds, P – pottery, IN – installations; objects from debris contexts in parenthesis

\* – numbers for Phases 1 and 2 combined because of the difficulty of distinguishing between phases

\*\* – numbers for Phases 1, 2 and 3 combined because of the difficulty of distinguishing between phases

	Storage			Transport		Household Equipment			Subsistence			Craftwork		Private Religion	
	IN	SF	P	SF	P	IN	SF	P	IN	SF	P	SF	P	SF	P
<b>Phase 1</b>															
Room 1			7		1				1	14	42				1
Room 2			3*		1*					3*	22*		3*		
Room 3															
Room 4			14							6	65		5		
Room 5	1		3		1					4	24		1		1
Room 6			7						1	5	23		2		1
Dump			25**		2**			1**		18**	252**		2*		
All rooms	1		59		5			1	2	50	428		13		3
<b>Phase 2</b>															
Room 1	2		(14)		(8)			(1)		(9)	2 (88)		(3)		
Room 2			3*		1*					3*	22*		3*		
Room 3*															
Room 4			3 (5)		(1)			1		2	14 (17)				
Room 5	2		2		1					6	44		6		1
Room 6			2							5	21		3		2
Courtyard	1		8		1				3	2	58		1		
Dump			25**		2**			1**		18**	252**		2**		
All rooms	4		43 (19)		5 (9)			2 (1)	3	36 (9)	413 (105)		12 (3)		3
<b>Phase 3</b>															
Room 1+2			14 (8)		4 (3)					(5)	55 (20)				
Room 3			1		1						3				
Room 4			(2)		(1)			(1)			(11)				(1)
Room 5	2		(3)					(1)		(10)	(19)		(7)		(2)
Room 6			(3)								(22)				
Room 7			3 (1)		(1)					(2)	5 (3)				
Room 8			1 (4)							(2)	1 (16)		(4)		
Courtyard			5		2					6	75				
Dump			25**		2**			1**		18**	252**		2**		
All rooms	2		49 (21)		9 (5)			(1) 1(1)		24 (19)	391 (91)		2 (11)		(3)

related to each activity found in each room of both houses in each period of its use is presented in tables [Tables 1–2]. Most objects come from floors and other types of units (e.g., fireplaces, dumps, fill of bins) directly related to the activities that could have taken place in a given phase. However, since objects found in the debris may also indicate activities from a given phase of a building, they are also included in the study. The numbers of objects from stratigraphic units of this kind are given in parenthesis.

### 3.1.1. Installations

Installations are one of the best indicators of activities. However, the two studied houses did not contain many features of this kind. Installations can be assigned to three types of activities. Vari-

ous kinds of fireplaces (with or without mud-brick walls) and ovens were assigned to the Subsistence category. Theoretically, a fireplace could be assigned to the category of Household Equipment, but it is impossible to determine which of them served only as source of light and heat. Several bins found inside the houses were assigned to the Storage category. The single example of a mastaba was assigned to the Household Equipment category.

### 3.1.2. Small finds

In most cases the examined small finds came from floor units (unless otherwise noted), but generally not where they were used. Many of them were probably displaced or removed from the original place of use. Hence they can be used to reconstruct only a more general pattern

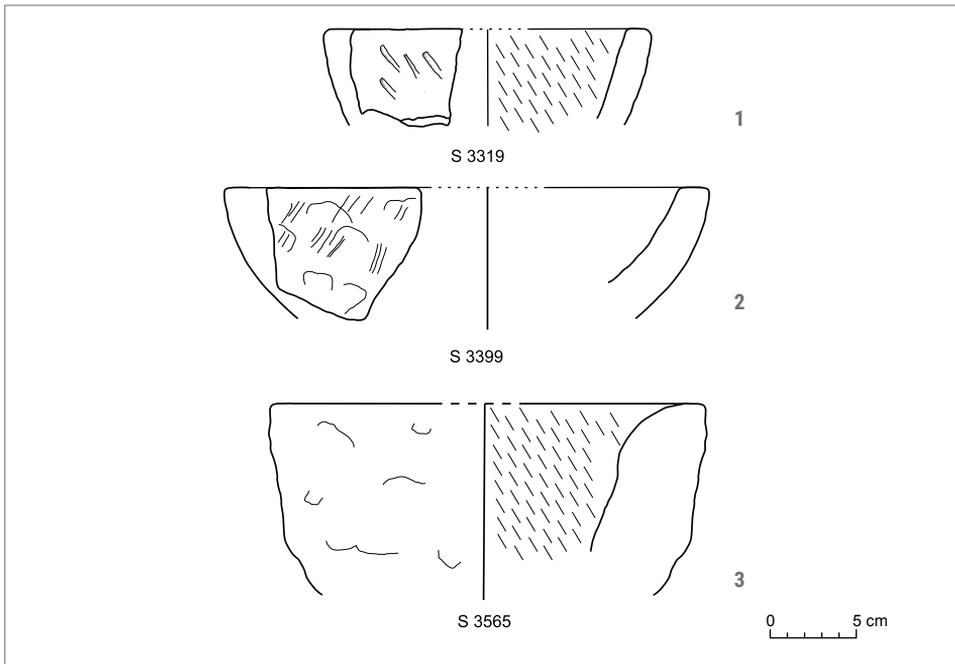


Fig. 7. Examples of stone vessel types: 1 – deep bowl (S3319), 2 – shallow bowl (S3399), 3 – mortar (S3665) (University of Warsaw Tell el-Retaba Project | drawing D. Sulecki)

of activities in these two buildings. The most important analytical step is the collation of particular types of small finds into given categories of activities.

The Storage category comprises objects connected with preservation inside the building. These are all containers or remains of containers, for example, jar stoppers.

The Household Equipment category includes all architectural elements found inside the building, such as door sockets and thresholds, as well as furniture (for example fittings, basketry, ropes). In the case of this study, this category is poorly represented: only two door sockets.

The Subsistence category includes all objects connected with activities taking place in the household and necessary for physical survival, namely food acquisition (agriculture, hunting, fishing) and food preparation and processing. This category includes: ground stone tools (if used to prepare food), stone vessels, weights (if used for food acquisition, for example, net sinkers), sickle blades and knives. Stone vessels are a problematic group, especially when fragmentarily preserved [Fig. 7]. Some of them could have been used as mortars, but also as food containers. For the purpose of this analysis they will be treated as objects connected with food processing.

The Craftwork category includes objects used in craftwork activities, such as ground stone tools (if—judging by their use-wear and features—they were not used for food preparation, e.g., whetstones, pounders, polishers), loom weights, pins, spatulas, spindle whorls, scrapers, disks and needles. The distinction between Subsistence and Craftwork is not always clear.

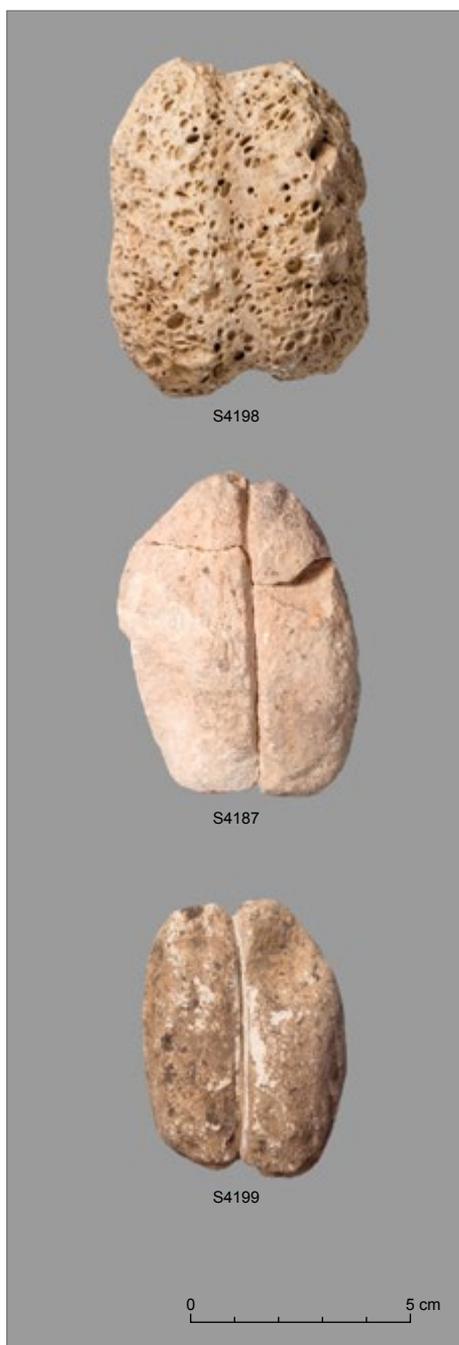


Fig. 8. Examples of limestone weights with incised grooves from Houses {1095} (S4187) and {3111} (S4199, S4198) (University of Warsaw Tell el-Retaba Project | photo M. Reklajtis)

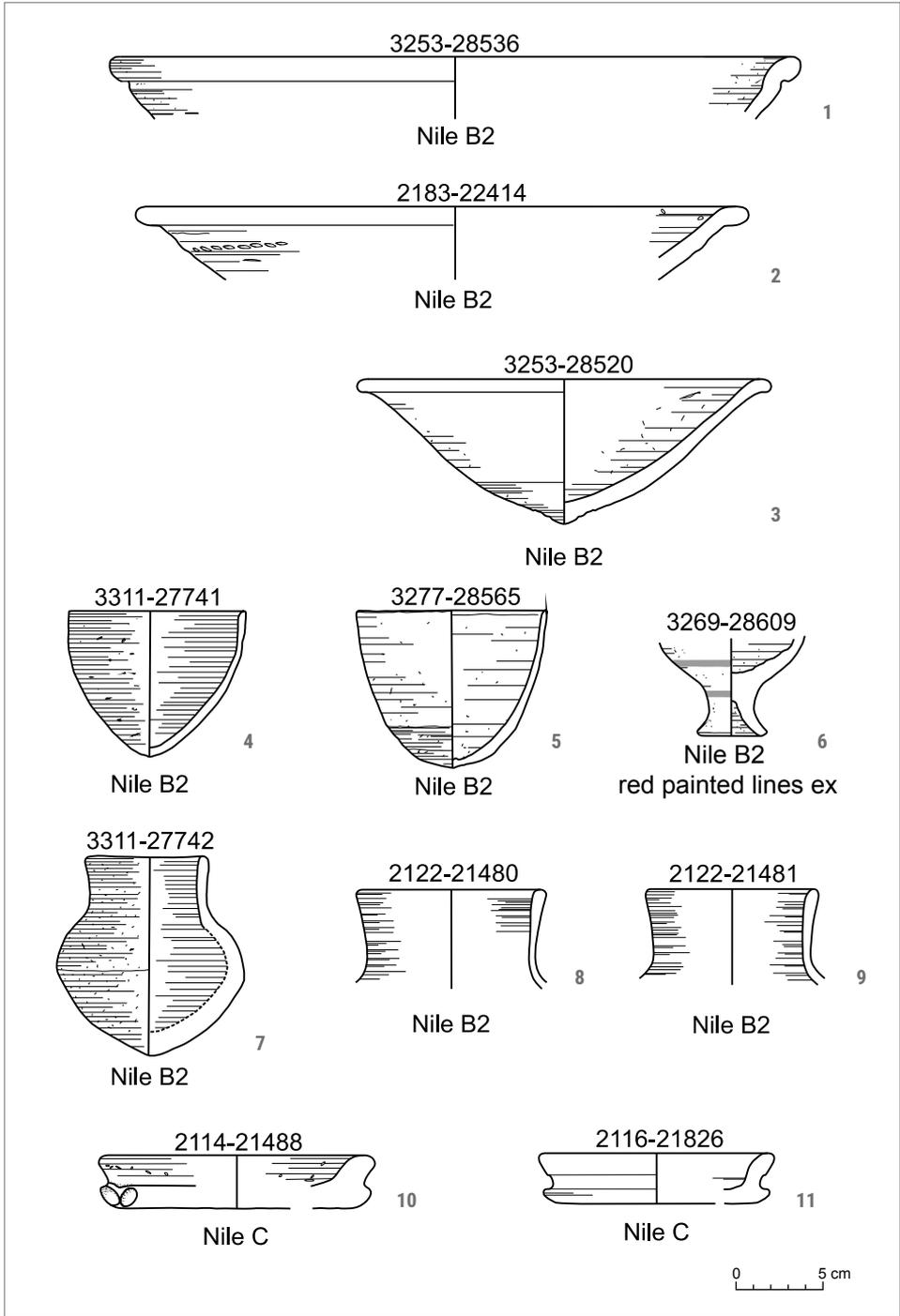


Fig. 9. Ceramic vessels used for food preparation (University of Warsaw Tell el-Retaba Project | drawing B. Jakubowska, K. Szymańska, A. Weźranowska and A. Wodzińska)

In the case of many grinders or pounders it is difficult and even impossible to determine the specific activities for which the tools would have been used. Therefore, for the purpose of this analysis, it was assumed that as long as they did not bear traces indicating other use, grinders were used for food preparation. Similarly, limestone weights with incised grooves [Fig. 8] were classified as net sinkers.

The identification of objects connected with Private Religion is occasionally problematic. The main concern is distinguishing objects used for secular purpose from those having apotropaic/religious function. This distinction is not always clear. For the purpose of this analysis, objects with religious imagery or objects which could be connected with religious practices/rituals were included in this category (Stevens 2006: 21–23). The same assumption was made for scarabs and scaraboids, which also have a protective function (Andrews 1999: 52–59).

### 3.1.3. Pottery

Pottery as well as ceramic small finds from the houses were found mostly in passive position. Pottery sherds were found mainly in floor layers, ash deposits and debris, but several vessels were found in active position, in shallow cuts made in floor surfaces. The classification of objects into categories of activities was also applied to ceramic material, even though not every activity was represented and some activities were weakly attested.

Most of the pottery can be associated with Subsistence, meaning all stages of foodmaking, including food preparation with and without heat, and serving of meals (Rice 1987: 238).

Pots, which could have been used for food preparation without the use of fire, are represented by bowls and basins of usually large diameter, simple conical body and ring base [Fig. 9.1–2]. Smaller bowls [Fig. 9.3], cups [Fig. 9.4–5] and goblets [Fig. 9.6] could have been used for serving food, although it cannot be excluded that they were used also at the preparation stage.

Vessels for food preparation with the use of fire comprise jars of various sizes but very similar shape [Fig. 9.7–9]. They have a simple, straight or slightly flaring rim, generally cylindrical neck, biconical body and circular base. They can be classified as cooking jars because in most cases there is soot and evidence of burning on their external surfaces.

Another category of pots used for food preparation with the use of fire is made up of handmade bread trays with flat bases and carinated bodies [Fig. 9.10–11]. Their surface is often blackened due to heating.

Ceramic objects of a specific kind could have been used as fire dogs [Fig. 10.1] They are usually found in fragments, always burned and with traces of soot.

Vessels with very narrow holes pierced in the base at the manufacturing stage [Fig. 10.2] can also be connected with food preparation. They are sometimes referred to as pigeon pots (Aston 1998: 550), but it seems more probable that they were funnels or lids (Trzcińska and Wodzińska 2020). Their external surface is sometimes burned, probably indicating use for cooking/baking.

The Storage category includes large jars [Fig. 10.3–4], often with two vertical handles [Fig. 11.1]. Jars of this kind are

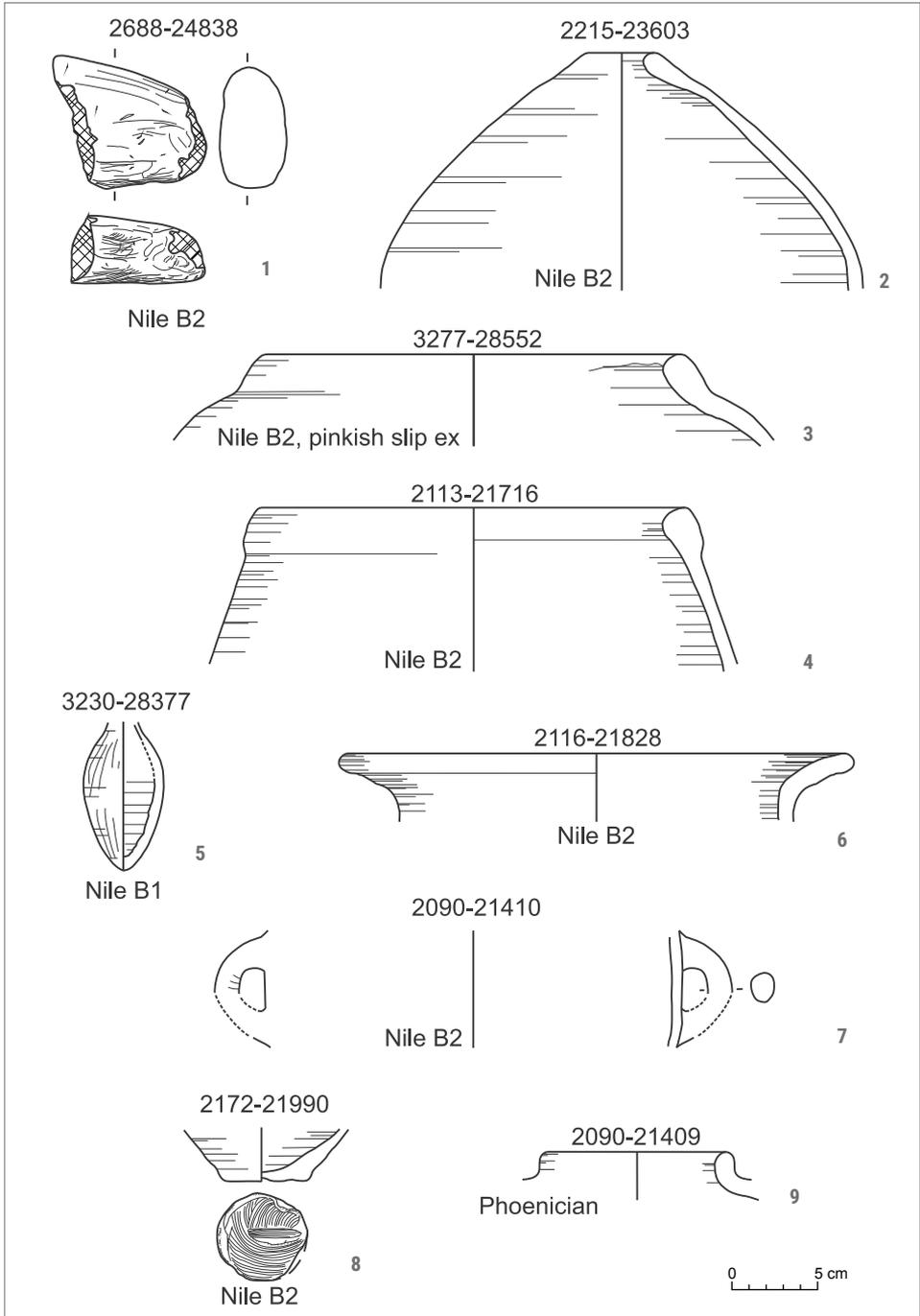


Fig. 10. Ceramic vessels: 1–2 – vessels for food preparation; 3–4 – storage jars; 5 – cosmetic container; 6 – chamber pot; 7 – possible spinning vessel; 8 – votive vessel; 9 – imported transport amphora (University of Warsaw Tell el-Retaba Project | drawing K. Danys, B. Jakubowska and A. Wodzińska)

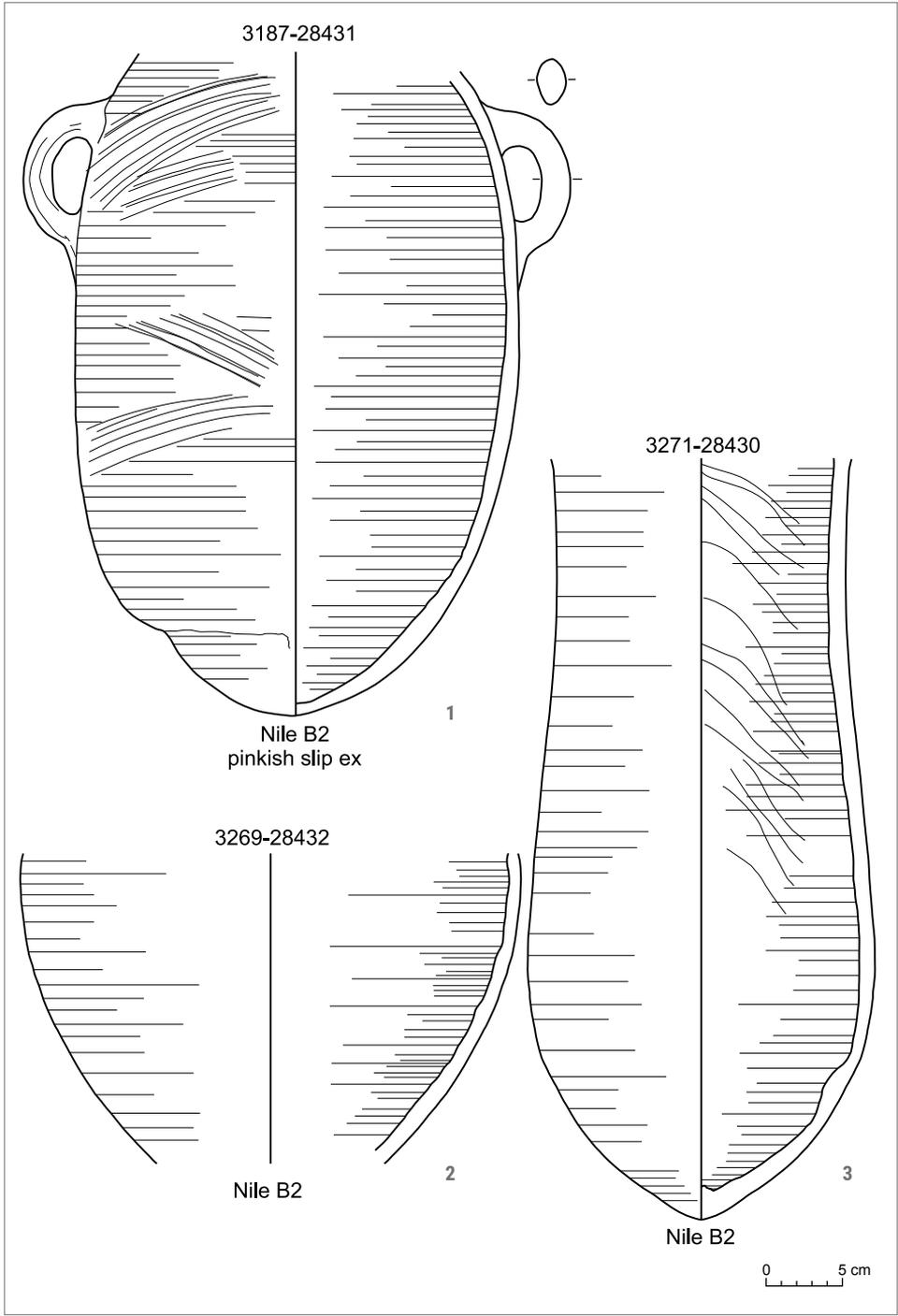


Fig. 11. Jars found in situ, placed in holes in the ground, probably used as containers for water (University of Warsaw Tell el-Retaba Project | drawing A. Weźranowska and A. Wodzińska)

highly characteristic of the Third Intermediate Period and display many forms. Some of them were found *in situ*, placed in holes in the ground (Wodzińska 2019) [Fig. 11].

Small containers, presumably used for cosmetics, can be recognized as Household Equipment [Fig. 10.5]. One vessel importantly can be classified with a high degree of probability as a chamber pot (Aston 1998: 550, No. 2241) [Fig. 10.6]. The pot has a wide ledge rim, globular body and low ring base. The complete vessel had a small vertical handle attached to the upper part of the body. Interestingly, some of the pots contained a yellowish substance, which could not be subjected to laboratory analyses, but which appears to be the remains of urine.

Vessels used for Craftwork are difficult to identify. Many of them were probably reused vessels, their first function being associated with storage or food preparation. There is, however, one category of ceramic objects that could have been used for making textiles. These are handles of storage jars with horizontal notches in the middle, apparently made post-manufacture, when the vessel was being used [Fig. 10.7]. This notching is very similar to traces observed in the case of so-called spinning bowls from the Middle (Schiestl and Seiler 2012: 704–706) and New Kingdoms (Rose 2007: 202–203, SD.6). The fragmentary pots from Tell el-Retaba clearly belonged to jars not bowls. The process of spinning thread is difficult to imagine, but possible.

Private religion is even less obvious with regard to pottery. A number of small jars and plates with flat bases [Fig. 10.8] had bases cut during manufacture either

with string or with wire, leaving characteristic circular traces on the base. These vessels are hardly ever well made and do not have well finished surfaces. In the context of the Old and New Kingdom, such pots were often left as votive gifts at burial grounds. The subject needs more study, but inside houses vessels of this kind could have been used in private rituals performed in a domestic context (Wodzińska 2019: 98).

Transport as a category is associated with pottery alone. Containers made of organic materials (like leather or textiles) may have been in use, but have not been preserved. Amphorae imported from Phoenicia are classified as transport packaging (Aston 2007: 56, Fig. 53, No. 623) [Fig. 10.9]. Also included in this category are jars made of marl clay, a material not encountered locally at Tell el-Retaba. They must have been delivered to the site with their content and reused for storage purpose once they had been emptied.

### 3.2. CLEAN/UNCLEAN SPACE ANALYSIS

Another approach applied in this study is the concept of clean and unclean spaces used by Felix Arnold (2015) in the analysis of houses from Elephantine. House space is divided into areas where waste products accumulated and areas which were kept clean. Deposition of waste products may indicate not only certain activities but how a given space was perceived by the inhabitants, e.g., which space should be kept clean for activities requiring cleanness (e.g., receiving guests, sleeping). An obvious indicator of unclean spaces are the rubbish dumps (usually ash mixed with animal bones and fragments of discarded objects).

A second indicator is the quantity of discarded objects in floor layers. Even though many floors were not typical dumping places, the number of discarded objects can be relatively high. For people living in these rooms regular cleaning seems not to have been important. For the purpose of this analysis, non-diagnos-

tic fragments of objects were also taken into consideration. This is particularly important in the case of non-diagnostic pottery sherds, the quantities of which can be significant. Although they cannot be indicators of specific activities, large amounts of sherds in a floor layer would indicate a rather unclean space.

## 4. RESULTS

### 4.1. ACTIVITY-AREA ANALYSIS

#### 4.1.1. Installations

Installations from the two houses are few. There is no evidence of fixed features from House {1095} in Phase 1. In the second phase, a rectangular bin was found along the west wall of Room 1, but there was nothing to determine its content. A small mastaba and two fireplaces were found in Room 4. Sets of this kind are common in many houses from the New Kingdom (Spence 2015) and are interpreted as indication of a “living room”. Such rooms served various kinds of social activities. In the case of Room 4, the position of fireplaces by the wall instead of in the middle of the room is unusual. The two fireplaces lack any kind of mud or mud-brick lining. There were no shallow cuts with pots typical of this kind of room.

The bin in Room 1 could have still been in use in Phase 3. All of the features in Room 4 were covered with a floor. A fireplace lined with mud bricks was installed in the corner of Room 1 in Phase 4. The position of the fireplace suggests that it was used for cooking. In “living rooms” fireplaces were usually placed in the middle of the room, allowing people to gather around them. The pottery vessel in the

middle of Room 4 was probably used for water storage (see below, § 4.1.3).

Similar types of installations were found in House {3111}. In Phase 1, features typical of “living rooms” were found in Rooms 1 and 6. In both cases, they were placed in the front room of the living unit. A round fireplace lined with mud bricks and two storage vessels were found in Room 1. A fireplace in Room 6 was rectangular; only one storage vessel was found. There were no traces of mastabas in either of the rooms. Remains of a storage bin were found in Room 5.

Major changes took place in the second phase. A floor covered the features in Room 1 and two storage bins were built by the south wall. Features in Room 6 were also covered by a new floor and no new installations were introduced. The alterations suggest different activities in these rooms compared to Phase 1. Remains from Room 5 show that the space was still used for storage. The doorway between Rooms 5 and 4 was blocked and a second bin was built. Three fireplaces, indicating cooking activities, were found in the western part of the courtyard. Remains of ashes in layers covering the courtyard (see below, § 4.2) suggest that activities of the same kind took place also during Phase 1.



Fig. 12. Examples of needles from Room 1 in House {1095} (University of Warsaw Tell el-Retaba Project | photo S. Rzepka)



Fig. 14. Spinning tool from Room 6 in House {3111} (University of Warsaw Tell el-Retaba Project | photo M. Reklajtis)



Fig. 13. Amulets from Room 1 in House {1095}: above, S3054 (University of Warsaw Tell el-Retaba Project | photos S. Rzepka)



Remains from Phase 3 of House {3111} were poorly preserved. The only new fixed feature was a pottery vessel placed roughly in the middle of Room 1. Storage bins in Room 5 were probably still in use.

Installations from both buildings belong mostly to two categories of activities: Storage and Subsistence. The mastaba from Room 4 in House {1095} is the only example of Household Equipment.

#### 4.1.2. Small finds

The share of artifacts in House {1095} is constant in all phases. Subsistence is the dominant category and includes objects connected with food processing and preparation (stone vessels, grinding tools, pounding tools), fishing (net sinkers) and agriculture (sickle blades).

Objects connected with subsistence constitute the bulk, especially in Phase 4, when they make up almost 80% of the total finds. The numbers are smaller for the preceding three phases, but still considerable. Rooms 2 and 3 were the only ones not to yield any finds related to this category in Phase 3.

The distribution and number of objects connected with craftwork activities is also similar in all phases. Artifacts are connected mostly with spinning/weaving [Fig. 12]; they are attested particularly in Room 1. The possibility of cloth making in House {1095} is also confirmed by pottery finds (see below, § 4.1.3). However, no traces were found which could be related to weaving installations, such as a loom, for instance. The Craftwork category includes objects connected with abrasive/smoothing activities. It comprises whetstones, which can be connected with the production of bone or wooden objects

(Jeuthe 2019: 61; Prell 2019: 228) as well as bead-making (Flexner, Fleisher, and LaViolette 2008). There are also potsherd scrapers, the presence of which can be associated with pottery-making, leather-working, woodworking or soft-stone working (for a discussion, see, for example, Raedler 2015). There is no evidence of production on a scale larger than necessary to meet household demand.

Objects connected with religious activity were found only in Phase 1. These include three faience amulets from Room 1, one poorly preserved (S3046), but two in a complete state. One is in the form of a bust with the head of a lion- or cat-headed goddess, with the uraeus and sun disk (S3054) [Fig. 13 above]. The other is in the form of a standing figure of a cat-headed goddess (S3108) [Fig. 13 right]. The pendants represent most probably Bastet or Sakhmet (Andrews 1994: 33; Rzepka et al. 2017: 60).

The artifact pattern characterizing the assemblage found inside House {3111} is similar to that from House {1095}. Groups of objects connected with subsistence activities constitute the bulk of the material. They are mainly connected with food processing and preparation (stone vessels and ground stone tools) and fishing. There are also objects used in craftwork activities. A relatively large group comprises ground stone tools which were not used for food preparation because the use-wear traces on their surfaces and the nature of the raw material argue against it. These are abrasive/smoothing tools which could be associated with the production of stone or bone objects. Activities could not be assigned to given rooms because of an absence of waste products

and installations. It could have also been a small-scale production. Use-wear traces on the bone pin (S4379) from Phase 2 in Room 6 indicates either spinning activi-

ties, textile weaving or netting production [Fig. 14]. A relatively large number of net sinkers makes the latter idea more probable.



Fig. 15. Clay figurines from House {3111}: left, S4233, right, S4274 (University of Warsaw Tell el-Retaba Project | photos M. Reklajtis, processing A. Ryś)



Fig. 16. Faience stamp seal S4151 from Room 1 in House {3111} (University of Warsaw Tell el-Retaba Project | photos, M. Reklajtis, processing A. Ryś, drawing P. Sójka)

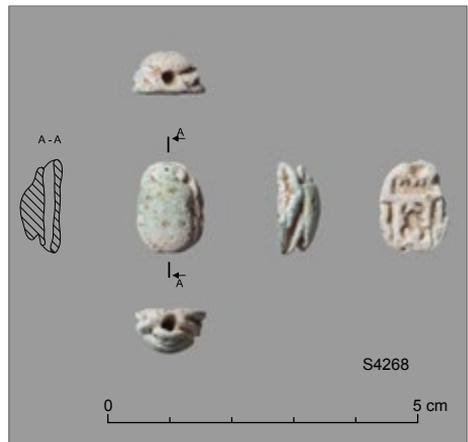


Fig. 17. Faience scarab S4268 from Room 6 in House {3111} (University of Warsaw Tell el-Retaba Project | photos M. Reklajtis, processing A. Ryś, drawing P. Sójka)

Artifacts connected with private religious practices were found in all phases. Among them are fragmentarily preserved faience pendants depicting divinities endowed with a protective function. The two other specimens are hand-modelled figurines made of Nile silt, rectangular in shape, with plain surfaces decorated only with formed lumps applied to their upper parts [Fig. 15]. In both cases, the top parts are broken. Based on their shape and available parallels, they can be identified as simple versions of cobra figurines. Their relation to apotropaic rituals has been assumed.

Two inscribed objects from House {3111} can be assigned a protective function. The first one is a faience seal (S4151), found in Room 1 of Phase 1 [Fig. 16]. Its bundle-back handle is decorated with an indication of gathered lines. The inscription on the base is quite poorly executed and difficult to read. It may have contained the sign “*mn*”, while the vertical line to the left could be an “*i*”, and the horizontal line underneath could be an “*n*”; thus, the inscription would include the name of Amun. This type of small faience seal inscribed with a god’s name on the underside is also recognized as a protective amulet (Andrews 1999: 54, Fig. 55). The scarab (S4268) was found in Room 6, in a Phase 2 context [Fig. 17]. It is made of blue-glazed faience, has its base decorated with the name Menkheperre; the *kheper* sign is flanked by two *maat* feathers. It is a popular composition on scarabs from the time of the Eighteenth Dynasty to the Late Period, also imbued with protective powers (Andrews 1994: 55).

The artifact assemblage from Houses {1095} and {3111} confirms the multifunctionality of Egyptian houses (Spence 2015:

83–97). The same room could be used in a different manner at different times. There are no indicators to connect a specific room to specific activities. Moreover there is no visible separation between space for “life” and for “work”. It is possible that activities generating a large amount of waste took place outside the household.

The everyday life of the inhabitants of Houses {1095} and {3111} was focused on activities such as agriculture, fishing and food preparation. Based on the number of objects connected with craftwork activities, it can be assumed that this type of production was limited to household needs and concentrated on the manufacture of everyday artifacts, such as textiles, nets and small objects. There is no evidence of production on a larger scale, notably large amounts of waste, casts or specialised installations.

#### 4.1.3. Pottery

The ceramic material found in both houses can be divided into diagnostic and non-diagnostic pieces. House {1095} contained 3762 non-diagnostic and 869 diagnostic fragments; 6865 non-diagnostics and 1113 diagnostics were found in House {3111}.

The largest group of pottery found in Houses {1095} and {3111} consists of vessels used for food preparation. Such pots were found basically in every room, hence it is very easy to assume that every room was associated with food preparation and serving of meals. Breaking down the general group into more detailed categories: preparation without fire, preparation with fire (cooking jars, bread moulds and fire dogs) and serving, does not change

the picture significantly. Therefore, one cannot say whether any of the rooms were used for more specific purposes. Most of the vessels are larger and smaller bowls used for food preparation without fire and for serving. They generally make up 50% of all of the pots found in each room of both houses.

The second group are cooking jars (20%), followed by bread moulds (5%). The statistics vary between rooms but the general trend is more or less the same. The only difference is in the presence of fire dogs, but one does not easily recognize a pattern. The examples found on the floors of House {1095} came from Room 4 in Phase 1; Rooms 1 and 3 in Phase 2; and Room 3 and the courtyard in Phase 4. In House {3111}, fire dogs were found in Rooms 1, 4 and 6 from Phase 1; Room 4 and the courtyard from Phase 2; Rooms 1 and 2 from Phase 3.

The vessels categorised as Storage constitute an overall 15–20%, together with transport jars, which were probably often reused as storage vessels. The statistics are more or less the same for each room in both houses.

A number of pots was found *in situ* in both houses: House {1095} – Room 4 (Phase 4); House {3111} – Rooms 1 (Phases 1 and 3) and 6 (Phase 1). The vessels can be divided into two groups: large jars of various types [see *Fig. 11*] and conical cups [see *Fig. 9.4–5*]. It appears that some of the jars were reused as possible storage vessels. They were placed in holes in the ground. Strikingly, they seem to have been associated with conical cups used probably for drinking. Thus, the most plausible idea is that the storage jars placed more or less in the middle of

the rooms contained water for drinking but also for cooking.

Chamber pots represent Household Equipment. Four of them were found in House {1095}: two fragments in Room 3 (Phase 2) and two in Room 4 (one in Phase 2 and one in Phase 4). House {3111} also contained four chamber pots: one fragment in Room 1 (Phase 2), two pieces in Room 4 (Phases 2 and 3), and one in a dump (Phase 1). It is difficult to be sure in this case, but it seems that rooms with chamber pots could have been used as bedrooms, at least for some time. The idea works best for Room 3 in House {1095} with adjacent Room 4 which could have acted as a vestibule with a multifunctional space inside it. Room 4 in House {3111} could have also been used as a bedroom with Room 5 serving as an entrance space. A small juglet fragment [see *Fig. 10.5*] from Room 5 (Phase 3) of House {1095} could be seen also as Household Equipment, assuming that it had been used as a container for cosmetics or medicaments.

Only two pottery fragments associated with Craftwork, possibly textile making, were found, and this in House {1095}. They were collected from Room 4 (Phase 4).

Ceramic vessels considered as markers of Private Religion were found in Room 1 of House {1095} (Phases 3 and 4). The room was apparently used in many ways. Nothing from this category was found in House {3111}.

Like the small finds, the pottery from the two houses under examination shows mainly all stages of food preparation and consumption with a clear pattern of storage jars found *in situ* and used most probably for water.

## 4.2 CLEAN AND UNCLEAN SPACES

### ANALYSIS

There are no rubbish dumps anywhere in House {1095} in Phases 1 and 2. From the perspective of the numbers of artifacts coming from the floor levels (including non-diagnostic objects), the level of cleanness is similar in all of the rooms. There is not one space from which discarded objects were removed regularly by the inhabitants. The courtyard was a place for dumping ash in the second phase (and probably also in the first phase, but these layers were not excavated). Phase 3 of House {1095} was short-lived, producing little in the way of remains (apart from the debris). The accumulation of ash in Room 2 in this phase clearly indicates dumping activity. The room was used for the same purpose also during Phase 4. The ash must have come from a fireplace in Room 1. Significant amounts of ash were also found in Room 5. The courtyard was still used as a dump for ash. The quantity of objects of all types in units from this phase was relatively high and did not suggest any particularly clean space. The small quantity of objects from Room 5 is related to the poor state of preservation of the layers. The quantities of objects (including non-diagnostic fragments) found in the floor level of Room 4 indicates a relatively unclean space.

The most obvious unclean space from Phase 1 of House {3111} was placed outside the proper house. The ruined Building {3130} was probably used as a place for dumping rubbish all through the existence of the building. The dump contained extremely large amounts of ash, pottery sherds and animal bones. The source of ash was probably an oven, which

has yet to be located. Remains of animal bones prove that also food remains were dumped there. The second unclean space was the courtyard, but the dump deposits in this case were different. The layer in the courtyard consisted of intercalated black ash and brown sand laminae. Ash, most likely from provisional fireplaces, were apparently dumped from time to time and subsequently covered with windblown sand. Three such fireplaces were traced in the courtyard from Phase 2.

The inner spaces of House {3111} were relatively clean and no specific dumping place was noted. The low artifact content of the well-preserved, relatively high-volume floor level suggests that Room 3 was kept very clean. By contrast, the sheer quantity of artifacts of all kinds scattered in the floor level inside Room 4 suggests relative uncleanness. The numbers of finds from this room are comparable with those for Room 1, despite the lower floor volume in Room 4. A similar situation was observed for Phase 2 with Room 3 still being very clean and Rooms 4 and 5 yielding large quantities of finds despite low-volume and poorly preserved floors. The extremely poor state of preservation of layers from Phase 3 precludes any conclusions except for the thick layers of ash found in the courtyard, which suggest that the main dumping place had shifted from the ruined Building {3130}.

The analysis has demonstrated that the inner spaces of both houses were kept relatively clean. Large dumps were located outside, in the courtyards or in ruined buildings. The sheer volume of all kinds of objects from the floors indicates that some rooms (Room 4 in House {1095}

from Phase 4, Rooms 4 and 5 from House {3111} from Phases 1 and 2) were not considered as clean spaces. Perhaps they were used for manufacturing activities and did not require regular cleaning. Other rooms, like Room 3 in House {3111} from

Phases 1 and 2, show regular cleaning. Considering the location of the room, at the back of the unit, and its small size, it seems probable that the high level of cleanness was due to its use for sleeping rather than receiving guests.

## 5. CONCLUSIONS

The architectural features of both houses presented in this paper, despite some differences, share many characteristics. Size and layout are what differentiates them the most. House {3111} occupied an area of 116 m<sup>2</sup> with a courtyard of 35 m<sup>2</sup>. The structure comprised up to eight rooms. House {1095} had approximately 80 m<sup>2</sup> with a courtyard of at least 4 m<sup>2</sup>. It consisted of five rooms. The layout of the eastern part of House {3111} resembles Bietak's type B1 (Bietak 1996), comprising one main living room and two rooms at the back. The layout of the western part is rather irregular and may have resulted from space constraints within the settlement. The layout of House {1095} resembles Tietze's type "b", which comprises the main living room with smaller rooms abutting the two sides (Tietze 1985; 1986). House {3111} was originally, in Phase 1, separated into two units with independent entrances. In the successive Phases 2 and 3, a third independent space (Room 4) was separated out. House {1095} was originally a single living unit (Phase 1 and presumably 2). It was separated into two units with independent entrances in Phases 3 and 4. Frequent changes of layout are notable in both structures. They should probably be linked with changes of the resident family structures. Irregular wall construction is another feature noted in

both buildings. The wall thickness, varying from one to two bricks, does not represent any clear pattern (e.g., the outer walls of House {3111} limiting Rooms 4 and 5 are much thinner than outer walls elsewhere).

From the perspective of an activity-area analysis the two structures share many elements. Installations, the best indicators of activities, are unfortunately rather rare. They indicate mostly storage activities and allow certain spaces to be designated as "living rooms". Neither house has any structures indicative of manufacturing activities, e.g., ovens, quern emplacements. Alterations of installations in Room 1 of House {3111} is another example of multifunctionality in ancient Egyptian houses, especially those of small and medium size (Spence 2015).

The analysis of activities based on moveable objects, although the weakest indicator, confirms the multifunctionality of the rooms. The bulk of diagnostic fragments of small finds and pottery (reaching about 80% of the total number of objects) indicates activities connected with subsistence. Much less represented are remains of objects connected with storage and transport (about 10–15% of all objects). Remains representing different types of craftworks and private religion constitute less than 1% of all of the objects. More importantly, these proportions are the same for both

houses in all phases. Distribution of activities according to rooms also shows that from the perspective of moveable artifacts different activities could have taken place in the same room in the same phase.

The analysis of clean and unclean spaces revealed a fairly clear pattern. Waste prod-

ucts were kept mostly outside the house proper. The pattern is recognized in houses from other Egyptian settlements (Arnold 2015). In most rooms, fragments of discarded objects were regularly left on the floor. However, there are spaces which were evidently kept very clean intentionally.

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# Middle Kingdom tombs in the North Asasif Necropolis: field seasons 2018/2019 and 2020



**Abstract:** The early Middle Kingdom mortuary complexes of Khety and Meru continued to be the main research target of the Polish Archaeological Mission to North Asasif in the two winter seasons of 2018/2019 and 2020. The rubble dump on the eastern side of Khety's forecourt, left over from the 1922/1923 excavation, was now explored, leading to the discovery of hundreds of objects—fragments of wooden statues and models, cartonnages and coffins, shabti figurines and pottery—shedding light on the Middle Kingdom burial assemblages as well as the later usurpation of the tomb, mainly in the Third Intermediate Period. Conservation objectives included treatment of the decorated burial crypt and sarcophagus in the tomb of Meru and stabilization and cleaning of the plaster decoration in the mortuary cult chapel of Khety. The season in 2018/2019 was also devoted to a reconnaissance of the underground structures and protection of tomb MMA 507. Specialists studies of finds from the excavations, both recent and earlier, were continued.

**Keywords:** Theban Necropolis, North Asasif, Middle Kingdom, rock-cut tomb, conservation

The mission from the Polish Centre of Mediterranean Archaeology University of Warsaw continued its work on the hillside of North Asasif, a high-officials' cemetery dated to the reign of Nebhepetra Mentuhotep II, in two successive seasons, 2018/2019 and 2020. A major part of the effort was to

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conserve and restore the burial crypt and sarcophagus in the funerary complex of Meru (TT 240) and the mortuary cult chapel of Khety (TT 311), where weak wall plasters covered with painted scenes were in need of consolidation. Both tombs have been under investigation for the past few seasons and current work included both archaeological exploration and specialist studies. Excavation of the rubble dump in the eastern sector of Khety's courtyard yielded an assemblage of finds illustrating the sequence of reuse of this tomb. Research continued on the human and animal remains, the pottery and other elements of the pharaonic grave goods,

as well as artefacts of everyday use from the Byzantine era discovered during the team's earlier work in the two tombs.

The team also undertook a reconnaissance of the underground parts of tomb MMA 507 [Fig. 1], a multiple burial of more than 60 soldiers discovered in 1922/1923. By permission of the Ministry of State of Antiquities, the tomb interiors were protected prior to further research.

Site management objectives included the construction of a wooden floor and balustrades in the main passageway of Meru's tomb and an accessway consisting of massive steps built of rubble on the steep slope from the foot of the hill to the tomb doorway.

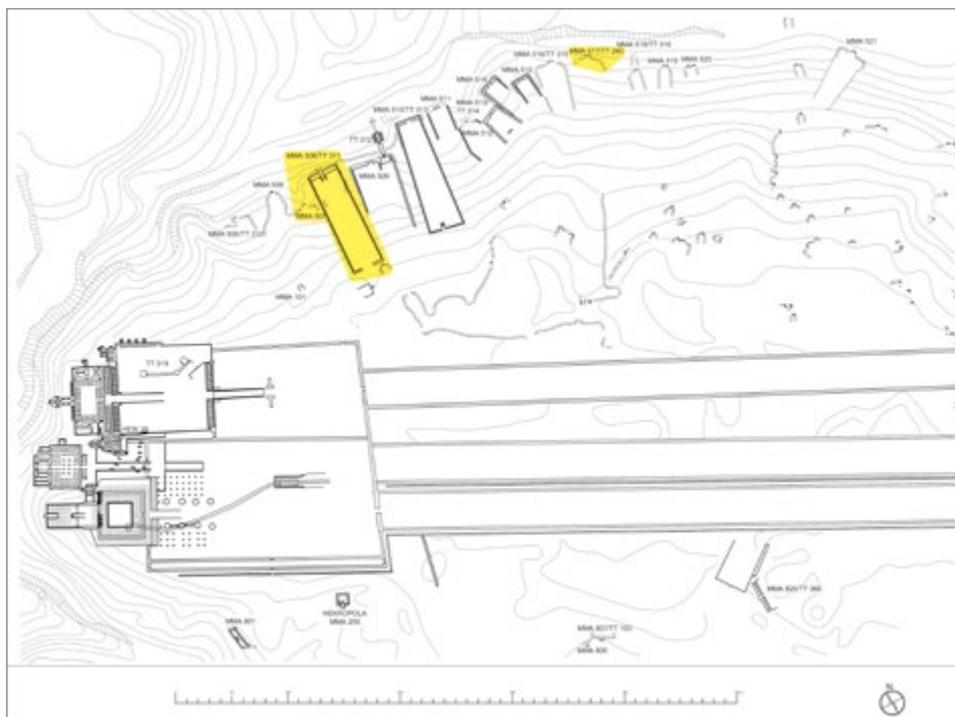


Fig. 1. Plan of Deir el-Bahari and the North Asasif necropolis – highlighted tombs where the work discussed in this article was conducted (PCMA UW Asasif Project | drawing K. Andraka after Arnold 1979: Pl. 38 and Eigner 1984: Plan 1).

## TOMB OF KHETY (TT 311)

### 1. ARCHAEOLOGICAL ACTIVITY

The tomb of chancellor Khety was discovered by the Egyptian Expedition of the Metropolitan Museum of Art directed by Herbert E. Winlock in the 1922/1923 season [see Fig. 1]. At the time

of discovery, the rock-hewn corridors and chambers of the tomb were filled with rubble containing ancient artefacts. The debris brought out from inside by Winlock's workmen formed a vast dump on the eastern side of the

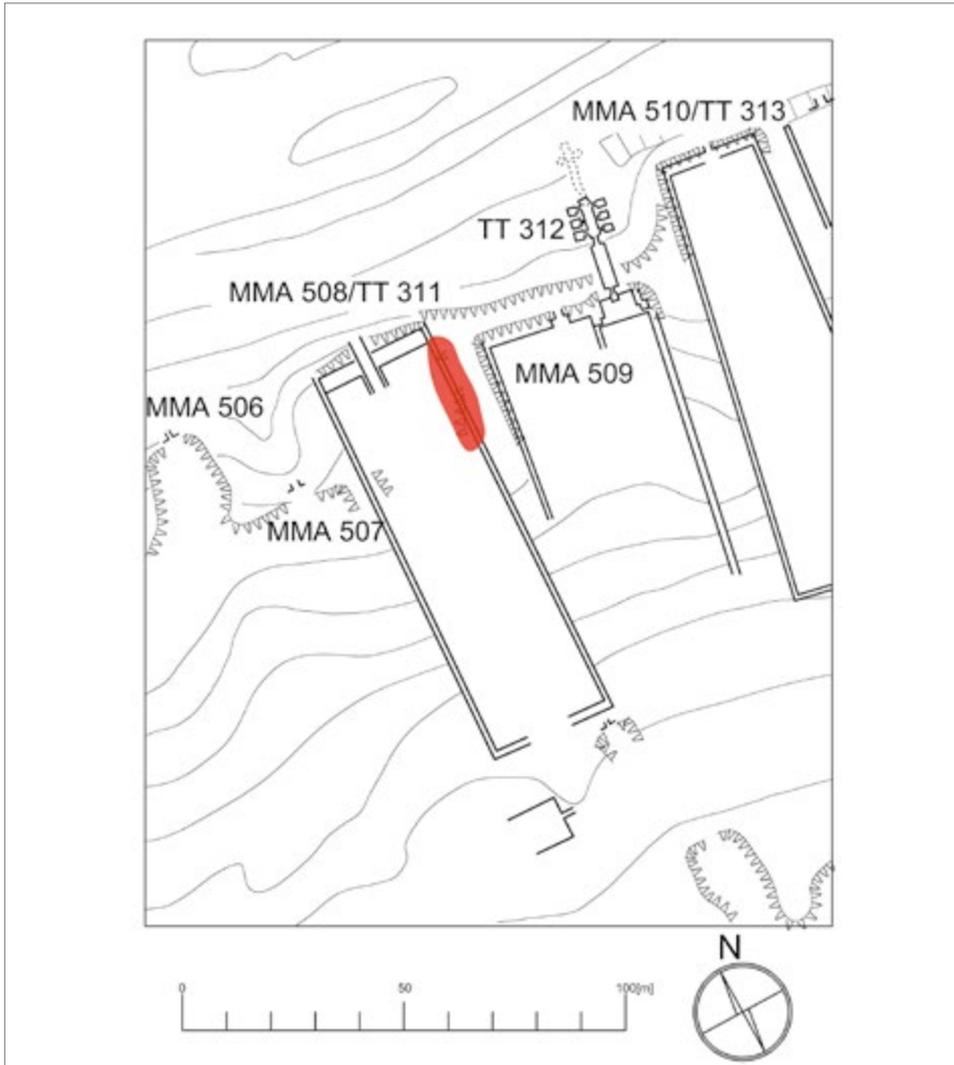


Fig. 2. Location of the rubble dump in the forecourt of Khety's tomb (PCMA UW Asasif Project | drawing K. Andraka)

forecourt [Fig. 2]. A reexamination of this archaeological dump became the task of the PCMA team during field seasons in 2017 (for preliminary results, see Chudzik 2018: 186–188) and 2018/2019. A ground survey in 2015 had already revealed an oval clay tray in the upper parts of the dump, close to the east lateral wall of the facade, and fragments of decorated limestone blocks from the main passage of the tomb protruding from debris in the middle of the dump (Chudzik 2017: 186). Systematic exploration of the rubble in the next years brought to light hundreds of artefacts and architectural elements from the interior of the tomb. A horizontal and vertical stratigraphy was observed in the dump, substantiating a closer examination of the finds aimed at reconstructing the sequence of use and reuse of the tomb. The present observations are limited, however, to preliminary remarks on human activity in the tomb after the Middle Kingdom, as well as to natural erosion processes and the original context of the finds.

### 1.1 Horizontal arrangement

The rubble dump was piled up alongside the eastern boundary of the courtyard for approximately 37.80 m, covering the remains of a mud-brick enclosure wall in the upper part of the steep slope. The width varied from 0.50 m at the northern end to more than 7.50 m in sectors I and II. Four different sectors of the rubble were distinguished, corresponding to the different rock-hewn structures of Khety's funerary complex [Fig. 3 top]. It is also fairly clear that the distribution of finds within individual sectors likely indicates the original context [Fig. 3 bottom].

### Sector I

The lowermost part of the dump is a thick layer of debris, reaching nearly 3.00 m at the highest point. The artefacts found among the rubble must have come from the fill of the innermost structures of Khety's tomb explored in Winlock's time, namely the sarcophagus chamber and most likely the interconnecting room, from where a reverse descending corridor leads to the main crypt. Hundreds of clay vessel fragments were found together with finely decorated fragments of the burial chamber wall decoration and the massive sarcophagus of limestone, fragments of Khety's wooden coffin covered with Spells from the Coffin Texts and a frieze of objects, as well as elements of Middle Kingdom grave goods, i.e., arrows, wooden models, a 5-cm-long head of a *sekhem* sceptre of one of Khety's figurines [Fig. 4], as well as remains of Nile crocodiles, which are particularly interesting and extremely rare in funerary contexts. The debris also contained remains of intrusive burials from the Third Intermediate Period, among others fragments of wooden anthropoid coffins, cartonnages, shabtis and Ptah-Sokar-Osiris figurines, faience amulets [Fig. 5], textiles and human remains. One of the mummies was undoubtedly buried in a niche hewn into the west wall of the interconnecting room. It should be kept in mind that clear boundaries between sectors in the rubble dump naturally could not be established, hence the finding of a few decorated block fragments from the main passageway, as well as fragments of the sandstone ceiling slabs in this context.

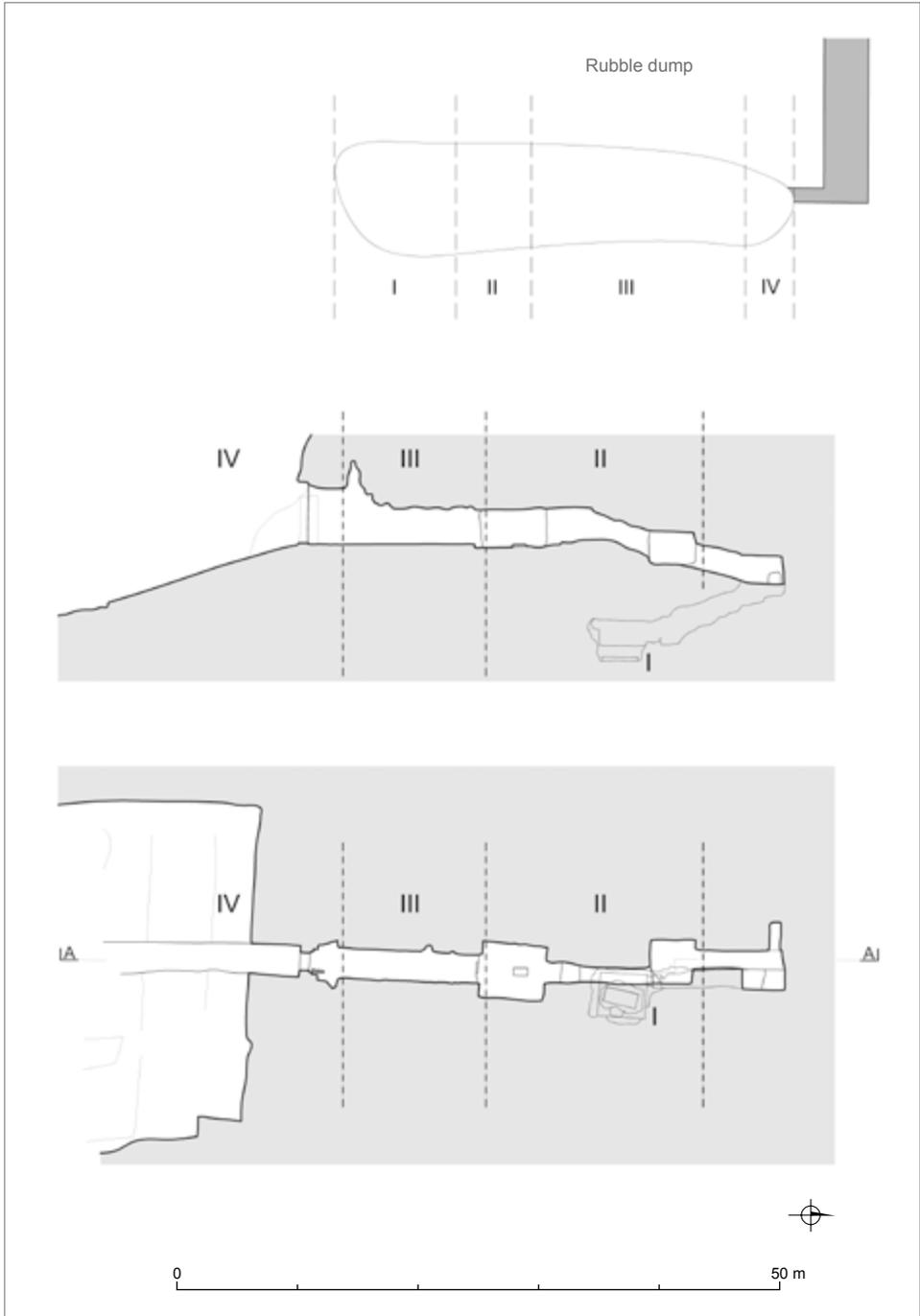


Fig. 3. Plan and section of the Tomb of Khety (bottom); numerals refer to the four sectors distinguished in the rubble dump located in the forecourt of the tomb (top) (PCMA UW Asasif Project | drawing K. Andraka)

## Sector II

Although a small number of fragments from the wall surfaces of the burial chamber was found in the southern part of Sector II of the dump, which was 6.20 m long, the context as a rule contained remains of painted lime plaster and fragments of limestone blocks covered with relief scenes clearly originating from the first descending corridor, the funerary cult chapel and the terminus of the main passageway. Exploration of this sector resulted also in

the discovery of fragments of at least five wooden statues and figurines, including a life-size statue of Khety, which must have once stood in a niche in the cult chapel.<sup>1</sup> Another statue, the head of which Winlock discovered and shipped to New York,<sup>2</sup> belonged most likely to Khety's wife. She was depicted also in scenes on the walls in the main corridor. The fill also contained incomplete Third Intermediate Period burials: remains of mummies, cartonnages and coffins, shabti and Ptah-Sokar-Osiris figurines.



Fig. 4. Wooden model of the head of a *sekhem* sceptre from the Tomb of Khety (PCMA UW Asasif Project | photo M. Jawornicki)

## Sector III

Sector III of the dump, 17.60 m long, also produced a large number of limestone block fragments covered with relief decoration, clearly from the main corridor. Hundreds of greater and smaller pieces were decorated with sunk and raised reliefs. Different carving techniques can be observed, indicating that several artists were at work creating this decoration [Fig. 6]. Of particular interest are the relief-decorated block fragments with graffiti painted in both black and red ink.

A small fragment turned out to be the missing piece of Ramesses II's name written in the cartouche on a graffito that Winlock discovered excavating the tomb. The graffito was of the vizier Paser, who visited the funerary monument of the Middle Kingdom official in Year 17 of the reign of User-maat-Ra Setep-en-Ra

- 1 A wooden statue of the tomb owner was set in a regular niche hewn into the wall opposite the chapel doorway, whereas the sandstone block in the centre of the chapel, which Winlock described as the base of this sculpture (Winlock 1942: 71), was in fact a purification basin (Chudzik 2016: 293).
- 2 MMA Inv. No. 26.3.104a (Winlock 1942: Pl. 36 [upper left]; Hayes 1968: 164, 210; Arnold 1991: 28-29, Figs 39-41; Roehrig, Hill, Allen and Brand 1995: 149, Cat. 56).

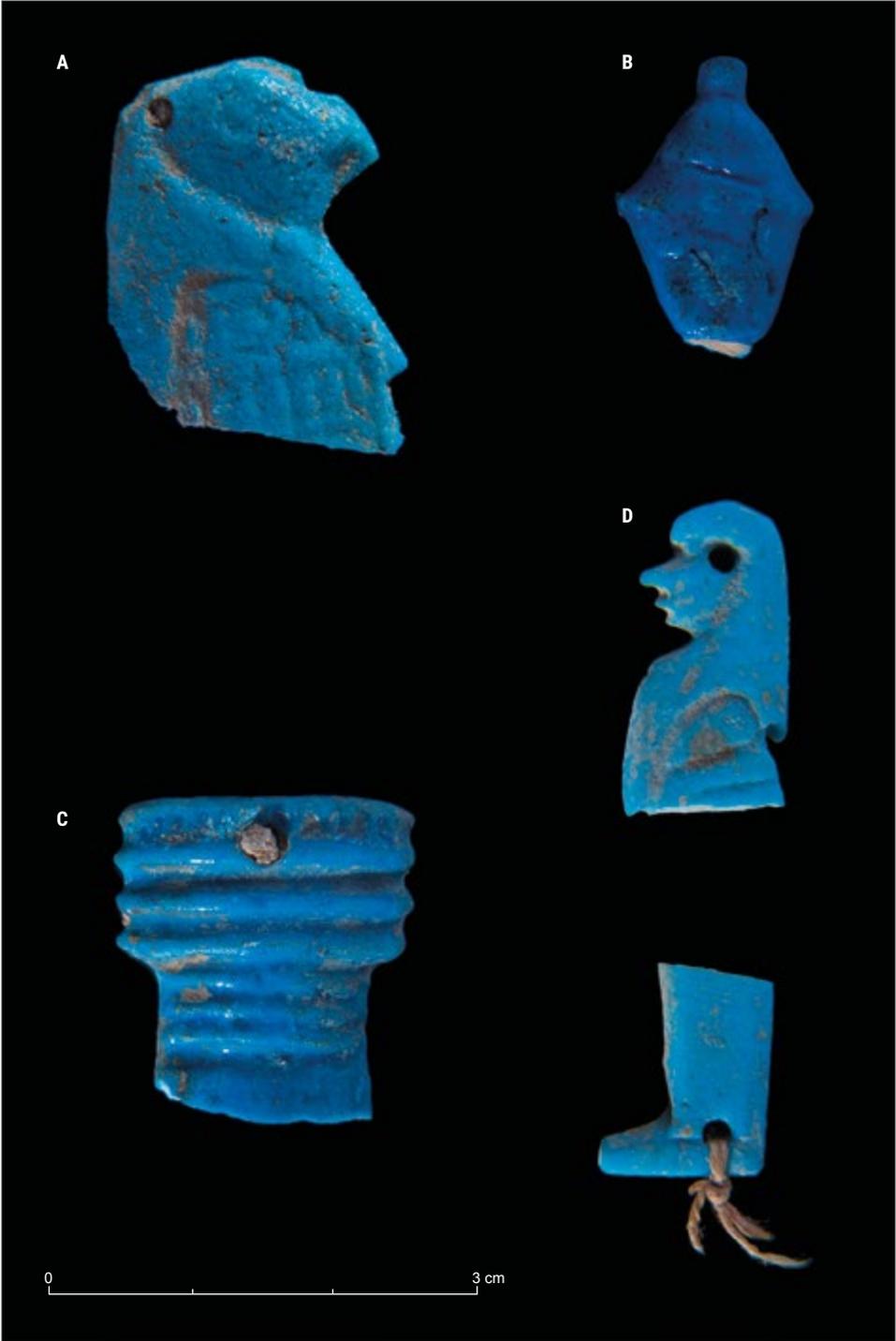


Fig. 5. Faience amulets from the fill of Khety's tomb (PCMA UW Asasif Project | photo M. Jawornicki)

Ramesses II (Winlock 1923: 17, Fig. 9); the second part of the king's prenomen was missing, but this had not affected the identification [Fig. 7]. Other similar short text fragments are presumably dated to the same period.

Special attention should be paid to a number of graffiti, which were most likely written shortly after Khety's

funeral. A group of seven inscriptions and their fragments, painted in red ink, consists only of the names written next to the representation of men facing left, hence originally depicted in a row on the eastern side of the entrance corridor. One of the names, Senwosret [Fig. 8], clearly indicates that they were added to the decoration of the main passageway



Fig. 6. Relief block decoration from the main passageway in Khety's tomb (PCMA UW Asasif Project | photos M. Jawornicki)

in the early Twelfth Dynasty at the earliest. However, it is still uncertain why they were written here in the first place. Chancellor Khety was one of the most prominent officials in the court

of Nebhepetra Mentuhotep II. His position is clearly confirmed not only by his funerary monument in the Theban Necropolis, but also by inscriptions containing his name and titulary in

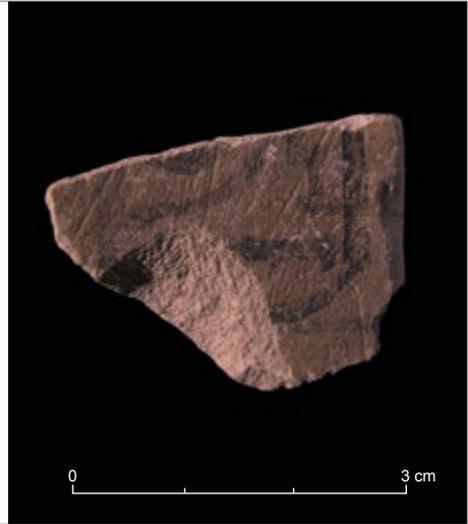
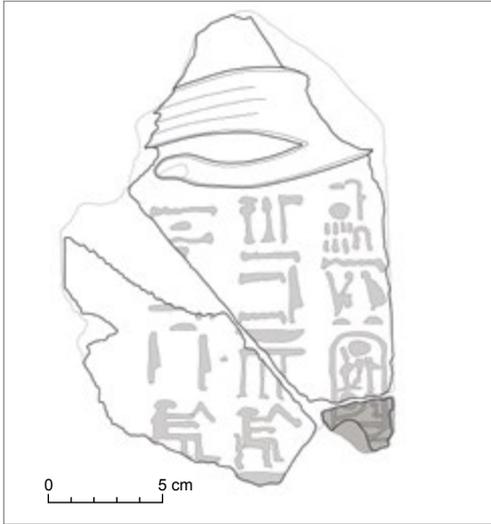


Fig. 7. Ramesside graffito from the main passageway in Khety's tomb: left, fragment from the dump discovered in 2020; right, drawing of the graffito found by Winlock with the newly discovered fragment of the king's name added at bottom right (PCMA UW Asasif Project | photo M. Jawornicki; drawing and modification G. Biczak after Winlock 1923: Fig. 9)

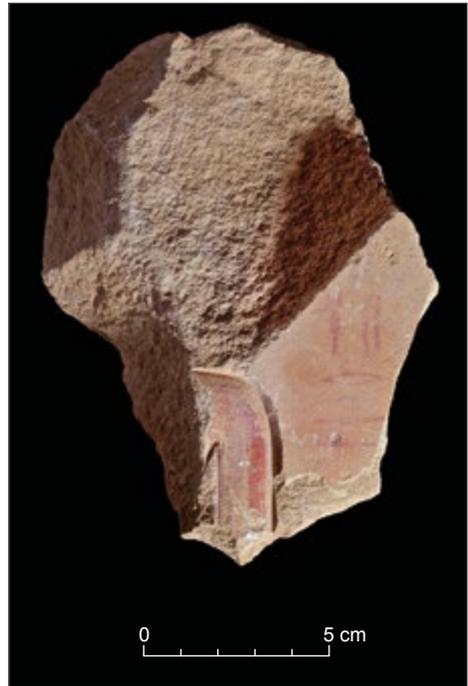


Fig. 8. Relief block decoration with the arm of a male and later graffito mentioning the name Senwosret (PCMA UW Asasif Project | photo M. Jawornicki)

the royal mortuary temple at Deir el-Bahari<sup>3</sup> and rock graffiti at Wadi Shatt er-Rigal.<sup>4</sup> His reputation presumably endured after his death as attested by two other objects, both made of red granite, inscribed with Khety's name and titles, found in Karnak. The first is a headless statue mentioning *htmti-bitj smr w<sup>c</sup>tj jt-ntr jmj-r htmt m t3 r dr=f im3h hty m3<sup>c</sup> hrw* "king's seal-bearer, unique friend, god's father, overseer of the seal in the entire land, revered Khety, justified".<sup>5</sup> The other one is an altar with an offering formula *htp-di-nsw h3 t hnkt k3 3pd sš mnht n jmj-r htmt im3h hty m3<sup>c</sup> hrw* "an offering, which the king has given, of a thousand of bread and beer, beef and fowl, alabaster and clothing for the overseer of the seal, revered Khety, justified" and *im3h hr ntr 3 nb 3bdw jt-ntr mry-ntr hty m3<sup>c</sup> hrw* "revered by the great god, lord of Abydos, god's father and beloved Khety, justified".<sup>6</sup> The stylistic features of the two monuments from Karnak clearly indicate their creation in the Twelfth Dynasty, but it is uncertain whether they were dedicated to Khety's cult or were donated by another individual of the same name and bearing the same titles in later times (Allen 1996: 8–9; 2003: 19).

The uppermost part of this sector also yielded a large assemblage of limestone block fragments (over 200

pieces) from a doorway system. All of these pieces were painted red with black dots, whereas some of them also contained fragments of scenes and texts (see below).

The other materials from the sector represent the same repertoire as the two contexts described above. Human and animal remains, fragments of wooden coffins, cartonnages, shabti figurines and pottery sherds, but also some fragments of Middle Kingdom wooden statues and figurines indicate that the tomb was robbed in antiquity and the grave goods were scattered in various parts of the substructures.

#### Sector IV

The uppermost and the smallest part of the dump, only 4.00 m long, covered the eastern part of the lower rock-cut step crossing the courtyard, and the bedrock behind the lateral mud-brick wall. The maximum height of homogeneous debris in the lower part of the dump reaches 0.80 m. Excavation of the sector recorded a small quantity of mostly fragments of uninscribed terracotta cones, mud bricks, pottery sherds and pieces of a round funerary clay tray, as well as fragments of decorated doorjamb and lintel. This part of the dump clearly came from the cleaning of the tomb façade and its doorway.

3 His name is attested on three block fragments: Nos 82, 660 and 3078, see Allen 1996: 6, footnote 22; 2003: 19, footnote 58.

4 Petrie 1888: 15, Pls XV–XVI (Nos 443 and 489, respectively); Winlock 1940: 142–143, Figs 7–8; 1947: 62–63, Pls 12, 36–37.

5 Currently on display in the Rijksmuseum van Oudheden (National Museum of Antiquities) in Leiden, Inv. No. AEBB (Mariette 1875: 44, Pl. 8j; Boeser 1910: 5, No. 40, Fig. 13, Pl. XXI; Schneider and Raven 1981: No. 39).

6 Collection of the Egyptian Museum in Cairo, JdE 67858 (Kamal 1938: 15–19, Pl. 3).

## 1.2 Vertical stratigraphy

A thorough analysis of the nature of the debris distinguished a vertical stratigraphy, which however could not be recorded other than by descriptive documentation and schematic sketching of layers, thus due to the steepness of the slope which resulted in continuous down-sliding of the rubble [Fig. 9]. In some parts of sectors I, II and III, three layers of the dump were identified, reflecting an inverse stratigraphy:

(1) uppermost layer of debris consisting of small- and middle-sized stones and rocks, containing a large number of decorated fragments of limestone blocks and bowls made of blocks. The ancient rubbish also included fragments of wooden coffins and cartonnages, shabti figurines, as well as human and animal remains. The team also found remains of Middle Kingdom funerary equipment.

(2) the second stratum in the middle of the dump contained only a few

decorated block fragments, but definitely more remains of mummies and burial assemblages. Interestingly, this layer of debris consisted mostly of small-sized rocks, almost without any middle-sized examples and a total absence of large rocks.

(3) the lowermost strata contained only single bone fragments as well as some wooden and faience objects. This layer consisted mainly of middle- and large-size rocks, which had fallen as a result of natural erosion.

The character of the ancient rubbish, especially when considered in accordance with the vertical stratigraphy of the dump, illustrates the history of the tomb after the Middle Kingdom. A preliminary reconstruction of the various phases of reuse of the tomb runs as follows. In the reign of Ramesses II, when the vizier Paser visited the tomb of Khety, its walls were still in place, but it is not clear that the sarcophagus chamber had not been robbed as yet.

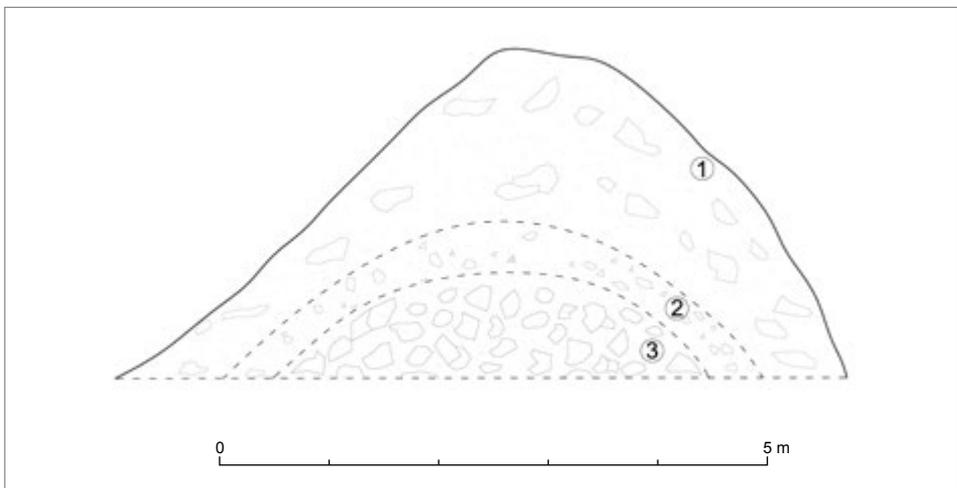


Fig. 9. Section through the rubble dump in the forecourt of Khety's tomb (PCMA UW Asasif Project | drawing P. Chudzik, digitizing K. Andraka)

Subsequently, most likely at the close of the New Kingdom or in the beginning of the Third Intermediate Period, the finely decorated walls of Khety's main passageway and partly the walls in the burial crypt, as well as his sarcophagus made of high-quality limestone, were intentionally shattered into smaller pieces using small chisels. Stone vessels were made from these pieces. This was the most destructive phase in the history of Khety's tomb.

The period that followed was a time of intrusive burials. Many people, both adults and children, were buried in the deepest chambers and presumably also in the corridors of the underground structures. Looting was commonplace, the burials from the Twenty-second and Twenty-third Dynasties being scattered around the tomb interior. After that the tomb appears to have been visited only by wild animals, until finally the rock ceiling in the front part of the entrance corridor collapsed and filled almost the entire tomb with rock debris, which is the condition in which the tomb was discovered in the early 20th century.

## 2 CONSERVATION WORK

A program for the conservation of the mortuary cult chapel of Khety was initiated in 2020. The walls of the tomb are covered with lime plaster heavily mixed with plant fibers and small stones, and decorated with a painted repertoire of scenes of food and beer production, workshops, offering bearers and a pilgrimage to Abydos. The plaster is fragmentary on both sides of the chapel doorway (south wall), small fragments appear on the east wall and bigger ones

on the west wall, whereas the northern side of the room reveals remains of plaster on the west side of the statue niche in particular. Natural processes of rock erosion have left the plaster in very poor condition, requiring immediate stabilization treatment.

The first step was to mechanically remove dust and hornet nests (the following description is based on unpublished reports by conservator Ahmed Farag). Voids under the plaster, where it has come loose from the rock, were grouted with liquid mortar to make the plaster adhere and the fragile edges of preserved patches of ancient plaster were protected with sealing bands of mortar. Finally, the filled voids as well as smaller gaps and cracks were covered with a second layer of mortar mixed colored with an earth pigment.

## 3 STUDIES

Specialists focused concurrently on the tomb architecture and specific categories of finds: grave goods from original and intrusive burials, as well as human and animal remains.

### 3.1 Architectural research

The progress of archaeological work in the tomb has contributed new data for architectural research, which has been ongoing since the beginning of work in this tomb five years ago. Among the newly studied structural elements is the doorway system connecting the substructures with the corridors and chambers carved into the mountain. The tomb entrance, situated in the centre of a monumental mud-brick façade, was flanked by two limestone doorjambs, decorated with

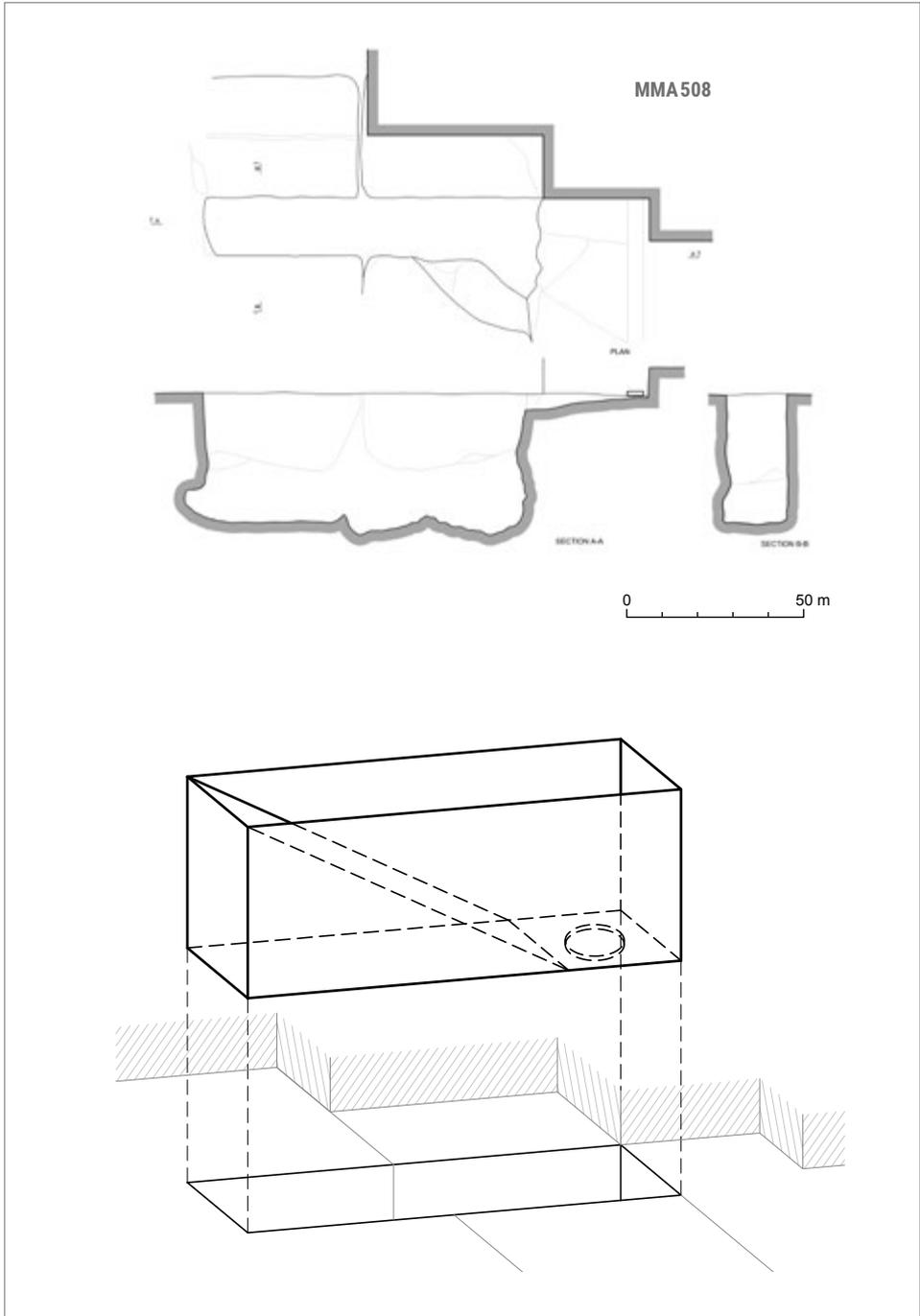


Fig. 10. Floor recess for the lower door socket behind the doorway in Khet's tomb: top, plan and section; bottom, hypothetical reconstruction of a wooden door socket (PCMA UW Asasif Project | drawing K. Andraka)

representations in sunk relief and painted with vivid colors. The representation depicts Khety sitting on a chair, above his head a hieroglyphic inscription painted blue, containing his name and titulary. The lintel was decorated in the same technique, depicting a winged sun-disk and the name of the king Nebhepetra written in cartouches on either side. The background is painted red with black dots imitating red Aswan granite, which has strong solar connotations.

New fragments of the doorjambs and lintel, recovered from the dump in the forecourt of Khety's tomb, contribute to a more complete reconstruction of both these architectural elements. Cleaning in the main passageway uncovered a rectangular recess in the sandstone floor of the corridor, just behind the eastern doorjamb [Fig. 10 top]. The size and shape of this recess suggests that it had served to position the lower door socket. It is possible to reconstruct the shape of the socket and the technique of mounting the door. The socket was most likely made of a single block of wood of rectangular shape. A long descending groove led down from the rear end to the circular socket at the bottom [Fig. 10 bottom].<sup>7</sup> The door leaf was hung up first by passing the upper pivot into the socket carved in the lintel, and then letting down the lower part of the leaf into the lower socket using the slot.<sup>8</sup>

Exploration of the tomb entrance did not reveal a recess that could be expected on the left side of the corridor. This clearly indicates that the doorway was closed with a single-leaf doorway. No remains of the doorway have been identified so far, but it is to be assumed that it was made of long boards of sycamore wood that were doweled together and backed with wooden cross-pieces. The door was then coated with gesso and decorated with a representation of the king and the name of the deceased, which seems to be provided by a fragment of a door leaf discovered by Winlock in 1923 in nearby tomb MMA 509a (Winlock 1923: 15, Fig. 15 *in situ*; 1942: 70, Fig. 15; Hayes 1968: 257, Fig. 163).

### 3.2 Human remains

The exploration of the underground structures and the dump in the courtyard yielded a large number of human remains, both skeletonized and mummified. Examination by physical anthropologist Roselyn A. Campbell<sup>9</sup> leads to the preliminary conclusion that the tomb of Khety was the last resting place of at least 20 (probably more) individuals (Campbell 2019: 163). Whether this group includes the remains of Khety himself one cannot say at the present stage of research. A large and massive femur undoubtedly belonging to an adult was excavated in the burial crypt.

7 For a similar lower door socket from the temple of Kom Ombo, see Clarke and Engelbach 1930: 164.

8 On door leaf mounting techniques, see Arnold 2003: 74–76.

9 Campbell also examined human remains from the Middle Kingdom Tomb MMA 514, which was repeatedly reused in later periods, as confirmed by intrusive shafts and chambers hewn in the original entrance passageway and mortuary cult chapel (see Campbell 2018; 2020 in this volume).

Some of the buried individuals could have been interred here during the Third Intermediate Period. This is suggested by fragments of at least five wooden coffins, cartonnages and remains of grave goods.

Remains of five infants have also been identified, changing the previously held view that there were no child burials in this tomb.

### 3.3 Archaeozoological research

Animal bone remains are among the most frequently discovered materials from ancient Egyptian tombs. The exploration of the mortuary complex of Khety, both the underground structures and the dump on the courtyard, also brought to light hundreds of bones, bone fragments and teeth belonging to different species of animals. Archaeozoological research initiated by Urszula Iwaszczuk in the 2018/2019 field season provided

particularly interesting data on the early Middle Kingdom burial assemblages, but also on the later history of Khety's tomb.

The faunal assemblage examined during the 2018/2019 season counted altogether 344 animal bones, bone fragments and teeth. The material mainly consists of mammals: domestic (donkey, cattle and dog) and wild, as well as fishes. Of particular interest is, however, the presence of the bones of a Nile crocodile.

Considering the four types of animal burials distinguished by Salima Ikram (2005: 1–16), i.e., beloved pets, votive mummies, funerary food offerings and sacred animals, one can say that some of the species found in the tomb of Khety clearly correspond with the last two types. The most common finds from the Middle Kingdom funerary context, also well attested in the tomb of Khety, are cattle bones, which were not part of the



Fig. 11. Conservation work in the burial crypt of Meru (TT 240) (PCMA UW Asasif Project | photo M. Jawornicki)

everyday diet. Their consumption was recorded mainly during celebrations, such as funeral ceremonies and mortuary rituals (De Meyer, van Neer, Peeters and Willems 2005: 60–66); the parts that were deposited foremost in the tombs were cattle heads, forelegs and feet. For

the same reason probably the burial assemblage of Khety contained fragments of the body of a Nile crocodile, a sacred animal of the god Sobek;<sup>10</sup> however, in contrast to the cattle bones, the Nile crocodile remains are an extremely rare discovery.<sup>11</sup>

## TOMB OF MERU (TT 240)

### 1 CONSERVATION WORK

In order to ensure stability of the ceiling and therefore the safety of the mummified body of the overseer of sealbearers Meru and his funerary equipment, the burial crypt was carved deep into the hard limestone beds of the Theban Formation. Although the walls of the sarcophagus chamber were carefully smoothed with copper chisels, they were not formed as perfectly flat surfaces. Therefore, the crypt has the shape of an irregular cube. Additionally, a wide crack running across the chamber and sarcophagus raised concerns. In some places the crack was so wide that it was filled by the ancient workmen with small stones or a limestone block, for example, in the floor on the western side of the sarcophagus. Subsequently, the walls were covered with a very thin layer of lime plaster and then painted with colourful friezes of objects, false doors, offerings and inscribed with offering lists and Spells from the Coffin

Texts,<sup>12</sup> whereas the ceiling of the crypt was painted blue.

Conservation activity in the tomb of Meru began in 1996 with the Italian Archaeological Mission from the University of Rome “La Sapienza”, directed by Alessandro Roccati, removing a thin layer of accrued smoke, dirt and bat excrements from the surface of the paintings (Roccati 1997: 241–243, Pl. LXIV [B]).<sup>13</sup> The Italian conservators, Adriano Luzi and Luigi de Cesaris, replaced some fallen fragments in their original position and cleaned part of the east wall, as well as small fragments on the west wall and ceiling, revealing the original colors of the painting, which are still quite bright, and the vertical columns of texts.

Twenty years later, the Polish mission started a comprehensive conservation and restoration program prepared by Izabela Uchman and under her management. The aim is to revitalize the original historical and aesthetic values

10 For the cult of god Sobek in the Theban Necropolis, see Kockelmann 2011.

11 Remains of Nile crocodiles were also found among others in Tomb MMA 509a, located east of Khety’s funerary complex (unpublished material) and in Tomb 16L05/2 at Dayr el-Bersha (De Meyer, van Neer, Peeters and Willems 2005: 58, Fig. 10).

12 For preliminary results of the epigraphic studies, see Stupko-Lubczyńska 2020, in this volume.

13 I am deeply indebted to Francesco Tiradritti for sharing information on the work of the Italian mission.

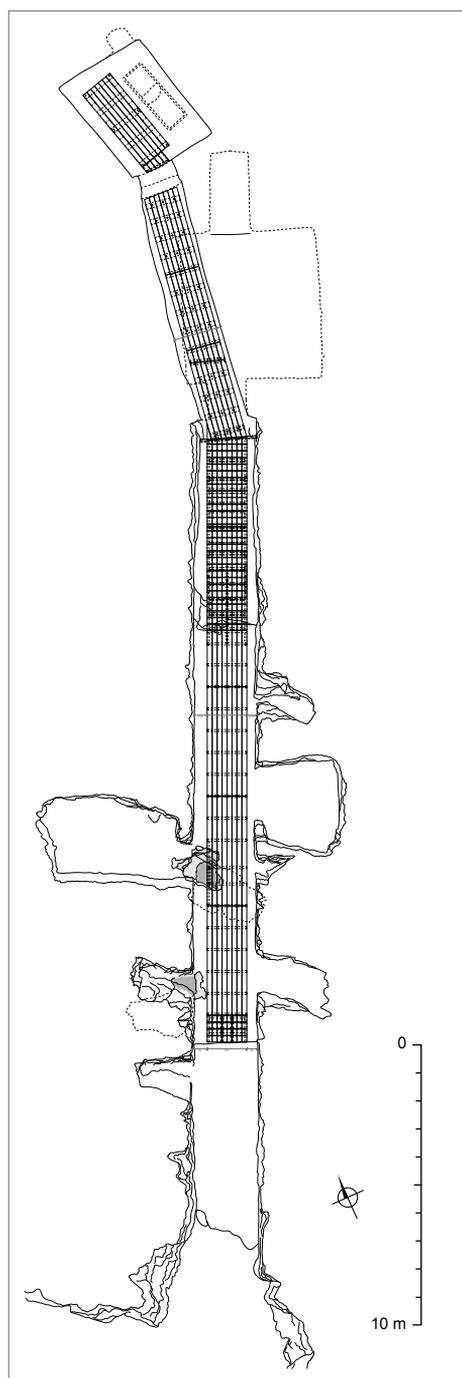


Fig. 12. Plan of the wooden floor system in the Tomb of Meru (TT 240) (PCMA UW Asasif Project | drawing G. Biczak)

of the decoration by implementing a complex treatment based on research. It was observed that the ancient wall decoration was not only covered with accumulations, but large fragments of the plaster, on the north and south walls, were almost totally gone. Damage in the form of an irregular niche was observed on the eastern side of the north wall; it was carved apparently in Byzantine times. The focus of work in the in 2018/2019 season was on reinforcing and stabilizing the technological structure of the painting [Fig. 11]. The team concentrated on cleaning the thin layer of accumulations. The procedure took place in two phases: the dirt and bat excrements were first removed from the surface and this was followed by chemical cleaning. All the powdering plaster and polychromy was consolidated. The conservation work and studies will be continued in the following seasons. Ultimately, wooden floors and balustrades will be constructed and lighting installed in order to open the tomb to the public.

## 2 STUDIES

### Pottery assemblage in context

Most of the pottery collected from the mortuary complex of Meru was found on the forecourt, hence it is difficult to associate it with any particular underground structures. Despite the fragmentariness of the assemblage, ceramologist Teodozja Rzeuska reconstructed a chronological sequence that corresponds almost completely with that represented by other finds from the tomb (T.I. Rzeuska, unpublished report).

The overseer of sealbearers Meru was a high official in the court of Nebhepetra Mentuhotep II and his position is clearly exemplified by the oldest pottery group consisting of large storage vessels that are characteristic of the late Eleventh and early Twelfth Dynasties. These vessels were brought to the tomb together with other elements of the grave goods and left in the burial crypt during the funeral ceremony. Other fragments of Middle Kingdom pottery are dated to the period between the mid-Twelfth and early Thirteenth Dynasties. Interestingly, while the chronological context of the oldest ceramic material is confirmed, among others, by a flint knife (Chudzik 2016: 300, Fig. 13) and the wooden head of a *sekhem* sceptre from a small figurine, presumably representing the tomb's owner, the second phase of the Middle Kingdom assemblage has not been attested in the other groups of finds.

The tomb of Meru was reused in later periods, chiefly during the Third Intermediate Period and in Byzantine times, but the ceramological research also revealed material from the New Kingdom and Late Period. After the fall of the New Kingdom, the tomb was reused for an intrusive burial during the Twenty-second or Twenty-third Dynasty, which is also confirmed by finds of cartonnages and shabti figurines from that time. The antechambers on both sides of the main passageway were cut most probably for these burials (Chudzik 2016: 298, Figs 11–12). One of these was subsequently used by Coptic monks for a small hermitage, as attested by pottery typical of such occupation.

## 2.2 Archaeozoological material

The assemblage of faunal remains from the mortuary complex of Meru provided equally interesting data. Whole and fragmentary animal bones were found during a ground survey in 2015 of the steep forecourt (Chudzik 2016: 300). Iwaszczuk examined the set in the winter season of 2018/2019, finding a predominance of cattle bones, which represent most probably remains of sacrifices at the tomb during the funeral ceremony of Meru. Among the remains there were also wild mammals (small ruminants) and other domestic mammals. The latter were identified as donkey and camel and should be connected with the latest phase of the tomb's reuse, that is, the Coptic hermitage.

## 3 SITE MANAGEMENT

Site management and presentation are tasks undertaken by the team within the frame of a comprehensive approach, involving also conservation, restoration, archaeological, epigraphic and architectural research, aimed at broadening knowledge of Ancient Egyptian civilization while protecting cultural heritage. In recent seasons this called for introducing an inner communication system, that is, a wooden floor starting from the present doorway (located in the main passageway) all the way into the sarcophagus chamber [Fig. 12]. A path in the form of steps leading from the foot of the hillside to the doorway of the tomb was constructed of debris on the slope. Protective screening of the decoration of the burial crypt, lighting and information boards will be carried out in the next field season.

## TOMB MMA 507

Winlock discovered tomb MMA 507 at the end of the winter season in 1923. The tomb was located high up on the hillside in the western part of North Asasif, in the neighborhood of the funerary complex of chancellor Khety (TT 311) (Winlock 1942: 122). The tomb had been robbed before, but Winlock found dried-up human remains and therefore assumed that they were bodies of Coptic monks, whose burials were frequent in this area. Three years later, in 1926, the New York expedition returned to complete the excavation of the funerary complexes in the North Asasif necropolis. It was then that some of the textiles from MMA 507 were found to be marked with names typical of the Middle Kingdom. Work was resumed in the tomb revealing more marked linen and

other finds that changed Winlock's earlier interpretation. Of particular interest was a detailed anthropological examination by Douglas E. Derry, which resulted in several interesting observations. The number of individuals buried in this tomb reached over 60. All of the bodies had been wrapped without mummification and showed signs of external violence, including a group of individuals killed by arrows (Winlock 1945: 9–24). The nature of the injuries together with bows and wrist guards found in the debris were clear evidence to Winlock that Tomb MMA 507 was the burial place of a group of soldiers slain in battle. Moreover, due to the Middle Kingdom date of the names marked on the linen, he was convinced that they fell during the most important historical event

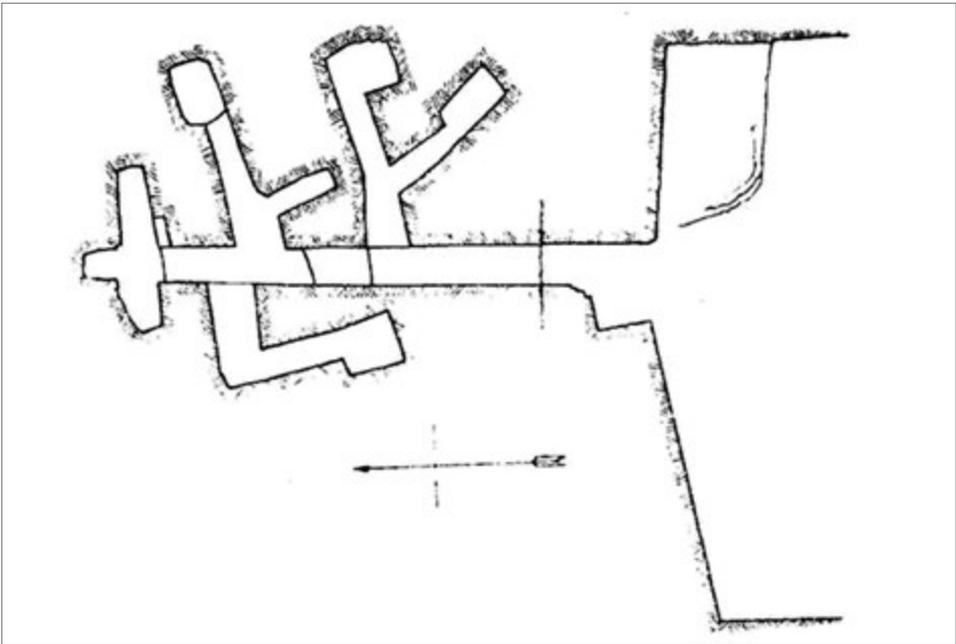


Fig. 13. Plan of Tomb MMA 507 (After Winlock 1945: Pl. II)

during the reign of Mentuhotep II, i.e. the siege of Heracleopolis (see Winlock 1928: 14–16), the main adversary of Thebes in the battle for the reunification of Egypt.<sup>14</sup> According to Winlock, the corpses of the soldiers were collected from a battlefield, where they must have been left for some time for vultures to scavenge on. They were then wrapped and finally buried together in a honorable tomb, placed in the vicinity of the royal mortuary temple at Deir el-Bahari.

Winlock also drew attention to the unusual architectural layout of Tomb MMA 507 and its catacomb character [Fig. 13]. The tomb entrance was located in the centre of a roughly-carved rock-façade, which is more than 23 m wide,

and it leads deep into the mountain. One should point out, however, an uncommon architectural feature in the main passage. The perspective trick of diminishing height of the entrance corridor, which gives the impression of a much longer passage than in reality, is frequent in other tombs (e.g., MMA 1152, see Chudzik 2013: 194), but in MMA 507 it has been achieved in a slightly different way. The ceiling becomes lower, but one can observe two steps, also leading down, in the floor. Despite the descending line of both planes, the corridor decreases in height from 2.20 m at the entrance to just 1.60 m at its end. Moreover, unlike most other Middle Kingdom rock-cut tombs, the main passageway did not lead to the mortuary cult chapel, but was



Fig. 14. Human remains, textiles and ancient rubbish in the Tomb of Soldiers (MMA 507) (PCMA UW Asasif Project | photo M. Jawornicki)

<sup>14</sup> For the situation in Egypt at the end of the First Intermediate Period and the conflict between Thebes and Heracleopolis, see Gomaà 1980: 145–157; von Beckerath 1996: 13–20; Darnell and Darnell 1997; Seidlmayer 2000: 118–147; Franke 2001: 526–532.

blind-ended, which may have been due to the fact that work in this tomb were never completed.<sup>15</sup> Short side corridors, two on the east and one on the west side, were hewn on both sides of the corridor, leading to small burial crypts. Deep niches or unfinished side corridors were carved on either side of the end of the entrance passageway. This uncommon architectural design was observed not only in Tomb MMA 507, but also in two others tombs, MMA 101 and MMA 506, discovered by the MET expedition in the lower and upper parts, respectively, of the western sector of the North Asasif necropolis. These tombs have a similar catacomb character, but only Tomb MMA 507 contained remains of slain soldiers.

Winlock's theory was taken up by Sydney Aufrère (2000), but more recently Carola Vogel pointed out many inaccuracies in the considerations regarding the date of the burials in Tomb MMA 507 (Vogel 2003: 241–245). In her opinion, the funeral ceremony took place definitely later than Winlock assumed, the names written in hieratic on the linen bandages actually being characteristic of the reigns of Amenemhat I and Senwosret I (Vogel 2003: 242–243). Regardless of the interment date of the slain soldiers in the early Twelfth

Dynasty, it is not clear whether Tomb MMA 507 was arranged at this time or should rather be dated to the reign of Mentuhotep II.

In 2018, the PCMA mission received permission from the Ministry of State for Antiquities to visit the tomb and to protect it by building a new doorway system, facilitating access to the tomb and comprehensive work in this complex. A preliminary reconnaissance by the Polish team demonstrated the need to undertake a cleaning of the interior and securing the rock-ceiling, which is loose and in danger of collapse. Remains of corpses of slain soldiers were observed, although in a much smaller number than when Winlock described it over 70 years ago. In addition, the assemblage included no skulls, which clearly suggests that the main diagnostic materials had been removed from the tomb. Nevertheless, the tomb still contained a large number of torn linen bandages scattered in the back part of the entrance corridor [Fig. 14]. The bad condition of the rock ceiling, debris in the main passageway and the site chambers, as well as anthropological material and huge amounts of textiles require quick and decisive action to protect and reexamine this tomb, using modern scientific technology.

## CONCLUSION

The two most recent field seasons of the PCMA UW mission to North Asasif resulted in the discovery of many artefacts, revealing relevant information

on the archaeological context of the late-Eleventh-dynasty burial assemblage as well as the later history of the funerary complex of Khety. A reexamination of

15 A similar state of work and a blind-ended entrance corridor was attested in the nearby tomb MMA 504 (see Ragazzoli 2017: 19–21).

the rubble, which had filled the interior of the tomb before being dumped outside in the course of the modern excavations, helped to reconstruct the chronological sequence of the reuse of the early Middle Kingdom funerary monument.

The primary task of the mission being the protection of archaeological heritage, the team conducted thorough conservation work in the tombs of Meru and Khety. The focus here is on the preservation of the unique decoration repertoire of Middle Kingdom funerary art, as well as site management leading to the opening of the tombs for visitors in the near future.

Finally, comprehensive studies of different find categories, such as pottery and human and animal remains, have contributed to the knowledge of Ancient Egyptian burial assemblages and funerary practices in the Theban Necropolis, mainly in a historical context. Of particular interest are Nile crocodile remains, which must have been left during the funeral ceremony in Khety's sarcophagus chamber. Their function in the mortuary beliefs remains unknown, but the uncommonness of the find in Middle Kingdom funerary context, undoubtedly indicates Khety's particularly important position.

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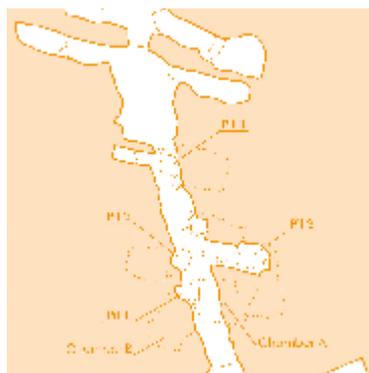
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# The human remains from MMA 514 in North Asasif



**Abstract:** The tombs of the North Asasif Necropolis have been the subject of archaeological excavations for more than a century. Mainly dating to the Middle Kingdom, the majority of these tombs were excavated for the Metropolitan Museum by H.E. Winlock in the early 20th century. In many cases, a significant amount of archaeological debris has been left behind, including detritus from the original use of the tombs in the Middle Kingdom and material from the Third Intermediate Period, when many of these tombs were reused. One of these tombs, MMA 514, was reused at least twice, and has yielded a wealth of leftover material, including a significant number of human remains. A Polish team from the University of Warsaw has been working at the site since 2013. The human remains have been fragmented, damaged, and scattered by centuries of looting, as well as by Winlock's excavations, but some information may still be gathered from these remains. Over the course of two field seasons, an inventory of the human remains was conducted, the results of which are presented here. All age ranges are present in the human remains, and both males and females are represented.

**Key words:** physical anthropology; Asasif; Middle Kingdom; Third Intermediate Period; rock-cut tomb

Located adjacent to the later, and more famous, Temple of Hatshepsut at Deir el-Bahari in southern Egypt, the North Asasif Necropolis comprises numerous tombs of Middle Kingdom officials [Fig. 1 inset]. Many of these tombs were reused after the original interment, especially during the Third Intermediate Period (Chudzick 2018).

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Though most of the tombs in the North Asasif Necropolis were excavated by Herbert E. Winlock in the early 20th century, he left a great deal of material behind, and

thus much information has been gained by recent cleaning and re-excavation of these tombs and the surrounding areas by the Polish Asasif Project.

### ARCHAEOLOGICAL CONTEXT

The discovery and early excavation of MMA 514 by Winlock have been described in greater detail in previous publications (Winlock 1922; 1923; Campbell 2018). After its discovery, probably between 1921 and 1923, the tomb was

excavated by Winlock on behalf of the Metropolitan Museum of Art in New York (Winlock 1922; 1923). While some of the more complete objects were retained by that museum, a great deal of material that was considered less interesting

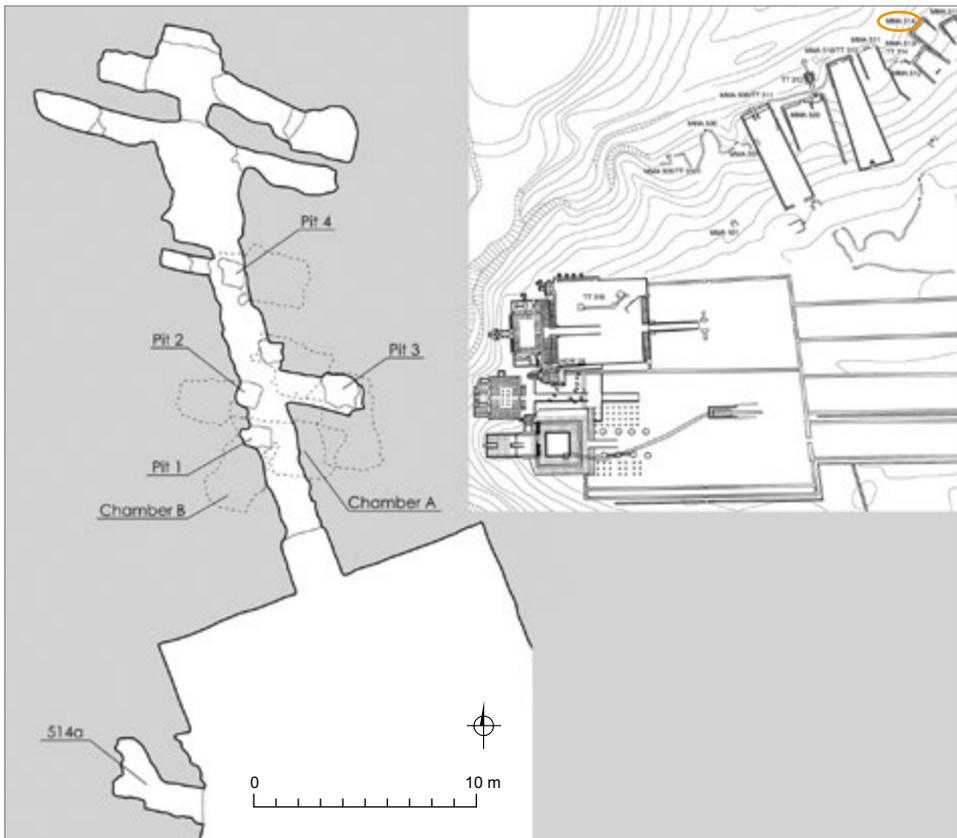


Fig. 1. Plan of the tomb MMA 514 showing an arrangement of the intrusive pit-tombs within the entrance passageway; inset, plan of the North Asasif Necropolis, showing the tomb courtyards and the location of tomb MMA 514. The Temple of Hatshepsut is located in the bottom left of the image. (PCMA UW Asasif Project/drawing K. Andraka)

or desirable was left behind both within the tomb and mixed with the excavation debris. From 2013 to 2016, the Asasif Project cleaned and re-excavated the debris left behind by Winlock, both in the tomb courtyard as well as the tomb itself. From this debris, it is possible to determine that MMA 514 was reused at least twice in antiquity after its initial construction in the Middle Kingdom: once in the early Eighteenth Dynasty for a single burial, perhaps entailing the cutting of a side shaft, and again for multiple burials in the Third Intermediate Period (Chudzik 2017; 2018; Campbell 2018).

The architectural details of MMA 514 have been discussed in greater detail elsewhere (Campbell 2018; Chudzik 2018). Broadly speaking, the tomb's architectural features have led archaeologists to classify it as Type IIa, a corridor tomb with a funerary complex that was common for officials during the Middle Kingdom (Arnold 1971: 43–46; Soliman 2009: 95–108, 191–192; P. Chudzik, personal communication, 2018). The tomb entrance is located within the remains of an outer courtyard; after an irregular chamber that probably functioned as a funerary chapel, the main tomb cor-

ridor was carved into the hillside, with several shafts and an irregularly shaped burial chamber opening off the main tomb axis (Chudzik 2017) [Fig. 1]. The four shafts appear to be intrusive, later additions, probably created for one or more of the occasions when the tomb was reused (P. Chudzik, personal communication, 2018). Human remains were recovered both inside the tomb and in the courtyard area outside. An additional rock-cut corridor tomb, 514a, is located on the western side of the main courtyard. It also yielded human remains, which are discussed here. This subsidiary tomb belonged to a lower official associated with the main tomb owner of MMA 514 (P. Chudzik, personal communication, 2020). Chudzik (2016) notes that the fill in front of 514a showed reversed stratigraphy, a strong indicator that the fill was deposited during previous excavation or clearing of the main and accompanying tomb, whether in antiquity or in more recent times. Various fragments of Middle Kingdom and Third Intermediate Period funerary objects were found in the fill, and are described elsewhere (Chudzik 2016; Campbell 2018).

## THE HUMAN REMAINS

Careful work by the Asasif Project uncovered numerous fragments of human remains, in various states of preservation. An inventory of the human remains, begun in 2017 when this author joined the project, was completed in 2020. Over the course of these two seasons, the human remains were sorted from the faunal remains, identified when possible, and cata-

logued. Over 350 entries were recorded, with many entries including multiple elements. Individuals of all ages were recorded, and levels of preservation varied from fragmentary and badly weathered to intact mummified elements that retained soft tissue, and sometimes linen mummy wrappings and resin. Pathological conditions were noted as they were encoun-

tered and photographed. Preliminary findings are presented here, but future work will focus on more in-depth analysis of demographic trends and, when possible, the health profiles apparent in these remains.

## METHODS

Given the highly commingled nature of the human remains from MMA 514, an exact count of individuals present is not possible. Instead, the minimum number of individuals (MNI) represented in the assemblage was estimated based on standard osteological methods (Adams and Byrd 2014; Osterholtz, Baustian, and Martin 2014). Though methods vary slightly, the primary task in calculating MNI is to count the occurrences of an identifiable, unique feature on a specific element (e.g., the medial condyle of a right femur). While this prevents an individual from being counted more than once, it also tends to underestimate the actual number of individuals, since it cannot account for paired but unmatched bones (e.g., a left femur and a right femur that are from different individuals) (Adams and Byrd 2008; Osterholtz, Baustian, and Martin 2014).

When possible, age at death and sex were assessed and noted. Broad age estimates were assessed based on standard osteological analysis of epiphyseal closure and dental eruption (Buikstra and Ubelaker 1994). In a few cases, preservation of the auricular surfaces of adult *os coxa* allowed the estimation of more precise age categories, following the criteria set forth by Buckberry and Chamberlain (2002). Nonadult remains were defined as any individuals demonstrating ongoing

growth and development, either skeletal (as evidenced by epiphyseal fusion) or dental (Scheuer and Black 2000; 2004; Corron et al. 2018). Nonadult remains were assigned to age categories based on morphological features, using the following categories from Baker and colleagues (Baker, Dupras, and Tocheri 2005): fetus/prenate, perinate (around the time of birth), infant (from birth to one year), child (one year to the onset of puberty, usually around 10 to 12 years of age), and juvenile (puberty to the mid-20s, when the last skeletal element, the clavicle, completes fusion). As morphological characteristics are generally considered more reliable indicators of age than metrics for nonadult remains, metric methods were not used for aging these remains (Baker, Dupras, and Tocheri 2005). While population-specific standards are always preferable, such standards are still being developed for Egyptian remains, and those that do exist tend to be restricted to specific populations and time periods, and thus may not accurately reflect aging rates for populations of different time periods, geographic locations within Egypt, or demographic mixtures.

When possible, sex was assessed based on morphological features of the *os coxa*, following standard osteological methods (Buikstra and Ubelaker 1994). Before the onset of puberty, assessing the sex of skeletal remains is difficult and often inaccurate, and thus was not attempted for the nonadults in this assemblage (Scheuer and Black 2004; Baker, Dupras, and Tocheri 2005; Corron et al. 2018). While metric methods may be used for adult remains with some degree of accuracy in commingled assemblages (see Marlow 2016; Mar-

low and Kozieradzka-Ogunmakin 2016), assessment of morphological features, whenever possible, is generally agreed to be the most accurate method of sex estimation (Buikstra and Ubelaker 1994).

Pathological conditions were noted and described as they were encountered, and photographed for further analysis.

## RESULTS

Preservation of the human remains ranges widely, which is unsurprising given the many occasions the tomb has been re-used and excavated over the centuries. Some remains show poor preservation and heavy weathering, while others retain large amounts of soft tissue, and sometimes mummification materials as well. A few elements have been partly or completely burned.

## AGE AND SEX DISTRIBUTION

Based on data gathered in 2017 and 2020, the minimum number of individuals (MNI) recovered from the entire MMA 514 complex is 13. This number was calculated by first assessing the number of proximal left ulnae present ( $n=12$ ). At least one infant is represented by other elements, thus bringing the MNI to 13. This is a very conservative estimate, and it is highly likely that more individuals are present, given the number of fragments that were too small or damaged to be sided and the apparent mismatch of some paired elements.

Of these 13 individuals [Table 1], one is an infant, one is a child (between one and 10–12 years of age), one is a juvenile, eight are adults, and two are older adults. The juvenile is certainly on the young end of the range, based on epiphyseal fusion

of the proximal ulna. A mandible showing fully erupted first and second molars but no eruption of the third molar may belong to this same juvenile. At least one adult is represented in the accompanying tomb, 514a, by a proximal left ulna. The partial remains of an additional individual, either a child or a young juvenile, were also found in the entrance corridor of 514a, but as no other nonadult remains were definitively identified inside this tomb, it seems likely that the remains of these two individuals were heavily mixed with other remains from the main tomb 514 in the courtyard.

For reasons discussed above, sex estimation was not conducted on the nonadult remains. Fragments of *os coxae* indicate that of the eight adults at least one was male. Biological sex could not be assessed for the remaining adults due to fragmentation, weathering, and the absence of skeletal elements with sexually dimorphic features. None of the remains from 514a yielded information about the sex of the individual(s) buried there.

Table 1. Age and sex distribution of human remains from the MMA 514 complex

Age category	MNI	Sex distribution
Infant (perinatal to 1 year)	1	Undetermined
Child (1 year to ~12 years)	1	Undetermined
Juvenile (~12 to ~25 years)	1	Undetermined
Adult (~25 to ~40 years)	8	1 Male
Older adult (~40 years and up)	2	1 Male 1 possible female
Total	13	2 Males 1 Female(?) 10 Undetermined

One older adult is represented by a fragmented right *os coxa*; the very narrow sciatic notch suggests this individual was a male, though the iliopubic and ischiopubic rami are absent postmortem. Assessment of the auricular surface of this *os coxa* suggests a mean age at death for this individual of 66 years (Buckberry and Chamberlain 2002). A fragmentary left *os coxa* could belong to the same individual, however, the wider sciatic notch and slightly lower age-at-death estimate (62 years) for the left *os coxa* could also indicate a different individual who died at a similar age (Buckberry and Chamberlain 2002). Another older adult (median age 66 years), possibly a female, is represented by another *os coxa* fragment, indicating the presence of at least two, and potentially three, older adults.

It should be noted that the use of the ulna to calculate MNI also has some bearing on age estimation; epiphyseal closure of the proximal ulna is highly variable, sometimes reaching completion before the 20s (McKern and Stewart 1957; Scheuer and Black 2004), and in rare cases sometimes persisting unfused into adulthood (O'Donoghue and

Sell 1943; Skak 1993; Scheuer and Black 2004). In this study, the proximal ulnae fell into three categories: 1) clearly adult, i.e., completely fused, 2) apparently adult and/or articulated to adult elements, but epiphyseal surfaces were covered by soft tissue, and 3) clearly nonadult, i.e., still in the process of fusing (as in the case of the two ulnae deriving from children). Those which fell into categories 1 and 2 were counted as adults, as all these elements appeared to be of adult size, and many were articulated with adult (i.e., fully fused) elements.

#### PATHOLOGICAL FINDINGS

The frontal bone of a child shows evidence of pitting characteristic of *cribra orbitalia*, which was healing at the time of the child's death [Fig. 2]. The right mandible of an adult shows perimortem loss of the mandibular first and second molars, with complete resorption of the alveoli, and loss of the third molar shortly before death, as indicated by the active resorption of the alveolus. There was no evidence of caries. Osteophyte formation on several adult lumbar vertebrae may be an indicator of advanced age or repetitive heavy lifting, or both.



Fig. 2. Unfused frontal bone of a child (left image), with evidence for *cribra orbitalia* in both the right (center image) and left (right image) orbits (PCMA UW Asasif Project/Photos R.A. Campbell)

**SPATIAL DISTRIBUTION OF HUMAN REMAINS**

The greatest number of human remains was found in the courtyard area near the entrance to MMA 514a; given Chudzik’s (2016) previous suggestion that the material in this area may have been placed here during earlier excavations, this wealth of material is no surprise (see also Campbell 2018).

Regarding the intrusive shafts in the main tomb, the greatest number of remains was recovered from Pit 4, followed by Pits 2 and 3, respectively. No human remains were recorded from Pit 1, nor from the main burial chamber, though many elements were found in the main tomb corridor and courtyard. Using the proximal left ulna as a proxy for distribution of individuals, it is clear that the human remains were distributed throughout the main tomb, most likely during the original use of the tomb, as well as during excavation and looting [see Table 2 and Fig. 3]

The infant remains that were found may hint at the extent to which the human remains were scattered. Infant remains were found in three locations: Pit 4, Pit 2, the east side of the courtyard

[see Fig. 3]. While it is possible that multiple infants are represented, there are no duplicated elements, and all appear to derive from an infant of approximately

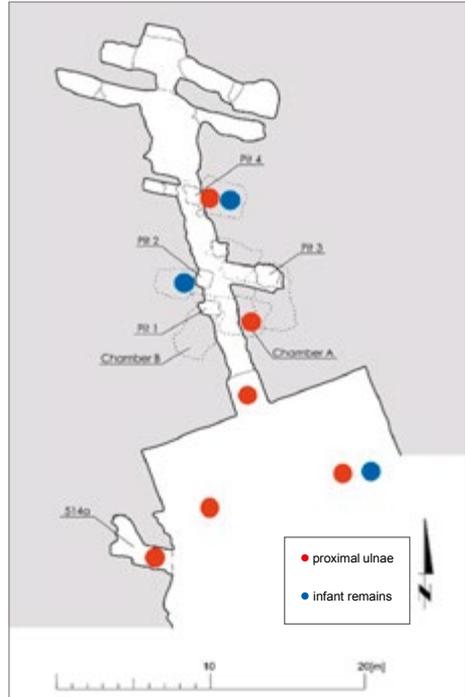


Fig. 3. Distribution of proximal ulnae (red circles) and infant remains (blue circles) inside the MMA 514 complex (general locations, not exact findspots) (PCMA UW Asasif Project/ original drawing K. Andraka)

Table 2. Distribution of proximal left ulnae from the MMA 514 complex, as well as the remains of at least one infant.

General location	Specific location	Minimum Number of Individuals
514	Main tomb, no specific location	2 (adult)
	Pit 4	2 (child)
		2 (adult)
	Pit 2, Pit 4, and Courtyard, east side	1 (infant)
Courtyard	West side (Sector A4)	1 (adult)
	East side	2 (adult)
	In front of 514a	2 (adult)
	514a	Entrance corridor
		<b>Total MNI = 13</b>

the same age (i.e., birth to one year). Likewise, a nonadult femur of a child or young juvenile, found in the entrance corridor to 514a, is the only nonadult element that was found in 514a; all other elements found in this accompanying

tomb were either obviously adult, or the age could not be determined due to fragmentation. It is clear then that the distribution of remains presented here represents only a glimpse into the actual complexity of this tomb's history.

## DISCUSSION

Due to the complex and layered history of the tomb, the archaeological material has been heavily fragmented and commingled. This makes conclusions about burial practices, and differentiation of separate tomb uses, extremely difficult, beyond the observation that the tomb was indeed used multiple times and during specific time periods, based on funerary material (Chudzick 2016; personal communication, 2018).

As with the nearby and roughly contemporaneous tomb of Khety (MMA 508) (Campbell 2019), MMA 514 yielded human remains ranging in age from infants to older adults. This broad distribution suggests that at least during one of its reuses, MMA 514 was employed for group burial, most likely for family members. Group burial of family members has been suggested for both the Middle Kingdom as well as the Eighteenth Dynasty and the Third Intermediate Period, when MMA 514 was used and reused (Chudzick 2016; personal communication, 2018; Campbell 2018). That the accompanying tomb, 514a, also yielded the remains of one adult and one nonadult presents a tantalizing hint that perhaps this tomb could have also been used for more than one burial, but given the disturbance of 514a and the distribution of material, this is in no way conclusive.

In some cases, multiple types and layers of mummy wrapping have been preserved [Fig. 4]. Even when mummification materials are not present, some of the human remains display very good preservation, including extensive soft tissue and even, in one case, locks of medium length hair, still attached to the skin of the scalp. The multiple layers of linen used to wrap these remains, and the fine quality of the outer wrappings, are an indication of this individual's high status.

Two joining fragments of a juvenile mandible, found in Pit 4, show bright green staining on some of the elements, particularly on a mandible fragment [Fig. 5]. Green staining in archaeological contexts is often due to the presence of copper artifacts, which corrode and come into contact with bone as the soft tissue decayed over time (Buikstra and Ubelaker 1994; Schultz et al. 2003; Schultz 2012; Dupras and Schultz 2013). A few other elements, including a cervical vertebrae and several cranial fragments, also show small areas of green staining, and may derive from the same juvenile.

Although the etiology is imperfectly understood, *cribra orbitalia* visible in the orbits of a child's frontal bone suggest a systemic stress on the child's system. Though imperfectly understood,

*cribra orbitalia* manifests as small pits in the superior portion of the orbits, caused by widening of the diploe (Angel 1964; Goodman et al. 2013; Keita and Boyce 2006; Ortner 2003; Waldron 2009). Though the condition is typically attributed to chronic iron deficiency (Sandford, van Gerven, and Meglen 1983; Stuart-Macadam 1985; 1992; Burkhart et al. 2001; Ortner 2003; Waldron

2009; Larsen 2015), some studies suggest it may also be linked to Vitamin C or D deficiencies, or to secondary periostitis (Ortner 2003; Larsen 2015). Regardless of the proximal cause, such lesions do indicate systemic stress of some kind, and typically appear in nonadults, whose systems may be stressed not only due to deficiencies but through the normal processes of maturation. Both



Fig. 4. Fragment of a mummified limb, showing the vertical layers of coarser linen covered by very fine linen wrapped horizontally (PCMA UW Asasif Project/Photo R.A. Campbell)



Fig. 5. Bright green staining on the central mandible of a juvenile (lingual aspect shown). (PCMA UW Asasif Project/Photo R.A. Campbell)

*cribra orbitalia* and its counterpart on the cranial vault, porotic hyperostosis, occur frequently on ancient Egyptian remains, and based on modern comparative studies may be partly caused by persistent blood loss due to para-

sitic infections, such as hookworm and schistosomiasis (Stephenson and Holland 1987; Chandiwana, Bradley, and Chombo 1989; Tanaka 1989; Brooker, Bethony, and Hotez 2004; Keita and Boyce 2006; Larsen 2015).

## CONCLUSIONS AND FUTURE WORK

With the initial inventory and preliminary analysis of the human remains from the MMA 514 complex complete, it is possible to begin to understand the layered history of this tomb. While the remains from both the main and the accompanying tomb have been heavily scattered and

commingled, it is possible to identify numerous individuals of various ages within the assemblage. In future seasons, work may include radiographic analysis of the remains, particularly the mummified individuals, as well as a more in-depth analysis of pathological conditions.

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# Decorated burial chamber of Meru (TT 240) at North Asasif: some remarks on the layout



**Abstract:** The paper offers some preliminary considerations concerning the distribution, composition, and orientation of the elements comprising the decoration of the burial chamber of Meru, TT 240. The tomb, situated within the North Asasif slope, dates to the last phase of the reign of Mentuhotep II Nebhepetra. The repertoire of the decorative elements found in Meru's burial chamber may be traced back to the Old Kingdom, while some peculiarities in their distribution and orientation seem to be a consequence of the introduction of the Pyramid Texts, a post-Old Kingdom novelty in the decoration of a non-royal burial space.

**Key words:** Theban Necropolis, North Asasif, Old/Middle Kingdom, Sixth/Eleventh Dynasty, Mentuhotep II Nebhepetra, burial chamber, sarcophagus/coffin, offering list, false door, Pyramid Texts, "seven sacred oils", glorification/resurrection/departure spells/texts (*s3hw*)

The tomb of the overseer of the sealbearers Meru, TT 240, ends the line of tombs cut in the rocky slope of North Asasif (which is the north cliff of Deir el-Bahari in a natural continuation) that were constructed and decorated for the courtiers of Mentuhotep II Nebhepetra during the last decade of his reign (Allen 1996: *passim*, especially 9–10, 18–19, Fig. 3). The tombs located further east postdate this king, although Meru himself seems to have outlived Mentuhotep II (Willems 1988: 113 with note 249; J.P. Allen 1996: 24–26).

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Like the rest of the rock-cut tombs in this area, TT 240 represents a corridor type (Arnold 2015: 10–11), with its cult chapel accessed via a corridor and its burial chamber approached by a sloping passage [Fig. 1]. The cult space of the tomb (i.e., the offering chapel and the corridor leading to it) was left undecorated, whereas its sarcophagus chamber is among the three decorated burial spaces at this site (the other two belonging to queen Neferu, TT 319, and to the king's treasurer, Khety, TT 311<sup>1</sup>). The fourth decorated burial chamber in this line is that of the royal sealbearer Horhotep, TT 314, dating, most probably, to the time of Sesostris I (for the date, see Morales and Osman 2018: 85, 90, 97; for more on this monument, see below).

The tomb of Meru, discovered in 1844/1845 by Karl Richard Lepsius (*LD Text III*: 241–242), remains unpublished except for its texts, the hieroglyphic transcription of which was included in Allen 2006: 46–251. The decoration of its burial chamber, documented by the Metropolitan Museum Expedition

(Allen 1996: 24, Note 102), was not commented upon in Harco Willems milestone study, the author dealing only with Meru's coffin, that is, a coffin-shaped pit cut in the rocky floor of the chamber (*LD II*: Pl. 148 c–d; Willems 1988: 106, 182–185, 187 with Note 30, 202, 247) [see Fig. 1]. A comprehensive publication is being prepared within the frame of the Polish Archaeological Expedition to the North Asasif (Asasif Project) from the Polish Centre of Mediterranean Archaeology, University of Warsaw, working at the site since 2015 (Chudzik 2016: 297–300; 2017: 195–196; 2018: 192). Conservation work, initiated in the 2018/2019 and continued in the past season, following up on the work of the Italian team (for details, see Chudzik 2020, in this volume), is making the decoration of the burial chamber increasingly clear in preparation for comprehensive egyptological studies. Pending completion of this stage of the work, it is already possible to offer the following remarks concerning motifs and themes comprising its decorative layout.

## REMARKS ON THE DECORATION SCHEME

### EAST WALL

The east wall of Meru's burial chamber displays a false door, a pile of foodstuffs, and an offering list (see Chudzik 2017: Fig. 12). The list, arranged in three registers, each containing 30 columns, represents classical A-type list content (Barta 1963: 47–101). Its composition seems well thought-out, as the smaller units comprising the whole (for these, see Barta 1963: 69–72) are not divided

between the registers. So register I contains the opening ritual activities (A/1–A/18) and the so-called “small meal” (A/19–A/26), followed by the actions preceding the “large meal” (A/27–A/29). Register II starts with the names of foodstuffs comprising the “large meal” proper, that is, various types of bread, meat, and poultry (A/30–A/59) and Register III continues with a group of other types of bread, drinks, and sweets (fruits

1 For the location of the North Asasif tombs mentioned in this paper and their spatial relationship, see Chudzik 2020, in this Chudzik 2020: Fig. 1, in this volume. For the location of TT 319, see Chudzik 2016: Fig. 1.

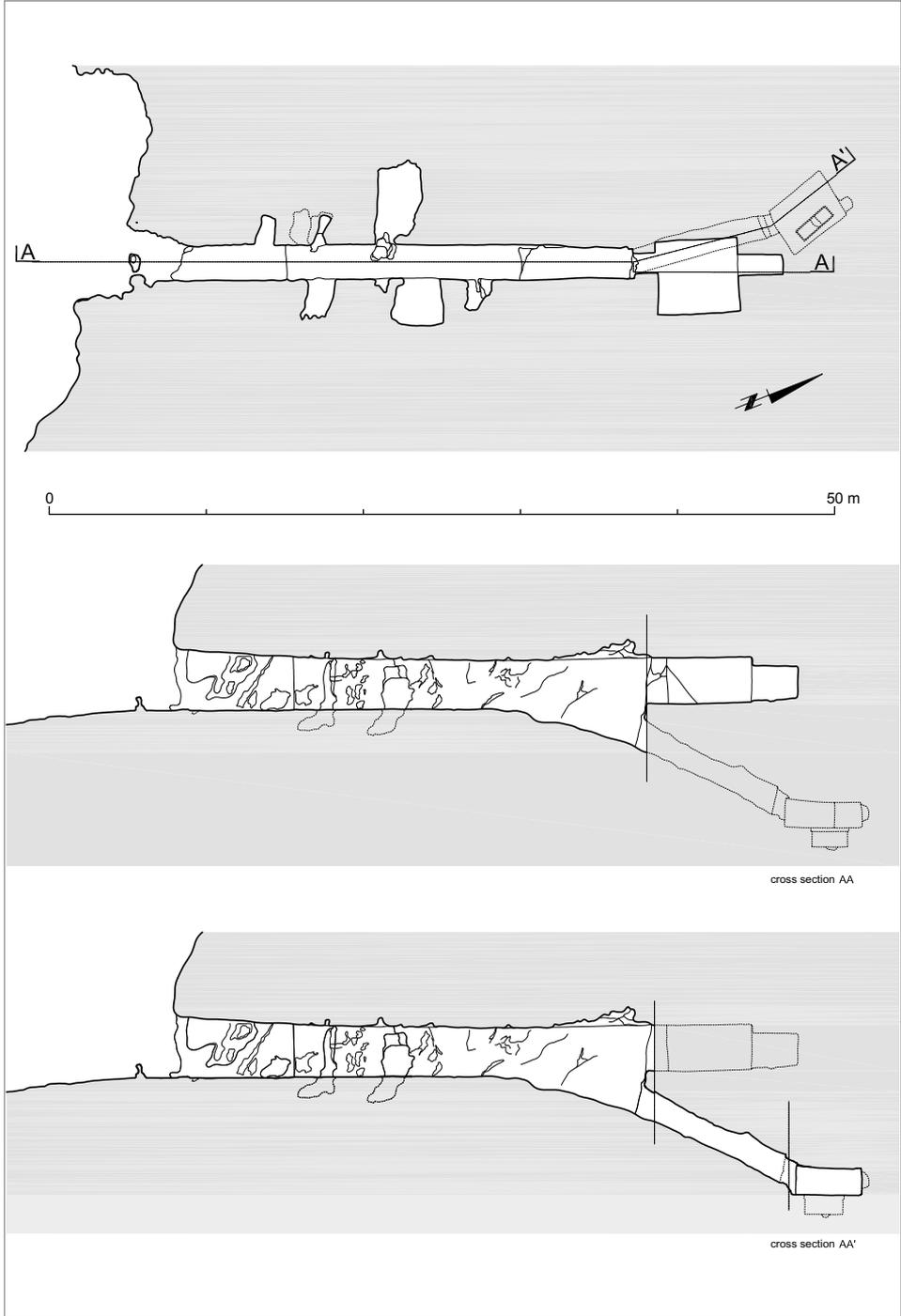


Fig. 1. The Tomb of Meru TT 240: plan and cross sections (PCMA UW Asasif project | drawing K. Andraka, based on 3D documentation by M. Mackiewicz)

and cereals) (A/60–A/87), followed by the closing actions (A/88–A/91). In the fourth, lowermost register of the chart, each column contains a short inscription, which reads *dd mdw n jm3h(y) Mrw p(w) n k3.f* “Recitation for this honored Meru, for his *ka*”. In the remaining columns, this text is repeated, omitting however the initial *dd mdw*-phrase.

Meru represents a rare case of a tomb preserving the decoration of its burial chamber and its coffin, both following the same general principles of distribution and orientation of particular components. The location of the offering list on the east wall is a general rule, which may be traced back to the earliest decorated burial chambers, at Giza and Saqqara, dating as early as the turn of the Fifth and the Sixth Dynasties (Dawood 2005: 112–113 with references, Fig. 5; Kanawati and Willoughby-Winlaw 2010: 44–49, Photos 3, 16, 17),<sup>2</sup> and is equally common among the sarcophagi and coffins (Willems 1988: 228–232), the earliest examples dating to the Old Kingdom as well (Lapp 1993: 32–35, esp. § 96 and § 102, Pl. 5b). Interestingly, a comparison of the offering list placed on the wall of Meru’s chamber with that on the front, eastern side (FR)<sup>3</sup> of his sarcophagus (not included

in LD II: Pl. 148 d) reveals dissimilarities in their arrangement and even in the paleography of some of the entries, which leads one to consider whether or not two different *Vorlagen* were used in these two cases. Further comparison of the two decorative layouts, of the burial chamber and of the sarcophagus, seems extremely promising.

#### NORTH WALL

The most destroyed north wall of the chamber preserves the decoration in its western part. Looking at it from left to right, there is first a rectangular segment with three compartments placed one above the other, containing images of two different kinds of linen (in bundles) and two *wnhw*-strips. Inscriptions above inform about the quantity of items in each case. A *serekh*-type false door appears to the right of this rectangle. The preserved decoration in the right (eastern) top corner of the wall indicates the presence of another false door, placed symmetrically to the one depicted in its left part and at the same distance from the edge of the wall on this side [Fig. 2].<sup>4</sup> The space between the two false doors would have been occupied by the object frieze,<sup>5</sup> a small bottom fragment of which

2 The date of some of these monuments is debated, the issue amounting to the question of the origins of the practice of decorating non-royal burial space with regard to the introduction of the Pyramid Texts in the substructure of Unis; for a summary of the discussion, see Kanawati and Willoughby-Winlaw 2010: 43–45; contra Dawood 2005: 108–110, 113–116.

3 Here and below, the code system applied to the sides of sarcophagi and coffins follows Willems 1988: 47, Note 6 and *passim*: FR = front side (eastern side), B = back side (western side), H = head-end (northern side), F = foot-end (southern side). For more on the orientation of a body within a sarcophagus and on further connotations of this, see, e.g., Raven 2005: *passim*, especially 40–43.

4 Judging by the chisel marks, the niche cut in this part of the wall is to be associated with the secondary, post-Middle Kingdom phase of use of the funerary space (P. Chudzik, personal communication, 2020).

5 On the term and its content, see Jéquier 1921: *passim*; Willems 1988: 179–190, 209–228.

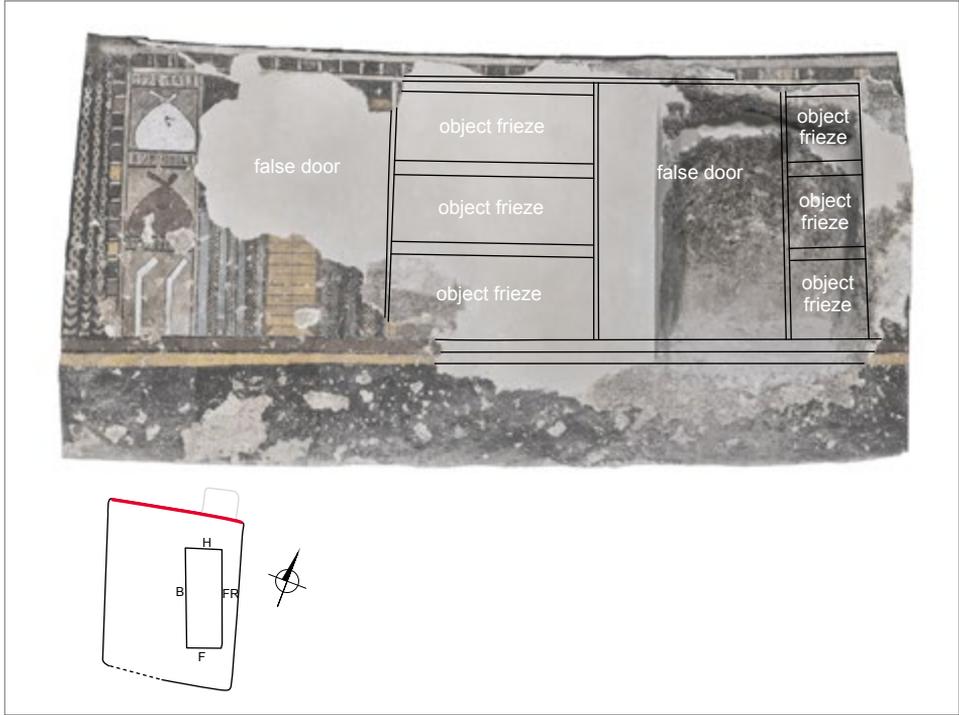


Fig. 2. Burial chamber of Meru: north wall, reconstruction of the layout (PCMA UW Asasif project | photo M. Jawornicki, tracing A. Stupko-Lubczyńska, plan K. Andraka)

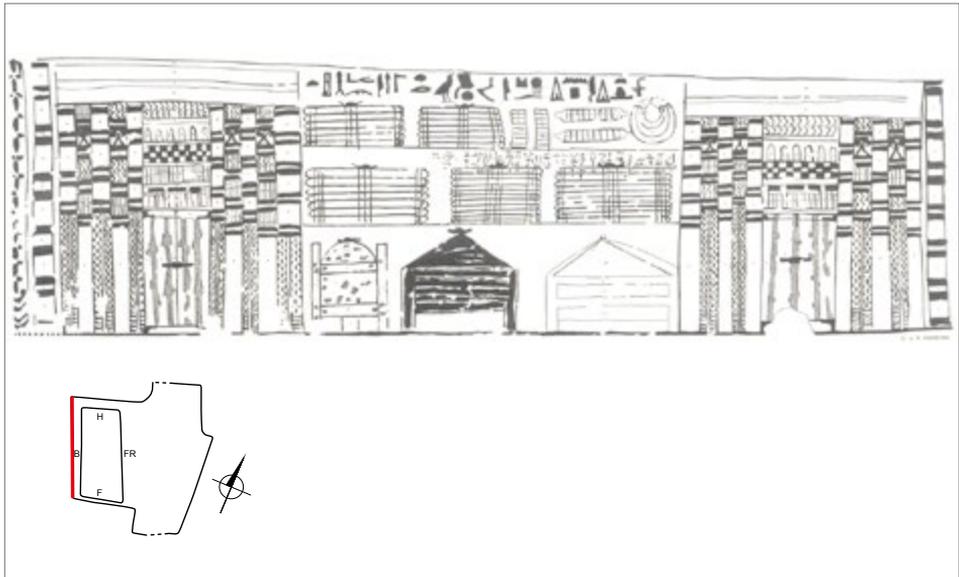


Fig. 3. Burial chamber of Hewetiaah, Meir, D2 (late Sixth Dynasty), west wall (After Blackmann 1924: Pl. XIX (1), plan adapted from Blackmann 1924: Pl. II | tracing A. Stupko-Lubczyńska)

is preserved, adjoining the right edge of the (left) false door; here, two round objects representing, most probably, pellets of incense, can be seen.

A comparable composition of a pair of false doors and the object frieze between them is attested, for example, in two burial chambers at Meir (D2), dating to the late Sixth Dynasty (Blackman 1924: 62–63, Pl. XIX [Fig. 3]; Kanawati and Willoughby-Winlaw 2010: 70–71, Photos 100, 103, 112). In both cases, however, this is the west wall (corresponding to B of the coffin), and the products comprising the object frieze are, typically of this location, jewelry and linen, the latter represented in the form of packages and stored in chests.<sup>6</sup>

In Meru's immediate neighborhood, a similar arrangement of these elements is found in the burial chamber of Horhotep, CG 28023. This decorated limestone lining of the chamber, discovered along with the sarcophagus in the North Asasif area in 1883, dismantled and moved to the Bulaq Museum and subsequently to the Egyptian Museum, Cairo (Maspero 1889: 134–180; Lacau 1904: 42–56), has recently been (re-) located convincingly in the courtyard of

TT 314, a tomb lying just west of Meru's tomb (Morales and Osman 2018: *passim*, especially 86–90, Figs 2a–b, 5). The identification of this chamber with the subsidiary burial and not the main burial chamber of TT 314, put forward by Antonio Morales and Mohamed Osman, has led to a reconstruction of the accurate orientation of the walls of this structure,<sup>7</sup> which is crucial for the interpretation of its decorative scheme. According to this latest finding, it is the west wall in Horhotep's burial chamber that has two false doors [Fig. 4], as in the aforementioned burial chambers at Meir, and because the entrance occupies here the whole space between the false doors, an abbreviated object frieze (comprising scepters, maces, and incense) had to be "packed" in the small compartment above the entrance. The actual object frieze in this chamber is divided between the two lateral walls, forming an apparent sequence starting on the north wall (in its western part) with a set of seven sacred unguents and two eye-paints arranged in one register, and continued on the south wall, where the frieze, in two registers, starts (again, in the western part of the wall) with

6 An analogous location of these motifs is found primarily in the decorated burial chambers at Saqqara, dating from the Sixth Dynasty up to the Heracleopolitan Period (e.g., Jéquier 1929: Figs 17–19, 39, 42–43, 49–50, 55, 82, 140, Pls IV, VII, XI, XII, XIV; for a comprehensive list of these monuments, see Dawood 2005: 117–119, with references; for a reassessment of their date, see Fischer 1997: *passim*; Brovarski 2005: *passim*). There, the west (back) walls (with the false door often placed in the middle) additionally comprise the motif of the seven sacred oils. The same content of the friezes, that is, oils and linen, is observed in this place in the burial chambers of Mereruka, dating to Teti (Kanawati and Willoughby-Winlaw 2010: Photos 55–56) and Inumin, dating to Pepy I (Kanawati and Willoughby-Winlaw 2010: 68–69, Photo 90).

7 Compared to misleading labels in Maspero 1889: unnumbered plates after pages 136, 138, 140, 146, 148, 150, denoting the west wall as the "east" one, etc. [see here, Fig. 4], repeated in Lacau 1904: 42–49.

8 The set of the seven oils, eye-paints, and two *wnhw*-strips, having its place in A-type offering lists (A/3 – A/12), corresponding to PT 72–81, commonly occurs on H of coffins and sarcophagi (oriented to the north), as in the course of the ritual these products are associated with the face of

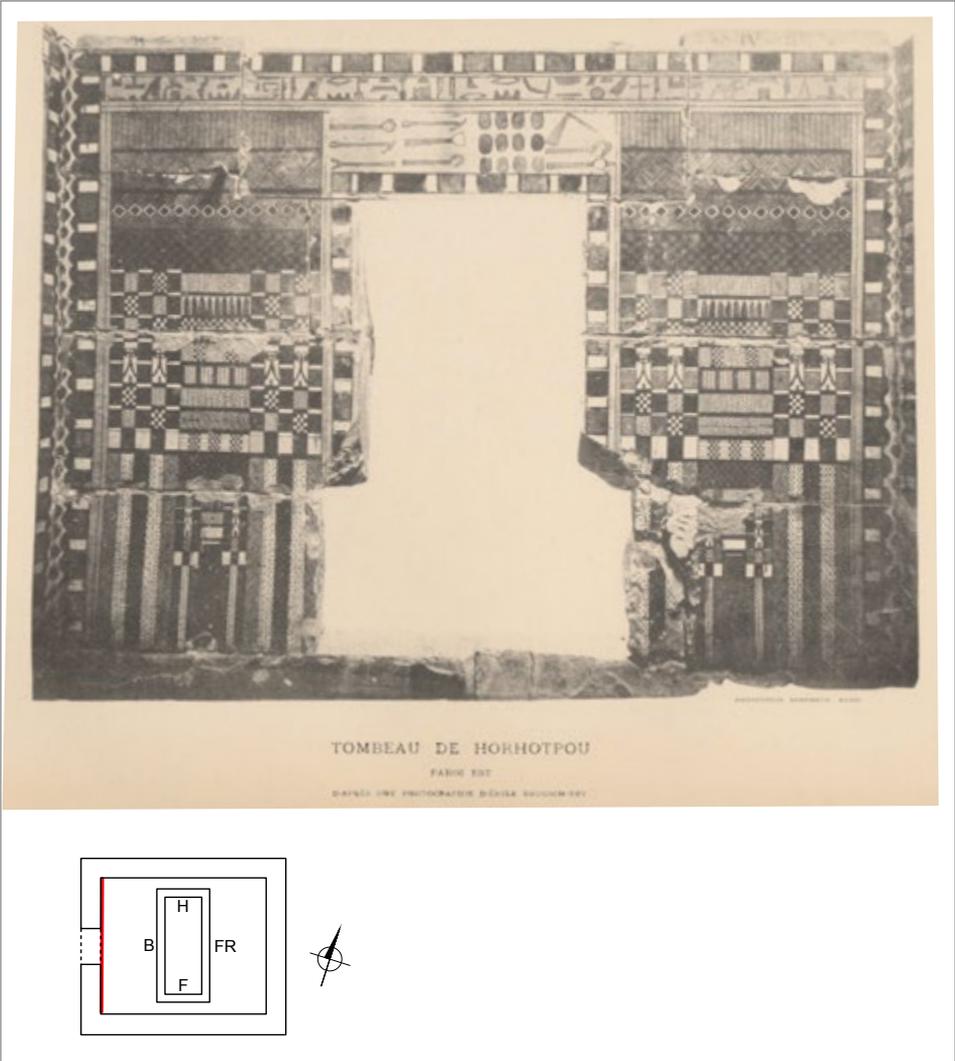


Fig. 4. Burial chamber of Horhotep (subsidiary burial to TT 314): west wall (After Maspero 1889: unnumbered plate after p. 136, mislabeled “east wall”; plan adapted from Lacau 1904: 42, Fig. 1, oriented according to Morales and Osman 2018: Fig. 5 | tracing A. Stupko-Lubczyńska)

the deceased (Willems 1988: 202–203, 209, 211–213; Roth 1993: 67–69; Koura 1999: 77, 290). Interestingly, the texts beneath the frieze on the north wall of Horhotep’s chamber, apart from PT and CT spells directly associated with the depicted objects, additionally contain the sequence of *s3hw*-spells PT 220–222 (Morales and Osman 2018: 92–93 and Table 1 [North wall]); on the subject of an interweaving relationship between the ritual text and the image in the object frieze, see Willems 1988: 200–209). Although Morales and Osman (2018: 63) rightly note the striking position of PT 220–222 on the north wall, compared to their usual placement on the south wall in the royal burial chambers, it seems not completely meaningless if one considers the *s3hw*-connotations of the set of seven sacred oils, as discussed elsewhere by the present author (Stupko-Lubczyńska forthcoming).

two *wnḥw*-strips<sup>8</sup> and ends, as often, with the depiction of sandals (placed in the second register, in the eastern part of the wall).<sup>9</sup> The east wall of Horhotep's chamber is traditionally occupied by the offering list accompanied by PT and CT spells (Morales and Osman 2018: 94 and Table 1 [East wall]).

Judging by numerous parallels, the missing part of the object-frieze compartment on Meru's north wall can be reconstructed as containing a set of the seven sacred unguents, which constituted, from the Old Kingdom on, an obligatory component of the decoration of burial chambers, complementary to various types and forms of linen.<sup>10</sup> On the one hand, one may conclude that Meru's case shows a departure from the Old Kingdom pattern of locating the object frieze on the west (back) wall of the sarcophagus chamber, but on the other hand, if the present reconstruction is correct, its main part, occupied by the seven sacred unguents, would justify the orientation of the whole composition toward the head of the deceased (see above, Note 8).<sup>11</sup>

### PYRAMID TEXTS AND THEIR ARRANGEMENT (WEST, SOUTH AND EAST WALLS)

The shift of the object frieze from the west ("back") wall to the north ("head-end") wall may be seen as a consequence of introducing the texts that occupy the remaining space of the chamber, that is, the west wall (in addition to the false door in its northern part, in symmetry with the east wall), the entire south wall and the southern edge of the east wall. These texts, arranged in columns, have been identified as the Pyramid Texts spells 213–217, 220–223 (T.G. Allen 1950: 69–70; Lesko 1979: 106; J.P. Allen 2006: 46–251; Morales 2013: 574–575, 865).

Except for PT 223, the texts represent the "core" sequence of the *sḥw*-spells (also known as "glorification", "resurrection", or "departure" texts), which were attested in the royal pyramids since Unis onwards, and were broadly used in the periods postdating the Old Kingdom (see e.g., Assmann 1986: 999–1000; 1990: 13–14; Allen 1994: 15–17; Assmann 2001: 323–324; Bène and Guilhou 2004; Allen 2005: 31–41; Hays 2009: 54–56, 79; 2012: 92–99; Morales 2013: 691–693, 854–855, 859–865; for the

9 On coffins and sarcophagi, the motif of sandals commonly finds its place on the F or at the foot-end of B (Willems 1988: 209, 213–217, Fig. 26), located here already in some of the decorated burial chambers of the late Sixth Dynasty (e.g., Jéquier 1929: Fig. 82; 1935: 158, Fig. 19).

10 See above, Note 6, and, in addition, e.g., Petrie 1900: Pl. III. Noteworthy, among the northern examples of decorated burial chambers, the *wnḥw*-strips do not occur in the frieze along with the usual depictions of seven sacred oils and eye-paints, substituted(?) for several kinds of linen. In the Theban area, however, the presence of the *wnḥw* is attested in the friezes inside the burial chambers of Khety, TT 311 (north wall, Wilkinson 1983: 22, 23 [18], 67 [38.105.35]), and Neferu, TT 319 (north wall: personal observation, 2017), this apart from the tombs of Meru and Horhotep. The issue requires further research, which should also include coffins and sarcophagi.

11 This would be in agreement with the decoration of H of Meru's sarcophagus, typically showing the set of sacred oils and a headrest, the frieze accompanied by PT 77 (LD II: Pl. 148 c [right]; Lesko 1979: 106).

link between this sequence and the offering ritual, see Stupko-Lubczyńska 2016: 75–82, with references).

PT 223, occupying the eastern edge of the east wall and adjoining the offering list, constitutes, in turn, a summary of the food presentation, which in the pyramids themselves follows the Great Offering Ritual (i.e., the sequence corresponding to the A/B offering list, PT 23, 25, 32, 34–42, 32, 43–57, 72–81, 25, 32, 82–96, 108–171, on which see, e.g., J.P. Allen 1994: 12–13; Hays 2009: 51–54, 75–76; 2012: 81–90; Morales 2016: *passim*, especially 79–96; Stupko-Lubczyńska 2016: 39–57), pertaining the same position whenever attested in the Middle Kingdom sources (J.P. Allen 1994: 8–15, especially notes 8 and 16, Figs 2 and 3 [sequence C]; Hays 2009: 76 [group A.3]; 2012: 84, 677; Morales 2013: 450–451 [with Note 1298], 854, 862, 864). In this respect, the placement of PT 223 in Meru's burial chamber is not exceptional.

Noteworthy, the same spatial relation-

ship between PT 223 (although combined with PT 222) and the offering list has been noted in the Theban area in the Eighteenth Dynasty tomb of Rekhmire, TT 100, where it occurs in the offering chapel (Davies 1943: Pl. CVIII; Hays and Schenck 2007: 101–102, Fig. 7.3). Attestation of the spell and its position in the same context, that is, next to the offering list, in the cult space of the tomb of Ukhhotep I, B2, at Meir (Blackman 1915: 16–17, Pls VI–VIII; Hays 2006: 185–186), dating to Sesostri I (Favry 2004: 77–78 [No. 23]), has stimulated the present author to speculate on a possible quest for sources taking place in the Hermopolitan region at the dawn of the New Kingdom, and their subsequent transfer to Thebes (Stupko-Lubczyńska 2016: 314, Note 1764). Meru's example proves, however, that, at least in this particular case, the occurrence of PT 223 in TT 100 could have equally well been rooted in the local tradition.

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# Epigraphic notes on the *aleph*-sign (Gardiner G1) in the second half of the Eighteenth Dynasty and beginning of the Nineteenth Dynasty



**Abstract:** The paper considers the hieroglyphic writing of the *aleph*-sign (Gardiner G1) in royal monumental architecture as a dating criterion. A certain epigraphic feature of the sign appears to be particularly characteristic of the second half of the Eighteenth Dynasty and the beginning of the Nineteenth Dynasty. The characteristics of the sign are discussed mainly in reference to the renewal texts, concluding with some remarks on the chronology of the restorations of reliefs in the Hatshepsut temple at Deir el-Bahari.

**Keywords:** *aleph*-sign (Gardiner G1), renewal texts, ancient restorations, temple reliefs

## THE ALEPH-SIGN

Peculiarities of Egyptian writing may date texts to given periods. Single signs can similarly be used as a dating criterion as demonstrated by J.H. Taylor for the Third-Intermediate-Period writing of the sign representing a wick of twisted flax (Gardiner V28) (Taylor 2006). The *aleph*-sign may actually be a diagnostic sign of this kind for royal monumental texts of the period from the end of the Eighteenth to the beginning of the Nineteenth Dynasty.

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I would like to express my gratitude to Mirosław Barwik for permission to reproduce an image from the south wall of the Vestibule of the Chapel of Tuthmosis I in the Temple of Hatshepsut at Deir el-Bahari, courtesy of the Project documentation archives.

The alphabetic sign of the Egyptian vulture was often confused with the sign representing the buzzard (Gardiner G4) in hieroglyphic writing (e.g., Griffith 1898: 19; Gardiner 1994: 467). This confusion is not the subject of the present paper, but there is one feature that constitutes a point of departure for a discussion of the *aleph*-sign. It is the back of the bird's head which is apparently the only significant difference between the two signs: the buzzard's head is more rounded whereas that of the Egyptian vulture is flatter. This feature

of the *aleph*-sign is emphasized in Old Kingdom hieroglyphic writing where the feathers form a crest (as in the model sign adopted by Fischer for his calligraphy, Fischer 1988: 9) [Fig. 1]. However, the feature fails to be apparent in the Middle Kingdom [Fig. 2] and Eighteenth Dynasty [Fig. 3:a] examples: the Middle Kingdom signs from the kiosk of Sesostris I (Lacau and Chevrier 1956: 261; 1969: Pls VIII, IX), the temple of Mentuhotep at Deir el-Bahari (Arnold 1974: 47), the tomb of Djehutyhotep at el-Bersheh (Griffith 1898: Fig. 120), the Eighteenth Dynasty

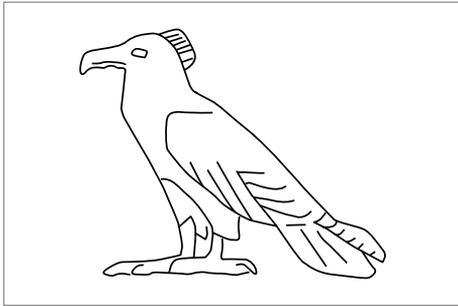


Fig. 1. Aleph, Old Kingdom (After Fischer 1988: 9 | drawing E. Kopp)

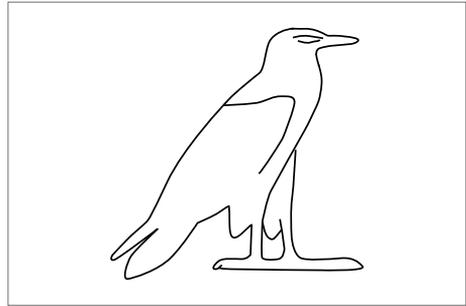


Fig. 2. Aleph, Middle Kingdom (After Lacau and Chevrier 1969: Pl. VIII 4 | drawing E. Kopp)

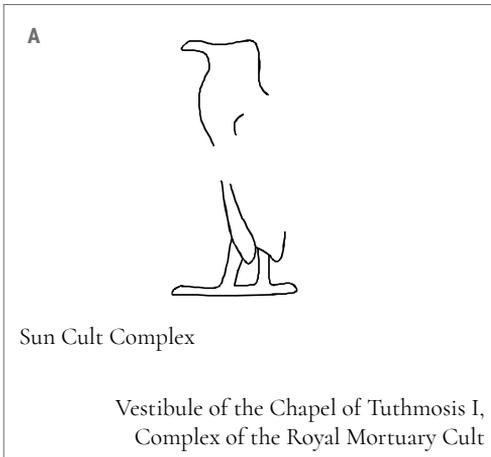


Fig. 3. Aleph, Eighteenth Dynasty, Temple of Hatshepsut, Deir el-Bahari (A – after Karkowski 2003: Pl. 38 | drawing E. Kopp; B – PCMA UW Temple of Hatshepsut Project | photo M. Jawornicki)

examples from the temple of Hatshepsut at Deir el-Bahari (Griffith 1898: Fig. 4; Karkowski 2003: Pl. 38) and the tomb of Paheri at el-Kab (Griffith 1898: Fig. 73). This last graphic rendering of the bird is actually treated as the conventional and classic form of the *aleph*-sign.

The feathers appear again on some late Eighteenth and early Nineteenth Dynasty temple reliefs. A few additional ways of marking the back of the bird's head are observed in this period [Figs 3:b, 4–6]. A survey of royal monuments suggests that the *aleph*-sign was written differently in the reigns of different kings. No clear time frame can be placed on the use of the sign for a number of reasons. Patterns of text and scene transmission

in Egypt were complex, and recurring motifs from the past were a common feature in Egyptian culture. Moreover, the building, rebuilding, and restoration of the larger monuments, such as temples, by successive kings often obscures the different phases. Lastly, changes of rulers were not transposed directly into changes of artistic conventions.

A large number of standard temple ritual scenes of the New Kingdom do not include the *aleph*-signs. They appear more commonly in temple scenes of festivals and war representations. Moreover, during the New Kingdom, and especially during the Ramesside period, verbs such as *m33*, *km3*, *dw3* were usually written without the *aleph*-sign. Therefore, the present study is

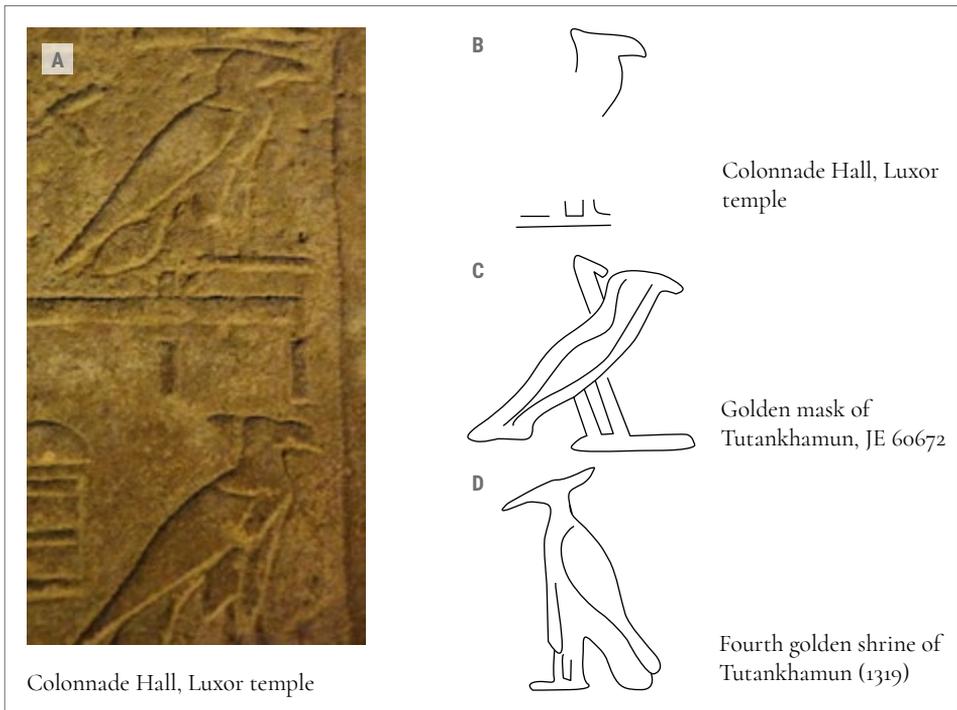


Fig. 4. Aleph, Tutankhamun (A – compare Epigraphic Survey 1994: Pl. 20; B – after Epigraphic Survey 1994: Pl. 119; C – after Schulz and Seidel 1997: 235, line 6; D – after Piankoff 1951: Pl. 20 | drawing and photo E. Kopp)

based on royal renewal texts, the inscriptions in which the sign appears with relative regularity. These texts are understood principally as texts that introduce, using the formula *sm3wy mnw* ‘the renewal of monuments’, the name of a restorer or beneficiary (such as the posthumous cult of a previous king) in the context of a restored relief.<sup>1</sup> Such inscriptions are the most typical for the post-Amarna restoration of reliefs (Grallert 2001: 71). Other sources, including ones on material other than stone, were called upon when these texts were insufficient, especially as the verb *sm3wy* is frequently not preserved or is written with the quail chick variant of the sign instead of the *aleph*.

The renewal texts were studied as a group (Grallert 2001), but also in the context of the reign of Seti I (Brand 2000). The restoration activities of this ruler, attested in these short texts, are outstanding compared to both earlier and later periods. There are some reasons for this state. Tutankhamun and Horemheb sporadically used renewal texts starting

with *sm3wy mnw* (Grallert 2001: 69) and Horemheb usurped the monument of his predecessors (Brand 1999: 114; 2000: 46–47, 117–118), replacing the cartouches of former restorers with his own. Tutankhamun, Ay and Horemheb merely completed older monuments or added specific parts to them (Brand 1999: 114). The presumed absence of standardizing formulae could be another explanation (Brand 1999: 114; 2000: 116). Instead, Late Eighteenth Dynasty formulae replaced the restorer’s name with that of the beneficiary, that is, the previous king.

Ramesside renewal texts attributed to Ramesses II, which are practically limited to the Temple of Hatshepsut at Deir el-Bahari (Grallert 2001: 640–641), are infrequent, especially compared with the restoration activity of Seti I (Grallert 2001: 69, 619–623). Seti I is best known for his restorations; his *sm3wy mnw* inscriptions were always inserted in well visible places (along processional ways, in gateways, lunettes of stelae, facades of pylons), also in the temples outside the

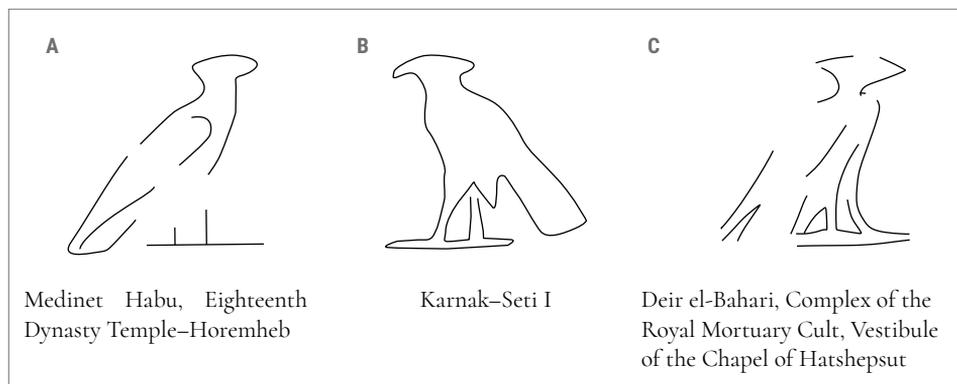


Fig. 5. Aleph, Horemheb–Seti I (A – after Epigraphic Survey 2009: Pl. 11:17; B – after KIU 4388; C – PCMA UW Temple of Hatshepsut Project | drawing E. Kopp)

1 Grallert (2001: 29–30, 67–73) distinguished two groups: *Widmungsvermerke (rWv)* for the posthumous cult of the king and the proper *Restaurierunginschriften (Rv)* naming the royal restorer.

Theban area. It is thought, however, that the restorations were already completed (Brand 1999: 114; 2000: 116–118), hence the texts were unlikely to refer to the actual restoration. Nonetheless, this aspect of the renewal inscriptions is beyond the scope of the present paper.

Tutankhamun was responsible for the first post-Amarna restorations as stated on his stela (CG 34183). Of the four monumental renewal inscriptions (Grallert 2001: 615–616), two are found on blocks reused in the temple of Merenptah, originally part of the temple of Amenhotep III in Western Thebes (Bickel 1997: 103–104, 118–119, Pls 70 and 80). The beginning of one of these inscriptions is lost, while the other one contains a regular *aleph*; Seti I usurped the cartouches of Tutankhamun in both cases. Tutankhamun's cartouches in texts from the temples in Karnak and Luxor were

usurped by Horemheb. The two renewal inscriptions of Tutankhamun from the sixth pylon of Tuthmosis III in the temple of Karnak are different in style. A classical *aleph* appears in the southern part, while the sign in the text in the northern part has a head the back of which is more triangular than square (Brand 1999: 115–117, Fig. 1; KIU 3474 and 3478<sup>2</sup> respectively). Some back-head stylisation is noted also in the renewal text on the eastern section<sup>3</sup> of the north wall of the Colonnade Hall at the Luxor temple (Epigraphic Survey 1994: Pl. 119) [see Fig 4:b]. Such atypical writing of the *aleph*-sign occurs in other parts of the Colonnade Hall as well [see Fig. 4:a]. The decoration sequence of this part of the temple is one of the most complicated ones because of the many stages of recarving. It was constructed by Amenhotep III, in whose time the decoration was commenced,



Fig. 6. Aleph, Ramesses II: A – Deir el-Bahari, Temple of Hatshepsut, Southern Lower Portico; B – Gurna, Temple of Seti I, facade (A – Compare Naville 1908: Pl. CLVII; B – photo E. Kopp)

- 2 Photos of KIU 3478 show two renewal texts in the northern part; similarities are noted in both cases.
- 3 The text in the western section is written by means of the group combining a quail chick and a sickle (Gardiner G 46).

but most of the interior reliefs were accomplished under Tutankhamun; only the southernmost part was carved in the times of Seti I based on Tutankhamun's cartoons (Epigraphic Survey 1994: xvii) and the facade was decorated by Ay (Epigraphic Survey 1998: xviii). Horemheb limited his input to the usurpation of the cartouches (Epigraphic Survey 1994: xvii). An *aleph*-sign with a triangular shape of the feathers at the back of the head [see Fig. 4:a–b] is clearly attested in the parts dated to the reigns of Tutankhamun (e.g., Epigraphic Survey 1994: Pl. 20) and Seti I (Epigraphic Survey 1998: Pls 196 and 197). Other monuments of Tutankhamun are not consistent in presenting this feature of the *aleph*-sign. The *alephs* are regular on the restoration stela (CG 34183) and on the golden shrines except for a variant with the feathers more raised at the back of the head (Piankoff 1951: Pl. 20). This is not a frequent variant at this time [see Fig. 4:d].<sup>4</sup> One should also note the different writing of the *aleph* on ushebtu figurines from the tomb of Tutankhamun (Piankoff 1955: Pls 62, 63). The bird's head with the feathers is treated there as a slightly wavy and narrow line [compare Fig. 6:a]. Such a form of writing is also used in inscriptions of Horemheb, Seti I and

Ramesses II, especially where the writing demonstrates the typical Ramesside manner of long and narrow signs. The narrow form [see Fig. 6:a] is encountered, e.g., on a decree of Horemheb (Kruchten 1981: Pls VIII–XII and KIU 5085), in renewal texts of Seti I on stelae (CG 34026 and CG 34025) and on an obelisk of Hatshepsut in Karnak (KIU 3333), in the Ramesseum (personal observation) and in inscriptions on the facade of the Gurna temple of Seti I [see Fig. 6:b].

A special form of writing is attested on the famous golden mask of Tutankhamun JE 60672, bearing the text of the Book of the Dead Spell 151 with the *Gliedervergottung* (Beinlich and Saleh 1989: 82–83) [see Fig. 4:c]. Such a wider drawing of the back of the bird's head is also known from the renewal texts of Horemheb and Seti I. In the case of the former ruler, there is one inscription (Epigraphic Survey 2009: 15–16, Pl. 11:17) with such a rendering of the sign [see Fig. 5:a].<sup>5</sup> As for Seti I, some renewal texts from Karnak attest to this variant (KIU 4388,<sup>6</sup> KIU 3347) [see Fig. 5:b] as do other texts, e.g., the record of the northern wars (KIU 1018). Seti's restoration program is generally dated to the early parts of his reign (Brand 2000: 117)<sup>7</sup> and it is tempting

4 Although it appears in some reliefs of Seti I and in reliefs of the temple at Medinet Habu (Epigraphic Survey 1940: Pls 218:1, 219).

5 More texts from other parts of the Eighteenth Dynasty temple are to be published by the Epigraphic Survey. Two more texts have the renewal formulae written with the *aleph*, whereas the bulk of renewal texts used the composite group with the quail chick and the sickle (Gardiner G 46) (Grallert 2001: 365–366, 617–618).

6 Southern jamb of the doorway of Amenhotep II at Karnak; the beginning of the restoration text is illegible on the northern jamb. Compare also Loeben 1987: Pl. 3b.

7 The writing of the prenomen of Seti I on the architraves of the Colonnade Hall of the Luxor temple (Epigraphic Survey 1998: Pls 196 and 197) suggests an early date (Brand 2000: 92 and Note 134).

to date the wider sign [see *Fig. 5:a–c*] to the reigns of Tutankhamun, Horemheb and early Seti I.<sup>8</sup> It is because it does not appear in any of the Ramesses II renewal texts, and if it does, it is the thin variant [see *Fig. 6:a*], as in the case of especially the southernmost Lower Portico (so-called Portico of Obelisks) of the Temple of Hatshepsut at Deir el-Bahari (Neville 1908: Pls CLII, CLVII).<sup>9</sup> In other porticos, including the northern lower one, if the renovation formula is preserved, a standard *aleph* is used without any modification at the back of the bird's head (compare, e.g., Martinez 2007: Pl. XXXVII; not all restoration texts have been published). Some additional observations support the impression that the narrow-head variant [see *Fig. 6:a,b*] could be considered as typical of the writing from the late Seti I–early Ramesses II reigns (perhaps the first two decades of the latter's reign). However, the broader time range of the attestations is notable. The sign is used in the decree of Horemheb. Such writing is present in the Ramesseum, which was decorated between the 5th and 21st year of Ramesses II (Lecuyot n.d.: 1). It appears also on the facade of the temple of Seti I at Gurna where the decoration was presumably executed after year 20 of the reign of Ramesses II

(Brand 2000: 245). A standard bird sign was used alongside the atypical variants also in the renewal texts of Seti I (e.g., the doorjamb of the east gate of the southern court of the sixth pylon in the temple at Karnak, see KIU 4723). As in many other cases, ancient Egyptians were never consistent in their (stylistic) choices, which were dependent on the circumstances (e.g., space, personal skills, untraceable circumstances). Other factors, such as individual training and craftsmanship, or type of monument, should also be taken into consideration.

It is striking that the renewal texts of Ramesses II in Deir el-Bahari (with the exception of the southern Lower Portico) generally use the classical form of the Middle Kingdom sign [see *Figs 2–3:a*]. In this case, the proposed dating of the restorations is the first 20 years of the reign of Ramesses II on the grounds of the writing of the cartouche names (e.g., Martinez 2007: 160). The nomen had been changed by year 21 from a shorter form *R<sup>c</sup>-ms-s(w)* to the longer *R<sup>c</sup>-ms-sw* (Kitchen 1979: 387; Spalinger 1980: 95–97). The prenomen also took a longer form, with the epithet *stp-n-R<sup>c</sup>* by the end of year two and the relief was changed from raised to sunken before the end of year two (Brand 2000: 38; Brand,

8 The verb *km3* in the temple of Ptah at Karnak, dated to the reign of Ay, has such an *aleph*-sign (KIU 258).

9 See also the uppermost, left-side sample of the renovation text of Ramesses II (Martinez 2007: Pl. XXXVII), which corresponds to the renewal text on the south wall (Neville 1908: Pl. CLII). It seems unclear how accidental the back line of the *aleph*s head is because the cut line seems to be destroyed. However, the *aleph* with a line was certainly carved on the west wall [see *Fig. 6:a*], contrary to the suggested ordinary writing by Neville (1908: Pl. CLVII). Additionally, it seems that the shorter nomen should be restored here. The *aleph*s of the upper registers (Neville 1908: Pl. CLIV) could have been of the ordinary kind, but it is difficult to judge the small and thin hieroglyphs carved on the destroyed surface.

Feleg, and Murnane 2018a: 18 and Note 123). The narrow bird's head variant dated to the reign of Ramesses II could have been an earlier tradition inherited from Horemheb and Seti I and abandoned during the following years. A change of this kind was noted in the temple iconography from year two of the reign of Ramesses II (Lurson 2005). The continuation of iconographical characteristics attributed to Seti I surely depended on the draftsmen and sculptors during the transition from the reigns of Seti I to Ramesses II (Brand, Feleg, and Murnane 2018a: 17–18). A representation with the *sm3-t3.wy* scene from the east wing of

the south wall of the Hypostyle Hall in the temple at Karnak (Brand, Feleg, and Murnane 2018b: Pl. 69) could be a case in point. The speeches of the gods start with the same verb *sm3*, but the *aleph* on the right side of the speech of Horus is carved in the style with a wider head [see Fig. 5], whereas that on the opposite side of the speech of Thot shows a standard *aleph* with a rounded back of the head. This part of the temple was executed in the first two years of Ramesses II (Brand, Feleg, and Murnane 2018a: 20, 123), but the decoration was initiated by Seti I, hence the noted stylistic influence of the latter in the royal figures.

## ORIGIN OF THE ALEPH-SIGN VARIANT

Variants of the sign could have been a local (Theban) affair, but there are examples of a different writing of the *aleph*-sign in other parts of Egypt as well, e.g., stela of the first year of Seti I from Kom el-Lufi in Middle Egypt (Kessler 1983), temple of Seti I in Abydos (e.g., Calverley, Broome, and Gardiner 1933: Pl. 18). In the restoration texts of Seti I in the temple of Amada, classical *alephs* are used, whereas on Elephantine the beginning of the renewal text is lost.

The irregularities of the sign could suggest a different model of execution. Traditional forms may have been preferred, especially in standard religious texts and formulae, because they would have been taken from established pattern books. However, the issue of the transmission of texts to the final surface is widely debated and there are several different approaches to the subject. Handwriting (hieratic), cursive

hieroglyphic and hieroglyphic copies are all considered as having been used in the decoration process (e.g., Haring 2015; Lüscher 2015). One would agree with Haring's proposition that the model for the hieroglyphic text should also be hieroglyphic (Haring 2015: 79). Unfinished tombs, like the royal tomb of Horemheb, show hieroglyphic cartoons being used (Hornung 1971); the *alephs* have there a classical form of the back of their heads.

Cursive hieroglyphs are used in the text on the golden mask of Tutankhamun, where a new variant of the *aleph* [see Fig. 4:c] appears. Based on the appearance of the sign, its style should be classified as 3a, in use from the Twelfth Dynasty onwards (but the most common in the early Eighteenth Dynasty and the Amarna Period) in inscriptions with incised hieroglyphs on metal and wood (Fischer 1976: 41–42, Fig. 4). This raises the ques-

tion of how much the hieroglyphic texts were based on cursive hieroglyphs. Hieratic affinities for some signs, including the *aleph*, are clearly excluded (e.g., Graefe 2015: 123, Fig. 12). Generally, cursive hieroglyphs have their own distinct tradition of forms independent of the hieroglyphic and hieratic writings (Fischer 1976: 43). The intrusion of cursive hieroglyphs and hieratic on stone inscriptions from different periods is also noted, but not attested for the *aleph* (Fischer 1976: 43–44). The chronological uniqueness of this sign could perhaps be exemplified by Pap. N. York MMA 39.9.19, dated to the Nineteenth Dynasty,<sup>10</sup> which exhibits features of cursive writing type 3a, although using the traditional shaped *aleph*-sign (Graefe 2015: Figs 8, 12). As a matter of fact, the proper palaeography of cursive signs if existing, would give the answer regarding the origin of the peculiar *aleph* sign in the end of the Eighteenth Dynasty.

Under such circumstances, the influence of cursive writing on the *aleph*-sign during the post-Amarna period seems possible. In the light of this conclusion, the case of the *aleph* from the south wall of the Vestibule of the Chapel of Tuthmosis I in the Temple of Hatshepsut at Deir el-Bahari is conspicuous (Barwik and Dziedzic forthcoming) [see Fig. 3:b]. A version close to the Tutankhamun variant was carved on the early Eighteenth Dynasty relief with personifications of the three seasons of the year. There are two possible explanations for such writing. Either the *aleph*-sign with a modeled back of the head was known and used

earlier or it was present there as a cartoon copy for the raised relief decoration and remained uncarved until the first restorations made by the post-Amarna rulers, i.e., Tutankhamun and others. In Egypt, the building and decoration processes were separate. Unfinished royal monuments (e.g., KV 57, the tomb of Horemheb) or monuments carved with reliefs by successors using painted outlines are well known, e.g., the Festival Colonnade Hall at the Luxor temple and the temple of Seti I at Abydos completed by Ramesses II and Merenptah (Brand 2000: 167–170). Polychrome cartoons are also thought to have played the role of temporary reliefs, as for instance in the temple of Seti I at Abydos and the Hypostyle Hall at Karnak (Brand, Feleg, and Murnane 2018a: 8). The latter instance could also be supported by the unfinished scene on the northern part of the east wall of the Chapel of Tuthmosis I (Barwik and Dziedzic forthcoming).

Individual artistic style should not be considered with regard to the origin of the sign. It is more probable that its further usage and dissemination could depend on scribal education and the itinerant craftsmen travelling from project to project. The use of the sign variant with narrow head [see Fig. 6:a,b] in other than royal context is certain, e.g., TT 19, the tomb of Imenmes (e.g., Karlshausen 2009: Pl. 24) dated to the first half of the reign of Ramesses II (Kampp 1996: 200). However, a private context for the origin of the discussed signs would require a separate study.

10 According to the dating in the database of the Totenbuch Projekt (<http://totenbuch.awk.nrw.de/>).

## ANCIENT RESTORERS IN THE TEMPLE OF HATSHEPSUT AT DEIR EL-BAHARI

The special writing of the sign is also attested in a restored divine name in the procession of gods in the Vestibule of the Chapel of Hatshepsut at Deir el-Bahari [see *Fig. 5:c*]. The last divine figure of the lowest register in the southern part of the west wall is identified by the name *Ḥsw(.t)* (Leitz 2002: 100); a goddess is certainly intended judging by the female figure. The special writing in this case brings additional information on the ancient restoration works in the temple of Hatshepsut at Deir el-Bahari, especially on the Upper Terrace.

The restoration of texts and reliefs on the Upper Terrace differs from those in other parts of the temple by the total absence of any direct information about who completed the work. Other clues are needed in order to date these anepigraphic restorations. Iconographic features of the restored reliefs show that they are evidently early, namely from the end of the Eighteenth Dynasty, between the reign of Tutankhamun, and Horemheb or later under Seti I (Martinez 2007: 158–159). Moreover, the restoration technique is also distinctive: on plaster, it is at Horemheb's order, if sunk relief, then it is typical of Ramesside work (Karkowski 2003: 50). However, Seti I and Ramesses II used both types of relief, differing in style (Brand 2000: 27–28, 36–38; Brand, Feleg, and Murnane 2018a: 18). Restorations of Ramesses II on the Upper Terrace are attested by two fragments of restoration texts in the courtyard (Grallert 2001: 407). Res-

torations earlier than Ramesses II are indicated by only two texts attributed to Horemheb (Grallert 2001: 407, 617) and the restored scenes dated to his reign, representing barks in the sanctuary of Amun on the Upper Terrace (Karlshausen 2009: 43–45). Restorations by Tutankhamun are not supported by any direct evidence (Grallert 2001: 407; Martinez 2007: 158–159).

The special writing of the *aleph*-sing in the Vestibule of the Chapel of Hatshepsut should be viewed as evidence for restorations made by the rulers of the post-Amarna period, that is, between Tutankhamun and Seti I. Additionally, the recutting of restored divine figures with visible traces of the earlier outline, so-called secondary restorations, show that figures of gods could have been restored in a different scale than the original figures, smaller for Tutankhamun and larger for Horemheb (Brand 1999: 115–116). Such larger restorations are attested, among others, in the scenes of the procession of the gods in the Vestibule of the Chapel of Hatshepsut in the Royal Mortuary Cult Complex. The restored representations there are larger than the original traces and, in general, they are also of different height, suggesting that the restorations were done in stages. Restoration work extending beyond year 21 of the reign of Ramesses II is attested by recently published graffiti (Barwik 2013: 99–101), noting simply the names of workers from the fourth decade of the reign of Ramesses II who may have been

engaged in the restoration work. Consequently, the process of the restoration of the scenes and accompanying texts in the Temple of Hatshepsut at Deir el-Bahari could have been more drawn out, carried out in stages that can be traced thanks to a combination of iconographic and epigraphic features, rather than as the action of a single ruler as stated in the renewal texts of Ramesses II.

A scene at Deir el-Bahari would constitute evidence for a two(?) stage restoration. The temple at Karnak offers also a parallel in the decoration of the Hypostyle Hall, which shows the complexity of the restoration and decoration process, especially when considering a change from raised to sunk relief in the reign of Ramesses II (e.g., Brand, Feleg, and Murnane 2018a: 18). In light of the above, the Ennead scene on the south wall of the Middle Portico (Birth Portico)

(Naville 1896: Pl. XLVI; Martinez 2007: Pl. XXXVIA), restored in two techniques and bearing the renewal text of Ramesses II, could be a case in point. The partly preserved original raised relief was restored in raised relief in the part of the divine figures, but some divine names were restored in raised and sunk relief in a different style. However, an earlier restoration (sometime between Tutankhamun and Seti I) could be another explanation of the different types of restored relief but not figures. The longer version of the pre-nomen of Ramesses II in the renewal text would be in favor of the latter proposition. Otherwise, we would have to assume a less probable solution that the restoration started during the first year of the reign of Ramesses II when the raised relief technique was in use, and was continued in the following period changing the technique to sunken relief (Brand 2000: 38).

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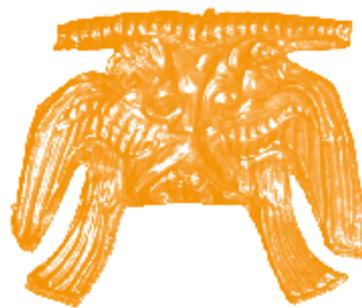
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# Understanding the role of metal within the Late Bronze Age community at Mycenae: challenges and potential approaches



**Abstract:** It has been widely argued that metal played a decisive role in the development of Mycenae, which became one of the foremost centers on the Late Bronze Age Greek mainland. Yet, little is understood as to how metals were integrated into the lives of the inhabitants. Most scholarship has concentrated on the relationship between the ruling class and metal artifacts, drawing much of their evidence from the Linear B archives and top-down models of trade, society and internal redistribution that are increasingly considered untenable within the study of other aspects of Mycenaean life. This paper introduces a new project designed to investigate this issue by using a practice-orientated approach based around object biographies to study the use of metal across the entire social spectrum of the Late Bronze Age community at Mycenae (approximately 1700–1050 BC). The decision to take such an approach is justified through the presentation of a case study, based upon hitherto unpublished previous research, that examines the unexpected rarity of gold vessels in the Palatial-period archaeological record from the perspective of social practice; its purpose is to demonstrate how the holistic use of evidence from multiple sources, as envisaged in this new project, can help overcome the difficulties inherent in the study of the use of metal in past societies.

**Keywords:** metal, Mycenae, Late Bronze Age, social practice, object biography

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It is unsurprising, given the quality and quantity of metalwork unearthed at Late Bronze Age Mycenae (approximately 1700–1050 BC), that metal has long been considered to have played a crucial role in the distinctive sociopolitical trajectory of Mycenaean societies, especially at Mycenae itself (Davis 1983; Rutter 2001; Parkinson and Galaty 2007; Kelder 2016). How metal artifacts were integrated into the communities in which they were used is still poorly understood despite extensive research into Mycenaean metalwork. Indeed the two most recent attempts at a comprehensive study of Mycenaean metalwork date back almost 40 and 20 years respectively (Iakovides 1982; Kayafa 1999), but these broad-brush overviews did not seek to address wider issues concerning the social role of metals in these societies.

The early discovery of Grave Circle A at Mycenae in 1876, marking the beginning of Aegean Prehistory as a scholarly discipline, the lower frequency of hoards in the Aegean compared to the rest of mainland Europe, and the fact that most Mycenaean metalwork comes from mortuary contexts seem to have directed scholarly attention towards the role of metal within the political economy. This has been reinforced by the nature of the information derived from contemporary textual sources. However, an extraordinarily wide range of metal artifacts, such as weaponry, cookware, jewelry, tools, architectural elements and personal grooming accessories, has been recovered from multiple types of contexts implying that metal objects were used in a diverse selection of social practices extending well beyond the immediate concerns of the political economy.

Thus the importance of metal objects can only really be truly appreciated through a close examination of their relevance to the entire social spectrum of a Late Bronze Age Greek mainland community.

The project “Forging society at Late Bronze Age Mycenae: the relationships between people and metals” is designed to tackle these issues. Deliberately taking the unusual approach of focusing on a single community enables the project to provide a much deeper analysis than could be achieved by superficial comparison across a multitude of sites, which also particularly facilitates the investigation of temporal change. Mycenae has been specifically chosen for this study due to its long history of excavation and the diversity of its domestic, mortuary, religious and civic contexts, as well as our in-depth understanding of its chronology and sociopolitical trajectory and the availability of detailed evidence from the Mycenae Excavations Archive. The project’s methodology combines distribution and contextual analyses of metal objects with contemporary textual and iconographic evidence. It will consider metal artifacts from Mycenae holistically from the perspective of social practice. Social practices comprise the discursive and non-discursive activities that take place within each society, and their precise expression is influenced by many factors such as social structure, emic cosmology, available material resources, and the surrounding environment. A practice-orientated approach seeks to understand the function and meaning of objects by examining how they are embedded within the set of social practices specific to a certain society. As the social practices within which

metal artifacts are embedded encompass their manufacture, use and deposition, this approach will be informed by investigating their object biographies. This project will determine:

- 1) which social practices metal was and was not involved in;
- 2) the culturally defined criteria, along with any associated processes of adaptation, exclusion and resistance, that governed access to metals at Mycenae;
- 3) the typical object biographies for metalwork, which artifacts deviated from these and why.

This paper first presents the relationship of the project to previous scholarship by discussing the difficulties specific to the study of metals and their impact on earlier research, especially the use of evidence from Linear B documents to support one particular model of palatial

control over metal. The next section then examines the advantages of a practice-orientated approach, with a short illustrative case study based upon unpublished research derived from the author's doctoral thesis. This case study demonstrates how a practice-orientated approach can be used, in conjunction with multiple sources of evidence, to explain otherwise unexpected patterns in the archaeological record. The nature of the latter creates distinct challenges for archaeologists studying metal artifacts in particular, which must be acknowledged and integrated into our interpretations. Therefore, the paper ends by explaining how this new project will avoid some of the pitfalls encountered by previous scholars with regard to the appearance of metal in the archaeological record and its relationship to past practices of metal deposition.

## DIFFICULTIES SPECIFIC TO THE STUDY OF METALS

The archaeological record is well understood to be a partial and imperfect source of evidence for the investigation of past societies, and this is especially the case for the study of metals. There are several factors that disproportionately affect the preservation of metals in comparison to other materials, generating challenges that may have deterred holistic investigations in the past. The most prominent of these is the convertibility of all metals, both precious and non-precious (Sherratt 1994: 62). Thus a metal artifact can be recycled by heating it until the metal becomes liquid, resetting its structure and removing all traces of its former shape and

previous object biography (Aulsebrook 2017: 10). This possibility both discourages the deposition of metal and encourages its removal from the archaeological record through legitimate or illegitimate cycling (Taylor 1999: 26), which may have been exacerbated during the Mycenaean period due to the frequent reuse of tombs (Boyd 2015). Durable items also tend to enter the archaeological record less frequently (Hurcombe 2007: 545).

The majority of metal artifacts from the Late Bronze Age Greek mainland, particularly those dated to the Prepalatial period (1700/1600–1420/1390),<sup>1</sup> were recovered from mortuary contexts. The process of

1 Absolute dates are based on Manning 2010: 23 and Warren 2010: 393.

organizing an assemblage of goods to accompany the dead was, through necessity, one of selection. It was driven by myriad concerns that can be summarized as a combination of regard for the social status of the deceased, and perhaps also elements of their individuality, as well as the wider values held about material culture and its role in this situation. One notable example of artifact selection is the absence of lead vessels from graves after LH I, despite their appearance in settlement contexts (see Mossman 1993). Indeed, current evidence would suggest that they only ever appeared in two tombs (shaft graves IV and V in Circle A at Mycenae) out of the many hundreds known from the Greek mainland, and these were a special variant with a distinct foot and bronze clad rim (Karo 1930: 109, 160, Figs 78-79, Pl. CII). Although this selection process can provide us with interesting insights into various aspects of Late Bronze Age societies on the Greek mainland, it creates preservation biases that can obscure the significance of certain types of metalwork routinely un-

derrepresented in mortuary contexts, such as tools (Kilian-Dirlmeier 2009: 385); the quantity found at Mycenae thus far does not in the least resemble that required for the basic functioning of a complex Late Bronze Age settlement.<sup>2</sup> Indeed, analysis of tool marks on the Lion Gate itself has highlighted the gap between the range of tools known to have been used at Mycenae and the archaeological record (Blackwell 2014).

The same problem also applies to another major source of metal artifacts from Late Bronze Age Mycenae: hoards. The five known examples from Mycenae, which contain a range of tools, weapons, other implements and ingots, together total more than 200 objects (Schliemann 1878; Spyropoulos 1972). Blackwell (2018a) has emphasized that these are not random assortments of material but structured deposits, which may be linked to tool kits and the organization of bronze production, and therefore once again create preservation biases that must be taken into account when assessing the role of metal at Late Bronze Age Mycenae.

## EARLIER SCHOLARSHIP: ELITES AND MYCENAEAN METALS

Most earlier scholarship concerning Mycenaean metalwork has concentrated on establishing typologies (see below), analyzing ore sources to reconstruct trade networks (such as Stos-Gale and Gale 1982; Gale 2011), assessing single artifacts from an art-historical viewpoint (for example, Marinatos 1954; Davis 1974) and the reconstruction of metalworking practices, sometimes with the assistance of

composition analyses (such as Demakopoulou et al. 1995; Clarke 2013; Becker 2015). This has provided a great deal of important information upon which this project is founded, but the structuring of these studies has had an impact on our thinking about metalwork and its role in Mycenaean societies as well as narrowing the range of the types of research questions pursued.

2 In his catalog of tools, Blackwell (2011: 581-585) lists 214 examples from Late Bronze Age Mycenae (and another three of unknown date) which, given that he defines this as a period of six centuries (2011: xxiii), approximately represents one tool per three years.

In particular, the focus on typology has led to Mycenaean metalwork being predominantly studied in a compartmentalized fashion, as a series of separate classes of artifacts that have often been further fragmented by the type of metal used; examples include precious metal vessels (Davis 1977), copper and bronze vessels (Matthäus 1980), spears (Avila 1983), swords (Kilian-Dirlmeier 1993) and daggers (Papadopoulos 1998) [Fig. 1]. This compartmentalizing approach has meant that only limited research has been carried out into the simultaneous use of multiple artifact types within social practices, mainly within the context of burial assemblages (such as Kilian-Dirlmeier 1988).

Integrated studies that combine inquiries into both the various types of context and the metal objects they contain, using the latter as more than just tools for assessing dating, are relatively rare (but see Blackwell 2018a) except in the case of mortuary assemblages, which are primarily studied in terms of assessing the wealth and social status of the deceased. Indeed, metalwork is often expected to act as an index for wealth (Gillis 1999: 291) and objects manufactured from gold and silver in particular have been repeatedly interpreted as belonging to elite or wealthy individuals with little consideration of their overall context. The result includes some rather simplistic assumptions and modeling (see,



Fig. 1. Selection of metalwork object categories from Mycenae (Photos S.J. Aulsebrook & N. Soderberg, processing S.J. Aulsebrook)

for example, Graziadio 1991), reflected in and exacerbated by the frequent division of Mycenaean metalwork into elite (or non-functional) and non-elite (or utilitarian) objects, perhaps encouraged by the compartmentalization approach described above.

It is clear that metals were of great importance to the competing yet complementary demands that emanated from both the political economy and the efficient and effective functioning of the wider economy upon which the ruling elite relied; indeed it is possible that the mismanagement of this difficult balance, perhaps only fully appreciated with hindsight, led to the collapse of the political system of the Late Bronze Age Eastern Mediterranean (Sherratt and Sherratt 1991). Differential access to metals across the social spectrum at Mycenae was a key element of this community's social structure, and this observation seems applicable to most of the Late Bronze Age Greek mainland. It is indicated by, among other trends, variation in the inclusion of metal artifacts in grave assemblages, the frequent use of metal in the production of objects suited to the demands of the political economy, the enhancement of everyday artifacts with metals especially in the funerary sphere, and the emulation of metal artifacts in other materials. However, who was able to access metals and how this was actually controlled has not been investigated.

Specialists studying other forms of Mycenaean material culture, such as ceramics, have already made considerable advances in our understanding of their wider role across society (examples include Tournavitou 1992; Bendall

2004; Hruby 2017). In other areas of Mycenaean scholarship previous assumptions regarding the central role of elites, especially during the period of the palatial bureaucracies, have been challenged. Recent study into topics such as the functioning of autonomous market environments (Parkinson, Nakassis, and Galaty 2013; Pullen 2013) have continued to demonstrate that the complexity of Mycenaean life cannot be explained by simplistic models of elite-controlled redistribution. These are just two of the latest contributions to an ongoing trend that has been evident now for more than two decades (see, for example, Halstead 1992: 72–73). Yet this model of elite-controlled redistribution is still habitually applied to metals, which are considered to be a special case because of their vital importance to both the practical and symbolic aspects of elite control (see, for example, Tournavitou 1997: 31), and the fact that they have to be imported (Nosch 2006). Nosch suggested that this idea of a state monopoly on metals is particularly prevalent among philologists and historians (2006: 171); indeed, it is the case that almost all of these models rely upon a single set of Linear B texts from Pylos, the Jn series, as a fundamental source of supporting evidence. However, the limitations of these texts do need to be acknowledged especially, given that they only deal with bronze-working, in terms of their lacunae and their wider applicability to all metals and the rest of the Greek mainland. In light of the importance of this specific Linear B series within this particular strand of previous scholarship, the following section discusses their limitations in greater detail.

## THE LIMITATIONS OF THE JN SERIES

The preserved documents of the Jn series suggest a decentralized structure, with the bronzesmiths in question located away from the palace (Shelmerdine 2007: 43) and some form of intermediary in place (Killen 2001: 174). The work commissioned in these tablets was undertaken within the *ta-ra-si-ja* system (Killen 1987: 68; Gregersen 1997a: 47), which was a mechanism through which the palace issued small quantities of raw materials that were weighed and recorded upon release to ensure the return of an appropriate quantity of finished goods (Killen 1987: 68; 2001; Smith 1993: 179; Nakassis 2015: 583).<sup>3</sup> It may also refer to a consignment of work (Smith 1993: 179). Certain bronze-workers received tax exemptions and grants of land, in contrast to lower status workers who were provided with rations as payment in kind (Gregersen 1997b: 401–402), although some bronzesmiths did receive foodstuffs (Nakassis 2015: 599); bronzesmiths could also own slaves (Gregersen 1997a: 49; Nakassis 2008: 558). However, Killen argues that the large number of bronze-workers listed (approximately 400) cautions against the idea that they were all particularly elevated in status (2001: 173). Nakassis (2008: 557–558; 2015: 587) has suggested that at least some named individuals on the Jn tablets were members of the elite with multiple administrative supervisory functions and thus did not carry out the

work themselves; overall he believes that the social status of bronzesmiths may have been quite diverse (Nakassis 2015: 592). Tablet Jn 832 indicates the existence of specialists, in this case finishers (Smith 1993: 179). Another specialist, the *ka-si-ko-no* (Gregersen 1997a: 47), who may have manufactured weapons, received payment in kind (Gregersen 1997b: 401). Some bronzesmiths were apparently associated with Potnia, an important religious deity, but the nature of this relationship is still not well understood (Killen 1987: 67; Gregersen 1997a: 46; Shelmerdine 2007: 44).

There are several important caveats and limitations that must be borne in mind. The given titles only reveal the relevance of these people to the palace; it is possible that they were not full-time specialists or they may have also worked for other clients beyond the palatial sphere (Gregersen 1997a: 43; Tournavitou 1997: 37). Indeed the entire organizational structure may be based on an anterior system (Gregersen 1997a: 48; Nakassis 2015; Palaima 2015: 621), since metalworking predated the arrival of the palaces by a considerable margin, and it has been argued that this indicates that bronzesmiths, as a group, retained some level of independence and power (Gillis 1997: 511, although this is partly based on a reinterpretation of *ta-ra-si-ja* as a tax that, as discussed above, is not widely accepted; see Nosch 2006:

3 Halstead (1981: 333) suggested that the allocated bronze was intended to repair tools, not produce finished objects. This would be required for iron tools because it is easier to patch than reforge them (Ehrenreich 1991: 78), but makes little sense in the context of cast bronze tools unless the metal was used to produce replacements. This practice would not fit the structure of *ta-ra-si-ja*, the basic operation of which is well understood from textile crafts as well (Killen 2001; Nosch 2006).

175). That the tablets show a fixed quantity was allocated to each geographical unit, regardless of the number of smiths (Uchitel 1990: 199), again indicates there are certain aspects to this system which we do not yet fully understand. Other tablets make it clear that there were additional mechanisms in place for distributing metal to palace-based workshops and apparently repairing metal objects (Smith 1993: 214). Furthermore, the information in the Jn series only applies to bronze-working. Goldsmiths are also mentioned in the Pylian archive, but not within the Jn series (Tournavitou 1997: 37; Hruby 2013: 424). Thus the extent to which this system was relevant to other metals is simply not known and it may have been difficult to apply to the manufacture of composite objects, for which gold was commonly used.

As with all Linear B evidence, it is uncertain how applicable this information is to Prepalatial and non-palatial Mycenaean societies, or even to other contemporary palatial societies; although metals are mentioned on tablets from Knossos (Landenius Enegren 2000: 34–35), comparable information about the organization of metalworking is not. Killen (1987: 61) argues that similarities between the documents recovered from different palatial centers means it is safe to assume that information from one site is applicable to all the others. However, this type of approach creates a self-fulfilling prophecy; the current lack of overlap between sites cannot be presumed as solely due to an accident of preservation, although this surely does play some role. The Jn

tablets were written just before the collapse of the palatial system at Pylos; thus it is not possible to be certain as to their typicality, but neither is it necessary to interpret their contents as symptomatic of an emergency (Palaima 1995). The small quantities of metal allocated to certain bronzesmiths, and the absence of an allocation for approximately one third of the bronze-workers listed, have been used to argue for a shortage, connected to problems that immediately preceded the fall of the palaces (such as Chadwick 1973: 510; Blackwell 2018a),<sup>4</sup> which would undermine its use as an example of the typical functioning of the bronze-working industry at a Mycenaean palace. It has also been argued, based on analogous texts from Ur concerning silversmiths, that the failure to allot metal to all the Pylian bronzesmiths listed on these tablets was due to seasonal fluctuations in their expected work schedule (Uchitel 1990: 202). Having an excess number of smiths ‘on the books’ would give greater flexibility to the palatial authorities (Nakassis 2015: 591). Smith (1993: 189–190) also notes that two tablets in the Jn series (Jn 601.7 and Jn 389.7) record metal that is leftover or yet to be allotted, which seems inconsistent with the notion of a shortage. The issuing of small quantities may have been a deliberate policy to facilitate logistics and discourage theft (Montecchi 2012: 189). Thus, it remains unclear whether the Jn series provides information concerning the normal functioning of the bronzesmithing industry at Pylos or an atypical situation.

4 Ta-ra-si-ja allocations appear to be annual but it is possible that the Jn series covered only a short administrative period (Nakassis 2015: 591).

The preservation of this textual material through accidental firing means that the Pylian palace may have also interacted with metalworking industries in a variety of other ways, and this evidence has now been lost.<sup>5</sup> The description of certain metal artifacts as “of Cretan manufacture” (Matthäus 1980: 114) implies that the import of finished metal goods also took place and demonstrates that there were multiple methods through which the Pylian palace obtained finished metal objects.<sup>6</sup> The fact that the majority of the Jn tablets do not specify what artifacts this metal was intended to be used for (Smith 1993: 181) is another clear sign that we are missing significant information. Only on Jn 829 is this made explicit, and this document does not belong to the *ta-ra-si-ja* system but is instead an order for metal from 16 centers/districts, which was intended to be made into spear and javelin points (Palaima 2004a: 290). No information is provided as to where the production of these weapons would take place nor who was involved. Given that this is the only example of its type, it is not certain if Jn 829 represents an unusual or typical process (Palaima 2004a: 292). Killen (1987: 63, 69–70) argues that tablet K(1) 875 from Knossos, a list of metal vessels, represents a later stage in the same *ta-ra-si-ja* system and thus that such lists would have also

existed at Pylos although, given the lack of both forms of record at a single site, it is still not clear how (or indeed if) a Mycenaean palace ordered a specific form of object. Bronze-working is exceedingly complicated with very different techniques and forms of working that occupy distinct conceptual frameworks. It cannot be assumed that each of the listed smiths possessed the same skill-set and were all capable of producing every type of required object. The fact that all the artifacts listed on K(1) 875 were vessels may imply some type of specialization for each organizational unit. However, it has also been argued that the metal listed in the Jn series was specifically intended for weapon production (Montecchi 2012: 186). This is eminently plausible, as the scribes often presumed a certain level of knowledge on the part of the reader and did not provide exhaustive information (Palaima 2015: 620).

It is probable that the scribes who wrote these documents were administrative specialists, not craft specialists (Smith 1993: 176, Note 20), and were the primary consumers, as well as producers, of the information stored on these tablets (Palaima 2015: 619–620). This underlines the point that ultimately what most of these tablets provide is a snapshot (Smith 1993: 216) of a single mechanism through which metal was distributed to bronze-

- 5 Killen (2001: 173) notes that the specified total of bronze for the Jn series exceeds that obtained by adding up the individual records, which may indicate that the series is incomplete. This is disputed (Smith 1993: 172), although it is possible that this series was still a work in progress (Smith 1993: 194–197).
- 6 This reasoning is still applicable even if some of these Cretan artifacts were heirlooms (as argued by Palaima 2003); they may have reached the palace stores through gift exchange or taxation, as booty or they may have already been in the possession of one of the lineages that went on to form the palatial authorities.

smiths from the logistical point of view of the palatial accounting authorities. Returning to the use of this series as a fundamental source of evidence to support the existence of a state monopoly on the redistribution of metals, in reality we have little idea as to how important the *ta-ra-si-ja* allocations were to the bronzesmiths themselves, nor what proportion they represent of the total metal in circulation in Messenia. If the *ta-ra-si-ja* system is a form of *corvée* labour (Montecchi 2012) then, far from being grateful recipients of a diminishing resource that enabled them to continue working, the bronzesmiths may have seen these obligations as an unwanted distraction from their main work; hence the need for the palaces to supply rewards in the form of tax exemptions and land grants. Currently, it is not even possible to be certain that the *ta-ra-si-ja* process described in the Jn series was the primary way in which the Pylian palace interacted with the bronze-working industries; it is simply the one for which we have the most evidence. Moreover, although further information about bronze and other metals can

be gleaned from inventories (Chadwick 1973: 335–338; Palaima 2004b: 113), descriptions of rituals (Chadwick 1973: 284–287; Godart 2009; Weilhartner 2012: 222–223) and other types of texts (Killen 2007: 117) preserved in the Pylian archive, there is no mention of the production or disbursement of utilitarian metal tools (Palaima 2015: 629). It has simply been assumed that the palace must have played a role in the redistribution of such objects because of the existence of an entirely different mechanism through which the palatial authorities collected and allocated raw material.<sup>7</sup> Finally, as stated above, the applicability of the Jn series to other forms of metalworking is completely unknown and this has serious implications for the use of the Jn series as evidence for a model of palatial control over the redistribution of all metals. Even when palatial authorities may have exerted a significant degree of control over redistribution, such as for types of metalwork essential within Mycenaean political economies, it cannot be assumed that the specific system embodied by the Jn series was used.

## ADVANTAGES OF A PRACTICE-ORIENTED APPROACH

It is perhaps understandable, given the problems inherent in studying the use of metals in past societies, that scholars have principally turned to other sources of evidence such as the Linear B records.

As I have just demonstrated, although informative, too much interpretative weight has been placed upon them, particularly the Jn series, and instead of being accepted as a small window into the world of

7 In this respect I disagree with the argument recently put forward by Blackwell (2018a) which does exactly that, supported by what I believe is a problematic interpretation of Late Bronze Age Greek mainland hoards as representing ‘palatial stock’ within a redistribution system that seems to be mainly based on a single tablet, Jn 829, the typicality of which is deemed uncertain, as noted above.

bronze-working at Pylos, they have instead been used as the foundation for an entire palatial redistribution system for all metals. The model this has imposed, the assumptions it has begot and the constraints on interpretation that it has created have acted as a straitjacket on our investigation of the role of metals in Mycenaean societies. Disregarding the information these documents contain would, however, be counterproductive; it is essential that such evidence, with due concern for its limitations, is carefully integrated into a wider examination of material from the archaeological record.

As discussed above, the use of archaeological material to interpret the role of metal objects in a society is not a straightforward task. It can be difficult to judge whether a specific unexpected or problematic pattern in the archaeological record is solely an outcome of preservation bias, and is therefore unrelated to past realities. Moreover a naive reading, without due regard for such biases, can generate misleading interpretations. In such circumstances, a practice-orientated approach, as defined above, can prove much more fruitful.

This type of approach places social practice at the heart of analysis. Understanding the actual forms of interaction between people and metalwork at Mycenae enables us to piece together the role that metal played in the community and moves the debate from abstract assumptions to concrete examples. The evidence for a practice-orientated approach can be accrued by establishing the typical life cycle or biography of a given artifact (Kopytoff 1988); that is to say the full narrative of an object from its concep-

tion and production to its removal from the human and material world (recently re-termed by some scholars as itinerary) (Joyce and Gillespie 2015; Bauer 2019). Of course, this ideal is impossible to achieve for prehistoric objects. However it is still possible to investigate the social history of things (Appadurai 1988: 34), which can provide plentiful information regarding social norms and the expected relations between people and objects (Joy 2009) that would otherwise remain inaccessible [Fig. 2]. Once a standard expected biography has been recognized this can be compared to the range of actual object biographies, enabling the uncovering of narratives that deviated from the usual path, for example extension of use life through a repair. These “discrepancies” can highlight occasions when atypical values or social practices were put into action.

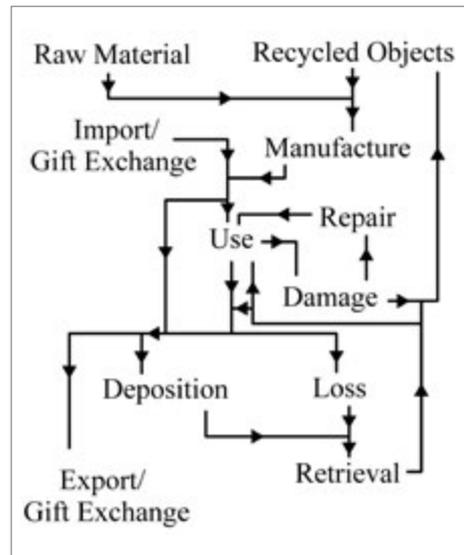


Fig. 2. Flow chart showing potential object biographies of metal artifacts in general (S.J. Aulsebrook)

The investigation of each stage of this object biography can reveal different types of information. Production can tell us about the expected functions, visibility and durability of an artifact. Repairs (Aulsebrook 2017) and usewear traces, which may range from minor scratches on the working edges of tools and weapons (Kristiansen 2002; Quilliec 2008; Molloy et al. 2016) to significant alterations that enabled a change in function (Aulsebrook 2017), allow us to compare the intended use of an object against its actual use, understand how an item was used and assess the decisions made once an artifact became worn or obsolete. How an ob-

ject left the human world, for example as a grave offering, through accidental loss or deliberate discard, can also provide evidence concerning the values placed upon that particular artifact, including the curation of heirlooms

Metals open up new social practices because they can be used to manufacture objects that cannot be made in any other material. A good example of this is the sword, the impact of which has been explored in considerable detail (Peatfield 1999; Kristiansen 2002; Molloy 2008; 2010). Other examples include artifacts such as mirrors and tweezers, the social impact of which has generally received

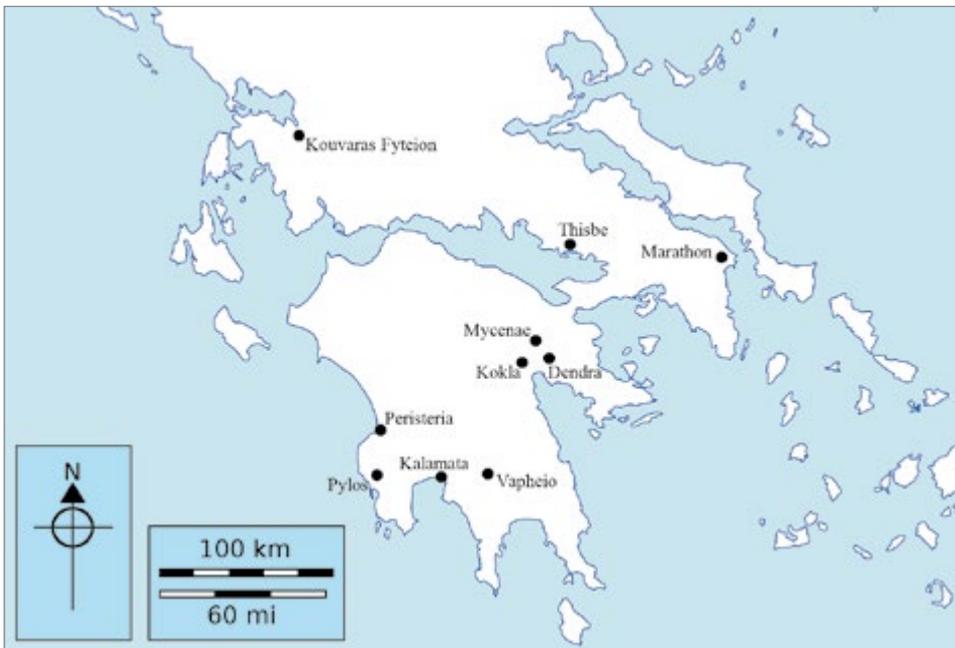


Fig. 3. Distribution map showing the Greek mainland locations from which Mycenaean-period gold vessels have been reported. The Thisbe vessel, a miniature gold box (Evans 1925: 2 Fig. 1c), was purportedly found with other objects that are regarded as forgeries (Betts 1981: 32), although Mycenaean remains are known from this area (Heurtley 1923–1925: 41). 39 of these vessels came from Mycenae and of those 33 came from just four contexts: Graves III, IV and V in Circle A (Karo 1930) and the Acropolis Treasure (Thomas 1938–1939). The gold vessels from Pylos come from the Griffin Warrior tomb, the publication of which will revise the total upwards.

less attention (but see Treherne 1995). Although recent research has begun to reverse this trend, branching out into different types of metal artifacts such as tools (Blackwell 2018b), it is the actual use phase of metal objects that has received the least scholarly consideration. Indeed, someone otherwise unfamiliar with the functioning of a Bronze Age society might be forgiven for thinking that the primary purpose of Mycenaean metalwork was its deposition as a form of wealth display in the mortuary sphere; this is an unfortunate reflection of the context within which most Mycenaean metalwork has been recovered and the conceptual framework within which most scholars have operated.

Conversely, although many different types of Mycenaean metal objects have been discovered, which demonstrates their use within a variety of spheres of human action, they form just a subset of the total range of material culture found at Late Bronze Age Mycenae. This may imply that metal artifacts were absent from many social practices. For example, the known corpus of ceramic vessel shapes (Furumark 1972; Mountjoy 1986; 1993) is significantly larger than the metal equivalent (Davis 1977; Matthäus 1980; Mossman 1993). The use or absence of metalwork within the context of a particular social practice has been generally presumed to

relate to the accessibility of metal and the “wealth” status of the individuals involved. Other possibilities have not been investigated, presumably because it has been assumed, based perhaps on deep-rooted ideas within the archaeological literature concerning the technological superiority of metal artifacts (Fontijn 2002: 4), that metals would have been enthusiastically employed for any relevant purpose whenever possible. Consequently, processes of resistance and adaptation have been downplayed or neglected with little thought given as to why and how new forms of metalwork were adopted by the inhabitants of Mycenae during this period.

To demonstrate the possibilities of this practice-orientated approach, I would therefore like to present a case study where the consideration of social practice, in conjunction with evidence from the Linear B archives, can be used to help clarify and contextualize an unexpected pattern in the archaeological record of the Mycenaean Palatial period. This case study is not a product of the project discussed here but results from previous unpublished research related to my doctoral thesis. Although its scope extends beyond Mycenae, the decision to include this case study was taken due to its ability to act as a practical demonstration of the potential of the project.

## THE RIDDLE OF THE MISSING GOLD VESSELS

Of the 55 or so gold vessels presently known from the Greek mainland [Fig. 3], only one, a shallow cup decorated with a marine scene from the tholos tomb at

Dendra (ANM 7341, Persson 1931: 31–32, No. 3; Davis 1977: 276–280, No. 116, Figs 224–227) [Fig. 4], can be securely dated to the Palatial period (LH IIIA–B;

1420/1390–1200/1185 BC). The Palatial period is widely considered to be the florescence of Mycenaean culture across many different spheres (for a general overview, see Shelmerdine 2001; Mee 2008; Shelmerdine and Bennet 2008), and therefore this apparent lack of gold vessels seems rather puzzling. It cannot be explained as the result of an overall shift in mortuary depositional practices,<sup>8</sup> as approximately 25 silver vessels<sup>9</sup> have been recovered from secure Palatial period contexts (Aulsebrook 2012: 465–467, Table B4)<sup>10</sup> and gold continues to appear in other forms, such as jewelry, dress ornaments and wire, in the contemporary archaeological record, and beyond into the Post-Palatial period as well (Kayafa 1999: 248).

This finding of a single solitary Palatial period gold cup has been taken at face value by some scholars, especially those who wish to argue that the standard of crafting in the Aegean fell considerably as a result of the end of the Neopalatial period on Crete; it has been suggested that every precious metal vessel deposited after this point was an heirloom, with the knowledge of their production all but lost along with the LM IB Cretan palaces (Rehak 1995: 118; 1997). Yet, Lin-

ear B texts provide strong evidence to the contrary, and even appear to place gold vessels at the core of religious activities linked to the palaces. Tablet Tn 316, from the Pylian archive, reports the offering of gold and silver cups to deities from the palace, through the medium of a sanctuary (Shelmerdine 2001: 355; Godart 2009; Lupack 2011: 208; Weilhartner 2012). A second tablet from Knossos documents a similar arrangement, with gold vessels given to different deities as laid down in a set timetable (Chadwick 1973: 284, 287), thus demonstrating that such practices were not confined to Pylos alone.<sup>11</sup> The use of gold vessels in such a context



Fig. 4. Gold octopus cup from the Dendra tholos (photo and processing S.J. Aulsebrook)

- 8 All gold vessels found in securely dated contexts came from the mortuary sphere (at least 82% of the total).
- 9 Silver vessels are often recovered in a highly fragmented state; some fragments in the same context may have belonged to one or more vessels, hence the quantity presented here is approximate. The majority of these came from Dendra (11 examples) and Mycenae (8 examples). Please note that these figures do not include the Griffin Warrior Tomb, which is currently awaiting publication.
- 10 The total given in this table is incorrect and should read 22/25.
- 11 It is exceedingly unlikely that these objects were anything other than solid gold vessels; in other words they were not tinned ceramics that had been subjected to the “gilding” process described by Gillis (1991–1992: 28) or any other type of gilded vessel. Composite objects are listed in the Linear B archives and the description of their various materials is highly detailed and comprehensive (Shelmerdine 2012: 688).

underscores their significance in Mycenaean material culture within the palatial sphere, even though not a single gold vessel has been found within the Palace of Nestor itself.

How can this contradiction be resolved? Given the survival of Palatial-period silver vessels and other gold objects, it is not enough to point to general issues with the entry of metals into the archaeological record. The possibility that this absence of gold vessels from the remainder of the mortuary sphere is to be attributed to purely economic concerns can, I think, be safely discounted. The weight of the gold vessels from the shaft graves varies enormously, from 9.95 g to 1004 g, but the difference between the median (98.725 g) and the mean (189.43 g) weights indicates that these graves contained many lighter gold vessels weighing less than 100 g with a few exceptional heavier examples (Karo 1930: 166–168). This does not compare too unfavorably with the quantity of gold found in rich Palatial period mortuary contexts such as Chamber Tomb 515 at Mycenae; only small items, like rosettes and other foil ornaments, were present but in great number (207 in total) (Wace 1932: 52–63). Although these have not been weighed, an estimate can be obtained using as a basis a form of circular foil from the shaft graves (ANM 315, Karo 1930: 167), which was about half the diameter of the most common example in Tomb 515. This would suggest that the approximate total gold in Tomb 515 was just over 100 g;<sup>12</sup> in comparison, the lightest cup in the shaft

graves (ANM 220) weighed 26.55 g (Karo 1930: 167). Thus the absence of gold cups cannot be linked to a general inability to access gold.

The gold vessel heirloom theory is also implausible. Not only does this hypothesis fail to address why, given the extensive trading networks within which Mycenaean Greece was embedded at this time (Mee 2008), alternative sources of gold vessels in the East Mediterranean were not sought, it is also contradicted by evidence from the precious metal vessel corpus. Clear evolution in techniques over time can be distinguished in the manufacture of silver vessels including into the Palatial period (Aulsebrook 2012: 253–258) which, due to the similar working properties of the two metals, would have been applicable to gold vessels as well (as seen in Davis 1977), and temporal change in form is also visible (Aulsebrook 2018).

It has been argued that the failure to find a precious metal artifact in the archaeological record was not because it was non-existent, but because of the way in which it was retained in circulation and mobilized when necessary (Sherratt and Sherratt 1991: 360; Michailidou 2001: 85–86). Although I broadly agree with this tenet, I suggest that in this specific set of circumstances, the apparent absence of the gold cups could be best explained through a combination of sumptuary practices and changes to the elite mortuary landscape. At Mycenae, the use of the grave circles ended in LH II, when a building sequence of large tholos tombs

<sup>12</sup> The size of the most common Tomb 515 circular foil in terms of area was four times larger than that of ANM 315, which weighed 0.15 g.

was put in motion that continued into LH III (Wace 1921–1923: 393–396; Wace 1949: 16; Galanakis 2014). Similar large grand tholoi, ranging in date from LH II–III, appear at a number of sites including Analipsis, Dendra, Galatas, Kokla, Malthi, Marathon, Menidi, Nichoria, Orchomenos, Pylos,<sup>13</sup> Routsis, Thorikos and Tiryns (Voutsaki 1995: 59; Cavanagh and Mee 1998: 56, 77–78; Cavanagh 2008: 334–335; Galanakis 2014: 243).

The effort required to construct these edifices was significant and clearly associates them with the uppermost echelons of Mycenaean societies; the construction of the Treasury of Atreus at Mycenae required the demolition of existing buildings, the removal of thousands of tons of rubble and rock, and the quarrying, transportation and raising of large stone blocks (Cavanagh 2008: 337). The sociopolitical significance of tholoi has been discussed by several scholars. Their construction seems to have been used as a form of political influence, for instance at Nichoria (Bennet 1995: 599; Cavanagh and Mee 1998: 78), and it has been posited, based on strong similarities to the Treasury of Atreus, that the Treasury of Minyas at Orchomenos was an elite gift (Cavanagh and Mee 1999: 101). In the Argolid, the number of tholoi in use decreases during LH IIIA until by LH IIIB they are only in use at palatial centers; this has been interpreted as a strategy of centralization (Voutsaki 1995: 59). It is unlikely that they were restricted to royalty alone (Cavanagh and Mee 1998: 56; Shelmerdine 2001: 352), but were proba-

bly associated with the leading lineages at each of the most prominent settlements (Wright 2008: 246).

Unfortunately, despite the precautions taken by those who sealed them, the majority of these tombs were looted. Their high visibility made their mortuary assemblages far more vulnerable. The looting of large tholoi across the mainland over many centuries may have effectively creamed off the very highest-status Mycenaean material culture (Reeves 2003: 190–191), of which, as suggested by the Linear B evidence, gold vessels appeared to have been a part. This is supported by the fact that the only Palatial period gold vessel found thus far came from a large grand tholos. However, this cannot be the entire story. Plenty of Palatial period prestige goods have been recovered from the archaeological record, including silver vessels. That these were in use at the very highest levels of society is demonstrated by the appearance of a broken inlaid silver vessel just outside the main megaron of the palace at Pylos (Blegen and Rawson 1966: 57–58; Davis 1977: 308–310, No. 136, Fig. 251). A very similar example was discovered in Chamber Tomb 24 at Mycenae (Davis 1977: 297–300, No. 130; Xenaki-Sakellariou 1985: 84, No. A 2489, Pl. 15). This, I believe, highlights the main difference between the treatment of gold and silver vessels; the capability and right to deposit silver vessels in the mortuary sphere extended beyond the ruling elite, despite their use by the latter. The same also applied to other gold objects but not, apparently, gold vessels.

13 But see Murphy et al. 2020, which re-dates the construction of one of the most developed tholos tombs at Pylos, Tholos IV, to MH III.

As discussed above, purely economic concerns are unlikely to have been the cause. The fact that between LH II–IIIB only one gold vessel is known to have been deposited in a chamber tomb across the entire Greek mainland<sup>14</sup> strengthens the likelihood that gold vessels were actively prevented from entering the mortuary sphere outside of the large grand tholoi. Whether gold vessels were also withheld from the use of the living community beyond those entitled to be buried in a large tholos is impossible to say. Their existence outside of this innermost sphere of elite material culture may well have been so rare that their loss to the mortuary sphere could have been unthinkable, especially if their acquisition governed access to special arenas of social importance, such as feasting activities. However, sumptuary laws that encompassed the realms of both the living and the dead would probably have been the easiest way to guarantee this distinction for gold vessels. This may have been reinforced through direct control over the producers of gold vessels and also perhaps silver vessels, with the latter allowed to circulate beyond the very highest echelons of society as gifts and rewards for services rendered.

The likely association of gold vessels with large tholoi is highly significant when attempting to piece together how metal vessels fitted into the political landscape of the Mycenaean mainland. If a concerted effort was sustained to keep gold vessels within a small clique of

individuals, it suggests that they had an important symbolic link to leadership. Gold seems to have been the most highly valued metal used for vessels (Aulsebrook 2012: 137–139) and its indestructibility and immutability have been suggested to convey notions of immortality (Whittaker 2008: 94), an idea that may have been used to stress the continuity and legitimacy of Mycenaean leaders. However, it is not necessarily the case that all the large grand tholoi contained gold vessels. The appearance of gold vessels in the LH I mortuary sphere at locations such as Peristeria, which did not become a palatial center, implies that those individuals who deposited them envisaged retaining future access to gold vessels. Yet the almost complete absence of gold vessels from rich chamber tombs during LH II indicates that restrictions on the ability to deposit them were in place before geographical restrictions on the use of large grand tholoi were imposed. The limitations on gold vessel deposition in chamber tombs during LH II may have been enforced locally by those individuals who were being buried in tholoi. If so, it is probable that, as the distribution of the large grand tholoi in use contracted over time, so also did the distribution of individuals who were entitled to deposit gold vessels in the mortuary sphere. This interpretation of the available evidence would suggest that gold vessels were probably deposited in all the large grand tholoi constructed and used by local elites who had more autonomy; in the cases

14 In Chamber Tomb 10 at Dendra (Persson 1942: 74–75, No. 19; Davis 1977: 267–269, No. 110, Figs 214–216), and this probably occurred before the large tholos there was constructed in LH IIIA (Wright 2008: 246).

of Nichoria and Orchomenos, for example, where, as discussed above, the involvement of other polities in the construction of their tholoi has been hypothesized, it cannot be assumed that the right to be buried with gold vessels was also granted alongside the right to be buried in a large grand tholos. Such patterns indicate that the increasingly centralizing palatial authorities were able to impose their sumptuary rules on other settlements within their area of influence, although exactly how this was achieved requires further investigation.

Therefore, the appearance of only a single gold vessel in the Palatial-period archaeological record is not evidence that these objects simply no longer existed, but is connected to their specific role in Mycenaean societies and limits

placed on the type of social practices in which they could be used. By treating gold vessel mortuary deposition as a form of social practice, regulated by a set of culturally specific rules, it has been possible to form an alternative hypothesis that better fits the available evidence. Separating out different forms of mortuary deposition, in this case by tomb, metal and object type, and considering each of these as distinct but related social practices has revealed a small part of the complexity embedded in this sphere of human action. That this has been achieved despite the focus of the case study upon only one part of these objects' biographies indicates the richness of interpretation that is potentially accessible when more aspects of an object's biography are analyzed.

## **DISCUSSION: METAL DEPOSITION AS SOCIAL PRACTICE**

This case study has provided a demonstration of how an approach based on social practice can provide a more plausible interpretation for an unexpected pattern in the archaeological record, working within the limitations of the latter and using additional sources of evidence, in this instance textual, when possible. This method is valuable for the analysis of all patterning of evidence concerning past societies, because it ensures that human action is at the forefront of interpretation. It is this type of study that the wider project on metalwork at Mycenae has been designed to achieve, by maximizing the range of social practices and potential actors that can be investigated, through its holistic approach.

One further danger that is evident in some similarly wide-ranging analyses of metal use is a tacit assumption that the deliberate deposition of metal objects provides an index of the total metal circulation in a society (Taylor 1999: 25). In fact, deliberate metal deposition is primarily rooted in culturally determined ideas concerning correct social practice, as firmly demonstrated by the above case study. Durability is one factor that can make the issue of deliberate deposition of metals much more complex than for other materials. Metal tools, for example, may be gifted from generation to generation rather than being buried with a deceased craftsperson, regardless of their "wealth" status, because they retain their usefulness. The categorization of metals

as inter-generational may also influence decisions made about their deliberate deposition, as it could be expected that older members of a family effectively hold them in trust for future descendants.

To avoid this issue and overcome other problems commonly found in the interpretation of metal use in past societies, the project will employ the use of six general, fluid, analytical categories when considering metal deposition. These consider ownership status, social and/or economic restrictions on metal depositional practices and the opportunity for interaction between people and metalwork; they are summarized as follows:

- 1) Possessors of metalwork that have the capacity, right and/or desire to deliberately deposit all metal objects and may, through their interaction with metals, also accidentally deposit them;

- 2) Possessors of metalwork that have the capacity, right and/or desire to deliberately deposit certain types of metal objects and may, through their interaction with metals, also accidentally deposit them;

- 3) Possessors of metalwork that do not have the capacity, right and/or desire to deliberately deposit metal objects yet may, through their interaction with metals, accidentally deposit them;

- 4) Non-possessors of metalwork that nevertheless have frequent contact with metal objects during their day-to-day lives and may, through their interaction with metals, accidentally deposit them;

- 5) Non-possessors of metalwork that have little or no contact with metal objects except in exceptional circumstances;

- 6) Possessors or non-possessors of metalwork that contravene accepted so-

cial norms regarding the capacity, right and/or desire to deliberately deposit metal objects as well as those who gain unauthorized access to metalwork and may, through their interaction with metals, accidentally deposit them.

These categories are not intended to neatly map onto the social structure of the community at Mycenae, but instead provide a tool to think through how different agents may have interacted with metal objects and the impact this has on social practices and the preservation of metalwork in the archaeological record. For example, sumptuary laws, such as those discussed in the case study, could differentiate between the visibility of Group 1 and Group 2 in the archaeological record, even though in terms of their “wealth” there was in fact no difference between them. This scheme covers all the possibilities through which metal could enter the archaeological record. A destruction horizon, for instance, could be associated with any group except Group 5; a mortuary gift would be associated with Group 1 or 2. Group 6 is most likely to be linked with atypical object biographies. Identifying the involvement of each group with the various social practices that will be uncovered as part of this project will form the first step towards contextualizing the relationships between people and metals at Mycenae.

Although the “Forging society at Late Bronze Age Mycenae” project is still in its early stages, this paper has demonstrated the need for such a study, the strengths and potential of its approach and highlighted some of the precautions being taken to avoid the pitfalls encountered by previous scholars.

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# Metsamor after the 2019 season



**Abstract:** The 2019 season in Metsamor confirmed the functioning of the settlement in the Urartian period. House II, discovered during the fieldwork, is the first architectural structure built at the beginning of the Early Iron Age period which, after some possible rearrangements, retained control over the Araxes valley during the Urartian kingdom. Pottery discovered there confirms that the already excavated part of the settlement was extensively used after the fall of Urartu. A pit grave dated to the 7th century BC yielded a late Urartian cylinder seal.

**Keywords:** Early Iron Age, Urartu, settlement, grave, pottery, dwelling structures

Fieldwork in the seventh season of the University of Warsaw archaeological project at Metsamor in Armenia continued to focus mainly on the area of the so-called “lower town” or settlement as having the greatest research potential in the context of the known history of Metsamor. Methodical exploration of the site, layer by layer, may be time-consuming, but it affords an excellent opportunity for a thorough and considered study of all the finds, the small and insignificant artifacts as well as the large-size architectural remains.

## “LOWER TOWN”

The “lower town” spreads north of the citadel mound towering above the local landscape. So far, only the central part of the settlement has been recognized

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to some extent. The excavation area was extended significantly eastward, including in 2019 new trenches opened in the part of the settlement where the remains of a large architectural structure had been discovered the year before [Fig. 1]. House II, as this structure was designated, turned out to be a large rectangular dwelling. In its final form, the house was dated to the Iron Age III (600–200 BC) period. It consisted of four parts, the largest of which was a rectangular courtyard (S15) in the northern part of the building [Fig. 2]. The first chamber (S12), attached directly to the south wall of the courtyard, is quite narrow and looks rather like a corridor. It separated the courtyard from the next, large chamber (S13), which seems to be the most important one in the dwelling. A small rectangular room was attached to the west wall of S13 and to the south wall of S12. That room had no direct connection with either S12 or S13, but was accessed via an independent entrance in its south wall. Installations discovered inside it indicate that this small chamber could have served as a potential kitchen with an open fireplace. The need to prevent a fire from spreading could have actually been the reason for separating the chamber from the rest of the house.

The “kitchen chamber” (S9) is probably the oldest fragment of the large house. This part of the dwelling was originally included in an older structure, parts of which were most likely reused for the large house structure from the Early Iron Age I (1150–800 BC). Some traces of earlier structures were also brought to light near the recently excavated house.

The structure (House II) was built of irregular stones and boulders [see Fig. 2]. Relatively large stones were used for the wall façade, while the space between the outer and inner faces was filled with small stones, rubble and compacted clay. Although this type of construction was commonly applied in the architecture recorded at Metsamor, this particular building stands out because of its careful execution. The courtyard (S15) hidden behind the stone walls was the largest and apparently the most distinguished part of the building. Of particular importance is the lowermost part of the yard, recorded in its northern section on the level corresponding to the disassembly of the northern part of the north wall; the removal of almost all of the stone elements of the outer façade in this phase nicely exposed the foundations. It turned out that the lower stones of the wall were laid on a substructure of the same kind of mud brick that was used to level the ground and construct a sound and stable platform for the foundation. A meter of the height of this stone wall was preserved, the upper parts being made presumably of mud brick, although no traces of these were found inside the structures.

Excavation of the northern part of the courtyard uncovered a stone-paved floor, actually two layers of a stone pavement, representing two different phases of occupation. Remains of the lower pavement, made rather untidily of irregular stones, can be observed throughout the structure, while the upper pavement is attested only in the center of S15 [Fig. 3]. The upper pavement may be linked to the rearrangement of the house,

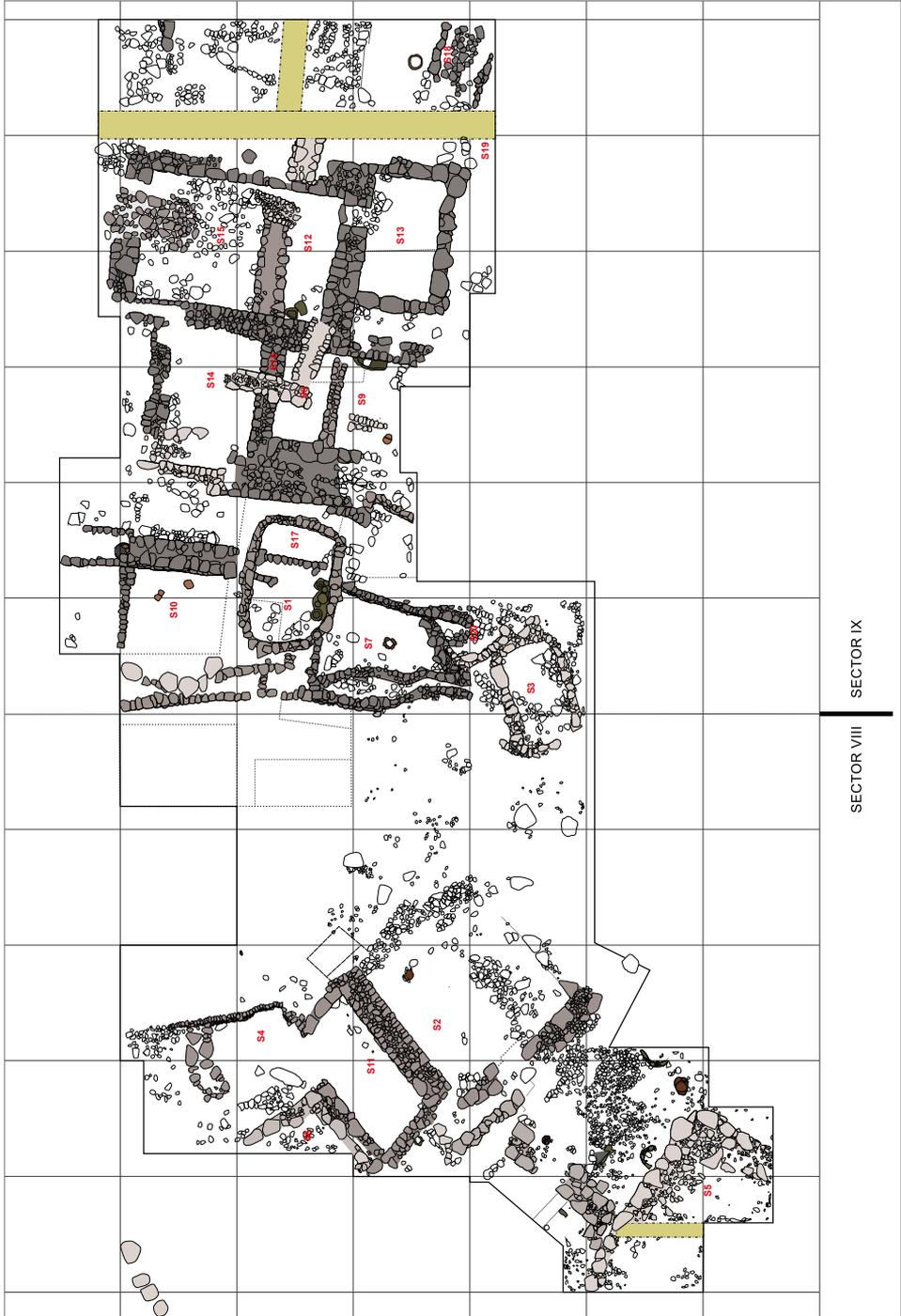


Fig. 1. The "Lower Town" in Metsamor: general plan (2019) (University of Warsaw Metsamor Project | drawing M. Iskra)

which took place still in the Iron Age III period. It partly damaged the north wall of the building. Structure S15, rebuilt(?) at that time, belonged to the older, original part of the house constructed in the Iron Age II (800–600 BC), a dating apparently corroborated by the pottery finds. Of particular importance in this regard is a ceramic deposit, found in a broken churn, close to the northern edge of the trench; it contains a red-burnished Urartian jug and a clay oil lamp, both typical of the local Iron II pottery production, as well as three different bowls [Figs 4, 5].

Moreover, the original Iron Age II structure was reduced in size and its southern part rearranged. A partition wall separated out a long rectangular unit (S12). This newly formed chamber was also paved in part with stones of irregular shape. The pottery assemblage, as well as the small finds and other artifacts, indicate a date in the Iron Age II period for the refurbishment. The partition wall is later than the primary features of the building, but it is still difficult to estimate when the change occurred. A doorway in the southeastern corner of S12 led to the next chamber.



Fig. 2. House II: top view (University of Warsaw Metsamor Project | orthophoto M. Truszkowski; processing M. Iskra)

It was well made, of square stone blocks forming smooth walls. A door socket found by the eastern edge of the doorway, already inside chamber S13, proves that the doors here opened inward. Compared to the other parts of the house, this chamber was built of the largest stones.

Notwithstanding the alterations, which were sufficiently drawn out in time to obscure the final arrangement, the layout of the structure in its final phase appeared to be rather regular. This particular architectural form has already been recorded at some other Urartian sites. Remains of a similar house

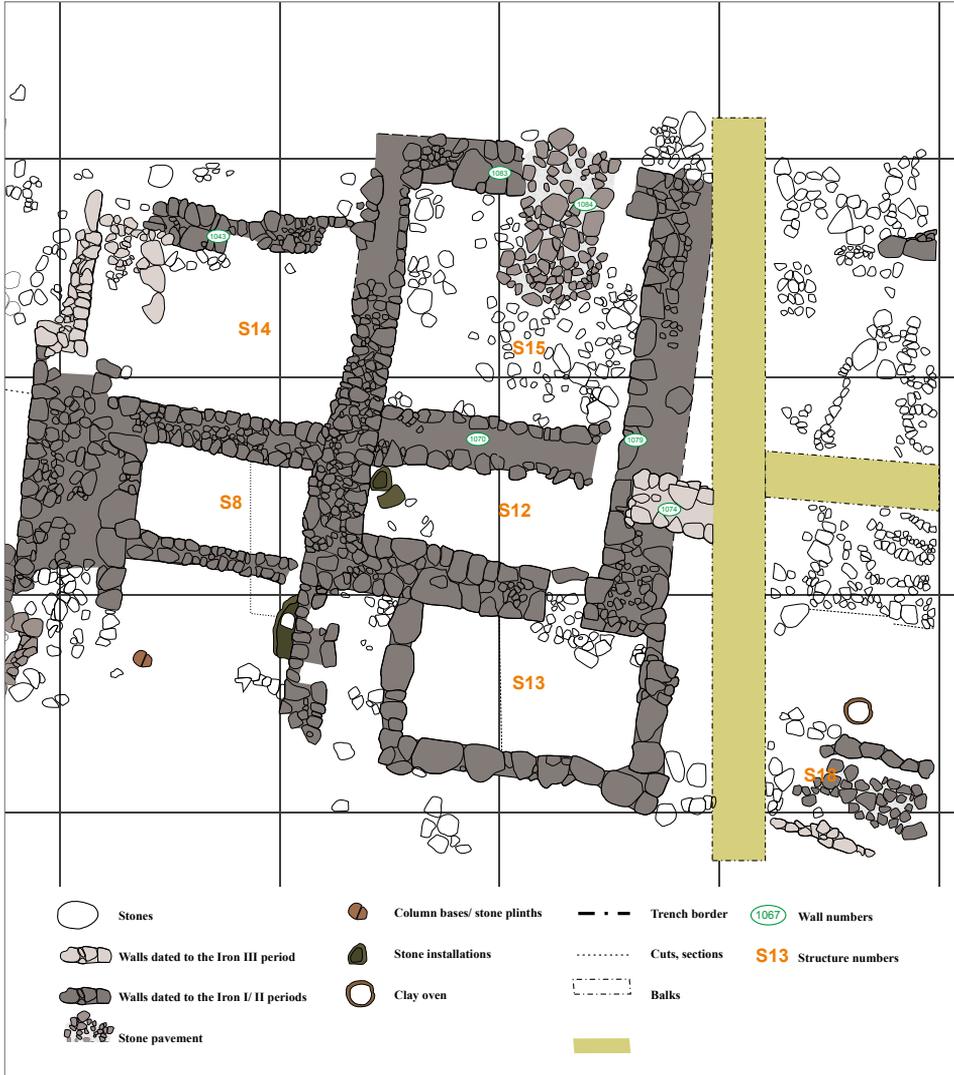


Fig. 3. House II: stone pavement and remains of the Iron Age III phase (University of Warsaw Metsamor Project | orthophoto M. Truszkowski; processing M. Iskra)

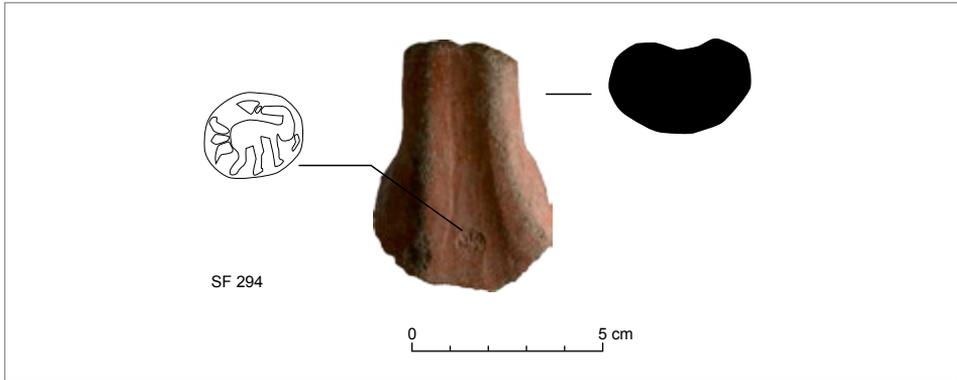


Fig. 4. Seal imprint on an Urartian jug handle (University of Warsaw Metsamor Project | photo M. Truszkowski, drawing D. Storey, processing M. Iskra)

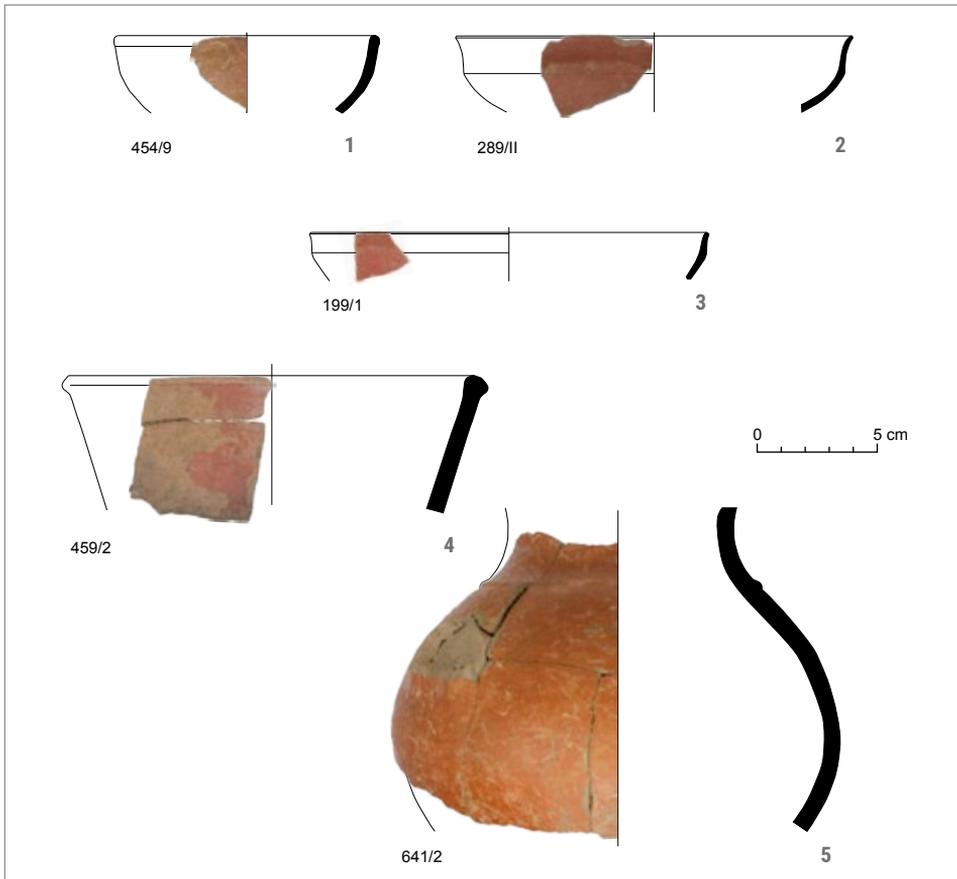


Fig. 5. Selected pottery from House II: 1 – oil lamp; 2, 3 – bowls; 4 – basin; 5 – Urartian jug (University of Warsaw Metsamor Project | drawing D. Storey, J. Pawlik, photos M. Truszkowski, processing M. Iskra)

were discovered during the excavations of the lower town in Van (Tarhan 1994). A dwelling structure in the L9–L10 area had at least three chambers. The similarities included two small chambers situated in the southern part of the structure and an entrance from outside in a chamber (B<sub>1</sub>) interpreted as a kitchen. The courtyard was arranged in the northern part of the building; only a quarter of its surface was paved.

Other parallels are known from the Eski Norguh site (Tarhan and Sevin 1977). Three comparable houses investigated there consisted of two chambers each, adjoining a large internal courtyard. They were oriented differently. Two of them had courtyards in the southern parts of the buildings. The architectural structure at Agaclik also resembles the house from Metsamor, although in reverse: the courtyard was in the southern part of the building and two dwelling chambers in the northern one (Tarhan and Sevin 1977). Moreover, two corner buttresses in the south wall added a grandiose character to this structure, making it comparable to the large house at Metsamor.

Another type of building with three chambers from Urartian sites merits attention. Houses discovered in Govalek and Gymli feature small rectangular courtyards with two adjoining rooms or chambers of a rectangular shape (Tarhan and Sevin 1977). The stone material used for their construction was generally the same as in the case of the large house from Metsamor. All these structures in their lowermost parts were built of regular stones creating a stable base for the upper parts constructed most probably of mud brick.

Several structures discovered in Karmir Blur also represent a form of house with three separate units/chambers (Oganesyanyan 1955). The layout of these dwellings is basically different because of the agglutinative building technique. Still, a suite of two chambers and a courtyard appears to have been a common feature for houses 1, 2, 3, 5 and 8 from Karmir Blur. Compared to other sites, Karmir Blur appears to have been fairly densely built-up, which might have been the reason for the irregular layout of the building (Martirosyan 1958; 1961).

Considering the parallels described here, House II at Metsamor appears to be typical of the time and place, being associated with a kind of “middle class” at the core of the local society. The pottery assemblage supports this idea. Locally manufactured pots of mediocre quality turn up side by side with the well-made and well-finished red-burnished pottery, which is so characteristic of the Urartian period. Moreover, Urartian pottery (Red Burnished Ware) was fairly scarce, if not accidental, in buildings of the period. The rectangular building with two chambers and courtyard was an exception in this regard.

The pottery collected from House II also contributes to a better understanding of how and why the building was abandoned. The material from the latest occupation layer is dated to the 8th–7th century BC. It includes red burnished (Urartian) wares and locally manufactured pots [Fig. 5:1,3,4,5]. A few trash pits filled with remains of organic material and potsherds were found in the ruins. Most of the pottery fragments were dated to the 7th and 6th centuries BC, indicating

tha the rectangular houses were deserted most probably in the 7th century BC, presumably because of the destruction of the whole settlement.

The hypothesis that the house was destroyed along with the rest of the lower town is supported by the discovery of a single grave in the eastern part of the former courtyard (S15). The grave, dated to the end of the Urartian period (late 7th century BC), was placed next to the entrance to chamber S12. The burial was of a woman, some 30 years of age, laid to rest on her right side, face turned east/southeast [Fig. 6]. The grave should be considered as rather modest with only personal belongings deposited with the body. The most conspicuous of these

was a cylinder seal of stone. Its style and execution point to an Urartian date [Fig. 7]. A more precise date is suggested by certain details like the top finished with a loop for threading a twine for suspension and a conical-like shape formed by the facets slightly bent at the edges. The decoration, engraved on the lateral surfaces, is badly weathered and practically impossible to identify. A representation of a hybrid creature on the bottom of the seal is in only slightly better condition. An analysis of the decorative elements puts the seal in one class with the so-called common style types of Urartian seals, which are dated to the 7th century BC. Seals of this type were fairly common at other sites like Armavir,



Fig. 6. Urartian-period 7th-century-BC grave discovered in the courtyard of House II (University of Warsaw Metsamor Project | photo E. Bastien)



Karmir Blur, Erebuni, Igdyr, Noratus etc. (Ayvazian 2016; Yengibirian 2019). The character of these seals, the iconography and their distribution suggests that they were personal adornments or a symbol of status. One hypothesis, which has yet to be confirmed, is that they were used by mid-level officials from the royal administration. Should this have actually been the case, then the buried female could have been a local official, the seal being a symbol of her high status or authority.

The presence of her grave in the settlement could be an indirect indication of Metsamor being a regional administrative center. There is, however, no other evidence from the site, either architectural or artefactual, to support this assumption. Surprisingly for a presumed official, the woman was buried without any grave goods. The seal was after all only a personal belonging. Apart from it, the grave

Fig. 7. Grave goods from an Urartian-period (7th century BC) burial: left, stone cylinder seal from the Urartian period; right, two needle-like bronze artifacts and bead (University of Warsaw Metsamor Project | photos O. Bagi and T. Zakyán)

yielded two small long needle-like bronze objects [Fig. 7]. One of these “needles” is fragmentarily preserved; its original length could have been about 11 cm, as in the case of the second, fully preserved object. Both objects had a loop at one end and a bronze bead stuck onto the other end. The bead on one of the the fragmentary “needles” is rather simple with a single circular groove, while the other one is more elaborate with numerous diagonal cuts adorning its surface. Indeed, both items can be interpreted as jewelry. Found next to the woman’s chest the beads may have been pendants from a modest necklace. Otherwise, bound together with a string or a leather strap, they could have been a fastening for the fairly thick and heavy clothes that were presumably worn during the cold season. Should this assumption be correct, then one could suggest that the burial had taken place in the winter months.

The mysterious burial, devoid of grave goods, installed inside an allegedly abandoned building, seems to reflect the situation of the settlement at the time. The lack of funerary equipment appears striking in itself in the context of Urartian burial rituals. It may have been due to a pauperization of the local community for reasons as yet unknown. A similar grave, also without any grave goods, was recorded in 2018, in the western part of the excavated area. Two knives, presumed to be personal belongings, were the only objects found with the skeleton. One is entitled to assume that the 7th century BC witnessed hardship on a scale unrivaled only a century earlier.

As said above, the large rectangular house had apparently been abandoned already when the woman with the seal was buried within its walls. Several rubbish pits were dug near the eastern façade of the rectangular house, about 0.50 m above the latest floor level. The pits were filled with pottery material dated to the 7th century BC, mixed with organic material. The potsherds represented mainly locally produced pots. Some of them, however, represented high-quality Urartian Red Burnished Ware (Toprak Kale Ware; see Kroll 1976: 122–124).

Two additional trenches were opened east of the rectangular house, but the work there was not completed in the 2019 season for lack of time. Some parts of a stone wall were traced in the northern of the two trenches, whereas the southern trench yielded fragments of stone and clay structures (such as S18 and S20). They were apparently part of much bigger structures of unknown character and layout, which are assumed to have been dwellings from the Iron Age II and III periods.

A mid-sized jar was discovered partly sunk into a clay pavement recorded at the northern edge of the southern trench. The pavement may belong to another supposedly large house located next to the rectangular house (S15), but in much worse condition than S15. Sections of stone walls forming another rectangular chamber and a flagstone pavement were recognized in the southern part of the trench. The other stone structures and installations have proved difficult to classify and interpret.

## SOUTHWESTERN CITADEL SLOPE

A new trench on the southwestern slope of the citadel mound [Fig. 8], 100 m east of a complex of sacral buildings, revealed a hiatus that should be considered as a local event. The temples are dated to the Late Bronze Age (1500–1150 BC), although they may well have been used past that time, in the Iron Age I (1150–800 BC) period (Jakubiak and Zakyan 2019). Postholes and pits dug in compacted clay were numerous in this part of Metsamor while the additional archaeological material was very modest. The pits were filled mainly with sherds dated to the 8th through 13th centuries AD and the Persian Khanate period, attesting to

a relatively large local community, in post-antiquity times, which left behind profuse rubbish. A medieval settlement must have been located on the citadel.

A circular kiln or oven of an unknown function, supposedly industrial, was unearthed on the slope here. The pottery from the pits suggests that this quarter of Metsamor was abandoned after the 4th century AD, that is, in late antiquity. The pits were dug in a clay leveling deposit, but the time of the leveling of this area remains unknown. The stratigraphic sequence is therefore the only tool to enhance an understanding of the deposits accumulated before the 4th century



Fig. 8. Trench on the southern slope of the citadel hill (University of Warsaw Metsamor Project | drone photo M. Truszkowski)

AD. The compacted clay level yielded few artifacts capable of contributing to a precise dating of the leveling layer. However, an underlying layer with a pottery deposit, associated with a stone wall recognized in the southern extension of the trench, supplied the needed chronological data. The wall was built of large blocks and boulders. Taking into consideration the shape of the southern slope of the citadel, the excavated wall appears to have been part of a much larger defensive structure. However, the building technique recorded here is different from the other massive wall structures known from Metsamor. The material

excavated in the layer associated with the wall is dated to the turn of the Late Bronze and the Early Iron Ages (Khantzadjan 1979: Pl. XVI, 11, 12; Avetisyan and Avetisyan 2006: Pl. 37:4,6). However, research has shown that most of the pottery discovered in this area should be associated with the building of a circumferential wall around the settlement, which did not occur earlier than the later Late Bronze Age, most probably, however, at the beginning of the Early Iron Age period. This observation fits well with the presumption that a sacral complex functioned in the area west of the trench.



Fig. 9. Selected pottery fragments from the rescue excavations (University of Warsaw Metsamor Project | photo M. Truszkowski)

## OTHER ACTIVITIES

Road construction providing access to the local museum called for salvage operations. Two stone chamber graves damaged by heavy caterpillar bulldozers and diggers were cleared. The only finds which survived the operation were a few scattered bones, some pottery sherds, and two complete jars. The number of buried individuals, their original placement and, likewise, the presence of grave goods could not be determined.

The type and plan of the two graves resembled other tombs known from the cemetery, but the pottery assemblage belonged to a type thus far unknown at the site. The pottery, dated to the Late Bronze Age, was decorated with geometric patterns, while some potsherds belonged to jars decorated with cut or relief representations of lions or other felines [Fig. 9]. This kind of pottery is typical of the Karabakh region (Pogrebova 2011: Pls XIX, XXII) and was extremely rare in the Araxes river valley, especially in funerary contexts.

One possible reason for the atypical assemblage was that it was brought from the Karabakh mountains possibly as a mark of the high status of the deceased. A “migrant” theory is equally possible. Bearing in mind the distribution of the graves and the grave goods, one could speculate that this part of the necropolis was dedicated to members of the Metsamor community who were native to the Karabakh region and who had migrated from there at some point to settle in the Araxes valley. It is not an accident that at least two graves with similar deposits were located side by side in an area situated the shortest distance from the settlement. At first glance, it looks as if a special sector of the necropolis was addressed to a non-native group of settlers.

The data from the salvage operations are too limited for a more conclusive interpretation without further regular excavation.

## CONCLUDING REMARKS

The 2019 season in Metsamor brought to light new evidence concerning site development and changes of local community behavior across several centuries. Of greatest importance for studies of settlement development is the presence of structures suggesting a possible transformation of the village into a small town. The excavations in the trench situated on the southern slope of the citadel confirmed that during the post-transition period, from the Late Bronze Age into the Early Iron Age I,

circumferential walls were constructed to organize the space inside the settlement on the top of the hill. An examination of the pottery indicates that the walls could have been erected at the beginning of the Early Iron Age I period (about 1000 BC), dating the sacral complex west of the already opened trench not earlier than the beginning of the Early Iron Age I period (Jakubiak and Zakyan 2019). This corroborates an earlier assumption, which could not be confirmed because of a less than fully precise documentation.

Recent research demonstrated that the shrines had been in operation here from the Early Iron Age. The stone wall appears to have run along the south slope of the citadel, enclosed and protected behind the wall curtain.

The excavations in the “lower town” have shed new light on the settlement developed in the Urartian period, but in the light of the pottery assemblage, it appears to have been an Urartian-period settlement rather than a town settled by Urartians. The percentage of locally manufactured pottery distributed in the same levels and a

context with Red-burnished Urartian ware (mainly Toprak Kale-type wares) indicates that the local community still formed the core of the settlement, although influenced by Urartian culture. Moreover, the local community was strong enough to survive the collapse of the Urartian kingdom and local traditions were still vibrant even in post-Urartian times (Khanzadyan, Mkrtch'yan, and Parsamyan 1973).

Further work in the “lower town” may yet supply surprising new evidence that will confront old theories about the past of the Araxes valley.

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# A bull's-head rhyton from the Museum of Tarsus in Cilicia, southern Turkey



**Abstract:** The terracotta rhyton in the form of a bull's head presented in this brief communication, dated most probably to the 1st century BC, is of unknown provenance, in the collection of the Museum of Tarsus since 1973. It is in very good condition and shows an admirable level of craftsmanship. Rhyta were ceremonial vessels that had taken on a votive function in the Hellenistic period when they were frequently deposited in the tombs as part of the grave goods.

**Key words:** rhyton, Hellenistic ceramics, bull's head, Cilicia, Turkey

Hellenistic ceramics from Cilicia, a region on the south-eastern Mediterranean coast of Asia Minor [Fig. 1], represent an underpublished category despite numerous publications of excavation results (e.g., Tarsus-Gözlükule and Nagidus, as well as Antioch-on-the-Orontes in Graeco-Roman Syrian territory). The lack of a general overview of vessel types, production origins and chronology is particularly burdensome with regard to the territory extending from eastern Cilicia to the northern part of Syria. Some information is available from the collections of international museums, but with many of the finds coming from the antiquaries market, reliable findspots are not always indicated. In turn, the local archaeological museums in Cilicia in southern Turkey—Alanya, Anamur, Taşucu, Silifke, Mersin, Tarsus,

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This piece, as well as other pieces, were studied with the authorization of the Turkish Ministry of Culture and Tourism, Directorate of Monuments and Museums, issued on 4 July 2007 and registered as B.16.0.KVM.200.11.02.02.14.01.222.11.(TA07.40/E) (116543). The necessary documentation was assembled in Cilicia in December 2007.

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The article is dedicated to Dr. Herbert Hoffmann (1930–†2012) who contributed extensively to the archaeology of rhyta.

Adana and Osmaniye, listing them from west to east—rarely publish catalogues of their collections, hence the finds in their collections, which could fill the gap with greater reliability, are not known to many researchers.

This is the case of rhyta, small ceremonial vessels, which are not numerous in

Cilician museums. The vessel presented here comes from the Museum of Tarsus, which was inaugurated in 1971 and has an extensive collection, especially from the ancient site of Tarsus, the capital of the Roman province of Cilicia and the most influential Graeco-Roman city of Cilicia Pedias, that is, Plain Cilicia.

### RHYTA IN THE PREHELLENISTIC AEGEAN, GREECE AND ASIA MINOR

In ancient times, rhyta (drinking horns) of metal, clay, stone or faience, in various animal forms or with animal foreparts, were ritual offering vessels used mostly during fertility cult celebrations to pour liquids. They were filled with whatever was needed through a hole where the rim

is and emptied during the ritual through another hole in their nostrils.<sup>1</sup> These vessels, used later during banquets for drinking, are often distinguished by the variety and refinement of shape, especially among numerous precious metal goods that were placed in graves as a sign of the status of



Fig. 1. Cilicia in Turkey (Map S. Pataci, 2018)

1 On rhyta generally: Ebbinghaus 2005; Svoboda – Cončev 1956, 9–89; and for further references on rhyta: Hoffmann 1989, 131 especially note 2; and rotroff 2019.



Fig. 2. Typological comparanda for bull's-head rhyta: top, from Porsuk; center, from Aşvan Kale near Elaziğ in eastern Anatolia (Archaeological and Ethnographic Museum in Elaziğ); bottom, from the Museum of Çorum in central Anatolia (Photos E. Lafli, 2019)

the deceased and the custom of gathering together to banquet or in adherence to a concept of afterlife that included an underworld often engaged in joyful conviviality (Ebbinghaus 2000: 98; see also Jehasse and Jehasse 1973: 87, Fig. 39). They could well have been drinking vessels or vessels for filling a bowl from which the banqueters would drink, and were increasingly connected with the image “of dead persons” (“heroes”) (Ebbinghaus and Ellis Jones 2001: 393 Note 54).

Rhyta were produced especially in the 2nd millennium BC. Bull’s head rhyta were particularly common in this period. The best-known example of a bull’s head rhyton is a vessel made of serpentinite from the Little Palace of Knossos on Crete, dated to 1450–1400 BC (McInerney 2009: 7–8; see also Hoffmann 1989: 137). It was used in religious ritual, banquet and festival settings. Libations of wine, water, oil, milk, or honey were used to worship a god or honour the dead. The libation would be poured through the neck and spouted through the bull’s mouth and into the earth. The rhyton would be made to represent the sacrificed bull individually in his honour.

According to Herbert Hoffmann (1961; 1989), three types of rhyta appear in Classical Greek art shortly after 480 BC. These are bent rhyta, horn rhyta and animal head cups (Hoffmann 1961: 21). Each of these three types derives from a Persian prototype and these rhyta were considered a symbol of heroic status as *kantharoi*. The known examples of animal head cups in the Greek Classical period have the heads of rams, donkeys, deer, hounds, boars, bulls, lions, cows, vultures, goats, griffins, sheep, lion cubs, panthers, pigs, horses, mules, antelopes and sea dragons (Hoffmann 1989, 141: Pls 1, 2). As a part of “animal head cups”, bull’s head rhyta played a special role in the pre-Hellenistic Greek world,<sup>2</sup> and they became common again after the birth of red-figured vases in the 5th century BC (Ebbinghaus 2008a: 145; Ebbinghaus and Ellis Jones 2001: 385 Note 9, see also 386 Note 18, 388, 390, 394 Nos 8–9). During the Iron Age, as well as the Archaic and Classical periods in Asia Minor and in the rest of the Eastern Mediterranean, there were numerous well known examples of bull’s head rhyta, mostly made of clay [Fig. 2],<sup>3</sup> but also of metal and stone

2 For an Achaemenid bronze bull-protome rhyton in the Antikenmuseum Berlin, Staatliche Museen Preussischer Kulturbesitz (accession no. 31158): Hoffmann 1989, 154, Figs 22a, 22b.

3 Typologically and chronologically, the closest vessel to the rhyton from Tarsus was excavated in Aşvan Kale near Elazığ in 1969. It came from the destruction level of a late Hellenistic building dated by coins to about 65 BC (Mitchell 1980: 253, Fig. 126, discussion of the find context, 37–41). This fits the late Hellenistic date assigned to the example from Tarsus (S. Mitchell, personal communication, 29 March 2021). Bull’s head rhyta were especially popular in Phrygia and central Anatolia during the Iron Age; see Ebbinghaus 2008b; a fragment from Gordium: Bald Romano 1995: 6–7, No. 6 Pls 3, 6 (early or middle Phrygian period, not later than the 5th century BC, manufactured in central Anatolia); some further Phrygian examples: Tuchelt 1962: 64–68, Pls 10, 11; and other examples from the Aegean and Anatolia between 1600 and 700 BC: Guggisberg 1996: 206–218. For Persian-period ceramic rhyta from Gordium studied by Susanne Ebbinghaus: Sams, Burke, and Goldman 2007: 380–381. See also rhyta from Egypt: Adriani 1938–1939; and Iran: Ghirshman 1962: 77, Fig. 10.

(for instance, Drew-Bear et al. 2007: 398). During the Classical period, scenes depicted on figured bull's head rhyta were sometimes arranged on the neck, mostly with Dionysian imagery (Hoffmann 1989: 150, Figs 18a–c, 151), although there are numerous examples without figures as well. The great abundance of rhyta in different animal forms or with animal foreparts in neighboring Cyprus (Jehasse and Jehasse 1973: 85–92) can most probably be attributed to Persian influence,

but the rhyta from Cilicia are not known in greater detail. Some examples of terracotta rhyta are also known from Hellenistic and early Roman Syria [Fig. 3].<sup>4</sup> Because of their elaborate form, perhaps commissioned by their owners, these rhyta have few comparanda, making their dating more difficult in general. Terracotta rhyta in the shape of a bull's head during the Hellenistic and Roman period are less known in Asia Minor compared to the earlier periods.<sup>5</sup>

### TERRACOTTA BULL'S HEAD RHYTON FROM TARSUS

The terracotta rhyton in the shape of a bull's head from the Museum of Tarsus (accession no. 18670; on display)



Fig. 3. A terracotta rhyton from Hama in western-central Syria, Nationalmuseet in Copenhagen (Photo E. Lafli, 2019)

is remarkable in terms of the state of preservation, details of craftsmanship and richness of the decoration. It was certainly intended for a special table [Fig. 4]. It was acquired in 1973 by a local salesman who probably found it in the area of Tarsus.

The measurements are: length 26 cm; height (with horns) 18 cm; width across projecting ears (at back) 8.9 cm; across forehead at root of horns 6.7 cm; depth of open chalice 5.8 cm. wall thickness from 0.2–0.3 cm in the cheek part to 1 cm in the more heavily moulded places; chalice wall thickness 0.5–0.6 cm; strap handle low set, thickness 2.8–2.9 cm.

Except for two little broken horns, the rhyton has survived intact. The surface is

- 4 For instance, a red-slipped fragment from Hama in western-central Syria, today in the Nationalmuseet in Copenhagen: Papanicolaou-Christensen and Friis Johansen 1971: 203, Fig. 79, 204, with references to two further examples from the National Museum of Damascus and Ny Carlsberg Glyptotek in Copenhagen.
- 5 "Hellenistische Figurengefässe" with some references to Hellenistic rhyta and chronology of Hellenistic and Sub-Hellenistic–(Early) Roman plastic vessels, especially from Asia Minor: Mandel 1988: 212–215, especially 214. Also a formerly unnoticed clay bull-head rhyton from the Roman phase at Zank Höyük near Avanos in Cappadocia in central Anatolia: Sever 1998: 530 (no photo or drawing).

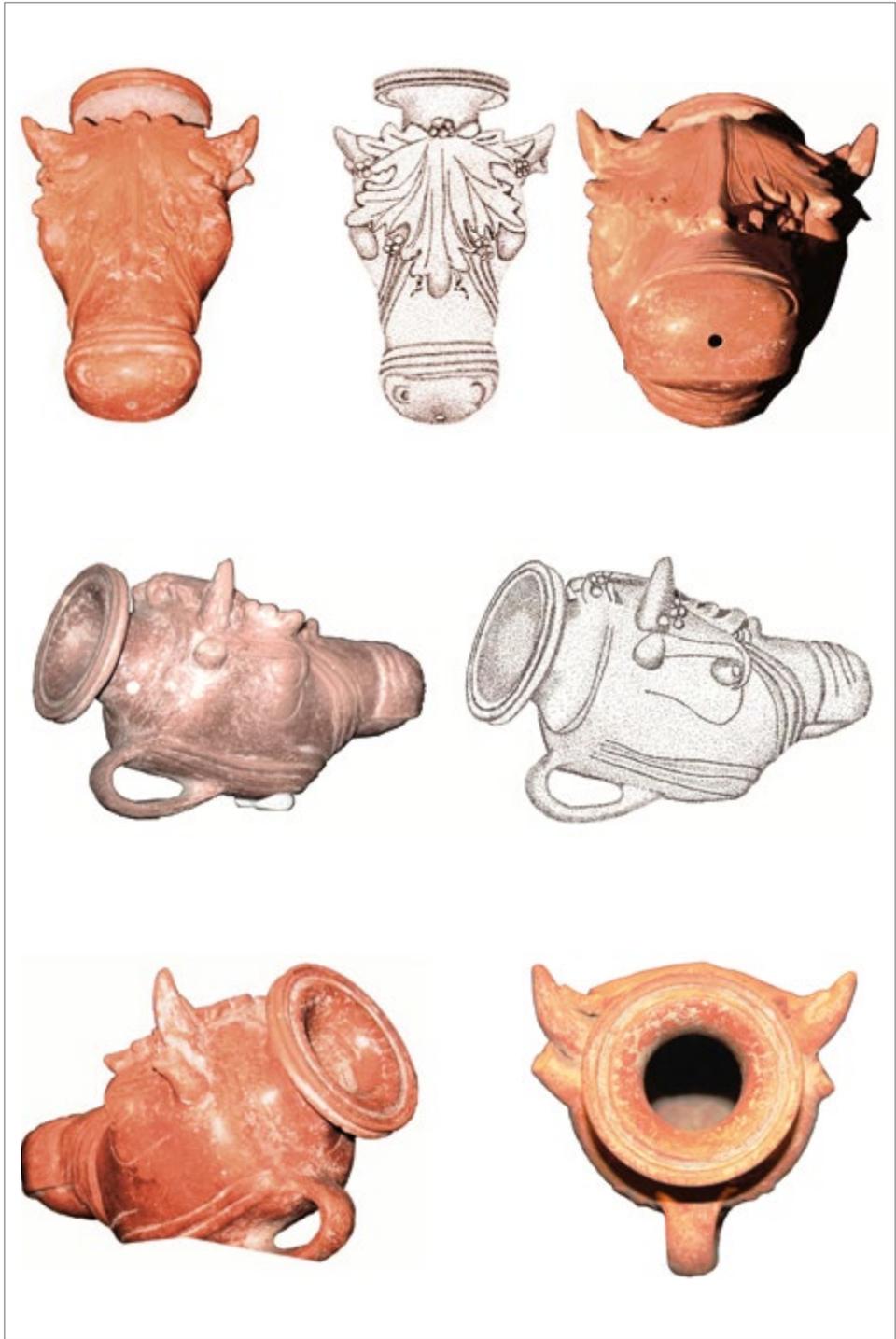


Fig. 4. Bull's-head rhyton from the Museum in Tarsus (Courtesy Museum of Tarsus)

also perfectly preserved with a shiny slip and very fine patina.

The fabric is similar to ESA fabric: orange-red ware with inclusions, slip the same color as the clay, glossy over the exterior.

The rhyton was mouldmade with parts modeled by hand as well as using the potter's wheel. It is shaped as a bull's head with two little horns and a horizontal handle, clearly imitating a lost bronze prototype. In keeping with the standards of late Hellenistic coroplastic art, the bull's head is finely modelled with rich details in relief, such as the large vine leaf on the forehead with clusters of small grapes. This is a Dionysian symbol reminiscent of the theme of the feast, while the infulae adorning the snout symbolize a sacrifice. The craftsmanship imitating metal prototypes and the naturalistic style are typical of Hellenistic relief ceramics of Asia Minor and Syria, especially

in the form of a leaf. A hole (diameter roughly 0.5 cm) appears at the top of the snout, which could reflect ritual use of the vessels.

#### COMPARANDA

An unpublished terracotta rhyton said to be from a necropolis in Rough Cilicia, displayed today at the museum of Anamur, has an amphora-like body [Fig. 5]. It originates most probably from the necropolis of Kelenderis or Nagidus and can be dated to the 4th century BC (for a parallel, see Ebbinghaus 1999: 403, 4th–3rd century BC). However, it is neither morphologically, nor chronologically parallel to the discussed rhyton from Tarsus.

Several other figured vessels are known from Cilicia, most of which are typologically not a "rhyton": a terracotta vessel in the form of a boar's head with a protruding tusk was found in a rock-cut grave in the necropolis of Elaiussa



Fig. 5. Terracotta rhyton with an amphora-like body from Rough Cilicia, 4th century BC (Photo E. Lafli, 2007)



Fig. 6. Boar's-head vessel necropolis of Elaiussa Sebaste, late 1st century BC/early 1st century AD (Photo E. Lafli, 2007)

Sebaste; rescue excavations at the cemetery were conducted by the museum of Erdemli in 1973 [Fig. 6]. It has been said that a coin of Claudius I, an early Roman terracotta unguentarium and an amphoriskos were also uncovered in the same burial (Mustafa Ergün from Mersin, personal communication, 2005). This ceremonial vessel appears to belong to the late 1st century BC and early 1st century AD.<sup>6</sup> An “askos” with a goat protome from Cilicia has been illustrated in the archaeological literature (Svoboda and Cončev 1956: 50 Note 163, Fig. 13).

Another four typological parallels to the example from Tarsus came from excavated contexts of some sites in Asia Minor. A black-glazed rhyton with added touches of white paint, shaped like a prancing horse (preserved H. 10.2 cm)



Fig. 7. A lion's-head rhyton in the Museum of Aydın in western Anatolia (photo E. Lafli, 2019).

6 A similar ceremonial vessel in the form of a fox (H. 16.5 cm, W. 15.0 cm), representing a Pergamene type, was found in Grave 13 of the necropolis of Aenus, eastern Thrace and dated to the early Roman period (Başaran 1988: 601, 617, Fig. 12).

was excavated in a domestic context at Kinet Höyük in eastern Cilicia, where the medieval occupants reused Hellenistic vessels, including this one (Gates 2004: 409, 415, Fig. 11. Accession no. KNH-1296 [02 Y 51 L.71]). A similar terracotta rhyton was found in a domestic context at Porsuk (or Zeyve) Höyük in southern Cappadocia in central Anatolia (Beyer et al. 2005: 302, Figs 9a–b). This piece is black-slipped and, according to the French excavators, its date is “Hellenistic”, because it was found with a typical Hellenistic unguentarium (Beyer et al. 2005: 297). The Porsuk find is similar in morphology to the one from Tarsus. The third parallel was discovered in the German excavations of the höyük (mound) site of Perge in Pamphylia (unpublished; M. Recke, Giessen, personal communication, 2008). The Perge piece is also Hellenistic in date and is slipped with white as well as rose engobe. Only a large fragment of this example is preserved, namely the mouth with the horns, that is, the upper hull. The German excavators have interpreted the find as a votive item in the form of a “Hohlterrakotta” rather than a functional cultic vessel because of the surface colours, which are neither red-slipped like the Tarsus rhyton nor black-slipped like the example from Porsuk. The last parallel originates from Kurul Kalesi, a Hellenistic mountaintop site that is located 13 km north of Ordu in ancient Pontus (northeastern Turkey). The elaborately ornamented, painted terracotta bull's head rhyton was found in 2017 in the sanctuary of Cybele (Şenyurt et al. 2019: 702, 706, Fig. 4). This spectacular and very well preserved vessel should be dated to the Middle Hellenistic period.

In morphological terms, a bull's head rhyton, which resembles most the one at Tarsus, was in the collection of the Staatliche Museen zu Berlin before being lost during World War II. It was allegedly picked up in Istanbul by Martin Schede, the former director of the Abteilung Istanbul des Archäologischen Instituts des Deutschen Reiches, but it originates from Kütahya in Phrygia. It is known only from a poor illustration (accession no. 30949. H 19.5 cm, handle and horns missing).

Several rhyta with certain iconographic similarities and a strong animalistic taste are known from other sites and museums in and outside of Asia Minor [Figs 2, 7]. A similar one from the Roman period was published from Montirone, near Abano Terme in Padua, Italy (Lavizzari Pedrazzini 1993: 151). The position of the mouth and of the ring are comparable to the said rhyton and another one stored at the Ashmolean Museum in Oxford, which was referred to in the same article.

As shown by the examples above, rhyta as burial equipment were not a rare find in Hellenistic and Roman graves in Cilicia (e.g., terracotta rhyton from a late Hellenistic burial in Gerasa, Jordan, Kehrberg 2004: 299, 301, Fig. 1). The example from Tarsus was probably deposited in a monumental grave during the late Hellenistic period and thus functioned as a burial gift.

Because of its elaborate form, this particular rhyton has almost no exact parallel, which makes its precise dating difficult; however, it may be dated to the late Hellenistic period as its decoration is typical of 1st century BC art.

## CONCLUSION

The Tarsian rhyton is probably an outstanding example of late Hellenistic grave goods in Plain Cilicia, and demonstrates the penetration of the Dionysian cult in connection with oriental funerary rites into late Hellenistic Cilicia. However, Hoffmann was of the opinion that animal heads were chosen for rhyta because of their sculptural and decorative qualities

rather than any specific cult associations (Hoffmann 1989: 131).

The bull's-head rhyton from Tarsus could be a product of workshops from northwestern Syria, most probably the region of Antioch-on-the-Orontes. It will be interesting to know if this kind of rhyta exist in the collection of the Archaeological Museum of Hatay in Antakya.

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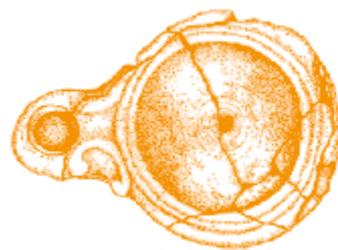
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# A group of early Roman lamps from Chhîm, Lebanon: preliminary research on shapes, fabric and provenance



**Abstract:** The early Roman oil lamps from recent excavations by a Polish team in Chhîm constitute a significantly fragmented group. Macroscopic analysis of fabrics, combined with a typological study and complemented by iconographic research wherever applicable, revealed similarities between these lamps and similar finds from the Levant. The fabric underscores a production continuity from the Hellenistic period and reveals similarities with a regional semi-fine ware. The collected data suggest the Southern Phoenician coast as a potential center of production.

**Keywords:** Chhîm, Phoenicia, Roman period, oil lamps, macroscopic fabric analysis, semi-fine ware, iconography

The early Roman lamps presented in this paper represent four selected groups of 1st and 2nd century AD lighting devices found at the Chhîm archaeological site in Lebanon. The site is located on the outskirts of the modern village of Chhîm in the Chouf Mountains, located some 30 km south of Beirut. The excavation concerned the area of the ancient village, including a Roman temple, a Byzantine basilica, village dwellings, oileries and cisterns (see Périssé-Valéro 2009; Waliszewski and Wicenciak 2015).

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The samples mentioned in the paper were analysed within the framework of a project "Enlightenment in Ancient Times. Research on Hellenistic and Roman terracotta oil lamps from Nea Paphos, Cyprus", dedicated to interdisciplinary research on lamps from Paphos. The project was funded by the Polish National Science Centre Grant 2015/19/N/HS3/01810 (Preludium 10 program).

The presented material was selected from the Hellenistic and Roman assemblage of lamps (dated between the 3 century BC and the 4th/5th century AD), found in the area of the ancient village (a total of 165 lamp fragments<sup>1</sup>), as well as 20 examples from two rock-cut tombs, A and B, located east of the village.<sup>2</sup> The material is for the most part significantly fragmented, posing difficulties for a proper classification into types and interpretation of iconographic motifs. Only a few objects, most of them from Tomb A, are bet-

ter preserved. Even so, fabric groups were distinguished. Four interrelated groups among lamps from the said period (92 assigned fragments) are described in this paper, including basic information on types and decorative motifs. Also included is a discussion of analogous finds and the tentative provenance of the groups.

The paper is intended as a preliminary study, offered in the hope of stimulating further research on the lamps produced and distributed in the Levantine region.

## METHODOLOGY

The fragmentation of the oil lamps from Chhîm made a full reconstruction of shape and decoration difficult. However, classification by fabrics was possible based on macroscopic observation of fabric characteristics selected and assessed according to a fabric description system published by Orton and Hughes (2013) with some modifications (see Marzec, Kajzer, and Nocoń 2020). Features described include: amount, size and color of inclusions; presence and shape of voids; hardness, fresh break texture, feel of the surface and, if any, surface treatment. Core and surface coloring was described using Munsell Soil Color Charts (1990; 2013). Observations on individual fragments were carried out usually with the naked eye under comparable lighting conditions,

occasionally complemented with observations under a 10x magnifying glass.

Typological and iconographic studies were also undertaken. The lamps were classified according to the Loeschke typology (Loeschke 1919), including basic lamp types from the Roman manufacturing tradition. The lamps were dated based mostly on parallels from the region (Rey-Coquais 1963; Pritchard 1988; Marchand 1996; Mikati 1998; Frangié 2009, 2011; Sussman 2012; Frangié-Joly 2017) because the nature of the archaeological layers in Chhîm disallow a more precise dating.

The preserved decorative motifs were compared with published Roman lamps from the region (see above) and beyond (Bailey 1980; 1988).

1 This number does not include the Byzantine lamps studied separately by Tomasz Waliszewski. The publication, including the entire assemblage of lamps, is currently in preparation.

2 For more information on the tombs and their content, see Ortali-Tarazi and Stuart 2004.

## FABRIC CHARACTERISTICS

The lamps discussed in this paper were assigned to four interrelated groups macroscopic fabric groups characterized below [Table 1]. Particle size and amount as well as shape of voids observed in fresh breaks differed slightly, but at the same time, the color and shape of inclusions seemed to be compatible between the groups, suggesting their analogical composition and provenance. Moreover, differences could be observed in the color of fresh breaks and surfaces (from pale yellow to light red) and hardness (from powdery to hard).

This variety could be interpreted as the result of different technological processes (such as firing temperatures or degree of oxidation) or distinct clay sources, characterised by slightly different mineralogical and chemical composition. The question could be resolved with laboratory analyses. Meanwhile the group is treated as four interrelated groups, divided by their physical properties, foremost the hardness and color of the core and slip.

Table 1. Characteristics of the four fabric variants distinguished on grounds of macroscopic observation

Fabric properties	Fabric group			
	1	2	3	4
Inclusions	Few to frequent, fine to medium, white, dark and red	Frequent, fine to medium, white, red, dark and grey	Few, fine to medium, white, red and dark	Few, fine to medium, white; frequent, fine dark and red
Voids	Rare, angular	Frequent, rounded	Frequent, rounded and angular	Frequent, rounded and angular
Hardness	Fairly hard to hard	Fairly hard to hard	Soft	Fairly hard
Color, core	Very pale brown (10YR7/4) to reddish yellow (5YR7/6)	Reddish yellow (7.5YR7/6), pink (5YR7/4) or light red (2.5YR6/6)	Pale yellow (2.5YR8/4) or pale brown (10YR8/4)	Pale yellow (5Y8/4), yellow (10YR8/6) to pink (7.5YR7/4)
Color, surface	Yellowish red (5YR5/8), red (2.5YR5/8), reddish brown (5YR5/3) to dark grey (5YR4/1)	Yellowish red (5YR5/8), light red (2.5YR6/8) to dark grey (5YR4/1)	Red (2.5YR5/8) to dark grey (5YR4/1)	Reddish brown (5YR5/4), brown (7.5YR5/4) to very dark grey (5YR4/1)
Surface treatment	Matt or semi-lustrous slip	Matt or semi-lustrous slip	Semi-lustrous slip, often blurred	Semi-lustrous slip
Surface feel	Smooth	Smooth	Powdery	Smooth
Fresh break texture	Smooth	Smooth	Smooth	Smooth
Frequency (number of lamps)	28	32	8	24
Illustrated examples	Fig. 1b, Figs 2, 3a-c,e, 4a, 5, 7b-c	Figs 3f, 6, 7a	Fig. 7d	Figs 1a, 3d, 4b

## PRESUMED FABRIC PROVENANCE AND DISTRIBUTION

The characteristics of the described fabrics preclude a local manufacture of these lamps. The pottery presumably produced in Chhîm (Wicenciak 2016a: 621, 666–668) includes only coarse ware (amphorae, kitchen vessels and possibly lamps) without any surface treatment. However, the presented fabric features are very similar to the Hellenistic fabric group defined as Semi-fine ware. This was described for the first time for plain-ware vessels from Tel Anafa in Israel (Weinberg 1970: 20; Berlin 1997a; 1997b: 9–10). It was identified subsequently among pottery finds from many sites, showing the wide distribution of some shapes, especially the amphoriskoi, in the Mediterranean (Lund 2015: 200; Ugarković and Šegvić 2019 with distribution maps and further references). Further studies have revealed the variety of pottery forms produced in semi-fine, including lamps, and variants of the fabric with slightly different characteristics and amount of inclusions (Młynarczyk 2001: 248–249; Berlin and Stone: 140–141; Élaigne 2019: 390). The connection between Hellenistic wheel-made lamps produced in the 3rd to early 2nd century BC, mouldmade late Hellenistic lamps of the 2nd to 1st century BC and other Hellenistic semi-fine ware vessels has been discussed for the finds from Tel Anafa (Dobbins 2012: 108–109). The

same author also studied early Roman lamps in relation to semi-fine ware, and interpreted them as a continuity of the production (Dobbins 2012: 113–114). Also, the lamps representing different chronology (Hellenistic to Roman) and found in 'Akko-Ptolemais (Berlin and Stone 2016: 185–186) and Tyre (Élaigne 2019: 384, 390) were assigned to semi-fine ware. These data correspond well with the research conducted on the lamps from Chhîm. The fabric similarities between lamps of different chronology and technologies have also been documented.

The Southern Phoenician coast, more specifically, the neighborhood of Tyre have been assumed as the production region of semi-fine ware (Berlin 1997b: 9–10; Rotroff 2006: 161–162; Frangić 2009: 237; 2011: 318; Dobbins 2012: 110; Lund 2015: 200; Berlin and Stone 2016: 141; Wicenciak 2016a: 637–641; 2016b: 113; Élaigne 2019: 381), but without any direct archaeological evidence; so far excavations have not uncovered any structures (kilns or workshops) or wasters connected with pottery production (Wicenciak 2016a: 637). The provenance, therefore, is tentative at best, especially as researchers have suggested different workshops for the production of regional semi-fine ware variants (Młynarczyk 2001: 250; Berlin and Stone 2016: 141; Frangić-Joly 2017: 28–30).

## LAMPS FROM CHHÎM: TYPOLOGY AND ICONOGRAPHY

The discussed group of lamps from Chhîm is dated to the early Roman period, that is, between the early 1st and the late 2nd centuries AD. Taking into

account typological diversity, the lamps were classified into three basic types with stylistic variants, but the exact form is usually difficult to distinguish because

of the poor state of preservation. More generally, the lamps can be classified as relief discus lamps, typical of early Roman times.

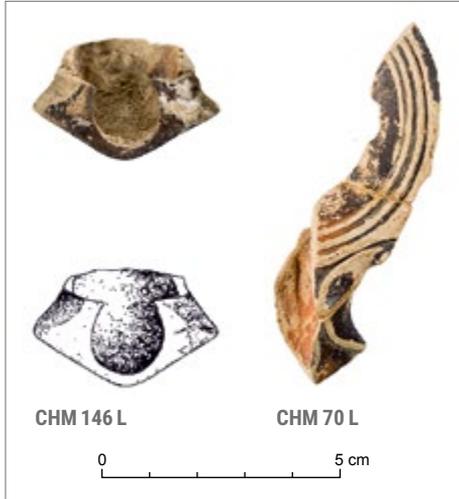


Fig. 1. Loeschcke I type lamps (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

The earliest examples may be assigned to type Loeschcke I, characterized by a rounded body, grooved shoulders and typical angular nozzle flanked by volutes [Fig. 1]. Lamps of this type are dated to the early 1st century AD.

The second type, Loeschcke IV, is characterized by a similar body shape but is rounded at the end of the nozzle. It is dated to the 1st century AD. One almost completely preserved example, but without discus decoration, was found in Tomb A [Fig. 2].

Decorated fragments can be assigned to both described types (without the nozzle, it is impossible to distinguish between the two). Identified motifs are few and can be divided into thematic groups. A rosette with a varying number of petals is a simple, floral motif identified on a few fragments (not illustrated). Depictions of animals were also record-

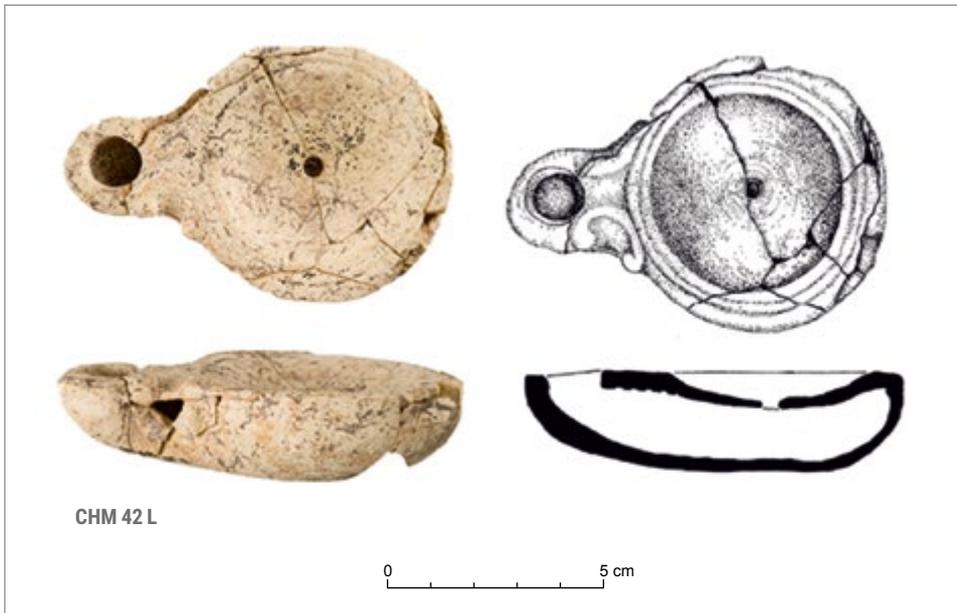


Fig. 2. Loeschcke IV type lamp (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

ed on a few objects and again the best preserved objects come from Tomb A. One of them depicts a bull [Fig. 3:a]. A very similar depiction may be found on a lamp of a different type from Sidon (Rey-Coquais 1963: 156, No.27, Pl. VI). The bull motif is also found on an early Roman lamp from Beirut (Mikati 1998: 95, Pl. 13.3). The other lamp from Tomb A calls to mind a bucolic scene known from an Italian lamp in the British Museum Collection (see Bailey 1980: 44–45, 174, Q923, Fig. 48, Pl. 16). The motif consists of an animal, probably a goat, jumping to the right (originally leaning against

a tree) over a round object [Fig. 3:b]. In the full scene there is a dog curled up below the tree and the goat. The scene could be interpreted as a local derivative of a more complicated decorative scene, such as that on imported Italian lamps. A reduced scene of this kind is well documented among finds from Tyre, where three analogical examples were reported (Marchand 1996: 61). One parallel was purchased in Damascus (Kennedy 1963: No. 491, Pl. 20) and a similar lamp is known from a tomb excavated in Paphos, Cyprus (Raptou 2004: Cat. No. 16, Pl. 44.3).

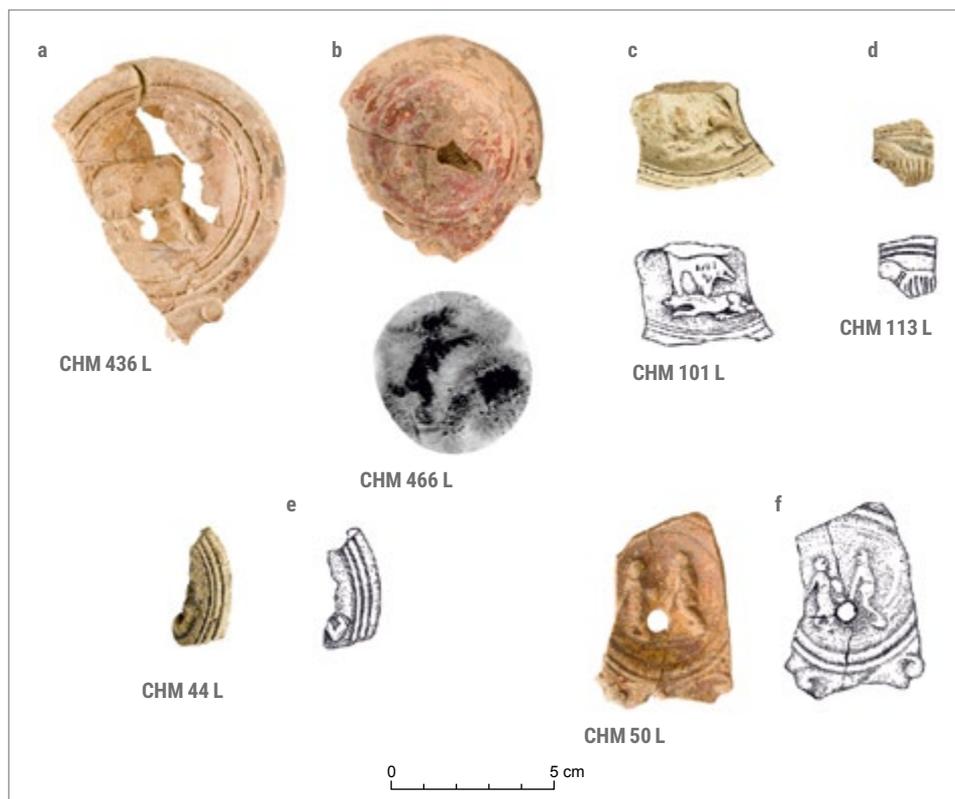


Fig. 3. Discus scenes on lamp fragments of the Loeschcke I and IV types from Chhîm: a – bull; b – bucolic scene with goat and dog; c – wolf with puppy; d – lion; e, f – gladiator scenes (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

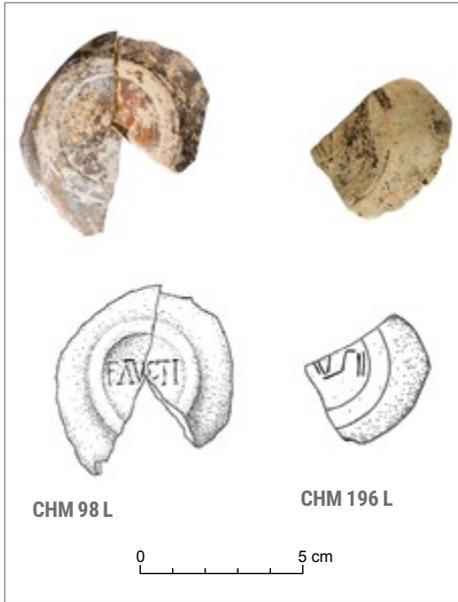


Fig. 4. Lamps with the FAVSTI signature (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

Other animal scenes are poorly preserved. One fragment is decorated with what is probably a depiction of a wolf with a cub [Fig. 3:c], while another small fragment features a lion [Fig. 3:d].

Figural scenes found on fragments of type Loeschcke IV include what could be depictions of gladiators [Fig. 3:e–f]. Albeit direct parallels cannot be indicated because of the poor state of preservation, the motif was very popular on early Roman lamps (see Bailey 1980: 52; 1988: 55–59), including the Levantine region (compare Mikati 1998: 179, Sussman 2012: 12).

Lamps from the 1st century AD often bore workshop signatures. Two of the lamps in the assemblage from Chhîm were signed with the name FAVSTUS [Fig. 4], which is a well-attested name in Beirut (Mikati 1998: 117–119; 2003: 175). The signature has

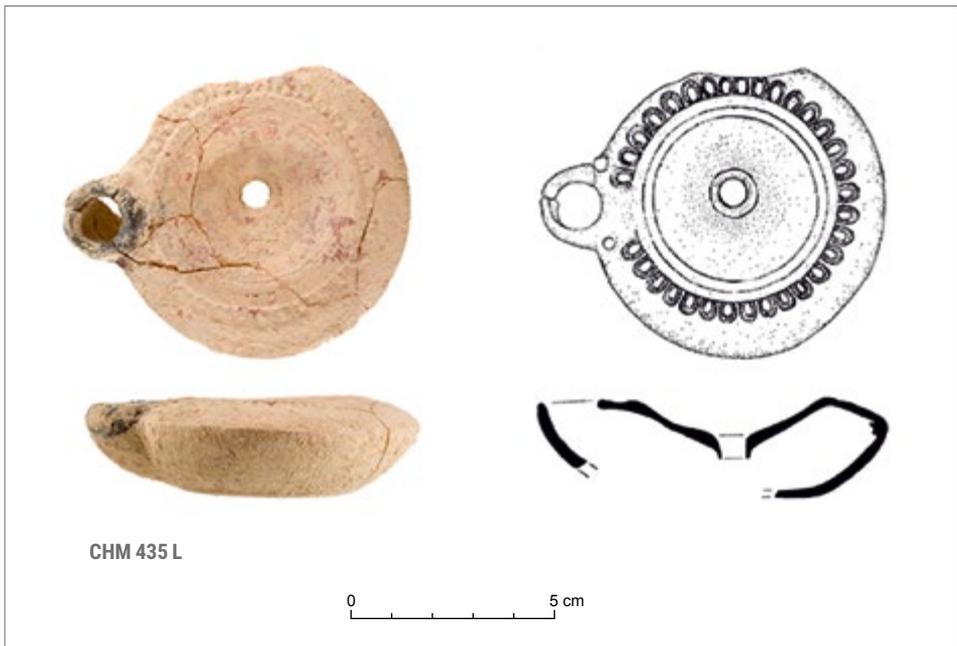


Fig. 5. Loeschcke VIII type lamp (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

two different variants, both coming from a mould rather than incised on a leather-hard lamp (compare Mikati 2003: 176): compare an example made in a mould possibly taken from an original archetype [Fig. 4 left] with

one with modified lettering, presumably the result of surmoulage [Fig. 4 right] for which second-generation moulds were used (Bailey 1997: 168). The name of Faustus is known from different sites in Egypt, Cy-

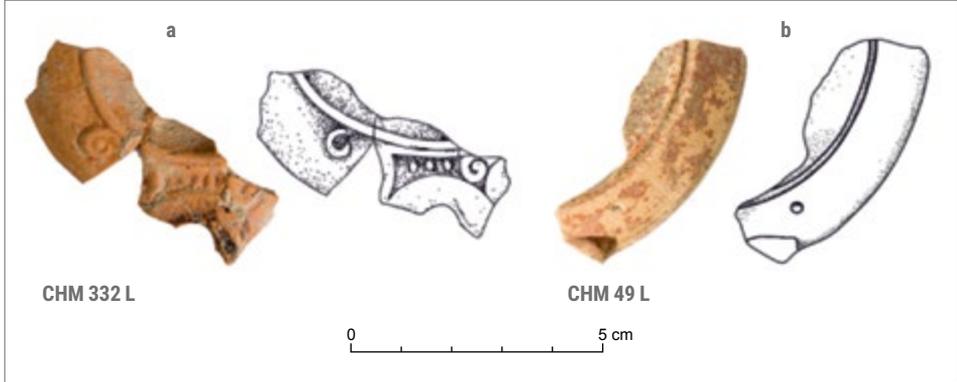


Fig. 6. Loeschcke VIII type lamps with different decoration around the nozzle: a – flanking volutes; b – ‘pimples’ (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

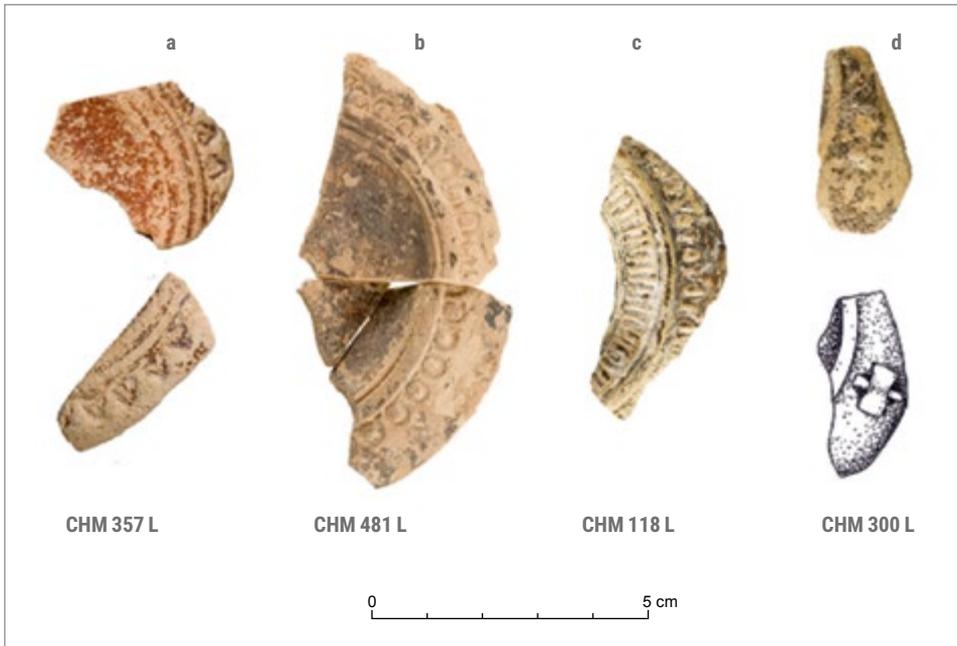


Fig. 7. Loeschcke VIII type lamps with different shoulder ornaments: a – ivy leaves; b – ovules; c – ovules and ladder pattern; d – double-axe motif (PCMA UW Chhîm Project | photo A. Oleksiak, drawing M. Makowska)

prus and the Levant (Bailey 1980: 95; Oziol 1993: 34–36; Lynch 1995; Mikati 1998: 117; Mikati 2003: 175; Dobbins 2012: 176–179; Sussman 2012: 12). The widespread presence of such a signature on lamps could reflect the migration of a manufacturer who established branches of his workshop in different places. However, it is also possible that some of these lamps are ancient forgeries (Sussman 2012: 12).

A large group of lamps represents the Loeschcke VIII type which was predominant in the 2nd century AD but it also continued into the 3rd century AD (Bailey 1988: 280–281; Rosenthal-Heginbottom 2017). This form is well exemplified by a lamp from Tomb A [Fig. 5]. It is characterised by a rounded body with ornamented shoulders. The nozzle is very short, sometimes flanked by simplified volutes. The space between

these volutes and the discus may be filled with a geometrical ornament [Fig. 6:a] or small “pimples” on both sides of the nozzle [Fig. 6:b]. The most common ornament around the discus consists of stamped ovules [Fig. 7:b–c] separated from the central space by one or a few rings [Fig. 7:a–b]. A popular combination used in lamp decoration includes ovules connected with a ladder pattern surrounding the inner part of the discus [Fig. 7:c]. The motif of ivy leaves was also attested [see Fig. 7:a]. Single motifs on the shoulders are rare, e.g., a double axe [Fig. 7:d] (compare Sussman 2012: 62–64). Analogical lamps are generally dated from the mid-1st to the 2nd century AD (Frangié and Salles 2011: 285; Sussman 2012: 58, 67). Sadly, none of the fragments from Chhîm preserved the discus decoration.

## DISTRIBUTION OF ANALOGOUS LAMPS

Analogous lamps presumed to be from the region are not easy to identify without a good fabric description. The shape is not usually helpful in indicating provenance, especially in the case of 1st century AD lamps which demonstrate common shapes derived from Italian products and most likely produced independently in various workshops. Some features observed in slightly later lamps of type Loeschcke VIII, such as simplified volutes or “pimples” flanking a short nozzle together with the motif of a double axe seem to be characteristic of the region understood broadly as the Levant (compare Hayes 1980: 86; Sussman 2012: 56, 62–63). Although there is no clear evidence for a particular provenance, coastal Phoenicia might have been where these lamps

were produced (Rosenthal-Heginbottom 2012; 2017: 156), tentatively supporting the connections with semi-fine ware discussed above. In Phoenicia, early Roman lamps of the Loeschcke VIII type have been recorded at many sites in Beirut (Mikati 1998: 100, Pl. 20), Byblos (Frangié and Salles 2011: 285, Pl. 11), Deb'aal (Hajjar 1965: Pls XX–XXI), Jiyeh (personal view), Sarepta (Pritchard 1988: 185–186, Fig. 75), Sidon (Rey-Coquais 1963: 156–157, Nos 29–33, Pls IV–V) and Tyre (Marchand 1996: 64–65, Nos 61–67). But their distribution is much wider and includes numerous sites in Palestine (Sussman 2012: 55–67, 230–260, Nos 254–481; Lapp 2016: 49–72, Nos 78–142), Syria (Hayes 1980: 86–87) and beyond (see below). Only a comprehensive, comparative study of fab-

rics, complemented by laboratory analysis, can help to understand the production and distribution patterns.

Some additional data comes from the mouldmade lamps of late Hellenistic date, made of semi-fine ware that could have preceded the production of the lamps described above. These lamps were usually made of a grey variant of the ware (effected by firing in a reduced atmosphere without oxygen). They often had an S-shaped side lug and were decorated with rays and chevrons, as in this example from excavations in Jiyeh, Lebanon [Fig. 8], or with a figural depiction of Eros on top of the body. The distribution pattern in this case is similar to that previously discussed for early Roman objects (see Rey-Coquais 1963: 148, Pl. 1, No. 1;



Fig. 8. Late Hellenistic mouldmade semi-fine lamp with S-shaped side lug, rays and chevron ornament, found in Jiyeh (PCMA UW Chhîm Project | photo M. Kajzer)-

Pritchard 1988: 174–178, Figs 73–74; Kassab Tezgör and Sezer 1995: 164–170, Nos 437–456; Marchand 1996: 57, No. 1; Młynarczyk 1997: 36; Mikati 1998: 92, Pl. 10:2; Sussman 2009: 41, 54; Frangié 2011: 318–320; Frangié and Salles 2011: 280–281, Pls 3–4; Frangié-Joly 2017: 65; Élaigne 2019: 384) and supports the assumption that they were produced on the Phoenician coast (Frangié 2009: 237). Beyond this presumed region of manufacture, numerous late Hellenistic lamps are known from Delos (Bruneau 1965: 87–88, Nos 4144–4201) and single examples were unearthed in Tarsus (Goldman and Jones 1950: 101, Fig. 194). Moreover, both Hellenistic and early Roman lamps made of an analogous fabric, were found on several sites in Cyprus: Famagusta (Karageorghis 1966: 336, Fig. 90), Palaepaphos (Bezzola 2004: 48, Nos 222–224), Panagia Ematousa (Wismann 2006: 346, Figs 170, 178), Nicosia (Oziol 1977: 55, 59, Nos 115–117, 132–133) and Nea Paphos, where they were noted at several locations (see Karageorghis 1986: 874, Fig. 118; Młynarczyk 1978: 241–242, Nos 30–33; 1998: 55, Fig. 1f; Papuci-Władyka 1997: 132; Kajzer 2019: 102–103). Early Roman discus lamps of type Loeschke VIII were recorded at Amathus (Abadie-Reynal 1987: 57, No. T.256/14, Pl. XXX), Archimandrita (Bezzola 2004: 66, Nos 269–270, Pls 7–8, 23), Kourion-Episkopi (Oliver 1983: 255, No. 48, Pl. XXI:9), Kourion-Agios Hermogenis necropolis tombs 8 (McFadden 1946: 474, No. 28, Pl. XXXVIII) and 64, Nos 3 and 74 (personal observation), Nea Paphos (Młynarczyk 1998: 57; Kajzer 2019: 117–118) and Salamine (Karageorghis 1978: No. 73, Pl. XIX). Single examples are also known from the Archaeological Museum in Nicosia (Oziol 1977: 186–188, Nos 549–555, Pl. 31) and from the Piéridès Collection (Oziol 1993: 56, No. 81, Fig. 12).

Laboratory analyses of six samples taken from Hellenistic and Roman lamps representing the said fabric group found at the Paphos Agora<sup>3</sup> were aimed at identifying their provenance. Thin-section petrography combined with WD-XRF chemical analysis revealed connections between lamps of different chronology and types, and suggested

their Levantine provenance (Kajzer 2019: 172; Kajzer et al. forthcoming). Even though the sample was quite small, the Cypriot provenance of these lamps was definitely excluded in view of the different mineralogical and chemical composition of the fabric. Last but not least, these results add another element to the study of Phoenician lamps.

## CONCLUSIONS

Preliminary research on the early Roman lamps from Chhîm discussed above has suggested that the lamps could have been made of semi-fine ware or related. Assuming this is correct, lamps made of this fabric were continuously produced from the 3rd century BC to the early Roman period, possibly into the 2nd century AD (see Frangié-Joly 2017: 29) despite major changes in shape and decoration. The provenance of this type of ware is provisionally connected with the Southern Phoenician coast, an idea that only detailed studies of the chemical composition of fabrics and their petrographic characteristics could confirm. The wide distribution of the discussed semi-fine ware lamps and other vessels suggest production on a significant scale. It is even more likely when the use of moulds in the technological process is considered and the extraordinary distribution observed in other case studies, e.g., Hellenistic Ephesian and Knidian lamps (Giuliani 2011; Kajzer 2019: 180–181). However, the presence of analogous lamps at different archaeological sites may also be the result of several independent places of produc-

tion (Młynarczyk 1997: 36). Laboratory analyses could produce more conclusive results if materials from different sites are sampled, this combined with a comparative study of archaeological finds and geological matter from the presumed production region. The state of research on oil lamps from this region, together with the lack of any recorded lamp or, more generally, semi-fine ware workshop, do not facilitate identification of production centers. Still, macroscopic fabric analysis and laboratory examination of analogous finds, including the lamps from the Paphos Agora, open the way to a speculative consideration of the region of Tyre, located 48 km from Chhîm in a straight line, as a probable production area for semi-fine ware and with it also lamps (Wicenciak 2016b: 113).

Issues of semi-fine ware production, its continuity in Roman times, and the reasons for and date of its decline remain open for further investigation, lamps included, supported by more reliable chemical and petrographic analysis to demonstrate the internal variability of this pottery group.

3 The Paphos Agora Project directed by E. Papuci-Władyka from the Institute of Archaeology, Jagiellonian University, Kraków, Poland, see <http://www.paphos-agora.archeo.uj.edu.pl/>.

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# House H10 from Marina el-Alamein on the northwest coast of Egypt



**Abstract:** House H10 is a Hellenistic-Roman building that was among the first to be discovered at the site of Marina el-Alamein in Egypt. It is one of the largest and most extensive houses uncovered at the site. The following comprehensive overview is based on the results of regular research since 1997, including initial conservation work. The spatial design is a showcase of building technology typical of houses from Marina. Embedded in both Greco-Hellenic and Roman tradition, it is an *oikos* house with a courtyard and incomplete peristyle consisting of two columned porticoes on opposite sides aligned with the main axis and a third, perpendicular portico imitated by the architectural decoration of the courtyard elevation articulated with engaged columns. The two main rooms were located on opposite sides of the peristyle. The house was rebuilt several times, resulting in a complicated layout. The house has been re-studied, casting new light on domestic religious practices and the distinctiveness of the architectural and artistic interior design, including exceptional examples of figural wall painting. The architecture and interior décor of the house document the changes at the interface of Hellenistic and Roman traditions.

**Key words:** Marina el-Alamein, Greco-Roman Egypt, domestic architecture, decoration, domestic cult

House H10 is one of the most extensive structures at the archaeological site of Marina el-Alamein (Matrouh Governorate, Egypt). After the discovery in 1985, the relics of the Hellenistic-Roman city and the necropolis

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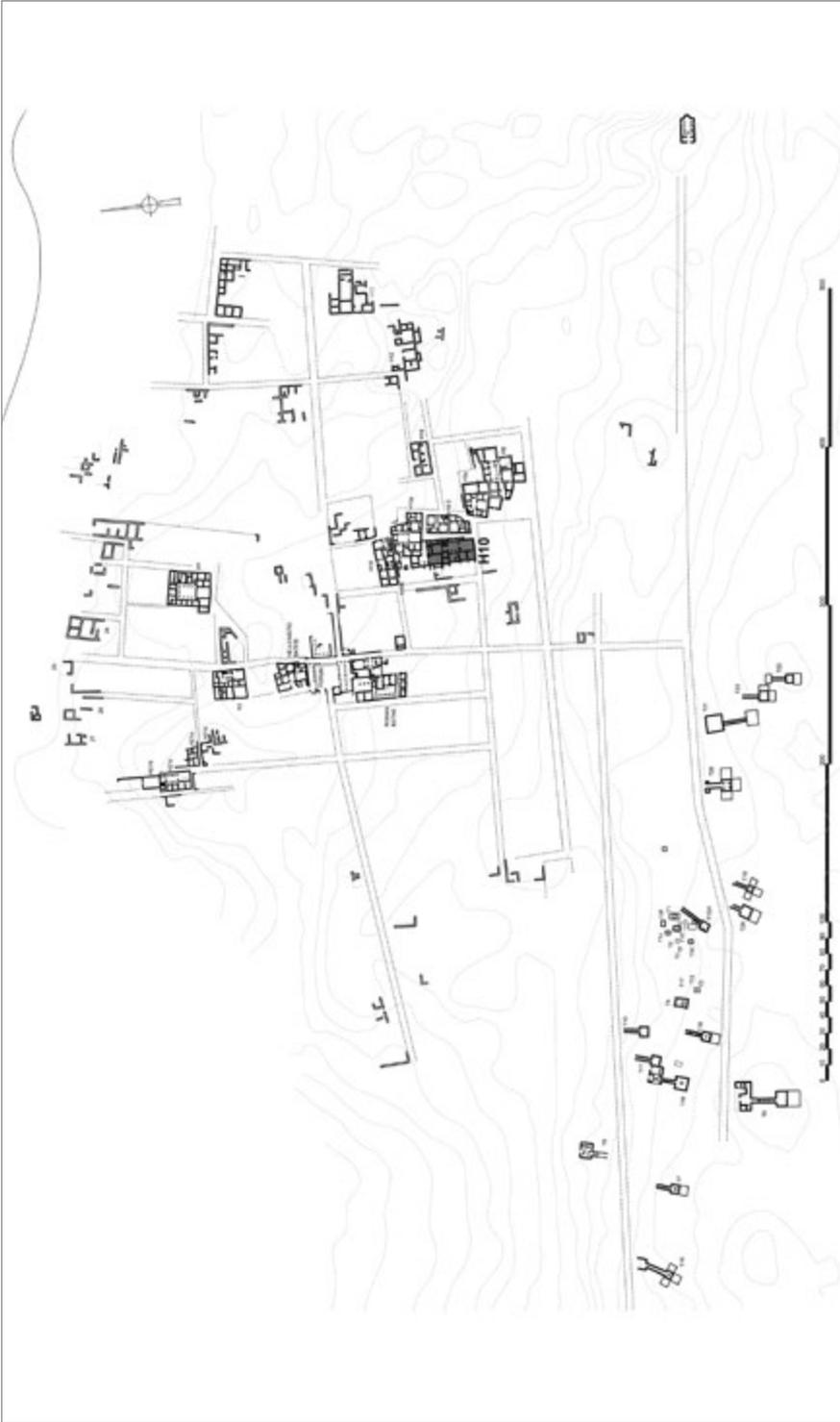


Fig. 1. Plan of the site in Marina el-Alamein showing the excavated structures and the reconstructed network of streets with the location of House H10 (After S. Medeksza)

were studied by the PCMA University of Warsaw archaeological mission led by Wiktor Andrzej Daszewski together with Egyptian archaeologists. Conservation teams undertook work parallel with the archaeological expedition. In 1995, Stanisław Medeksza from the Wrocław University of Science and Technology mounted a separate conservation and research mission.

The structures under investigation include some significant remains of residential buildings. Most of the relics come from the 1st–2nd centuries AD. Opulent tomb monuments from the 2nd century BC–1st century AD are evidence of an already developed urban center (Czerner 2017: 42–46). House H10 lies in the southeastern

part of the ancient town [Fig. 1]. Research in this area was carried out by Egyptian archaeologists who excavated the relics of the house. A map of excavated structures from 1988 shows the outlines of the first walls (Daszewski et al. 1990: Fig. 2); by 1994 almost the entire house plan had been uncovered (Daszewski 1995: Fig. 1). The conservation team began work once Egyptian archaeologists completed the excavations in 1997. In the seasons until 2001, the preservation of the remains, including anastylosis of various elements, was carried out [Fig. 2]. Additional work in later seasons providing further opportunity for research. The results of these studies are collected and presented in this article.

## HOUSE H10

The urban space in which the house is located is a zone of already less regular street layout on the southeastern outskirts of the ancient town [see Fig. 1]. The buildings here are also less regular in plan, although H10 is an almost regular rectangle at the core, measuring 16 m by 30 m, oriented to the south with a slight eastward deviation of  $5.7^\circ$  [Fig. 3]. Some additional unexplored rooms to the west appear to have belonged to the complex, extending the currently known limits of the house a total of 12.50 m closed by the street parallel to the house main axis.

The house was built entirely of local limestone. The perimeter walls and the walls of the largest rooms are formed of rubble masonry and are of considerable thickness (0.75–0.80 m). They were bonded in clay mortar and covered with

lime mortar, which also acted as a structural bond for the stone facade. The walls surrounding the central courtyard—the representative part of the house—were constructed of standard-size regular ashlar of (0.52–0.60 x 0.27 x 0.27 m). Columns were constructed of carefully processed limestone elements and topped with stone cornices. Ashlars were also used for the eastern and northern street facades which is where the main entrances were. All exterior and interior walls were plastered. There are some remains of exterior plaster on the outer east wall and interior plaster in Rooms 2, 3, 3a, 5c, 6 and 7. The courtyard, together with the porticoes and most of the rooms, is paved with rectangular limestone slabs measuring 0.35–0.40 x 0.50–0.65 m. Some rooms lacked a stone floor.

In terms of the layout of the main part, the house is of the *oikos* type (see below) [Fig. 3]. This layout is characteristic of houses in Marina, in keeping with the tradition of Hellenistic houses (Pensabene 2010: 208). However, it can also be placed in the tradition of the Roman axial peristyle house (Meyer 1999: 109–110), widespread in the Mediterranean, and present also in Cyrenaica (Pensabene and Gasparini 2019: 183–184), where the *oikos/oeci* was often turned into a triclinium.

Among the Marina houses H10 is the most elaborate, but it has its irregularities. The house was also rebuilt at least twice, clouding the issue of a functional interpretation. However, studies conducted in the course of the restoration work have cast light on the function of the most important rooms and elements of the building even as the function of some of the smaller chambers continues to be speculative.

## THE LAYOUT

The core of the house is organised around the main reception room (2) on the southern side [Figs 3, 4], opening onto the portico courtyard (1) to the north and a second smaller room (7) on its opposite

side. The courtyard had two porticoes, 2.55 m and 2.15 m wide opening on the eastern and western sides respectively, of a central, open space measuring 4.60 m by 7.07–7.25 m. The western portico has two



Fig. 2. House H10 after conservation in 2003, view from the south (Photo R. Czerner)

columns, while the eastern one features three. The facade decoration articulated with three semi-columns, the outer two shared with the porticoes, stood in place of the third portico on the northern side. This gave the impression of an incomplete peristyle with porticoes to the west, north and east. The portico courtyard measured 9.15–9.25 m east–west and 7.15–7.30 m north–south. A cistern situated under the

courtyard was fed from a well opening in the middle of this space, which collected water from the roofs through downspouts in the walls next to semi-columns standing in the northwestern and northeastern corners of the courtyard portico, and then through two channels leading under the floor diagonally towards the well. Relics of both the channels and the western downspout have been preserved.

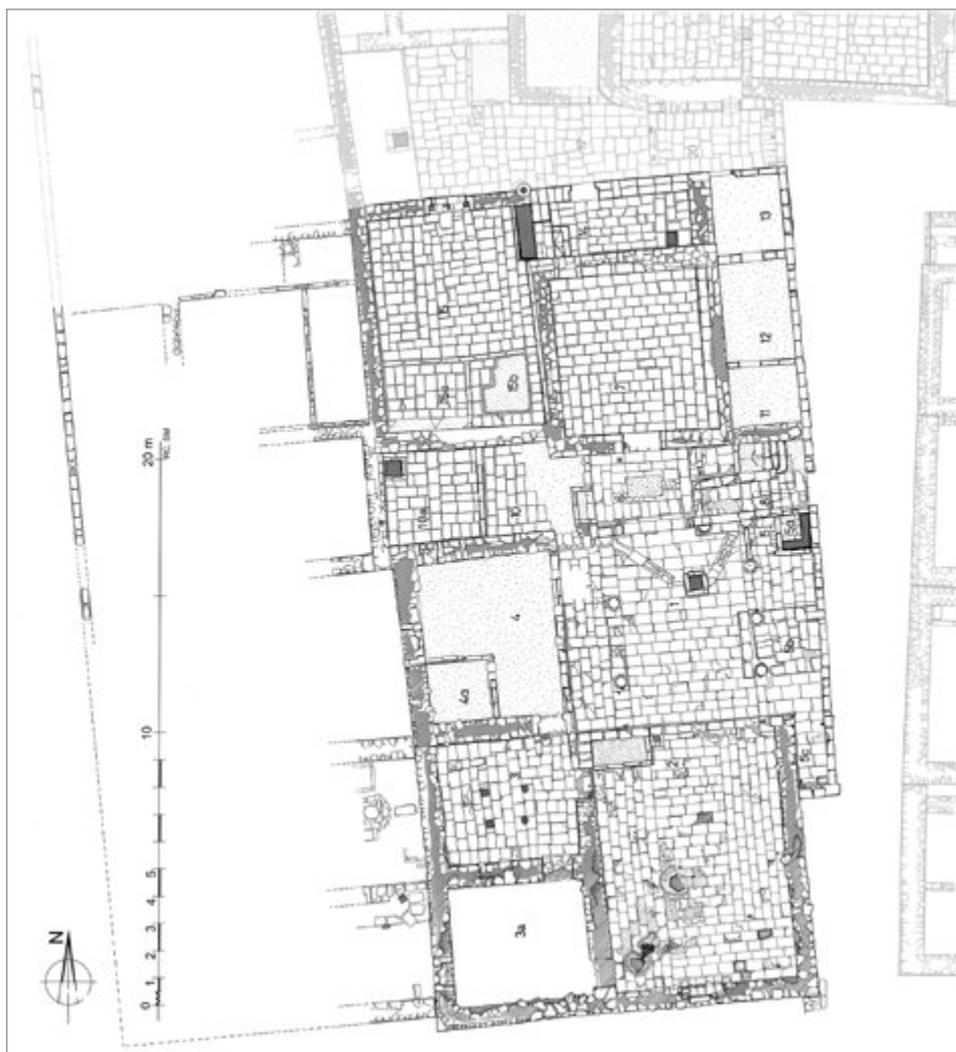


Fig. 3. Inventory plan of House H10 in Marina el-Alamein (Plan R. Czerner and S. Medeksza)

On the south, the main reception hall (2) ran adjacent to the courtyard (1). It was elongated on the north–south axis, 9.40 long and 6.60 m wide, making it one of the largest halls discovered so far in the ancient town. It had three doors opening onto the courtyard in its southern, architecturally undecorated wall. The largest, central doorway, 2.15 m wide, led directly from the open area of the courtyard, as did the small eastern door, which was 1.12 m wide. The western side door, 1.05 m wide, led from the western portico. Therefore, the main axis of the hall and that of the courtyard were offset in relation to one another. This design was consistently repeated in the other houses in Marina, regardless of whether small or large.

Corresponding to this entrance from the western portico south into Room 2 was a doorway of the same width at the southern end of the eastern portico

leading to a very small room (5c). None of the doors described had stone jambs. Nevertheless, above the thresholds from the side of the courtyard, there are recesses for mounting wooden frames. That would have been flush with the south face of the courtyard. The doors (best observable in the eastern doorway from the courtyard into Room 2) also had bolt holes and recesses in the thresholds, fitted with slabs with pivot holes, probably made of harder stone (studies on door thresholds in Marina were carried out by Andrzej B. Biernacki). The doors opened into the hall. The middle one was double-winged.

On the northern side, exactly opposite the central door to Room 2 and on the same axis, stood an equally wide (2.30 m) entrance to a vestibule (6), 3.55 m wide and 2.60 m deep, preceding the second large Room 7, which was 6.00 m long north–south and 5.70 m wide. The entrance to the



Fig. 4. Courtyard and main reception hall of House H10, view from the north (Photo R. Czerner)

vestibule had a threshold raised by about 0.12 m, but there is no evidence for the mounting of the frames, hinges or door leaves. Indications have been preserved only in the entrance to Room 7. It was 1.33 m wide, without stone jambs, with a recess for a frame in the external face of the wall and a pivot hole on the western side. The door opened inwards. The hall with its vestibule is unique in Marina and the only similar example is in House H9 (Daszewski 2011: 431; Bąkowska-Czerner and Czerner 2019: 75). It could be related to the Greek *prostas* layout or a megaron according to Medeksza's interpretation (Medeksza 1999b: 123). One argument in favor of the latter hypothesis is the presence of a rectangular hearth (0.75 m by 1.30 m) in the vestibule, sunk into the floor, found with traces of burning inside it. The fireplace in the vestibule is a unique case in Marina.

A typical design feature in Marina are two rooms adjacent to the main hall that, together, form a complex, here 3 and 3a located on the western side. Both are almost square and measure 4.80 m by 4.43 m (east–west). They are accessed from Room 2 via 1.10 m-wide doorways fitted with wooden frames in the eastern face of the wall and doors opening inward. The northern room (3) has four recesses in the middle of the floor for wooden poles that probably supported the structure of the skylight frame. The southern room (3a) was never fully explored and awaits restoration of the preserved remains of polychrome plaster on the walls (Medeksza 1999b: 130). Hence, nothing can be said of the floor and roof arrangements, whether they repeated those from the twin room.

Room 4 located to the north of Room 3 (with a smaller one, 4a) had no floor. All the doors that opened into it featured stone jambs in a direction indicating that they had led from inside. Therefore, Room 4 was perhaps an open, working courtyard.

Room 10a, accessible from the north-western corner, provided with a cellar or a cistern (a hole in the floor remains), could have been a kitchen. Room 10 to the east, of identical size as Room 10a, was accessible from the portico and must have served a residential purpose. Rooms 11–13 on the eastern side of the house probably constituted a series of shops with storerooms, accessible from the street from the east and north.

### REBUILDING PHASE

The preserved entrance to the house, which led directly into the courtyard down from the street running along the eastern façade, is not the original one. It was probably created after the street level had been raised, exceeding the level of the peristyle courtyard by about 0.50 m. It became necessary to build four steps inside the eastern portico leading down to its level and to make a new entrance. Therefore, the portico was rebuilt in order to adapt the number and spacing of the columns to the new functional layout (Medeksza 1999b: 122–123). The southern column set on a base, which is an inverted pseudo-Corinthian head, stems from this time. The old entrance was located north of the present one and led from the street into Room 8, which also contained steps, and through it into the courtyard.

Research in the street revealed that the east wall of the house was rebuilt, probably after some kind of cataclysm. The

confirmation of a 0.08 m thick layer of combustion in all of the excavated rooms as well as in the area indicates that this event could have been accompanied by a fire. This was connected with the said raising of the usable street level. Some remains of the original wall, built of stone blocks 0.27 m, i.e., half a royal cubit, thick, have been preserved at the bottom and a foundation course was laid on top of them corresponding to the new usable street level. These blocks were already equal to the length of the block used in Marina, i.e., 0.52 m, and a wall one-block thick was built on top of this foundation (Medeksza 2001a: 69; 2001b: 9).

Houses in Marina usually featured a latrine adjacent to the entrance and the staircase (Medeksza 1999b: 123). In House H10, it is also located next to the entrance, at the northern end of the eastern portico and adjacent to the wall of Room 8. However, it was rebuilt in this place, probably during the same reconstruction that formed the new east wall and entrance. The preserved latrine could be flushed from the same downspout, which supplied water to the cistern from the east. No relics of any other, more regularly arranged, latrine have survived.

The functional transformation that the building underwent at the time of the rebuilding also called for bricking up the door leading from the western courtyard portico into the reception hall (2). Next to the bricked-up door, already inside Room 2, in its northeastern corner, a plinth enclosed with vertical slabs or a *kline* couch, measuring 2.15 m by 1.05 m, was installed. The western portico was partly fenced off with a wooden balustrade, traces of the installation of

which could be seen in the floor, and a column base still preserved in the southern bay.

The other entrance, from the east–west street running north of House H10, must have been then the second, representative entrance to House H10. It led down some steps into Room 14 and then, through an original door, into Room 7. The rebuilding cut Room 14 and the neighboring Room 15 off from the house, and made them part of the adjoining house H10b, which was created by fencing off part of the street and connecting it with these rooms. A cistern lay under Room 14, the opening into it preserved in the southeastern corner. In the opposing, southwestern corner, three steps led up to a passage running west to Area 15, where the floor level was higher than in the interior of Rooms 7 and 14. Under the floor ran a cistern channel that could collect water from the roof through a downspout carved inside a nearby pseudo-Ionic column. This could be in fact associated with the construction of House H10b. Room 15, accessible only from the northern street, may have originally been a shop or a tavern. Indeed, the spot could have been empty of any kind of building at first as suggested by the regular limestone-slab facade of this side of the west wall of Room 7. Were this the case, it would mean that all the important facades of the original house were constructed of well-dressed ashlar or stone slabs. It is possible therefore that House H10 was initially smaller, and that the area later occupied by Room 15 (with 15a and 15b separated off) was left empty at first, becoming the main reception hall of House H10b when it was constructed. The floor could be related to those times as well.

## FUNCTIONAL INTERPRETATION OF THE MAIN ROOMS

The main axial complex of the courtyard with the two spacious rooms functioned in the same way before and after the rebuilding. Medeksza interpreted the two rooms (7 and 6) as an *oikos* with a vestibule from the north and the main, largest room (2) on the south as an *andron* turned triclinium (Medeksza 1999b: 123). In other Marina houses, the largest hall is usually considered to be the *oikos*. It was often designed with a niche that performed a religious function. This was the case with Houses H9 and H21c. Usually, such a room was accompanied by one or more often two auxiliary rooms.

In House H10 likewise there was an aedicule with a rich architectural design and figural painting, undoubtedly of a religious nature, situated in the middle of the south wall of the main hall. The hall

was accompanied by two rooms (3 and 3a). However, unlike the other houses, H10 also had an exceptionally spacious and representative room (7) on the opposite side of the courtyard, additionally preceded with a vestibule (6). The special layout of the floor in the main hall (2), distinguished by the orientation of the slabs in the central part surrounded by three narrower panels by the walls, corresponds to the layout of a triclinium. However, it could have been the same as in the other houses, where the main reception room with a niche for religious purposes and auxiliary rooms at the side would have been in fact an *oikos*.

In this context, one should note that Room 7 had a relatively narrow door and its floor slab arrangement corresponds to the arrangement of dining couches in a triclinium.

## THE FORM OF THE ROOFS AND UPPER FLOOR

Medeksza (1999b: 124) considered two different forms of roofing in ancient Marina: sloping tile roof and flat roof/terrace covered with clay or lime mortar. This issue is also relevant to the house in question. The tradition of Greek and Roman houses in this area incorporates both types of roofs as well as combined systems with gable roofs over high halls only (see Hoepfner and Schwander 1994: 40, 150, 185, 211, 278). With the exception of one example, no relics of tegula roof tiles have been found in Marina. This argues in favor of a prevailing flat roof form. It is also connected with the Egyptian tradition of utility terraces. Flat roof technology

is also known to have been used at the site: remains of a clay covering of a flat ceiling structure made of palm beams was discovered in the Hellenistic baths in the town centre (Bąkowska-Czerner in Czerner et al. 2016: 173).

Stairs leading to the roof terraces or to the upper floor rooms were found in most of the houses in Marina (Medeksza 1999b: 124). The existence of rooms on the first floor would have facilitated the functional separation of the part of the house intended for women. Room 8, located on the eastern side immediately to the north of the peristyle courtyard, had a corridor on the southern side,

leading to the street entrance to the house and the first flight of stairs on the northern side. Before the entrance from the courtyard there was one step up, another in the corridor, four more already in the northern flight. As far as the landing, which would have restricted

the flight of the stairs to the west, and slightly beyond the wall that separated the room below, there was room for another six steps, of which at least the last two must have been wooden. Therefore, the flight of the stairs was short. With an average step height of up to 0.20 m, a total

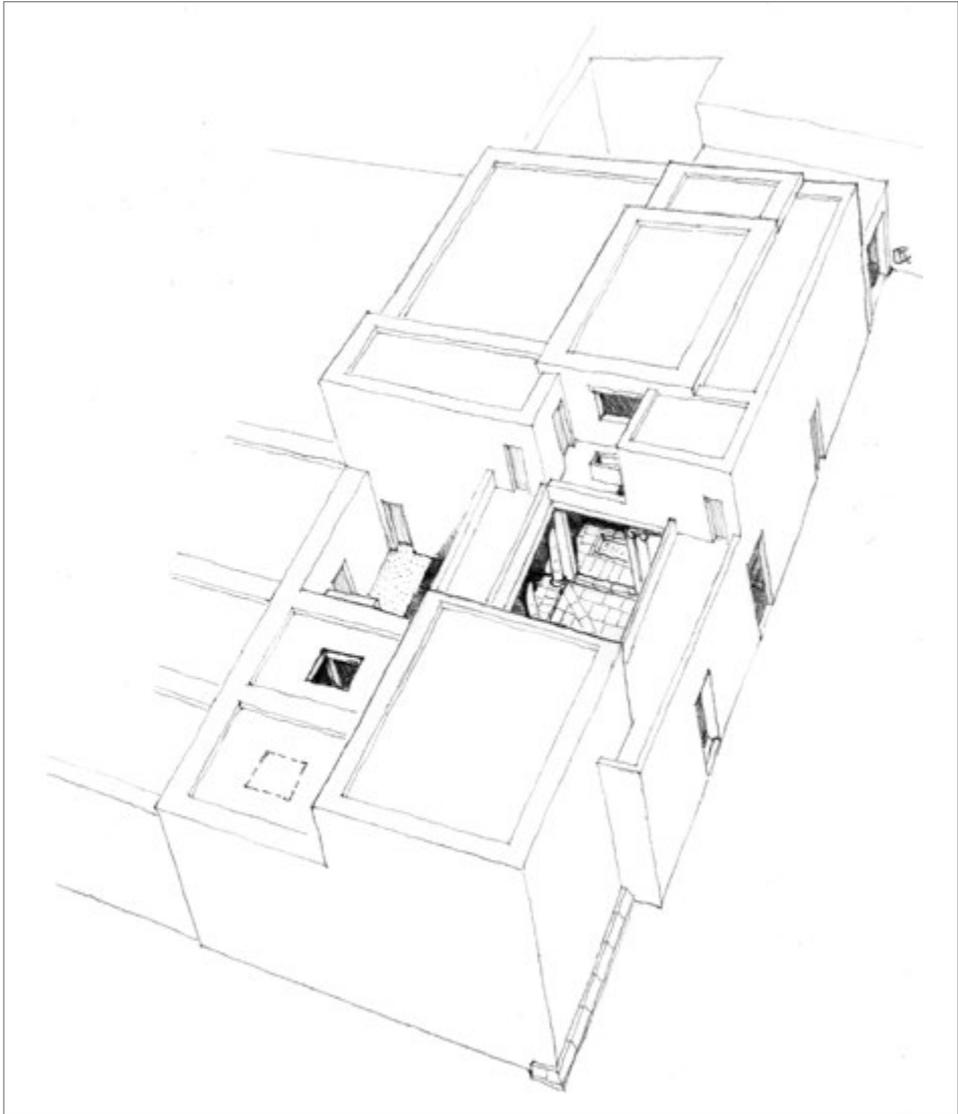


Fig. 5. Reconstruction of the form of the roofs and upper floor of House H10 (Reconstruction drawing R. Czerner)

of 12 steps ensured a rise of about 2.40 m. This was not much, but enough for the landing to rise to the level of the lintel above the entrance to the corridor, which was only 1.00 m wide, and the staircase from the courtyard. However, the upper floor level could not have been as low as this. Therefore, the staircase must have had two more flights, which could have reached a height of 4.40 m. At this level or slightly lower than that, one could expect the floor of the rooms or terraces on the upper storey. This is also the level of the roofing of the courtyard porticos, which, with a maximum height of the columns equal to nine times the diameter of the shaft above the base, measured at 0.425 m, would be more than 3.825 m.

An issue to be clarified is the range of rooms and/or terraces on the upper floor [Fig. 5]. Undoubtedly, the largest reception room (2), 6.60 m wide and 9.40 m long, required a proportionate height. The south wall of the room featured an aedicule 2.44 m high, its bottom ledge at 1.53 m above the floor (Czerner 2000: 4). Counting the space essential above the finial of the niche, the hall should therefore have been about 4.50–5.50 m high. Finally, the flat ceiling covering it, assuming it was the case, would have probably been made of palm beams, which at a span of 6.60 m would have been insufficient in terms of load-bearing capacity to carry a floor usable for people. Consequently, there could not have been a used level above the main reception room which would have been covered directly with a probably flat roof. The skylight lighting Room 3 to the west (and possibly Room 3a) would have precluded an upper floor of rooms in this part of the house as well.

Room 4 farther north, interpreted as an open courtyard, also would not have had any need for utility galleries above the porticoes, although the height of the porticoes (equal to about 4 m) allowed for their existence. There were no rooms on the upper floor to the south and west of the courtyard.

Chambers could have existed above Rooms 10 and 10a, above the row of shops 11–13, Room 14 perhaps and possibly Room 15. However, as we recall, the latter might not have existed in the original phase, while in the second it was the main reception hall of House H10b, probably also double height. In turn, the column with a hollow downspout between Rooms 14 and 15, by their north wall, was reconstructed from its preserved set of elements to a height of 3.51 m (Medeksza 2001a: 69; 2001b: 11). This suggests that either the original street, which later became part of Courtyard 17 of House H10b, had a roof or this particular area of the house above Unit 1 did not actually have an upper-floor room.

Theoretically, a chamber could have existed above Hall 7, this despite the hall's large dimensions and representative character. But the need to illuminate it would make it expectedly higher than some of the neighboring interiors in order to have a window or windows in the upper part of its walls. In fact, Vestibule 6 could have been covered with a terrace roof with an opening for the smoke from the hearth to escape outside.

Consequently, it should not be expected that the upper floor lay above the utilitarian rooms further to the west of the examined part of House H10, unless they were accessed via a different staircase or staircases.

## INTERIOR DÉCOR

Some relics of sculptural and painted interior decoration have been preserved. Pseudo-Ionic columns of the Marina type (named so according to Daszewski's suggestion, similarly to the pseudo-Corinthian ones. See Czerner 2009: 2, 22–24; Daszewski 2011: 440) stood in the porticoes, the shafts without

fluting and with simplified forms of bases and capitals. In the absence of any relics of stone architraves, it should be assumed that wooden beams rested upon them. Stone cornices with dentils were featured at ceiling level, i.e. Ionic as well as simplified versions. Several elements of this kind of a cornice have



Fig. 6. Reconstruction of the body of House H10 with location of polychrome decoration (Reconstruction drawing R. Czerner)

been preserved (Czerner 2009: 103–104). Some remains of cornices with obliquely positioned flat hollow modillions were also found (Czerner 2009: 106). Such modillions, often alternating with flat grooved modillions, also referred to as a *travicello* (Pensabene 1993: 99–100 and 131; McKenzie 2007: 87–89; Pensabene 2010: 206) are typical forms of Hellenistic architectural decoration and were commonly used in Marina. The cornices, in which they took an oblique form, probably came from the corner triangular jerkin heads of the pediment placed above a door.

The aedicule was located in the main Room 2, in the middle of the wall opposite the entrance (Czerner 2000:

3–4) [Figs 4, 6]. This location of a niche in a house is typical and is also repeated in the reception halls of other Marina Houses: H9, H21c and in Hall H21 “N” (Bąkowska-Czerner and Czerner 2017: 142; Czerner 2017: 52). Stone elements of the fallen niche, almost completely preserved, were discovered in 1998 (Czerner 2005: 120) [Fig. 7]. The remains of the bottom ledge were still *in situ* in the wall. This allowed for anastylosis of the niche during conservation work in 1999–2001 (Medeksza 2000: 50–51; 2001a: 69; 2002: 93). Four slabs from the back wall of the niche were also found, still preserving relics of figural painting on the plaster. The architectural form of the niche was peculiar, at the same time typical of

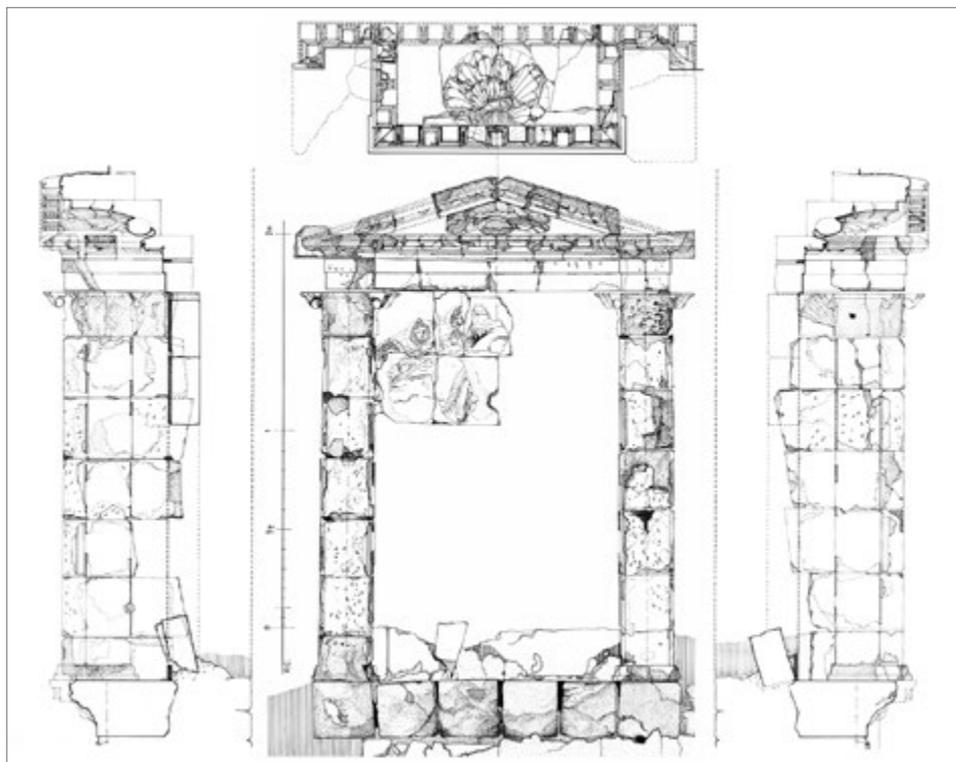


Fig. 7. The aedicule from Room 2 of House H10 (Inventory drawing R. Czerner and A.B. Biernacki)

Marina, with half-columns and pilasters on the sides and a pediment, in this case triangular, which did not form a closed tympanum, but whose lower cornice was retracted and ran around the side and rear wall of the niche (Pensabene 2010: 206; Czerner 2017: 52). The half-columns and pilasters were pseudo-Corinthian, of the Marina type, the former with convex fluting modeled in mortar (Czerner 2009: 111, Pl. XV-E.001). The lower cornice of the pediment was decorated from the base with geometrized flat groove modillions alternating with square hollow modillions, the upper one featuring the flat grooved type only. In the centre of the pediment, from the bottom, was a shell modeled in mortar.

The niche was refashioned. Surviving remains of the new decoration include

Corinthian forms of the half-columns and pilasters closer to the classical versions. Both received concave fluting, with semicircular ends at the top and bottom, and Attic bases (Czerner 2009: 110, Pl. XIV-D.006). The capitals were probably also changed. The grooves of the cornice modillions were closed. The new decoration was made of mortar.

#### **POLYCHROME DECORATION**

House interiors were richly decorated with wall painting. House H10 yielded the most examples of figural as well as geometric decoration, preserved on successive coats of plaster. Relics of polychrome decoration were discovered *in situ* same as in House H9 (Bąkowska-Czerner and Czerner 2019: 81–84). Not all of the fragments were revealed.



Fig. 8. Remains of polychrome decoration on the west wall of Room 3 of House H10 (Photo S. Medeksza)

Polychrome decoration was observed on the walls of Rooms 3 and 3a. In Room 3, it was best visible on the west wall, reaching a height of 0.87 m (Medeksza 1999a: 130) [Fig. 8]. Traces of decoration were also found in the southwestern corner and near the floor by the south wall and in the southern doorway. The bottom of the west wall was decorated with a black plinth 0.21 m high, separated by an engraved line from red and black pilasters surrounded by a vertical, red frame. There were panels between the pilasters, alternating brown and black, with traces of marbling. Such colors, although practical, made the room dark. Light penetrated here through an opening in the roof; the upper parts of the walls may have been painted in light colors to brighten up the interior. Similarly decorated walls can be found, among others, in Pompeii (Strocka 1984: 26, Figs 13, 14). Room 3a was not cleared of the fill before a conservation project could be mounted. Securing of the plaster edges demonstrated that the walls had been painted with a structural geometric decoration.

Remains of polychrome painting are discernible on the cornices and one of the capitals from the courtyard porticos. The colors have been reconstructed referring additionally to parallels from other houses. The shafts of the columns and half-columns were plastered and probably painted white. However, their bases and wall plinths were black (Medeksza, Czerner, and Bąkowska 2015: 1753–1754). A preserved fragment of a pseudo-Ionian capital was painted in Pompeian red with a black margin under the abacus (Czerner 2009: 38, 97, Fig. 71). A fragment of a pseudo-Ionic volute

found in House H10e had the same color and a black margin (Czerner 2009: 38, 98, Fig. 70). The Ionian cornices reveal remains of Pompeian red between the dentils (Czerner 2009: 38, 103–104, Fig. 67).

The decoration of the aedicule was also polychrome. Remains of blue paint was preserved on the pediment, along with the shell and the modillions of the upper cornice. On the lower cornice, the modillions were Pompeian red, and the interior of the square modillions was painted black. The shafts of the pilasters and half-columns were ash-grey. In the second phase, they were white and the inside of the fluting was painted black.

Of greatest importance is the fine figural decoration of the niche, which is linked to the first phase of the structure (Medeksza 1999a: 57–58) [Fig. 9]. It was later either repaired or completely replastered, as indicated by the fragments of white plaster visible in two places. The interior of the niche in which the painting was located is 1.98 m high and about 1.26/1.23 m wide. The preserved images of three busts are on the left side in the upper part of the niche [see Fig. 7] and have been interpreted as well as described in detail by Zsolt Kiss (2006: 163–166). They are arranged on an arch, with Serapis at the top and Harpocrates and Helios below. Their female counterparts, such as Isis and Selene/Luna, could have appeared on the other side. If so, then one side would have been dedicated symbolically to the Sun, and the other to the Moon. These elements resemble compositions depicting scenes of Mithra killing a bull. The arch over which the busts of the gods are located could refer to the image of a grotto in

which the action took place. Considering the location of this painting in the *lararium* of the main hall of the house, it could testify to the cult of Mithra in Marina. Mithraism was a mystery religion followed mostly by Roman soldiers and officials. According to some scholars, the cult of this god could have been introduced into Egypt in the time of the Achaemenids (Mikołajczak 2008: 132–133, Note 23). There is evidence of its existence at a later date (Harris 1996). Representations of Mithra in homes, or in private Mithraea, are found in ancient

Ostia and elsewhere (Rubio Rivera 2003–2005). However, as Kiss emphasizes, the kinship with Mithra's iconography here is purely formal (Kiss 2006: 169).

Medeksza suggested that the the lower part of the scene represented a man or a god, the figure of which could have been about 1.60 m high (1999a: 57). This figure was not identified. The busts of deities described above were shown against a distinctly blue background and were given blue nimbuses, the color of which could have had some significance. In the case of the images of Jupiter or Dionysus,

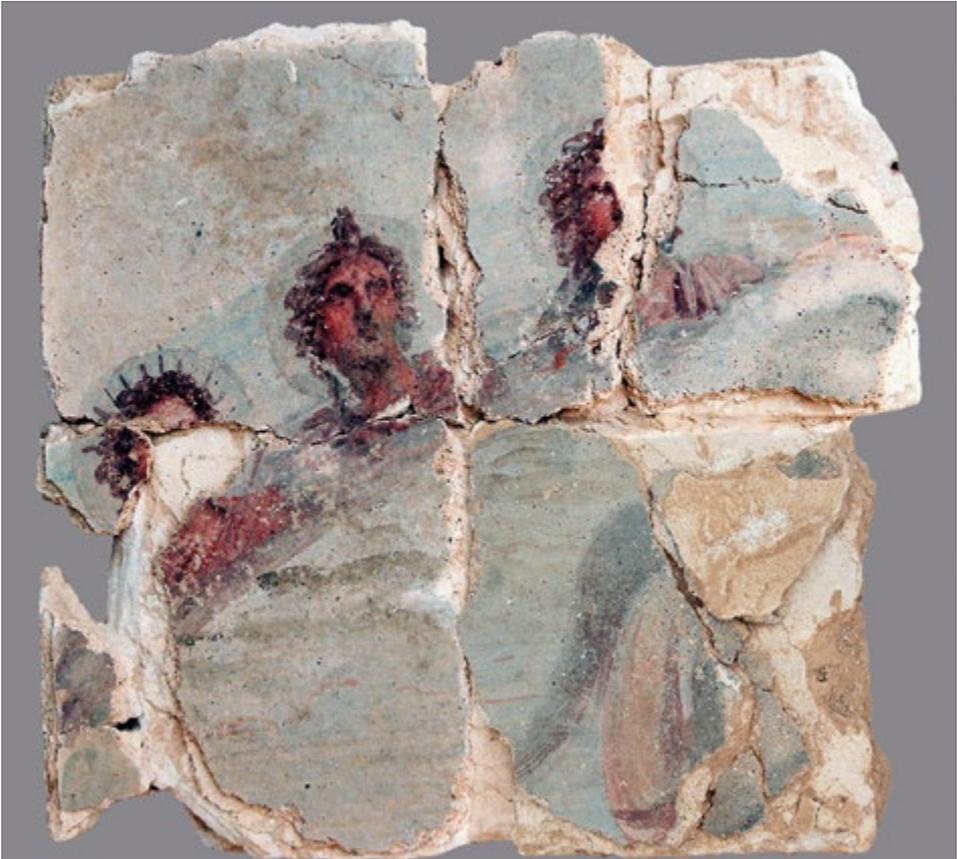


Fig. 9. Painting depicting three gods: Helios, Harpocrates and Serapis, in the aedicula in Room 2 of House H10 (Photo S. Medeksza)

a bluish nimbus highlighted the cosmic nature of the deity, the universal divinity (Cecconi 2016: 17–19). In the upper part of the painting, the action undoubtedly takes place in the sky. The remains of the main scene have been preserved in the form of two small fragments. Delicate waves are marked in various shades of grey on a bluish-greenish background. A yellow, vertical element can be interpreted as a raised forearm of the arm bent at the elbow. Long strands of straight, black-brown-burgundy hair on either side of the forearm, slightly curled at the ends, arranged as if a hand—missing unfortunately—was holding them up. One could imagine the head with black thick hair, parted in the middle of the forehead, positioned directly on the vertical axis of the niche, already on the fragment with the head of Serapis. It would have been turned to the right and inclined, probably crowned with a white diadem with a red tip at the very top. Described in this way, the figure immediately lends itself to an association with images of Aphrodite Anadyomene emerging from the sea foam. Based on the length of the forearm and taking into account the proportions of the figure, it could have been about 1.26 m tall, fitting perfectly the imaginary scene. The painting is very poorly preserved in this part and difficult to interpret; other interpretations may yet be put forward following further research and analysis. However, one should bear in mind that Aphrodite was undoubtedly venerated there considering the many representations that have been discovered in various form in the ancient town (Bąkowska-Czerner 2011). Images of the

goddess of love have been found in the *lararia* of houses in Pompeii (Fröhlich 1991: 147–150). A representation of the nude Aphrodite Anadyomene in a similar arrangement is found in the triclinium of Casa del Principe di Napoli in Pompeii (Strocka 1984: 106–107, Figs 106, 107). A terracotta niche with a naked Aphrodite under a shell may also be considered as a parallel. The upper part of the Marina niche was decorated with a scallop shell, an attribute of Aphrodite. It is not known why the goddess emerging from the sea was accompanied by Serapis, Harpokrates and Helios. The presence of these gods could mean that they were her patrons in this scene, emphasizing in a way Aphrodite's command of the sea.

The quality of the workmanship and mastery of *chiaroscuro* in the painting under consideration is evident. Only one head—that of Harpokrates—survives in its entirety. The god appears surprised or agitated. The hair is long, curly, blowing in the wind. At the same time, the raised eyes emphasise his spirituality, divinity and inaccessibility. The composition of the scene as a whole is well thought out and shows good technique and the influence of Hellenistic art. The painting has been dated to the 2nd century AD, but it could have been made earlier, even in the 1st century AD, arguably because the house with the niche were built in the 1st century AD. The characteristic architectural decoration of the niche itself (Czerner 2005: 122–123) and the influence of the Hellenistic tradition visible in the painting are also noteworthy.

The preserved fragment of painting from the *lararium* is further testimony of religious syncretism and the popularity in

Marina, above all, of the private cult of Serapis and Harpokrates. These are not the only figural representations found in House H10. In its eastern part, by the main entrance, next to the courtyard and the *oikos*, lies a small rectangular room (5c), 2.65 m long and 1.05 m wide. As indicated by preserved traces in the stone floor, as well as holes for the horizontal beam of the wooden frame, a wooden door closed it off from the courtyard. A plinth or table (Medeksza 1999a: 61), perhaps an altar, stood in the southern end of the room. One should note that small stone altars attesting domestic worship are ubiquitous in the houses in Marina. Restoration work in 1998 uncovered fragments of a wall painting



Fig. 10. Painting depicting Heron from Room 5c of House H10 (Photo S. Medeksza)

which were subsequently studied by Kiss (2006: 166–169). The painting shows Heron, a god of Thracian origin, standing next to an altar [Fig. 10]. It is badly damaged, but a thorough conservation over the years (by painting restorer Małgorzata Ujma) have revealed several previously unseen elements.

The scene is presented inside a brown, rectangular frame that Kiss interpreted as a picture frame (Kiss 2006: 168). Vestiges of the frame remain in the upper part of the painting and are also faintly visible in the lower part as well as on the right side, where one can also see the plaster from the adjacent west wall. Fragments of the figure of the god survive. Heron is depicted standing, a large, curving cornucopia to his left, supported probably by his left arm. In his right he could have held a patera (lost) for pouring a libation on a high altar. The god has thick hair and beard. A brownish-maroon *kalathos*, a symbol of abundance, rests on top of the head, shown surrounded by a nimbus of turquoise color that became clear after conservation. The god's face is completely destroyed. Behind his back, on the right side, one can see a large spearhead. The dress is barely visible: a turquoise chiton traces of which can be discerned on the right arm. However, the left is covered with a reddish-brownish chlamys or *plaudamentum*, a type of military cloak possibly fastened with a fibula or brooch on the right shoulder. By painting the folds, the artist highlighted the arrangement of the garment, which is barely discernible today. The second attribute ensuring abundance is the cornucopia. A snake with its head turned towards the god hovers above him. The

long, thin and tightly twisted body of the serpent is partly hidden around the cornucopia and its sinuous tail appears in the middle of its height. In Greco-Roman Egypt, the image of a snake is associated primarily with the guardian deity Agathos Daimon.

Half of a horizontally hanging garland (Latin *serta*) has been preserved in the upper part of the painting. Made of red flowers, it is tied with a double, thin, green ribbon, the ends of which are tightly twisted. Garlands were usually secured by nails driven into the wall. Some of the paintings bear traces in these places, because sometimes real garlands were hung in the painted areas (Rogers 2020: 1). Often depicted in *lararia*, they were an important element of Roman cult as reported in the ancient written sources, being offered to the Lares in addition to incense, wine and cakes (Rogers 2020: 9). Long, thin grasses along with plants with thicker or thinner stems and oblong leaves appear to grow from the groundline formed by the brown frame. This indicates that the scene is set in a landscape.

The painting was well composed and executed, and the precision in rendering the details is clearly visible. Strong colors contrast with the white background. The painter used a narrow range of colors. Shades of brown and burgundy dominate, but turquoise, red, delicate pink and light green are also included. Looking at the contorted body of the snake, the twisted strings of the garland that seem to dance in the wind, and the plants shown at different angles, it seems that the artist was trying to convey the impression of movement. It is also observable that some

details are painted delicately, with brisk strikes of the brush. They contrast with the dignified, static figure of the god. The preserved fragment of the scene reflects the atmosphere of a religious ceremony.

The size and location of this painting are puzzling. On the basis of the preserved fragment of garland, Daszewski suggested (Medeksza 1999a: 59, Note 9) that this scene was part of a larger whole and that there could have been at least one more character, perhaps Lycurgus. Considering the composition and dimensions of this painting, and taking into account the size of the room, the best place for it would have been the shorter, southern wall, opposite the entrance. All the more so because of the remains of a structure found in front of this wall, which is 1.05 m wide against the 0.47 m of the image. An edge fragment of the plaster belonging to the side wall indicates that the painting had started from the edge, leaving enough room for a larger composition perfectly fitted to the dimensions of the south wall. Regarding a reconstruction of the full composition, parallels need to be considered in this case.

This religious painting featuring the image of a god and the remains of a structure preserved on the floor in front of it suggest that some ceremonies and rituals were performed in this room, and that sacrifices were certainly made to the god. There are many indications that it was a *sacrarium*, a place of worship, sacrifice, prayer or storage of sacred paraphernalia (on the *sacrarium*, see Sfameni 2014: 19–22). These were usually small rooms, located near the courtyard, and were treated as private religious spaces.

One is left with the question why a god of Thracian origin would have been depicted in a house in Marina, right in the entrance. In Egypt, the origins of the Heron cult stem from the Thracian military settlers who arrived in the 3rd century BC. They were mercenaries and soldiers recruited from the southern part of Thrace enlisted in the Ptolemaic army (Velkov and Fol 1977: 97). They settled in Fayum, and many testimonies of Heron's cult were also found in Upper Egypt in Deir el-Medina and Deir el-Hagar in Dakhla (Kaper and Worp 1999: 246–248, Figs 15, 16; Omran 2015: 206). The Thracians also certainly lived in Alexandria, all the more so because in Roman times a Roman army, in which the Thracian riders served, was stationed in Nicopolis (Dimitrova 2002: 210, Note 4). Art, papyri and inscriptions indicate the survival of the cultural and religious traditions of the Thracians in the country on the Nile (for more about Thracians in Egypt, see Bingen 2007).

Reliefs depicting a “Thracian rider” found in ancient Thrace (Dimitrova 2002) are very similar to the depictions of Heron in Egypt. In the reliefs from Thrace, he is shown in various scenes, sometimes appearing in a chiton and chlamys, holding a patera or sometimes a spear, at times standing in front of a tree with a snake entwined around the trunk interpreted as a “tree of life”, symbolizing the birth of nature (Dimitrova 2002: 211–216). Due to the scarcity of written sources, little is known about his cult in Thrace itself. He is depicted as a god and a hero, referred to by scholars in various ways, sometimes as the Lord of the Universe or the protector of fertility (for more on this topic, see Boteva

2011: 12–14). The iconography is believed to have been borrowed from Greek art (Dimitrova 2002: 223). In Egypt, Heron is usually depicted on horseback or standing in front of an altar, holding a patera intended for libation (Omran 2015: 207). As a military deity, he was depicted in a soldier's outfit with the appropriate attributes, usually a spear. He is often accompanied by a snake sometimes coiled around a tree (Omran 2015: 206, 210, 211, Pl. 2). Iconographic details changed with the passage of time. This is also seen in the Marina representation, which is dated to the 2nd century. Only a fragment of the Heron scene has survived here, and it is very damaged. The presence of a tree cannot be confirmed. The serpent appears apparently entwined around the cornucopia. A nimbus is visible around Heron's head. As already mentioned, many illustrations of him have been found at the Fayum oasis. He was worshiped in temples and in homes (Omran 2015: 208, Pl. 10). It has been noted that the image of Heron sometimes appears at entrances, for example, in the temple in Magdola or the sanctuary of the temple dedicated to the crocodile god Pnepheros and Petesouchos at Theadelphia in Fayum (Omran 2015: 209). One of Callimachus' epigrams could also be mentioned here; it contains a reference to a small statue of a Hero with a coiled snake and a sword, which stood guard at the door in front of a house in Amphipolis (*Call. Epigr.* 24; Cameron 1995: 211, VIII.5). In all likelihood, this concerns an image of the Thracian horseman who was known in Thrace as a door keeper (Bingen 2007). He could have played this role, in addition to that of protective spirit, in Egypt, also

protecting the inhabitants of House H10. Heron of Marina is also very similar to the image of Genius, the guardian spirit of the *paterfamilias*, who approaches the altar holding a cornucopia in one hand to offer libations (Rogers 2020: 3, Fig. 1). Such a representation was featured in a niche in a *sacrarium* at Casa di Popido Prisco in Pompeii (Bassani 2013: 412, Figs 149, 150). The protective god of the house, the guardian of the door, watches over the safety and well-being of the inhabitants, who complete their daily worship by making offerings and pouring a libation on the altar.

The painting in Room 5c is a testimony to the cult of Heron in Marina. Various assumptions can be made: perhaps the residents of the house were descended from Thracian soldiers from Ptolemaic times, possibly originating from nearby Alexandria or the Fayum, or appearing later with the Roman army. The military in Egypt played an important role beyond economy or religion—they also united different social groups (Fischer-Bovet 2014: 140). Given the apparent religious

syncretism in Marina, it seems that the owners of the house did not necessarily have anything to do with the military. The described house is relatively large, representative, close to the city centre, and has rich architectural and painting décor. It must have belonged to a wealthy, influential family engaged in commerce and worshipping syncretic deities popular in the Greco-Roman period in Egypt. The ancient city on the site of Marina el-Alamein may have been inhabited to some extent by a multi-ethnic and multicultural society. There are traces of Egyptian, Greek, Roman and later Christian culture. The proximity of cosmopolitan Alexandria, as well as its location on trade routes, had a great influence on the developing cultural and religious syncretism.

The paintings from House H10 help to interpret the purpose of the rooms, and stand as testimony to domestic religious worship that existed in Marina, as well as the painting skills of the artists working in the area, which also emphasizes the status of the people living there.

## THE ARTIFACTUAL ASSEMBLAGE FROM THE HOUSE

House H10 had been partly cleared in the early stages of archaeological work at the site, hence the conservation mission focused on archaeological supervision in places where conservation work was underway instead of regular excavations (Medeksza 2001b: 7–12). The few artifacts found include ceramics, a fragment of a lamp, as well as some coins (Medeksza 1997: 8, Pl. XV). There were also a few small nails, including tacks, which were probably used to nail together or deco-

rate furniture. A bronze key-ring had practical uses—such keys were used to lock small wooden boxes. A bronze fish-hook from the ruins is of a type often found in Marina and other coastal settlements. However, the most important finds in terms of dating evidence are the coins, dated from Vespasian to Theodosius II, i.e., from the end of the 1st century AD to the middle of the 5th century AD (Medeksza 1998: 76, Note 2).

The house was rebuilt several times.

Surveys made in the street and in neighboring houses indicate at least three phases of use. The house was probably built in the 1st century AD. It was rebuilt at the beginning of the 2nd century AD. There is evidence for a general building movement throughout Marina in this period. It could have been influenced by historical events in Egypt, although it is impossible for now to say whether and to what extent the town was affected by events related to the Jewish uprising. Marina was expanded during the rule of Emperor Hadrian. The damage seen in many places in

Marina dates to around the middle of the 3rd century. One may wonder if the cause was not an earthquake, perhaps the one that hit Libya and Western Anatolia in AD 262. A layer of burning 8 cm thick, found in several places around the House H10 complex, appears to be related to this event. The city was certainly impacted by the crisis of the 3rd century, which halted its development. The rebuilt House H10 was still in operation in the 4th century, when Christianity reached Marina, and probably even after AD 365, which is the date of the next great earthquake.

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# Stone block surplus? Reconstruction of the building process and architectural form of Marina el-Alamein hypogea



**Abstract:** The monumental rock-cut tombs of the Graeco-Roman necropolis at the site of Marina el-Alamein on the Egyptian Mediterranean coast, today a sightseeing icon following restoration work by the Polish team, have produced significant information about the town, its inhabitants, and burial traditions. Different aspects of the tombs and their content have already been discussed, but without going into the details of the architectural building process. This paper focuses on ancient quarrying and masonry techniques in an effort to reconstruct the process as applied to the large hypogea. An estimate of the volume of stone material sourced during the execution of the underground parts of these tombs was compared with the reconstructed demand for stone ashlar used in the aboveground superstructures. The issue to be examined in this context is whether the tomb hypogea could have produced a surplus of stone building material, thus serving as a quarry for the city itself.

**Key words:** Egypt, Marina el-Alamein, Graeco-Roman, hypogeum tomb, building technology, architecture

The ancient town in place of modern-day Marina el-Alamein, located about 100 km west of Alexandria and 185 km east of ancient Paraetionium (Marsa Matruh), was discovered in 1986, when work started on the construction of a tourist resort at this Mediterranean coastal site (Daszewski 1991). Archaeological

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excavations uncovered many different structures, establishing the character and chronology of the remains. The settlement, which was established in the 2nd century BC, existed for more than 600 years, ultimately disappearing in the 6th century AD (Daszewski 2011). Despite more than 30 years of fieldwork, the name of the city remains unknown: the harbor of Leucaspis, mentioned in Roman sources, has been considered as a possibility; so has the Byzantine-era episcopal see of Antiphrae. It is probable that the two may have actually been conflated late in the 4th century at the earliest (Twardecki 1992; Czerner 2015).

Investigations of the site have given a good understanding of the town plan made up of three main parts: a harbour,

a residential and public sector, and a cemetery. This paper is focused on the necropolis in the southeastern part of the town. The monumental hypogea cut in bedrock [Fig. 1] could well have supplied building stone for the local community.

Participation in the Polish–Egyptian Conservation project gave the author an opportunity to examine the underground parts of the tombs firsthand searching for evidence that they could have served as quarries of stone building material for the city. Using strategic-game techniques (Kwiatkowska 2017), the author was able to prepare a calculation model which produced measurable results. Two of the most typical hypogeum tombs were chosen for the project, the goal being to carry out the reconstructions.

## THE NECROPOLIS

The Marina el-Alamein cemetery, identified at the very beginning of the excavations, was excavated by Wiktor Andrzej Daszewski for close to 20 years (Daszewski 1991; 1992; 1993; 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001: 47–58; 2003: 51–58; 2011: 435–452; Daszewski et al. 2005: 74–86; 2007: 84–97). More than 30 tombs were unearthed and documented in the course of the archaeological project.<sup>1</sup> They represent a variety of forms, some the best preserved examples of their kind, others unparalleled in Hellenistic and Roman Egypt, engendering extended interest due to the monumentality of their architecture and their ornamentation.

The location on a limestone coastal ridge determined the size and shape of the necropolis, its monumental character and enhanced visibility to the town residents. The ridge is a geological formation stretching west of Alexandria along the coast, punctuated by long depressions (Klemm and Klemm 2001: 641; Medek-sza 2002: 104; for a geological review, see Skoczylas 2002: 1179). The tombs extend 400 m, east to west, across a landstrip about 150 m wide. Situated on a gentle slope, the “houses of the dead” form a succession of tiers that were visible from both the town and the harbor [Fig. 2].

A group of tombs of similar form stood at the center of the site (T1, T1B,

1 A few other tombs discovered by Egyptian archaeologists during the rescue excavations in the late 1980s were neither documented nor published.





Fig. 1. Subterranean part of the hypogeum tomb T6: left (opposite page), view of the inner court and entrance to the burial chamber, above, view of the entrance to the dromos from the inner court (Photos S. Popławski)

T1C, T1D, T1F, T1I, T1J, T1K, T2, T3, T12). These structures consisted of a rock-hewn rectangular pit under a stepped square structure topped with a decorative sarcophagus or a huge pillar or column. Dated mainly to the early 1st century AD (with a few of earlier date, reaching back even to the 2nd century BC) (Daszewski 2011: 438–441), they formed an impressive landmark thanks to their central location and significant height—up to 7 m in the case of individual monuments. The architectural concept behind the most elaborate examples could be described as a complete architectural order presented in a single column or pillar (Czerner 2015). These tombs were crowned with a simplified geometric form of decoration resembling the Nabatean style, which was extremely common at the site (Czerner 2009).

The other tombs were scattered across the necropolis [see Fig. 2]. Among the more elaborate forms two types were dis-

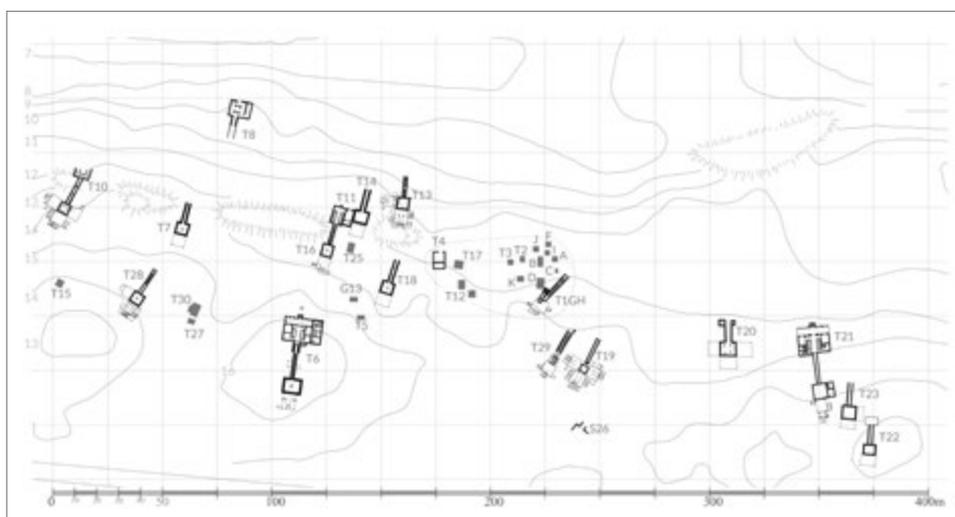


Fig. 2. The necropolis at the site of Marina el-Alamein (Plan S. Popławski, after R. Czerner, K. Majdzik and S. Medeksza)

tinguished: box tombs and hypogea. The box structures (T<sub>11</sub>, T<sub>17</sub>, T<sub>25</sub>, T<sub>27</sub>, T<sub>30</sub>) consisted of four or six loculi arranged in two or three rows. The structures were usually oriented N–S and enclosed inside a temenos wall. Their construction was also dated to the early 1st century AD, but the larger examples at least continued to be used into the 4th century AD (Daszewski 2011: 441).

The third category of tombs, the hypogea, were located along the ridge. They were oriented along the slope. These structures are among the largest and probably the earliest at the necropolis. The first hypogea, constructed at the end of the 1st century BC, were in use until the 3rd century AD; they were the most common in the 1st century AD

(Daszewski 2011: 441–452). These tombs consisted of one or more burial chambers located around an open court cut as a shaft in the rock, accessible via a long staircase from the ground surface. A kiosk or larger mausoleum in the form of a pavilion was built aboveground, at the top of the staircase. The orientation of the tomb is adjusted to the sloping surface of the ridge, but the overall layout is with the subterranean burial chamber always at the southern end and the entrance toward the north.

Simple graves were also discovered among these structures. These were pit graves covered with mounds or prisms, grouped in threes and fours, sometimes apparently associated with some of the larger tombs.

## THE HYPOGEA

Sixteen burial monuments in the form of rock-cut hypogea (T<sub>1GH</sub>, T<sub>6</sub>, T<sub>7</sub>, T<sub>8</sub>, T<sub>10</sub>, T<sub>13</sub>, T<sub>14</sub>, T<sub>16</sub>, T<sub>18</sub>, T<sub>19</sub>, T<sub>20</sub>, T<sub>21</sub>, T<sub>22</sub>, T<sub>23</sub>, T<sub>28</sub>, T<sub>29</sub>) have been uncovered to date by the Polish archaeological team. The key features of these tombs are the same, the sole difference being the size and elaboration of the aboveground pavillions.

The underground part consists of an open court with at least one burial chamber having burial niches (loculi) cut in the walls. This court is square in plan, approximately 5.50 m to the side, cut in bedrock to a depth of around 6.00 m. In the earliest tombs (T<sub>1GH</sub>, T<sub>29</sub>), it was much smaller, just 1.20 m by 1.20 m, and not so deep. The open court had a wall constructed on the ground surface (which basically corresponds to the rock surface), raised about 1.00 m above the ground.

It ran on a perimeter that was slightly larger than the shaft itself and generally protected the inner courtyard from, among others, sand filling it up. The rule is for the burial chamber, if there is only one, to open off the south side of the court/shaft and be aligned with the long axis of the complex. The chambers are generally slightly bigger than the court; their ceilings are flat, corresponding to the layering of the limestone bedrock, supported in a few instances on rock-cut columns or pillars. Frequently, they are arranged with rock-cut benches and altars, separated from the court in some cases by walls that are fitted with windows and more than one doorway. In the most spectacular example (T<sub>10</sub>), the rock cut pillars give the impression of a peristyle. Unlike the burial chambers,

the loculi were executed in no apparent order, depending probably more on burial necessity. They were cut in the walls and were approximately 0.40–0.70 m wide, 0.90–1.10 m high and 1.85–2.10 m long.

Access to the hypogeum was down a rock-cut staircase, either vaulted or flat-roofed. The roofing made of stone ashlars limited the width of the staircase to roughly 1.30 m. The entrance to the staircase was

located inside the aboveground structure. In the simpler complexes, it took on the form of a decorated kiosk, while in the largest ones, the mausolea resembled pavilions, composed of a banquet hall with benches (*klinai*) on the two long sides. The most spectacular structures (T6, T21) comprise also secondary rooms (including a rock-cut cistern and a latrine) and facades articulated with porticos.

## HYPOTHESIS: MANAGING A SURPLUS OF STONE

The aboveground parts of the tombs were built of stone ashlars and there is every reason to believe that they came from the cutting of the underground chambers. Did this generate a surplus of stone ashlars, especially in the case of the large hypogea, a surplus that one would expect to be removed and used as building material elsewhere in the city? The idea can surely be tested in practice, by reconstructing theoretically the masonry parts of a tomb and calculating material volumes for the purpose of comparison.

However, a theoretical reconstruction must be based on substantive data. In order to test the idea, two hypogeum tombs were chosen for a detailed reconstruction, both well documented and studied, thus

ensuring the feasibility and credibility of the theoretical reconstruction. The tombs were selected on the principle of contrast. Tomb T6 has the largest aboveground part with simultaneously one of the simplest subterranean parts, while T13 consists of an elaborate underground part and a simple kiosk on the surface.

The quickest way to check this hypothesis is to calculate the volume of the underground part and compare it to that of the stone blocks used in the superstructure [Fig. 3]. However, this approach can lead to major mistakes due to the nature of the quarrying and building processes. The author will calculate the volume and show one possible way of how to avoid the said mistakes.

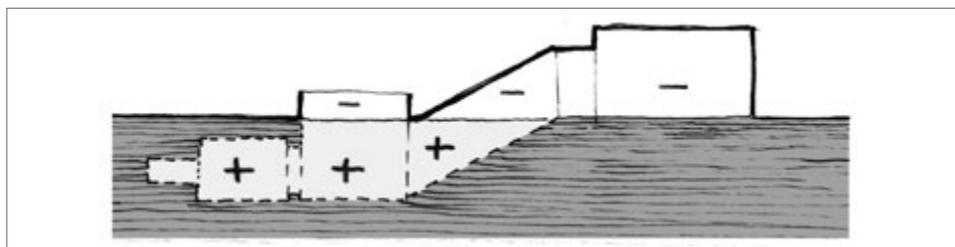


Fig. 3. Schematic illustration of the sourced material equation (Processing S. Popławski)

## QUARRYING TECHNIQUES AND THE CONSTRUCTION PROCESS

Quarrying techniques are the single most important factor influencing the amount of stone material that would have been extracted from any given tomb. But in any discussion of stone extraction and dressing techniques the stone itself is the most important element. Limestone was one of the most popular building stones in ancient Egypt (Arnold 1991: 27–36) and regular quarries can be found all along the Mediterranean and in the Nile Valley between Cairo and Esna (Harrell and Storemyr 2013: 19–20). In the case of the local limestone at Marina, it has been described in geological terms as an oolitic limestone: white, fine-grained, horizontally layered, presenting mediocre technical parameters (Skoczylas 2002: 1179). The layered structure results in a greatly varied hardness and resistance to weathering of particular laminae. The average density of the stone is estimated at 2.2 g/cm<sup>3</sup>, which means that one cubic meter weighs 2200 kg.

The chain of operations in the construction of the Marina el-Alamein tomb should be considered first. One could certainly expect planning and surveying to be the prerequisite steps (Arnold 1991: 7–16; Müller-Wiener 1988: 17–42) and the consistency of layout and orientation of the excavated tombs in the cemetery indicate that this was indeed so. There is no suggestion of a pre-existing quarry operating in this area and the hypogea seem to have been planned and executed individually rather than taking advantage of an independent quarry operation.

The process of cutting the underground parts of these tombs is illustrated by an unfinished tomb excavated at Marina el-Alamein (and more examples of rock-cutting practices can be observed inside the finished tombs). A tomb from Plinthine, a site halfway to Alexandria, also contributes crucial information for understanding the process as a whole.

Structure S26 of the cemetery at Marina el-Alamein, located thanks to an analysis of geophysical readings, turned out to be an unfinished tomb of the hypogea type (Daszewski 2001: 50–51; Herbich, van der Osten-Woldenburg, and Zych 2013: 227). Excavations verified the structure as an open court, which had started to be cut and was abandoned midway [Fig. 4 left]. The north wall of the shaft was 6.15 m long and the cutting had reached a depth from 2.00 m to 2.20 m, leaving an uneven bottom of the triangular shaft with four rough steps in the northeastern corner. The steps were 0.42 m, 0.35 m, 0.30 m and 0.30 m high, starting from the uppermost one. A wide recess in the middle of the north wall, 3.50 m long and 1.60 m wide, could be identified as the beginning of a dromos. The rock surface was cut in the form of two steps, 0.40 m and 0.80 m deep. A few dressed blocks, roughly 0.79 m to 0.30 m to 0.23 m in size, were found loose on the bottom. The structure was filled with sand and could not be dated for lack of any archaeological evidence.

Scaled images of the structure (the feature was backfilled and is no longer accessible) allowed additional observa-

tions to be made. Narrow cuts between the north wall and the triangular steps are less than 5 cm wide. The steps do not follow the alignment of the walls. The bottom level of the incipient dromos does not correspond to the level of either the steps or the bottom of the shaft.

In turn, the hypogeum tomb from Plinthine is part of a Hellenistic and Roman necropolis located on the coastal limestone ridge rising about 20–30 m a.s.l. The site was a major sea and lake (on the inland Mareotis Lake) port roughly halfway between Alexandria and the city at the site of Marina el-Alamein. The geological situation resembles that in Marina and the historical background of the necropolis is similar as well. The hypogeum tomb T3 is dated to the end of the 4th century BC or the beginning of the 3rd century BC. It was multi-phased, and in

many aspects unfinished. Of particular interest is the part described by the researchers as a probable quarry and located between the dromos and open court [Fig. 4 right]. This part may represent an unfinished burial chamber, which was cut most certainly before the 1st century BC when the necropolis ceased to be used. One observes vertical extraction cuts in the walls. The grooves are around 0.15 m wide, the space between them about 0.60–0.80 m. A few steps, around 0.30 m high, were left on the floor surface.

The presented examples combined with knowledge of ancient quarry techniques (Orlandos 1966–1968: 15–69; Müller-Wiener 1988: 43–48; Adam 1994: 21–62; Harrell and Storemyr 2013) will serve here to reconstruct the tomb-cutting and construction processes step by step.

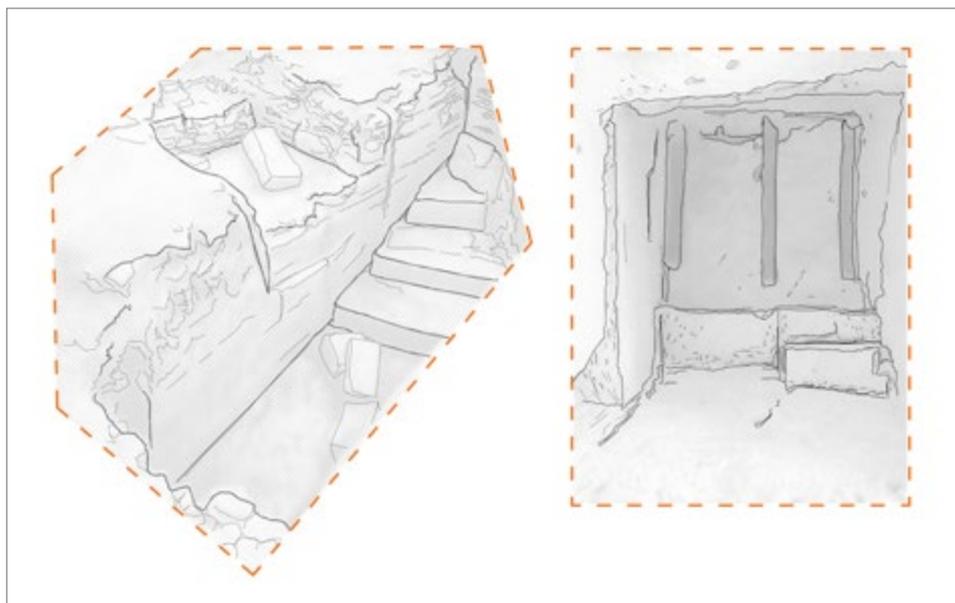


Fig. 4. The quarrying character of unfinished tombs: left, feature S26 in Marina el-Alamein; right, hypogeum T-3 in Plinthine (After Daszewski 2001: Fig. 4 and Boussac et al. 2012: Fig. 6 | drawing S. Popławski)

The first step was to cut an open court and dromos. The work would have proceeded like an open-cut quarry. Workers would start with vertical cuts around the block to be extracted, removing a series of blocks, layer by layer, within the perimeter of the planned court shaft. Blocks from deeper levels could have been brought out through the dromos, which was in all likelihood cut simultaneously. However, the steps preserved at the bottom of the shaft in the unfinished structure S26 indicate that at least in the early stages of the process, the stone material would have been removed directly via the steps without using the dromos. The extracted blocks were already of a required size, hence needed no further splitting. Comparing the height of cut layers and the sizes of blocks used in the construction of town buildings, it was determined that each successive cutting platform was slightly more than 0.30 m high. In his calculations the author assumed a standardized block size: 0.32 to 0.32 m to 0.64 m (Czerner 2015: 8), the width of vertical cuts for extraction measuring 3 cm, and thickness of material lost in the dressing process estimated at 2 cm. Based on these values, the quantity of sourced material was estimated at about 0.65 of the extracted stone volume.

Once the inner court and dromos had been prepared, the next step was to cut the primary burial chamber. A similar procedure was followed in covered quarries. A horizontal slot marking the top of the planned chamber was first removed. When the empty space under the ceiling became high enough for a worker to operate there, the process became similar to that implemented in an open-cut

quarry. Crucial for the reconstruction is the technique for cutting out the space below the ceiling and estimating how much of the stone material was wasted. Based on data from the Plinthine hypogeum, the author has assumed that the uppermost layer of a new chamber would have been roughly 1.00 m high with vertical cuts, 0.12 m wide, around it. Consequently, the quantity of sourced material in this layer under the ceiling could be estimated at about 0.47 of the total extracted stone volume. The lower layers, treated as an open-cut quarry as indicated above, would have had a stone extracting efficiency of 0.65.

The burial niches, which would have been cut next in the burial chamber walls, appear to have been prepared to satisfy specific burial needs. For the most part there seems to have been no planning of the disposition of these loculi. However, in a few tombs (T6, T14, T29) tracing lines were drawn in red to indicate the placement of new loculi (Daszewski 1991: 35–36; 1997: 75–76; 2000: 46; 2003: 53).

The building of the aboveground structure was a separate stage and it is impossible to determine whether it occurred simultaneously, or was later than the quarrying of the subterranean part. The walls were constructed following standard building procedures throughout the cemetery and the town. Standardized stone ashlar formed walls one-block thick with limestone mortar for bonding. Walls were in principle 0.30 m thick with narrower walls measuring 0.20 m. The structures were located no higher than 1.50 m above the bedrock and the foundation walls were probably made out of the stone leftovers.

## DESCRIPTION OF THE TOMB ARCHITECTURE AND THE SOURCED MATERIAL EQUATION

Hypogeum T6 was among the first to be discovered and studied, archaeological excavations proceeding simultaneously with basic restoration treatment (Daszewski 1991: 35–37; 1992: 33–35; 1993: 28; 1997: 73–74; 1999: 43–45; 2003: 56–58; Medeksza 2001: 74; 2002: 97–99; Medeksza et al. 2003: 92; 2007: 107). The size of the aboveground pavilion was impressive, especially when contrasted with the single burial chamber with just one niche, which was not even centrally located [see *Fig. 5*]. The total length of the complex was roughly 44 m and the area more than 350 m<sup>2</sup>. The tomb is located at the highest point of the necropolis, on the limestone ridge, around 16 m asl. The archaeological evidence from the excavation of the tomb indicated that it was constructed in the 1st century AD and used in its primary function until the 3rd century AD (although not entirely regularly, I. Zych, personal communication).

The other hypogeum, T13, had two subterranean chambers. The total length of the complex is 24 m. It is one of the structures in a lower tier of tombs, approximately 12.00 m asl, and was dated like T6: construction in the 1st century AD and regular, extensive, ritually varied use until the 3rd century AD. The ritual side of the burial customs observed in this tomb were of particular interest for the excavators (Daszewski 1995: 35; 1997: 76–79; Zych 2010), but for the purpose of the present discussion, the tomb is an example of a simple aboveground mausoleum with an elaborate subterranean part.

### DESCRIPTION OF THE ARCHITECTURE

The pavilion of tomb T6 was built on a rectangular plan. The building was 10.80 m deep and 17.60 m wide, the seaward facade encompassing the pseudo-Ionian front portico and the eastern extension added to the original mausoleum. The building, which was perfectly symmetrical in layout, consisted of a central hall with two banquet couches, flanked by a room on either side, entered from the northern portico and exiting centrally by way of the dromos in the southern side, leading down into the subterranean chamber. The eastern extension of the mausoleum was added separately, as indicated by the joining observed also on the foundation walls forming a platform under the whole monument.

A crucial element for the reconstruction of the original appearance of the building is the height of the columns in the portico. The recorded architectural remains were grounds for completing the restoration of the columns to a height of 3.25 m (Medeksza et al. 2007: 107). A wooden roof was suggested over both the central hall and the portico in view of the large spans involved, 3.20 m in the portico and 5.50 m in the banquet hall [*Figs 5, 7 left*]. A similar solution was observed down in the city, in House H10, where impressions of wooden beams were discovered on the top surface of a pseudo-Corinthian capital (Czerner 2009: *Fig. 31*), and in the case of the Palazzo delle Colonne at Ptolemais (Pesce 1950: 25, Pl. VIII.C,F).

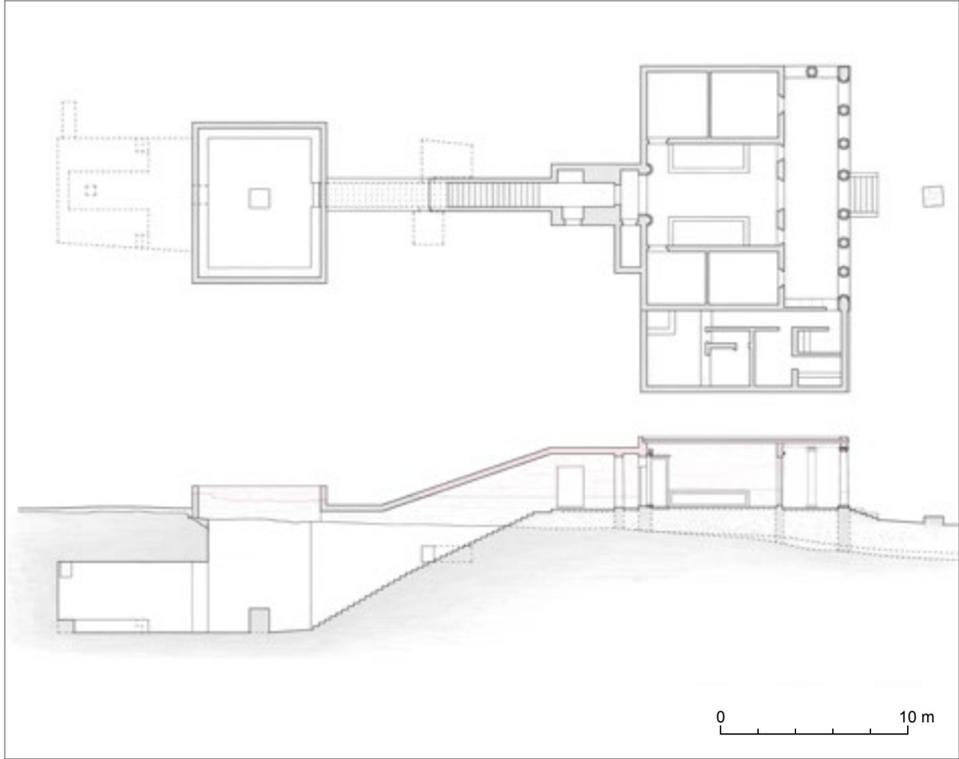


Fig. 5. Tomb T6: architectural reconstruction (After Daszewski 1998: Fig. 8 | drawing S. Popławski)

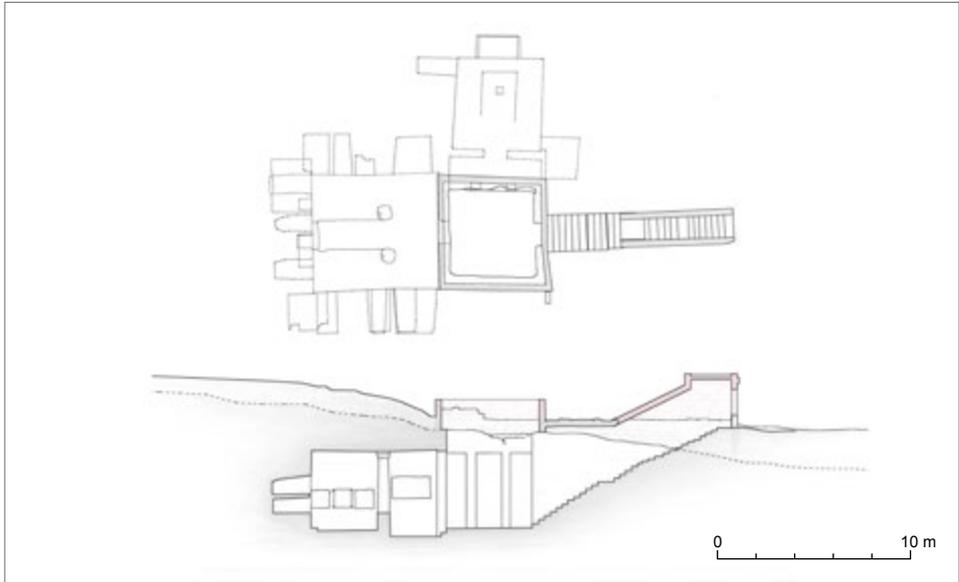


Fig. 6. Tomb T13: architectural reconstruction (After Daszewski 1997: Fig. 3 | drawing S. Popławski)

A monumental flat-roofed staircase led from a small vestibule on the southern side of the mausoleum down into the subterranean part. The staircase was perfectly preserved and undisturbed since the most recent burials dated to the first half of the 2nd century AD at the latest. It was aligned N–S, 17.00 m long and descending 7.00 m to the level of an inner open court, which is 7.00 m wide and 5.50 m long [see *Fig. 1*]. A low wall ran around the shaft mouth on the rock surface. A rock-cut altar (1.30 m high, 1.05 m long, 1.00 m wide) was left standing in the middle of the court and a cistern-well was cut several meters down in the northeastern corner.

A doorway in the south side of the court, located on the axis of symmetry of the tomb, led into a burial chamber. This was 6.00 m wide and 7.25 m long, the height of about 3.80 m matching the height of the narrow entrance, which is just 1.00 m wide. Rock-cut benches line the long sides of the chamber and the back wall, and a rock-cut altar, a simple block shape, stands in the middle. Interestingly, only one loculus was

executed in the southwestern corner, in the topmost tier on the west wall. It has not been explained satisfactorily why the facilities provided by the tomb were not used as intended. Instead, rather irregularly, burials of mummified bodies furnished with so-called painted Fayum portraits, were made in two small chambers cut in the rock and perfectly concealed on either side of the staircase at about the middle of its length. Several broken mummies were stashed in a cache added onto the eastern side of the vestibule at the top of the stairs and a few burials were made also on the floor inside rooms of the eastern extension. These latest burials belong to a period dated to the 2nd–3rd century AD.

The aboveground part of the T13 tomb took on some form of a kiosk [Fig. 7 right]. It has largely been destroyed, but can be reconstructed based on a parallel provided by a partly reconstructed entrance kiosk in the early tomb T1GH. The kiosk is square in plan, slightly wider than the staircase and decorated with corner pilasters, doorframe, and a cornice above a lin-

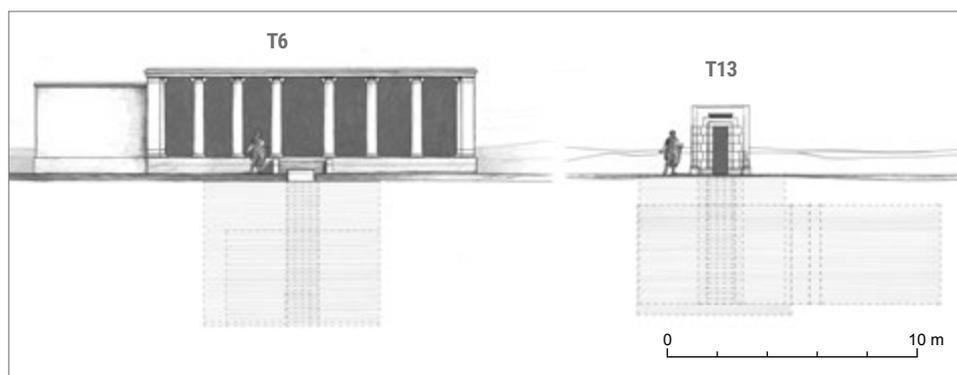


Fig. 7. Comparison of the aboveground and subterranean parts of the tomb (After Medeksza 2005: Fig. 6 | drawing S. Popławski)

tel, restored to a height of about 2.50 m (Medeksza 2005: 114–116). A flat-roofed staircase led down to an inner open court and two burial chambers located west and south of the shaft [Fig. 6]. The staircase, which was 10.00 m long and 1.15 m wide, was covered with monolithic stone slabs almost 2.00 m long. The court, almost perfectly square in

plan measuring 4.40 m to the side, had a low protection wall surrounding the perimeter of the shaft opening on the rock surface. This protective wall was 5.80 m wide and 5.50 m long.

The burial part of the tomb consisted of a large chamber lined up on the N–S axis of symmetry and another chamber off the west wall. The large

Table 1. Volume of sourced stone building material removed from the structure: subterranean parts of the tombs taken into consideration cover dromos, open court, burial chambers and niches in the chambers

Part	T6 – Calculation (m <sup>3</sup> )	T6 - Total	T13 – Calculation (m <sup>3</sup> )	T13 - Total
Dromos	$1.30 \times (5.80 \times 10.35) / 2$	39.02 m <sup>3</sup>	$1.20 \times ((2.40 \times 3.40) / 2 + (2.20 \times 4.20) + (2.30 \times 4.40) / 2) =$	22.06 m <sup>3</sup>
Open court	$6.00 \times 5.50 \times 7.00 - 1.30 \times 1.05 \times 1.00$	229.64 m <sup>3</sup>	$4.40 \times 4.40 \times 5.15$	99.70 m <sup>3</sup>
Burial chamber 1	upper section $1.00 \times 6.00 \times 7.25$	43.50 m <sup>3</sup>	upper section $6.00 \times 6.60 \times 1.00 + 1.20 \times 0.60 \times 1.00 - 2 \times 0.70 \times 0.70 \times 1.00$	39.34 m <sup>3</sup>
	lower section (with benches) $2.80 \times 6.00 \times 7.25 + 3.80 \times 0.80 \times 1.00 - 0.70 \times (4.85 \times 1.85 + 4.85 \times 1.95 + 2.00 \times 0.60)$	111.10 m <sup>3</sup>	lower section $6.00 \times 6.60 \times 3.00 + 1.20 \times 0.30 \times 3.00 - 2 \times 0.70 \times 0.70 \times 3.00 - 2 \times 4.20 \times 1.45 \times 0.45$	111.46 m <sup>3</sup>
Burial chamber 2			upper section $4.40 \times 4.80 \times 1.00 + 1.20 \times 0.40 \times 1.00$	21.60 m <sup>3</sup>
			lower section $4.40 \times 4.80 \times 2.90 + 1.20 \times 0.40 \times 2.90 - 2 \times 1.40 \times 3.20 \times 0.45 - 0.70 \times 1.80 \times 0.45$	58.04 m <sup>3</sup>
Portico			upper section $4.70 \times 1.30 \times 1.00 + 3 \times 1.30 \times 0.36 \times 1.00$	7.52 m <sup>3</sup>
			lower section $4.70 \times 1.30 \times 2.90 + 3 \times 1.30 \times 0.35 \times 2.90$	21.68 m <sup>3</sup>
Burial niches (loculi)	$0.80 \times 0.70 \times 1.95$	1.09 m <sup>3</sup>	$18 \times \sim 1.00 + 4 \times \sim 1.50$	24.00 m <sup>3</sup>
		<b>424.35 m<sup>3</sup></b>		<b>405.40 m<sup>3</sup></b>

chamber was rectangular in plan, 6.00 m wide, 6.60 m long and about 4.00 m high, supported in the center by two pseudo-Doric columns hewn in rock. Altogether 18 burial niches of varied shape were executed in the three sides of the chamber and rock-cut benches were left along the east and west walls. The other chamber had a two-pillar portico (4.70 m wide, 1.30 m deep) and a large door giving entrance to a room that was 4.40 m wide and 4.80 m long, and 3.90 m high. This chamber was also provided with rock-cut benches: wide ones on the northern and southern sides and a narrower one on the western side. Two large loculi, one above

the other, were cut in the main wall opposite the entrance, one high up on the south wall in the corner and the last in a more concealed position just inside the entrance on the north.

### Sourced material estimation

The subterranean part of tomb T6 includes a staircase (39.02 m<sup>3</sup>), an open court (229.64 m<sup>3</sup>), a burial chamber (154.60 m<sup>3</sup>) and a loculus (1.09 m<sup>3</sup>) [Table 1; Fig. 8]. The total volume of material removed when the funerary complex was first arranged (without cutting more loculi) is 424.35 m<sup>3</sup>. Taking into consideration an estimated efficiency of the process, the volume of extracted stone

Table 2. Volume of stone building material used in construction: aboveground parts of the tombs taken into consideration include mausoleum/kiosk, dromos and perimeter wall

Part	T6 - Calculation (m <sup>3</sup> )	T6 -Total	T13 - Calculation (m <sup>3</sup> )	T13 -Total
Pavilion / Kiosk	pavilion - phase I podium = 56.93 m <sup>3</sup> floor pavement = 5.61 m <sup>3</sup> outer walls = 51.97 m <sup>3</sup> colonnade = 13.31 m <sup>3</sup> inner walls = 16.13 m <sup>3</sup>	143.95 m <sup>3</sup>	kiosk $2 \times (2.70 + 1.70) \times (2.50 + 1.50) \times 0.32 + 2.70 \times 2.30 \times 0.32$	13.25 m <sup>3</sup>
	pavilion - phase II podium = 9.22 m <sup>3</sup> outer walls = 18.44 m <sup>3</sup> inner walls = 9.98 m <sup>3</sup>			
Dromos	dromos roof $17.50 \times 1.80 \times 0.32 + 1.50 \times 4.50 \times 0.32 + 2.50 \times 1.40 \times 0.32$	13.36 m <sup>3</sup>	dromos roof $(3.50 + 4.10) \times 0.32 \times 1.90$	4.62 m <sup>3</sup>
	dromos walls $0.70 \times 12.30 \times 0.32 + (9.00 \times 3.00) / 2 \times 0.32 + 2 \times (4.50 \times 3.00) \times 0.32 + 3.70 \times 3.00 \times 0.32$	19.27 m <sup>3</sup>	dromos walls $2 \times ((7.20 \times 0.64) + (3.90 \times 1.90) / 2) \times 0.32$	5.32 m <sup>3</sup>
Perimeter wall	$2.00 \times (2 \times (7.20 + 8.00)) \times 0.32$	19.46 m <sup>3</sup>	$2 \times (5.80 + 5.20) \times 2.00 \times 0.32$	14.08 m <sup>3</sup>
		<b>233.68 m<sup>3</sup></b>		<b>37.27 m<sup>3</sup></b>

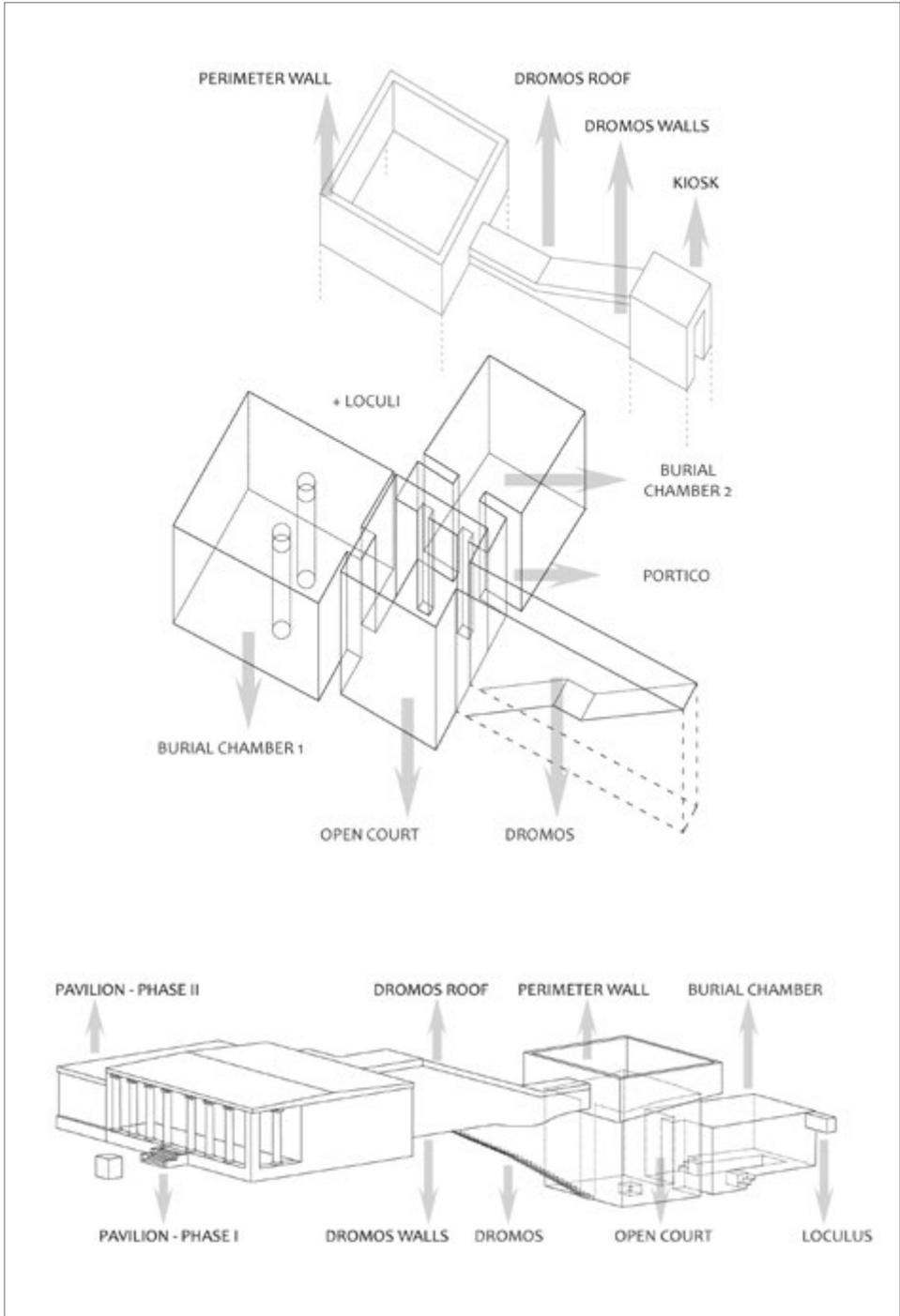


Fig. 8 (and opposite page). Parts of the tombs for which the volume of building material was calculated: above, aboveground part (T6); opposite page, underground part (T13) (Drawing S. Popławski)

blocks is  $267.80 \text{ m}^3$  ( $0.65 \times 379.76 \text{ m}^3 + 0.47 \times 44.59 \text{ m}^3$ ). However, the amount of stone used for the construction of the aboveground parts in Phase I amounts to  $196.04 \text{ m}^3$  [Table 2; Fig. 8]. The extensions in Phase II required another  $37.64 \text{ m}^3$  of stone ashlar. Consequently, an estimated  $71.76 \text{ m}^3$  of stone ashlar would have remained after the mausoleum was built and even after the extension was completed, there would have still been some  $34.12 \text{ m}^3$  left over.

Looking analogously at tomb T13, the constituent parts of the underground include a staircase ( $22.06 \text{ m}^3$ ), an open

court ( $99.70 \text{ m}^3$ ), two burial chambers ( $150.80 \text{ m}^3$  and  $79.64 \text{ m}^3$ ) along with a front portico ( $29.20 \text{ m}^3$ ) and 22 loculi (approximately  $24.00 \text{ m}^3$ ) [see Table 1; Fig. 8]. The total volume of removed stone material is  $405.40 \text{ m}^3$ . The estimated efficiency of the process indicates that the volume of dressed blocks would have been  $246.87 \text{ m}^3$  ( $0.65 \times 312.94 \text{ m}^3 + 0.47 \times 92.46 \text{ m}^3$ ). The construction of the aboveground part required  $37.27 \text{ m}^3$  [see Table 2; Fig. 8]. Consequently, in this case, the cutting of the sepulchre produced a surplus of stone ashlar calculated at  $209.60 \text{ m}^3$ .

## CONCLUSION

A look at the volume of extracted stone and that used in construction of the aboveground parts of two tombs from the early Roman necropolis at Marina el-Alamein demonstrated that a surplus of stone could be generated even when constructing a very elaborate aboveground monument. The estimates are most likely biased because it is impossible to put a number on how much of the stone was lost owing to the poor quality of the bedrock, which could have been cracked or porous in some sections. It is common not to utilize all of the material during a building process.

For the sake of visualising the volume of stone involved,  $1.00 \text{ m}^3$  of the stone ashlar is enough to build a wall  $0.32 \text{ m}$  wide,  $3.00 \text{ m}$  high and  $1.00 \text{ m}$  long. In other words, the estimated volume of stone generated from the cutting of tomb T13 ( $-209.60 \text{ m}^3$ ) was sufficient to build a wall with these technical param-

eters around a square with sides  $50 \text{ m}$  long. Therefore, the quantity of stone material sourced from the underground structures known from the site of Marina el-Alamein—about 20 hypogea and at least two huge underground city cisterns, the eastern one  $20 \text{ m} \times 19 \text{ m}$  in plan and the western one  $50 \text{ m} \times 40 \text{ m}$  (Daszewski 2011: 435)—was substantial and should be taken into consideration in any kind of reconstructions of building investment in the town.

A study of the house building process and the volume of needed stone, which the author is preparing separately based on two houses recently studied in detail (Czerner 2011; Bąkowska-Czerner and Czerner 2019), should demonstrate whether a supplementary quarry would have been necessary at Marina el-Alamein or whether the ashlar sourced from the underground tomb structures were enough to construct the town buildings known so far from the urban site.

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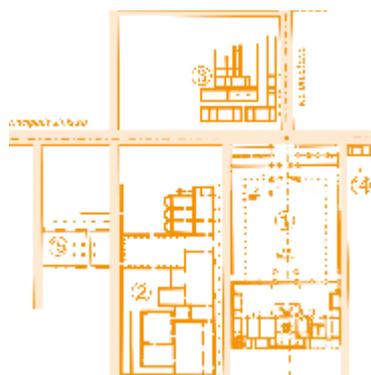
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# The defenses of the Roman legionary fortress at Novae (Lower Moesia) and coin finds from the “Per lineam munitio” project: numismatic and archaeological interpretation



**Abstract:** This paper presents the results of archaeological work carried out between 2005–2016, within the framework of a post-excavation project, “*Per lineam munitio*”, on the fortification system of the Roman legionary fortress and the late Roman and early Byzantine town of Novae. The research concentrated generally on completing and recording old trenches, as well as recording remains of the original building substance, stratigraphy and other archaeological remains using modern technologies and precise geodetic equipment. The archaeological data and stratigraphical observations were compared with the numismatic findings in an effort to improve the final interpretation and the reconstruction of the main construction phases.

**Keywords:** Roman fortifications, legionary fortress, numismatics, coins, Novae, Lower Moesia

Systematic and methodical archaeological research conducted at the site of a Roman legionary fortress in Novae began with an agreement on cooperation between the Bulgarian Academy of Science and the University of Warsaw, which led to the establishing of a Bulgarian–Polish Archaeological Expedition in 1960. The first excavation campaign took place that year (Majewski et al. 1962). The

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This work is dedicated to the late Professor Tadeusz Sarnowski, long-term director of the excavations in Novae—a brilliant researcher, patient teacher and mentor of several generations of archaeologists—who was also the one to suggest the topic for this paper.

fieldwork and research initiated then has continued for 60 years, leading to many important discoveries, that have turned the remains at the site of Novae into one of the better studied legionary camps in the Lower Danube region.

Structures and installations linked to the fortification system at Novae were at the core of the investigations from the start. Over the years, Bulgarian and Polish archaeologists have located and unearthed many components of the stone fortifications built by the First Italica Legion in the Trajanic period, including towers, sections of the defensive wall and remnants of four gates (Sarnowski 2016: 175 and Note 1; Zakrzewski 2017: 7–10) [Fig. 1]. Studies have progressed significantly, but due to obvious differences between past and present methodology, documentation systems and measuring equipment, many questions have been left unanswered. Most of them concerned the elusive remains of the timber-and-earth fortifications built by the *Legio VIII Augusta*, because the stone fortifications were practically superimposed on the older defense ditches, earthen ramparts and wooden towers. Remnants of the earliest fortification system were recorded and documented for the first time by Tadeusz Sarnowski in 1981 on the eastern side of the fortress, in the vicinity of Tower 6 [see Fig. 1]. Similar discoveries were successively made on the western side of the camp [see Fig. 1, Towers 22 and 23], by Kazimierz Lewartowski, Juliusz Ziomecki and Sarnowski (Sarnowski 1981; 1983a; 1983b; 1984; 1990; Lewartowski 1985). Further evidence of the timber-and-earth fortifications was revealed by P. Donevski on the eastern

side of the camp in the 1980s and the 1990s. The results of these excavations were never published and the set of available data is fragmentary.

This unsatisfactory state of research on the fortifications of the legionary fortress at Novae and the need for an improved understanding of their phasing, dating and functioning stood behind the “*Per lineam munitioum*” project. Its main goal was to verify the results of earlier research by means of cleaning old trenches in order to prepare state-of-the-art archaeological documentation of the remains and extending them to trace ancient architecture and stratigraphic sequences undisturbed by the previous excavations. Interdisciplinary investigations benefitted from the application of modern methodology and implementation of new technologies and documentation techniques, aimed at enhancing the process of data acquisition and interpretation.

Archaeological excavations conducted between 2005 and 2016 were focused on two sides of the legionary fortress at Novae. On the northern side, the remains of Tower 27 and its immediate surroundings were investigated (1 in Fig. 1), as well as the eastern part of the North Gate (2) and the northeastern corner (3). In the east, the research covered the area of the East Gate (5) and Towers 2 (4), 4 (6) and 5 (7). In the final seasons, excavations were also conducted in the vicinity of Tower 12 (8). Previous interpretations were reevaluated in the course of the work and crucial new information was collected on the construction and development of the fortification system at Novae (Sarnowski, Kovalevskaja, and Kaniszewski 2005; Sar-

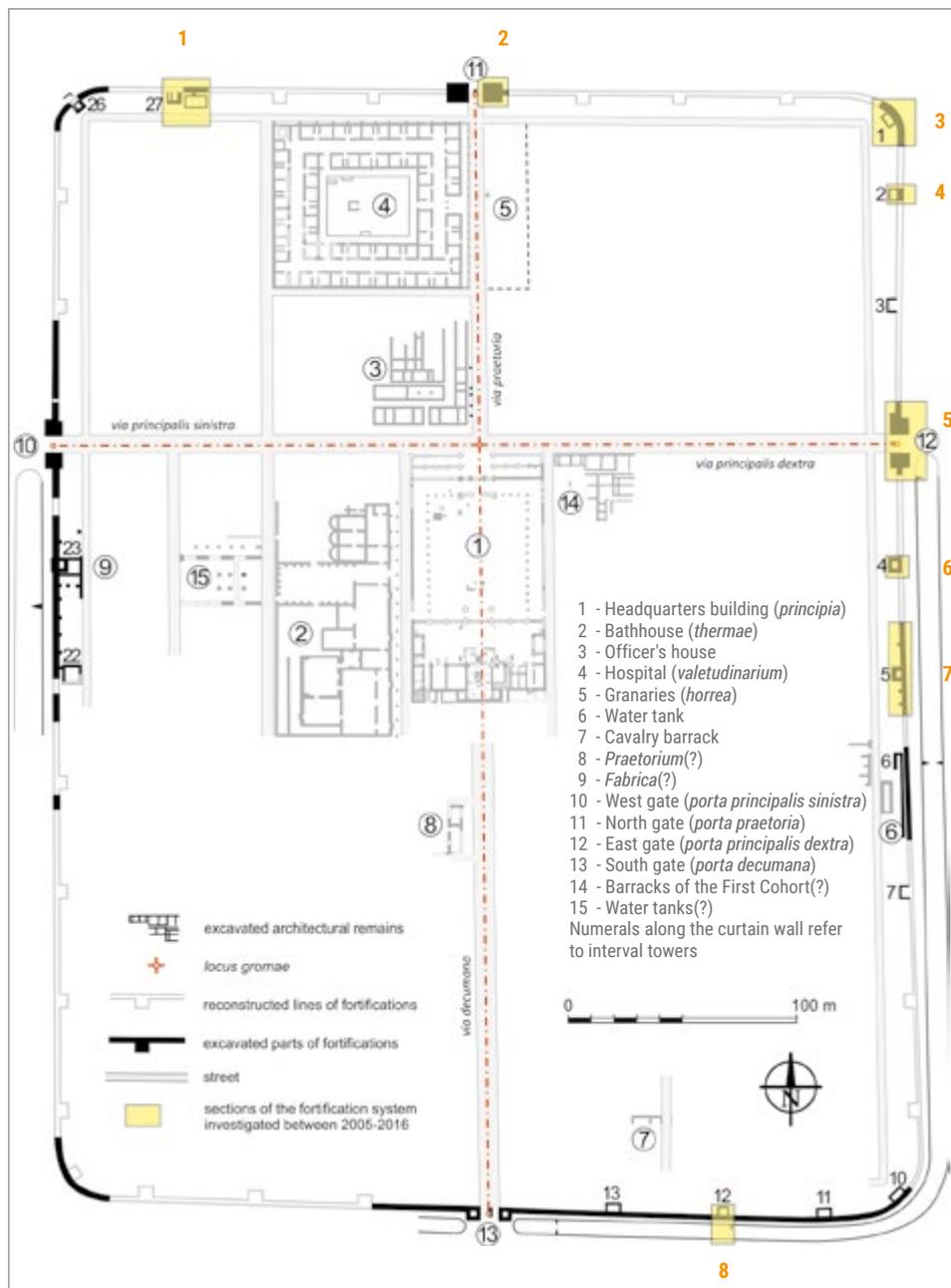


Fig. 1. Novae. Plan of the legionary fortress in the 2nd and 3rd centuries AD; highlighted structures investigated in the course of the “*Per lineam munitionum*” project, discussed in this article: 1 – Tower 27 and adjacent area; 2 – North Gate (*porta praetoria*); 3 – Northeastern corner tower; 4 – Tower 2; 5 – East Gate (*porta principalis dextra*); 6 – Tower 4; 7 – Tower 5; 8 – Tower 12 (University of Warsaw Faculty of Archaeology, Archaeological Expedition to Novae | T. Sarnowski, J. Kaniszewski, P. Zakrzewski; incorporating drawing by M. Lemke, P. Dyczek and A.B. Biernacki)

nowski, Kovalevskaja, and Tomas 2010; Sarnowski et al. 2014; 2016; Sarnowski 2016; Zakrzewski 2017).

Several different specialists including numismatists participated in the research in order to examine a comprehensive set of material on the chronology of the fortification system on the one hand, and on the other, to ensure a proper understanding of individual finds. The numismatic

material, which is presented in this paper, was particularly significant for the purpose of a reexamination of standing presuppositions concerning the building sequence of elements of the defense system and adjoining structures. However, the architectural and stratigraphic analyses were not always feasible or informative, either because of disturbed stratigraphy or a scarcity of finds.

## NUMISMATIC REMARKS

Numismatic research based on finds from well-researched sites characterized by a high level of monetization, such as the legionary fortress at Novae (Kunisz 1992a; 1992b: 39–40, 134–135, 144; Ciolek 2011; Dimitrov 2011; 2013), entails the necessity to discern the contexts where a sufficiently numerous sequence of coins was deposited in a well-defined, closed stratigraphic context. It should be noted that the chronological structure of all 128 finds from particular sections of the fortifications (see Catalog), reflects only the history of monetary circulation at Novae and does not permit—with certain exceptions discussed in greater detail in the present paper—far-reaching conclusions concerning the dating of construction phases in particular sections of the fortifications [Fig. 2 and Table 1].

The bulk of the discussed coins, except for one Roman denarius (Cat. 9), represent bronze denominations struck mostly in central Roman mints from the beginning of the 1st century AD to the first half of the 5th century AD (123 specimens). The four Byzantine coins are from the 6th century AD. None of the bronze coins from the first half of the 3rd century at-

tested at Novae (eight pieces) was struck in a Roman mint; instead, all were minted in provincial towns of Lower Moesia and Thrace. The coins issued under the Julio-Claudian dynasty were characterised by a significant degree of surface wear caused by prolonged circulation. Their increased influx and circulation, resulting in finds from layers associated with the earlier construction phases at Novae, was most likely due to the arrival and stationing of the *legio VIII Augusta* in the 1st century AD, and subsequently of the *legio I Italica*. Among the sparse coin finds from the 2nd century AD, one should note a bronze coin of Marcus Aurelius minted in Caesarea in Cappadocia in AD 161/162 (Cat. 15), which possibly came to Novae together with Moesian troops returning from the Parthian campaign of Lucius Verus. A significant increase in the number of finds dated to the second half of the 3rd century AD, and to the 5th century AD in particular (approximately two thirds of the total coin assemblage) reflects Empire-wide effects of a sudden depreciation of the Roman currency in the mid-3rd century AD and the resulting intensification of production of billon coins of small denominations.

Table 1. Chronological structure (by emperors' reigns) of 128 coins found along the defenses at Novae in a topographical division: (1) Tower 27 (\* indicates coins from a foundation deposit), (2) North Gate, (3) Northeastern corner tower, (4) Tower 2, (5) East Gate, (6) Tower 4, (7) Tower 5, (8) Tower 12

Date	Issuer	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Total
<b>ROMAN COINAGE</b>										
1st–2nd centuries AD	Tiberius	2	-	-	-	-	-	-	1	3
	Gaius	3	-	-	-	-	-	-	-	3
	Claudius	2	-	-	-	-	-	-	-	2
	Vespasian	4	1	-	-	-	-	-	-	5
	Trajan	-	1	-	-	-	-	-	-	1
	Marcus Aurelius	1	-	-	-	-	-	-	-	1
	Uncertain issuers	3	1	-	-	-	-	-	-	4
First half of 3rd century AD	Septimius Severus	-	-	1	-	-	-	-	-	1
	Caracalla	2	-	1	-	-	-	-	-	3
	Macrinus	-	-	-	1	-	-	-	-	1
	Severus Alexander	1	-	-	-	-	-	-	-	1
	Gordian III	-	-	-	-	1	-	-	-	1
	Uncertain issuers	1	-	-	-	-	-	-	-	1
Second half of 3rd century AD	Valerian I	1	-	-	-	-	-	-	-	1
	Gallienus	2	-	-	-	-	-	-	-	2
	Claudius II	2	-	-	1	1	-	-	-	4
	Aurelian	3*	-	-	1	-	-	-	-	4
	Tacitus	1	-	-	1	-	-	-	-	2
	Florianus	-	-	-	-	1	-	-	-	1
	Probus	1+2*	1	-	-	-	-	-	1	5
	Carus	-	-	-	1	-	-	-	-	1
	Diocletian	1	1	-	-	2	-	-	-	4
	Maximian	1	-	-	-	-	-	-	-	1
Uncertain issuers	2	-	-	-	-	-	-	-	2	
4th–5th centuries AD	Galerius	-	-	-	-	1	-	-	-	1
	Licinius I	-	-	-	1	1	-	-	-	2
	Constantine I	3	-	-	-	-	-	1	-	4
	Urbs Roma	-	-	-	-	1	-	-	-	1
	Crispus	-	1	-	-	-	-	-	-	1
	Constantine I (posthumous)	1	-	-	2	-	-	-	-	3
	Constantinus II	-	-	-	-	1	-	-	-	1
	Constans or Constantius II	1	-	-	-	-	-	-	-	1
	Constans	2	-	-	-	-	-	-	-	2
	Constantius II	7	1	1	-	2	-	-	-	11
	Constantius Gallus	2	2	-	-	1	-	-	-	5

Byzantine coins represent the period of “Justinian’s revival” in the history of Novae, when the settlement lost its previous military character.

The inventory of coin finds included in the present study was compiled based on excavation documentation and coin descriptions prepared by Jaworski at the Museum in Švištov (in the case of material

from excavations before 2009) and in the course of particular seasons of fieldwork. The use of metal detectors at the site from a certain moment has significantly increased the number of finds in recent seasons. All of the coins collected within the perimeter of the fortifications should be regarded as stray finds, representing instances of lost property. The only coin

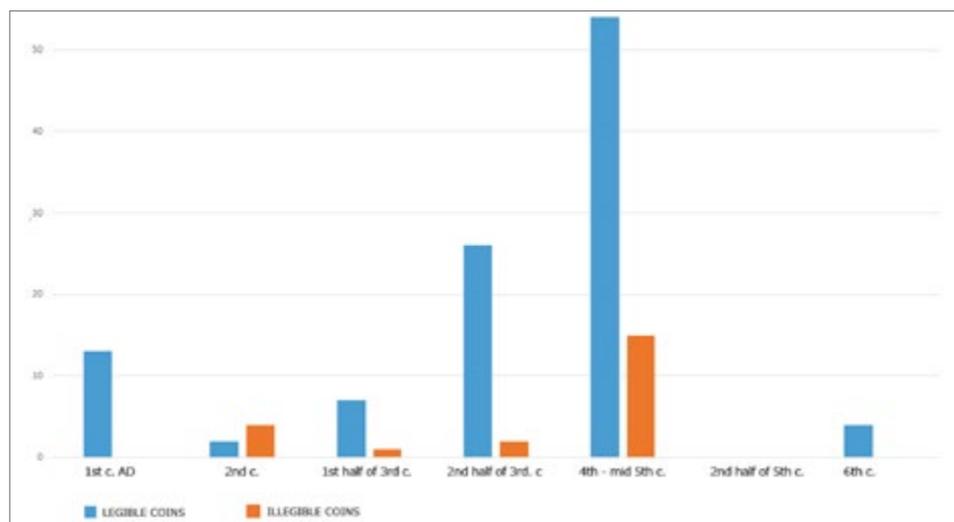


Fig. 2. Chronological structure of coin finds from archaeological investigations along the defenses of the legionary fortress at Novae

Table 1. Continued from the previous page

4th–5th centuries AD (continued)	Julian II	–	1	–	–	2	–	–	–	3
	Valentinian I	2	1	–	–	–	–	–	–	3
	Valens	4	1	–	–	1	–	–	–	6
	Valentinian I or Valens	1	–	–	–	–	–	–	–	1
	Theodosius I	4	1	–	–	2	–	–	–	7
	Arcadius	–	–	–	1	1	–	1	1	4
	Theodosius II	–	–	–	–	1	–	–	–	1
	Uncertain issuers	6	1	–	–	6	–	–	–	13
<b>BYZANTINE COINAGE</b>										
6th century AD	Justin I	–	1	–	–	–	–	–	–	1
	Justinian I	1	1	–	–	–	–	–	–	2
	Maurice Tiberius	–	–	–	1	–	–	–	–	1
<b>Total</b>		69	16	3	10	25	–	2	3	128

assemblage intentionally hoarded, probably about AD 282 or slightly later, was a small foundation deposit of *antoniniani* [see above and *Table 2*] discovered in a structure located in a built-up area, which

directly adjoined the inner side of the north wall of the camp. The *antoniniani* in question were hidden in a small circular container made of lead, the rim of which was partly pushed inside. .

## THE INVESTIGATED STRUCTURES AND THEIR ARCHAEOLOGICAL STRATIFICATION

### 1. TOWER 27

The most extensive and time-consuming excavation was carried out in the western part of the north curtain wall, namely around Tower 27 [see *Fig. 1*]. Fieldwork started in 1960 with the aim of establishing the outline of the fortifications of the legionary fortress (Parnicki-Pudelko 1962; 1990: 42–44). This particular spot was selected for investigation because of the remains of a solid stone structure at the bottom of a robber's pit, which was most likely dug in modern times to procure building material. The excavations revealed remains of a curtain wall, some 2.40 m wide, with traces of two building phases and a stone tower with inner dimensions of 4.48 m by 3.72 m.

Progressing erosion of the escarpment over the Danube has all but destroyed the northern line of the defenses, leaving only a few sections, including the one around the tower (Dyczek 2008: 254–256; Sarnowski, Kovalevskaja, and Tomas 2010: 170–171). Currently, the northern escarpment drops away steeply, almost vertically, in line with the northern side of the legionary camp, but there is evidence indicating that it used to begin much farther north (Sarnowski, Kovalevskaja, and Tomas 2010: 170–172; Zakrzewski 2017: 10). A digital terrain model of the site and its vicinity

has confirmed this topographical observation (Sarnowski et al. 2014: 77 and *Fig. 2*).

Excavations in this area were resumed in 2006 and continued intermittently until 2014 (Sarnowski, Kovalevskaja, and Tomas 2010: 162–170; Sarnowski et al. 2016: 187–188). The architectural remains in the trench were cleaned and documented and the trench was extended, including several test pits. The first and the largest of them, test trench A, measuring 14 m by 5 m, ran from the fortifications towards the center of the camp, sectioning the entire width of the *intervallum* and the *via sagularis*. Test trench B, 10.0 m by 1.70 m, was opened 7 m farther east with the aim of investigating the curtain wall extension and the area directly in front of the line of fortifications. Test trench C was dug in the western part of the area, along the line of the south wall of the tower. Additionally, a small test trench D was opened in the final season of the investigations, aimed at determining the location of a wooden tower [*Fig. 3*].

Structures belonging to the fortification system of the legionary fortress and the late antique town at Novae, as well as remains of other structures and installations located in the vicinity, were thoroughly investigated. Most importantly, three main construction phases along

with a few subphases (IA–B, IIA–C, III) were distinguished, reflected in the history of the site (Sarnowski, Kovalevskaja, and Tomas 2010: 162–172).

### Phase I A

The earliest traces of the fortification system were represented by timber-and-earth defenses dated to the pre-Flavian period, built by the *legio VIII Augusta*. A V-shaped ditch (*fossa*), measuring 4.20 m in width [Figs 3, 4:2], and originally up to 2 m deep, was discovered in test trench B excavated directly outside a late retaining wall. A thin layer of silt attested at the bottom of the ditch [Fig. 4:j?] yielded only a small fragment of a South Gallic terra sigillata vessel (Sarnowski, Kovalevskaja, and Tomas 2010: 164, Note 28) which, coupled with the lack of any indication that the ditch underwent any maintenance, may suggest that it ceased to be used before the change of the garrison at Novae, namely before the arrival of the *legio I Italica*.

An earthen rampart (*vallum*) was located roughly 4 m to the south [Figs 3, 4:3]. The inner slope of the rampart was uncovered in trenches A and C. It was preserved to a height of 2.65 m, and its minimum width was 1.75 m. Later changes in the defense system, especially the construction of the stone wall, prevented the original width of the rampart to be determined; Neither could the presence of a berm be confirmed. A ramp was built parallel to the rampart; a section of it, 1.40 m long, was unearthed in trench A [Figs 3, 4:4]. Both structures were constructed of compact yellow and brown loess with intermittent layers of burning indicating that fire-hardening may have been a means of consolidating

the structure. Two square features (30 x 30 cm) were also discovered [Figs 3, 4:1]. Based on parallels from other parts of the site, the features were interpreted as internal post holes of a wooden tower from the earliest phase (Sarnowski 2016: 179).

These were the only documented traces of the earliest defense installations on the northern side of the legionary fortress.

### Phase I B

The next construction phase of the fortifications in this area, dated to the Flavian period, was related to the arrival of the First Italic legion about AD 72 (Sarnowski et al. 2014: 81–83). It seems that the first building activity comprised large-scale earthworks covering the entire width of the *intervallum*. By adding large amounts of pale yellow and brown loess [Fig. 4:j], the walking level was raised by approximately 2 m, effectively covering the ramp (Sarnowski, Kovalevskaja, and Tomas 2010: 165–166, Notes 30 and 31). At the same time, a retaining wall was built, probably to increase ground stability at the northern end of the *via sagularis* in operation at the time. The retaining wall, preserved only as a ‘ghost wall’ [Fig. 4:10a], was 1.20 m wide and 1.00 m deep. Two poorly preserved foundation walls of legionary barracks belonging to the same phase were found at the southern end of test trench A. They were constructed of mid-sized stones and broken roof tiles bonded in loess mortar (Sarnowski, Kovalevskaja, and Tomas 2010: 166).

A group of four coins of Vespasian and a total of seven coins of his predecessors come from this sector of the fortifications. Although the influx of coins

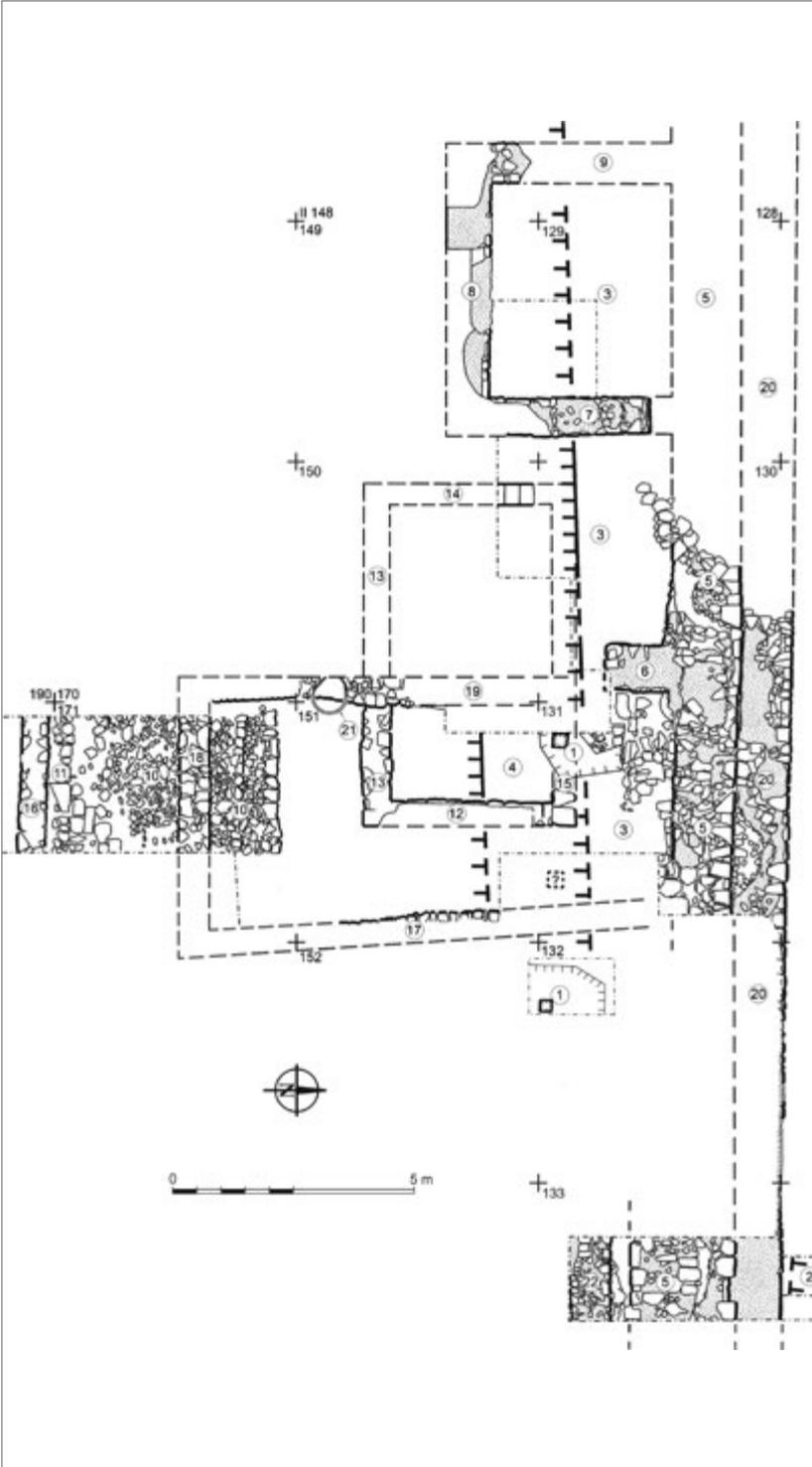


Fig. 3. Area around tower 27 [for the location, see No. 1 in Fig. 1]: 1 – post holes, 2 – Flavian ditch, 3 – rampart, 4 – Trajanic curtain wall, 5 – internal counterfort wall, 6–9 – walls of tower 27, 10 – via sagularis, 11 – sewer, 12–15 – walls of rectangular structure, 16 – north wall of centurial barracks, 17–19 – loess-bonded walls of a later building, 20 – late retaining wall, 21 – pottery kiln (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan A. Tomas, L. Kovalevskaia and P. Zakrzewski)

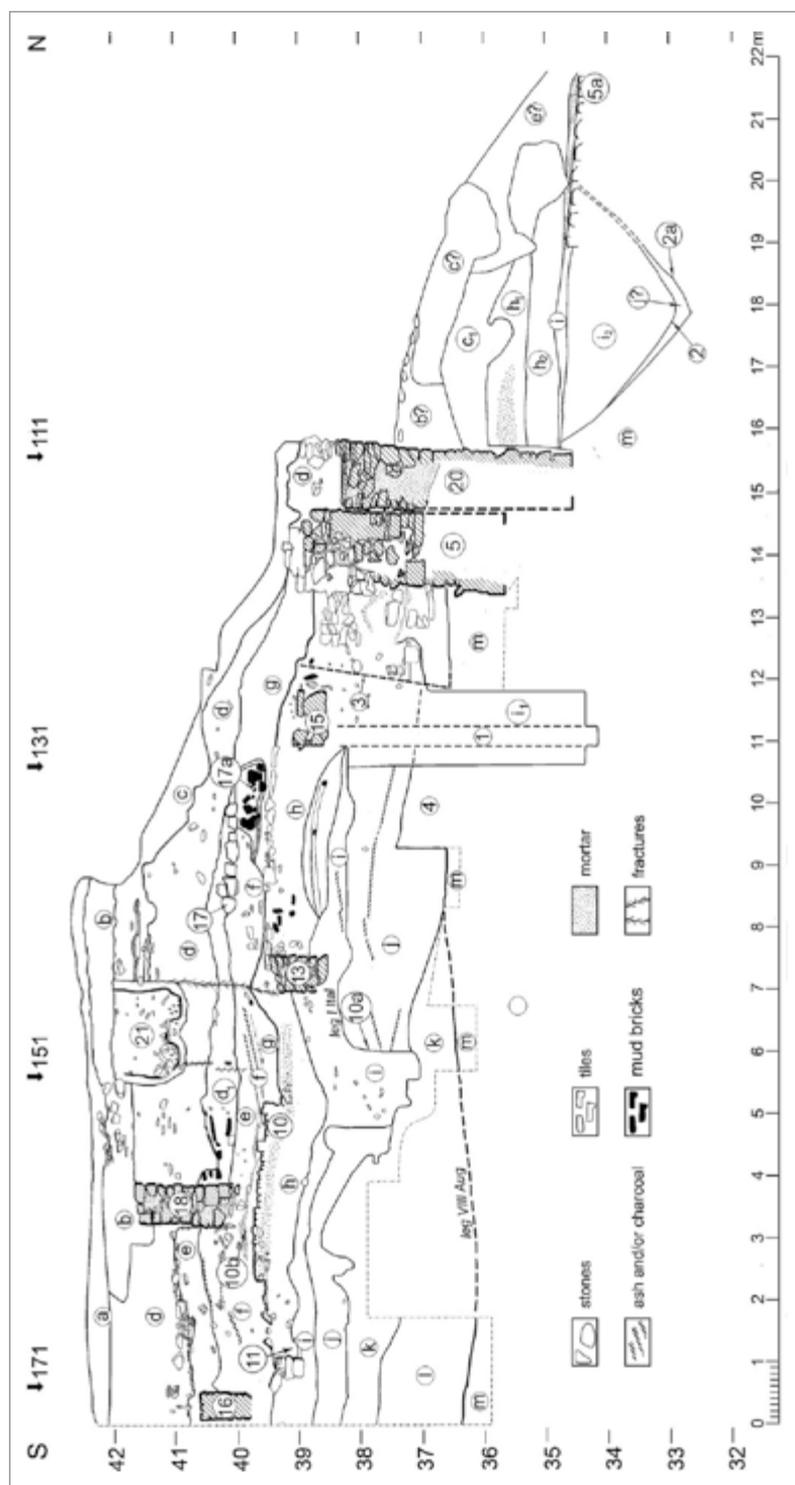


Fig. 4. Tower 27, trench A section: 1 – post holes, 2 – Flavian ditch, 2a – pre-Flavian ditch, 3 – rampart, 4 – ramp, 5 – Trajanic curtain wall, 5a – soil reinforcing stones, 10 – via sagularis, 10a – ghost wall(?), 10b – post-Trajanic via sagularis, 11 – sewer, 13, 15 – walls of rectangular structure, 16 – north wall of centurial barracks, 17–18 – loess-bonded walls of a later building, 17a – oven, 20 – late retaining wall, 21 – pottery kiln (for a description of the layers, see Samowski, Kovalevskaia, and Tomas 2010: 164, Fig. 11) (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae I drawing A. Tomas, P. Zakrzewski)

preceding Nero's reign may be associated with the oldest building phase (Phase IA), it cannot be excluded that their deposition took place in the Flavian period (Phase IB), when the changes within the fortifications were introduced by the First Italic legion.

## Phase II A

More significant changes were introduced in the fortification system around Tower 27 in the beginning of the 2nd century AD, under Trajan and Hadrian. In this period, the timber-and-earth fortifications were replaced with stone structures (IGLNovae 52; Sarnowski 2018). The main element of the new defences was a stone wall [Figs 3, 4:5], 1.30 m wide, built of rubble and mid-sized irregular chunks of sandstone, only partly dressed, bonded with mortar. The foundations, which reached a depth of 1.40 m, were bonded in a sandy-orange mortar, whereas a white mortar, composed of lime and river gravel, was used in the higher parts. A plinth was discovered on the outer side of the wall, raised some 0.80 m and projecting 0.20 m from the wall face (Parnicki-Pudelko 1962: 128, 132, Fig. 119). The wall leaned against a vertical slope cut into the front of an earthen rampart. For additional support of the structure and the stability of levelling layers in the *intervallum*, perpendicular counterforts were added, measuring 1.20 m in length and 0.90 m in width [Fig. 3:6]. Three such counterforts were observed at regular intervals in the excavation of 1960 (Parnicki-Pudelko 1962). This design was used also in other sections of the legionary fortress.

An extension of the defensive wall was revealed in the southern part of test

trench B. It was aligned with the outer face of the defense wall, but it was much wider, measuring 2.20 m. The reason behind this difference was not established within the small confines of the trench. Differences in the width of the curtain wall were noted also on other sides of the camp, and they may have been caused by different factors (Sarnowski 2016: 185). It is plausible that the stone wall and the tower walls [Fig. 3:7–9] were built simultaneously, as indicated by the construction technique and building materials. Despite the fact that the tower was set on foundations reaching a depth of 2.60 m, it was largely destroyed, most likely by erosion of the escarpment over the Danube. The same happened to the section of the curtain wall adjoining it. There appears to have been a slight change of orientation compared to the older defense line (Sarnowski, Kovalevskaja, and Tomas 2010: 164, Note 27).

The above construction efforts were preceded by earthworks in front of the fortifications and in the *intervallum*. The soil from the cutting of the rampart was most likely used to backfill the ditch [Fig. 4:2i], which was apparently not included in the construction plan of the stone fortifications. The backfilling appears to have been motivated by the need to ensure appropriate bearing capacity for the defense wall. No additional structures, like retaining walls, for stabilizing the ground were found, apart from a paving made of irregular stones, laid directly on top of the backfilled ditch, some 5 m to the north of the wall [Fig. 4:5a]. The rest of the earthworks consisted of adding subsequent levelling layers [Fig. 4:h–i] in the *intervallum* (Sarnowski, Kovalevskaja, and Tomas 2010: 167).

Other structures built in this phase include a stone wall uncovered in the southern part of the trench [Figs 3, 4:16], which was most likely a legionary barrack wall. North of the wall, a drainage ditch [Figs 3, 4:11] was unearthed; the ditch removed waste and excess water from the *via sagularis*. The street, 3.60 m wide, was set on a ballast of hard beaten sand mixed with pink mortar and was paved with small stones.

A very different kind of structure was revealed in the northern part of the *intervallum*. It was a poorly preserved rectangular construction measuring 4.70 m by 7.10 m. The four walls [Figs 3:12–15] had very shallow foundations made of irregular stones bonded in lime-loess mortar. In two cases [Fig. 3:12, 14], the upper parts of the walls had been made of sun-dried loess bricks (Sarnowski, Kovalevskaja, and Tomas 2010: Pl. XXIV.4). The exploration of the inside of the structure revealed several thin layers of hard beaten soil covered with roof-tile fragments and large slabs of sandstone. Perhaps the structure functioned as a platform for heavy projectile engines (Sarnowski, Kovalevskaja, and Tomas 2010: 167, Note 53). A similar structure, preliminarily identified as a tower, was discovered on the western side of the fortifications [see Fig. 1]. Although it is difficult to ascertain the function of this structure, it is possible to link it with many similar examples, also unidentified, uncovered within the *intervallum* at other Roman legionary fortresses (Sarnowski, Kovalevskaja, and Tomas 2010: 167, Note 52).

It is symptomatic that the period of Trajan's and Hadrian's reigns, marked by an abundance of evidence of building activity in the western part of the northern wall

at Novae is not reflected in the monetary finds. Not a single coin that could be dated with reasonable certainty was assigned to the first half of the 2nd century. The second half of the 2nd century was also quite sparsely represented (a single coin of Marcus Aurelius struck in distant Caesarea in Cappadocia, Cat. 15), as was also the first half of the 3rd century (three specimens). It is possible that the absence of coins of Trajan and Hadrian, as well as the poor representation of coins of their successors was due to the far-reaching changes dating to Phase II B (*terminus post quem* AD 282, see information on the foundation deposit comprising coins of Aurelian and Probus), or earlier (Severan period?), which necessitated the removal of some deposits of the Nerva–Antonine period.

### Phase II B

In the 3rd century AD, the walking level of the *intervallum* was raised some 0.60 m, thus covering the upper surface of the ramp [Fig. 4:g], while the *via sagularis* was overlaid with a layer of sand and mortar, most likely for renovation purposes [Fig. 4:10b]. Archaeological evidence recorded in the southern part of trench A suggests that some unspecified disaster took place in the second half of the 3rd century AD. In the excavated area inside the centurial barracks, above a level of prolonged habitation, there was a thick layer of crushed roof tiles. It corresponded to numerous traces of burning and charred material discovered over the entire area north of the barrack wall [Fig. 4:f].

The area affected by destruction was later covered with a layer of dirty earth with remnants of building ceramics

[Fig. 4:e]. Directly on top of this layer were three walls outlining a spacious structure [Figs 3, 4:17–19]. They were constructed of mid-sized stones bonded with loess mortar and probably supported a super-structure of dried bricks.

The foundations of the south wall yielded a foundation deposit (Inv. No. 123/09w) comprising five billion *antoniniani* of Aurelian, minted at Mediolanum and Cyzicus (Cat. 36\*–38\*), and of Probus, struck in the Siscia mint (Cat. 45\*, 46\*), placed in a small, circular lead container [Fig. 5]. The issue date of the youngest editions of coins represented in the deposit could not be established, hence the end of Probus’ reign, that is AD 282, was assumed as a *terminus post quem* for the hoard [Table 2]. Two semicircular installations related to production activities were found inside the structure. Their foundations were made of well-fitted stones supporting thin 3–6 cm clay walls (Sarnowski, Kovalovskaja, and Tomas 2010: 168, Note 60). South of the area, where the ground was levelled at almost 41 m a.s.l., there was a thin layer of hard beaten sand mixed with pink mortar. Stones were laid on top of this bedding [Fig. 4:e/d], creating a sort of street paving that was 3 m wide.

A series of stray coin finds (11 specimens) associated with Phase II B can be dated from approximately the mid-3rd century (Valerian I) to the period of the Tetrarchy (perhaps even until the beginning of the 4th century). However, it is difficult to formulate any definite conclusions based on such sparse and accidental finds.



Fig. 5. Foundation deposit in a lead container (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | photo P. Jaworski)

Table 2. Coins from a foundation deposit found in the foundations of a structure dated to the fourth quarter of the 3rd century AD

Cat. No.	Emperor	Date	Legend on reverse	Mint	RIC
36*	Aurelian	270–275	FIDES MILITVM	Mediolanum	V.1, 126
37*	Aurelian	270–275	CONCORD MILIT	Cyzicus	V.1, 342
38*	Aurelian	270–275	RESTITVT ORBIS	Cyzicus	V.1, 348
45*	Probus	276–282	CONCORDIA MILIT	Siscia	V.2, 632
46*	Probus	276–282	ADVENTVS PROBI AVG	Siscia	V.2, 651

### Phase II C

Extensive construction took place in the area in the first half of the 5th century AD and consisted mainly of a retaining wall, 1.10 m wide, built fronting the defense wall [Figs 3, 4:20]. The new wall was constructed of mid-sized stones bonded in grey mortar mixed with crushed ceramics. Traces of the same mortar were attested on the top and in some other sections of a 2nd-century wall, indicating that it had undergone restoration at the same time. A contemporaneous layer documented in the *intervallum* seems to be represented by a deposit of yellow-grey loess, which yielded numerous artifacts (Sarnowski, Kovalevskaja, and Tomas 2010: 169).

Phase II C was represented by a considerable group of Late Roman coins (33 specimens in total) dating from Constantine I to Theodosius I, with predominant monetary finds of Constantine I (three specimens), Constantius II and Gallus (nine specimens), Valentinian I and Valens (seven specimens) and Theodosius I (four specimens). The prevalence of such finds is not surprising because it reflects the general chronological structure of coins unearthed at Novae, characterised by a large representation of Late Roman small change, especially of the second half of the 4th century (beginning with Constantius II).

### Phase III

The final activity in the investigated area was evidenced by a single pottery kiln [Figs 3, 4:21], measuring 1.20 m in width, dated to the 6th century AD. At that moment, Novae was already a full-fledged late antique town. A single find of a *foliis* of Justinianus I (Cat. No. 128) can also be associated with this phase.

## 2. NORTH GATE

Establishing the approximate location of the North Gate (*porta praetoria*) became possible first in the early 1970s, following extensive research conducted in the area of the West Gate (*porta principalis sinistra*) and the South Gate (*porta decumana*) (Zakrzewski 2017: 7–10). The positive identification of these structures permitted the *locus gromae* to be located, defining the central axes of the legionary fortress at Novae. The four main streets were aligned with these axes: *via principalis dextra* and *sinistra*, as well as *via praetoria* and *via decumana* [see Fig. 1].

Excavations between 1970 and 1974 revealed fragments of the gate with a wide passage, a short section of the *via praetoria* and a sewer running underneath it (Ziemiński 1973; 1975; Czerniak 1977; Parnicki-Pudelko 1990: 42–44) [Fig. 6:4–5]. The uncovered structures were very poorly preserved, destroyed extensively by soil erosion, and the work was made difficult by the steep slope of the escarpment and the generally difficult terrain. Investigations were resumed because the earlier results were far from satisfactory and both the architecture and the chronology of the gate were still not properly understood. Over four seasons of fieldwork (2011–2014) the previously unexplored eastern part of the structure was uncovered, clearing the remains of one of two massive platforms, measuring 8.00 m by 8.50 m [Fig. 6:2]. The platforms were separated by a passage over 7 m wide. The research also enabled an architectural analysis and reconstruction of the main components of the gate (Sarnowski and Tomas 2011; Sarnowski et al. 2012; 2013; 2014; 2016; Zakrzewski 2017: 10–13).

For the most part, the eastern platform was founded on a flat surface created by extensive levelling works, cut in a very compact layer of culturally sterile dark orange clay [Fig. 7]. Its southern fragment was situated on a raised terrace. The difference in foundation levels of the two parts reached 1.50 m, perhaps in order to better stabilize the structure and to prevent it from sliding down the slope of the escarpment.

The lower part of the foundations was constructed of irregular sandstone slabs bonded in brown-grey loess mixed with limestone. The upper part of the structure, ranging from approximately 0.50 m to 1.00 m in thickness, was built of sandstone slabs almost twice as large, bonded in abundance applied white-

grey mortar. Dressed stone blocks (for instance, 80 x 100 x 70 cm) were laid on top of this. They either composed the outer face of the platform or the plinth of the tower, which could have taken up the entire space of the platform. A test trench opened next to the eastern side of the platform also revealed two plinths [Fig. 7: sections I–II].

According to the architectural and archaeological analyses, the platform underwent certain structural modifications, but the only unequivocal evidence of such a transformation in late antiquity was attested in the curtain wall located in the eastern part of the platform [Fig. 6:3]. In the course of extensive remodelling of the lower part of the tower structure, a small section of the

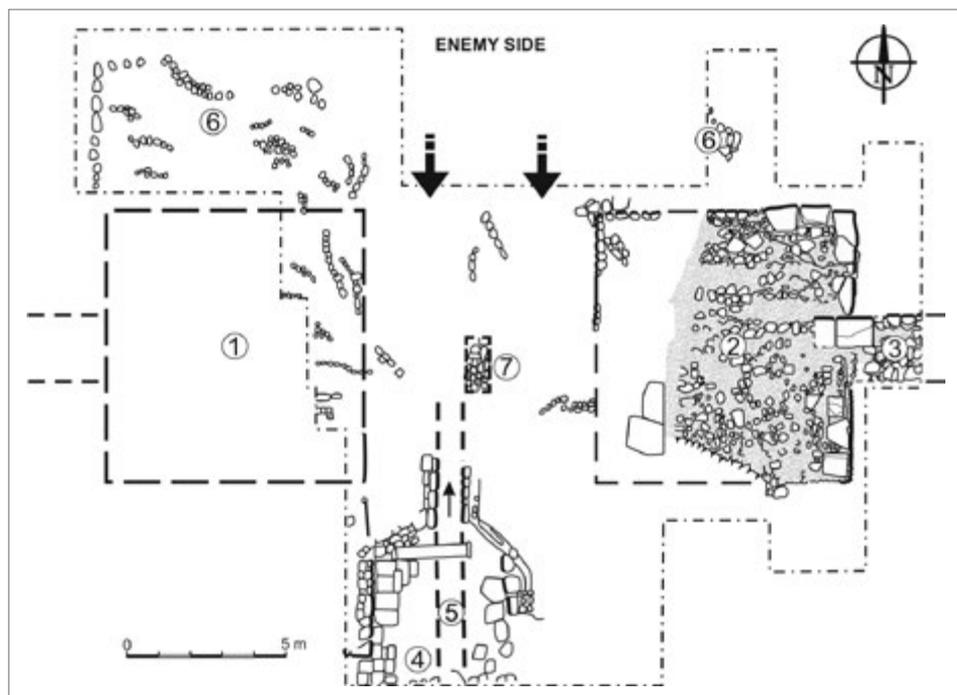


Fig. 6. North Gate [for the location, see No. 2 in Fig. 1] (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan P. Zakrzewski)

defense wall was apparently dismantled and then rebuilt using squared blocks of limestone [Fig. 7: section III]. The original width was at least 2 m judging by the preserved northern face of the curtain wall. It is also likely that at some point in time the surface of the platform was extended northwards by about 2.50 m.

A long test trench opened on the outer side of the platform yielded no evidence of a defense ditch. The ditch may have ran further north, but it is also possible that the lay of the land at that time was a sufficient obstacle for potential enemies. The uncovered architectural remains in the form of a short wall made of small, roughly dressed stones could correspond to similar discoveries made

in the northwestern part of the area investigated in the 1970s [Fig. 6:6]. Perhaps these were the composite elements of some kind of retaining wall that had the purpose of preventing a landslide.

Investigations of the North Gate yielded 16 coin finds, which could be divided into four chronological groups: 1) coins from the second half of the 1st to the first half of the 2nd century (Vespasian–Trajan, three specimens); 2) coins from the second half of the 3rd century (Probus–Diocletian, two specimens); 3) late Roman coins (post 337–Theodosius I, nine specimens), 4) Byzantine coins (Justin I–Justinianus I, two specimens). Although this chronological structure seems to correspond to phas-

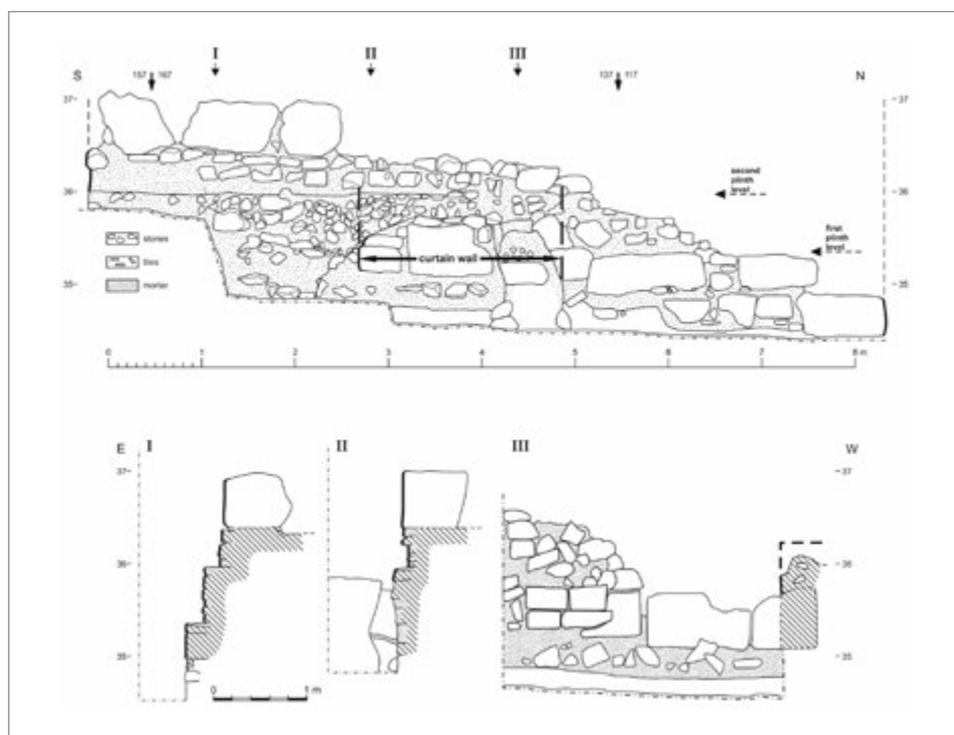


Fig. 7. North Gate: top, facing of the east platform; bottom, sections I, II and III (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | drawing P. Zakrzewski)

es recorded in the western part of the northern fortifications of the camp (see above), it should be pointed out that, in the case of the North Gate, the finds were few and mostly stray.

This building phase of the North Gate, which is on record, evidently commenced in the second half of the 4th century AD. The gate functioned in unchanged form probably until the end of the 6th century AD, a hypothesis also supported by artifacts from the excavations (Sarnowski et al. 2016: 182–183; Zakrzewski 2017: 13). The scope of construction work that was carried out on this structure at this time has obliterated any evidence of the earlier building phases.

### 3. TOWER 1 (NORTHEASTERN CORNER)

The surroundings of the northeastern corner tower [see *Fig. 1:3*] were investigated in the late 1970s by the Bulgarian expedition. At the time, the eastern front of the legionary fortress was investigated. In 2005–2006, some 300 m<sup>2</sup> were cleared of dense plant growth, shrubs and trees in order to document the remains that were uncovered previously. Three test trenches were excavated to reexamine the stratigraphic sequence and the foundation levels of particular structures. A section of the curtain wall 22 m long was uncovered, as well as a rectangular tower (4.15 m by 3.25 m), a large drainage channel, remains of the *via sagularis* and a fragment of an unidentified structure (Sarnowski, Kovalevskaja, and Kaniszewski 2005: 151–152; Sarnowski and Kaniszewski 2007) [*Fig. 8*].

The curtain wall [*Fig. 8:1*] revealed numerous traces of superficial destruction, most likely caused by landslides in an-

tiquity. The preserved height of the wall was 1.60 m, yet based on a comparison of uncovered levels of the earliest phase of the *via sagularis* with the original ground level on the outer side of the wall, the actual height of the wall was estimated to be at least 6.50 m. The width of the structure at the foundation level was 3.70 m, but starting from the level of the plinth, it tapered in to just about 2.10 m. The construction technique and building material, consisting of mid-sized, roughly dressed sandstone slabs bonded in lime mortar, corresponded to other curtain wall sections uncovered on all four fronts of the legionary fortress. Only two construction phases were distinguished in the remains, the first one associated with the building of the wall at the beginning of the 2nd century AD and the second corresponding to numerous renovation works taking place in the 6th century AD. At the latter stage, large stone blocks were reused and bonded in grey mortar.

The few coin finds from this area were not very informative in terms of dating the architectural changes. Two provincial coins were issues from the beginning of the 3rd century (Septimius Severus and Caracalla), the third was a bronze of Constantius II.

### 4. TOWER 2

Archaeological investigations in the north-western corner of the fortifications in the 1970s also encompassed a tower located 27.75 m further south [see *Fig. 1*]. The structure was uncovered and documented once more in 2006–2007 (Sarnowski, Kovalevskaja, and Tomas 2010: 160–161).

Traces of the earliest camp fortifications at Novae, that is, the timber-and-earth defences, were one of the most

important discoveries made in this area. It was a section of the wall which most likely supported the inner side of a defensive rampart (see Sarnowski 1983a; 1983b). The preserved segment of stone foundations consisted of irregular stones bonded in loess mortar. A foundation trench 0.65–0.75 m wide was revealed in an extension of the trench [Fig. 9:1].

A successive construction phase was represented by a stone tower [Fig. 9:3–5], measuring 4.48 m by 3.72 m, as well as a ‘ghost’ curtain wall that was 1.50 m wide. A test trench extending 8 m east from the original curtain wall line revealed no evidence of a defensive ditch, at least in this section.

In the area of Tower 2, 10 scattered coins were found, among which the most

abundant group was composed of *antoniniani* struck in 268–283 (Claudius II, Aurelian, Tacitus, Carus). The oldest find was a bronze coin of Macrinus, while the youngest one was a 20 *nummi* piece of Maurice Tiberius. Given the sparseness of the material, it was not possible to draw any conclusions regarding the dating of architectural changes in this area.

## 5. EAST GATE

Remains of the East Gate [see Fig. 1:5] were first unearthed in the late 1970s, and the excavations were continued through the early 1990s, uncovering two stone platforms under the towers, in similarity to the North Gate, as well as a section of the curtain wall located north of the gate, and a significant fragment of the

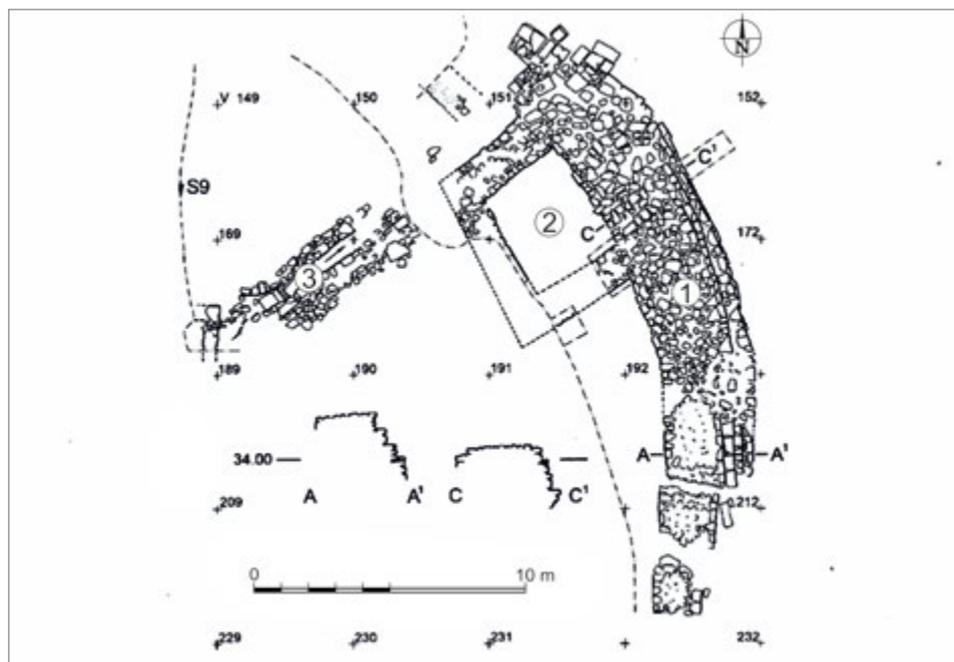


Fig. 8. Northeastern corner tower [for the location, see No. 3 in Fig. 1]: 1 – curtain wall, 2 – Tower 1, 3 – sewer (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan J. Kaniszewski)

*via principalis* (Čičikova 1978; 1979; 1981; Čičikova and Najdenova 1981; Donevski 1989; 1994; 1996) [Fig. 10].

The reinvestigation, which started in 2012, was prompted by the meagre amount of published data and lack of detailed documentation (Sarnowski et al. 2014: 86–89; 2016: 179–182). A detailed site plan was drawn after the site and the architectural remains were cleared. Two test trenches were opened, one located along the outer side of both platforms, and the other cutting across the width of the *via principalis*. The results bore out the findings from previous fieldwork. Two V-shaped ditches [Fig. 10:1] belonging to the timber-and-earth defences built by the Eight Augustan legion were located and identified. The first one was observed in the southern part of the excavated area, some 12 m away from the stone platform. The ditch was 2.40 m wide and 1.40 m

deep. The rounded end of the second ditch was revealed in the second test trench which was opened on the extension of the early ditch almost 28 m to the north, just in front of the northern platform.

Both platforms (northern 7 m by 7 m; southern 8 m by 6 m), as well as a curtain wall fragment (approximately 1.50 m wide) were constructed of mid-sized irregular stones bonded in grey mortar. In the southwestern part of the southern platform, a short wall made of large stone blocks probably supported the stairs leading to the upper level of the tower or the top of the curtain wall. At the southern end of the cleaned area, remains of the lowest level of the curtain wall were revealed; they measured 1.50 m in width and were founded directly on culturally sterile loess [Fig. 10:4]. Evidence of a defense ditch [Fig. 10:5], 1.80 m deep, were recorded more than 5 m further east. The ditch was part of the fortification system built by the First Italic legion.

The test trench located along the road yielded several interesting discoveries concerning the street organisation of the legionary fortress (Sarnowski et al. 2016: 179–182). These included two stone sidewalks flanking the street paved with slabs, a narrow sewer and a wide channel transporting excess water away from the camp.

Probably in the beginning of the 3rd century AD, an 8-m wide double entrance was partly obstructed with massive sandstone slabs placed in the southern passageway, preventing wheeled traffic. These restrictions were most likely linked to the construction of a monumental entrance (*groma*) leading

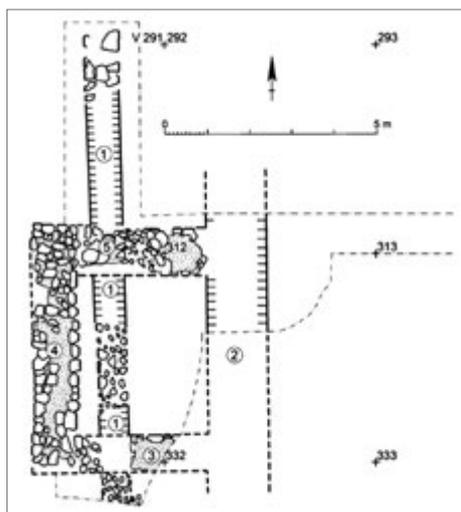


Fig. 9. Tower 2 [for the location see No. 4 in Fig. 1]: 1 – sleeper wall, 2 – remains of a curtain wall, 3–5 – walls of Tower 2 (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan P. Zakrzewski)

to the headquarters (*principia*), which was located at the intersection of the main streets of the legionary fortress (Sarnowski 1995). As the transformation of the legionary fortress into a town started in the 3rd/4th century, and the fortifications expanded eastward, the gate no longer fulfilled its purpose and was dismantled, as was the entire eastern front of the fortifications (see Poulter 2007: 31–39; Lemke 2015).

The group of coin finds from the excavation in the area of the East Gate was relatively numerous, 25 in total, but its usefulness of dating was limited due to the scattering of the finds. There is generally

a lack of coins from periods preceding the reign of Gordian III. Among the four coins dated to the second half of the 3rd century, an *antoninianus* of Florian from AD 276 (Cat. 41) is a relatively rare find. The most numerous group was composed of late Roman coins (20 specimens), with the youngest group consisting of three bronze coins of Theodosius I and Arcadius, as well as the latest specimen struck under Theodosius II (408–450). These coin finds testify to an intensive activity in this area in late antiquity, when the former eastern line of fortifications lost its function due to the eastward expansion of the town of Novae.

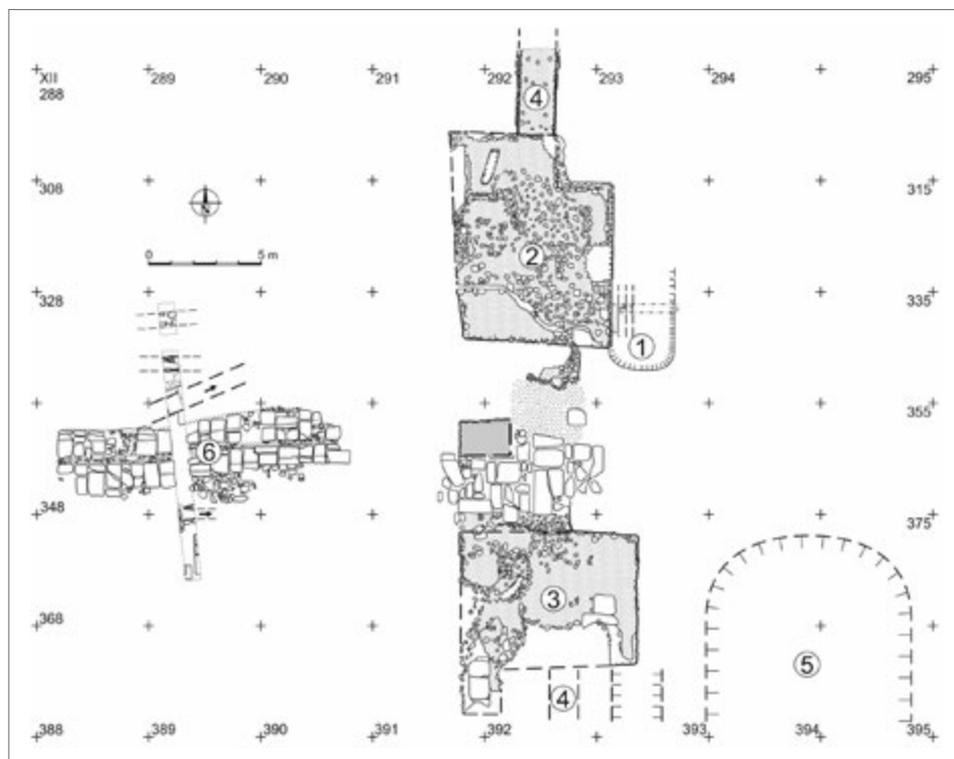


Fig. 10. East Gate [for the location see No. 5 in Fig. 1]: 1 – Neronian ditch, 2– northern platform, 3 – southern platform, 4 – Trajanic wall, 5 – Trajanic ditch, 6: Via principalis dextra (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan P. Zakrzewski)

## 6. TOWER 4

Over 40 m to the south of the East Gate, there was another stone tower belonging to the fortification system [for the location see *Fig. 1:6*], which was first investigated in the late 1980s (Sarnowski et al. 2010: 161, Note 16). Similar to the above-discussed cases, the tower, 3.40 m by 3.20 m, and the defense wall, 1.80 m wide, were constructed simultaneously [*Fig. 11:5–8*].

During the campaigns of 2008 and 2009 (Sarnowski, Kovalevskaia, and Tomas 2010: 161–162), a detailed plan of the section was drawn up and an old test trench, located to the south of the tower, was extended and excavated down to culturally sterile soil. Two pits of a regular outline were located by the southern end of the trench wall [*Fig. 11:1*]; they should be associated with the construction of wooden towers of the earliest, pre-Flavian phase of

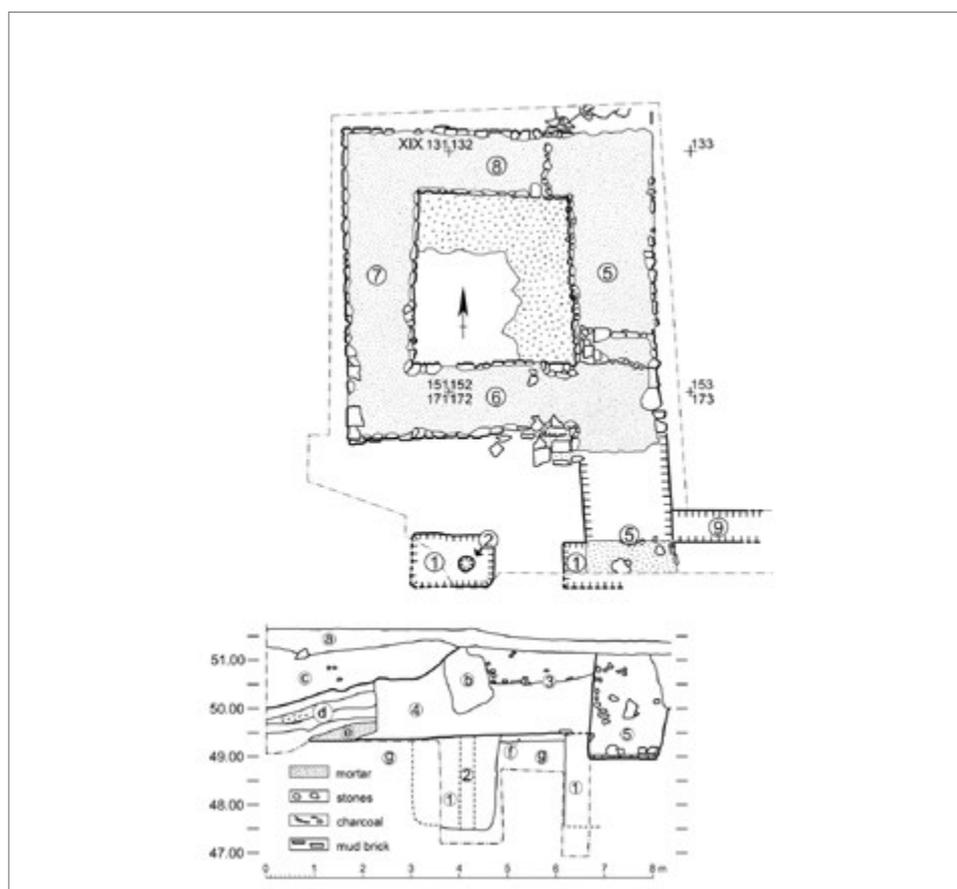


Fig. 11. Tower 4 [for the location see No. 5 in *Fig. 1*]: top, plan; bottom, southern section (for a description of layers, see Sarnowski, Kovalevskaia, and Tomas 2010: 161, *Fig. 9*): 1 – pits, 2 – post hole, 3 – rampart, 4 – ramp, 5 – curtain wall, 6–8 – Tower 4 walls, 9 – robber trench (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan T. Sarnowski and P. Zakrzewski)

the fortifications. In both cases it was possible to document the post holes belonging to the wooden tower [Fig. 11:2].

The south trench section revealed traces of a loess ramp [Fig. 11:4], which ran parallel to it in the timber-and-earth phase [Fig. 11:3], as opposed to the period after the construction of the stone fortifications, when the rampart was perpendicular to the curtain wall.

No coin finds were recorded from the vicinity of the tower.

## 7. TOWER 5

Cleaning and documentation works were also conducted in the area of the next tower in the line of the eastern fortifications, which was uncovered already between the late 1980s and early 1990s (Donevski 1989; 1994; 1996) [Fig. 1:7]. Remains of a rectangular tower (3.05 m by 2.85 m) were uncovered in 2011, along with a 21-m-long section of the curtain wall. The wall, which was 1.50–1.70 m wide, was supported by three perpendicular counterforts [Fig. 12:3].

The only observed traces of earlier construction phases consisted of a very poorly preserved earthen rampart, which seemed to have been unwittingly cut during the previous excavations (Sarnowski et al. 2014: 89).

Only two coins were found, deposited separately, in the area of Tower 5. They were dated to the late Roman period, the reigns of Constantine I and Arcadius, indicating that this area was used in the 4th–5th century AD.

## 8. TOWER 12

In 2013, the organisation and chronology of the southern front of the fortifications were studied at the location of

Tower 12 lying more than 70 m west of the southeastern corner of the fortress [Fig. 1:8]. The defenses in this area, already uncovered by Polish and Bulgarian archaeologists in the 1960s and the 1980s (Kolkówna 1967; Parnicki-Pudelko 1990: 46; Donevski 1996), were expected to be in good condition, but as it turned out, the earlier excavations had severely disrupted the original stratigraphic sequence around the tower. Moreover, numerous modern robber pits were attested throughout the area (Sarnowski et al. 2016: 183–187).

The area of the tower (3.30 m by 2.15 m) as well as a section of the curtain wall adjoining it was uncovered in the course of three seasons [Figs 13:2–3, 14:2–3]. The initial width of the curtain wall was 1.60 m, but in late antiquity, when the fortifications underwent general modifications, it was thickened by about 1.90 m. Remains of an U-shaped tower of the same period [Fig. 13:6], the dimensions of which were established in a small test trench more than 8 m south of the curtain wall. A long test trench was opened east of the tower in order to properly document the stratigraphic sequence.

Several construction phases were observed in the area, including the earliest one, the timber-and-earth defenses, which consisted of a ditch [Figs 13, 14:1] and a very small fragment of an earthen rampart [Fig. 14:1a]. A pit was discovered next to the rampart [Fig. 14:1b], most likely dug for one of the three internal posts supporting a wooden tower.

As a result of changes in the organisation and the construction of the defense system in the legionary fortress at

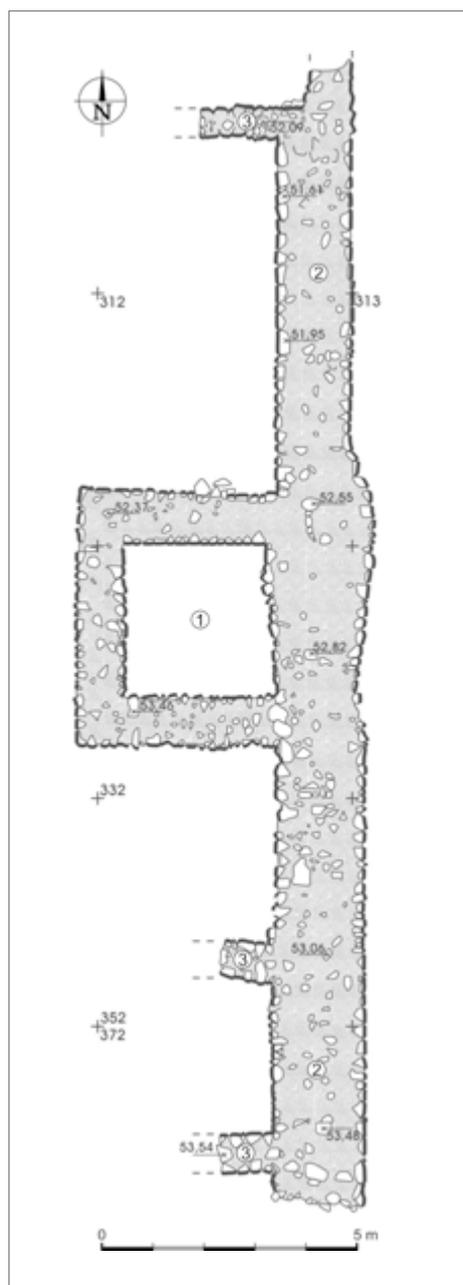


Fig. 12. Tower 5 and section of curtain wall [for the location see No. 7 in Fig. 1]: 1 – Tower 5, 2 – curtain wall, 3 – counterforts (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan A. Tomas, P. Zakrzewski)

the beginning of the 2nd century AD, an earthen rampart was partly dismantled and replaced with a stone wall built at the same time as the rectangular tower [see Fig. 13:2–3]. A new ditch was dug [Figs 13, 14:4], reaching at least 1.50 m in depth. Loess obtained in the course of these works was most likely used for the construction of a ramp. The maximum height of the ramp, equal to the walking level on the top of the wall, could be estimated at 2.20–2.60 m.

The last observed building activity, dated to the beginning of the 4th century AD, was the thickening of the curtain wall on both sides, which also probably led to an increase in its height. A new U-shaped tower, 9.30 m by 8.80 m, was also built, projecting more than 12 m from the fortification line. Its walls were made in the *opus mixtum* technique and had an impressive width of 2.50 m. In order to strengthen the surface around the new tower, the fill of an early ditch was replaced with large reused stone blocks and soil mixed with an abundance of lime mortar [Fig. 11:m]. The tower belonging to an earlier phase was rendered obsolete and therefore dismantled. In its place, a longer ramp with very gentle descent was constructed; it may have been used for pulling up heavy projectile engines.

Three coins were found during the investigations of Tower 12. The oldest specimen was struck under Tiberius and could be associated with the earliest building phases of the 1st or the beginning of the 2nd century. The second half of the 3rd century was represented by an *antoninian* of Probus, while the youngest one was struck under Arcadius.

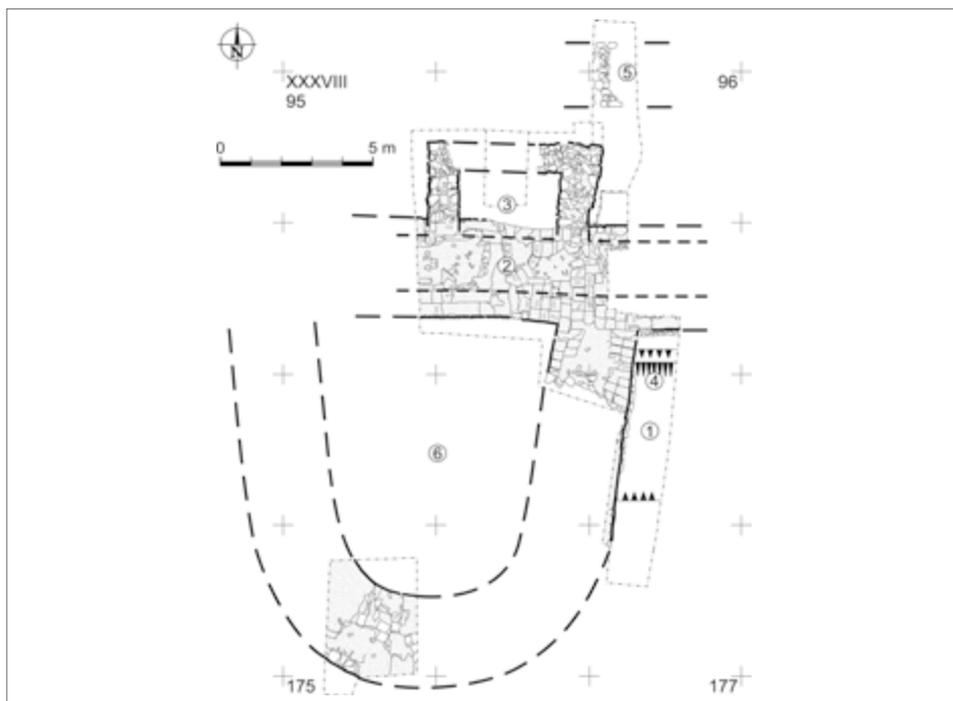


Fig. 13. Tower 12 [for the location see No. 8 in Fig. 1]: 1 – Neronian ditch, 2 – curtain wall, 3 – Tower 12, 4 – north end of the Trajanic ditch, 5 – *via sagularis*, 6 – U-shaped tower (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | plan M. Momot and P. Zakrzewski; original drawing T. Dziurdzik)

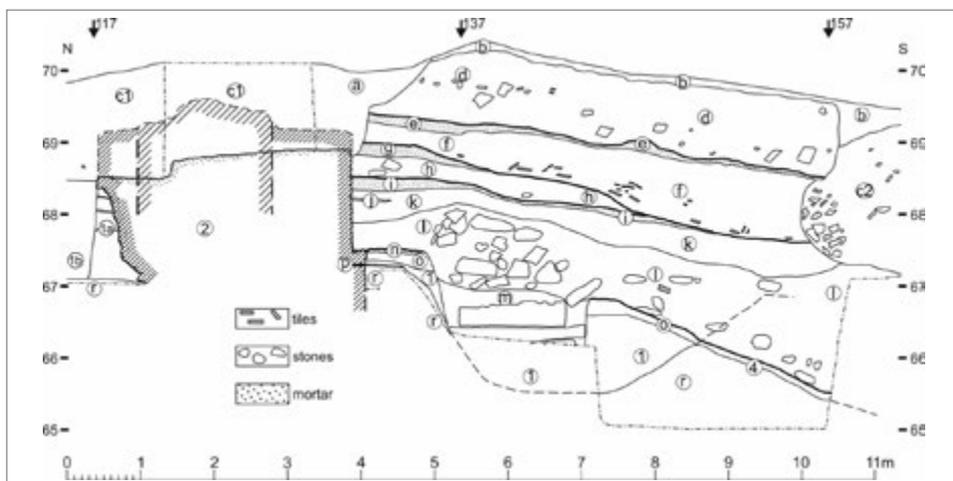


Fig. 14. Tower 12: section (for a description of the layers, see Sarnowski et al. 2016: 185, Fig. 10): 1 – Neronian ditch, 1a – rampart, 2 – curtain wall, 3 – Tower 12, 4 – north end of the Trajanic ditch (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | drawing T. Dziurdzik)

## APPENDIX: COIN CATALOG

The catalog presents 128 coins from the investigations of the archaeological project at the legionary fortress of the First Italic legion at Novae between 2013 and 2016. The finds are arranged in chronological and typological order, and divided into Roman (including provincial Roman) and Byzantine coinage. The coins are considered here as a single assemblage despite the fact that they come from different, often distant sectors of the site. The archaeological contexts are briefly indicated in the respective catalog entries; an extensive discussion of the discoveries in particular areas is presented above.

Catalog entries are organized as follows: – ordinal number ([\*] an asterisk was used to mark five coins comprising a foundation deposit from the last quarter of the 3rd century AD); field inventory number (small finds register) / Museum of Švištov

inventory number (for coins collected before 2013);

- date of issue (if established), mint and denomination (if impossible to determine module or metal, for instance ‘AE’ for bronze coins made of copper alloys);
- description of the obverse and the reverse, together with information on the state of preservation of legends;
- denotation of type;
- metrological data (weight, diameter, die axes expressed in hours, and remarks on the state of preservation, if relevant);
- archaeological context.

In cases where the same issue or series is represented by several items, the entries have been ordered according to the state of preservation of the coins. Separate plates with 1:1 photographs illustrate the more significant and better preserved specimens [*Figs 15–17*].

### Abbreviations

- cuir. – cuirassed
- diad. – diademed
- dr. – draped
- ex. – exergue
- l. – left
- laur. – laureated
- obv. – obverse
- r. – right
- rad. – radiated
- rev. – reverse
- std. – seated
- stg. – standing
- var. – variant

**I. ROMAN COINAGE****Tiberius (14–37)**

1. *Inv. No.* 127/09w (No. 10) / *Museum No.* 1048-HCΦ

c. 34–37, Rome mint, *as*

*Obv.* Rad. head l., [DIVVS AV]GVSTVS PA[TER]

*Rev.* Eagle stg. on globe, head r., wings half-spread, S-C

RIC I<sup>2</sup>, 82

9.21 g; 27 mm; 6 h

(1) Tower 27, ha II, Sq. 171

2. *Inv. No.* 1/15w

35–36 (?), Rome mint, *sestertius*

*Obv.* Quadriga of elephants l., with riders; figure of Augustus, rad., in the car, holding laurel-branch in r. hand and long sceptre in l., [DIVO/AVG]VSTO/[S]PQR

*Rev.* TI [CAESAR DIVI AVG F AVG-VST] P M TR POT XXXVII (?) round SC

RIC I<sup>2</sup>, 62 – possibly also RIC I<sup>2</sup>, 56 (AD 34–35) and RIC I<sub>2</sub>, 68 (AD 36–37)

24.34 g; 33 mm; 12 h

(8) Tower 12, ha XXXVIII, Sq. 97

3. *Inv. No.* 154/09w (No. 9) / *Museum No.* 3839

Rome mint, *as*

*Obv.* Head r., [...]AVG F AVG[...]

*Rev.* Illegible, [...] MAXIM TR [...]

Uncertain RIC type

9.13 g; 26 mm; ?

(1) Tower 27, ha II, Sq. 191

**Gaius (37–41)**

4. *Inv. No.* 113/09w (No. 8) / *Museum No.* 3837

37–38, Rome mint, *as*

*Obv.* Bare head l., C CAESAR AVG GERMANICVS PON M TR POT

*Rev.* Vesta, veiled and dr., std. l. on throne, holding patera in r. hand and long transverse sceptre in l., VESTA S-C

RIC I<sup>2</sup>, 38

9.70 g; 28 mm; 8 h

(1) Tower 27, ha II, Sq. 151

5. *Inv. No.* 124/08w / *Museum No.* 3819

37–41, Rome mint, *dupondius*

*Obv.* Germanicus, bare-headed, stg. in quadriga r., holding eagle-tipped sceptre in l. hand, GERMANICV[S]/CAESAR

*Rev.* Germanicus, bare-headed, stg. l., r. hand raised, l. holding aquila, SIGNIS-RECE[PT]/[D]EVICTIS-GER[M]/S-C

RIC I<sup>2</sup>, 57

14.34 g; 29 mm; 7 h

(1) Tower 27, ha II, Sq. 131

6. *Inv. No.* 243/07w / *Museum No.* 929-HCΦ

37–41, Rome mint, *as*

*Obv.* Agrippa head l., wearing rostral crown, M A[GRIPP]A L F [COS III]

*Rev.* Neptune stg. l., holding small dolphin in r. hand and vertical trident in l., [S-C]

RIC I<sup>2</sup>, 58

6.47 g; 28 mm; 6 h (pierced)

Tower 27, ha II, Sq. 149

**Claudius (41–54)**

7. *Inv. No.* 164/09w / *Museum No.* 3838

c. 41–50, Rome mint, *as*

*Obv.* Bare head l., [TI CL]AVDIVS CAESAR AVG P M [TR P IMP]

*Rev.* Minerva r., helmeted and dr., r. hurling javelin, round shield on l. arm, S-C

RIC I<sup>2</sup>, 100

9.45 g; 29 mm; 7 h

Tower 27, ha II, Sq. 191

8. *Inv. No.* 173/09w / *Museum No.* 3840  
c. 50–54, Rome mint, *as*  
*Obv.* Bare head l., [T]I [CL]AVDIVS  
CAESAR AV[G P M TR P I]MP P P  
*Rev.* Libertas stg. facing, head r., holding  
*pileus* in r. hand, l. extendend, [LIBERTAS  
AVGVSTA], S-C  
RIC I<sup>2</sup>, 113  
8.98 g; 28 mm; 7 h  
Tower 27, ha II, Sq. 191

### Vespasian (69–79)

9. *Inv. No.* 170/09w / *Museum No.* 3841  
71, Rome mint, *denarius*  
*Obv.* Laur. head r., IMP CA[ES VESP]  
AVG P M  
*Rev.* Vesta std. l., holding *simpulum*,  
TRI-POT  
RIC II<sup>2</sup>, 46  
3.21 g; 17 mm; 5 h  
Tower 27, ha II, Sq. 191

10. *Inv. No.* 1/13w/f  
71, Rome mint, *sestertius*  
*Obv.* Laur. head r., IMP CAES VESPAS  
AVG P M TR P P P COS III  
*Rev.* Roma stg. l. holding Victory and  
spear, ROMA, S-C  
RIC II<sup>2</sup>, 244  
27.65 g; 31 mm; 5 h  
Tower 27, ha II, Sq. 132 (inner side; test pit)

11. *Inv. No.* 168/09w / *Museum No.* 3859  
73 or 74 (for Domitian), Rome mint,  
*dupondius* (?)  
*Obv.* Laureate head r., bust dr., CAES[AR  
AV]G F DOMITIAN COS II  
*Rev.* Aequitas stg. l., holding scales and  
rod, AEQVITAS AVGVST, S-C  
RIC II<sup>2</sup>, 657  
9.84 g; 27 mm; 6 h  
Tower 27, ha II, Sq. 191

12. *Inv. No.* 13/10w / *Museum No.* 4019  
74 (?), Rome mint, *as*  
*Obv.* Laur. head r., [IMP CA]ESAR VESP  
AVG COS V (?)  
*Rev.* Aequitas stg. l., holding scales and  
rod, AEQ[VITAS] AVGVST, S-C  
RIC II<sup>2</sup>, 720 (?) or RIC II<sup>2</sup>, 821 (COS VI –  
AD 75) or RIC II<sup>2</sup>, 890 (COS VII – AD 76)  
6.34 g; >26 mm; 6 h (broken, about 1/2)  
North Gate, ha III, Sq. 137

13. *Inv. No.* 22/11w / *Museum No.* 4101  
76, Rome mint, *as*  
*Obv.* Laur. head r., IMP CAESAR VESP  
AVG COS VII  
*Rev.* Aequitas stg. l., holding scales and  
rod, AEQVITAS AVGVST, S-C  
RIC II<sup>2</sup>, 890  
--; --; --  
Tower 27, ha II, Sq. 111

### Trajan (98–117)

14. *Inv. No.* 240/12w / *Museum No.* 4108  
Rome mint, *dupondius*  
*Obv.* Rad. head r., [...]  
*Rev.* Figure std. l. (?), [...], in ex.: [...]  
Uncertain RIC type  
13.61 g; 26 mm; 7 h  
North Gate, ha III, Sq. 96

### Marcus Aurelius (161–180)

15. *Inv. No.* 123/08w / *Museum No.* 3818  
161/162, Caesarea in Cappadocia mint, AE  
*Obv.* Laur. head r., [AYTO]K AN[TωNeI]-  
NO[C CeBACTOC]  
*Rev.* Mons Argaeus, KAICAPεωN-T II  
APTAIω, in ex.: εTO B  
Ganschow 267c  
8.85 g; 22 x 24 mm; 12 h  
Tower 27, ha II, Sq. 171

**Uncertain issuers (1st–2nd century AD)**

16. *Inv. No.* 241/12w / *Museum No.* 4110 (?)

First half of 1st century, Rome mint (?), *as*

*Obv.* Head l., [...]

*Rev.* Illegible

Uncertain RIC type

4.54 g; 27 mm; ?

North Gate, ha III, Sq. 96

17. *Inv. No.* 140/09w (No. 11) / *Museum No.* 972-HCΦ

1st century (?), Rome mint (?), *as*

*Obv.* Emperor's head (?)

*Rev.* Illegible

Uncertain RIC type

5.49 g; 26 mm; ?

Tower 27, ha II, Sq. 171

18. *Inv. No.* 153/09w (No. 7) / *Museum No.* 1047-HCΦ

1st century (?), Rome mint (?), *as*

*Obv.* Emperor's head

*Rev.* Emperor (?) stg. l.

Uncertain RIC type

6.79 g; 28 mm; 2 h (?)

Tower 27, ha II, Sq. 191

19. *Inv. No.* 234/07w / *Museum No.* 928-HCΦ

1st–beginning of 2nd century(?), Rome mint, *as*

*Obv.* Emperor's bust r., [...]

*Rev.* Figure stg., [...], S-C

Uncertain RIC type

6.72 g; 23 mm; 5 h

Tower 27, ha II, Sq. 171

**Septimius Severus (193–211)**

20. *Inv. No.* 55/06w / *Museum No.* 3661

Uncertain provincial mint, AE

*Obv.* Laur. head r., [...]

*Rev.* Fortuna (?) stg. l., holding cornucopia and rudder (?), [...]

Uncertain type

7.93 g; 27 mm; 7 h

Northeastern corner tower, ha V, Sq. 149

**Caracalla (211–217)**

21. *Inv. No.* 215/07w / *Museum No.* 3715

Marcianopolis mint (Quintilianus), AE

*Obv.* Laureate head r., ANTONINOC ΠΙOC AVTOVCTOC

*Rev.* Eagle stg. on altar, with *signum* on either side; all set on garlanded table, V[Π KV]NTIAIANOV MAPKIANOΠOΛIT-[O]N (the latter two letters between the legs of the table) AMNG I, 648

8.44 g; 27 mm; 2 h

Tower 27, ha II, Sq. 151

22. *Inv. No.* 226/07w

Caracalla (?), Nicopolis ad Istrum mint, AE

*Obv.* Rad. bust of young, beardless emperor r., [...] P [...] -TONI [...]

*Rev.* Nemesis stg. l., [...], across inner fields: CTP-ON VII (?)

Uncertain type

10.11 g; 25 mm; 7 h

Tower 27, ha II, Sq. 151

23. *Inv. No.* 58/06w / *Museum No.* 3662

Caracalla(?), Nicopolis ad Istrum mint, AE

*Obv.* Emperor's bust r., [...]

*Rev.* Herakles stg. r., ΝΙΚΟΠΟΛ [...] O [...]

Uncertain type

3.27 g; 17 mm; 2 h

Northeastern corner tower, test pit (west of tower)

**Macrinus (217–218)**

24. *Inv. No.* 249/07w / *Museum No.* 3716  
 Nicopolis ad Istrum mint (Staius Longinus), AE  
*Obv.* Laur. head r., [...]N OΠEΛIIOC CEVH [M]AKPINOC  
*Rev.* Asklepios stg. facing, head l., leaning on serpent-entwined staff [...]NΓINOV NIKOΠOΛITON ΠPOC [...]  
 Varbanov I, 3448 var.  
 14.29 g; 26 mm; 7 h  
 Northeastern corner tower/Tower No. 2, ha V, Sq. 293

**Severus Alexander (222–235)**

25. *Inv. No.* 231/07w / *Museum No.* 3718  
 Marcianopolis mint (Tereventinus), AE  
*Obv.* Laur., dr., and cuir. bust of Severus Alexander and dr. bust of Julia Mamaea, wearing *stephane*, facing one another, [...]M AΛ[E]ΞANΔP[...]  
*Rev.* Homonoia stg. l., holding cornucopia in l. hand and patera over altar in r., [...]TEPEBENTIN-OV MAP[K]IAN[...]  
 AMNG I, 1079 (?)  
 9.96 g; 27 mm, 7 h  
 Tower 27, ha II, Sq. 171

**Gordian III (238–244)**

26. *Inv. No.* 13/14w  
 Hadrianopolis mint, AE  
*Obv.* Laur. bust r., AVT K M ANT ΓOPΔIANOC  
*Rev.* Tyche stg. l. within tetrastyle temple, AΔPIA-NOΠIOΛ-εITΩN  
 Varbanov II, 3856  
 7.98 g; 25 mm; 2 h  
 East Gate, ha XII, Sq. 349

**Uncertain issuers (first half of 3rd century)**

27. *Inv. No.* 237/07w / *Museum No.* 3719  
 First half of 3rd century, uncertain provincial mint, AE  
*Obv.* Emperor's bust r., [...]  
*Rev.* Female figure stg. facing, head r., [...]O[...]  
 Uncertain RIC type  
 2.56 g; 19 mm; 6 h  
 Tower 27, ha II, Sq. 171

**Valerian I (253–260)**

28. *Inv. No.* 242/07w / *Museum No.* 3720  
 255–256, Antioch mint, *antoninianus*  
*Obv.* Rad. bust r., IMP C P LIC VALE-RIANVS P F AVG  
*Rev.* Two emperors stg. facing each other, the one holding spear and globe, the other Victory and spear, VIRTVS AVGG  
 RIC V.1, 293  
 2.80 g; 20 mm; 6 h  
 Tower 27, ha II, Sq. 171

**Gallienus (253–268)**

29. *Inv. No.* 202/07w / *Museum No.* 3721  
 Uncertain mint, *antoninianus*  
*Obv.* Rad. bust r., [GA]LL[I]ENVS AVG  
*Rev.* Female figure stg. l., holding cornucopia in l. hand, r. hand over altar (?), [...]Uncertain RIC type  
 2.30 g; 22 mm; 7 h  
 Tower 27, ha II, Sq. 191

30. *Inv. No.* 207/07w / *Museum No.* 3722  
 Uncertain mint, *antoninianus*  
*Obv.* Rad. bust r., [... GAL]LIENVS AVG  
*Rev.* Figure stg. l., [...]Uncertain RIC type  
 2.13 g; 20 mm; 11 h  
 Tower 27, ha II, Sq. 171

**Claudius II (268–270)**

31. *Inv. No. 225/07w / Museum No. 3725*

Siscia mint, *antoninianus*

*Obv.* Rad. bust r., IMP CLAV[DI]VS AVG

*Rev.* Providentia stg. l., holding baton and cornucopiae, at foot, globe, PROVIDEN AVG, in r. field: T

RIC V.1, 187

3.09 g; 18 mm; 1 h

Tower 27, ha II, Sq. 171 (?)

32. *Inv. No. 34/14w*

Uncertain mint, *antoninianus*

*Obv.* Rad. bust r., IMP CL[AVDIVS ...]

*Rev.* Providentia stg. l., holding baton and cornucopiae, at foot, globe, PROV[...]

Uncertain RIC type

2.30 g; 18 mm; 6 h

East Gate, ha XII, Sq. 329

33. *Inv. No. 204/07w / Museum No. 3724*

Uncertain mint, *antoninianus*

*Obv.* Rad. bust r., [... CLAV]DIVS AVG

*Rev.* Pax stg. facing, head l., holding branch and sceptre, PAX [...]

Uncertain RIC type

1.61 g; 18 mm; 12 h

Tower 27, ha II, Sq. 171

34. *Inv. No. 247/07w / Museum No. 3723*

Uncertain mint, *antoninianus*

*Obv.* Rad. bust r., [... CLA]VDI[VS ...]

*Rev.* Female figure stg. l., holding cornucopia, [...] AVG

Uncertain RIC type

2.51 g; 18 mm; 11 h

Northeastern corner tower/Tower No. 2, ha V, Sq. –, “from separate spoil heap”

**Aurelian (270–275)**

35. *Inv. No. 246/07w / Museum No. 3727*

Rome mint, *antoninianus*

*Obv.* Rad. bust r., IMP AVRELIANVS AVG

*Rev.* Sol stg. between two captives, ORIENS AVG, in ex.: BXXIR

RIC V.1, 63

3.48 g; 22 mm; 12 h

Northeastern corner tower/Tower No. 2, ha V, Sq. 292

36\*. *Inv. No. 123/09w (6a) / Museum No. 3843*

Mediolanum mint, *antoninianus*

*Obv.* Rad. bust r., IMP AVRELIANVS AVG

*Rev.* Soldier stg. r., presenting globe crowned by Victory to emperor stg. l., [F]I[DE]S MILITVM, in ex.: T

RIC V.1, 126

3.62 g; 23 mm; 11 h

Tower 27, ha II, Sq. 191

37\*. *Inv. No. 123/09w (6b) / Museum No. 3842*

Cyzicus mint, *antoninianus*

*Obv.* Rad. bust r., IMP AVRELIANVS AVG

*Rev.* Emperor stg. r., holding sceptre, receiving globe from Jupiter stg. l., holding spear, [CONCORD] MILIT, in ex.: \*C\*

RIC V.1, 342

3.19 g; 21 x 23 mm; 5 h

Tower 27, ha II, Sq. 191

38\*. *Inv. No. 123/09w (6c) / Museum No. 3844*

Cyzicus mint, *antoninianus*

*Obv.* Rad. bust r., IMP AVRELIANVS AVG

*Rev.* Female stg. r., presenting wreath to emperor stg. l., holding spear, RESTITVT [O]RBIS, in ex.: A

RIC V.1, 348

3.66 g; 24 mm; 1 h

Tower 27, ha II, Sq. 191



Fig. 15. Selected coins struck from the 1st until the mid-3rd centuries AD (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | photos and processing P. Jaworski)

**Tacitus (275-276)**

39. *Inv. No.* 128/09w / *Museum No.* 3848  
 Serdica mint, *antoninianus*  
*Obv.* Rad. bust r., IMP C M CL TAC-  
 ITVS AVG  
*Rev.* Roma stg. r., holding spear, receiv-  
 ing globe from emperor stg. l., holding  
 sceptre, between them: A, CLEMENTIA  
 TEMP, in ex.: KA  
 RIC V.1, –; reverse type identical to RIC  
 V.1, 126 (Ticinum)  
 3.48 g; 22 mm; 10 h (plating partly pre-  
 served)  
 Tower 27, ha II, Sq. 191

40. *Inv. No.* 244/07w / *Museum No.* 3729  
 Ticinum mint, *antoninianus*  
*Obv.* Rad. bust r., IMP C M CL  
 TACITVS AVG  
*Rev.* Victory stg. r., holding palm-branch,  
 presenting wreath to emperor stg. l.,  
 holding sceptre, SPES PVB[L]ICA, in  
 ex.: T  
 RIC V.1, 167 (var.)  
 4.14 g; 22 mm; 5 h  
 Northeastern corner tower/Tower No. 2,  
 ha V, Sq. 293

**Florian (276)**

41. *Inv. No.* 231/12w / *Museum No.* 4113  
 Rome mint, *antoninianus*  
*Obv.* Rad. bust r., IMP C FLORIANVS  
 AVG  
*Rev.* Salus stg. l., holding sceptre, feeding  
 serpent rising from altar, SALVS AVG,  
 in ex.: XXIA (?)  
 RIC V.1, 40  
 3.76 g; 22 mm; 6 h  
 East Gate, ha XII, Sq. 349

**Probus (276–282)**

42. *Inv. No.* 221/07w / *Museum No.* 3730

Siscia mint, *antoninianus*  
*Obv.* Rad bust r.. IMP PROBVS P F AVG  
*Rev.* Pax stg. l., holding olive-branch and  
 sceptre, PAX AVGVSTI, in r. field: V, in  
 ex.: XXI  
 RIC V.2, 713  
 3.58 g; 23 mm; 12 h  
 Tower 27, ha II, Sq. 151

43. *Inv. No.* 4/13w/f  
 Siscia mint, *antoninianus*  
*Obv.* Rad bust r.. IMP C PROBVS AVG  
*Rev.* Pax stg. l., holding olive-branch and  
 sceptre, PAX AVGVSTI, in ex.: XXIS  
 RIC V.2, 714 (var.)  
 3.31 g; 21 mm; 10 h  
 Tower 12, ha XXXVIII, Sq. 115

44. *Inv. No.* 20/11w / *Museum No.* 4103  
 Siscia mint, *antoninianus*  
*Obv.* Rad. bust l., in imperial mantle,  
 holding scepter surmounted by eagle,  
 IMP C M AVR PROBVS P F AVG  
*Rev.* Mars walking r., holding spear and  
 trophy, VIRTVS PROBI AVG, in r. field:  
 V, in ex.: XXI  
 RIC V.2, 810  
 3.62 g; 21 mm; 7 h  
 North Gate, ha III, Sq. 76

45\*. *Inv. No.* 123/09w (6e) / *Museum No.* 3845  
 Siscia mint, *antoninianus*  
*Obv.* Rad. bust l., in imperial mantle,  
 holding scepter surmounted by eagle,  
 IMP C M AVR PROBVS P F AVG  
*Rev.* Emperor riding l., r. hand raised,  
 holding sceptre in l., captive at foot,  
 ADVENTVS PROBI AVG, between the  
 horse's back legs: –, in ex.: XXI  
 RIC V.2, 632 (var.)  
 3.44 g; 23 mm; 6 h  
 Tower 27, ha II, Sq. 191

46\*. *Inv. No.* 123/09w (6d) / *Museum No.* 3846

Siscia mint, *antoninianus*

*Obv.* Rad. bust r., IMP C M AVR  
PROBVS AVG

*Rev.* Emperor stg. r., clasping hand of  
Concordia stg. l., between them: V, CON-  
CORD MILIT, in ex.: XXI

RIC V.2, 651 (var.)

3.80 g; 23 mm; 11 h

Tower 27, ha II, Sq. 191

### Carus (282–283)

47. *Inv. No.* 2/10w / *Museum No.* 4021

Ticinum mint, *antoninianus*

*Obv.* Rad. bust r., IMP CARVS P F AVG

*Rev.* Spes walking l., holding flower and  
raising robe, S[PES P]VBLICA, in ex.:  
SXXI

RIC V.2, 82

2.97 g; 22 mm; 12 h (pierced twice)

Tower 4, ha XIX, Sq. 173

### Diocletian (284–305)

48. *Inv. No.* 28/14w

289–290, Siscia mint, *antoninianus*

*Obv.* Rad. bust r., IMP C C VAL  
DIOCLETIANVS P F AVG

*Rev.* Emperor stg. r. and Jupiter stg. l.,  
sacrificing at altar, each holding sceptre,  
CONSERVATOR AVGG, in ex.: XXI[...]  
I•

RIC V.2, 263 (var.)

3.83 g; 23 mm; 6 h

East Gate, ha XII, Sq. 329

49. *Inv. No.* 16/10w / *Museum No.* 4022

291, Heraclea mint, *antoninianus*

*Obv.* Rad. bust r., IMP C C VAL DIO-  
CLETIANVS P F AVG

*Rev.* Emperor stg. r., holding *parazonium*,  
receiving Victory Jupiter stg. l., holding  
sceptre, CONCORDIA [MIL]ITVM, in  
field: ε, in ex.: •XXI•

RIC V.2, 284

4.14 g; 22 mm; 12 h

North Gate, ha III, Sq. 137

50. *Inv. No.* 205/07w / *Museum No.* 3731

292, Heraclea mint, *antoninianus*

*Obv.* Rad. bust r., IMP C C VAL  
DIOCLETIANVS P F AVG

*Rev.* Emperor stg. r., holding *parazonium*,  
receiving Victory Jupiter stg. l., holding  
sceptre, CONCORDIA MILITVM, in  
field: HB, in ex.: [•XXI•] (?)

RIC V.2, 284 (?)

2.15 g; 21 mm; 12 h

Tower 27, ha II, Sq. 171

51. *Inv. No.* 49/14w

c. 295–299, Cyzicus mint, AE

*Obv.* Rad. bust r., IMP C C VAL DIO-  
CLETIANVS P F AVG

*Rev.* Emperor stg. r., receiving Victory  
Jupiter stg. l., leaning on sceptre, CON-  
CORDIA MI[L]IT[VM], in field: KΓ

RIC VI, 15–17

3.20 g; 22 mm; 12 h

East Gate, ha XII, Sq. 369

### Maximian (286–305)

52. *Inv. No.* 116/09w (No. 4) / *Museum No.* 3849

292–295, Heraclea mint, *antoninianus*

*Obv.* Rad. bust r., [IMP C M] A MAX-  
IMIANVS P F AVG

*Rev.* Emperor stg. r., holding *parazonium*,  
receiving Victory Jupiter stg. l., holding  
sceptre, , CONCORDIA [MILITVM], in  
field: HF, in ex.: •[XXI]•

RIC V.2, 595

1.72 g; 20 mm; 12 h

Tower 27, ha II, Sq. 191



Fig. 16. Selected late Roman coins (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | Photos and processing P. Jaworski)

**Uncertain issuers (second half of 3rd century)**

53. *Inv. No. 222/07w / Museum No. 933-HCΦ*

Uncertain mint, *antoninianus*

*Obv.* Rad. bust r., [... A]VG

*Rev.* Two figures stg. facing each other, [C] ONCO[RDIA ...]

Uncertain RIC type

1.23 g; 19 mm; ?

Tower 27, ha II, Sq. 151

54. *Inv. No. 4/10w / Museum No. 1060-HCΦ*

Uncertain mint, *antoninianus*

*Obv.* Rad. bust r., [...]

*Rev.* Female figure stg. l., holding cornucopia, [...]

Uncertain RIC type

2.72 g; 20 mm; 11 h

Tower 27, ha II, Sq. 171

**Galerius (293–311)**

55. *Inv. No. 48/14w*

308–309, Cyzicus mint, AE

*Obv.* Laur. bust r., GAL MAXIMIANVS P F AVG

*Rev.* Mars advancing r., naked but for floating chlamys, holding spear and trophy, VIRTVTI EXERCITVS, in l. field: B, in ex.: MKV

RIC VI, 47

6,23 g; 27 mm; 6 h

East Gate, ha XII, Sq. 329

**Licinius I (307–324)**

56. *Inv. No. 250/07w / Museum No. 3733*

311, Nicomedia mint, AE

*Obv.* Laur. bust r., IMP C VAL LIC[IN LICINVS P F AVG]

*Rev.* Jupiter stg. l., chlamys hanging behind, in r. hand holding Victory on globe, l. hand leaning on sceptre, eagle at feet to l., IOVI CONSER[VATORI], in r. field: [...], in ex.:

SMN

RIC VI, 69a

1.48 g; 22 mm; 6 h (broken, about 1/2)

Northeastern corner tower/Tower No. 2, ha V, Sq. 293

57. *Inv. No. 88/14w*

313, Heraclea mint, AE

*Obv.* Laur. bust r., IMP C VAL LICIN LICINVS P F AVG

*Rev.* Jupiter stg. facing, head l., in r. hand holding Victory on globe, l. hand leaning on sceptre, eagle with wreath in beak at feet to l., IOVI CONSERVATORI AVGG, in r. field: Δ, in ex.: SMHT

RIC VI, 73

3.55 g; 21 mm; 12 h

East Gate, ha XII, Sq. 309

**Constantine I (308–337)**

58. *Inv. No. 105/09w (No. 2) / Museum No.*

3850

326–328, Mennica Thessaloniki, AE

*Obv.* Laur. head r., [CONSTA]N[TINVS [AVG] (?)

*Rev.* Camp gate, two turrets, no doors, star above, PROVIDENTIAE AVGG, in ex.: SMTST

RIC VII, 153

2.96 g; 18 mm; 5 h

Tower 27, ha II, Sq. 151

59. *Inv. No. 218/07w / Museum No. 3734*

330–333, Thessalonica mint, AE

*Obv.* Diad. bust r., CONSTANTINVS MAX AVG

*Rev.* Two soldiers stg. facing, looking at one another, reversed spear in outer hand, inner hand on shield resting on ground, between them two standards, GLORIA EXERC[ITVS], in ex.: SMTSA

RIC VII, 183

1.95 g; 18 mm; 12 h  
Tower 27, ha II, Sq. 151

**60.** *Inv. No.* 18/11w / *Museum No.* 4104  
330–335, Nicomedia mint, AE  
*Obv.* Diad. bust r., CONSTANTINVS  
MAX AVG

*Rev.* Two soldiers stg., between them two standards, GLORIA EXERCITVS, in ex.: SMNS

RIC VII, 188

1.97 g; 17 mm; 12 h  
Tower 5 (test pit), ha XIX, Sq. 273

**61.** *Inv. No.* 203/07w / *Museum No.* 3737  
336–337, uncertain mint, AE  
*Obv.* Diad. bust r., CONSTANTINVS  
MAX AVG

*Rev.* Two soldiers stg., between them one standard, [G]LORIA EXERC[I]TVS, in ex.: [...]

Uncertain RIC type  
1.89 g; 19 mm; 12 h (pierced)  
Tower 27, ha II, Sq. 191

### Urbs Roma series

**62.** *Inv. No.* 230/12w  
About 336–340, uncertain mint, AE  
*Obv.* Helmeted and dr. bust of Roma l., [VRB]S [ROMA]

*Rev.* Two soldiers stg., between them one standard, [GLORIA EXERCITVS], in ex.: [...]

Uncertain RIC type  
—; —; —  
East Gate, ha XII, Sq. 350

### Crispus (317–326)

**63.** *Inv. No.* 15/10w / *Museum No.* 4024  
324–325, Rome mint, AE  
*Obv.* Laur. bust l., FL IVL CRISPVS NOB  
CAES

*Rev.* Camp gate, two turrets, no doors, star above, [PROVIDENTIAE CAESS], in ex.: RS

RIC VII, 266  
2.74 g; 19 mm; 12 h  
North Gate, ha III, Sq. 116

### Constantine II (337–340)

**64.** *Inv. No.* 65/14w  
333–336, Heraclea mint, AE  
*Obv.* Diad. bust r., CONSTANTINVS IVN  
NOB C

*Rev.* Two soldiers stg., between them two standards, GLORIA EXERCITVS, in ex.: SMHA\*

RIC VII, 137  
2.59 g; 18 mm; 11 h  
East Gate, ha XII, Sq. 309

### Constans or Constantius II (caesars)

**65.** *Inv. No.* 240/07w / *Museum No.* 3736  
333–336, uncertain mint, AE  
*Obv.* Diad. bust r., [...]ONSTAN[...]  
*Rev.* Two soldiers stg., between them two standards, [GLORIA EXERCITVS], in ex.: [...]

Uncertain RIC type  
1.68 g; 17 mm; 6 h  
Tower 27, ha II, Sq. 131

### Constantine I (posthumous)

**66.** *Inv. No.* 248/07w / *Museum No.* 3758  
337–340, Nicomedia mint, AE  
*Obv.* Veiled head r., [DV CONSTANT]  
INVS PT AVGG

*Rev.* Emperor, veiled, in quadriga to r., the hand of God reaches down to him, in ex.: SMNA

RIC VIII, 18  
1.35 g; 14 mm; 12 h  
Northeastern corner tower/Tower No. 2, ha V, Sq. 293

67. *Inv. No.* 60/06w / *Museum No.* 3664  
347–348, Constantinople mint, AE  
*Obv.* Veiled head r., DV CONST[AN-TINVS] PT AVGG  
*Rev.* Emperor stg. r., veiled, raising r. hand, VN-MR, in ex.: CONSA  
RIC VIII, 68  
1.47 g; 15 mm; 6 h  
Northeastern corner tower/Tower No. 2, ha V, Sq. 129

68. *Inv. No.* 210/07w / *Museum No.* 3742  
347–348, uncertain mint, AE  
*Obv.* Veiled head r., DV CONSTANTI-NVS PT AVGG  
*Rev.* Emperor stg. r., veiled, raising r. hand, [VN]-MR, in ex.: [...]  
Uncertain RIC type  
1.45 g; 15 mm; 6 h  
Tower 27, ha II, Sq. 171

### Constans (337–350)

69. *Inv. No.* 213/07w / *Museum No.* 3740  
340, Cyzicus mint, AE  
*Obv.* Diad. bust r., [D] N CONSTANS P F AVG  
*Rev.* Two soldiers stg., between them one standard, G[LORIA EXERCITVS], in ex.: SMKI  
RIC VIII, 18  
1.39 g; 16 mm; 6 h  
Tower 27, ha II, Sq. 171

70. *Inv. No.* 216/07w / *Museum No.* 3739  
347–348, Thessalonica mint, AE  
*Obv.* Diad. bust r., CONSTANS P F A[VG]  
*Rev.* Two Victories facing one another, each holding wreath and palm-branch, VICTO-RIAE DD A[VGGQ NN], in ex.: SMTSA  
RIC VIII, 106  
0.74 g; 16 mm; 6 h  
Tower 27, ha II, Sq. 151

### Constantius II (337–361)

71. *Inv. No.* 219/07w / *Museum No.* 3738  
336–337, uncertain mint, AE  
*Obv.* Diad. bust r., FL IVL CONSTAN-TIVS NOB C  
*Rev.* Two soldiers stg., between them one standard, GLORIA EXER[CI]TVS, in ex.: [...]  
Uncertain RIC type  
1.29 g; 15 mm; 12 h  
Tower 27, ha II, Sq. 151

72. *Inv. No.* 3/10w / *Museum No.* 4026  
347–348, uncertain eastern mint, AE  
*Obv.* Diad. bust r., D N CONSTANTIVS P F AVG  
*Rev.* VOT/XX/MVLT/XXX within wreath, in ex.: [...]  
Uncertain RIC type  
1.78 g; 17 mm; 10 h  
Tower 27, ha II, Sq. 131

73. *Inv. No.* 223/07w / *Museum No.* 3743  
347–348, uncertain eastern mint, AE  
*Obv.* Diad. bust r., D N CONS[TANTI]VS P F AVG  
*Rev.* VOT/[XX]/MVLT/XXX within wreath, in ex.: [...]  
Uncertain RIC type  
1.67 g; 14 mm; 1 h  
Tower 27, ha II, Sq. 151

74. *Inv. No.* 33/14w  
351–355, Thessalonica mint, AE  
*Obv.* Diad. bust r., D N CONSTANTIVS P F AVG  
*Rev.* Helmeted soldier l., shield on l. arm, spearing falling horseman, shield on ground at r.; horseman turns to face soldier and extends l. arm, FEL TEMP [REPA] RATIO, in l. field: M, in ex.: SMTS (?)  
RIC VIII, 211

1.50 g; 17 mm; 11 h

East Gate, ha XII, Sq. 329

**75.** *Inv. No. 8/10w / Museum No. 4025*

351–355, Heraclea mint, AE

*Obv.* Diad. bust r., D [N CONST]ANTIVS  
P F AVG, in l. field: Δ

*Rev.* Soldier spearing fallen horseman, [FEL  
TEMP REPAR]ATI[O], in ex.: SMHA (?)  
RIC VIII, 86

3.98 g; 19 x 23 mm; 12 h

North Gate, ha III, Sq. 157

**76.** *Inv. No. 56/06w / Museum No. 3665*

351–355, Heraclea mint, AE

*Obv.* Diad. bust r., D N CONSTANTIVS  
P F AVG

*Rev.* Soldier spearing fallen horseman, FEL  
TEMP REPARATIO, in ex.: SMHΓ (?)  
RIC VIII, 90

1.70 g; 18 mm; 5 h and 11 h (reverse struck  
twice)

Northeastern corner tower/Tower No. 2,  
ha V, Sq. 150

**77.** *Inv. No. 220/07w / Museum No. 3744*

355–361 (?), Siscia mint, AE

*Obv.* Diad. bust r., D N CONSTANTIVS  
P F A[VG]

*Rev.* Soldier spearing fallen horseman, [FEL  
T]EMP REPARATIO, in l. field: M, in ex.:  
SMSIS

RIC VIII, – (similar to RIC VIII, 369–384  
but different mint mark)

1.71 g; 20 mm; 12 h

Tower 27, ha II, Sq. 151

**78.** *Inv. No. 232/12w / Museum No. 4121*

351–361, Constantinople mint, AE

*Obv.* Diad. bust r., [DN C]ONSTANTIVS  
P F AVG

*Rev.* Soldier spearing fallen horseman, FEL  
TEMP RE[PARA]TIO, in ex.: CONS[...]  
Uncertain RIC type

2.96 g; 17 mm; 5 h

East Gate, ha XII, Sq. 330

**79.** *Inv. No. 106/09w (No. 3) / Museum No. 3852*

351–361, Nicomedia mint (?), AE

*Obv.* Diad. bust r., D N CONSTANTIVS  
P F AVG

*Rev.* Soldier spearing fallen horseman,  
[FEL TEMP RE]PARATIO, in ex.:  
[SM]N[...] (?)

Uncertain RIC type

2.78 g; 17 mm; 12 h

Tower 27, ha II, Sq. 151

**80.** *Inv. No. 217/07w / Museum No. 3745*

351–361, uncertain mint, AE

*Obv.* Diad. bust r., D N CONSTA[N]TIVS  
P F A[VG]

*Rev.* Soldier spearing fallen horseman, [FEL  
T]EMP REPARATIO, w l. field: M, in ex.:  
[...]A

Uncertain RIC type

1.83 g; 18 mm; 12 h

Tower 27, ha II, Sq. 151

**81.** *Inv. No. 238/07w / Museum No. 3746*

351–361, uncertain mint, AE

*Obv.* Diad. bust r., D N CONSTANTIVS  
P F [AVG]

*Rev.* Soldier spearing fallen horseman, FEL  
TEMP [REPARATIO], in l. field: –, in ex.:  
[...]

Uncertain RIC type

1.82 g; 17 mm; 4 h

Tower 27, ha II, Sq. 171

**Constantius Gallus (351–354)**

**82.** *Inv. No.* 236/07w / *Museum No.* 3747  
351–355, Siscia mint, AE  
*Obv.* Bareheaded bust r., D N CONSTAN-  
TIVS IVN NOB C  
*Rev.* Soldier spearing fallen horseman, FEL  
TEMP REPARATIO, in ex.: ΓSIS  
RIC VIII, 351  
2.41 g; 18 mm; 6 h  
Tower 27, ha II, Sq. 171

**83.** *Inv. No.* 9/10w / *Museum No.* 4027  
351–355, Heraclea mint (?), AE  
*Obv.* Bareheaded bust r., [D N C]ON-  
STANTIVS NOB C  
*Rev.* Soldier spearing fallen horseman, [FEL  
TEMP] REPA[RATIO], in ex.: [...]   
RIC VIII, 91 (?)  
2.61 g; 16 mm; 5 h  
North Gate, ha III, Sq. 117

**84.** *Inv. No.* 228/07w / *Museum No.* 3748  
351–355, Constantinople mint, AE  
*Obv.* Bareheaded bust r., D N [FL CL  
CONSTANTIVS NOB CAES] (?)  
*Rev.* Soldier spearing fallen horseman, [FEL  
TEMP REPARATIO], in l. field: •S•\*, in  
ex.: CONSA (?)  
RIC VIII, 117  
4.77 g; 21 mm; 12 h  
Tower 27, ha II, Sq. 151

**85.** *Inv. No.* 12/14w  
351–354, Cyzicus mint, AE  
*Obv.* Bareheaded bust r., D N FL CL CON-  
STANTIVS NOB CAES  
*Rev.* Soldier spearing fallen horseman, FEL  
TEMP REPARATIO, in ex.: SMKA  
RIC VIII, 106  
2.77 g; 18 mm; 11 h  
East Gate, ha XII, Sq. 349

**86.** *Inv. No.* 11/10w / *Museum No.* 4028  
351–354, Cyzicus mint, AE  
*Obv.* Bareheaded bust r., D N FL CL CON-  
STANTIVS NOB CAES  
*Rev.* Soldier spearing fallen horseman, FEL  
TEMP REPARATIO, in ex.: SMKS  
RIC VIII, 106  
2.04 g; 16 x 18 mm; 1 h  
North Gate, ha III, Sq. 137

**Julian II (361–363)**

**87.** *Inv. No.* 5/13w/f  
355–361, Siscia mint, AE  
*Obv.* Bareheaded bust r., D N [IVLIANVS  
NOB C] (?)  
*Rev.* Emperor, helmeted and in military  
dress, stg. l., holding globe and spear, [SPES  
REI] PVBLICE, in ex.: ASIS (?)  
RIC VIII, 391–404 (var.)  
2.48 g; 17 mm; 12 h  
North Gate, ha IV, Sq. 136

**88.** *Inv. No.* 50/14w  
355–361, Thessalonica mint, AE  
*Obv.* Bareheaded bust r., [D N CAES  
IVLIA]NVS NOB CAES  
*Rev.* Soldier spearing fallen horseman, FEL  
TEMP REPARATIO, in ex.: SMTS  
Uncertain RIC type (similar to RIC VIII,  
210)  
2.85 g; 16 mm; 6 h  
East Gate, ha XII, Sq. 349 (“or 369”)

**89.** *Inv. No.* 46/14w  
355–361, Cyzicus mint, AE  
*Obv.* Bareheaded bust r., D N FL CL IV-  
LIANVS NOB CS  
*Rev.* Soldier spearing fallen horseman, FEL  
TEMP REPARATIO, in l. field: •M•, in  
ex.: SMKA  
RIC VIII, 116

2.85 g; 18 mm; 6 h

East Gate, ha XII, Sq. 369

### Valentinian I (364–375)

90. *Inv. No.* 241/07w / *Museum No.* 3751

364–367, Siscia mint, AE

*Obv.* Diad. bust r., D N VALENTINIAN-  
[VS P] F AVG

*Rev.* Emperor advancing r., with r. hand  
dragging captive and holding *labarum* in  
l., [GLOR]IA ROMANORVM, in r. field:

\* / A, in ex.:  $\Gamma$ SISC

RIC IX, 5 (a)

1.90 g; 18 mm; 1 h

Tower 27, ha II, Sq. 133

91. *Inv. No.* 12/10w / *Museum No.* 4029

364–367, Thessalonica mint, AE

*Obv.* Diad. bust r., [D N] VALENTINI-  
ANVS P F A[VG]

*Rev.* Emperor advancing r., with r. hand  
dragging captive and holding *labarum* in  
l., GLORIA ROMANORVM, in l. field:

\*, in r. field: \* / B, in ex.: TES

RIC IX, 16 (a)

1.79 g; 17 mm; 12 h

North Gate, ha III, Sq. 136

92. *Inv. No.* 239/07w / *Museum No.* 3757

367–375 (for Gratian), Siscia mint, AE

*Obv.* Diad. bust r., D N GRATIANVS P  
F AVG

*Rev.* Emperor advancing r., with r. hand  
dragging captive and holding *labarum* in  
l., GLORIA ROMANORVM, w l. field:  
Q, in r. field: A / R, in ex.:  $\Delta$ SISCE

RIC IX, 14 (c)

2.40 g; 18 mm; 11 h

Tower 27, ha II, Sq. 191

### Valens (364–378)

93. *Inv. No.* 32/14w

364–367, Siscia mint, AE

*Obv.* Diad. bust r., D N VALENS P F AVG

*Rev.* Victory advancing l., holding wreath  
and palm-branch, SECVRIT[AS] REI  
PVBLICAE, in ex.: •ASISC

RIC IX, 7 (b)

2.40 g; 19 mm; 12 h

East Gate, ha XII, Sq. 329

94. *Inv. No.* 227/07w / *Museum No.* 3755

364–367 (?), Uncertain mint, AE

*Obv.* Diad. bust r., D N VALENS P F AVG

*Rev.* Emperor advancing r., with r. hand  
dragging captive and holding *labarum* in l.,  
GLORIA ROMANORVM, mint-mark in  
ex. uncertain

Uncertain RIC type

1.77 g; 19 mm; 6 h

Tower 27, ha II, Sq. 151

95. *Inv. No.* 214/07w / *Museum No.* 3756

367–375, Thessalonica mint, AE

*Obv.* Diad. bust r., D N VALENS P F AVG

*Rev.* Victory advancing l., holding wreath  
and palm-branch, SECVRITAS REI  
PVBLICAE, in l. field: • / -, in ex.: TES

RIC IX, 27 (b)

1.84 g; 17 mm; 6 h

Tower 27, ha II, Sq. 151

96. *Inv. No.* 230/07w / *Museum No.* 3754

Uncertain mint, AE

*Obv.* Diad. bust r., [D N] VALEN[S] P F  
A[VG]

*Rev.* Victory advancing l., holding wreath  
and palm-branch, [S]ECVRITA[S] REI  
PVBLICAE], mint mark in ex. uncertain

Uncertain RIC type

1.39 g; 16 mm; 12 h

Tower 27, ha II, Sq. 171

97. *Inv. No.* 10/10w / *Museum No.* 4030  
Uncertain mint, AE  
*Obv.* Diad. bust r., [D N VA]LENS P F  
AVG

*Rev.* Victory advancing l., holding  
wreath and palm-branch, SECVRITAS  
REI[PVBLCIAE], mint mark in ex. un-  
certain

Uncertain RIC type  
1.83 g; 17 mm; 12 h  
North Gate, ha III, Sq. 137

98. *Inv. No.* 235/07w / *Museum No.* 3753  
Uncertain mint, AE

*Obv.* Diad. bust r., D N VALENS P F  
AVG

*Rev.* Victory advancing l., holding wreath  
and palm branch, [SECVRITAS REI  
PVBLCIAE], mint mark in ex. uncertain

Uncertain RIC type  
1.80 g; 16 mm; 5 h  
Tower 27, ha II, Sq. 171

### Valentinian I or Valens

99. *Inv. No.* 208/07w / *Museum No.* 932-  
HCΦ

364–367, uncertain mint, AE

*Obv.* Diad. bust r., [...]

*Rev.* Emperor stg. facing, head r., holding  
standard and Victory on globe, [RESTIT-  
VTOR REIP], mint mark in ex. uncertain

Uncertain RIC type  
1.48 g; 16 mm; 6 h  
Tower 27, ha II, Sq. 171

### Theodosius I (379–395)

100. *Inv. No.* 209/07w / *Museum No.* 3759  
379–383, uncertain mint, AE

*Obv.* Diad. bust r., [D] N THEODOSIVS  
P F AVG

*Rev.* VOT/X/MVLT/XX in wreath, mint  
mark in ex. uncertain

Uncertain RIC type  
1.28 g; 12 mm; 11 h  
Tower 27, ha II, Sq. 171

101. *Inv. No.* 224/07w / *Museum No.* 931-  
HCΦ

Uncertain mint, AE

*Obv.* Diad. bust r., [D N] THEODO[SIVS  
P F AVG]

*Rev.* Illegible

Uncertain RIC type  
1.37 g; 16 mm; ?  
Tower 27, ha II, Sq. 151

102. *Inv. No.* 232/07w / *Museum No.* 3761  
388–392 (for Valentinian II), Heraclea  
mint, AE

*Obv.* Diad. bust r., D N VALENT[INIAN-  
VS] P F AVG

*Rev.* Victory advancing l., holding trophy  
in r. hand and dragging captive with l.,  
SALVS [REI P]VBLCIAE, in l. field: *chi-*  
*rho*, in ex.: SMHB

RIC IX, 26 (a)  
1.06 g; 12 mm; 12 h  
Tower 27, ha II, Sq. 171

103. *Inv. No.* 68/14w  
388–392 (for Arcadius), Constantinople  
mint, AE

*Obv.* Diad. bust r., D N ARCADIVS  
[P F AVG]

*Rev.* Victory advancing l., holding trophy  
in r. hand and dragging captive with l.,  
[SALVS] REI PVBLCIAE, in l. field: *chi-*  
*rho*, in ex.: [C]ONSA

RIC IX, 86 (c)  
1.23 g; 14 mm; 12 h  
East Gate, ha XII, Sq. 309

104. *Inv. No.* 233/07w / *Museum No.* 3760  
388–392 (for Arcadius), Cyzicus mint, AE  
*Obv.* Diad. bust r., [D N AR]CADIVS

P F [AVG]

*Rev.* Victory advancing l., holding trophy in r. hand and dragging captive with l., SALVS REI PVBLICAE, in l. field: *chi-rho*, in ex.: [S]MKΓ

RIC IX, 26 (c)

1.30 g; 12 mm; 12 h

Tower 27, ha II, Sq. 151

**105.** *Inv. No.* 14/10w / *Museum No.* 4031

392–395 (for Arcadius), Heraclea mint, AE  
*Obv.* Diad. bust r., D N ARCADIVS P F AVG

*Rev.* Emperor stg. facing, head r., holding standard and globe, GLORIA ROMANORVM, in r. field: \*, in ex.: SMHA

RIC IX, 27(b)

4.67 g; 21 mm; 6 h

North Gate, ha III, Sq. 117

**106.** *Inv. No.* 229/12w / *Museum No.* 4126

392–395 (for Arcadius), Nicomedia mint, AE

*Obv.* Diad. bust r., D N ARCADIV[S P F] AVG

*Rev.* Emperor stg. facing, head r., holding standard and globe, GLORIA ROMANO[RV]M, in ex.: SMNB

RIC IX, 46(b)

4.23 g; 21 mm; 6 h

East Gate, ha XII, Sq. 348

### Arcadius (395–408)

**107.** *Inv. No.* 2/15w

395–401, uncertain mint, AE

*Obv.* Diad. bust r., D N [ARCAD]IVS P F AVG

*Rev.* Emperor stg. l., head r., holding spear and resting l. hand on shield, Victory holding palm branch in l. hand, crowns him, [VIRTVS EX]ERCI[TI], mint mark in ex.

uncertain

Uncertain RIC type

1.95 g; 17 mm; 6 h

Tower 12, ha XXXVIII, found in a spoil heap

**108.** *Inv. No.* 59/06w / *Museum No.* 3666

401–403, Nicomedia or Cyzicus mint, AE  
*Obv.* Helmeted bust facing, diad., spear in r. hand, shield slung behind l. shoulder, D N ARCADIVS P F AVG

*Rev.* Constantinopolis std. facing, head l., holding sceptre and Victory on globe, beneath r. foot, a prow, CONCORDIA AVGG, in ex.: SM[...]

RIC X, 91 (Nicomedia) or 94 (Cyzicus)

1.84 g; 17 mm; 7 h

Northeastern corner tower/Tower No. 2, ha V, Sq. 150

**109.** *Inv. No.* 17/11w / *Museum No.* 4106

401–403, uncertain eastern mint, AE

*Obv.* Helmeted bust facing, diad., spear in r. hand, shield slung behind l. shoulder, [D N ARCADI]VS P F AVG

*Rev.* Constantinopolis std. facing, head l., holding sceptre and Victory on globe, beneath r. foot, a prow, [C]ONCORDI[A AVGG], mint mark in ex. uncertain

Uncertain RIC type (see RIC X, 248)

1.65 g; 17 mm; 6 h

Tower 5, ha XIX, kw. 273 (test pit)

**110.** *Inv. No.* 66/14w

406–408, Constantinople mint, AE

*Obv.* Diad. bust r., \* behind, [D N THEO]DOSIVS [P F AVG]

*Rev.* Three emperors stg. facing, each of two taller, outermost figures turn towards each other, holding spear and resting hand on shield, smaller innermost figure, holding spear, his head is turned r., [GLORIA

ROMANORVM], in ex.: [C]ONSA  
RIC X, 144  
1.57 g; 15 mm; 6 h  
East Gate, ha XII, Sq. 329

### Theodosius II (408–450)

**111.** *Inv. No.* 64/14w  
408–423, uncertain eastern mint, AE  
*Obv.* Diad. bust r., [D N] THEOD[OSIVS  
P F AVG]  
*Rev.* Two emperors stg. facing (figure to  
l. invisible), heads turned to one another,  
each holding spear and supporting between  
them a globe, [GLORIA ROMANORVM],  
mint mark in ex. uncertain  
Uncertain RIC type (see RIC X, 272)  
1.37 g; 10 mm; 5 h  
East Gate, ha XII, Sq. 309

### Uncertain issuers (4th–first half of 5th century)

**112.** *Inv. No.* 67/14w  
About 327–340, uncertain mint, AE  
*Obv.* Helmeted and dr. bust of Roma l.,  
[VRB]S [R]OM[A]  
*Rev.* Illegible  
Uncertain RIC type  
1.52 g; 17 mm; ?  
East Gate, ha XII, Sq. 309

**113.** *Inv. No.* 206/07w / *Museum No.* 3741  
About 337–347, uncertain mint, AE  
*Obv.* Diad. bust r., [...]  
*Rev.* Two soldiers stg., between them one  
standard, [GLORIA] EXE[RCITVS], mint  
mark in ex. uncertain  
Uncertain RIC type  
1.05 g; 13 mm; 6 h  
Tower 27, ha II, Sq. 171

**114.** *Inv. No.* 228/12w  
About 337–347, uncertain mint, AE  
*Obv.* Diad. bust r., [...]

*Rev.* Two soldiers stg., between them one  
standard, [GLORIA EXERCITVS], mint  
mark in ex. uncertain  
Uncertain RIC type  
--; --; --  
East Gate, ha XII, Sq. 329

**115.** *Inv. No.* 105/09w (No. 1)  
About 351–361, uncertain mint, AE  
*Obv.* Diad. bust r., [...] P F [...]  
*Rev.* Soldier spearing fallen horseman, [FEL  
TEMP REPA]RATIO, mint mark in ex.  
uncertain  
Uncertain RIC type  
2.78 g; 16x18 mm; 11 h  
Tower 27, ha II, Sq. 151

**116.** *Inv. No.* 87/14w  
About 364–367, uncertain mint, AE  
*Obv.* Diad. bust r., [...]  
*Rev.* Emperor advancing r., with r. hand  
dragging captive and holding *labarum* in l.,  
GLORIA ROMANORVM, mintmark in  
ex. uncertain  
Uncertain RIC type  
2.09 g; 17 mm; 7 h  
East Gate, ha XII, Sq. 309

**117.** *Inv. No.* 229/07w / *Museum No.* 934-  
HCΦ  
About 364–375, uncertain mint, AE  
*Obv.* Diad. bust r., [...]S P F AVG  
*Rev.* Victory advancing l., holding wreath  
and palm branch, [SEC]VRITAS [REI  
PVBLICAE], mint mark in ex. uncertain  
Uncertain RIC type  
1.37 g; 12 mm; 12 h  
Tower 27, ha II, Sq. 171

**118.** *Inv. No.* 211/07w / *Museum No.* 930-HCΦ  
Uncertain mint, AE  
*Obv.* Diad. bust r., [...]



Rev. M, cross above, A below, A/N/N/O to l., X/X/X/I to r., in ex.: KYZ

MIB I, 120

17.40 g; 33 mm; 6 h

Tower 27, ha II, Sq. 151

### Maurice Tiberius (582–602)

128. Inv. No. 245/07w / Museum No. 3765  
587/588, Nicomedia mint, half *folles*

Obv. Crowned and cuir. bust facing, holding *globus cruciger* and shield, [D N] m[...] TI (?)

Rev. K, cross above, A below, A/N/N/O to l., Ч/I to r.

MIB II, 79

5.05 g; 20 x 23 mm; 7 h

Northeastern corner tower/Tower No. 2, ha V, Sq. 293



Fig. 17. Selected Byzantine coins (University of Warsaw, Faculty of Archaeology, Archaeological Expedition to Novae | Photos and processing P. Jaworski)

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# In search of the camp of the IV Scythian Legion near ancient Artaxata: Pokr Vedi 2015–2018



**Abstract:** Participating in the Roman campaign of Emperor Trajan against the Parthians (114–117), the *Legio IV Scythica*, was stationed in Artaxata, the capital of the province of Armenia at the time. Its presence there was immortalized on stamped roof-tiles, bricks and a monumental inscription discovered at the southern edge of the present-day village of Pokr Vedi. The inscription, carved in limestone, confirms building activities carried out by the Roman army. Inscriptions of this kind were frequently placed on the gates and most important buildings in the legionary camps. The investigation of the alleged location of the army camp on the outskirts of Pokr Vedi involved an array of non-invasive survey methods (surface prospection, aerial photography, interviews with inhabitants, topographical scanning of the terrain and geophysical electrical resistivity and magnetic surveys). The prospection and test excavations in areas selected on the basis of the accumulated survey data were carried out by a joint Polish and Armenian team.

**Key words:** Armenia, Artaxata, Pokr Vedi, non-invasive research, Roman army, *Legio IV Scythica*, legionary camp

During the last years of his reign Emperor Trajan conducted a war against the Parthians. The deployment of troops from the camp in Satala constituted a key strategic move on the eve of the war (Bennett 2005: 195). Artaxata was at that time the capital of Armenia. According to the sources, the *Legio IV Scythica*, along with the

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*vexillationes* of other legions, peacefully took control of the city in AD 114 (Cass. Dio 68.19.1–5). Archaeological evidence has confirmed the presence of Roman armies both in the city itself and beyond its walls. One such piece of evidence is

a monumental inscription discovered in 1967 on the southern border of the village of Pokr Vedi. Its content and size make it a viable choice for decorating one of the buildings constructed in the new legionary camp at the time.

### STATE OF RESEARCH

Artaxata is located in the Ararat Valley, about 40 km south of Yerevan, on the present-day border with Turkey [Fig. 1]. It was once a large city situated on 14 hills at the confluence of two rivers: the Araxes and its tributary, bearing the contemporary name of Metsamor. Artaxata was one of the capitals of the Kingdom of Armenia. According to Plutarch, Hannibal the Carthaginian was said to have pointed out the natural advantages of the locality to the Armenian king of Artaxata and urged him to build a city there (Plut. *Vit. Luc.* 31).

Armenian archaeologists assume the borders of the city to have reached as far as the modern-day villages of Lusarat, Nor Kyank and Pokr Vedi (Arakelyan

1982: 20; Tiracyan 1988: 94; Khachatryan 1998: 99; Gyulamiryan 2018: 161–165) [see Fig. 1]. The authors of this paper share the opinion with regard to Lusarat, the northern border of the city beginning directly past the 13th and 14th hill. In turn, the contemporary villages east of Artaxata: Pokr Vedi and Nor Kyank, were almost certainly located *extra muros*, as indicated by the outcomes of this project. As for the western boundary, the fact that today the remains of ancient Artaxata lie in the territory of two countries, Armenia and Turkey, and that research is insufficient and restricted by the current political situation, it is especially difficult to trace it. Nothing has been published on the subject so far.

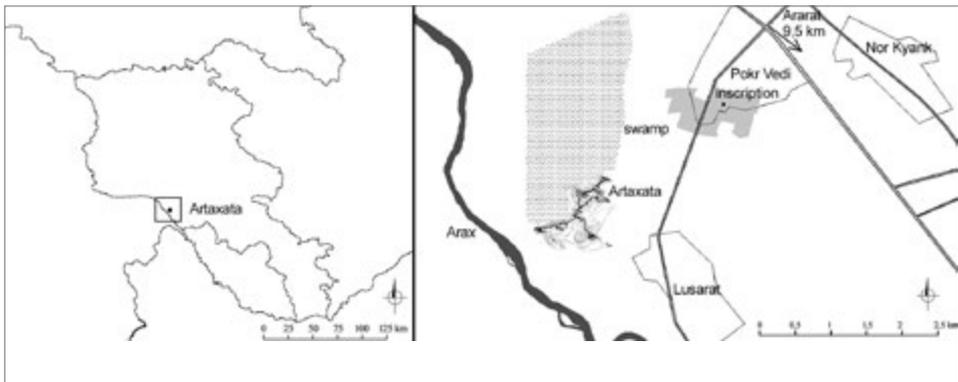


Fig. 1. Artaxata on the map of modern Transcaucasia and a map of the vicinity of Artaxata; the research area is marked light grey (University of Warsaw Pokr Vedi Project | after Khachatryan 1998: Fig. 2; drawing O. Kubrak)

At the northern end, the archaeological site borders with a swampy area, which was a natural barrier for the city's development in antiquity [see Fig. 1]. The present-day riverbed of the Araxes cuts through the archaeological site, demarcating the border between Armenia and Turkey. The smaller Metsamor river does not currently flow through this area, and the course of the ancient riverbed has not been traced.

Undoubtedly the most important artifact linked to the presence of the Roman army near Artaxata is a monumental building inscription and a recently discovered tombstone of a soldier from the *Legio I Italica*. In order to better understand this discovery, one should compare the inscription with other known texts referring to building investments carried out with the participation of the *Legio IV Scythica*.

Not much in the way of epigraphic evidence can be associated with this unit, referred to informally by specialists as a “construction legion” in view of their building activity wherever they were stationed. Inscriptions confirming the participation of the *Legio IV Scythica* in construction works are known from the region of the Danube in the vicinity of the Iron Gates (Petrović 2004: 75–76) and from Zeugma (Speidel 2012: 611–612; Crowther 2013: 203–204; Hartmann and Speidel 2013: 386–390). In addition, inscriptions mentioning this legion were found in Tarraco (*CIL* II 4245), Apamea (*CIL* III 335) and Andavtonia (*CIL* III 4013).

The legion was present in central Armenia between 114 and 117, the time of Trajan's Parthian campaign (Arakelyn 1974: 45). Despite the short duration of their stationing here, the Roman soldiers



Fig. 2. Three-dimensional model of the inscription from Pokr Vedi, now at the National Museum in Yerevan (University of Warsaw Pokr Vedi Project | model O. Kubrak)

left numerous traces of their construction activities, including stamped roof-tiles, bricks (Khachatryan 2006: 230–231, 234) and floor tiles. In 1967, during the installation of water pipes on the southern edges of Pokr Vedi, the Armenian archaeologist B.N. Arakelyan discovered a Latin inscription (Arakelyan 1971: 115–116; 1974: 47; 1982: 19; *AE* 1968: 510; Khachatryan 1981: 23; 2006: 231) [Fig. 2] as well as a tombstone of a soldier from the

*Legio I Italica* [Fig. 3], along with part of an unidentified stone structure and column fragments (Arakelyan 1971: 116–117; 1982: 19; *AE* 1968: 511). Rescue excavations at the time uncovered a number of ceramic fragments dated to the turn of the 1st and 2nd century.

The inscription is dated to AD 116 based on its content. It was well made, the letters stylized as *scriptura monumentalis quadratta*, which was reserved in An-



Fig. 3. Tombstone of a soldier from the *Legio I Italica* (University of Warsaw Pokr Vedi Project | photo courtesy M. Zardaryan; drawing after Gyulamiryan 2018: Fig. 1)

tiquity for official inscriptions placed in public places. Trajan's name in the genitive, Traianus, indicates that he was the founder of the inscription and, by default, of the building.<sup>1</sup> It is to be concluded that this unidentified structure was built by the soldiers of the *Legio IV Scythica* on commission from the emperor. The artifact is about 7.30 m long, 0.80 m high and from 0.13–0.16 m to 0.20–0.21 m thick. The text fits in three lines, with the letters in the first verse approximately 20 cm high and the other two lines made up of smaller letters of a height between 16 cm and 18 cm (*AE* 1968: 510).<sup>2</sup> The length of the inscription might be construed as indirect evidence for the width of the facade for which it had been prepared.

The slabs of the inscription were of local limestone. The nearest stone quarry from which this raw material could have been obtained is situated a few kilometers south of Artaxata. The most likely scenario is that the inscription was carved after the slabs had been delivered to the construction site and not before. Careful scrutiny of the inscription revealed previously unnoticed traces of a light red pigment originally used to paint the carved letters. This observation, made by Oskar

Kubrak and A. Trzop-Szczypiorska, would suggest that the building of which the inscription was a part was completed, contrary to the prevalent opinion to date that the slab had been destroyed during transportation and never reached the construction site.

The dearth of information on the circumstances of the discovery of this inscription contributed to the undertaking the project, which was aimed at gaining a better understanding of Roman army presence in the Araxes Valley. One of the objectives was a search for the structure for which the monumental building inscription was prepared.

The project also aimed to study the archaeological material found outside of the walls of Artaxata. Material from the 1960s and 1970s archaeological excavations in the vicinity of Pokr Vedi were never studied comprehensively, and only very rudimentary information was published in preliminary reports. Without excavation documentation, and sometimes without any documentation whatsoever, it was impossible to reconstruct the circumstances of the discovery of the inscription, not to mention the precise findspot and stratigraphic context.

## RESEARCH METHODS

The research conducted within the framework of the Pokr Vedi Project aimed at finding the remains of the camp of the *Legio IV Scythica* stationed in Artaxata (or near the city) in AD 114–117. The project

posited the use of a series of non-invasive methods in order to locate with greater precision the areas for verification through excavation. The southern fringes of Pokr Vedi village were surveyed over the course

1 The authors are grateful to the late Prof. Tadeusz Sarnowski, who was the first to point out this important detail.

2 Arakelyan (1971: 116; 1982: 19) gives the length of the inscription as 8.50 m; the remaining dimensions are the same as in *AE*.

of five field seasons (using the GPS-RTK receiving system for locating finds). An array of non-invasive methods was applied, including aerial photography, laser scanning, geophysical prospection (electrical resistivity and magnetic methods), as well as interviews with village inhabitants and participants of the earlier excavations. Trial trenches were planned only as a means of verifying the collected data.

In the initial stage, research was conducted at the National Museum in Yerevan. Permission was obtained to prepare new photographic documentation of the inscription for use in constructing a three-dimensional model of it. Direct access to the artifact revealed previously unregistered traces of red paint inside the carved letters. In addition, library and archive queries were conducted in the Institute of Archaeology and Ethnology of the Academy of Sciences of Armenia in Yerevan and in the library of the archaeological database in Lusarat.

A surface survey of the fields south of Pokr Vedi was designed to identify the site of the excavations in 1967. No documentation of this work has been preserved. This spot was approximately 2 km from the outer line of defensive walls of Artaxata. A perfect view of the hills with the ruins of the ancient city can be observed from this spot. The survey covered roughly 52 hectares of fields and orchards around the alleged site of the inscription. This area was divided into “squares”, adapting the actual size and shape to the field dimensions, property fencing, drainage ditches, etc., encountered in the area [Fig. 4].

Pottery and glass sherds, fragments of building ceramics and other small finds were collected during the field prospection and located within the borders of the grid of fields (plots of land). They were mapped with the aid of additional measurements taken with mobile GPS receivers [Fig. 5].



Fig. 4. Area south of Pokr Vedi: “squares” outlined in black and numbered in bottom right corner (Source Google Earth | drawing O. Kubrak)

The project undertook to interview as many Pokr Vedi villagers as possible, collecting in effect important additional information, which helped to specify the findspot of the inscription. Unexpectedly, the interviews yielded new data on burials from the first centuries of the common era located in various properties. In the course of the interviews, the project was also able to observe and document modern trenches dug for the purpose of installing a sewage system. This provided extra data, especially on the site stratigraphy.

Aerial photographs were taken over the course of two field seasons. For this task, a DJI Phantom 3 Professional drone was used, operated by Armenian specialist Arshaluys Mkrtchyan.

Laser scanning with a Leica Geosystems scanner was used for parts of the area under study (squares 6, 6a and 8). The method was intended to capture any ground unevenness that could indicate

the remains of camp embankments or ditches. Measurements of this type had not been part of the original project plan and were introduced to check out the potential of this device in the specific conditions of the site. The scanner was provided in cooperation with the Digital Humanities Lab of the University of Warsaw.

Geophysical prospection in the fourth and fifth seasons included magnetic and electrical resistivity surveys in areas selected based on the mapped clustering of ceramic finds dating from the first centuries of the common era and the tentative location of the site where the monumental Latin inscription was found according to the interviewed villagers. The magnetic survey was carried out with a Geometrics 858-G caesium magnetometer with an array of twin probes in horizontal configuration set 1 m apart. An ELMES ADA-07 alternating current device was used for



Fig. 5. Mapping of the distribution of 1st and 2nd century pottery and other ceramic finds (in red) in the area south of Pokr Vedi (Source Google Earth; University of Warsaw Pokr Vedi Project | processing O. Kubrak)

the electrical resistivity measurements, designed for archaeological geophysical and shallow geological testing.

Trial excavations carried out in the final stages of the project were aimed at

verifying the results obtained by the non-invasive methods. Trenches were dug in three different locations chosen on the basis of an analysis of the accumulated survey data

### RESULTS

#### AERIAL IMAGERY AND LASER SCANNING

An analysis of the aerial photographs of the region revealed no traces of buildings or any other structures that could be observed on the surface. The images were processed into orthophotomaps, which were later used to prepare an archaeological map of the area [Fig. 6].

The three-dimensional model of the terrain, which was the result of laser scan-

ning of part of the area which is today completely flat, did not show any surface irregularities that could be interpreted as traces of the camp.

#### GEOPHYSICAL PROSPECTION

Measurements were conducted in three different areas. Area 1 was located in square 11, the find place of the inscription according to initial assumptions. It

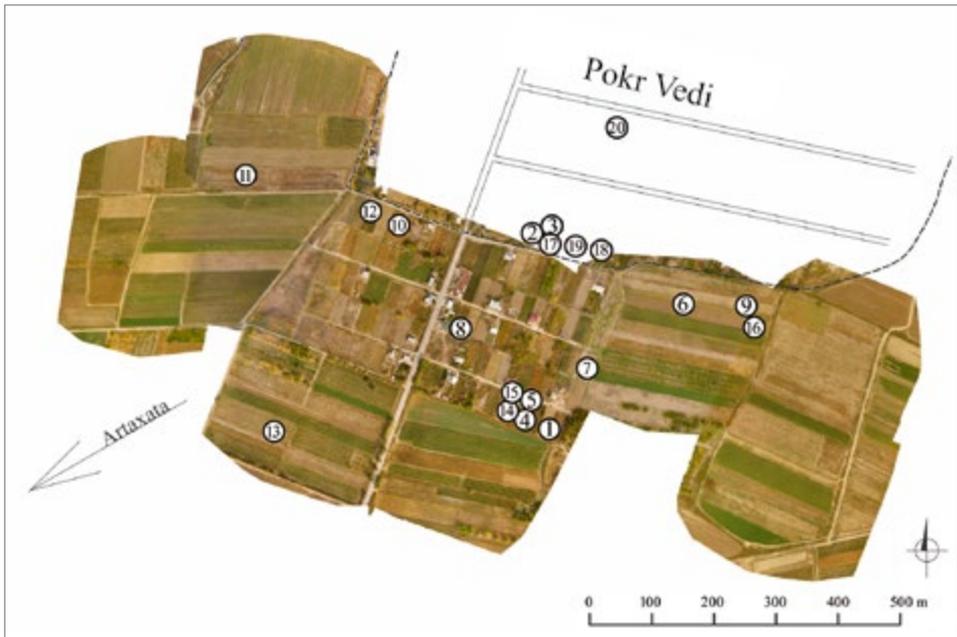


Fig. 6. Archaeological map of the area south of Pokr Vedi: 1–15 – loose finds [illustrated in Fig. 11]; 16 – trench in square 8; 17 – trench in square 11; 18 – trench in square 12, findspot of the inscription; 19 – location of two burials in ceramic vessels; 20 – location of a burial in a vessel covered with a limestone slab (University of Warsaw Pokr Vedi Project | orthophotomap A. Mkrtychyan, processing O. Kubrak)

was part of a 50 m by 67 m plot adjacent to some modern buildings from the south [see *Fig. 4*]. An electric resistivity survey was carried out here. Relatively low values of apparent ground resistivity predominated. Average values of ground resistivity correspond to loamy natural layers. Linear anomalies with higher values can be interpreted as filled trenches, dug probably for modern irrigation and water supply systems, as indicated by anomalies in places where elements of the irrigation system could still be observed on the surface.

Further analyses involved using various color scales and three-dimensional models of the distribution of apparent resistivity values. As a result, apart from the changes described above, a set of narrow linear anomalies was isolated, the right angles forming a structure measuring 4 m by 4 m [*Fig. 7*]. The structure is located in the vicinity of other, more pronounced anomalies, which could be associated with the presence of the irrigation system. The less pronounced nature of the

image of the regular structure could be an indication of its lying at a greater depth.

Area 2 was located in square 8 [see *Fig. 4*]. Magnetic field intensity measurements covered an area measuring 1.17 m by 2.62 m. Linear anomalies were detected, the source of which is the difference in the magnetic susceptibility of the fill (in the case of submerged features) or polar anomalies at the borders of the trenches (a moat) and embankments. The anomalies could reflect either features deliberately manmade or natural (mounds accumulated in place of the former riverbed). To check out this element, additional prospecting with the electric resistivity method was carried out in two areas (plots of land), cutting across these features at a right angle [*Fig. 8*].

In the case of the northern plot, the western border of the zone of increased resistivity was clearly recorded, while on the southern plot both the western and eastern border of the anomaly were visible. The observed differences could confirm the hypothesis presented above

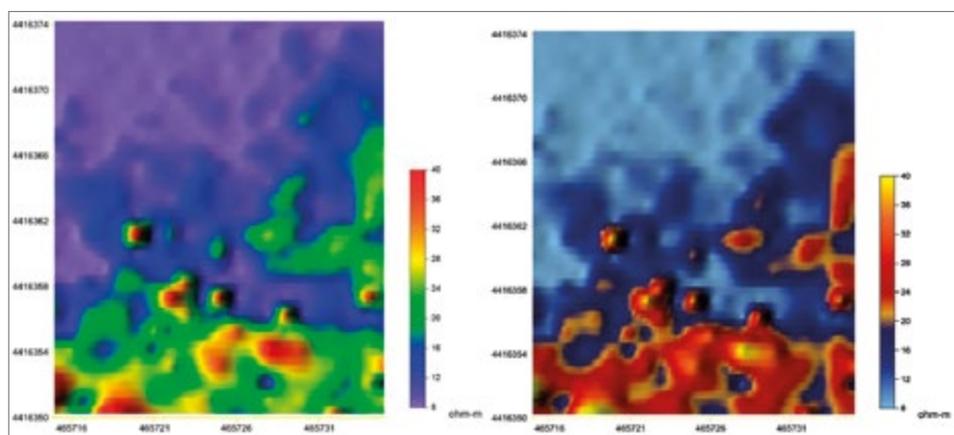


Fig. 7. Ground resistivity survey in Area 1 (values in the range of 8-40 ohm-m) (University of Warsaw Pokr Vedi Project | processing K. Misiewicz and W. Małkowski)

that the structure observed on the western plot may be of natural origin, while that on the eastern plot is the effect of anthropogenic changes.

Area 3 was located in square 2. The highest concentration of ceramic material was recorded in this area, including finds of sigilata-type vessel sherds. Two excavation areas (A and B) [Fig. 9] were traced here, on two different plots of land where construction projects were going on. It was not possible to distinguish anomalies that could be directly related to archaeological structures. Strong anomalies on the borders of the surveyed area were caused by modern construction, masking in effect any minor changes in the location of potential archaeological remains. A narrow dipolar anomaly on the north–south axis was probably caused by a modern water-supply system running to the buildings north of the survey area. After limiting the analysis of the calculated gradients of the horizontal compo-

nent of the total magnetic field strength vector, narrow parallel linear anomalies were visible, which probably resulted from deep ploughing conducted in the past. Additionally, the maps and three-dimensional models prepared for region B in area 3 did not show any significant changes that could be associated with remains from the Roman period [Fig. 10].

**FINDS FROM THE FIELD SURVEY**

**Pottery**

The surface surveys collected a total of 1447 potsherds, which were on the whole identified and dated. Only 19 finds, i.e., 1.3% of the entire collection, were attributed to before the Roman occupation of the province of Armenia. Of the entire collection, 207 vessel sherds were assigned to the end of the 1st and early 2nd centuries AD. Statistically, this amounts to 14% of the collection. By far the largest group, 1091 pieces (i.e., 75.3%), is made up of pottery from the period of

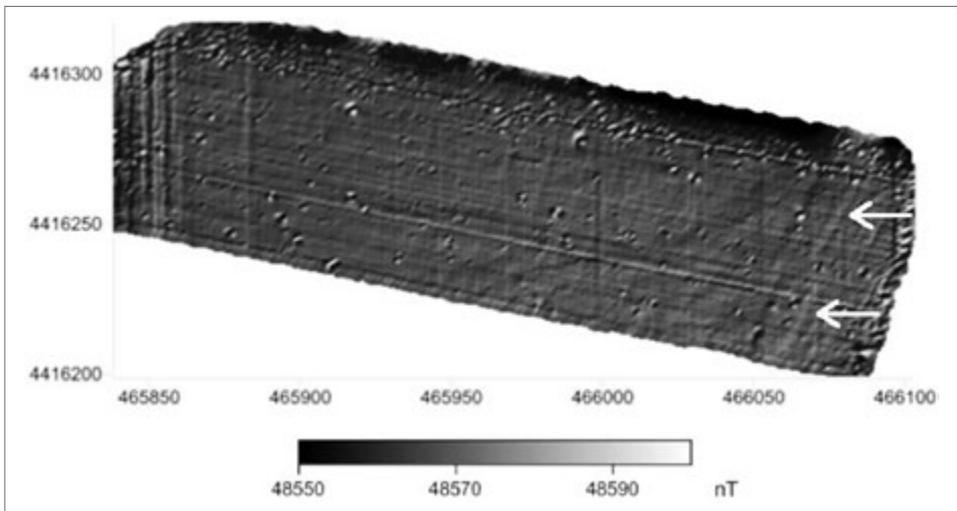


Fig. 8. Magnetic map of Area 2 (values in the range 48550–48600nT in greyscale. from dark to light) (University of Warsaw Pokr Vedi Project | processing K. Misiewicz and W. Małkowski)



Fig. 9. Location of magnetic prospecting (parts A and B) in Area 3 (Source Google Earth; University of Warsaw Pokr Vedi Project | processing K. Misiewicz and W. Małkowski)

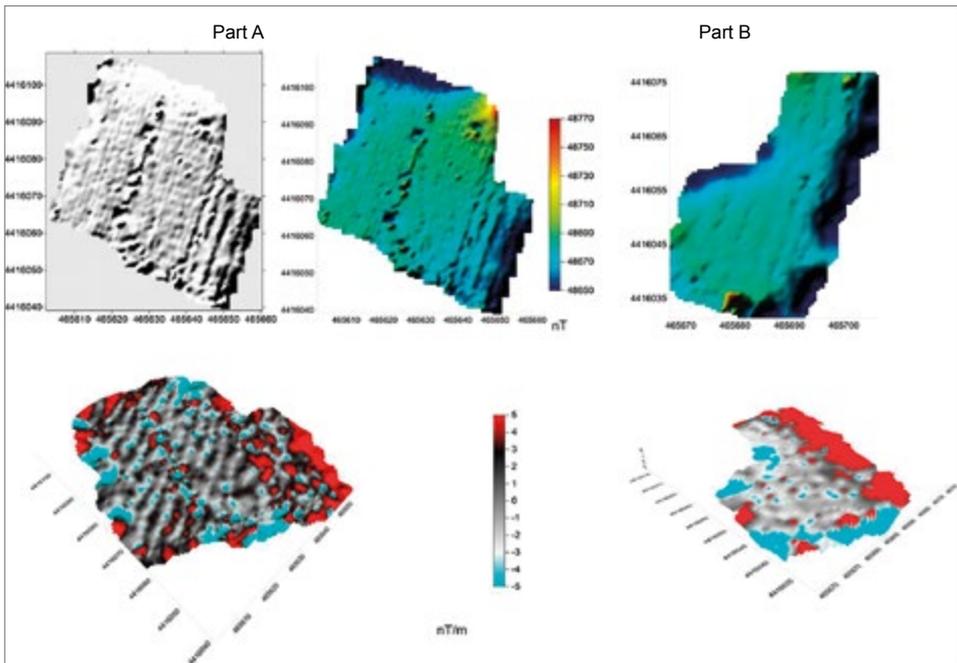


Fig. 10. Magnetic mapping of Area 3 (University of Warsaw Pokr Vedi Project | processing K. Misiewicz and W. Małkowski).

the influence of the Ilkhanate (13th–14th century; 16 fragments) and early modernity (15th–19th century). 130 of the collected sherds remain unidentified.

Several clusters of pottery from the Roman period were distinguished [see Fig. 5]. The highest density of vessel sherds from the first centuries of the common era was noted in the fields on the southern border of the village. There were much fewer finds on plots located at a greater distance from the

buildings. Most of the collection consists of body sherds with very few rims, handles and bottoms/bases in evidence. The material was compared to a reference assemblage from excavations in the nearby town.

Local pottery fabrics are characterized by sand as temper, the frequency being a maximum of 5 grains of sand per cm<sup>2</sup>. Basalt grits as temper were much rarer. All the vessels were baked in an oxidizing atmosphere.

Table 1. Selected finds (vessel and building ceramics) from the survey of southern Pokr Vedi [illustrated in Fig. 11]; the inventory number indicates position, season, square and ordinal number, fabric colors given according to Munsell Soil Color Charts

ACNO	Type and form	Fabric (Munsell)/temper
1. PV-01/1/1	Tile, Corinthian style; traces of finger brushing	5YR7/8; black inclusions, lime particles
2. PV-01/11/2	Chunk of mortar	5YR8/1; pyroxene particles/basaltic dust 1–2<cm <sup>2</sup> ; sand 6<cm <sup>2</sup>
3. PV-02/28/2	Fragment of limestone, decorated with a horizontal line	7.5YR9.5/1
4. PV-01/2/2	Thin-walled pottery, body and rim fragment; horizontal grooved line	5YR6/8; black inclusions
5. PV-02/2/2	Body sherd with zigzag pattern in relief	5YR7/6; sand 1<cm <sup>2</sup> , lime particles
6. PV-01/8/8	Body sherd with painted horizontal bands, one wide and one thin	5YR6/8; black inclusions
7. PV-02/3/3	Body sherd	5YR7/3; basaltic dust 3>cm <sup>2</sup>
8. PV-01/10/1	Thin-walled pottery, body and rim fragment, painted with darker stripes	5YR6/8; mica
9. PV-01/8/2	Body sherd with ribbing, sooted	5YR5/4; sand 2<cm <sup>2</sup> , mica
10. PV-01/31/1	Body sherd with painted horizontal stripes	5YR7/4; sand 1<cm <sup>2</sup> , black inclusions, limestone particles
11. PV-01/18a/1	Body sherd with painted horizontal, red and white stripes	5YR8/4; black inclusions
12. PV-02/29/5	Red-slipped ware, body sherd with horizontal stripes	7.5YR6/6; black inclusions
13. PV-02/53/2	Body sherd, slipped, painted dark horizontal stripes	5YR 7/4; sand 1<cm <sup>2</sup>
14. PV-03/2/20	Buff-slipped ware, body sherd with red painted figural decoration	7.5YR8/4; sand 2<cm <sup>2</sup> , black inclusions, limestone particles
15. PV-03/2/30	Body sherd with horizontal painted decoration: red lines (2.5YR 5/8), green waves and other unidentified shapes (7.5YR 5/1)	10R8/3; sand 4<cm <sup>2</sup> , black inclusions

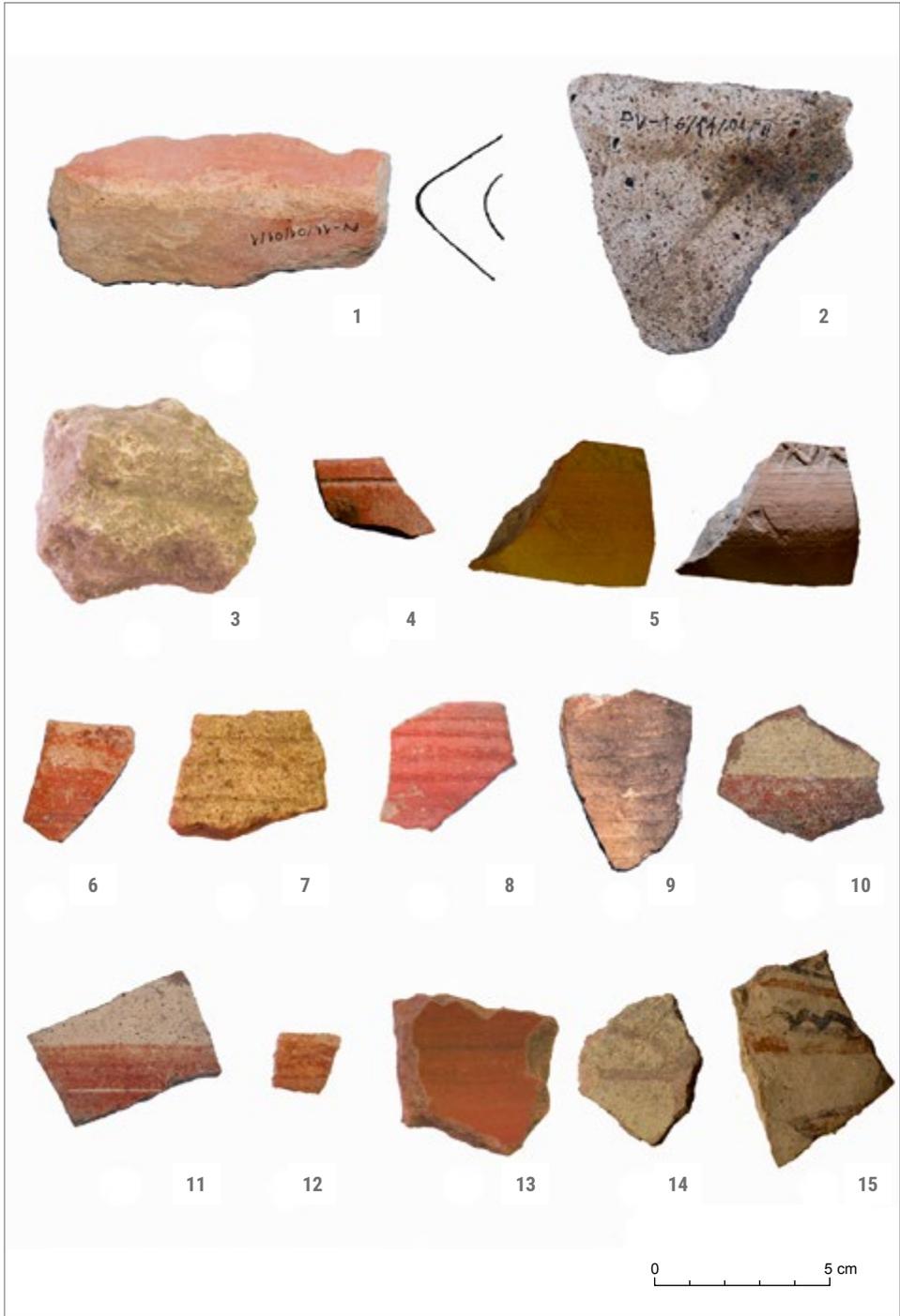


Fig. 11. Ceramic fragments and other finds from surface surveys, (for identification see **Table 1**) (University of Warsaw Pokr Vedi Project | photos A. Trzop-Szczypiorska and O. Kubrak)

Sherds of cooking ware show evident traces of use in the form of staining and sooted surfaces [Fig. 11:9]. The tableware is decorated mostly with horizontal stripes [Fig. 11:4,6] and ribbing [Fig. 11:7,8,9]; some pieces were decorated with painted, dark red, narrow [Fig. 11:12,13] or wide [Fig. 11:10,11], horizontal lines. Similarly decorated ceramic material is known from Artaxata (Arakelyan 1974: 55; Kha-chatryan 1998: 125, 130). Some fragments have white, yellow, green or light red slipware. A body fragment with zigzag decoration [Fig. 11:5] is particularly noteworthy. This is one of the few examples of vessels decorated in such a manner, both inside and outside the city walls.

A painted vessel sherd with a figural representation that is difficult to reconstruct was also discovered. The find is dated to the first centuries of the common era [Fig. 11:14]. The collection also includes 15 fragments of thin-walled sigillata-type tableware. Most of them come from squares 2, 6, 6a and 8 [see Fig. 4].



Fig. 12. Ceramic floor slab (University of Warsaw Pokr Vedi Project | photo O. Kubrak)

### Building ceramics

A fragment of a V-shaped imbrex-shaped tile was discovered during the survey stage of the project in square 1 [Fig. 11:1]. The artifact dates to the turn of the 1st century AD. Similar tiles are known from Artaxata (Kanetsyan 1998: 66–71). The presence of a Corinthian-styled tile is not surprising as it was extremely popular in North Africa



Fig. 13. Ceramic tile with a LEG IIII SCYT stamp (University of Warsaw Pokr Vedi Project | photo O. Kubrak)

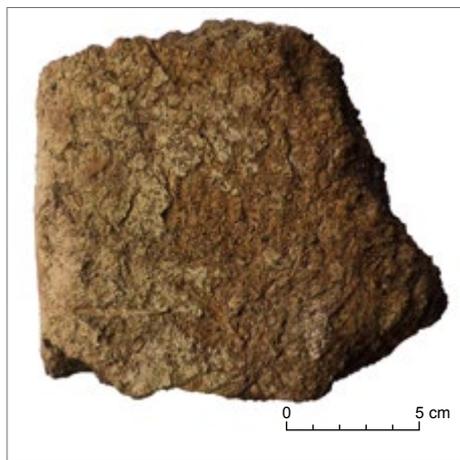


Fig. 14. *Pedales* brick fragment (University of Warsaw Pokr Vedi Project | photo O. Kubrak)

and the eastern provinces of the Roman Empire, introduced there to some extent by the Roman army (Mills 2005: 22).

Excavations in square 12, near where the inscription was allegedly found, yielded a square ceramic tile, measuring 36 cm to the side and 20 cm thick [Fig. 12]. Similar ceramic building elements with the LEG IIII SCYT stamp are in storage at the archeological base camp in Lusarat [Fig. 13]. In the same trial trench, two 24-cm-long and 4–5-cm-thick square bricks were also discovered [Fig. 14]. The bricks can be classified as *pedales*, i.e., with the side length equal to one Roman foot. Similar finds are known from the fort at Gonio/Apsaros (Karasiewicz-Szczypiorski et al. 2018: 497). These building ceramics may be associated with an unidentified building, the remains of which were found in the same trench as the building inscription mentioning the *Legio IV Scythica* (Arakelyan 1982: 19).

### Glass vessels

Three glass vessel fragments from the survey collection were found in square 12 (two pieces) and square 11 (one shard). These are remnants of vessel bottoms, which are likely dated to the 1st century AD. However, it should be noted that the identification of the finds and their typological classification is not certain.

The first fragment is a footed vessel bottom made of a light green glass [Fig. 15:1]. It seems to be a fragment of a shallow plate (Isings form 47; Isings 1957: 62). According to Isings, forms of this kind appear in Pompeii and date to the times of Claudius and Nero. A similar form of dish was found, e.g., in the Roman Bakar cemetery on the Adriatic Sea in Croatia, where it was dated

to the mid/second half of the 1st century AD (Gregl and Lazar 2008: 102, Pl. I:2). The ring base is 5.9 cm in diameter. Cylindrical drinking bowls of Isings form 85a with a similar bottom (Isings 1957: 101–103) have been found among the material from the northern cemetery in Este, dating from the end of the 1st–beginning of the 2nd century AD, and Colchester with layers from the 2nd–3rd centuries AD (Cool and Price 1995: 82–85, Figs 5.12:518–520).

The second fragment comes from a vessel of yellowish green glass [Fig. 15:2], probably part of a drinking bowl or goblet, which can be dated to the 1st century AD. Vessels belonging to Isings form 12 have a similarly shaped bottom, decorated with horizontal grooves (Isings 1957: 27–30), found, for example, at Novae (M. Wagner, personal communication).

The last fragment [Fig. 15:3] seems to be part of a goblet or a cylindrical bottle (Isings 1957: 67–69; Isings form 51) with a small diameter of the bottom, 4.7 cm, produced in the second half of the 1st century AD.

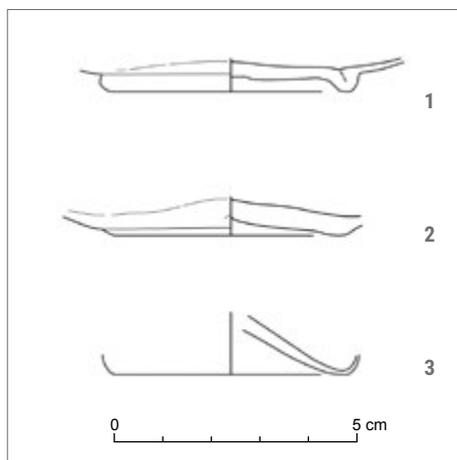


Fig. 15. Glass vessel fragments (University of Warsaw Pokr Vedi Project | drawing M. Wagner)

### Other finds

Not far from the alleged findspot of the monumental inscription in the eastern part of square 11 [see *Fig. 4*], the field survey collected two building-related artifacts: a chunk of mortar [*Fig. 11:2*] and a fragment of a limestone block [*Fig. 11:3*]. Based on the stratigraphic context, these finds can be dated to the first two centuries of the common era. Researchers working for years in the Artaxata area consider this kind of mortar as a characteristic “Roman concrete”. Another find is a worked piece of limestone, most probably part of an architrave.

Information about discoveries made in the past, not previously reported to archaeologists, came from interviews with the village residents. Apart from the burials (see below), pottery fragments are found frequently in the gardens. In addition, the construction of a primary school unearthed the shafts and bases of columns made of limestone (Khachatryan 1981: 25). The school building is located about 800 m north of where the inscription was discovered. Some of these architectural elements could be traced with the help of Armenian colleagues in the stores at the archaeological base in Lusarat. They were never documented, much less published.

Other similar column shafts and bases, probably from the same context, are located near the St James Church in Ararat, about 12 km away. One column fragment was moved to a local cemetery to serve as a gravestone. The column shafts had no flutings and the bases were characterized by a simple profile consisting of the plinth and torus. These architectural elements most probably come

from several different contexts and can be assigned to two different collections. The first is made up of column shafts and corresponding bases with diameters of, respectively, about 30 cm and 34–36 cm. The second collection consists of column shafts and corresponding bases with diameters of, respectively, 52–55 cm and 67 cm. All the architectural elements found during the construction of the school appear to belong to the first of these groups. The source of the second group of architectural elements is still open to question.

### Modern construction/industrial trenches

Modern building trenches in square 10 [see *Fig. 4*] revealed that the cultural layer from the first centuries of the common era is located at a depth of about 2 m. Trenches dug for the installation of a modern sewage system next to the houses in the southern part of the village were also documented in the course of the interviews with Pokr Vedi villagers. A deep construction trench could also be inspected in one of the fields in square 10 [see *Fig. 4*]. The stratigraphic sequence visible in the sections of these trenches showed that the cultural layer from the 1st and 2nd centuries AD can be found at a depth of 1.50–2.00 m throughout the studied area. This could well explain why there are no remains of the Roman camp visible on the surface.

A deposition nearly 1 m thick overlies the ancient layers. It is most probably an alluvial deposit formed by river activity. The riverbed (of the main river course or possibly one of its estuaries) must have once been located in the immediate vicinity of modern-day Pokr Vedi.

### Archaeological excavation

Trench 1 in square 8 [see *Fig. 6:16*] was excavated to verify the registered geophysical anomalies (see above). The 10 m by 3 m trench crossed the linear anomaly at right angles. At a depth of about 2 m, natural layers were recorded confirming that there had been a riverbed in this spot. The anomaly was generated by gravel and sand lying in the riverbed. These materials clearly stood out against the background of clay layers [*Figs 16,17*]. No signs of human intervention were observed in the trench.

Trench 2 in square 11 [see *Fig. 6:17*] was located on the spot indicated by the Armenian participants of the project as the findspot of the monumental inscription as well as tombstone of a soldier from *Legio I Italica*, floor and columns. Geophysical testing had recorded four narrow linear anomalies with visible right angles forming a 4 m by 4 m structure. However, the verifying excavation did not confirm any traces of human activity other than modern trenching.

Trench 3 in square 12 [see *Fig. 6:18*] was located on a spot located about 100 m east of Trench 2, indicated by a witness of the 1967 discovery of the inscription, who had informed scientists about the find. A geophysical survey was not possible in this place because of the proximity of modern residential and farm buildings and of an orchard with trees of various age. The shape and dimensions of the trench depended on available space, 15 m at the longest and up to 6 m wide. Fragments of “Roman concrete”, similar to the piece discovered during the surface survey in square 11 (and presumably to mortar dug in 1967), were found at a depth of

roughly 2 m [see *Figs 4; 6:2*]. Other finds included a ceramic slab, most probably a floor tile [see *Fig. 12*] and a brick [see *Fig. 14*]. In addition to these finds, the site abounded in pottery fragments dating to the 1st and 2nd centuries AD. Among the sherds were body fragments of a pithos, various tableware, including thin-walled local products (for a review of some of the finds, see *Table 1* and *Fig. 11*). A fragment of a glass vessel was discovered at the same depth as the said artifacts [see above and *Fig. 15:1*].

### Graves

Three burials in the village were reported by village residents interviewed by the Project team. The first two were found in the eastern part of square 11 [see *Figs 4; 6:19*], in some of the house gardens. According to the accounts recalling these discoveries, these were skeletal burials in large ceramic vessels, lying at a depth of about 3–4 m. Neither the human remains nor accompanying artifacts were disturbed by the landowner. The data concerning burial form and depth of the graves correspond to other known examples of ancient graves from this area (Khachatryan 1981: 6–30).

The third burial was discovered next to the house at 16 Janik Duryan Street while digging trenches for a new sewage system [see *Fig. 6:20*]. The grave discovered in the cut appears to be from the 1st or the turn of the 1st century AD. It was a large storage vessel with human bones inside, covered with a limestone slab. From the farmer’s account it is known that the burial was located at a depth of about 1.50 m. The vessel was located on an east–west axis, its mouth facing west.

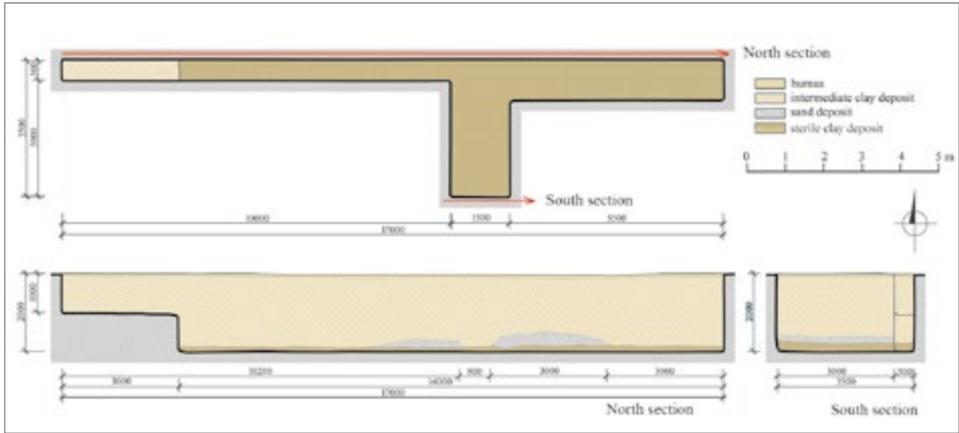


Fig. 16. Survey trench in square 8 (University of Warsaw Pokr Vedi Project | drawing S. Muradyan)

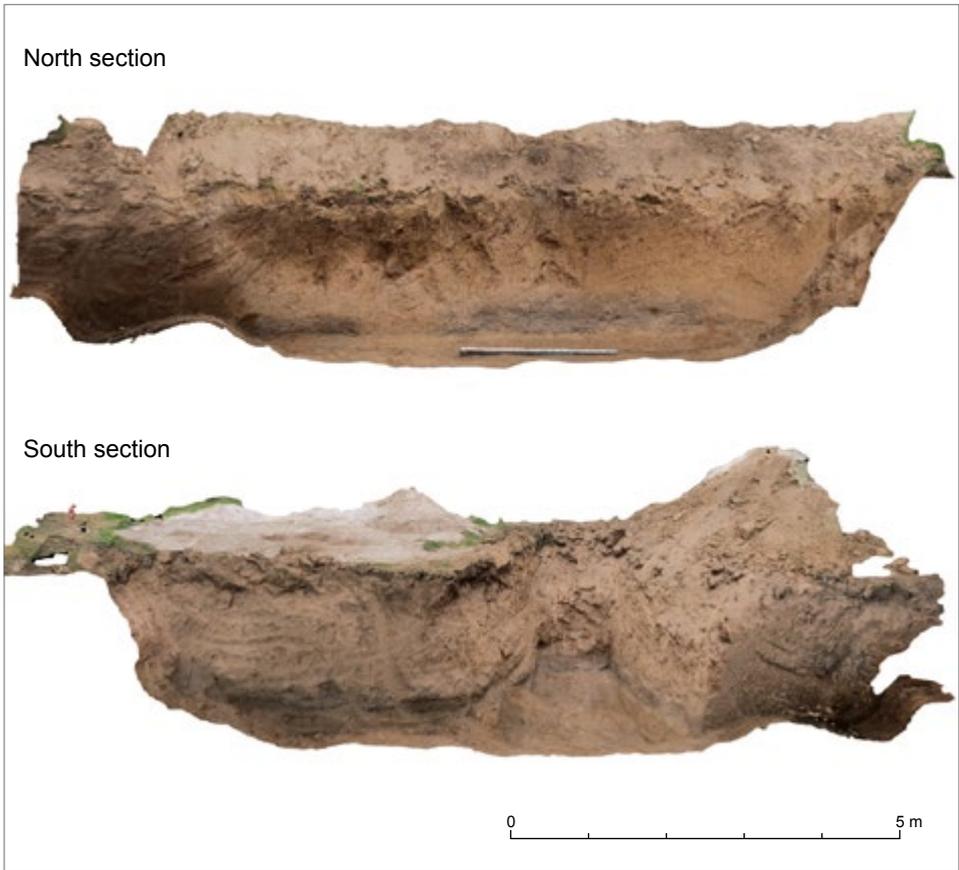


Fig. 17. Three-dimensional model of square 8, cutting through the former riverbed: top, section looking north; bottom, section looking south (University of Warsaw Pokr Vedi Project | O. Kubrak)

Previous research in the early 1970s uncovered two other similar burials in the same place. Several graves of this type were also discovered in the area of ancient Artaxata. All of these inhumations were made in large storage vessels

covered with a limestone slab. In a recent discussion of these burials, Hayk Gyulamiryan (2018: 161–165) discussed the grave discovered at 16 Janik Duryan Street, but failed to note the graves from square 11.

## DISCUSSION

In the early stages of the project, neither laser scanning of the ground nor aerial imagery revealed any uneven surfaces or other anomalies that could not be seen on the ground. Stratigraphic observations made later in the field indicated a uniform natural covering of the entire site with layers of river silt up to 2 m thick, superimposed on the cultural layer from the 1st and 2nd century AD. This natural levelling layer could have completely obliterated any traces of even such extensive structures as the ditches and embankments surrounding a Roman military camp.

A ground survey proved to be the most effective method, locating several clusters of finds that could be associated with the Roman army stationed here for a couple of years or other types of human activity at the beginning of the common era. These clusters of finds were subsequently investigated with geophysical research.

In the final stage of the research, excavations were carried out to verify the results of non-invasive prospection. However, nothing in the way of architectural features or depositions unequivocally connected with the alleged camp of the Legio IV Scythica could be found. Nonetheless, the collected data have improved the understanding of the area beyond the walls of Artaxata.

One of the objectives of the project was to locate and investigate the site of a monumental inscription connected to a Roman legion discovered here in 1967. Residents interviewed for this purpose suggested a spot in square 12, which was subsequently excavated, revealing a stratigraphic sequence and small finds that confirmed occupation in the first centuries of the common era. The spot was presumably somewhere very close to where the two inscriptions, architectural elements and remains of an unidentified building had been found over half a century earlier. However, there were no traces of a cemetery, let alone a riverbed, in this part of the site.

Evidence for a nearby river in the beginning of the common era, were confirmed in a trench in square 8. The results have proved important for a future reconstruction of the landscape around Artaxata and the spatial development of the city's hinterland. It was previously believed that the city had been founded at the confluence of two rivers, the Araxes and the Metsamor. However, the course of the tributary of the Araxes from the heyday of the Armenian capital remains unknown for the period in question. More could be learned on this issue with augerhole drilling in the area between Pokr Vedi and the ruins of Artaxata.

## CONCLUSION

The project yielded no conclusive proof of the a legionary camp from Trajan's times at the site on the southern borders of the village Pokr Vedi near ancient Artaxata. However, the collected data have made it possible to narrow down the area for further research. The ancient riverbed was traced, and so was the site

of a cemetery from the beginning of the common era. The research also tracked the most probable findspot of a monumental building inscription and other finds accompanying it, supplementing the contextual data on the building activities undertaken in the area by the *Legio IV Scythica*.

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<i>AE</i>	<i>L'Année épigraphique</i>
Cass. Dio.	Cassius Dio, <i>Roman History</i> VIII. Books 61–70 (=Loeb Classical Library 176) (E. Cary and H.B. Forster, trans.). Cambridge: Harvard University Press, 1995
<i>CIL</i>	<i>Corpus Inscriptionum Latinarum</i>
Plut. <i>Vit. Luc.</i>	Plutarch, <i>Lives</i> II. <i>Themistocles and Camillus. Aristides and Cato Major. Cimon and Lucullus</i> (=Loeb Classical Library 47) (B. Perrin, trans.). Cambridge: Harvard University Press, 1914

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# Tingitana Frontier Project. Recherches de la mission polono-marocaine dans la région de Volubilis au Maroc pendant la saison 2018



**Abstract:** The report presents the preliminary results of the work of the Polish-Moroccan expedition in the region of the ancient city Volubilis in 2018. The research carried out in Morocco aims to answer the question of the appearance and functioning of the border defence system of the Mauritania Tingitana province. The topic is not sufficiently developed in existing publications. Field research has provided new data and interesting field observations. Recognition of human activity from the Roman period in the region has allowed us to collect diagnostic ceramic material for a preliminary dating of the sites.

**Keywords:** Mauretania Tingitana, Roman Africa, Volubilis, limes, the Roman army

Le projet commun de l'équipe polono-marocaine suppose trois années de travail sur le terrain. Toutes les activités ont été réalisées avec l'autorisation de la Direction du Patrimoine Culturel, qui relève du Ministère de la Culture et de la Communication. Ce rapport introduit la problématique et la méthodologie présentant les résultats préliminaires de la saison 2018.

Les recherches entreprises sur ce site se sont concentrées sur le site de Volubilis et ses alentours (Mugnai 2018). Seules quelques missions se sont efforcées de

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*Dates of work* : 16–30 November 2018

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comprendre les installations militaires qui avaient pour mission la protection des habitants de cette riche ville de la province de Maurétanie Tingitane. Les études entreprises par les universités de Durham en 1952 doivent être considérées comme des travaux de reconnaissance, se limitant à des recherches générales de surface. Elles n'ont donc pas traité le sujet en profondeur et les résultats obtenus ont été loin d'être significatifs (Smith 1956). Bien que le seul plan d'une supposée tour d'observation soit tiré de la publication sommaire de l'étude, il s'est avéré, à la lumière des résultats de nos recherches, être discutable.

Des études concernant les positions liées à la présence de troupes auxiliaires ont également été entreprises par Maurice Euzennat qui a dirigé des travaux dans le camp à Aïn Schkour (Euzennat 1989), ainsi qu'à Sidi Moussa Bou Fri (Euzennat 1986b). Malheureusement, ces recherches ont également été incomplètes. René Rebuffat (Rebuffat 1958–1986), co-directeur de la mission Sebou, avec les Professeurs Aomar Akerraz et Hassan Limane de l'INSAP ont réalisé des prospections dans les territoires de la partie nord-ouest du Maroc (Rebuffat et Limane 2011). Ils se sont intéressés entre autres aux sites situés dans la région de Volubilis. Les résultats de leurs travaux sont en cours de publication. Néanmoins, la base méthodologique dans ce sujet présente des lacunes (Limane et Rebuffat 1992).

L'objectif de notre mission est la réalisation de travaux de terrain afin de collecter de nouvelles données nécessaires à l'analyse du système de défense de la région de Volubilis et la vérification des hypothèses des recherches précédentes.

Selon notre hypothèse, le système de défense se concentre sur les villes, les ports et les routes.

La première et courte mission de recherche en 2016 (Czapski 2017) a été consacrée à l'identification des publications existantes, ainsi qu'à la préparation du projet de prospection de surface, programmé pour 2018 et 2019. Les travaux de 2018 ont inclus des prospections de terrain et des recherches dans les bibliothèques locales (Bibliothèque de l'Institut National des Sciences de l'Archéologie et du Patrimoine à Rabat et la bibliothèque de la conservation de Volubilis) et dans les musées (Musée de l'histoire et des civilisations à Rabat et musée lapidaire de Volubilis). La zone concernée par le projet de prospection se situe entre les provinces de Meknès et de Sidi Kacem [Fig. 1].

La région prospectée a en grande partie servi, aussi bien dans l'Antiquité que de nos jours, à des fins agricoles. Les agriculteurs locaux cultivent principalement des légumes, des olives et des céréales, qui sont la base de l'économie de nombreuses familles (Bigi 2018). L'accent a été mis sur les domaines agricoles identifiés par les missions précédentes (Chatelain 1944; Euzennat 1977; Rebuffat 1998), ainsi que les forts où les troupes auxiliaires stationnaient pendant la période de domination romaine (Roxan 1973; Rebuffat 1998). De même, les sites où des tours de guet avaient été identifiées par certains chercheurs (Limane et Rebuffat 1992: 471; Euzennat 1989: 274–292) ont également été examinés avec leur zone périphérique, comme indiqué sur la carte [Fig. 2]. Les cartes topographiques et les plans obtenus

nus grâce à la recherche bibliographique dans les publications antérieures ainsi que les images de satellite nous ont été d'une grande utilité pour préparer le programme de prospection.

Les travaux ont été réalisés par la prospection pédestre systématique où les participants, espacés à distance égale, devaient prospecter le terrain à intervalles de 5 à 10 m, selon la nature du relief. Tout indice archéologique, tels les vestiges architectoniques, les traces de terrassement, la céramique et d'autres catégories d'artefacts sont considérés comme pertinents. Les trouvailles ont été ensuite documentées sur des cartes et ont reçu des numéros d'identification. Les coordonnées

GPS ont été marquées et une brève description des endroits visités a été donnée. Les fragments de céramique collectés ont été photographiés et inventoriés puis étudiés et dessinés une fois les travaux sur le terrain terminés.

Les structures identifiées comme étant des forts ou des tours ont été décrites et documentées. Les observations sur le terrain combinées avec les informations cartographiques nous ont permis de situer correctement les structures des sites identifiés et de découvrir d'autres sites inédits. Cependant, une vérification plus approfondie est nécessaire pour donner avec précision la fonctionnalité des structures archéologiques identifiées.

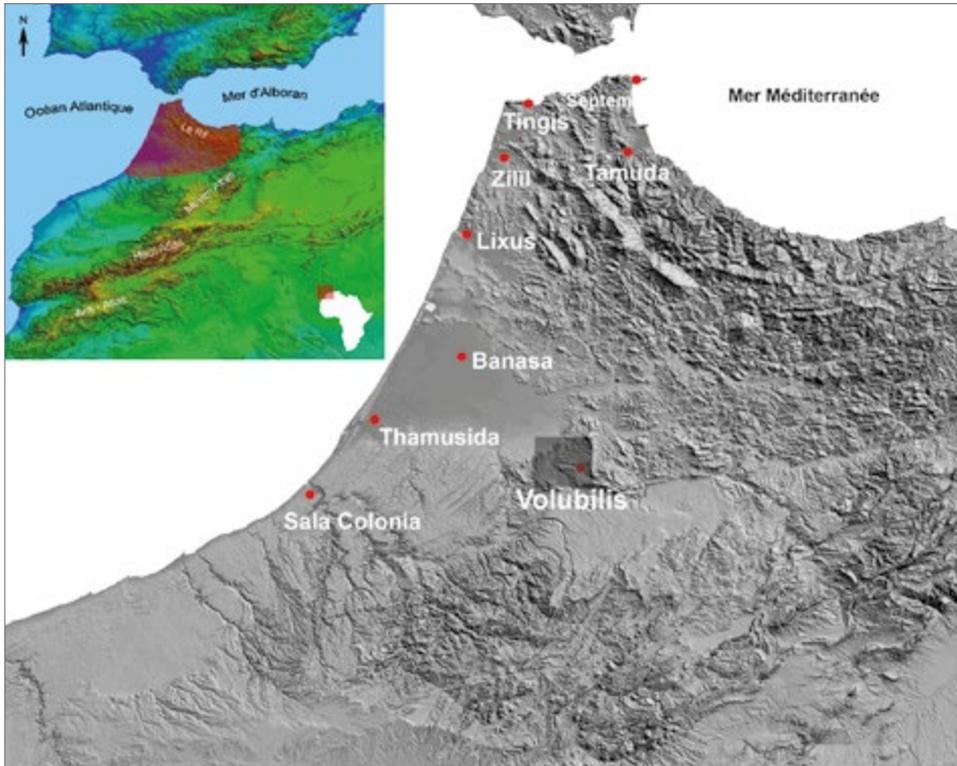


Fig. 1. La localisation de la Maurétanie Tingitane en Afrique avec les villes principales. La zone de prospection est indiquée par un carré (Tingitana Frontier Project | élaboration M. Czapski)

## 1. LA ZONE DES FORTS DES TROUPES AUXILIAIRES

Les travaux de prospection durant la mission 2018 ont débuté avec la localisation, la description et la documentation des forts et des tours identifiés lors des travaux de prospection antérieurs. Les travaux de la mission polono-marocaine ont permis de découvrir des inscriptions latines inédites et de récolter près de 1200 tessons de céramique ainsi que des petits fragments de verre, de briques et de meules.

La ville de Volubilis, située entre les non hautes montagnes, a été protégée par des unités stationnées dans des forts situés en distance entre 3 et 5 km [voir Fig. 2]. La nécessité de contrôler les déplacements de la population dans la région et d'assurer la protection de la ville aurait pu conduire à la construction d'installations militaires telles que des castella et des tours de guet. Les inscriptions trouvées dans la ville, appelées les autels de la

paix, documentent bien la relation entre l'administration romaine et les tribus locales de Baquates, Macentius, Bavares (Kolendo 2007 : 45). Ils documentent la conclusion des traités de paix après une période de conflits dont nous ne savons pas grand-chose. L'émergence des Romains et de leur modèle d'économie qui exige la gestion des terres autour de la ville semble avoir gardé l'économie pastorale traditionnelle, où en hiver la population locale est descendue des montagnes pour brouter le stock dans une végétation abondante (Shaw 1986 : 70; Sigman 1977 : 430). Le conflit d'intérêts conduit inévitablement à un affrontement, qui se tourne cependant au profit des habitants de la province (Sigman 1977 : 432). Par conséquent, ces peuples indigènes étaient dans une certaine mesure une menace pour Volubilis qui, bien sûr, a varié au fil



Fig. 2. La carte de la zone prospectée dans la région de Volubilis (basé sur Google Earth | élaboration M. Czapski)

du temps et est devenu faible ou encore plus forte. En particulier pour les fortresses, les unités suivantes ont été stationnées, connues pour de nombreuses inscriptions et diplômes militaires (Roxan 1973; Rebuffat 1998), des études de diplômes et inscriptions trouvées dans les sites archéologiques liés à la présence de troupes romaines, et a montré que les forts avaient les unités suivantes :

- Tocolosida
  - Ala Augusta Gallorum* (Roxan 1973: 844)
  - Ala Hamiorum Syrorum sagittaria* (Roxan 1973: 846)
- Aïn Schkour
  - Cohors I Asturum et Callaecorum civium Romanorum* (Roxan 1973: 846)
  - Cohors IV Tungrorum (vexillatio)* (Roxan 1973: 848)
- Sidi Moussa Boufri
  - Cohors Parthorum* (Roxan 1973: 850)

### TOCOLOSIDA

Ce site est situé à environ 4,5 km au sud-ouest de Volubilis à quelques centaines de mètres de la route no. P7031, au sud du village Tagourart Ain Karma. Le site renferme des vestiges architecturaux conservés [Fig. 3] en élévation sur le sommet d'une colline. À partir du site, les sommets des collines environnantes et les pentes du massif de Zerhoun sont visibles. Les structures archéologiques constituent les murs d'une forteresse d'environ 150 x 150 m. Le sol, ainsi que les ruines d'une structure qui pourrait être un *balneum*, situé à l'extérieur de la partie nord du fort ont été bien conservés [Fig. 4]. Ces résidus ont été découverts pour la première fois par Euzennat, qui les a appliqués au plan de position et décrits comme faisant partie des installa-

tions des bains (Euzennat 1989 : 245–248). Une conception similaire se trouve dans les environs du *castellum Tamuda*, situé dans le nord du Maroc, à proximité de l'actuelle ville Tétouan. À une distance d'environ 90 m à l'est de l'angle nord-est de la fortification, les résidus de *balneum*, identifiés comme utilisés par la garnison locale, ont été trouvés (Bernal-Casasola et al. 2016: 139). Chez Tocolosida, les techniques de matériaux de construction et de fabrication sont également très similaires. Les restes de briques (*suspensurae*) sont des éléments de *l'hypocaustum*. L'aspect du résidu visible, qui correspond à la description d'Euzennat, nous permet de penser à cet endroit comme un *balneum*. C'est l'emplacement typique de petits bains militaires sur le fort romain (Breeze 2002: 37).

Au cours de la prospection, de grandes quantités de matériel céramiques ont été trouvées, plus particulièrement dans la partie nord du site [Fig. 5]. Le fort est daté de la fin du 1<sup>er</sup>-début du 2<sup>ème</sup> siècle de n.è. (Hallier 1986) et aurait été occupé après 285 de n.è. après le départ de l'administration romaine (Blázquez Martínez 1968). Cependant, des fouilles archéologiques sont nécessaires pour confirmer la durée de l'occupation du site à l'époque antique.

La prospection sur Tocolosida et ses environs nous a permis de récolter plus de 400 fragments de céramique. Deux zones principales de concentration du matériel ont été identifiées: à l'intérieur du fort où de grandes quantités de céramique médiévale ont été trouvées, et à l'extérieur des murs sur les pentes nord de la colline où dominait la céramique antique, notamment la céramique sigillée [Fig. 6]. Les différents types de céramiques sigillées

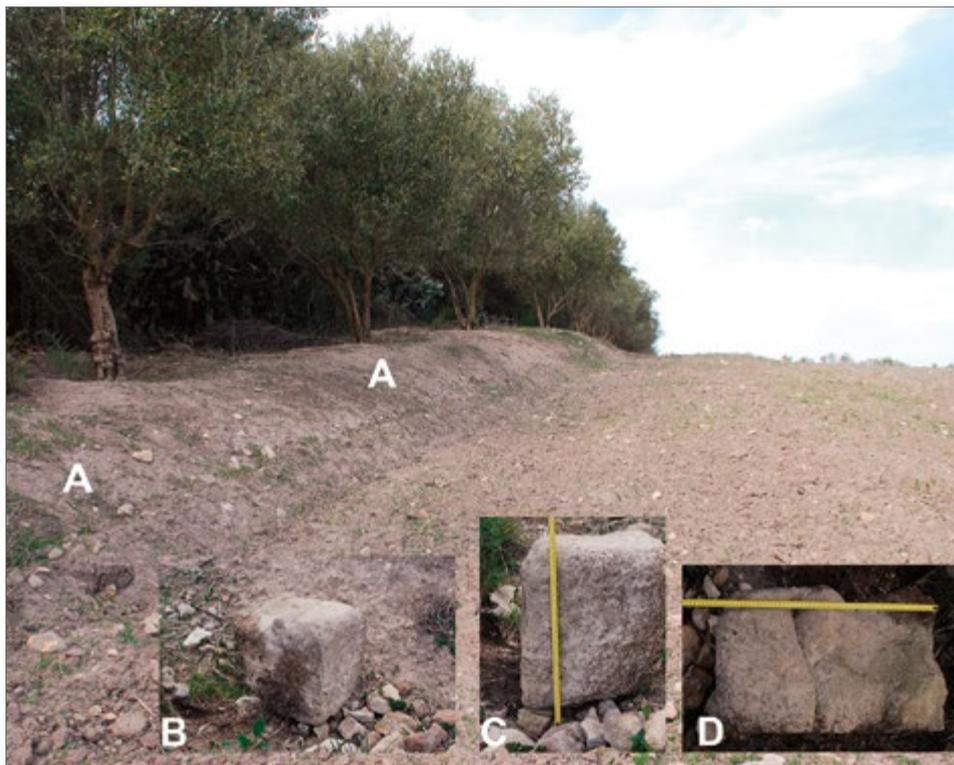


Fig. 3. Tocolosida. Les restes d'un ancien levée de terre / talus (A) et des pierres de construction(B,C,D) (Tingitana Frontier Project | photo et élaboration M. Czapski)



Fig. 4. Tocolosida. Les restes d'un *balneum* à l'extérieur du fort (Tingitana Frontier Project | basé sur Google Earth ; photo M. Czapski, S. Mazurek élaboration M.Czapski)

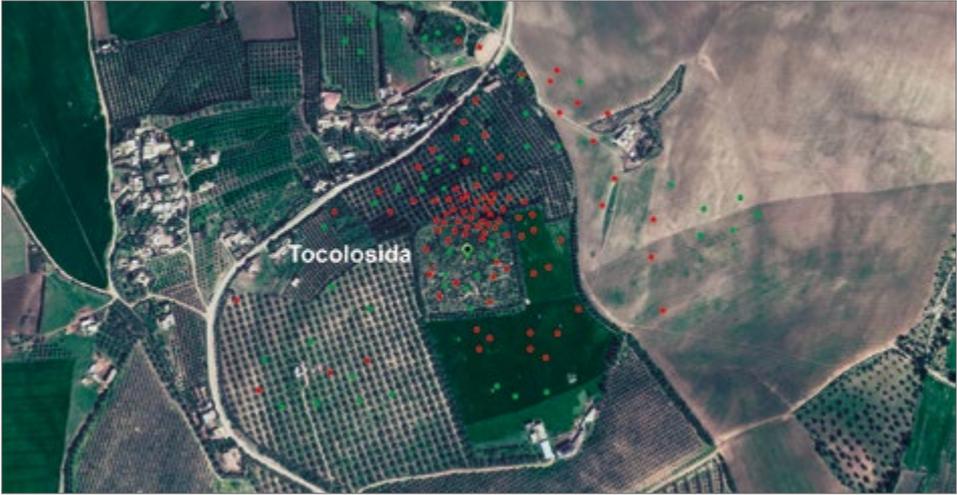


Fig. 5. Tocolosida. Plan du site avec les lieux de concentration de la céramique trouvée pendant la prospection. Les points rouges marquent les zones de concentration de la céramique d'époque romaine et les points verts celles de la céramique d'époque islamique (basé sur Google Earth | dessin M. Czapski)



Fig. 6. Céramique sigillée de Tocolosida (le dessin n'est pas à l'échelle) (Tingitana Frontier Project | photo M. Czapski, K. Trusz, élaboration M. Czapski)

identifiées sont : la sigillée hispanique, la sigillée sud-gauloise, la céramique sigillée claire A, la sigillée claire et la céramique

africaine de cuisine. Les autres types de matériel récolté sont la céramique commune, la céramique glaçurée, la céramique modelée et les amphores.

Le principal type de céramique sigillée trouvé est la céramique sigillée hispanique avec un nombre de 106 fragments constituant ainsi environ 50% des sigillées récoltées [Fig. 7]. La sigillée claire A et la sigillée africaine de cuisine arrivent respectivement en deuxième et en troisième position avec un nombre de fragments presque identique, respectivement 53 fragments et 52 fragments.

Le nombre de fragments de la sigillée sud-gauloise est de 14, alors que la sigillée claire C n'est représentée que par 3 fragments [Fig. 6].

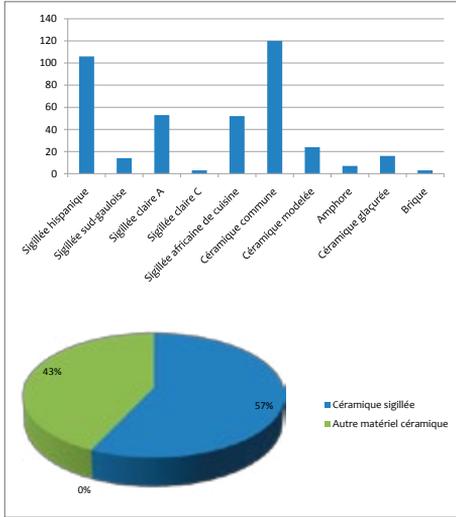


Fig. 7. Le matériel archéologique de la prospection et les pourcentages des céramiques sigillées et des autres céramiques de Tocolosida

**SIDI MOUSSA BOUFRI (AIN GHARBAOUI)**

Ce site est situé à l'ouest de Volubilis, à environ 19 km de la ville, sur la route



Fig. 8. Sidi Moussa Boufri. Plan du site avec les lieux de concentration de la céramique trouvée pendant la prospection. Les points rouges marquent les zones de concentration de la céramique d'époque romaine et les points verts celles de la céramique d'époque islamique. La lettre « A » marque le fort romain (basée sur Google Earth | élaboration M. Czapski)

no. P7006, près du village d'Ain Gharbau [Fig. 8]. Les structures en pierre d'un bâtiment d'environ 100 m x 100 m sont bien exposées sur la colline. La visibilité de l'intérieur du site est principalement orientée dans la direction ouest et nord-

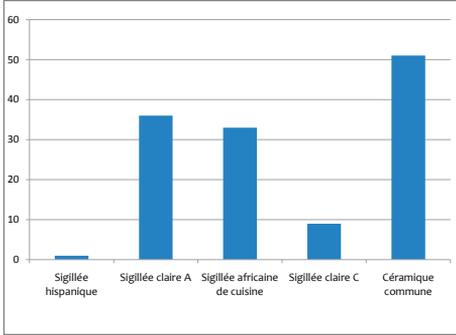


Fig. 9. Le matériel céramique récolté à Sidi Moussa Boufri

est. Volubilis n'est pas visible à partir du site. La construction de tours d'observation entre la ville et son fort a été par ailleurs nécessaires afin que le système de défense soit efficace. Les ruines de rempart subsistent toujours, ainsi que des éléments architecturaux épars à l'intérieur du fort.

Ce site a livré, lors de notre prospection, 130 tessons de céramique, exclusivement d'époque romaine du 2<sup>ème</sup> et du 3<sup>ème</sup> siècle de n.è. [Fig. 10]. 60% du matériel céramique total est composé de sigillée, principalement africaine [Fig. 9]. Ce site se distingue aussi par la rareté de céramique du 1<sup>er</sup> siècle de n.è., ce qui laisse à penser que sa fondation était tardive, si on le compare aux autres sites prospectés, comme Tocolosida et Ain Schkour.



Fig. 10. Sidi Moussa Boufri. Le matériel céramique (le dessin n'est pas à l'échelle) (Tingitana Frontier Project | photo M. Czapski, K.Trusz, élaboration M. Czapski)

**AÏN SCHKOUR**

Ce fort est le site militaire le plus proche de la capitale provinciale, à environ 3,5 km au nord de Volubilis, sur la route nationale n° 13 [Fig. 13]. Les contours du fort ne sont pas visibles sur tout le périmètre, mais des vestiges de structures en pierre sur place nous indiquent le plan général [Fig. 14]. Le contour du rempart sur le côté ouest, par exemple, n'apparaît pas sur le sol, mais nous avons constaté

sur place la présence de nombreux blocs de pierre taillés qui ont du être arrachés aux murs antiques.

C'est le site qui a livré le plus grand nombre de fragments de céramique lors de notre travail de prospection, avec plus de 450 tessons [Fig. 12]. Le matériel récolté remonte aux époques romaine et islamique [Fig. 11]. Le fragment le plus ancien est un exemplaire en céramique sigillée italique datable de la fin du 1<sup>er</sup> siècle avant n.è. et du début du 1<sup>er</sup> siècle de n.è. Le matériel antique le mieux représenté est la sigillée claire A datable du 2<sup>ème</sup> et du 3<sup>ème</sup> siècle de n.è. L'existence de matériel de l'époque islamique montre que Aïn Schkour a connu une occupation humaine durant cette période, après une période d'abandon qui a suivi le retrait de l'administration et de l'armée romaine vers l'an 285 (Février 1982).

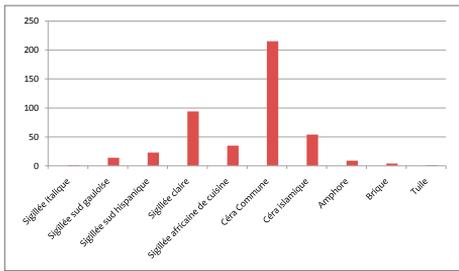


Fig. 11. Le matériel céramique récolté à Aïn Schkour



Fig. 12. Aïn Schkour. Le matériel céramique (le dessin n'est pas à l'échelle) (Tingitana Frontier Project | photo M. Czapski, K.Trusz, élaboration M. Czapski)



Fig. 13. Aïn Schkour. Plan général du site avec les lieux de concentration de la céramique trouvée pendant la prospection. Les points rouges marquent les zones de concentration de la céramique d'époque romaine et les points verts celles de la céramique d'époque islamique. La lettre « A » marque le fort romain (basé sur Euzennat 1989 et Google Earth | élaboration M. Czapski)



Fig. 14. Aïn Schkour. Restes de pierres de construction et l'huilerie (Tingitana Frontier Project | photo et élaboration M. Czapski)

## 2. LA ZONE DES AUTRES SITES ARCHÉOLOGIQUES

Dans un deuxième temps, l'accent a été mis sur l'identification des postes mentionnés par les missions précédentes, comme les ruines des tours de guet (Euzennat 1986a). En nous appuyant sur l'expérience de l'équipe, acquise pendant des années de recherche concernant de telles structures en Crimée, nous nous sommes rendus sur le terrain pour vérifier et compléter les coordonnées des sites. En raison du peu de temps dont nous nous disposions, trois sites seulement ont été prospectés dont le site d'Ain Kalaa qui semble n'avoir jamais été mentionné dans une publication scientifique.

### BOURBEAA

Situé à environ 3 km au nord-ouest de Sidi Moussa [Fig. 15], ce site a livré des traces tangibles de remparts de terre.

Il dispose d'une bonne visibilité sur les flancs ouest et est donnant sur Sidi Moussa. Ce site a livré exclusivement de la céramique d'époque islamique. Le matériel antique n'a pas été identifié, ce qui laisse à penser que le site date uniquement de l'époque islamique. Un nombre limité de tessons ne dépassant pas 22 exemplaires a été récolté.

### EL MELLALI

C'est une tour (Rebuffat 1999) située à environ 2 km au sud de Tocolosida [Fig. 15], et disposant d'une bonne vue sur la partie sud de la vallée orientée vers Meknès. Les vestiges sont visibles sur le terrain.

Ce site n'a livré qu'un seul fragment en sigillée claire A, ainsi qu'une paroi fine d'époque antique avec d'autres tessons de



Fig.15. Tours de guet. Carte de la zone prospectée. 1 – site Bourbeaa ; 2 – site Feddan Loudaya ; 3 – site El Mellali (basé sur Googlemaps | élaboration M. Czapski)

céramique commune, dont une partie est probablement antique. Le reste du matériel est islamique. C'est un site qui aurait été vraisemblablement occupé à l'époque romaine, puis à l'époque médiévale. Le nombre total de tessons de céramiques identifiées est de 54.

### **FEDDAN LOUDAYA (AIN KALAA)**

Situé à environ 2 km au sud de Sidi Moussa et à environ 4 km au sud-est du site de Bourbeaa, Feddan Loudaya (Ain Kalaa) est une structure de surveillance

qui a été localisée au sommet d'une colline, qui est dotée d'une excellente vue sur une large zone tout autour [Fig. 15]. Ses dimensions de 15 m x 15 m indiquent l'intérêt du site, mais des recherches supplémentaires sont nécessaires pour mieux l'étudier.

Ce site a livré exclusivement de la céramique d'époque islamique avec un nombre de 29 fragments. Le matériel antique n'a pas été identifié, ce qui laisse à penser que le site est exclusivement d'époque islamique.

## **CONCLUSIONS**

Nous avons constaté que les sites militaires antiques majeurs situés dans la région prospectée, à savoir Tocolosida, Ain Schkour et Sidi Moussa Boufri (Ain Gharbaoui) sont des sites qui ont été occupés durant l'époque romaine entre le 2<sup>ème</sup> siècle et le 3<sup>ème</sup> siècle de n.è. Ils ont sans doute été abandonnés avec l'évacuation de l'armée et de l'administration romaine de la Maurétanie Tingitane vers le nord de l'oued de Loukou aux alentours de l'an 285 de n.è. Ils ont été réoccupés à l'époque islamique, vers la fin de la période médiévale et durant la période moderne, mais on ne connaît pas encore la nouvelle fonction qu'ils ont rempli à cette époque.

Le site d'Ain Schkour, le plus grand des trois sites, se distingue par une présence de matériel archéologique daté exclusivement du 1<sup>er</sup> siècle, ce qui suggère que la construction de ce camp daterait de cette époque. Les arguments

en faveur de la datation précoce sont également les signes de brûlure visibles dans les profils archéologiques publiés par Euzenat à la suite de ses propres courtes sondages menées en 1959 (Euzenat 1989 : 257). Le fait que l'un des établissements du castellum a été brûlé par Baquates et Macentius (Sigman 1977 : 431) peut conduire à l'hypothèse qu'il y avait déjà un fort dans 1<sup>er</sup> siècle de n.è, dont la construction aurait pu être liée à la période de révolte d'Aemon, qui était également lié au sous-bose de la province par Rome. La confirmation de cette hypothèse nécessite évidemment d'autres recherches.

Ce serait le premier cas d'un fort du 1<sup>er</sup> siècle de n.è. confirmé dans la Maurétanie Tingitane. Néanmoins, cette hypothèse nécessite la réalisation d'autres travaux sur le site pour déterminer la date exacte de son occupation et les phases de son exploitation.

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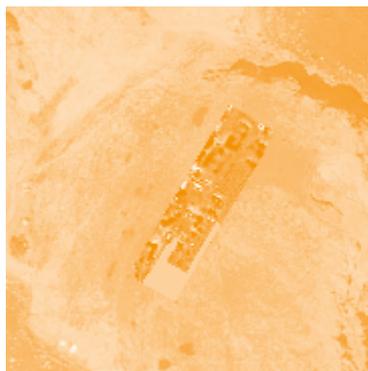
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# An integrated geoarchaeological approach to Late Iron Age settlement at the Kaštelina hillfort (Lopar, Island of Rab, Croatia) using Amplitude Data Comparison (ADC) method and trial excavation



**Abstract:** Geophysical prospection and small-scale archaeological excavation were undertaken on the site of Kaštelina, a Late Iron Age hillfort settlement located on the Stolac promontory in the northern part of Rab island (Kvarner Gulf, Croatia). Within the frame of the “Archaeological topography of the island of Rab” program, a Polish–Croatian team applied a series of multidisciplinary methods to study the occupational history of the site, its preservation, the nature of selected site features and future research potential. Ground-penetrating radar and magnetometer surveys, combined with the implementation of the Amplitude Data Comparison (ADC) method, led to the detection of remains of Late Iron Age building structures distributed over the north-western side of the Stolac promontory. Archaeological excavations verifying the findings of the geophysical survey resulted in the discovery of a dwelling with associated outdoor features. A preliminary assessment of the outcome of a multidisciplinary approach to the study of the site of Kaštelina emphasizes the importance of the collected data for a general understanding of Late Iron Age settlements and their internal organisation in a wider context.

**Keywords:** Northeast Adriatic, hillfort settlement, Late Iron Age building structures, geophysical survey, Amplitude Data Comparison (ADC) method, archaeological excavation, ground penetrating radar, magnetometry, multidisciplinary research

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## INTRODUCTION

The Kaštelina hillfort occupies a site on Stolac, a small promontory in the northernmost part of Rab, a mid-sized island in the Kvarner archipelago, located in the northernmost inlet of the eastern Adriatic Sea [Fig. 1]. In the protohistoric period,<sup>1</sup> the area is considered to lie on the northernmost flank of two major communities: the Liburnian culture group with a core area in the Zadar–Ravni Kotari region, and the

southwestern group of the continental Japodian culture. Specific regional characteristics, identified almost exclusively on the grounds of archaeological studies of attire and metal finds, point to the development in the Late Bronze Age of a distinct Kvarner cultural group, further influenced by relations with communities of the western and northern Adriatic and its hinterland (Blečić Kavur 2014: 165; for historical sources,

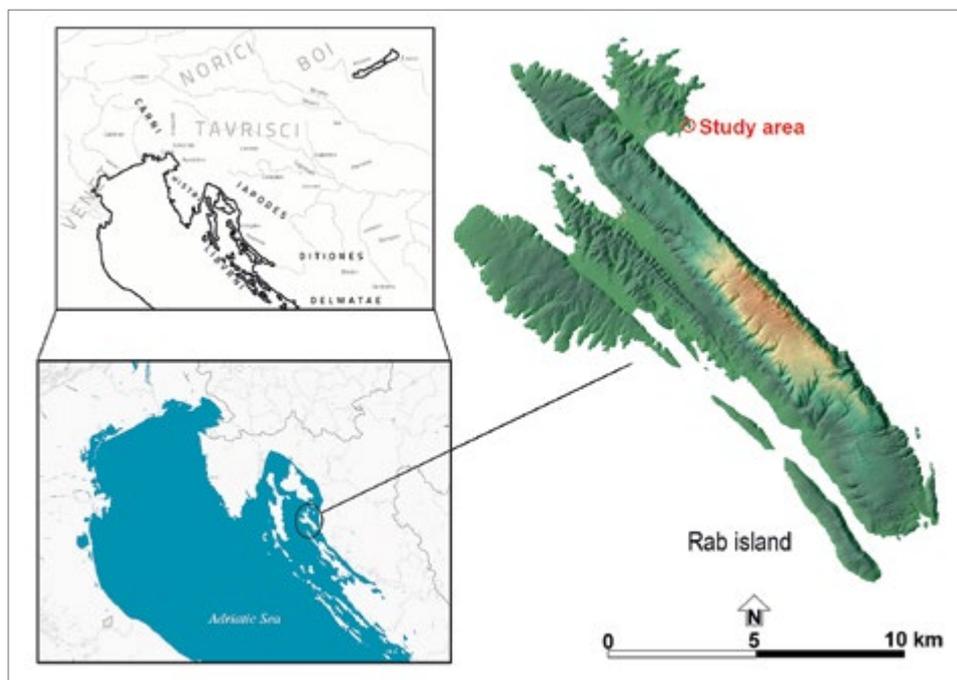


Fig. 1. The Island of Rab: right, altitude map of the island and its location in the Eastern Adriatic (bottom left); upper left, protohistoric cultural geography of the northeastern Adriatic in the context of southeastern and central Europe (Rab Island Project archive | altitude map based on DGU/JU ZPP-PGŽ, modified by A. Konestra; cultural geography map after Mihovilić 2014: 24)

- 1 The protohistoric period on the eastern Adriatic coincides with the Late Iron Age, i.e., a timeframe roughly encompassing the 4th–1st century BC. Thus, it coincides with the Central European La Tene (LtA–LtD), the Hellenistic in the Eastern Mediterranean and the Roman Republic in the west. In fact, Roman rule in the region was established effectively in the mid-1st century BC (times of Julius Caesar and Octavian).

see Barnett 2017; Čače and Milivojević 2017) [see Fig. 1]. However, despite the exceptionally large concentration of hillforts in the north(eastern) Adriatic, where they were the main type of settlement from the period in question (see Mihovilić 2013 with earlier bibliography), indeed a kind of hallmark of the Bronze and Iron Age landscape in the eastern Adriatic and its hinterland (Čučković 2017), the Kvarner area has been poorly investigated in this respect (Blečić 2002: 72; Glavaš 2014: 3).

Being the most common form of fortified protohistoric earthworks, these manmade features come in different size and shape. Their most frequent location is on conical hill summits, linguliform plateaus rising above valleys and on the sea coast, always in prominent positions seen from far and strategic with regard to natural resources and communication routes in the region. Typically, they consist of an oval area enclosed by one or multiple, concentric, drystone ramparts, except in places where the steepness of the terrain itself provides sufficient protection (Mihovilić 1979; Batović 1987b; Forenbaher and Rajić Šikanjić 2006: 467). Traditionally, all types of hillforts were recognised as settlements, often without clear evidence, but recently plural interpretations have emerged, putting forward different possible functions of the prehistoric fortified sites: refugia, cattle corrals, surveillance points, ritual places (Batović 1987a; Forenbaher and Rajić Šikanjić 2006: 467 with earlier references; Glavaš 2014: 3–4; Glavaš and Glavičić 2019: 123–124), and even, where possible, a beacon for maritime navigation (Čučković 2017 with earlier

references). On the island of Rab several, mainly Bronze Age hillforts have been located, mostly on the karst anticlines, and some overlooking the Lopar field. Their evolution and possible relationship with Kaštelina are not known for lack of substantial research. With the dawn of Roman rule in the 1st century BC, some of the hillforts developed into urban settlements, probably as leading centers of larger communities, later gaining municipal status. This was the case of the island's only Roman urban center, today's town of Rab.

The Kaštelina hillfort lies on the margin of one of the three flysch plain areas on the island where alluvial deposits created suitable conditions for soil cultivation, unlike the central and southwesternmost anticlinal parts of Rab that are characterised by carbonates and, thus, karst (Welc et al. 2019: 485). More precisely, this protohistoric site is located within the so-called Lopar sandstone that consists of alternating sandstones and bioturbated sandy marls. The sandstones here occur as thin interbeds in marls, as packages of stacked sandstone beds and as several-meter-thick sandstone bodies, commonly capped by the sandy marls (Marjanac and Marjanac 2007: 495). Typical Mediterranean garrigue and macchia grows sporadically on Kaštelina's sandy, relatively flat surface, together with different types of halophytes.

Located on a relatively small promontory of 7000 m<sup>2</sup> that rises about 20 m asl, this protohistoric settlement had no real need for a fully enclosed fortification. The steep slopes of the escarpment exposed toward the sea, especially

on the eastern and southern sides, optimized the construction of the defensive structures. The only possible land access is from the northwestern side, where remains of a rampart, later reinforced with limestone mortar, are still faintly visible on the surface.

The position of the Kaštelina hillfort dominates the landscape, inevitably ensuring visual control over potential natural resources, like nearby arable land, pastures, as well as sea and land communications (see Glogović 1989; Mihovilić 2013; Glavaš and Glavičić 2017: 120; 2019: 123) [Fig. 2]. Its seaward orientation makes it easy to keep tabs on two important local sea routes, one passing through the Rab channel and the other through the Velebit channel (Gržetić 2002). The importance of these navigation routes is attested by two shipwrecks, one from the 3rd and the other from the 2nd–1st century BC, located respectively off Cape Sorinj (northwestern part of the island) and Cape Glavina (southeastern part of the island), bearing cargos of amphorae of the Greco-Italic and Lamboglia 2 types, as well as an array of stray underwater amphorae finds in the Velebit channel (Dautova-Ruševljan 1975; Miholjek 2007; Glavaš, Konestra, and Tonc 2020) [Fig. 3]. It is therefore possible that the Kaštelina hillfort setting served multiple roles, which could include acting as a visual reference from the sea, a form of sea beacon, but also as a node in the seaborne communication networks, or simply a landmark affirming possession of nearby land (see Čučković 2017; Čače 1981).

The hillfort settlement on the Stolac promontory was first discovered in 1984 during an archaeological survey of the

island of Rab (Batović 1985: 13). The first indication of the archaeological potential of the site was the other name of the cape, which is also known as Kaštelina (Croatised toponym from the Latin *castellum*, fortress, castle, stronghold, refuge, citadel, but probably under Venetian influence). It could be proof that some of the features of the fortification could have still been visible as late as the early Modern period, and as such recognized in the local toponymy (Batović 1985: 15; Šimunović 1986: 141). Surface finds, like fragments of southern Italic and other Hellenistic fine wares, local coarse pottery together with a rim fragment of a possibly Hellenistic glass vessel, set the occupation of the area between the 4th and the 1st century BC (Batović 1987c; Mihovilić 2002). Remains of a rampart enclosing the only possible overland access to Kaštelina from the northwest, as well as scattered clay plaster fragments around the central plateau, are in line with the discovery of the hillfort settlement on the promontory (Batović 1987c; Brusić 1990). A repeated survey of the site in 2013 (Lipovac Vrkljan et al. 2014) corroborated earlier results, failing however to establish with certainty whether actual settlement remains could be expected on this highly eroded site. The first non-invasive geophysical survey in 2018 concentrated on an area near the supposed rampart, within the perimeter of the hillfort settlement (Konestra et al. 2019). Remains of several rectangular structures with associated features were traced and interpreted provisionally as possible settlement units together with storage and manufacturing areas (Konestra et al. 2019: 192; 2020).



Fig. 2. The Kaštelina promontory: top, aerial view from the west; bottom, arrow marks location of the archaeological trench dug in 2019, view of the promontory from the northwest (Rab Island Project archive | photos G. Skelac and K. Rabięga)

## GEOPHYSICAL SURVEY AND AMPLITUDE DATA COMPARISON (ADC) METHOD ANALYSIS

The magnetic survey of a Late Iron Age hillfort settlement on the Stolac promontory applied a fluxgate-type gradiometer. Measurements were taken along lines set 0.50 m apart. The results of the survey are presented here in the form of greyscale distribution maps, where darker areas correspond to anomalies characterized by higher magnetic-field values, indicating a greater concentration of magnetic matter or ferromagnetic mineral in the soil.

Supplementing the magnetic survey were ground-penetrating radar measurements using a GPR MALA/ABEM – GroundExplorer system with a frequency of 450 MHz. As before, measurement profiles were set 0.50 m apart.

An innovative method of analysis was applied to the geophysical magnetic and GPR results in an effort to recognize the vertical and horizontal stratigraphy of the site. The results were compared with the Amplitude Data Comparison (ADC) method. The limitations of the magnetometry and GPR methods derive from the fact that both are strongly dependent on local geology, material composition and geometry of the buried features (Welc, Nebelsick, and Wach 2019; Welc, Rousse, and Benčić 2020). Ground-penetrating radar emits electromagnetic (EM) waves, which are reflected from boundaries between two archaeological layers characterized by significantly different electric properties. By contrast, the magnetic method measures the intensity of the local

geomagnetic field. Applied alone, it is not suitable for understanding vertical archeological stratigraphic sequences because it provides only a plan of the site in the form of a distribution map of anomalies corresponding to concentrations of ferromagnetic matter in the soil (Welc, Rousse, and Benčić 2020). In turn, GPR profiles show objects and boundaries between layers without information about their material and chemical characteristics. Only when individual GPR reflection profiles are interpreted together with the corresponding magnetic values it becomes possible to define the types of materials visible in the GPR reflection profiles and these two

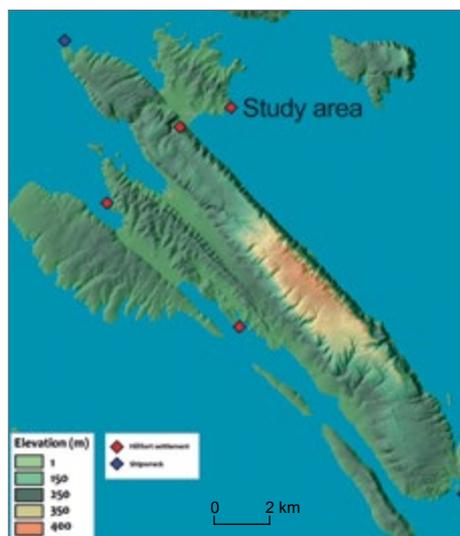


Fig. 3. Location of Late Iron Age archaeological sites: hillforts and shipwrecks (Rab Island Project archive/base map DGU/JU ZPP-PGŽ | image P. Androić Gračanin)

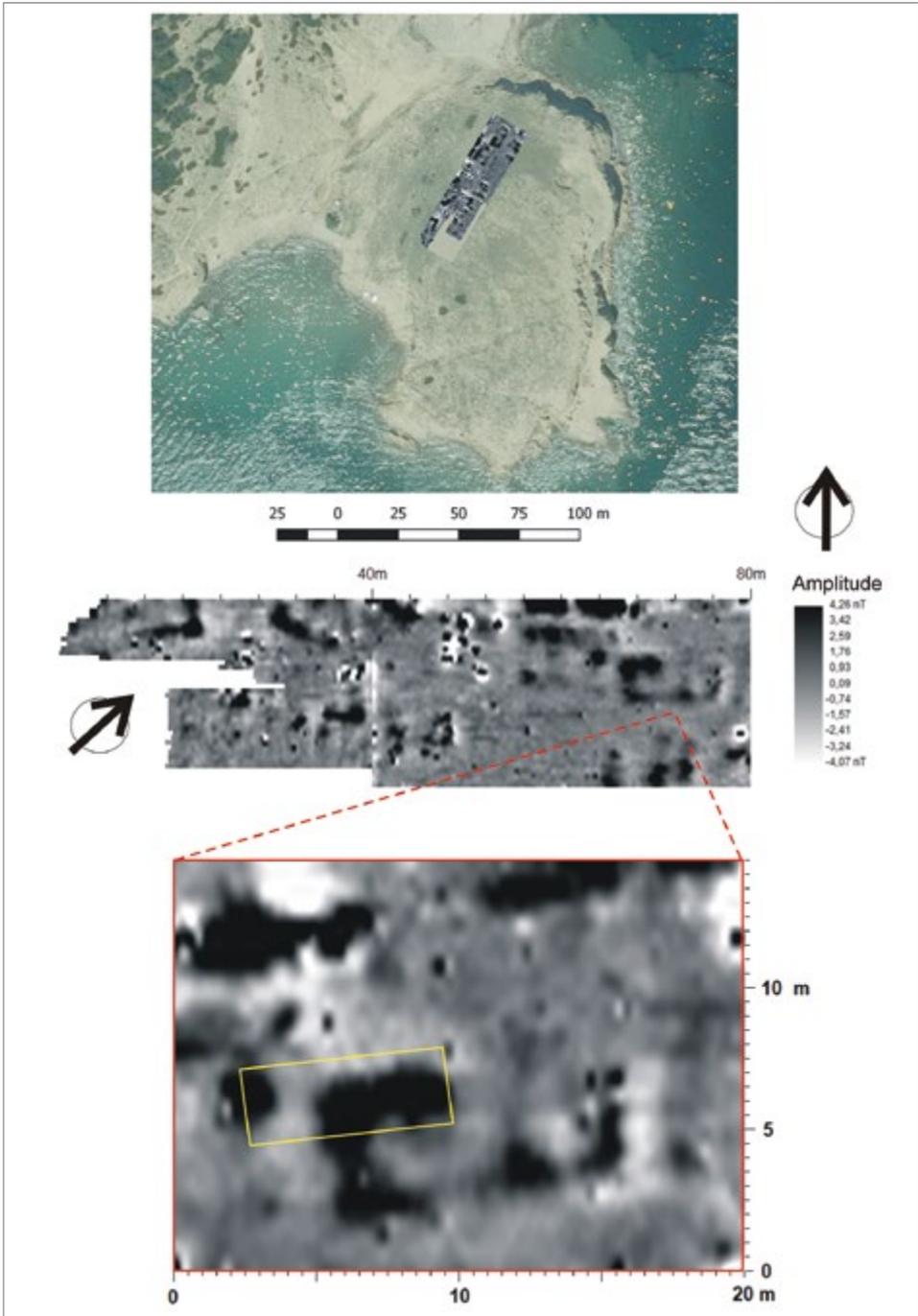


Fig. 4. Results of the geophysical survey: top, area surveyed by the magnetic method; bottom, section surveyed additionally by the GPR method; yellow rectangle corresponds to location of the archaeological trench (Rab Island Project archive | processing and drawing F. Welc)

datasets then become complementary to some extent. This is the main premise of the Amplitude Data Comparison (ADC) method (Welc, Nebelsick, and Wach 2019; Welc, Rousse, and Benčić 2020).

The magnetic survey was performed in the northwestern part of the promontory where numerous high amplitude anomalies were revealed (Konestra et al. 2019) [Fig. 4]. These features can be interpreted as the remains of a few rectangular buildings that have not been preserved in their entirety. The multiple rectangular structures that were detected were interpreted provisionally as severely damaged organic remains or negative imprints of possible structures.

In 2019, the geophysical survey was supplemented with a GPR survey to pro-

vide data for performing an ADC analysis. The GPR time-slices (GPR amplitude maps) recorded characteristic high-amplitude linear anomalies at a depth of about 0.60 m. Anomalies of this kind are generated most probably by buried stone debris [Fig. 5]. Oval GPR anomalies can be seen in several positions, coinciding with high values of the magnetic amplitude. This could be interpreted as the remains of a hearth filled with numerous burnt objects (potsherds, stones) [Fig. 5:1]. The remaining anomalies noted in the GPR image do not coincide with high-amplitude magnetic values, confirming the mostly organic nature of these features. The low contrast of the electrical properties of these residues compared to the surrounding soil explains why they were not visible to the GPR method [Fig. 5:2].

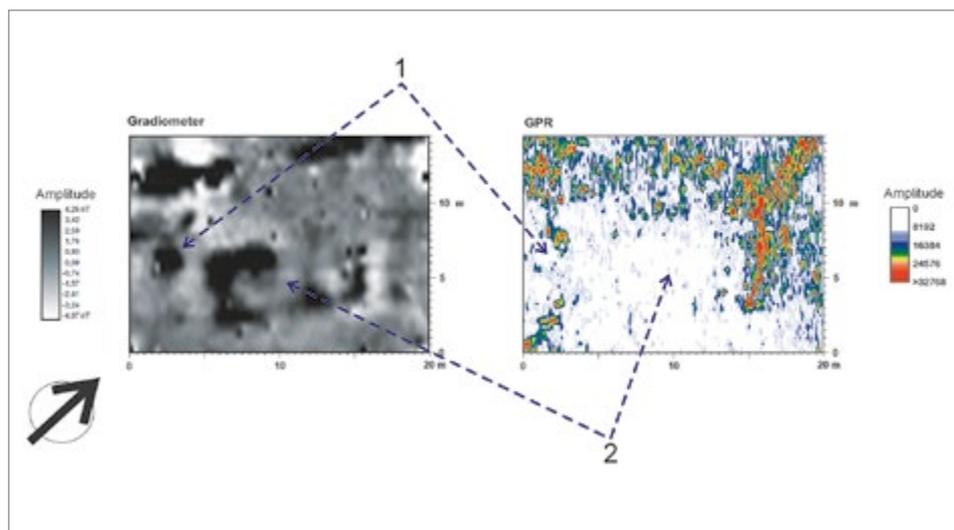


Fig. 5. Analysis of the magnetic and GPR survey results using the ADC method: left, section of the magnetic map from Fig. 4; right, GPR timeslice (GPR plan) for the same area a depth of approximately 0.40 m: 1 – high amplitude anomaly corresponding to remains of a hearth; 2 – outline and interior of a building very well visible on the magnetic map and almost absent from the GPR image; (RAB Island Project archive | processing, interpretation and drawing F. Welc)

For the ADC analysis, a GPR reflection profile marked a–b was combined with the corresponding gradiometer readings [Figs 5, 6]. A shallow depression could be seen between the first and fourth meter of this profile and this corresponded to a high-amplitude magnetic value [Fig. 6, No. 1]. Consequently, the whole set of anomalies should be interpreted as a hearth with a number of burnt objects inside it. A wide and shallow depression noted between the fifth and the fifteenth meter on the selected GPR profile corresponds to a

different magnetic value characterizing the northwestern edge of the building [Fig. 6, No. 2]. However, the northern edge (wall?) is visible on the GPR profile as an amplitude signal amplification zone, while the mapped magnetic field intensity values are both high and low (so-called dipole). This should be interpreted as heavily burnt matter, in this case also involving non-magnetic rock debris, which is reflected in the GPR results due to a sufficient electric contrast of these remains with the surrounding soil [Fig. 6, No. 3].

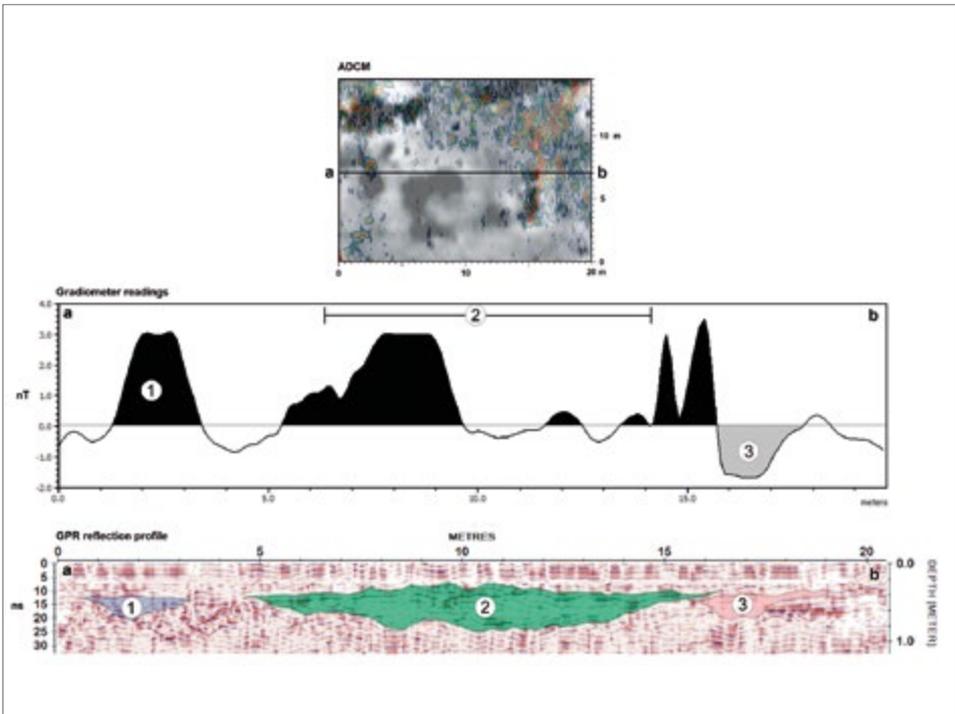


Fig. 6. Results of ADC analysis of a selected GPR profile and corresponding magnetic records (location of profile a–b marked on a map of superimposed magnetic and GPR results at top): 1 – highly magnetic sediments filling a small depression, corresponding to remains of a hearth; 2 – vast and shallow depression filled with diverse material, more magnetic on the outside corners (sand and stone rubble mixed with organics and ash); 3 – low magnetic amplitude values corresponding to GPR signal amplification zone, corresponding most probably to an accumulation of limestone rubble (Rab Island Project archive | processing, interpretation and drawing F. Welc)

## ARCHAEOLOGICAL VERIFICATION

Subsequent archaeological trial excavations based on the geophysical outcomes were aimed at verifying the nature of the buried target of interest (see Theocaris et al. 1996 with earlier bibliography). The trench was set close to the northwestern limit of the hillfort, where rows of rectangular buildings were detected, fairly closely spaced and running parallel to the rampart [see Fig. 4].

The specific aim of this small-scale excavation was to explore one of the structures determined by the ADC method. The excavation was planned to cover a part of the interior and the adjacent exterior. Initially, a larger area was to be examined, but the depth at which the remains were found forced the excavated area to be reduced to 14 m<sup>2</sup>.

Archaeological remains appeared under a layer of eroded sand up to 0.90 m thick and grass-overgrown topsoil. The sand and silt are practically sterile, reflecting a strong erosional force, quite the opposite of what was determined in earlier prospections (Konestra et al. 2019). Mechanical erosion of soil transported by water and evident all around the promontory, especially on the escarpments, led to this apparent third phase of the erosion process being overlooked (Morgan 2005). Control profile soil samples were sequentially collected every 5 cm from all the layers and their magnetic susceptibility measured with a kappameter. Once these measurements

are analyzed, they will help to better understand the provenance of these sediments.

Another eroded layer lay below this upper layer, this time containing archaeological material, but once again showing strong erosional forces at work. The first archaeological context *in situ* was unearthed below this in the southernmost part of the trench. It consisted of fire installations and contexts probably related to food processing [Fig. 7]. Five simple, subcircular clay hearths were discovered. Different in size, varying from 15 cm to 30 cm in diameter, these small structures with a clay base were placed directly on the ground. Charcoal was found both inside the hearths and around them, but no ash or evidence of sediments exposed to high temperatures were noted (see Berna et al. 2007: 359–360). Subcircular perforated clay vessel stands were found in abundance, fragmented and mixed together with remains of daub and sandstone pebbles, tentatively suggesting a feature referred to in the literature as a pebble hearth (see Pisoni 2008; Gur-Arieh et al. 2014 with earlier references). The pottery uncovered here, relatively modest in quantity considering the context, represented a typical coarse, hand-made Iron Age household ware.<sup>2</sup>

The corner of a rectangular building foundation was unearthed 2 m north-east of the hearths and fire installations, again fully confirming the usefulness of

2 Local coarse ware has hardly been studied (see Starac 2009: 41), hence there is no definitive typology, although parallels with neighbouring regions suffice to establish the main production features (see Šešelj and Vuković 2013; Vuković 2014; Barbarić 2016 for southern Liburnia; Mihovilić 2014: 304–312 for Histria).



Fig. 7. Fire installations and hearths in context (Rab Island Project archive | photo B. Nowacki)



Fig. 8. Remains of a dwelling: western corner of a dry-stone wall foundation and the interior filled with rubble (Rab Island Project archive | photo B. Nowacki)

geophysical data analysis using the ADC method. The foundation was built in the dry-stone technique, of large, irregular chunks of sandstone and chalk pebbles [see *Figs 5, 8*]. Construction material was evidently supplied from the nearest vicinity. Postholes were documented on the bearing surface of this western corner foundation, and the remains of carbonised beams and presumed posts, together with an abundance of plaster throughout the excavated interior, demonstrate the use of both perishable and long-lasting building material. Indeed, the condition

of structural wood buried in the collapse filling the interior was surprisingly good despite the poor preservation of the foundation and a projected fire event, either by direct contact with fire or with live embers (see Gur-Arieh et al. 2012).

As expected, fragmented coarse household pottery was found here as well, together with a couple of fragments of imported, central Mediterranean fine ware pottery and several sherds possibly belonging to amphorae. A spindle whorl and a stone quern were discovered nearby.

## INTERPRETATION OF RESULTS

The discussion will focus on the most plausible results concerning the remains of architectural structures from the Late Iron Age (roughly 5th to 4th centuries

BC) discovered at Kaštelina hillfort thanks to a combination of conventional archaeological and geophysical methods (the rest of the results will be reported elsewhere). The results are threefold: a general plan of one segment of this protohistoric hillfort settlement and a detailed layout of a single settlement unit, preliminary exploration of this unit with associated exterior, and confirmation of the reasons for the termination of this zoned unit of the Kaštelina settlement.

Remote sensing revealed the general outline of the settlement. It corroborated the spread of dwellings close to the western and southern limits of the hillfort, following the natural curve of the promontory, as is frequent in similar protohistoric settlements (see Batović 1987a; Glogović 1989; Buršić-Matijašić 2007; Mihovilić 2013). All the buildings traced at the Kaštelina site are matched in size and layout, which usually denotes segregation of the same types of activities and functions (Guilbert 1975: 203–210).



Fig. 9. Remains of a dry-stone wall settlement unit structure in context with fire installations and hearths (Rab Island Project archive | drawing K. Rabiega, processing A. Konestra)

A zoned plan, confirmed at least in the northwestern part of the settlement, could be a sign of a planned hillfort interior [see *Fig. 4*]. However, it will hardly be possible to ascertain whether the layout of buildings on an irregular site, like this one, was consciously arranged in view of the obvious need of adapting to the lie of the ground (Guilbert 1975: 203–210).

A multidisciplinary approach to the research identified the buildings at Kaštelina as typical, single-room, above ground, stand-alone rectangular dwellings (see Batović 1987a: 116). Even their size, 4 m by 10 m, meets the common standards of what has been defined as a so-called Liburnian house (Batović 1987a: 355; 2005: 25). However, the settlement units mapped by the magnetic survey and verified archaeologically show some distinctiveness when compared to features of similar layout, function and date. The first peculiarity concerns the setting of fireplace or hearths, in our case located outside the structures [*Fig. 9*]. On the eastern Adriatic coast and in its hinterland, they are almost without exceptions located in the interiors of simple Iron Age dwellings (Drechsler-Bižić 1986; Batović 1987b; Suić 2003: 128). Dwellings excavated at the sites of Beretinova gradina and Nin, both located in central Liburnian territory, have a stub wall stretching in front of the entrance, interpreted as a structure bearing a kind of canopy, sheltering that front yard (Batović 1987c: 110). Neither remote sensing nor limited trial excavation of the complex of hearths detected any clear evidence of structures carrying the canopy, but a similar concept could be expected at Kaštelina as

well, possibly in the form of postholes, bearing in mind the activities in the area in question.

The second peculiarity noted on Kaštelina concerns the building material for the walls. An abundance of daub fragments was scattered all over the complex, alongside remains of timber beams and carbonised wood in the collapsed structure and impressions of stakes in the wall foundation. The evidence for wattle-and-daub being used as a composite building method is indisputable. The technique has been hypothesized often enough in the past, but not clearly reported from sites with excavated settlement architecture dating from the Iron Age that are still rare in the Eastern Adriatic (see Batović 1964; 1966; 1968; 1969; Čondić and Vuković 2017). This also refers to rarely excavated protohistoric settlements in Kvarner, where only limestone drywall structures were explored so far (Pavišić 1985; Faber 1977; 1980; 2018). Sporadic finds of daub in some of the Bronze and Iron Age hillfort settlements in Istria and Dalmatia suggest the use of this composite building method (Buršić-Matijašić 2007: 526–533; Barbarić 2010: 163); hence, the absence of clear evidence of use of perishable materials in wall construction on sites similar to this one can be interpreted in part as poor preservation rather than not using it in the first place. Thus, the results obtained at Kaštelina confirm the use of this building technique, offering further details on the modes of construction with stone and timber/daub, perhaps adjusted to the available raw materials, an aspect that should be taken into consideration as well.

Evidence of the conflagration at the Kaštelina hillfort was traced by the geophysical survey as well as trial excavation, thus showcasing the potential of the ADC method. Strong magnetic susceptibility recorded in all of the traced settlement units in the northwestern part of the hillfort was interpreted at first as remains of perishable construction material (in the form of carbonized wood),

but subsequent archaeological trenching reported remains of permanent construction material as well. Whether the causes of the fire were anthropogenic or natural cannot be inferred from the mere presence of buried items (Alperson-Afil 2012: 112), but it surely meant the end of occupation, at least within this zoned unit of the hillfort, as no traces of rebuilding were detected here.

## CONCLUDING REMARKS

The results presented in this paper are preliminary because the research at the hillfort settlement of Kaštelina is in a preliminary phase, but they demonstrate the benefits of a multidisciplinary approach combining geophysical and archaeological methods. Despite the limited extent and short duration of the surveys, the results proved complementary when analyzed in unison. The spacious plateau on the Stolac promontory appeared at first as an extensively eroded archaeological site which could not conceal at any great depth an abundance of relatively well preserved remains. The initial geophysical survey conducted in 2018, which aimed to test the efficiency of different geophysical techniques on an eroded flysch substrate, brought surprising results that made an extended remote sensing survey one of the priorities of the “Archaeological topography of the island of Rab” program. Field research in 2019 produced a surprisingly successful complementation of conventional archaeological techniques and applied geophysical methods. The properties of the topsoil ensuring preservation of the remains was probably behind the good results.

In the wider, both regional and over-regional context, the data gathered at Kaštelina opens a more informed discussion of settlement layout and individual unit planning, as well as building techniques and consequently exploitation of natural resource. An analysis of the finds, still in progress, will shed more light on the latter aspect, as well as on the place of the site and island in the wider trade networks. On the local, island level, the data are crucial to understanding settlement patterns and their development (see Konestra et al. 2020), revealing an apparently rather short-lived settlement, but also calling for further research on its relationship to the other hillforts on the island.

A planned, although location specific layout of the settlement is certainly indicative of communal effort in its setup, while virtually identical single-space dwellings might suggest their multipurpose function (settlement, productive, storage, etc.) with no signs of specialization (see Guilbert 1975; for other regions Dietler 2010: 276–277, 280). Nevertheless, the presence of outdoor hearths, a feature again replicated several times

within the settlement, does suggest a dedicated area for food processing or other fire-related activities, that is, a courtyard attached to each unit. Such data on dwellings was so far regionally absent, while in the wider northeastern Adriatic only sporadically and partly known, precluding further elaboration, but also more precise parallels relevant to our case.

Building materials, while pointing to local resource exploitation, suggest an optimisation in the use of each material, with the foundation being built of rocks and the wall of perishable materials and daub. The roofing has not been determined, but was in all probability of perishable materials as well. Small finds are indicative of wool processing and cereals being used in food preparation, while the import of certain foodstuffs is suggested by the presence of amphorae

in the pottery assemblage. More data will come from continued excavation as well as finds processing, which should shed light on other aspects of the material culture, i.e., imported finewares, and models of appropriation, as the site seems to have functioned during a period of increasing import of foreign beverages (wine) and related consumption vessels, marking a shift in both cultural practices and, possibly, social structures (Dietler 1990: 389; Riva 2010: 221).

In conclusion, the combined methodology applied at the site allowed the extent of preserved settlement features to be determined, including their organisation and layout, while excavations offered a more in-depth look at construction and everyday activities and, crucially, offering data for the dating of the site, thus placing it within a wider Adriatic context.

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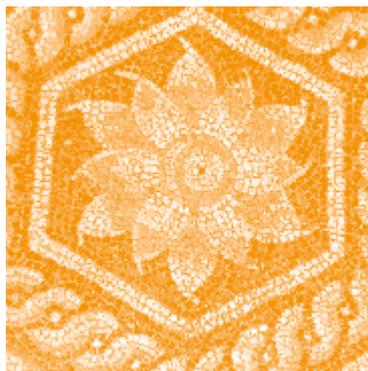
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# Alexandria, Kom el-Dikka. Fieldwork in the 2019 season



**Abstract:** The report offers an account of archaeological and conservation work carried out at the site. Excavations in the central part of the site (Sector F) were continued for the fourth season in a row. Exploration of remains of early Roman houses led to the discovery of a well preserved multicolored *triclinium* mosaic floor with a floral and geometric design. A large assemblage of fragments of polychrome marble floor tiles, recorded in the house collapse, showed the scale of importation of decorative stone material from various regions of the Mediterranean. Overlying the early Roman strata was direct evidence of intensive construction work carried out in the vicinity in the form of large-scale kilnworks, supplying lime most probably for the building of the late Roman bath and cistern. Included in the presentation is a brief review of the limited conservation work that was conducted in the complex of late antique auditoria.

**Keywords:** Alexandria, lime kilns, Roman mosaic, ceramics, decorative marble, conservation

Recent fieldwork of the Polish–Egyptian Archaeological and Conservation Project on Kom el-Dikka centered on the central part of the site (Sector F), even as the project’s conservators continued with ongoing preservation work, including mosaic floors, benches in Auditorium T (Area CW) and minor operations around the architectural monuments scattered around the site. On-site maintenance continued to be the most pressing issue and the biggest challenge for the site managers and the

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conservation team. For those in charge of the site, the growing numbers of visitors in the period between field seasons are a source of unquestioned satisfaction on one hand and constant apprehension on the other. Littering is perhaps the most acute problem, forcing regular cleaning campaigns to remove the garbage (empty cans, plastic bags, empty packages etc.) accumulated between excavation seasons. Next in line is an exuberant and uncontrolled vegetation growth due to the high

precipitation rate during the winter rainy season. It not only restricts visibility, but also threatens the integrity of the restored monuments, plant roots deeply penetrating the architectural structure, tending to open up mortar joints and cracking the most massive walls. Methodical eradication of all vegetation in the ruins is a regular activity each year before the fieldwork starts and this year it took a consignment of laborers six days to complete.

## EXCAVATIONS

The focus of excavation in the central part of the site is on uncovering the remains of Roman domestic architecture investigated in the area for the past several seasons (Majcherek 2018; 2019). The extent of exploration and the duration of the project are determined every time by the logistics of having to remove a large volume of soil from the center of an archaeological site in the middle of a vibrant modern city and of excavating in deep trenches with the dumps located quite some way from where the work is taking place. Thus, the team excavated trench S2019 in the western part (Area W) of the sector, extending the area investigated in the past two seasons.

### EARLY TO MID-ROMAN PHASE

Continued clearing of the façade of a Roman building that was excavated in the previous season was halted when two lime kilns of later date were exposed. They blocked access to the facade, but also partly cut into remnants of earlier structures (see below). A stratigraphic

test was planned in Room 19, part of which had been explored in 2009 (Majcherek 2012). The idea was to explore the stratigraphy and chronology of the complex, but the results were somewhat unexpected.

### Assortment of stone floor tiles

The first layer was made up almost entirely of remnants of the floor from the collapsed second storey (context 1343/19). Over 300 assorted multicolored stone tiles were recorded, some still with an adhering layer of ash-lime bedding up to 6–7 cm thick. This considerable thickness may have been needed to compensate for an uneven floor level resulting from the varying thickness of the floor tiles. The tiles were all broken, irregular and apparently spoliated pieces. Most could be classified as fragments of original *crustae*, 2–3 cm thick, while other, more solid examples (3–6 cm thick) could have come from the floor pavement. Only a few pieces preserved the original edges. None of the recorded fragments could be ranked among specifically shaped *sectilia*;

on the contrary, the forms are totally random. In two cases, small fragments of inscriptions (a few letters) were recognized. Unsurprisingly, the pattern of the floor decoration could not be reconstructed. It may have been a simple multicolored patchwork.

Varied as they are, the catalogued pieces represent a wide range of polychrome decorative marbles, originating from Egypt, the Aegean, western Asia Minor and presumably North Africa. Usually referred to as “imperial marbles”, they come from stones that were quarried mostly in the period from the 1st to the 3rd century AD; some might have even been of earlier date.

Colored decorative stones from the site were discussed by Barbara Tkaczow (2010: 99–103), but the newly found assemblage merits discussion in view of the contribution that it makes to the discussion of the trade patterns supplying Alexandria with ornamental stones. It is hardly surprising that Egyptian stones are present in a considerable quantity (approximately two-thirds of the total). They mostly came from the state-controlled quarries, and their diffusion in Alexandria is proof that some quantity of this material, probably leftovers, nevertheless entered the market. Their presence, as pointed out by Patrizio Pensabene (2016), could thus be well explained both by the role played by the city in exporting Egyptian stones and by the assumed existence of a sculptors’ school, producing imperial statues. Red porphyry is certainly a case in point [Fig. 1A]. Listed in *De Pretiis* as the most expensive stone material, it is still relatively common at the site in contexts

of different date, not only as fragments of sculpture, but also as *sectilia*, wall veneer, small columns and even *mensae* (Tkaczow 2010: 102). A pavement of large marble slabs with a simple geometrical centrepiece, employing a red-porphry roundel (*rota*) inscribed in a square, was found nearby in house FA (Majcherek 1998: Fig. 2).

Egyptian alabaster (*alabastro cotognino*) [Fig. 1B] is another stone well attested in the assemblage (36 pieces) and again well documented throughout Alexandria, the so called Alabaster Tomb being the most striking and obvious example to cite. Alabaster, used essentially as wall veneer, was very often recycled as paving slabs. A well preserved floor, employing re-worked alabaster tiles, was uncovered, for instance, in the southern *triclinium* of House MA, next to the theater (Majcherek 2003).

Other stones, quarried in the Eastern Desert, are definitely marginal. One should mention two fragments of *marmor claudianum* [Fig. 1C left]. Columns made of this grey and black speckled tonalite were shipped primarily to Rome and used to embellish Trajan’s Forum, the Pantheon and the Bath of Caracalla among other buildings. *Marmor claudianum* is rarely reported from Alexandria and mostly used as wall revetment. A single fragment of a serpentine slab (*serpentina moschinata*) extracted in Wadi Um Esh (Klemm and Klemm 2008: 294) supplements the list of Egyptian ornamental stones [Fig. 1C right]. This extremely rare, mottled, dark yellowish-green stone was employed chiefly for sculpture in the Roman period. A well known statue of a dog, in the collection of the Musei Capitolini

(Inv. No. 1110) is perhaps the most spectacular example. A fragmentarily preserved statue of green serpentine

was also discovered at Kom el-Dikka, in the adjacent Sector G (Majcherek 2013: Fig. 2).



Fig. 1. Selection of polychrome marble finds from Room 19 of a Roman house: A – red porphyry; B – Egyptian alabaster; C – *marmor claudianum* and *serpentina moschinata*; D – *breccia corallina*; E – *greco scritto*; F – *breccia di Sciro* (PCMA UW Alexandria Kom el-Dikka Project | photos G. Majcherek)

Polished nummulithic limestone slabs were also employed on a large scale (42 recorded fragments). They were thicker as a rule (4–6 cm). Some more regular rectangular pieces were noted alongside the broken pieces. Nummulithic limestone, most likely quarried in Middle Egypt (Klemm and Klemm 2008: 60–76), was commonly used as building material both in Ptolemaic and Roman periods. The best evidence of its popularity is widespread usage in late antique structures uncovered at the site. Nummulithic pavers and doorsteps were cleared among others in the bath and the theater portico (Majcherek 2017b).

The macroscopic visual identification needs to be verified, but it seems that most of the extremely abundant red-and-white breccia fragments (over 100 pieces) [Fig. 1D] were not of Bithynian origin (*breccia corallina*), but represented an Egyptian limestone breccia variety, quarried in Wadi Gelbana (Klemm and Klemm 2008). Local provenance would explain to a large extent its predominance in the assemblage.

The source of *greco scritto* [Fig. 1E], a stone represented by 11 fragments, is also in need of careful consideration. Two totally different sources should be looked at: Annaba in North Africa and the region of Ephesus (Attanasio et al. 2012). It goes without saying that the origin of the Kom el-Dikka pieces cannot be positively identified without petrographic and isotopic analyses.

A dominant position among the imported stones belongs unquestionably to Proconessian marble (76 fragments).

It was exported on an enormous scale all over the Mediterranean and Alexandria is no exception. Numerous capitals, columns and bases, found in various monuments at the site, are the best evidence of the popularity of this greyish-white marble. The low price could above all account for massive distribution of Proconessian marble all over the Mediterranean. Given as 40 denarii in Diocletian's Edict, it amounts to but a sixth of the price of porphyry or *lapis lacedaemonius* (Russell 2013).

Several fragments of *pavonazzeto* and Dokimean white marble, along with *breccia di Sciro* [Fig. 1F], *bigio antico* (Lesbian?) and red *marmor iassense* complement this short list of Aegean and Asia Minor polychrome marbles.

However, the total absence of *cippolino verde* in this repertory is highly unusual. It is particularly striking when confronted with a large number of columns and broken *crustae* of Karystos marble recorded throughout the site (Tkaczow 2010: 101).

While a rather well developed marble-working industry based on spoils is well evidenced in late Roman Alexandria (Rodziewicz 1991; Majcherek 2019), it now appears that the phenomenon can be traced back to as early as the mid-Roman period.

### Mosaic floor

The floor of the square room under the layer of collapse was decorated with a fine tessellated mosaic floor, measuring approximately 5.70 m to the side. The southern part of the room, sealed by a later wall W778, has yet to be excavated, hence the length remains conjectural.

The mosaic consisted of two parts, forming the U+T layout typical of Roman *triclinia*. Ample space along the walls (about 1.35–1.40 m wide), accommodating the couches, was paved with irregular multicolored stone chips (mostly *breccia corallina* and Proconessian marble, but also some pebbles), with no pattern to them, set in a red mortar. A similar technique, also using multicolored stones, was also applied in zones, bordering the *opus sectile* mosaic that decorated the southern *triclinium* in House MA, uncovered in front of the theater (Majcherek 2003: Fig. 4).

The main tessellated field forms a square (2.60 m by 2.60 m) framed by a band of five/six rows of white cubes, enclosing a two-stranded guilloche, on a black backdrop [Fig. 2]. Within an inscribed circle, again bordered by a guilloche, the field is arranged in a honeycomb pattern of seven adjoining hexagonal panels. The panels are separated by a continuous two-stranded guilloche on a black background. Each panel (measuring approximately 0.53 m to the side), framed by a double white filet, is filled with a representation of a polychrome flower on a black background. The three middle-row panels show six-petaled flowers, while the four lateral ones are filled with fully opened lotus flowers with pointed petals (*Nelumbo nucifera* spp.). The decoration in the spandrels consists of stylized lotus flower buds on a white background [Fig. 3 bottom].

A transversal element of the decoration (the horizontal bar of the T) is also quite elaborate. It is framed by a band of white astragals on a black background. The geometrical composition is divided

into a row of adjoining white octagons, separated by squares, lozenges and triangles, each outlined by double black filets and filled respectively with smaller red lozenges or squares [Fig. 3 top]. Octagons are filled with vegetal motifs: scrolls, stems and buds, alternating with stylized lotus flowers set in a cross-like manner.

The mosaic was executed using middle-sized tesserae, the mean density being from about 50 to 65 cubes per dm<sup>2</sup> for the border and the panels respectively. Common stone material (basalt, *pavonazetto*, *breccia corallina*, *giallo antico*, limestone) employed for tesserae, resulted in a rather limited although vivid color palette: black, yellow, greyish-blue, red and white. It seems quite probable that the white cubes used in the mosaic may have been cut from large limestone clasts extracted from the matrix of Egyptian *breccia corallina*.

The new mosaic apparently fits well with Alexandrian mainstream mosaic art. The composition of the central panel upholds the view about the special popularity of the circle-in-square design in Alexandrian mosaics (Daszewski 1996). The design is well attested in mosaics from both the late Ptolemaic and Roman periods, known from Maamura, Shatby, Canopus and the Cinema Diana excavations (Guimier-Sorbets 2019: 71–84). The Kom el-Dikka excavations have also yielded a number of similar examples from the ruins of Roman houses (Majcherek 1999; 2003).

The honeycomb pattern, while also recorded on mosaic floors in Alexandria—a good example comes from House *gamma* on Kom el-Dikka (Rodziewicz 1984: 52, Fig. 38)—seems to be generally better

attested in the Western Mediterranean. Mosaics from Gaul (Belis et al. 2016: 18–22; Balmelle and Darmon 2017: 111, Figs 139–140), Baetica (Dunbabin 1999: 150; Vargas Vázquez 2017: 356, Fig. 12) and Africa Proconsularis (Stern 1953: 184, Pl. 24) offer the best parallels (M.T. Olszewski, personal communication). Against this background, it is certainly interesting to note that similarly rendered, fully open lotus flowers are shown on the *triclinium* mosaic discovered at the Diana site in Alexandria (Guimier-Sorbets 1998), while stylized lotus buds are preserved in spandrels of the honeycomb pattern mosaic at Vaison-la-Romain in Gaul (Balmelle and Darmon 2017: Fig. 139).

The Kom el-Dikka mosaic, in similarity to all the above-listed examples,

should be dated most probably to the second half of the 2nd–early 3rd century AD. One cannot ignore the fact that the honeycomb pattern inscribed into a circle was first developed in Roman art in connection with zodiac or calendar designs on relief ceilings and was only later transferred to mosaic pavements (Hachlili 2009).

The northern, transversal element of the mosaic was rather seriously damaged, most probably due to the robbing of the wall separating it from Room 18. Similar damage was likewise observed along the eastern edge of the mosaic. The wall dividing it from Room 16 was dismantled at an as yet unknown time. The central panel suffered damages as well. In several places the surface was substantially



Fig. 2. Central panel of the mosaic pavement from Room 19 (PCMA UW Alexandria Kom el-Dikka Project | photo G. Majcherek)



Fig. 3. Roman mosaic in Room 19: top, geometric pattern in the forepart; bottom, lotus flower and lotus bud in the spandrel, detail of the central panel (PCMA UW Alexandria Kom el-Dikka Project | photos G. Majcherek)

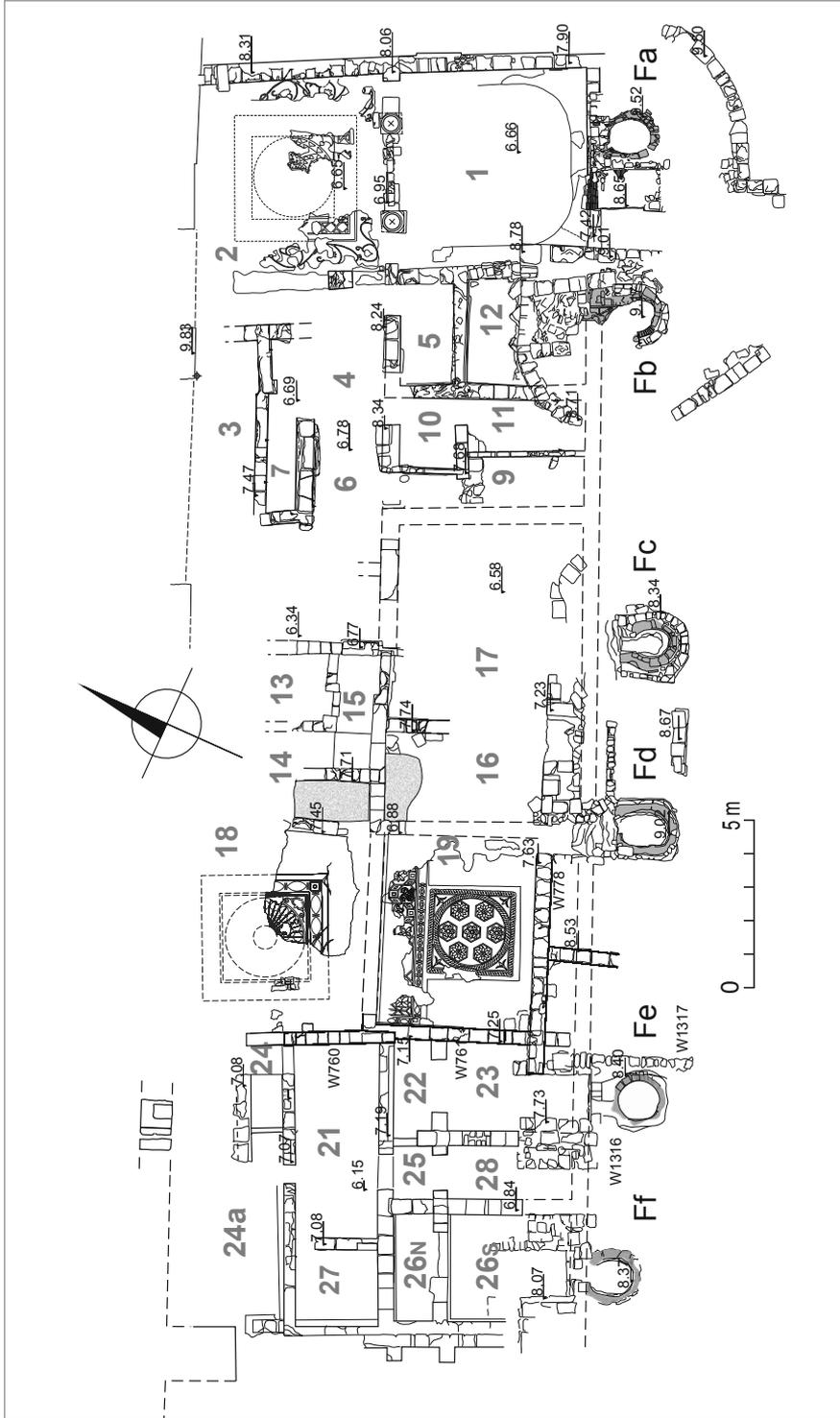


Fig. 4. Area FW: plan of the early Roman building (PCMA UW Alexandria Kom el-Dikka Project | drawing G. Karpińska, M. Sołtys, A. Brzozowska, G. Majcherek)

indented by stone collapse; in others, distortions usually interpreted as seismically-induced have been observed.

The layout of the mosaic indicates that the entrance to the *triclinium* was in the north wall [Fig. 4]. The wall was completely dismantled already in antiquity. The negative was not cleared in its entirety, hence no parameters can be given. Neither is there any data on its structure except for two pilasters preserved on the opposite walls (W761 and W701 respectively), which argue in favor of a typical tripartite monumental entrance instead of a single doorway, enhanced with columns. A similar entrance, flanked by two columns, was also recognized in the eastern wing of House FB (Rooms 1 and 2). Two fallen monolithic columns

of Aswan granite (approximately 3.80 m high), originally standing on marble bases preserved *in situ*, were found there (Majcherek 1999: 37–39). Interestingly enough, two fragments of middle-sized grey marble column shafts (Dia. 0.40 m and length 0.62 m; and Dia 0.45 m and length 0.58 m, respectively) were found reused in a structure (W1247) surrounding the nearby lime kiln Fe [Fig. 5]. The height of these plain shafts could be calculated as not exceeding 4 m, that is, comparable to the granite columns from Room 2.

Assuming this is correct, then the newly discovered *triclinium* would be accessed from the north, from Room 18, which was also decorated with a mosaic [see Fig. 4]. Of note is that the arrangement of Rooms



Fig. 5. Fragments of columns found in the structure of kiln Fe (PCMA UW Alexandria Kom el-Dikka Project | photo G. Majcherek)



19 and 18 duplicates almost exactly the location of Rooms 1 and 2 in the eastern confines of House FB [see *Fig. 4*]. It may be that we are dealing here with a kind of modular layout. In both cases northern units, serving as anterooms or courtyards, were decorated with mosaics decorated with the familiar circle-in-square design featuring a shield of bichrome interchanging scales (Majcherek 1999; 2012: 30–32). Both the sizes of respective rooms and the mosaic floors are almost identical. This altogether unexpected outcome raised the question of the general layout of House FB. It is highly likely that we are dealing here with two separate houses instead of one, each with its own *triclinium*. The need to pursue the issue is obvious.

### Secondary occupation

It turned out that Room 19 was reoccupied together with the rest of the building. In several places on the mosaic there were circular depressions left by pots placed there for a prolonged time. Three such fragmented pots, used most probably as *impromptu* hearths, were found *in situ*. Two of them were cut from the middle part of the cylindrical bodies of a Mareotic AE3 and an early version of a Gazan amphora respectively (Majcherek 1995). The third one belonged to an Egyptian middle-sized, two handled jug, produced in a hard Nile-silt fabric, well evidenced in the 2nd–3rd century deposits at the site. No particular content except for some



Fig. 7. Kiln Fe: vaulted stokehole (PCMA UW Alexandria Kom el-Dikka Project | photo G. Majcherek)



Fig. 8. Nude male statue: front and back view (PCMA UW Alexandria Kom el-Dikka Project | photo G. Majcherek)

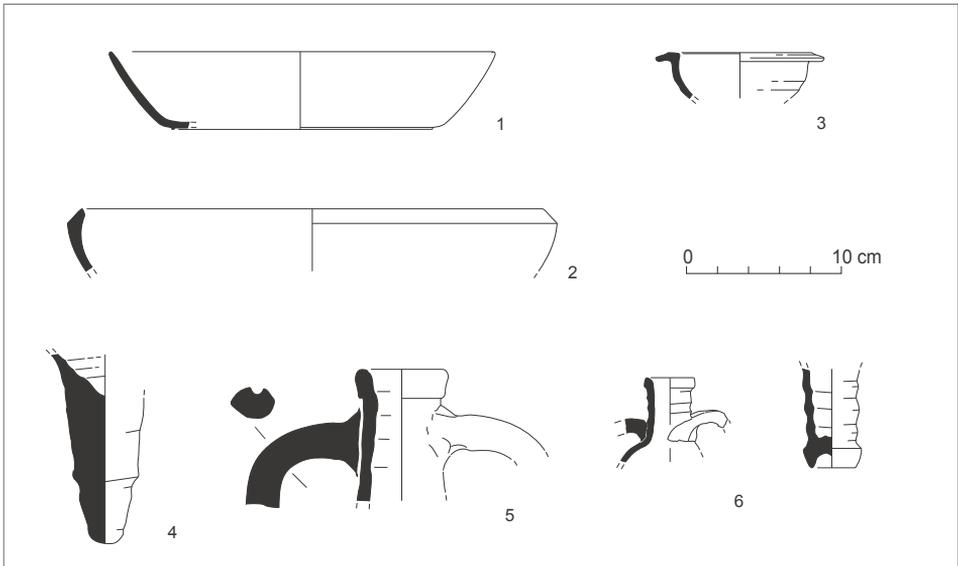


Fig. 9. Selection of late Roman pottery finds: 1 – ARS plate, form 50; 2 – ARS dish, form 61; 3 – ERSA bowl, form T311A; 4 – LRA7, base; 5 – LRA1, small module; 6 – LRA3A, foot and neck fragments (PCMA UW Alexandria Kom el-Dikka Project | drawing G. Majcherek; digitizing M. Momot)

ash and charcoal was retrieved from the pots. The *terminus ad quem* suggested for the pottery is approximately the late 3rd–early 4th century AD. Examination of the glass finds (see Kucharczyk 2020, in this volume) corroborated these chronological observations.

Evidence for secondary occupation or squatting was previously recorded also in Rooms 13–16 located further east. The building obviously housed artisanal production as proved by ample evidence of glassmaking: stone molds accompanied by a great number of beads and half products (Majcherek 2018; Kucharczyk 2019).

## LATE ROMAN PHASE

### Lime kilns

A lime kiln (Fe) was identified in the vast accumulation covering the ruins of early Roman House FB, sitting partly astride the presumed side street there (contexts 1307/19, 1312/19, 1315/19 and 1337/19) [Figs 6, see also 4]. The round chamber of moderate size (1.10 m in diameter) was built of flat square bricks: 24 x 24 cm, approximately 4.5 cm thick. Bricks were often cracked and partly disintegrated due to prolonged exposure to high temperatures.

The chamber was most probably tronco-conical in shape. The walls are preserved to a height of only 1.20 m, apparently less than half of what they had been originally. A stokehole (0.58–0.60 m wide) opened toward the north. A short tunnel, 0.80 m long, was covered by a partly preserved radial vault [Fig. 7]. Similarly to other kilns found in the vicinity, a fairly wide stoking

area (approximately 1.35 m wide) was framed by two quite solid parallel walls (W<sub>1316</sub> and W<sub>1317</sub>), extending north for a distance of 2.00 m and 2.30 m respectively. Unmortared walls were built of assorted stones, originating most likely from the dismantled structures of the neighboring early Roman house.

The kiln chamber has yet to be cleared and details of the structure studied. It was partly sunk into the ground, certainly built for continued use and was, in all probability, of the so called “flare” type. Such kilns were obviously loaded from the top and fired from the bottom, with fuel and air supplied through a stokehole. Following the calcination process, which may take at least several days, quicklime was removed through the stokehole and slaked (Adam 2005: 116–129).

The last load of quicklime was found still in the chamber; some fragments of large half-melted stone blocks are still visible. In front of the kiln, in the stoking area, a fragmentary marble statue of a male nude was found (Reg. No. 5280) [Fig. 8]. The statue may have been part of the load. Feeding marble to the lime kilns was a widespread phenomenon in antiquity. The productive efficiency of marble and its availability were the main reasons for its common use.

The kiln is one of a battery of six regularly aligned kilns, apparently built as a single complex (the other kilns Fa to Ff were discovered previously) [see Fig. 4]. The complex can be associated with extensive building activity in the area, most probably the construction of the bath and/or cistern in the first half of the 4th century AD.

Such kilnworks producing lime on an industrial scale are a very rare find. The closest parallel is a set of six well preserved kilns found in Iversheim in the Rhineland, apparently operated by a local legionary detachment in the period from AD 150 to AD 300 (Sölter 1970). However,

the kilns from Germania Inferior were much larger (3 m in diameter) and their load accordingly large, reaching 15 m<sup>3</sup> of lime each. The kilns from Alexandria should be ranked among the more modest installations, on a par with those uncovered in Naukratis (Coulson and Wilkie 1986), measuring approximately 1.30 m across. The load in the case of the kiln from Kom el-Dikka could be estimated at a mere 2.50–3.00 m<sup>3</sup>.

House FB was abandoned at the end of the 3rd century–beginning of the 4th century AD at the latest, giving a useful *terminus post quem* for the kiln. No legible coins were found in associated layers (contexts 1300/19, 1303/19, 1306/19), which produced a limited quantity of broken pottery and some glass finds belonging mainly to the 3rd–mid 4th century AD horizon, suggesting operation in the 4th century AD. Commercial amphorae



Fig. 10. Late Hellenistic stamped amphora handle (PCMA UW Alexandria Kom el-Dikka Project | photo R. Kucharczyk)

Table 1. Quantification of amphorae found in the refuse dump

Amphora Type	R	B	H	S	RBHS	%RBHS
LRA 4A	76	31	112	1965	2184	58.85%
AE 3 T (Egloff 172)	19	13	22	478	532	14.33%
LRA 7 (Egloff 177-179)	11	20	21	303	355	9.56%
LRA 1A	15	6	23	119	163	4.39%
"pinched" handle amphorae	2	3	1	21	27	0.73%
African (various forms)				26	26	0.70%
Pompei V (Ras el Bassit)	1	3	7	15	26	0.70%
Spatheion 1				25	25	0.67%
Kapitän II	4		2	17	23	0.62%
Agora M 239	2	3	3	12	20	0.54%
Tripolitanian (various forms)	2	3	1	16	16	0.43%
LRA 3	2	3	3	7	15	0.40%
Crétoises (various forms)	2			10	12	0.32%
Laodicean Dr 2-4			2	5	7	0.19%
other (unidentified, residual etc.)	6	6	7	261	280	7.54%
<b>Total</b>	<b>142</b>	<b>85</b>	<b>204</b>	<b>3280</b>	<b>3711</b>	<b>100%</b>

were plentiful, while tableware was virtually absent, hence the chronology still needs to be supported with more solid evidence. Typically, early versions of Gazan amphorae (LRA<sub>4A</sub>) dominated the assemblage (Majcherek 1995), while Egyptian containers were limited to occasional sherds of Nile silt AE<sub>3</sub>-type amphoras.

One should also mention sound evidence of Aegean vessels in the assemblage. Apart from several examples of 2nd-century Crétoise amphoras (AC<sub>1</sub> and AC<sub>2</sub>; Marangou-Lerat 1995) fragments of Kapitän II and LRA<sub>3A</sub> (single-handled, open-foot version) were also noted.

Two other catalogued forms are particularly noteworthy. One is a 4th-century Pompeii V successor, which, based on its dark red-brown fabric with abundant sub-rounded basalt and lime inclusions, most probably originates from the Ras el-Bassit workshops (Mills and Reynolds 2014). The other is a characteristic red-fabric Zeest 80 (Pontic) amphora. This container, seldom reported from Egypt, is represented by several body sherds and a rim fragment. They all belong to an early variant from the 3rd–4th century AD (Riley 1979: 188–189; Benghazi MR5) with a characteristic wedge-shaped, somewhat sloping rim marked by two deep grooves on the outside. The distribution of this wine amphora is generally confined to the Aegean and Black Sea regions with sporadic examples reported from Athens, Benghazi and Rome. Its presence in Alexandria is also rather occasional. Even though previously reported from Kom

el-Dikka (Majcherek 2015: Fig. 6), the Zeest 80 amphora has not been identified in the recently published vast collection of vessels from the Graeco-Roman Museum (Şenol 2018).

### Post-kilns levelling

This relatively thin set of layers (contexts 1236/19, 1237/19 and 1238/19) extended over almost the entire trench area, covering the abandoned kilns and thick lime deposition. It consisted mostly of lime refuse, some ash and slag with some marble detritus, apparently raw material for lime production. Prominent among the identified examples were fragments of wall veneer or floor slabs, some retaining the original edges. Most of them represent decorative stones, quarried in the Aegean. Similar deposits of raw material were also previously noted in the vicinity of other kilns with a particularly heavy concentration next to kilns Fc and Fd (Majcherek 2011: 42, Fig. 6).

The explored deposits turned out to be rather short of fine wares. Only a few examples of imported and Egyptian tableware were identified. African Red Slip ware was exemplified mostly by fragments of a large dish with a straight wall and a plain rim (form ARS 50) dated to AD 240–325 and a far later flat-based dish with a triangular incurved rim (form ARS 61) assigned to AD 325–400/420 [Fig. 9:1–2]. Even though obviously residual, the presence of ARS 50 in this context is particularly significant. It is commonly regarded as a marker of opening expansion of African Red Slip ware in the Eastern Mediterranean. The form is usually recorded in considerable numbers not only in Alexandria but also

throughout Egypt (Ballet, Bonifay, and Marchand 2012).

The Cypriot Red Slip presence is limited to fragments of a dish with a rounded off, thickened rim (form CRS 1) dated to the late 4th–mid 5th century, whereas Egyptian Red Slip wares

in turn are signified by several sherds of group A, originating from Aswan workshops (Gempeler 1992: 91–92; form T311A), generally assigned to the same period [Fig. 9:3]. The *terminus post quem* for this deposit could thus be set in the late 4th century AD.

Among other finds, mostly residual, one should note a late Hellenistic stamped amphora handle with the fabricant’s name: ANAPIKOY, and a caduceus below (Reg. No. 5281) [Fig. 10].

**Refuse dumps**

Sector F is located on the northern fringes of a vast area ensconced between the Imperial Roman bath, the cistern and the theater, which was never fully built over and was in a way isolated from the late antique urban fabric. Starting in the 4th century, it was turned into an enormous dumping ground that very quickly rose to a considerable height.



Fig. 11. Small alabaster mortarium (PCMA UW Alexandria Kom el-Dikka Project | photo G. Majcherek)



Fig. 12. Bone scraps from the rubbish dumps (PCMA UW Alexandria Kom el-Dikka Project | photo G. Majcherek)

Another portion of these deposits from the late 4th–5th centuries AD was excavated this season. A large part of the upper strata (approximately 3 m thick), composed of ash originating from the nearby bath and also some urban refuse, was cleared already in 2018. Layers explored this season (contexts 525/19, 534/19, 535/19 and 1209/19) once again turned out to be particularly rich in ceramic finds. Altogether approximately 4000 sherds were collected from a relatively small area (7 m by 3 m).

The results are hardly staggering. The amphorae, which represent the bulk of the finds, display the usual spectrum of forms typical of the 4th–5th century AD horizon in Alexandria. Fragments of an early version of the ubiquitous LRA4 amphora, produced in southern Palestine (Gaza–Ashkelon area), once again turned out to be particularly prolific. With amphorae constituting over 58% of the RBHS count, they form unquestionably the most numerous group [Table 1]. Such a high share, reached by Gazan amphorae, noted already also in other assemblages throughout the site, once again points to a very high consumption of Palestinian wines on the Alexandrian market (Majcherek 2004). Egyptian wine amphorae, manufactured in various centers of the Delta and Nile Valley, are definitely in the minority. Their combined quota does not exceed 25% of all the amphorae. Interestingly, the bulk of this group of containers is formed by examples of AE3T (Egloff 172) amphorae (Dixneuf 2011). Vessels with their characteristic ringed toes and large rounded handles are attested in a much smaller number as a rule. Their

frequency is much higher than LRA7, a quintessential Egyptian amphora. However, only earlier forms of the latter (Egloff 177–179) were recorded [Fig. 9:4]. Identifying their origin is a largely futile task. A visual characteristic of the basic silt fabric, virtually the same along the whole Nile valley, renders such identification impossible. They may have been manufactured in any of the many production centers recognized in Egypt.

Of the other vessel types, the most frequent in the assemblage is the LRA 1A container, originating in Cilicia or Cyprus, accounting for 4.39% of the sherds. Aside from typical densely ribbed body sherds, belonging to the standard morphological type, fragments belonging to a small sub-module [Fig. 9:5] as well as several hollow toes of its 3rd–4th century predecessor were also identified (Reynolds 2008: 70–72, Fig. 3). The presence of other foreign vessels is rather marginal. The most numerous is by and large the group of Eastern amphorae. However, each of the identified type-forms accounts for only well below 1% of the total. The repertory is limited to some Cretan amphorae, Kapitän II, LRA 3A (open foot version) [Fig. 9:6], pinched handle amphorae and their later small module, white-washed variant (Agora M239), both made in a typical brick-red western Cilicia (Anemurium) fabric. Two further type-forms are particularly noteworthy: Laodicean Dr 2–4, so far reported only in the Eastern Desert and on Red Sea sites, and examples of Pompeii V amphorae, manufactured in the distinct Ras el-Bassit fabric. The latter have also been reported in early 4th century AD contexts related to lime kilns.



Fig. 13. Auditorium T: Doric column drum incorporated into the portico backwall (PCMA UW Alexandria Kom el-Dikka Project | photo R. Kucharczyk)

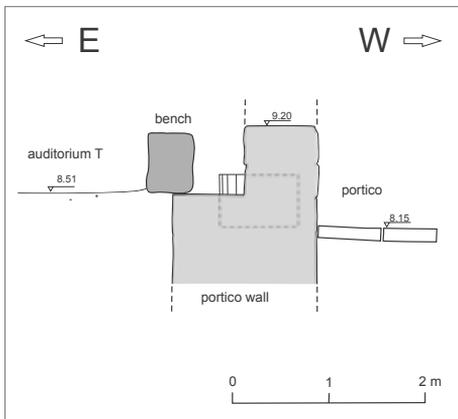


Fig. 14. Auditorium T: cross-section through the benches and portico backwall (PCMA UW Alexandria Kom el-Dikka Project | drawing G. Majcherek)

Both forms, however, seem most likely to be residual in this stratum. Its relatively high frequency comes as a surprise, since such amphorae have not been reported so far either from Alexandria or from Egypt as a whole. In contrast with previously studied assemblages from this area (Majcherek 2017a), containers from the Western Mediterranean came in surprisingly small numbers. They include examples of Tripolitanian 2 and 3 amphorae, together with non-diagnostic sherds of vessels from Africa, regarded under a general fabric heading. Prominent among them are *spatheia* (Type 1), usually assigned to workshops centered around

Nabeul. Ceramics other than amphorae are extremely rare in the assemblage.

Fragments of the 5th century Aswan kegs, complete with lids, as well as sherds of Egyptian and Aegean cooking pots, exhaust the repertory of commonwares. The list of fine wares is even shorter. Only three fragments of a symptomatic form ARS 50 and several stray sherds of ERSA were recorded. Finds other than pottery included some glass fragments, a small alabaster mortarium [Fig. 11] and numerous bone scraps [Fig. 12], waste from a developed bone-carving industry active in the vicinity.

#### LATE ANTIQUE AUDITORIA

Small scale research was also undertaken in auditorium T. In preparation for planned conservation work, the entire west wall of the hall (=back wall of the Theatre Portico) was cleared. A small deposit, sealed behind the northern end of the western bench, turned out to be of particular value for the chronology of the auditorium. Fragments of LRA 1B and LRA 4B, as well as two rims of Cypriot Red Slip (forms 1 and 2) pointed to the first half of the 6th century AD as the most plausible date for the construction of the auditorium. The wall itself was made of large dressed stones, sometimes using *spolia* as well. A drum from a Doric column, similar to those employed in the gate leading to the imperial bath complex and possibly originating from the same source, was incorporated into the wall [Fig. 13]. The location of the bench, positioned partly over the west wall, leaves no doubt that it had been dismantled prior to the construction of the auditorium [Fig. 14]. This operation must have been deliberate and fully controlled,

as it was dismantled in a most unusual way. The eastern face of the wall was removed, leaving only three courses of the western face above the portico pavement. This phenomenon has in turn serious implications as far as the development of the portico is concerned. Substantial reduction of width (from approximately 1.55 m to 0.80 m) resulted in a total change of its structural load-carrying capacity and for all practical reasons excluding its role as a portico backwall. Such a wall could hardly reach a height of approximately 8 m needed in the portico and sustain the load of heavy roof trusses. In other words, it puts into question the very existence of this section of roofed portico in the late 6th century AD and later.



Fig. 15. Auditorium N: eastern stretch of benches in 2019: top, state prior to preservation work; bottom, after preservation (PCMA UW Alexandria Kom el-Dikka Project | photos G. Majcherek)

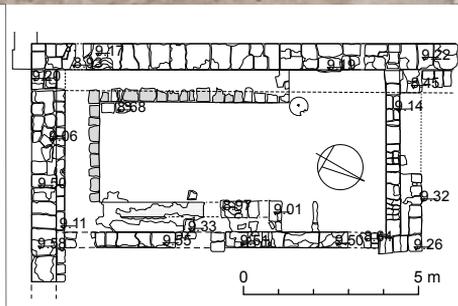


Fig. 16. Auditorium T: top, benches prior to restoration work in 2019; bottom, after restoration; right, plan with restored benches highlighted in grey (PCMA UW Alexandria Kom el-Dikka Project | photos and plan processing G. Majcherek)

## CONSERVATION WORK

In the beginning of the season the mission undertook necessary repairs to the protective barriers delimiting the visitors path (Majcherek 2019). Several sections of the barrier had been vandalized between the fieldwork seasons. Some of the supporting steel posts were found overturned, the steel wire cut or torn from the clamps. In these cases, the posts were fixed in cement bases, whereas new steel wire was reinstalled and fastened with clamps. Moreover, warning notices, in Arabic and English, were hung in chosen places.

Some of the architectural monuments suffered from heavy rains during the winter season. Necessary repairs were undertaken in all the affected areas: the baths, the portico gate and the residential quarter. Procedures entailed the refilling and grouting of washed away joints and fixing loose blocks or bricks in the wall.

In sector W<sub>1</sub>N, an entire street façade, approximately 17 m long, enclosing a series of rooms in House H (front walls of rooms H<sub>1</sub>, H<sub>3a</sub>, H<sub>4a</sub> and H<sub>8a</sub>), was treated. A large part of this section had been subjected to conservation



Fig. 17. Mosaic MA-1: restored and on display in the mosaic shelter (PCMA UW Alexandria Kom el-Dikka Project | photo R. Kucharczyk)

procedures a few years back (Majcherek 2016), but unusually heavy precipitation in the winter season had resulted in serious damage.

The main objective was to stop the process of degradation. Mortar washed out from the joints had eased water penetration into the wall structures. The principle of minimum intervention guided the team's work as usual. All the joints were repaired and pointed with new mortar. In several places, damaged wall coping was reshaped using a more resilient layer of well hardened mortar. Similar treatment was also undertaken in the southern wing of the auditorium complex. Likewise, in auditoria F, G and H, missing joints were repaired and some deteriorated stones replaced with new ones.

In auditorium N, the eastern stretch of benches had undergone conservation. Large patches of plaster, covering the benches, were cleaned and consolidated [Fig. 15]. Edges were secured with new protective mortar bands, whereas detached fragments were affixed with PVA and limewash.

However, the main task undertaken in the auditoria complex was the conservation of auditorium T [Fig. 16]. The western (4.60 m long) and southern (2.80 m long) stretches of the benches in this auditorium, which was excavated in the 2005/2006 season, were gone, obviously destroyed by burials of the so-called Lower Necropolis (Majcherek 2008: 31–34). However, the evidence of imprints left on the floor permitted a full reconstruction.

The operation was performed strictly in accordance with applicable procedures. Missing sections of benches were restored

using blocks found during excavations and assumedly originating from the structure [see Fig. 16]. Mortar used in the process was based on an ancient formula (1:3 lime to sand). The restoration was limited to the lowermost bench; to avoid confusion, new additions were separated from the original ones by strips of bitumen-tar paper. The original layout was thus recreated, enhancing visual integrity.

This season, the conservation of mosaic MA-1 (approximately 1.85 m by 1.65 m), initiated last season, continued with the transfer of the floor to the Villa of the Birds, where the final phase of conservation was performed. A protective canvas, fixed with PVA, was now removed and the entire surface thoroughly cleaned. Some losses in the bedding were completed and occasional loose tesserae re-set [Fig. 17]. This fine example of Roman art, featuring a bichrome geometric design, was put on display in the shelter, by the north wall. The mosaic was placed on a specially prepared low stone pedestal and anchored with stainless steel bars to the shelter wall.

With regard to the newly discovered mosaic from Area FW, reburial was chosen as the near optimum preservation measure in anticipation of regular conservation in the coming season. Basic preservation measures were applied: thorough mechanical cleaning, washing of the surface with demineralized water, detailed photographic and graphic documentation. The edges of the mosaic were subsequently secured with a kind of protective frame of vertical wooden planks. The surface of the mosaic was coated with a vapor-permeable membrane (mdm AQ 180) and polypropylene interlining, and

covered with a 12–15 cm thick layer of desalinated sand. It was then sealed with a protective layer of soil. The latter was

applied primarily as an extra protection against heavy rainfall and/or mechanical damage.

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# Glass finds from Area FW at Kom el-Dikka in Alexandria. Season 2019



**Abstract:** New glass finds from the Kom el-Dikka site in Alexandria come from the excavation of Area FW located in the central part of the site. The bulk of the recorded material, made up of conical lamps, beakers and bowls, and poorly fashioned bottles, belongs to the late Roman period (4th–5th century AD). The uniformity in color, distinctive low quality of the fabric and simple workmanship, all point to a common origin in local workshops covering the needs of the local market. A few pieces, including luxury cast and facet-cut tableware, apparently from a non-local source, represent the late Hellenistic/mid-Roman chronological horizon (2nd century BC–3rd century AD). Meriting note is new evidence of mosaic glass, once again confirming that this type of glass was manufactured in Alexandria in the mid-Roman period. The importance of this assemblage derives from the presence of early Roman luxury tableware which has seldom been observed before at Kom el-Dikka.

**Keywords:** Alexandria, Kom el-Dikka, late Hellenistic/early Roman cast glass, late Roman glass, mosaic glass

The glass finds from the central part of the site, where excavations proceeded in 2019 in Area FW, represent two broadly defined chronological horizons: the early/mid-Roman and the late Roman/early Byzantine, in similarity to the results of the previous year (see Kucharczyk 2019: 46–60). Current work concentrated on the southern part of the trench explored already in the previous season (for the location of the dig and results of excavation in 2018, see Majcherek 2019: 23–37,

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The study of glass artifacts from the residential houses discovered in Sector F, of which Area FW is part, are an integral part of the multi-disciplinary research on the Roman residential architecture of Alexandria.

Fig. 1; for the results of excavations in the immediate area in previous years, see Majcherek 1995: 14–20; 1996: 13–20; 1997: 19–30; 1998: 25–30; 1999: 35–39; 2010: 35–42; 2011: 38–46).

The assemblage discussed here was small and quite fragmented. The bulk of it consisted of 4th–5th century AD vessels produced by free-blowing, covering a repertoire of forms that includes bottles, flasks, bowls, cups, beakers and lamps. They were made of colorless glass with a greenish or yellowish tinge, shades of green and yellowish-green glass. Other colors are opaque blue and purple. In many instances, they display a milky-white, black and silver weathering, and iridescent layers. The vessel shapes, simple workmanship, noticeable inferior quality of the fabric, all point to local, mass production.

A limited number of fragments represented an earlier group from the late Hellenistic/mid-Roman periods (2nd BC–3rd century AD). The attested forms include cast and facet-cut tablewares, and

free-blown bottles, as well as mosaic glass. The composition of this assemblage is remarkable for the presence of luxury glass of the early Roman period, which has seldom been recorded at the site, and the definitive evidence for mosaic glass manufacture in Alexandria during the Roman period.

The finds are presented following a stratigraphic division of the material into four principal groups. Their dating is based on the pottery and glass analysis combined with stratigraphic and chronological data obtained in previous seasons.

1. Roman building post-destruction deposits (contexts 1343/19, 1307/19, 1312/19, 1315/19, 1337/19) = 4th century AD;
2. Lime-kiln burning deposits (contexts 1300/19, 1303/19) = 4th century AD;
3. Post-kiln levelling (contexts 1236/19, 1237/19, 1238/19) = late 4th–5th century AD;
4. Refuse dumps (contexts 1209/19, 535/19) = late 4th–5th century AD.

## 1. ROMAN BUILDING POST-DESTRUCTION DEPOSITS

The early Roman building (FB) excavated in this area was ruined most probably at the end of the 3rd century AD. Exploration of the post-destruction deposits yielded fragments assigned to two chronological horizons: obviously residual late Hellenistic–mid-Roman period (2nd /1st century BC–3rd century AD), and the late Roman period (4th–5th century AD).

### LATE HELLENISTIC–MID ROMAN GLASS

Of particular importance in this group is a colorless thick-walled fragment with ground outer rim edge and two closely

spaced wheel-cut horizontal grooves just below the rim, on the inside (Ctx 1337/19) [Fig. 1:1]. It is too small for the body profile to be reconstructed, but it may come from a cast hemispherical grooved bowl typical of the 2nd–1st century BC (Grose 2012: 27–29, 41–46: Group A). It is only the second example of such a vessel from the Kom el-Dikka excavation. The first fragment was a tiny fragment of a thick rim of amber color, preserving two closely spaced horizontal grooves on the inside just below the rim. It was found in a late Roman/early Byzantine

context above a collapsed vault in the nearby Bath in Area G (for recent excavations in this area, see Majcherek 2015: 31, 43–47, Fig. 1). Cast bowls of this type

are seldom reported from Alexandria or from Egypt in particular (Kucharczyk 2016: 100–101, Fig. 8; and other references to similar finds from Alexandria

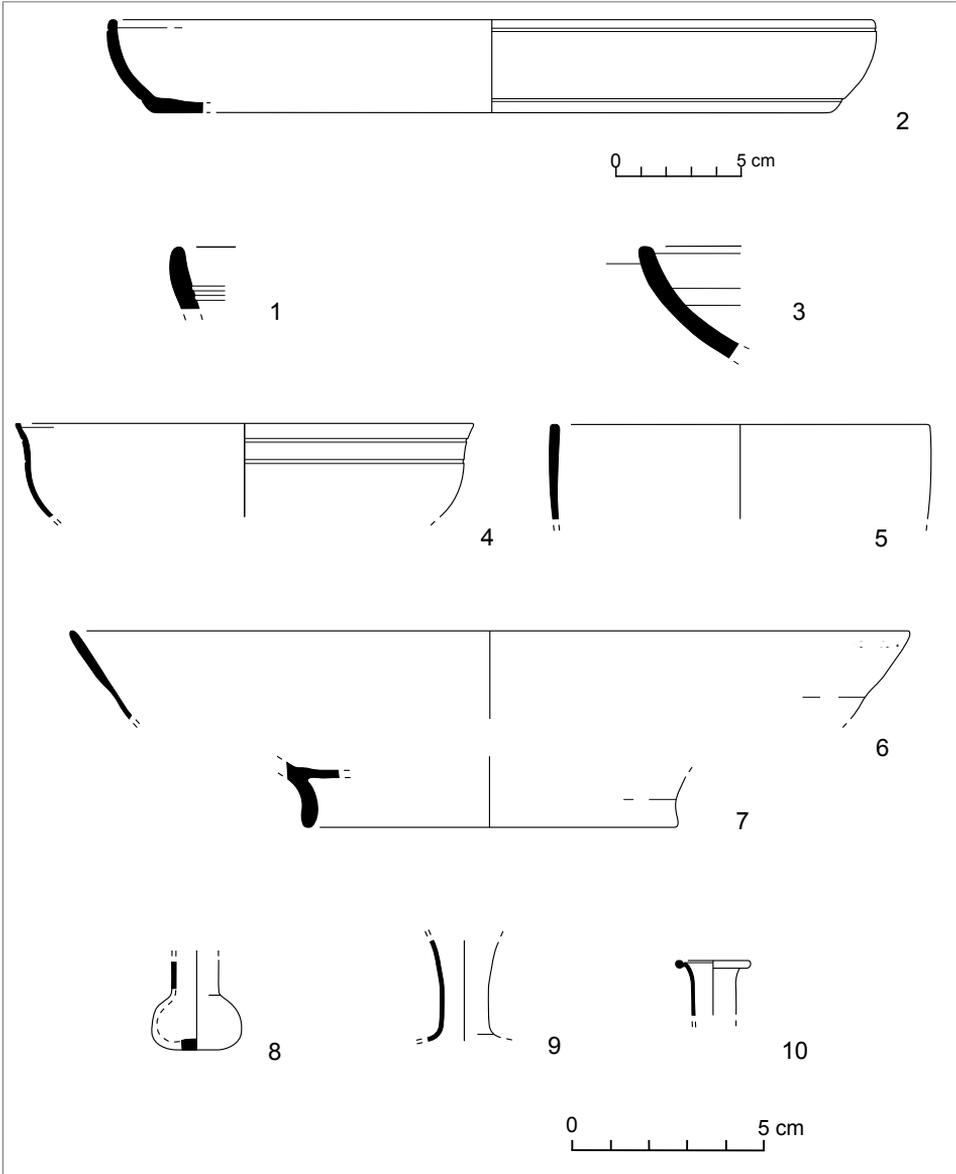


Fig. 1. Post-destruction deposits. Late Hellenistic/mid-Roman glass (2nd BC to 3rd century AD): 1 – cast bowl; 2–3 – cast plates; 4–7 – bowls; 8–10 – bottles (PCMA UW Alexandria Kom el-Dikka Project | drawing R. Kucharczyk, M. Momot)

and Egypt). The widest distribution of these bowls, however, is observed in the Eastern Mediterranean, especially Syro-Palestine (Tel Anafa); find spots farther west (Italy, Carthage, and Spain) suggest other centers of production.

Fragments of shallow, thick-walled cast dishes from the 1st century AD are noteworthy because they represent an extremely rare category of glass at Kom el-Dikka. Both of them were made of opaque blue glass, now with milky-white weathering and black spots. The first large specimen (Ctx 1312/19) has a curving wall tapering towards a flat base, and a carefully fashioned, rounded thickened rim with horizontal grooves below the rim edge on the outside and near the bottom of the base [Fig. 1:2]. A similar fragment discovered earlier in this area (next to lime kiln Fd (Ctx 75/08) turned out to be a matching piece (for results of excavations in 2008, see Majcherek 2011: 39–46, Fig. 5). The other dish (Ctx 1312/19) was preserved as a small fragment of body wall with a neatly worked, grounded rim, decorated on the inside by very lightly cut horizontal lines [Fig. 1:3].

A few fragments of variously shaped bowls and bottles represent the 2nd–3rd century AD. One shard (Ctx 1343/19) comes from a thin-walled hemispherical bowl with a ground and polished cracked-off rim and two cut horizontal grooves below the rim on the outside. It was blown, the glass colorless with a greenish tinge, now with milky-white weathering [Fig. 1:4]. These are rare finds at Kom el-Dikka, another example (Ctx 1307/19) being a colorless shard from a large shallow bowl with flaring walls, thinning towards the bottom, and a rounded,

thickened rim. Lightly abraded horizontal lines appear at the rim and beneath on the outside [Fig. 1:6]. This find, along with a colorless solid ring-base found in the same context, may derive from the same vessel [Fig. 1:7]. The evidence, again from the same context, also includes a shard from a deep vessel with straight walls and a rounded, thickened rim, made of green bubbly glass [Fig. 1:5].

Bottles are preserved mainly as necks and a few bases. One should mention the thin-walled, squat globular body of a toilet flask, most probably with a narrow and long cylindrical neck and flared rim (Ctx 1337/19) [Fig. 1:8]. The original color of the vessel is obscured by a layer of black weathering. An identical fragment which could belong to a candlestick-type bottle, a receptacle common in the 2nd–3rd century AD, was recently found in Area U (sub-area UN) in the northwestern part of the site (for recent excavations in the area, see Majcherek 2015: 31–42). They are still surprisingly few at the site (Kucharczyk 2016: 88, Fig. 1:1). Another bottle type is represented by the bottom part of a thin-walled spherical container with a flat base and two thin-walled cylindrical necks (Ctx 1307/19) [Fig. 1:9], one of these with a rolled-in rim [Fig. 1:10]. They were made of colorless glass with tiny spherical bubbles; now their surfaces exhibit milky-white weathering.

Mosaic glass was represented by a thick-walled shard from a shallow bowl with a neatly worked, flattened rim (Ctx 1315/19) [Fig. 2:1]. The decorative pattern consists of polygonal sections of a single cane with a central green rod, surrounded by an opaque yellow circle, randomly encased in a

green matrix. The vessel is decorated with a narrow, finely cut horizontal groove around the lower body on the outside. The surfaces inside and outside were rotary-polished; the exterior surface is glossy. The context dates this vessel to the 2nd–3rd century AD. This simple design is well known among the mosaic glass from Kom el-Dikka, from both the early and the late Roman periods. Examples include vessels (bowls), wall revetment, small disk-like objects with perforations, domed gaming counters, beads, balls, but most importantly, prefabricated mosaic canes. The latter

evidence is undisputed proof of a glass workshop at the site producing various mosaic objects (Kucharczyk 2010a: 67, Fig. 7:2; 2011: 66–67, Fig. 9:3; 2019: 48–49, Fig. 3, early to mid-Roman). Interestingly enough, a fragment of composite mosaic canes with this pattern came to light also this season, in the post-kiln levelling (Ctx 1238/19; see below).

**LATE ROMAN GLASS**

The remaining finds can be attributed to the 4th–5th century AD. These are a cup, lamps, and windowpanes, as well

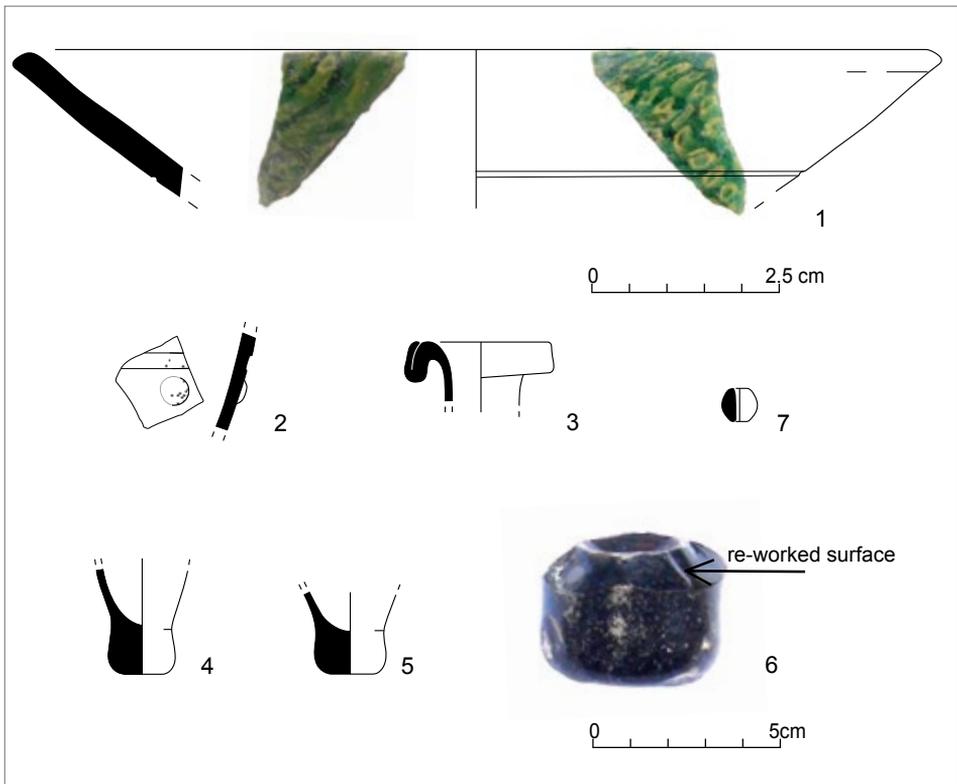


Fig. 2. Post-destruction deposits. Mid- to late Roman glass (2nd to 5th century AD): 1 – cast mosaic bowl; 2 – bowl or cup; 3 – bottle; 4–6 – lamps (6 – not to scale); 7 – bead (PCMA UW Alexandria Kom el-Dikka Project | drawing R. Kucharczyk, M. Momot, photo R. Kucharczyk)

as objects made with the non-blowing technique. A thick-walled shard (Ctx 1337/19) of a good quality, virtually colorless glass, with no weathering and fine polishing on the inside and outside surfaces, is unique. It preserves a small blue blob, protruding from the external shiny surface, and a finely cut, shallow, horizontal groove [Fig. 2:2]. The quality of the glass, the high level of workmanship, and the unusually good state of preservation make this fragment exceptional in this group of finds as well as in the material from this period from the site as a whole. Despite the small size, the fragment is recognizable as a possible cup or hemispherical bowl with a ground and polished cracked off rim, dated to the 4th century AD.

From the same chronological horizon there is a cylindrical neck with a thick rim with a double folding out (Ctx 1307/19) [Fig. 2:3], as well as fragments of conical lamps: two solid, knob bases made of colorless glass with a greenish tinge (Ctx 1307/19) or of purple glass streaked with light green, a rather unusual color for this type of lamp at Kom el-Dikka (Ctx 1307/19) [Figs 2:4-5 and 2:6 respectively]. The latter find deserves special mention because it appears to have been reworked after the vessel was broken. Its edges were neatly trimmed and then smoothed, possibly to be used as a stopper.

Other glass finds from this group include several fragments of windowpanes. They were produced in two different techniques, both based on free-blowing. One thick green piece, fire-polished on both sides, belongs to the “crown” variety (Ctx 1307/19). This method calls for a disk,

a so called “bull’s eye”, to be produced. It has a thick center and scar in the middle where the pontil was attached. Such disks were used either whole or cut into panes. The rest of the shards comes from flat panes, executed in the muff-process, also called the cylinder technique (Ctx 1307/19). They were blown of colorless glass with a greenish tinge, as well as of green and yellowish-green glass, with the typical elongated bubbles visible within the glass; some edges are sharp and rough, suggesting that they were cut, representing maybe the shear-cutting that opened the cylinder.

Apart from vessel glass, two other objects made with the non-blowing technique were also registered. They include a spherical, rod-formed bead made of green glass (Ctx 1307/19), and a pale-bluish, small disk-like object, flat on both sides with rounded edges and a wide perforation. The latter was used most probably as a pendant incorporated in a necklace (Ctx 1307/19). A single, small fragment of a bracelet with a roughly semicircular cross-section and one protruding diagonal rib was also registered (Ctx 1307/19). The glass of the bracelet appears to be opaque black. It had either been seamed-manufactured by drawing out a cane of glass and folding it upon itself to form the ring or by seamless-rotation on a rod to create the desired shape. This type of bracelet, termed by Spaer as ‘diagonally ribbed bracelets’ of the monochrome group (Spaer 2001: 199, Nos 447, 448, Pl. 33:447, 448), is dated to the late Roman/Byzantine periods. A few similar fragments are already known from the site (Kucharczyk 2010a: 65, Fig. 6:3; 2016: 99).

## 2. KILN OPERATION DEPOSITS

A circular, middle-sized lime kiln (Fe) was explored in the southern part of the trench, in an accumulation deposit covering the ruins of the early Roman building. Layers related to the operation of lime kilns yielded some glass material typical of the 2nd–5th centuries AD. A few fragments of thin-walled colorless beakers, at least two vessels, with a rounded, thickened flaring rim, were recognized. They are dated to the 2nd–3rd century AD (Ctx 1300/19). The category that they represent, colorless vessels from this period, is not overly represented in the Kom el-Dikka assemblage so far.

Finds of a 4th–5th century AD date include a low, hollow tubular base from a bowl or bottle, blown of pale yellowish-green glass (Ctx 1303/19) [Fig. 3:1], and windowpanes blown from pale green and yellowish-green bubbly glass, some with purple streaks in the glass (Ctx 1300/19) [Fig. 3:3]. Scratched parallel lines on the upper, glossy surface of a few fragments of panes may be guidelines to facilitate cutting. A distorted windowpane shard constitutes undisputed evidence of local glassmaking. It seems that all the panes came from the large windows of the nearby baths as indicated by a no-

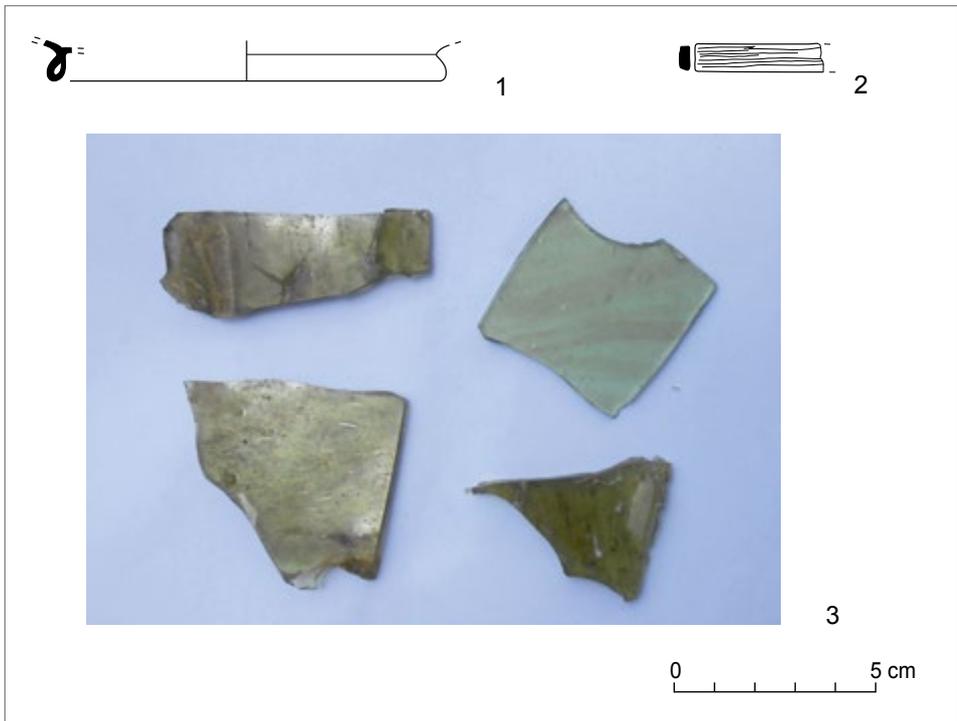


Fig. 3. Kiln-operation deposits. Late Roman glass (4th to 5th century AD): 1 – base; 2 – bar-shaped inlay; 3 – cylinder blown windowpanes (PCMA UW Alexandria Kom el-Dikka Project | drawing R. Kucharczyk, M. Momot; photo R. Kucharczyk)

table concentration of yellowish-green window-glass observed in deposits of ashes dumped from the baths (Kucharczyk 2007: 53; 2010a: 66; 2011: 62–63, Fig. 6; 2019: 59).

All the remaining glass finds from this chronological group represent specimens made by the non-blowing technique. This very small group consists of a bar-shaped inlay, a bead, and pieces of twisted rods. A fragment of a rectangular, pale yellowish bar-shaped flat inlay, roughly rectangular in cross section, retains long striations on the upper surface (Ctx 1303/19) [Fig. 3:2]. It appears to have been made in a mould as demonstrated by the glossy surface on one side and dull surface on the other, and by the rounded edges. Similar objects made of purple glass have been recorded from the site, from contexts dated to the end of the 4th–5th century AD (Kucharczyk 2010a: 65–66, Fig. 6:4–5; 2011: 62, Fig. 5:2; for the composite moulding stripes of the early Roman period, see Goldstein 1979: 247–248). They may have been used in inlay work: on furniture, small chests or other flat objects. Much longer pieces were composed into elaborate wall decorations like the mosaic glass panels and colored *opus sectile* from Antinoupolis, set within parallel lines made of colored glass (see Silvano 2001: 424–426, Pls I, II:1a, III: 7–7bis: 4th–5th century AD). Two rod fragments of pale yellowish-green and green glass, drawn out in a loose twist,

were also retrieved (Ctx 1300/19). They are deemed to represent cosmetic instruments used in the process of preparing and mixing various cosmetic and medical preparations (for a pale green glass rod from the early Roman period found in Sector U, see Majcherek and Kucharczyk 2014: 28–29, Fig. 4:3). Straight segments were sometimes set in panels as architectural ornaments (Goldstein 1979: 263–264: a fragment of a pilaster with twisted polychrome rods: mid-1st century BC to 1st century AD).

A faceted necklace bead made of a deep blue glass was noted as well (Ctx 1300/19). This type, a so-called “cornerless” bead, hexagonal in section, with a fairly large perforation, is made up of four neatly faceted lozenges framed by eight triangles. Six identical examples were found last season in the same area, although in lower layers of the excavated building. Not only the shape and quality of workmanship of all the beads, but above all the color of the glass, imitating lapis lazuli, enhance the significance of the group (Kucharczyk 2019: 52–53, Figs 6A: 1–2; 6B: top row). The ample evidence of bead-making: stone moulds with rows of grooves on top accompanied by a significant amount of gold-in-glass beads and half products (glass tubes), as well as wasters, testify to the artisanal production taking place in this area in the 2nd–3rd centuries AD.

### 3. POST-KILN LEVELLING FILL

Post-kiln levelling fill yielded one body shard of the 2nd–3rd century AD, belonging to a colorless beaker with flaring walls and a rounded rim (Ctx 1238/19) [Fig. 4:1].

The rest of the material is dated to the 4th–5th century AD and includes a beaker, bottles and their bases, a jug, a cup and a bowl, and lamps. The beaker,

apparently made of purple black glass, has flaring walls and a thick rounded rim (Ctx 1238/19) [Fig. 4:2]. Bottles, manufactured of various shades of bubbly green and yellowish-green glass, as well

as purple and blue glass, are exemplified by fragments of cylindrical necks, often with uneven walls, with a rather limited range of rims: rolled-in rim (Ctx 1237/19) [Fig. 4:3], partly infolded rim (Ctx 1236/19)

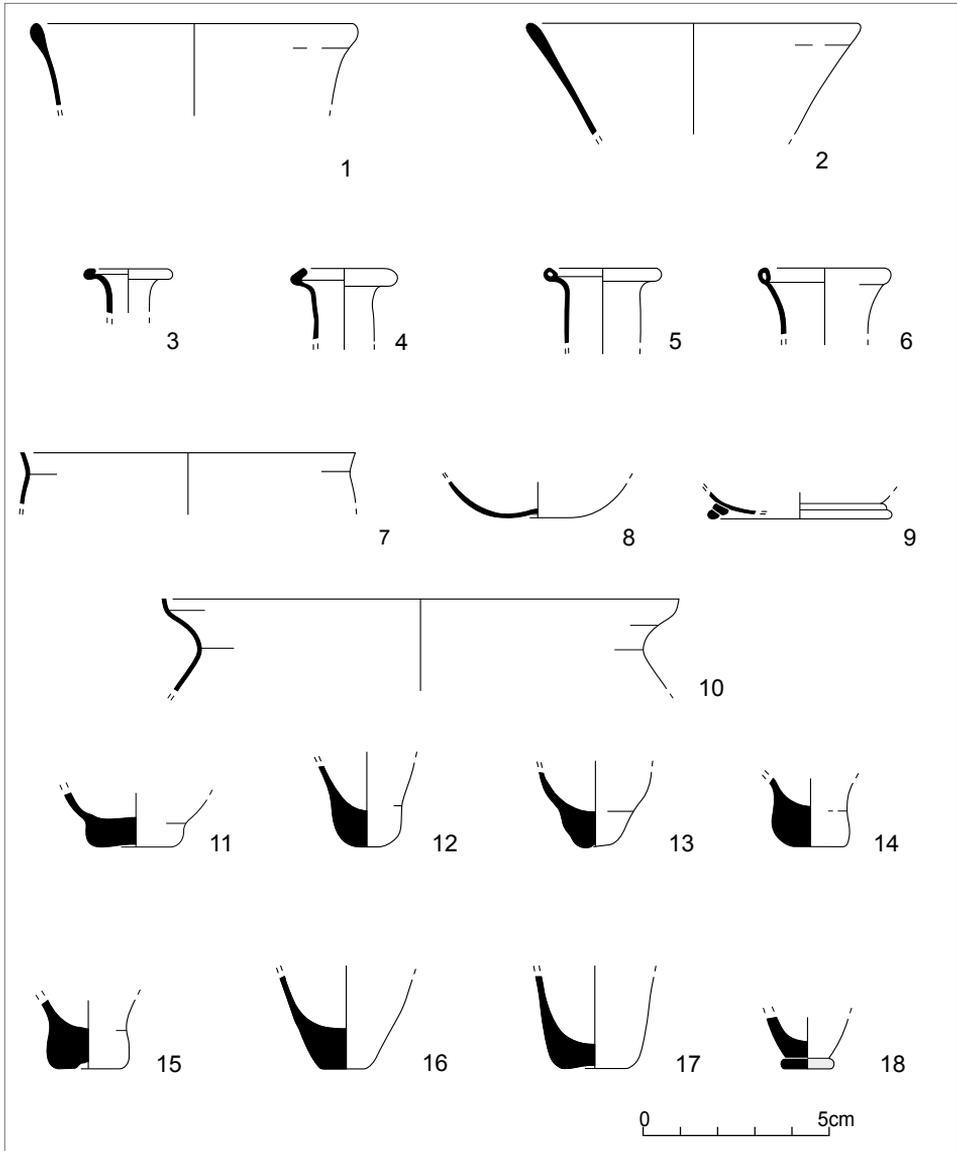


Fig. 4. Post-kiln levelling. Mid- to late Roman glass (2nd to 5th century AD): 1-2 – beakers; 3-6 – bottles; 7, 10 – cup/bowl; 8, 9 – bases; 11 – beaker; 12-16 – lamps; 17 – beaker or lamp; 18 – lamp or bottle (PCMA UW Alexandria Kom el-Dikka Project | drawing R. Kucharczyk, M. Momot)

[Fig. 4:4] and infolded rims with a small opening (Ctx 1238/19) [Fig. 4:5–6]. Two base fragments have also been recorded: a slightly concave base of an apparently spherical bottle (Ctx 1236/19) [Fig. 4:8], and a trail-wound base with two thin winds, spirally applied to the outer base edge. The vessel and the delicate trail on the base are of the same, pale green glass (Ctx 1236/19) [Fig. 4:9]. Several bases of this sort with fragments of a flat and convex floor, have been noted previously at Kom el-Dikka. In nearly all the examples, the body and bases are made of the same color glass, usually yellowish-green or shades of green; the number of winds ranges from two to four, and some form a pedestal base. Their quality, colour of the fabric and workmanship point to a local production. This type of base, well known from several different vessel forms, such as bowls but mostly bottles and jugs, is characteristic of the 4th century AD (Kucharczyk 2007: 51–52, Fig. 3:13; 2010a: 57–58, Fig. 1:11–13; 2011: 57–58, Fig. 1:5–7,11; 2016: 92–93, Fig. 3:8, and references to similar finds from other sites in Egypt, including Marina el-Alamein and 'Marea'; also Majcherek and Kucharczyk 2014: 30, 28, Fig. 4:8; Kucharczyk 2016: 92–93, Fig. 3:8).

One shard of a decorated bottle was also found. A pale green flat base and body fragment with mold-blown decoration in relief, exhibiting most probably knobby locks, comes likely from a head flask (Isings 1957: 93–94, Form 78b; Stern 1995: 210–212: Type A4). Not enough has been preserved to determine whether this perfume container had a single or double head (Ctx 1238/19). To date, Kom el-Dikka has yielded a few

loose fragments of bases and lower parts of bodies (purple, yellowish-green, green and blue), and only one intact yellowish-amber bottle with two identical chubby youthful faces and knobby hair arranged in three rows. The latter object was recovered from the bath area, specifically the thick deposits of ashes from the bath furnaces preserved in the subterranean service passages. The find spot leaves no doubt as to its function (Kucharczyk 2004: Fig. 1A; 2010a: 59, Fig. 2:5; 2011: 58–59, Fig. 1:12; 2016: 92; for parallels, found in 2nd–3rd century AD contexts at House 1 in Marina el-Alamein, see Kucharczyk 2010b: Fig 1:7). The seams on the bases indicate molding of the vessels in a bottomless two-part mold with the vertical mold seams incorporated into the hair of the two figures and the rough underside of the base reflecting the surface on which they were made. Once again, the color and the low quality of the fabric and workmanship point to a local workshop from the 4th century AD. This period also witnessed the manufacture of head flasks bearing a *crux monogrammatica* molded in relief on the underside of the base. Such a motif, composed of the Latin cross combined with the Greek letter *rho*, can be seen on a double-head flask, with two male heads set back-to-back, from Karanis (Harden 1936: 214, Pl. XVIII: 629; Harden thought the sign on the base to be a maker's mark rather than a Christian *chi-rho*).

The material from this context included a cylindrical neck fragment with a plain flaring rim with rounded edge and a single thick trail wound round once just below the rim, fitted with a reeded strap handle attached and folded below it

(Ctx 1238/19). The vessel, most probably a tall jug with a cylindrical or pear-shaped body, has a handle and trail from the same, very bubbly green glass. A limited number of containers of this type, which was common in the 4th–5th century AD, has been found at the site (Kucharczyk 2011: 57–58, Fig. 1:11; 2016: 92–93, Fig. 3:7,9; Majcherek and Kucharczyk 2014: 28, 30, Fig. 4:7; for evidence from House 1 in Marina el-Alamein, see Kucharczyk 2010b: 116–117, Fig. 1:13).

Open forms are clearly among the less frequent finds. They are represented by a beaker, bowl and lamps, specimens typical of the 4th–5th centuries AD. Vessels include examples with a cracked-off, ground rim: a thin-walled deep bowl or cup made of colorless bubbly glass with a greenish tinge (Ctx 1236/19) [Fig. 4:7] and a pale green, large bowl (Ctx 1238/19) [Fig. 4:10] (for variously shaped vessels with a cracked-off rim from the site, see Kucharczyk 2007: 49; 2010a: 60–61, Fig. 3:10–13; 2016: 90, 96, 98, Figs 2A: 4–5, 6: 3, 7: 5–6). A low, solid colorless base came from a beaker serving as a drinking vessel or a container for ointments of various kinds (Ctx 1237/19) [Fig. 4:11]. Although the upper body is missing, it is likely to belong to a specimen with a thin, slightly concave cylindrical body, curving under and in towards a base, and a thickened, fire-rounded, almost vertical rim, often decorated with one horizontal trail below it. Beakers of the common 4th and early 5th century AD type are still rare at Kom el-Dikka (Kucharczyk 2010a: 63–64, Fig. 5:1). The distribution of finds seems to indicate that the type was confined mainly to northern Palestine and northwestern Jordan (for

fragments unearthed in large quantities in the debris of the glass workshop at Jalame, dated to the second half of the 4th century AD, which would suggest that they were produced there, see Weinberg and Goldstein 1988: 60–62, Fig. 4-23, and see discussion and references therein).

Lamps were represented by only one type of conical lamp or beaker: six bases with thick, solid bottoms, made of bubbly yellowish-green, light green, and colorless glass with a greenish tinge, in some cases roughly formed (Ctx 1238/19) [Fig. 4:12–16] and one, thick flat fragment (Ctx 1237/19) [Fig. 4:17]. The lower part of a conical vessel, blown of good quality colorless glass, with a small disk formed from dark blue glass applied to its bottom, may have been either a lamp or a bottle. The combination of two contrasting colors made this vessel attractive, a feature infrequent among the Kom el-Dikka finds from this time (Ctx 1238/19) [Fig. 4:18].

The few windowpanes (Ctx 1238/19) were made with the cylinder technique based on free-blowing. The matt/glossy fragments (2.5–3 mm thick), all with rough edges, are of a pale green and yellowish green glass, with many elongated bubbles.

A mosaic cane with a simple pattern, consisting of a green center, surrounded by a ring of opaque yellow, was also evidenced in the material (Ctx 1238/19). It has already been said above that this was one of the commonest patterns of mosaic glass on Kom el-Dikka, used on vessels as well as small objects like beads and gaming counters. This find, together with other fragments of mosaic canes with simple patterns both floral (quatrefoils, connected at their tips, made

of opaque yellow glass, encased in a dark green matrix; and flower-like rosette with an opaque red center and opaque yellow small petals embedded in a dark green matrix) and geometric (opaque red

center surrounded by an opaque yellow border encased in a dark green matrix) already known from the site, are strongly suggestive of a local production of mosaic glass.

#### 4. REFUSE DUMPS

The central area of the site (sector F) was most probably never built over and apparently served as a dumping ground. The core of the dump was made up of ash from the nearby bath, alternating with urban refuse. The contexts excavated this season belonged to the initial stage of the dump, deposited in the 4th–5th century AD.

Exploration of compact layers of ash yielded glass fragments mainly from the 1st–4th centuries AD (for the 4th–6th century AD glass material from 2018, chiefly comprising simple shapes of tableware, mostly free-blown bottles, bowls, wineglass, and lamps, and personal adornments as well as evidence of window glazing, see Kucharczyk 2019: 56–59). The most significant find from this context is a clear colorless body shard with parts of two rows of close-set, vertically oriented, hexagonal facets, slightly varying in form (Ctx 1209/19) [Fig. 5:1]. It is too small to give a full sense of the shape, but it was most likely part of a tall, truncated conical beaker with splayed foot, carved from a vessel blank, with undecorated recessed bands above the base and below the rim, and high ridges below the rim and above the base, with a wide register of cut decoration between the two. The decoration usually featured horizontal rows of normal facet-shapes, such as diamonds, hexagons, circles or ovals, set either in quincunx

or in a honeycomb pattern, very rarely an interlocking pattern consisting of long and wide curving facets, and a figurative scene. Colorless drinking vessels appeared in the third quarter of the 1st century AD and continued to be made until the end of the first quarter of the 2nd century AD. Their provenance is uncertain, but both Italy and Alexandria, as well as other Mediterranean centers, have been suggested (Isings 1957: 37–38, Form 21; for the colorless conical facet-cut beakers, including two principal versions: one tall and narrow (Group I), and the other short and wide (Group II) (see Oliver 1984; also Harden 1987: 194–195, Nos 102, 104–105). The importance of this small piece lies in the fact that luxury glass tableware of this kind is extremely rare at Kom el-Dikka. So far, it is the first evidence of this type of glass to come from the site.

Speaking of this fragment, one should recall a massive aquamarine disk-base with a solid dome, coming from a tall conical beaker, also representing luxury tableware of the 1st century AD. Interestingly, it was found also in Area FW, in House FB, located further east (Kucharczyk 2011: 66–67, Fig. 9:1; for the plan of Area FW, see Majcherek 2020, in this volume: Fig. 5; Isings 1957: 48–49, Form 34; see also Whitehouse 1997: 227, No. 384—a blue beaker with a cracked-off rim and simple wheel-cut linear

decoration from the Corning Museum of Glass).

Early Roman vessels decorated with facet-cutting were until now entirely absent from Kom el-Dikka, but the picture at the port of Berenike on the Red Sea coast is entirely different. The evidence of such vessels is particularly numerous and includes two shapes, tall and short, with several schemes of cut-decoration (Kucharczyk 2017: 155–156, Figs 4:4–5, 5:7–8; and references to earlier finds from the site). These distinctive faceted beakers were also observed at Quseir al-Qadim (Meyer 1992: 21, Pl. 5, Nos 76–86). Extensive evidence of glass material of a similar kind has been forthcoming from stations and small fortlets in the Eastern Desert: Wakalat al-Zarqâ/Maximianon, al-Muwayh/Krokodilò, Umm Balad/Kainé Latomia, as well as

Khashm el-Minayh/Didymoi (see Brun 2011: 217, Fig. 263: 33–39) and the sites at Gebel Abu Dokhan/Mons Porphyrites (see Bailey 2007: 239–241, Fig. 8.3:26–35). Facet-cut motifs on the fragments from Berenike find parallels among vessels published from Elephantine (Rodziewicz 2005: 88, Pl. 6:104), Tebtynis and Douch (Nenna 2003: 359–360, Figs 1–2). Complete examples of this type and some fragments are known from Karanis (Harden 1936: Pl. XV:409–412).

Other finds worth mentioning from the ash dumps include a complete, long, cylindrical neck with a short funnel mouth and fire-rounded rim, and an apparent piriform body (Ctx 1209/19) [Fig. 5:2]. This colorless piece of noticeable workmanship quality, may have belonged to a flask of 2nd–3rd century AD date. Such finds are still rare at Kom el-Dikka.

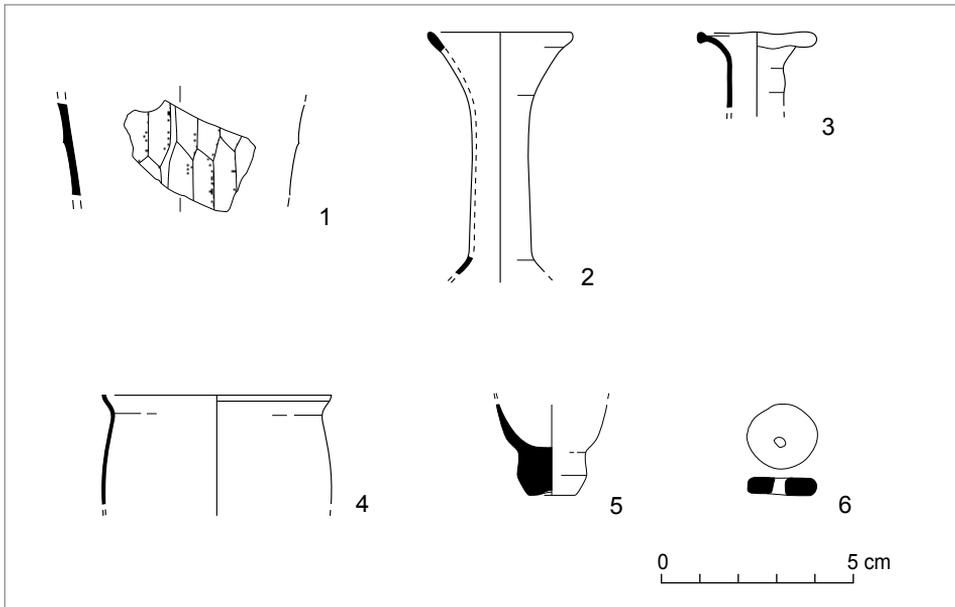


Fig. 5. Refuse dumps. Early to late Roman glass (1st to 5th century AD): 1 – facet-cut beaker; 2–3 – bottles; 4 – beaker or cup; 5 – lamp; 6 – disk-like object (PCMA UW Alexandria Kom el-Dikka Project | drawing R. Kucharczyk, M. Momot)

A few late Roman (4th and 5th century AD) fragments were also registered, including a roughly fashioned, cylindrical neck of a bottle with a short funnel mouth, and a thickened, unevenly folded rim, made of low quality green glass (Ctx 535/19) [Fig. 5:3]. There is also a solid, knobbed base of a conical lamp, made of green glass (Ctx 535/19) [Fig. 5:5], featuring distinctly good workmanship and a shiny surface, features not observed

on similar finds from the site. Another body fragment appears to have been part of a simply shaped, thin-walled beaker or a cup with a cracked-off, ground rim of near-colorless glass (Ctx 1209/19) [Fig. 5:4].

Glass other than vessels is embodied by two finds made in the non-blowing technique: a yellowish-green flat disk-like object with very smooth and rounded sides, and a slightly worn perforation (Ctx 1209/19) [Fig. 5:6] and fragments of stirring rods.

## CONCLUSION

Despite its limited size, the glass finds assemblage from the excavation conducted in area FW in the central part of the site merits attention because of the presence of luxury tableware of late Hellenistic/early Roman date, which has seldom been recorded so far, not only from Kom el-Dikka but from the region as well. Standing out in the assemblage are two, presumably imported, blue cast plates and a colorless bowl with grooves, as well as a colorless beaker with facet-cut decoration.

However, the bulk of the material is late Roman: plain, free-blown bottles, bowls, and lamps, as well as windowpanes. Similarities to other vessels from the site, poor quality of the fabric and inferior workmanship are proof of local mass production.

The evidence of mosaic glass, including a shallow bowl and more importantly, a composite mosaic cane, which is yet another example of this sort from the site, confirms beyond all doubt that this type of glass was manufactured in Roman-age Alexandria.

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# Group of tetradrachms from the reign of Diocletian discovered at Kom el-Dikka in Alexandria



**Abstract:** A group of more than 30 tetradrachms from the second half of the 3rd century AD was discovered in Alexandria in Egypt, at the Kom el-Dikka site excavated by a Polish mission, in a zone of public buildings constructed in the 4th century AD. A row of lime kilns from the construction site of this complex of buildings stood on top of the ruins of an early Roman domestic quarter and, once they were no longer needed, were covered with earth and rubble coming in part from the destruction layer of these houses. Excavation of the kilns in 2008 and 2009 produced large quantities of 4th and 5th century pottery, as well as pieces of marble revetment that were used to produce the lime in the kilns and isolated late Roman coins. The group of tetradrachms from the fill covering two of the kilns (Fc and Fd), collected apparently around AD 293–295, appear to precede the destruction of the early Roman houses underlying the kilns and may have actually been hoarded away in one of the houses.

**Keywords:** Roman coin hoard, Egypt, Alexandria, Kom el-Dikka, tetradrachms, Diocletian

One of the discoveries of the 2008 and 2009 archaeological fieldwork seasons, run by Grzegorz Majcherek from the Polish Centre of Mediterranean Archaeology University of Warsaw at the site of Kom el-Dikka in Alex-

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andria, Egypt, was the discovery of a group of 33 tetradrachms. A structural analysis of the set found in a sealed archaeological context, combined with a scrutiny of the stratigraphy in the area of the discovery (Jegliński 2011: 71–74), suggested that the coins could be considered as a Roman hoard, hidden in one of the early Roman houses, the ruins of which are being explored in the center of the Kom el-Dikka site. This part of the site is occupied by a

massive public building complex of the later 4th century AD: a Roman Imperial bath and cisterns supplying the complex with water (Kołataj 1992: 43–45). A row of lime kilns, discovered in the area south of the baths and northwest of the cisterns, appears to mark the location of the construction site for the building of this late Roman complex (Majcherek 2011: 38–44). The coins came from the fill covering two of these kilns.

## ARCHAEOLOGICAL CONTEXT

The early Roman architecture in the vicinity of the find was destroyed in the 3rd century AD, most likely before the end of the century. It gave way to the large complex of public buildings including baths and a cistern, constructed in the second half of the 4th century. A row of lime kilns, at least six (Fa to Ff), was installed in the area of the ruins of the early Roman houses, roughly 20 m south of the baths and northwest of the cistern (for the results of fieldwork in the area of the kilns, see Majcherek 2011: 44; 2019). The row, aligned east–west, is practically parallel to the south wall of the baths. The same orientation is demonstrated by the complex of subterranean passages under the baths, which would have been used during the building of the bath (Kołataj 1992: 46, 82–85). The relation of the kilns to the baths is evident and has been confirmed by more finds of kilns in recent years: the lime produced in these kilns would have been used to build the bath and possibly also the cistern.

The entire Imperial and academic public complex was located on the lev-

eled remains of early Roman domestic architecture. The kilns were situated in the ruins, partly on top and partly in the remains of House FB. Once the building project had been finished and they were no longer needed, the kilns were buried under soil and debris. In effect, a low slope was formed, separated by a hollow from the mound covering the ruins of another building (House FB). The hollow was quickly filled with the same composition of soil and debris that covered the kilns.

Of the 33 tetradrachms making up the collection discovered in this area, 29 coins came from the fill covering kilns Fc and Fd. Another four tetradrachms from the last few dozen years of the 3rd century AD were discovered in the fill of the hollow between the abandoned kilns and the mound of earlier ruins. The leveled ground above these remains continued to serve as a convenient rubbish dump for the ash, charcoal and debris from the baths; a mound several meters high accumulated from the mid 4th through the first quarter of the 7th century AD (Jegliński 2011: 70–71). The

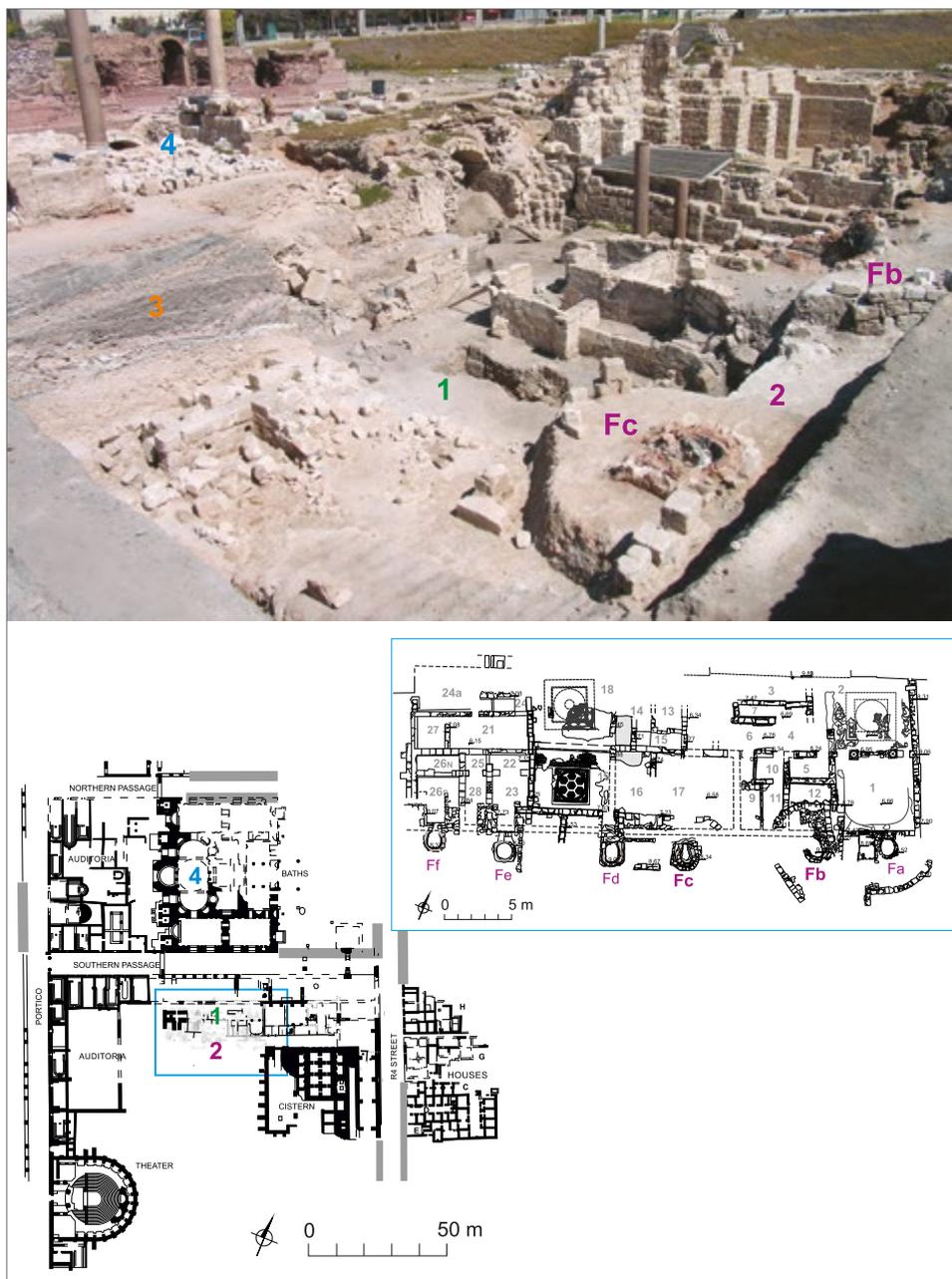


Fig. 1. General view of Area F, looking northeast, during the excavation of the kilns: 1 – ruins of houses from the early Roman period; 2 – line of kilns (Fb and Fc visible) overlying the early Roman architecture; 3 – trench section illustrating the accumulation of ash dumped from the furnaces heating the baths; 4 – ruins of the late antique bath; below, general plan of the Kom el-Dikka site with the location of the line of kilns, the latter presented in detail in the inset (PCMA Alexandria Kom el-Dikka Project | photo A. Jegliński; plan W. Kołtąj, D. Tarara; processing E. Czyżewska-Zalewska)

public complex was in operation in late Roman and early Byzantine times, as attested by the small finds, primarily pottery (Majcherek 2011: 28), but also coins from the dump (Majcherek 2011: 38–41).

A cluster of tetradrachms counting 29 pieces was found scattered in the fill of the two kilns. The bulk of the coins was recorded in adjacent stratigraphic units on the level of the kiln firing chambers and shafts. The layers were composed of



Fig. 2. Area F, section through the site, looking east (PCMA Alexandria Kom el-Dikka Project | photo and interpretation A. Jegliński)

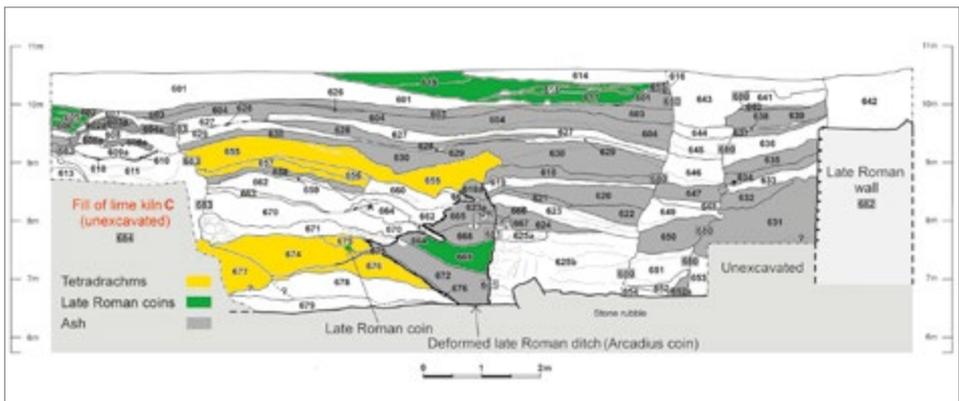


Fig. 3. Stratigraphic cross-section through kiln Fc, looking east (PCMA Alexandria Kom el-Dikka Project | drawing S. Maślak, interpretation A. Jegliński)

brown soil with considerable quantities of brick rubble, lime, fragmented marble floor slabs from which the lime was made, pieces of bronze fused into the slag, and broken pottery. Another illegible tetradrachm lay in the lower layer of ash, just above the fill. There was also a late Roman coin in the fill, too poorly preserved for identification. A quarter of an unidentified late Roman coin was discovered in the layer separating the fill of the hollow from the fill of the kilns.

A small cut was subsequently dug in the fill, distorted later, along with the adjacent deposits, by the masses of soil accumulated on top of it [Fig. 3: layer 669]. The fill of this cut contained a very poorly preserved bronze coin (Æ 4), presumably of Arcadius, the CONCORDIA AVGGG type with a cross on the reverse.

Since the accumulations inside the kilns and in the described hollow were practically identical in content, they must have formed very quickly and contemporaneously. Hence the assumption for the purposes of the present paper that the four coins from the fill of the hollow came from the same source as the main group of finds.

The pottery assemblage from the fill of kilns Fc and Fd, and from the hollow comprised broken amphorae representing a whole range of types: ARS, Egloff 172, LRA 1A, LRA 3A, LRA 4A, LRA 4B, early LRA 7, Tripolitanian and Africana Grande, sherds of Egyptian common wares and amphora stoppers in the form of small clay juglets. Pottery wares of this kind are generally dated to the 4th and early 5th century AD (Majcherek 2011: 39–41; 2012: 28–30). Cooking ware of Egyptian make from the 2nd–3rd centuries AD was found together with sherds of Cretan amphorae

and tableware of the Egyptian RSB type from the 3rd century AD in just one layer at the bottom of the fill covering kilns C and D. The Arcadius coin mentioned above provided a *terminus ante quem* for the fill of the kilns. It was found in an ash dump from the bath complex, supporting the view that the complex was in operation already at the close of the 4th century AD. The same fill also yielded the two illegible late Roman coins. The fill around kilns Fa and Fb produced a similar pottery assemblage (Majcherek 1999: 37). The numismatic finds were consistent with the period as well: a pre-reform tetradrachm of Maximian, an illegible 4th-century coin and an illegible late Roman coin. The construction project, which the kiln operation was part of, was conducted in the middle or second half of the 4th century AD; this dating was additionally confirmed by three clay oil lamps of 4th century date found in the subterranean complex (Kołataj 1992: 47; Majcherek 2007: 31). A 4th-century date for the fill of the abandoned kilns is thus undisputed.

Tetradrachms from the second half of the 3rd century in the same layers are thus an incongruity unless they are viewed as a group of coins that was hoarded in one of the early Roman houses in the neighborhood (House FB?), most probably sometime in the 290s, shortly before the domestic quarter in this part of the city was destroyed or perhaps even at the time of its destruction (Jegliński 2011: 78). Their presence in a cluster in the fill of kilns Fc and Fd could not have been accidental, considering that only one tetradrachm from this period was found in the fill of the adjacent kilns Fa and Fb. The whole group must have been discarded here together with rubble from the ruined houses.

The lowest part of the fill covering the two kilns yielded pottery of 2nd and 3rd century date, which must have come from the underlying destruction layer dated to the end of the 3rd century AD. The fill of the kilns closely resembles the leveling layer that prepared the ground in this area for the public building project of the later 4th century; it is full of broken bricks, architectural elements, crushed plaster and lime (Kołątaj 1992: 47; Majcherek 1995: 19). The filling of the abandoned kilns would have happened presumably shortly after

the construction work in this area was completed and before the baths began functioning. The coins must have been introduced with these fill deposits and the fact that they were found within a radius of roughly 7 or 8 m confirms the original clustering of the coins. There is no way to be sure that the whole hoard was thus redeposited. Laborers filling the ruins of the kilns may have pocketed the coins that they found. They would have kept such old coins for the value of the metal or out of sheer respect for the money.<sup>1</sup>

## HOARD STRUCTURE

Of the 33 tetradrachms, 17 were illegible, but attributable to the 260s–290s based on size and the metal alloy. The 16 pieces that could be identified constitute roughly half the set, which is statistically significant (Savio and Cavagna 2011: 999) [Fig. 4 top].<sup>2</sup>

Only one coin in this set, a tetradrachm of Philip the Arab (with a portrait of the empress Otacilia Severa on the obverse), was struck before AD 260. It is larger in diameter and made of a better copper alloy than the other coins. All the illegible coins are smaller in size and are made of an alloy typical of tetradrachms struck in AD 260–296. The reform intro-

duced by Diocletian in AD 296 put an end to Egypt's separate coinage (Christiansen 2013: 1635). Philip's coin makes up 3% of the set. Extrapolation of the remaining 32 coins (80% of the 15 identified pieces) gives a total of 77.5% ( $80\% \times 32 = 25.6$ .  $25.6/33 \approx 77.5\%$ ) (for the chronological structure, see Fig. 4 bottom).

Diocletian's pre-reform coins are prevalent in the group. The coins of three emperors before him occur in practically the same low numbers. This structure indicates that the collection could have been formed in the reign of Diocletian shortly before the reform (Christiansen 2004: 85).<sup>3</sup> There are at

1 Credible examples of two hoards from Egypt, A 158 and A 159, containing Alexandrian coins from the first 300 years of our era and even some Ptolemaic ones alongside the late Roman coins (Christiansen 1985: 85).

2 The same can be said of a group of 214 tetradrachms from the times of Diocletian, which looks like a hoard. The set was purchased by an Italian diplomat in Istanbul in the 1920s, who was told by the seller that the collection was discovered in Egypt. All the coins are legible, but for obvious reasons it cannot be excluded that the poorly preserved and illegible ones were discarded; the set may have been part of a larger hoard.

3 Coins from before the reform are very rare in post-reform coin hoards from Egypt. Billon coins disappeared from circulation right after the reform.

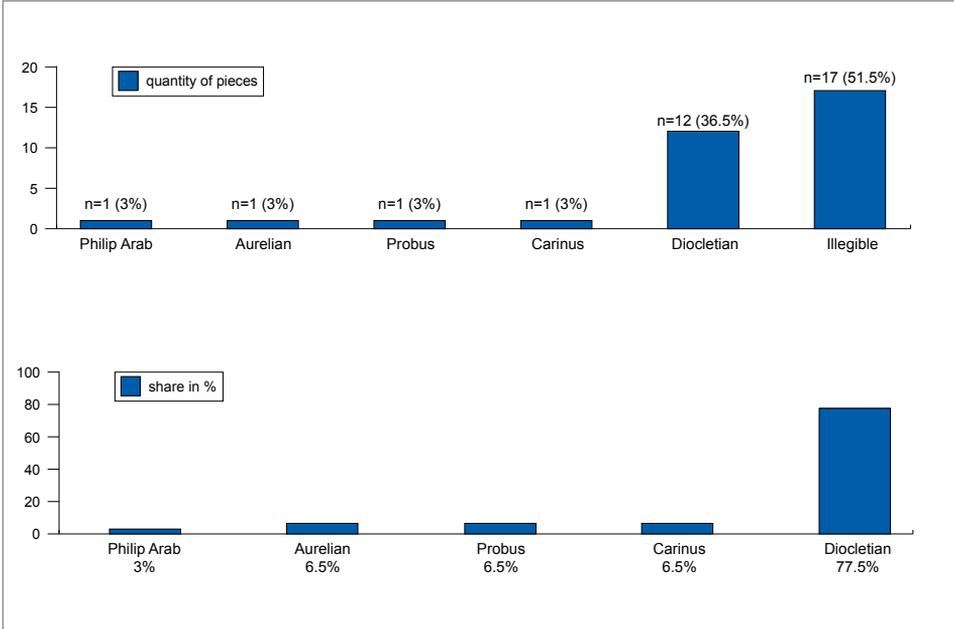


Fig. 4. Structure of the Kom el-Dikka set of tetradrachms (identified coins only): top, quantitative structure; bottom, chronological structure (Processing A. Jegliński)

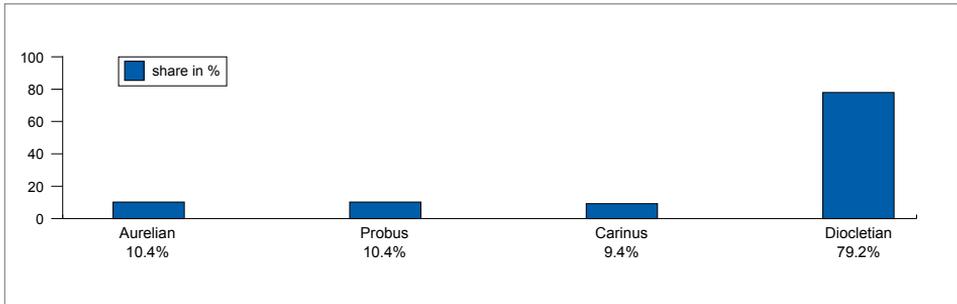


Fig. 5. Coin hoard A140 from Kom Aushim (Karanis), AD 294–295 (Processing A. Jegliński).

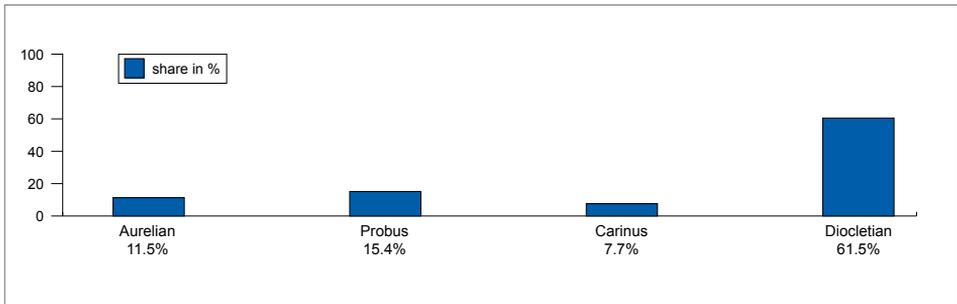


Fig. 6. Coin hoard from Batn Ihrit, AD 292–293 (Processing A. Jegliński)

least 100 coin hoards from Egypt. 68 of these are complete, well described and safe to compare with the Kom el-Dikka set. Of these, 24 were from the times of Diocletian (Christiansen 2004: 80–81). A comparative analysis demonstrates that close to a half of the hoards from the reign of Diocletian have a chronological structure close to that of the Kom el-Dikka group (Christiansen 2004: 82–83, Table I B).<sup>4</sup> The nearest are the hoards A 140 from Kom Aushim [Fig. 5]; the smaller hoards A 146 and A 148 from Kom Aushim and Batn Ithrit are only slightly less similar [Fig. 6]. Diocletian's coins make up from three-fifths to four-fifths of these hoards. The share of coins of his predecessors rarely exceeded 10% without usually crossing this threshold. Coins of rulers before Aurelian occur in trace quantities. In the Kom el-Dikka group, each coin makes for 6.25% of the whole. In the case of Philip Arab (Otacilia Severa), Aurelian, Probus and Carinus, every next tetradrachm found or read would double their share in the collection. Moreover, if the poorly pre-

served coin identified by the author as a coin of Carinus is wrongly attributed, it would mean that this emperor is not present in the set. However, it would not change the picture in any significant way.

Coin hoards with a chronological structure similar to that of the group from Kom el-Dikka are dated for the most part to AD 295–296, in one case AD 291–292 and in another AD 292–293 (Christiansen 2004: 82–83, Table I B). Because of the illegible coins, it is impossible to be certain, which is the youngest coin in the Kom el-Dikka hoard. The two youngest of Diocletian's coins are from the seventh regnal year, that is, AD 290–291. The state of preservation of one of these two coins (M75/08) is very good, indicating that it had not been long in circulation. The same can be said of the coin of Probus (M85/08), which has completely escaped corrosion. The nearness of the Alexandrian mint must have also had an impact on the share of freshly minted coins in circulation.

## DISCUSSION

The Kom el-Dikka group of coins is clearly close in its chronological structure to the monetary circulation of the first half of the 290s. This structure was typical of a racing inflation, attested in the rule of Diocletian by recent research into salaries documented in written papyrus records from the last dozen or so years

of the 3rd century AD (Robertson 2015: 119–151). Earlier research indicated the beginning of inflation in the 270s (Callu 1969: 344–350; Lendon 1990: 114–115, 119), and even the 250s (Harl 1996: 280). The continuous decline of the silver content in billon (tetradrachms) in the 3rd century AD was not clearly reflected in

4 Christiansen presents the hoard chronological structure including illegible coins. A recalculation excluding illegible coins from the calculation showed that the identified coins constituted the greater part of a hoard (more than two-thirds in a worst-case scenario), giving a highly representative sample of the whole.

the salaries and prices, which were on a rather stable level, most probably because the state-guaranteed nominal value continued to be respected (Robertson 2015: 156, 212, Fig. 18; Lendon 1990: 114–115). In the reform introduced by Aurelian in AD 274/275, the nominal value of billion coins was probably raised from four to eight drachms (Estiot 2012: 549–551) or, less probably, 20 drachms (Harl 1996: 502). This resulted in the inflation of the unit of account (drachm), but not of the coins themselves, which did not start losing value until the end of the 280s.

The chronological structure of hoards from times of high inflation tends to change rapidly. The Istanbul set from AD 295–296 is most likely the latest known hoard of tetradrachms from before the monetary reform of Diocletian. The percentage share of coins of earlier emperors is evidently smaller in this group: Aurelian 1.4%, Probus 0.5%, Carus and sons 5.6%. The share of coins of the ruling tetrarchs increases to 92.5%, this encompassing Diocletian 50%, Maximinus 40.6% and Galerius 1.9% (Savio and Cavagna 2011: 1000, 1002). Two years earlier the share of Diocletian's predecessors was 10% each (Kom Aushim hoard A 140) and four years earlier 12–15% (Batn Ihrit hoard, excluding the youngest Numerianus, ≈ 8%). Based on this chronological structure, the hoarding date of the Kom el-Dikka set of coins should be placed around AD 294 (AD 293/294–294/295), slightly later than the Batn Ihrit hoard and contemporaneous with the Kom Aushim hoard A140.

The proposed date for the hoard bears significance also for research on this part of ancient Alexandria. The destruction of

the early Roman domestic architecture in this part of the Kom el-Dikka site has been attributed to the massacres of Caracalla in AD 215 or the siege of the city either by Aurelian in AD 273 or Diocletian in AD 295 (Kołątaj 1992: 47). The dating of this particular hoard, which must have come from the destruction layer of the described domestic quarter, points to the latter date as the most likely one. The chronological structure of the set indicates rapid thesaurization, removing coins from circulation. It is tempting to associate the date of the deposit with events taking place in AD 295.

Excavations by Bernard P. Grenfell and Arthur S. Hunt in the rubbish dumps of Oxyrynchos in the 1890s uncovered more than a thousand loose coins dating from Ptolemaic times up to the reign of Heraclius (Milne 1922: 158–163). Of these, 336 coins are from the period in question, that is, from the rule of Philip the Arab to the monetary reform of Diocletian in AD 296. The chronological structure of this group is a reflection more of the issue size of the coinage of particular Roman emperors than circulation in this period, because the dumping of the coins with rubbish from the city occurred over a long period of time and in no particular order. The structure is as follows: the share in this set of coins of Philip the Arab, Trebonianus Gallus, Valerian, Gallien and Claudius the Goth oscillates between 1% and 3% for each of the emperors. There is only a trace quantity of coins of Tacitus (less than 1%). Aurelian's coins constitute 16.4% of the collection, those of Probus 20.5%, those of Carus and sons 9.5%, while the share of Diocletian's pre-reform coins shoots up to 42.5% (calculated based on Milne 1922:

group B). The structure reveals a gradual growth of the mass of issued coinage, peaking in the reign of Diocletian due to galloping inflation in the late 280s and in the 290s. It is different from the structure of the Kom el-Dikka set, the share of coins of Diocletian being twice less, while showing a slightly greater share of coins of Aurelian and Probus. The strong similarity of chronological structure of the Kom el-Dikka set to other monetary hoards and a weak one to coins accidentally lost in the rubbish of Oxyrynchos supports the view that the Kom el-Dikka collection of tetradrachms was an actual hoard that was formed by taking coins out of circulation and hidden as a set rather than being gradually lost over a longer period of time in the rubbish dumps of the city.

Rapid thesaurization of the set is also suggested by the archaeological context. The presence of a coin of Philip the Arab seems to be accidental, very much like the Karanis hoard 28 from AD 269/270, which contained 22 contemporaneous coins out of a total of 23 (Christiansen 2004: 174–175). Preferential hoards were of a different nature, formed over a long time by taking out of circulation old coins with an evidently higher silver content, possibly size and weight, as could have been the case with the coin of Philip the Arab from the Kom el-Dikka set with its larger diameter and better metal alloy. In the 260s and 270s, before Aurelian's reforms of AD 274/275, the low quality issues of the emperors from this period constituted only a few percent of the preferential hoards. The prevailing coins in such hoards were the old, better quality coins from the first half of the 3rd century AD (before AD 260), coins of emperors from the 2nd century AD and

even Nero's coins (Christiansen 2004: 170, 175, 178, 181; Robertson 2015: 108–110). After Aurelian's reform, the number of old coins in the hoards declined. Although it is likely that many of the old coins were withdrawn from circulation and melted down during the Aurelian reform, the preferential hoards created after the reform have a similar structure as those before the reform (Christiansen 2004: 169–170, 173, 185–186; Robertson 2015: 109–110).

Questions that arise concern the nominal value of old coins, whether it was higher than that of new coins with evidently less silver in them. If so, then was it the market that established their value? And was it a legal procedure (Robertson 2015: 66; Elliott 2014: 144–148)? Ancient written sources do not give a clear answer. “Antoninian aurei”, “Philipian aurei”, “silver Antoninian coins”, “silver Philipian coins”, “Philipian bronzes”, “Phillipian coins”, “aurei with portraits of Aurelian”, “coins one-third of the value of an as with a portrait of Salonina” – these are frequent references found in the *Scriptores Historiae Augustae* (SHA: Claudius 14.3, 17.7, Aurelianus 9.7, 12.1, Probus 4.5, Firmus 15.8). The adjective “Philipian” is often used for all kinds of coins and seems to be more an erudite device than a reference to coins of Philip the Arab, similarly as the anachronous and non-existent coins, for instance, 1/3 of an as. Silver Antoninian coins presumably mean the antoninianus.

Modern parallels can be inspiring in this case. A hoard of coins hidden by a Polish Jew, who went missing in World War II, is on display at the castle museum in Dubno in Ukraine (region of Volhynia which was part of Poland until 1939). It

was found during a post-war renovation of a townhouse in which the owner had lived before the war. The hoard consisted of nothing but 2-, 5- and 10-zloty silver coins (Ag 750 standard), despite the fact that notes of similar or greater value were in circulation at the same time, as were also coins of non-precious metals.

Silver coins are also reported to have disappeared from circulation in Poland in 1939, in the last weeks before the outbreak of war. It seems obvious that in these cases coins were being hoarded for the actual value of the metal rather than the nominal value of the money then in use.

## CATALOG

### OTACILIA SEVERA

Obv.: Bust of the empress right,  
[M Ω T ] CEOVEPA CE M CT C  
Rev.: Eusebeia veiled, standing left,  
hand raised above an altar, date L Δ  
Weight 10.25 g, Ø 22–23 mm  
Reference: Geissen IV, 2770  
Local site ref. M37/o8



### AURELIANUS

Obv.: wreathed bust of emperor right,  
[A] ΚΑ ΔΟΜ ΑΥΡΗΛΙΑΝΟC CE[B]  
Rev.: Eagle standing right, head turned  
left, wreath in beak, palm branch under  
the wing, date ETOY E  
Weight 6.33 g, Ø 20–21 mm  
Reference: Geissen IV 3095  
Local site ref. M47/o8



### PROBUS

Obv.: Wreathed bust of emperor right,  
ΑΥΤ ΗΡΟΒΟC CEB  
Rev.: Eagle standing right, head turned  
left, wreath in beak, date L S  
Weight 7.48 g, Ø 20–21 mm  
Local site ref. M85/o8



### CARINUS(?)

Obv.: Wreathed bust of emperor right,  
... ΚΑΡΙΝ[OC]...?  
Rev.: Illegible  
Weight 6.02 g, Ø 19 mm  
Local site ref. M34/o8



### DIOCLETIAN

Obv.: Wreathed bust of emperor right,  
...[ΔΙΟΚΛ]ΗΤΙ[ΑΝΟC]...  
Rev.: Standing figure (Alexandria, Elpis,  
Sarapis?) holding unidentified object in

right hand, date [L] E  
 Weight 6.75 g, Ø 20–21 mm  
 Local site ref. M36/o8



Obv.: Wreathed bust of emperor right,  
 ...O[V]A ΔΙΟΚΛΗΤΙΑΝ[OC]...

Rev.: Dikaioisyne standing left, holding  
 balance in right hand and horn of plenty  
 in left hand, date [L] E

Weight 8.23 g, Ø 20 mm  
 Local site ref. M39/o8



Obv.: Wreathed bust of emperor right,  
 ...OVA ΔΙΟ[K]ΛΗ[TIANOC]...

Rev.: Tyche standing left, horn of plenty  
 in left hand, rudder in right hand, [L] Γ ?

Weight 5.39 g, Ø 18–19 mm  
 Local site ref. M40/o8



Obv.: Wreathed bust of emperor right,  
 [A K]Γ OV(?).. [Δ]ΙΟ[K]Λ[HTIANOC  
 CEB]

Rev.: Eagle standing, head turned right,  
 wreath in beak, date ETOYC Γ

Weight 4.7 g, Ø 18–19 mm  
 Reference: Geissen IV 3224  
 Local site ref. M43/o8



Obv.: Wreathed bust of emperor right,  
 A K Γ OVA ΔΙΟΚΛΗΤΙΑΝOC CEB

Rev.: Eagle stading between standards,  
 head right, wreath in beak, star to left,  
 date L A

Weight 9.51 g, Ø 19 mm  
 Local site ref. M45/o8



Obv.: Wreathed bust of emperor right,  
 [A K Γ OVA]Δ ΔΙΟΚΛΗΤΙΑΝ[OC CEB]

Rev.: Eagle standing right, head turned  
 left, wreath in beak, palm branch under  
 left wing, date L E

Weight 7.57 g, Ø 18–19 mm  
 Reference: Geissen IV 3241  
 Local site ref. M74/o8



Obv.: Wreathed bust of emperor right,  
 ΔΙΟΚΛΗΤΙΑΝOC CE

Rev.: Zeus turned left, enthroned, patera  
 in right hand, scepter in left, eagle left of

feet, date L Z

Weight 7.29 g, Ø 19–20 mm

Reference: Geissen IV 3252

Local site ref. M75/08



Obv.: Wreathed bust of emperor right,  
A K Γ OVA ΔΙΟΚΛΗΤΙΑ[NOC CEB];

Rev.: Tyche standing left, horn of plenty  
in left hand, rudder in right hand,  
date L Γ

Weight 6.63 g, Ø 19–20 mm

Reference Geissen IV 3230

Local site ref. M81/08



Obv.: Wreathed bust of emperor right,  
...[ΔΙΟ]ΚΛΗΤΙ[ANOC CEB]

Rev.: Zeus in chimation, standing left,  
patera in right hand, scepter in left, eagle  
at the feet, date L Z

Weight 7.81 g, Ø 21 mm

Reference: Geissen IV 3251

Local site ref. M133/09



Obv.: Wreathed bust of emperor right,  
[AKΓ O]V[A ]ΔI[OK]ΔH[T]I[ANOC CEB]

Rev.: Tyche standing left, holding rudder  
in right hand, horn of plenty in left, date  
ETOVC Γ, star above Γ

Weight 6.90 g, Ø 20 mm

Reference: Geissen IV 3233

Local site ref. M134/09



Obv.: Wreathed bust of the emperor  
right, [AKΓ O]VA Δ[IO]ΚΛΗΤΙΑ[NOC  
CEB]

Rev.: Dikaiosyne standing left, holding  
balance in right hand, horn of plenty in  
left, L Γ

Weight 6.08 g, Ø 18–20 mm

Local site ref. M135/09



#### UNIDENTIFIED TETRADRACHMS

##### AD 260–296

Obv.: Bust of unidentified emperor right,  
legend illegible

Rev.: Illegible

Weight 6.67 g, Ø 18–20 mm

Local site ref. M44/08



**Other unidentified tetradrachms**

(AD 260–296), local site ref.: M20/o8, M 21/o8, M27/o8, M28/o8, M30/o8, M31/o8, M32/o8, M35/o8, M41/o8, M42/o8, M46/o8, M60/o8, M79/o8, M82/o8, M96/o8 (quarter of coin)

**ARCADIUS**

Obv.: Illegible

Rev.: Cross in center field; absence of a wreath around the cross and the size of the cross appear to be typical of Arcadius issues of the CONCORDIA AUGGG type

Weight 0.27 g, Ø 10–11 mm

Local site ref. M76/o8

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# Development of a settlement on the northeastern promontory at 'Marea'



**Abstract:** The ancient topography of the settlement on the northeastern promontory at 'Marea' (North Hawariya) was the subject of investigations carried out at the site in 2018 within the frame of a broader excavation project. Fieldwork established the date of some structures recognized along an ancient road. The oldest remains turned out to be from the Roman period, when the promontory became a rubbish dump for production waste, mostly sherds of AE 3 and AE 4 Egyptian amphorae, from the nearby pottery kilns. Two superimposed occupation levels were recognised, an earlier one from the beginning of the 3rd century AD or later, and a later one from the 5th–6th century. The buildings followed a regular grid that fits into the overall plan of the town. The research has resulted in a better understanding of the changes occurring in this part of the settlement at 'Marea'.

**Keywords:** Marea, Egypt, Roman period, early Byzantine period, early Islamic period, latrine, pottery, urbanism, streets, church

The settlement known as 'Marea'<sup>1</sup> is located on the southern shore of Lake Mareotis (currently Lake Mar-jut), roughly 40 km southwest of Alexandria. This place was first inhabited in the Hellenistic period and continued to be so after the Arab conquest (until the 8th century) (Pichot 2010; Gwiazda and Wielgosz-Rondolino 2019). Fieldwork in 2018 was focused on the area east

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1 For a discussion of the ancient name of 'Marea' and its identification, see Rodziewicz 2010; Wipszycka 2012.

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## **Team**

*Dates of work:* 14 October–15 November 2018 (19th season)

*Director:* Prof. Tomasz Derda (Institute of Archaeology, University of Warsaw)

*Field director:* Dr. Mariusz Gwiazda (Institute of Archaeology, University of Warsaw)

*SCA representative:* Walaa Mokhtar Rushdie, Ahmed Ali Hassan, Amr Ibrahim Ali

*Archaeologist:* Aleksandra Pawlikowska-Gwiazda (Institute of Archaeology, University of Warsaw)

*Glass specialist:* Renata Kucharczyk (Polish Centre of Mediterranean Archaeology, University of Warsaw)

*Pottery expert:* Katarzyna Danys (Polish Centre of Mediterranean Archaeology, University of Warsaw); Julia Faucher (independent researcher)

*Architect:* Andrzej Kutiak (freelance)

*Student-trainee:* T. Groszek (Institute of Archaeology, University of Warsaw)

## **Acknowledgments**

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The area of the Basilica continued to be excavated by Dr. Krzysztof Babraj and his team from the Archaeological Museum in Kraków in cooperation with the PCMA UW within the frame of the extended Marea project.

of the Byzantine Great Basilica, where six different trenches were excavated [Fig. 1].<sup>2</sup> Two of these (trenches S1-1 and S1-2) were intended primarily to confirm the existence of a street running northwards just behind the apse of the Basilica. The remaining four, further east and north (S3-1, S4, S5, L1), provided data on the chronology of the architecture and the stratigraphy of underlying layers (S-1, S1-2 and S3) leading to a better un-

derstanding of the landform and earlier architecture.

Earlier excavations in the sector had uncovered House H1, latrines L1 and a quay (Babraj et al. 2013: 67–73; Babraj, Drzymuchowska, and Willburger 2014: 48–52; Wielgosz-Rondolino and Gwiazda 2016; Gwiazda and Pawlikowska-Gwiazda 2019). Also wall tops visible on the surface were documented in previous research (Kościuk 2012).

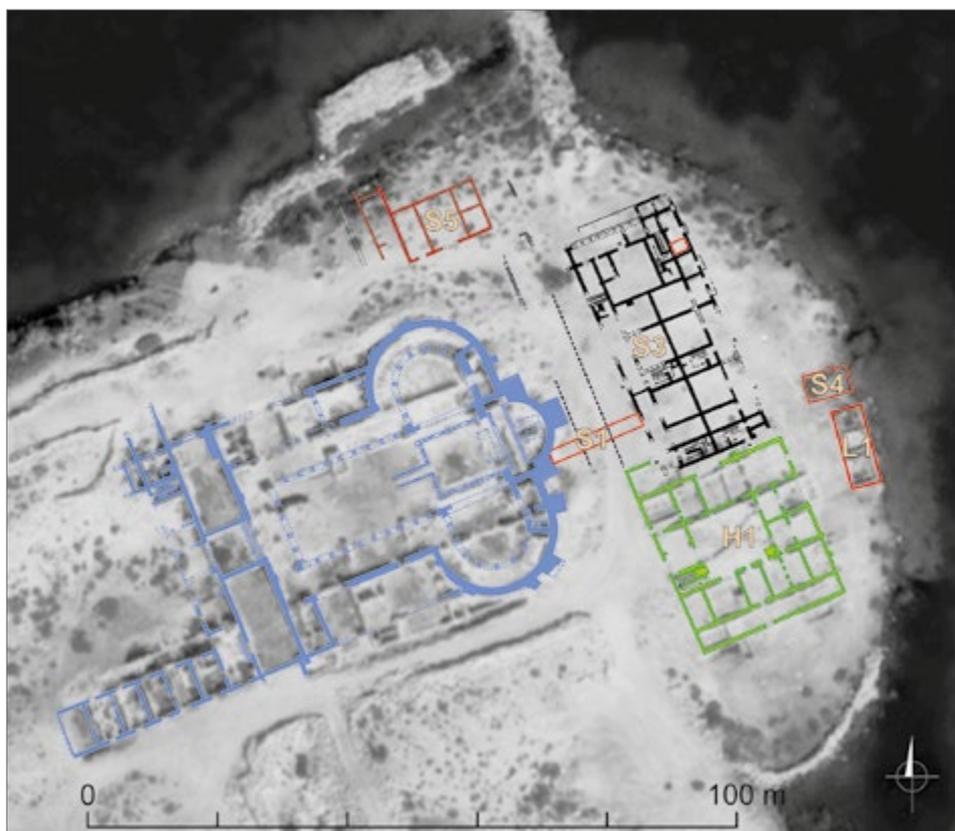


Fig. 1. Urban architecture on the northeastern promontory at 'Marea' showing trenches excavated in the 2018 season (University of Warsaw Faculty of Archaeology Marea Project | processing M. Gwiazda after J. Kogut, D. Tarara, J. Kościuk, A. Kutia)

- 2 The results of a mission from the Archaeological Museum in Kraków working in the Great Basilica and a separate team conducting magnetic and electrical resistivity surveys in the southern part of the settlement will be reported separately.

## RESULTS

### TRENCH S1

Trench S-1 comprised the eastern end of the trench (S1-1; 2 m N-S by 5 m E-W), which was traced perpendicular to the facade of Building S3, and an extension aligned with the first part, extending west across the road all the way to the back of the apse and the outer east wall of the Great Basilica. The extension was 9.80 m long [Fig. 4]. A half-meter baulk was left between the two trenches.

### S1-1

The earliest structure uncovered in the trench was a stone wall (S1-1-22), 0.60 m wide [Fig. 2]. It was built using

limestone of irregular shape and various size (0.40 m x 0.37 m x 0.15 m to 0.20 m x 0.10 m x 0.09 m) with no traces of bonding mortar. The layout of this feature did not line up with the later architecture.

A concentration of unworked limestone (S1-1-23) of different size (from 0.13 m x 0.10 m x 0.70 m to 0.42 m x 0.33 m x 0.20 m) was found west of this wall, on the same level. It covered an area 1.10 m (east-west) by 1.00 m (north-south). The collected data is still insufficient to determine function and date of these features.

A mud-brick wall (S1-1-16) in the central part of the trench was made of bricks measuring roughly 0.40 m x

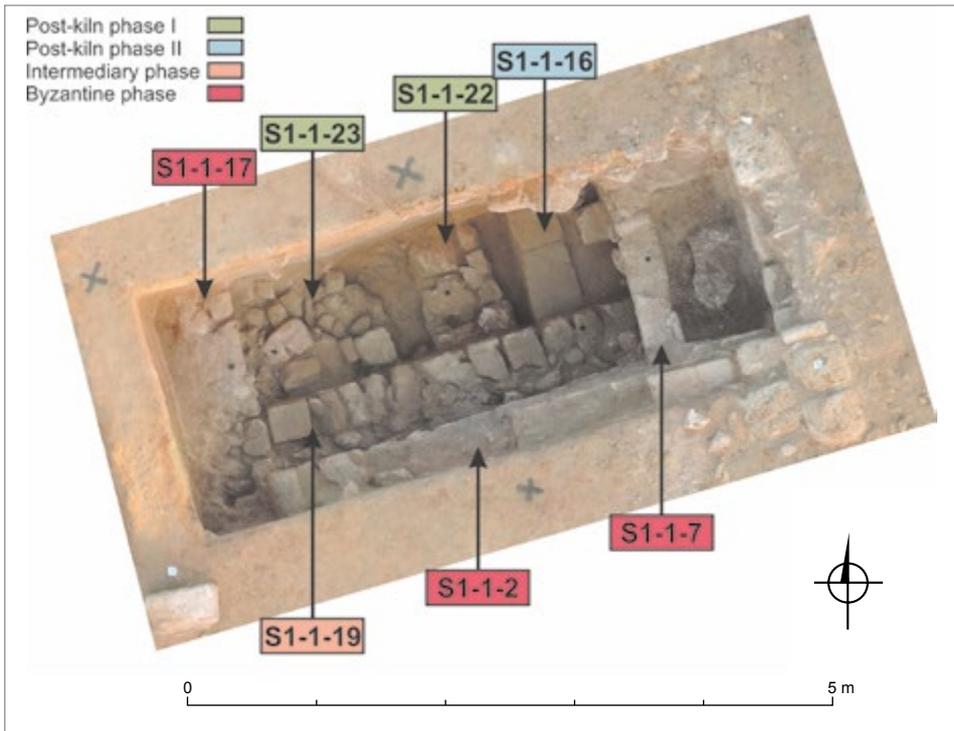


Fig. 2. Trench S1-1: plan showing the architecture identified in the trench (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

0.20 m x 0.70 m [see *Fig. 2*]. It was oriented north–south and its overall width was about 0.80 m. Some of the collapsed bricks were superimposed on the remains of the earlier wall S<sub>1-1-22</sub>, which, however, does not seem to have acted as a foundation for it. Bricks were also observed below the foundation (S<sub>1-1-19</sub>) of Building S<sub>3</sub>.

This foundation wall ran alongside the southern side of the trench. It was very regular and wide [see *Fig. 2*]. It might even be the remains of an earlier structure, the ruins of which were reused as a foundation. On the west, it abutted at right angle to the inside of the west outer wall (S<sub>1-1-17</sub>) of Building S<sub>3</sub>, which acted at the same time as the eastern boundary of a street running between the Great Basilica and this complex (see below).

Lining the southern side of this foundation was a similarly oriented wall (S<sub>1-1-2</sub>) [see *Fig. 2*]. It was partly dismantled prior to the destruction of Building S<sub>3</sub>. A thinner and more poorly preserved wall (S<sub>1-1-7</sub>) formed a compartment of unknown purpose at the eastern end of the trench. The enclosed space, 1.00 m by 1.50 m, preserved traces of a simple mortar floor.

Contrary to expectations, there was no stone pavement or mortar floor associated with these structures, although the dismantling of the south and west walls of Building S<sub>3</sub> may have contributed to its destruction. A tamped earth layer was found in places.

When this structure went out of use, it was covered by rubble composed of mostly small-sized cobbles (the biggest



Fig. 3. Layer of rubble from the collapsed wall of Building S<sub>3</sub>, looking west; scale = 50 cm (University of Warsaw Faculty of Archaeology Marea Project | photo A. Pawlikowska-Gwiazda)

measured 0.25 m x 0.20 m x 0.13 m). The debris yielded lumps of mortar, pottery (jug, bowl, plate, LRA 1 amphorae as well as numerous fragments of AE 5/6 and AE 7 containers), glass vessels, an iron nail and one illegible coin. The rubble was delimited in part by wall S1-1-2, overrunning however the more destroyed western end of this partly dismantled wall. The tumble was very thick on the eastern side (approximately 0.20 m), and sloped down to the west before disappearing entirely.

The youngest occupation layer connected with Building S3 before its ultimate destruction consisted of a thin continuous layer of silt, 0.10 m thick, discovered throughout the trench. The pottery assemblage from this layer included a bowl, a lid, sherds of LRA 1 and LRA 4 amphorae, AE 5/6, AE 7 and residual Roman-period AE 3 amphorae (Pieri 2005: 69–84, 101–131; Dixneuf 2011:

97–134), broken glass, three coins, an iron nail and some animal bones. The upper courses of the west outer wall (S1-1-17) of the building managed to be dismantled before the structure of the building ultimately collapsed.

Rubble from the destroyed walls of Building S3, which included pseudoashlars with attached mortar, was spread over the occupation layer [Fig. 3]. Ceramics (kitchenware, tableware, amphorae, jugs) from this level reflect a rubbish dump deposit. The uppermost layer consists of windblown silt from the last habitation phase and the post-abandonment period. An ostrakon from this deposit turned out to be a short but complete trading-administrative text from the 7th–8th century.

**S1-2**

The lowest layer, reached in three test pits dug by the southern baulk of the trench,

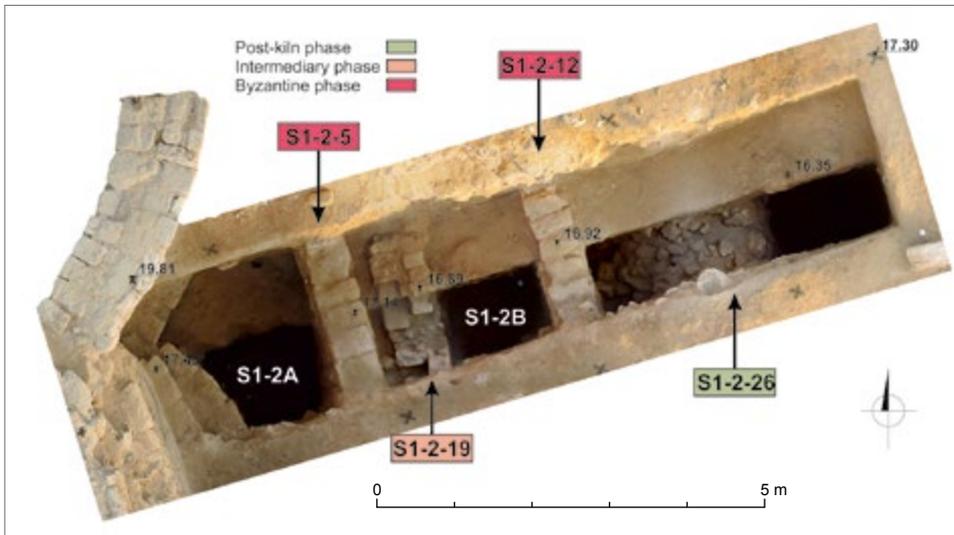


Fig. 4. Trench S1-2 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

was ginger red in color, full of fragmented Roman-period AE 3 and AE 4 amphorae. A north–south wall (S1-2-26) was recorded at the eastern end [see Fig. 4]. It was built of unworked limestone pieces, measuring up to 0.40 m x 0.25 m x 0.20 m. The estimated width of the wall is 1.20 m (the west face is partly obscured by rubble, but there is no doubt that the cobbles originated from a collapsed part of the wall). The structure of which this wall was part was covered with another ginger-red layer with a huge quantity of Roman-age AE 3 and AE 4 amphora wasters, separators used in pottery kilns and much later sherds of LRA 1 and AE 7 containers. This deposit, which was traced in all three test pits, was most probably a terrace fill, levelling the ground under the construction of the Great Basilica.

Wall S1-2-19 (corresponding to S1-2-26) cut through this ginger-red layer [see Fig. 4]. It was composed of pseudo-ashlars measuring from 0.20 x 0.15 x 0.8 m to 0.38 x 0.30 x 0.20 m, bonded in mortar. The upper part of the wall was intentionally dismantled to make way for the architecture of the next phase.

Parallel walls S1-2-5 and S1-2-12 were built in the next construction phase [see Fig. 4]. The masonry was quite typical: limestone pseudo-ashlars of a maximum width of 0.58 m and maximum height of roughly 0.40 m, laid on a foundation made of smaller unworked limestones (maximum size 0.22 m x 0.30 m x 0.15 m), all bonded in mortar. Mortar floors between these two walls and next to the wall of the Great Basilica indicate the presence of two rooms. The bedding of



Fig. 5. Surface of the street between the Great Basilica and Building S3, looking west; scale = 50 cm (University of Warsaw Faculty of Archaeology Marea Project | photo A. Pawlikowska-Gwiazda)

this floor yielded several sherds of LRA 1 and AE 7 amphorae, as well as a single coin from the 5th–6th century AD.

A street surface was recorded on the level of the mortar floors on the eastern side of wall S1-2-12 (overlying the earlier wall S1-2-26). It was, as expected, a north–south street [Fig. 5]: a level of tamped earth, significantly rising up toward the west. A layer of crushed mortar and plaster that must have flaked off the face of wall S1-2-12 was recorded on the surface, explaining the significant difference in thickness.

A pit was sunk into the street surface in the southeastern corner of the trench. It measured at least 1.10 m by 0.88 m, its eastern and southern sides disappearing into the baulk. It was almost completely filled with ash, burnt animal bones and pottery sherds, including LRA 1 and AE 5/6 amphorae, bowls and jugs, as well as residual AE 3 and AE 4 containers). The considerable size of this feature suggests that it was probably a hearth used for a fairly long period of time.

The occupation layer on the street surface yielded many sherds of LRA 1 am-

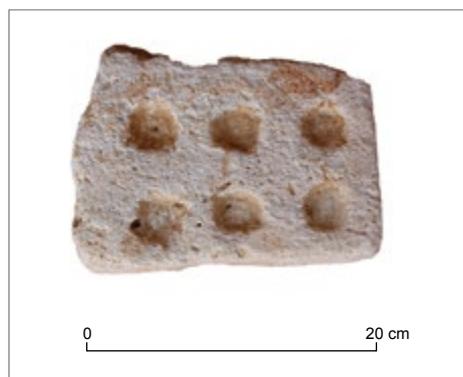


Fig. 6. Board game found in a street behind the Great Basilica (University of Warsaw Faculty of Archaeology Marea Project | photo A. Pawlikowska-Gwiazda)

phorae, some AE 5/6 containers, plates, bowls, jugs, glass, animal bones, an oil lamp and, last but not least, a fragment of a limestone game board [Fig. 6]. Limestone pseudo-ashlars piled up on the western side of the street represent gradual natural collapse of the wall. A similar tumble filled the two compartments west of the street. Six coins from this layer, once they have been cleaned and studied, may date the abandonment of this part of the church.

### TRENCH S3-1

Complex S3 sits between the lake on the north and east, the Great Basilica on the west and House H1 on the south, the latter cleared in the previous season. The trench was dug to examine the stratification under the building in an effort to determine the date of its construction [Fig. 7]. It was delimited by the east, south and west walls of a room (unit 80 on earlier plans, see Kościuk 2012: 32–34, Fig. 2). The northern boundary was arbitrary, imparting an almost square outline on the trench (2.00 m N–S, 2.32 m E–W).

The lowest excavated layer is an occupation level consisting of light brown silt (S3-1-20) [Fig. 8]. Superimposed on it are four phases of dumped deposits (S3-1-18A, B, C, D) with numerous fragments of broken AE 3 and AE 4 amphorae, as well as separators and bricks used in the pottery kiln structures. There was also a significant amount of characteristic black ash. The lack of any other material led to the identification of this deposit as a Roman-age pottery dump.

A series of horizontal layers in the next phase appear to be ground-levelling deposits. They were composed of earth mixed with lime/gypsum production

waste, potsherds (LRA 1, AE 5/6 with residuals sherds of AE 3 and AE 4), separators and a coin provisionally dated to the 5th–6th century.

The wall foundations of the room cut through the levelling layers described above. The eastern foundation was roughly 1.75 m deep from the pavement

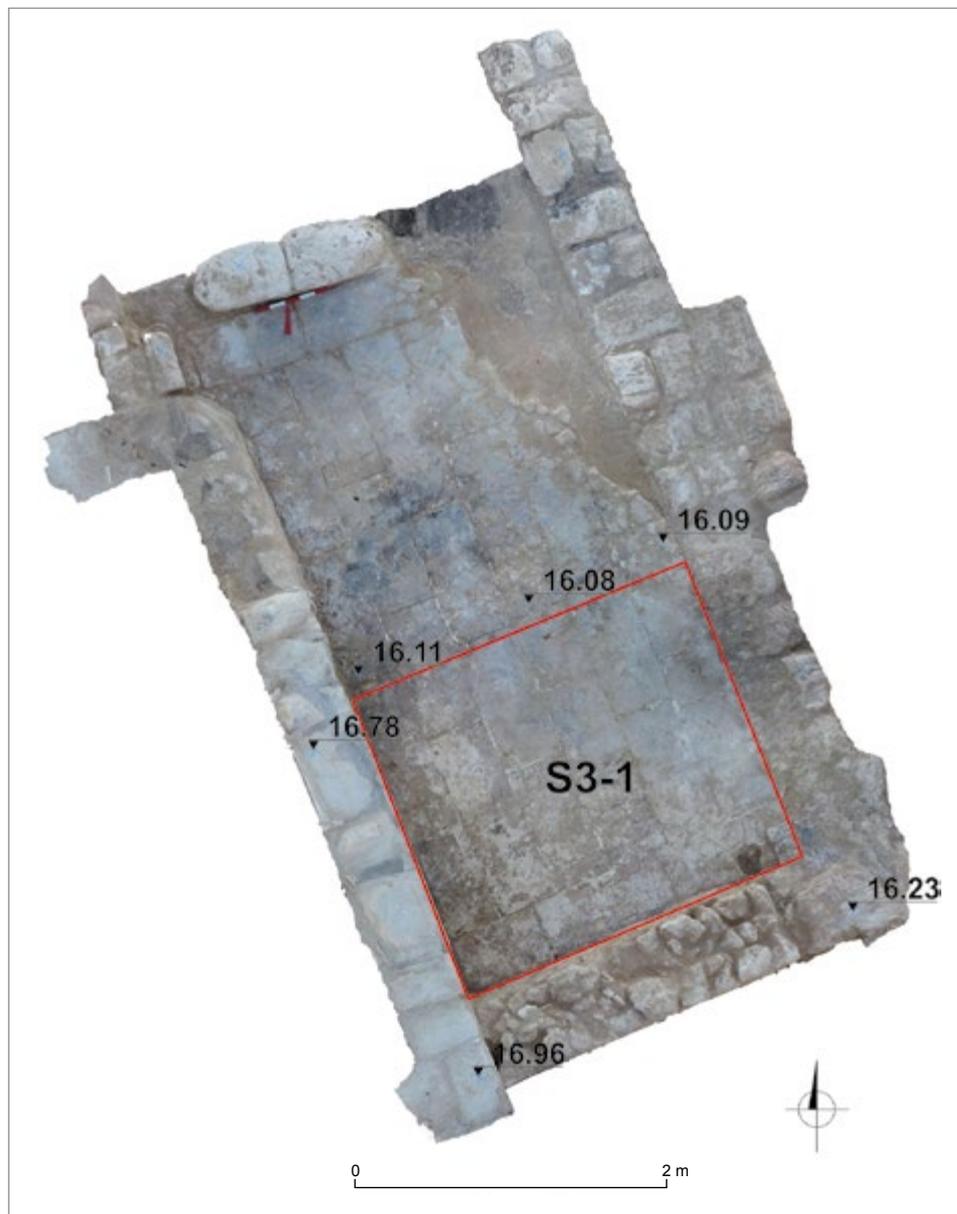


Fig. 7. Pavement in room S3-1 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

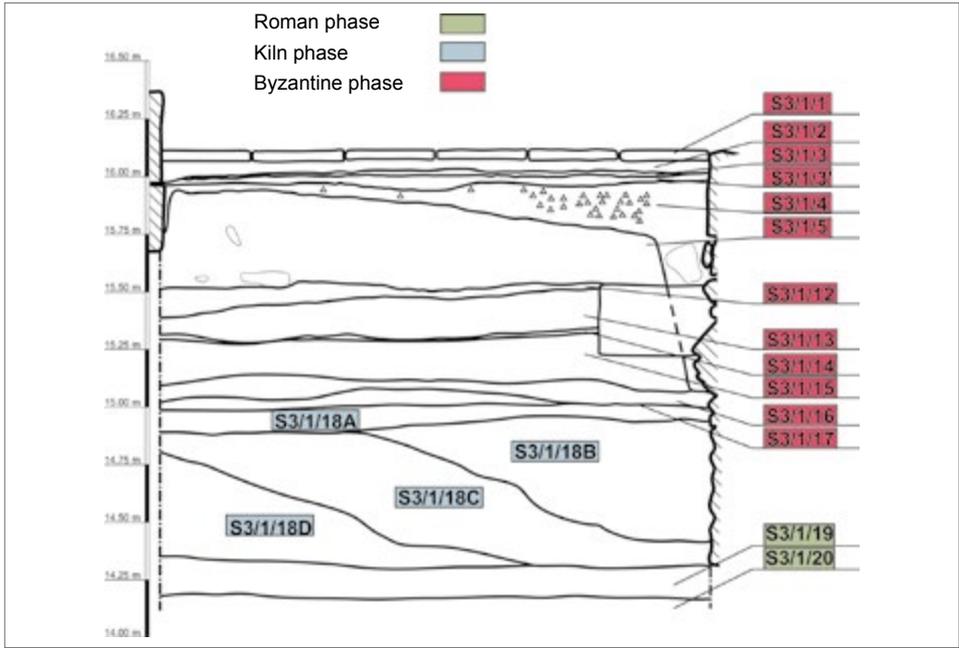


Fig. 8. Room S3-1: northern trench section (University of Warsaw Faculty of Archaeology Marea Project | drawing M. Gwiazda)

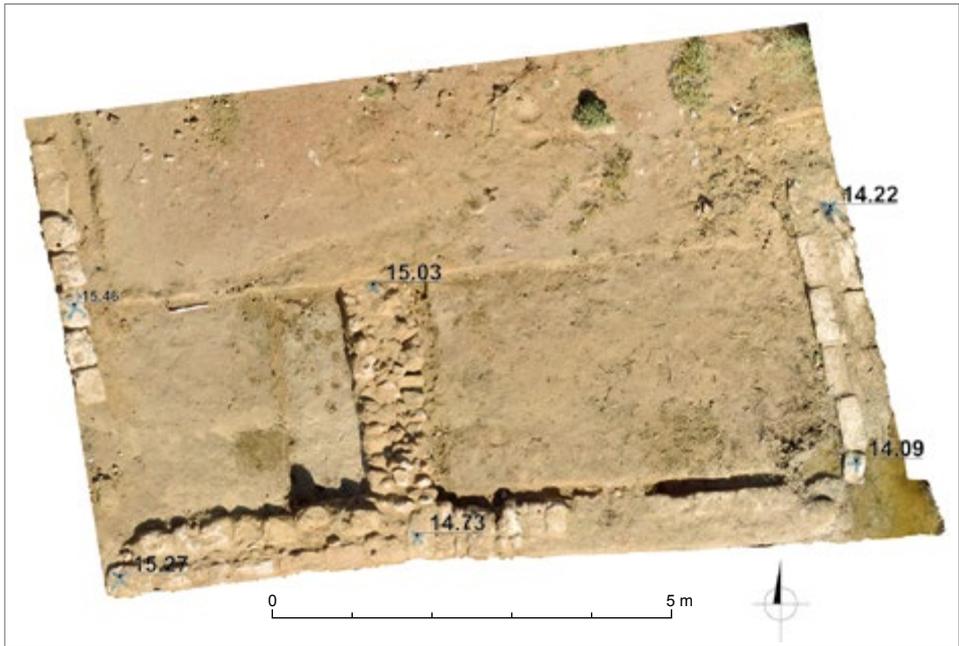


Fig. 9. Foundation walls of Building S4 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

surface. It consisted of pseudo-ashlars and unworked limestone (maximum size 0.15 m x 0.13 m x 0.70 m), the upper part only bonded in mortar. The western foundation was built in similar fashion, although it was only half as deep (0.80 m below the surface). The difference is due to a natural downward slope toward the lake: the deeper foundation was aimed at preventing a catastrophe.

Both foundation trenches were filled with a layer that extended also across the trench, indicating that the two walls were contemporaneous [see *Fig. 8*, S3-1-4]. It was composed mainly of ash and pottery sherds (AE 3 and AE 4, LRA 1). The south wall of the room was not interlaced with the rest of the building.

#### TRENCH S4

An unidentified building stands on the lakeshore, east of Building S3 and 1.50 m north of latrine L1. The excavation focusing on the southern part of the structure, traced first the internal layout of the building. There were at least two rooms there, as indicated by the presence of three N-S foundation walls [*Fig. 9*].

The original occupation levels appear to have been completely destroyed. Only the wall foundations have survived along with the levelling layer between them. The natural surroundings forced a trapezoid plan of the building. The south wall appears to run east beyond the line of the east wall. However, this part of the building is already underwater in the lake. The foundations of the outer walls were made of ashlars, pseudo-ashlars and unworked limestone, arranged in rows, whereas the foundation of the inner wall was built exclusively of unworked limestone cobbles,

the largest of which were 0.20 m x 0.16 m x 0.70 m in size. Both the south and east walls drop off toward the lake owing to the gradual subsidence of the building, but it is impossible to say how long this process has been going on. It may have started in antiquity.

Testing in the central part of the building yielded dating material, that is, sherds of LRA 1 and LRA 4 amphorae, indicating that Building S4 was founded either in the 5th–6th century AD or later.

#### LATRINE L1

Latrine L1 is located east of House H1, on the lakeshore. It was excavated in 2012, hence the current work focused on an architectural inventory of the remains and on searching for evidence to date its construction. With this in mind, the building was thoroughly cleaned and the central 'platform' (L1-2) was explored. The latrine seats made of blocks were originally placed on this 'platform', the upper surface of which was paved with limestone slabs. Testing under this level revealed a brown-colored layer containing lumps of mortar and broken limestone floor slabs. The pottery assemblage included numerous fragments of LRA 1 amphorae, as well as 5th–6th century coins indicating *terminus a quo* for the building foundation.

Cleaning of the building identified some previously unexplored archaeological deposits. A sewage channel along the eastern side of L1-2 room contained a deposit that was first interpreted as a structural element of the central platform [*Fig. 10*]. Its upper part consisted of rubble from the walls of the dilapidated building. Sealed under the tumble was

a concentration of broken amphorae (LRA 1 and LRA 4, AE 5/6 and AE 7) and jugs accumulated there when the latrine was in use [Fig. 12]. A fill of white silt was found in the lower parts of the channels.

A water supply channel was discovered in the northwestern part of the latrine [see Fig. 10]. Beside rubble, the fill contained a large amount of silt and fragmented pottery (including LRA 1 and LRA 4, and AE 5/6 and AE 7 amphorae, as well as a Late Roman D Ware dish, see Hayes 1972: 382, Form 9B, about 580/600 to end of 7th century).

The narrow area between the building and the lake was also explored, uncovering remains of a structure made of stone blocks [see Fig. 10]. It was cut by channels emptying sewage directly into the lake.

**TRENCH S5**

Building S5 was recognized north of the transept of the Great Basilica. Its layout and chronology were not known. Clearing of the building identified six compartments of different size [Fig. 11]. No door openings between the units could be traced.

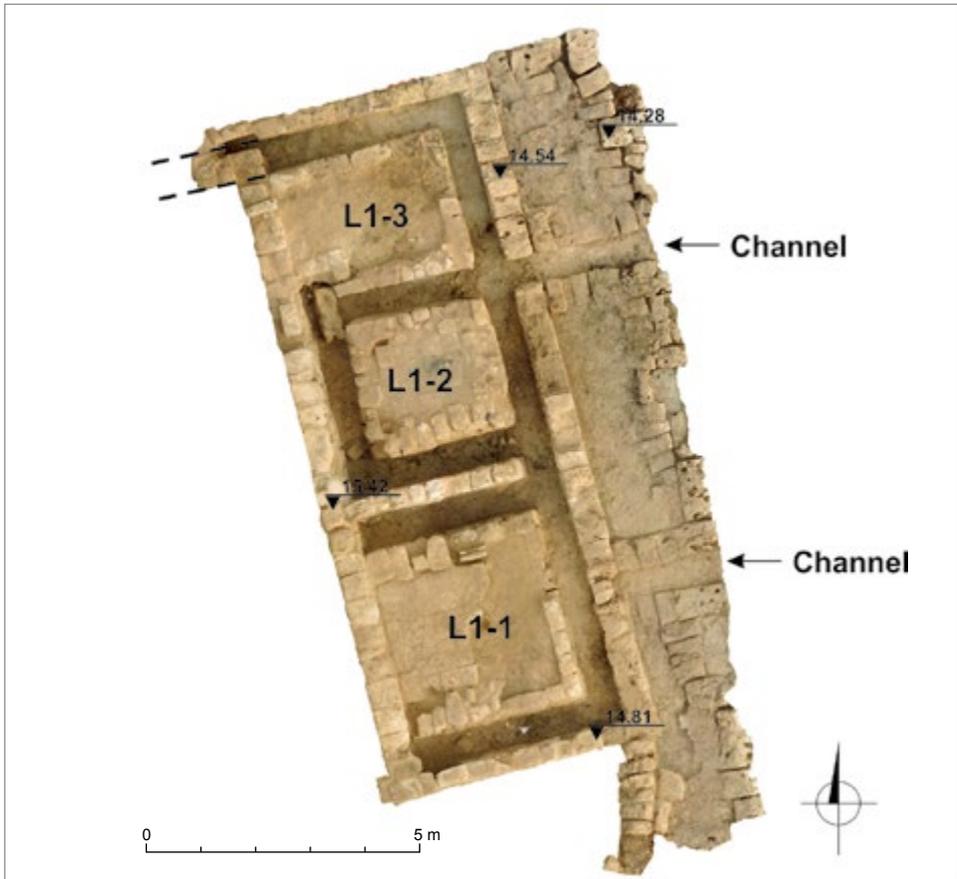


Fig. 10. Latrine L1 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

Two of the rooms on the eastern side were cleared of rubble originating from the disintegrated walls. A floor made of limestone slabs was uncovered in the northern of the rooms (S5-2B). A very limited set of finds suggested intentional clearing of the room before abandonment.

The second room was not fully excavated before the end of the season. Excavations uncovered several layers of sediments. The lowest exposed level in room S5-2A was a row of amphorae (AE 3?) running at a distance of 1.50 m from the south wall of the room and extending westward at least 1.50 m. Lumps of resin were found in this layer (possibly for impregnating amphorae). 200 small bronze Byzantine and early Islamic coins were found in a superimposed layer in the southeastern part of the room. Another concentration of objects was found by the west wall; it comprised well-preserved

jugs, fragments of LRA 1 amphorae bearing *dipinti*). Moreover, six ceramic artifacts identified as wick-holders were found inside the room (see Foy 2011: 272–275, Figs 1, 2).

The finds dated the latest use of Building S5 to the 8th century AD. Interestingly, there was no tumble from the walls of the building in the topmost layers.

A trial pit was opened in the northern part of the building S5 in order to verify a hypothesis about the presence of a portico in this place (Kościuk 2012: 35). A floor level was cleared north of the presumed portico. One of the faces of the alleged stylobate was also cleaned, revealing that the top of the column base is on the same level as the rest of the presumed stylobate. Therefore, the base must have been reused in this place, casting doubt on the supposition that this had been the support of a column.

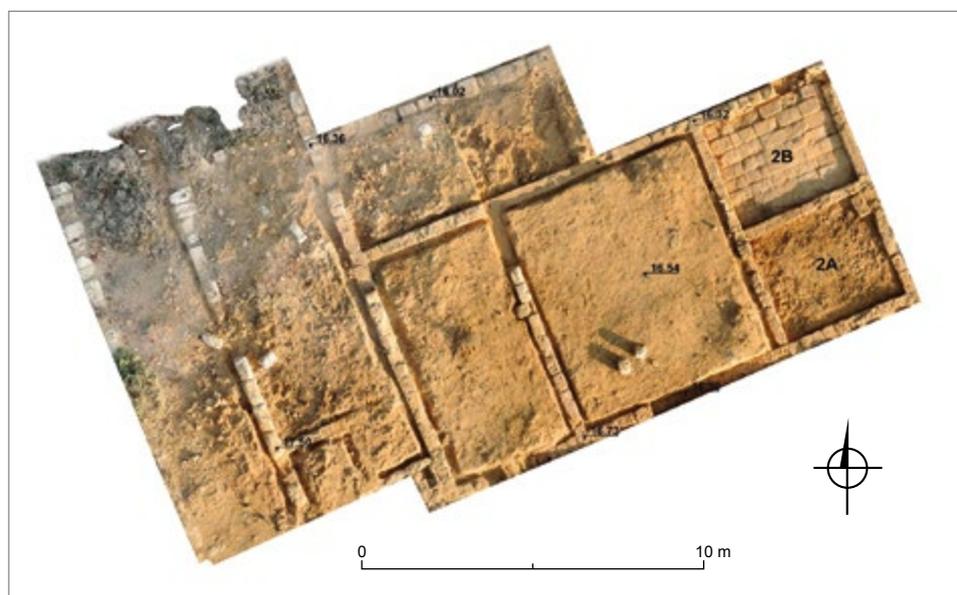


Fig. 11. Building S5 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

## DISCUSSION

The most notable discovery of the season were deposits connected with the functioning of the pottery kiln or kilns in Roman-period 'Marea' (see Babraj and Kogut 2015; Gwiazda and Wielgosz-Rondolino 2019). Finds included an abundance of broken AE 3 and AE 4 amphorae, as well as bricks from the kiln structure and separators used in the ceramic firing process. Significant amounts of ash were also encountered. The pottery dumps in trench S1-2 were located close to the kiln uncovered under the apse of the Great Basilica, whereas others were positioned 30 m further northeast (trench S3-1). Similar remains were found earlier under House H1 (Gwiazda and Pawlikowska-Gwiazda 2019; Gwiazda and Wielgosz-Rondolino 2019).

The next phase above the dumps comprised the first architectural remains of unidentified structures: foundations of stone walls (S1-2-26, S1-1-22) and a mud-brick wall S1-1-16 in trench S1-1 a. These remains correspond in date to the 5th-century baptistery and some mud-brick structures discovered previously under the Great Basilica (Szymańska and Babraj 2007: 57, 59–62, Figs 3, 4). Other wall foundations from this phase were recognized in 2016 underneath the pavements of House H1 (Gwiazda and Wielgosz-Rondolino 2019).

In the 5th–6th century, the construction of new buildings (Building S3) was preceded by the dismantling of old walls and a levelling of the ground. A series of levelling layers corresponding to this phase were found in trench S3-1.

The present investigations have determined the contemporaneity of the east-

ern wing of the building and its central part, disproving an assumption presented by Jacek Kościuk (2012: Fig. 2), based on his analysis of elements of the plan observed on the surface, that this part was a later addition. Excavation in trench S1-1 revealed an additional row of rooms west of it, but the status and chronology of these rooms is unclear [see Fig. 1]. All in all, Building S3 has been shown to be much bigger (roughly 22 m wide) than initially assumed and its western façade was in line with the western face of House H1.

Two walls (S1-2-5 and S1-2-12) in trench S1-2 east of the Great Basilica were also dated to the 5th–6th century as a *terminus a quo*. The walls are parallel to the transept of the Great Basilica and they are linked to mortar floors, indicating the presence of at least two rooms (S1-2A and S1-2B) [see Fig. 4]. Their function could not be defined. Hypothetically, if wall S1-2-5 were continued northward, it would eventually meet with the apse, whereas wall S1-2-12 would join the wall visible on the surface, approximately 24 m away (Kościuk 2012: Fig. 2). Furthermore, the floor in room S1-2A abutted the outer face of the apse, so it should be assumed that there was a connection between these structures. It is not clear whether these rooms were contemporary with the Great Basilica, but such additional rooms near church apses are known from Abu Mina and other sites in Egypt (Grossmann 2002).

A street oriented north–south was marked already on earlier plans of the area between the Great Basilica and Building S3 (Kościuk 2012: Fig. 2). Iden-

tifying the western outer wall of the latter building has now placed a dimension on this street. The total width was about 5 m. Oddly enough, there was no street paving or drainage channel. Another section of this street was discovered in 2017 west of House H1, but there it had a sewage system covered with limestone slabs (Gwiazda and Pawlikowska-Gwiazda 2019). The channel carried waste from the northwest (from another presumed street running along the southern side of the Great Basilica) in a generally southern direction toward the lake.<sup>3</sup>

A closer examination of latrine L1 demonstrated that the two platforms located to the south and to the north (L1-1 and L1-3) adjoined the west wall of the structure and were surrounded by channels on the other three sides [see *Fig. 10*]. Parallels from other archaeological sites present similar arrangements: the platform abuts a wall on one side, while rows of seats with a channel below run along the other sides (Grossmann 1977: 35–37, Pl. 8a; Grossmann et al. 1991: 474–475; Szymańska and Babraj 2008: 35–38; Czerner et al. 2016: 152, *Fig. 6*). In the case of latrine L1, it seems that the entrance or entrances were not on the western side, but directly opposite. There were no doorways in the east wall, but the remains of stairs on the eastern side support this idea. The stairs consisted of an outer frame of limestone pseudo-ashlars filled inside with soil. The closest parallel is from a 6th-century

funerary chapel situated in the southern part of ‘Marea’ (Babraj and Szymańska 2008: 177–178, *Fig. 65*). It also argues in favour of locating the entrance to the latrine on the lakeside (Kościuk 2012: 34, *Fig. 2*), although this would require some form of stepping stone across from the top of the stairs to the platforms.

Interestingly, a secondary wall between the southernmost and central platforms divided the latrine into two compartments of different sizes. This could be sex-related, although as an arrangement it is fairly unique. Parallels from other types of public buildings include, for instance, two independent sectors, one for males and the other for females, in the neighboring southern baths contemporary with the latrine (Fournet and Redon 2017: 285, 307–309).<sup>4</sup> Considering different examples of ancient latrines (Hoss et al. 2011: 52), an estimated 18–25 individual users could have been using the facility at a given time. In view of this, it should be interpreted definitely as a public rather than private latrine.

The channel for washing away the excrements entered the latrine from the outside, in the northwestern corner of the latrine. Here it joined the cloaca surrounding all three platforms. The egress for the sewage was on the opposite side as indicated by the lakeward direction of the channels underneath the stairs.

The most distinctive pottery coming from the latrine sewage consists of large fragments of AE 5/6 amphorae and

3 Other parts of the Byzantine sewage system were identified by an Egyptian archaeological mission in the northern part of ‘Marea’. These channels were connected with the biapsidal bath complex, el-Fakharani 1983: 178–179, *Figs 1, 2*.

4 A latrine, likewise divided into two parts for the two sexes, is supposed to have been located next to the hemicycle in Abu Mena, Grossmann et al. 1991: 474–475.

small jugs [Fig. 12].<sup>5</sup> Fresh water might have been stored in the bigger vessels, while the more handy jugs would have been used for ablutions. Jugs of this kind were rather multifunctional, especially if we take into consideration that they were found in different contexts all over the site.<sup>6</sup> When latrine L1 was in use, the stink would have been dealt with by

throwing lime on the faeces (De Groot and Bernick-Greenberg 2012: 172). Traces of this procedure were noted in the form of a white sediment filling the sewer.

Ceramic sherds and coins found in Latrine L1 as well as in trenches S1-1, S1-2 and S5 provide data for the claim that the abandonment of 'Marea' was a relatively long and gradual process taking place in

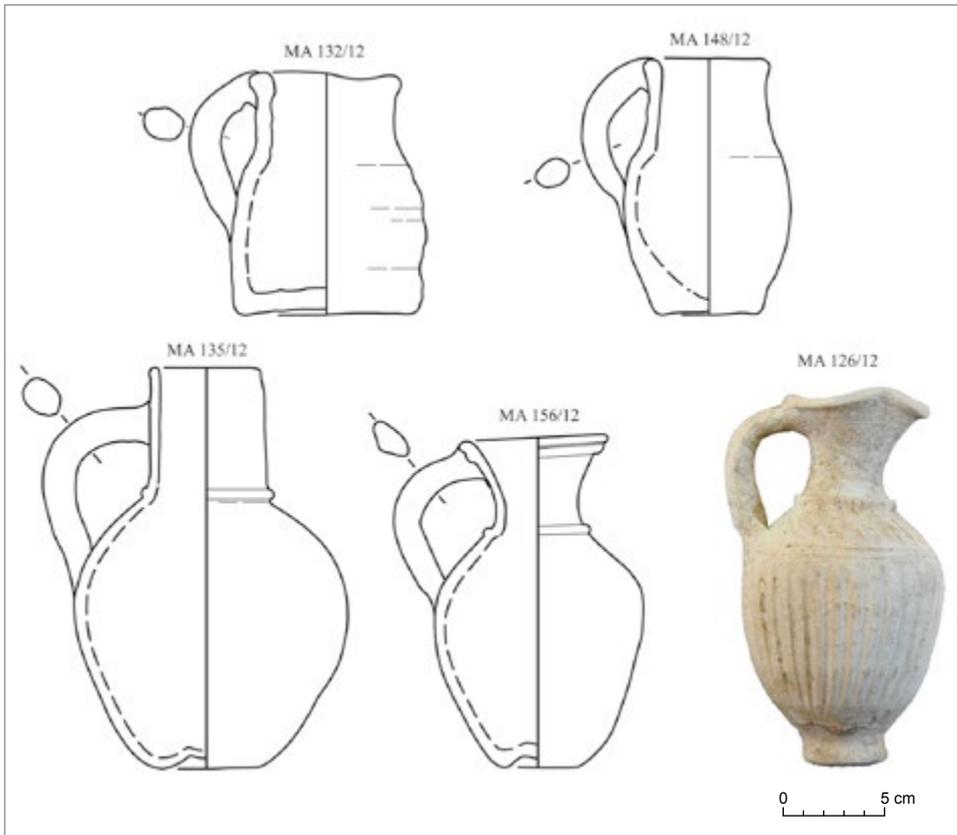


Fig. 12. Selected jugs from the sewage channels of Latrine L1 (University of Warsaw Faculty of Archaeology Marea Project | drawing J. Faucher, digitizing M. Gwiazda)

5 Over 30 examples of identical jugs were found here during previous seasons. For other pottery deposits in latrines, see Majcherek 2008: 107; Szymańska 2010: 402; Petznek et al. 2011: 103 (with further references); Czerner et al. 2016: 153, 158.

6 The same jug types were uncovered during the excavation of Building S5. More on such jugs and their function in Drzymuchowska 2012: 73–76, Fig. 2. In Abu Mena, they were encountered in deposits dated from the 6th to the 9th century, see Engemann 2016: 97.

the late 7th–8th century. Dismantling the walls (as in Building S3) and then reusing the building material was common in this period. Urban waste started to be

discarded in the deserted ruins, hence the animal bones and broken pottery. Natural deposits accumulated over the whole area after the last occupation phase.

## CONCLUSIONS

First and foremost, three phases have been distinguished in the northeast sector of ‘Marea’. The earliest one, the so-called “kiln phase”, produced large pottery dumps, comprised of AE 3 and AE 4 amphorae fired on-site. The size of these deposits was quite impressive: their overall width was up to 30 m and they were at least 1.70 m thick. The changes to the natural landscape of the promontory were significant, affecting later building activity.

The purpose of the first architecture built on top of the pottery dump is uncertain, but the chronological framework at least is clear: amphora production ended in the 3rd century (*terminus a quo*) and another phase of building activity was initiated in the 5th–6th century or later (*terminus ante quem*).

A well-planned quarter of diverse function was raised on the promontory in the Byzantine period. It includes Building S3 (houses with shops?), latrines, the Great Basilica and House H1. An ostraka deposit located in earlier seasons by the wall of House H1 (Babraj, Drzymuchowska, and Willburger 2014: 53–54) is considered part of a “building corporation” archive. The corporation’s office is likely to have been located in one of the

rooms of House H1. An ostrakon with a trading-administrative text from trench S1-1 may indicate a similar office nearby, an attractive idea to be explored in future investigations.

Building S3 was shown to be much bigger than expected and the contemporaneity of all its parts was confirmed, rejecting an earlier hypothesis about the eastern wing being added later. Buildings S4 and S5 were demonstrated to be contemporary with S3, even though their function continues to be somewhat enigmatic. Overall, the architecture on the northeastern promontory of ‘Marea’ in this period seems to have been quite dense.

The street behind the Great Basilica belongs to this period as well. Its width at roughly 5 m is less than was previously assumed, and it was a dirt road without paving or in-built sewage. The street ran in a straight line, fitting perfectly the overall plan of this part of the town.

In the 7th–8th century, this part of ‘Marea’ started to change, hence the intentional demolition or gradual destruction of the walls. Dumps of urban waste were the last trace of human activity in this area. By the 8th century the area was permanently deserted.

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# Excavations in the northern and eastern parts of the Byzantine town at ‘Marea’



**Abstract:** The ‘Marea’ project of the University of Warsaw expanded the program to survey and excavate in the northern and eastern parts of the city in order to establish the character and chronology of the structures there. The eastern waterfront was uncovered, along with the adjacent latrines, streets and buildings, which are presumed to be residential. The structures which were examined were very regularly formed and involved large-scale earthworks. They were built no earlier than the mid-6th century AD, and, although their purpose sometimes changed, they remained in use until about the mid-8th century AD. Accumulations of Roman, Byzantine and early Islamic date were discovered, including the oldest remains this season, that is, a row of locally-manufactured amphorae serving an unexplained purpose.

**Keywords:** Egypt, Roman/Byzantine/early Islamic, architecture, amphorae, terracotta figurine

The Byzantine town located at the site of ‘Marea’ (in the northern part of the modern village of Hawwar-iyā) was an important stopover for pilgrims traveling from Alexandria (which is about 40 km north of the town) to the shrine of Abu Mena (17 km further south), starting from the 5th century through the first half of the 7th century AD.<sup>1</sup> A ground survey of the

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1 The identification of the ancient name of this site is still under discussion. See Rodziewicz 2003: 27–38; Wipszycka 2012.

## **Team**

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*Architect:* Andrzej Kutiak (freelance)

*Building engineer:* Jose Cano Correa (freelance)

*Restorers:* Julia Burdajewicz (Faculty of Conservation and Restoration of Works of Art, Academy of Fine Arts in Warsaw)

*Student-trainees:* Natalia Lockley, Marcin Sobańda, Maciej Żmuda (University of Warsaw)

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The area of the Basilica continued to be excavated by Dr. Krzysztof Babraj and his team from the Archaeological Museum in Kraków in cooperation with the PCMA UW within the frame of the extended Marea project.

site indicated that at the peak of its development the city occupied an area of about 13 ha. Archaeological research initiated in the 1970s led to the discovery of numerous buildings (a church, a house, a mill, two bath complexes, latrines, a sepulchral chapel and buildings assumed to be workshops) (Babraj and

Szymańska 2008 with further references) [Fig. 1]. However, the bulk of the buildings on site have not been recognized in terms of form, function, and date of construction and abandonment. The research program commenced last year (see Gwiazda and Pawlikowska-Gwiazda 2019) aims at reconstructing the topography of the

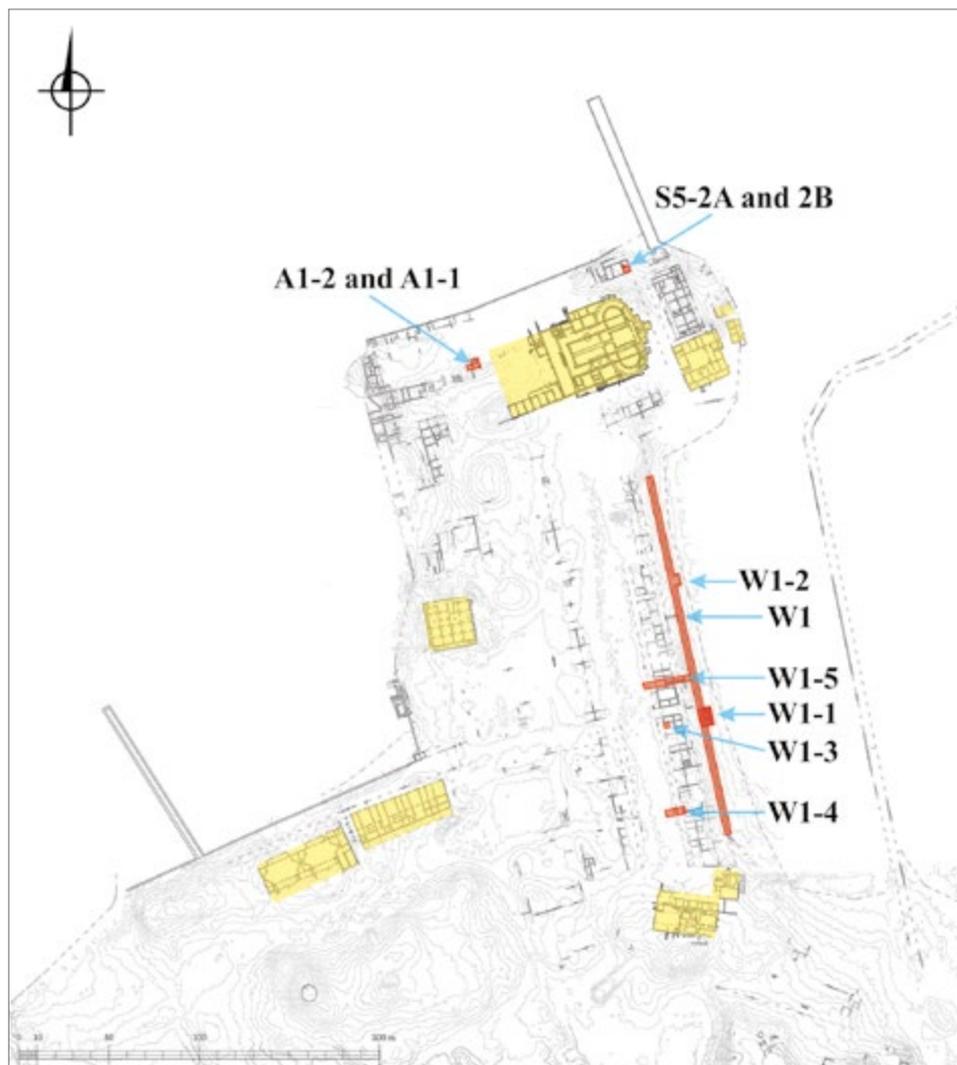


Fig. 1. Site plan marking buildings and trenches investigated in 2019; in red, structures studied in 2018, in yellow, structures from previous seasons (University of Warsaw Faculty of Archaeology Marea Project | drawing A. Kutiak, W. Małkowski, processing M. Gwiazda)

town in areas that were not previously investigated. A second objective is to establish building histories and functions. In 2019, nine large-area trial trenches were

opened in the northern and eastern parts of the site, contributing a considerable body of data on site topography and the date of individual structures.

## TRENCH EXCAVATIONS

### 1.1 AREA S5

Building S5 is located north of the transept of the Great Basilica explored by the Polish mission in a recent season [see Fig. 1], directly next to where one of the quays let off onto land. Clearing of the wall tops in the previous season gave a rough idea of the building plan. Two rooms on the eastern side, S5/2A and S5/2B, were excavated, uncovering a row of amphorae set upside down in vertical position in the southern part of room S5/2A (Derda, Gwiazda, and Paw-

likowska-Gwiazda 2020, in this volume) [Fig. 2]. A floor of small limestone slabs was discovered in the other chamber.

A trial trench (1.10 m by 1.20 m) was excavated under the pavement in the southwestern corner of room 2B, the objective being to examine the foundations. A *terminus a quo* for the floor construction was provided by one of the coins from the bedding layer; it was identified as a Byzantine issue (late 5th through first half of the 7th century AD). The layer also yielded amphorae of



Fig. 2. Row of amphorae in room S5-2A, view from the north (University of Warsaw Faculty of Archaeology Marea Project | photo A. Pawlikowska-Gwiazda)

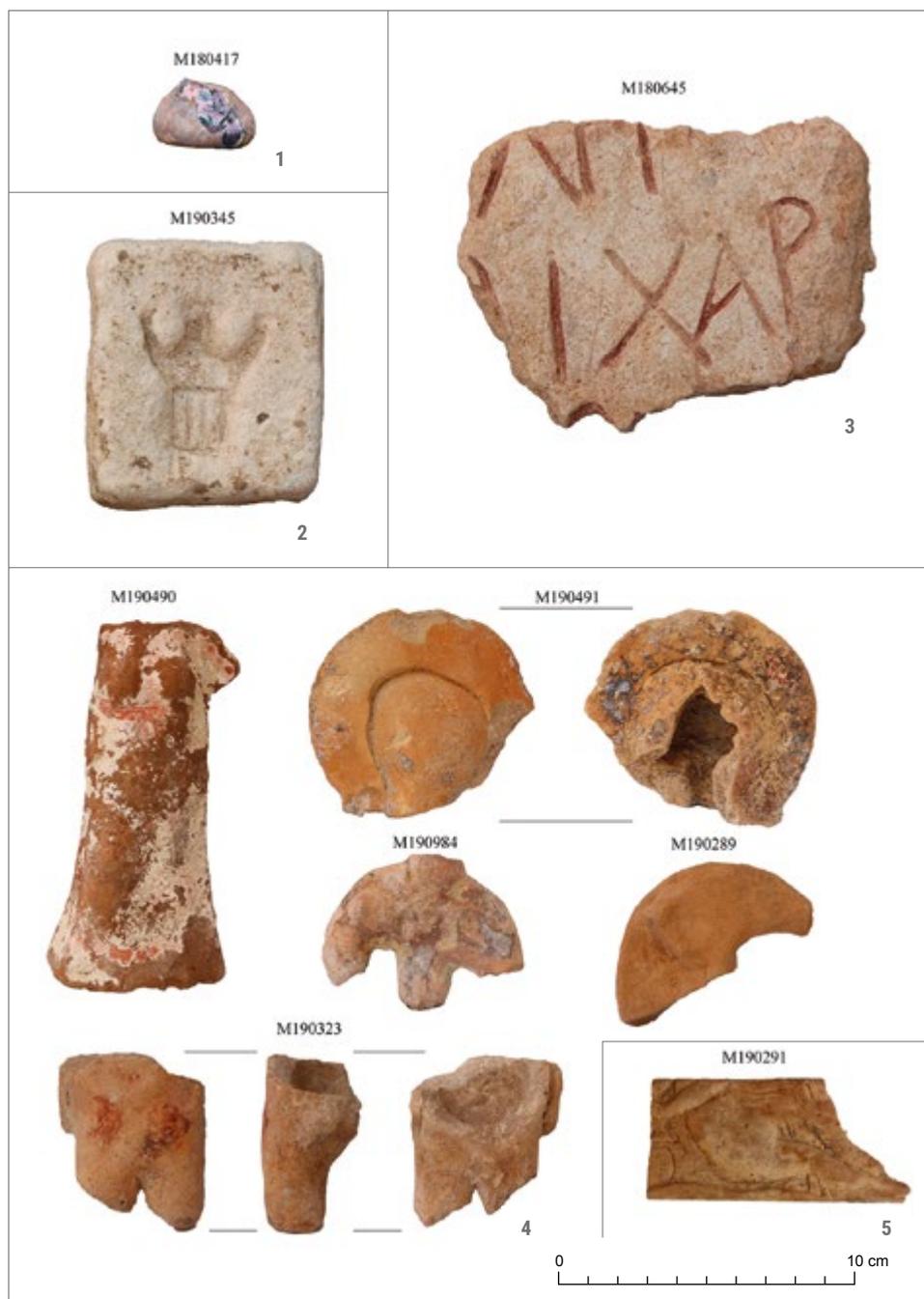


Fig. 3. Finds from the 2019 season: 1 – resin (Trench S5-2A); 2 – mould (Trench A1-2); 3 – fragment of inscription on plasterwork (Trench A1-2); 4 – terracotta figurines (levelling layer in Trench W1-5); 5 – plaque depicting a reclining woman (levelling layer in trench W1-5) (University of Warsaw Faculty of Archaeology Marea Project | photos T. Derda)

Byzantine date: LRA 1 and 3, and AE 5/6 (Pieri 2005: 67–84, 94–100; Dixneuf 2011: 142–153) and a few residual fragments of AE 3 and LRA 4.1 from the Roman period (Dixneuf 2011: 97–128). The lattermost type is found usually in deposits dating to the 2nd century AD (Pichot and Şenol 2015: 279–282). The bedding layer was laid directly on bedrock and examination of the foundations of the south and west walls of the room indicated that they had also been constructed on bedrock. The trench was backfilled and the slab floor was reconstructed.

The amphorae that had been discovered in Room 2A, eight altogether, formed a row almost 2 m in length [Fig. 2]. The row may have been longer toward the east where it was cut by the foundation trench for the east wall of Room 2A. The vessels were placed neck down, the bottoms and lower bodies damaged. They belonged to a phase preceding the construction of Building S5 and were disturbed by it.

The amphorae were identified as type AE 3, which was known to have been produced in 'Marea' (Gwiazda and Wielgosz-Rondolino 2019). The layer yielded over 200 fragments of LRA 4.1 amphorae as well as lumps of resin [Fig. 3.1] used to impregnate clay containers.<sup>2</sup> Resin was used to waterproof the AE 3 and 4 vessels produced in 'Marea'. The amphorae were probably used to store wine produced in the Lake Mareotis region (Abd el-Ghani 2010: 4–5). Determining the function of

this row of neck-down amphorae requires further study.

No trace of the Byzantine flooring was recorded, presumably because of the well-documented practice of salvaging and reuse of floor elements in the early Islamic period (Gwiazda and Wielgosz-Rondolino 2019). Coins recorded from the overlying fill layers, interpreted as tamped earth floors, were identified as Byzantine and early Islamic issues, suggesting the ultimate abandoning of the structure in the 8th century AD.

## 1.2 AREA A1

Area A1 is located directly west of the northern row of rooms lining the atrium of the Great Basilica [Fig. 4; for the location, see Fig. 1]. Two trenches were excavated, A1-1 on the east (2.45 m by 3.00 m) and A1-2 on the west (3.20 m by 4.00 m), separated by a baulk. The layout of the trenches took into account walls visible on the ground.

### 1.2.1 Trench A1-1

Orange-brown colored sediment not exceeding 0.25 m in thickness covered bedrock, which was found to slope down gently to the south. A layer of soil with large amounts of cockle shells (*Cerastoderma edule*) [Fig. 5] was unearthed above it. Shells of this kind are found in 'Marea' in large quantities, mixed into hydraulic mortar applied in Byzantine construction.<sup>3</sup> They were also used to temper the clay from which amphorae were produced on-site in the Roman period (Gwiazda

2 The same set of artifacts was found at the nearby Akademia site, 2 km southeast of 'Marea', where AE 3 and AE 4 amphorae were manufactured in the Roman period (Pichot and Flaux 2015).

3 Also noted in the southern thermae (Szymańska and Babraj 2008: 28) and in the tank near the *saqia* in the western part of the site (personal observation).

and Wielgosz-Rondolino 2019). The deposit in trench A1-1 did not yield any diagnostic dating material, precluding any advocating of a reliable link between this discovery and the possible applications cited above.

A foundation trench for a wall cut through the layer with shells at the northern end of the trench. The fill contained fragments of LRA 1, 4 and 8 amphorae (Pieri 2005: 67–84, 101–113, 132–136), which indicates a *terminus a quo* in the Byzantine period for the erection of this structure. Patches of a mortar floor were observed adjacent to the north wall and in the southern part of the trench. The center part was completely destroyed by construction work in the next building phase.

An installation of pseudo-ashlars and a reused column shaft bonded in pink, hydraulic mortar cut through the earlier mortar floor [Fig. 6]. It was 0.80 m wide and it followed a line parallel to the north and south walls. No continuation of this installation was found on the western side, but it was visible in the eastern baulk.

The fill covering this installation contained a Byzantine coin and sherds of amphorae dating to the same period. This fill was sealed by the well-preserved mortar floor of a rectangular room, which was traced on the ground surface. The floor was attached to the walls on the southern and eastern sides, and also partly on the northern side; to the west it was continued in the adjacent trench A1-2 (see below). A doorway in the north wall of

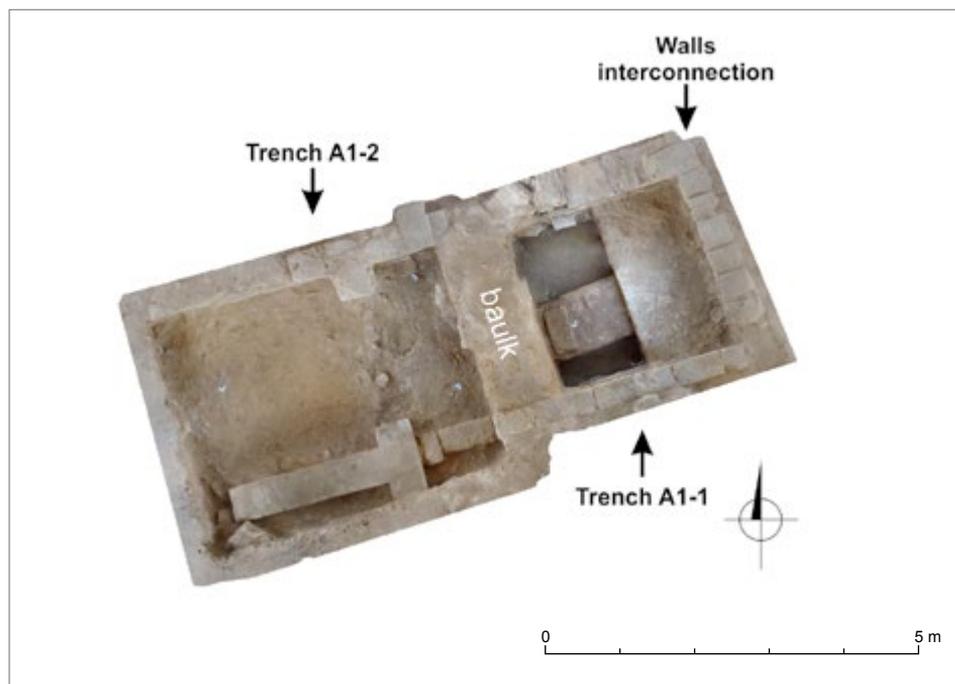


Fig. 4. Trenches A1-2 and A1-1 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)

room A1-1 was walled up at an unspecified time while the room was still in use [see Fig. 6].

The north wall was interlaced with a wall from the western part of the atrium of the Great Basilica [see Fig. 4], showing that this structure was contemporaneous with the construction of this part of the church. The south wall in the trench was not interconnected; it was probably a partition wall built later than the other walls, although during the same building phase.

The tumble of broken limestone pavement slabs (0.45 m thick) lying directly

on the mortar floor was either the floor of an upper room or a flat roof. Broken slabs from damaged roofs were also found in House H1 east of the Great Basilica.

The room ceased to be used in the 7th or 8th century as suggested by sherds of AE 8 amphorae, the production of which is confirmed in Egypt at this time (Dixneuf 2011: 178–179). The *terminus a quo* is supported by the discovery, in the layer with the broken floor slabs, of a bronze coin of Phocas (AD 602–610).

The topmost layer of rubble in this trench came from tumbled walls and consisted mainly of pseudo-ashlars and



Fig. 5. Cockle shells (Trench A1-1) (University of Warsaw Faculty of Archaeology Marea Project | photo A. Pawlikowska-Gwiazda)



Fig. 6. Trench A1-1, looking north; scale 0.50 m (University of Warsaw Faculty of Archaeology Marea Project | photo A. Pawlikowska-Gwiazda)



Fig. 7. Floor in Trench A1-2, looking north; scale = 1 m (University of Warsaw Faculty of Archaeology Marea Project | photo T. Barański)

crushed mortar. It also included two limestone column shafts and an ashlar with openings cut for wooden beams.

### 1.2.2 Trench A1-2

A continuation of the structure from trench A1-1 was discovered in this trench, the mortar floor being associated with two parallel walls oriented east–west. Opposite pillars could have borne an arch supporting the vault. The section on the eastern side was connected with the room uncovered in trench A1-1. The limits of the western section were not determined. A doorway in the south wall of the eastern section was blocked with ashlar in a later phase. Another doorway could have existed in the western part of the same wall.

A hearth was discovered in the north-eastern part of the trench, dug into the mortar floor [Fig. 7]. It contained post-consumption waste, namely animal bones. The floor surface in the western

section was severely worn due to heavy use. A coin from the Umayyad period suggests a *terminus a quo* for the abandonment of the room (around the end of the 7th or 8th century AD).

Wall collapse, continued from trench A1-1 (see above), filled the room, lying directly on the mortar floor. Apart from pseudo-ashlars, the debris included fragments of plasterwork with Greek inscriptions carved in the still wet surface and painted red [Fig. 3.3]. A limestone column coated with plaster was also found with single letters scratched into it. Broken pavement slabs, like those from trench A1-1, lay in the lower part of the destruction layer [Fig. 8].

The tumble was covered with a layer of silt and ash, approximately 0.50 m thick, containing the remains of a dismantled furnace, some waste related to glass production and two molds [Fig. 3.2]. Large quantities of AE 7 amphora sherds and broken ventilation pipes usually used



Fig. 8. Fragments of limestone floor slabs (Trench A1-2) (University of Warsaw Faculty of Archaeology Marea Project | photo T. Barański)

in baths were also found (Szymańska and Babraj 2008: 30, Photo 16). This varied set of artifacts suggests that it was a rubbish dump.

### 1.3 AREA W1

Excavation in the eastern waterfront area, between the Great Basilica and the southern bath [see Fig. 1], included one big trench (W1-5) and three trial pits (W1-1, W1-3 and W1-4). Four features were investigated: a straight wall forming the waterfront (W1), a street with a row of buildings along it, and a street on the western side of this area.

#### 1.3.1 Waterfront (W1) and latrines (W1-1 and W1-2)

The waterfront structure was cleared of vegetation and wind-blown sediment in order to investigate its full length. It consisted of a row of pseudo-ashlars, varying in thickness from 0.60 m to 0.93 m, and bonded in pink hydraulic mortar [Fig. 9].

The structure started in the northwest and ran southeast in a straight line for over 200 m, then turned west to avoid the *saqia* near the southern bath. It may have then joined the Roman causeway, located about 80 m further east and parallel to the waterfront W1 (Pichot 2010: 58) [see Fig. 1]. Together they would have formed an artificial bay in the eastern part of 'Marea'.

Two structures of limestone pseudo-ashlars joined the waterfront on the east, located about 70 m apart [see Fig. 1]. Both were identified as latrines. The southern one (W1-1) was made up of two platforms [Fig. 10]. They were surrounded by sewage channels discarding waste directly into the lake. Testing under the northern platform revealed the foundations of this building. The associated fill contained, among other things, fragments of LRA 4.4 amphorae, the production of which is dated no earlier than the second half of the 6th century AD (Maj-



Fig. 9. Waterfront wall W1, looking south; latrine W1-1 on left (University of Warsaw Faculty of Archaeology Marea Project | photo M. Gwiazda)

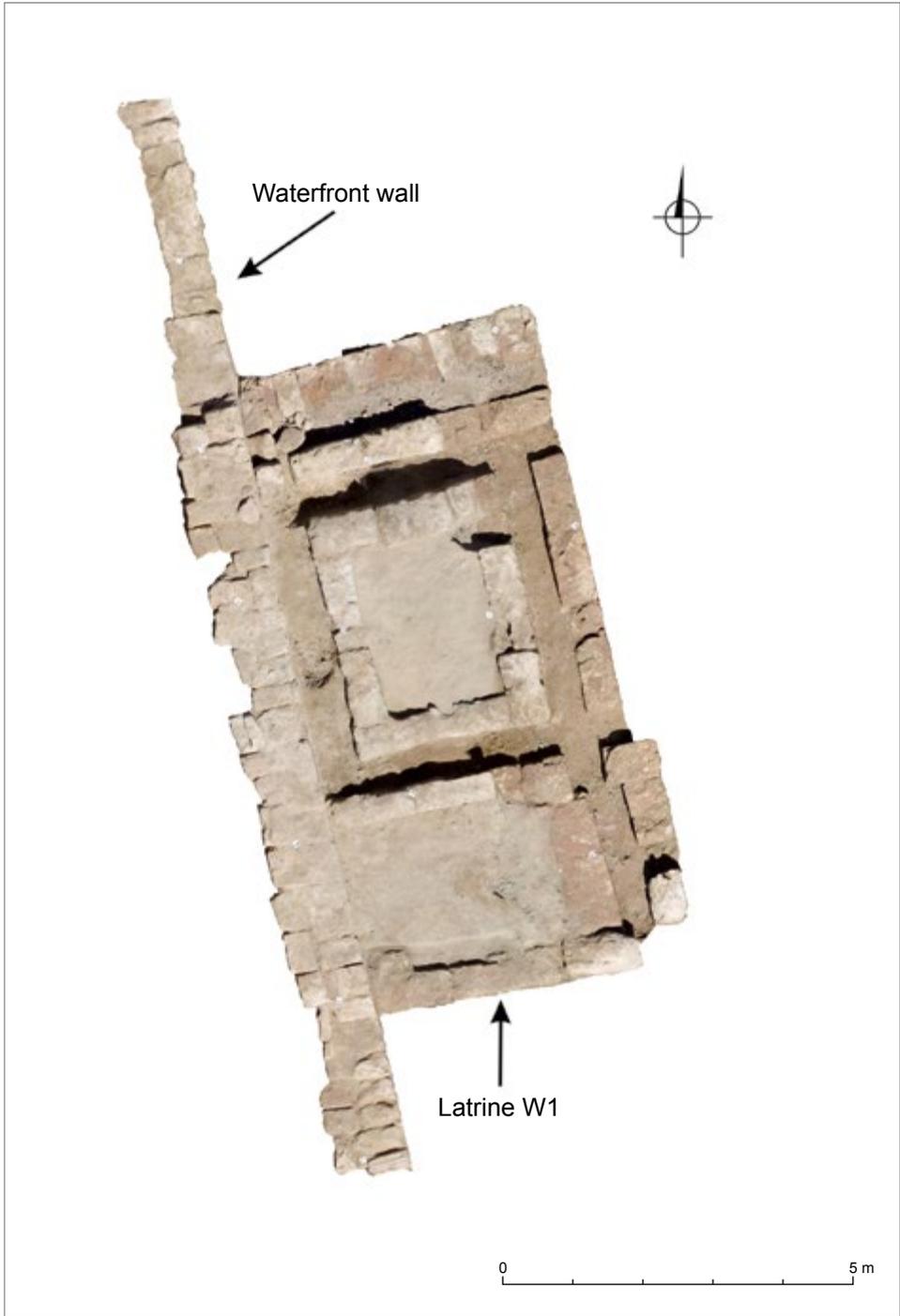


Fig. 10. Latrine W1-1 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda)



Fig. 11. Fish remains found on a fragment of an amphorae (University of Warsaw Faculty of Archaeology Marea Project | photo A. Panic)



Fig. 12. Pottery sherds with rounded edges found by the east wall of Latrine W1-1 (University of Warsaw Faculty of Archaeology Marea Project | photo J. Cano)



Fig. 13. Waterfront W1 (crossing the trench in the foreground), western street surface and house architecture, looking west (University of Warsaw Faculty of Archaeology Marea Project | photo M. Gwiazda)

cherek 1995: 169; Pieri 2005: 101–111), and sherds of Late Roman D Ware (Form 9A–B, Hayes 1972: 382), also dated after the second half of the 6th century AD. Construction-wise, the latrine is younger than the waterfront itself, since the two structures were not interconnected. The northern structure (W<sub>1-2</sub>) was smaller in size. It was not excavated more extensively.

A concentration of ceramic fragments with rounded edges was found outside the northern part of the east wall of latrine W<sub>1</sub> [Fig. 12]. A similar concentration of ceramic fragments was noted by a wall of House H<sub>1</sub>, east of the Great Basilica, the outer face of this wall also being oriented toward the lake (Gwiazda and Pawlikowska-Gwiazda 2019). Bearing in mind the fact that some fragments bore mortar traces on their surface, it is possible to assume that they were somehow used to finish the external faces of the walls. Nevertheless, only further discoveries of this kind can actually confirm this idea.

The upper parts of the walls, the seats and platform floors of both latrines were robbed at some point. Following on this event, the area of the Latrine W<sub>1-1</sub> (but not W<sub>1-2</sub>) started to be used as a rubbish dump. The layer reached 0.40 m at the thickest, becoming shallower toward the east. The assemblage included many sherds of kitchenware, tableware (Aswan) and amphorae. The latter category included imported LRA 1, 4 and 8 vessels, along with AE 5/6, 7 and 8 containers made in Egypt. A broken amphora of the AE 5/6 type was found to contain many fish bones [Fig. 11], implying use

of amphorae for the preparation of fish products (e.g. *garum*, *salsamenta*, etc.).<sup>4</sup> Fragments of more than 800 glass bottles and flasks were found concentrated in the southeastern corner of the structure. Also recorded were three ceramic incense burners with sooting, fragments of terracotta figurines made in Abu Mina (camel, pregnant woman, male head), animal bones, and mussel and snail shells. The rubbish must have come from nearby (see below) and it started to be deposited here not earlier than in the end of the 7th century or the first half of the 8th century, as suggested by an Umayyad coin in the assemblage.

### 1.3.2 Trench W1-5

In the eastern part of the trench, both sides of the waterfront were explored. The western face, unlike the eastern one, was made of stone material that was irregular and unplastered, which is understandable if one assumes that it was hidden from view by intentionally accumulated fill to raise the ground level. The layer was composed of sediments with large amounts of slag from unidentified production [Fig. 14 bottom; layers W<sub>1-5-16</sub>, 18, 19 and 25]. Pottery from this deposit included sherds of African Red Slip Ware Form 97 (dated AD 490–550, Hayes 1972: 151), Late Roman D Ware Form 9A–B (AD 550–700, Hayes 1972: 382), and LRA 4.4 amphorae (Majcherek 1995: 169; Pieri 2005: 101–111). These finds suggest that the waterfront and the adjacent street, like the southern latrine W<sub>1-1</sub> (see above), were constructed after the second half of the 6th century AD.

4 On fishmeal production involving reused wine amphorae, see Van Neer et al. 2007.

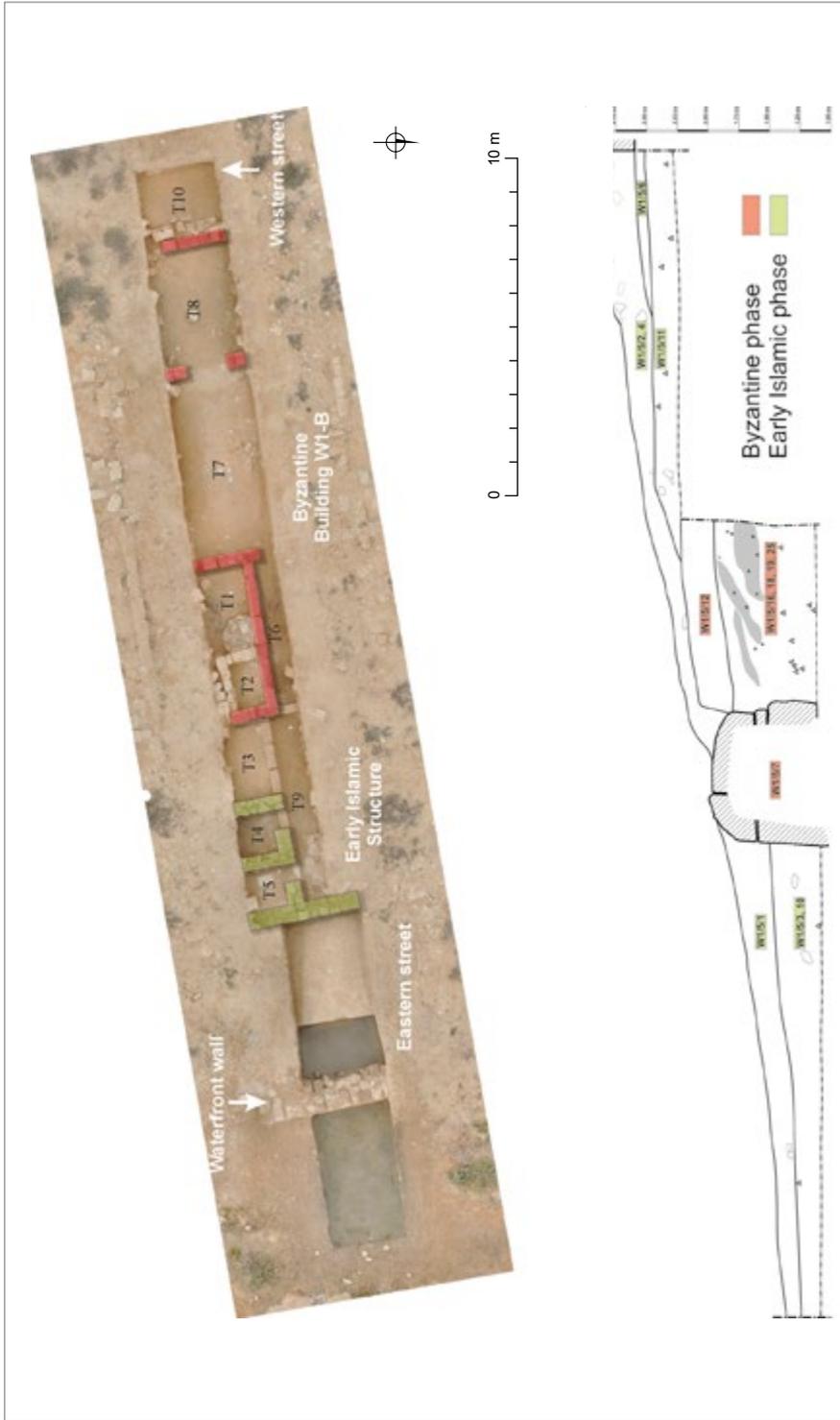


Fig. 14. Trench W1-5 (University of Warsaw Faculty of Archaeology Marea Project | orthophoto M. Gwiazda); southern section of the western part (University of Warsaw Faculty of Archaeology Marea Project | drawing M. Gwiazda)

A street was traced west of the waterfront, running parallel to it. The levelling layer under the street yielded a few broken terracotta figurines, which were produced at Abu Mina from the end of 5th century to the first half of the 7th century AD (Kaminski-Menssen 1996: 115, 153–154) [Fig. 3:4]. Another interesting find was a bone plaque, probably attached to a wooden chest, depicting a naked, reclining woman, possibly a Nereid [Fig. 3:5]. Iconographic motifs of this kind were popular in Alexandria in the late Roman and Byzantine period (Rodziewicz 2007: 71–73). The street surface, noted east of the east wall of Room T5, was of tamped sand and silt [Fig. 14, 16; see also Fig. 13]. Two levelling layers were recorded on the street surface; one contained slag and was identical with that unearthed under room T3 [see Figs 15, 16].

The Byzantine building W1-B adjacent to that street was composed of three rows

of rooms, with the walls made of pseudo-ashlars bonded with mortar. A transverse vestibule (T8) was situated west of it and beyond that a space of considerable size, most probably a courtyard (T7). At least two narrow rooms (T6 and T1–T2) were located east of the building.

The foundations and underlying strata were examined in a trial pit by the south baulk in unit T8 and in another pit in T3. A layer of dense sand and silt was found in both trial pits. It was used to backfill the foundation trenches of the walls of Building W1-B. This layer produced a fragment of a St Menas ampulla and a small number of broken nummulithic limestone chunks imported to ‘Marea’ from other parts of Egypt to produce architectural elements like socles and pillars. The discovery proves that this was a man-made layer, something also confirmed by the fact that the layer partly covered the top

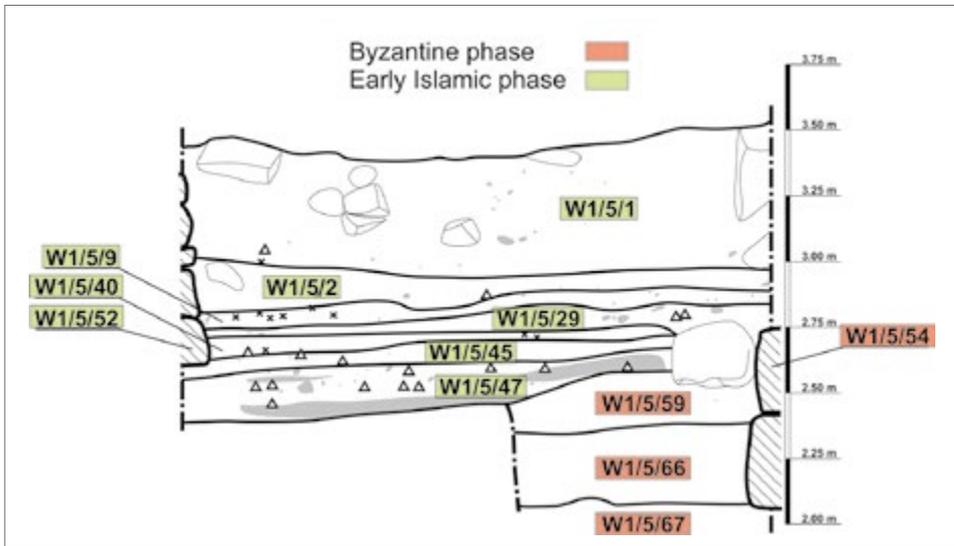


Fig. 15. Room T3, southern section (Trench W1-5) (University of Warsaw Faculty of Archaeology Marea Project | drawing M. Gwiazda)

of a wide wall foundation in the western part of the trial trench in T8. This deposit was at least 1 m thick, but it was not possible to examine its lower part due to the high level of groundwater. A set of 14 Byzantine coins was spotted in the grouting between some pseudo-ashlars of the foundation wall in the eastern part of T8. The coins were illegible, but coins of similar diameter and weight are dated between the end of the 5th century AD and the beginning of the 7th century AD. The assemblage also included a coin substitute, that is, a disk made of lead (for coin substitutes of this kind, see Bijovsky 2012: 44, 128). Such *monnaies de nécessité* were included in the hoard discovered by the wall of House H1, along with coins from the 5th and 6th century AD (Gwiazda and Pawlikowska-Gwiazda 2019). This find suggests a chronology of the foundation

of Building W1-B around this date, definitely not earlier.

Under T3, a levelling layer (W1-5-47) with large quantities of slag from an unknown source was deposited on the previous occupation level (as in the eastern street) prior to building the first wall. It was subsequently covered with another layer (W1-5-45) [see Fig. 15]. A corresponding layer on the western street yielded a fragment of an AE 8 amphora dated no earlier than the 7th century AD. This find suggests that the structure made of broken limestone east of Building W1-B was built in the same century or the next. The east wall of T3 was constructed of broken limestone directly on top of these levelling layers. It turned out that the foundation of the east wall (W1-5-54) was deeper than that of the west wall (W1-5-52) [Fig. 15]. Corresponding to these structures was another tamped earth surface.



Fig. 16. Wall of Room T5, looking west; note levelling layers underlying the feature; scale = 1 m (Trench W1-5) (University of Warsaw Faculty of Archaeology Marea Project | photo M. Żmuda)

Remains of walls from the early Islamic period were traced in the central part of trench W<sub>1-5</sub>. They were attached to the eastern face of Building W<sub>1-B</sub>: T<sub>3</sub>, T<sub>4</sub>, T<sub>5</sub> and T<sub>9</sub> [Fig. 14]. The structure was built using a novel technique: broken limestone, sized approximately 0.20 m across, with no regular row-based arrangement, bonded probably with mud, no trace of which has survived. Thinner limestone ashlar structures, found between these walls, were probably low partitions separating particular sections of this building. All the uncovered rooms had a tamped earth floor. Additionally, part of the floor in room T<sub>5</sub> was paved with a large reused marble slab.

No installations were discovered on the tamped earth floor of the alleged courtyard T<sub>7</sub>. In turn, the northern side of the trench revealed a concentration of marble tiles; the thickness of these slabs (approximately 0.25 m) suggests that they were part of a larger marble pavement broken and were simply left there. In room T<sub>6</sub>, located further east, the tamped earth floor level revealed a concentration of ash in its central part. An Umayyad coin was also found, implying that this building was used in the early Islamic period. In the adjacent room T<sub>1</sub>, a small compartment (T<sub>2</sub>) was attached to the walls of room T<sub>1</sub> [Fig. 14]. It was empty, hence its function remains unknown. Adjoining it on the west was a circular platform of fired bricks and a stone slab, its base approximately 0.20 m above the tamped floor level. A concentration of ash and kitchenware sherds was discovered nearby.

The meter-thick accumulation of layers sloping down from the eastern face of the waterfront (investigated at the eastern end of the trench) (layers W<sub>1-5-1,3,10</sub>) also appears to be waste dumped beyond the wall, probably in the early Islamic period.

At the western end, an early Islamic street was found west of Building W<sub>1-B</sub>. The street surface was covered with debris from the west wall of this building [Fig. 14, T<sub>10</sub>]. At the other end of the trench, the early Islamic level of the eastern street was also buried under debris, which formed after the town was deserted.

### 1.3.3 Trench W<sub>1-3</sub>

Trench W<sub>1-3</sub> was opened to explore Building W<sub>1-A</sub> located south of trench W<sub>1-5</sub> and west of latrine W<sub>1-1</sub> [see Fig. 1]. It was located in the northwestern corner of the alleged courtyard of a complex of rooms that was arranged in a manner similar to that found in the western part of trench W<sub>1-5</sub> (T<sub>1</sub>, T<sub>2</sub>, T<sub>6</sub>, T<sub>7</sub>, and T<sub>8</sub>). However, the registered sequence of layers is slightly different from that recorded in Building W<sub>1-B</sub> (see above).

The excavation reached a depth of 2 m below the ground surface, where it was interrupted without reaching bedrock because of a high groundwater level. The lowest investigated layers were interpreted as levelling layers, which yielded sherds of LRA 1 amphorae, suggesting that the building was not erected before the Byzantine period. The foundation trench of the north wall cut through these layers and was filled with ash and residual fragments of locally manufactured AE 3 and AE 4 amphorae. A similar practice

of reusing Roman pottery production waste to fill in foundation trenches of Byzantine buildings was also confirmed in other parts of the site (Derda, Gwiazda, and Pawlikowska-Gwiazda 2020, in this volume). A deposit of ash and broken Roman amphorae, which had not been

used to fill the trench, was unearthed next to the upper part of the trench.

A doorway was located in the southern part of the west wall. A small section of the paving made of reused limestone slabs and fired bricks was found in the threshold; the rest of the floor was made



Fig. 17. Deposit of LRA 4 amphorae, looking north; scale = 1 m (Trench W1-3) (University of Warsaw Faculty of Archaeology Marea Project | photo T. Barański)

of tamped earth. Two thin walls raised on this floor level formed a rectangular pen abutting the north and west walls of the courtyard. Seven complete LRA 4.4 amphorae, laid close together on their sides, were found inside [Fig. 17].

A set of two tamped earth floors sealed this occupation layer and the amphora deposit. The upper floor yielded three Umayyad coins and the remains of a hearth by the north wall.

A sterile stratum, 0.25 m thick, covered the ruins after the building was ultimately abandoned.

### 1.3.4 Trench W1-4

The trench was opened west of the central part of Building W<sub>1</sub>-A [see Fig. 1]. It encompassed a street to the west and a narrow vestibule adjacent to it. A layer

of sand mixed with silt and lenses of slag from an unknown source were discovered under the first street surface, corresponding in its characteristic to other levelling layers underlying Byzantine-age buildings W<sub>1</sub>-A and W<sub>1</sub>-B, and the waterfront wall. The street surface itself was made of crushed lime or gypsum mixed with soil [Fig. 18, layer W<sub>1</sub>-4-25]. Subsequent street levels uncovered in the trench were non-hardened dirt surfaces, altogether nine surfaces counting the different colors of the soil. The overall thickness, although not uniform and decreasing towards the wall of Building W<sub>1</sub>-A, did not exceed 0.25 m. The layers resulted from a makeshift deposition of small amounts of waste and natural windblown sediments.

Remains of another floor made of reused limestone slabs were found west

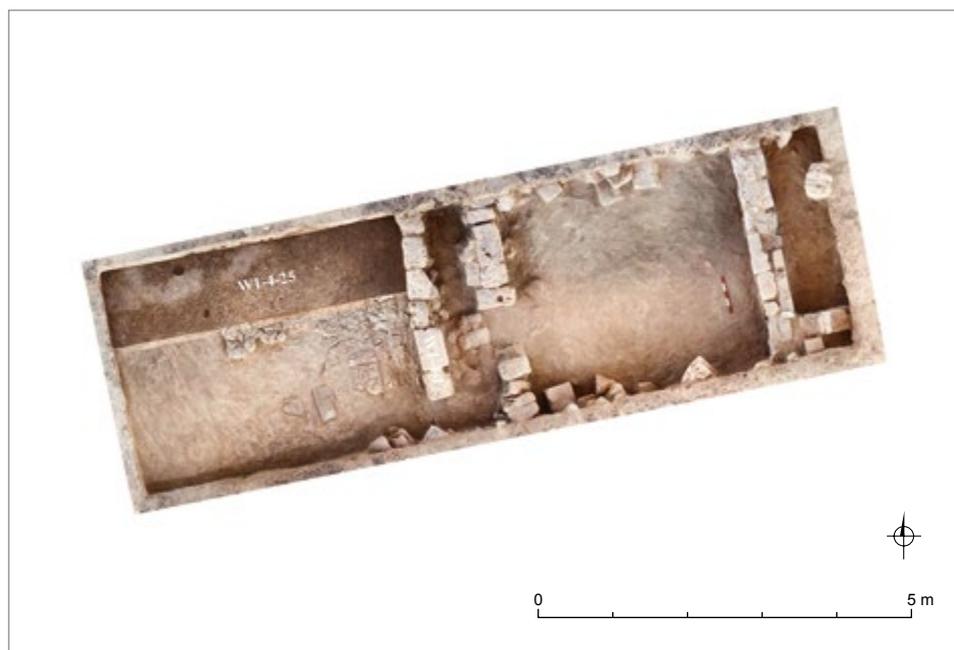


Fig. 18. Street and building W<sub>1</sub>-A (Trench W1-4) (University of Warsaw Faculty of Archaeology Marea Project | orthophoto D.F. Wieczorek)

of the wall of Building W<sub>1</sub>-A. This is the first instance of a street surface of such fine quality in 'Marea'; in all of the other cases, crushed lime or gypsum was used for tamped-earth street surfaces (Gwiazda and Pawlikowska-Gwiazda 2019; Derda, Gwiazda, and Pawlikowska-Gwiazda 2020, in this volume). A makeshift wall appears to have screened the entrance to Building W<sub>1</sub>-A, set approxi-

mately 0.50 m away from the wall façade [see Fig. 18, wall W<sub>1</sub>-4-1).

The remains of a disintegrating wall were found inside the building and on the latest street surface. These layers were dated by sherds of AE 8 amphorae and three Umayyad coins, which provided a *terminus a quo* for the abandonment of this part of the site in the early Islamic period.

## CONCLUSIONS

Excavations in 2019 were extended beyond the northeastern promontory to gain a better understanding of the diverse stratification and occupation history of the eastern part of the Lake Mareotis shoreline.

Occupation levels dated to the Roman period (trench S<sub>5</sub>-2A), later built over in Byzantine times, have been recorded in the northern part of the settlement. Investigation of the eastern waterfront (trenches W<sub>1</sub>-3 and W<sub>1</sub>-5) did not reveal any evidence of structures erected earlier than the Byzantine period. It suggests that Roman-period settlement was probably limited to the northern part of the 'Marea' promontory, to the site of the Byzantine Great Basilica later built in this place; habitation has also been confirmed on an island located about 300 m northeast of the promontory (Pichot 2010). Pottery kilns and amphorae production waste are proof that these containers were being produced at the site in the Roman period (Gwiazda and Wielgosz-Rondolino 2019).

The settlement expanded considerably in the Byzantine era. As indicated by the excavation results, numerous new

structures like streets, residential buildings, public latrines and over 200 m of the waterfront, were built at this time. The regular layout of the buildings points to a centralized investment strategy. In some cases, construction projects entailed large-scale earthworks aimed at levelling the area under new building (trenches W<sub>1</sub>-3, W<sub>1</sub>-4 and W<sub>1</sub>-5).

Habitation was proved to continue until the beginning of the early Islamic period in most of the areas investigated this season (see also Gwiazda and Wielgosz-Rondolino 2019). In Trench W<sub>1</sub>-5, clear indications were found of organized construction activity, entailing new buildings being added to older ones (W<sub>1</sub>-B). At the same time, there is evidence of some of the Byzantine structures (Latrine W<sub>1</sub>-1) being abandoned or destroyed. Makeshift rubbish dumps appeared in various places within the town. Rooms started to be used in different ways. In trench W<sub>1</sub>-3 at least three successive occupation levels were registered, which did not find corresponding levels in the western part of trench W<sub>1</sub>-5. The dynamics of habitation in different parts of 'Marea' were obviously

changing over time. No Abbasid coins were found during the 2019 excavation season, confirming earlier assumptions

that the town was abandoned around the mid-8th century AD (Gwiazda and Wielgosz-Rondolino 2019).

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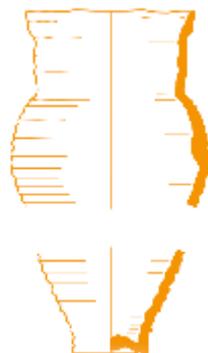
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# Roman-period pottery from a trench by the northern city wall in Beit Ras/Capitolias



**Abstract:** Insight into the chronology of the defenses of ancient Capitolias comes from a standard typological ceramic analysis of pottery finds from relevant stratigraphic contexts. Remains of a defensive city wall were uncovered in one of the trenches opened by a PCMA team working at the site of Beit Ras (ancient Capitolias) in the governorate of Irbid, northern Jordan, in 2015–2016. Neither the foundation nor the earliest walking level connected with the wall was reached; however, three upper floors, all posterior to the construction of the city wall, were identified. Apart from chronological indications, an analysis of the ceramics from under the floors facilitated a study of the repertory of local, regional and some imported wares in Roman-period Capitolias.

**Keywords:** pottery, Roman period, city wall, Beit Ras/Capitolias

A section of the city defences of ancient Capitolias, founded as a city most probably in the late 1st century<sup>1</sup>, was discovered in one of the trenches excavated at Beit Ras over the seasons in 2015 and 2016 by a team from the PCMA UW (Młynarczyk 2017: 497–502, Figs 23–25). The location of the trench in question (the Central North trench) is in accord with the course of the northern section of the city defences as traced by Gottlieb Schumacher [*Fig. 1*], the author of the first (and so far

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<sup>1</sup> All dates are AD (CE) unless otherwise noted.

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only) archaeological map of the ancient site (Schumacher 1890: 154). With the exception of a short section of the wall abutting the western face of the theater (see below), the course of the wall today is completely obliterated.

Difficult field conditions, specifically, the location of the excavations inside a privately-owned olive grove, restricted the size of the trench to 5.40 m east–west by 4.45 m north–south (for the trench plan, see Młynarczyk 2017: 499, Fig. 23). The unearthed wall was 2.50 m thick. The section excavated in the trench was roughly 3.80 m long and was aligned east–west. The inner (southern) face

was carefully constructed of limestone ashlars, the core made of both undressed and semi-dressed stones, and the outer (northern) side faced with square basalt blocks (Młynarczyk 2017: 500, Fig. 25). On the outside, the trench reached a depth of approximately 1.50 m below the present ground surface, that is, the top level of the first preserved course of basalt blocks. On the southern side, however, excavation stopped at 572.50 m ASL, 3.50 m below the modern surface. The dig had to be halted for logistical reasons; the deepest point reached was about 0.40 m below the level of the wall plinth, leaving its full height unknown [Fig. 2].

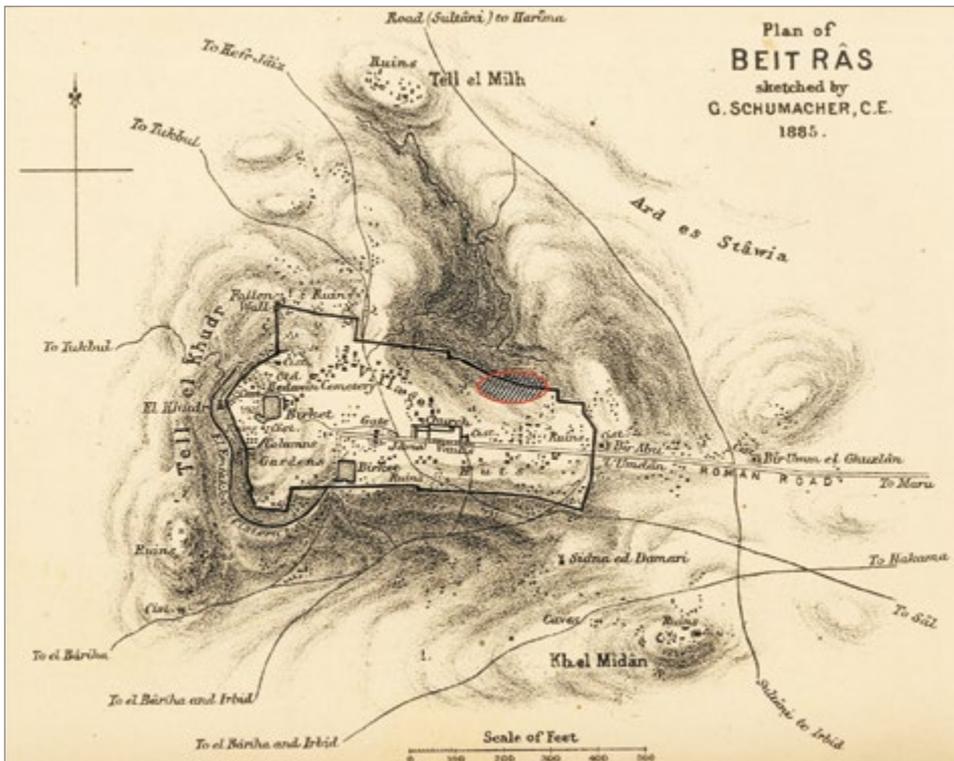


Fig. 1. Plan of the remains of ancient Capitolias with the city wall as recorded in 1885 by G. Schumacher; the hatched area indicates the location of the PCMA UW trenches (2015–2016) (After Schumacher 1890: 154 | updated M. Burdajewicz)



Fig. 2. Section of the northern city wall of Capitolias (W I in Areas 2-N and 3-N) with the inner (southward) face of limestone ashlars, facing northwest (PCMA UW Beit Ras Project | photo M. Drzewiecki)

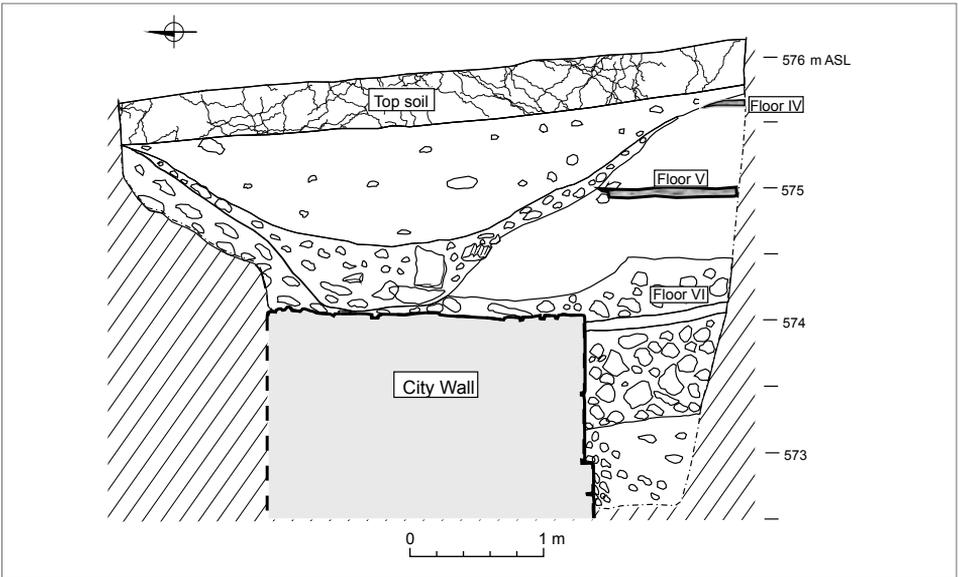


Fig. 3. The eastern section of the Central North trench with the robber pit, 2016 (PCMA UW Beit Ras Project | drawing M. Drzewiecki, digitizing M. Burdajewicz).

The aim of the present paper is twofold: a repertory of pottery shapes and wares, based on the finds from the fill connected with the wall, and insight into the chronology of this particular section of the city wall. In both cases, the fact that the excavation did not reach the lowermost original walking and/or construction level renders our knowledge incomplete. The extremely narrow area of the bottom of the trench yielded a rather small sample of pottery.

### STRATIGRAPHY

During the first phase of the excavations in 2015, two floors were identified on the southern side of the city wall: FI and FII (Młynarczyk 2018: 184–185, Figs 28–30). After the trench was enlarged in 2016, three floors, once abutting the southern face of the city wall, were identified: FIV (corresponding to FI of 2015), FV (corresponding to FII of 2015) and FVI. Two of them, FIV and FV, were cut through by a robber pit 1.45–1.60 m deep [Fig. 3], associated with the dismantling of the upper part of the city wall and the extraction of limestone ashlar from its southern face (Młynarczyk 2017: 498). The pit was backfilled with earth, rubble and ceramics (baskets B111, B114 and B116), mostly of the Byzantine and Umayyad period, with just a couple of glazed sherds. The fills under FV were recorded as B115 and B118–B122, of which the upper ones (B115 and B118–B119) may have contained some intrusive material from the adjoining robber pit. Potsherds in B118–B121 included also several joining fragments, proving that the contexts in question were parts of the same leveling layer about 1 m thick,

while context B122 should be interpreted as a deposit accumulated on the only undisturbed floor, FVI. The level of this floor corresponded to the top of the city wall as preserved under the robber pit. Of the contexts recorded below FVI (B123 through B126), the lowermost B126 rose from the deepest point 0.40 m below the top of the plinth to the level corresponding to the top of this plinth.

A small ceramic assemblage retrieved in 2015 from under FI (equal to FIV of 2016) contained common-ware pottery of the Byzantine to Umayyad periods. The latest potsherds were dated to the 7th century (Młynarczyk 2018: 188–191), but with a strong prevalence of 5th-century ceramics, such as a jar rim of an early “Beisan” type (Młynarczyk 2018: Fig. 33:34), casseroles of “Competing Form C3A” (Adan-Bayewitz 1993: 156–158; see Młynarczyk 2018: Fig. 33:40–41) and a neckless cooking pot of “Competing Form C4A” (Adan-Bayewitz 1993: 159–162; see Młynarczyk 2018: Fig. 33:39). Fragments of the same type of neckless cooking pot as above, but also other vessel forms and wares clearly of pre-Byzantine date, were found within the floor make-up of FII of 2015 (equal to FV of 2016) and directly beneath it (Młynarczyk 2018: 189, Fig. 34).

Within the Central North trench extension in 2016, the FV floor was dated provisionally to the late Roman/early Byzantine period (4th–5th centuries), and FVI to the 3rd century AD (Młynarczyk 2017: 500). Despite the presence of these two distinct ancient floors no sharp chronological division could be drawn between the two sets of contexts: B118–B122 (between FV and FVI) and B123–B126 (under FVI), respectively. This is

mainly because the pottery represents common wares that have a rather wide chronological range. This means that the same vessel forms repeatedly occur in different contexts, while examples of fine ware, which traditionally support the

dating of ceramic assemblages with more precision, are extremely few (see below). Definitely the most common category of pottery in all the contexts were fragments of cooking pots and cooking bowls of several different fabrics and shapes. In

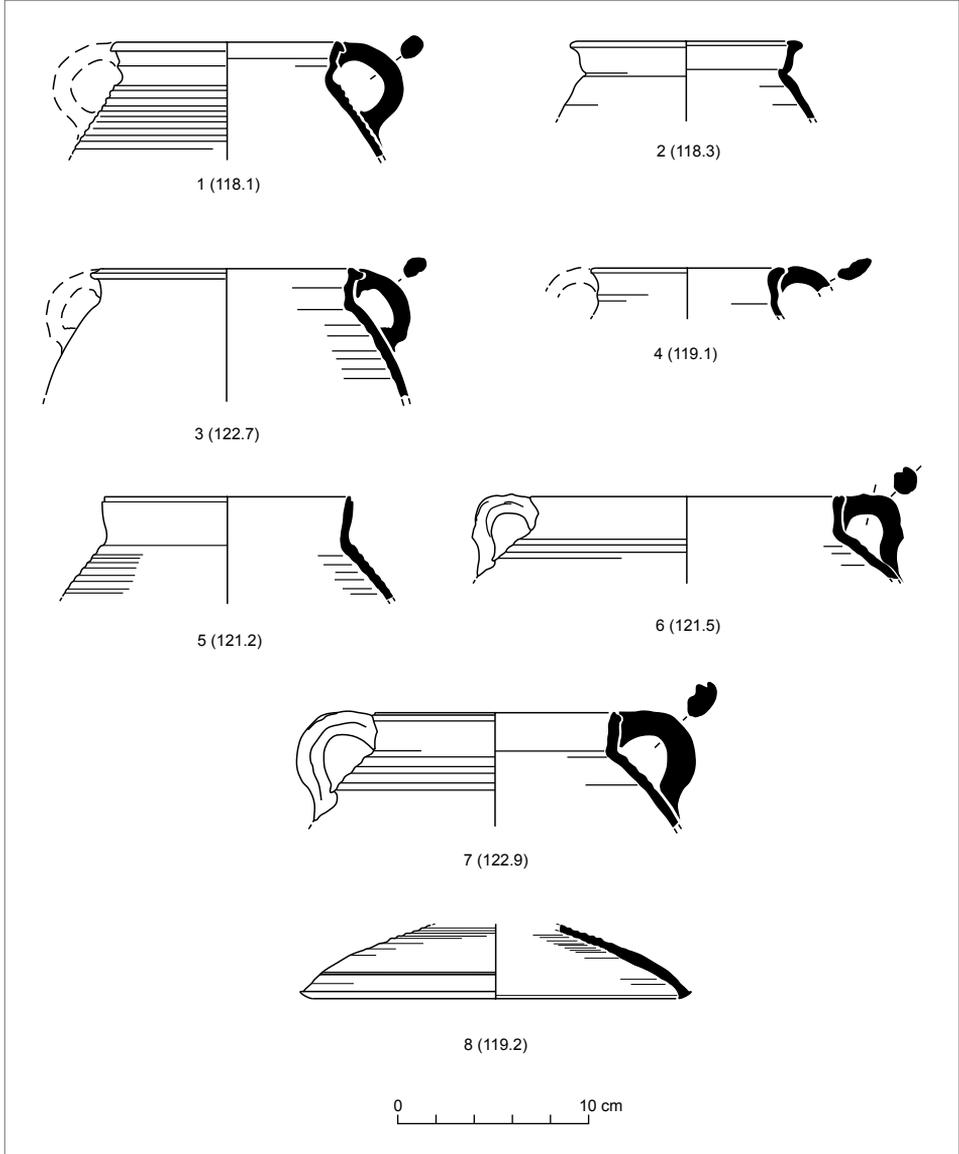


Fig. 4. Cooking pots from different contexts under FV and above FVI; contexts indicated in brackets (PCMA UW Beit Ras Project | drawing M. Burdajewicz)

many contexts, especially B121 and B124–125, the ceramics were accompanied by considerable amounts of animal bones. The contexts directly above FVI (B121–B122) and below it (B123–B125) contained also pieces of low-baked clay interpreted as fragments of a *tabun* or oven (kiln?).

Moreover, contexts below FVI (B123–B125) contained many small pieces of raw clay. Alongside a waster of a jug (deformed during the firing), such finds may bear testimony to pottery making in Roman-period Capitolias (Młynarczyk 2017: 503–504).

## CERAMIC TYPES AND FORMS

The pottery documented in drawing during the excavation of the city wall in 2016 is presented in groups divided by function, such as cooking pots (plus a cooking ware lid), cooking bowls, jugs and juglets (plus a funnel), basins, fine wares, local/regional storage jars and imported amphorae. Vessels are identified by their registration number (basket number accompanied by serial number). The state of preservation is described using the following abbreviations: R for rim, N for neck, W for wall, H for handle and B for base.

### COOKING POTS

#### CP form 1a

**No. 1 (118.1).** RNWH of a cooking pot [Fig. 4:1]. Fabric gritty dark red with white grits; surface with very dark grey “skin” outside, dark brown inside. A fragment of a cooking pot from Hippos, closely similar to 118.1 and misidentified as Díez Fernández T 10.2, was found in a 3rd-century context (Kapitaikin 2018: Pl. 14:17). Actually, this fragment, as well as another Hippos example (Kapitaikin 2018: Pl. 12:9), pertain to Díez Fernández T 10.6c, dated to between the 3rd and 4th century. A parallel from Jerash comes from a 3rd century context (Clark et al.

1986: Fig. 20:2), and three examples of a closely related form were discovered in a context dated to the late 3rd century (Lichtenberger and Raja 2015: 315–319, Figs 1, 10, 13). Similarly, a fragment from Caesarea, classified as Riley Caesarea Cooking Pot Type 2A, is attributed to the 3rd–4th centuries (Johnson 2008: No. 786). The prototypes of the form go back to the early Roman period, suffice it to mention Díez Fernández T 10.2, dated to the 1st century BC–1st century (Díez Fernández 1983: 201) and Cooking Pot Type 4 from an early Roman assemblage at Jiyeh in the Sidon hinterland (Wicenciak 2016: 87 and Pls 65–67, especially No. 304).

#### CP form 1b

**No. 2 (118.3).** RNW of a cooking pot [Fig. 4:2]. Fabric very gritty, strong brown (7.5YR5/6) with many small (up to some large) white grits, few small black grits and occasional small circular voids; similar surface, partly fired brown (7.5YR5/4). The shape occurs in Gadara and Pella (Vriezen 2015: 130, Note 202, and Fig. XII.21:18, dated to the mid-5th? century), and in Caesarea (Johnson 2008: No. 784, identified as Riley Caesarea Cooking Pot Type 2A of the 3rd and 4th centuries). It is close to

Kefar Hananya Form 4C (Adan-Bayewitz 1993: 129, especially Nos 3 and 7), dated to between the early 2nd and mid-4th century. A close parallel comes from Capernaum, classified as PENT 12 and broadly dated to between the mid-1st and mid-4th century (Loffreda 2008a: 150). A related shape occurred in Beirut in the 1st–2nd centuries (Pellegrino 2007: 150, Fig. 5:8).

**No. 3 (122.7).** RNWH of a cooking pot of the same form and fabric as No. 2 above [Fig. 4:3].

Cooking pots Nos 1–3 pertain to two variants (a–b) of the same form, one (No. 1) with a ribbed outer surface of the body, and the other (Nos 2–3) with a smooth shoulder. In the Decapolis region, the variant with ribbed body continued into the mid-5th century (Młynarczyk 2009: 128, No. 113, with references).

### CP form 2

**No. 4 (119.1).** RNH of a cooking pot [Fig. 4:4]. Fabric orange-brown with some small white grits and some deep voids; surface ‘pitted’, fired orange to brown, dark brown at rim. Form comparable to Jiyeh Early Roman Cooking Pot Subtype 6.2, dated by parallels from Beirut to the Flavian period, 69–96 (Wicenciak 2016: Pl. 70, Nos 317–318; see also Pellegrino 2007: Fig. 5:4–5).

### CP form 3a

**No. 5 (121.2).** RNW of a thin-walled cooking pot [Fig. 4:5]. Fabric reddish yellow with white grits and some tiny black inclusions; inner surface fired reddish yellow (5YR7/6 and 7/8), outer surface fired between light red (2.5YR6/8) and reddish yellow (5YR7/6), with

very delicate ribbing on the shoulder. A parallel pot from Pella comes from a 3rd–4th century context (Da Costa et al. 2002: Fig. 6:1), the shape corresponding to Kefar Hananya Form 4E1 (Adan-Bayewitz 1993: 132–135, No. 3), dated to between an earlier 4th and an earlier 5th century. It is also related to Capernaum form PENT 14.2, common throughout the Byzantine period, that is, from the mid-4th century on (Loffreda 2008b: 190).

### CP form 3b

**No. 6 (121.5).** RNWH (three joining fragments) of a cooking pot with grooved rim and pinched handle [Fig. 4:6]. Fabric brownish pink, granular, with some minute sand grits(?); surface yellow-beige inside, light brown outside. Cooking pots of this form are known from a 3rd–4th century context at Pella (Da Costa et al. 2002: Fig. 6:1, with narrower neck) and from Gadara, broadly dated on the grounds of parallels to between the 2nd and mid-4th century (Vriezen 2015: 129, and Note 203, Fig. XII.21:9). The general shape seems to correspond to Díez Fernández T 10.6b–c, dated to the 3rd–4th centuries (Díez Fernández 1983: 205).

Cooking pots Nos 5 and 6 are similar in their grooved lips and ribbed shoulders, even if they differ in proportions. However, their respective fabrics prove that they come from two different workshops, of which neither seems to be local to Capitolias.

### CP form 4

**No. 7 (122.9).** RNWH of a cooking pot with externally ribbed body [Fig. 4:7]. Fabric with ‘sandwich’ break: grayish brown inside, orange-red outside; inner

surface yellowish pink, outer surface orange-red. Related to a form known from Beirut and attributed to the 1st–2nd centuries (Pellegrino 2007: 150, Fig. 5:10), and to Díez Fernández T 10.12 (1983: Nos 352–353) of the same period. The rim/shoulder profile is related to that of pot No. 5 of CP form 3a (see above).

### CP form 5

The deepest context reached in the trench, B126, yielded two fragments of Galilean cooking pots of Kefar Hananya form 4C (not illustrated), dated to between the early 2nd and mid-4th century AD (Adan-Bayewitz 1993: 129–130).

### LID

**No. 8 (119.2).** RW (two joining fragments) of a lid [Fig. 4:8]. Fabric brick-red with white grits; some deep voids; surface “pitted”, fired light brown inside, orange-brown outside with dark brown spots; rim sooted inside. A comparable lid comes from a context of the second half of the 3rd century at Jerash (Rasson 1986: 68, Fig. 17:7, different fabric); in Capernaum, it is classified as COP 1 and dated to the 4th–5th centuries (Loffreda 2008b: 219).

### COOKING BOWLS

#### CB 1 (ledge-handle casserole)

**No. 9 (121.3).** RWH of a thin-walled casserole with thumb-indented ledge handle [Fig. 5:9]. The same fabric as cooking pot No. 5, but here the exterior surface is fired a reddish yellow (5YR6/6). An exact parallel dated to the 3rd century, doubtlessly of local manufacture, comes from Jerash (Clark

et al. 1986: 248, Fig. 20:7). An example from Pella displaying the same profile, but provided with “regular” horizontal handles, comes from a context dated to the 3rd–4th centuries (Da Costa et al. 2002: Fig. 6:4); two fragments with horizontal handles were found under FI in the Central North trench in 2015 (Młynarczyk 2018: Fig. 33:40–41); a related example from Caesarea is dated from the 3rd/4th century on (Johnson 2008: 71 and No. 819). The general form is close to the “Competing form C3A” (Adan-Bayewitz 1993: 157), dated to between the 4th and 5th century (and later). This form, very common in the Decapolis area and elsewhere in Palestine, continued to develop through the Umayyad period.

#### CB 2 (Kefar Hananya forms)

**No. 10 (122.1).** RW of a cooking bowl [Fig. 5:10]. Fabric fired between light red (2.5YR6/6) and red (2.5YR5/6), with occasional black and white grits, the latter including large eruptions. Kefar Hananya form 1B (Adan-Bayewitz 1993: 94, No. 14) dated to between the 1st/2nd and mid-4th century. Imitation of Kefar Hananya ware(?).

**No. 11 (122.2).** RW of a cooking bowl, the same fabric as No. 10 above [Fig. 5:11]. Kefar Hananya form 1E (Adan-Bayewitz 1993: 103–107), between the mid-3rd and earlier 5th century.

#### CB 3 (regional variations of Kefar Hananya forms)

**No. 12 (122.12).** RW of a cooking bowl [Fig. 5:12]. Fabric soft, pink (light red) with lots of white grits, up to large. The shape is related to Kefar Hananya bowl form 1A (Adan-Bayewitz 1993: 88–91,

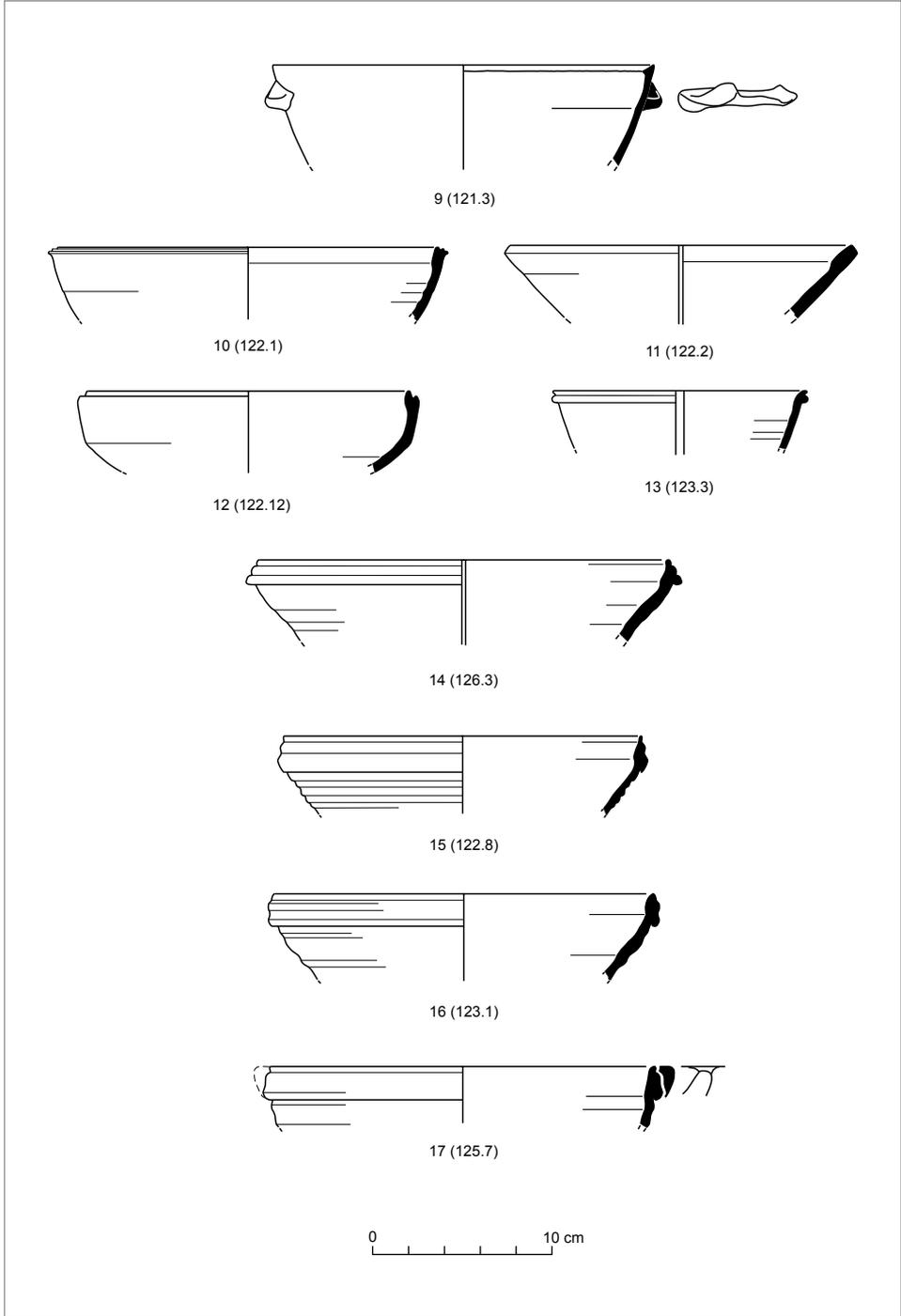


Fig. 5. Cooking bowls from different contexts under FV and above FVI; contexts indicated in brackets (PCMA UW Beit Ras Project | drawing M. Burdajewicz)

Pl. 1A:2–3), dated to between the latter 1st and latter 3rd century. The profile of the bowl recalls Early Roman Jiyeh Pan Type 2 (Wicenciak 2016: Pl. 73:336), but also a bowl from Pella found in a 3rd–4th century context (Da Costa et al. 2002: Fig. 7:2) and a bowl from Gadara, dated broadly to 365–750 (Vriezen 2015: 133, Note 235, Fig. XII.22:17).

**No. 13 (123.3).** RW of a small cooking bowl [Fig. 5:13]. Fabric with sandwich section: grey inside, red outside; surface reddish brown (to dark brown on the rim outside), with white mineral eruptions on the outer surface. A related vessel has been reported from Gadara (Vriezen 2015: Fig. XII.22:18). The parallels from Capernaum, classified as TEG 14, are dated to between the end of the 1st and the end of 3rd century (Loffreda 2008b: 206–207; 2008a: 178–181, DG 193, especially Nos 124, 126). A similar form has also been attested elsewhere in Galilee (Díez Fernández 1983: T 15.1a, Nos 420 and 424) and in Caesarea (Johnson 2008: No. 809). It seems to be related to Kefar Hananya Form 1A from the late 1st through the late 3rd century (Adan-Bayewitz 1993: 88–91); the presence of a gray core would identify this object as a Golan product, form G1A (Adan-Bayewitz 1993: 173).

**No. 14 (126.3).** RW of a cooking bowl [Fig. 5:14]. Fabric fired to grey, containing many white grits of all sizes; surface fired red inside, grey (with red spots on the rim) outside. It appears to derive from Kefar Hananya form 1B dated to between the 1st/2nd and mid-4th century (Adan-Bayewitz 1993: 94–95). For a parallel profile, see examples from Pella (Da Costa et al. 2002: Fig. 9:7, context of the

3rd–4th centuries), Gadara (Vriezen 2015: 133, Note 229, Fig. XII.22:11, dated by parallels to the mid-5th century) and Hippos (Kapitaikin 2018: Pl. 12:7). In the Central North trench, the same form of cooking bowl occurred also in B121 and B125.

#### **CB 4 (outfolded rim, ribbed on exterior; undulated wall profile)**

This type of bowl is typical of the Decapolis region, attested at such sites as Hippos (Młynarczyk 2009: 133, Nos 154 and 171, with numerous local parallels), Gadara (Vriezen 2015: 133, Fig. XII.22, Nos 11, 13–14, 16, all attributed to the mid-5th century) with neighboring Hammat Gader (Ben-Arieh 1997: 348–349, Pl. I:15–18, of a pre-455 date), as well as Pella (McNicoll et al. 1992: Pl. 109:9–10, about mid-5th century; Da Costa et al. 2002: Fig. 6:3, from a 3rd–4th century context). The type may be a distant development of Kefar Hananya form 1B as suggested by its apparent relationship to No. 14 (above).

**No. 15 (122.8).** RW of a cooking bowl [Fig. 5:15]. Fabric rather hard baked, brown, partly burnt to very dark grey, with some tiny white grits.

**No. 16 (123.1).** RW of a cooking bowl, sooted on the exterior [Fig. 5:16]. The same form and fabric as No. 15, fired to a deeper reddish brown color.

**No. 17 (125.7).** RWH of a cooking bowl with lug handle [Fig. 5:17]. Fabric dark grey (5YR4/2 dark reddish grey) with many white grits of all sizes; surface very coarse, outside fired reddish brown (near 5YR4/3 and 4/4), inside red (10R5/6). Similar lug-handled bowls from Gadara are dated on the basis of parallels to the

mid-5th century (Vriezen 2015: 133, Notes 230 and 234, Fig. XII.22:12 and 16), but the type is virtually the same as Nos 15–16, therefore it must have started not later than the 3rd century.

### JUGS/TABLE AMPHORAE(?)/JUGLETS

**No. 18 (118.2).** RNWB of a jug with ribbed body, standing on a small concave base; rim strongly deformed during firing [Fig. 6:18]. Fabric a very gritty light brown (near 7.5YR6/4) with voids, some medium to small black grits and a few very small white ones; surface fired reddish yellow (7.5YR6/6). A related form is known from Caesarea (Johnson 2008: Nos 435 and/or 445, undated), while a very similar body/neck/rim profile is represented by a table amphora (base not preserved) from Samaria, allegedly from the 1st century (Díez Fernández 1983: 191 and No. 140).

**No. 19 (121.4).** RNW of an oinoche jug [Fig. 6:19]. Fabric rather hard, dense, pink (5YR7/4), with occasional white grits (tiny to large) and some small black ones(?); surface the same as in the break. Jugs of a similar shape come from the Roman-period tombs in Pella (McNicoll, Smith, and Hennessy 1982: Pl. 133:17, from Tomb 13; McNicoll et al. 1992: Pl. 92:5, from Tomb 64), from a context dated to the second half of the 3rd century in Jerash (Rasson 1986: 68, Fig. 17:1), and from Gadara (Vriezen 2015: Figs XII.24:18 and XII.27:10–11), the latter with a range of parallels dating from the 3rd to 6th–8th(!) century (Vriezen 2015: 151, Note 287).

**No. 20 (122.3).** RNH of an amphoriskos (parts of both handles preserved) in “cooking ware” [Fig. 6:20]. Fabric red (2.5YR5/6) with rare black and more

numerous white grits. It is paralleled by fragments from Gadara (Vriezen 2015: Fig. XII.28:7) and Caesarea (Johnson 2008: No. 441, from a sealed locus, probably from the 4th century, and No. 496, undated).

**No. 21 (122.4).** RNH of a juglet with flanged neck in “white ware” [Fig. 6:21]. Fabric (both in the break and on the surface) is very pale brown (10YR8/3) with rare white and black grits. The form corresponds to Díez Fernández T 8.3 (1983: 197–198, Nos 199–200) with examples from southern and eastern Palestine dated to between the late 1st and late 3rd century, and to Capernaum type VAS 2 dated to between the late Hellenistic and the beginnings of the “middle Roman” (i.e., 1st/2nd century) period (Loffreda 2008b: 157). A comparable form comes also from a sealed context from the second half of the 4th century in Caesarea (Johnson 2008: No. 438), probably residual.

**No. 22 (122.5).** BW of a jug or small table amphora in “white ware” [Fig. 6:22]. The fabric (break and surface) is very pale brown with rare white and black grits. The size and shape resemble a jug, No. 18 (above); the wall, however, is ribbed. It is also similar to the “table amphora base” category of the early Roman assemblage from Jiyeh in the Sidon hinterland (Wicenciak 2016: Pl. 53), and a base of a jug from Caesarea (Johnson 2008: No. 435 with ribbed body, undated).

**No. 23 (125.3).** BW of a juglet with thick flat base and ribbed body, in “white ware” [Fig. 6:23]. Fabric white, rather porous; outer surface slightly darker (very pale brown). Form similar to Juglet Type 1, common in Jiyeh during the early Roman period, manufactured already in

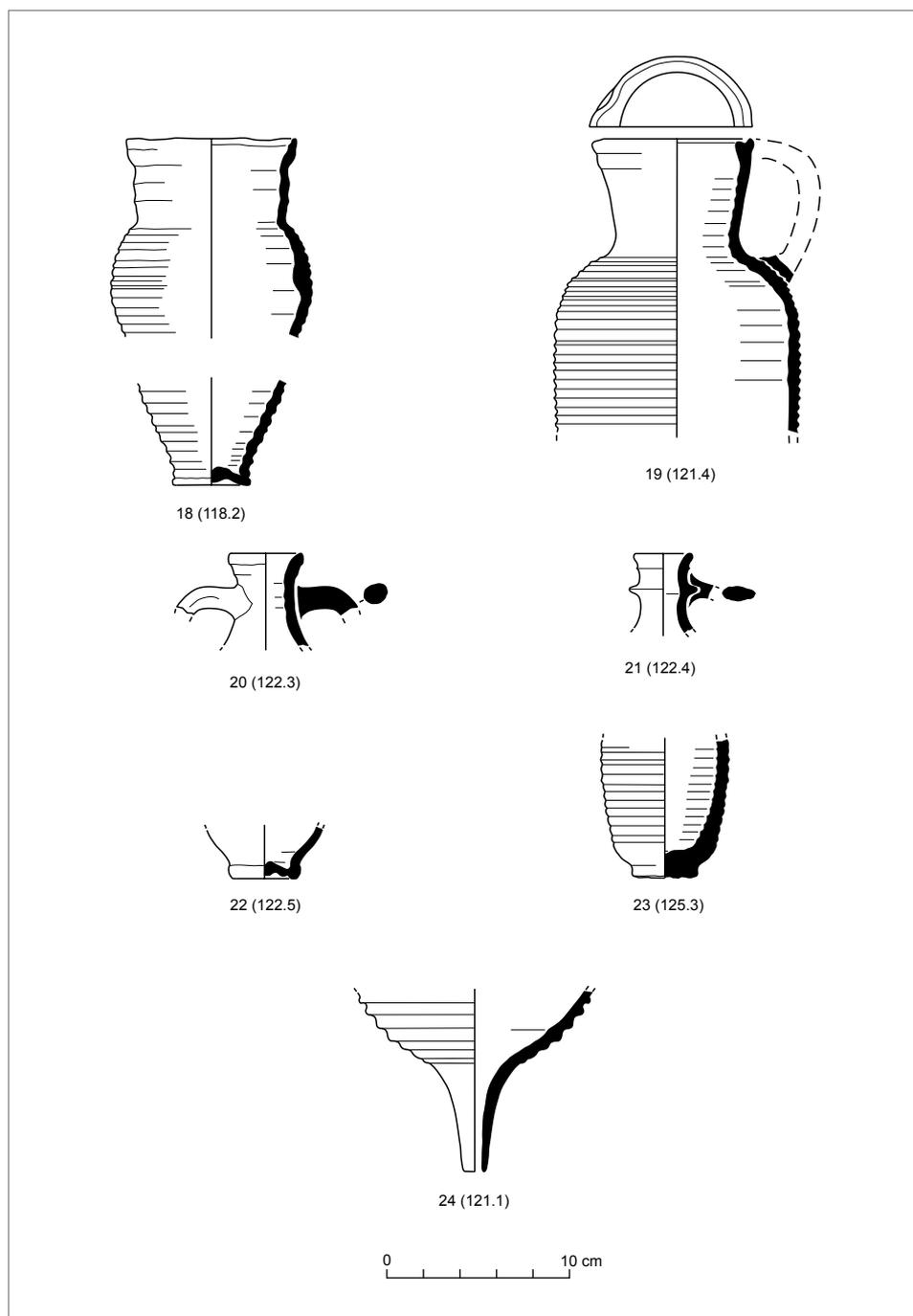


Fig. 6. Vessels from different contexts under FV and above FVI: jugs (Nos 18–19); amphoriskos (No. 20); juglets (Nos 21–23); funnel (No. 24); contexts indicated in brackets (PCMA UW Beit Ras Project | drawing M. Burdajewicz)

the late Hellenistic period (Wicenciak 2016: 84, Pl. 59: 277–282, different fabric). A similar vessel comes from a Roman-period tomb in Pella (McNicoll et al. 1992: Pl. 92:6), with more examples from Amman and Jerash attributed to the Roman period and beginnings of the Byzantine period (Díez Fernández 1983: 194–195, T 6.3); parallels from Hippos come from a deposit securely dated to the 3rd century AD (Kapitaikin 2018: Pl. 19:81–83).

#### FUNNEL

**No. 24 (121.1).** BW fragment of a funnel, in "white ware" [Fig. 6:24]. Fabric very pale brown (10YR8/3) with few tiny black and small white grits; some brown sediment inside. A fairly close parallel is known from the Roman-period Tomb 64 in Pella (McNicoll et al. 1992: Pl. 92:3). Apparently designed for filling bottles or narrow-necked jugs rather than jars.

#### CRATERS AND LEKANAI

**No. 25 (122.6).** RN of a krater or deep basin in "white ware" [Fig. 7:25]. Fabric very pale brown with small voids and some medium-sized white grits (surface eruptions). A parallel shape in the same ware is known from Gadara (Vriezen 2015: Fig. XII.26:1); a similar form attested in early Roman Beirut pertains to a group of large open forms in a fabric, which is clean, well-fired and whitish or pink in color, possibly from the Antioch area (Pellegrino 2007: 153, Fig. 14:15).

**No. 26 (123.4).** RN/W of a krater(?) [Fig. 7:26]. Fabric dense, brownish red with many white grits; surface red to pale red. A similar vessel in a different fabric was found under FII excavated in 2015 in the

Central North trench (Młynarczyk 2018: Fig. 34:48).

**No. 27 (125.1).** RW fragment of a lekane [Fig. 7:27]. Fabric reddish yellow (5YR6/6) with some small black grits, many tiny white grits and some small oblong voids; surface light red (2.5YR6/6) with occasional large white eruptions. A similar fragment from Jerash is dated to the 3rd century AD (Clark et al. 1986: 248, Fig. 20:17); the form is related to lekane Type 1 from early Roman Jiyeh (Wicenciak 2016: Pl. 78, No. 354), comparable also to a Caesarea example from a sealed locus dated to roughly the mid-1st century or slightly later (Johnson 2008: 43, No. 347).

**No. 28 (125.2).** RW fragment of a lekane or basin [Fig. 7:28]. Fabric dense, red, with many small white grits; surface smooth, dark red. The form is comparable to Capernaum type PIAT 46, dated between the 3rd and 5th centuries (Loffreda 2008b: 240), with a similar vessel coming from Gadara (Vriezen 2015: Fig. XII.26:4). A basin of comparable profile from Caesarea is classified with the so-called North Syrian mortaria, a category manufactured in an area much wider than North Syria, and dated to the 3rd and early 4th century (Johnson 2008: 38, No. 278).

#### FINE WARES

**No. 29 (122.11).** R of an ESA bowl [Fig. 7:29]. Fabric reddish yellow (5YR7/6) with some tiny white grits; surface very pale brown (10YR8/4) with a worn red slip (2.5YR5/8). Probably form 50, common in the time between 60/70 and 100 or later (Hayes 1985: 37).

**No. 30 (125.6).** RW of a small ESA plate [Fig. 7:30]. Fabric dense, reddish

yellow (5YR7/6), with some tiny red grits(?); slip red, smooth (10R5/8). Form 57, dated to the first half of the 2nd century (Hayes 1985: 39; Johnson 2008: No. 248), or Form 59 of the same date (Hayes 1985: 40; Johnson 2008: No. 250).

**No. 31 (123.2).** BW of a bowl in Color-Coated ware [Fig. 7:31]. A pinkish beige (very pale brown) fabric of granular texture with fine white, dark brown and occasional larger reddish grits; some white lumps on the surface; slip brown inside, orange-red

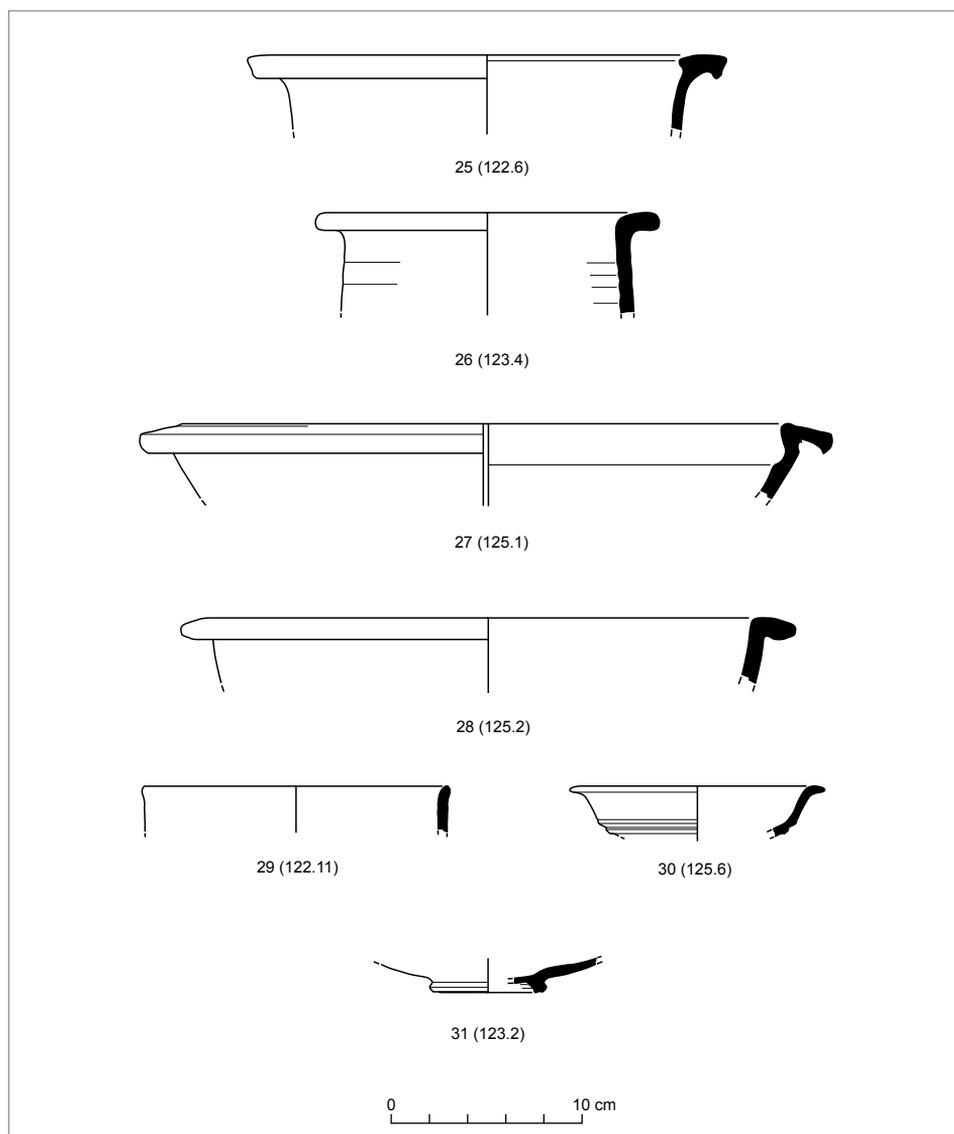


Fig. 7. Vessels from different contexts under FV and above FVI: kraters(?) (Nos 25–26) and lekanai (Nos 27–28), fine wares (Nos 29–31) (PCMA UW Beit Ras Project | drawing M. Burdajewicz)

with darker spots outside, not covering the base. Possibly a Jerash workshop of the 1st century (Braemer 1989: Fig. 2:4).

Not illustrated here are the three fragments of ARS ware, specifically, a floor fragment of a flat-based dish, Form 58, dated to about 290–375 (Hayes 1972: 93–96), from context B121 (below FV), and two fragments of Form 50A, dated to about 230/240–360 (Hayes 1972: 73), found in contexts B123–124 (below FVI).

**LOCAL JARS**

While contexts B118–B119 below FV yielded some sherds of “Beisan” type jars characteristic of the Byzantine and Umayyad periods, 5th to 8th centuries (e.g., Vriezen 2015: Fig. XII.8–9 and Pl. XII.1; Młynarczyk 2017: Fig. 7), possibly intrusive from the adjacent robber pit, they were totally absent from contexts B121–B126, in which the jar fragments were of fabric(s) fired in shades of pink

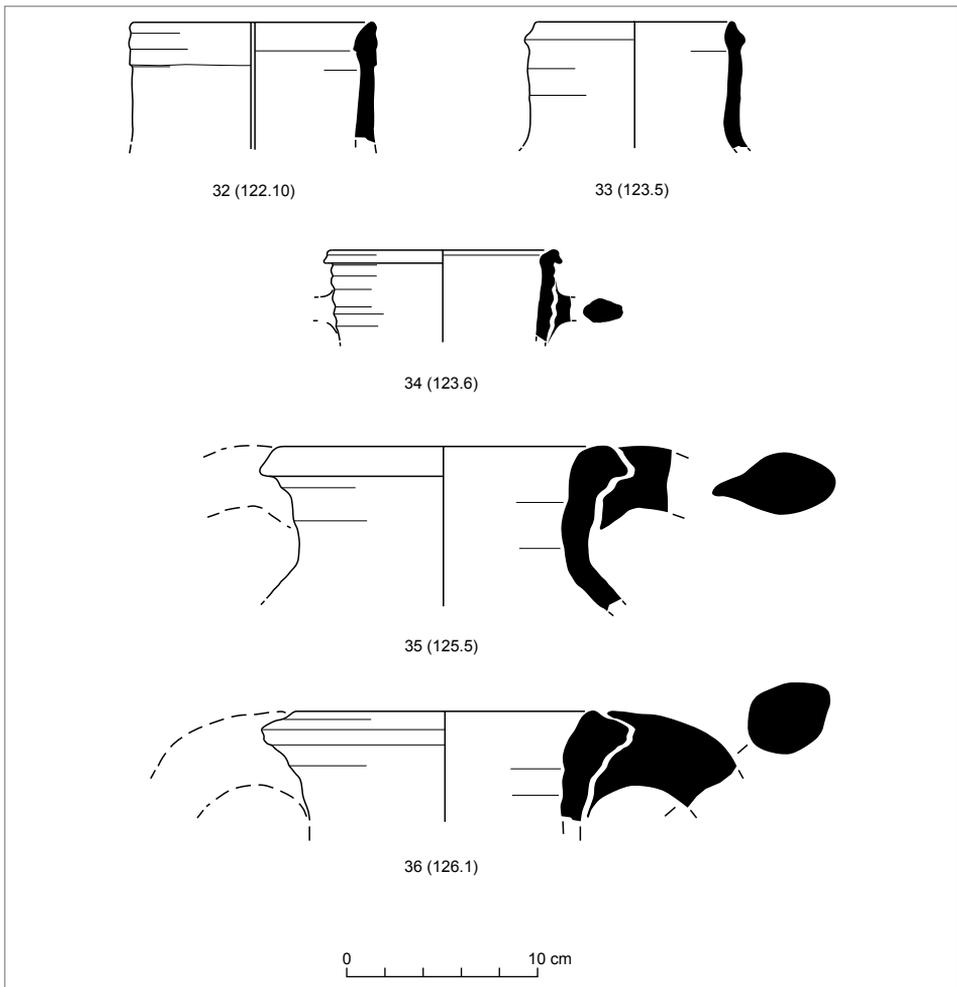


Fig. 8. Vessels from contexts on and below FVI: jars Nos 32–33 and amphorae Nos 34–36 (PCMA UW Beit Ras Project | drawing M. Burdajewicz)

and beige to light brown, with very pale brown (“white”) external surface. Their rim is thickened outside, the lowest part of the neck (or sometimes the top of the shoulder) features a ridge, and the body is ribbed [Fig. 9].

**No. 32 (122.10).** RN of a jar [Fig. 8:32]. Fabric hard baked, light pink with rare tiny white grits and occasional oblong voids; smooth very pale brown (“white”) surface. Close to a fragmentary rim from a 3rd–4th century context in Pella (Da Costa et al. 2002: Fig. 8:5), and to jars from Caesarea classified as Riley Caesarea Type 1A shape dated from the 2nd to the 4th centuries (Johnson 2008: 87, Nos 1019 and 1023).

**No. 33 (123.5).** RN of a jar [Fig. 8:33]. Fabric dense pink with few white grits, including occasional eruptions; smooth, very pale brown surface. The same general type and fabric as No. 32 (above) and a jar/jug fragment retrieved from under FII in 2015 (Młynarczyk 2018: 189, Fig. 34:47). Similar rims in the same ware come from the 3rd century contexts at Jerash (Clark et al. 1986: Fig. 20:8) and Hippos (Kapitaikin 2018: Pl. 17:68), as well as from a 3rd–4th century context in Pella (Da Costa et al. 2002: Figs 8:8 and 10:6). They seem to correspond to Riley Caesarea Type 1A Shape, dated from the 2nd to 4th centuries (Johnson 2008: Nos 1018, 1021).

#### IMPORTED AMPHORAE

**No. 34 (123.6):** RNH of an amphora [Fig. 8:34]. Fabric pale pink with small white and dark brown inclusions and voids; surface of the same color as the break (“white ware”). The shape corresponds to Amphora Type 6 (=Beirut 2) from Early Roman Jiyeh, dated

to between the mid-1st and beginning of the 2nd century AD, with production places attested so far in Beirut, Jiyeh and Heldua (Wicenciak 2016: 77–78, and Pls 44–45). Despite this formal parallel, the fabric of No. 34 is completely different from that of the Lebanese examples, being close instead to the “white ware” represented by several finds from the Beit Ras assemblage under discussion (Nos 21–25), the origin of which remains unknown.

**No. 35 (125.5):** RNH of a transport amphora [Fig. 8:35]. Fabric very pale brown with some small white grits, occasional red inclusions and many small voids; surface color very pale brown, similar to the break, with some white eruptions. Type Almagro 50/Keay XVI or XXII from the Iberian Peninsula, manufactured in Lusitania (Portugal), but also in the Strait of Gibraltar area and in many places in southern Spain, between the first half of the 3rd and the 5th century; it was intended for carrying fish products (Quevedo and Bombico 2016: 312–313, and Fig. 6:1–2). Two comparable fragments from Caesarea have been identified as Keay Amphora Type XVIA, dated to between the late 2nd and mid-4th century (Johnson 2008: 104, Nos 1245–1246).

**No. 36 (126.1).** RH of a transport amphora [Fig. 8:36]. Fabric reddish yellow with some white grits, from small to large, with occasional sizeable voids; surface very pale brown. The same type and dating as No. 35 (a variant fabric).

#### OIL LAMPS

Very few fragments of lamps were discovered, apparently parts of just



Fig. 9. Fragments of local jars from contexts B121 and B123 (PCMA UW Beit Ras Project | photos J. Młynarczyk)



Fig. 10. Fragments of oil lamps from B118 (left) and B125 (right) (PCMA UW Beit Ras Project | photos J. Młynarczyk)

three different objects, found in B118, B121 (both below FV) and B125 (below FVI) respectively [Fig. 10]. Despite the stratigraphical difference, they seem to represent a single type described as “Round-bodied, no discus” lamps, rather broadly dated to between the late 2nd and 4th century (Da Costa 2010: 73, Figs 3–4).

Judging by their fabrics, however, they come from two different produc-

tion centers. Lamp fragment B118 is of a soft, very pale brown fabric with occasional large white grits on the surface, preserving remains of very dark grey (almost black) slip. Fragments of two other lamps, retrieved from B121 and B125, both made in worn moulds, are of a pink fabric, containing some tiny white and some dark (red) grits, covered with ill-preserved red slip.

## POTTERY FABRICS AND SOURCES

Most of the vessel functional categories include more than one ceramic fabric, macroscopically distinguished by the color and scope of mineral inclusions in the clay matrix, as well as by the surface treatment. The logical conclusion is that the pottery supplying Capitolias came from several different sources. Setting aside such obvious pottery importations as the ESA ware (from northern Levant?), ARS ware (from northern Africa) and transport amphorae from the western Mediterranean (Iberian Peninsula), the remainder should be considered as local and regional pottery. Considering that the territory of Capitolias bordered upon Abila, Gadara and Pella, it is only to be expected that these cities were not only interconnected, but that they also could have shared some external trade contacts.

The variability of the cooking vessel fabrics is remarkable and should be treated as testimony to several different production centers, even if difficult to pinpoint exactly. Thus, a gritty bright red fabric with white mineral inclusions occurs either with dark external “skin” (No. 1 of CP form 1a), or with a dark reddish brown surface, slightly “metallic”

in appearance (Nos 2–3 of CP form 1b) [Fig. 11 top]. The latter, on account of its frequency in the Central North trench (several unregistered smaller fragments), may be considered as local to Capitolias. Next, cooking pot No. 4 shares fabric and firing characteristics with lid No. 8; there is hardly any doubt that both came from one center. A most interesting couple of sherds, apparently from one workshop, are the thin-walled cooking pot No. 5 and casserole No. 9 [Fig. 11 center], perhaps also cooking pot No. 7 [Fig. 11 bottom left]; all three share a similar orange-fired surface and can be tentatively attributed to a Jerash workshop. Another cooking pot fabric, beige-pink (No. 6), could be connected with a center at Pella; exactly the same form of cooking pot with a kind of very pale brown wash (fabric brown with partial grey core, some white grits including eruptions; semi-transparent greenish/grayish wash on the exterior) is known from B123 [Fig. 11 bottom right]. Finally, two cooking pot rims from B126 apparently represent a genuine Galilean Kefar Hananya ware.

With regard to the cooking bowls, the fabric in at least two cases (Nos 10–11)

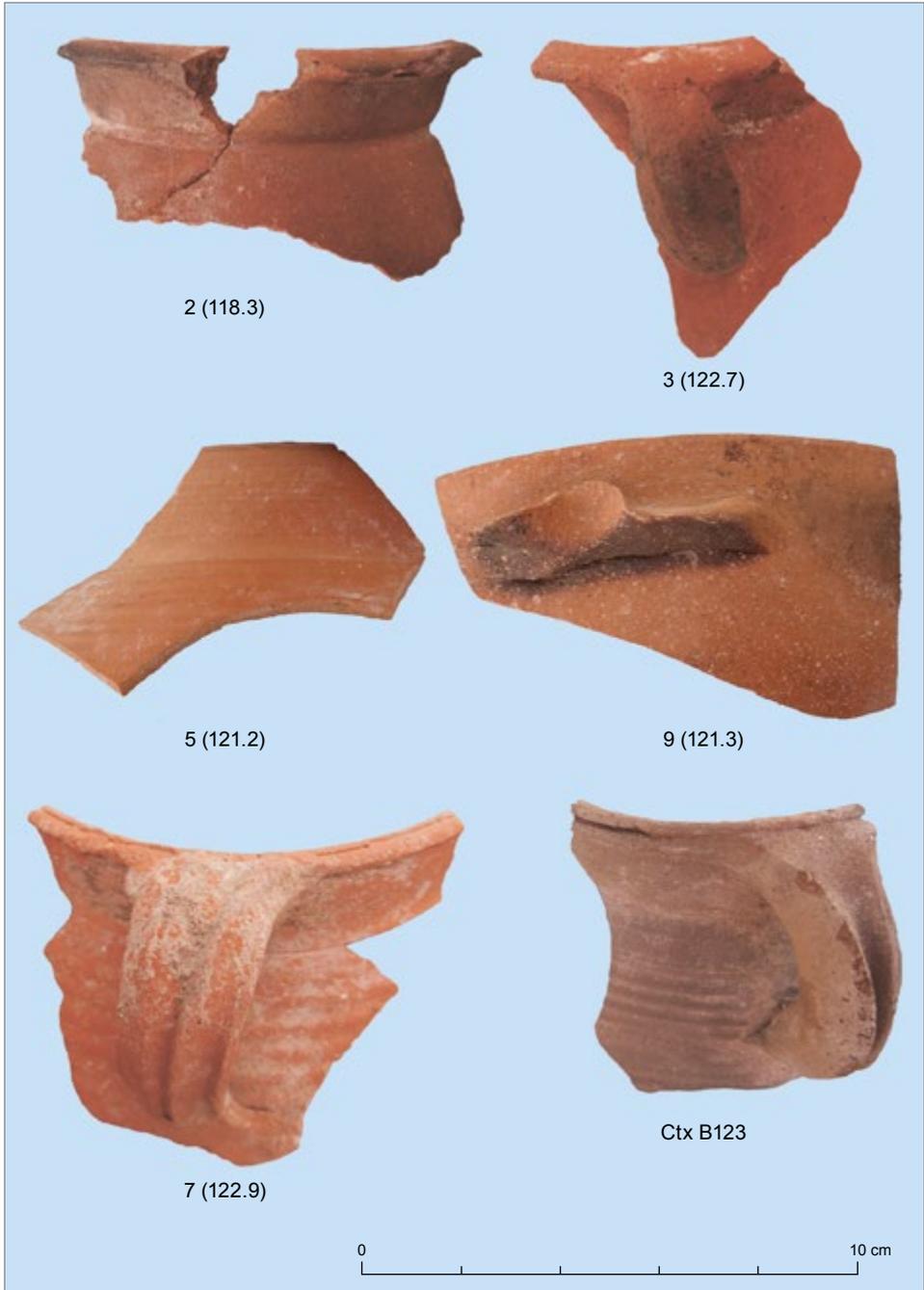


Fig. 11. Fragments of cooking vessels: top, cooking pots of local Capitolias production; center, cooking pot (on the left) and casserole of Jerash production; bottom, cooking pot of Jerash production (on the left) and cooking pot possibly made in Pella (PCMA UW Beit Ras Project | photos J. Młynarczyk)

seems to be a faithful imitation (rather than a genuine product) of the Kefar Hananya ware. However, the fabric of other derivatives of the Kefar Hananya type of “Galilean bowls” (Nos 12–14) is completely different and for now still of undetermined origin. Of these, bowl No. 14 is of the same fabric as Nos 15–16 which pertain to a type rather common in the Decapolis [Fig. 12]; the characteristics of this ware may indeed indicate a local (or southern Golan?) provenance. However, the fabric of No. 17, which represents the same form as Nos 15–16, differs in that it has an abundant admixture of white grits visible both in the break and on the surface.

The group of small and middle-sized closed forms is no less heterogeneous as far as fabric is concerned. The fabrics of jugs Nos 18–19 look fairly similar and may be considered local to Capitolias, given the fact that jug No. 18 cannot be anything else than a waster from a local potter’s workshop [Fig. 13]. It is also interesting to note the visual resemblance of their fabric to the low-fired fragments

of a domestic installation (an oven or kiln) found in several contexts [Fig. 14], both above and below F VI. The fabric of amphoriskos No. 20 is comparable to that of cooking pots Nos 2–3 (local to Capitolias?). Other fragments of juglets/jugs, specifically Nos 21–23, are in what is called “white ware” [Fig. 15 bottom]. Their fabric, based on calcareous (marly) clay, is in shades of white and very pale brown, with the same or similar color of the surface, occasionally slightly porous, including a few white and sometimes tiny black grits. Two other vessel forms: funnel No. 24 and krater/deep bowl No. 25 [Fig. 15 top] are in the same ware, while a related fabric is represented by amphora fragment No. 34. Considering the variety of vessel forms made in “white ware”, one should suppose that the source of this ware must have been in a locality that enjoyed a favorable connection with Capitolias. The fabrics of other large-size open vessels (Nos 26–28) are fired in shades of red, their surface color ranging between pink/light red and red, possibly related to each other in terms of

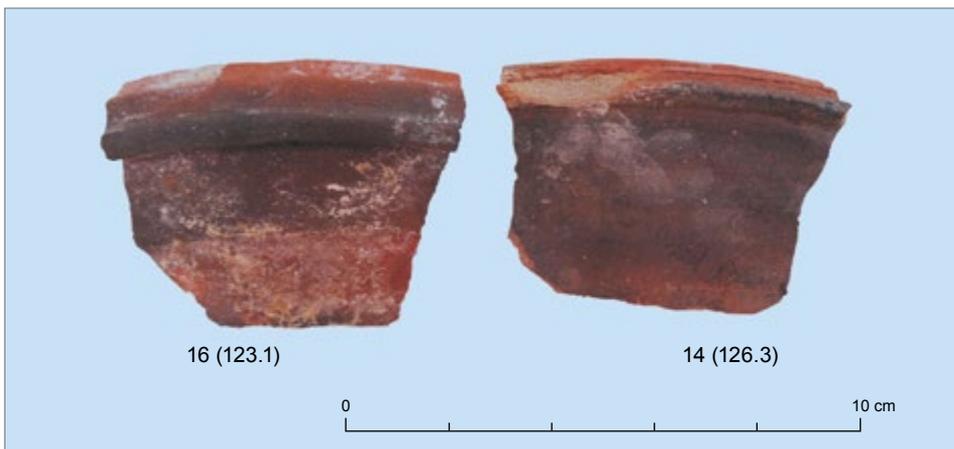


Fig. 12. Fragments of cooking bowls (PCMA UW Beit Ras Project | photo J. Młynarczyk)

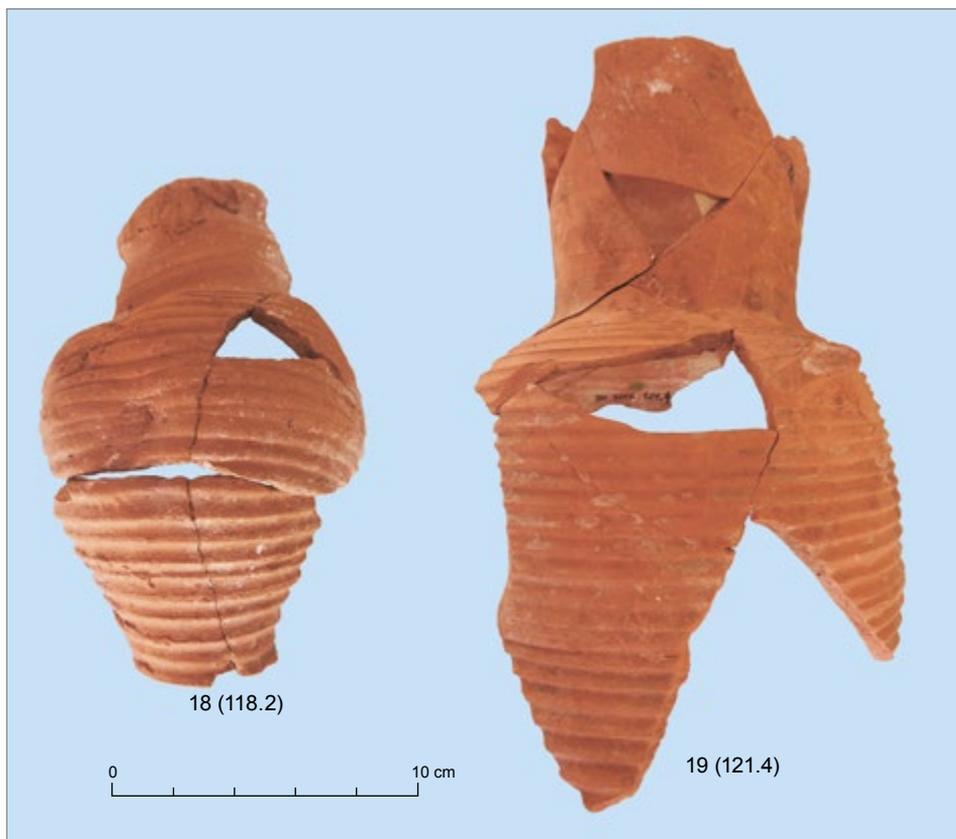


Fig. 13. Jugs (PCMA UW Beit Ras Project | photos J. Młynarczyk)



Fig. 14. Pieces of an oven or kiln body from B121 (PCMA UW Beit Ras Project | photo J. Młynarczyk)

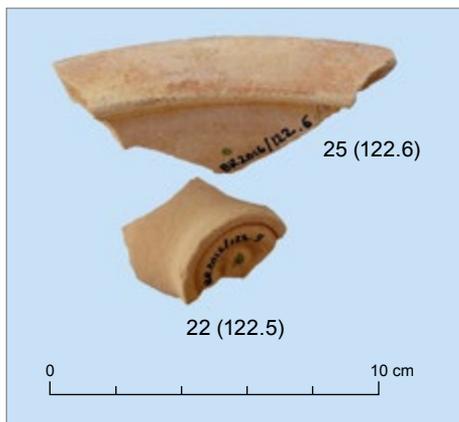


Fig. 15. "White ware" vessels: top, rim of krater/lekane; bottom, base of jug/amphora (PCMA UW Beit Ras Project | photo J. Młynarczyk)

the production centers. As for the local/regional jars of the bag-shaped type, especially those from contexts B121–B126, it is not possible to pinpoint their exact provenance, but it is obvious that their fabric is homogeneous, fired in shades of

pink and beige to light brown, with very pale brown (“white”) external surface [see *Fig. 9*]. It seems to match the fabric of lamp fragments from B121 and B125 [see *Fig. 10*], additionally covered with an ill-preserved red slip.

## CHRONOLOGY OF THE CITY WALL

Not being able to reach the original construction level of the city wall, it was impossible to place a precise date on it. However, the chronology of “habitation” levels connected with the defences could be determined. Contexts B123–B126 underlying the only undisturbed floor, FVI, contained no potsherds later than the 3rd century. Except for ESA fragment No. 30 and Color-Coated bowl No. 31 [see *Fig. 7*] of the 1st century and first half of the 2nd century, other potsherds of potentially earlier Roman date include juglet No. 23 [see *Fig. 6*] and amphora No. 34 [see *Fig. 8*], perhaps also cooking bowl No. 13 [see *Fig. 5*]. The latest dated ceramics below the floor FVI include Decapolis-type cooking bowls Nos 14 and 16–17, dated to the 3rd–4th century [see *Fig. 5*] and a rim of a cooking bowl of the Kefar Hananya type form 1C from the mid-3rd to the latter part of the 4th century (Adan-Bayewitz 1993: 98–100), coming from context B123 (not illustrated). A sound dating of FVI is set in two fragments of Iberian amphorae Almagro 50/Keay type XVI or XXII from between the first half of the 3rd through the 5th century [*Fig. 8:35–36*], fragments of a lamp of late 2nd- to 4th-century date [see *Fig. 10* right], as well as a fragment of ARS ware form 50A dated to 230/240–360 (see above). A 3rd-century dating may also be assigned to lekanai

Nos 27–28 [see *Fig. 7*] and jar rim No. 33 [see *Fig. 8*]. Consequently, the construction of FVI can be placed safely in the late 3rd or early 4th century.

The chronological range demonstrated by the pottery from the floor deposit B122 on FVI is very similar to that of potsherds found below the floor: cooking pots Nos 3 and 7 [see *Fig. 4*] and cooking bowls Nos 10–11 and 15 [see *Fig. 5*], of which the latest type, Kefar Hananya form 1E [*Fig. 5:11*] is dated between the mid-3rd and the earlier 5th century. Other forms in this deposit include juglets Nos 20–22 [see *Fig. 6*], krater No. 25 and ESA bowl No. 29 [see *Fig. 7*], as well as jar rim No. 32 [see *Fig. 8*]. The pottery found in other contexts above FVI and below FV is to a large extent similar to that below FVI. A possible explanation is that the leveling layer under FV was formed of a dump containing material from the 1st/2nd to 3rd centuries. Therefore, FV, disturbed by the robber pit could be late Roman, 4th to 5th century (Młynarczyk 2017: 500), just as well as later, 5th to 6th century?

It has already been pointed out that FVI from the 3rd century was the earliest level reached but it did not constitute the original walking level connected with the wall. It has been estimated that the construction of the defences did not take place later than the 2nd century

(Młynarczyk 2017: 498–499). However, a small section of the city wall that abuts the western side of the theater not only seems to be an extension of the wall course as discovered in the Central North trench in 2015–2016, but also reveals exactly the same masonry style [Fig. 16], suggesting that both sections are contemporaneous. Since the theater is considered to be a 2nd century structure (Al-Shami 2005: 511), and the wall abutting it must have been added at a later date, the question of both relative and absolute chronology of the defences

of Capitolias deserves further in-depth study.

The earliest dated potsherds from the Central North trench, regardless of their stratigraphical context (B number), testify to the first phase of habitation at the site, occurring from the second half of the 1st century (e.g., Nos 29–31), thus confirming the supposition that Capitolias was founded as a polis only at that time (Młynarczyk 2017: 473). On the other hand, the almost total absence of fine wares confirms the domestic character of this sector of Capitolias.



Fig. 16. The connection of the city wall section (on the left) with the theater wall (on the right) (Photo J. Młynarczyk, 2011)

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# Unwrapping the micro-history of a house cistern from ancient Akrai/Acrae (southeastern Sicily)



**Abstract:** The paper looks into the turbulent history of the ancient town of Akrai/Acrae in a mountainous part of southeastern Sicily, encapsulated in the assemblage of finds from a domestic cistern, which was remodeled and adapted in the course of its use. The cistern is considered as an architectural feature against the background of the ancient town, and the assemblage recovered from it is examined thoroughly, category by category, giving insight into the life of the ancient inhabitants of this island in the Mediterranean.

**Keywords:** Akrai/Acrae, Sicily, micro-history, cistern, archaeological repertoire

Ancient dwellings, like modern ones, were full of objects that are undeniable facts of everyday life (Sudjic 2008). For archaeologists, they enhance the pool of knowledge on human and natural activities in the past, rendering even apparently ordinary material (pottery, glassware, coins, oil lamps) informative and fostering a better understanding of the history of an ancient town, Akrai in southeastern Sicily in this case.

The paper presents the results of archaeological excavations carried out by the Archaeological Mission of the University of Warsaw at Akrai/Acrae (modern Palazzolo Acreide, southeastern Sicily) [Figs 1, 2], in collaboration with the Parco archeologico di Siracusa (earlier Polo

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Regionale di Siracusa per i siti e musei archeologici Museo Paolo Orsi). The ancient town was founded by Syracuse about 664/663 BC and was inhabited continuously through late antiquity (Chowaniec 2017: 126–130). But despite numerous archaeological and historical studies, a detailed history of the town is still in the writing (Chowaniec 2015a) [Fig. 3].

The houses excavated in the decade between 2009 and 2019 presented plans going back to the end of the 3rd century BC. Earlier construction phases of these buildings are not known. The houses seem to have been built during the final years of Hiero II, tyrant of Syracuse, and/or at the onset of the official Roman administration (after 212 BC). Coins extracted from

the wall structures included one minted in Syracuse, dated to after 214 BC, but with evidence of decently long circulation (Calciati 1983–1987: type CNS I:235), and another one from the mint in Tauromenium, struck at about the same time (Calciati 1983–1987: type CNS III:9) have corroborated this assumption.

The archaeological context featured in this paper, a house cistern, was discovered in a building comprising a number of rooms around a small central courtyard with modest remains of a portico. The courtyard may have been larger, having rooms only on the western and eastern sides, and was reduced in size at some point to make room for more chambers. There were four rooms in the eastern



Fig. 1. Map of Sicily with location of studied area (After Uggeri 2004 | processing P. Zakrzewski)



Fig. 2. Acremonte hill, view from the southwest (Archaeological Mission at Akrai | photo R. Chowaniec)



Fig. 3. Orthophotomap of the archaeological site with excavated structures (Archaeological Mission at Akrai | photo M. Bogacki, processing R. Chowaniec)

wing. Of these, three (Nos 3, 4, and 5) belonged to the initial house plan, while the fourth (No. 8) may have been the original entrance to the house. Shortly after construction, the building appears to have been enlarged and adapted, and it might have also changed owners. New divisions were introduced, creating new and stately rooms, which subsequently led to a rearrangement of the rooms and alterations of the painted decoration (Chowaniec, Lanteri, and Żelazowski 2018). Very well-preserved floors, made in the *cocciopesto* and *opus signinum* techniques (Room 6) were recorded. The latter technique, with geometric decoration made of white marble tesserae, was introduced to Sicily at the end of the 3rd century BC, gaining in popularity from the 2nd century BC on (for techniques and parallels, see De Vos 1975; Tsakirgis 1990: 427–428, 431–432, 434–435, 439, Nos 2, 33, 74; Brem 2000: 73–74; Zirone 2011: 169–174, 182–185; Tortorici 2016: 131–132, 286, No. 10). There is substantial proof of rooms with *opus signinum* floors being reorganized in the 1st century BC (Wilson 2000: 152) and this may have been the case of Akrai as well. In some rooms (Nos 3 and 6), the lowermost parts of the walls bore slight traces of painted plaster with remains of imitation-marble fresco painting (*afinto marmo*) (Falzone 2010) contemporary with the pavements. Two layers of fresco painting were identified in both of the rooms. The first layer was composed of creamy-yellow *arriccio*, white engobe, decorated with *crustae marmoreae*; this type was adopted in Sicily in the 2nd century BC (La Torre 2011: 270–273; Barresi 2014; Barresi and Guarneri 2018) and characterised the first style of painting inspired by the decoration of residences of Hellenistic

rulers. Thanks to *intonacco* applied in two layers, it was possible to observe traces of fresco painting on a red background, laid on a thin ground coat [Fig. 4].

The reconstructed and adapted house fulfilled a residential function until the mid-4th century AD, when it was badly damaged as a result of a series of earthquakes and eruptions, in the 350s–370s, which affected Akrai on a par with many other Mediterranean towns (Chowaniec 2015a: 67–69). For the two decades after that there seems to have been no activity, but by the end of the 4th century AD a revival was recorded in this part of the town. This late antique phase was characterized by inferior structures, a random choice of secondarily adapted architectural elements and solely production-related and economic activities (Chowaniec 2017: 166–170).

The town was in dire need of water from the start, particularly when the local ground water deposits in Plio–Quaternary deposits in the Hyblaean Mountains started to be overexploited by a growing population. Many wells were dug, which depleted these resources. Water supplies were supplemented with rainwater collected in cisterns, which were present in virtually every house excavated at Akrai.

The water reservoir discussed in this paper was situated slightly southwest of the middle part of a small courtyard within the house. The upper outlet was on the eastern side of the structure, below the inlet (at 764.77 m asl). The position of the cistern, as well as the said outlet, may suggest that a kind of *impluvium* USM.2 (looking from the west); location of the cistern inlet marked with a circle was located to the east, toward the middle of

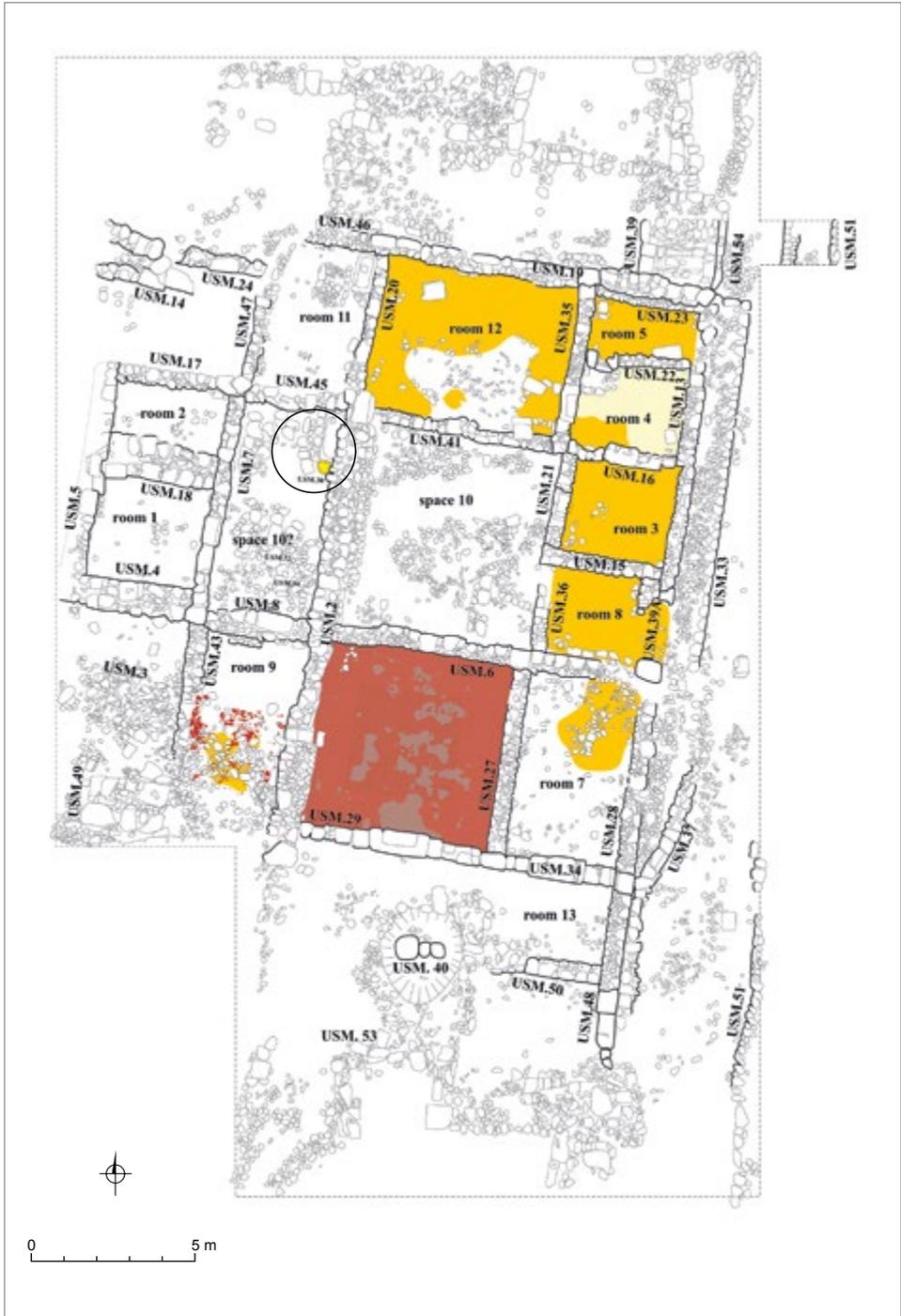


Fig. 4. General plan of the excavated area in the discussed residential area ; location of cistern marked with a circle (Archaeological Mission at Akrai | drawing M. Woińska, R. Chowaniec, P. Zakrzewski)

the original courtyard. The upper inlet measured 0.50 m by 0.60 m and was fitted with well-dressed stone blocks. The cistern was in the shape of a bell dilating toward the bottom with a relatively narrow neck at the top. Up to 1.50 m from the inlet it

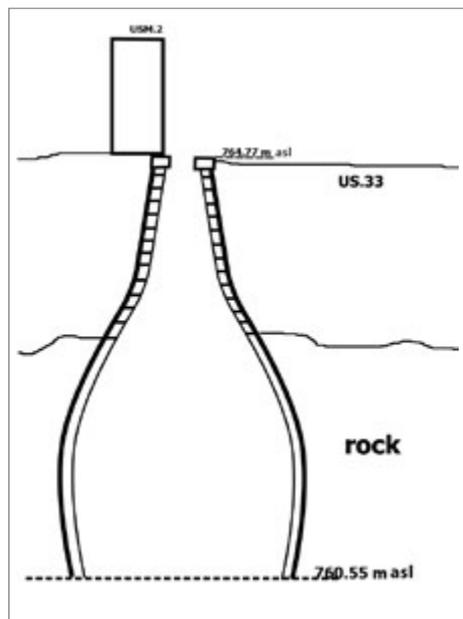


Fig. 5. Cistern with wall USM.2, section looking south (Archaeological Mission at Akrai | drawing R. Chowaniec)

was made of small, tightly fitting and well dressed stones bonded with mortar mixed with fine volcanic sand (grain size 1.5–2.0 cm). Below, it was carved into the rock and its walls were plastered [Fig. 5].

In the reuse phase, the upper inlet of the cistern partly overlapped a stone structure and wall No. 2. The secondary exploitation of the reservoir was also confirmed by a structure constructed over the inlet and to its north, presumably at the end of the 4th century AD. A broad ‘tub’ made of a reused cracked stone slab was set next to the western face of the wall, on a layer of compact soil mixed with rubble. In the middle, a long shallow groove was carved alongside it, whereas the southern corner was pierced through so that water could dribble directly into the cistern. The whole installation was precisely fitted with reused stone blocks in order to make it stable and—by elevating it—ensure comfortable usage [Fig. 6].

Exploration of the cistern yielded material mainly from the backfill. The earth falling inside the reservoir formed a cone in the center. Heavier items, from the secondary exploitation phase, slipped to the sides.

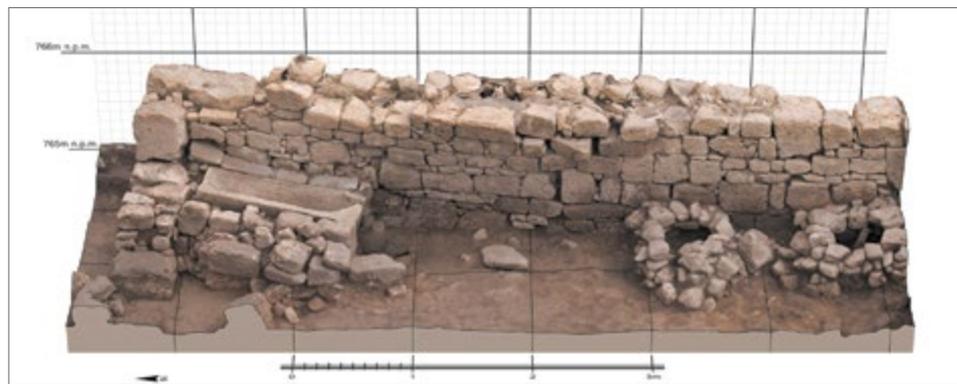


Fig. 6. 3D model of the cistern, wall and late antique structures (Archaeological Mission at Akrai | 3D model processing J. Kaniszewski)

## MATERIAL CULTURE

### NUMISMATIC FINDS

The backfill of the cistern contained 22 ancient coins, all made of copper alloys. They were attributed to five arbitrary layers [Table I]. Numismatic finds first started to appear at a depth of 762.65 m asl, some about 2 m below the cistern inlet. The coins from the fifth, lowest level were found only 25 cm above the bottom of the reservoir (760.50 m asl).

The coins are classified into two principal groups: seven items were Hellenistic and early Roman issues of Sicilian mints, mainly Syracuse, dated from the late 4th to the 2nd century BC, whereas the remaining 15 are the smallest Late Roman denominations struck between the mid-4th and the 5th century AD. Apart from the upper layers, these finds appear together throughout the subsequent levels of the backfill. Being secondary deposits in much later contexts, the Hellenistic–early Roman coins give no information of chronological significance. However, an analysis of the Roman coins from the cistern contributes to a more precise dating of the structure, especially with regard to when it ceased to function as a reservoir and was probably backfilled.

Level 5, close to the bottom (below 761.15 m asl), 0.65 m thick, yielded five coins, including three Hellenistic and two late Roman. A hiatus of approximately 20 cm between two clusters of finds resulted in a division of the level into two parts: A and B, but the similarity of the numismatic material indicated that it was in fact the same stratigraphic unit. The late Roman coins from this level, VOT XX MVLV XXX, belong to the

same type issued by Constantius II and by Constans. Both were struck in mints of the Eastern Empire roughly at the same time, around AD 347 or 348. Their state of preservation is good, better than most late Roman bronze artifacts from the upper layers of the backfill, which are chronologically later; it could suggest a short time between their issue and the time when they reached eastern Sicily and were deposited ultimately in the cistern.

Level 4 (761.5–761.15 m asl) yielded nine coins, including two Hellenistic ones (both are only 10 mm in diameter and weigh 0.78 g and 0.88 g); five diagnostic bronzes of nominal value AE 4; and two unidentified ones of minimal size. Among the identifiable coins, three were of the SALVS REI PVBLICAE type showing advancing Victory dragging a captive, whereas the issuer, Arcadius, could be identified in only one case (*RIC IX*: 234, No. 86c, mint in Constantinople). They could have not been minted prior to AD 383. The fourth coin was also struck in the reign of Arcadius (*RIC IX*: 184, No. 48b, mint in Thessalonika), but represents the VOT V type, with a laurel wreath, from the years AD 383 to 388. Finally, there is a coin of the VOT X MVLV XX, type with laurel wreath, most likely with a portrait of Theodosius I, the dating of which may be suggested between AD 378 and 383 (*RIC IX*: 196, No. 19c, mint in Heraclea). These coins clearly show a coherent chronology, which may be narrowed to the AD 380s as their minting date. Notably, the SALVS REI PVBLICAE type

Table I. List of numismatic finds from the cistern context  
asl – above sea level, Den. – denomination, Wg. – weight, Dia. – diameter

asl	Den.	Mint	Wg.	Dia.	Axis	Short description	Dating	Reference
<b>Level 1: above 762.50 m asl</b>								
762.65	AE 4	?	1.50	13	?	Illegible late Roman bronze coin Bent	After second half of 4th century AD	
<b>Level 2: 762.50–762.00 m asl</b>								
762.15	AE 4	?	1.05	11	180	Victory dragging captive type, presumably SALVS REI PVBLICAE Poor state of preservation	About AD 383–450	?
762.08	AE 4	Aquileia	1.38	12	0	Magnus Maximus, SPES ROMANORVM gate type Very good state of preservation	AD 387–388	RIC IX: 105 No 55a
762.08	AE 4	?	0.61	8	180	Cross within wreath type (Theodosius II?) Very poor state of preservation	About AD 425–435 (Theodosius II)	See RIC X: 275 Nos 440–455
762.08	AE 4	?	0.88	10	?	Type with cross? Very poor state of preservation	First half of 5th century AD	See RIC X: 275 Nos 440–455
<b>Level 3: 762.00–761.50 m asl</b>								
761.83		Syracuse	5.52	20	60	Apollon/Gorgoneion type Poor state of preservation	About 317–310 BC (Agathocles)	CMS II: 121; BAR 5
761.65	AE 4	Aquileia	1.01	13	0	Arcadius / Victory dragging captive SALVS REI PVBLICAE type Good state of preservation	About AD 388–394	RIC IX: 107 No. 58c

Table I (continued)

asl	Den.	Mint	Wg.	Dia.	Axis	Short description	Dating	Reference
761.61		Syracuse	6.64	20	270	Head of Zeus / Nike driving <i>biga</i> type Good state of preservation	After 214 BC	CNS II: 229; BAR 100
<b>Level 4A: 761.50–761.30 m asl</b>								
761.44	AE 4	Thessalonica	0.60	15	180	Arcadius, type VOT V within wreath type Mediocre state of preservation	AD 383–388	RIC IX: 184 No. 48b
761.33		Syracuse?	5.93	20	210(?)	Head of Kore/Nike driving <i>biga</i> type? Very poor state of preservation	Late 3rd/2nd century BC(?)	CNS II: 123–131; BAR 38 cf.
<b>Level 4B: 761.30–761.15 m asl</b>								
761.23	AE 4	?	0.93	12	180	Unidentified Emperor, Victory dragging captive SALVS REIPUBLICAE type Poor state of preservation	About AD 388–395	See RIC IX: 136 No. 69 (Rome); 262–263 No. 45/48 (Nicomedia)
761.23		Syracuse	5.32	20	330	Head of Zeus / Nike driving <i>biga</i> type Mediocre state of preservation	After 214 BC	CNS II: 226; BAR 100
761.21	AE 4	Constantinople	0.99	11x13	180	Arcadius, Victory dragging captive SALVS REIPUBLICAE type Mediocre state of preservation	AD 388–392	RIC IX: 234 No. 86c
761.21	AE 4	?	0.76	11	0	Unidentified Emperor, Victory dragging captive SALVS REIPUBLICAE type Poor state of preservation	AD 383–425	?

Table I (continued)

asl	Den.	Mint	Wg.	Dia.	Axis	Short description	Dating	Reference
761.20	AE 4	?	0.88	10	?	Tiny coin, illegible	Late 4th/5th century AD(?)	
<i>minimus</i>								
761.20	AE 4	Heraclea ?	1.39	11	30	Unidentified Emperor, VOT X MVLX XX within wreath type Good state of preservation, but obverse legend off flan	AD 378–383	RIC IX: 196 No. 19c (Theodosius I)
761.15	AE 4	?	0.78	10	?	Tiny coin, illegible	Late 4th/5th century AD(?)	?
<i>minimus</i>								
<b>Level 5A: 761.15–761.00 m asl</b>								
761.07		Syracuse	2.39	12	90	Head of Apollo/apex type Poor state of preservation	After 214 BC 208–204 BC (BAR)	CMS II: 214; BAR 11
761.03	AE 4	Constan-tinople	1.36	13	180	Constantius II, VOT XX MVLX XXX within wreath Good state of preservation	AD 347–348	RIC VIII: 453 No. 72
761.01		Lilibaenum	6.74	20	0	Head of Apollo/ <i>krithara</i> type Mediocre state of preservation	After 241 BC (2nd century BC?)	CMS I: 261 No. 1ff.
<b>Level 5B: below 761.00 m asl</b>								
760.82	AE 4	Heraclea ?	1.48	14	0	Constans, VOT XX MVLX XXX within wreath type Good state of preservation	AD 347–348	RIC VIII: 433 No. 47/55/60 cf.
760.75		Syracuse	5.35	17	0	Radiate head ("Artemis") / walking figure ("Horus") type	After 214 BC 211–200 BC (BAR)	CMS II: 238; BAR 108

with Victory and a captive is one of the most popular types of late Roman coins found in Akrai. All other types, dated to AD 395 or later, are certainly scarcer at this archaeological site.

Level 3 (762.00–761.50 m asl), although thicker than level 4, yielded only three coins. Two Hellenistic ones and a single specimen of the SALUS REI PVBLICAE type with Victory and a captive, issued by Arcadius, from the same timeframe as the previous ones (RIC IX: 107, No. 58c, mint in Aquileia). Four coins were found in level 2 (762.50–762.00 m asl), all of them of late Roman date. These included a well-preserved bronze of Magnus Maximus of the SPES ROMANORVM type with a gate, dated to AD 387 or 388 (RIC IX: 105, No. 55a, mint in Aquileia), as well as a single specimen with Victory and a captive on the reverse, the emperor unrecognized, dated to between AD 383 and 450 (it may be a SALVS REI PVBLICAE, but its poor state of preservation makes a conclusive identification impossible). Another two coins are barely decipherable, however, one certainly bears the motif of a Latin cross within a wreath on the reverse. The item may be dated to between about AD 425 and 450. This type was issued predominantly in the rule of Theodosius II and significantly less often by Valentinian III. The reverse of the other coin possibly presents a cross without a wreath. It proves that the closer to the inlet, the later the coins, which, in turn, indicates that the stratigraphy of the backfill was undisturbed. It could be confirmed by a single coin find from level 1 (762.65 m asl), it is however poorly preserved, bent, and intentionally scratched.

## LAMPS

The cistern yielded only six lamps, three of which are very fragmentary and one (No. 6) an absolute unicum. All were manufactured in local or regional workshops and were either autochthonous ‘inventions’ or copies modelled on African originals. The chronological framework is very clear. Two lamps from the end of the Republic and the reign of Tiberius form the first group: a wheel-thrown lamp (No. 1) coinciding in date with a moulded one (No. 2), the two types coexisting in Akrai. As a matter of fact, lamp No. 1, parallels of which abound across the site, is a much earlier—Hellenistic—local creation that subsisted unchanged until the first half of the 1st century AD. The second group (Nos 3 to 6) clearly fits the timeframe between AD 440 and 550, which complies with the dating obtained from the studies of other artifacts.

### Group 1: Late Republican to Tiberian lamps

No. 1 [Fig. 7.1]: clay: 2.5YR 5/6 red; medium-quality clay with occasional inclusions, poorly-burned; slip: 7.5 YR 6/6 (reddish yellow); dated from the 2nd century BC to the 1st century AD.

A wheel-thrown lamp with a flat circular base, rounded shoulder, and biconvex profile. Slightly protuberant rounded nozzle incorporated into the shoulder. No trace of combustion observable. This type of lamp, a local derivative of the Ricci type C (Ricci 1973: 212–213), is common at Akrai/Acrae, where it constitutes one of the most numerous typological groups. It is a local ‘marker’ differentiating it from other common types of wheel-thrown lamps present in the best-studied archaeological town assemblages of Sicily

(Chrzanowski 2015: 178–181; 2018: 252–253, with further references and parallels);

No. 2 [Fig. 7.2]: clay: 2.5YR 5/6 red; good quality with small middle-sized limestone inclusions, well fired; slip: 5 YR 4/3 (reddish brown); dated from the early Augustan to Tiberian times.

A small fragment of the shoulder and the beginning of the handle of an early Loeschke type IA lamp (for the chronology of lamps of Italian provenance, see Bailey 1980: 132, type A.ii), enriching

a series of lamps of this type made in the micro-region and found in recent excavations at Akrai/Acrae. All the said lamps, the shoulder fragment included [Fig. 8], were made of regional clay and reflect the Romanization of the workshop production in Syracuse and its vicinity) which reproduced extensively all the latest Republican types, i.e., Vogelkopflampen, Dressel 4a, and Loeschke I, adapting them and modifying to cater to their own tastes (Chrzanowski 2015: 239–245).



Fig. 7. Lamps and lamp fragments from the cistern context (Archaeological Mission at Akrai | photos M. Bogacki, M. Murawski, M. Zawistowska)

### Group 2: Local copies of late African lamps of type Bussière 31 (Atlante X)

Homogeneous as it is, the group is interesting because it demonstrates once again the range and diversity of Syracusan workshop production, as well as their attempts to copy or imitate North African lamps from the mid-5th to the 7th century AD. As a matter of fact, the recorded specimens present a full spectrum of manufacturing quality from really poor (No. 3) through mediocre (No. 4) to accurate overmoulding (Nos 5 and 6).

No. 3 [Fig. 7.3]: clay: 10YR 7/4 very pale brown; poor quality clay with many inclusions, poorly-burned; slip: none or not preserved; dated AD 450 to 550.

Back part of a lamp with preserved moulded handle. The discus decoration and the shoulder ornaments are indiscernible, while the raised ring defining

the discus appears very high compared to African examples.

No. 4 [Fig. 7.4]: clay: 7.5YR 6/6 reddish yellow; medium quality clay with inclusions of limestone, poorly-burned; slip: none or not preserved; dated AD 450 to 550. An almost intact lamp, missing the end and the left part of the nozzle. Traces of combustion on the nozzle channel indicating use. The shoulder bears a pattern of ornamented circles alternating with lozenges. The discus is adorned with a peacock or a crested egret with three hoops, walking towards the handle and holding a branch behind its back. This is a fairly rare motif, known mainly in its most popular, horizontal rendering with the bird walking left (the upper part of the mould preserved in Geneva, see Chrzanovski 2017: 158, No. 87 with further references) and a Tunisian lamp found in Tim-



Fig. 8. Fragment from Akrai overlaid on the best preserved locally made Loeschcke I A lamp (Redone after Chrzanovski 2018: 246, Fig. 17)

gad (see Bussière 2007: 123, C637, Pl. 47; with further literature). Most authors claim that the bird is more like an egret, a sacred bird known from pharaonic times and mentioned already in the Old Testament, which was subsequently integrated as a hoopoe (الهدهد /*hudhud*) also into the Byzantine and Islamic traditions, where its hoop was considered a strong talisman against the evil eye. Rendered vertically, the bird is usually shown holding a vase in its beak, which is, however, absent in the case under discussion (a Tunisian lamp from Timgad, see Bussière 2007: 125, C675, Pl. 49).

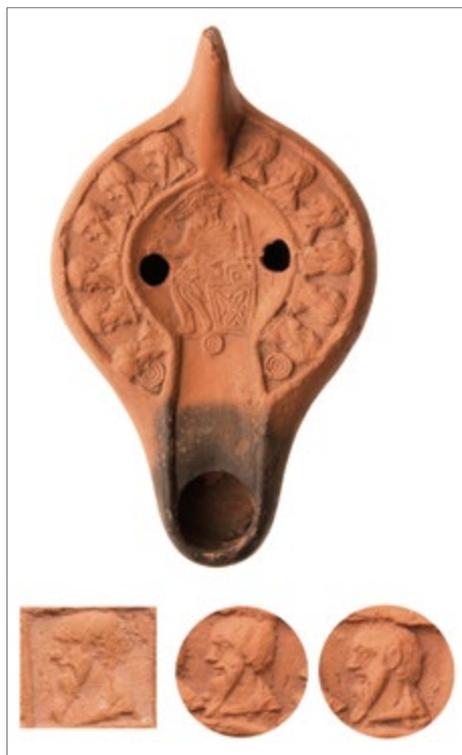


Fig. 9. Lamp from the Geneva collection with details of two of its busts and the central ornament of the Akrai lamp (first from left) (Courtesy Musée d'Art et d'Histoire de Genève, inv. C 1478 ©S. Crettenand and MAH)

No. 5 [Fig. 7.5]: clay: 5YR 6/6 reddish yellow; good quality clay with silver mica inclusions, well fired; slip: 10R 6/8 light red; dated AD 450 to 550.

Fragment of the back part of a lamp with the handle and part of the shoulder. Several small blobs indicate trapped oxygen bubbles in a mould made by a local potter not on an archetype but on an original African lamp. The shoulder decoration features a pattern of ornamented horseshoes alternating with leaves. The discus, now lost, was probably adorned with a geometric pattern of vegetal decoration.

No. 6 [Fig. 7.6]: clay: 2.5YR 7/6 light red; medium quality clay with inclusions, well fired; slip: 2.5YR 5/6 red; dated AD 430 to 550.

Fragment of the upper part of a lamp (bottom part and handle lost). Traces of combustion around the wick hole and on the nozzle channel, indicating use. Several small blobs are proof of oxygen bubbles trapped in the mould as in the previous example. Shoulder decorated with ornamented horseshoes alternating with leaves. The discus is adorned with the head of an apostle within a frame that is ornamented with dots and topped with two branches ending in an ivy leaf. This representation is a unicum. Single framed busts are known, e.g., that of Orpheus in a similar square frame and that of emperors/empresses in a circular frame. Renderings of the bust of a bald and bearded apostle are also well known, it being one of three kinds of busts decorating extremely rare lamps with shoulders bearing representations of the Twelve Apostles. The best known example has the image of a man seated on a throne and holding a book on the

discus. The lamp is in a Geneva collection (De Rossi 1867; 1870) and has been the object of debate from the mid-19th century. Added to the earlier discussion (see Chrzanowski 2011: 277) are a few other North African lamps with the Twelve Apostles depicted on the shoulders [Fig. 9]: two from the Bibliothèque Nationale de France (type Atlante XIA2 and X, see Trost and Hellmann 1996: 112–113 No. 144, 142–143 No. 223, with further literature and discussion), and one from the British Museum (Bailey 1988: 196, Q1777, Pl. 21).

### GLASS FINDS

The assemblage of glass vessels was numerous, although for the most part small, poorly preserved and not diagnostic. A morphological analysis of the fragments identified a minimum of 27 vessels in the set. The bulk of these were conical beakers, supplemented by a few goblets, a beaker lamp and a flask (the catalog below presents the individual types). The present discussion encompasses 21 representative vessel fragments. All the pieces show characteristics of free-blown glass vessels. Olive-green and pale green glass masses were used most frequently. Single vessels were produced from glass of the following colors: green (2), yellowish-green (1), pale blue (1), and translucent with a pale green tinge (2). The material is dated to the late Roman and Byzantine periods.

### Conical beakers

Isings Form 106b1 (Isings 1957: 126–129; already published by Wagner 2015: 159–161, Fig. 8) or Trier Form 52 (Fünfschilling 2015: 338). The type is characterized by a wide and fire-rounded rim (Dia. between 6.0 cm and 8.8 cm); a narrow

and concave base, often with a wide pontil mark (Dia. 3.4 cm to 4.0 cm). Only one base is slightly larger (Dia. 5.0 cm), which suggests that it was part of a deep bowl. These drinking vessels belonged to Sicilian table ware popular in late antiquity. Fully preserved specimens were found, among others, in the cemeteries of Ragusa, the San Mauro di Sotto necropolis in Caltagirone, the catacombs of Syracuse, and in the vicinity of Palermo. Basile argues that in late antiquity this type of vessels, although with bases of a slightly larger diameter, was produced in northern Italy as well as in the workshops of Rome (Basile et al. 2004: 45–46). Conical beakers of the type, similar to finds from Akrai, made of glass of various hues of green, dated to between the 4th and early 5th century AD, were found in Augst (Fünfschilling 2015: 338) [Fig. 10A–B; Table 2].

### Beaker lamp

Isings Form 134 (Isings 1957: 162). The type was classified as C1 and C2 in the Crowfoot and Harden typology (1931: 199). Deep goblets made of glass with three small handles attached to the upper part of the vessel appeared in the Near East at the end of the 4th century AD. These goblets were used as lamps, a linen wick being held in a lead holder fixed to the edge of the rim, which was folded outward and downward (Milavec 2017: 200–201). These lamps played a vital role in religious or funeral contexts. Being fairly symbolic, they are usually found in subterranean Christian cemeteries, e.g., Rome, Latium and Sicily. Uboldi classified them as type I.1 (1995: 96). These lamps were registered in the San Marziano crypt in Syracuse,

Table 2. Glass finds from the cistern context

No.	Description	Diameter (cm)	Colour	Weathering
<b>1–18. Conical beakers</b> (Isings Form 106b1)				
1.	Fragments of fire-rounded rim and concave base with a pontil mark; smooth and shiny surfaces; numerous small elliptical bubbles [Fig. 10A:1]	Rim 8.4; Base 4.6	Translucent, olive-green glass	Dark weathering; rainbow iridescence
2.	Fragments of fire-rounded rim and concave base with a pontil mark; smooth and shiny surfaces; single round and fusiform bubbles [Fig. 10A:2]	Rim 6.6; Base 3.4	Translucent, olive-green glass	Dark weathering; rainbow iridescence
3.	Fragments of fire-rounded rim and concave base with a pontil mark; smooth and shiny surfaces; single small round bubbles [Fig. 10A:3]	Rim 8.8; Base 4.2	Translucent, amber glass	Dark weathering; rainbow iridescence
4.	Fragments of fire-rounded rim and concave base with a pontil mark; smooth and shiny surfaces slightly cracked in the lower part; numerous very small elliptical bubbles [Fig. 10A:4]	Rim 8.4; Base 4.6	Translucent, pale green glass	Dark weathering; rainbow iridescence
5.	Fragments of fire-rounded rim and concave base with a pontil mark; smooth and shiny surfaces slightly cracked in the lower part; numerous small and single fusiform bubbles [Fig. 10A:5]	Rim 6.0; Base 3.4	Translucent, olive-green glass	Dark weathering; rainbow iridescence
6.	Concave base with a pontil mark; smooth and shiny surfaces; single small and medium round bubbles [Fig. 10A:6]	Base 4.0	Translucent, olive-green glass	Dark weathering; rainbow iridescence
7.	Concave base with a pontil mark; smooth and shiny surfaces; numerous small and medium round bubbles [Fig. 10A:7]	Base 4.0	Translucent, pale green glass	Dark weathering; rainbow iridescence
8.	Concave base with a pontil mark; smooth and shiny surfaces; numerous small elliptical bubbles [Fig. 10A:8]	Base 4.2	Translucent, olive-green glass	Dark weathering; rainbow iridescence
9.	Concave base with a pontil mark; smooth and shiny surfaces; single small round bubbles [Fig. 10A:9]	Base 3.6	Translucent, green glass	Dark weathering; rainbow iridescence
10.	Concave base with a pontil mark; smooth and shiny surfaces slightly; single small round bubbles [Fig. 10A:10]	Base 5.0	Translucent, green glass	Dark weathering; rainbow iridescence
11.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; single small and very small elliptical bubbles [Fig. 10B:11]	Base 7.8	Translucent, pale green glass	Dark weathering; rainbow iridescence



Fig. 10A-B (this and opposite page). Glass conical beakers, Isings Form 106b1 (Archaeological Mission at Akrai | drawing and photo M. Wagner)

Table 2. Glass finds from the cistern context (continued)

12.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; single fusiform bubbles [Fig. 10B:12]	Rim 9.0	Translucent, olive-green glass	Dark weathering; rainbow iridescence
13.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; numerous small and very small round bubbles [Fig. 10B:13]	Rim 6.6	Translucent, pale green glass	Dark weathering; rainbow iridescence
14.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; single small elliptical bubbles [Fig. 10B:14]	Rim 7.0	Translucent, pale green glass	Dark weathering; rainbow iridescence
15.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; numerous small elliptical bubbles [Fig. 10B:15]	Rim 6.6	Translucent, pale green glass	Dark weathering; rainbow iridescence
16.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; numerous small and very small elliptical bubbles [Fig. 10B:16]	Rim 7.0	Translucent, yellowish-green glass	Dark weathering; rainbow iridescence
17.	Fragment of thickened, uneven fire-rounded rim; smooth and shiny surfaces; single small round and fusiform bubbles [Fig. 10B:17]	Rim 7.0	Transparent, colourless glass with pale green tinge	Dark weathering; rainbow iridescence

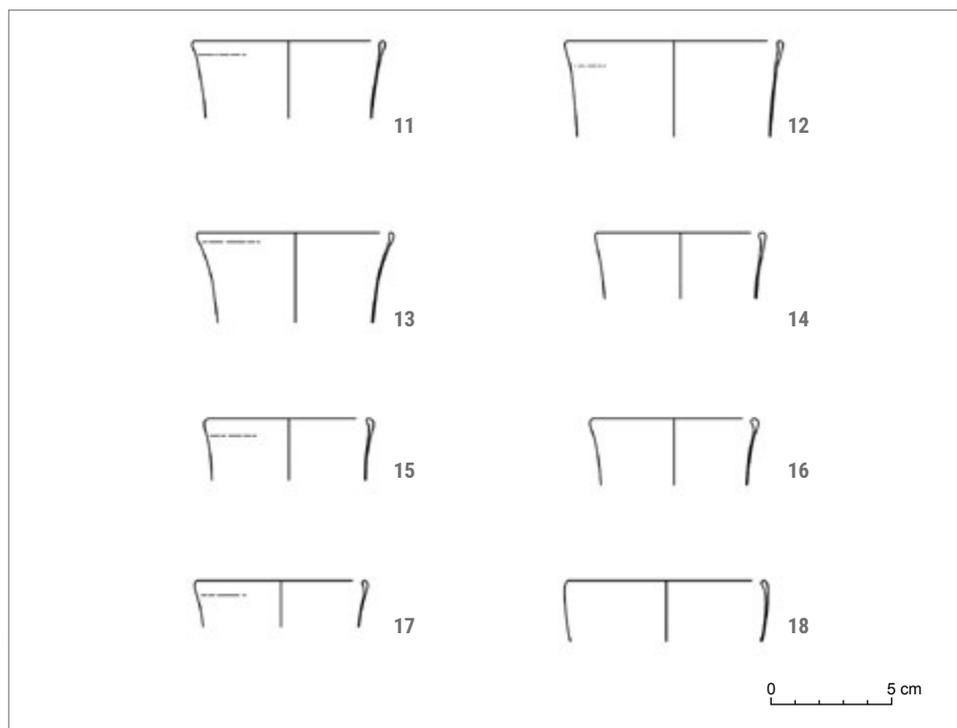


Table 2. Glass finds from the cistern context (continued)

18.	Fragment of thickened fire-rounded rim; smooth and shiny surfaces; single small round and fusiform bubbles [Fig. 10B:18]	Rim 8.2	Transparent, colourless glass with pale green tinge	Dark weathering; rainbow iridescence
<b>19–21 Other forms</b>				
19.	Beaker lamps (Isings Form 134). Fragments of hemispherical bowl with a tubular rim folded outward and downward and a pushed-in base, three handles (one of them preserved) with roughly circular cross section, dropped onto the wall and drawn-up and re-attached to the outside of the rim; smooth and shiny surfaces; single small elliptical bubbles [Fig. 11:1]	Rim 8.4; Base 4.4	Translucent, pale green glass	Light weathering; rainbow iridescence
20.	Goblets (Isings Form 111). Fragments of goblet with almost vertical walls in the upper part of the hemispherical bowl, a fire-rounded rim, a cylindrical long stem, and a conical, pushed--n base; smooth and shiny surfaces; single small round bubbles [Fig. 11:2]	Rim 7.0; Base 4.8	Translucent, pale blue glass with olive streak	Light weathering; rainbow iridescence
21.	Flask with funnel rim. Funnel, fire-rounded rim with constriction in the upper part of the cylindrical neck; smooth and shiny surfaces; a few vertical fusiform bubbles [Fig. 11:3]	Rim 4.4	Translucent, olive-green glass	Dark weathering; rainbow iridescence

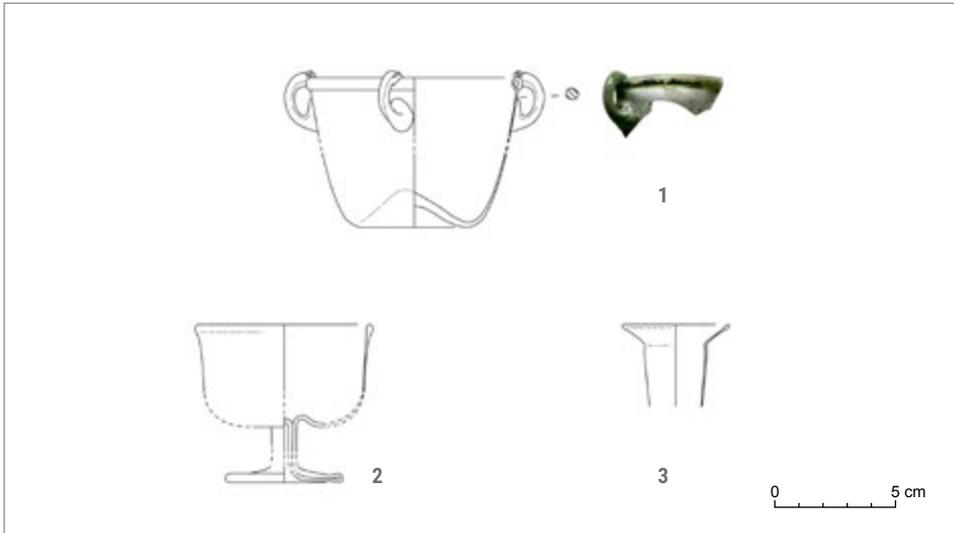


Fig. 11. Glass: 1 – beaker lamp, Isings Form 134; 2 – goblet, Isings Form 111; 3 – flask with funnel rim (University of Warsaw Akrai Project | drawing and photo M. Wagner)

dated to the AD 520s (Isings 1957: 162). The lamps appeared in contexts dated from the 4th to 8th centuries AD (Crowfoot and Harden 1931: 199). Form C<sub>1</sub> came into use in Italy at the end of the 4th century AD and, most probably, functioned until the 8th century AD (Uboldi 1995: 104–105). The pale green glass fragments from cistern are reconstructed as a deep bowl with tubular rim turned outward and downward, and a pushed-in base. Three small ‘Ds’—shapely handles, of which only one remains—drop to the upper wall of the vessel, are drawn up and finally attached to the outside of the rim [Fig. 11:1, Table 2:19].

### Goblets

Isings Form 111 (Isings 1957: 139–140; already published by Wagner 2015: 163). Fragments of five goblets were found, the glass pale green, yellowish-green, olive-green, and pale blue. The base diameter ranges from 3.0 cm to 4.8 cm. Vessels of this type appeared in the 4th century AD and were also used in later periods (Çakmakçı 2009: 50–51) [Fig. 11:2, Table 2:20].

### Flask

Flask with funnel rim, characterized by a cylindrical neck and globular or piriform body. In material from the Beirut excavations, they appeared in contexts dated between the 6th and 7th centuries AD, and resembled, to a considerable extent, the fragment found in Akrai (Jennings 2006: 177, Fig. 7.26.5) [Fig. 11:3, Table 2:21].

### FINE WARE

In general, only 32 fragments of fine ware vessels were found, which makes it

the least numerous group among other identified categories of ceramics (2.7%) (Domżański 2018: 212–214, Pls 1–3). Only the best preserved diagnostic and decorated fragments of fine ware are discussed here [Figs 12, 13].

The FW finds were dominated by Late Roman fragments representing solely African Red Slip Ware (20 fragments). They were found in different levels of backfill, from top to bottom. The other 12 sherds (not illustrated), also found in different levels, come from earlier periods and they are definitely residual in character, as indicated by their poorer state of preservation and smaller size. These include: three sherds of Late Classical and Early Hellenistic Black Gloss Ware (two fragments of skyphoi and one fragment of a bowl with incurved rim) from the 4th to 3rd century BC (see Stone 2014: 92–94, 102–105, Pls 5, 9–10), one fragment of Italian Terra Sigillata (plate, Form 18) from the early 1st century AD (Ettlinger et al. 1990: 82–83), and eight fragments of early Roman African Red Slip Ware A and A/D (including one bowl of Form 9B and one dish of Form 31) from the 2nd to mid-3rd century AD (Hayes 1972: 13–299; 1980: 484–523; Mackensen and Schneider 2002; 2006; Bonifay 2004: 45–65, 154–210).

Fragments of Late Roman African Red Slip Ware are generally dated from the mid-4th to mid-6th century AD (Hayes 1972: 13–299; 1980: 484–523; Mackensen and Schneider 2002; 2006; Bonifay 2004: 45–65, 154–210). Both the earliest and the latest finds are singular, the bulk consisting of fragments of 5th century AD vessels. The earliest find is a small fragment of ARS C<sub>1</sub>–2 dish of Form 50A/B (not illustrated) from the mid- or late 4th century

AD. It is the only find from workshops located in central Tunisia.

Other late Roman fragments are represented by ARS D vessels from the northern part of modern Tunisia. Among these there is a distinctive group of three variants of Form 61 dishes: variant 61B

(one fragment, Fig. 14:1), variant 61B/C (six fragments, Fig. 14:2), and variant 61C (one fragment, Fig. 14:3). Of these the earliest one is dated to the 1st half of the 5th century AD, the latest to the late 5th century AD, and the transitional one to the middle decades of this century. The

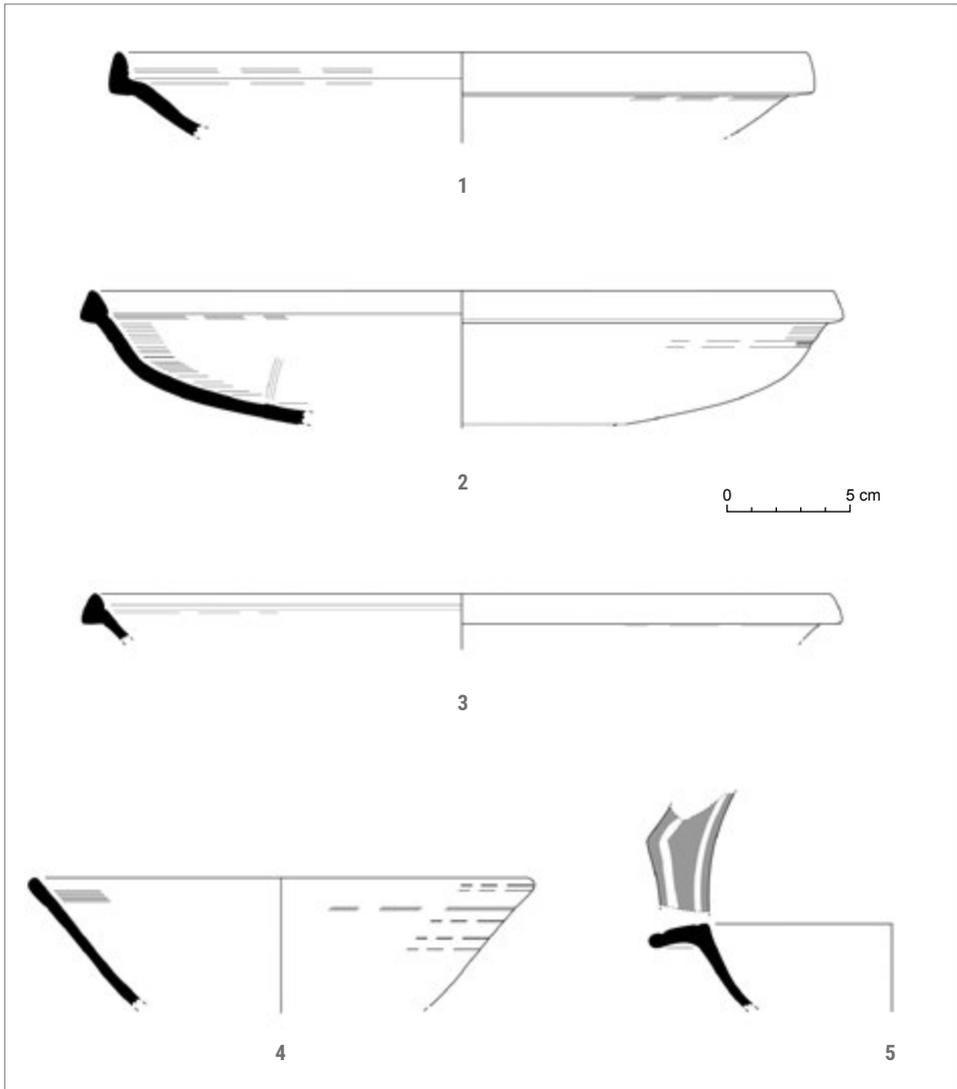


Fig. 12. Selected fine ware finds from the cistern: ARS D: 1 – form 61B, 2 – form 61B/C, 3 – form 61C, 4 – form 81B, 5 – form 97 (Archaeological Mission at Akrai | drawing and photo K. Domžalski)

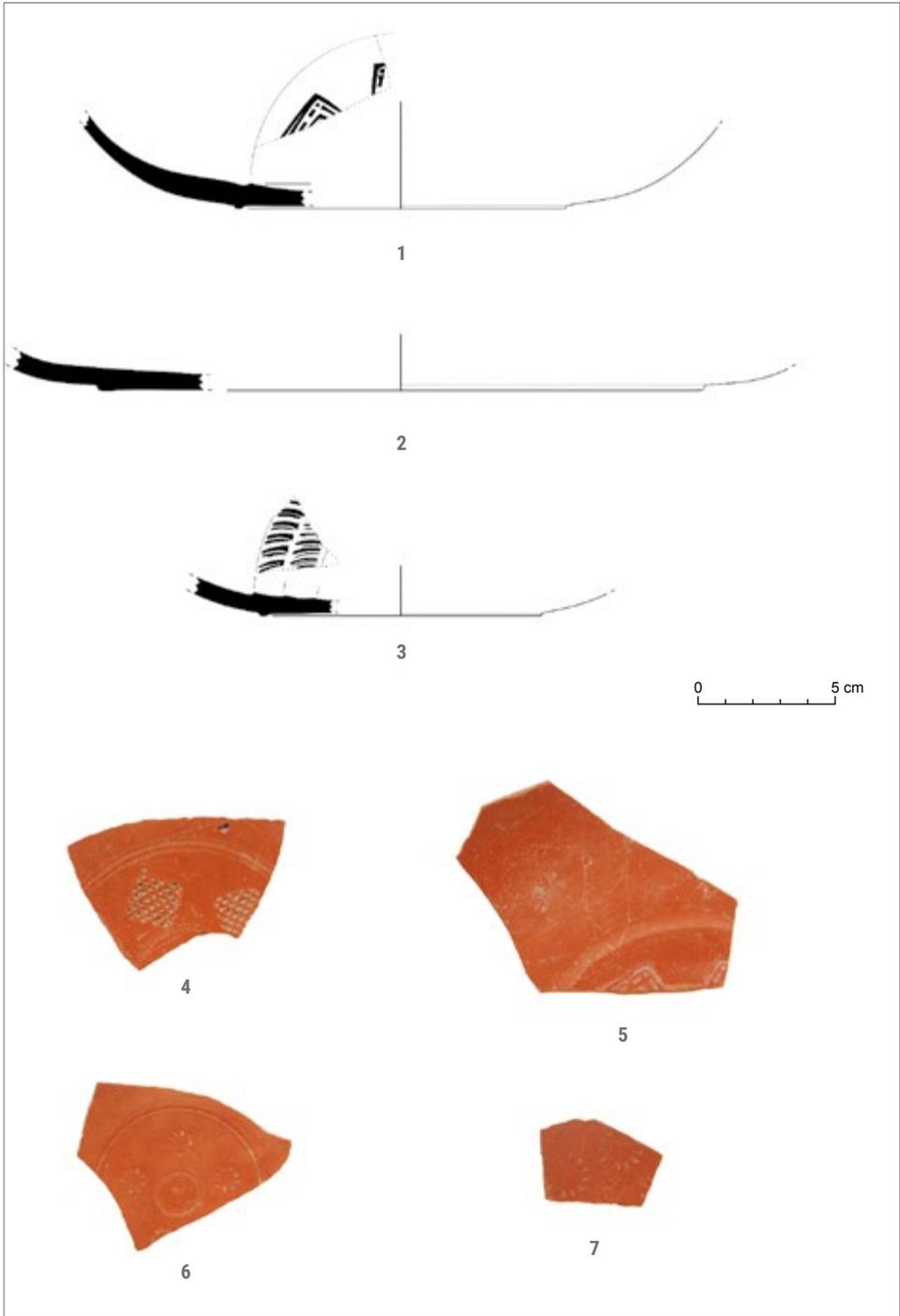


Fig. 13. Selected fine ware finds from the cistern: ARS D: base fragments (Archaeological Mission at Akrai | drawing and photo K. Domżański)

described dish was among the most popular and the most often exported ARS types, which is also proven by other finds from Akrai (Domžalski 2018: Fig. 5). Most of base and floor fragments of undetermined large dishes (some possibly also representing forms 61B–C) are also dated to the 5th century AD. Four of them bear a simple geometric motif, generously stamped inside the vessel, creating a medallion-like composition encircled with a single or double grooved line [Fig. 13:1, 4–7]. The rather careless manufacturing technique of the motifs and their stamping indicate the A III decorative style used in the discussed period. The largest amount of ARS D finds came from the lowest level 5, together with an ARS C1–2 fragment of Form 50A/B.

Other ARS D vessels are represented by a few sherds. The first one is an undecorated bowl rim, Form 81B [Fig. 12:4], dated to the late 5th century AD. A flanged bowl, Form 91, represented by a base fragment, decorated with bands of so-called feather rouletting [Fig. 13:3] is probably of similar or later date (variant A or early B?). Since the upper part of the vessel is missing, its more precise defining and dating is impossible. Among the more diagnostic sherds, the latest find (from level 1) is definitely a fragment of a bowl, Form 97, with scalloped rim [Fig. 12:5], from the first half of the 6th century AD.

### AMPHORAE

Altogether 217 amphorae fragments, making for 18.5% of the total ceramic finds from the context, were registered (Domžalski 2018: 212, Pls 1, 2). The amphorae from several different regions

from Cilicia or Cyprus in the East, to Sicily and southern Spain in the West were noticed. The eastern amphorae are represented by fragments of LRA 1 containers of Cilician or Cypriot provenance (Lang 1976: 57–58; Empereur and Picon 1988: 33, 35, Fig. 21; 1989: 236; Demesticha 2000; 2003: 471–472; 2014: 601; Manning et al. 2000; Demesticha and Michaelides 2001; Pieri 2005: 80; 2007: 613–614; Iacomi 2010: 25; Autret 2012: 254; Leidwanger 2014: 898–899). These types were produced between the second half of the 4th century AD and the 7th century AD, both in Cilicia and Cyprus (Autret 2012: 263). Amphorae from southern Spain (type Keay XIX) are also represented in the material. They were produced between the late 3rd or early 4th century AD and the early or mid-5th century AD (Keay 1984: 160, 168).

A group of North African amphorae has also been registered, among them examples of Tripolitanian (Keay XI/Tripolitana III) and perhaps Tunisian amphorae (Keay XXV and Keay LXII). The Keay XI amphorae were produced from the late 2nd or early 3rd century AD up to the 4th century AD (Keay 1984: 136; Bonifay 2004: 105, 107). The presence of a single foot of a Keay LXII amphora in the context is questionable. Although the piece displays numerous traits differentiating it from the Keay LXII amphorae, still its general morphology resembles the type. Such is also the case with two feet of a Keay XXV amphorae. Both attest a large typological diversification, which reflects a wealth of small production centers. While describing the Keay XXV amphora type, Simon J. Keay (1984: 191) noted that “Identifications of foot types is difficult, since they

are often very plain and employed on different types of amphora”.

A Keay XXIII amphora, preserved as a foot, is a type of a questionable origin and unconfirmed provenance (Keay 1984: 173). Alan J. Parker (1977: 36) suggested their Lusitanian provenance and Daniele Manacorda (1977: 145) followed suit, considering the Keay XXIII amphorae to have been produced in the Iberian Peninsula.

Production of the said amphora types could also be dated to late antiquity: Keay LXII (second quarter of the 5th to the mid-6th century AD, Keay 1984: 347), Keay XXV (different variants produced from the 3rd to the 5th century AD, Keay 1984: 193), and Keay XXIII (late 4th to early 5th century AD, Keay 1984: 173, 178).

The presence of local, Sicilian containers is confirmed by finds of fragments categorized as Naxos flat-bottomed ovoid amphorae. Their production was attested at Naxos (Pacetti 1998: 187; Ollà 2001: 48–49; Malfitana et al. 2009: 138, 140; Casalini 2014: 272; Franco and Capelli 2014a: 552; 2014b: 350; see Menchelli and Picchi 2016: 236). The chronology of various variants of this class of amphorae covers a period from the second half of the 1st century to the mid-5th century AD (Franco and Capelli 2014b: 350).

#### **KITCHEN AND COOKING POTTERY**

This category consists of 246 fragments comprising Roman kitchen and cooking vessels (late 1st to mid-6th century AD, with a predominance of forms from the 4th to the mid-5th century AD). This group is dominated by vessels of local or regional, Sicilian production (Olcese 2012: 432–469): wares 8a, 9 and probably 12, with

a fair share of imported specimens falling into three manufacturing groups: Pantellerian Ware (Ware 8), Aegean Cooking Ware (Ware 11), and African Cooking Ware (Wicenciak 2015: 265–272, Fig. 9). Typological and macroscopic analysis of forms and wares (fabric and surface treatment) led to the recognition of two production regions in eastern Sicily, one in the vicinity of Messina (based both on typology and fabrics, W8a) and the other in Akrai or its vicinity (as indicated by fabrics, W9). The latter group, distinguished by its characteristic fabric and production features, was dubbed the Akrai Cooking Ware (Wicenciak 2015: 272–273).

The production site for the W12 group of vessels has yet to be determined. This pottery could be classified as:

#### **1. Akrai Cooking Ware (AkCW) = Ware 9**

The backfill contained 135 fragments of cooking pots of the following Akrai types: 26, 49, 55, 56, 58, 62, 67, as well as three fragments of bases (for a typology, see Wicenciak 2015: 258–265) [Fig. 14]. All of them were ascribed to the macroscopic group W9. Moreover, this group also included a single lid handle (type T68) and a base of a jug (type T69). The AkCW is characterized by the presence of volcanic glass inclusions in the products. Visually, most of the fragments appear to be scorched; their external surfaces usually are melted and cracked, while their rims are deformed (Wicenciak 2015: 256, Table 2, Fabric 9). The AkCW is defined by the reddish color of the external and internal surfaces (2.5 YR 4/4 or 4/6). The core is very dusky red (2.5 YR 2/2). The vessels are well-fired. Of the 75 types of vessels distinguished within the Akrai

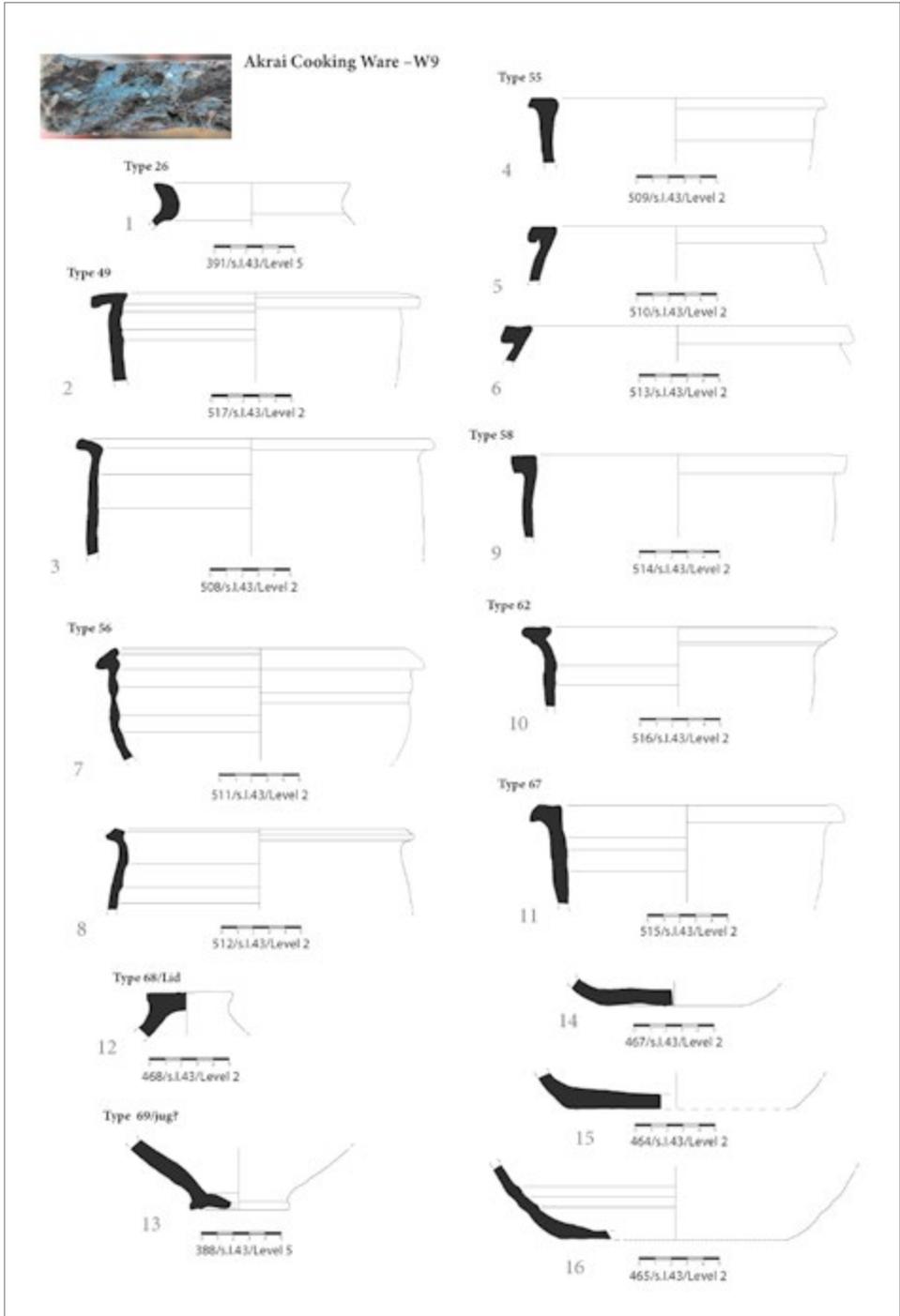


Fig. 14. Akrai Cooking Ware (AkCW) – Ware 9 (Archaeological Mission at Akrai | drawing and microphoto U. Wicenciak)

collection (Wicenciak 2015: 258–265; new types T66–75 were added recently), 34 are AkCW cooking pot forms. The richness and typological diversity of this assemblage corroborate the existence of several workshops producing various types of cooking pots across the Akrai region. A precise dating of this group is not possible at the moment, although preliminary estimates are available since the layers with the highest number of these forms (26 types) are dated very broadly from the 4th century BC to the 6th century AD. The same chronology regarding other artifacts like fine ware, coins, and lamps, was noted inside the cistern. Some of the cooking pot types from the AkCW group (e.g., Akrai types 49, 62, and 56) show morphological similarities to the cooking vessels from the group of Aegean Type cooking pots (see below for more on Aegean Cooking Ware). Chemical composition as well as petrographic and mineralogical analyses of just four AkCW fragments point to similarities between the AkCW and the vessels from Leontinoi (modern Lentini), and consequently argued that the Akrai vessels were produced in Lentini (Barone et al. 2016: 182, Fabric C:175). For lack of Roman samples from Lentini, Barone compares the Roman-period AkCW vessels with Hellenistic finds from Lentine (Agodi et al. 1998; 1999; Barone et al. 2005). However, one should exercise caution when making interpretations based on just four fragments. Lentini and Akrai lie within the same geological zone, only 45 km apart, hence the clay used for ceramic production on both settlements could have been very similar (Barone et al. 2005: 753, Pleistocene bluish marly clay). Moreover,

in the Roman period, identical types of kitchen vessels could have been produced in both towns, something that could not be ascertained for lack of published data from Lentini. Therefore, it seems reasonable at this stage of research to consider both possibilities, namely, that the AkCW vessels could either have been produced locally at Akrai or that the entire kitchen vessel production might have been transferred from Lentini to Akrai in the Roman period, or that the AkCW pots could have been brought to Akrai from Lentini.

## **2. Peloritani Mountains and the vicinity of Messina Ware = Ware 8a**

It is a group of vessels represented only by two fragments of rims, classified as Akrai types T65 and T66 [Fig. 15]. Their fabric (out/inside 5YR 5/3) is fine-grained and contains scarce amounts of fine white and red grains. In a previous study, vessels from this macroscopic group were ascribed to the Pantellerian Ware (Wicenciak 2015: 270), but more recent archaeometric analyses have pointed instead to the Messina region and the Peloritani Mountains as the place of origin (Barone et al. 2015: 316–317).

## **3. Unidentified production = Ware 12**

The production site of the W<sub>12</sub> group of vessels remains undetermined and identifying it would require archaeometric analyses [Fig. 16]. The fabric (out/inside 5YR 7/6, core 5YR 5/1) is dense, fine-grained, with many medium and large dark red rough grains (iron?). Vessels classified in the Akrai kitchen and cooking vessels typology are two types of lids (T<sub>25</sub> and T<sub>73</sub>), a casserole (T<sub>75</sub>), and a stand (T<sub>74</sub>). The casserole type imitates

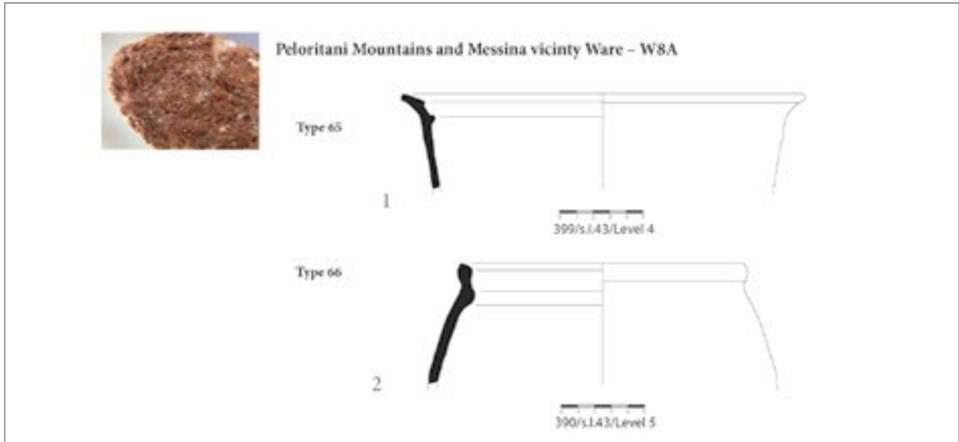


Fig. 15. Peloritani Mountains and Messina vicinity Ware – W8A (University of Warsaw Akrai Project | drawing and microphoto U. Wicenciak)

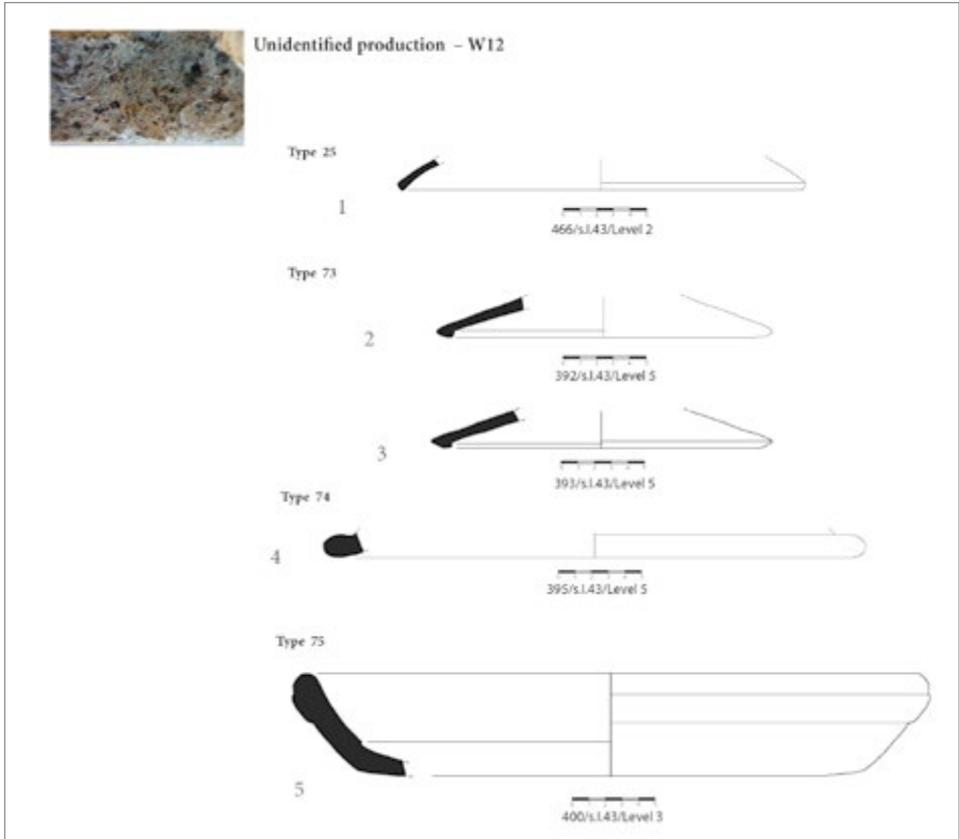


Fig. 16. Unidentified production – W12 (Archaeological Mission at Akrai | drawing and microphoto U. Wicenciak)

the shape of the 4th and 5th century AD Pantellerian production (see below, T19).

**4. Pantellerian Ware (PW) = Ware 8**

The PW is the second most common, after those of local or regional provenance, group of pottery (found) in the backfill of cistern. These vessels were manufactured on the island of Pantelleria between the 1st and 5th century AD (Olcese 2012: 524; Peacock 1982: 78–80). They are kitchen specimens with technological features indicating their use for cooking or roasting [Fig. 17A–B]. The thick-walled vessels were manufactured from a very characteristic fabric (5YR 5/3) with significant quartz and volcanic temper (Wicenciak 2015: 256, Ware 8, coarse fabric). These are open forms, such as pans or casseroles (Wicenciak 2015: 258–260), and fitting

lids were made from the same fabric. The cistern deposit contained the following Akrai types 1, 2, 19, 23, and 24. These forms of vessels appeared at other sites across Sicily in contexts dated from the mid-4th to the 5th century AD (Baldassari 2015: 448, Fig. 3).

**5. Aegean Cooking Ware = Ware 11**

A group of imported cooking vessels of a fine-grained fabric interspersed with tiny specks of silver mica which is characteristic of the Aegean region in southwestern Asia Minor. The results of macroscopic analysis of finds from Akrai match the fabric description of the LR micaceous Aegean cooking ware group. Vessels made of this fabric were manufactured between the mid-5th and mid-6th century AD, and appeared at numerous

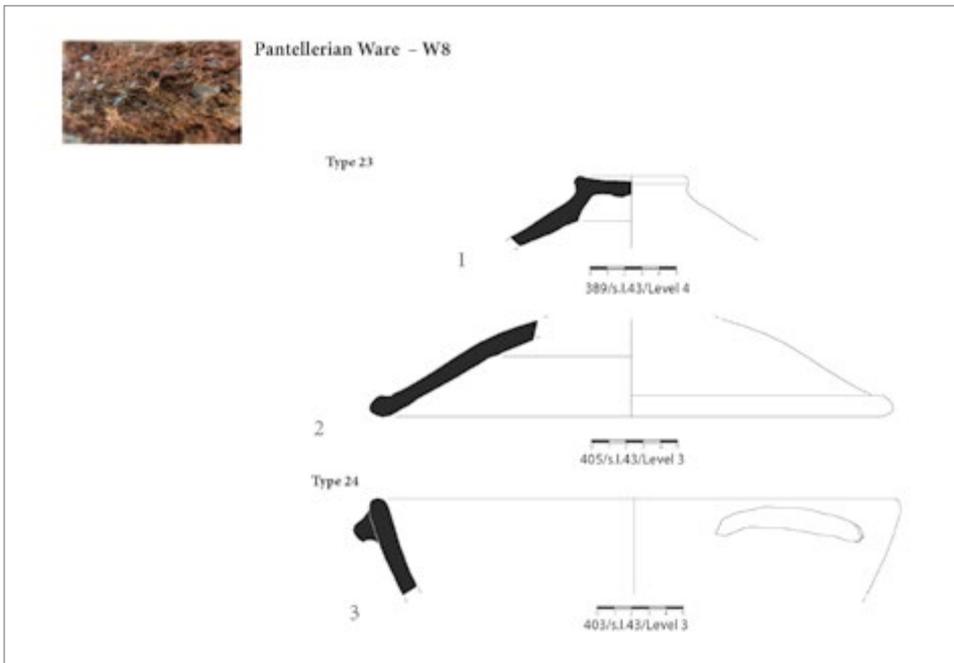


Fig. 17A. Pantellerian Ware – W8: lids and open vessel (Archaeological Mission at Akrai | drawing and microphoto U. Wicenciak

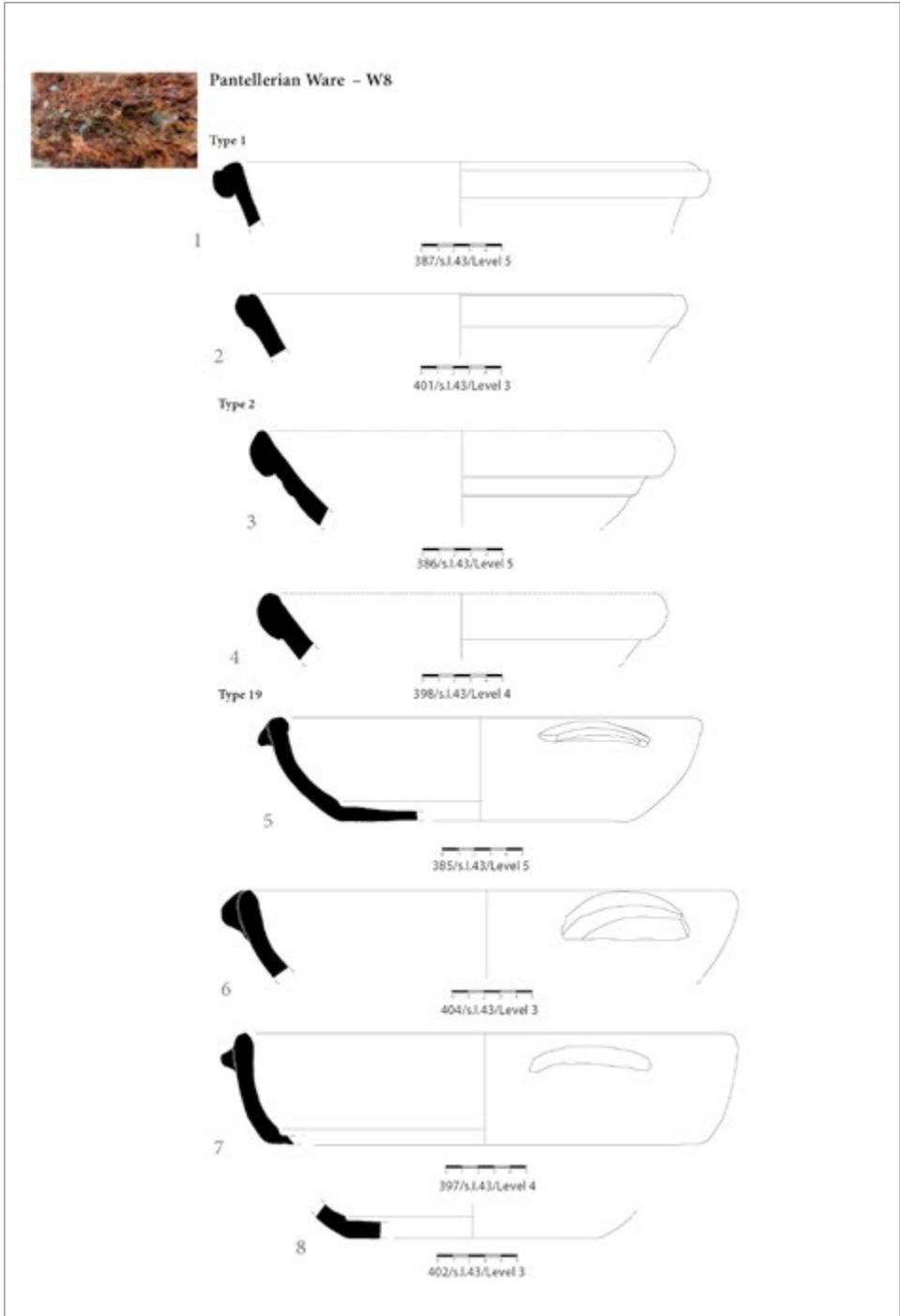


Fig. 17B. Pantellerian Ware – W8: open vessels (Archaeological Mission at Akrai | drawing and microphoto U. Wicenciak)

sites across the Aegean, Adriatic Italy and Carthage (Slane and Kiriati 2014: 910, Figs 8, 9). Therefore, their presence in eastern Sicily is just as likely. The backfill contained four types of cooking pots (Akrai types 13, 70, 71, and 72) [Fig. 18]. These forms find parallels, among others, in the material from Knidos dated to the early 5th century AD, where kitchen ware production, including cooking pots, was modelled on vessels from western Anatolia (e.g., Ephesus) (Doksanalti 2010: 770, Fig. 5; Doksanalti and Tekocak 2014: Fig. 4: 21).

**6. African Cooking Ware (ACW)**

Kitchenware imports from North Africa are represented by two fragments of dishes of form Hayes 181 (Hayes 1972: 200)/

Bonifay Type 3 (Bonifay 2004: 211–213, Fig. 112), as well as a single fragment of a lid form Hayes 185 (Hayes 1972: 204)/ Bonifay Type 9, variants B or C (Bonifay 2004: 221, Fig. 118) [Fig. 19]. These forms were produced between the late 1st and mid-4th century AD.

**PLAIN TABLE WARE**

The plain table ware found in the top part of the backfill was of a mixed character. While they were mostly of late Roman date (late 4th, 5th and perhaps into the 6th century AD), they were also accompanied by some much earlier (Republican or Early Imperial) sherds. The lower part of the fill contained ceramics of consistently late Roman date (Hayes 2006–2007; Rizzone and Sammito 2006: Pl. I, Nos 10,

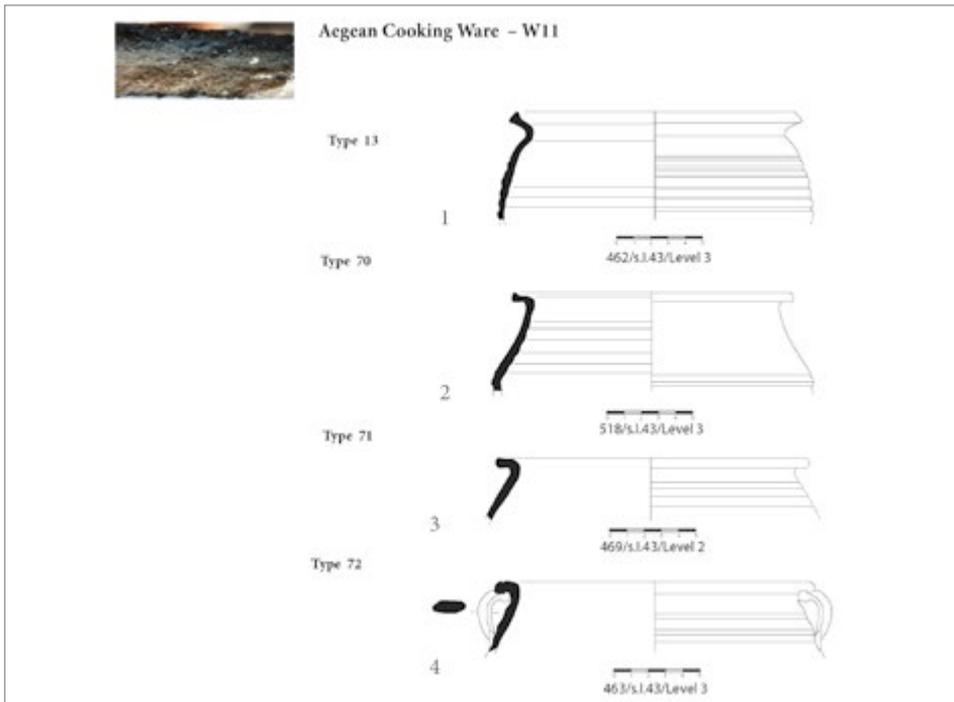


Fig. 18. Aegean Cooking Ware – W11 (Archaeological Mission at Akrai | drawing and microphoto U. Wicenciak)

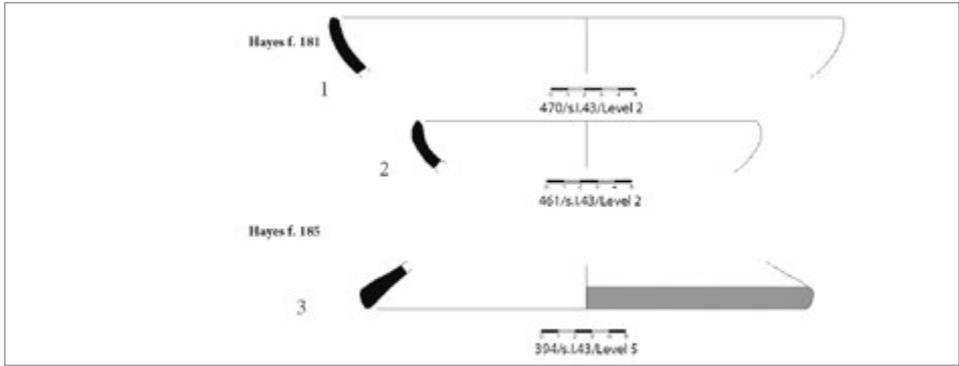


Fig. 19. African Cooking Ware (Archaeological Mission at Akrai | drawing U. Wicenciak)

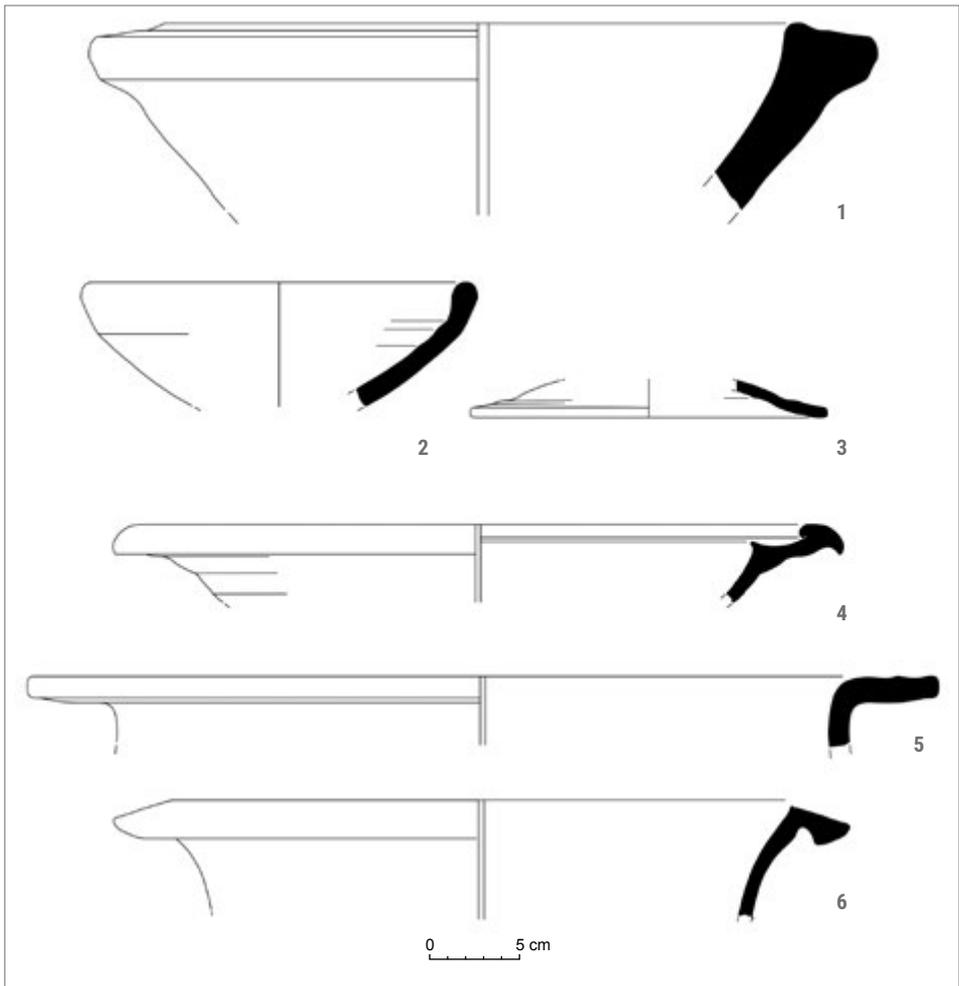


Fig. 20. Plain table ware: open vessels (Archaeological Mission at Akrai | drawing M. Burdajewicz)

13 and 16). The vessels found in levels 3 through 5 in some cases were recomposed of fragments coming from more than one level, e.g., 621/15 [Fig. 22:9] and 626/15 [Fig. 23:12] (levels 3–5), or 625/15 [Fig. 22:11] and 627/15 [Fig. 21:7] (levels 4–5), which suggests that these three layers formed a chronologically homogenous fill. As regards fabrics of the late Roman vessels in question, they seem generally to be descendants of earlier Roman imperial period fabrics (for the fabrics distinguished in the plain tableware category of ceramics, see Młynarczyk 2015), mostly later variants of F1, F 3 and F 3/F 4 being represented as well.

The plain table ware found in the cistern must have been destined for daily activities such as preparing, serving and consuming food. Open-shape vessels are apparently prevalent. Among them are fragments of mortaria in a coarse (ceramic building material) fabric [Fig. 20:1], a coarse-ware bowl with curved wall and rounded rim [Fig. 20:2] (Amari 2014: Fig. 3:6), a large dish or lekane [Fig. 20:4], a very shallow lid which may have been used also as a saucer [Fig. 20:3]. Moreover, two rims [Fig. 20:5, 6] apparently pertain to *situlae* (deep basins or ‘buckets’) (Amari 2014: Figs 3:3, 3:4 respectively, the latter with a horizontal handle). A basin frag-

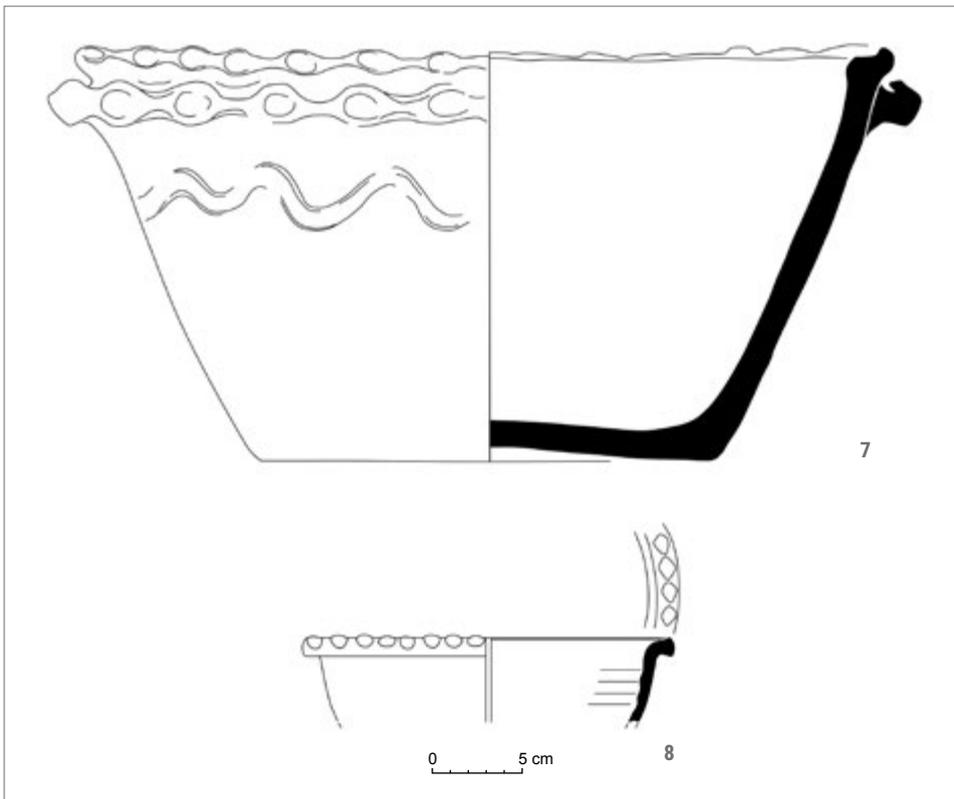


Fig. 21. Plain table ware: basin and fragment of bowl (Archaeological Mission at Akrai | drawing M. Burdajewicz)

ment [Fig. 21:7] bears a 'pie crust' decoration on the rim (Amari 2014: Fig. 3:5), a similar ornament adorns the rim of a smaller open shape, to be identified as a bowl [Fig. 21:8].

Closed-shape vessels seem to be fewer, although several sherds of 'combed' amphorae bodies should be noted. Addi-

tionally, there are fragments of a table(?) amphora [Fig. 22:9], its neck apparently pitched(?) inside; and a concave base in the same fabric [Fig. 22:10], although not joining, probably belongs together with the upper part. Another amphora [Fig. 22:11] bears some similarity to the

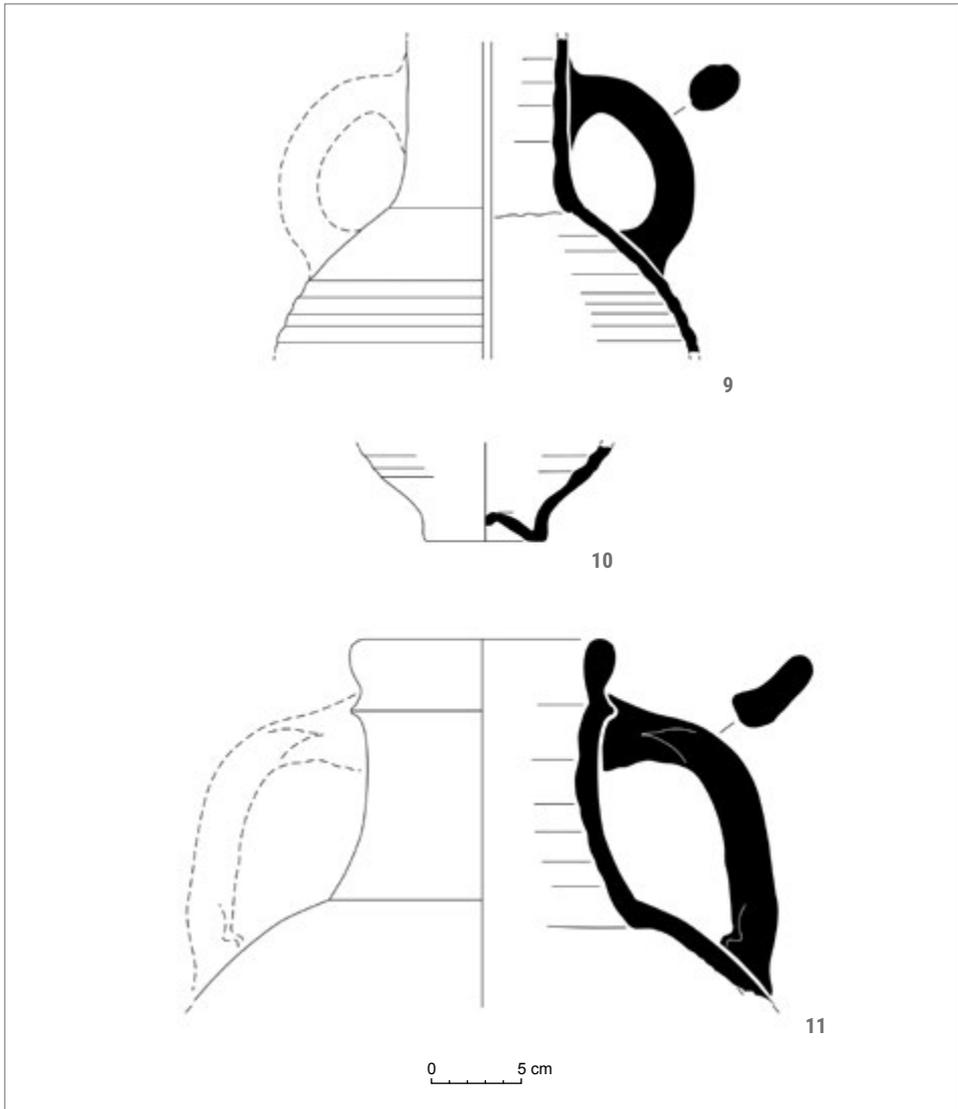


Fig. 22. Plain table ware: amphorae fragments (Archaeological Mission at Akrai | drawing M. Burdajewicz)

Mid Roman 1a amphorae, except for a distinctly different handle and some details of the profile (Amari 2014: Fig. 1:1–2). Unfortunately, the late Roman material pertaining to plain tableware or domestic multifunctional vessels (that is, for preparing food in other ways than cooking as well as serving and consuming) has not been sufficiently studied as yet and publications are scarce. For this reason, the late Roman assemblage from Akrai certainly deserves further consideration.

**OTHER OBJECTS (MISCELLANEA)**

The backfill of the cistern yielded some other artifacts, e.g., two bronze needles, flattened at the top and fitted with an oval-shaped eye; a fragment of the upper part of a bone needle with oval-shaped eye; three pestles made of stone; a few fragments of bronze and iron artifacts; a small iron sickle; a fragment of a bronze arrowhead; a bronze balance; and two stone weights. Among these artifacts there are two that call for special attention: a female terracotta head and a bronze signet ring.

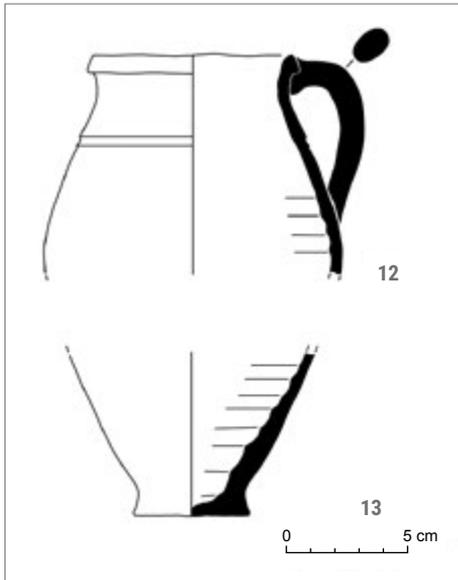


Fig. 23. Plain table ware: fragments of closed vessels (Archaeological Mission at Akrai | drawing M. Burdajewicz)

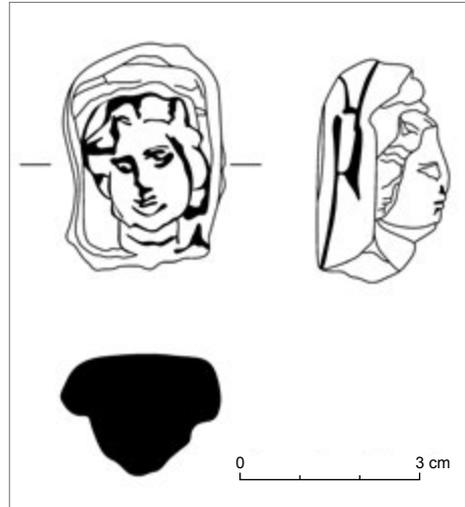


Fig. 24. Terracotta head of a woman (Archaeological Mission at Akrai | drawing M. Woińska)

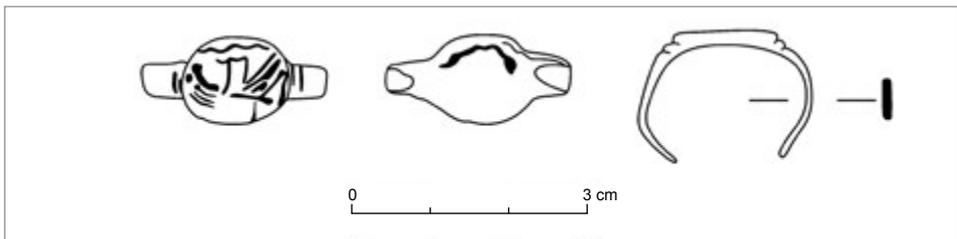


Fig. 25. Signet with flat oval bezel (Archaeological Mission at Akrai | drawing R. Chowaniec)

The female terracotta head is made of well-fired clay with a high density of inclusions of fine-grained mica and single grains of organic impurities, uniform in color: 2.5YR/6/6 light red. The head, with almond-shaped eyes, straight nose and straight lips with the ends turned down, is inclined slightly to the right. The hair is styled in a melon coiffure with remains of a veil still visible. The terracotta is dated to the mid-3rd–2nd century BC (Bell 1981: Figs 89, 93, 168, 281; Burn and Higgins 2001), which means it must have come from an earlier period and its place in the backfill is definitely residual [Fig. 24].

The dating of the signet ring complies with the chronology of the assemblage from the reuse phase. The flat oval bezel bears a representation of a bird, in left profile, with outspread wings (Orsi 1942: 155–156) [Fig. 25].

**ARCHAEOZOOLOGICAL REMAINS**

The archaeozoological collection contains 1105 animal remains, studied according to standard archaeozoological practice (Silver 1969; von den Driesch and Boessneck 1974; Reitz and Wing 1999; Lasota-Moskalewska 2008). Altogether, 1034 elements of animal skeletons were recognized [Tables 3, 4], which amounts to 94.03% of the analyzed assemblage. The bulk of bone and teeth fragments came from mammals (989) and birds (16). Moreover, 11 bones of a tortoise, probably from a single individual, were found, as well as 23 shells of mussels and snails.

The mammalian remains were dominated by domesticated animals. Wild animals were represented merely by four bones of deer, which amounted to 0.41%

of the whole group. Elements of skeletons of the four basic species were most prevalent among the remains of domesticated animals. Among these, remains of sheep and goat were most numerous, reaching 46.14% of the remains of the domesticated mammals. Next in number, were the remains of cattle (27.85%) *ex aequo* with pig (26.00%). In addition, horse, donkey, and dog yielded a few fragments each. Birds were represented by skeletal remains of domesticated chicken. Remains of small ruminants, cattle, pig, deer, and chicken represented post-consumption waste. Some of them bore traces of portioning and culinary processing of meat. Vertebrae of cattle and sheep or goat showed nu-

Table 3. Animal remains from the cistern context

Taxon	n
Cattle <i>Bos primigenius</i> f. taurus	253
Pig <i>Sus scrofa</i> f. domestica	271
Sheep <i>Ovis ammon</i> f. aries	48
Goat <i>Capra aegagrus</i> f. hircus	54
Sheep/Goat <i>Ovis ammon</i> f. aries / <i>Capra aegagrus</i> f. hircus	347
Horse <i>Equus ferus</i> f. caballus	6
Donkey <i>Equus africanus</i> f. asinus	4
Dog <i>Canis lupus</i> f. familiaris	2
Deer <i>Cervus elaphus</i>	4
<b>Mammals</b>	<b>989</b>
Chicken <i>Gallus gallus</i> f. domestica	10
Galliformes	2
Aves identified	4
Birds	16
Snails	8
Mussels	15
Tortoise	11
Undetermined	66
<b>TOTAL</b>	<b>1095</b>

merous signs of chopping along the spine in the sagittal plane, across the middle of the vertebrae or either on the left or right sides of their bodies, which suggested that carcasses had been halved and portioned.

In ruminants and pig, traces of carcass portioning were also relatively numerous around the hip, knee, shoulder and elbow joints. Skulls and jaws of some pigs (only the oldest individuals) showed

Table 4. Anatomical distribution of mammal remains from the cistern context

Anatomical element	Cattle	Pig	Sheep	Goat	Sheep/ Goat	Horse	Donkey	Dog	Deer
Horn core/antlers	2			8					
Cranium	37	51	8	4	72				
Mandible	10	15	10	9	20				1
Cranial teeth	7	5	2		13				
Mandibular teeth	5	15	4	6	3				
Teeth		2							
Hyoid bone					2				
Cervical vertebrae	5	7	2		9				
Thoracic vertebrae	16	7			10				
Lumbar vertebrae	23	14			18			1	
Sacrum	2	2			1				
Coccygeal vertebrae									
Sternum									
Costae	36	84			72				
Scapula	14	8	1	3	12				
Humerus	10	10	1	1	12	2		1	
Radius	7	6	2	3	6				
Ulna	2	2			7	1			
Carpal bones	8								
Metacarpals	2	2	2	4	17				
Pelvis	12	3			9		1		
Femur	10	11		1	23		1		
Patella		9			4				
Tibia	12	8	2	3	20	2			1
Fibula	1								
Astragalus	1	1	4	1					
Calcaneus		3	2	1					1
Other tarsal bones									
Metatarsals	7	4	1	1	14	1	1		
Metacarpals or metatarsals	6				2				
Phalanx I	9	1	5	6	1				1
Phalanx II	7	1	2	3			1		
Phalanx III	2								
<b>Total</b>	<b>253</b>	<b>271</b>	<b>48</b>	<b>54</b>	<b>347</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>4</b>

signs of chopping and filleting, which suggested that brawn was consumed. Filleting was also evident on the ribs of all the above-mentioned species. It is puzzling, however, to see signs of chopping or whittling on the caudal side of a horse tibia. It may suggest horse meat consumption, but it is highly probable that it represents a craft-related activity that was abandoned unfinished for whatever reason.

In the case of pig, age-at-death was estimated for six individuals. Two of them were slaughtered under one month of age, one was between four and six months old, still another one about six to eight months, while one female and one male lived for 22 to 24 months, respectively. This indicates that slaughter involved mostly morphologically immature animals. It is worth noting that several dozen bones from all parts of the carcasses belonged to the two youngest individuals, one of which was found at the bottom of the cistern, whereas the other in the upper layers of the backfill.

Much less data on age-at-death could be obtained from dentition analysis performed on cattle, sheep and goat. The only thing that is certain is that the bulk of the individuals of these species reached morphological maturity, with the youngest sheep and goats, whose remains were found in the cistern, slaughtered at about 21 to 24 months of age, whereas the oldest were three or four years old. In the case of cattle, the age of the slaughtered animals ranged from several months (under one year) to five or even seven years old. This suggests two-directional breeding of these species, in which some of the animals were meant as a source of meat and slaughtered at a young age, while the

other group was kept alive longer for diverse benefits of their husbandry, such as milk, wool or, in the case of cattle, pulling power. Of the chicken bones, three out of ten belonged to immature individuals, and only one to a mature female.

The registered bones were characterized by a high degree of fragmentation due to the animals' young age, culinary processing and taphonomic processes affecting the bones after their deposition as waste. Few bone fragments, apart from distal elements of extremities (mostly phalanges) were preserved in a state allowing measurements. Only one measurement enabling a withers-height calculation was obtained for cattle: the parameter, determined on the basis of the total length of the radial bone (GL = 263.3 mm) of cattle, was 113 cm.

The deposit found inside the cistern was mostly composed of kitchen waste, which being dated fairly broadly hinders an unambiguous statement whether it had accumulated over a long period of time or was the result of a short-term process. The anatomical composition of the remains as well as observations made in the course of an osteological analysis of remains from arbitrary layers indicate that, in the case of pig and probably also cattle, the bones of each species were deposited separately, in a single or, more probably, several larger batches (at least six pigs and four bovines). The analyzed remains reflect the dominant role of domesticated species as sources of protein and animal fat in the discussed period. The most prominent item in the menu of the residents of Akrai who deposited this material was lamb and goat meat, whereas pork and beef were of lesser importance.

## MICRO-HISTORY: CHRONOLOGY AND FILLING

Micro-history, as stated by István M. Szi-jártó (2016), investigates—through small objects (artifacts, in case of archaeology)—answers to bigger historical questions regarding the life of ‘past actors’. This paper presents artifacts of material culture excavated from a single cistern, reflecting thus on the micro-history of one Hellenistic–Roman house, reused in the later Roman and Byzantine periods, and shows its turbulent fate as well as that of its residents from the ancient settlement of Akrai/Acrae. The presented assemblage of objects contributes also to an interpretation of ‘everyday social-oriented history. “The reduction in scale is an experimental operation precisely because of this fact, that it assumes that the delineations of context and its coherence are apparent and it brings out those contradictions which only appear when the scale is altered. ... The choice of micro dimensions arose as a direct result of the traditional preponderance of macro contextual interpretation, in view of which it was the only possible direction to take” (Levi 1991: 107).

The time and mode of use and filling of the cistern can be reconstructed on the basis of a general architectural history of the household and material culture (most of all numismatic evidence, fine ware, oil lamps and glass finds) found in the backfill. The large assemblage of artifacts, along with the big architectural blocks that were also found inside the cistern, show that the deposit accumulated gradually. The lowest level is exceptional in this regard, because it reveals the probable reason for when the fill started to ac-

cumulate, namely, a series of earthquakes in the AD 350s–370s, which also affected Akrai. This hypothesis is supported not only by the chronology of the material, but also by the characteristic deformation of the architecture, collapse of structures in one direction as a consequence of oscillation, and breaks in the walls which are evidence of a natural disaster (Chowaniec 2015a: 67–69; 2017: 166–170).

The material dated after the earthquake suggests that this area, at the end of the 4th century AD, after a few decades of stagnation, evidenced for instance by the absence of new coins, was again occupied for production and household usage. Once the area had been leveled with soil and intact or relatively undamaged architectural elements had been recovered from the rubble, new structures were built in this provisionally adapted space. This secondary adaptation was also evidenced by a practice of barring entrances with nibs or lintels and by the readjusting of the cistern for further exploitation. New structures and secondary space divisions followed more or less the layout of the original walls of the late Hellenistic–Roman house, indicating that the old walls were still standing above ground at the time. As a whole, however, the complex lacks either coherence or logic.

An interesting example shedding light onto the secondary function of the whole complex is the construction related to the cistern. No roof above it may suggest that the cistern was no longer in use as a reservoir for rainwater. Instead, it was involved in some kind of production, especially as the whole area was now

dedicated to some craft-related activity. The 'tub' might have been used for flushing, washing, or cooling things, the water used for this purpose, which would have run in the groove and refilled the reservoir, needing not to be particularly clean, especially as all the residue and pollutants would have gathered at the bottom anyway.

The proposed interpretation of the secondary exploitation of the cistern seems plausible, because approximately 2 m away from it there were traces of metallurgical activity in the form of two small hearths or small kilns with post-production waste, such as heavily vitrified slag or cut pieces of bronze ingots, and various tools—an axe, whetstones, iron gravers, tongs, bradawls, chisels, knives—in the immediate vicinity, as well as the bottom of a clay vessel containing remains of slag and a knife for cutting/portioning sulphur (Chowaniec 2015b: 10; 2017: 193).

Manufacturing activity was additionally confirmed by an enormous assemblage of bone and antler artifacts. Intensification of antler processing in late antiquity has been observed at many sites throughout the Mediterranean. Products made of antler and horn were intended to serve as a substitute for ivory, which at the time was reserved exclusively for sacred items (St. Clair 2003: 16–17). Finished products, semi-products, waste and offcuts, bone material after preliminary processing were noted within the house. The largest group (almost 500 specimens) among the bone and antler artifacts were hairpins and needles made from metacarpals, metatarsals, tibias, and radial bones of cattle, and, in some cases, from

deer antlers (e.g., for hairpins made of bone, see Fitula 2018). The products were handcrafted with a turning lathe. The vast majority was carefully ground, rubbed and polished to give some shine to the surface. Many of the artifacts were left at an early stage of treatment, i.e., they were merely given a basic shape without any further elaborate treatment. In order to prepare a bone for further treatment, it had to be softened, in water, for example, so the cistern could have been useful in this context as well.

The cistern backfill was packed with fragments of plain table and kitchen ware, amphorae, and some ceramic building materials (from 36.2% to 14.7%, respectively) (Domżański 2018: 212–214), including mainly late Roman and Byzantine pottery from the 5th/6th century AD, and late Roman amphorae. However, there were also finds from earlier periods (Hellenistic), which most probably had been deposited in the backfill of cistern during the original usage or later in the process of cleaning and re-adaptation.

The fine ware seems to be a homogeneous group, represented by the most popular ARS vessels imported to Akrai in the 5th century AD (form 61 dish). However, the last use is indicated by one or two of the youngest finds, coming probably from the first decades of the 6th century AD. There were also many fragments of glassware which, mainly on the basis of parallel examples from other sites in Sicily, Italy, and the Levant, may be dated to between the 5th and 6th century AD. It would be in line with the date suggested by the pottery found at the site (Wagner 2015: 159, 165–167, Fig. 8.15).

The numismatic evidence is crucial for determining the history of this cistern and house. Two late Roman bronzes from level 5 are approximately 30 years older than the earliest finds from level 4, separated by a 10 cm thick layer, which seems hardly a coincidence. It has to be stressed that no coins of the FEL TEMP REPARATIO type, with the emperor and a rider on the reverse, were found in the cistern. They are dated from AD 355 to AD 363 and this refers to coins of a denomination reduced to size AE 3 or even smaller, found frequently at the site of Akrai. Neither are there any coins of the SPES REI PVBLICE type, usually quite common in Akrai, which come from the terminal years of the reigns of Constantius II and Julian II (about AD 355–363). The reservoir does not contain any AE 3 bronzes of the SECVRITAS REI PVBLICAE type, with Victory holding a palm and a wreath, which started to be produced in AD 364 and which are known from other parts of the town.

Thus, it may be hypothesized that the cistern served in its original function at least until about the mid 4th century AD. At the time, two coins of the VOT XX MVLT XXX type, from AD 347 or 348, both exceptionally well preserved, were deposited therein.

It is hard to tell whether the deposition of some much older Hellenistic bronzes—the three items from level 5—can be tied back to a more distant past, perhaps the original use of the cistern, or were somehow deposited contemporaneously with its later life. Most of the coins, if not all of them, found their way inside the cistern at the same time, about AD 350 to AD 355. However, numerous coins from level 4 (as

well as a single bronze of the VOT V type from level 3), dated to between AD 378 and AD 395, suggest that the intensive backfilling of the tank did not start before this period or shortly after that. Once it was clear that it could no longer hold water, it was methodically filled in. In level 2, around 1.50 m above the cistern bottom, clearly later coins minted in the first half of the 5th century AD were found next to coins issued at the end of the 4th century AD. At the same time, the much older Hellenistic coins, present in the backfill up to this level (above 761.83 m asl), ceased to appear. It suggests that the backfill soil now contained less archaeological material in general and, notably, not from distant past, mainly objects of daily use, or items which had gone out of use in a relatively recent past. The stratigraphic units of the fill grow thicker the closer they are to the cistern's inlet, while the number of coins found in the layers decrease.

Establishing the date when the reservoir was definitively filled in does not seem to be possible in the light of the numismatic and other finds. The youngest coin shows that it was approximately in the mid-5th century AD at the earliest, but most probably much later. Few small denominations confidently dated to the 5th and early 6th centuries AD have been recognized at the site of Akrai until now. It is therefore not surprising that, apart from the bronzes with a cross motif on the reverse found in level 2 (from about AD 425 to AD 455, if we assume the fringe dates), no later coins have been found. Thus, the answer to the question about the youngest archaeological material is rather given by the other kinds of artifacts.

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- BAR Carroccio B., *Pelorias 10*, Messina 2004
- CNS *Corpus Nummorum Saeculorum*, Milano
- OLA *Dal basileus Agatocle a Roma. Le monetazioni siciliane d'età ellenistica (cronologia – iconografia – metrologia)*,
- RIC Sutherland C.H.V., Carson R. A. G. (eds.), *Roman Imperial Coinage* vol. I: *From 31 BC to AD 69*, London 1984; Mattingly H., Sydenham E. A. (eds.), *Roman Imperial Coinage*, vol. II: *Vespasian to Hadrian*, London 1926

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# Post-Meroitic cemetery at the Khor Shambat site in Sudan



**Abstract:** Archaeological research at the Khor Shambat site (in Omdurman in central Sudan) has been conducted since 2012, when a team of scientists from the Institute of Archaeology and Ethnology Polish Academy of Sciences (Poznań) launched a salvage exploration of a Neolithic site and cemetery damaged by road construction. Research is now conducted within the scope of a grant from the National Science Centre, Poland (No. 2015/17/D/HS3/01492). Three seasons of fieldwork since 2016 have focused on the extensive prehistoric settlement spanning nearly 4000 years, from the early Mesolithic to the late Neolithic. As it turned out, the site had attracted not only Mesolithic hunters-gatherers and Neolithic shepherds, but was also used as a burial place for the Meroitic and post-Meroitic inhabitants of the region. A survey of about 1% of the surface of the Khor Shambat site (KSH 1) resulted in the discovery of 66 graves; 12 of these are probably post-Meroitic and of these three presented a rich and interesting array of burial goods, including imports from the Far East. At the same time, KSH 1 is one of the southernmost post-Meroitic cemeteries.

**Keywords:** Khor Shambat, Post-Meroitic, cemeteries, graves, anthropological analysis, burial goods

The designation Khor Shambat is derived from the name of a large wadi joining the Nile approximately 8.5 km north of the confluence of the White and Blue Niles and around 1.2 km north of the research site [Fig. 1]. The site is located on a small hill of limestone covered with heavily eroded iron mudstone, forming a culturally sterile layer. The thickest accumulation consists of silty sands, probably of aeolian origin, reaching more

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than 1.50 m in depth counting from the summit point. The stratigraphy reflected in these accumulations (from 1.50 m to 0.90 m below the modern surface) is composed of Mesolithic and Neolithic remains, containing numerous fragments of stone artifacts, shells, animal bones and ceramics. The surface layer was a gravel midden yielding mixed prehistoric material, ranging in thickness from a few to several dozen centimeters. The site is regrettably disturbed, not only by road construction, which was the reason for

undertaking archaeological salvage work, but also by modern residential building, farming and animal husbandry.

Investigation of this multiphase sepulchral and settlement complex, dated primarily to the Mesolithic and Neolithic periods, recorded burials that could be associated with younger, Meroitic and post-Meroitic settlement in central Sudan. Using the site as a preferential burial ground, these settlers also contributed to wide-scale damage of prehistoric cultural layers. Post-Meroitic grave struc-

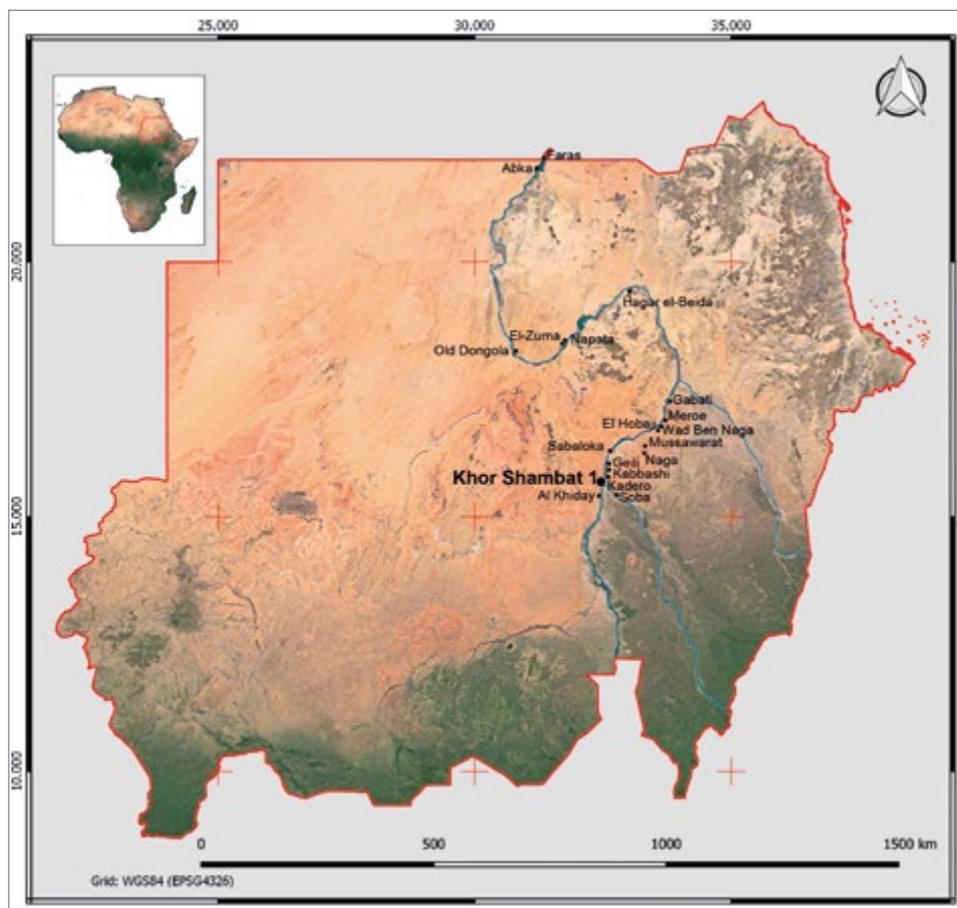


Fig. 1. Location of the Khor Shambat 1 site in Sudan (IAE PAN Poznań Khor Shambat Project | processing P. Wiktorowicz and M. Jórdeczka)

tures were particularly destructive in this respect. The trench section below Grave 28 revealed that the grave had destroyed about 50 m<sup>2</sup> of the Neolithic site at the base and about 100 m<sup>2</sup> in the younger layers above.

The current summit of the site is at about 384–385 m a.s.l. and about 8 m above the modern overflow level of the Nile. It is limited from the north and south by two small gorges (khors), which carry water to the Nile valley during rainfall.

## RESEARCH

The site was investigated in nine excavation trenches, mostly aligned north–south, running alongside the eastern edge of a local road in Omdurman. During the first season in 2012, four small excavation trenches (I, III, IV–V) were opened on the

southern slope of the hill. The goal was to investigate a major concentration of skeletal burials visible in the road cut. Several burials were examined, including distinctive Neolithic graves and what are probably Meroitic graves (without burial

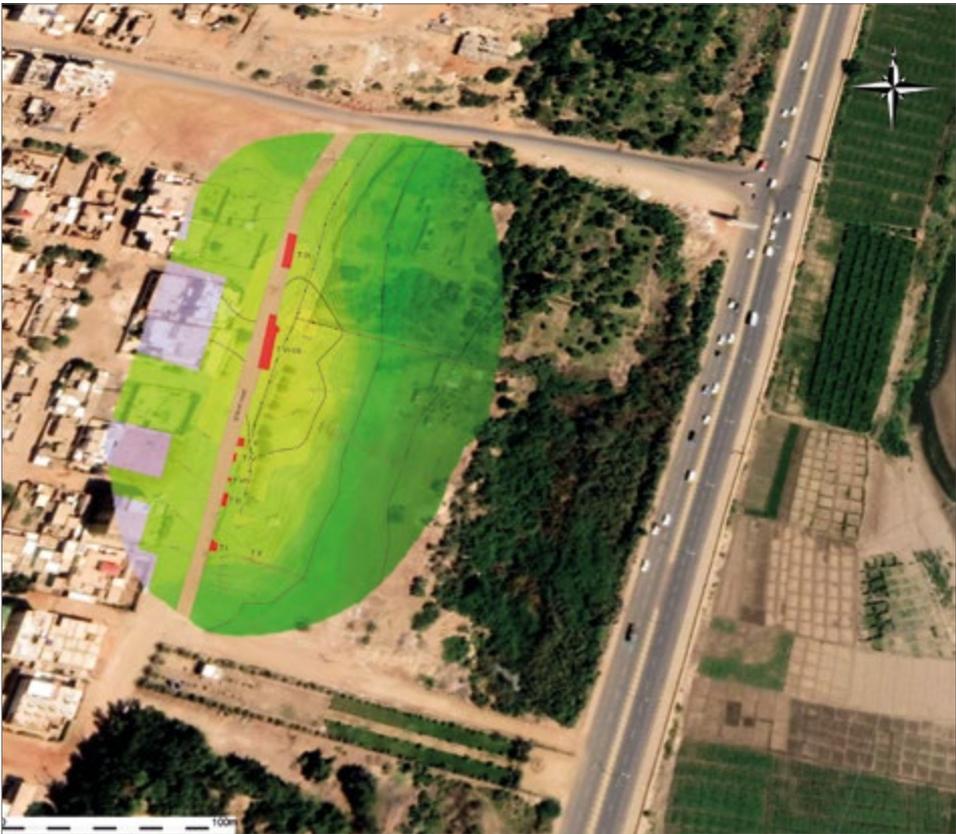


Fig. 2. Site map of Khor Shambat 1 with the location of the excavation trenches (IAE PAN Poznań Khor Shambat Project | P. Wiktorowcz and M. Jórdeczka, based on own surveying)

goods) (Bobrowski et al. 2016). In 2017, a small excavation trench VIII was dug in this part of the site, securing a burial that had become visible in the road-trench section and was in threat of being damaged by either rainfall or scavenging animals (Jórdeczka et al. 2020a) [Figs 2–3].

The main area of research in the first three grant seasons from 2016 to 2018 was located on the hill summit and its northern, slightly inclined slope. Three large excavation trenches VI–VII (combined in the course of the work) and trench IX

were excavated there. The stratigraphy in trench VI yielded an undisturbed sequence of Mesolithic and Neolithic layers, while revealing perturbations associated with post-Meroitic occupation. The western part of trenches VI–VII and all of trench IX were situated within the road lane; they were therefore lacking the Neolithic and partly Mesolithic stratification. However, the layer of gravel used for road construction turned out to be superimposed on the bottoms of burial pits and prehistoric features (Jórdeczka et al. 2020b).

## GRAVES AND BODY ARRANGEMENTS

In the process of surveying this multi-phase sepulchral and settlement complex, the team recorded burials that could be associated with younger, post-Meroitic settlement in central Sudan. Three of the graves contained an array of burial goods permitting more precise chronological determinations. Another nine graves without burial goods were classified in this settlement phase on the grounds of mainly formal similarities: shape of burial pit, type of fill, position of the skeleton in the pit and stratigraphic observations. No traces of any kind of grave superstructures have been preserved. The three most distinctive graves were located on the summit (Grave 28, trenches VI–VII) and northern slope of the hill (Graves 60 and 66, trench IX). More burials were uncovered on a gently inclined slope south of the summit (Graves 32, 36, 39, 40, 50, trench VI; Graves 22, 26, trench V; Grave 31, trench VIII; Grave 24, trench III).

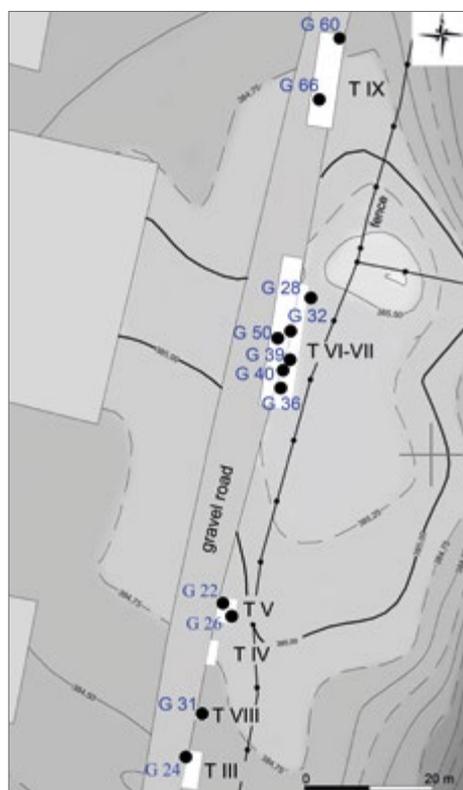


Fig. 3. Location of post-Meroitic graves in the excavation trenches at Khor Shambat 1 (IAE PAN Poznań Khor Shambat Project | processing P. Wiktorowicz and M. Jórdeczka, based on own surveying)

**GRAVE 28**

Grave 28 was recorded closest to the summit of the hill. The well preserved stratigraphy permitted a reconstruction

of the process of formation. The burial of an adult woman (*adultus*), aged 30–35 years, was located in a pit, about 1.40 m below the modern ground level. The



Fig. 4. Khor Shambat 1. Grave 28: top, burial with the grave goods, looking northeast; bottom, set of ceramic vessels and beads from bracelet and necklace (IAE PAN Poznań Khor Shambat Project | photos M. Jórdeczka)

pit outline was observed at a depth of 0.60 m below the surface. At the base, it was oval in shape, nearly circular, the diameter being about 1.20 m. The section revealed a characteristic bell-shaped form narrowing toward the top; above the 0.60 cm level (from the surface) the pit expanded to about 8–10 m in diameter, taking on an funnel-like shape. The body had been laid on its right side, the head facing south and the legs slightly drawn up [Figs 4 top, 5]. Stressors near the vertebrae included somewhat flattened vertebral bodies, Schmorl's nodes and no osteophytes; there were also deformations of the thoracic vertebrae and partial lumbarization of the first sacral vertebra (S<sub>1</sub>). Life stature of the deceased was estimated at 165 to 167 cm

(Stanaszek 2016). The grave was covered with a mound of large stones (blocks and sandstone slabs, averaging 10–25 cm in size). The grave goods comprised four vessels in the legs: a beer jar and three bowls. Several dozen beads, probably from a necklace (but in no clear arrangement) were found near the cervical vertebrae and head, and about a dozen beads from a presumed bracelet lay by the folded hands of the deceased [Fig. 5].

### GRAVES 60 AND 66

The two graves on the northern slope of the hill contained burials of adult men, archers to judge by the characteristic burial goods. Modern road trenching and the removal of several dozen centimeters of overburden in trench IX

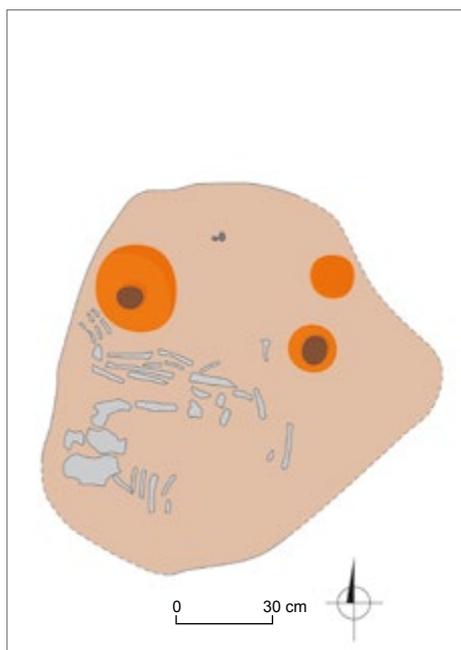


Fig. 5. Khor Shambat 1: Grave 28 (IAE PAN Poznań Khor Shambat Project | processing P. Bobrowski and K. Mugaj)

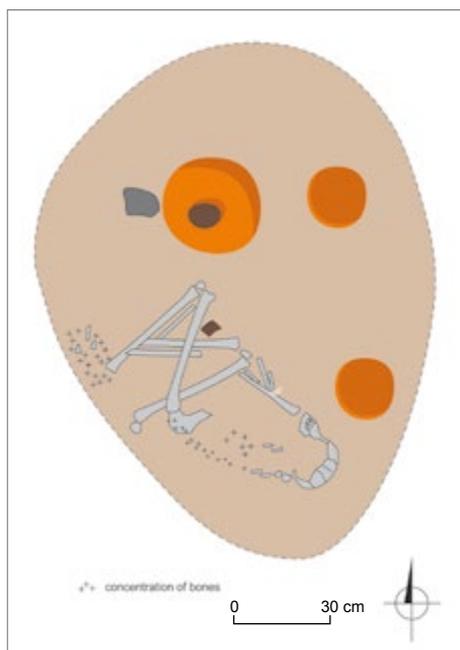


Fig. 6. Khor Shambat 1. Grave 60 (IAE PAN Poznań Khor Shambat Project | processing P. Bobrowski and K. Mugaj)

left for examination only the base section of the burial pits, set already in the culturally sterile layer of eroded iron mudstone.

The northernmost Grave 60 had an ovoid pit with maximum dimensions of 1.60 m by 1.25 m. The deceased was most probably a young man aged 18–20



Fig. 7. Khor Shambat 1. Grave 60: top, top view of the burial; bottom, clay vessel and personal jewelry, as well as an archer's ring from the grave goods (IAE PAN Poznań Khor Shambat Project | processing M. Jórdeczka)

(*iuuenis/adultus*), lying on his right side, with legs drawn up (the right leg more), the head to the southeast and facing north [Figs 6, 7 top]. He had severe porotic hyperostosis of the right orbital roof (*cribra orbitalia*), severe alveolar prognathism as well as calculus and tooth decay. Stature was estimated at 166–169 cm (Stanaszek 2018).

Three vessels were placed as grave goods in the burial pit: a beer jar and an open bowl (in the northern part of the pit at knee level), and a biconical bowl directly in front of the man's face. A stone archer's ring was found between the knees where the left hand

rested, and two quartz-bead bracelets were lying by the long bones of the right arm. Several dozen different beads from a necklace were recorded near the skull [see Fig. 7]. The grave pit was covered with an overlay of stones.

Grave 66 in the southern part of trench IX proved to have an extensive oval burial pit partly intersecting two smaller burial pits with Neolithic burials. Its diameter was about 2.10 m. The deceased, around the age of 25–35 (*adultus*), had been buried with grave goods in the southern part of the grave. He was lying on his right side with the head to the southeast, facing north, and

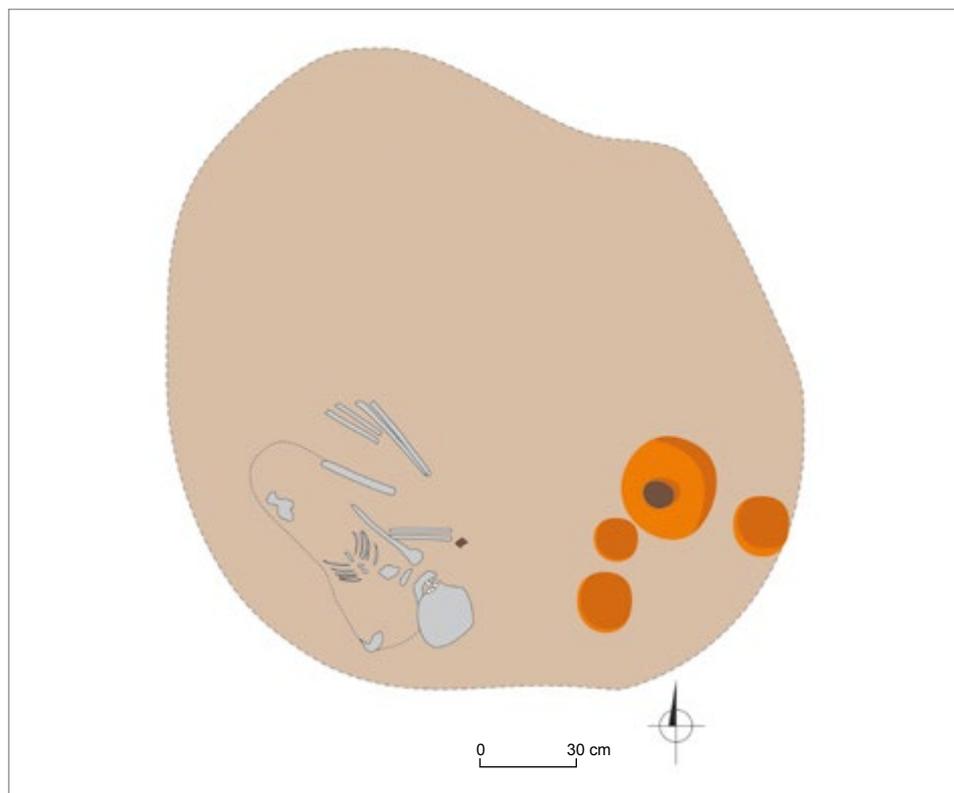


Fig. 8. Khor Shambat 1. Grave 66 (IAE PAN Poznań Khor Shambat Project | processing P. Bobrowski and K. Mugaj)



Fig. 9. Khor Shambat 1. Grave 66: top, top-view of the burial; bottom left, clay vessels; bottom right, personal jewelry, archer's ring and iron arrowheads from the grave goods (IAE PAN Poznań Khor Shambat Project | processing M. Jórdeczka)

legs drawn up tightly [Figs 8, 9 top]. The individual had severe prognathism and calculus. He was probably around 171–174 cm tall (Stanaszek 2018). The grave goods comprised vessels (a beer jar and three bowls) standing near the head of the deceased. A stone archer's ring was found near the face, where the right hand was placed. Several dozen beads and three cowry shells, probably from a necklace and a diadem, were found near the temporal bones of the skull and the cervical vertebrae. Two iron arrowheads were found next to the body by the back. The grave was covered with a loose overlay of stones (partly preserved, most likely damaged during road construction) [see Fig. 9].

The remaining post-Meroitic graves on the southern slope of the hill were devoid of burial goods and were classified by means of comparative analysis and stratigraphic observations. Part of the burials were laid in pits of oval, usually irregular shape (Graves 22, 24, 26, 31, 40) [Fig. 10, Table 1].

Grave 22 was the largest at 1.70 m by 0.70 m; it had an elongated shape widening near the legs. The burial pit of Grave 26 (partly examined) was probably of triangular shape (similarly widening near the knees). The burial pits of Grave 40 (1.10 m by 0.80 m) and most likely Grave 24 (partly examined) were shaped more regularly as ovals.

Grave 31 turned out to be an instructive example of grave formation (Jórdeczka et al. 2020a). The irregular oval burial pit, which probably had a funnel-like section, was wider on the eastern side, and was about 1.20 m

by 0.80 m in size. The grave structure was first detected at a depth of around 0.60 m; the base reached a depth of 0.80 m below the present ground surface and was embedded in the culturally sterile iron mudstone layer [see Fig. 10]. The woman was between 40 and 50 years of age at death. She was laid out on her left side, her lower limbs drawn up, the right hand bent at a right angle and the left hand near her face. Her bones were poorly preserved and incomplete. The skeleton was rather gracile, the ossification process visibly complete (pedicles conjoined with the core), minor *cribra orbitalia*, reduced mandibular alveolar bone, growth of the right and left canine (C) in the jaw stopped *in vivo* in the alveolus, obliterated alveolus on the left M<sub>1</sub>–M<sub>3</sub>. Tooth decay was discovered near the root of the right canine (C) of the jaw, along with periodontitis. The estimated stature of this individual was 155 to 159 cm (Stanaszek 2017). The grave goods, if any, did not leave any traces.

Compared to the Neolithic burials, the burial pits were distinguished by a light gray/yellowish dusty sand fill, often containing damaged artifacts from older burials and fragments of Neolithic vessels and stone artifacts. The fill clearly stood apart from the sterile iron mudstone layer. In four cases (Graves 32, 36, 39, 50), however, the burial pit could not be traced. The skeletons were found lying directly on the culturally sterile layer. Data on the sex, age, body articulation and position, as well as major pathologies to be had from Table 1.

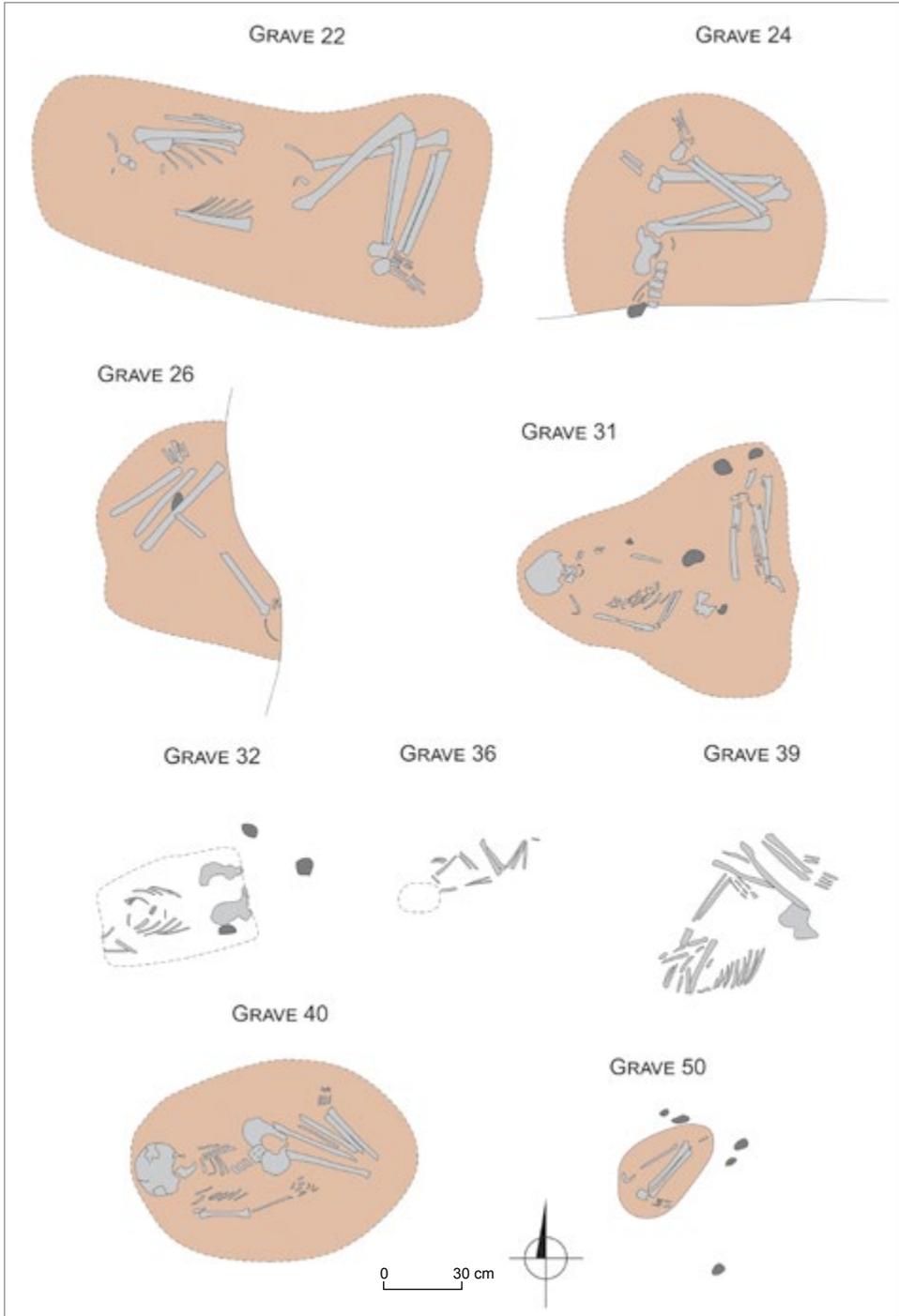


Fig. 10. Khor Shambat 1. Graves 22, 24, 26, 31, 32, 36, 39, 40, 50, without burial goods (IAE PAN Poznań Khor Shambat Project | processing P. Bobrowski, M. Jórdeczka and K. Mugaj)

Table 1. The skeletal remains from post-Meroitic graves without burial goods discovered at KSH 1, including sex, age, body position and major pathologies (Ł.M. Stanaszek)

Grave No.	Sex	Age	Body position	Notes/major pathologies
22	M	<i>Maturus</i> (40–50)	Lying on the back, legs drawn up slightly, left arm bent at the elbow to place the hand near the face, head oriented west and facing north.	Bones of hands and feet show signs of slight acromegaly (length of metatarsal II 9.0 cm); degenerative changes in the spine (osteophytes on C, degeneration of the surface of the vertebral bodies, strongly flattened vertebral bodies, osteophytes and Schmorl's nodes on L). Degenerative changes on the joint surfaces of the distal phalanges of the feet (rheumatoid arthritis?); thickened bones in the proximal phalanges of the hands and strong muscle attachments on the bones of the forearm suggesting intensive use of a bow; longitudinal bone defect in the distal part of the left femoral shaft (healed injury?); bone infiltration along the edge of the left fibula shaft (trace of healed injury?); reduced mandibular alveolar bone (periodontosis); calculus. Stature 187–190 cm (Stanaszek 2016).
24	M	<i>Maturus</i> (35–45)	Lying on the right side, legs drawn up slightly, head oriented west, facing south.	Slight osteophytes and Schmorl's nodes on the L5 vertebral body; inflammatory changes on the auricular surface of the left pelvic bone; post-inflammatory and stress lesions on the left femur above the patellar surface and on the popliteal surface. Stature 169–179 cm (Stanaszek 2016).
26	F	<i>Maturus</i> (35–55)	Lying on the left side, legs drawn up slightly, arms between the thighs, head oriented southeast, facing west.	Skeleton in the trench section (bones not fully examined); slight degenerative changes on the articular surfaces of the palm phalanges. Stature about 164 cm (Stanaszek 2016).

(continued overleaf)

Table 1. (continued)

Grave No.	Sex	Age	Body position	Notes/major pathologies
31	F	<i>Maturus</i> (35–55)	Lying on the left side, legs drawn up slightly, right arm bent at a right angle, left hand by the face, head oriented west and facing north.	Skeleton relatively gracile; minor <i>cribra orbitalia</i> ; reduced mandibular alveolar bone, growth of the right and left canine (C) in the jaw stopped <i>in vivo</i> in the alveolus; obliterated alveolus on the left M1–M3, tooth decay near the root of the right canine (C) of the jaw, periodontitis. Estimated stature 155–159 cm (Stanaszek 2017).
32	F?	<i>Adultus/maturus</i> (25–40)	Lying on the back with head to west, preserved especially well around the torso.	Skeleton relatively gracile; no age-related changes. Estimated stature 150–159 cm (Stanaszek 2017).
36	?	<i>Infans</i> (about 2)	Semi-fetal position on the right side, lower limbs contracted at the knees, upper limbs: left limb bent, right extended and head to west.	Skeleton gracile, non-ossified (including not fully formed deciduous teeth roots, non-fused vertebral arches and pelvic bones) (Stanaszek 2017).
39	F?	<i>Maturus</i> (40–50)	Lying on the left side, legs drawn up high; upper limbs: right one turned toward the face (no hand, skeleton disturbed by the trench cut), left one straight to the knees; head to southwest, facing north.	Ossification process completed (including pelvic crest); cervical vertebrae (slightly flattened vertebral bodies, osteophytes on the edges); minor calcaneal spurs; narrowing in the left distal humerus (mechanical?). Estimated stature 160–168 cm (Stanaszek 2017).
40	M?	<i>Infans II</i> (8–10)	Lying on the back, slightly turned to the right side; legs drawn up, head tilted to the left and oriented west, facing north.	Non-ossified skeleton (long bone pedicles separate; vertebral bodies fused, including <i>Th</i> newly fused; surfaces of vertebral bodies not ossified; non-ossified iliac crest; sacrum segmented).
50	?	<i>Maturus</i>	Arrangement of the lower leg fragments indicate a position on the left side with legs drawn up, probably with the head north-east and facing east.	Slight degenerative changes in the distal phalanges of the feet (Stanaszek 2018).

## GRAVE GOODS

### CERAMIC VESSELS

Ceramic vessels were found in three of the graves, and the set was relatively standardized consisting of three to four vessels. A beer jar appeared in all three sets. Two pieces found in Graves 60 and 66 had no decoration at all, while one piece, a vessel from Grave 28, was decorated with a simple imprinted ornament beneath the spout. All the graves also included two or three bowls in three basic types. Hemispherical open bowls were found in all of the burials: one in Grave 60 and two each in Graves 28 and 66. A globular bowl was found in Grave 28, and a biconical one in Grave 66.

Some of the hemispherical open bowls were decorated on the inside just below the rim with impressed (Graves 22, 66) and incised (Graves 22, 66) zigzag motifs. One of the bowls from Grave 60 had a simple herringbone impressed pattern. In a few vessels, the ornaments were filled with a red (Grave 66) or white paint. The spout on one of the bowls was additionally decorated with incisions [*Fig. 11*; see *Table 2* for a detailed description of the vessels].

### PERSONAL ADORNMENT

Numerous beads representing the remains of personal adornment were found near the deceased in Graves 28, 60 and 66. The adult woman from Grave 28 probably had a necklace and a bracelet. The necklace consisted of at least 111 beads of a diameter of 4 to 6 mm, made of ostrich eggshell (threading holes drilled from one side) and a single globular bead of an unspecified (light gray)

stone, 1 cm high and about 0.8 cm in diameter (threading hole drilled from both ends). The bracelet consisted of at least 10 beads of ostrich eggshell, the diameter varying from 3 to 6 mm, combined with a stone bead and two glass beads, all of globular shape. The stone bead was about 3 mm in diameter and dark gray in color. Of the glass beads, the green one had the same diameter, while the blue/navy blue one was 4 mm in diameter and 3 mm high [see *Fig. 4*].

Two bracelets and a necklace were found next to a man in Grave 60. One bracelet was made up of 18 quartz beads, of which 12 had a regular barrel shape (0.6–1.2 cm long, maximum diameter 0.6–0.9 cm with 0.2 cm diameter threading hole), two were of oblate shape (0.6–0.8 cm in diameter, threading hole 0.2 cm diameter) and four were tubular with rectangular section (0.8–0.9 cm long, 0.6–0.7 cm wide, threading hole and 0.2 cm diameter). The second bracelet was composed of 14 beads (13 barrel-shaped and one globular) of similar dimensions. The holes in the bracelet beads were drilled from both sides. The necklace consisted of at least 46 different beads. These included 24 pieces made of ostrich eggshell, eight of turquoise-colored faience, nine probably of carnelian and five of an unidentified gray stone. Ostrich eggshell beads had a diameter of about 0.5 cm (threading hole drilled from one side, diameter 0.2 cm). Faience beads came in two shapes: tubular (six pieces, 0.3–0.8 cm long, 0.3–0.6 cm wide, threading hole 1.5 cm diameter) and oblate (diameter

0.2 to 0.3 cm, threading hole 1.5 cm diameter). Carnelian beads were of similar shapes and sizes, including three tubular and six globular pieces. Five oblate beads of gray stone had a diameter of 0.2 cm and a threading hole 1 mm in diameter [see *Fig. 7*].

Three cowry shells found near the body in Grave 66 were probably part of head decoration. The necklace consisted of 210 different beads. The most numerous were ostrich eggshell beads (100), their dimensions similar to that of beads from Grave 60; 19 beads were made of quartz, includ-

Table 2. Vessels from Graves 28, 60 and 66 at the post-Meroitic cemetery in KSH 1; key: Rd – rim diameter, Md – maximum diameter, H – height, Th – body wall thickness (M. Jórdeczka)

Grave No.	Vessel type	Description
28	Beer jar [ <i>Fig. 11:1</i> ]	Brown ware, upper part burnished. Simple impressed decoration below the rim top. Break brown with black core, fine to medium vegetal temper. Rd 9 cm, Md 26 cm, H 30 cm
28	Unrestricted bowl [ <i>Fig. 11:4</i> ]	Grayish-brown, break black, fine organic temper. Inside, below the rim, impressed zigzag with traces of white paste filling. Rd 16.5 cm, H 12 cm, Th 6.5 mm
28	Unrestricted bowl [ <i>Fig. 11:3</i> ]	Grayish-brown, break black, fine organic temper. Decorated with an incised zigzag inside below the rim. Oblique cuts on the rim top. Rd 15.5 cm, H 12 cm, Th 6.5 mm
28	Globular, restricted bowl [ <i>Fig. 11:2</i> ]	Dark gray-brown, simple rim. Rd 8.5 cm, Md 14.5 cm, H 11 cm, Th.6.5 mm
60	Beer jar	Brown ware, upper part burnished. Simple impressed decoration below the rim top. Break brown with black core, fine to medium vegetal temper. Rd 9 cm, Md 31 cm, H 37 cm
60	Unrestricted bowl	Black ware, fine vegetal temper, break black. Simple rim. Inside, below the rim top, impressions similar to a herringbone pattern with white paste filling. Rd 18.5 cm, H 10.8 cm, Th 9.5 mm
60	Deep, slightly restricted bowl [ <i>Fig. 11:5</i> ]	Dark gray-brown, burnished vertically outside. Simple rim, undecorated. Rd 14.7 cm, H 12.5 cm, Th 6.5 mm
66	Beer jar	Noted.
66	Unrestricted bowl [ <i>Fig. 11:7</i> ]	Grayish-brown, break black, fine organic temper. Decorated with incised zigzag inside below the rim. Rd 17 cm, H 13 cm, Th. 6.5 mm
66	Unrestricted bowl [ <i>Fig. 11:8</i> ]	Black ware, fine vegetal temper, break black. Inside, below the rim, impressed zigzag with traces of red paste filling. Oblique cuts on the rim top. Rd 21 cm, H 14.3 cm, Th. 9.5 mm
66	Biconical, restricted bowl [ <i>Fig. 11:6</i> ]	Black ware, break black, fine organic temper, simple rim. Rd 9 cm, Md 13.5 cm, H 8 cm, Th.6.5 mm



Fig. 11. Khor Shambat 1. Vessels from Graves 28 (1-4), 60 (5) and 66 (6-8) (IAE PAN Poznań Khor Shambat Project | photos M. Jórdeczka and J. Wierzbicki)

ing 15 barrel-shaped beads (0.9–1.1 cm long, 0.7–0.9 cm in diameter) and four oblate ones (0.6–0.9 cm in size). Another nine oblate beads were made of turquoise-colored faience (dimensions same as in Grave 60). Quartz and faience beads appeared side by side. A total of 16 beads were made of carnelian, including eight oblate beads and four double- or triple-segmented oblates with dimensions similar to those found in Grave 60. A total of 66 beads were made from an unidentified gray stone and included 50 single, 10 double and six triple beads [see Fig. 9].

**ARCHER’S RINGS**

So-called archer’s rings were found near human remains in Graves 60 and 66. The ring found in Grave 60 had a regular

shape and trapezoidal section [see Fig. 7]. The piece was 3.2 cm long, the maximum and minimum diameters respectively 4.5 cm and 3.5 cm. The hole was drilled from both sides and had a diameter of 1.8–2.0 cm. The ring was made of a light gray fine-grained sandstone. The second piece (probably made of limestone) coming from Grave 66 was trapezoidal in section but with slightly concave sides. It was 4.2 cm long with the diameters respectively 4.5 cm and 3.5 cm, maximum and minimum; the hole was 1.8–2.0 cm.

**IRON ARROWHEADS**

Two single-barbed iron arrowheads with triangular points and a separate stem, 4.3 cm and 4.8 cm long, were discovered in Grave 66 [see Fig. 9].

**SOME ANTHROPOLOGICAL REMARKS**

The small number of skeletons (12) does not support generalized conclusions concerning the biostructure of the population living in Khor Shambat during

the Meroitic and post-Meroitic periods. Some more general remarks are possible, however, and only further research will show whether these findings can be ex-

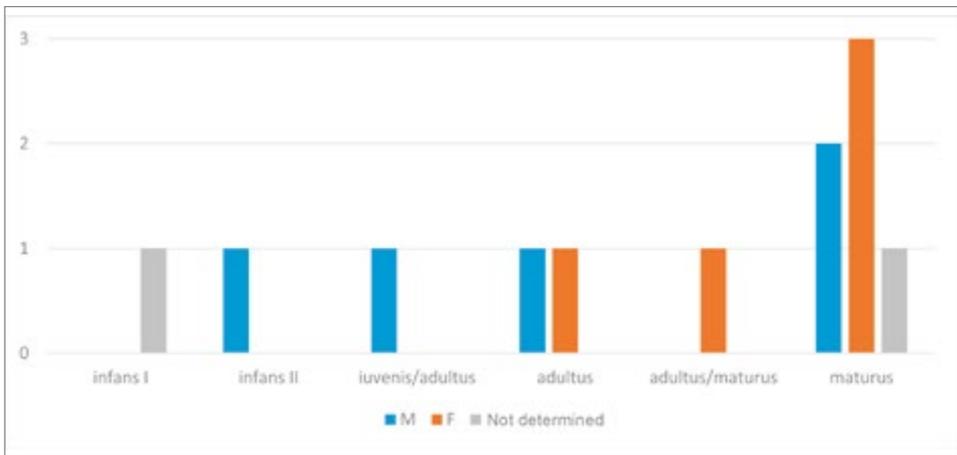


Fig. 12. Khor Shambat 1. Structure of age and sex of individuals from the Meroitic/post-Meroitic cemetery (IAE PAN Poznań Khor Shambat Project | processing Ł.M. Stanaszek)

trapolated to the rest of the population residing in the vicinity of Khor Shambat.

An analysis of the structure of the studied group in terms of age and sex showed that adults predominated (10), most of them (7) having reached maturity (within the *adultus/maturus* and *maturus* range). One person (Grave 60), probably male, died as a *iuvenis/adultus* (18–20 years old). He must have been considered by the community as an adult, having obviously reached a reproductive age. With regard to the sex of the deceased, women (4M, 5F) slightly outnumbered men, although in one case (Grave 50), the sex could not be determined [Fig. 12].

The two non-adult skeletons (Graves 36 and 40) were individuals who died in earlier (*infans* I, approximately two years old) and later infancy (*infans* II, approximately 8–10 years old); the latter individual was probably male. The high mortality of children is primarily associated with the high sensitivity of young organism to external factors (lack of individual immunity), as well as lack of everyday hygiene (Pyżuk 2004: 41).

The bulk of the pathologies noted were due to age-related degenerative-deforming processes; these are visible mainly in and around the spine (Gładkowska-Rzeczycka 1976; Buikstra and Ubelaker 1994). In addition to general degenerative changes (i.e., bone infiltration, roughness, deformed articular surfaces) visible in all parts of the skeleton (Graves 22, 24, 26, 50), these especially included osteophytic lipping and bone infiltration on the edges of

vertebral bodies (Graves 22, 24, 39), but also typical stressors, such as Schmorl's nodes (Graves 22, 24, 28) or flattening of the vertebral bodies (Graves 22, 28, 39). In addition, traces of healed injuries in the left lower leg area as well as post-inflammatory and stress lesions within the left lower limb (femur and knee joint) were noted in the mature men from Graves 22 and 24. Other conditions detected include dental calculus (Graves 22, 60, 66), tooth decay (Graves 31, 60), periodontitis (Graves 22, 31) and reduced alveolar bone in the maxilla and mandible (Grave 31). *Cribra orbitalia* was observed in Graves 31 and 60 in a mature woman and a young man respectively, witness to a particular form of nutritional stress, iron deficiency, anemia and/or parasites. In contrast, severe prognathism was detected in two young men from Graves 60 and 66, providing evidence as to the archimorphic traits of their skulls.

Body stature estimates for most of the analyzed individuals, that is, five women (Graves 26, 28, 31, 32, 39) and four men (Graves 22, 24, 60, 66) provided data for a comparative analysis [Fig. 13]. Sexual dimorphism can be observed in this study group. Male stature ranged from 166 cm to 179 cm (with one exception of a very tall man (187–190 cm) from Grave 22, whose bones bear signs of acromegaly), while women were 10 cm shorter on average (168–150 cm). In general, both men and women were either tall or very tall, which may indirectly suggest a population enjoying fairly good living conditions.

### CHRONOLOGY

From a typological point of view, the artifacts from the cemetery in Khor Shambat find formal parallels among finds from Meroitic, but above all post-Meroitic sites. This proves the long duration of both funerary rites and individual forms of grave goods. Similar forms of burials, in terms of pit shape, body arrangement and grave goods, were discovered at the cemetery referred to as Meroitic in Kadero (Krzyżaniak and Krzyżaniak 2011) and Al Khiday (Usai et al. 2014). The latter cemetery has yielded absolute dates in the 1st century AD. In Grave 25 at the cemetery in Kadero, similar types of bowls—open and globular—were recorded, so was a bracelet made of quartz beads. A similar bracelet was also found in Grave 26 at the same cemetery (Krzyżaniak and Krzyżaniak 2011: 204; Chłodnicki, Bagińska, and Polkowski 2015: 196), while an archer’s ring and an iron arrowhead were found in Grave 30 (Krzyżaniak and Krzyżaniak 2011: 206; Chłodnicki, Bagińska and Polkowski 2015:

196). On one of the bowls from Grave 66 at KSH 1, the rim was additionally decorated with incisions [see *Table 2*]. Similar bowls in Kadero are dated to the Meroitic period (Krzyżaniak and Krzyżaniak 2011: 203), while at the sites in Geili and Kab-bashi, they are associated with the late Meroitic/post Meroitic horizon (Caneva 1988: Fig. 28).

Graves 47 and 159 from the Al Khiday cemetery have yielded similar forms of ceramic vessels as those found in all the graves at the KSH 1 cemetery (Usai et al. 2014: 191). Faience beads of similar shape and color were also found in Grave 47, additionally accompanied by ostrich eggshell beads (Usai et al. 2014: 192). Similar forms of so-called beer jars with their characteristic globular shape and narrow neck were found in Tumuli 6 and 10 at Hagar el-Beida Site 1, dated to the late Meroitic/post-Meroitic period (around the Fourth Cataract on the Nile; Chłodnicki, Bagińska and Polkowski 2015: 199–200, 219). An assem-

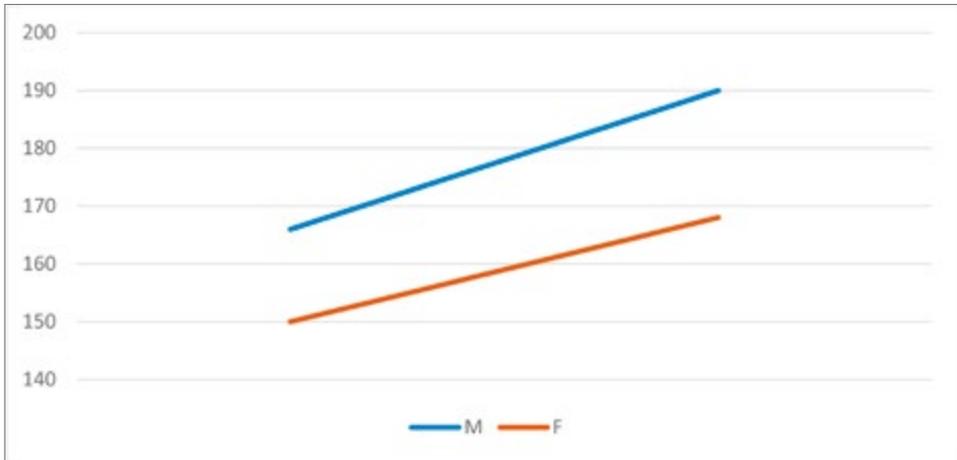


Fig. 13. Khor Shambat 1. Stature (in cm) variation in men (M) and women (F) from the Meroitic/post-Meroitic period (IAE PAN Poznań Khor Shambat Project | processing Ł.M. Stanaszek)

blage of such vessels, containing both beer jars and bowls, was found in the so-called Prince's grave at the site (Chłodnicki, Bagińska and Polkowski 2015: 214–215). Similar forms of turquoise-colored faience beads were found at the same site in Tumuli 5 and 10 at Hagar el-Beida Site 1, and Tumulus 25 at Hagar el-Beida Site 2 (Chłodnicki, Bagińska and Polkowski 2015: 226–228). All these burial features are dated to the post-Meroitic period. Similar assemblages of vessels (mainly bowls of all shapes) and personal jewellery are found in post-Meroitic graves in Gabati in Central Sudan (see, for example, Edwards 1998: 72 Fig. 4.2, 76–77 Fig. 4.4, 95–97 Fig. 4.15, 110 Pl. 85, 111 Pl. 90). Post-Meroitic graves from this cemetery are dated from the beginning of the 5th to the mid-8th century AD.

Five iron arrowheads were found, including four with single barbs in Tumulus 52 at Hagar el-Beida Site 1 (Chłodnicki, Bagińska and Polkowski 2015: 241). Five similar arrowheads were also found in post-Meroitic Grave 72B at the cemetery in Gabati (Edwards 1998: 87, Fig. 5.12). The closest formal analogy to the content of Graves 60 and 66 at Khor Shambat can be found in the grave of an archer (Tumulus 1) at the Fox Hill site in Jebel Sabaloka.

The “architecture” of the grave, body position and typical burial goods (beer jars, arrowheads, personal jewelry) from this grave are all amazingly similar to the burials from KSH 1 described here.

Signal grass seeds of the *Brachiaria ramosa* species found in a burial context at KSH 1 were radiocarbon-dated to between 258–381 cal AD (at 1-sigma;  $1720 \pm 30$   $^{14}\text{C}$  BP; Pokorná et al. 2014).

An extremely important component for dating are the blue and green glass beads found in the context of Grave 28. Parallels from post-Meroitic contexts include the cemeteries at Faras East 195, Abka 425 and el-Zuma (green) and Bab Kalabsha and el-Zuma (Then-Obluska and Wagner 2019: 91). They were made of glass produced in the southern Asian zone, in the region of India and Sri Lanka. According to Joanna Then-Obluska, imports of glass beads from the Levantine zone, which supplemented local Egyptian products during the Meroitic period, were replaced after the fall of the Meroe Kingdom (in the post-Meroitic period) by imports from the Indo-Pacific zone (Then-Obluska and Wagner 2019: 180). The Khor Shambat site is the southernmost point in northeastern Africa where this type of import has been recognized.

## SUMMARY

The graves from Khor Shambat probably represent only a fraction of the cemetery that functioned at the site during the post-Meroitic period. To date, a mere 1% of this site has been studied, yet the frequency of graves and their distribution over a relatively large area (several clusters) could indicate a much larger scale. The location

was most likely extremely attractive for the Meroitic and post-Meroitic inhabitants of central Sudan, as much as for the prehistoric hunters-gatherers and Neolithic shepherds. For 650 years, between 300 BC and 350 AD, the Kingdom of Meroe grew and developed in the territory of modern Sudan. The transfer, effected by King Arkamani I at

the beginning of the 3rd century BC, of the country's capital and the royal cemetery to the region between the Fifth and Sixth Nile cataracts (today's Butana Highland) is considered as the beginning of this new period in the development of the Kush state. Large urban centers developed in this area, with the capital and necropolis in Meroe at the forefront, as well as Naga, Wad Ben Naga and Musawwarat el-Sufra. Cities in the north, such as Napata, maintained their status, but the greater burden of settlement moved to the area of Butana. About 220 BC, the borders of the Meroe state in the north reached the region of Aswan and the First Cataract on the Nile. At the turn of the 4th/5th century, the Meroitic state disintegrated into a number of smaller states. The invasion of the Kingdom of Axum from Ethiopia, which destroyed Meroe and reached the confluence of the Atbara and the Nile, is assumed to be the main reason for the fall of the Meroitic kingdom (Chłodnicki, Bagińska and

Polkowski 2015: 184). The period between the fall of the Meroitic Kingdom and the rise of Christian states (between AD 350 and 543) is referred to as the post-Meroitic period. Most likely, a number of smaller states was established during this time under a variety of influences, but retaining for the most part older traditions. This is especially visible during the older period (4th to 5th century), when graves contain burial goods characteristic of the new society, as well as numerous objects of a Meroitic legacy, which can be observed in the cemetery at Khor Shambat 1. In Lower Nubia, centers were developed in Faras-Ballaña; on the middle Nile, they appeared in the area of el-Zuma and Old Dongola, while in the south, near el Hobaji-Soba, near the Sixth Cataract and the confluence of the two Niles (Chłodnicki, Bagińska, and Polkowski 2015: 216). The cemetery in Khor Shambat was probably in the zone of influence of the population from this center.

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# The faunal remains from Mamluk Khirbat al-Sar (Jordan)



**Abstract:** Excavations at Khirbat al-Sar in 2019 yielded a small assemblage of animal remains dating mainly to the Mamluk period. An archaeozoological analysis provided insight into the food provisioning of the site's inhabitants. Caprines (sheep and goat) and cattle made up the bulk of animal food products. The other species present in small quantities are the dromedary, the horse, the dog, the chicken and the hare. The faunal remains offer an opportunity to collect data on animal management and consumption during this period, of which we know very little in terms of archaeozoology.

**Keywords:** faunal remains, caprine, cattle, dromedary, archaeozoology, Mamluk, Jordan

In general, animal bones discovered during an archaeological excavation may be the result of either natural processes, independent of human activities, or they may be anthropogenic in origin (Lyman 1994: 115). The former are chiefly intrusive—animals like rodents and carnivores dying *in situ* of a variety of causes (ailment, accident, natural catastrophe, building collapse, etc.). Often they are commensal for humans and then the bones represent food waste found in an oven, on an occupation floor or dumped, for example, when cleaning house. These animals could have also died from natural causes, either illness or accident. The carcasses would

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have been thrown away without being consumed, deposited in pits, in refuse fill or simply put aside in the homes (Monchot 2016: 261). The article discusses the faunal remains from three trenches excavated by a team from the Polish Centre of the Mediterranean Archaeology (University of Warsaw) working at the site of Khirbat al-Sar in Jordan.

Khirbat al-Sar (the ancient name is not known) lies in the western suburb of modern Amman [Fig. 1 inset]. Its location on the plateau edge (972 m a.s.l.), commanding a broad view to the south and west, made it an important strategic and trading point on the road linking the Jordan Valley with Rabbat Ammon/Philadelphia/Amman. Travelers from the second half of the 19th century and the first half of the 20th century either mentioned or described the site briefly (see numerous references in Młynarczyk and Burdajewicz 2018), but no field excavations had been conducted there.

Many architectural relics have been preserved in Khirbat al-Sar, among them a magnificent architectural complex standing on the highest ground in the area. It includes a square building, probably erected in the Iron Age, and a large arcaded courtyard added in the Roman period (2nd–3rd century AD) [see Fig. 1], as attested by the characteristic material and building technique, as well as the style of the architectural decoration. The excavators also unearthed evidence for the enclosing of the Roman-era courtyard sometime during the 9th or 10th century and its use as a shop or residence into the 15th century. A lintel block in this chamber was decorated with an equal-armed cross set within a wreath, which

may have been a Christian symbol. Human remains, buried without any grave goods, were discovered under a courtyard arcade; they were most likely Bedouin burials from late Ottoman times, dating to the 19th century.

A survey conducted by the PCMA UW team within a fenced area belonging to the Department of Antiquities, which covers 16,000 m<sup>2</sup>, aimed at a better understanding of the site (it should be noted, however, that a part of the ancient site lies outside the fence). The objectives of the survey were: a) mapping visible architectural remains; b) testing the area with non-invasive geophysical methods (electric resistivity); c) collecting surface finds to establish site chronology. In the follow-up, three trenches, S1, S2 and S3, were opened in the eastern part of the courtyard of an architectural compound provisionally identified as a Roman-period sanctuary (Młynarczyk and Burdajewicz 2018: Fig. 2).

Trench S1 was aligned with the long axis of the courtyard. It covered an area of 37.95 m<sup>2</sup> and revealed a massive north–south wall with a series of floors abutting it on the east. All of the floors except for the lowermost one were pottery-dated to the Mamluk period (13th–15th century AD). The lowermost floor associated with the original structure was attributed securely to the Roman period (2nd century AD?), also on the grounds of pottery finds.

Trench S2 (surface area 7.22 m<sup>2</sup>) was opened in front of the easternmost arch preserved in the southern row of arcades in the courtyard. The arches were clearly of Roman origin, but the floors associated with the occupation of this chamber, either

a dwelling or a workshop, yielded pottery of medieval, mainly Mamluk date. Trench S3 (surface area 9.1 m<sup>2</sup>) was situated outside the corresponding arcade in the northern row.

The exploration of these three trenches yielded material attesting to dense habitation of the site in the Middle Ages, especially in the Mamluk period, when

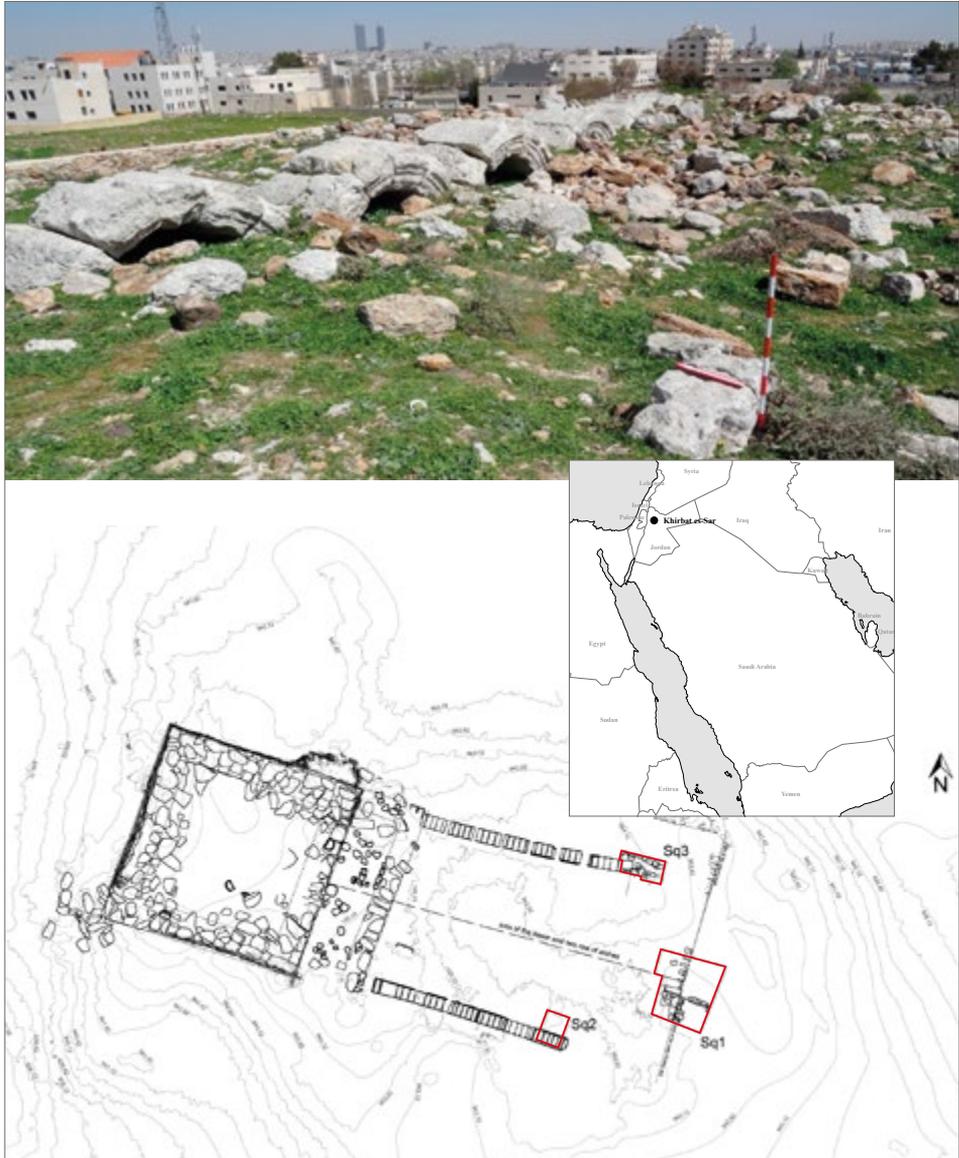


Fig. 1. Khirbat al-Sar: top, general view of the site showing the large Roman arcaded courtyard; bottom, master plan of the site marking the location of the three excavated trenches S1, S2 and S3; location of the site in the region in the inset (Courtesy PCMA UW Khirbat al-Sar Project | photo and processing J. Młynarczyk and M. Burdajewicz; plan A. Kubicka)

the earlier Roman structures were largely reused. Among the finds from the survey was a small faunal assemblage (NISP = 375; of this 301 in trench S1, 50 in S2 and 24 in S3). The assemblage was made up of the remains of seven species [Table 1].

While some of these remains could date to Roman times, they will be considered for the purpose of this preliminary study as coming from the Mamluk period. (Two human phalanges in trench 2 [Bo55] are most certainly from a disturbed grave.)

Table 1. List of species by number of identified specimens (NISP) and minimum number of individuals (MNI), recovered from the three trenches at Khirbat al-Sar (1, S2 and S3) (fieldwork in 2019)  
Key: M = Mamluk; R = Roman; LH = large herbivore, cattle or dromedary; Indet. = indeterminate

	Trench	NISP	Caprine	Cattle	Equid	Drome- dary	Dog	Hare	Chicken	LH	Indet
B001	S1 (M)	21	1	19	1						
B001-002	S1 (M)	6	2	4							
B002	S1 (M)	46	13	23	4		1				5
B003	S1 (M)	23	7	13							3
B004	S1 (M)	64	14	22		7			1	15	5
B005	S1 (M)	31	15	13							3
B006	S1 (M)	23	8	15							
B007	S1 (M)	4	2	2							
B010	S1 (M)	17	12	5							
B012	S1 (M)	32	17	13				1	1		
B013	S1 (M)	12	11	1							
B014	S1 (M)	13	7	2							4
B015	S1 (M)	4	4								
B018	S1 (R?)	5	5								
<b>NISP/MNI</b>	<b>S1</b>	<b>301/19</b>	<b>118/9</b>	<b>132/5</b>	<b>5/1</b>	<b>7/1</b>	<b>1/1</b>	<b>1/1</b>	<b>2/1</b>	<b>15</b>	<b>20</b>
B055	S2 (M)	5	2	3							
B056	S2 (M)	9	6	3							
B058	S2 (R?)	36	32	2					2		
<b>NISP/MNI</b>	<b>S2</b>	<b>50/5</b>	<b>40/3</b>	<b>8/1</b>					<b>2/1</b>		
B071	S3 (M)	7	4	2							1
B072-073	S3 (M)	17	6	11							
<b>NISP/MNI</b>	<b>S3</b>	<b>24/2</b>	<b>10/1</b>	<b>13/1</b>							<b>1</b>
<b>TOTAL</b>		<b>375</b>	<b>168</b>	<b>153</b>	<b>5</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>16</b>	<b>20</b>
% NISP		100	49.6	45.1	1.5	2.1	0.3	0.3	1.2	-	-
Total MNI		26	13	7	1	1	1	1	2	-	-

## METHODS

### SPECIES IDENTIFICATION

Bone specimens were identified to the lowest possible taxonomic category and anatomical element, or portion thereof. Published literature, including Barone's anatomy atlas (Barone 1986) and Steiger's paper on the camel (Steiger 1990) were used wherever necessary.<sup>1</sup>

Distinguishing between the bones of sheep and goat is a notorious challenge in archaeozoology. Several methodological contributions have been published to facilitate this task, largely relying on a macro-morphological approach (see Salvagno and Albarella 2017, and references therein). However, despite the extensive literature, specific separation is not always easy, the bulk of the criteria being not 100% reliable and diagnostic elements, such as horncore or complete coxae, being absent from the Khirbat al-Sar assemblage. The sheep and goat remains were placed in a combined sheep/goat, that is, caprine category.

### QUANTIFICATION

The method for determining the number of identifiable specimens used in this study is the most widely used faunal parameter available for the characterization of faunal assemblages from archaeological excavations. The quantification of bone remains is based on the total number of identified specimens (NISP)

and on a minimum number of individuals (MNI). The MNI is defined as "the minimum number of (complete) individual animals necessary to account for (to have contributed to) the specimens observed" (Lyman 1994: 510).

### AGEING

To estimate the age at death and thus obtain a mortality (slaughter) profile, two main methods have been used. The first one calls for estimating the stage of tooth eruption and analyzing dental wear: the work of Payne (1973)<sup>2</sup> for sheep and goats, and that of Grant (1982) for cattle. The second method, epiphyseal fusion, is less reliable as a result of the various taphonomic processes affecting skeletal remains, especially those of young immature individuals and those with a high marrow and spongiosa content. For caprines, cattle and equids, dates of bone fusion published by Barone (1986) were used.

### SEXING

The morphology of some skeletal parts differs between the sexes in the case of many mammal species. In bovids, female skulls lack horns or bear ones different in size or shape from the males. In caprines, the principal criteria for diagnosing sex differences are the morphology of the horns, the development and the form of the muscular insertion on the rear of

1 For more information on archaeozoological methods the reader is referred to the following handbooks: Lyman 1994; Reitz and Wing 1999; Chaix and Méniel 2001; Gifford-Gonzalez 2018.

2 There are many works criticizing and modifying the Payne methodology (see Greenfield and Arnold 2008). The most important in Payne's work is establishing a scale for classifying the stages of eruption and tooth wear.

the skull, and the first cervical vertebrae (Boessneck et al. 1964). Otherwise the female pelvis differs significantly in shape from that of the male, because the female pelvis must accommodate the birth canal (Prummel and Frisch 1986). Unfortunately, these parts useful for sexing are relatively fragile and are therefore rare in archaeological assemblages due to selective removal, post-depositional leaching, profile compaction, and other fragmentation processes. In some samples, it may be possible to use differences in bone size to establish a sex ratio as an alternative to differences in bone shape. Male skeletal parts tend to be larger than female homologues in most mammal species, reflecting larger average male body size (Fernandez and Monchot 2007).

## **SURFACE TREATMENT**

### **Cut and chop marks**

Butchering consists of a set or a series of sets of human activities directed towards the extraction of consumable resources from a carcass. It has a temporal duration, made up of the set and order of activities carried out to extract these resources from a carcass (i.e., butchering pattern) (Lyman 1987: 252). So, during butchering, anthropogenic marks are the result of several carcass-processing activities like skinning, dismemberment or disarticulation or meat removal (filleting) (e.g., Binford 1981; Lyman 1987; Monchot 1996). Two categories of damage resulting from tool use were identified, namely cut marks and chop marks (Horwitz and Monchot 2002). Cut marks are incisions resulting from the cutting movement of a sharp-edged implement on the bone

surface. These are elongated, linear striations of variable length and width. Chop marks are defined as broad, deep and relatively linear depressions that often have a V-shaped cross-section. Internal striations within the main groove may be observed. Chop marks are the result of a heavy blow to the bone with a sharp implement.

### **Burning**

The bones may show traces of combustion. These may be linked directly or indirectly to human action. In cases of intentional burning, the meat could have been cooked, a broth could have been made allowing fat recovery (in this case bone fragments are not charred), or even fresh bones could have been used as fuel. Bones may have also been burned by accident, falling into a hearth, being in a fire, or deposited underlying a fire. Burned bones can be grouped by color, which is directly related to the intensity of combustion (Stiner et al. 1995).

### **Carnivore traces**

In archaeology, the carnivore damage characteristic is studied to determine the effect that these species could have on a faunal assemblage, both through the complete removal/destruction of bone and through alterations made to surviving bone. The main traces left by carnivores on bones are chewing, gnawing, tooth punctures, scores and furrows (Fisher 1995; Pokines and Tersigni-Tarrant 2013).

## **METRIC EVALUATION**

The good state of preservation of animal bones from the site provides an opportuni-

ty for collecting relatively numerous bone measurements. All the measurements and abbreviations used are according to the

von den Driesch standard (1976). Measurements were taken using a caliper rule and are expressed in millimetres.

## RESULTS

Domestic mammals constitute the bulk of the assemblage, including the following species [see *Table 1*]: caprid (*Ovis aries/Capra hircus*), cattle (*Bos taurus*), equid, mainly horse (*Equus caballus*), dromedary (*Camelus dromedarius*), dog (*Canis lupus*

*familiaris*) and chicken (*Gallus gallus*). Wild mammals were represented only by the hare (*Lepus capensis*). Caprines represent 49.6% of the identifiable elements, closely followed by cattle (45.1%), which is not surprising given the important role played by these animals in the diet of the Mamluk inhabitants of the Levant.<sup>3</sup>



Fig. 2. Root etching on a caprine right radius (on the left) and a cattle humerus right diaphysis (on the right) (B056, trench S2) (Photo © H. Monchot)

### BONE PRESERVATION

Many taphonomic processes: anthropogenic, such as butchering and bone fracturing, or natural, can affect animal carcasses and bones between the animal's death and the burial of the carcass or bones (Lyman 1994: Chapter 9). At Khirbat al-Sar, apart from post-depositional fragmentation or fragmentation related to butchery activities, the bones are well preserved, with weak weathering (except for some longitudinal cracks on the long bones) and intense root etching. Indeed, the roots of many plants excrete humic acid, and often “dendritic patterns of shallow grooves” on bone surfaces [Fig. 2] are interpreted as the results of dissolution by acids associated with the growth and decay of roots or fungus in direct contact with bone surfaces (Behrensmeyer 1978: 154). The presence of root etching indicates the bone was in a plant-supporting sedimentary environment for at least part of its taphonomic history.

3 Meat for the inhabitants of Palestine in all of the historical periods has meant primarily one of the four domesticates: sheep, goats, cattle and pigs (MacDonald 2008: 32).

## SPECIES COMPOSITION

### Caprine: sheep (*Ovis aries* L., 1758)/ goat (*Capra hircus* L., 1758)

Sheep/goat are represented by 301 specimens, tooth and bone fragments and they were found in all of the excavated areas [see *Table 1*]. The total minimum number of individuals (MNI) is 13: nine in trench S1, three in trench S2 and one in trench S3. Distinguishing between the bones of sheep and goat is a notorious challenge in archaeozoology. Several methodological contributions have been published at different times and by various people to facilitate this task, largely relying on a macro-morphological approach (see Salvagno and Albarella 2017 and references therein). The sheep and goat remains were placed in a combined sheep/goat category, i.e., caprines.

**Skeletal representation.** The sample size was sufficient to observe caprine skeletal element frequencies [*Table 2*]. The representation and fragmentation is the result of several ante-depositional (e.g., butchery techniques) and post-depositional processes (e.g., trampling and excavation technique as well). It is thus difficult to imagine that caprines were introduced to the site whole for slaughter and consumption. Anatomical representation data indicate that a broad range of elements was present at the site and the data also suggest that the most frequent parts of the carcass discarded in the excavated Mamluk contexts were the upper anterior limbs (scapula, humerus, radioulnar), closely followed by the upper posterior limbs (coxal, femur, tibia). Furthermore, there is a significant underrepresentation of the trunk (vertebrae and ribs) and foot

elements (metapodial and phalanges). This skeletal profile represents a mix of elements derived from, on the one hand, butchery waste—head, lower limb and foot elements, indicating on-site primary processing of animal carcasses (skinning, evisceration and removal of extremities)—and on the other hand, meal leftovers.

No articulated joints were found but some long bones are complete (radius, metacarpal, metatarsal) allowing withers height to be calculated by multiplying the maximum length by a coefficient given by Teichert (1975) [*Table 3*]. The withers height of caprines from the archaeological site is between 62.1 cm and 65.9 cm.

**Slaughter profile.** The age-at-death of nine individuals from trench S1 could be established based on tooth eruption and wear:

- five young lambs aged from six to 12 months at death (Payne's stage C) [*Fig. 3*];
- one young adult aged two to three years at death (Payne's stage E);
- two adult individuals aged three to six years at death (Payne's stages F and G);
- one adult aged six to eight years at death (Payne's stage H).

In trench S2, one juvenile (Payne's stage C, 6–12 months at death), characterized notably by the presence of a complete skull, and two adults could be identified. One adult is present in trench S3. One should also note the presence of two femurs, two metacarpals and one humerus in trench S1 and one humerus in trench S3, the unfused epiphyses of which are characteristic of immature animals.

The percentage of juveniles (6/13=46% of the MNI) indicates a substantial presence of young animals. Such a presence of suckling lambs is not uncommon and

is recorded on archaeological sites from late antiquity and the Middle Age in Jordan (e.g., Machaerus: Monchot 2019; Khirbet el-Dharih: Bouchaud et al. 2018; Khirbet el-Samra: H. Monchot, unpublished data).

*Surface treatment.* Only three caprine bones from Khirbat al-Sar show butchery marks. The first one was observed on a proximal extremity of a left radius (Boo2, trench S1, code Binford Rc-p5) on the

dorsal view; the second on the neck of a proximal extremity of a right scapula (Boo2, trench S1, code Binford S-2); and the third on the medial view of a distal end of a right humerus (Boo1, trench S1, code Binford Hd-2). All of these marks correspond to operations of dismembering of the anterior limb (shoulder and elbow), certainly from the perspective of removing the shank. In addition, a chop mark is reported on the diaphysis of

Table 2. Skeletal profile of caprine and cattle remains from Khirbat al-Sar presented by number of identified specimens (NISP) in a division by trenches

SKELETON PART	TRENCH S1		TRENCH S2		TRENCH S3	
	CAPRINE	CATTLE	CAPRINE	CATTLE	CAPRINE	CATTLE
Skull	2	6	24			
Mandible	14	5	1		1	
Isolated teeth	5	5	1			
Axis		1				
Cervical vertebrae		1				
Thoracic vertebrae	1	2				
Lumbar vertebrae	2	2				1
Vertebrae indeterminate		4	1			3
Sacrum				1		
Rib	29	37	1	2	1	1
Scapula	7	1			1	
Humerus	5	7		1	1	
Radius	4	9	2		1	
Ulna		4	1			
Metacarpal	6	1	1			
Pelvis	3	9	1	2	2	
Femur	5	2	1			1
Tibia	5	5	2			2
Talus					1	
Calcaneus	1	2				
Cubonavicular						1
Metatarsal	1	3	3		1	1
Phalanx I	1		1	1		
Long bone diaphysis	26	27		1	1	3
Indeterminate		2				
<b>TOTAL</b>	<b>118</b>	<b>132</b>	<b>40</b>	<b>8</b>	<b>10</b>	<b>13</b>

a tibia (Boo2, trench S1) and could thus correspond to disarticulation or even extraction of the marrow. Only one piece (a left proximal metacarpal, Bo12, trench S1) shows traces of burning. Finally, a proximal humerus (Boo2, trench S1) and a glenoid cavity of a scapula (Bo12, trench S1) showed gnawing/chewing traces left by a dog.

**Cattle (*Bos taurus* L., 1758)**

Represented by 153 bone remains, cattle accounts for 45.1% of the domestic mammals. The remains come from a minimum of seven adult individuals. Five of these are from trench S1, comprising four adults, identified from the right fused-radius proximal end, and a calf aged 18–24 months. One adult each came



Fig. 3. Three mandibles of young lamb (B006, S1) (Payne's Stage C, 6–12 months) (Photo © H. Monchot)

Table 3. Skeletal element measurements (in mm)

Bone/species	Side	Trench	Measurements							WH
<b>Humerus</b>			Btro	Htro						
Caprine	R	TR1	32.0	19.1						
<b>Radius</b>			GL	Bp	Dp	SD	Bd	Dd	BFd	
Caprine	R	TR2	161.2	34.6	16.7	18.5	33.1			64.8
Caprine	R	TR2					31.1			
Caprine	L	TR1		28.7	14.2					
Caprine	R	TR1		29.6						
Cattle	R	TR1		53.1	33.4					
Cattle	R	TR1		71.8	37.7					
Cattle	R	TR1					57.7	34.8		
Cattle	R	TR1					60.4			
Cattle	R	TR1					59.4			
Equid (horse)	L	TR1					85.9	49.7	78.3	
<b>Ulna</b>			LO	SDO	DPA					
Caprine	R	TR2	39.7	24.5	26.8					
Cattle	R	TR1	57.2	37.2	46.9					
<b>Scapula</b>			GLP	LG	BG	SLC	ASG			
Caprine	R	TR1	29.2	24.7	21.6	17.5	26.6			
Caprine	L	TR1	33.3	27.4	21.2	19.7	19.5			
<b>Femur</b>			Bd							
Cattle	R	TR3	85.1							
<b>Tibia</b>			Bd	Dd						
Caprine	R	TR1	29.5	22.6						
Caprine	L	TR1	27.3	20.2						
Caprine	R	TR2	28.3	21.1						
Cattle ♀	R	TR1	44.0	34.5						
Cattle ♀	R	TR1	54.3	41.7						
Cattle ♀	R	TR1	56.2	34.7						
Cattle ♂	L	TR1	76.0	46.1						
Cattle ♂	R	TR3	73.5	47.1						
<b>Talus</b>			GL	BL	GM	BM	Bp	Bd		
Caprine	L	TR3	27.6	13.6	25.5	14.3	15.7	16.8		62.6
Camel	L	TR1	77.2	41.0	68.9	42.3	43.7	52.5		
<b>Calcaneus</b>			GL	GB						
Cattle	L	TR1	114.9	45.1						
<b>Cubonavicular</b>			GL	GB						
Cattle	R	TR3	49.3	39.4						

Table 3. Continued

<b>Metacarpal</b>			GL	Bp	Dp	SD	Bd	Dd	
Caprine	R	TR2	127.1	23.6	17.1	14.3	27.8	17.3	62.1
Caprine	L	TR1		21.3	14.2				
Caprine	R	TR1		24.6	13.0				
Caprine	L	TR1		27.1	18.8				
Caprine	R	TR1		22.7	15.2				
<b>Metatarsal</b>			GL	Bp	Dp	SD	Bd	Dd	
Caprine	L	TR2	145.2	23.7	23.2	14.1	29.1	19.2	65.9
Caprine	L	TR2	143.5	21.9	21.2	12.4	25.7	17.2	65.0
Caprine	L	TR2		20.6	21.2				
Cattle	L	TR3		40.3	40.8				
Cattle	L	TR1		48.5	46.8				
Camel	R	TR1		60.4	46.4				
<b>Phalanx 1</b>			GL	Bp	Dp	SD	Bd	Dd	
Caprine		TR1	39.3	13.5	16.5	11.8	12.5	10.8	
Caprine		TR2	40.4	13.1	15.7	9.9	12.3	12.7	
Cattle		TR2	52.9	27.9	31.8	25.7	31.6	22.3	
<b>Phalanx 3</b>			GL	GB	Ld	BF	LF		
Equid (horse)		TR1	78.3	49.0	65.2	47.5	28.4		
<b>Femur</b>			GL	Lm	Bp	Dp	SC	Bd	Dd
Chicken		TR2	68.4	63.7	12.6	9.2	5.5	12.8	11.1

Key (according to Teichert 1975): GL = Greatest length; GB = Greatest breadth; GH = Greatest height; Lm = Medial length; GM = Greatest length of the medial half (talus); Bp = Greatest breadth of the proximal end; Bd = Greatest breadth (depth) of the distal end; BL = Breadth of the lateral half (talus); BM = Breadth of the medial half (talus); Btro = Greatest breadth of the distal trochlea (humerus); Htro = Height of the distal trochlea (humerus); Dp = Greatest depth of the proximal end; Dd = Greatest depth of the distal end; SD = Smallest breadth of the diaphysis; SC = Smallest breadth of the corpus (for the bird); GLP = Greatest length of the processus articularis (scapula); LG = Length of the glenoid cavity (scapula); BG = Breadth of the glenoid cavity (scapula); SLC = Smallest length of the collum scapulae (scapula); ASG = Shortest distance from the base of the spine to the edge of the glenoid cavity (scapula); LF = Length of the articular surface; BF = Breadth of the articular surface; BFD = Breadth of the distal articular surface; Ld = Length of the dorsal surface; LO = Length of the olecranon (ulna); DPA = Depth across the Processus anconaeus (ulna); SDO = Smallest depth of the olecranon (ulna); WH = wither height

from trenches S2 and S3. The skeletal representation [see *Table 2*] shows an even distribution between head, trunk, forelegs and hind limbs, with a dominance of meaty bones. The origin of the bones (butchery, leftovers) seems to be the same as for the caprines. The dimensions of the proximal radius [see *Table 3*] suggest the presence at least two males and three females.

Only a rib shaft (Boo6, trench S1) showed cut marks (filleting), while a cranial fragment (Boo2, trench S1) and a coxal fragment (Boo6, trench S1) demonstrated chop marks. Five pieces of bone (two long bone diaphyses, a condyle of a right mandible, a rib shaft and a right distal tibia) exhibited traces of combustion and a complete diaphysis (tube) of a metacarpal showed carnivore damage at both extremities.

The origin of the bones (butchery, leftovers) seems to be the same as that of the caprines.

### **Equid (*Equus sp.*)**

Five bone pieces belonging to an equid were identified from trench S1: phalanx 3, neck of a right scapula which was gnawed by a dog, fragment of coxal, distal epiphysis of a left radius and a fragment of a distal radius metaphysis. They belong to an adult individual, aged at least 42 months (age of the epiphysation of the distal radius, Barone 1986). The morphometric distinction of the different equine species is not easy, but the large dimensions of the distal radius and phalanx 3 [see *Table 3*] suggest that we are dealing with the remains of a horse (*Equus caballus*) rather than those of a donkey (*Equus asinus*) or a mule.

### **Dromedary (*Camelus dromedarius L., 1758*)**

The dromedary (Arabian camel) is represented by seven elements: one left talus, a right subcomplete metatarsal [*Fig. 4*], a lumbar vertebra, three fragments belonging to a coxal and one unidentified epiphysis. The dimensions of the animal from Khirbat al-Sar conform to those of modern camels [see *Table 3; Fig. 5*]. Camel remains are abundant in Mamluk levels at the Aqaba castle (De Cupere et al. 2017) and the Tell Hesban village (von den Driesch and Boessneck 1995).

### **Dog (*Canis lupus familiaris L., 1758*)**

The dog is represented by a fragment of a right mandible without teeth found in trench S1 (B 002, trench S1). Never abundant, dogs as a commensal species are often listed from sites in the Levant. The presence of some bones with traces of carnivore gnawing, chewing, tooth pitting suggested that dogs had access to the dumps and were generally rummaging through the garbage or scavenging for abandoned herbivore carcasses (or meal leftovers).

### **Chicken (*Gallus gallus domesticus L., 1758*)**

A distal diaphysis fragment of a tibiotarsus and caudal vertebrae testify to the presence of domestic fowl in trench S1, while a complete right femur and a right diaphysis fragment of a humerus are present in trench S2. Contrary to what is currently believed, it seems that chicken did not play an important role in the meat diet of the Khirbat al-Sar inhabitants.



Fig. 4. Dromedary right metatarsal (B004, trench S1) (Photo © H. Monchot)

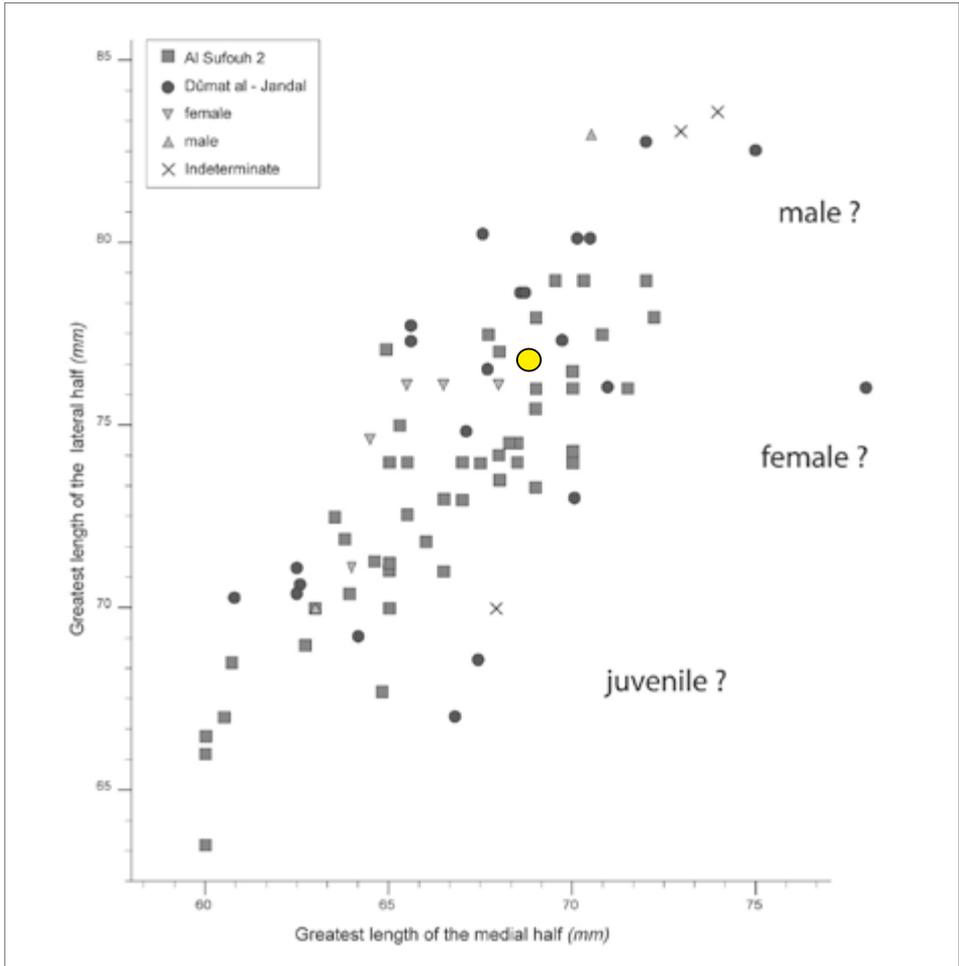


Fig. 5. The greatest length of the lateral half and the greatest length of the medial half (in mm) of the dromedary talus from Khirbat al-Sar in yellow (modified from Monchot 2014: modern data from Steiger 1990; Al Sufouh 2 from von den Driesch and Obermaier 2007; and Dûmat al-Jandal from Monchot 2013)

**Cape hare (*Lepus capensis* L., 1758)**

The only representative of a wild species, the Cape hare, is present at the site as a complete right diaphysis of a humerus found in trench S1 (Boo6). This species is widely distributed throughout the region today. It can occur in a wide variety of

habitats, from deserts and mountains to sandy deserts with sufficient vegetation (Amr, Abu Baker, and Rifai 2004). Never abundant, this species has been reported from many Jordanian sites, notably from the Mamluk levels of the Aqaba castle (De Cupere et al. 2017).

## SUMMARY AND DISCUSSION

First, it is interesting to note that these trenches delivered a small faunal assemblage of great diversity. The faunal list from Khirbat al-Sar is consistent with what is found in the region during the Mamluk period (13th–15th century AD). The bone assemblage is dominated by domestic species, sheep/goat and cattle, species widely consumed in the Levant in Roman and Byzantine times (King 1999; Kroll 2012), and then later in the Middle Ages, in different Islamic periods (e.g., von den Driesch and Boessneck 1995; Loyet 1999; Gharaibeh 2002; Brown 2016; Bouchaud et al. 2018; Bar-Oz and Raban Gerstel 2019; Marom 2019).

These bones represent meal leftovers or residue from primary butchery. It is worth remembering that meat was an expensive dish and the preparation of food was of interest mainly to the top echelons of the Mamluk ruling elite, to members of the civilian upper class who were able to cook food at home, and to

the professional cooks who kept shops catering to the urban lower classes (Levanoni 2005).

Classically, sheep are preferred for their meat,<sup>4</sup> wool and also milk. Goats, on the other hand, are better suited to more arid environments and breed more quickly than sheep. Goats also provide more milk than sheep and for a longer period of time (Palmer 1998). Cattle were exploited for two main reasons: most importantly, they provided traction for plowing the fields, and secondarily, they were a source of meat.

No pig remains have been identified certainly in accordance with Islamic bans (Simoons 1994; Jump 2002; Benelmouffok 2008). Chicken also does not appear to have been an important part of the inhabitant's diet.<sup>5</sup> Wild species showing signs of hunting activity are represented by hare alone.

Camel and horse are present, which should not come as a surprise given

4 Ways of adulterating meat dishes included the incorporation of much fat and little meat; the replacement of mutton with goat meat or with the meat of impure animals like dogs, and the use of spoiled, cooked meat or carrion masked by the liberal use of spices (Levanoni 2005: 210).

5 An explanation other than taphonomic processes for the lack of chicken bone from the site is that this animal was so expensive in the 14th century that an unskilled worker needed one month's earnings to buy 12 chickens (Ashtor 1970 cited by Perho 2014).

the importance of these animals in the villages during Mamluk rule (Shehada 2013). For instance, the economic role of the dromedary, especially for the Bedouin, was such that Arab poets often referred to the animal as a ‘ship of the desert’. Both the Mamluk and the Bedouin use the camel for many purposes, including transport, meat, milk, and sometimes to make use of their skins. But while an abundant (ethnographic) literature exists demonstrating the economic value of the camel, archaeozoological studies of camel bones have developed only in recent years (Shehada 2013; Monchot 2014).

Concerning the origin of the bone remains, the paucity of the sample does not allow rigorous conclusions to be drawn concerning caprine and cattle kill-off patterns at Khirbat al-Sar. Nevertheless, we have seen that bone remains represent food leftovers rather than remains from primary butchery and that juvenile animals (lambs/kids) and young adults are in the majority. In the sheep/goats category, the meat-bearing parts, such as shoulder, lamb shank and lamb rump predominate. Traditionally, male lambs, which are appreciated by the Bedouin/Muslim population, are killed in the first year,

particularly on occasions like weddings or religious holidays (for instance, Aïd al-Adha). Of the males not killed as a lamb, most are killed in the second year. Female lambs are rarely killed, because of the replacement needs of the flock. Few juveniles are kept on for breeding; rams are finally chosen at 3–4 years, and the rest are killed at that age. Males are often castrated a few months before slaughter to improve weight gain. The killing of goats follows a similar pattern, although probably a higher proportion is killed as kids as there are more individuals surplus to breeding needs: fewer kids die, and twinning is rather commoner than in sheep (Monchot, Lorain, and Bendezu-Sarmiento 2019).

The usual cooking method involved long simmered stews for tough and tendinous portions of caprines. Charred bone is extremely rare on Islamic sites, indicating that roasting with the bone was probably equally rare. Finally, the presence of many small fragments of ribs implies preparation of a costal grill, as for making kebab.

Further excavations bringing more faunal samples, should add substantially to the archaeoenvironmental and archaeozoological body of data already processed from the site.

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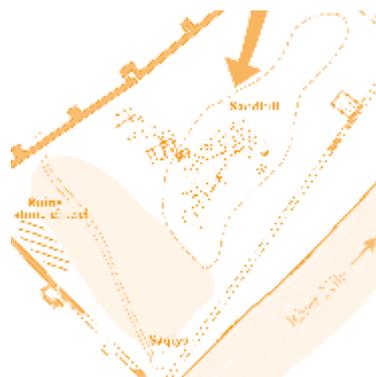
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# Pachoras: a brief history of the town from the 5th to the 7th centuries



**Abstract:** Pachoras was an important town in mid-5th century AD Nobadia, but its steady urban development was broken by a flood of catastrophic proportions occurring sometime in the beginning of the second half of the 5th century AD. The devastated settlement and so-called Enclosure remained deserted until the close of the 6th century. A sand dune rising 5 m in height accumulated in the meantime inside the enclosure, and it is on this hill that the Cathedral of Aetios, the first of the medieval stone cathedrals of Pachoras, was constructed before the end of the 6th century.

**Keywords:** Makuria, Nobadia, Pachoras, destruction of the enclosure

The large “valley of Pachoras” was inhabited from the Neolithic period (A-Group) through Ottoman times and, to be true, even through the mid-20th century, until a time when the Nubian Lake put a definite end to any research, fragmentary at best in any case, in this region. Archaeological excavations have helped to outline the history of settlement in the late Meroitic period and the broadly understood Christian period, chiefly within the frame of the Kingdom of Makuria. The times of the see of Pachoras and its cathedrals are indeed the brightest period in the history of this agglomeration (Jakobielski 1972; Kubińska 1974; Godlewski 2006; Jakobielski et al. 2017).

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There is no doubt today about the millennial continuity of occupation in this part of the Nile valley, which was at its widest here in the section between the First and Second Cataracts. The topographic conditions were advantageous to human settlement, but at the same time they posed a threat. The low flat riverbank where Pachoras was located, stretching roughly 2 km inland to the rock cliff in the west, was easily inundated by the Nile flood, which occasionally took on catastrophic proportions. One of the greatest disasters of this kind occurred in Pachoras in the 6th century AD, in all likelihood between 530 and 550.

The date of this cataclysm has been confirmed so far only by archaeological evidence from Pachoras on the one hand (Adams 1986: 19) and Dongola on the other (Godlewski 2019), but the part of the Nile Valley that sustained damage in the outcome of this event must have been much more extensive, perhaps even including Egypt. The issue of this climatic anomaly obviously merits a broader and detailed examination.<sup>1</sup> Suffice it to say that there

are two archaeologically recorded events significant for reconstructing local history from the 5th to the 7th centuries:

1) destruction and abandonment of the citadel at Pachoras (dubbed the Enclosure by early researchers) and the settlement architecture further north of the hill, and

2) emergence of a new political center at Ikhmindi, which a surviving inscription suggests was founded by the Nubian King Tokiltoeton from the second half of the 6th century (Donadoni 1959; Deichmann and Grossmann 1988: 81–88). The phrase that “the fortification was built for the safety of men and animals”, which reflects societal response to a situation of threat, could be a reference to a natural cataclysm(s) like a deluge, perhaps repeated, of unseen proportions.

In the late Meroitic period, between the 2nd century BC and the 4th century AD, Pachoras was one of the more populous settlements between the First and Second Cataracts. The population was also socially differentiated, judging by the diversity of tomb superstructures

1 The link between global climatic changes and variations of the Nile discharge has already been reported, the Nile flood maxima and minima being a direct factor of the intensity of the rainy monsoon season in the Ethiopian highlands feeding the sources of the Nile (Hassan 1981; data from AD 640 to the present). Recently, the possibilities of modeling clusters of volcanic eruptions, ultimately in order to analyze the societal response to a climatic or environmental shock, as in the case of droughts caused by Nile failure, is being explored by the “Yale Nile Initiative” headed by Joseph Manning; this collaborative project to be concluded in 2023 is focused on Ptolemaic Egypt (305–30 BC) (Manning et al. 2017). A discussion of climate modeling and societal resilience in the Eastern Mediterranean in the past millennium, with references to methodological issues and further reading, can be found in Xoplaki et al. 2018. It should be kept in mind, however, that recent extensive research into ice-core records of volcanic eruptions, which is offering a new tool for dating episodes of environmental stress, concerns drought rather than excess floods, hence the evidence offered is still circumstantial, e.g., Michael McCormick speaking of a series of volcanic eruptions that caused climatic changes from Britain to China (and Ethiopia in the south), ushering in a cooling that recent studies have shown to be at the root of drought, crop failure, a breakdown in food supply chains, and famine (see Gibbons 2018).

discovered by Francis Llewellyn Griffith at an extensive Meroitic cemetery (Griffith 1924; 1925). The settlement connected with this burial ground was located most probably in the northeastern part of the wide valley, near the river, but there is nothing in the archaeological record to substantiate its existence. The fortifications of the Enclosure (Citadel), which could be seen on the surface, were explored in part by Griffith (1926: 25–29, Pls XXI–XXX) and then documented

by Leonard Wooley in 1912 [Fig. 1]. The early dating of these defenses to the late Meroitic period proved unjustified in the light of later research. Ugo Monneret de Villard (1941) moved the construction of the citadel to the 4th/5th century AD, and this view has never been challenged.

Being a complex second in size only to Dongola in all of the kingdom, the Pachoras Citadel was probably made into the seat of the rulers of Nobadia following the transfer of the royal necropolis from

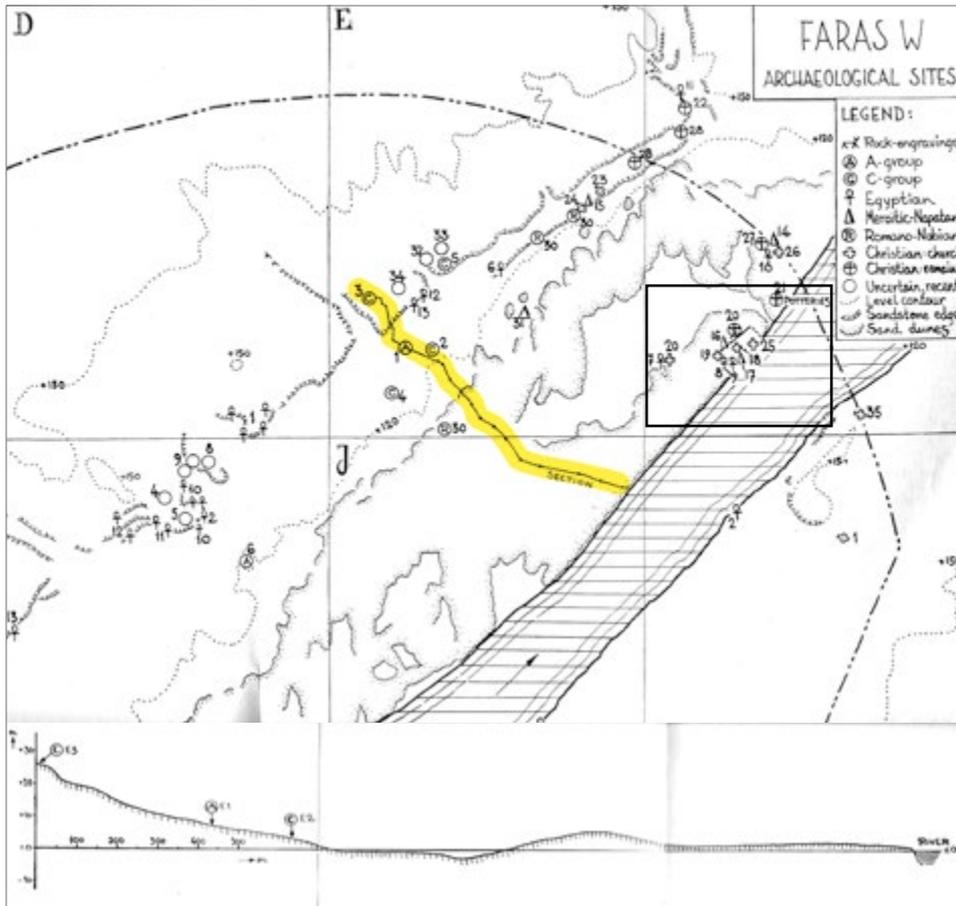


Fig. 1. Archaeological sites in Faras West; box, the site of the citadel and the pottery workshops on the riverbank; bottom, section looking north (downriver) (Map H.-A. Nordstrom; reproduced after Adams 1961a: Fig. 1)

Qustul to Ballaḥna, an event which has been dated hypothetically to the mid 5th century AD. Therefore, the citadel would have taken on importance as an administrative center of the kingdom, its location justified from an economic point of view as well as meeting security needs. Standing on the western Nile bank, far from the mouth of Wadi al-Allaḡi, it would have afforded protection to a sizable population in danger, probably quite real, of being attacked by marauding desert tribes.

The Enclosure was filled with official

and private architecture, of which nothing remained except the stone-built Rivergate Building, which was transformed into a church in the late period (Griffith 1926: 66–86, Pls XLVI–LIX). The catastrophe caused by a high Nile and perhaps also intensive rainfall was sudden and tremendously destructive. The flood breached the eastern curtain of the fortifications and annihilated the largely mud-brick architecture of the town leaving behind only the stone elements, mainly doorways and foundations [Fig. 2]. Villages in Sudan

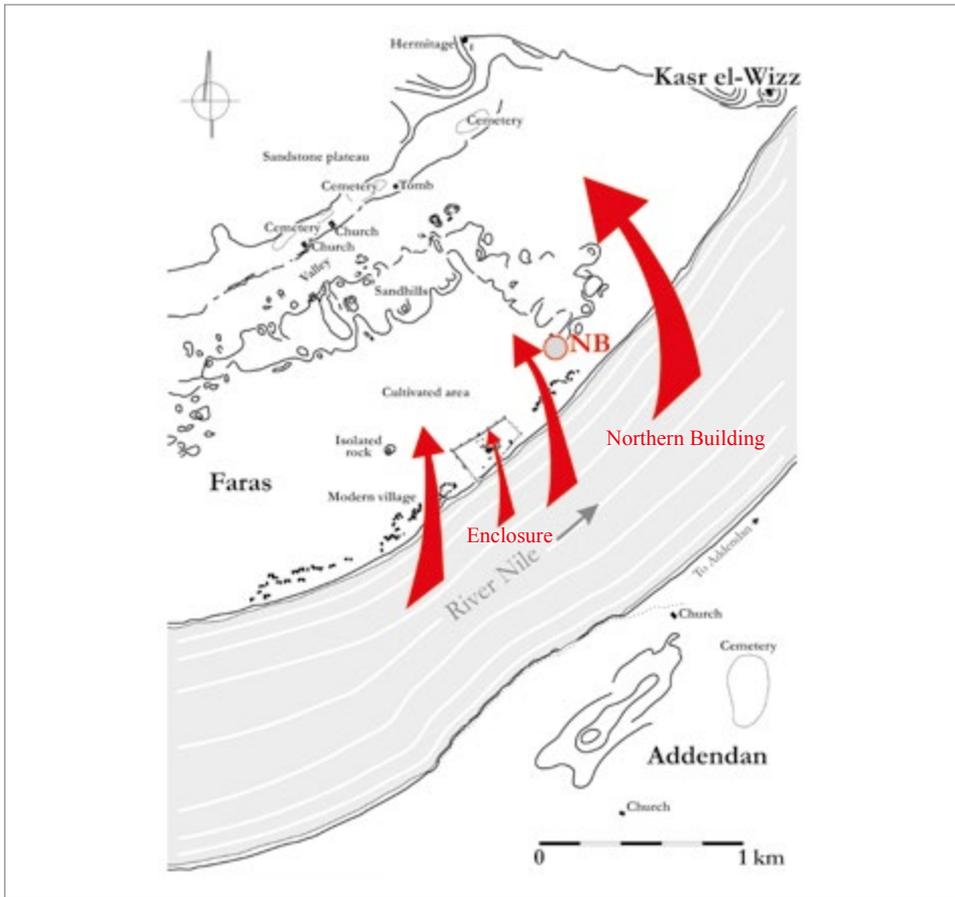


Fig. 2. Penetration by the high Nile into the Pachoras agglomeration in the mid-6th century AD: note the location of the Enclosure and the Northern Building, later the pottery workshops (NB) (Drawing S. Mašlák)

which survived the cataclysm of 1986 presented a similarly tragic view: fragments of doorjambs were the only elements of the washed out houses still sticking out from the flat ground. A rather general description of the village architecture once inside the Pachoras Enclosure is possible based on an examination of these remains (Godlewski, in preparation).

The extent of the disaster would have forced the residents of the town to leave. The city administration was moved to Ihmindi, while the residents of Pachoras found a new place for their

houses on the western cliff, high above the river and the devastated valley. The date of this event is not known, but it must have taken place most probably in the 530s or 540s. The first churches in Pachoras, the South Church and the North Church, were built on the top of the cliff (Mileham 1910), and the earliest tombs of the fresh converts to Christianity were situated further to the north (Griffith 1927: 67–78, Pls LII–LVIII; Monneret de Villard 1957: Pl. CXXXVI). The dwellings from this period must have been located around the churches, but there were not discovered.

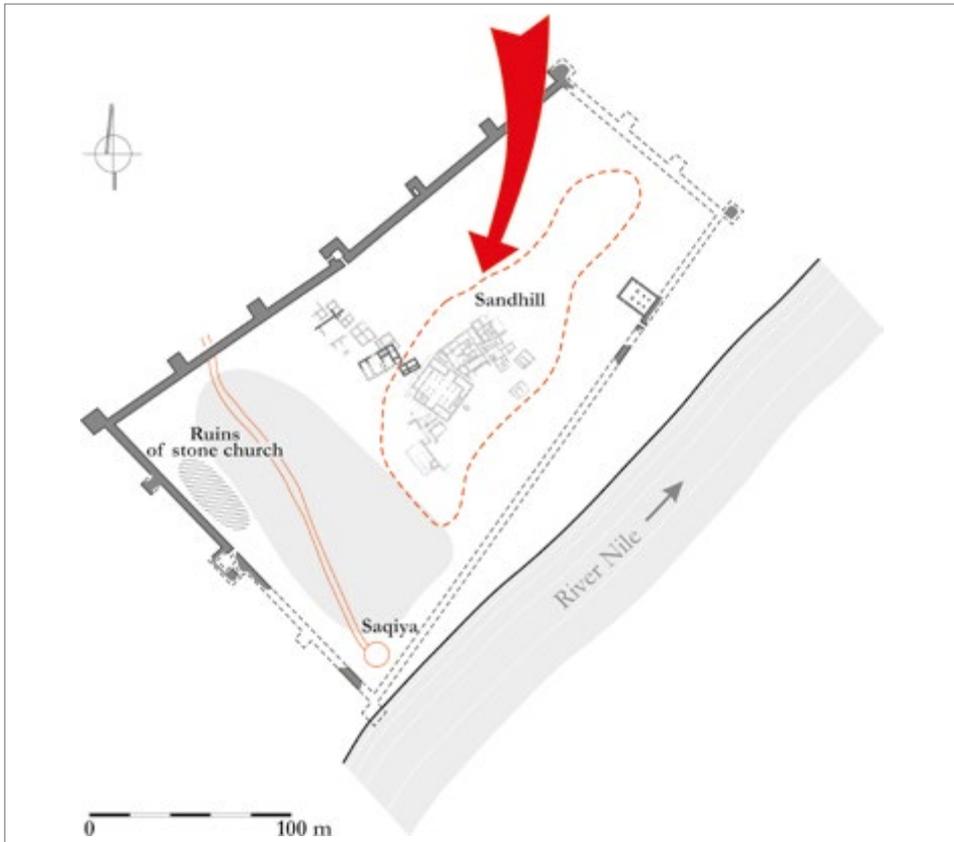


Fig. 3. The Enclosure in Pachoras with the sand dune in the center and the oldest architectural remains observed on the site; arrow indicates the direction of the wind bringing sand in; area with extensive evidence of digging for *sebakh* in modern times in the southern part (Drawing S. Maślak)

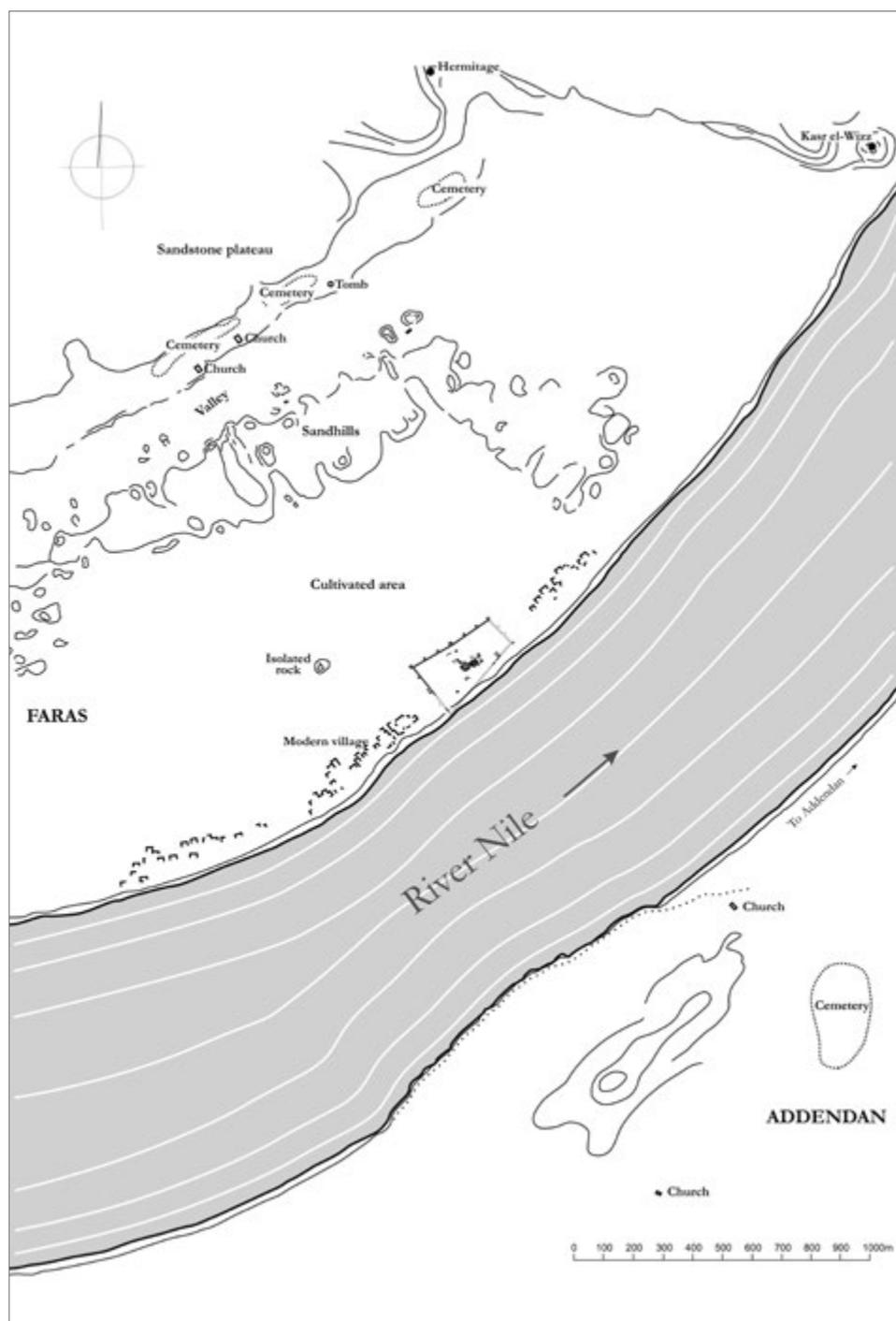


Fig. 4. The valley of Pachoras (original documentation of Leonard Wooley from 1909, updated W. Godlewski, digitizing S. Maślak, 2006)

The deserted Enclosure gradually filled up with sand blown in by the northern winds. The dune grew to be more than 5 m high in the middle of the citadel [Fig. 3]. It was the lowest by the western curtain wall where the wind blew the sand away from the ruined wall. The northern curtain wall was presumably the chief reason why the dune formed in the northern and central part of the Enclosure.

The revival came after AD 580, in a completely different political and social situation that developed in the Nile Valley after the fall of Nobadia and the rise of Great Makuria (Godlewski 2020). The territorial administration of the Church of Makuria under formation, guided by the Byzantine church administration from Alexandria, recognized the importance of the ruined city of Pachoras. In effect, at the turn of the 6th century AD, Bishop Aetios founded an episcopal complex on top of the sand dune inside

the citadel, including the first cathedral and the adjoining buildings, 100 and 200, west of it. The building that preceded the Cathedral, the Mud Church, appears to have been constructed on the sand dune a mere few years earlier (Godlewski 2006: 31–41) [Fig. 5]. The town continued to occupy a site on the western cliff.

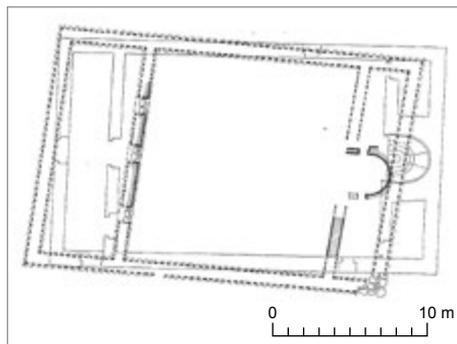


Fig. 5. Outline of the layout of the Mud Church (dashed line) under the pavement of the Cathedral of Aetios in Pachoras (solid line outline) (After Michałowski 1967: 48)

## THE TOPOGRAPHY OF THE PACHORAS AGGLOMERATION

The wider valley of Pachoras was mapped in 1909 by Geoffrey S. Mileham. The present discussion is based on a map drawn up by the American expedition (Griffith 1926: 25, Note 1) [see Fig. 1]. A few years later, Griffith's mission uncovered a Meroitic cemetery with Christian graves, churches in a field of mastabas and a church by the Rock of Hathor, as well as precincts inside the Citadel. In 1960–1964, a Polish mission concentrated on uncovering the central part of the citadel where the Cathedral of Paulos and Petros was located. The pottery workshops north of the citadel mound were reinvestigated at this time by William Y. Adams (1961b; 1986/I: 16–22).

The parts of the Pachoras agglomeration to be considered in the time between the mid 5th century AD and the year AD 707 (which is the date recorded in the foundation inscription of the Cathedral of Paulos), can be described as follows, taking into consideration the excavation results [Fig. 4]:

1. Citadel (Enclosure) and the early architecture inside the fortifications, from a time preceding the cataclysmic floods that destroyed the structures inside the walls and led to the deserting of the settlement on the river bank (Godlewski 1986; forthcoming);

2. Western part of the town, on top of the cliff above the old Nile riverbed, including the North and South Churches (Mileham 1910);

3. Northern cemetery, on the cliff edge (Griffith 1927: 67–81).

When life returned to the citadel, most probably in the second half through the end of the 6th century AD, there was already a huge sand dune inside the walls. It is not to be excluded that the mound held religious significance for the local inhabitants already in the period before the flood. If the king and the missionaries converting Nubia to Christianity had founded a church here, it would have prompted the decision to locate on the already hallowed site first the Mud Church and then, after the incorporation of Nubadia into Greater Makuria, the Cathedral

of Aetios along with the adjoining Buildings 100 and 200 [Fig. 9]. The monastery on the northern cliff (Qasr el Wizz) may have preceded the construction project inside the citadel area by a few years [see Fig. 4].

It is unfortunate that the investigations did not cover all of the wide valley of Pachoras, which was after all an episcopal see from the close of the 6th century AD, seat of the bishops of Pachoras and periodically also the metropolitan bishop (from the second half of the 8th through the end of the 10th century). Pachoras also served as the quarters of the *domestikos* of Pachoras, at least from the end of the 8th century. This specific administrative situation would have surely affected the development of the agglomeration after AD 707.

## THE CATASTROPHE: ARCHAEOLOGICAL EVIDENCE

The archaeological evidence for the cataclysm that washed away the town of Pachoras in the mid-5th century AD was uncovered already by Adams during the exploration of the architecture on the site of the later pottery workshops (NB in Fig. 2). Griffith (1926: 63–65, Pls XLI–XLV) had interpreted the second and third phases of this building as a monastery, but this interpretation does not seem likely today. In the end of Phase 3, the walls in the eastern part of the structure were destroyed, surviving as stubs approximately 1 m high, submerged in a layer of mud about one-meter thick, which only heavy rainfall or a major Nile inundation could have deposited (Adams 1986: 16–19) [Fig. 6 left]. The destroyed chambers were not restored and were

gradually filled with windblown sand. Adams proposed to date the revival of the workshops with a changed architectural plan and mass ceramic production to about AD 850.

A similar deposition of a meter-thick layer of mud, representing most probably a major flood event, was observed by the author in Buildings BY and BX under the first cathedral of Dongola (EC.I); it was dated there to about AD 540–550 based on contextual archaeological material including pottery of the first half of the 6th century (Godlewski, in preparation). The top of the mud layer recognized on the outside of the east and west walls of the fragmentarily investigated Building BY was at 11.46 m above the benchmark, which was assumed as the winter level of

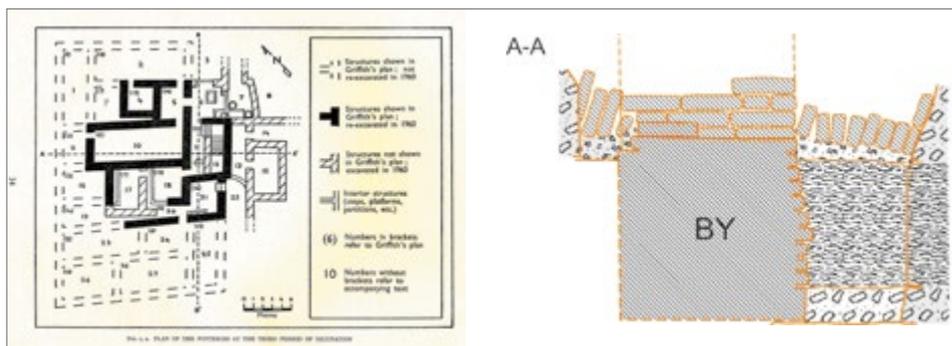


Fig. 6. Archaeological evidence of a cataclysmic deluge: left, Northern Building in Faras with superposed plans of the pottery workshops; right, Building BY excavated at Site CC in Old Dongola, section (Left, After Adams 1986 modifying Griffith 1926: Pl. XLII; right, PCMA UW Old Dongola Project | drawing W. Godlewski and D. Zielińska)



Fig. 7. The Enclosure in Pachoras: Trench 1, stone wall and above it a thick mud(?) deposit under the sand dune (Courtesy PCMA UW Pachoras documentation archive)

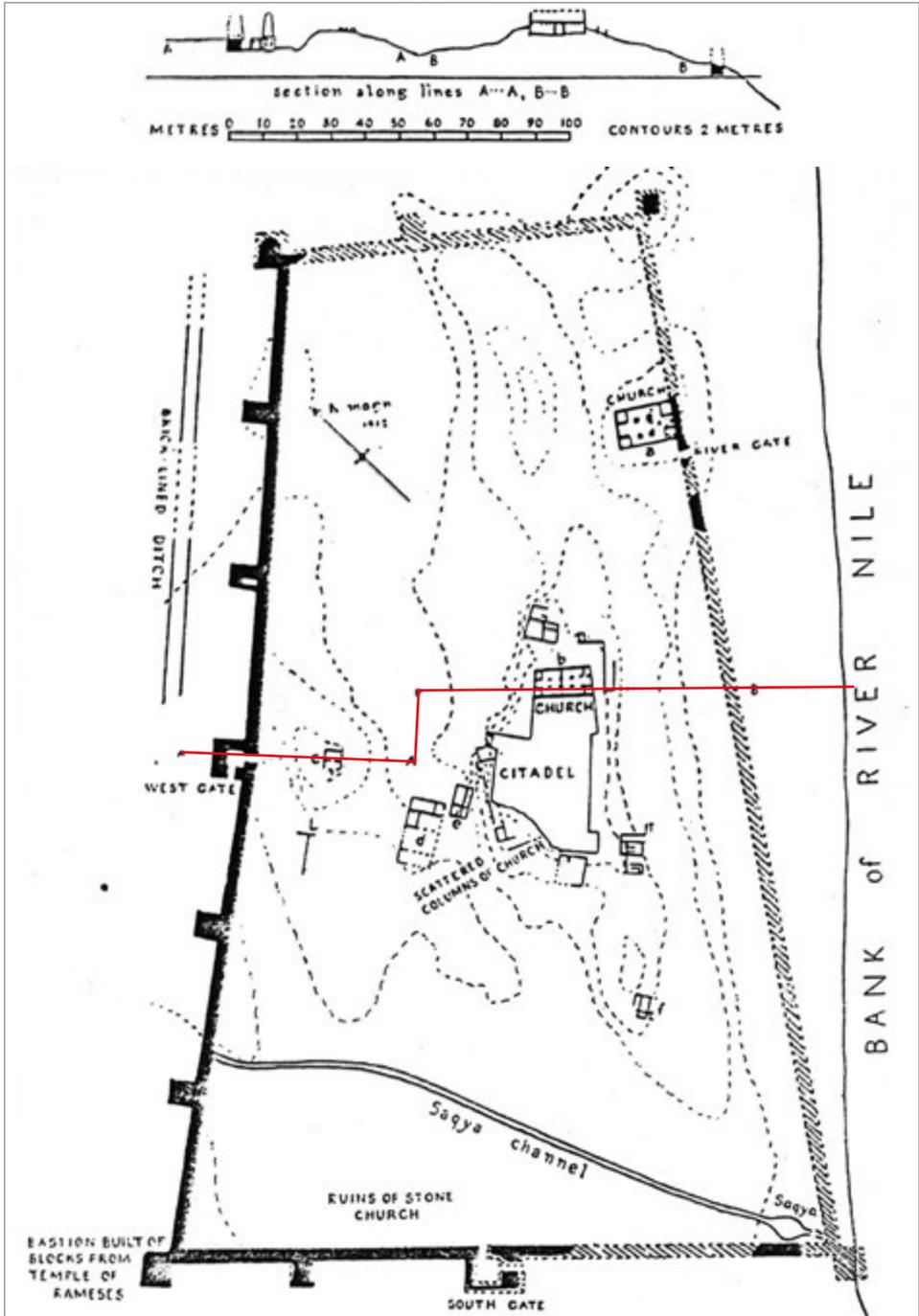


Fig. 8. The Enclosure in Pachoras following Griffith's excavations; top, section through the fill and late architecture inside the Enclosure in relation to the eastern and western outer fortification walls (After Griffith 1913)

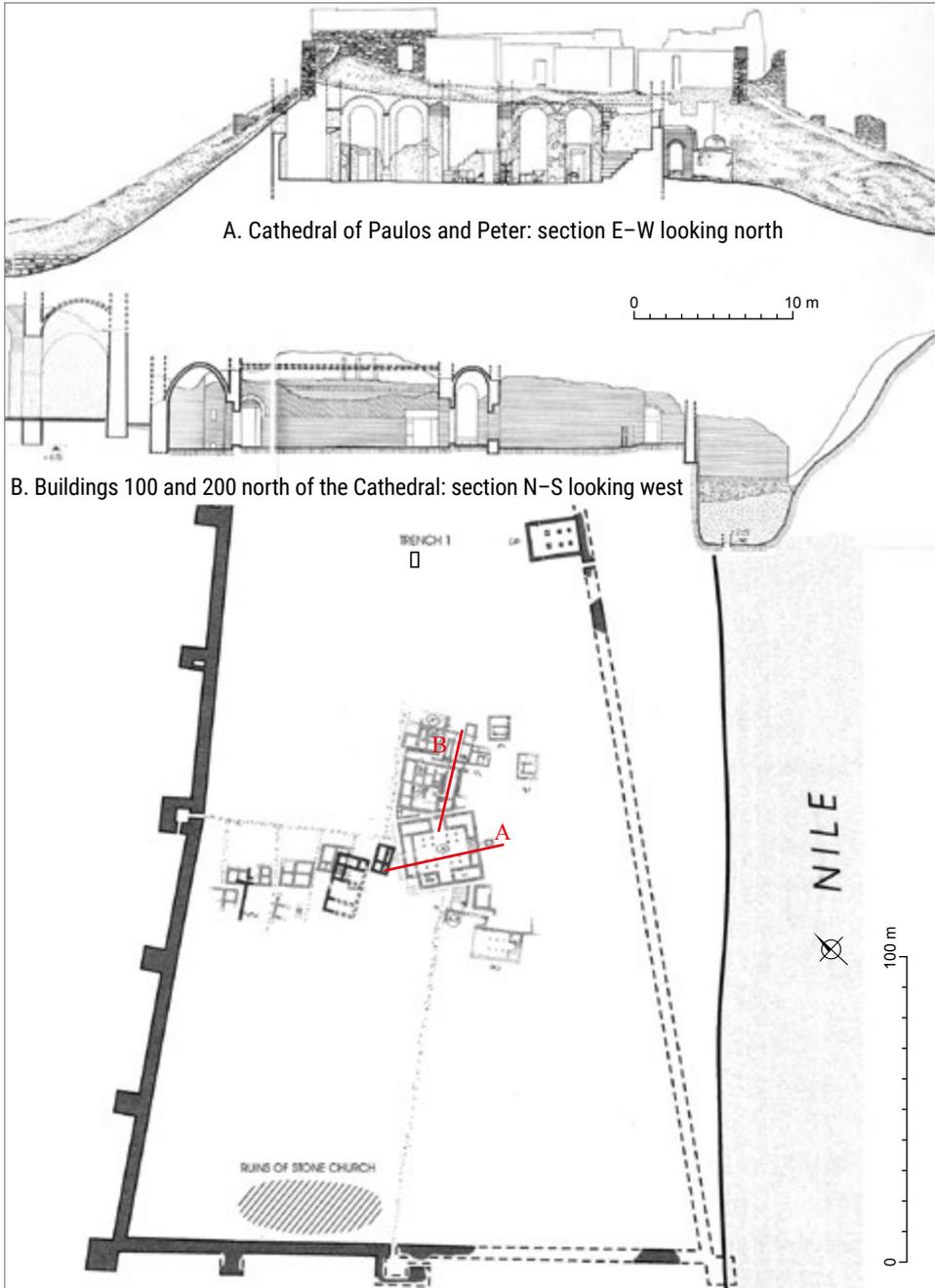


Fig. 9. The Enclosure in Pachoras following the Polish excavations in 1963–1964; top, sections showing differences in the ground levels of the early 5th-century AD architecture, including the Cathedrals of Aetios, Paulos and Petros (A) and the town architecture north of the Cathedral (Buildings B100 and B200) (B) before about AD 550 and in AD 590 respectively (After Griffith 1926: Plan 9a and sections 8 and 10; Michałowski 1965: Plan I)

the Nile in 1964 [Fig. 6 right]. The layer was observed to be approximately 1 m thick (trenches 1 [86.4] and 6 [85.4] in Dongola), and it was not present inside the building, even though on the western side the layer is practically level with the entrance. The mud may have been stopped from pouring inside by a stone threshold block in this entrance, perhaps scavenged as building material after the structure was deserted.

The threat posed by a high water level on the Nile could not have loomed too big in the consciousness of Dongola inhabitants, because the next structure on the site, Building BX, was located barely 27 cm higher than the threshold of the western entrance to Building BY. One is tempted into thinking that the flooding which had left the meter-high deposition of mud was believed to be a one-time event that would not be repeated. It was repeated, however, as indicated by another deposition of Nile mud of similar thickness present on the floor of the western part of Building BX. The elevation of the top of this second mud deposition was 12.11–12.18 m, that is, approximately 0.70 m higher in context with the walls of Building Y. The building must have been desacralized at this point and the level of the pavement in the successive structure, Building EC.I, was raised by 1.10 m (Godlewski forthcoming).

The mud deposits in Dongola are like the layers that in Pachoras Adams had attributed a big Nile flood (heavy rainfall) and the dating of these deposits at the two sites coincide as well. The event in Pachoras, which Adams dated to the early Christian period, caused substantive damage in the town extending on the relatively low ground next to the river.

The effects of the cataclysm would have been felt with particular severity in the northern and western districts, and it surely destroyed the east curtain wall facing the river and penetrated into the citadel [see Fig. 2]. However, the only proof of this event inside the citadel is its evident abandonment for a few dozen years at the very least, which left the huge sand dune in the middle [see Fig. 3]. One would expect that a flood of this magnitude would have caused much wider destruction throughout the lands of Nobadia, but no documented archaeological evidence is forthcoming for now (see Kyle Harper 2017; Polish edition 2021: 297–302).

The absence of documented archaeological evidence of the destruction caused by the flood inside the Citadel (as well as at the site of the Northern Building) is unfortunate, but it may be explained by the fact that the entire southern part of the mud deposition within the Citadel was removed in modern times by local farmers digging for fertile soil (called *sebakh*) for their fields (Griffith 1926: 28), whereas these levels were not reached anywhere in the central and northern part with the exception of the inside of the Rivergate Church (initially, Rivergate Building). Neither was the Nile mud deposition observed in the test trenches dug in 1964, but the Polish team was already pressed for time by the filling up of the Nubian Lake. Photographic images of the section in Trench 1 reveal an interesting sequence of layers above the destroyed wall of stone slabs [Fig. 7]. The compact layer above the wall (which may be a wall foundation) could represent a mud deposition layer (there is no descriptive documentation of this trench in the records). All in all, the farmers' activities in the southern

part of the citadel, as observed by Griffith, should be construed as indirect evidence for the presence of a thick deposition of Nile mud left by an exceptionally high flood. Interestingly, this part of the Enclosure does not seem to have been occupied by any kind of architecture during the period of the stone Cathedrals on the hill inside the Citadel [Fig. 8]. According to Wooley, Griffith located a *saqiya* inside the Enclosure and a canal that supplied water to the cultivated fields west of the fortifications.

In turn, the sand dune in the center of the Enclosure should be perceived as indirect evidence for a period of several years when the ruins of the Citadel stood abandoned and open to drifting sand, blown in freely from the north and east, where the collapsed walls offered no obstacle. The formation of a dune approximately 5 m high would have taken some time, most likely in the years between AD 540–550 (the date of the destruction) and about AD 590 (construction of the Mud Church).

### RECAPITULATION

In recapitulation, one is entitled to suggest, based on a review of available evidence, that about the 540s–550s the entire area of the Pachoras agglomeration, reaching all the way to the western and northern cliffs, was inundated by an exceptionally high Nile flood. The alluvial mud that the river left behind became the base of a developed agricultural economy in the 8th through 14th centuries, determining the position and importance of the region in the ages to come. The proceeds from the local economy stood behind the office or status of the *domestikos* of Pachoras, who was either the owner of the land or merely its administrator. The area under cultivation and economic development was presumably more extensive than marked by Griffith on his map from the early 20th century, in all likelihood reaching the eastern and northern cliffs. The flood destroyed the Citadel and any architecture to its northwest. The unparalleled magnitude of this event is corroborated by evidence from Dongola, 500 kilometers upriver from Pachoras,

where similarly thick depositions of alluvial mud were documented outside the walls of Buildings BY and BX.

Following the flood, the civil and religious architecture of Pachoras moved to the top of the high cliff west of the old river branch. It is there that the first churches were built and the oldest cemeteries situated (Mileham 1910; Griffith 1927: 67–78, Pls LII–LVIII). Presumably the dwellings of the inhabitants of Pachoras were also located in this western district for the rest of the 6th century AD.

A revival came at the close of the 6th century AD. Life returned to the Citadel where a huge sand dune had formed in the center. The first structure to be constructed on the hill was the Mud Church, quickly superseded by the first stone cathedral, that of Aetios. This building development should be dated to the close of the 6th and the early 7th century. The floor of the first stone cathedral was already 5 m above the architecture inside the Enclosure dated to middle of the 5th century from before the Great Flood [Fig. 9].

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# “Eternal Bodies”: images of archangels in the upper parts of Nubian buildings



**Abstract:** Images of archangels painted in the upper parts of buildings and on structural elements were popular in Christian Nubian painting, as the discoveries made recently in Church SWN.B.V on the citadel in Old Dongola have shown. These images, which derive from pre-Christian art, depict the eternal nature of the archangels and angels. Presenting a select group of images, the author traces their origins in an effort to highlight the role of archangels as intermediaries between God and mankind. As spiritual beings they move freely between the Heavens and the Earth, making air and cosmic space their natural surroundings. Moreover, archangels govern the forces of nature, the planets, and the seven skies. Therefore, their sanctuaries were located on hill summits, in the upper chapels, on structural elements of ecclesiastical buildings, etc. The Nubian tradition is therefore part of a broader Mediterranean tradition, the roots of which should be sought in the Near East.

**Keywords:** archangels, angels, Nubia, early Christian, wall paintings

Images of angels and archangels were very popular in Christian Nubia. One can find them in all of the churches, monastery annexes, even in private houses. As intermediaries between God and mankind, archangels and angels had many functions. They adored the Lord and assisted him during celestial court ceremonies. They were mes-

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sengers, guardians, protectors, healers, fighters of demons, etc. Their wings were intended to enable faster movement. However, wings were not mentioned in the canonical Books of the Holy Scripture, nor were they represented in the oldest images of archangels and angels (Berefelt 1968: 6; Martin 2001: 12). Whenever angels are mentioned in the Holy Scripture, they either “come” or “go”, or “stand” (Berefelt 1968: 17). Note the description of the Annunciation: “And the angel **came** in unto her, and said, Hail, thou that art highly

favoured, the Lord is with thee: blessed art thou among women” (Luke 1:28).

The paper is dedicated to a discussion of a select group of images of angels and archangels painted on the walls of the staircase of the Cathedral in Faras/Pachoras and on the supporting elements of this and other buildings in Nubia. The preceding introduction concerns the essence of angels and archangels perceived as eternal, winged beings, backed by a review of manifestations of this perception in early Christian and Mediterranean art.

As messengers of God (Gr. ἄγγελοι = messengers, ἀρχάγγελοι = chief messengers) angels undertook special missions, but even so they had to manage without wings, at least in the Bible. When the Archangel Raphael appeared to Tobit as a guide for his son, he looked just like any ordinary man and he did not change this image all the way from Nineveh to Media and back. He revealed his real identity only at the last moment, when a thankful Tobit wished to give him money in return for his help.

In keeping with the descriptions in the Holy Scripture, the oldest known images of angels in art presented them as androgenic wingless figures. They were difficult to recognize unless identified by the *tituli* of the iconographic context. For example, in the 4th century painting of the scene of Balaam’s Donkey (Num. 22:21–39), found in an arcosolium of Cubiculum F in the mortuary hypogeum under the Via Latina and Via Dino Compagni in Rome, the angel standing in the way of the prophet on his donkey is depicted as a severe-

looking man, a little larger than Ballam. Serious-faced, he holds a drawn sword in his hand [Fig. 1]. He has no wings and there is no *titulus* describing this scene. In fact, it is only the presence of the donkey that helps to recognize the scene (Ferrua 1990: 83, 85, Fig. 82).

Images of angels with wings appeared already at the end of the 4th and in the beginning of the 5th century, and one is entitled to wonder why this process, which seems quite sophisticated, took place at this time. First, early Christian art used the language of antique pagan imaginary, as demonstrated persuasively already by scholars like Ferdinand Piper (1847–1851) and André Grabar (1961), not to mention a host of others. In ancient religious art, spiritual beings and gods were often equipped with wings, especially if their function was in any way connected with protective or funerary tasks, or their role as messengers. The entrances to Assyrian palaces were guarded by sculptures of Lamassu deities depicted as hybrid creatures with bodies of bulls and hu-



Fig. 1. Balaam on his she-donkey in front of the Angel, wall painting in the arcosolium of Cubiculum F in the Dino Compagni Hypogeum at the Via Latina Catacomb, Rome, 4th century (After Ferrua 1990: Fig. 82 | digital processing A. Ambroziak)



Fig. 2. The body of Sarpedon, carried by Thanatos and Hypnos with Hermes in attendance, Red-figured krater by Euphronios, about 515 BC (Archaeological Museum of Cerveteri, Italy © J. Ardiles-Arce | [https://en.wikipedia.org/wiki/Euphronios\\_Krater#/media/File:Euphronios\\_krater\\_side\\_A\\_MET\\_L.2006.10.jpg](https://en.wikipedia.org/wiki/Euphronios_Krater#/media/File:Euphronios_krater_side_A_MET_L.2006.10.jpg))

man heads, and wings on their backs. In ancient Egypt, protective goddesses like Isis were represented with wings as well. Gods who were *psychopompoi*, guiding the souls of the dead to the afterlife, were depicted with wings, also in Greek art.<sup>1</sup>

A touching scene on an Attic red-figured calyx-krater by Euphronios (about 515 BC), represents Hermes, Thanatos (Death), and Hypnos (Sleep) around the dead body of Sarpedon, a Trojan War hero [Fig. 2].<sup>2</sup> The twin brothers Thanatos and Hypnos carrying the body of Sarpedon have spectacularly huge wings, whereas Hermes-Psychopompos wears only the *talaria*, the winged sandals.

Personifications of the winds in Greek art were also represented with wings. They can be found on pottery as well as on architectural monuments like the Tower of the Winds in the Roman Agora of Athens (mid-1st century BC) [Fig. 3]. This octagonal building, admired by Marcus Vitruvius Pollio, acted as a weathervane.

“Above that, tower he (Andronicus of Cyrrha) caused to be made a marble upright and above it, he placed a bronze Titan holding a rod in his right hand. He so contrived

it that it was driven around by the wind and always faced the current of air, and held the rod as an indicator above the representation of the wind blowing” (Vitr. I, 6:4).

Apart from practical, the images of the winds also bore symbolic meaning associated with the number eight. According to Plato, the atom-like forms of fundamental particles of the air had the shape of an octahedron (Ball 2002: 9). Considering that wind is air, this symbolism is clear. Each of the personifications represented on the Athenian Horologion holds an attribute connected with the power of the wind.<sup>3</sup> Therefore, these winged male figures have power over the elements. One should also note a description of four angels from the Book of Revelation, who are said to stand on the four corners of the Earth and who wield power over the winds.

“After this I saw four angels standing at the four corners of the earth, holding back the four winds of the earth so that no wind could blow on earth or sea or against any tree. I saw another angel ascending

1 Other winged creatures in Greek art include Gorgonae, Harpyiai, Pegisides, Sphinxes, Eos, Eros, and other, see Ostrowski 2002: 473.

2 The krater was found in an Etruscan tomb and was bought for the collection of the Metropolitan Museum in New York in 1972; in 2008 it was repatriated to Italy (Spivey 2019: 42–43).

3 “Four of the winds have beards to indicate adult status, while the remaining four are beardless youths. Boreas (north) blows into a conch shell to summon the group. Caecius (northeast) pours hailstones from a shield. Apeliotes (east) is young and carries grain and fruit in his cloak. Eurus (southeast) has his arm hidden in his cloak to summon a hurricane. Notus (south) is a youth who pours rain out of a vase. Lips (southwest) also young, leans on the stern of a boat and blows it on its way. Zephyrus (west), shown as a nude youth, scatters flowers. And Sciron (northwest) is an older man who empties a cauldron to signify the beginning of winter” (Darling 2004: 216).

from the rising of the sun, heaving the seal of the living God, and he called with a loud voice to the four angels who had been given power to damage earth and sea saying: Do not damage the earth or the sea or the trees, until we have marked the servants of our God with a seal of their foreheads" (Rev. 7:1–3)<sup>4</sup>

This description of four angels holding the winds follows the account of the Lamb opening the seven seals (Rev. 6: 1–17). This vision finds its reflection in the visual arts in the form of four angels standing in the corners of the vault. On the cross-ribbed vault in the presbytery of San Vitale in Ravenna (consecrated 548), the angels placed in the four groin



Fig. 3. The Tower of the Winds built by Andronicus of Cyrrhus, Roman Agora in Athens, mid 1st century BC (© Georg Zumstrull / CC BY-SA 2.0 DE)

4 The Book of Revelation goes on to describe seven angels who stand in the proximity of God. They also rule over the forces of the nature and have the power to cause cataclysms by blowing their seven trumpets (Rev. 8: 15). See Łaptaś 2014: 291.

vault panels raise their arms, supporting the central medallion [Fig. 4]. The Lamb of God is shown inside the medallion. The angels stand on globes, which are placed on top of the acanthus branches. The vault panels are separated by four arrises, decorated with garland motifs. This kind of composition was assimilated with representations of the seasons in late antique art. Glenn Peers compared the San Vitale vault image with a mosaic from the residence at Daphne near Antioch (housed in the Louvre Museum, about AD 325, Acc. No. 97216002; Peers 2001: 28–29). There, the female personifications of four seasons are depicted with wings. They are placed at the corners of the composition representing hunting scenes. The difference between the two mosaics is their place in the respective architecture: one is on a floor and the

other on a vault, one decorated a private residence and the other a church.

Additionally, the origins of angelic representations on vaults or pillars should be searched for among images of ancient caryatids, later transposed into winged Nikes-Victorias. An example to cite here is a pillar with a sculptured Nike-Victoria from the portico of the agora in Thessaloniki. This relief is dated to the late 2nd–early 3rd century AD (The Louvre Museum Acc. No. MA 1391). The frontally rendered figure stands upright, her wings are lowered [Fig. 5]. Her foot rests elegantly on the base of the pillar, while her head supports the capital. Despite her function—a caryatid supporting a pillar—she looks delicate and full of grace.

The angels took over a caryatid role after the ancient Victories. Their images were carved on pillars and columns, and



Fig. 4. The Lamb of God in a medallion supported by four angels, mosaic decoration on the vault of the presbytery of St Vitale in Ravenna (Photo D. Rywiková)

especially on capitals scattered throughout the Mediterranean. One can recall here an elegant example of a bust of the



Fig. 5. Nike-Victoria from the Portico of the Caryatids in Thessaloniki, late 2nd–early 3rd century AD (The Louvre Museum Acc. No. MA 1391) The Louvre © M.-L. Nguyen / Wikimedia Commons)

Archangel Michael from Constantinople dated to 1250–1300 (The Metropolitan Museum of Art) [Fig. 6]. The subject also became very popular in Western mediæval art. For example, in the Church of Our Lady on the Sands in Wrocław, all nine angelic choirs were represented on the carved Gothic corbels supporting the vault (Studniarek 1968: 14; Grzybowski 1997: 221).

Glorification of God is another aspect of the winged angels' function. It derives from the role of Victories in glorifying the images of the emperors. In ancient Greece, certain gods were represented holding a standing Nike in their hands.<sup>5</sup> It was a favorite motif with the 5th-century BC sculptor Phidias as both his Athena



Fig. 6. Capital with a bust of the Archangel Michael, Metropolitan Museum of Art (<https://www.metmuseum.org/art/collection/search/466108>)

<sup>5</sup> In Greek art, Nike was associated primarily with victories in sport competitions; it was later added also to scenes of military victories (Ostrowski 2002: 477).

Parthenos in Athens and his Zeus at Olympia were shown in this way.<sup>6</sup> The motif was adopted in Roman art. A coin of Diocletian shows Jupiter holding in his right hand an orb with a figure of Victory standing on it (Ostrowski 2002: 482, Fig. 9). The orb is an ideal shape, with neither beginning nor end, hence symbolic of God's perfection. Victory standing on an orb was an allegory of triumph over the world. With the development of the cosmic kingship idea, which reached Rome from the East, the Roman emperors started being portrayed with planetary and astral attributes (L'Orange 1982: 35–36). In this case, Victory standing on an orb symbolized the deified emperors' power over the world. Sometimes two rulers were portrayed with an orb, sharing their imperial authority. On the reverse of a coin of Gratian, the emperors Gratian and Valentinian are seated on their thrones, holding an orb [Fig. 7]. Victory is shown in the background, hovering above them, (Łaptaś 1997: 25, Fig. 1). Once Christianity became the official religion of the Roman empire, Victory was replaced by the Archangel Michael (e.g., obverse of a golden solidus of Justinian, Łaptaś 1997: Figs 1–2).

Another scene that was almost a cliché in Christian and Byzantine art, borrowed from ancient Roman representations, is the image of two flying Victories-angels holding a medallion between them (Jastrzębowska 2011: Figs 1–2). This scene also derived from the

East, e.g., an Achaemenid seal presenting the god Ahuramazda in a medallion supported by two winged creatures (Segall 1956: 75).

While Early Christian art had at its disposal a wide range of pre-Christian motifs that could serve as inspiration, visual sources were hardly the only ones to impact the creation of winged images of angels. Let us take a look at apocryphal texts and the commentaries of the Church Fathers. Among the Apocrypha coming from a pre-Christian Judaic tradition (Sparks 1984: 169), one might quote the Ethiopic Book of Enoch. This compilation of several texts is a rich source on antique angelology (Jędrzejewski 2006: 207). The Book of Parables<sup>7</sup> contains a description of angels with wings:



Fig. 7. Gold solidus of Gratian showing Gratian and Valentinian II on the reverse, Trier mint, AD 375–378 (Courtesy National Museum in Warsaw | photo K. Balakier and H. Kruszcwaska)

6 “The god sits on a throne, and he is made of gold and ivory. On his head lies a garland which is a copy of olive shoots. In his right hand he carries a Victory, which, like the statue, is of ivory and gold; she wears a ribbon and—on her head—a garland” (Paus. V, 11:1).

7 The dating of this Book varies from AD 50–170 to AD 270 (Alexander 1977: 156–159).

"And in those days I saw long cords given to those angels, and they acquired wings for themselves, and flew and went towards the north" (1 En. 61:1)

The Hebrew Book of Enoch also contains a description of the 72 wings which were given by God to Enoch upon his transformation into the Angel Metatron:<sup>8</sup>

"72 wings grow on me, 36 on each side. And each wing was as the whole world. And He fixed on me 365,000 eyes: each eye was a great luminary" (3 En. 9:3–4).

The Church Fathers, Tertullian as well as Origen, apparently knew the text of the Apocryphal Book of Enoch.<sup>9</sup> Tertullian justified the need for angels to have wings:

"Every spirit is possessed of wings. This is a common property of both angels and demons. So they are everywhere in a single moment: the whole world is as one place to them" (Tert. *Apol.* 22:8)

Not only wings, but most of all the nature and corporality of the angels was the subject of the Church Fathers' dis-

course. Were they corporeal or incorporeal (Gr. ἀσώματα, Clem. Al. *Exc. Theod.* I, 11:4)? On one hand, there was a tradition deriving from ancient Stoic philosophy, according to which "every substance is necessary of the body" (Bonino 2016: 113). Tertullian wrote:

"Everything which exists is a bodily existence *sui generis*. Nothing lacks bodily existence but that which is non-existent" (Tert. *De Carn. Christ.* XI:4)

On the other hand, it was necessary to find a solution that would place the angels inferior to God and superior to man (Bonino 2016: 113). As only God is an incorporeal being, the angels have to be corporeal, yet their bodies are different from those of human beings. They have subtle bodies,<sup>10</sup> which allow them to move in space. This view, based on the opinions of the Church Fathers, as well as on models known from ancient art, caused angels subsequently to be perceived as eternal beings. Following this notion, their sanctuaries were located on hilltops and in the upper parts of buildings. In 590, Pope Gregory I led a penitential procession to ask God to stop the plague devastating Rome. Suddenly, he saw the Archangel Michael standing atop of the Mausoleum

8 This part of the text is dated to the 1st century AD (see Prokopowicz 2013: 6).

9 Tert. *De cult. fem.* I:3, 1. I am aware that the Scripture of Enoch, which has assigned this order (of action) to angels, is not accepted by some, because it is also not admitted into the Jewish canon.

10 Bishop John of Thessalonica (died about 630 or 649, Kazhdan 1991: 1044). "Concerning angels and archangels and the holy Powers that are above them—and I shall add our human souls—the Catholic Church recognizes them to be spiritual, but not altogether incorporeal and invisible, as you pagans say; rather as having a fine body of an aerial or fiery nature, as it is written: 'Who maketh his angels spirits, his ministers a flaming fire'" (Mango 1993: 140).

of the Emperor Hadrian and sheathing his sword as a sign that the plague would cease (Shwartz 2013). Pope Boniface IV dedicated to Archangel Michael a chap-

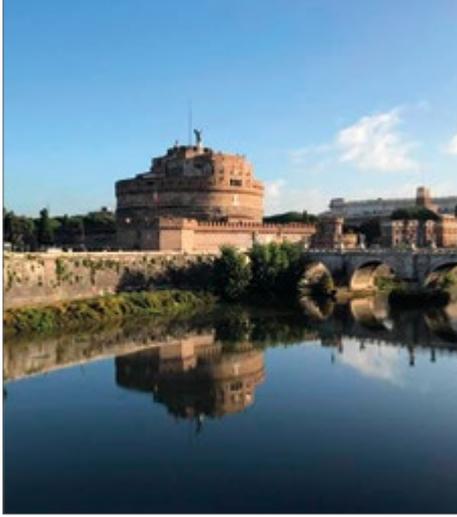


Fig. 8. Mausoleum of Hadrian, renamed Castel Sant' Angelo, Rome (Photo A. Głusiuk)

el built on top of Hadrian's Mausoleum (subsequently renamed Castel Sant' Angelo, Osborne 2013: 275) [Fig. 8]. Also, sanctuaries of Archangel Michael, such as Mount Gargano or Mount St Michel, which became large pilgrimage centers, were located on hilltops (Arnold 2000; Everett 2002) [Fig. 9]. Consequently, archangels were venerated in the upper chapels, galleries, or towers (Crosnier 1862: 695; Vallery-Radot 1929: 453–454).

Taking into consideration that the cult of the eternal and winged angels started to develop during late antique–early Byzantine times, it is not surprising that it reached Nubia following the conversion of the land to Christianity. The location of images inside Christian buildings was subordinated to the iconographic program and the art interacted with the worshippers as well (Cormack 1985: 9–17).



Fig. 9. Mont Saint-Michel, Sanctuary of the Archangel Michael on a rocky islet, Normandy, France (Photo M.C. Flossmann-Schütze)

## II

The context of the disposition of archangels inside Nubian buildings was meaningful. In their role as protectors of buildings, the archangels were painted on either side of the entrances. As court dignitaries, they were represented in attendance of the God, or the Virgin, sometimes in the apses. They protected mortals and were also painted in places chosen by the founders (even in apses).

The context chosen as the subject of this paper was associated with highlighting the eternal nature of the archangels. Included among images of this kind are the freestanding figures of archangels located in the upper parts of buildings. Despite the destruction of most of the vaults of medieval buildings in Nubia, some images of archangels were preserved on the walls of the Cathedral in Faras. Additionally, images of archangels were found painted on pillars and columns. Their placement on elements supporting the vaults (symbolically celestial vaults) evoked their function connected with the four elements, the winds and caryatids deriving from pre-Christian art.

The walls of the staircase in the southwestern corner of the Cathedral at Faras, excavated by Kazimierz Michałowski in the early 1960s, were decorated with four images of the archangels. Two were painted on the first coat of plaster and the other two on a superimposed coat.

The early (8th century) mural of the archangel Michael was painted on the west wall of the staircase (see Michałowski 1974: 103–105, Cat. No. 9, Pl. 9; Jakobielski et al. 2017: 160, Cat. No. 29). The only surviving fragments of the figure are the

face, part of the arms and the left wing [Fig. 10 top]. The archangel is rendered frontally, looking out at the viewer. He is dressed in a tunic with semicircular collar and a *loros* (a goldish strip running diagonally from the left arm). In his right hand, he holds a trumpet (partly preserved). The elegant long neck, oval face and big almond-shaped eyes are like that of St Anne and the two archangels flanking the western entrance to the Cathedral, all painted also on the first plaster coat. Dark purple is the dominant color in these murals. The knot of hair on top of the archangel's head resembles the hairdos of other archangels.

The trumpet resembles that held by the figure of Archangel Michael depicted by the western entrance to the Cathedral. It helps to identify this image, even though the *titulus* of the mural is not preserved, because, luckily, the murals of the archangels by the entrance to the Cathedral are well preserved along with the *tituli*. Michael can be seen written above the head of the archangel holding the trumpet [Fig. 11]. The archangel will blow the trumpet to summon to the Last Judgment, hence the symbolism of this image is connected with the Resurrection. The way to the Resurrection is the way to the Heavens, therefore placing the image of the archangel on the wall of the staircase is justified. The importance of the image in this place inside the Cathedral is demonstrated by another painting of an archangel rendered in the same place on a later coat of plaster.

The later painting was also preserved only in the upper part: head, upper part

of arms and wings. (Jakobielski et al. 2018: 215–216, Cat. No. 55).<sup>11</sup> The archangel is rendered frontally, looking out to the viewers, his wings lowered [Fig. 10 bottom]. He has more attributes compared to the earlier image: a halo around his head and a crown. The crown, a golden *stemma* studded with precious stones, is rimmed with rows of pearls. The archangel is dressed in a chlamys, fastened on his right arm with a fibula. A gentle face with almond-shaped eyes and green highlights dates the mural to the 10th century (Jakobielski et al. 2017: 215) or even later. Extensive use of a yellowish tint in imitation of gold (chlamys, wings,



Fig. 10. Representations of the archangel Michael from the west wall of the staircase of the Cathedral at Faras: top, earlier image from the 8th century (National Museum in Warsaw, 234043 MN); bottom, later image from the 10th century (National Museum in Warsaw, 234042 MN) (Courtesy National Museum in Warsaw | top, photo P. Ligier; bottom, after Michałowski 1974: Pl. 32).

11 In the collection of the National Museum in Warsaw (see Michałowski 1974: 168, No. 32, Pl. 32), now on temporary loan in the Louvre.

halo, *maniakion*) recalls the Comnenian style in Byzantium. The attributes and the use of a yellowish-golden tint identify this image as an archangel instead of an ordinary angel. This archangel was identified as Michael, although Stefan Jakobielski pointed out that the "absence of characteristic attributes indicates that it could just as easily be a representation of any of the archangels" (Jakobielski et



Fig. 11. Archangel Michael from the narthex of the Cathedral at Faras, first layer of plaster (National Museum in Warsaw, 234062 MN) (Courtesy National Museum in Warsaw | photo P. Ligier)

al. 2017: 215). Nevertheless, the fact that it covered an earlier painting of the Archangel Michael suggests that it represented the same archangel.

Another two images of archangels were painted on the south wall of the staircase, again in the same superimposition as described above, that is, the same theme repeated on a new coat of plaster (Godlewski 2006: Fig. 58). The earlier one is on display at the National Museum in Warsaw (Michałowski 1974: 122–125, Cat. No. 17, Pl. 17) [see Fig. 12]. This painting, dated to the mid-9th century (Jakobielski et al. 2017: 173, Cat. No. 36) or later<sup>12</sup> is luckily better preserved than the previously described ones. The archangel stands frontally, his feet apart. He holds a scepter in his right hand and an orb in his left one. The acclamation on the orb reads: IC XC NIKA ("Jesus Christ conquers"). His attire consists of a long-sleeved white tunic with embroidered *orbiculi*, and *epimanikia* and a purple *loros*, crossed on the chest, with the edge dropping vertically decorated with a fringe (Łaptaś 2016: 473). His hair, trimmed below the ears, is elegantly curled. The head of the archangel is topped with a *stemma*, studded with precious stones. The wings of the archangel are lowered. They are adorned with peacock's feathers. The *titulus* written vertically by the right arm of the archangel is partly destroyed, leaving only the three last letters of his name: AEA. This is the end of a theophoric name, appropriate to Michael, Raphael, as well as Iael. Some scholars have identi-

12 The *loros* worn by the archangel is of a kind similar to the one worn by the emperor Alexander (912–913) on a mosaic in the Hagia Sophia, indicating a later dating for the mural from Faras. Bożena Mierzejewska (2014: 85) noted this element and dated the painting to the second half of the 9th–first quarter of the 10th century.

fied this figure as Michael (Kubińska 1974: 172), but others as Raphael (Mierzejewska 2014: 84), arguing in the latter case by reference to the later mural covering this one, which was identified by an accompanying inscription dedicated to the archangel Raphael.

This painting was so severely destroyed at the time of discovery that it was not even taken down from the wall (Jakobielski et al. 2017: 217, Cat. No. 56). The lower part of the figure and the wings could still be seen. The archangel was rendered frontally with lowered wings. The *loros* draped over the tunic identified it as an archangel rather than an ordinary angel. The painting was recently dated to the 10th century (Jakobielski et al. 2017: 217), but it seems to have been created later.<sup>13</sup> The Greek inscription, painted next to the figure contains a request for protection for “Petros priest of ... (in) Pachoras”.<sup>14</sup> According to Adam Łajtar (2009: 91), the Archangel Raphael is named in this inscription a “guide of the Lost Sheep”, which alludes to the mission of Jesus (Matt. 18:12–14; Luke 15:3–7). The names Sara and Asmodeus, mentioned in this inscription, recall the Book of Tobit (7:10–8:3), and the role of the Archangel as a demon tamer. Raphael was highly venerated in Nubia as a healer, demon tamer, commander-in-chief etc. (Łaptaś 2016: 460), so this inscription confirms his multiple functions.

Placing four images of the archangels on the walls of a staircase leading up to the *empora* is understandable.

Jean Vallery-Radot demonstrated in his research that the upper spaces in churches, such as *emporas* or towers, were dedicated specifically to Archangel Michael. For the sake of argument, let us imagine that the *empora* of the Cathedral at Faras was dedicated to Archangel Michael. It would have fulfilled the three aspects of the cult of the archangel: first, his eternal nature, second, his role as protector of the entrance to the building, and third, his role as *psychopompos*. As commander-in-chief of the celestial hosts, the one who conquered the fallen angel, the archangel was often depicted by the entrances to buildings, even by city gates, the goal being to protect cities and buildings against evil. Resurrection symbolism is introduced by the image of the archangel holding a trumpet (see above), which together with the depiction in the narthex forms part of the program connected with the Last Judgement. The staircase leading to the *empora* was a passage to the afterlife in a metaphorical way.

However, since Raphael and Gabriel also acted as *psychopompoi*, carrying the souls of the deceased to God, it is likely that the *empora* would have been dedicated to more than one archangel.

With the eternal nature of the archangels in mind, let us pass to their images painted on pillars and columns. At least two images of the archangels were painted on the third northern pillar of the Cathedral at Faras. The first, very

13 The elongated figure resembles that of St Epiphanius (dated between the 12th and the mid 13th century, Jakobielski et al. 2017: 417, Cat. No. 137).

14 The Greek translation by Stefan Jakobielski in Jakobielski et al. 2017: 217.

poorly preserved at the time of discovery, was not taken of the wall. It was painted on the eastern face of the pillar. The middle part of the figure was preserved with a fragment of the wings (Łaptaś 2019a: 163, Fig. 1). The archangel was rendered frontally, holding a scepter upright in front of him. The wings visible on both sides were adorned with peacock feathers. Dating in this case depends on the stratigraphy of plaster coats; assuming after Jakobielski that it was painted on the third layer of plaster, the painting could be dated to the 10th–11th centuries (Jakobielski et al. 2017: 228, Cat. No. 62).



Fig. 12. Archangel Raphael(?) from the Cathedral at Faras (National Museum in Warsaw, 234044 MN | after Michałowski 1974: Pl. 17)

The second image of the archangel, depicted on the northern face of the same pillar, was also poorly preserved. However, the surviving lower part of the figure was taken off the wall and is currently in the collection of the National Museum in Warsaw (Jakobielski et al. 2017: 228, Cat. No. 63). The rendering of the archangel is similar to the previous one, standing, feet apart, holding a scepter in front of him [Fig. 13]. He is dressed in elegant court attire: a long tunic and a ceremonial *loros* with *thorakion*.<sup>15</sup> This ceremonial part of the dress is decorated with golden medallions studded with green and red precious stones. Also the *tsangia* are adorned with rosettes. The inscription written inside the frame, by the foot of the figure reads: "Lord Jesus Christ (and) Michael, guard, bless, protect, strengthen, (and) help Thy servant." Thus, the figure can be identified as Michael.

The next image is that of an angel (not an archangel this time) painted on the third northern pilaster on the north wall of the northern aisle. It is interesting not for its sophisticated composition, which is rather standard, but because of its association with an inscription containing the name of an angel, Litarkuel (Jakobielski et al. 2017: 271, Cat. No. 78) [Fig. 14]. The mural was painted apparently on the first plaster coat in this part of the church and was transferred to the National Museum in Warsaw despite its poor state of preservation. The surviving part shows a standing figure, feet apart. One can see the bottom parts of a long tunic adorned with vertical stripes, the hem trimmed with a horizontal band

15 More about a *loros* with *thorakion* in Nubian painting, see Łaptaś forthcoming.

decorated with a lattice pattern filled with dots. The mantle visible on either side of the figure falls in vertical folds. The cross, painted below and between the figure's feet, is accompanied by a Greek inscription reading: "Jesus Christ, Cross".

A Greek invocation to the angel Litarkuel is preserved by the right side of the figure. It reads:

"Lord Jesus Christ (and) Litarquel, guard, bless, protect, strengthen (and) help Thy servant Martere, daughter of Isusinta. So be it. Amen".



Fig. 13. The Archangel Michael painted on a pillar in the nave of the Cathedral at Faras (National Museum in Warsaw, 234006 MN) (Courtesy National Museum in Warsaw | photo P. Ligier)

This painting, dated to the early 11th century (Jakobielski et al. 2017: 270–271, Cat. No. 78), is the only known image of this angel in Nubian painting. The name Litharkouël is known from an apocryphal text, *The Investiture of Archangel Gabriel*, where it is listed with four other angels: Ouriël, Sourathiël, Daveithaël and Yeremiël. The function of each of the angels is different: Ouriël holds "all the powers of God in his hands", Sourathiël is a "messenger to the prophets", Daveithaël "dwells in the church of the firstborn children", Yeremiël cares for all "who struggle in this world", and Litharkouël "who holds the unguent box filled with the medicine of life" and he heals every soul (Jenott 2020: 572). Lance Jenott noted a resemblance between this angel and the "mysterious figure" of the angel Lithargoel from the apocryphal *Acts of Peter and the Twelve Apostles* (NHC VI,1). There, Lithargoel, clad as a physician, also carries an unguent box, and ultimately turns out to be Jesus in disguise, a healer of bodies and souls



Fig. 14. The angel Litarkuel on a pillar in the nave of the Cathedral at Faras (National Museum in Warsaw, 234019 MN) (Courtesy National Museum in Warsaw | after Michałowski 1974: Pl. 55)



Fig. 15. Archangel Raphael on a three-quarter column by the apse of Church SWN.B.V in Old Dongola (Courtesy PCMA UW QSAP Dongola Project | photo W. Godlewski)

(Jenott 2020: 562–563). A broader approach to the issue of the Christ Angel in Nubian painting, demanding a more profound study, is beyond the scope of this paper (for a brief discussion, see Łaptaś 2019b: 103–105).

The last image to be discussed here is one of a number of representations of archangels painted on the supporting elements of Church SWN.B.V in Old Dongola (Zielińska 2015: 108). The murals from this church will be published once the conservation treatment is completed. The image of the archangel Raphael, dated by the excavator to the 8th–9th century (Godlewski 2018b: 166), was painted on a three-quarter column attached to the east wall of the nave by the church apse (Godlewski 2018a: Fig. 10.1)



Fig. 16. The interior of Church SWN.B.V in Old Dongola (arrow indicates location of the three-quarter column with the image of Archangel Raphael shown in Fig. 15) (Courtesy PCMA UW QSAP Dongola Project | photo W. Godlewski)

[Fig. 15].<sup>16</sup> The archangel is rendered frontally, holding a cross-scepter in his right hand and a disk in the left one. His head is topped by a golden crown, studded with precious stones and surrounded by a halo, while his spectacular wings are adorned with peacock feathers and eyes. The archangel is dressed in a long-sleeved tunic and a goldish chlamys on top of this, fastened with a fibula on his right shoulder. The *titulus* "Archangel Raphael" is written by the right side of the figure, above the head. This image shows clearly that Michael was not the only archangel in Nubian art to be depicted with peacock feathers (Martens-Czarnecka 2020: 79).

The location of this painting is also interesting [Fig. 16]. The image of Michael appears on a three-quarter column by the southern side of the apse, while Raphael was painted on the northern side of the apse. The painting in the apse was poorly preserved, but there was clear evidence of figures of the apostles surrounding the central figure of the composition in the apse. The identification of this figure will be clearer after restoration. A scene of the *Maiestas Domini* most probably filled the conch above the apse. The faithful entering the church would have seen Raphael on the left and Michael on the right side of the apse. However, viewed from the perspective of the Lord, whose place was in the conch of the apse, Raphael stood by his right

hand and Michael by his left. The four archangels surrounding the throne of God are described in some texts, e.g., in the *Ethiopic Book of Henoch*.

"I looked, and on the four sides of the Lord of Spirits, I saw four figures ..." (1 En. 40:2)

"This first one, is the Holy Michael, the merciful and long-suffering. And the second, who is in charge of all the diseases, and in charge of all the wounds of the sons of men, is Raphael. And the third, who is in charge of all the powers, is the Holy Gabriel. And the fourth, who is in charge of repentance and hope of those who will inherit eternal life, is Phanuel" (1 En. 40:9).

This symbolism was known also in Dongola. In the *Oratio Mariae ad Bartos* prayer written on the walls of a crypt under the Northwestern Annex of the Monastery on Kom H, the Virgin says: "Let Michael be on my right, let Gabriel be on my left" (Lajtar and van der Vliet 2017: 104).

Why was Raphael represented by the right hand of God and Michael by His left in the SWN.B.V Church? In Byzantine hierarchy the right side of God (and of the emperor) was considered the more privileged one. As the patron of the church Raphael could have been the more privileged archangel here.

16 I am using the terminology from the multilingual dictionary of the architecture by René Ginouvès et al. (1992: 66).

## CONCLUSION

A study of this selected group of images shows that Nubia continued a tradition developed in Early Christian and Byzantine art. This tradition, grew out of pre-Christian models and was strong enough to have an impact on later art, independently of the Biblical descriptions (in which wings, for example, were not mentioned). The ancient models spread to the East and West, hence the parallelism between Nubian and western images and their contexts (analogous to western examples appearing also in Nubian art).

Images painted on the walls of the Cathedral staircase at Faras may be proof that the gallery over the entrance was dedicated to the archangel Michael, if not to other archangels as well. The attributes and the inscriptions accompanying the paintings

confirm that this part of the Cathedral was symbolically linked with the idea of Salvation, whereas peregrination to the upper space symbolized the path to Resurrection and to Paradise. This "higher space" was the preferred surroundings of the archangels who hovered above the ground.

In turn, images of the archangels on architectural supporting elements—pillars, columns, etc.—go back to the idea of celestial beings, connected with the forces of nature and the astronomical world order. Nubian paintings are two-dimensional, which makes them different from images of antique caryatids, but the idea is nonetheless the same. They are celestial spirits supporting the heavenly vault and the throne of God.

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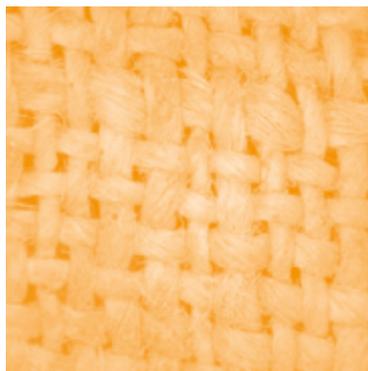
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# Textile material from Old Dongola: preliminary observations on trade and sartorial practices in the Ottoman period



**Abstract:** The textiles presented in this paper come from the so-called House of the Mekk, which—judging by its intricate plan and size—was one of the most important compounds on the Old Dongola citadel during the Funj period (16th–18th centuries). The typology of the textiles presented is representative of an urban settlement, and two case studies, piece-dyed blue cottons and fabrics decorated with plaid-effect pattern in white and blue, are discussed in greater detail. The textile analysis is complemented by an assessment of various written sources (court registers, traveler’s accounts), which can produce information about trade routes and goods, and also offer a preliminary picture of the sartorial practices of the elite in Old Dongola during the Ottoman period.

**Keywords:** Dongola, blue-dyed cotton, plaid-effect pattern, trade, sartorial practices

Specific environmental conditions of the Middle Nile Valley offer optimal preservation for organic material. Textiles retrieved from archaeological exploration, no matter how fragmentary, provide always substantial information about the resources, technology, and society in which they were produced (Andersson Strand et al. 2010). Such data is particularly valuable in contexts in which written sources are rather scarce.

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Archaeological research in Sudan, frequently the outcome of salvage programs necessitated by dam construction projects, has been concentrated mostly in Nubia with numerous textiles coming from both settlements and burials (Bergman 1975; Mayer Thurman and Williams 1979; Adams 1996; 2001; 2002; 2003; Adams and Adams 1998; 2010; Adams et al. 1999). More recently, excavations conducted in the Fourth Cataract region (also within the framework of a dam-related salvage program) have demonstrated the preservation of textiles also in this area (Carpio and Guillen 2005; Chłodnicki 2007; Osypiński

2007; 2010; Longa 2010; 2012; 2014; Petrick 2012; Heikel and Patolla 2012; Woźniak, in preparation). Old Dongola, the capital city of the kingdom of Makuria, is no exception. Fabrics were found previously by a Polish mission from the Polish Centre of Mediterranean Archaeology University of Warsaw (Godlewski, Mahler, and Czaja-Szewczak 2012; Czaja 2018), as well as more recently by the UMMA Project, which is set to explore the late medieval Funj-related (16th–18th centuries) layers on the citadel in Dongola. This paper presents part of the textiles excavated in the 2018–2019 and 2019–2020 seasons.

## PROVENANCE

The textile fragments documented during a short study visit to Old Dongola in February 2020 counted 274 in total and of these 238 were fragments of woven fabrics. The other items were raw fibers (wool, cotton), spun threads, occasionally raveled yarns (mainly from piece blue-dyed fabric), various cords, strings, fringes, a few fragments of non-woven textiles (felt, braids) and what could well be a button. For each group of textiles recovered from a context, the fragments were inventoried by type, and measurements were taken for the biggest fragments.<sup>1</sup> The assemblage considered here represents approximately 20% of the total number of textiles (visual evaluation) recovered during the first two seasons of the UMMA Project. It is too early to

draw general conclusions about textile production and cloth consumption in Old Dongola during the Ottoman period based on such a small data sample, but some preliminary observations can be made already at this stage of the research.

The focus of these observations are textiles from contexts related to the so-called House of the Mekk and its vicinity. “MeKK” was a royal title during the post-medieval period, worn by Funj kings, as well as by rulers of smaller territories, such as Dongola, after it ceased to be the capital of the kingdom of Makuria. Early explorers dubbed the large and intricately planned complex the House of the MeKK, but the “royal” nature of the building is uncertain. It evidently belonged to a wealthy owner, as the excavations in the 2019–2020 season

1 Not every single fragment was registered. Fragments of the same fabric were all counted, except in rare instances when they were too tiny and numerous; then they were estimated by the surface they covered, a basic unit being an A4 sheet paper. The information was reported in the “measurements” column, but registered as one item as all of the fragments came from one fabric.

highlighted, but the evidence was insufficient for identifying this individual with the Mekk of Dongola (M. Wyzgoł, personal communication, 2020).

The textiles from the House of the Mekk were found in two adjacent but not interconnected rooms, 113 and 128 [Fig. 1]. Room 113 was probably on the ground floor of a two-story building. Its original function cannot be determined at present, but at some stage it was certainly used for food preparation and later for rubbish disposal. A total of 22 textile fragments was found in the refuse layer. As for room 128, also on the ground floor it was initially used as living quarters, then as a workspace for household activities, and finally as a dump. Here also the textiles, a total number of 96 fragments, came from the rubbish, but in terms of content, the two

rubbish depositions were different: the waste from room 113 consisted mainly of ash, which is typical of cooking activities, whereas that in Room 128 was more diverse (M. Wyzgoł, personal communication, 2020). As for the size of the textile fragments, both assemblages contained small, medium, and larger pieces (gauged by counting the number of warps and wefts in 1 cm<sup>2</sup> of the fabric). Interestingly, the upper stories of the building were apparently inhabited even as the ground-floor rooms were filled with rubbish, indicating that the waste could have come from the neighborhood as well as from the residents of the house.

The presence of textile fragments in refuse contexts is common in settlements. Fabrics were costly items, reused repeatedly long after they were no longer useful for

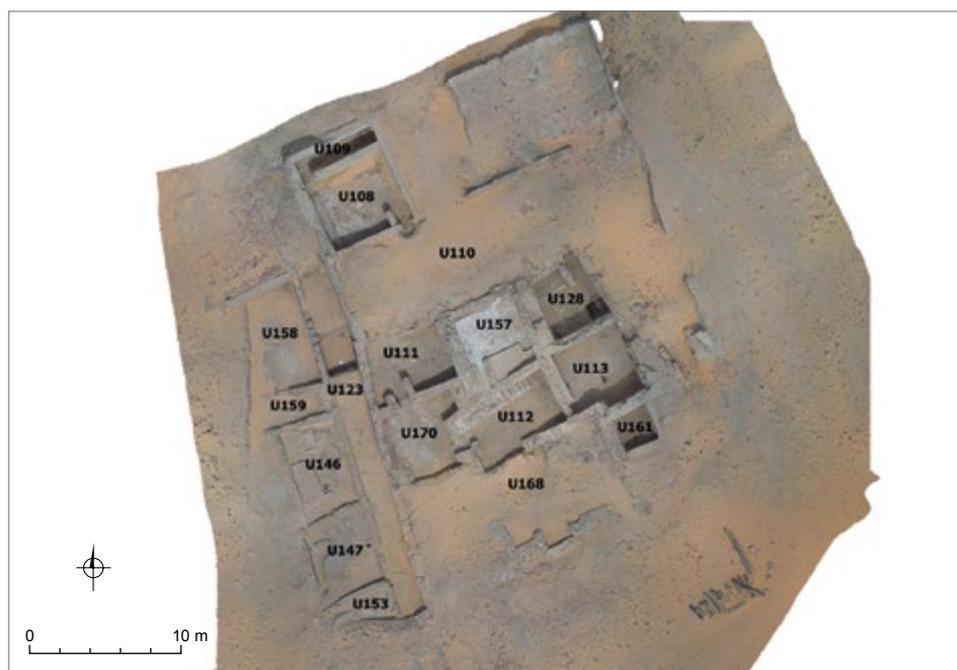


Fig. 1. Plan of the so-called House of the Mekk in Old Dongola; rooms 113 and 128 at right (UMMA Project (ERC), PCMA UW | orthophoto A. Chlebowski)

their original purpose. Larger fragments were redone into children's clothes or used for patching other garments. Smaller pieces, especially of valuable textiles, could be adapted into decorative panels on hats, for example, or used to embellish hems. Small, doll-size dresses, clumsily sewn, present in the textile material from Qasr Ibrim were

interpreted by Elizabeth Crowfoot and Nettie K. Adams as children's training pieces (Alexander and Adams 2018: 157). These small models were made of scraps or, most probably, of reused textiles. Ultimately, a worn and discarded fabric ended up as rags, toilet paper, or even filler for masonry walls (Alexander and Adams 2018: 151).

## TEXTILE ANALYSIS

The typology of the textiles from the House of Mekk follows the categories employed in textile analysis, namely, fabric structure (that is, identification of the fiber), twisting direction of the yarn, fabric density and type of weave.<sup>2</sup> Consequently, textiles are grouped by fibers (in this case, wool, cotton, linen,

silk, *Fig. 3*) and are sub-divided into two groups depending on the spinning direction of the yarns: S or Z [*Fig. 4*].<sup>3</sup> Evaluation of textile density serves to assess fabric quality [*Fig. 2*].

Textile examination also provides information on any visible embellishment processes, such as dyeing, which can be applied

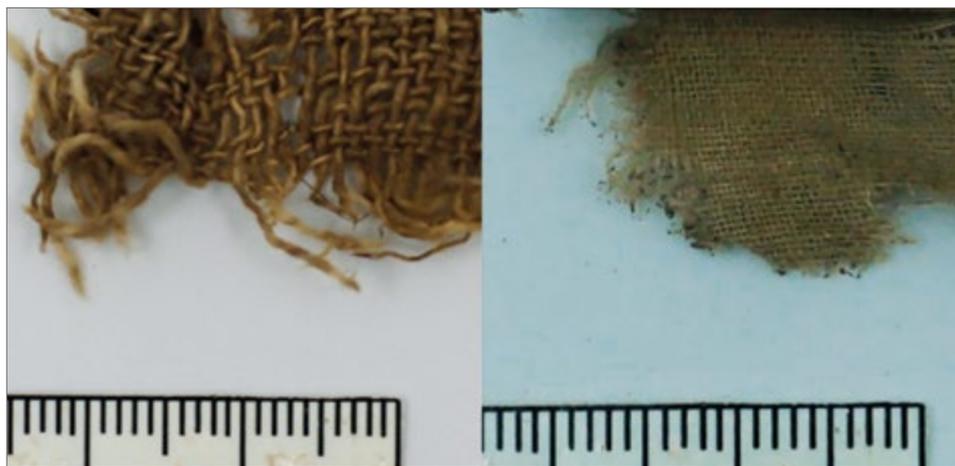


Fig. 2. Two cotton textiles of different densities: 7 warps x 9 wefts/cm<sup>2</sup> (left) and 24 warps x 25 wefts/cm<sup>2</sup> (right) (UMMA Project (ERC), PCMA UW | photo M. Drab)

- 2 For non-specialists, weave is the way warps and wefts intercross. Basic weaves are tabby, twill, and satin. Except for specific complex weaves, it is not possible to determine the loom used for weaving a fabric. Warp-weighted looms are attested in Sudan antiquity, but the absence of loom-weights in medieval contexts suggest a two-beam loom instead, which is consistent with descriptions left by Johann Ludwig Burckhardt (1819: 253).
- 3 If the number of mixed warps and/or wefts spun in S and Z direction increases significantly in further studies of this assemblage, then a third sub-group labelled S/Z will be introduced.



Fig. 3. Fabric structure in microscopic images: top left, cotton; top right, wool; bottom left, linen; and bottom right, silk (right) (PCMA UW | Dinolite photograph M.M. Woźniak)



Fig. 4. Cotton fibers twisted in S direction (left) and in Z direction (right) (PCMA UW | Dinolite photograph M.M. Woźniak)

to raw fibers before spinning, spun threads (to be used as warps and/or wefts to create a woven decorative pattern), or complete woven pieces of fabric, which are dyed in their entirety. Tailoring and/or sewing traces are occasionally to be observed, and can be considered an indicator of fabric value in view of the time-consuming nature of weaving as an activity, requiring careful planning at each stage of its making. Any additional embellishment and/or transformation would have increased the value of a given piece of textile.

An exemplary study of similar material, which the author has drawn on extensively both for content, comparanda and methods of presentation, is the recent publication of Ottoman textiles from Qasr Ibrim (Nettie K. Adams, in Alexander and Adams 2018). All 53,077 fragments from 793 provenances in the Ottoman layers were inventoried,<sup>4</sup> and despite rigors of space (“a complete report on the entire corpus of textiles from the Ottoman period will require a separate monograph”, Alexander and Adams 2018: 151), the chapter on the textiles offers a detailed overview of the fabric types, their ratio in the assemblage, and, when possible, descriptions of the kind of garments identified.

The assemblages from the two rooms were considered separately. The set from room 113 contained only cotton fragments

and one piece of wool fabric [Fig. 5 top]. All the fabrics represent a tabby weave, which is the simplest weave where each weft passes over one and under one warp. The cotton material can be divided into cottons made of S-spun yarns (1/3) and cottons made of Z-spun yarns (2/3). Among the cottons with Z-spun yarns, about 30% are piece-dyed in blue. Due to the very long tradition of counterclockwise spinning in Sudan, fabrics woven with S-spun yarns are considered to be local products, while textiles woven with Z-spun yarns are most probably imports (see discussion in Bouchaud, Yvanez, and Wild 2019: 30–36). Fabric density (comprised between 10 and 14 yarns/cm for both warp and weft) indicates medium-quality, most probably used for clothes. About 40% of the pieces had tailoring/sewing traces [see Fig. 5 center and bottom].

The set from room 128 presents similar repartition, the assemblage being dominated by cotton tabbies [Fig. 6 top]. Fabrics woven with Z-spun threads are more numerous than those woven with S-spun threads. Fragments of both show traces of sewing or tailoring. Also, more than half of the Z-spun cottons are dyed blue. One of the peculiarities of the group is the presence of pieces decorated with a plaid effect<sup>5</sup> in white and blue.<sup>6</sup> Most of the fabrics are medium-

4 Of these, 1322 pieces were selected as a reference base, numbered and catalogue; they were divided between the Egyptian Museum in Cairo, the British Museum in London and the Bolton Museum in Manchester (Alexander and Adams 2018: 151).

5 Regarding the terminology, the author follows the CIETA system, where the term “chequered” is applied to a pattern created in the fabric’s structure by the weaving, while “plaid-effect” is preferred to describe a pattern created by color, that is, the setting of the colored warps on the loom and the selection of color wefts during the weaving process.

6 “White” is used to describe the general effect produced by the pattern; the actual shade of the cotton undyed threads varies from pale beige to golden.

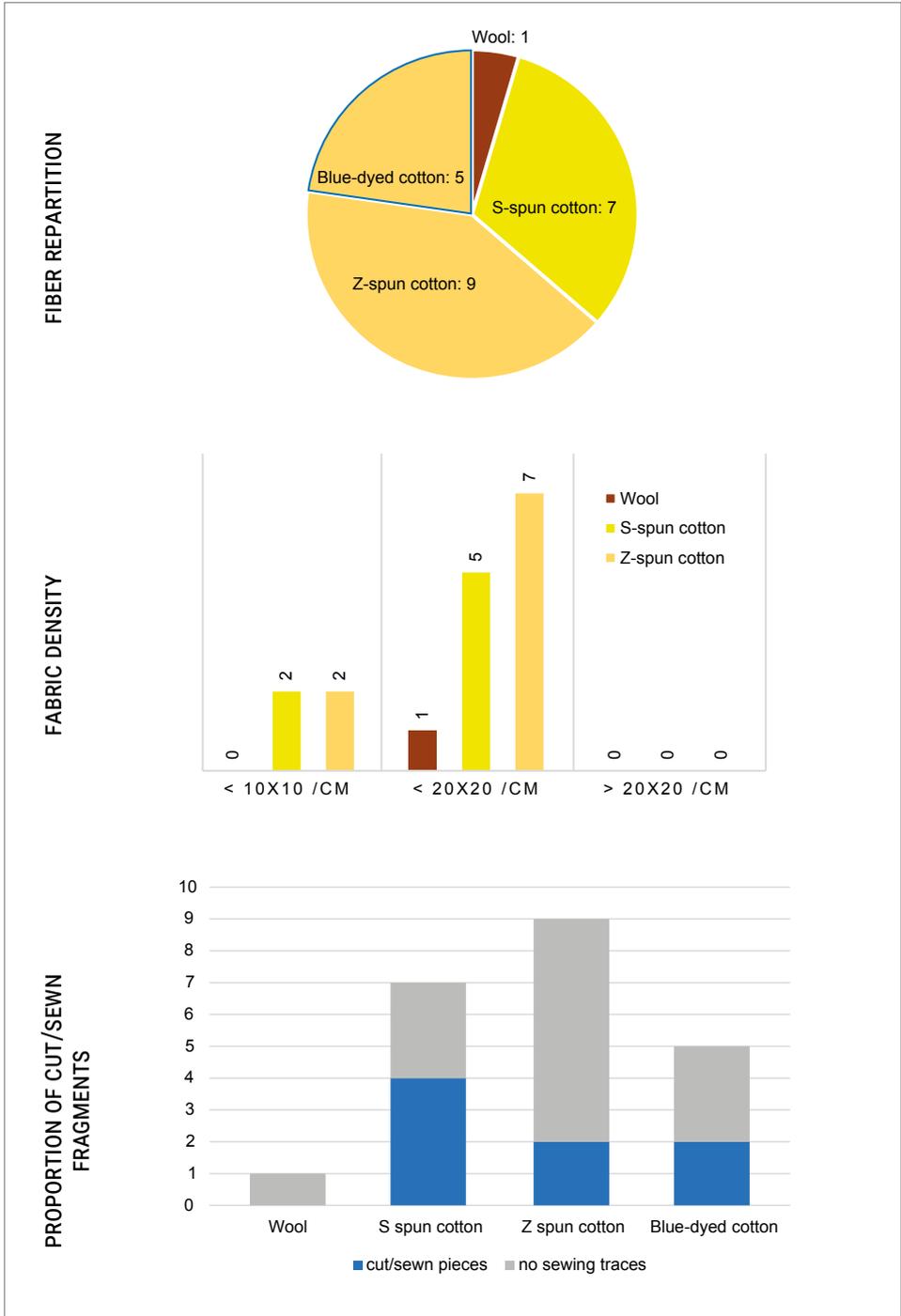


Fig. 5. Textile assemblage from Room 113: top, fiber repartition; center, fabric density; and bottom, proportion of sewn textiles

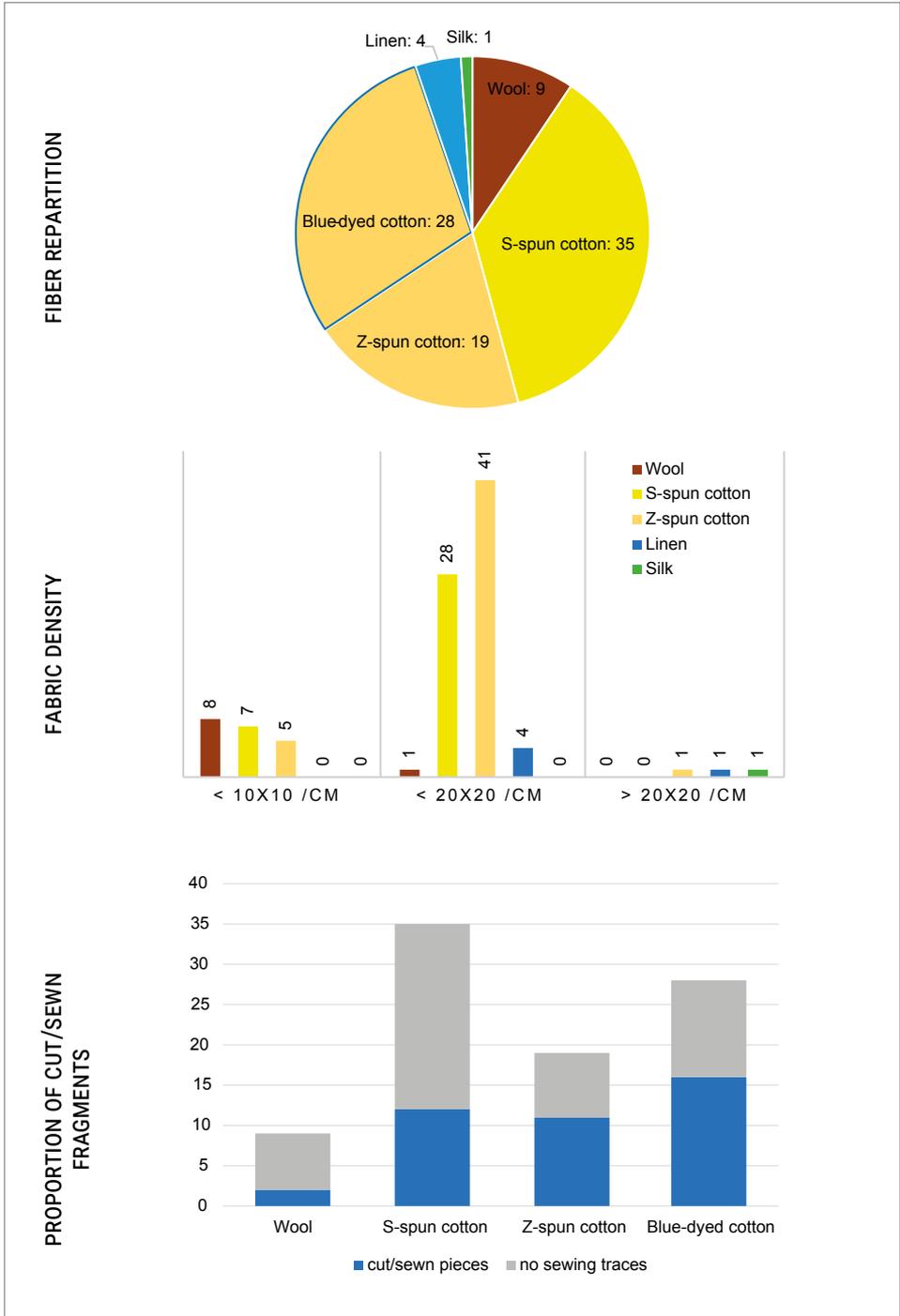


Fig. 6. Textile assemblage from Room 128: top, fiber repartition; center, fabric density; and bottom, proportion of sewn textiles

quality pieces [Fig. 6 center]. Regarding the woolen fragments, which are woven exclusively with S-spun yarns, they appear to be tabbies of lesser quality with a density falling under  $10 \times 10 / \text{cm}^2$ . Another interesting fact for the assemblage in room 128 is the presence of rare fibers, such as linen and silk. The four linen fragments are all tabbies woven from Z-spun yarns. Their density varies from medium- to fine-quality cloth.

A number of fragments shows sewing traces [Fig. 6 bottom]. A piece sewn from two fragments preserves a seam and a short fringe (Lp 198). The use of a Z2s cotton yarn demonstrates that the two panels were sewn if not by an inhabitant of Dongola, then at least by a person using locally spun cotton thread. Another fragment of good-quality linen fabric bears stitching holes created by a yarn that has disintegrated completely (Lp 209). Finally, a small linen piece shows a simple plaid-effect decoration in blue on white ground (Lp 224). The original function of the linen pieces was most probably clothing as well.

As for the small silk fragment, it is composed of a bundle of threads in golden (undyed), blue and red shades. An interpretation of the context, in which it was found, suggests the con-

tent of an upper-story chamber that had fallen into the ground-floor room when the floor collapsed. The fact that all the threads are undulated proves that they unraveled from a woven piece: a closer observation of the threads under a microscope shows deeper and lighter undulations on different threads. Some threads present sections without undulation, which may point to their use as floating threads, but in the absence of the weave, this cannot be proved. Some yarns bear also fragments of a metal thread, possibly silver, wound around them; other yarns bear dark traces, which could be oxidation residues due to the contact of the thread with a metal. Even if it is not possible to reconstruct the fabric's original structure, the presence of metal threads with a silk core and the identification of some floating threads are technical elements that reveal the special value of the original textile. As for the bundle itself, it is more probable that the unraveled bright silk threads were stocked in order to be re-spun and used probably as sewing thread for embroidering or hemming a garment (Crowfoot 1931: 12; Alexander and Adams 2018: 155), rather than to be used for reweaving, since they were insufficient for the latter purpose.

## CASE STUDIES

Archaeological evidence shows that wool is generally the prevalent fiber in towns and villages in Nubia (Bergman 1975; Adams and Adams 1998). When studying textiles in the Nubian context, one should keep in mind this relative “ranking” of the fibers in which the most

common and accessible product is wool. While cotton was cultivated in Sudan since the Meroitic period, its production needed an important and well-organized working force, which was often controlled by central authorities (Yvanez and Woźniak 2019: 39–45).

Furthermore, in terms of productivity, wool is much more convenient to obtain, as the quantity of wool given by a sheep surpasses by far the quantity of fiber produced by a cotton tree.<sup>7</sup> In areas with reduced arable land, parcels were then mostly used for food crops and the local sheep flock usually provided the textile fiber for domestic needs (garments, utilitarian, and furnishing textiles). The larger number of cotton textiles in the assemblages from the so-called House of the Mekk can be considered to represent an urban setting, with a wealthier population that had access to trade products that were imported, and not locally produced.<sup>8</sup> The presence of both local and imported textiles points to a local production of cotton cloth, which was strongly supplemented by traded fabrics (the proportion observed in the assemblages is 1/3 local for 2/3 imported). Among the textiles imported for the Sudanese market, we would like to focus on blue-dyed cotton fabrics and textiles decorated with a plaid effect in blue and white.

### BLUE-DYED COTTONS

Cotton fabrics woven from Z-spun yarns and dyed blue in one piece<sup>9</sup> appear in consistent numbers across many assemblages found at Old Dongola. Their dark blue color is rather well preserved, usually on the whole fragment. In some cases, the textiles show paler shadows of blue or green [Fig. 7], but when a hem is preserved, the bright blue is often visible inside. The density is that of medium-quality cloth. Numerous pieces show traces of sewing; among the fragments examined this season, some appear to have been used as panels on tailored tunics [Fig. 8]. Some pieces bear traces of repair in the form of patches or thick sewing. In most of the tailored textiles, hems and seams are sewn in a very thin running stitch. In the cases where it can be observed, the sewing thread is a blue Z-spun cotton yarn. The use of an S-spun cotton thread, usually undyed, is attested for repairs and reuse of the original textile for another purpose [Fig. 9]. In conclusion, the archaeological evidence suggests that not only untailored pieces of cloth taken off the loom were available on the market, but also possibly tailored clothes.

7 Discussion during “Cotton in the Old World conference” at the Muséum National d’Histoire Naturelle in Paris in May 2017. Internet data give an average of 60–80 g per cotton tree and an average of 1.8 to 2.2 kg per sheep. These numbers must be taken with extreme caution as the cotton species grown in medieval Sudan was different from the cotton species grown today for the cotton industry, which originates from the Americas; similarly, sheep in Sudan were short-haired and cannot be compared with other breeds of sheep, which were raised specifically for wool. However, even considering all these caveats, the quantity of fiber produced by a cotton tree is still smaller than the quantity of wool produced by a single short-haired sheep bred in Sudan.

8 Judging from the presence of cotton textiles woven from S-spun threads in all the assemblages, the inhabitants of Old Dongola appear to have cultivated large plots of land, undoubtedly in the Letti Basin, a part of which was used for cotton production. For the cotton cultivation system along food crops, see Bouchaud, Yvanez, and Wild 2019.

9 A closer examination of the textile shows that the dye did not penetrate the threads at the crossing point between warp and weft.

As for the provenance of blue-dyed cottons, some Egyptian written sources suggest India as a possible place of their production. These documents are copies of 16th-century commercial contracts kept in the archives of the religious courts in Cairo (Walz 1979). They record the activity of several members of the al-Tahtawi family, who lived in Upper Egypt and were merchants involved in the trade with Sudan. Terence Walz studied a dozen such contracts written between 1563 and 1612, in which Cairo merchants acting as investors partnered with *gallaba*, traveling merchants who “transported goods between Egypt and the [African] interior either on their account or on that of an associate” (Walz 1979: 216). Many of the *gallaba* seem to be members of Arab tribes, “located on the periphery of Upper Egypt”. Both par-

ties invested common capital to purchase goods in Egypt and sell them in Sudan in exchange for slaves, camels, feathers, or gold (Walz 1979: 222). It appears that “goods invested in partnerships were, first and foremost, textiles of various sorts which proved or were believed marketable in the Sudan” (Walz 1979: 224). Among the textiles mentioned in these contracts, Walz lists the following categories:

- *qumash*, general term used to describe cotton cloths (includes fabrics produced in the Egyptian Delta, Syria, Palestine, and India)
- *kandaki*, describes coarse cotton textiles (possibly imported from India)
- *fazari*, unidentified
- *muzaffar*, a kind of luxurious fabric destined for royalty(?)
- *masqari*, unidentified.



Fig. 7. Monochrome blue-dyed cottons from Old Dongola (Lp 160) (UMMA Project (ERC), PCMA UW | photo M. Drab).

Among these types, the *kandaki* is of particular interest for our study as it is often described as “dyed blue”. Walz cites local sources to indicate Broach (modern Bharuch, in Gujarat province) as the place where this textile was woven at the beginning of the 17th century. Interestingly, in the early 19th century, a guild of “teinturiers de toile dite Dandaki [sic] au Caire” was

identified by historian André Raymond (Raymond 1957, quoted in Walz 1979: 224–225, Note 6). Assuming it is indeed *kandaki* fabric referred to here, it is possible that some *kandaki* cloth was imported undyed and then dyed blue in Cairo. Although the dyeing process increased undoubtedly the value of this type of textile, it was still relatively cheap due to the coarseness of the



Fig. 8. Fragment assembled from two panels (Lp 243) (UMMA Project (ERC), PCMA UW | photo M. Drab)



Fig. 9. Secondary sewing with an undyed cotton thread made of two S-spun yarns plied in Z direction (UMMA Project (ERC), PCMA UW | photo M. Drab)

yarns. Of the three contracts edited and translated in full by Walz, *kandaki* appears in two: first, in an agreement from 26 November 1563, in which the parties plan to acquire “5 bundles of blue Kandaki cloth”; secondly in another contract from 7 July 1567, in which the partners declare they purchased “35 bundles of Kandaki cloth”. The Arabic word used to describe the bundle (or bale) of textiles is *kurja*, which Walz relates to *carga*, a medieval weight unit used in Europe, and equivalent to 130–180 kgs or, to a camel’s load.<sup>10</sup>

In the first contract, the total invested money amounted to 175 dinars, and it corresponded to the price of 500 pieces of Mahalla cloth (produced in the Egyptian Delta), five bundles (= 5 camel’s load or 650–900 kgs) of blue *kandaki*, two bundles of unbleached *hijazi* cloth and various articles, such as chains, tin pieces, scents and files. Curiously, the Mahalla cotton fabrics were bought in *thawb*, known to be a rectangular pieces of textile the dimension of which allowed to cut a garment from it, or, by extension, a garment (dress, tunic) cut in a textile of similar dimensions (Dozy 1845: 21–23, Note 1).<sup>11</sup> The other two types of fabrics in the document, *kandaki* and *hijazi*, were bought by weight. This distinction is certainly related to the value of the textiles: we can hypothesise that the price for more valuable fabrics was fixed per piece, while the cheaper ones were sold in gross (by weight) by bales. However, it is difficult to estimate here the exact sum

invested by the merchants for acquiring the bales of *kandaki* alone. In the second contract, 180 dinars were spent to acquire almost exclusively *kandaki* (35 bundles = 4.5–6 t.) and two camels.<sup>12</sup> The lack of any color adjective indicates that the cotton fabric was most probably undyed.

As already observed by Nettie Adams in the material from Qasr Ibrim, both blue-dyed and undyed cotton tabbies woven from Z-spun yarns decline in both quality of yarns and density (low, medium and fine), which confirms that the blue-dyed tabbies are the same type of cloth as the undyed ones (Adams 1996: 161; Alexander and Adams 2018: 154). When combined with the written evidence, it is very tempting to identify the cottons in our assemblages, especially the blue-dyed ones, with the *kandaki* cloth. There are plans to test this hypothesis via strontium isotope analyses, provided that access is granted by the Sudanese authorities.

#### TEXTILES WITH PLAID-EFFECT PATTERN IN BLUE AND WHITE

This category is much less numerous than the previous one: only 11 pieces recorded from the site so far. Most are cottons of medium quality, one is of low quality, and another of fine quality [Fig. 10]. One cotton tabby (Lp 195) has cotton (blue) and silk (red, ecru) warps; one piece is a linen (Lp 224). Two pieces have the plaid-effect pattern in blue and white enhanced with red threads (Lp 195 and Lp 122).

10 Estimated at 300–400 lbs; for example, a camel’s load is “from six to seven hundred pounds English” (Burckhardt 1819: 120).

11 In modern-day Sudan, the *thawb* is still used by women as a mantle to wrap around their body and head.

12 The issue of the cost of a camel is under debate.

The pieces, which are middle- and large-sized, were all found in the so-called House of the Mekk (Room 128) and in the adjacent street (Unit 123) (two small fragments, 1.5 to 2 cm in size, came from other sectors). One is entitled to link these highly valuable textiles with the wealthy residents of the house. Indeed, 18th-century written sources speak of the Nubian elite being the exclusive users of plaid-effect patterned textiles. For example, Teodoro Krump, a Franciscan priest from Germany who was part of a mission to Sennar between 1700 and 1702, in his book published in 1710, writes about the clothing habits of the inhabitants of Nubia who wore from everyday leather or cotton loincloth to winter-time woolen mantle. When it comes to the elites, Krump adds:

“As for the clothing of the nobility, they wear a long blue shirt that reaches to the feet, which may or may not have sleeves that come down to the hands. No less common is a **piece of blue and white striped material (cotton, or cotton and silk, or even pure silk)**, which is not unlike a bed sheet in length. **They use this in place of a cloak, wrapping it two or three times around the waist as a sash, or over the hips and shoulders, and so they go about**” (Krump 1710: 224).<sup>13</sup>

Krump depicts the costume worn by the various dignitaries he met during his journey, such as a son of a prince or a “small king” of villages. Each of them

wears among other elements a piece of blue and white striped cloth:

“On the twelfth [of January 1701] a son of the prince, to whom we had given two handfulls of wool and a little coffee, paid us a visit. He was dressed like a Barbarian [=Nubian], and his clothing consisted of the following pieces, namely: a blue shirt wrapped around with a white and blue embroidered sheet in place of a cloak, a long sabre in his hand, ...” (Krump 1710: 230).<sup>14</sup>

“Today [22/01/1701] along the way we met the small king or patron of all these villages. He rode elegantly on a fine Arabian horse, his tobacco-pipe in his mouth, and accompanied by four slaves on foot and four mounted soldiers. As for his clothing, he wore a Nubian linen shirt without sleeves, from which one could have boiled several quarters of fat. His loins were bound about with a blue and white striped cotton sash several ells long” (Krump 1710: 233).

Some of the plaid-effect textiles match quite well with these descriptions: while most of their surface appears to have been decorated with uneven plaid-effect where larger stripes were more visible than the thin bands, as on piece Lp 215; other fragments preserve larger decorative bands which were most probably located on the fabric borders. Similar textiles decorated in blue and white appear in small numbers in assemblages dating to the Late and Terminal Chris-

13 All quotations from Krump 1710 after the English translation Spaulding 1974.

14 A decline in the quality of the textiles produced in Egypt from the end of the 17th to the end of the 18th century, possibly as a response to more competitive European textiles, may explain the production of lower quality decorated textiles, which became then more accessible also for the Sudanese market. See Raymond 1973: Chapter 6 § 46. Such a “downscaling” process to respond to the market’s increasing demand is also described in Jacoby 2004: 216–217.



Lp 103



Lp 224



Lp 122



Lp 195



Fig. 10 (and opposite page). Textile fragments decorated with plaid-effect pattern: cottons (Lp 103, 122, 197, 215), linen (Lp 224) and cotton and silk (Lp 195) (UMMA Project (ERC), PCMA UW | photo M. Drab)

tian periods at Qasr Ibrim (Adams 1996: 161–163); their presence increases notably in the Ottoman Period but nothing is said so far about their provenance on the site (Alexander and Adams 2018: 154). We do not know if these textiles were more popular and accessible to the common inhabitants of Qasr Ibrim<sup>15</sup> or if they

were still mainly worn by the city's notables. Given the present advancement of research, it is too early to evaluate the proportion of the plaid-effect textiles in the Dongolese assemblages, and therefore, remarks about their concentration in the area of the so-called House of the Mekk are preliminary.

## DISCUSSION

Despite the limited number of textiles examined this season, the various categories of fabrics identified shed light on sartorial practices in Old Dongola during the Ottoman period. The preponderance of cotton fabrics at the expense of wools in the material on site suggests an urban environment, the inhabitants of which had access to and a taste for imported textiles. The assemblages from the refuse layers of rooms 113 and 128 both contained an important number of blue-dyed cotton tabbies, of which about 40% had hems, seams, or other sewing traces. These features suggest that these textiles were initially made and used as garments.

At least judging from the finds uncovered thus far, the blue fragments are concentrated mostly in the area of the said two rooms, while being almost absent in other contexts. While dark blue garments are a familiar feature of the Egyptian visual landscape of the 19th century (Burckhardt 1819: 8), their presence in Nubia is more difficult to document. We know, for example that cotton is almost absent at Qasr Ibrim before the 14th century; however, it increases

to 5.5% of the total textile output in Late Christian Period 2 (AD 1300–1400) and to 8% in the Terminal Christian Period (AD 1400–1500) (Adams 1996: 161). Although researchers do not indicate it specifically, the proportion of cotton textiles appears to have increased further in the Ottoman Period (Alexander and Adams 2018: 154). Once again, as we have no information about the exact provenance of the Qasr Ibrim cottons, it is difficult to link them to specific areas in the city. In this situation, written sources can help to estimate the popularity of blue textiles in Nubian society of the Ottoman period. If we rely on Krump's depictions of Nubians in 1701, it appears that most people wore leather garments (*rahat* for women, apron for men) or coarse cotton wraps. This modest outfit was sometimes completed in wintertime with brown woolen mantles made of a rectangular piece of cloth wrapped around the body. Blue clothes are mentioned as well, but they are limited to tailored blue shirts, and appear only in descriptions of noblemen's costumes. The blue shirts, almost certainly tailored in cotton fabric,

15 See the description of Nubians dressed in blue shirts in Cairo by Thévenot (1622?), cited by Żurawski 2001: 94–95.

seem to have been almost always worn in combination with a rectangular piece of striped white and blue textile, used as a sash or as a cloak (Krump 1710: 224, 230–233; after Spaulding 1974). Some of the dignitaries met by Krump, possibly the most wealthy and important, wore a white robe over their blue shirt. Two times, the blue shirt is qualified by the author as “Nubian” and it seems from the context that this type had no sleeves. Travelling in Lower Nubia a century later, Burckhardt observed that blue was still worn by the wealthier classes, while common people were dressed in a “linen[20] shirt only” or in “the woolen cloak of the peasants of Upper Egypt” (Burckhardt 1819: 141). Therefore, it is possible to conclude with some certainty that until the end of the Ottoman period, blue garments were the prerogative of the elite and the wealthier inhabitants of Nubia. Consequently, the presence of blue cotton fabrics in the House of Mekk at Old Dongola sustains the initial interpretation of the dwelling as the home of an important personage.

Seeing that blue garments are assigned special value, one is entitled to ask whether blue was a color of some importance in Nubian society? Blue cloth is known to have been traded on the Sudanese market, but there is no way to tell whether it was imported because it was available in Cairo and judged attractive for sale by Egyptian merchants or imported on-demand for Sudanese customers. The first hypothesis does not exclude the second, but this kind of speculation does not lead anywhere. Material evidence from Nubia demonstrates that blue-colored

costumes were popular among the elite during antiquity (Yvanez 2018: 87–90) and that objects with apotropaic function were often dyed blue. During the Christian period, the importance of blue is more difficult to assess, even though magical amulets with apotropaic function remain a vivid tradition. It would appear, however, that the written sign was perceived as more performative than the use of a specific color. Even so, some data could attest to the apotropaic function of blue in daily life practices. The inhabitants of Qasr Ibrim, for example, often used blue-checkered linen fragments to adorn “the neck area of the garments, especially those of children” (Alexander and Adams 2018: 154). Nubian women also wrapped their necks and arms with blue cords and their woolen mantles were decorated with blue wool (Krump 1710: 224). There exists archaeological evidence for the latter aspect (Lp 34, 70, 141, 146, 171, 256). Both Poncet and Krump list blue-dyed wool as a currency used in Nubia for bargaining (Poncet 1709: 10; Krump 1710: 223), which hints to the fact that blue-dyed fabrics were desirable products on the local market. While wealthier people could afford garments dyed entirely in blue, the lower classes may have acquired limited quantities of blue fabric to adorn their clothing and jewellery. Such a predilection for blue, while many other shades were available on the Egyptian market, was certainly not accidental, but further research is needed to determine whether blue was just a fashionable color or it carried a peculiar meaning for the Nubian people.

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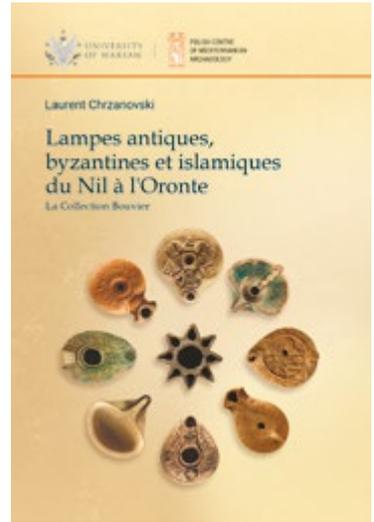
# Book review

Laurent Chrzanovski, *Lampes antiques, byzantines et islamiques du Nil à l'Oronte. La Collection Bouvier*; Warsaw: PCMA, University of Warsaw Press, 2019; ISBN 978-83-235-4058-8 (print); ISBN 978-83-235-4066-3 (online); 478 pages color + 238 plates B&W; Soft cover; 159,20 zł

Maurice Bouvier was an esteemed professor of law at the University of Alexandria, and in this capacity, resided in Egypt for over 30 years where he acquired several hundred ancient oil lamps – the Bouvier Collection. Laurent Chrzanovski has expertly analyzed, identified, and assembled these lighting vessels in this handsome volume. Honestly, it is one of the largest and finest collections of Egyptian and Near Eastern lamps I have encountered, and made accessible and affordable through Chrzanovski's publication.

The volume presents 795 oil lamps molded or wheel-thrown in clay, cast in bronze, and carved in stone. The lamps were manufactured in various workshops and production centers located in Egypt, Tripolitania, Tunisia, Cyprus, Palestine, Greece, and Asia Minor. The collection's lamp groups reflect a wide chronological range as well: the Pre-Hellenistic, Roman, Byzantine, and Islamic periods. Plastic-figurine lamps, lamp parts (e.g., handles and triangular reflector shields), multi-nozzle rectangular candelabra, and lanterns are also included. Each lamp catalogue entry includes a thorough macroscopic description, provenance, date, and parallels.

Chrzanovski's catalogue substantially expands the global corpus of published collections of ancient lamps and our knowledge of the various types, especially the Egyptian lamps originating from Alexandria and the Fayum. One exciting aspect of this assemblage is the rare and sometimes never-before-seen lamps and lamp scenes. The "frog" lamp portraying a barbarian man



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(p. 330, No. 567) and two additional frog lamps with faces of a grotesque and female head (p. 330, Nos 566 and 568, respectively), at least for me, demonstrate the wider repertoire of images found on this group which, in general, tends to represent various frog styles: natural (p. 305, No. 502), geometric (p. 299, No. 485), and symbolic (p. 303, No. 497). Images interpreted as human fetuses are pictured on three other rare frog lamps located in the British Museum, which I suggest may have been intended for use as photoamulets: the lamps may have been placed in burials of miscarried fetuses to “radiate” symbolic light to protect them from darkness where impure demons lurk. I was delighted to discover that a frog lamp decorated with Christian crosses is also found in the Bouvier Collection (pp. 50–51, 328–329, No. 565). These are rather uncommon and reflect the early Christian appropriation of the millennia-old Egyptian association of this slimy amphibian with rebirth, renewal, and resurrection as Chrzanowski points out on the basis of similar examples from Karanis (p. 51).

As a fellow lychnologist, I greatly appreciate Chrzanowski’s decision to publish large photographs of the lamps, and not only the upper part of the lighting vessels, but also their respective bases. Much information can be gleaned from the inscriptions, initials, and lamp-maker marks found on a lamp base, as Chrzanowski’s helpful dictionary of lamp-epigraphy in the volume shows. Medalion-like photographs of discus scenes with accompanying discussion is another helpful feature of the publication. The lamps’ clay fabric colors pictured in the

respective photographs appear accurate and the resolution of the black-and-white images is particularly superb. The combined effect is as if I were examining The Bouvier Collection in person! The inclusion of Prof. Bouvier’s lamp drawings intermittently throughout the volume is a thoughtful touch and pays tribute to his fascination with ancient lamps.

Chrzanowski’s attention to detail and superb scholarship is evidenced in his correct identifications and dating of the lamps in the tome, a sizable accomplishment given the large number of lamps from many different provenances. Take, for example, the Syrian discus lamp entry (p. 281, No. 427). In Roman times, numerous regional versions of the widely popular discus or “picture” lamps (*Bildlampen*) were manufactured. Phoenicia, Syria, and Palestine were no different. It has become standard practice among lychnologists, including myself, to identify the latter regions as the origin for the discus lamp group produced in the Levant. That said, no archaeological evidence—such as an actual workshop, molds, and wasters—has been found to confirm this type’s location of manufacture. Two possible clay sources may have been quarried for the manufacture of this group, as the findings of a combined petrographic and trace-element analysis of lamp samples from multiple sites in Israel and Jordan suggest. But whether these sources were limited to locations in Phoenicia, Syria, and/or were actually located in Palestina Tertia, at or in the vicinity of the Decapolis city of Scythopolis/Beth Shean, still must be determined. Another sourcing study has identified Abila as a location for picture lamp production, but the version made

there differs from the Palestinian discus type in that its fabric is a brick red and the lamp walls tend to be thick. There simply may have been several workshops and even multiple production centers for the Levantine versions of the picture lamp group given the widespread distribution and concentrations found at sites in the region. So, I was impressed that Chrzanovski distinguished the Syrian discus lamp from the very similar provincial Palestinian discus lamp form that is typically characterized by two double-ax motifs on its shoulder and a hard-fired thin wall, among other distinguishing features.

The section about *Firmalampen* ("factory lamps") reminds me of the rarity of this type in the Levant as compared to the substantial quantities produced in Italy and in the northern provinces of the empire. Several Levantine examples have been excavated at Jerusalem, Caesarea Maritima, Masada, Byblos, and Aqaba. A theater mask is depicted on a standard factory lamp from Italy included in the catalogue (p. 252, No. 346; cf. to a face interpreted as Jupiter Ammon's, depicted on another *Firmalampe* unearthed at Gerulata in the Roman province of Pannonia). Additionally, three versions of this lamp type are found in the catalogue (p. 253, Nos 348–350) and, as suggested by Chrzanovski, may originate from Egypt or the Near East. Some lychnologists identify lamps belonging to this version as the "Northern Group" or "Northern Stamped" form, which was likely manufactured in Galilee or somewhere farther north, as distribution maps suggest.

One topic Chrzanovski confronts is the interpretation of façades on lamps as Christian and Jewish motifs (pp. 405–

407). He identifies four stylistic variants of a façade motif depicted on lamps. The shrine image portrayed on the lamp example from Chersonesos appears to have been made in the same mold as that from Miletus (Variant A, middle bottom, p. 406). The Miletus example has been identified as representing a Torah Shrine based on similar depictions pictured on synagogue mosaics in Israel (e.g., Sepphoris, Beth Alpha, and Hammath-Tiberias), shown in the frescoes of the Jewish catacombs of Torlonia and Monteverde in Rome, and those portrayed on gold glasses and on other clay lamps. Torah Shrine images on lamps are rare, though. One example from Ostia shows open doors with scrolls represented inside. Another shrine is pictured with a drawn curtain or parochet and was unearthed at Tel Mevorakh near Caesarea Maritima. Further examples exhibit closed paneled doors (i.e., Miletus and Kalymnos). The few façades portrayed on lamps from Sepphoris may represent possible Torah Shrines, but unfortunately are incomplete as they occur on fragments. Crosses typically distinguish Christian shrines represented on lamps, including one found on a lamp from Caesarea Maritima, and another interpreted as the Edicule of the Holy Sepulcher on a lamp located in the Münster Museum.

In his introduction on the economic contribution of Egypt and the Levant regarding oil lamps (pp. 37–53), and his most captivating section, Chrzanovski takes his lamp catalogue a critical step further, advancing the field of lychnology by addressing wider matters involving the commercial culture behind lamp production and usage. His discussion on the var-

ious types of oil-fuels and wick materials used in lamps are treated in light of Egyptian hieroglyphs in addition to Hebrew and Arabic religious texts. (Incidentally, petrographic evidence for the diffusion of burning wick vapors through the clay fabric of an early Byzantine lamp has been identified in a recent study as meandering hairline vapor veins.) Chrzanovski's analysis and inclusion of a papyrological fragment belonging to the Zenon corpus listing various hand-lamps and oil-fuels (pp. 44–47) is further welcomed. Papyrological texts “cut to the chase” and take us directly to daily life activities and rituals involving lamp usage.

I appreciate that Chrzanovski mentions the occurrence of finger imprints on lamps in this section as well (p. 49). Finger impressions are an important diagnostic feature of some lamp types, including, for example, the Classic Nabataean group dating to the early Roman period and likely manufactured in the area of Petra, Jordan. As a recent study reports, a lamp-maker's thumb-impression was extracted from a Classic Nabataean lamp fragment excavated at Roman Aqaba us-

ing 2D-laser scanning methods. Lamps belonging to the Beit Nattif type made in one or more workshops in the Judaeen Shephelah, too, characteristically exhibit finger imprints, as indicated in the image provided in the catalogue (p. 49).

Additionally, Chrzanovski draws our attention to the modern manufacture and ritualistic usage of clay lamps for the Hindu festival of lights (Diwali) which is especially intriguing as the lighting vessels are similar to ancient saucer lamps and demonstrate how this tradition has survived for millennia. Another example where Chrzanovski takes that additional leap forward is his acute identification and comparison of the multi-pointed star motif carved into the façade of the Al-Aksa Mosque in Jerusalem to the same-shaped stone lamps from the Arabian Peninsula, probably Yemen, in the collection (pp. 476–477, Nos 794–795). This symbolic connection between sacred space and material culture is fully plausible. All said, Chrzanovski's exquisite scholarly publication of *The Bouvier Collection* has readily found itself on bookshelves worldwide as a lychnological classic.

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