

POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY
UNIVERSITY OF WARSAW

POLISH ARCHAEOLOGY IN THE MEDITERRANEAN

XXVI/1

RESEARCH



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IN THE MEDITERRANEAN

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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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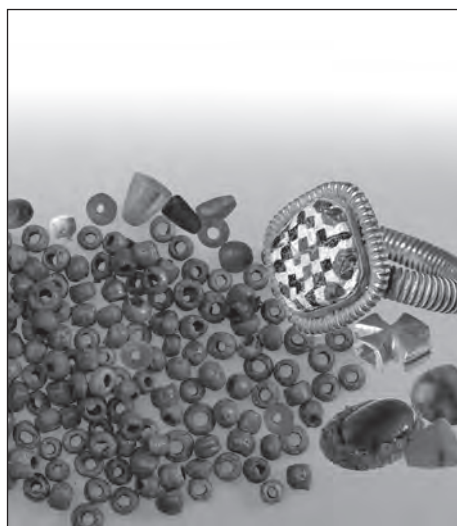
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POLISH CENTRE OF MEDITERRANEAN ARCHAEOLOGY
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CONTENTS

CONTENTS

ABBREVIATIONS	10
OUR PARTNERS	11

PAM REPORTS

POLISH RESEARCH IN 2016

A. PCMA field missions and research projects in 2016 (with maps).....	15
B. Other Polish projects in this volume.....	31
C. The “Lion of Palmyra” exhibition in Warsaw	31

OBITUARY

Tomasz Górecki 1951–2017.....	32
-------------------------------	----

EGYPT

ALEXANDRIA

Alexandria, Kom el-Dikka. Season 2016	
<i>Grzegorz Majcherek</i>	37
Appendix: Glass from Area CV on Kom el-Dikka (Alexandria). Season 2016	
<i>Renata Kucharczyk</i>	54
Egyptian imitations of Chinese celadon from the 14th–15th centuries found at Kom el-Dikka in Alexandria	
<i>Małgorzata Redlak</i>	59

MARINA EL-ALAMEIN

Research and conservation in Marina el-Alamein in 2016 (Polish–Egyptian Conservation Mission)	
<i>Rafał Czerner, Grażyna Bąkowska-Czerner, Wiesław Grzegorek and Piotr Zambrzycki</i>	85

TELL EL-RETABA

Tell el-Retaba, season 2016	
<i>Sławomir Rzepka, Józef Hudec, Łukasz Jarmużek, Veronika Dubcová and Lucia Hulková</i>	109

TELL EL-MURRA

Tell el-Murra (Northeastern Nile Delta Survey): preliminary excavation report for the 2014 and 2015 seasons	
<i>Mariusz A. Jucha, Grzegorz Bąk-Pryc, Natalia Malecka-Drozd and Magdalena Kazimierczak</i>	137

CONTENTS

NAQLUN

- Naqlun 2016. Hermitage EE.50 preliminary report**
Włodzimierz Godlewski 161
- Pottery finds from Hermitage EE.50 in Naqlun: preliminary assessment of the assemblage**
Katarzyna Danys 173

WEST THEBES: ASASIF

- Middle Kingdom tombs from Asasif: work in the 2015/2016 season**
Patryk Chudzik 185

DEIR EL-BAHARI: TEMPLE OF HATSHEPSUT

- Theoretical reconstruction of the Solar Altar in the Temple of Hatshepsut at Deir el-Bahari**
Teresa Dziedzic 199
- The Southern Room of Amun in the Temple of Hatshepsut at Deir el-Bahari: epigraphic work between 2014 and 2015**
Katarzyna Kapiec 207
- Mammals in the iconography of the Temple of Queen Hatshepsut: a project underway**
Kamila Braulińska 221

DEIR EL-BAHARI: TEMPLE OF TUTHMOSIS III

- More remarks on the enlarged doorway in the Dejsjer-akhet temple of Tuthmosis III at Deir el-Bahari**
Janina Wiercińska 229

GEBELEIN

- Archaeological survey at Gebelein in the 2014, 2015 and 2016 seasons**
Wojciech Ejsmond, Julia M. Chyla, Piotr Witkowski, Daniel Takács, Dawid F. Wiczorek, Lawrence Xu-Nan, Vincent Oeters, Taichi Kuronuma and Adam Grylak 239

SUDAN

BANGANARTI AND SELIB

- Fieldwork in the Southern Dongola Reach and Third Cataract Region in 2015/2016**
Bogdan Żurawski, Mariusz Drzewiecki and Aneta Cedro 269
- The North-East living quarter of the medieval pilgrimage center in Banganarti. Archaeological research in 2015 and 2016**
Michał Dzik 289

CONTENTS

The medieval fortifications at Banganarti after the 2016 season <i>Mariusz Drzewiecki</i>	301
Selib 3: pottery from the midden <i>Aneta Cedro</i>	310
SONIYAT	
The Kushite temple in Soniyat after the 2016 season <i>Mariusz Drzewiecki</i>	329
EL-ZUMA	
Early Makuria Research Projet. Excavations at el-Zuma in 2017 <i>Mahmoud El-Tayeb</i>	339
Early Makuria Research Projet. Remarks on pottery production evidence from recent excavations at el-Zuma <i>Ewa Czyżewska-Zalewska</i>	355
GHAZALI	
The winter seasons of 2013 and 2014 in the Ghazali monastery <i>Artur Obluski, Grzegorz Ochala, Cristobal Calaforra-Rzepka, Małgorzata Korzeniowska, Szymon Maślak and Zaki ed-Din Mahmoud</i>	367
CYPRUS	
NEA PAPHOS	
Nea Paphos. Seasons 2014 and 2016 <i>Henryk Meyza, Marcin A. Romaniuk and Monika Więch</i>	399
Appendix 1: Glass from "Hellenistic" House Courtyard 1 <i>Dorota Mazanek-Somerlik</i>	420
Appendix 2: Note on the pottery from the circular basin S.1/16 <i>Monika Więch</i>	423
Circular pool in the main courtyard of the "Hellenistic" House in Nea Paphos: preliminary remarks <i>Marcin M. Romaniuk</i>	429
Cooking Ware pottery from the "Hellenistic" House at Nea Paphos. Seasons 2014 and 2016 <i>Monika Więch</i>	441
Appendix: Inscription on the rim <i>Grzegorz Ochala with a contribution by Adam Lajtar</i>	451

LEBANON

JIYEH

- Mammals in the economy of ancient Porphyreon (Lebanon)**
Joanna Piątkowska-Malecka 453

JORDAN

BEIT RAS

- Beit Ras/Capitolias: archaeological project 2014–2016**
Jolanta Młynarczyk 475

KUWAIT

FAILAKA

- Failaka Archaeological Research Project. Preliminary results after the second and third seasons of excavation at Kharaib el-Desht in 2015–2016**
Agnieszka Pieńkowska 507

OMAN

QUMAYRAH

- Archaeological investigation of the Early Bronze Age burial site Qumayrah-Ayn 1 (QA 1) in Wadi al-Fajj in northern Oman: results of the 2016 season**
Lukasz Rutkowski 523
- Preliminary report on a new prehistoric site Qumayrah-Ayn 2 (QA 2) in northern Oman**
Marcin Białowarczuk 543

ARMENIA

METSAMOR

- Preliminary report on the 2016 season in Metsamor (Armenia)**
Krzysztof Jakubiak, Mateusz Iskra, Ashot Piliposyan and Artavazd Zakyan 557
- Aerial survey of the cemetery and surrounding fields at Metsamor in Armenia**
Marek Truszkowski and Otto Bagi 570

STUDIES

Settlement history of Iraqi Kurdistan: an assessment halfway into the project <i>Rafał Koliński</i>	579
Argishti I in the Arax valley: consequences of the conquest <i>Krzysztof Jakubiak</i>	591
Metal garment elements from the Beshtasheni Late Bronze Age – early Iron Age cemetery in eastern Georgia <i>Jacek Hamburg and Katarzyna Pawłowska</i>	601
Glass from the Tell Farama/Pelusium excavations, 2003–2006 <i>Krzyszyna Gawlikowska</i>	619
Glass finds from Beit Ras/Capitolias in Jordan <i>Mariusz Burdajewicz</i>	661
Early Makuria Research Project. Royal Ornaments of the Late Antique African Kingdom, Early Makuria, Nubia (AD 450–550) <i>Joanna Then-Ostuska</i>	687
Between the Nile and the Ocean. The bead assemblage from the Eastern Desert (4th to 6th centuries AD) <i>Joanna Then-Ostuska</i>	719
The utility ware assemblage from the hermitage inside tomb MMA 1152 in West Thebes: selected issues, provisional characteristic and research methodology <i>Tomasz Górecki</i>	749
A bronze censer with decoration from a cathedral in Old Dongola <i>Maciej Wyżgół</i>	773
Four encolpia from the monastery complex in Naqlun, Egypt: preliminary iconographic study <i>Agnieszka Rys</i>	787

DOCUMENTATION AND CONSERVATION

The process of 3D documentation in archaeological fieldwork: a case study from the archaeological site of Metsamor <i>Otto Bagi</i>	795
The Iraqi Kurdistan heritage in the face of regional development: preservation of archaeological sites and damage assessment — first preliminary report <i>Joanna Mardas</i>	809

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Department of Architectural Heritage and Archaeological Antiquities, Dubai Municipality
and its successive CEOs Mr. Rashad Mohammed Rashad and Mr. Ahmed Mahmoud

ABBREVIATIONS

<i>ANM</i>	<i>Archéologie du Nil Moyen</i> (Lille)
<i>ASAE</i>	<i>Annales du Service des Antiquités de l'Égypte</i> (Cairo)
<i>AV</i>	<i>Archäologische Veröffentlichungen, Deutsches Archäologisches Institut, Abteilung Kairo</i> (Berlin–Mainz am Rhein)
<i>BAH</i>	<i>Bibliothèque archéologique et historique</i> (Paris)
<i>BAR IS</i>	<i>British Archaeology Reports International Series</i> (Oxford)
<i>BASOR</i>	<i>Bulletin of the American Schools of Oriental Research</i> (Ann Arbor, MI)
<i>BCH</i>	<i>Bulletin de correspondance hellénique</i> (Paris)
<i>BIFAO</i>	<i>Bulletin de l'Institut français d'archéologie orientale</i> (Cairo)
<i>BSFE</i>	<i>Bulletin de la Société française d'égyptologie</i> (Paris)
<i>CCE</i>	<i>Cahiers de la céramique égyptienne</i> (Cairo)
<i>EA</i>	<i>Egyptian Archaeology</i> (London)
<i>EtTrav</i>	<i>Études et travaux. Travaux du Centre d'archéologie méditerranéenne de l'Académie des sciences polonaise</i> (Warsaw)
<i>FIFAO</i>	<i>Fouilles de l'Institut français d'archéologie orientale</i> (Cairo)
<i>GAMAR</i>	<i>Gdańsk Archaeological Museum African Reports</i> (Gdańsk)
<i>GM</i>	<i>Göttinger Miszellen</i> (Göttingen)
<i>JARCE</i>	<i>Journal of the American Research Center in Egypt</i> (Boston–Princeton–New York–Cairo)
<i>JEJ</i>	<i>Journal of Egyptian Archaeology</i> (London)
<i>JGS</i>	<i>Journal of Glass Studies</i> (Corning, NY)
<i>JJP</i>	<i>Journal of Juristic Papyrology</i> (Warsaw)
<i>JRA</i>	<i>Journal of Roman Archaeology</i> (Portsmouth, RI)
<i>LÄ</i>	<i>Lexikon der Ägyptologie</i> I–VII, W. Helck, E. Otto (eds), Wiesbaden: Otto Harrassowitz, 1972–1992
<i>MIFAO</i>	<i>Mémoires publiés par les membres de l'Institut français d'archéologie orientale</i> (Cairo)
<i>MDAIK</i>	<i>Mitteilungen des Deutschen Archäologischen Instituts, Abteilung Kairo</i> (Wiesbaden)
<i>OIP</i>	<i>Oriental Institute Publications</i> (Chicago)
<i>OLA</i>	<i>Orientalia lovaniensia analecta</i> (Louvain)
<i>PAM</i>	<i>Polish Archaeology in the Mediterranean</i> (Warsaw)
<i>PSAS</i>	<i>Proceedings of the Seminar for Arabian Studies</i> (London)
<i>SAAC</i>	<i>Studies in Ancient Art and Civilisation</i> (Kraków)
<i>SAOC</i>	<i>Studies in Ancient Oriental Civilisation</i> (Chicago)
<i>SDAIK</i>	<i>Sonderschriften des Deutschen Archäologischen Instituts, Abteilung Kairo</i> (Mainz)
<i>ZÄS</i>	<i>Zeitschrift für ägyptische Sprache und Altertumskunde</i> (Leipzig–Berlin)

XXVI/1

RESEARCH

REPORTS

POLISH RESEARCH IN 2016

A. PCMA FIELD MISSIONS AND GRANT PROJECTS IN 2016

Fieldwork listed in this section chronicles fieldwork organized and funded, in full or in part, by the Polish Centre of Mediterranean Archaeology University of Warsaw (PCMA UW), as well as associated grant projects from the National Science Center of the Republic of Poland, conducted in 2016 and in the archaeological seasons overlapping into 2016. Sites are presented in alphabetical order by country, the sequence of presentation of the latter being arbitrary in reflection of the scope of current involvement. Projects not reported in full in this volume are described in brief, giving information on the dates of the fieldwork and team makeup, as well as a summary of the most important results and relevant publications.

The Syrian projects: Hawarte, Palmyra, Tell Arbid and Tell Qaramel, remain suspended due to the political situation in the region and are not included below. Some of the Egyptian projects were cancelled and others seriously delayed, resulting in decisions to reschedule this year's work.

EGYPT

Map A

ALEXANDRIA, KOM EL-DIKKA, see in this volume.

Ongoing research grant: Dr. Katarzyna Lach, "Studies on the character of social contacts in Roman Alexandria based on numismatics research. Analysis of coin finds from Kom el-Dikka in the archaeological context" (NCN Fuga 3: 2014/12/S/HS3/00088)

BERENIKE

Delayed permission from the Egyptian authorities resulted in a cancellation of the season. A large part of the Berenike Project team arrived in Cairo anyway to take part in a bilateral conference "Imperial' Berenike and its antecedents on the Red Sea coast", organized by the PCMA and Egypt's Supreme Council of Antiquities. The conference, held on 23 March 2016 at the SCA's Ahmed Basha Kamal Lecture Hall in Zamalek, provided a platform for sharing the results of recent research conducted by the Polish, Polish–American, French and Italian projects around the Red Sea. The results of this conference make up the Special Studies volume of *PAM* 26/2 this year. The conference was held within the frame of three research grants funded by the National Science Center of the Republic of Poland, two from Berenike and one from Aynuna i Saudi Arabia (see below). The two ongoing grants from Berenike are:

Ongoing research grants: Iwona Zych, MA "Religious practices and beliefs in the "Red Land": religious building complexes and cult objects from the port of Berenike as a manifestation of the religiousness of the population of the Egyptian Red Sea coast and Eastern Desert from the mid 3rd century BC to the early 6th century AD" (NCN Preludium 7: UMO-2014/13/N/HS3/04400)

Marek Woźniak, MA "From military base to international emporium: the nature and functioning of the Hellenistic port of Berenike on the Red Sea" (NCN Grant Preludium 9: 2015/17/N/HS3/00163)

Prof. Michał Gawlikowski "Infrastructure of the international trade in the Red Sea area in the Roman period" (NCN Harmonia 6: UMO-2014/14/M/HS3/00795)

See also: Sidebotham, S.E. and Zych, I. (2016). Results of the winter 2014–2015 excavations at Berenike Egypt and related fieldwork in the Eastern Desert. *Journal of Indian Ocean Archaeology*, 12, 1–34



Map A. Archaeological sites excavated by the PCMA: Egypt, Sudan, Cyprus, Lebanon and Jordan

OVERVIEW WITH INDEX

	[LP] <i>LIST OF PROJECTS</i>	[R] <i>REPORTS</i>	[S] <i>STUDIES</i>
ALEXANDRIA, KOM EL-DIKKA (EGYPT).....		[R] 33, 64, 87, 104	
ASASIF (EGYPT).....		[R] 289	
BANGANARTI (SUDAN).....		[R] 349	
BANI ISRAIL (THIRD CATARACT) (SUDAN).....		[R] 115	
BEIT RAS/CAPITOLIAS (JORDAN).....		[LP] 29	
BERENIKE (EGYPT).....	[LP] 15	[R] 315	
CHHÎM (LEBANON).....		[LP] 27	
DEIR EL-BAHARI, TEMPLE OF HATHEPSUT (EGYPT).....	[LP] 15	[R] 303	
DEIR EL-BAHARI, TEMPLE OF TUTHMOSIS III (EGYPT).....	[LP] 15		
DIFFAR (EL-) (THIRD CATARACT) (SUDAN).....		[R] 115	
DONGOLA (OLD) (SUDAN).....	[LP] 24	[S] 761	
FAGIRINFENTI (THIRD CATARACT) (SUDAN).....		[R] 115	
GEBELEIN/KHOZAM/EL-RIZEIQAT (EGYPT).....	[LP] 19		
GHAZALI (SUDAN).....	[LP] 26		
JIYEH/PORPHYREON (LEBANON).....	[LP] 28	[R] 479, 487	[S] 619
KISSENFARKI WEST (THIRD CATARACT) (SUDAN).....		[R] 115	
MAREA (EGYPT).....	[LP] 20	[R] 115	
MARINA EL-ALAMEIN (EGYPT).....		[R] 127, 145, 167, 185	
NAQLUN (NEKLONI) (EGYPT).....		[R] 265	
NEA PAPHOS (CYPRUS).....		[LP] 26	
PALMYRA (SYRIA).....		[LP] 26	
SAQQARA (EGYPT).....	[LP] 21	[R] 255	
SELIB (SUDAN).....		[R] 349	
SHEIKH ABD EL-GURNA (EGYPT).....	[LP] 21		
SONIYAT (DONGOLA REACH) (SUDAN).....		[R] 115	
TELL EL-FARKHA (EGYPT).....		[R] 227	
TELL EL-MURRA (EGYPT).....	[LP] 23		
TELL EL-RETABA (EGYPT).....		[R] 193	
VALLEY OF THE KINGS (RAMESSES VI) (EGYPT).....		[LP] 23	
ZUMA (EL-) (SUDAN).....	[LP] 25	[S] 725, 741	



Map B. Archaeological sites excavated by the PCMA: Iraqi Kurdistan, Armenia, Saudi Arabia, Kuwait, Emirate of Dubai U.A.E. and Oman

OVERVIEW WITH INDEX

	[LP] LIST OF PROJECTS	[R] REPORTS	[S] STUDIES
AYNUNA (SAUDI ARABIA).....			[LP] 30
BAHRA 1 (AL-SUBIYAH) (KUWAIT).....			[LP] 30
BESHTASHENI (GEORGIA).....			[S] 115
IRAQI KURDISTAN (IRAQ).....			[LP] 511
KHARAIB EL-DESHT (FAILAKA, KUWAIT).....			[R] 553
METSAMOR (ARMENIA).....			[R] 553
QUMAYRAH–AYN (OMAN).....		[R] 553, [LP] 23	
SARUQ AL-HADID (UAE DUBAI EMIRATE).....			[LP] 193

Osypiński, P. and Osypińska, M. (2016). The Wadi Khashab ceremonial complex — a manifestation of cattle keepers in the Eastern Desert of Egypt before the end of the fifth millennium BC. *Azania: Archaeological Research in Africa*, 51(2), 257–281. <https://doi.org/10.1080/0067270X.2016.1186335>

DEIR EL-BAHARI: TEMPLE OF HATSHEPSUT

The mission's work was concentrated in the Upper Terrace where studies and documentation in preparation for publication went on in the Main Sanctuary of Amun-Re (F. Pawlicki), in the South Chamber of Amun-Re (K. Kapić) and in the Complex of Royal Cult, where collation of plates for the publication of the Complex of the Royal Cults (M. Barwik) was supplemented with publication photos (M. Jawornicki) and a digital reconstruction of the north and west walls of the vestibule of the Chapel of Thutmose I. The documentation program included also the verification of columns of hieroglyphic texts containing the term “Mansion of Million of Years at Djoser-Djeseru”, describing the Temple of Hatshepsut (Z.E. Szafranski) and epigraphic work was continued in the Southern Middle Portico (so-called Punt Portico) (M. Brachmańska, K. Braulińska, M. Kaczanowicz and F. Taterka). Documentation of relief decoration representing scenes with animals from different parts of the temple was carried out for the purposes of a new research project by Kamila Braulińska (for details, see report in this volume).

Trial trench S.2/15 was excavated by the outer face of the Southern Wall of the Chapel of Hatshepsut to check its static condition prior to proceeding with restoration works. A section 9 m long of a buttressing wall of limestone blocks was uncovered; it rested on a levelling layer which served to cushion the weight of the structures above it. Several building dipinti were painted on the blocks. Finds from the fill included pottery and objects of the Eighteenth Dynasty, Late and Coptic periods, but also cigarettes and modern newspapers.

The conservation and restoration project, supervised by Rajmund Gazda, encompassed the placement of 35 original fragments in the West Wall of the Chapel of Hatshepsut on the Upper Terrace as well as cleaning and consolidation of selected registers in the Lower Shrine of Anubis on the Middle Terrace. Further work was done by Wojciech Myjak on the rearrangement and restoration of a colossal figure of Hatshepsut in the form of Osiris, located at the end of the Northern Portico of the Lower Terrace (the head was done in the previous season). The head of the other Colossus from the Southern Portico started to be conserved as well.

The preparation of the “Hatshepsut Temple Block-yard Open-air Museum” progressed with the construction of more benches under four Roman stone sarcophagi and five sarcophagus lids, as well

as elements of Coptic stone architecture. Decorated fragments of architecture of the temples of Hatshepsut and Tuthmosis III are already on display on the other benches.

- Three research programs appended to the main mission program were continued: 1) Temple of Thutmosis III storeroom project, directed by Monika Dolinska (see below in this section); 2) Temple of Thutmosis I storeroom project, catalogue of block fragments by Jadwiga Iwaszczuk; 3) Asasif Necropolis Project, directed by Patryk Chudzik (see the report in this volume).

Dates of work: 29 October 2015–17 March 2016

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Student-trainees: Adrianna Madej and Anastasya Guliyevskaya (Institute of Archaeology, University of Warsaw)

Rais: Ragab Ahmed Yassin

DEIR EL-BAHARI: ASASIF (research program), see in this volume.

DEIR EL-BAHARI: TEMPLE OF TUTHMOSIS III (research program)

Branch of the Polish-Egyptian Archaeological and Conservation Mission to the Hatshepsut Temple at Deir el-Bahari

Reconstructing the iconographic program of the decoration of the Temple of Tuthmosis III in Deir el-Bahari, is the main objective of this project and it is an ongoing work since the discovery of the shattered remains of the temple in 1962–1967. The theoretical reconstruction of various temple chambers based on a reconstruction of the painted relief wall decoration is particularly advanced for the Hypostyle Hall, Sanctuary, and Rooms D, G and H. The painstaking process of checking the reconstruction drawings against the surviving fragments continued, coupled with a program for complementing the drawings with high quality professional photographs necessary for the preparation of photomontages of chosen parts of the decoration. A 3D reconstruction model of the temple was made and 26 large blocks and fragments of Osiride statues were documented with orthophotography. Restorers worked on reconstructing from fragments the remaining two decorated blocks from the east wall of the Sanctuary.

Dates of work: November–December 2016

Director: Dr. Monika Dolińska (National Museum in Warsaw)

SCA representative: Mohamed Azaab

Egyptologists: Janina Wiercińska (National Museum in Warsaw), Dr. Andrzej Ćwiek (Archaeological Museum in Poznań)

Photographer: Zbigniew Doliński (National Museum in Warsaw)

Architect: Mariusz Caban (PhD candidate, Wrocław University of Technology)

Conservators: Joanna Lis, Andrzej Karolczak (both National Museum in Warsaw)

GEBELEIN ARCHAEOLOGICAL PROJECT (Egypt), see in this volume.

MAREA (Egypt)

Basilica project: The northern side chapel of the large Christian basilica from Byzantine times, excavated by the team from the Archaeological Museum in Kraków and PCMA UW since 2003, was cleared and investigated. It was a long room, divided into two by stub walls (units 6 and 50) and furnished with a small apse and a latrine abutting the walls of the northern pastophorium. The west wall of the chapel, of stone ashlars like the whole basilica, had a rectangular niche cut into it in its southern part and filled, presumably at some later date, with brick masonry. The entrance was from the northern aisle of the basilica. The north wall of the chapel shows a change in the bond in its western part where it replaced a wall belonging to the original phase. These repair works can be associated with structural changes made in the building. The addition of two latrines (units 14 and 51) and several rooms abutting the basilica on the north was most likely part of the same construction episode. The latrines were connected to the chapel by two entrances blocked during a subsequent phase of use. The latrine in unit 51 was explored in 2016, revealing the regulatory stone seats and Greek and Arabic graffiti on the plaster of the west wall. The partition walls inside the latrine complex were not interfaced with the basilica wall proper. The fill yielded an amphora stopper with the inscription *Αἰα Μαρία* (a bold speculation would see in St Mary the patron of the basilica). Another interesting find was a relief stele depicting a standing figure dressed in a toga; the stone had been reused in the basilica as a pilaster. Last but not least, a seal ring was discovered, 1.5 cm in diameter, with a bezel decorated with a bust of a holy figure carved in relatively deep relief. It may have belonged to a bishop and was used for sealing important documents. Of particular interest among the pottery finds was a toy vessel in the shape of a fish, richly decorated with scales and fins, and with perforations in the upper fin, most likely used for suspending the object; this is the first find of this kind from Marea. Pottery from the basilica this season was diverse; local forms dominated especially among kitchen- and table wares, although the material also included ARS group B (North Africa) and Aswan wares (ERSA). A large group consisted of amphorae, mainly locally produced LRA 5/6, as well as EA 3 and EA 4, common in the Mareotic region. Imported amphorae included specimens from North Africa. In general, the ceramic material varied both typologically and chronologically, spanning from the 4th to the 8th century AD. Studies and conservation procedures in the SCA store on site included finds from earlier seasons, namely, coins and ostraka.

The Late Roman house in Marea and its inhabitants (NCN research grant): Research in the eastern part of the Marea peninsula was carried out under a research grant of the Institute of Archaeology in cooperation with the PCMA UW and Archaeological Museum in Kraków expedition to Marea. The objective was to complete the excavation of building H1 which lies on the waterfront just about 10 m to the southeast of a large Christian basilica dated to the Byzantine period. It is 22.90 m by 24.20 m in size and has a regular rectangular plan. It is beyond doubt that it functioned as a residential building, although its southern part was most likely an industrial and service area. Over time the edifice underwent various changes that involved dismantling walls and raising new dividing structures and installations within the rooms, accompanied by a steady accumulation of occupational levels. The date of its occupation has been established as from the

late 5th–early 6th century to, most likely, the second quarter of the 8th century AD. The season was dedicated to clearing and documenting the full extent of the house and to digging trenches to verify the stratigraphy of the building. Occupational levels were explored in all of the rooms of the complex. The array of finds encompassed earthenware (local and imported vessels, and building material), glass, coins. The repertoire of pottery vessels includes forms dating from the 1st–3rd centuries AD to the early 8th century AD. Local transport amphorae are represented by Dressel 2–4 forms, as well as Late Roman Amphorae 5/6. Dominant among the imported containers are vessels from Palestine (Late Roman Amphora 4) and Cilicia or Cyprus (Late Roman Amphora 1). Kitchen wares and tablewares were also amply represented, the latter including plates and bowls imported from Upper Egypt (Egyptian Red Slip Ware) and a significantly smaller group of imports from southern Asia Minor (Late Roman D). Excavations in building H1 also yielded a small number of fragments of vessels with painted decoration, as well as two complete small jugs and partly preserved jugs with ceramic lids. Among glass finds the dominant forms were bottles, bowls and windowpanes. The dating span of the coins was from the second half of the 4th century AD to the first half of the 8th century AD.

BASILICA PROJECT

Dates of work: 5 November–12 December 2016

Director: Krzysztof Babraj, archaeologist (Archaeological Museum in Kraków; 2014, 2015)

SCA representative: Eslam Tailon

Archaeologists: Anna Drzymuchowska, ceramologist (Archaeological Museum in Kraków); Dominika Majchrzak (Archaeological Museum in Kraków)

Architect: Daria Tarara, chief architect (freelance)

Late Roman house in Marea and its inhabitants: research grant

(National Science Centre of Poland Grant 2011/01/B/HS3/02184)

Dates of work: 13 November–8 December 2016

Director: Dagmara Wielgosz-Rondolino, archaeologist (Institute of Archaeology, University of Warsaw)

SCA representative: Islam Ahmed Abd El Aal (archaeology), Wael Yousri Mohamed (conservation), Amr Ibrahim Ali Noah, Director of the Fawzy el Fakhrany Storage Museum in Marea

Papyrologist/epigrapher: Prof. Tomasz Derda (Institute of Archaeology, University of Warsaw): “Ostraca from Marea or how a big basilica was built in the 5th century?” (National Science Centre of Poland Grant 2012/07/B/HS3/03638)

Archaeologists: Dr. Mariusz Gwiazda (independent)

Numismatist: Dr. Piotr Jaworski (Institute of Archaeology, University of Warsaw)

Glass expert: Renata Kucharczyk (PCMA UW)

Ceramologist: Tomasz Górecki (National Museum in Warsaw), Julia Górecka, assistant (independent)

Architect: Andrzej Bruno Kutiak (freelance)

Archeobotanist: Tzvetana Nikolaeva Popova (independent)

Registrar/photographer: Aleksandra Pawlikowska (independent)

SCA archaeology trainees: Enas Ibrahim Abdelsalam Ibrahim, Nermin Wazif Ali Hegazy)

MARINA EL-ALAMEIN: CONSERVATION PROJECT, see in this volume.

MARINA EL-ALAMEIN: ARCHAEOLOGICAL PROJECT, season rescheduled to 2017.

NAQLUN (Deir el-Nekloni), see in this volume.

SAQQARA, season rescheduled to 2017.

SHEIKH ABD EL-GURNA: THE PHARAONIC PROJECT

The Pharaonic section of the Sheikh Abd el-Gurna Project concentrated on the continued exploration of the subterranean parts of the tomb MMA 1152. The sloping passage opening off

the bottom of the burial shaft turned out to be unfinished and with no burial chamber it is unlikely that the tomb was used in the Middle Kingdom period. However, a beaker from the Eleventh/Twelfth Dynasty may be proof of funerary activities during this time. In later ages, the tomb was used repeatedly, as attested by a rich burial from the Third Intermediate Period found at the end of the passage. The remains included fragments of a gilded cartonnage, a lapis-lazuli frame for the eye and pieces of a necklace of lapis lazuli and Egyptian blue, as well as faience beads from a mummy net, amulets and numerous ceramic ushebti. Other finds represented also the later periods in the history of the tomb, including a lamp from the Islamic period, which could date the episode of plundering in modern times. A survey of the area, including tombs on the western and southern slopes of Sheikh Abd el-Gurna, contributed data to a study of the location and role of tombs MMA 1151 and 1152 in the planning of the royal tomb complex in the Third Valley.

Dates of work: 15 February–10 March 2016

Director: Tomasz Górecki, archaeologist (National Museum in Warsaw)

Deputy director: (2015) Dr. Andrzej Ćwiek, egyptologist (Archaeological Museum in Poznań; Adam Mickiewicz University in Poznań)

SCA representative: Amr Abu el-Magd el-Nubi

Archaeologist: Marta Kaczanowicz (Adam Mickiewicz University in Poznań), Marcin Romaniuk (independent)

Architect: Elżbieta Kowalik (independent)

Conservator: Arkadiusz Ostasz (independent)

Photographer: Piotr Witkowski (independent)

Photographer: Maciej Jawornicki (freelance; 2015)

Acknowledgments: The Project gratefully acknowledges the support of the Adam Mickiewicz University in Poznań authorities and of Natalia Mielniczek and sponsors from the crowdfunding website <http://www.polkpotrafi.pl>

SHEIKH ABD EL-GURNA MANUSCRIPTS CONSERVATION MISSION, project suspended.

TELL EL-FARKHA (GHAZALA)

The exploration of the three mounds forming the archaeological site was continued. On the Western Kom the oldest phase of the administrative and cult complex from the Nagada IIIA1 period was investigated, uncovering several rooms of a domestic function, filled with ovens and storage vessels sunk into the floor. Excavation of one such pit revealed earlier remains associated with the so-called Nagada Residence as well as a layer of burning attesting to the conflagration that destroyed the settlement in the beginning of the Nagada IIIA1 period. It is thought that the fire corresponds to a phase of strong rivalry with Upper Egyptian power centers and is a reflection of a raid. More exploratory work was done also on a brewery located in this part of the site, uncovering successive phase of its operation. Work on the Central Kom proceeded on the southern part of the so-called Lower Egyptian residence fund under the granary which had been explored there in 2011. In another trench, unexpectedly, burials of men, women and children were discovered, laid in simple grave pits and without any furnishings. The burials, which correspond to settlement remains of the Nagada IIIB period, are found in a zone surrounding the remains of a round structure with very thick walls; the association. Last but not least, continued exploration of the southeastern corner of the trench on the Eastern Kom revealed the remains of large rectangular units, presumably a settlement that can be dated to the turn of Dynasty 0. A large structure, which was already evident in the previous season, still cannot be identified in terms of its function. The north wall preserves two niches filled with a light-colored substance, whereas on the inside the walls form a stepped structure. The building may be dated to the Second Dynasty. Earlier layers contained burials both in simple pits and in double-chambered tombs with stone casing and brick superstructures. Grave goods included ceramic beer jars and stone vessels.

Dates of work: 20 February–22 March 2016

Co-Directors: Dr. Marek Chłodnicki, archaeologist (Archaeological Museum in Poznań), Prof. Krzysztof M. Ciałowicz, archaeologist (Institute of Archaeology, Jagiellonian University in Kraków)

SCA representatives: Ahmed Hosni Ezzat Mohamed, Latifa Mohammed Elsayed

Archaeologist: Bartosz Adamski, Marcin Czarnowicz, Alicja Jurkiewicz, Jacek Karmowski, Dr. Piotr Kołodziejczyk, Jakub Skłucki (Institute of Archaeology, Jagiellonian University in Kraków) and Krzysztof Stawarz (freelance)

Ceramologists: Magdalena Kazimierczak, Magdalena Sobas (Institute of Archaeology, Jagiellonian University in Kraków), and Dr. Agnieszka Mączynska (Archaeological Museum in Poznań)

Archaeozoologist: Dr. Renata Ablamowicz (Silesian Museum, Katowice)

Archaeobotanist: Agata Bebel (Institute of Archaeology, Jagiellonian University in Kraków)

Anthropologist: Prof. Anita Szczepanek (Chair of Anatomy Collegium Medicum, Jagiellonian University in Kraków)

Geologist: Dr. Michał Wasilewski (Institute of Archaeology, Jagiellonian University in Kraków)

Conservator: Małgorzata Żukowska (Archaeological Museum in Poznań)

Photographer: Robert Słaboński (freelance)

Documentalists: Daria Białobrzeczka, Urszula Doros, Merita Dreshai, Marcin Gamrat, Aleksandra Węgrzynek (Institute of Archaeology, Jagiellonian University in Kraków), Gabriela Horodeczny (Institute of Archaeology, Adam Mickiewicz University in Poznań)

TELL EL-MURRA (NORTHEASTERN NILE DELTA SURVEY), see in this volume.

TELL EL-RETABA, see in this volume.

VALLEY OF THE KINGS: TOMB OF RAMESSES VI

The season, albeit extremely brief due to unexpected formal delays, was devoted to documenting Greek texts from the Roman period found on the walls of the tomb of Ramesses VI in the Valley of the Kings in West Thebes. This work was a continuation of earlier recording activities. The Project gratefully acknowledges the support of the Foundation for Polish Science (FNP).

Dates of work: 18–22 December 2016

Director: Prof. Adam Łukaszewicz, archaeologist and epigrapher (Institute of Archaeology, University of Warsaw)

Documentalists: Kamila Braulińska, archaeologist, photographer, PhD candidate, Faculty of History, University of Warsaw; Anastazja Golijewska, archaeologist, draftsman (both Institute of Archaeology, University of Warsaw)

Map A

SUDAN

DONGOLA

The PCMA UW team working within the frame of two programs supported by the Qatar–Sudan Archaeological Project (QSAP#10 and QSAP#31) continued the exploration of the Monastery on Kom H, digging in the monastic courtyard, the Central Building, directly to the east of the Monastic Church, and in the Southwestern Building (formerly the Southwest Annex). Architectural studies of the remains included a revisiting of buildings discovered earlier, including a review of the interior furnishings and installations, as well as expert studies on various categories of finds, among others, the pottery assemblage and the collection of Old Nubian and Greek inscriptions from the walls in the uncovered parts of the monastery. Wall paintings in the Central Building and Building NW.B.I (formerly the Northwest Annex) were conserved. The conservation and reconstruction project of the Mosque, originally the Throne Hall of the Kings of Makuria, entered the stage of reconstruction of the upper parts of the staircase leading to the viewing platform for tourists organized on the roof of the building.

On the Citadel the interior of the Church of the Archangel Raphael (SWN.B.V) was cleared in its entirety. Work continued on the conservation of successively discovered wall paintings and Greek inscriptions. The upper layers in the area between the church and the palace of King Ioannes I (SWB.B.I) were explored. In the Funj period (16th–17th century) this area served domestic purposes, similarly as the space inside the church walls. The eastern side of the fortifications were cleared, mainly a section 40 m long of the lower wall raised in Funj times to stop drifting sands from engulfing the town. Tower N.2, identified as part of the late 5th century enceinte, was conserved. Funj-period architecture on the northern side of Citadel (Kom B) continued to be investigated.

Dates of work: 10 January–18 February 2016; 14 November–20 December 2016

Co-Directors: Prof. Włodzimierz Godlewski, archaeologist (both seasons); Prof. Adam Łajtar, epigraphist (first season); Dr. Dorota Dzierzbicka, archaeologist (second season) (all Institute of Archaeology, University of Warsaw)

NCAM representative: Abubakr Abdelrahman Adam Abdalla (first season), Shahed Hamdi (second season)

Archaeologists: Mateusz Reklajtis, undergraduate student (Institute of Archaeology, University of Warsaw, first season), Agnieszka Ryś (independent; first season), Maciej Wyżgoł (independent, first season)

Ceramologists: Katarzyna Danys-Lasek (independent; both seasons)

Papyrologist: Prof. Tomasz Derda, (Institute of Archaeology, University of Warsaw; first season)

Epigraphist: Agata Deptuła (PhD candidate, Institute of Archaeology, University of Warsaw; second season)

Art historian/archaeologist: Dr. Dobrochna Zielińska (Institute of Archaeology, University of Warsaw; second season)

Architect: Dr. Romuald Tarczewski, construction engineer (Wrocław University of Science and Technology; second season)

Restorer: Urszula Kusz, wall painting restorer (freelance; both seasons)

Archaeozoologist: Dr. Marta Osypińska (Institute of Archaeology and Ethnology, Polish Academy of Sciences, Poznań; second season)

Archaeologist/surveyor: Szymon Lenarczyk (PhD candidate, Institute of Archaeology, University of Warsaw; both seasons)

BANGANARTI, see in this volume.

EARLY MAKURIA RESEARCH PROJECT: EL-ZUMA, see in this volume.

Ongoing research grant: Dr. Urszula Iwaszczuk, “Opportunities for research on the economy of the El-Zuma/El-Detti and Tanqasi microregions on the basis of animal bone remains from a funerary context” (NCN Preludium 7, Grant 2014/13/N/HS3/04620)

GHAZALI ARCHAEOLOGICAL SITE PRESETATION PROJECT (G.A.S.P.), see in this volume.

SELIB, see in this volume.

SONIYAT, see in this volume.

Ongoing research grants:

Dr. Artur Obluski “Nubian Monasticism. The role of religious institutions in the peripheries of the Byzantine World” (NCN Sonata 7, Grant 2014/13/D/HS3/03829)

Dr. Joanna Then-Obluska “A reconstruction of trade contacts in Northeast Africa: an interdisciplinary analysis of Nubian personal adornment” (NCN Sonata 5, Grant 2013/09/D/HS3/04508)

CYPRUS

Map A

NEA PAPHOS, see in this volume.

Map A

LEBANON

CHHÎM and JIYEH/PORPHYREON

Celebrating 20 years of archaeological and conservation presence in Lebanon, the PCMA organized in cooperation with the Polish Embassy a conference and exhibition at the French Institute in Beirut. The exhibition, which opened on 20 September 2016, presented the results of excavations at the sites of Chhîm and Jiyeh/Porphyreon, the first a village in the mountains, the second a coastal city, both located to the south of Beirut in what was once southern Phoenicia. The work and the cooperation of the Academy of Fine Arts in Warsaw, which has done extensive conservation work on ancient Roman mosaics and medieval church wall paintings at a number of sites, has resulted in a number of current research projects (see below, section B). The season in 2016 was devoted to specialist studies of the collected material from the joint excavations at Chhîm and Jiyeh/Porphyreon, in preparation for the final publication of the two sites.

See also. Urszula Wicenciak, *Porphyreon. Hellenistic and Roman Pottery Production in the Sidon Hinterland* [PAM Monographs 7], Warsaw: PCMA UW 2016

Dates of work: 4 September–6 October 2016

Director: Assist. Prof. Tomasz Waliszewski, archaeologist (Institute of Archaeology, University of Warsaw)
Archaeologists/specialists: Magdalena Antos (freelance); Michał Dzik (Institute of Archaeology, University of Rzeszów); Marcin Gostkowski, PhD candidate (Faculty of History, University of Warsaw); Mariusz Gwiazda, PhD candidate (Research Center for Antiquity of Southeastern Europe, University of Warsaw)

Ceramologists: Dr. Urszula Wicenciak (PCMA University of Warsaw), Piotr Makowski (PCMA University of Warsaw)

Geologist: Michał Ruskowski (Faculty of Geology, University of Warsaw)

Documentalist: Marek Puzkarski (PCMA University of Warsaw); Elżbieta Strachocińska (freelance)

Map A

JORDAN

BEIT RAS, see in this volume.

Map B

SYRIA

PALMYRA

At the request of the Syrian Directorate General of Antiquities and Museums, in the spring of 2016, the Polish Centre of Mediterranean Archaeology mounted an effort to assess the damages to the archaeological objects kept in the Palmyra Museum, especially the reliefs and sculptures that had been excavated and conserved by Polish experts. Bartosz Markowski, who had restored the famous Lion of Allat in 2005, now salvaged the remains of the sculpture destroyed during the months that DAESH militants occupied the oasis. The team worked together with the remaining staff of the Palmyra Museum to collect and preserve the broken statuary and other finds from the Museum. These were all packed carefully and shipped to safety in Damascus. An assessment report was made for the Syrian authorities in preparation for future conservation work. In 2017, Markowski, working under UNESCO auspices, restored once again the Lion sculpture in the gardens of the Museum in Damascus.

Dates of work: 1) 8–14 April 2016, Palmyra; 2) April/May 2016, Palmyra; 3) September 2017

Archaeologists: Assist. Prof. Tomasz Waliszewski (2; Polish Centre of Mediterranean Archaeology/Institute of Archaeology University of Warsaw), Robert Żukowski, archaeologist and museologist (1, 2; Institute of Archaeology and Ethnology, Polish Academy of Sciences);

Conservators: Bartosz Markowski (1, 2, 3; freelance); Krzysztof Jurków (2; freelance), both specialists in stone conservation

IRAQI KURDISTAN

Map B

IRAQI KURDISTAN SURVEY PROJECT: NEWCOMERS AND AUTOCHTHONS

The research funded by the PCMA UW within the frame of the greater UGZAR Survey Project directed by Rafał Koliński (see below, section B) was concentrated in 2016 in the southeastern zone of the survey area, south of the Upper Zab river. Comprehensive fieldwalking complemented routine examination of satellite photos, extensive prospection and interviews with local residents. The preliminary findings reveal a low settlement density in the area for the Chalkolithic (about 4300–3000 BC), which changes in the Nineveh 5 period, when there is an evident doubling of sites (still small, averaging less than 4 ha) in both the eastern and the western parts of the surveyed area. Of particular interest is the identification of a new variety of local painted pottery, called Harir Purple Ware from the location where it was recognized first. It appears to be contemporaneous with Nineveh 5 production, occurring together with that ware and having intermediary forms drawing upon both ceramic traditions.

Dates of work: 25 August–21 October 2016

Project Head: Prof. Dorota Ławecka (Institute of Archaeology, University of Warsaw)

Iraqi representative: Maryam Al Hamar

Archaeologist: Assist. Prof. Dariusz Szelaż (Institute of Archaeology, University of Warsaw)

ARMENIA

Map B

METSAMOR, see in this volume.

SAUDI ARABIA

Map B

AYNUNA

The Project, which is carried out in collaboration with the Saudi Commission of Tourism and National Heritage, had cleared a large rectangular structure, most probably a khan, and tested three other similar structures, interpreted as caravanserais, at an archaeological site located some 3 km away from the shore. The excavation in 2016 was geared to refining the chronology of the architecture. At least five structures were recorded in a part of the Lower Aynuna site approximately 160 m long by 80 m wide. They were all built on a very similar plan, bearing a definite resemblance to a type of monument usually called a khan, such as were built in later times along the Darb al-Hajj. Only one of them, Khan 1, is complete, nearly square (36 m by 37 m) and centered on a huge courtyard in the middle. Others are fragmentary and seem older. The bulk of the pottery finds—still to be studied in detail—are quite evidently locally made and pre-Islamic date; most are of Nabatean or Roman date. Excavation of two heaps of stones, vaguely round, proved these to be late burials. Several foundations present under the building suggest older structures underneath. Some rooms in three of the older khans were also tested. The results have supported preliminary chronological conclusions opening the way to further research.

The Aynuna Project, which is dedicated to the study of the infrastructure of international trade in the Red Sea area in the Roman period, is financed from a NCN grant UMO-2014/14/M/HS3/00795).

Dates of work: 6 February–5 March and 12 November–15 December 2016

Co-Directors: Prof. Michał Gawlikowski (PCMA University of Warsaw), Dr. Abdullah al-Zahrani and

Waleed al Badaywi (Saudi Commission for Tourism and National Heritage)

Deputy Director: Dr. Karol Juchniewicz (PCMA University of Warsaw)

SCTH representative: Abdel Basset al-Sadeq (Tabuk office)

Archaeologists: Marek Truszkowski (PCMA University of Warsaw), Karol Ochnio (independent), Saud al-Amari (Saudi Commission for Tourism and National Heritage)

Geologist: Hubert Kiersnowski (independent)

Glass specialist: Krystyna Gawlikowska, art historian (independent)

Documentalist: Marcin Wagner (Institute of Archaeology, University of Warsaw)

Map B

KUWAIT

BAHRA 1, AL-SUBIYAH (AS-SABBIYA)

The study season in 2016 was dedicated to research on individual categories of finds and a review of the excavation material in preparation for the publication of interim reports and the final publication. Of particular interest is an oval enclosure located in the highest point of the late 6th millennium BC settlement and must have had a special function, as suggested by both its shape and the assemblage of finds, which set it apart from the rest of the village. In November 2016, the PCMA team joined the Polish Embassy in Kuwait in opening in Kuwait City, in cooperation with the National Council for Culture, Art and Letters of Kuwait, a poster exhibition celebrating ten years of the Polish archaeological presence in Kuwait, digging and surveying at Bahra 1, but also on the Al-Sabiyah coast and in Failaka Island (for the other Polish projects, see below in this section).

See also: P. Bieliński, M. Białowarczuk, A. Reiche, A. Smogorzewska, A. Szymczak. (2016). *Bahra 1. Excavations in 2014 and 2015. Preliminary report on the sixth and seventh seasons of Kuwaiti–Polish archaeological investigations* [KPAM Publications], Kuwait–Warsaw: NCCAL–PCMA UW

Dates of work: 19 October – 19 November 2016

Co-Directors: Prof. Piotr Bieliński, archaeologist (Institute of Archaeology, University of Warsaw);

Dr. Hamid Al-Mutairi (Department of Antiquities and Museums of the State of Kuwait)

NCCAL representatives: Mustafa Al-Ansari, Talal Al-Shimery

Archaeologists: Dorota Bielińska (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences); Dr. Agnieszka Pieńkowska (PCMA University of Warsaw); Andrzej Reiche, small finds specialist/photographer (National Museum in Warsaw)

Ceramologist: Dr. Anna Smogorzewska (Institute of Archaeology, University of Warsaw)

Malacologist: Victoria Maria Morgan (independent)

Registrar: Mateusz Iskra, archaeologist (PhD candidate, Institute of Archaeology, University of Warsaw)

Surveyor: Piotr Zakrzewski (PhD candidate, Institute of Archaeology, University of Warsaw)

Documentalists: Ewa Hander (Archaeological Museum of Chelm); Marta Momot, archaeologist, Agnieszka Szymczak, archaeologist, Dr. Urszula Wicenciak, ceramologist (both PCMA University of Warsaw)

Photographer: Adam Oleksiak (freelance)

FAILAKA ISLAND: KHARAIB EL-DESHT ARCHAEOLOGICAL PROJECT,
see in this volume.

FAILAKA ISLAND: "WATERFRONT AND UNDERWATER ARCHAEOLOGY OF KUWAIT. ARCHEORISK ON THE COASTAL ZONE AROUND FAILAKA ISLAND, KUWAIT" PROJECT

The project, which is part of the Kuwaiti–Polish Failaka Archaeological Mission and was launched in 2013, aims to locate and describe archaeological sites on the seashore and in the tidal zone of Failaka Island, as well as to provide documentary evidence and ultimately organize proper preservation for the purpose of future educational opportunities. In the first seasons 32 stone structures were located, most of them interpreted as two kinds of fish traps: circular and linear long stone structures.

Remains of two harbours with breakwaters were also discovered and in 2016 the team focused on documenting the one in All Khidr Bay. Approximately 33 hextares were surveyed including the bay with shelf waters to the north, the southern beach and the peninsulas on the east and west including parts of the archaeological sites of Al Khidr on the west and Al Sa'ida on the east. A bathymetric map of Al Khidr Bay and surrounding coastal area was developed, showing the remains of harbour facilities. The breakwater was documented extensively, allowing a reconstruction of its original form, and the stone structures found in the port area were also recorded. Documentation of the coastline and seashore area located provisionally harbor facilities such as the dockyard and shipyard. The Al Khidr harbor has been dated to the Dilmun period in the 2nd millennium BC. It was expanded in the late Islamic period.

Dates of work: 6 March – 17 April 2016

General Director: Prof. Piotr Bieliński (Institute of Archaeology, University of Warsaw); Dr. Hamid Al-Mutairi (Department of Antiquities and Museums of the State of Kuwait)

NCCAL representative:

Project Coordinator: Magdalena Nowakowska, archaeologist, scuba diver CMAS P2, Commercial Diver 2nd class (Institute of Archaeology, University of Warsaw)

Archaeologists: Jakub Kaniszewski, surveyor, 3d graphics, CAD; Szymon Lenarczyk, archaeological graphics and geodesy measurement, CAD, scuba diver (both freelance)

OMAN

Map B

QUMAYRAH VALLEY ARCHAEOLOGICAL PROJECT: QUMAYRAH-AYN 1 and 2 (QA 1, QA 2), see in this volume.

QUMAYRAH VALLEY ARCHAEOLOGICAL PROJECT: QUMAYRAH-AYN 3 (QA 3)

The Project, organized in conjunction with the Omani Ministry of Heritage and Culture, included in its scope a site on the southern fringes of the village of al-Ayn Bani Saed, which was known from earlier surveys but had not been investigated more closely then. In 2016, the team tested the site, clearing off the dense vegetation, tracing stone walls and digging two probes in search of dating evidence. At the widest the remains extend for 70 m from east to west and stretch southward for about 120 m southward, apparently divided by a hollow in the ground. The southern part consist of a triangular mound rising 2 m above the surface, concealing stone structures, and the northern part, which is fairly flat on a slope dropping away to the north. Four groups of irregular units with stone walls rising up to 1.50 m in height are located in this area; these are probably the remains of a modern village deserted a few hundred years ago. The complex to the south consists of massive stone architecture closed off from the west and south with a wall of large blocks. The fragment cleared this year (Unit 1) was at least 40 m long and included six chambers. A nearly square free-standing structure (Locus 6) with walls of two rows of stone blocks stands in the southern part of the site. A probe dug to the south of it suggests a landscape of three terraces dropping away to the south. To the north of the structure a section of thick stone wall, built in two different techniques and stretching for at least 8 m, was discovered. Its role in the settlement could not be ascertained as yet. Tracing of wall tops in the area to the north of this wall recorded a large building unit, at least 20 m long and made up of at least seven fairly regular rectangular chambers (Unit 2); some of the standing walls seem to have been reused in the structures of the deserted modern village. More conclusive determinations regarding mutual stratigraphy of the structures could not be made without more extensive excavation. It can be said, however, that the site of Qumayrah-Ayn 3 (QA 3) reveals at least two cultural horizons: one modern on top and at least one that is pre-Islamic. The collected ceramic evidence is composed of a mainly red slipped and flat-bottomed common ware of domestic character with some very low ring bases and fragments with ribbed decoration

on the shoulders, typical of the Omani Iron Age II period (Unit 1). A few painted sherds collected from the area of Unit 2 may tentatively represent the Umm an-Nar culture of the Early Bronze Age. These findings will need to be confirmed by further research.

The team continued with a survey of the Qumayrah Valley, identifying and documenting two sites QA 20 and QA 21 with settlement remains of the Iron Age II period, presumably contemporary with QA 3. The location of QA 20 even suggests that it may have been linked to QA 3, permitting better control of the entire valley.

Dates of work: 21 November–17 December 2016

Director: Prof. Piotr Bieliński (Institute of Archaeology, University of Warsaw)

Omani representative:

Archaeologists: Dr. Agnieszka Pieńkowska (PCMA UW), Dorota Bielińska (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences)

Documentalist: Marta Momot (PCMA UW)

Surveyor: Magdalena Antos (independent)

Map B UNITED ARAB EMIRATES Emirate of Dubai

SARUQ AL-HADID

The PMSaruq Archaeological Research Project, co-directed by Prof. Piotr Bieliński (Institute of Archaeology, University of Warsaw) and Iwona Zych (PCMA UW), launched the first season of excavations as part of an international effort organized by the Dubai Municipality (UAE) to study the site of Saruq al-Hadid. After 15 years of continuous effort by different projects, the Polish contribution aims to develop research in fields that have been understudied or neglected to date. The team was assigned six squares in Area F of the main mound, located at the northeastern angle of the curving horseshoe-shaped ridge of slag which is the remaining part of the site to be explored. Dealing with the difficulty of a steadily encroaching modern sand dune, the team dug the squares in tiers in order to document with orthophoto techniques the sections for further study of the stratigraphy, which is extremely difficult in a sand matrix. The excavation technique was additionally essential to ensuring safe excavation conditions of the very high sand baulks reaching 3 m to 5 m in places. The pre-run in 2016 served to prospect the area assigned to the Polish team and the main season in winter and spring of 2017 excavated the uppermost layers corresponding to a phase of slag dumping related to copper-smelting and copper reworking at the site. A provisional dating of this episode is in the Iron Age II period (1st millennium BC) with some indications that the topmost layers, reflecting a second episode of slag dumping, could even date to the pre-Islamic period (beginning of the 1st millennium AD). The most prolific finds of the season were copper slag and all kinds of copper artifacts cut and otherwise reworked in this later industrial phase. A fine softstone bowl with incised decoration was among the finds as well as two complete copper daggers coming from the earlier cultural horizons reached but not fully explored by the end of the season.

Dates of work: pre-run 29 November 2016–21 December 2016; main season 21 January–10 April 2017

Co-Directors: Prof. Piotr Bieliński, archaeologist (Institute of Archaeology, University of Warsaw); Iwona Zych, archaeologist (PCMA UW)

Field Directors: Dr. Agnieszka Pieńkowska (PCMA UW), Andrzej Reiche (National Museum in Warsaw)

Dubai Municipality representatives: Dr. Mansour Boraik, Yaaqoub Yousif Al Ali and Maryam Al Hamar

Archaeologists: Magdalena Antos (independent), Marta Bajtler (independent), Dr. Dariusz Błaszczuk (Institute of Archaeology, University of Warsaw), Mateusz Iskra (independent), Dominika Majchrzak (independent), Joanna K. Rądkowska (PCMA UW), Marek Truszkowski (PCMA UW), Sidney A. Rempel (independent), Marek Woźniak (PCMA UW)

Metal expert: Łukasz Zieliński (Institute of Archaeology, University of Warsaw)

Personal adornment expert: Dr. Zuzanna Wygnańska, archaeologist (PCMA UW)

Surveyors/archaeologists: Otto Bagi, 3D documentation (Institute of Archaeology, University of Warsaw), Robert Ryndziejewicz (Institute of Archaeology and Ethnology, Polish Academy of Sciences), Piotr Zakrzewski (PhD Candidate, Institute of Archaeology, University of Warsaw)

Conservator: Władysław Weker (State Archaeological Museum, Warsaw)

Registrar: Katarzyna Pawłowska, archaeologist (independent)

Photographer: Anna Graczyk, archaeologist (independent), Michał Sita (freelance)

Documentalists: Marta Mierzejewska, Marta Momot (both PCMA UW)

B. OTHER POLISH PROJECTS IN THIS VOLUME

GEORGIA

Map B

Research grant/international cooperation: Jacek Hamburg (PhD candidate, Institute of Archaeology University of Warsaw), head of the Polish team. In 2016, the Georgian National Museum and the University of Warsaw signed a memorandum establishing the Polish–Georgian Archaeological Expedition to Beshtasheni, a site in eastern Georgia. Salvage excavations, directed by Dr. Dimitri Narimanishvili of the Georgian National Museum/Kldekari Historical-Architectural Museum-Reserve, have been conducted in the endangered parts of the Bronze Age cemetery from 2012 with the participation of Polish researchers, PhD candidates and students. Polish participation in the project is co-funded by the Foundation for Polish Science and an "Adulescentia est tempus discendi" grant of the Institute of Archaeology and Ethnology of the Polish Academy of Sciences.

C. OTHER EVENTS IN 2016

THE "LION OF ALLAT" EXHIBITION IN WARSAW

Dates & place: 1–21 April 2016, Gallery in Pałac Kazimierzowski, University of Warsaw Main Campus

The exhibition "Endangered Heritage. Syria and Iraq in the research of the Polish Centre of Mediterranean Archaeology" was organized as part of the University of Warsaw 200th anniversary celebrations, and was intended to showcase the PCMA's work in the Near East discovering, preserving and safeguarding world archaeological and cultural heritage covering several millennia of man's cultural and material development. It received the honorary patronages of the Rector of the University of Warsaw, the Polish Committee for UNESCO and Poland's Minister of Foreign Affairs. It was a timely and telling coincidence that the exhibition opened just as Palmyra was retaken from the hands of the militants, who in the preceding year had seriously damaged the ruins of this Syrian oasis city, as well as other sites, among them Hatra and Nimrud in Iraq. PCMA missions had worked at all three sites and it was their work that was presented at the exhibition, highlighting the most significant discoveries and restoration projects carried out in the Near East. Needless to say, some of these examples of the most precious heritage of Syria and Iraq exist today only in the scientific documentation that was made over the years by Polish archaeologists and specialists, and a significant number of these came from the University of Warsaw. The show emphasized this contribution against a historical backdrop of Polish archaeological research in the Near East.

The exhibition was curated by Łukasz Rutkowski; the design and the art for the event (as well as for the webpage) were created by Teresa Witkowska, executed by ASTO Adam Stojak and MASTERMEDIA Janusz Mikołajewicz in association with MOYO Teresa Witkowska. The model of the Lion of Allat for the exhibition was made by students of the Faculty of Conservation and Restoration of Artworks, Academy of Fine Arts in Warsaw. The exhibition may be revisited at leisure at <http://heritage.pcma.uw.edu.pl/en/>



Visiting the exhibition at the Pałac Kazimierzowski Gallery in the University of Warsaw Main Campus in April 2016 (PCMA/photo J. Rądkowska)



The model of the Lion of Allat on display at the exhibition in the Pałac Kazimierzowski Gallery (PCMA/photo A. Oleksiak)

THE LION OF PALMYRA AS THE NEW PCMA LOGO



UNIVERSITY
OF WARSAW



POLISH CENTRE
OF MEDITERRANEAN
ARCHAEOLOGY

The lion is a widely recognized symbol of power and dignity in all the cultures and periods that have been investigated over the years by PCMA teams. It is therefore well-suited for an institution exploring sites on three continents and covering several millennia. Many different lion images have been discovered by Polish projects throughout the Eastern Mediterranean and in northeastern Africa. Some were carved in relief on the walls of the Temple of Hatshepsut in Deir el-Bahari (Egypt), others were painted on glazed ceramics from the Islamic period in Alexandria (Egypt) and on the walls of a mithreum in Hawarte (Syria); still others were carved on Bronze Age cylinder seals from Tell Arbid (Syria). Lions were imaged on Byzantine-period mosaic floors from Chhîm and Jiyeh (Lebanon) and sculpted on the supports of a stone bench in a palatial building at Old Dongola (Sudan). Yet the Lion of Palmyra is the most monumental and the most extraordinary of them all. Fierce with its bared teeth and powerful claws, it protects a small gazelle nestling between its front paws, trustful of its guardian. The inscription carved on one of the Lion's paws warns of shedding blood in the temple.

The Lion of Palmyra is exceptional also because of the way in which it is linked with the PCMA. It was discovered in Palmyra where the Centre's founder, Professor Kazimierz Michałowski, directed one of the first Polish post-war digs. Fragments of the sculpture were discovered by the PCMA mission, restored by its conservator Józef Gazy and displayed in front of the Palmyra Museum, becoming an international hallmark of this UNESCO Heritage site (see above, pages 26–27). A new project for restoration in 2005, by Bartosz Markowski, gave the Lion an improved look, more in keeping with its ancient appearance. It is this new look that was recreated recently in the gardens of the Museum in Damascus.

The Lion of Allat is now charged with a new task: guarding the PCMA in its mission of discovery, documentation, scientific publication, conservation and site management of archaeological heritage in the Near East and Africa.



Palmyra late 1970s



Palmyra 2005



Damascus 2017



TOMASZ GÓRECKI

1951–2017

Tomasz Górecki passed away suddenly on 29 September 2017, in the middle of an active and rewarding scientific career, at a time when his lifetime of experience as an archaeologist and ceramologist in Egypt was bringing excellent fruit. His last article, unfinished, has been put together by friends and family in commemoration and as a painful reminder of everything that will now forever remain unsaid. It appears in this volume.

Górecki was born on 17 November 1951. From the start he was steadfast in his interests, enrolling in the Department of Christian Archaeology of the Warsaw Academy of Catholic Theology in 1972, completing in 1978 his Master's thesis on "Representations of 'Saints in armor' in the wall paintings from the Cathedral in Faras" under the supervision of Stefan Jakobielski and embarking in that same year on a lifelong employment at the National Museum in Warsaw. From 1996 he was the Keeper of the Eastern Christian (Coptic) Art Collection at the Museum, participating in the preparation of permanent displays, exhibitions and accompanying guidebooks and exhibition catalogues.

His interests were primarily in Coptic, Byzantine and early Muslim pottery, early Christian church architecture in Egypt, Sudan and Palestine, church wall painting in the Nile Valley and, especially in the later years when he directed his own project, monastic archaeology. He was a recognized expert on the art and culture of Christian Egypt in the early medieval period and a master of pottery studies, going well beyond the pot itself and entering the sphere of ceramics as an important cultural category.

Górecki amassed an enormous store of practical experience with pottery through participation in several archaeological projects, Polish, German, Austrian, Belgian and French, in Egypt, Sudan and even the Palestine Autonomy. Over the years he participated as a ceramologist in the excavations at Dongola (1976), Alexandria (1976–1978), Tell Atrib (1979–1985), Minshat Abu Omar (1981–

1082), Seti I Temple in West Thebes (1978, 1996), Tuthmosis III Temple in Deir el-Bahari (1983), Deir el-Malak monastery in Naqlun in the Fayum (1988–2002), Deir Abu Fana (1992–1993), Gaza (1995), Deir Anba Baramous in Wadi el-Natrun (1995–1996), Buto (1996–2000) and Shenhur (1999–2001). He was a consultant in Tomasz Derda's grant investigating the construction of a basilica in Marea Egypt based on evidence from ostraka and, most recently, a pottery expert in Dagmara Wielgosz-Rondolino's excavation project in Marea in Egypt (2014; 2016).

In 2003, he established his own project in Sheikh Abd el-Gurna. He did it with the same meticulous attention to detail as with everything else in his professional life, proving himself a dedicated and dedicated Project director, especially after he was rewarded with a sensational discovery of three Coptic manuscripts. The preservation and conservation of these codices, tied together with string and discarded in the hermitage rubbish dump, carried out concurrently with their documentation and publication, became a major effort that he managed with considerable success in the years that followed. Their forthcoming publication will be an excellent memorial to Tomek and his passionate approach to things ancient.

In the meantime Tomek wrote a number of articles (apart from regular reports, primarily in *Polish Archaeology in the Mediterranean*), taking up various detailed and often surprising issues resulting from his studies of the assemblage. Among these *minutiae* were guilloche drawings on sherds and stone flakes, from which he concluded about the processes of designing the decoration of an ancient hermitage, a Roman thymiaterion, Pharaonic artifacts that were interpreted by him as proof of the Coptic monks scavenging throughout Thebes for things that could come in use, and finally, the LRA 7 amphorae which he showed to be phased out gradually in favor of new wine containers. He also contributed his pottery expertise to colleagues publishing hieroglyphic signs scratched on a Late Roman transport amphora and a Coptic ostrakon from the Gurna hermitage. After a dozen or so seasons of excavation and study, he was working on a final publication of the hermitages in Sheikh Abd el-Gurna and their extensive and well-documented assemblage of pottery and other finds. It may only be hoped that the project for publication will be continued, also becoming a worthy commemoration.

The monks of Gurna were with him in these past fifteen years, even as he worked on topics that caught his attention, notably lighting of church interiors, which grew from an interest in a portable “candelabrum” from the excavation of a church in Tell Atrib, a reliquary *vel* vessel for eucharistic bread from the cathedral in Pachoras, in his care as the custodian of the collection at the National Museum in Warsaw. His knowledge of the utilitarian aspects of the monks' life was extensive and it extended well beyond the pottery that was his major interest.

In fact, Tomek was happiest when he could help a colleague with a research problem or discuss the intricacies of archaeological discovery. He had in him a natural curiosity of things, a ready and cutting wit, but never malicious, and an ingrained need to help. When researching topics for his studies, he was always happily on the lookout for material that would make others, equally interested in aspects of everyday life in late antiquity, just as happy. Like the present author, who benefitted considerably from a small avalanche of highly interesting trivia that came her way when Tomek was on a library query. On a personal note, it was a joy to work with him, translating into English his texts, discussing repeatedly and sometimes infuriatingly every aspect and detail. Tomek had great respect for the written word...

These few words are for him. He was an excellent colleague and a friend of many of us.
Already he is greatly missed.

Iwona Zych

Alexandria, Kom el-Dikka Season 2016

Grzegorz Majcherek¹

with appendix by Renata Kucharczyk²

^{1,2} Polish Centre of Mediterranean Archaeology, University of Warsaw

Abstract: The PCMA expedition to Kom el-Dikka conducted fieldwork between March and July 2016, filling out the usual multiple-task agenda encompassing both conservation projects and archaeological excavation. The program of work was conditioned to a large extent by the pending completion of the first stage of the Kom el-Dikka Site Presentation Project (southern zone of the site). Top priority was given to preservation work, supplemented with limited excavation in the early Islamic necropolis. A vast collection of finds including coins, plasterwork, glass artifacts of different age (from Ptolemaic to early Islamic) originating from previous seasons of fieldwork continued to be documented and studied by a group of specialists. The appendix brings a brief report on the glass finds from area CV, stratigraphically from the level of the Lower Necropolis, but chronologically from the late Roman/early Byzantine period (5th–6th century AD).

Keywords: Kom el-Dikka, Islamic necropolis, conservation work, Roman mosaics

The ongoing Kom el-Dikka Site Presentation Project, approved by the Supreme Council of Antiquities back in 2007, and above all the approaching opening of the visitors' route in the central part of the site, scheduled for the spring of 2017, had an obvious impact on the season's agenda. The regular excavation project was temporarily sidelined and reduced in scope. Instead, top priority was given to conservation and landscaping work focusing on the areas and monuments essential for concluding the Project [*Fig. 1*].

While archaeological fieldwork was substantially limited, research and documentation of the finds was pursued with

usual intensity. Barbara Tkaczow studied painted plaster and decorative marble fragments excavated in previous seasons. Her research focused on analyzing styles and patterns, as well as interpretation of the wall painted decoration, originating mostly from areas F and G (season 2009) as well as areas U and CW (seasons 2011–2014). Barbara Lichocka and Katarzyna Lach continued their respective numismatic studies on finds coming from past and present excavations. An ample number of coins was cleaned, identified and appropriately documented. Most of the studied examples are, however, rather poorly preserved low-copper denominations of different date,

from Ptolemaic through early Byzantine. Renata Kucharczyk continued research on glass finds, examining the evidence for glass production coming from the site.

Basic field and conservation training was offered by the team to six junior staff members from the Ministry of Antiquities of Egypt.

EXCAVATIONS

The planned opening of the site for visitors determined the excavation agenda, limiting exploration to the western section of area CV, which plays a key role in the envisioned itinerary for visitors. Excavation next to the western gate of the bath complex consisted of a trench approximately 12 m by 10 m [Figs 2, 3], opened in an area where investigations in the 1997/1998 season uncovered a large section of an early Islamic cemetery (Upper Necropolis phase). At the same time, a probe dug next to its eastern edge revealed remnants of a gate leading

to the bath complex (Majcherek 1999: 30–34). Resumed work in the 2015 season started with an extension of the old trench to the west.

Back in 1997/1998, mostly graves of the so-called Upper Necropolis phase preserved in the northern part of the trench were explored (Kulicka 2016). Most of these were found within a large rectangular enclosure (measuring 7.20 m along the E–W axis), of which only the southern part was excavated, the rest being still buried beyond the trench limits. Several

Team

Dates of work: 16 March–30 June 2016

Director: Dr. Grzegorz Majcherek, archaeologist (PCMA UW)

Deputy Director: Renata Kucharczyk, glass specialist (PCMA UW)

SCA representatives: Mohammed Faruk Abdel Aziz Mahmoud, Enjy el-Sayed Abd el-Raheem, Karim Mohammed Mohammed and Omar Mahrous Mahmoud Doma

Archaeologists: Prof. Barbara Tkaczow (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences), Emanuela Kulicka and Piotr Makowski (independent researchers)

Numismatists: Prof. Barbara Lichocka (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences), Dr. Katarzyna Lach (PCMA UW)

Conservators: Ewa Parandowska, Szymon Gąsienica-Sieczka and Zygmunt Nawrot (all freelance)

Architects: Marcin Polak and Sara Arbter (both freelance)

Documentalist: Alicja Wieczorek (PCMA UW)

Acknowledgments

We gratefully acknowledge the assistance of many individuals and institutions, whose good will was essential to our team's success. We greatly appreciate the efforts of the relevant authorities of the Ministry of Antiquities, both in Cairo and in Alexandria, for making the work possible. We could not be more grateful to Mr. Hany Abdel Azmi, Secretary of the Permanent Committee of the Ministry in Cairo, Mr. Mustafa Mohammed Rushdy, Director General of Antiquities in Alexandria, Ms Samiha Noshay, Director of the Foreign Mission Department, Ms Baheya Kamal Mohammed, Director of the Kom el-Dikka Site and Mr. Ahmed Musa, Director of Archaeological Sites in Alexandria, for their unfailing assistance.

graves discovered at that time featured an unusual, seldom reported type of vaulted burial chamber complete with shafts that were apparently intended for multiple burials (Majcherek 2016; Kulicka 2016).

In 2016, several graves from the Upper Necropolis phase left over from the previous season were excavated [see *Fig. 3*, graves CV175–CV177]. No tombstones

were preserved but the exploration of burial chambers produced quite unexpected finds. The chamber of grave CV178, belonging to the most recent phase of the cemetery and superimposed over the said enclosure, was built in a rather typical way, with walls made of smaller, rather regular masonry. Its limestone walls were originally lined with plaster, of which only some scattered

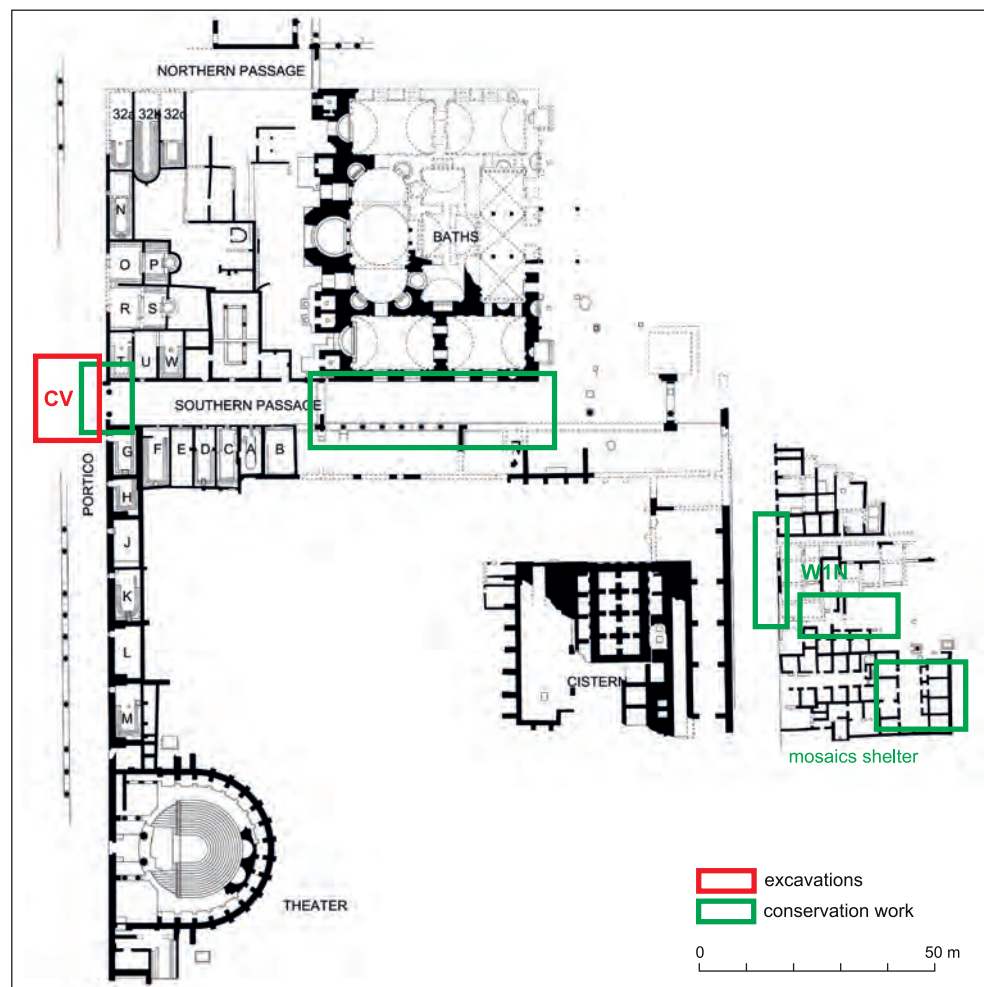


Fig. 1. Plan of the Kom el-Dikka site showing areas of work in the 2016 season (PCMA Alexandria Kom el-Dikka Project/drawing W. Kolářaj, D. Tarara)

remains were found, and covered flat with slabs that were now found in a collapsed state. Since a large part of the grave extended well beyond the present trench outline, its exploration was postponed to a coming season. Quite surprisingly, three fragments of broken funerary stelae inscribed in Kufic script were found incorporated into the collapsed roof of the burial chamber. They were carefully extracted and secured. All were badly eroded and barely legible. Only the largest fragment containing nine partly preserved lines of an inscription was deciphered [Fig. 4]. It is an example of a typical epitaph, several dozen of which have already been reported from the site (Kubiak 1967; 1975). Although none of

the preserved fragments contained any dates, the paleography of the inscriptions points to the 9th–11th century AD as the most plausible date, i.e., at least a century earlier than the horizon to which tomb CV178 was stratigraphically assigned.

The exploration of multi-burial grave CV176, located next to CV178, produced an even more surprising and spectacular find. The burial chamber, which again was built of small regular blocks in typical manner, contained three rather poorly preserved skeletons. A bundle of golden metallic thread was found next to the lowermost burial [Fig. 5]. This spiralling thread, preserved in tiny pieces on the skeleton and underneath it, must have



Fig. 2. *Exploration of the early Islamic necropolis in area CV, view from the north*
(PCMA Alexandria Kom el-Dikka Project/photo E. Kulicka)

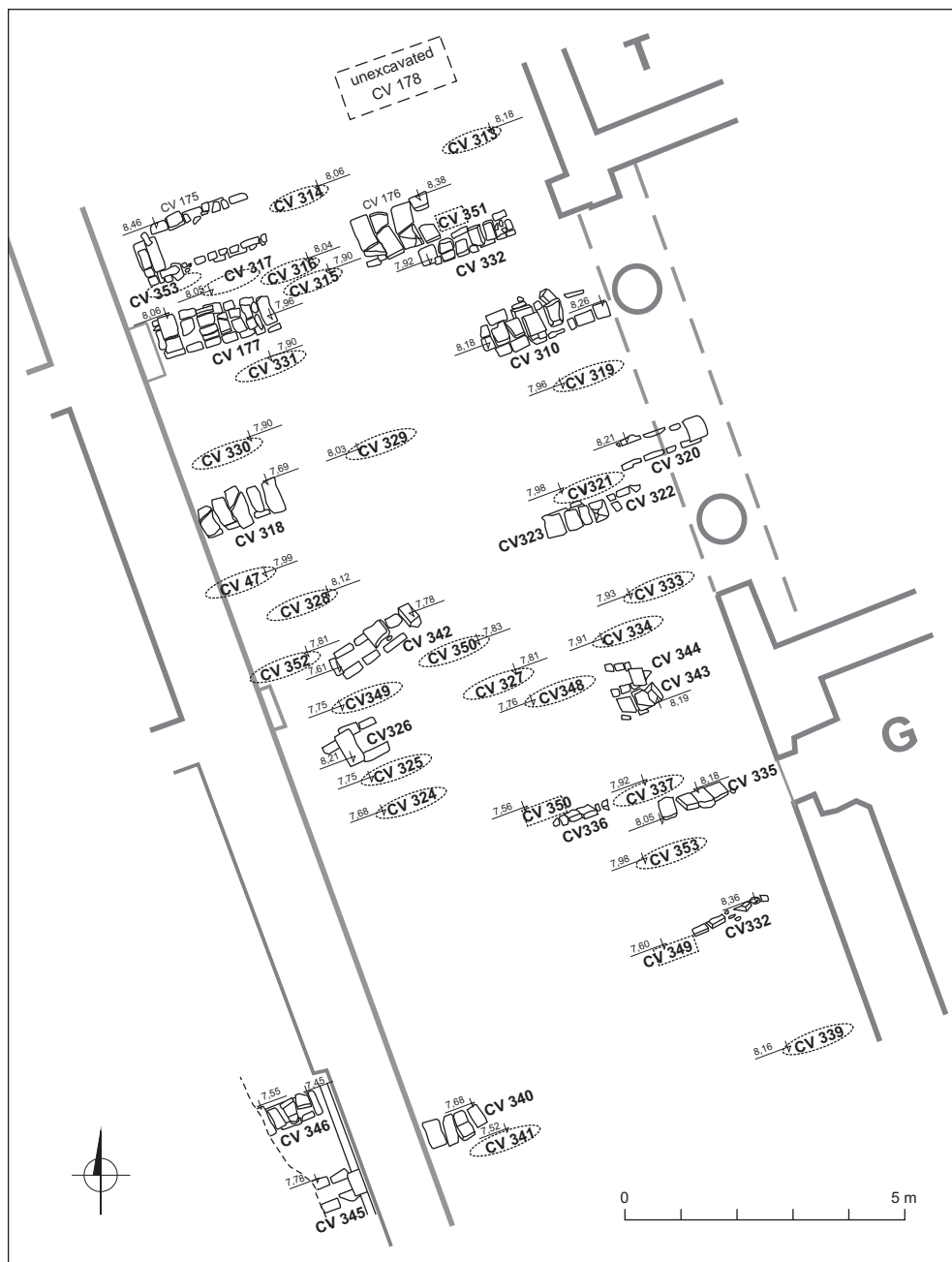


Fig. 3. Plan of the early Islamic necropolis in area CV
(PCMA Alexandria Kom el-Dikka Project/drawing E. Kulicka)

come from the embroidery of a shroud wrapping the body.

However contradictory it may seem to traditional Islamic custom, the presence of a sumptuously decorated shroud is hardly unique. The expected predilection for modest, plain, and preferably white shrouds was not always strictly observed, as best attested by a well-known 10th century Khorasan shroud (now in the Museum of the Louvre), a *tirāz* textile featuring a frieze of geometrical ornament as well as confronting elephants and camels (Bernus, Marchal, and Vial 1971). Departure from tradition and a penchant for more costly

and fashionable shrouds already in the early Islamic period is also surprisingly well-documented by various finds from other regions (Halevi 2007: 84–112). Much later in Egypt, burial practice admitted the use of more ornate tissues, like muslin and silk, as grave clothes (Lane 1895). It is also possible that the golden thread found in grave CV176 had issued from an elegant robe worn by the deceased in life and reused as a shroud. It remains to be determined upon anthropological examination of the skeleton, whether the burial was of a male or a female in this case.

This year's fieldwork focused on a survey of the so-called Lower Necropolis phase of the cemetery. Altogether over 40 burials were identified and explored (CV310–CV353) [see Fig. 3]. Although densely spaced within the trench, the general layout of the graves was rather haphazard and there was no internal patterning whatsoever.

The position of some of the graves had to be adjusted to the existing pre-dated structures. In several cases, sections of

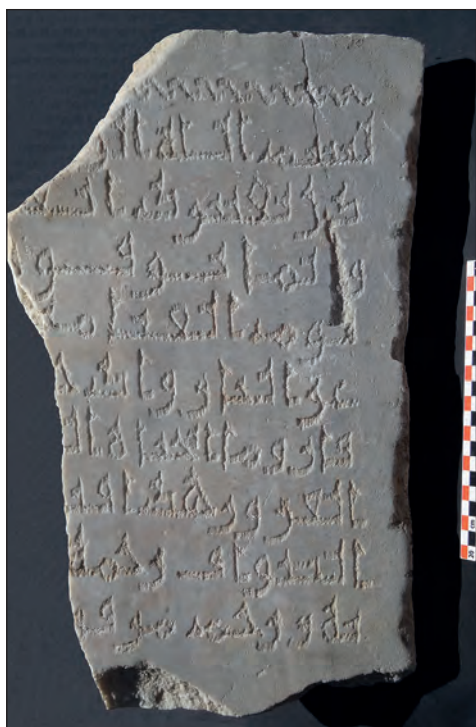


Fig. 4. Stela with funerary inscription in Kufic script, from tomb CV178 (PCMA Alexandria Kom el-Dikka Project/photo G. Majcherek)



Fig. 5. Golden thread, from grave CV176 (PCMA Alexandria Kom el-Dikka Project/photo G. Majcherek)

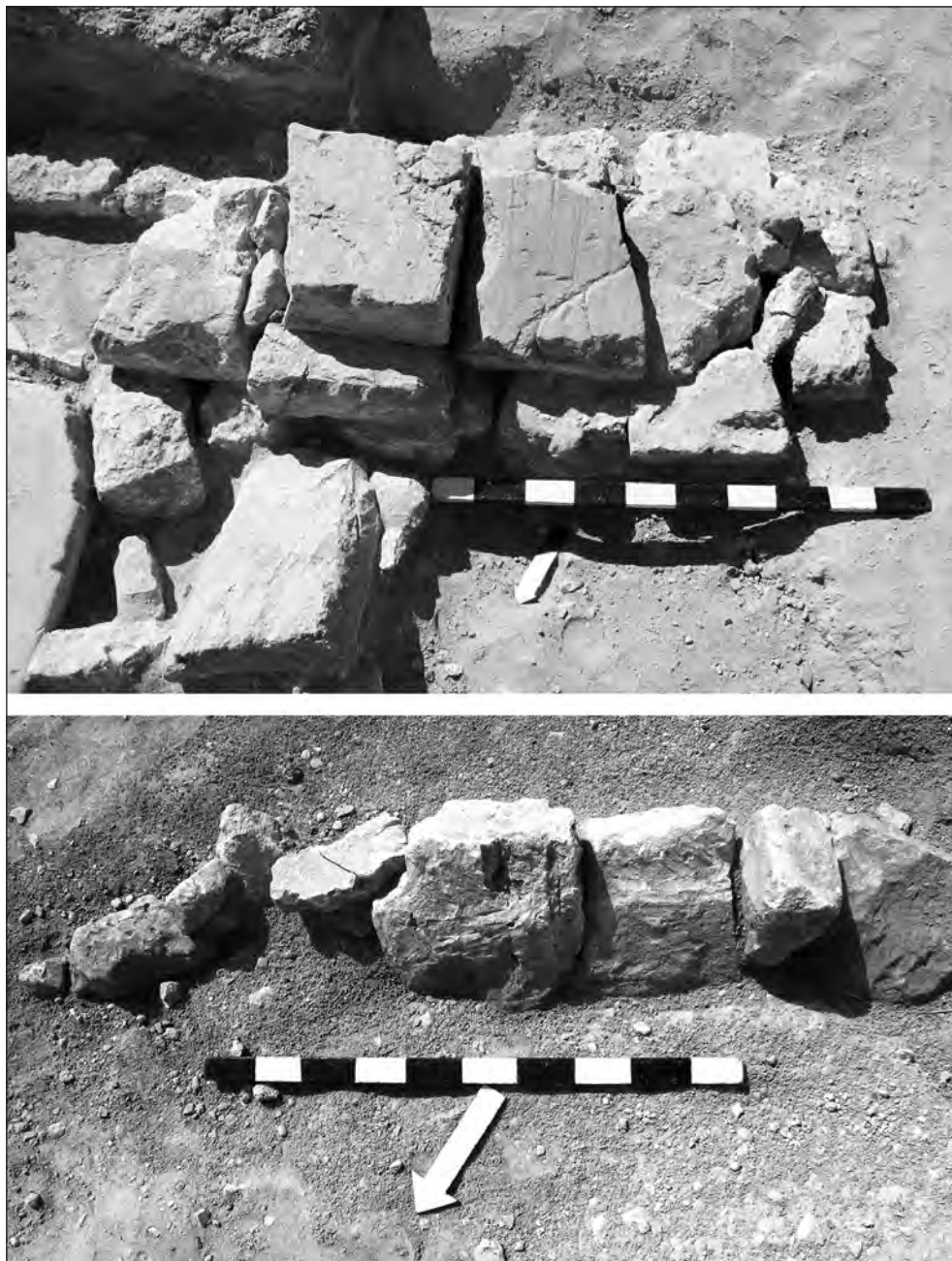


Fig. 6. Graves from the Lower Necropolis: top, CV310, view from the north; bottom, CV336, view from the north (PCMA Alexandria Kom el-Dikka Project/photos E. Kulicka)

intruding walls and the portico pavement had to be cut to accommodate burials (e.g., CV320, CV347). Most of the graves represented structures with rectangular cists made of large ashlar and covered by flat stones, some of them possibly pavers lifted from the portico, but the majority must have come from elsewhere [Fig. 6 top]. As a rule neither bricks nor mortar were used in these structures. Frequently,

the floor of the grave was spread thinly with sand. In the past, this type of grave was recorded in great numbers throughout the site (Dąbrowski 1966; Promińska 1972: 7–15) and has been associated solely with the earliest phase of the cemetery (Lower Necropolis). Despite not following exactly the established typology, structures of this kind could be considered perhaps as a local derivative of the *al-shaq* form of graves

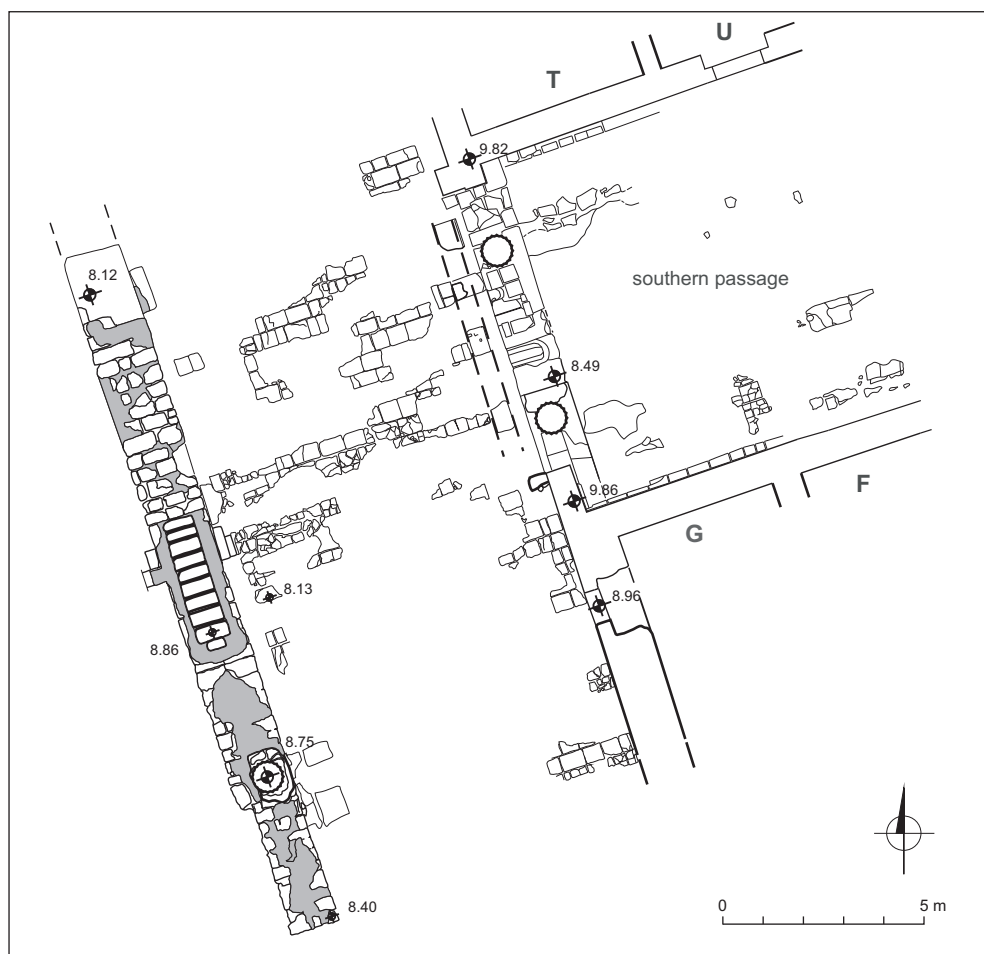


Fig. 7. Late Roman pavement and stairway in area CV
(PCMA Alexandria Kom el-Dikka Project/drawing S. Arbter, M. Polak, G. Majcherek)

prescribed and favored by the Islamic tradition (Petersen 2013: 246). This impression is further enhanced by the lack of any aboveground structures whatsoever.

A less developed type of burial was also identified: bodies were laid in an earth pit, creating a sort of side niche closed with slanted stone slabs resting on the edge of the hole (graves CV332, CV335, CV336). Such constructions, creating in fact a side niche, were possible due to the well packed and solid ground in which the graves were dug, but also due to the preservation of large sections of the original paving of the portico, which acted as additional support [see Fig. 6 bottom]. However rare, similar graves recalling the *al-lahd* type, were previously identified in other areas of the site (Kulicka 2011: 484–485). Quite a number of simple pit interments was also identified (CV324, CV325 etc.), squeezed in between the stone-built graves. It is hard to say whether the existence of the three types of burials reflects, for instance, social stratification, where graves with stone-made cists would have belonged to more affluent families, while simple earth interments served the less prosperous.

Both the orientation of the grave pit and position of the skeleton within the grave were typical of Muslim burials. Despite varying degrees of preservation of the remains, it was clear that the body was always placed on the right-hand side, facing the *qibla*, in our case southeast. Some minor variations in orientation could most probably reflect the season of the burial and the inaccuracy of astronomical observation (Gorzalczany 2007). All the recorded burials were invariably single interments.

Despite the varying depths of individual burials, indicating most probably the changing ground surface level from which

the graves were dug, there is no clear evidence of the cemetery's stratigraphical development. Consequently, no detailed chronological phasing is possible. The associated finds consisted mostly of assorted pottery sherds. Most of them, however, were apparently residual, representing a typical late antique repertoire.

Several patches of the portico flagging were cleared in this area, mostly next to the gate and along the portico stylobate [Fig. 7]. The pavement was seriously damaged by early Islamic burials. It was originally made of large regular limestone pavers, set in an ashy mortar. Pavers were laid in regular rows, set perpendicularly to the portico. The surface of the portico is generally uneven and considerably sunk in the middle, due to prolonged use and substantial subsiding.

The worn-out surface of the pavement is yet another sign of extended use over a longer period of time. *Mancala*-type game boards were scratched into the surface of two of the pavers [Fig. 8]. The boards feature the typical two rows of four to five cup-shaped depressions, also previously identified as game boards in the portico (Bell and Roueché 2007). On yet another slab (next to the stylobate),



Fig. 8. *Mancala* game board preserved on the pavement (PCMA Alexandria Kom el-Dikka Project/photo G. Majcherek)

a series of concentric incisions of unknown purpose, most probably yet another game board, were found.

The monumental entrance gate to the bath complex, explored in its entirety in the previous season, was flanked by two Doric columns standing 3.50 m apart. Similar Doric drums, often used in foundations, were also found in several locations in the northern section of the stereobate of the Theater portico. Now, the poorly preserved remains of large stairs in front of the gate leading to the baths were cleared [Fig. 9; for the restoration of the stairs, see below, Fig. 12]. Unlike other structures of late Roman date, they were made of hard nummulithic limestone, their heavily worn-out upper surfaces pointing to prolonged use. Such limestone originated most probably from the quarries

at Zawiet Sultan near Minia (Klemm and Klemm 2008: 68–76). Beginning with the Ptolemaic period it was used in Alexandria mostly for large architectural elements. Its durability was the reason why blocks of this limestone were often reused in later structures. Only isolated fragments of the lowermost steps were found (0.17–0.20 m rise), but their dimensions and position with regard to the threshold permitted the assumption that there had been two steps there originally.

Both the stairs and the pavement belong to the latest phase in the portico history, when the whole structure was substantially rebuilt following widespread destruction. The operation included not only rebuilding of the backwall of the portico, but also raising of the stylobate and subsequently also of the pavement. In a small test pit (B)



Fig. 9. Gate leading to the bath complex; state prior to conservation in 2016 (PCMA Alexandria Kom el-Dikka Project/photo G. Majcherek)

sunk next to the stylobate, a small patch of earlier paving was cleared. Unlike other areas of the portico or the bath passages, where two well-made levels were cleared, it was made of smaller, irregular pavers.

A nearby section of the portico stereobate wall, built approximately 8.30 m apart, was constructed in a rather intriguing way. The structure of the stylobate in front of the bath entrance appears to be substantially changed. Instead of a wall some 1.15 m wide, as in the southern part of the portico, the new northern section of the stylobate was much wider (approximately 1.55 m) (Majcherek and Kucharczyk 2014). It is also most surprising that no column foundations were recognized there. Remains of two pilasters on the eastern face and two walls stemming westwards were identified, pointing to an assumed presence of a gate. It appears, therefore, that yet another monumental gate had been introduced here in Late Antiquity, raising at the same time the question of the arrangement of the colonnade in this part of the portico.

Finds from accompanying layers are limited to pottery and some glass. All the identified fragments represent a typical medley of late Roman sherds, mostly amphorae and other common wares. However, no well-defined dating for this last phase of the portico can be offered: early-mid 6th century AD seems to be

the most probable *terminus a quo*. The rebuilding could be in all probability related to the widespread destruction caused by a series of earthquakes that affected Alexandria between AD 520 and 551 (Ambraseys, Melville, and Adams 1994: 24). While the chronological aspect of the pottery evidence is rather ambiguous and should be treated with due caution, the quantification itself offers some interesting details. As anticipated, LRA4 (Gazan) vessels have an overwhelming majority; they are by far the most frequent amphorae noted in the 6th–7th century layers at Kom el-Dikka. A marked growth in the frequency of Gazan amphorae in this period has been recorded on many similarly-dated sites both in Egypt and throughout the Mediterranean, but nowhere as much as in Alexandria. LRA4 makes up a group that is definitely the most numerous among the amphorae, its percentage share reaching even 75–80% (RBHS) in some of the studied assemblages (Majcherek 2004). Some other forms, namely LRA1 originating from Cilicia and, to a lesser extent, from Cyprus, as well as some Egyptian LRA7 were also recognized.

The glass, of which a handful was found, dated mostly to the late Roman/early Byzantine period; the available repertory of finds is presented in the appendix below.

CONSERVATION

The 2016 season was the third in a row dedicated, as far as the team's conservation program is concerned, to the parts of the site forming the core of the future visiting area. Preservation operations undertaken in these designated areas were

carried out even at the expense of other work. Emphasis was put on consolidating endangered walls of monuments, tracing pathways and landscaping. Moreover, a mosaic conservation operation was pursued. Alongside routine interventions

in the floor mosaics displayed in the “Villa of the Birds” mosaic shelter on site, the team’s mosaic restorers continued an additional project of restoration for display of an early Roman house mosaic removed during earlier excavations.

RESIDENTIAL AREA (W₁N)

The eastern part of the site has been subject to intense conservation work for several seasons. Extensive fragments of late antique domestic structures were thoroughly preserved, including limited restoration in cases where walls had been badly damaged or even totally destroyed. Restoration was limited to rebuilding short sections of missing walls, never higher than 0.50–0.70 m (1–2 courses) above the relevant occupation level.

The work in 2016 focused on building G, excavated in 1990 in the central part of the area (Majcherek 1991). A section of the western elevation (approximately 16 m long), enclosing rooms G2, G3, G8 and G10, was consolidated (work supervised by Marcin Polak). The weakened and deteriorated joints, some of which had lost almost all resilience, were either filled with new mortar or re-pointed, while some smaller losses and gaps were completed with new stones. The same procedure was applied to shops uncovered along the facade of House G and the opening onto the street [*Fig. 10* top]. The whole annex is made up of four small units of roughly similar size (approximately 1.50 m wide) with walls made of rather large masonry.

These structures were excavated in the 1998/1999 season (Majcherek 2000: 37–38). When found, they were in fairly poor condition: in almost every case the lowermost blocks of the foundations was all that survived. Basic conservation was

completed already in 2006 (Majcherek 2008: 39). Only one course of the original masonry was then restored, in an effort to retain the balance between restored and original fabric. Work done in the present season was essentially routine repairs limited to refilling losses in joints or replacing some modern, badly corroded blocks in the walls, which had suffered from the heavy rains that swept Alexandria the previous fall.

Some other seriously damaged walls of House G, e.g., the high wall between rooms G6 and G7, were also repaired [*Fig. 10* bottom left]. Similar measures were also undertaken in the case of the northern wing of House C. Sections of walls in rooms C4, C5 and C6 were treated likewise.

The rectangular well heads of two manholes located in the R4 street, restored in the past, were now repaired [*Fig. 10* bottom right]. Seriously deteriorated modern blocks were replaced with new ones, and the original form of both well heads was duly restored. A similar operation was also carried out in the case of a much larger rectangular wellhead of the underground cistern, located north of the mosaic shelter. There, however, it was necessary to rebuild the entire wellhead, two courses high.

BATH

One of the major operations undertaken in the bath complex was the conservation of an extant pavement in the southern passage of the bath (work supervised by Marcin Polak). The pavement, made of irregular, assorted nummulithic limestone and marble slabs, had survived in several separate sections located mostly along the elevation. The flagging had subsided considerably in places, most probably due to seismic events plaguing Alexandria in

antiquity (for a list of ancient earthquakes, see Ambraseys, Melville, and Adams 1994). Large sections of the pavement were treated already in the 2007 season (Majcherek 2010: 45). Whole sections of flagging were now set in a new mortar

bedding and consolidated. The edges of the flagging were additionally reinforced with a supporting band of lime-sand mortar. However, missing parts of the pavement were not restored, the gaps being filled instead with gravel.

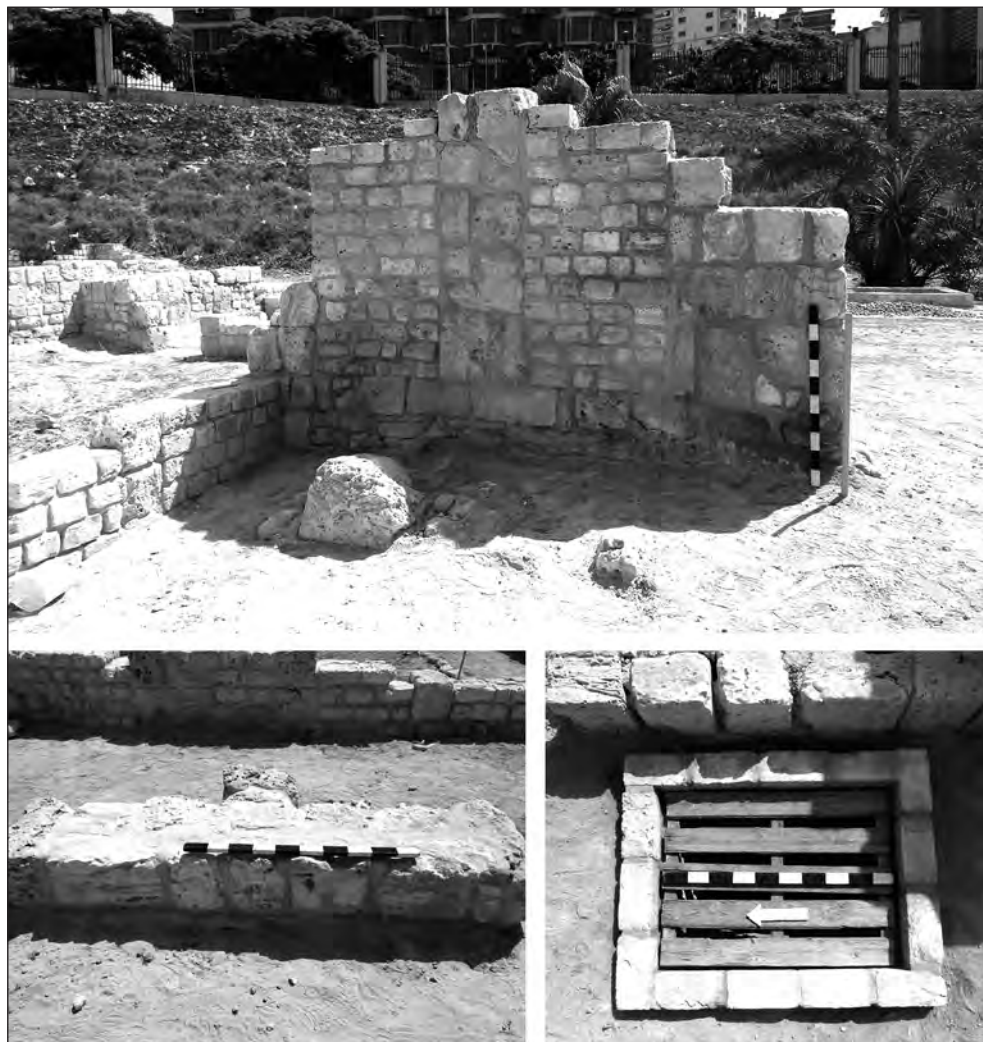


Fig. 10. House G: top, restored western elevation and shops; bottom left, wall between G6 and G7 after conservation; bottom right, street R4: restored manhole (PCMA Alexandria Kom el-Dikka Project/photos G. Majcherek)

The stylobate of the bath portico was also repaired [Fig. 11]. Lost joints along its entire length were completed with mortar, and the whole wall surface received a protective layer of well compacted lime mortar with some white cement added in. This technique, previously introduced in the coping of the theater outer wall, proved to be very effective against rainwater penetration.

An adjacent section of a modern sustaining wall protecting the entrance to the bath was restructured accordingly. Another layer of limestone blocks was added on top of the existing structure, forming a sort of curb, in order to ensure

visitors' safety. A similar operation was carried out also next to the southwestern corner of the bath.

THEATER PORTICO

The gate leading from the portico to the bath complex was also the object of conservation work. Procedures involved restoration of two steps of the large stairs located in the entrance, flanked by two Doric columns (work supervised by Marcin Polak and Grzegorz Majcherek). Restoration was seen as a necessary step not only for safeguarding existing remnants of the stairs [see Fig. 9], but also as a requirement for the planned visitors



Fig. 11. Restored southern portico of the baths
(PCMA Alexandria Kom el-Dikka Project/photo G. Majcherek)

route. The restoration was done using hard nummulithic limestone blocks from a nearby excavation [Fig. 12]. Some blocks could have even come from the original stairs. In accordance with the surviving evidence, the steps were restored with a 0.18–0.20 m rise and 0.40–0.45 m tread, allowing for unimpeded access to the bath complex. A large fragment of an ancient wall (0.80 m wide), built in traditional soft oolitic limestone, bordering the stairs from the east, was likewise restored. Judging by its parameters, this wall may have acted in the past as the topmost step or landing.

The area behind the stairs was back-filled, and will be covered with gravel.

Several patches of limestone flagging in the portico were also restored, the missing fragments completed with slabs found

during the excavation. The existing original surface was consolidated.

MOSAIC CONSERVATION

Top priority in the 2016 season was given to mosaic conservation (carried out by Ewa Paradowska and Szymon Gąsienica-Sieczka accompanied by SCA trainees). The Dionysus mosaic (MC-1), a 3rd century floor found next to the theater, was restored earlier (Lis 2004) and was transferred in 2015 to a new bedding supported by aluminium honeycomb slabs. This season, remains of PVA glue used for the original facing back in 2004 were removed mechanically with scalpels and a micro drill, and chemically using toothbrushes dipped in a 40% ethanol solution in water. Polyurethane foam, 5 mm thick, was



*Fig. 12. Restored gate leading to the bath complex
(PCMA Alexandria Kom el-Dikka Project/photo G. Majcherek)*

introduced as a separation layer between the honeycomb panels and the mortar used for filling edges, whereupon gaps and mosaic edges were completed with Remmers Multishpachtel mortar mixed with sand 1:1 and with a small addition of black charcoal aggregates. The round multicolored emblema set on a terracotta

tray was fixed on an aluminium supporting slab and reintegrated with the mosaic.

Two separate segments of the mosaic were then transported to the “Villa of the Birds” mosaic shelter, placed in specially-designed rigid steel frames (made of welded angled steel 221 x 285 cm) and reassembled. The most demanding operation was lifting the mosaic to a vertical position — a highly precarious operation at best. This was successfully achieved with the help of a small hand-hoist. The mosaic was positioned on a prepared foundation, slightly leaning against the north wall of the shelter, and fixed with steel rods [Fig. 13 top].

Conservation work was almost concluded this season. A final surface cleaning and application of a protective coating, as well as color integration of the plastering mortar in the gaps are scheduled for the next season.

Routine monitoring of the mosaics exhibited *in situ* in the “Villa of the Birds” mosaic shelter assessed their state of preservation and identified areas for intervention. The condition appeared to be fairly good except for some salt efflorescence noted on the surface of the floors as well as on the shelter walls. This should be related to exceedingly high humidity levels in the reported period, reaching even 80% on the humidity logger installed in the shelter. Protective bands around the mosaic edges were repaired where necessary and the pebbles and gravel filling the gaps in the pavements were removed and washed of salt deposits, then replaced on the cleaned and repainted ventilation grills [Fig. 13 bottom].

A fragment of a rather crude mosaic with geometric pattern exposed *in situ* in the portico at the entrance to the baths



Fig. 13. Mosaic conservation in the shelter: top, mosaic MC-1; bottom, mosaic with birds (PCMA Alexandria Kom el-Dikka Project/photos G. Majcherek)

(made of black and white, big tesserae) was detached from the disintegrated original mosaic bedding and moved to the storeroom. It will be reassembled on a new bedding, in its original place, in the next season.

LANDSCAPING AND SITE PRESENTATION

Heavy rains in October 2015 flooded large parts of the site, resulting in extensive damages [Fig. 14]. The devastating effect of water was observed in several monuments throughout the site. The theater and the portico appeared particularly vulnerable due to the lay of the ground. The high steep



Fig. 14. Flooded portico after heavy rains in the fall of 2015 (Photo Mahmud Mohammed al-Said)

earth slopes around them would normally absorb runoff were they not occasionally cemented or covered with stone. Moreover, a clogged drainage system along the portico did not help in effective handling of runoff water.

In several areas, where rainwater had been standing for a longer period of time (in front of the theater and next to auditorium M), serious ground subsidence was observed. Most of such damage was duly repaired, but this unplanned work involved moving large volumes of earth, backfilling and shaping new surfaces with a proper ground pitch. Damaged structures likewise had to be treated. A partly destroyed ancient staircase in the northern vestibule of the bath was repaired. Loose stones were fixed with new mortar, and eroded bricks (dating from the 1960s conservation operation) were replaced with new ones.

Other important, although seemingly ordinary and unassuming tasks, were essential for proper site maintenance. A general cleaning operation at the site was continued. Somewhat surprisingly, weeding, not litter removal, was the most time-consuming operation. Large quantities of gravel were transported and piled in prescribed areas of the planned itinerary, where they will be used for building new pathways.

Information for the visitors is one of the essential elements of the ongoing Site Development project. Bilingual information panels will be positioned next to the main monuments at the site. Specially-designed iron stands for panels made of welded steel pipes were prepared this year and the panels will be assembled in the coming season.

APPENDIX

Glass from area CV on Kom el-Dikka (Alexandria). Season 2016

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Excavations in area CV yielded only a handful of glass fragments. This small assemblage contains free and mold-blown vessels of simple shape intended for domestic use: bowls, bottles, a flask, and a wineglass. A few fragments of windowpanes were also recorded. All finds, although stratigraphically related to the excavated graves of the Lower Necropolis (8th–9th century AD), are chronologically associated with the late Roman/early Byzantine period (5th–6th century AD). The vessel shape, simple workmanship, noticeable inferior quality of the glass and its coloring, all point to a local production.

BOWLS

Three rim fragments belong to bowls with convex-curved bodies [*Fig. 15:1–2*]. They are characterized by delicate walls and in-folded rims with small elongated openings. Vessels were made of pale bluish-green glass of low quality with pinprick bubbles and small black impurities. No weathering was evident.

The third fragment is of special interest, representing as it does a deep, conical specimen with flaring walls and a high collar rim with a rounded thickened edge. It was made separately and neatly fused on the inside to an in-folded rim with

a small, horizontal opening [*Fig. 15:3*]. These bowls, although found at Kom el-Dikka in relatively small numbers, should be identified as local products (Kucharczyk 2010a: 60–61, *Fig. 3:5–6*; 2011: 59–60, *Fig. 2:6–7*; 2016: 90, *Fig. 2A:8*, 98, *Fig. 7:2–3*, 101–102, *Fig. 9:1*). The evidence of deep bowls with in-folded rims of the late Roman period also came to light in the eastern subterranean cistern of House 1 at Marina el-Alamein (Kucharczyk 2010b: 120, 122, *Fig. 5:3–4*).

BOTTLES

The few recorded fragments of bottles included two slightly concave bases made of pale green glass (too small to be illustrated) and two pieces exhibiting two different decorating techniques. One, a thick square flat base with rounded corners, exhibits faint, closely set mold-blown ribs. They were twisted during re-inflation and descend from left to right [*Fig. 15:5*]. The molded-blown pattern starts from the edge of the bottom and most probably extended to the full height of a square-sided container. The absence of seams suggests that a one-piece mold was used to make the vessel. The bottle was blown from bubbly pale yellowish glass. The surface exhibits no weathering.

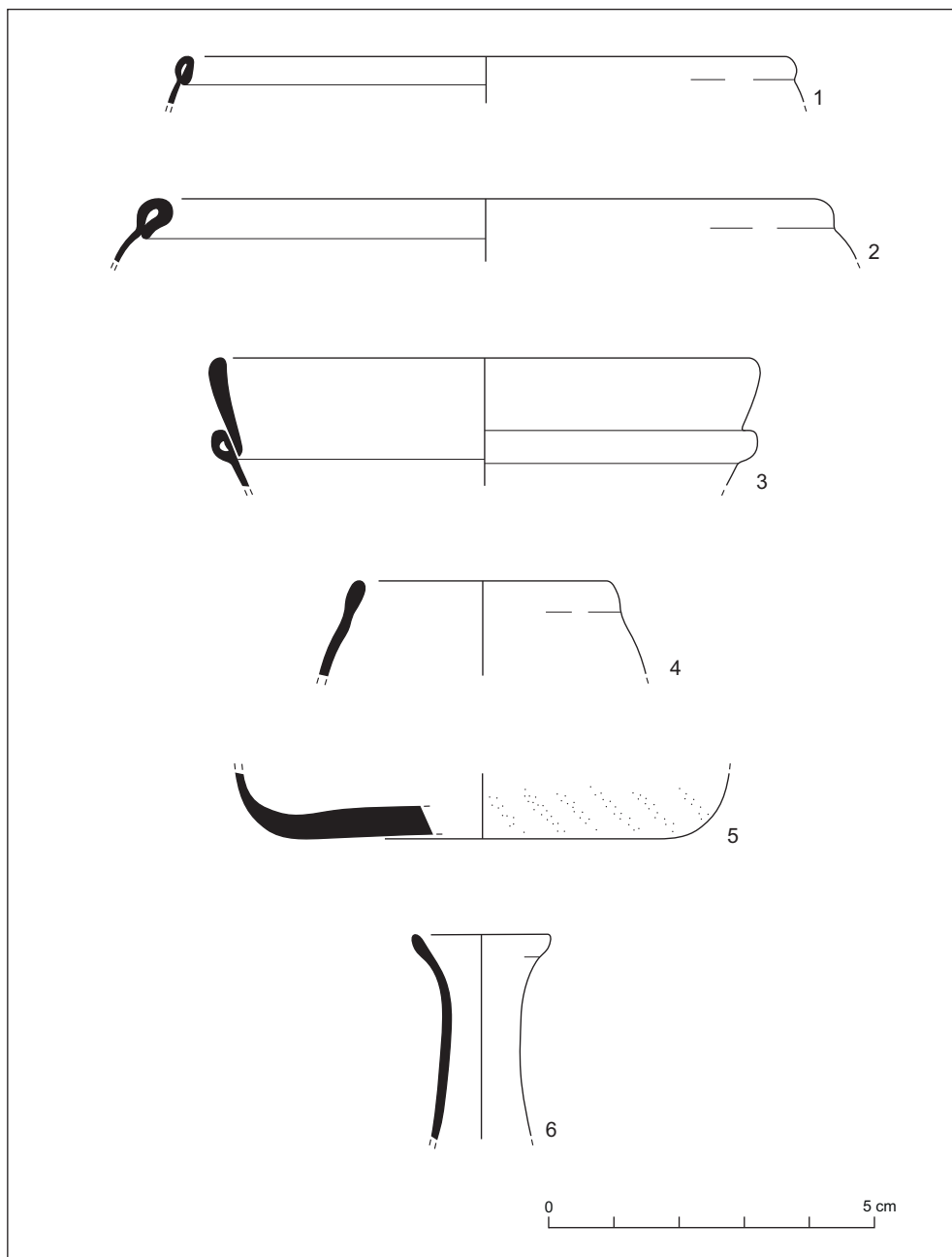


Fig. 15. Glass finds from area CV
(PCMA Alexandria Kom el-Dikka Project/drawing E. Kulicka, digitizing M. Momot)

The second piece retains a projecting, short pinch mark (too small to be illustrated). The vessel was blown from low quality colorless glass with a pale greenish tinge and a great deal of tiny spherical bubbles. The surface exhibits a milky-white coating. While not sufficiently diagnostic to identify vessel type, the shard may well have been part of a bottle. This type of plastic decoration, usually occurring on bottles, flasks, jugs, as well as bowls, particularly during the early Byzantine period, is not particularly favored in the glass workshops of Alexandria, operating most probably on Kom el-Dikka. It is also not a particularly common decorative technique at the Marea site, where only a few fragments of globular bottles (Kucharczyk 2007b: 72, Fig. 2:4; 2005: 57–58, Fig. 2:10, one pinch between green wavy trails) were found earlier and a small jar with six long, pronounced pinch protrusions as horizontal decoration was discovered quite recently (Kucharczyk forthcoming).

One shard came from a small flask with a long cylindrical neck, widening towards the shoulders, and a conical funnel-shaped mouth with a simple, fire-rounded thickened rim [Fig. 15:6]. The specimen was made of extremely bubbly

pale yellowish glass. The surface exhibits milky-white weathering and corrosion.

WINDOWPANES

A few pieces of flat window glass preserved none of the original edges (too small to be illustrated). Matt/glossy faces and numerous small elongated bubbles running in parallel lines exemplify the cylinder-blown method based on free-blowing (thickness 2.5 mm). They were made of pale green glass. The surface exhibits silver and black layers of weathering. Flat window glass produced from a blown cylinder represents one of the commonest finds on the site, particularly in contexts dated to the late Roman period (Kucharczyk 2007a: 53; 2010a: 66; 2011: 62–63, Fig. 6).

SURFACE FINDS

Two fragments of glass were found on the surface. One shard most probably belongs to a wineglass with a thin, slanting wall and a thick, fire-rounded rim [Fig. 15:4]. The second shard comes from a straight-sided bottle (too small to be illustrated). Both vessels are dated to the 5th–6th century AD and were made of bluish-green bubbly glass and showed no signs of weathering.

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Egyptian imitations of Chinese celadon from the 14th–15th centuries found at Kom el-Dikka in Alexandria

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Abstract: In Islamic Egyptian glazed ceramics there are three ceramic types inspired by Chinese pottery, stoneware and porcelain: *sancai* pottery, celadon stoneware and Blue and White porcelain. Egyptian imitations of Chinese celadon ware, produced in the 14th and 15th centuries mainly by Cairene potters working at the Fustat workshops, are particularly noteworthy and the Kom el-Dikka site in Alexandria, excavated by the Polish Centre of Mediterranean Archaeology University of Warsaw, has yielded a collection of over 300 pieces. The typological analysis was based on 235 distinct fragments of utilitarian wares selected on account of their form, decorative elements, technical quality, possible technological defects and characteristics that qualify them as imitations of Chinese celadon. Two typological ware groups were distinguished: those inspired by Chinese prototypes and those representing indigenous Egyptian ceramics infused with certain features copied from the Chinese celadons.

Keywords: Islamic ceramics, Mamluk glazed ceramics, Egyptian imitations of Chinese celadons, Egyptian Mamluk celadons

Inhabitants of the Muslim Caliphate, mindful of Mohammed's teachings that the quest for knowledge should be pursued even in China (Mahomet 1993: 105), were well aware of the land of As-Sin lying far to the East, home of sages and of artists fashioning objects of great beauty. The Moroccan traveller Ibn Battuta (1304–1369), whose voyages took him to the Middle Kingdom, wrote in his journal that “the inhabitants of China surpass all other peoples with the perfection of their skills in artistic handicrafts” (Ibn Battuta 2008: 279). Thin, yet robustly durable paper,

silken fabrics which caressed the skin of the wearer, shiny lacquer ware, bronzes adorned with mysterious characters, and varicolored ceramics were legendary in Islamic society. For centuries the Muslim Caliphate (established in the 7th and 8th centuries across a huge swath of the Eastern hemisphere, from Central Asia and northern India through Iran, the Middle East, and Arabia to Anatolia, North Africa, and Andalusia on the Iberian Peninsula) had been a destination for nomadic Turkic tribes which, with the passage of time, adopted a settled lifestyle and converted

to Islam. These migrations originated in regions profoundly influenced by the civilization of China, and as the successive waves of wanderers settled in the West, they brought with them various elements of Chinese culture (first and foremost in the material sphere) subsequently embraced by Muslims (always subject to

approval of the Caliphate's rulers). Beginning in the 9th and 10th centuries, there are confirmed accounts of commercial exchange between the eastern reaches of the Caliphate and China, also as regards imports of ceramic bowls, dishes and household wares (Scanlon 1970: Pls VII–XVI; Kahle 1956).

CHINESE CELADON AND ITS EGYPTIAN IMITATIONS

Even as the Seljuk Turks established themselves in Greater Iran during the 11th century, the influence of Chinese art on the artistic cultures of the lands they conquered grew. As the new arrivals from the north-east—Qipchaq Turks, Mongols and Circassians—made their presence felt, these influences were permeated into Egypt and even reached Ifriqiyya (modern-day Tunisia). The Muslim courts of Greater Syria and Egypt began using celadon, that is, stoneware vessels covered with a uniform feldspathic glaze of the highest quality. The typical celadon was finished in a shade of light green, olive or willow green, light turquoise or light blue hues, and less frequently, tones of beige or grey. Other celadon characteristics included a highly compact body structure, well baked and smooth to the touch, with a bluish-tinted grey color of the porcellanous stoneware in the break (Gompertz 1980: 22). A more fleeting but equally distinctive trait was the ringing sound when struck. Celadons were produced as monochromatic pieces or with underglaze ornamentation, either incised or carved in the *champlevé*

technique. Celadon decoration may have also been molded in relief or cut in openwork. The air bubbles in the glaze and the crackle on the surface are decorative in their own right. These effects are a consequence of the contractility of the glazing, which displays a tendency to shrink more than the body during the cooling process. Celadon vessels were fired in special furnaces at a temperature of approximately 1300°C, in a reducing atmosphere.

In its standard *pinyin* transcription, the Chinese name for celadon is *qingci* and may be translated as “greenish porcelain”.¹ The color of the monochromatic glaze was thus elevated to something of a hallmark, a distinctive aesthetic trait which lent its name to this type of ceramic.

The term “celadon” as a designation for greenish Chinese ceramics became standard usage in Europe during the 17th century.² The arrival of celadon in Europe is associated with a number of legends (Gompertz 1980: 21). One of them has it that a penchant for *qingci* ware was displayed by the Ayyubid sultan Salah ad-Din (1171–1193) who upon ascending to the throne sent

¹ In Chinese, *qingci* denotes stoneware as well as porcelain. A celadon typology based on Chinese-language sources was proposed by Amelia Macioszek (2008).

² Celadon and other Chinese ceramics were occasionally referred to in the academic literature from the mid-20th century as *martabani*, a term derived from Martaban, the name of a port city in Myanmar (formerly Burma) where ceramics were loaded onto ships bound for Thailand, the Philippines, the Indonesian islands, India, the Red Sea coast, and Europe.

40 celadon pieces to Damascus as a gift for Nur ad-Din (1147–1174), conqueror of the Crusaders. Salah ad-Din propagated a simple, low-key lifestyle among Muslims and, true to this ethos, he exhorted his subjects to shun ornamental wares in favour of monochrome vessels — celadon fitted the bill perfectly. This particular legend features an etymological note, tracing the origin of the term “celadon” to the Latinised version of sultan Saladin’s name. In modern usage, older wares are referred to as “*longquan*-type porcelain”, and more recent

ones as simply “celadon-type porcelain”. An alternate term for the type of ceramic of which celadon vessels are made is “stoneware”. The Chinese art collection of the National Museum in Warsaw includes several specimens (Jacoby, Markiewicz, and Popkowska 2009: 215–216, Fig. III.4–5) [Fig. 1].

Celadon wares were produced in pottery workshops operating in the northern provinces of China. The names of some of these workshops have been immortalized as designations for certain kinds of wares: *longquan*, *yazhou* and *guan* among others. The wares were turned on potter’s wheels or molded in forms in what were then innovative shapes, many of them derived from ritual bronze vases and censers produced between the 1st and the 15th centuries. Copies of these old wares are still produced today.³

Celadon vessels were imported to Egypt already in the 10th century (Gyllensvärd 1973; 1975; Scanlon 1967: 74–75; 1970: 85–88; 1982: 120–121; Mikami 1988: 10; Kubiak 1969: 17; François 1999: 143, Pls 5, 15, 17, 18). Their popularity, coupled with a general increase of commercial exchange with the Muslim lands of the Middle East, peaked between the 12th and the 14th centuries (Mikami 1988: 11), in the period when China was ruled by the Northern Song dynasty (960–1127), the Yuan dynasty (1279–1368), and the first rulers of the Ming dynasty (1368–1643), and Egypt and Syria by the Ayyubids (1171–1250) and Mamluks (1250–1517).



Fig. 1. Celadon small bowls of the 13th century from China: top, fishes in relief (SKAZsz 2872; 3.5 x 12.3 cm); bottom, incised peony branch ornament on the outer wall (SKAZsz 2733; 6 x 11.6 cm) (National Museum in Warsaw/photos P. Ligier)

³ Chinese celadon probably resembled vessels and artefacts sculpted from nephrite/jade, which has a similar color and was much valued in Chinese culture. In this sense celadon may be thought of as a less expensive alternative to the treasured jade; this would certainly contribute to the unwaning appeal of *qingci* and to its continued production over the centuries. That said, there is nothing in the Chinese sources to confirm such a connection. Export of celadon from China to Korea and Thailand led indigenous craftsmen in those lands to begin their own production of celadon wares, employing Chinese technology while remaining true to their own forms and decoration.

With time the thriving commerce between Egypt and China led some Egyptian craftsmen to attempt imitations of Chinese artistic objects in order to meet the high demand.⁴ The Mamluk era witnessed thus the emergence of a new type of ceramics: Egyptian imitations of Chinese celadon, a category of glazed ceramics. In terms of decoration, these ceramics may be divided into three subcategories: with uniform glazing, with incised and stamped underglaze ornaments, and with ornaments molded in raised relief or as appliqués. Such “Egyptian celadon” was produced during the 14th and 15th centuries, first and foremost by Cairene potters working in the Fustat workshops. Distinguishing Chinese celadon prototypes from their Egyptian imitations is fairly easy.

It should be noted that Chinese ceramic imitations by Egyptian craftsmen, regardless of the specific type of decoration, referred to colors of the glazes, stylistics of the decoration, and occasionally the shape; in other words, it was ware appearance and not the ceramic pastes or glazes in terms of their physical and chemical properties or formulations that was important. One reason for this was that Chinese craftsmen jealously guarded their technological secrets,⁵ leaving Muslim imitators to their own devices as they endeavored to identify raw materials and to devise formulations that enabled them to produce similar wares. Islamic potters had no way of knowing that feldspar, a silica-rich mineral, was a key component of Chinese celadon stoneware (as well as of Chinese porce-

lain and various glazes). In their search for similar effects, they chanced upon quartz sand (which likewise contains silica) and, beginning in the 12th century, they formulated and pressed quartz/stoneware ceramic pastes. In a proportion of 1 to 10 units, quartz paste consisted of 5–6 parts quartz/quartz sand, 1.5–2 parts glass, 1 part cullet (which acted as an adhesive during the firing process), 1 part clay, and appropriate proportions of auxiliary ingredients (Mason 2004: 73–74). Fine white clay (Mason 2004: 8–14) was an optimum raw material, but stoneware that turned beige after firing, as well as red Nile clay were also used.

Distinguishable Egyptian wares imitating Chinese celadon were first noted by archaeologists excavating in Egypt in the 1920s (Bahgat 1922: Pls 74, 107; Bahgat and Massoul 1930: 69–70, Pls 54/1, 5, 61/7, G52, J/72, 74; Scanlon 1965: 27, Fig. 4; 1971: 227, Pl. 5/b–d; 1984: 117, Figs 3–4; François 1999: 29–30, Figs 114–129, Pls 5/114–119, 13/3, 17/114). Items compatible with this typology were discovered at Fustat in Cairo, Kom el-Dikka, Kom el-Nadura, and Majestic in Alexandria. In Fustat, archaeologists digging in the 1960s and 1970s under the auspices of the American Research Center of Cairo unearthed large quantities of potsherds deriving from “Egyptian celadon” — almost 7000 specimens in September of 1968 alone, as juxtaposed with not more than 400 sherds of the Blue-Black-White type wares and almost 300 sherds of the Black Under Green Glaze Painted type (also called Silhouette

⁴ The production of ceramics inspired by the Chinese *sancai*, or tricolor, wares, painted in streaks and spots with green, light and dark brown glazes developed at an earlier stage, in the 9th and 10th centuries, in Iraq, Syria, Egypt, and in other parts of the Caliphate.

⁵ That said traditionally, the Arabs did succeed in ascertaining the technological details of producing paper thanks to information extracted from Chinese prisoners taken at the battle of Talas Valley in 751 (Kennedy 2011: 252–253).

type) over the same period (Scanlon 1971: 225).⁶

Soon enough, imitations of Chinese celadon from museums and private collec-

tions began to be referenced (Grube 1976: 278–279, Fig. 224; Atıl 1981: 183–184, Cat. 92; Jenkins 1983: 28–29, Fig. 31; Soustiel 1985: 127, Fig. 137).

THE KOM EL-DIKKA COLLECTION

The general description here presented of “Egyptian celadon” coming from the excavation site of the Polish–Egyptian Archaeological Mission at Kom el-Dikka in Alexandria (in the period from the 1960s through the 1980s) is of a typological nature. No stratigraphic analysis could be carried out for lack of the original excavation documentation. Published parallels date the “Egyptian celadon” from Kom el-Dikka to the Mamluk era, approximately between 1300 and 1450, much like the specimens unearthed at Fustat (Scanlon 1984: 117, Fig. 3).

The collection of finds, numbering over 300 items, was examined by the present author in the summers of 2010 and 2012. This analysis was based on 235 distinct fragments of utilitarian wares, selected on account of their form, decorative traits, technical quality, possible technological flaws and, first and foremost, characteristics making them an imitation of Chinese celadon. As mentioned above, the imitative traits of Egyptian celadon derive primarily from color schemes and visual qualities of the glaze, as well as the style and deployment of decorative motifs, and these determined the present selection. None of the potsherds seem to feature any signatures or manufacturing marks to identify the makers.

The bodies of the Egyptian wares are made mostly of stoneware paste; they are rough to the touch, brittle, and general-

ly prone to deterioration. This 14th and 15th century fabric has been designated by Robert Mason as “porous granular stoneware” (Mason 2004: 204). Breaks typically reveal a beige color, less frequently white or, occasionally, red; the items most similar to the Chinese models have breaks of light grey. As far as the technological aspect is concerned, the best specimens are those with a white body (analogous to the Blue-Black-White type produced in the 14th century). Towards the end of the 15th century, wares were executed and finished with less attention and skill; bodies were fragile and crumbling, and glazes flawed.

The glaze of the “Egyptian celadon” is either transparent or dull (the latter enriched with tin compounds). It comes in a broad range of hues, spanning various shades of willow green, solid green with a turquoise or light blue tint, olive green, grassy green, and light grey. Statistically speaking, transparent glazes and tin glazes are balanced on the whole; transparent glazes were more likely to be used on wares decorated with underglaze incisions, and tin glazes on molded wares with relief decoration. Egyptian potters habitually applied double glazes in various shades of green. The first layer of inferior quality glaze served as a ground upon which the higher quality glaze was then poured so as to obtain the desired color and quality. It would appear that this second glaze was

⁶ Of the sherds unearthed in September 1968 only Mamluk Red Clay Sgraffito and Slip Painted type sherds exceeded in quantity the celadon imitations.

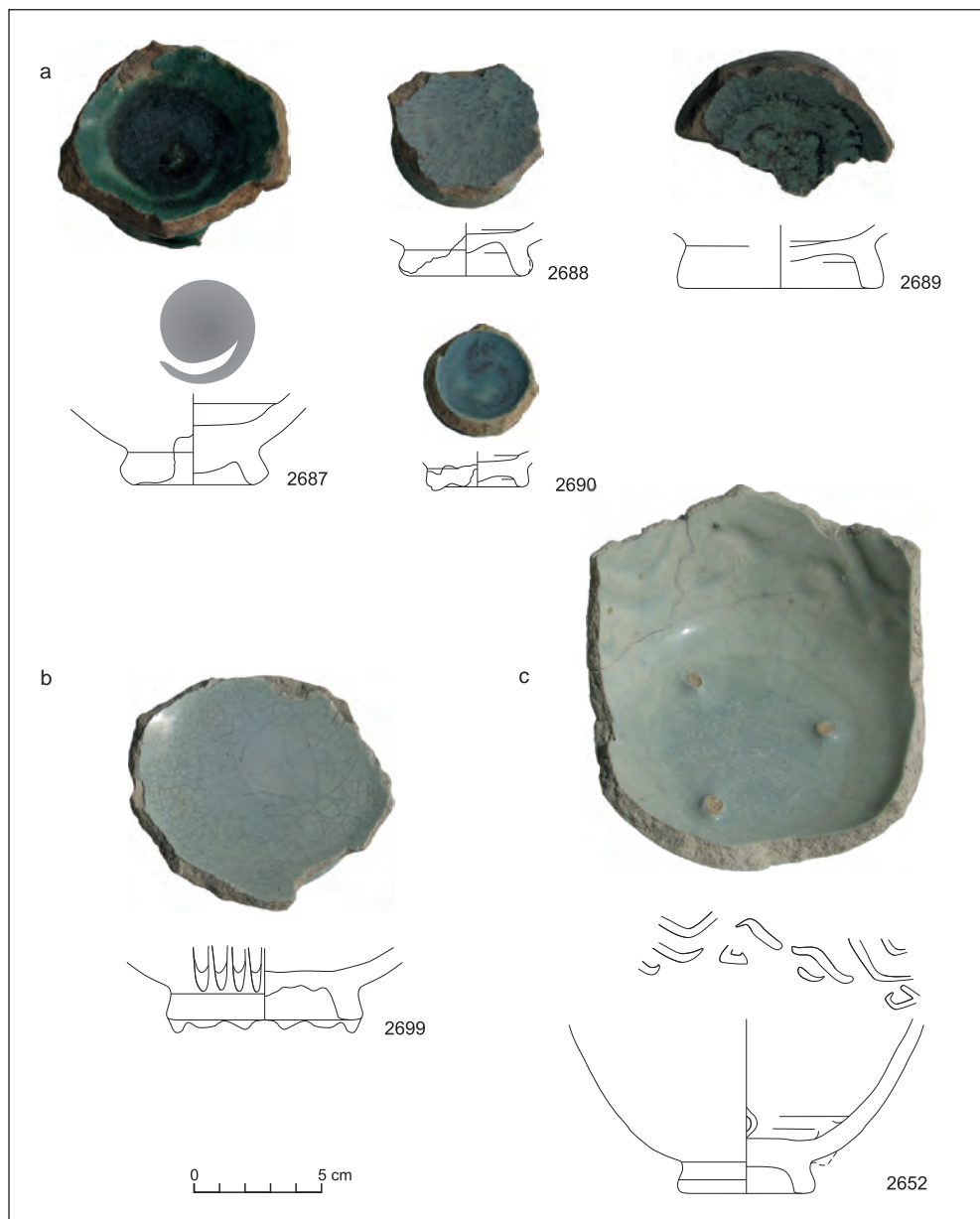


Fig. 2. Egyptian celadon examples from Kom el-Dikka: a – bowl and small bowl bottoms with concentric and linear copper coloration streaks; b – bowl bottom “adorned” with crackelure; c – fragment of a small vase bearing traces of a tripod stand (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danys)

applied in copious quantities, with the bottoms of some bowls and small bowls covered with a coat several millimeters thick. The outer side of the bottom usually received a layer of the ground glaze, whatever remained after the application of the first layer. The outer walls of the wares, around the base, often display purple streaks resulting from the precipitation of copper pigments, attesting to an admixture of copper oxide, carbonate or sulphate used to obtain the color of the glaze (Atli 1981: 183–184, Fig. 92). On a few of the Kom el-Dikka specimens, this precipitation of copper pigments yielded aesthetic results which, while quite appealing, were probably unintended [Fig. 2:a].

Egyptian potters also succeeded in obtaining a fine cracking effect (crackle), which was appreciated in the Chinese ceramic craft as an ornamental effect [Fig. 2:b].

The same workshops which produced Egyptian imitations of Chinese celadon also turned out Mamluk ceramics of the Blue-Black-White (BBW) and Blue-White types, as suggested by the odd accidental splashes of black and cobalt blue in evidence on the Kom el-Dikka wares. The ceramics were subjected to a single firing session at approximately 1300–1400°C, which used a tripod stand in the case of bowls (traces of which can be discerned on many of the potsherds) [Fig. 2:c].

TYOLOGY

Egyptian imitations of Chinese celadon found at Kom el-Dikka may be divided into two typological groups based on shape, glaze coloring and ornamentation. One group consists of vessels inspired by Chinese prototypes, the other of wares belonging to indigenous Egyptian ceramics with Chinese celadon characteristics.

GROUP INSPIRED BY CHINESE PROTOTYPES

In terms of shapes, the first group referred to above is comprised of goblets on a high foot, cups on a high foot, cone-shaped lids, slender beakers, and bowls with flat or carinated bottoms and perpendicularly formed walls topped with an everted rim, bowls with notched rim edges, and bowls with fluting on the inner and outer walls. Odd pieces within this group comprise a fragment of a small jug with dragon-shaped handles and fragments of three artifacts of unknown function.

Forms

Goblets seem to have been a popular vessel during the Mamluk era, occurring in all the types of Mamluk ceramic ware. The Chinese models for these vessels are present in Chinese Celadon wares (Gompertz 1980: 205, Fig. 115a) as well as in the exhibition catalogue *Blåvitt. Blue and White. Mavi Beyaz* (Houby-Nielsen 2008: 66). The Egyptian goblet usually consists of a bowl supported on a conical foot, oftentimes with a protruding element molded at the center of the stem. The Kom el-Dikka excavations have yielded several dozen fragments of feet with such molded swellings, but precious few fragments of the goblet bowls [Fig. 3]. Based on what we have, it may be surmised that the bowls of the goblet on high feet tended to be hemispherical or flattened, with walls curving toward the bottom; the edges, meanwhile, were rolled into a welt or had an everted rim. The goblet

fragments from Kom el-Dikka are covered with olive green, willow green, light grey, or greenish glaze. In some instances, the stoneware paste from which the bodies of the vessels were shaped is grey, as it would be in Chinese celadon. Many of the goblet bowls were decorated on the inside with a stamped rosette/chrysanthemum and with incised interweaving elements on the outer walls. The outer surface of one goblet bowl fragment is molded in fluting (called also a lotus petals motif), a very popular motif in Mamluk art with Chinese lineage. In some cases the rim edges were decorated with notches [see *Fig. 3*].

Knobbed stems recall the Egyptian Mamluk *ka's* cup at the Louvre (Ettinghausen 1974: 63, *Fig. 16*; Soustiel 1985: 127–128, *Fig. 137*), indicating that such vessels were produced in imitation of Chinese celadon (Gompertz 1980: 205, *Fig. 115a*). They consisted of a straight-

rimmed bowl mounted upon a high conical foot with a protruding element (knob) in the middle. None of the “Egyptian celadon” sherds from Kom el-Dikka could be definitively associated with such a cup; the foot fragments with the distinctive swellings may have belonged either to goblets or to cups [*Fig. 4:a*].

Two lids found at Kom el-Dikka are of a form which is innovative in Egyptian Mamluk ceramics, most Egyptian lids assuming rather a domed or hemispherical shape. A Chinese vase with a hemispherical lid topped by a fluted conical knob (Gompertz 1980: 151, *Fig. 73*) may have been the inspiration for Egyptian potters in this case. The Kom el-Dikka lids are made of stoneware ceramic paste, light grey in color for the smaller one and red for the larger. The smaller lid has willow green glaze with copper precipitations visible in the flutes. The larger lid has a tin glaze of

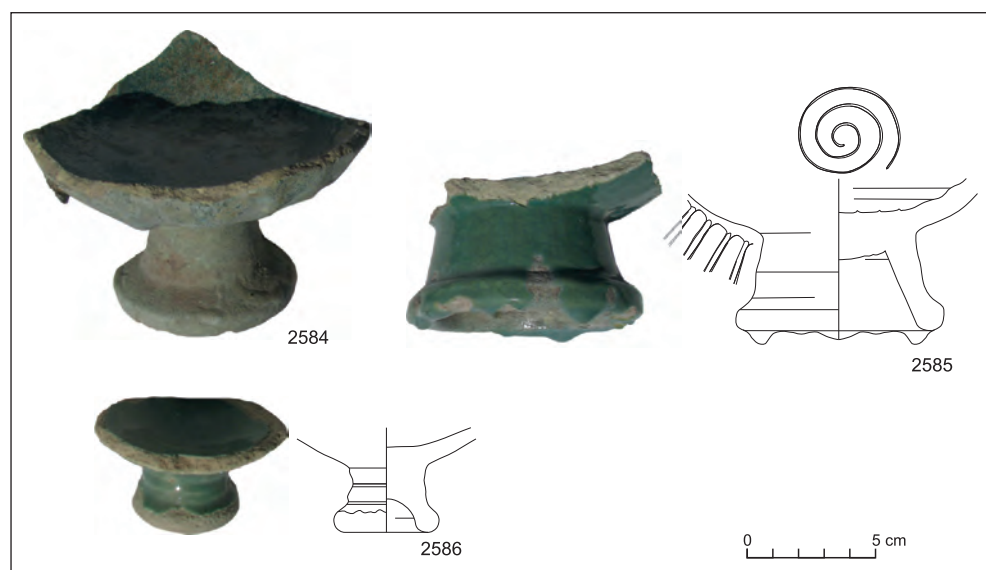


Fig. 3A. Forms of the First Group: goblets (diagnostic elements) (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danyś)



Fig. 3B. *Forms of the First Group: goblets (diagnostic elements) (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danyś)*

turquoise color. The difference in their dimensions notwithstanding, both lids are tiny, not to say miniature; they would probably have been used as lids for flasks used to hold medicine or cosmetics. Their unglazed bottoms have specially shaped grooves which would fit into the tops of flasks. These lids and one more item (a small bowl) are the only pieces imitating Chinese celadon from Kom el-Dikka to be preserved in their entirety [Fig. 4:b].

Much like bowls, beakers were not a new form in Egyptian ceramics, although their forms as produced during the Tulunid and Ayyubid eras (respectively in the 9th and in the 12th/13th centuries) were slightly different.⁷ The Mamluk period in Egypt was one in which beakers were produced in large amounts, probably under the influence of the Muslim lands to the East. While beakers also occur among the Sgraff/Slip Painted ceramics of red clay



Fig. 4. *Forms of the First Group: a – knobbed goblet or cup stems; b – conical flask lids (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danyś)*

⁷ Earlier on, during the Ayyubid period, ceramic beakers were generally tall and narrow, on a low foot flaring at the bottom. Meanwhile, a shape similar to the “Egyptian celadon” vessels described here was common among glass beakers painted with varicolored enamel.

and in the Blue-Black-White type, the greatest quantities of beakers were produced in the form of celadon imitations, indicating a high level of consumer demand.

Gompertz (1980: 137, Fig. 68a) presents a celadon beaker of almost cylindrical shape with an overall slenderness and a pronounced narrowing of its wall towards the bottom that became a typical characteristic of Egyptian beakers imitating celadon (Scanlon 1984: 117, Fig. 3). Apart from that, Egyptian vessels are notable for a relatively free hand in shaping the ring foot, which widens usually toward the bottom, occasionally embellished with a protruding or recessed element above the ring. The outer bottoms are glazed, with a conical protrusion in the center formed on the wheel. Walls are either smooth or fluted; incidentally, these flutes constitute the only decorative element in this group of items. The glaze on these vessels is either transparent green or light turquoise tin, usually applied in two layers; the interiors were covered with glaze of an inferior kind, while more care and color effects were lavished on the outer walls. If drops of glaze happened to flow down to the edge of the foot rim in the course of firing, producing unwanted bulges, these were then knocked off; unless, that is, the bottom of the beaker turned out to be uneven, in which case a drop of excess glaze left in a strategic location made for added stability. Most of the illustrated vessel fragments are from the 14th century and are made of white and beige stoneware ceramic paste; the vessels with a red stoneware body and weak glazing are dated rather to the 15th century [Fig. 5:a].

The Kom el-Dikka finds include some fragments of bowls that are Egyptian imi-

tations of a Chinese bowl with a flat bottom progressing at right angles into a low, straight wall and concluding with a broadly everted rim (Gompertz 1980: 138, Fig. 69). These are made of a stoneware ceramic mass. The smaller bowl fragment is covered with transparent green glaze and has a notched rim. The larger of the two has a willow green glaze with minor tin inclusions and a greyish hue; its outer wall was pressed to produce vertical fluting and also featured bulging rings. It should be borne in mind here that the glazed and decorated open form ceramic vessels characteristic of Islamic lands generally stood upon ring foots, so the flat bottom seen here is a formal innovation. The specimens shown here may have been intended for use as *zubdiyya*, that is, smaller bowls for serving sauce or liquefied fat (Zaza 1967: 43) [Fig. 5:b].

Decorative notching of the rims of “Egyptian celadon” bowls is another innovative stylistic trait. Gompertz cites a considerable number of Chinese models (Gompertz 1980: 97, Fig. 34a, 100, Fig. 37/a–b, 111, Fig. 45, 134, Fig. 65, 163, Fig. 82/a, 184, Fig. 98a). The rim incisions on the Chinese wares were made at equal intervals and the Egyptian potters adopted a similar practice, cutting a V-shaped notch and, on the inner wall beneath this, shaving off a layer of the body so as to form a slight hollow which ensured equal glazing in the course of firing. The Kom el-Dikka dig has yielded fragments of large bowls decorated with similar incisions, most of them covered with a thick layer of glaze [Fig. 6:a].

Many Chinese celadon wares—foremost vases with lids, goblets of various sizes, bowls, and beakers—feature molded fluting of the inner and/or outer surfaces (Gompertz 1980: 141, Fig. 71, 184, Fig.

98/a–b, 185, Fig. 99b). Egyptian imitations of such vessels (jugs, little jugs, bowls, cups, beakers of varying sizes, lids and candle holders) have been excavated in large quantities at Fustat during the 1920s, as well as in the 1960s and 1970s (Bahgat 1922: Pls 73, 107/1; Bahgat and Massoul 1930: 69–70, Pls 54/1,5, 57/5, 61/7?, G/51, J/72; Scanlon 1984: 115–126, Figs 3–4). Similarly at Kom el-Dikka, where finds of fluted utilitarian vessels were also abundant: pieces of all and sundry beakers, jugs, miniature jugs and bowls of varying dimensions. Fluted beakers have already been discussed above. Fluted jugs formed

an important and seldom encountered category. They were of ovoid or baluster shape with vertical fluting, either straight or slightly diagonal. The jug fragments excavated at Kom el-Dikka are of a high technological quality [Fig. 6:b].

Fluting was also used to decorate small jugs with bulging bodies and short necks ending in straight or rolled rims. The fragments of such vessels found at Kom el-Dikka constitute fine imitations of their Chinese models in terms of color and glaze quality [Fig. 7].

Fluting on open-form vessels occurred on bowls, in some cases on the outer as well

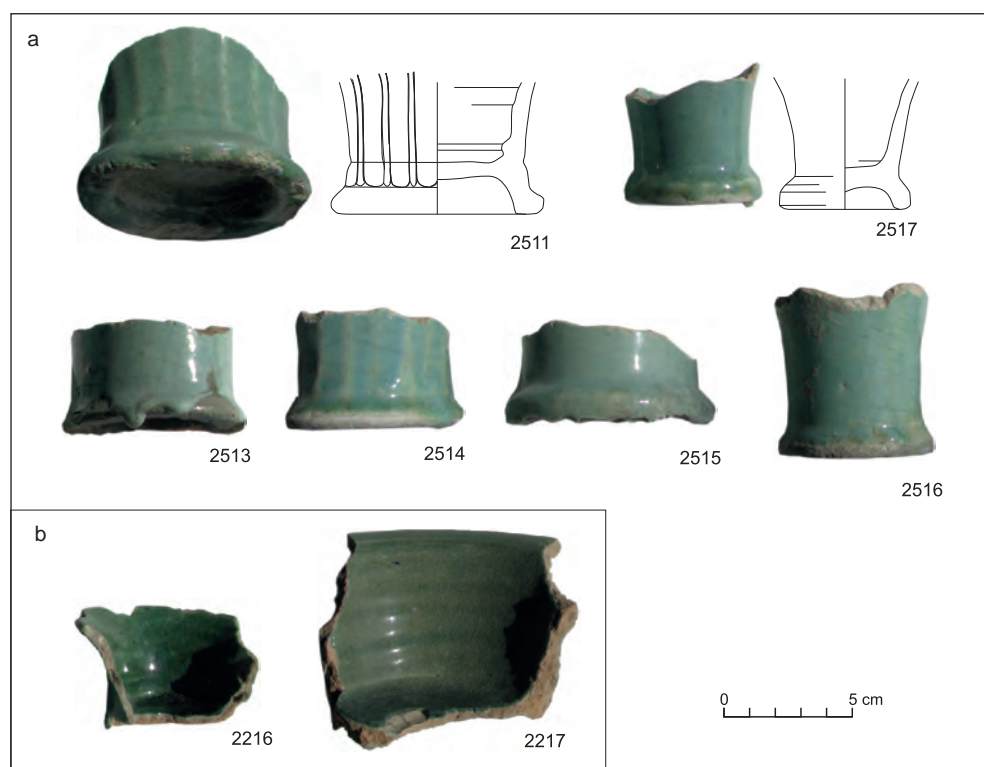


Fig. 5. *Forms of the First Group: a – beakers; b – bowl and small bowl with flat bottoms, straight walls and everted rims (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danys)*

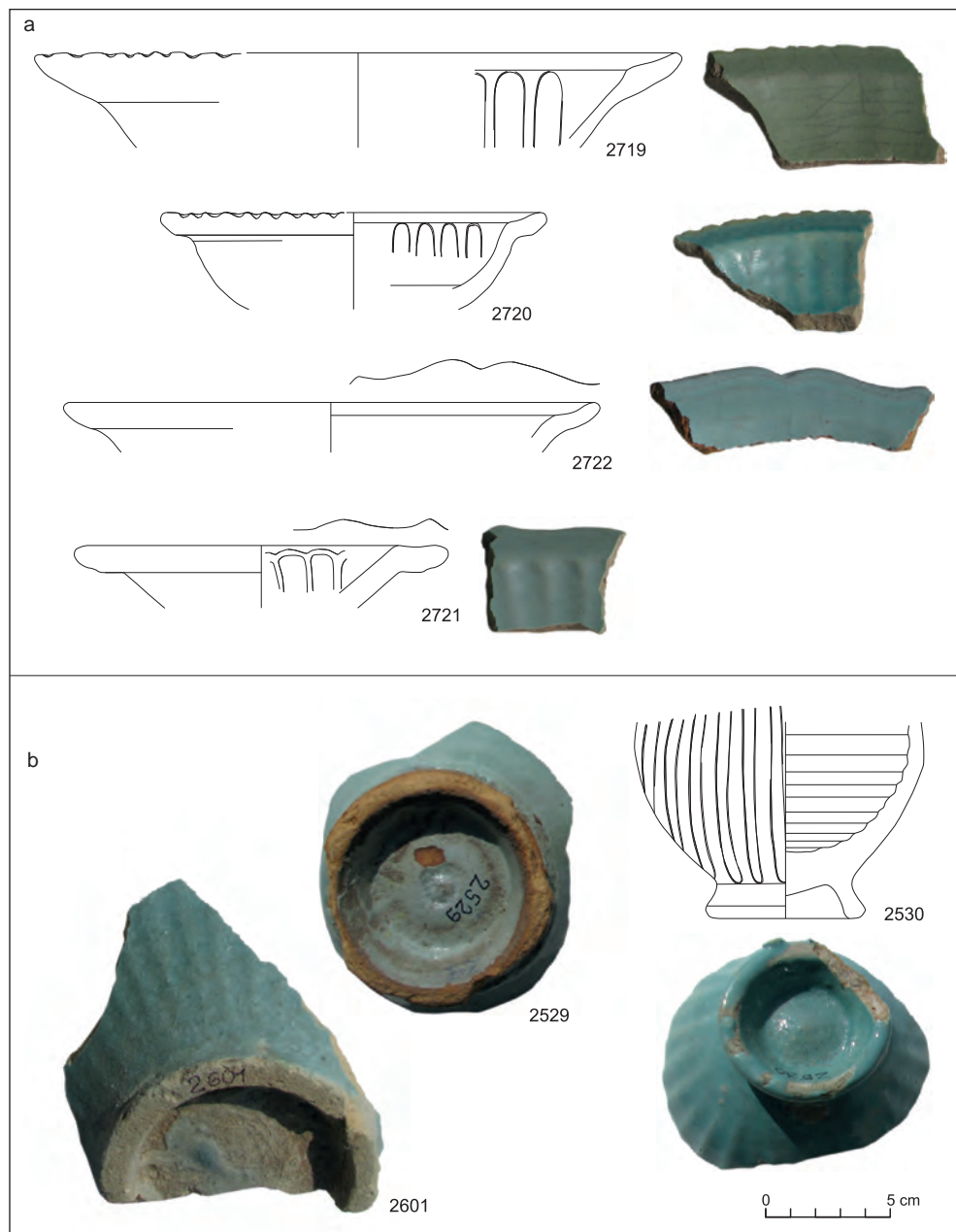


Fig. 6. Forms of the First Group: a – bowls with decoratively incised rim edges; b – jugs decorated with fluting (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danys)

as the inner surfaces. Interestingly enough, fluted decoration was applied on vessels ranging in size from the very small to the very large. In the case of bowls, fluting would have been a popular embellishment in that they made for a rosette, a favorite decoration in Mamluk ceramics. In some cases, the reverse side of a bowl was also accentuated with incised lines in a rosette arrangement. Large bowls of this sort would have probably been used to serve big portions of cereals or meat, as seen, for example, in the feasting scene in the miniature illustrating Maqamat by Hariri in the St Petersburg manuscript from approximately 1225 (Ettinghausen 1962: 113) [Fig. 8].

The Kom el-Dikka finds include fragments of three items whose nature and use evade us [Fig. 9]. The vessel top to the left resembles a cup upon a slightly expanding ring foot. The stoneware ceramic body is beige in color; the outside is covered with turquoise tin glaze, and the inside was not

glazed completely. The body of this mysterious vessel bears traces of perforations at three points along the upper edge of the preserved fragment; an aperture some 1.3 cm wide and of unknown height was located 1.7 cm from the base and, above this, 3 cm from the base, there were two small glazed incisions. The fragment is too small, and the apertures too irregularly spaced, to enable an educated guess as to the shape or designated use of the vessel [Fig. 9:a].

The second unidentified fragment is most likely a stand comprised of a circular base and four vertical supports with fluting on the outside (conceivably, these would have been joined at the top with a clamp of some sort). The preserved part of the wall and the bottom are covered with turquoise tin glaze, with copper discolorations; the top of the base and a ring between the supports were left unglazed. This fragment was probably used as a support for another vessel, the latter possibly with a spiked



Fig. 7. Forms of the First Group: small jug rims, also with fluted walls (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak)

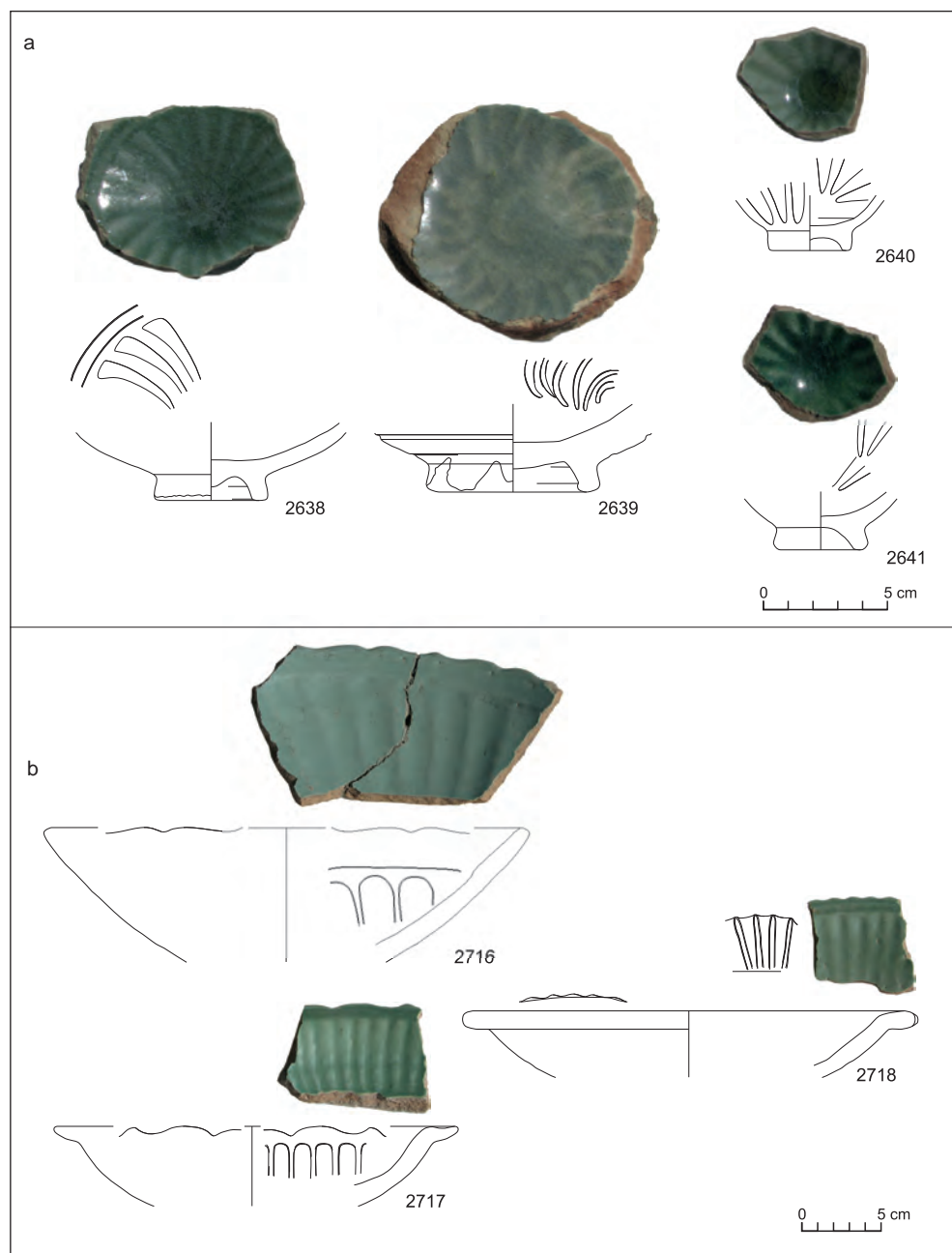


Fig. 8. *Forms of the First Group: bowls fluted inside(a) and on the walls (b) (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danys)*

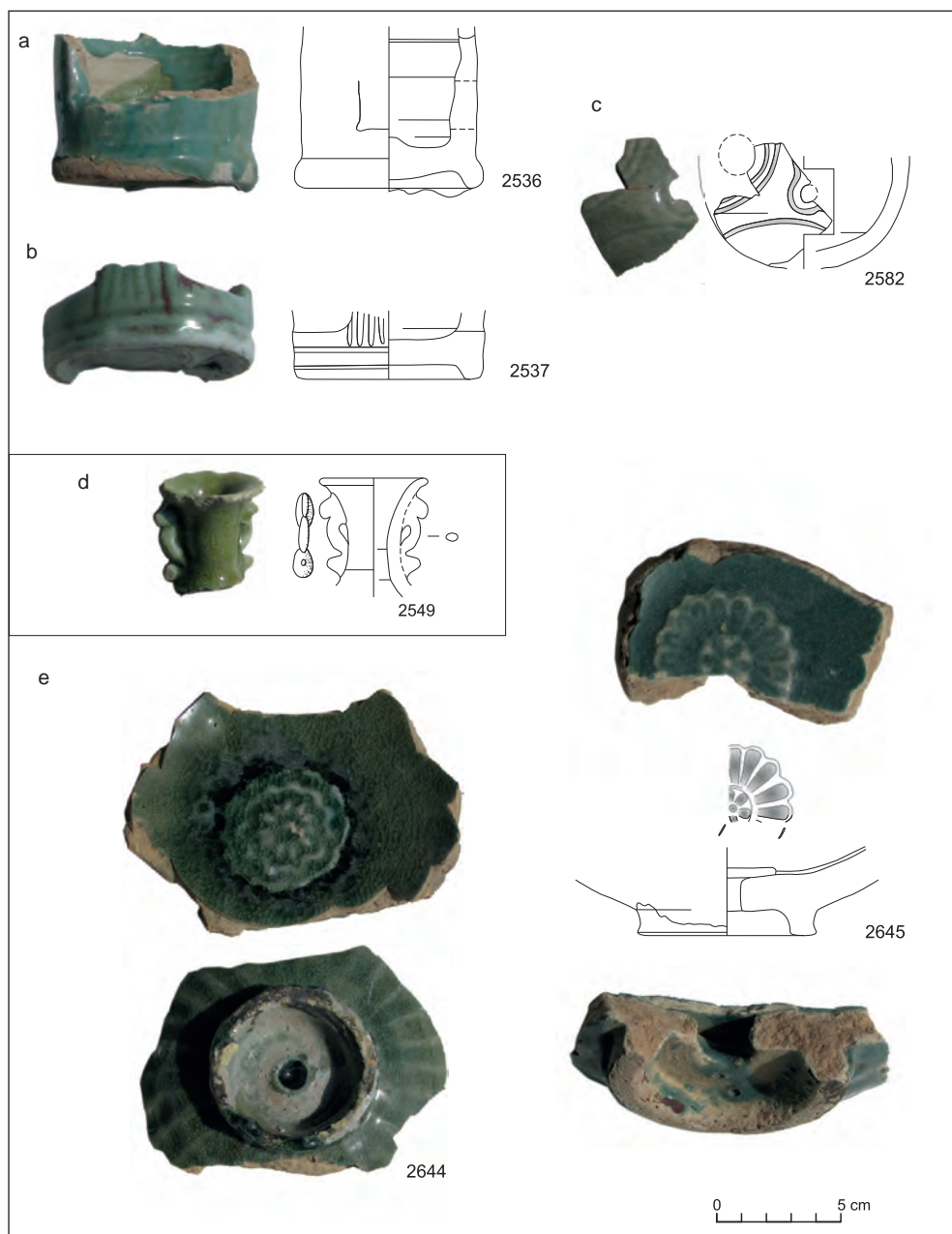


Fig. 9. Mystery vessels: a–c – examples of decoration on vessels from the First Group; d – Chinese-style small jug fragment; e – bowls decorated with appliqué rosettes/chrysanthemums (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danys)

ending, hence the additional clamp. It may also have served as a stand for an incense burner; the heat generated by the burner would explain the unglazed sections. One may add at this point that throughout the ages Chinese craftsmen had turned out wooden or metal stands for all kinds of ceramic, glass, metal, stone, lacque and ivory wares [Fig. 9:b].

The third is a fragment of a bulging, spherical or hemispherical object with traces of small, round perforations at the edges. It is made of greyish brown stoneware ceramic, glazed on both sides, with incised lines on the outside and incised rings around the apertures. This may have been a lid for an incense burner [Fig. 9:c].

Decoration

A fragment of a small jug found at Kom el-Dikka bespeaks Chinese influences at work in its making. The top of the neck is everted, chalice-like, and has been augmented with two handles stylized to resemble Chinese mythological beasts, either dragons or phoenixes (although the reference could also be to altogether more common creatures, namely fish). Zoomorphic handles of this sort were used to decorate Chinese jugs of the *kinuta* (hammer) type, a category of celadon (Gompertz 1980: 157, Fig. 78, Pl. G, 161, Fig. 80, 166, Fig. 84a). The characteristics of these jugs included a cylindrical main body and slightly sloping shoulders proceeding into a high, cylindrical neck with two zoomorphic handles and a flatly everted, broad pouring rim.

The small jug from Kom el-Dikka departs from this archetype in the shape of its pouring rim. The main body, now lost, probably had an ovoid shape that was popular in Egyptian ceramics. The handles

were shaped in a mold before being stuck onto the body, which was beige after firing and was covered with an olive green transparent glaze [Fig. 9:d].

Appliqué rosettes-cum-chrysanthemums are among the most interesting decoration used on “Egyptian celadons”, in formal terms as well as by virtue of the means of execution. They are the foremost example of Chinese inspiration in the ornamental sphere.

They were found in the Fustat excavations (Scanlon 1971: 227, Pl. 5). The Kom el-Dikka finds include several bowl fragments with decoration of this sort. The photographs in the exhibition catalogue *Blåvitt. Blue and White. Mavi Beyaz* show Chinese celadon bowls with appliqué chrysanthemums, wasters from their firing, and Egyptian imitations (Houby-Nielsen 2008: 46, Fig. 10, 24, Fig. 12, 44, Fig. 7, 71, Fig. 2, 103, Fig. 24, 123). In Chinese art, chrysanthemums symbolize continuity in perseverance and long life. Meanwhile, a six- or eight-petalled rosette was a Mamluk heraldic device associated with the Qalaun family of sultans (1290–1293); it was not associated, however, with the Egyptian celadon imitations under discussion, but with Sgraff/Slip Painted wares instead (Mayer 1933: 24–25).

The presumed production method was for the body of a chrysanthemum bowl to be built up from stoneware paste around a rod of approximately 1 cm in diameter spinning on a potter’s wheel (thanks to this device, the aperture at the bottom of the bowl was stable). At the same time, more ceramic paste was used to mold a chrysanthemum. After the bowl (replete with its ring foot) had been formed, it received a layer of glaze on the inside and outside, as did both sides of the chrysanthemum.

The glazed chrysanthemum was then carefully applied over the aperture at the bottom of the bowl. During firing, the glaze at the bottom of the bowl intermingled and hardened with the glaze on the underside of the chrysanthemum, permanently attaching the decoration, while any excess glazing flowed out through the aperture.

The chrysanthemum bowl fragments found on Kom el-Dikka comprise a number of bowl bottoms. The rosette-cum-chrysanthemums decorating them are of varied shape and thickness. The bodies were

shaped from stoneware paste of white as well as red color and covered with transparent green glaze of various hues or with turquoise or green tin glaze. The thick-walled bowls seem to be flawed technically, as suggested by the fact that some of the chrysanthemums have become unstuck from the underlying bowl body [Fig. 9:e].

The bowls and small bowls with rosette/chrysanthemum decorations applied by stamping were surely less labor-intensive. Several dozen fragments of such vessels — bottoms and pieces of walls — were

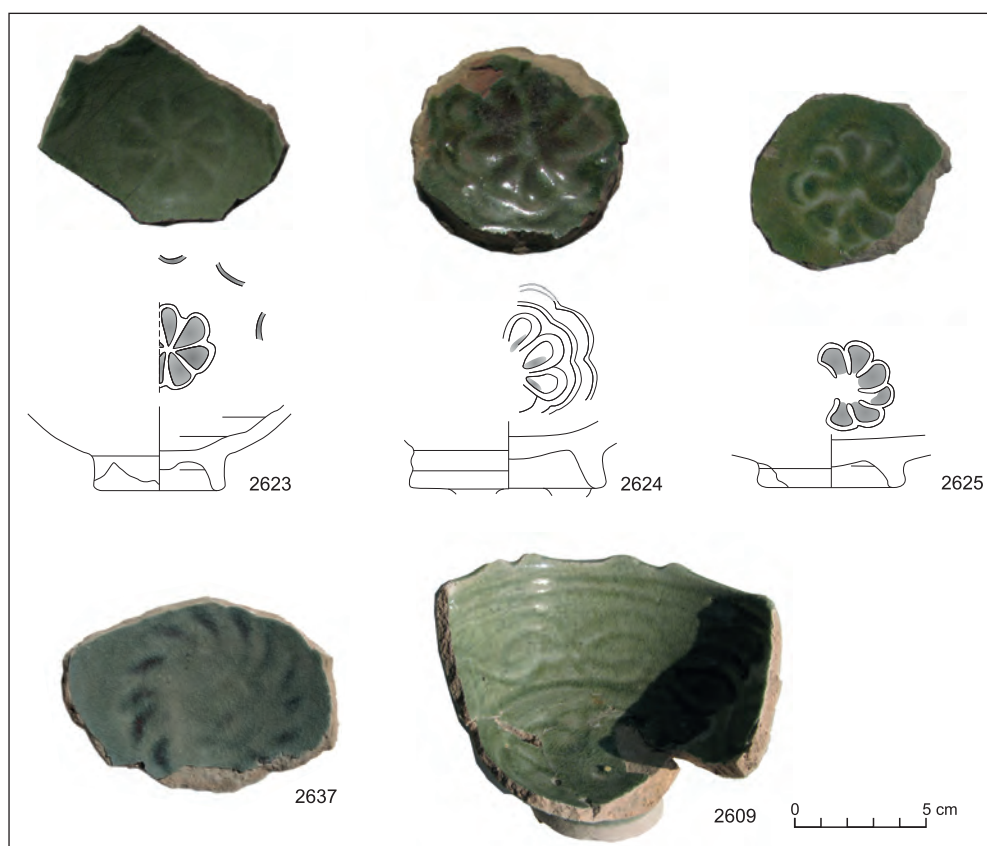


Fig. 10. Examples of decoration on vessels from the First Group: top row, bowls decorated with stamped rosettes; bottom row, bowls with whirling rosettes (PCMA Alexandria Kom el-Dikka Project/ photos M. Redlak, drawing K. Pawłowska, digitizing K. Danyś)

discovered at Kom el-Dikka [Fig. 10:a]. The rosettes varied in shape and in the degree of care exercised in their execution: some were painstakingly stamped into the body of the bowl, while others are barely discernible underneath the glaze. The petals

of the rosettes are rounded, spiked, or tipped with a straight line (making the design as a whole evocative of a windmill). In some cases, the rosette petals touch one another and in others they are separated; in some instances, they are arranged

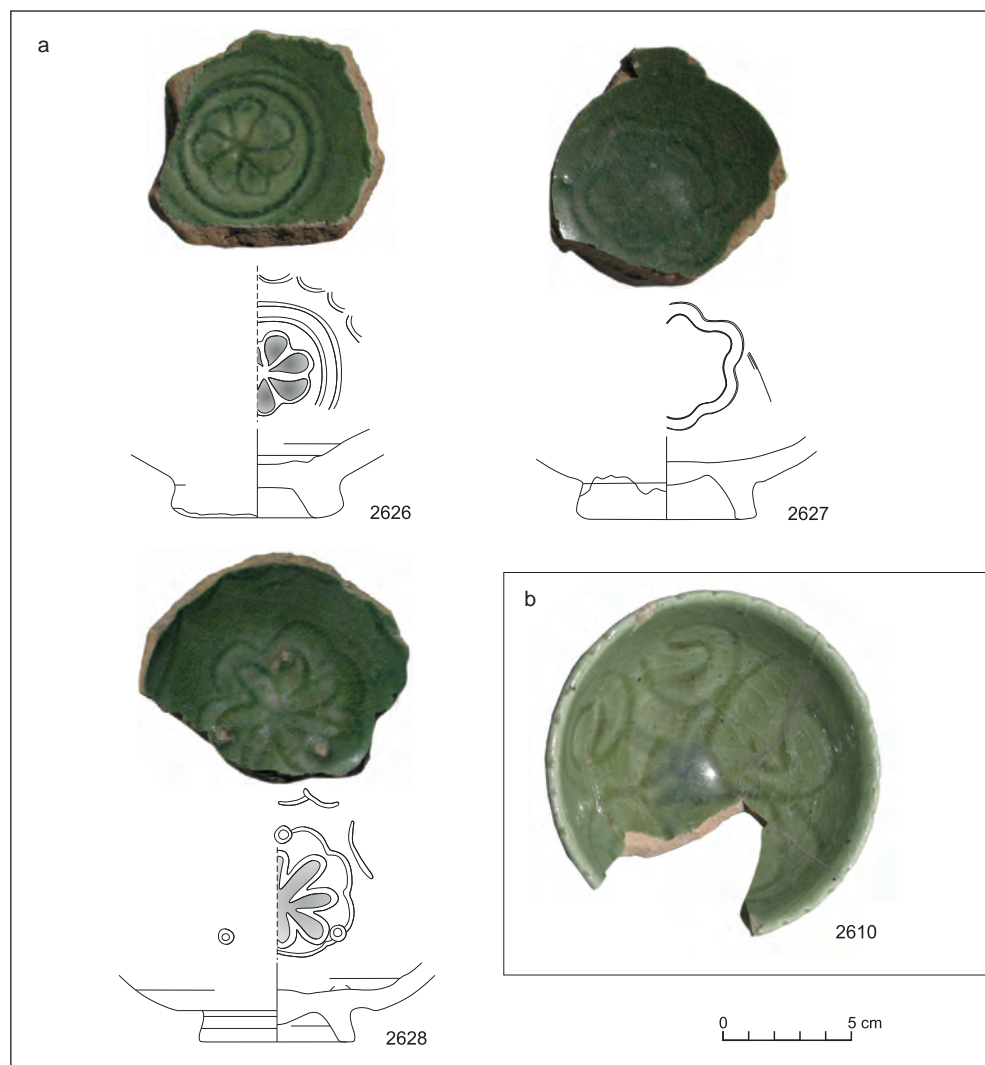


Fig. 11. Examples of decoration on vessels from the First Group: a – bowls decorated with incised rosettes and latticework; b – bowl decorated with crescents at the tips of radiating rosette (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak, drawing K. Pawłowska, digitizing K. Danyś)

diagonally into a “whirling rosette” shape [Fig. 10:*b*]. Some of the rounded petals have a double outline. Occasionally, the compositions forego a central element altogether, making do with a rosette-shaped contour reminiscent of a medallion. If the stamp was firmly applied to a body of white stoneware ceramic paste, the resulting rosette featured white color accents in the petal outlines.

One bowl fragment in which the side-wall has been preserved provides clues regarding the decoration beyond the rosette. These were usually incised circles of a double interweaving motif with circular or oval rings; other motifs included tendrils, leaves, and Chinese meanders. In some instances, a “lambrequin” rosette outline separated the interweaving outer decoration from the central rosette



Fig. 12. Examples of decoration in relief on vessels from the First Group (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak)

(Scanlon 1971: 227, Pl. 5; 1984: 117, Figs 3–4) [*Fig. 10:c*].

A considerable part of the Kom el-Dikka finds comprised fragments of bowls and small bowls decorated exclusively with incised motifs. The central motif on the bottom was usually a rosette with narrow petals, a radiating rosette or a radiating “whirling rosette”; these were executed in free form, sometimes schematic and sometimes rather haphazard [*Fig. 11:a*]. An interesting take on this form of decoration are crescents at the tips of a radiating rosette on a fragment of hemispherical small bowl [*Fig. 11:b*].

Chinese celadon vessels often featured decoration in relief. This effect was obtained either through forming in a mold (or, in the case of vessels with bulging walls, in two molds) or through painstaking, deep incision work on the bodies prior to glazing and firing (Gompertz 1980: Pl. C, 104–105, Figs 40–41, 116, Fig. 50; Gyllensvärd 1975: Fig. 20). In many places, details of the relief motifs are accentuated with thin incised lines produced with a special tool resembling a comb. The contours of the motifs were formed in the champlévé technique so as to produce shading effects in the colored glaze. One surmises that wares of this sort also exerted their influence on Egyptian craftsmen, particularly seeing as, in ages past, relief decorations were rare in Egyptian art.

Among the stoneware ceramic sherds with monochromatic glazing in various celadon hues one can distinguish a group of jug, bowl, and goblet fragments with relief decorations (mostly in the appliqué and mold-forming techniques). Applied elements of ceramic paste rolls and knobs were stuck onto the wet body in simple patterns. Molded decoration presented projections

in the desired places or, in some instances, continuous patterns (which were covered by the glaze, such as the pineapple peel design also known from Chinese celadon; Gompertz 1980: 76, Fig. 27a–b). The linear incisions upon the applications may be construed as a reference to the comb incisions upon Chinese celadon [*Fig. 12*].

INDIGENOUS EGYPTIAN CERAMICS WITH CHINESE CELADON CHARACTERISTICS

The second group in the collection of Egyptian imitations of Chinese celadons from Kom el-Dikka is comprised of fragments of vessels of traditional forms in widespread use in Egypt for centuries, but glazed in a manner clearly imitative of Chinese wares. The imitation is so close that it merits consideration in the present context. This group comprises a considerable number of bowls, small bowls, beakers, and oil lamps, as well as the less common *albarello* and *sirinja* vessels and spherical–conical receptacles covered with glazes the quality and colors of which place them among the celadons. These fragments are generally monochromatic and, barring one exception, undecorated.

Form

The largest item group among the Kom el-Dikka finds comprises monochromatic bottoms of bowls, small bowls, and cups as well as occasional walls from such vessels [*Fig. 13*]. The colors of their tin glazes present a fine imitation of Chinese monochromatic celadon of a variety produced in large numbers as well as affirming stylistics of Mamluk imitations.

Two *zubdiyya* bowls made of stoneware ceramic paste covered with turquoise tin

glaze assume the forms dated to the Fatimid era (969–1171) – a hemispherical body resting upon a ring foot, one of bowls with straight rim, the second one with everted rim. The widespread and long lasting use of these forms in Egypt confirms the traditionalism in native ceramics. Notwithstanding, bowls of these shapes have long

been common among Chinese celadon, attesting to the ubiquity of both particular forms [Figs 14, 15].

The container/jug of *albarello* type, used for storing spices, has a distinctive shape with the main body evocative of a bamboo stem section, a flattened bottom and shoulders, a small ring foot, and

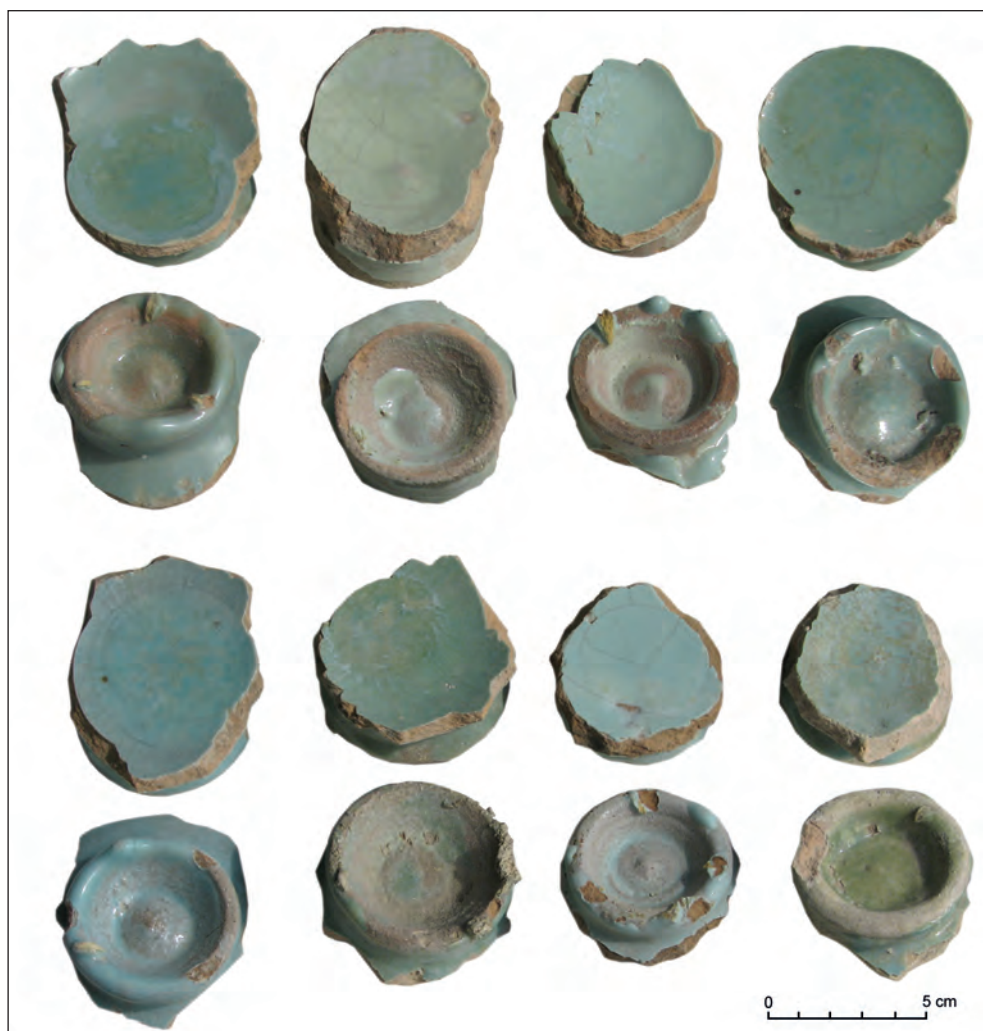


Fig. 13. Examples of decoration on vessels from the Second Group: bowls glazed monochromatically (PCMA Alexandria Kom el-Dikka Project/photos M. Redlak)

a low, narrow neck ending in a rolled rim. *Albarelo*-type receptacles became a fixture in Islamic ceramics, particularly in lands around the Mediterranean Sea, in the 13th century.

The Kom el-Dikka artifacts include several fragments of *albarelo* spice containers. The illustrated pieces are made of stoneware paste; after firing, the body of one assumed a light red color, and the other turned beige. A double layer of dull turquoise glaze was applied to the entire vessel. The main body is accentuated with flutes. The smaller *albarelo* has a drilled hole which was used to wire the vessel together after it had broken or cracked; this suggests that the vessel was once a valued possession [Fig. 16:a].

The *sirinja*, a bowl subdivided into seven compartments or small bowls, was a distinctive vessel in the Arabic lands and in Iran. It was used for serving seven dishes, the names of which commenced with the letter *sin* as part of the Nouruz or New Year's celebrations on March 21, the day of the spring equinox. Six compartments are arranged rosette-like around the central

seventh one. The color and quality of the glaze suggest that this *sirinja* was made at a workshop which produced celadon imitations. Illustrated is a fragment of the central compartment with parts of two surrounding ones [Fig. 16:b].

The Islamic Art Collection of the National Museum in Warsaw include an oil lamp in the shape of a small jug made in Egypt sometime during the 14th century, measuring 13.4 cm by 11 cm and representing type I in the Fustat typology (Kubiak 1970: 13–15, Fig. 11/a–b) [Fig. 16:c]. It is an excellent example of a Mamluk lamp preserved in its entirety. Its turquoise glaze features the crackles characteristic of celadon and its imitations.

Decoration

One of the bowl bottoms found at Kom el-Dikka features original decoration comprised of a tripartite tondo with lines filling out the central band [Fig. 16:d]. This schematically rendered tondo may have been derived from the heraldic round shields frequently found on Mam-

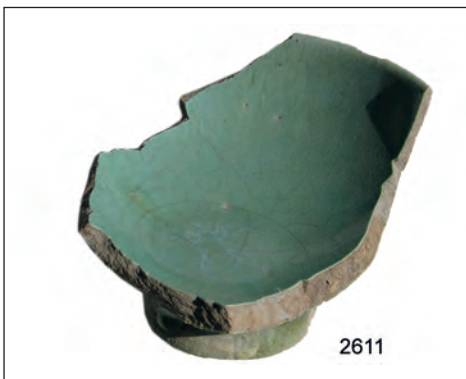


Fig. 14. Hemispherical bowl (PCMA Alexandria Kom el-Dikka Project/photo M. Redlak)



Fig. 15. Bowl with everted rim (PCMA Alexandria Kom el-Dikka Project/photo M. Redlak)

luk ceramics of the Sgraff/Slip Painted type. To follow this train of thought, the lines in the central field would be in lieu of an inscription. Such an inscriptive coat-of-arms was popular especially

during the reign of the Burji Mamluks. The remaining traits of this preserved vessel bottom place it in the category of Egyptian imitations of Chinese celadon.

RECAPITULATION

The article presents a general description of one of several stylistically distinct types of glazed ceramics produced during the

Mamluk era. Apart from these “Egyptian celadons”, Mamluk pottery during the 14th century was dominated by Sgraff/Slip



Fig. 16. Examples of Egyptian indigenous wares with Chinese celadon characteristics: a – albarello-type containers; b – sirinja bowl with seven compartments; c – oil lamp (National Museum in Warsaw SKAZsz 3521); d – bowl bottom with incised decoration presenting stylized Mamluk heraldic round shield, from the collection of the (National Museum in Warsaw/photos M. Redlak; c – P. Ligier; drawing K. Pawłowska, digitizing E. Czyżewska-Zalewska)

Painted wares, which largely accounted for the tableware and furnishings of Mamluk noble houses. Another line of wares comprised the Blue-Black-White vessels painted in various patterns and motifs; surviving examples testify to the exceptionally rich ornamentation cultivated in Islamic art at the time. Come the 15th century, utilitarian and architectural ceramics of the Blue-White type came to the fore; of course, this was another Islamic adaptation of a Chinese model, with inspiration for the shapes and decorations of these wares derived from blue-and-white *qing hua* (blue flower) porcelain.

These newer trends notwithstanding, production of Egyptian ceramics imitating Chinese celadon continued. It is this consistent production of “Egyptian celadon”, along with the stylistic appeal of these vessels which fuelled the output of monochromatic wares of stoneware paste covered with tin glaze or transparent glaze of blue, white, brown, purple, green, or turquoise color, fragments of which were discovered at Kom el-Dikka. Some of them feature notched edges, fluted walls and relief applications, but their color schemes are inconsistent with the Chinese celadon archetypes.

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Research and conservation in Marina el-Alamein in 2016 (Polish–Egyptian Conservation Mission)

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Abstract: Activities undertaken by the Polish–Egyptian Conservation Mission to Marina el-Alamein in 2016 included research and conservation in the public district of the ancient town as well as in private houses. Work focused foremost on research, conservation and exhibition of monuments in the central town square, especially the remains of a peristyle adjacent from the east, and the southern portico of the square itself. Research and conservation continued also in the area north of the central square, concentrating on the remains of public baths dating from the Hellenistic period and, on the south, on the remnants of Roman baths in use from the 2nd to the 3rd century AD. Maintenance conservation was carried out in private houses, in both baths complexes and in the eastern and southern area of the central square.

Keywords: Marina el-Alamein, town center, main square, northern and southern baths, houses, research, preservation, conservation

Announced by the Ministry of Antiquities, the imminent opening of the archaeological excavation site in Marina el-Alamein to visitors¹ demanded that the Polish–Egyptian Conservation Mission from the Polish Centre of Mediterranean Archaeology University of Warsaw, cooperating with the Wrocław University of Science and Technology, undertake its work in 2016 first of all in areas foreseen to be a part of the visitors' itinerary.

Conservation and preservation priorities for the current season were also largely determined by the visible effects of exceptionally unfavorable weather conditions in the autumn and winter of 2015/2016.

The season was short, but effective. In large measure, this is owed to the efficient organization of the mission's work by our Egyptian hosts and to their help with all the activities.

¹ During his visit to the site on 28 May 2016 the Minister of Antiquities of Egypt, Dr. Khaled El-Enany, reiterated that the opening of the site to tourism was to be expected soon.

MAIN AREAS OF ACTIVITIES

As part of preparations for the opening of the historic complex to visitors, the management of the site outlined a short guided route which is to be made available in the first stage. Currently, it includes several structures in the necropolis. The center of the ancient town, particularly its main square tentatively identified as the forum or agora (Daszewski *et al.* 2005: 86–92; Daszewski 2011: 423), and the surrounding building remains form an architecturally distinctive historic complex that is located nearby and can easily be included in the guided tour [*Fig. 1*]. The prime focus of the mission was on this area, the work being a continuation of systematic conservation and research work done in the past. In 2016, this included mainly work in the square itself, in the peristyle adjoining its eastern side and in two complexes of public bath remains: the Roman one situated to the south of the square and the Hellenistic one to the north.

The exploration and conservation of the southern bath complex started in 2007 (Medeksza *et al.* 2010: 88–91), while work in the northern complex was first undertaken in the 2014 season (Czerner *et al.* 2016b: 167–171, 173ff.). Research and preservation were continued currently in both structures. More extensive research and conservation work were undertaken in the forum, in its eastern peristyle in particular, this constituting the main task of the season.

Standard monitoring of the state of preservation of historic monuments on site in 2016 revealed many structures in need of additional conservation and protection from further damage. Such maintenance work has been carried out at the site by the mission for many years. Damage processes, intensified due to particularly unfavorable weather conditions in the autumn/winter period, required this activity to be more extensive in the current season. Maintenance conservation and

Team

Dates of work: 3–30 May 2016

Director: Prof. Rafał Czerner, architect (Wrocław University of Science and Technology)

SCA representatives: Nama Sanad Yakoub (Marina Site Director), Haitham Abd Allatief Ali Abd Allal (SCA inspector)

Archaeologist: Dr. Grażyna Bąkowska-Czerner (Jagiellonian University in Kraków)

Archaeologist/glass expert: Renata Kucharczyk (PCMA UW)

Architects: Wiesław Grzegorek (freelance, PCMA associate), Sara Arbter (undergraduate student, Wrocław University of Science and Technology)

Stone and sculpture conservator: Piotr Zambrzycki (InterAcademy Institute of Conservation and Restoration of Works of Art)

Acknowledgments

The assistance throughout the season of General Director of the Marina el-Alamein site, Mrs. Nama Sanad Yakoub, and SCA Inspector, Mr. Haitham Abd Allatief Ali Abd Allal, is gratefully appreciated.

preservation were carried out mainly in the area of the town center: the forum, its eastern peristyle and both bath complexes, as well as in houses H9, H9a, H10a and

H21N, and also, to a limited extent, in house H1 and in the necropolis. Object conservation was also carried out in the 2016 season.

NORTHERN HELLENISTIC BATHS

The Hellenistic baths located north of the central square were discovered by Egyptian archaeologists in 1987 (Daszewski 1991: 16; 1995: 18, Fig. 4; 2011: 429; Fournet et al. 2013: 326). At that time, the functional elements of their main body were identified. Studies undertaken during the conservation and research works carried out by the Polish–Egyptian

Conservation Mission in the 2014 and 2015 seasons confirmed the functions of the main rooms and the existence of several phases of functioning (Czerner et al. 2016b: 167–182) [Fig. 2]. It was typical of this kind of buildings in Egypt at the beginning of Roman domination (Breccia 1923; Yegül 1992: 24, 29; Daszewski 1995: 18–19, Figs 3, 4) and housed a set

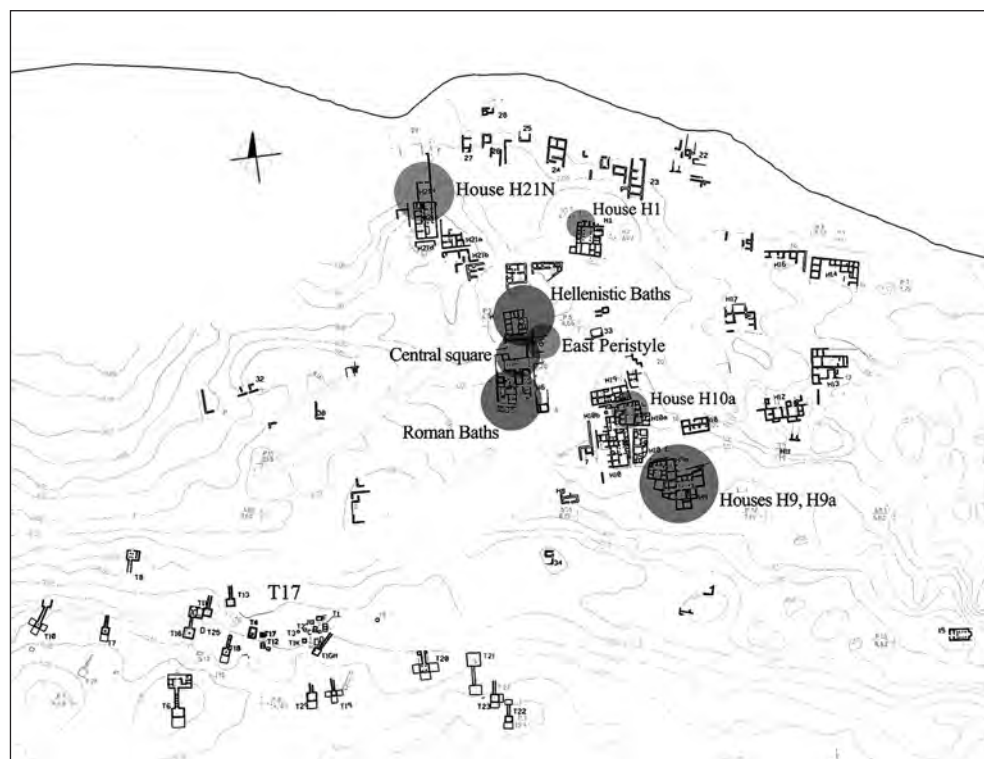


Fig. 1. Marina el-Alamein site plan: circles mark areas of work undertaken in the 2016 season (PCMA Marina el-Alamein Conservation Mission)

of rooms that were essential in Hellenistic baths (corresponding to the second model according to Monika Trümper [2009: 149, 152–153]). Situated in the center of the eastern area of the baths, the main rooms and facilities included a tholos (1 in *Fig. 2*) with nine hip-bathtubs and a larger

one, a possible immersion bathtub, by the wall and, neighboring to the west, a small room (2) housing an immersion tub. In the north section, a vast water reservoir was located on a raised superstructure (3) in the northeastern corner of the building, and a heating appliance was set

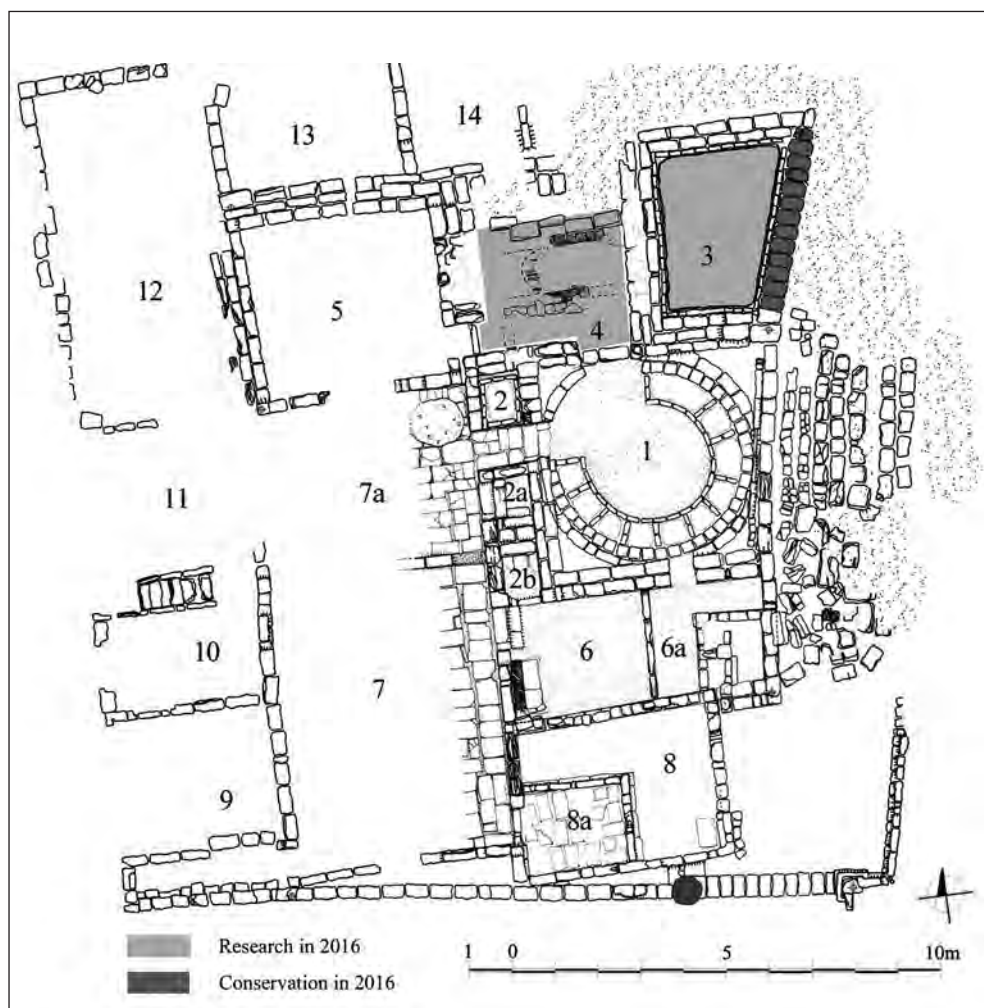


Fig. 2. Baths located north of the central square at Marina el-Alamein; plan showing areas of activities in 2016 (PCMA Marina el-Alamein Conservation Mission/drawing R. Czerner, M. Grzegorek, M. Krawczyk-Szczerbińska)

in a room (4) adjacent to the west. In the 2014 and 2015 seasons, research in the rooms (6–8) located south of the tholos was also carried out and at least two phases of functioning were confirmed. However, the function of these chambers remains yet to be explained.

In the current season, research was completed on the water reservoir (3) [Fig. 2]; in particular its bottom was examined and it was confirmed there is no outlet in it. As part of conservation work, in order to protect the eastern edge of the brick casing of the reservoir, one layer of stone blocks was added to the top of the east wall of the room housing it.

Exploration of the neighboring room (4) [see Fig. 2] revealed the upper parts of a furnace built of red bricks bonded in clay mortar. Walls made of vertically placed limestone slabs were built adjacent to the brick furnace walls on the north and south, sectioning out the middle part of the chamber with the heating appliance. The furnace was operated through an opening on the northern side. The inside brick walls supported a barrel vault made of brick halves. The vault has collapsed to a large extent. Exploration of the deeper parts of the furnace was not undertaken at this time and the relic was protected until further work can be carried out.

[RC]

ARCHAEOLOGICAL RESEARCH

In the northern baths, part of room 4 was cleaned as well as all of unit 3, which constituted a water reservoir [see Fig. 2]. Room 4, measuring 3.87 m by 3.10 m, has walls about 0.40 m wide. A door opening, 0.70 m wide, in the west wall by the

southern corner of the room and leading to room 5, turned out to have been blocked at a later date. A door (1.03–1.10 m wide) in the south wall, leading to the tholos, is also closed with big stone blocks laid to a height of 0.65 m. A narrow corridor-passage from the tholos to room 5, separated from the chamber space in the southern part of the room in a later phase, was 0.90 m wide. The big stone blocks in the upper layers of the fill must be tumble from the south wall. They lay on a layer of pure sand about 0.20 m thick. Fragments of two amphorae, as well as of a frying pan and pieces of kitchenware were discovered under this layer. The pottery came from a later phase of use.

The northern part of the room was occupied by a furnace. Big stone slabs (0.60 x 0.36 x 0.10 m) were found above the furnace, coming probably from the collapsed south wall of the structure. A corroded coin and several fragments of ceramics were found in the fill. The vault between the brick walls of the furnace body spanned approximately 1.05 m. Work here will be continued.

Unit 3 of irregular plan housed a water tank. The walls were 0.40 m wide on the south and west and 0.60 m wide on the north and east. The tank measured 4.04/3.52 m by 3.10/1.70 m and was about 0.90–1.20 m deep, encased in bricks and lined with waterproof mortar. A doorway, 0.70 m wide, was noted 0.40 m above the bottom of the tank in its south wall. In the later phase, stone blocks divided the tank into two. There were no archaeological finds, the tank having been cleaned during earlier research in the 1980s.

[GB-C]

SOUTHERN ROMAN BATHS

The small baths from the Roman period located south of the central square are typical *balnea* (see Nielsen 1990: 3) and, considering the layout of the main rooms, they follow a row-type organization (see Krenckner et al. 1929: Fig. 234–240; Nielsen 1990: 87). Remains of the baths were excavated for the PCMA by Wiktor Andrzej Daszewski in 1987 (Daszewski

1995: 19–20) and again in 2005 (Daszewski et al. 2007: 79–82). Research was continued in 2005 (Daszewski et al. 2007: 79–83), 2006 and 2007 by the Polish mission and by Egyptian archaeologists contracted by the American ARCE/EAP Marina el-Alamein Site Presentation project. The Conservation Mission has continued conservation and

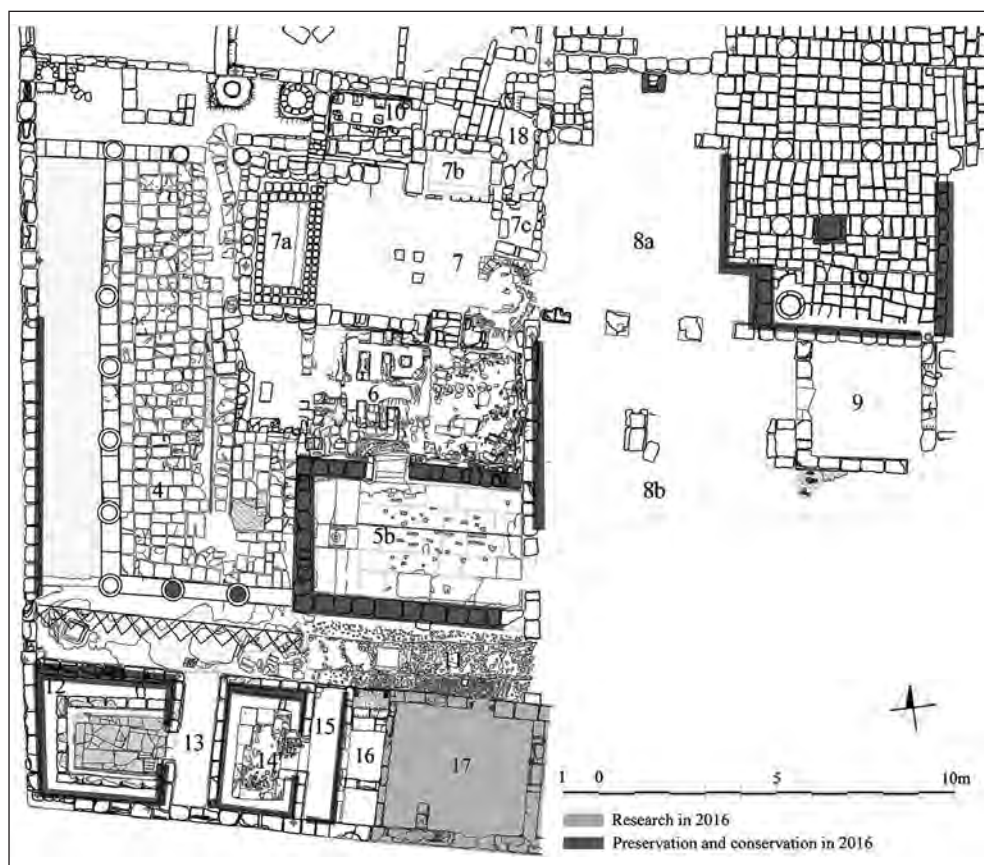


Fig. 3. Baths located south of the central square at Marina el-Alamein; plan showing areas of activities in 2016 (PCMA Marina el-Alamein Conservation Mission/drawing A. Brzozowska, R. Czerner, M. Grzegorek, A. Kubicka, M. Krawczyk-Szczerbińska, K. Majdzik)

research works in the complex since 2007 (Medeksza et al. 2010: 88–91; 2011: 116–118; 2012: 84–99; Czerner et al. 2015: 113–137; 2016a: 150–161). Studies have confirmed the function of the main rooms and the existence of at least two phases of use. In the current season, research was undertaken in room 17, a presumed apodyterium, situated in the southern part of the baths to the east of the latrines that were excavated earlier [Fig. 3]. Walls of the southeastern corner of the room and a fragment of an inner wall diverging from the south wall to the north at a distance of 0.90 m from the western corner were uncovered (see below). The inner wall was probably a base for a landing of the stairs, the first flight of which was situated in neighboring room 16. So far, no relics of the floor have been found. The outer south wall of the bath continues further east of room 17.

[RC]

ARCHAEOLOGICAL RESEARCH

Earlier and now continued exploration of room 17 (for previous work, see Czerner et al. 2016a: 155–156) uncovered the tops of walls: north (3.84 m long) and west (3.49 m), as well as south (3.85 m) and east (3.26 m). The southeastern part of the room had been damaged rather seriously, probably during building works in the 1980s that led to the discovery of the site. To the north a door opening, 0.70 m wide, opened into a corridor (room 11). The threshold was not apparent, but there was evidence of damage at its level. A low wall, 0.70 m long and 0.28 m wide, perhaps connected with the construction of the

stairs, diverges perpendicularly from the south wall of the chamber at a distance of 0.90 m from its west wall. This part of the room, separated by a low wall (and probably originally situated under the stairs), differs from the eastern part. A small hearth (0.60 m by 0.30 m), surrounded by stones and brick, was located by the north wall. Fragments of ceramics, glass, animal bones (cattle, birds, fish)² and land snails were found in the hearth. About 0.10 m lower in the western part of the chamber, a layer of dark soil about 0.15–0.20 m thick was found to contain pottery: sherds of Cypriot Sigillata bowls and jugs, dated mainly to the 2nd century AD.³ An amphora fragment with preserved dry *garum* remains was also found there. There were also fragments of glass vessels (the assemblage is dated to the 1st–2nd century AD; R. Kucharczyk, personal communication), pieces of windowpanes, fragments of lamps, bronze items (two corroded rings, a netting needle, nails) and animal bones (cattle, sheep/goat, some with traces of filleting, pig and lots of fish bones). Fragments of marble tiles and pieces of painted plaster (brown and black) were discovered. A terracotta right man's foot in a sandal was also found [Fig. 4 top left]. It could be a fragment of a figurine, a votive foot or a lamp. In the same layer there was a polychromed woman's head of the "Tanagra type", made of lime mortar (traces of black color are preserved on the hair and pink on the face and neck) [Fig. 4 top right]. It has a "melon" hairstyle, a coiffure popular with Hellenistic queens (worn among others by Cleopatra VII) (Tyllesley 2008: 60–61) and upper-class

² We would like to thank Dr. Urszula Iwaszczuk (PCMA UW) for the faunal identification of the bone remains.

³ Dr. Grzegorz Majcherek (PCMA UW) kindly examined the pottery finds.

women. Tanagra figurines, among others those found in Alexandria, had this kind of coiffure (Kassab Tezgör 2008: Nos 30–32, 202). Heads are decorated with a diadem or a braid, like in the case of the statuette from Marina or a Roman marble female portrait from the Louvre Museum, dated to the last quarter of the 1st century BC (Inv. Ma 3452).

In the eastern part of the room, several stone blocks lay on packed sand. By the east wall traces of small hearths have

survived. In the southwestern corner, level with the preserved wall tops, part of a marble sculpture was found in a firmly packed rubble pile. It was a fragment of a right foot broken into three pieces [Fig. 4 bottom], set on a plinth. Only its anterior portion without the ankle is preserved (12.3 cm long, 5.7 cm high and 8.1 cm wide). The foot is slender, presumably female, and is neatly carved. The second toe is longer than the big toe. The total length of the foot is estimated



Fig. 4. Finds from room 17 of the Southern Baths: top left, a man's sandalled foot in terracotta; top right, fragmentary statuette of mortar representing a female head; bottom, fragment of a foot from a marble statuette (PCMA Marina el-Alamein Conservation Mission/photos R. Czerner)

at about 0.22 m. The statue to which it belongs must have been almost lifesize. A small oval hole and remains of an iron dowel inside the foot are visible, indicating that two parts of the foot may have once been connected or that the sculpture had undergone repairs in antiquity (on sculpting techniques, see more: Grossman 2003: 59). Not much can be said based on just this fragment, but naked or semi-naked, and hence barefoot representations commonly depicted Aphrodite either entering or leaving the sea.

A column drum and part of a marble hand (two fingers survive) from a different sculpture were discovered in the sand, in the southeastern part of the room. These are not the only fragments of marble sculptures found in the baths. In 2011, two pieces of a marble hand were discovered in room 8 (Czerner et al. 2014: 73).

The remains found can be tentatively dated to the 1st through 3rd, mainly the 1st–2nd centuries AD. The research confirms the assumption from previous seasons that the baths were destroyed by the middle of the 3rd century AD.

Preliminary examination of animal bones found in the hearths, conducted by Urszula Iwaszczuk from the Polish Centre of Mediterranean Archaeology University of Warsaw, provided information about the diet of the ancient town inhabitants. As is the case of coastal towns, many fish were eaten. This season, remnants of *garum* have been discovered. However, sheep/goat and cattle bones dominate. There are also bones of pigs and birds. Chicken eggshells were also identified.

SURFACE FINDS

An architectural element discovered in a rubble heap by the entrance to the basilica probably came from this building.

Several coins were found on the surface in the vicinity of house H1 along with fragments of bronze nails and glass. The coins were cleaned and three were found to be partly legible. Two date from the 4th century AD. One is a coin of Constantine I (AD 317–320). Its reverse shows a standing figure of Jupiter. The other depicts Constantine II as Caesar (AD 335–337). Depicted on the reverse are two soldiers with spears and shields, a military standard between them, *Gloria Exercitus*. The third coin comes from the 1st or 2nd century AD.⁴

[GB-C]

CONSERVATION

Due to increased weathering of stone blocks in the walls, mortar joints and plaster, caused by damaging atmospheric factors in the autumn/winter period, extensive protection and conservation work was carried out inside the baths. In rooms 4, 5, 6, 8a, 9, 11–16 and 19, joints in the walls and their tops were filled in [for the extent of the work, see *Fig. 3*]. Protective mortar bands (6 parts sand, 3 parts lime, 1 part white cement) were applied to the edges of original plaster remains in many places within the structure. Anastylis of two columns in the southern portico of the peristyle was supplemented with, respectively, two and three original stone drums added on top.

[RC]

⁴ Prof. Barbara Lichocka from the Institute of Mediterranean and Oriental Cultures of the Polish Academy of Sciences kindly identified the coins.

EASTERN PERISTYLE OF THE MAIN SQUARE

The main square of the ancient town, identified as a forum lined with porticos on the north, south and east, was excavated by Wiktor Andrzej Daszewski from the Polish Centre of Mediterranean Archaeology University of Warsaw in 2001–2005 (Daszewski 2002: 80–86; 2003: 59–65; Daszewski *et al.* 2005: 86–89; 2007: 76–77; Daszewski 2011: 423–429). In addition, a smaller peristyle, adjoining the square from the east, was

discovered in 2002 (Daszewski 2003: 59–61) [*Fig. 5*]. Like the main square, it is paved with stone slabs. Stylobates on the northern, western and partly on the southern side, as well as the lower parts of the northern and western walls, have survived. On the northern and western stylobates column bases have survived *in situ*. Research in 2002 failed to uncover the eastern side of the peristyle. However, elements of architectural decoration of

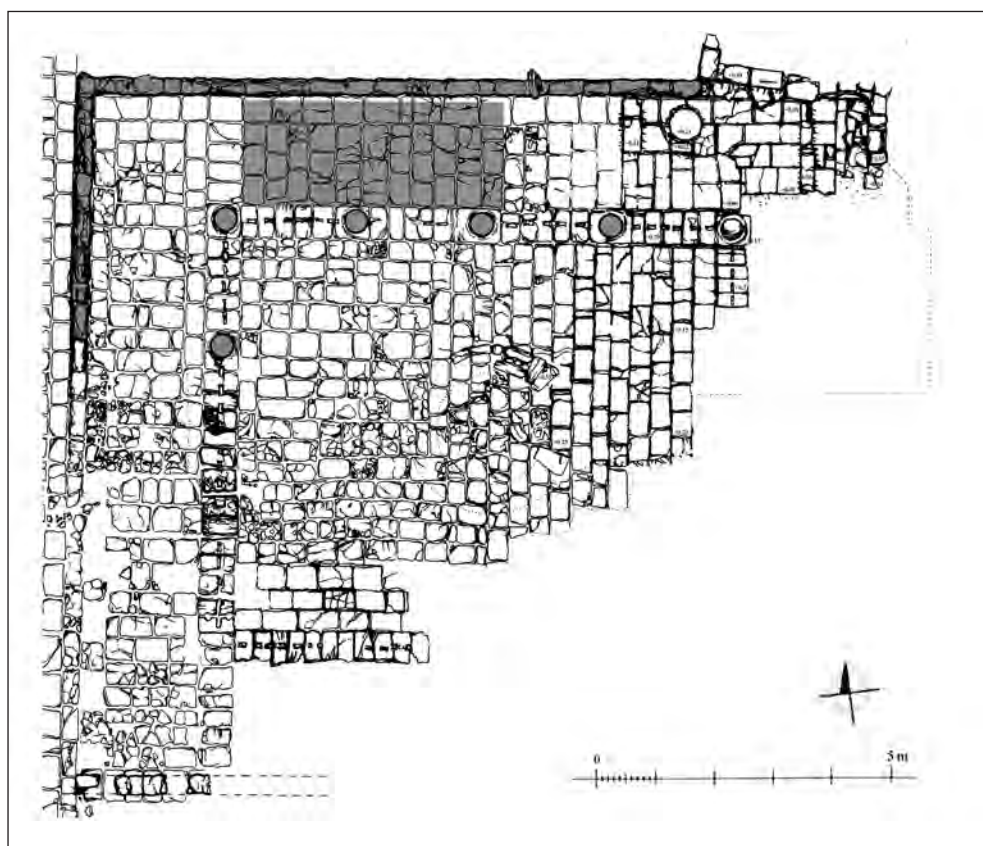


Fig. 5. Eastern peristyle of the forum; plan showing areas of conservation activities in 2016 (PCMA Marina el-Alamein Conservation Mission/drawing A. Błaszczuk, R. Czerner)

significant size have been found in this area: a fragment of a pilaster plinth, elements of a triglyph-metope frieze and fragments of a cornice, including also an element originating from the top of a pediment (Czerner 2012: 114–117, Figs 3–6). These, considered within the context of their particular location, indicate the potential existence of an outstanding building in this place. Current research in this area uncovered the north-eastern corner of the peristyle and a corner column on this side. A short fragment of the eastern stylobate was also uncovered. Densely spaced rectangular holes were discovered in all of the stylobates. These were used to insert vertical planks, which fenced off the central peristyle space. The lower part of a pseudo-Corinthian capital of a form typical of Marina and exceptionally large size, 0.50 m of the base diameter, was also found [Fig. 6]. Unfortunately, research in the central area east of the peristyle, where the building should have stood, revealed nothing but an extensive negative of a structure that had been pulled down.

[RC]

ARCHAEOLOGICAL RESEARCH

Conservation work in the northern part of the peristyle was preceded by the archaeological cleaning of the part of the northern portico east of the fourth column, which had failed to be examined earlier (Daszewski 2003: 59–60). Two functional layers were noted in the trench section. The earlier one was 0.10–0.05 m above the slabbing, the later about 0.20 m. Two hearths were situated in the upper layer, between two low walls standing on the slabbing. The west wall (0.30 m high, 0.95 m long) was located at a dis-

tance of 4.18 m from the east wall of the portico.

The hearth (0.40 m by 0.90 m) discovered in its vicinity was surrounded with stones; the lower part of a pseudo-Corinthian capital (see above) lay stuck in the slabbing to the east of the hearth [see Fig. 6]. The fill of the hearth yielded fragments of ceramics and animal bones, pieces of bronze and iron nails. The faunal assemblage was identified by Urszula Iwaszczuk (PCMA UW) as representing sheep/goat, cattle, fish and birds.

Another bigger hearth was located between the east wall of the portico and a low wall (0.53 m high, 1.50 m long) built on the slabbing at a distance of 1.15 m from the east wall of the portico. A large number of animal bones (pig and cattle) and fragments of ceramics were found in burnt soil, along with several pieces of



Fig. 6. Part of a pseudo-Corinthian capital from the eastern peristyle of the forum (PCMA Marina el-Alamein Conservation Mission/photo R. Czerner)



Fig. 7. Eastern peristyle of the forum: top, before and bottom, after restoration in 2016 (PCMA Marina el-Alamein Conservation Mission/photos R. Czerner)

plaster painted black. The column bases of the southern portico of the forum appear to have been painted black as well (Daszewski et al. 2005: 86).

Fragments of ceramics, glass, animal bones, and two damaged bone pins were found during the cleaning of the pavement. The ceramics and fragments of glassware are dated to the 2nd–3rd century AD. Hearths from a later period also yielded fragments of ceramics dated to the 4th century AD.

The eastern section of the northern stylobate was also uncovered (with one more base found *in situ*) as well as the badly damaged eastern stylobate. Assumptions as to the existence of pure sand behind the last base, made on the basis of the trench section, were confirmed.

The peristyle was probably built at the beginning of the 2nd century AD. The research so far may suggest that the town was partly destroyed in the middle of the 3rd century AD and then again in the middle of the 4th century AD. In 251, an earthquake occurred in Crete and in 262 another one in Cyrenaica; either one of these could have resulted in damage to the ancient city at the site of today's Marina el-Alamein. Next was a huge earthquake with a flood wave in 365, during which, among others, Alexandria was destroyed. The said pseudo-Corinthian capital probably fell during the first earthquake. The low walls were erected then on the pavement and small hearths were arranged between them. After the earthquake in AD 365, big hearths were

made, used perhaps by nomads. A similar situation was recorded in the southern portico of the forum (Daszewski et al. 2005: 86).

[GB-C]

CONSERVATION

The peristyle area was particularly affected by weather conditions [*Fig. 7 top*]. To protect the relics, but also to provide appropriate exposition, the preserved north and west walls were also restored along with partial anastylosis of five columns and protection work on them. The most weathered blocks from the walls were replaced, 1–3 layers were added to the wall tops using original blocks from the site. The maximum height of the wall after restoration is 0.76 m (four courses) at the western corner. The wall undulates due to uneven ground subsidence.

Column drums were eroded and some had large losses, but their condition was satisfactory for conservation work to be carried out. To protect them, they were replaced in position on bases surviving *in situ*, after which they were plastered. The height of the columns after anastylosis is, in the northern row, counting from west to east: 1.52 m (six drums), 1.06 m (four drums), 0.77 m (three drums), 0.57 m (two drums), 0.23 m (only the base); the column in the west portico is 0.47 m (two drums). Lime-and-white cement mortar was used. Restoration of the eastern peristyle has enhanced the attractiveness of the area [*Fig. 7 bottom*].

[RC, WG]

MAIN SQUARE (FORUM)

MAINTENANCE CONSERVATION

In the area of the main square, where the mission has worked since 2006, extensive maintenance conservation was carried out

during the current season [Fig. 8]. The south wall of the square and the wall on the eastern side had eroded significantly due to autumn/winter rains and winds. On the top of the south wall and in the exedra,

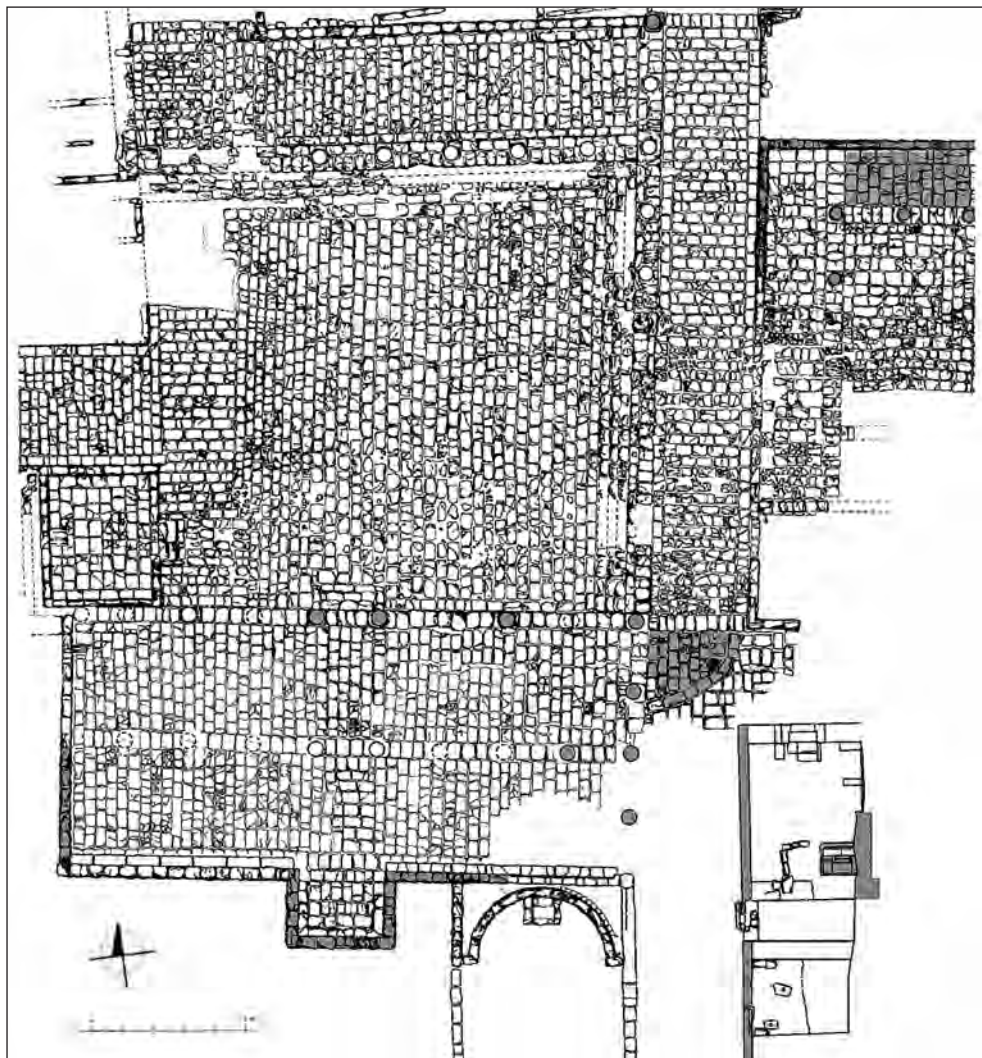


Fig. 8. Plan of the forum showing areas of conservation activities in 2016
(PCMA Marina el-Alamein Conservation Mission/drawing A. Błaszczyk, R. Czerner)

situated in the middle of it, gaps appeared between blocks as a result of the joints having been worn away. Joints in the wall on the eastern side were totally degraded in many places, putting the upper sections in danger of collapse.

Maintenance conservation recreated the missing joints and the wall tops were formed in such a way as to prevent water from penetrating inside. The lower part of the east wall was treated to a height of 1.20 m and its upper section about 1.00 m from the top on both sides. Protective mortar bands were put on the edges of plaster in the exedra. Mineral mortar (6 parts sand, 3 parts lime, 1 part white cement) was used for all the work. One

layer of stone blocks was added to the top of the western wall of the southern portico in order to protect it, while on the northern side of the square the anastylosis of a preserved column, started in 2015, was continued by adding another three drums on it (up to a height of eight drums, that is, 2.15 m).

SOUTHEASTERN CORNER OF THE FORUM

The southern portico of the forum, excavated by Daszewski between 2001 and 2004 (Daszewski 2002: 81–85; 2003: 59; Daszewski et al. 2005: 86–89; Daszewski 2011: 425), is a separate building distinctive for its layout with



Fig. 9. Steps from an earlier phase leading to the northern aisle of the southern portico in the main square (PCMA Marina el-Alamein Conservation Mission/photo R. Czerner)

two aisles and an exedra on the axis of the long south wall, accessed by one set of steps from the north located opposite the exedra in the central intercolumniation [see *Fig. 8*]. The exploration carried out in the current season on its eastern edge (the goal being to restore the slabbing at the junction of two streets) uncovered stairs from an earlier phase leading to its northern aisle, and an earlier lower level of a street paved with rubble and mortar (see below) [*Fig. 9*]. Covered with waterproof mortar, three steps at the southern edge were bordered with a low wall that sloped obliquely. From the north they are broken, indicating that they had originally reached the corner of the building. In this area the land sank and sloped to the north for geological reasons, and the consequences of this process had to be fixed repeatedly, which may have also entailed construction of the stairs. However, the stairs may have well come from the original phase. Then the portico would have been entered by the steps in the center from the north and by these steps from the east. But the latter also sloped to the north. More advanced repairs were undertaken then. Another layer was added on the floor of the northeastern corner of the building which had also sunk. A new pavement of limestone slabs was laid on the street on a higher level. There the southern part of the pavement was supported from the north by a curved retaining wall hidden under it. Starting from this wall, the northern part of the pavement slopes quite steeply to the north as far as the newly constructed wall running east in the extension of the stylobate. This part of the newly laid pavement covered the said steps. The changes discussed above document part of a more extensive

alteration of the building (the two-aisled portico), since levelling of the descending floor entailed the construction of at least six new columns on it.

CONSERVATION

After documenting the excavated steps, the damaged flooring was reconstructed following the original scheme. The lower parts of some columns in the two-aisled southern portico were restored by filling in the joints between the drums.

[RC]

ARCHAEOLOGICAL RESEARCH

While repairing the slabbing in the northern portico, the peristyle, and the eastern portico in the forum, three test trenches were dug. The fill yielded small fragments of ceramics, mostly non-diagnostic. Steps from an earlier phase were uncovered in the probe in the southeastern corner of the forum, under the slabbing east of the double portico, by its eastern stylobate. There were three steps (2.00 m long, each 0.14 m high), all damaged and slipping to the north. Waterproof plaster has survived on them in some places. A bedding layer for the slabbing (about 0.10 m) was noted, another one about 0.25 m below the slabbing. Traces of a street surface were observed at a depth of about 0.42–0.45 m. Glass and pottery sherds were found in the fill, along with small pieces of plaster. On the second step, there was a fragment of a column drum. The pottery will continue to be studied in the coming season, but it is already clear from this investigation that the redevelopment of this part of the forum took place in the beginning of the 2nd century AD.

[GB-C]

MAINTENANCE CONSERVATION AND PROTECTION IN THE AREA OF THE RESIDENTIAL BUILDINGS

CONCLUSIONS AND CONSERVATION OBJECTIVES

An important task of the Mission is to monitor continuously processes taking place in wall structure and on the surface of elements of architectural decoration in relation to the conditions of exposure. Data collected from the excavation and conservation work contribute to a fuller recognition of ancient technologies and durability of the structure.

Indeed, excavations have revealed ample evidence of conservation measures undertaken in antiquity. It was common practice in ancient times to use stone blocks of varying quality (mainly due to reuse of building material). Moreover, the limestone used for building in Marina is characterized by poor resistance to the damaging effects of weather conditions. Location is the key factor in this respect. The north and south faces of walls appear most prone to weathering, being affected by the sea (from the north) and desert insolation (from the south). These phenomena are escalated near the shore, where high air humidity is accompanied by salinity of the building material. This results in the destruction of weakened blocks and joints. Stone surfaces are exposed many times a year to desert storms of hurricane proportions and heavy rains during autumn and winter, such as the unprecedented in recent times downpour at the turn of 2015. It resulted in washouts appearing in building foundations throughout the ancient town. Rubble masonry walls were most severely affected (in houses H9, H9a, H10). Breaches up to 2 m² in

size were formed at the wall bases, while the conserved wall tops from 1988–1990 survived in a relatively good condition, confirming once again the appropriateness of the technology adopted in the course of this mission's conservation work. Reacting to the new damages, conservators replaced the joints in the lowermost parts of the walls using lime–cement mortar in lieu of the original clay and sand. Walls in these areas were dismantled and rebuilt.

Historical construction techniques are also at fault when considering damage of the lowermost parts of walls. Stone walls were bonded with clay and sand, and the joints were protected with lime-based plaster, which is not particularly effective, considering that the walls are subject to the action of rainfall water running downhill. Natural culverts of unstable ground were formed in places of seasonal currents. Improving the local drainage system by directing the water flow so as to minimize the loss of historical substance can prevent such adverse effect from taking place. Activities of this kind are implemented parallel with repairing wall damage and relaying of the masonry as required.

The following conclusions can be formulated following an analysis of the current state of preservation of the ancient architectural relics in Marina el-Alamein:

1. The limestone material, used for the walls and elements of architectural decoration in the ancient town, is diversified in terms of technical parameters. Block erosion was observed in varying degrees, independently of the location. Different quarry sources



Fig. 10. Conservation maintenance in House H9: top, a wall in collapsed condition after the winter rains; bottom, after reconstruction in 2016 (PCMA Marina el-Alamein Conservation Mission/photos R. Czerner)

from which the stone material issued in antiquity played a role in this. Evidence of repairs of such damage to building stones already during the functioning of the town has been noted.

2. Present conservation assumes maximum use of original stone blocks, locally complemented with new material. Reconstructions made of building stone quarried today mostly concern elements of architectural decoration (column drums and carved architectural decoration).
3. Structural damage to the walls results mostly from water runoff in the autumn and winter. This phenomenon is especially intense in the zone of houses in the central part of the town.
4. Damage to particular stone blocks in walls can be seen throughout the town and is not uniform in nature, as it presents varying degrees of deterioration. The most common phenomenon is the loss of cohesion of the subsurface and powdering of surfaces.
5. Damage to the joints between the blocks is particularly pronounced on the east–west axis and is associated with the direction of the prevailing winds (desert storms).
6. Substantial damage to the walls can be seen in the part of the town closest to the sea. This mostly concerns houses H21, H1, H2, where wind erosion is intensified by ground salinity.
7. The greatest damage to blocks occurs in the south and southwest, which is associated with exposure to sunlight and water migration accompanied by crystallization of salts in the stone.
8. Remains of the necropolis in the southern part of the town are relatively in the best condition. Their location,

on a hill lying about 200 m south of the sea shore, essentially improves the state of preservation of the walls and decoration.

[PZ]

AREAS OF CONSERVATION

Extensive maintenance conservation work was carried out again in the area of residential buildings. This year, however, the activities had a broader scope.

House H9 (rubble masonry walls)

Heavy rainfall in the winter of 2015/2016 resulted in a partial inundation of the area of the ancient town, fostering plant growth in the ruins in effect. Rainwater flowing from the direction of the modern asphalt road wore away the mortar from house wall joints, causing the collapse of large sections of walls in several places, except for upper parts that had previously been consolidated with mortar [Fig. 10



Fig. 11. House H21N: losses of stone blocks in the wall next to the passages (PCMA Marina el-Alamein Conservation Mission/photo P. Zambrzycki)

top]. The walls in question, about 0.50–0.75 m thick, were built of crushed rock rubble and bonded externally with lime mortar and internally with clay mortar. Repairwork involved using crushed rock rubble and mineral mortar (6 parts sand, 3 parts lime, 1 part white cement) [Fig. 10 bottom]. The following areas of house H9 were thus treated: south wall of room 9, north wall of room 10 (a recess was reconstructed in it), south and west walls of the tavern.

In houses H9a and H10a, the two most weathered columns were protected. Losses in plaster and mortar in the joints between the drums of shafts were filled in.

[WG]

House H21N

The house had undergone conservation treatment last time in 2007, when an anastylosis of the commemorative monument to Commodus was carried out in the southern part of the house (Medeksza *et al.* 2010: 88; Czerner and Medeksza 2010: 109–112). Assessment of the state of preservation of the historic substance in 2016 led to identification of zones of damage that comprised the walls of the entrance from the north to the hall with aedicule, and the wall with the aedicule. The damage was one of two kinds:

- joint loss (in some places reaching through to the other side of the wall);



Fig. 12. House H21N after the conservation of walls in 2016
(PCMA Marina el-Alamein Conservation Mission/photo P. Zambrzycki)

– loss of stone blocks (degradation increased around the house entrances). The most damaged blocks were located in the passages and on the southern side of the walls [Fig. 11].

Standard preventive conservation measures were undertaken. The losses in wall joints were filled in with mineral

mortar (6 parts sand, 3 parts lime, 1 part white cement). Around the entrance openings damaged parts of blocks were removed and replaced with original ancient stones collected at the site. The joints were filled with mortar [Fig. 12].

[WG]

CONSERVATION OF BRONZE ARTIFACTS

Bronze coins and nails are among the artifacts commonly recovered from the cleaning preceding conservation around the ancient houses. Basic conservation procedures are carried out in the mission's field lab, designed to stop the degradation processes and to restore the original condition to the largest extent possible.

Conservation treatment was preceded by photographic documentation. First the green sulphate deposits were removed with an aqueous solution of sulphuric acid. The objects were then cleaned in an ultrasonic cleaner using water as solvent. The cuprite shell of brown-red color was revealed as

a result of this treatment. Cleaning was continued in the case of objects which could not be identified due to a very thick layer of corrosion. For this purpose the objects were soaked in an aqueous solution of disodium edetate and cleaning was performed in an ultrasonic washer. Then the objects were rinsed in water. Locally occurring thick deposits of cuprite were removed mechanically using glass fiber sticks. The cleaned metal surface was protected with a solution of PARALOID B-72 in toluene and photographic documentation was made.

[PZ]

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Tell el-Retaba, season 2016

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Abstract: Excavations of the Polish–Slovak Archaeological Mission in Tell el-Retaba in 2016 were continued in the western part of the site, uncovering remains of domestic and funerary structures from the Second Intermediate Period in Area 4. Houses from the first half of the Eighteenth Dynasty were also investigated in this area. In Area 9, several houses from the Third Intermediate Period were explored and, for the first time, also substantial remains of a Late Period settlement, including at least one “tower house”.

Keywords: Tell el-Retaba, Second Intermediate Period, Hyksos, New Kingdom, Third Intermediate Period, Late Period

The Polish–Slovak Archaeological Mission has been exploring Tell el-Retaba, a large site in the middle of Wadi Tumilat in the Nile Delta, about 35 km west of Ismailiya, regularly since 2007. The excavation in the 2016 season focused on two areas, 4 and 9, both located in the western part of the site [*Fig. 1*]. Area 4 is a part of the tell closest to the modern settlement and is immediately endangered by present occupancy; in fact, local inhabitants have reclaimed a plot of land directly adjacent to the Migdol tower from the north. Yet, it is of considerable significance for understanding the archaeological stratigraphic situation of the site as demonstrated by excavations in 2011 (Rzepka, Hudec, Wodzińska et al. 2014: 55–64; Rzepka, Hudec, Jarmużek et al.

2014: 87–93) and 2015 (Rzepka et al. 2016). The results indicated more or less undisturbed stratified remains from the early Eighteenth Dynasty and the Second Intermediate Period. These layers are sealed by a mud-brick platform built underneath the northern Migdol tower and the adjoining defense wall (Petrie’s Wall 2) of the Twentieth Dynasty fortress of Ramesses III (Rzepka, Hudec, Wodzińska et al. 2014: 68–71). Brief excavations carried out during the 2016 season confirmed this assumption. A sequence of three different architectural structures, dated to the Second Intermediate Period (SIP) and the early Eighteenth Dynasty, was unearthed. This stratigraphy is crucial for our understanding of the history and chronology of Tell el-Retaba.

Table 1. *Site phasing system; in bold, phases mentioned in the report*

Phase	Dating	Main features
G3	Second Intermediate Period (SIP)	Open settlement and cemetery
G2	SIP	Open settlement and cemetery: enlargement of some buildings from the previous phase
G1	SIP/early Eighteenth Dynasty	Settlement and cemetery
F4	Eighteenth Dynasty (until Hatshepsut/Thutmose III)	Open settlement: Green House
F3	Eighteenth Dynasty (until Hatshepsut/Thutmose III)	Open settlement: Black Houses
F2	Eighteenth Dynasty (Thutmose III/Amenhotep II)	Scattered remains
F1	Late Eighteenth Dynasty	No archaeological record yet
E4	Nineteenth Dynasty	Earliest defence wall: core of Petrie's "wall 1"; infant cemetery
E3	Nineteenth Dynasty	Fortress of Ramesses II: extension of "wall 1"; barracks/workshops
E2	Nineteenth Dynasty	Fortress

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Dates of work: 18–26 May and 18 September–16 October 2016

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Table 1. Continuation

Phase	Dating	Main features
E1	Nineteenth–Twentieth Dynasty	Settlement and cemetery in the ruins of the fortress
D4	Twentieth Dynasty	Ruins of Nineteenth Dynasty fortress levelled; fortress of Ramesses III: Petrie's "wall 2"
D3	Twentieth Dynasty	Petrie's "wall 3", fortress
D2	Twentieth Dynasty	Fortress
D1	Twentieth Dynasty– Third Intermediate Period (TIP)	Fortifications abandoned and ruined
C4	Third Intermediate Period (TIP)	Settlement
C3	Third Intermediate Period (TIP)	Settlement
C2	Third Intermediate Period (TIP)	Settlement
C1	Third Intermediate Period (TIP)	Settlement
B	Late Period	Settlement with tower houses
A	Modern	Ottoman ovens and pipes, and others

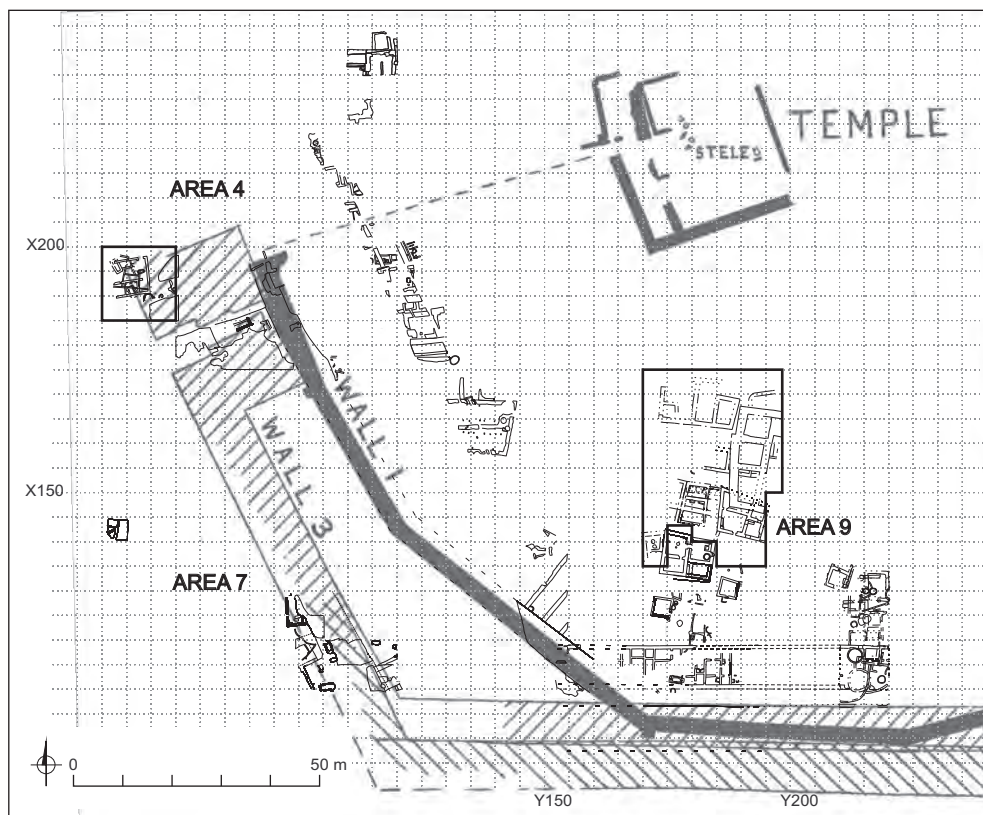


Fig. 1. General plan of the western part of the site marking areas excavated in 2016
(Tell el-Retaba Project/plan Ł. Jarmużek)

Exploration in Area 9 concerned a place adjacent to a relatively well preserved house, [991], from the Third Intermediate Period (TIP) excavated in 2011. This spot was chosen as part of a new three-year research program scheduled for 2016–2018, financed by the Polish National Science Centre. The plan is to explore a larger area, but

without going deeper than the levels of the Twentieth Dynasty. The aim is to get a fuller picture of the site's settlement history during the Third Intermediate Period.

The main results of the 2016 season are presented below following a phasing system developed for the site in the course of the excavation [*Table 1*].

SECOND INTERMEDIATE PERIOD [PHASE G]

SETTLEMENT (PHASE G3, AREA 4)

Mud-brick wall [2034]/[2065],¹ probably part of a larger building from phase G3, was exposed in square Y60–X195 in 2016 [*Fig. 2*]. These poorly preserved remains need not be the earliest structure here in view of some yellowish bricks, possibly part of an older wall, observed eastward, underneath wall [2034] (see below). The orientation of the mud-brick walls from phase G3 in Area 4 seems to differ slightly from that of buildings already known from Area 7. This is hardly a surprise² considering that the settlement seems to have grown organically rather than by plan (Bader 2015: 49). Excavations will be continued.

Mud-brick walls [2034]/[2045]/[2065]

In the northwestern corner of the excavated part of Area 4, a mud-brick wall [2034] was excavated, and the associated room fills (2035), (2038), (2039) and (2040) were investigated. About 1.30 m of the wall extending to the NNW and 1.94 m of it to

the WSW were exposed. The architecture seems to continue northward, beyond the limits of the area excavated in 2016. The WSW part of the wall is one-brick thick, the NNW part only half-a-brick thick, although this could be due to later destruction. The wall is built of pale grey mud bricks (40×16×10 cm) in a stretcher bond. Only two courses of bricks, that is, about 0.21 m of the original height of the wall, have been preserved in most places. The row of bricks [2065] south of wall [2034] seems also to be part of the same large structure; so does wall [2045], but since the space between this wall and wall [2065] has yet to be excavated, this assumption cannot be proved until further work is done to clarify the situation.

The architecture is apparently part of a domestic structure as suggested by the finds: scattered animal bones, grinders³ S2775 and S2833 and pottery, and associated features. Finds from layer (2007), presumably outside the building to the south, further indicated domestic/

¹ Numbers in brackets refer to individual stratigraphic units: round brackets () indicate fill or deposit layers, square brackets [] stand for mud-brick architecture, and corner brackets < > indicate cuts.

² Differences in the orientation of single settlement structures can be observed also in other Second Intermediate Period (SIP) settlements, see Redmount 1989: 232–233, 236, 238, 240–241.

³ The term “grinder” denotes either a more or less well-rounded stone tool or a small stone tool of irregular shape, usually with flattened side(s), made of flint or quartzite in most cases. These objects were probably multifunctional tools used for grinding or hammering, possibly also for other activities. For identification as a hammer, see Prell 2011: 36.

industrial activities. They included a red ochre lump S2749, a scraper(?) made from a reused pottery sherd S2797 and a flint blade S2747.

The architecture [2034]/[2045]/[2065] was already out of use by the time burials were made in this area. Wall [2034] was clearly cut by the construction of a large tomb [1696=1757], dug into sandy layer (2032). However, since layer

(2032) as well as its continuation to the east, that is, (2043) and (2064), contain typical rounded grinders, S2772, S2791, S2842 and S2845, bearing traces of use, it is probable that another contemporary domestic/industrial structure existed nearby. However, at this point, most of the architectural structures datable to this phase are concentrated in Area 7 further to the south.

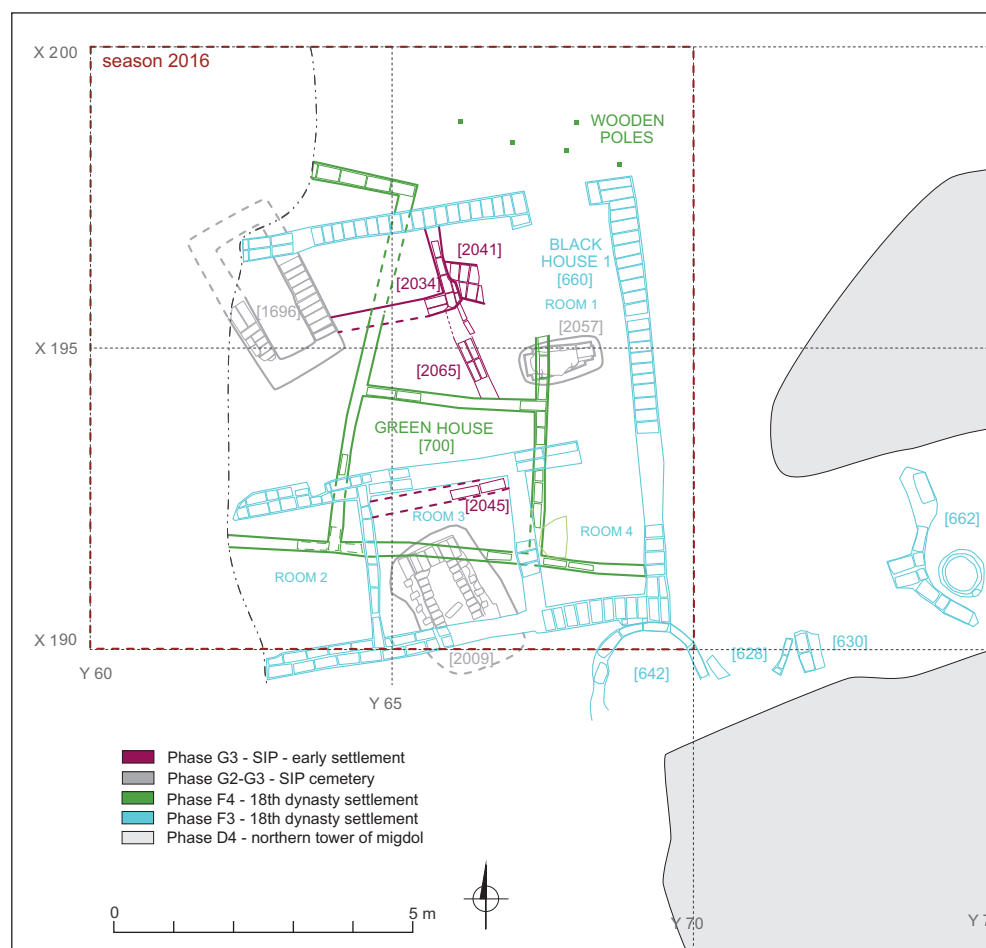


Fig. 2. Excavations in Area 4

(Tell el-Retaba Project/spatial data E. Stopková; drawing L. Hulková)

CEMETERY

(PHASE G2, AREA 4)

A cemetery developed in the area, separated from the mud-brick architecture [2034]/[2045]/[2065] temporally but not spatially. The walls were already decayed and covered by a thin layer of sediment. The tombs apparently observed the same orientation patterns as in Area 7 (Rzepka, Hudec, Wodzińska *et al.* 2014: 43–44; Rzepka *et al.* 2015: 97–100) and were similar more or less to the tombs unearthed by an Egyptian mission further to the east (Nour el-Din *et al.* 2016: 75–114).

Mud brick tomb [2009] [Figs 2, 3]

A relatively large mud-brick tomb with vaulted roof was excavated about 0.45 m south of wall [2045], which does not seem to be much older than the burial. It is unclear whether the building which wall [2045] once belonged to was still in use at the time when the tomb was built as the top edge of the tomb pit could not be established with certainty.

Architecture. The SE–NW oriented tomb was constructed in a narrow rectangular tomb pit <2010> with rounded corners. The pit was dug into a reddish sandy gravel layer (2049) and was filled almost completely by the tomb structure. The inner dimensions of the rectangular burial chamber were 1.30 m by 0.56 m. The walls were one-brick thick and three courses high, built in an irregular bond of alternating stretchers and headers, with sporadic occurrence of yellowish and greyish mud-bricks. The vault was built directly on the burial chamber walls. This construction corresponds to the Tell el-Dab'a type 4 (Forstner-Müller 2008: 29–30). The vault was further stabilized with a relatively thick covering layer of mud mortar.

Tomb content. Several individuals seem to have been buried in the tomb (anthropological analyses are still pending). A single heap of pelvis bones and human skull (2017) were found relatively high in the burial chamber, in fine loose fill (2016). Another and more complete interment (2019) was found deeper in the burial chamber. The bones of this individual, which filled the entire northern part of the burial chamber, were found displaced, although partly observing the original anatomical position: arms together under the skull in the south, legs placed together further to the north. This, as well as the discovery, next to the bones, of a bronze (or copper?) dagger S2722 with a limestone pommel S2720 (for parallels, see Philip 2006: 47–52) and the absence of a robbers' pit, argues in favor of the burial not having been disturbed; skeletons from robbed tombs in Tell el-Retaba were in much greater disarray and without any significant accompanying finds (Rzepka, Hudec, Wodzińska *et al.* 2014: 44–45).

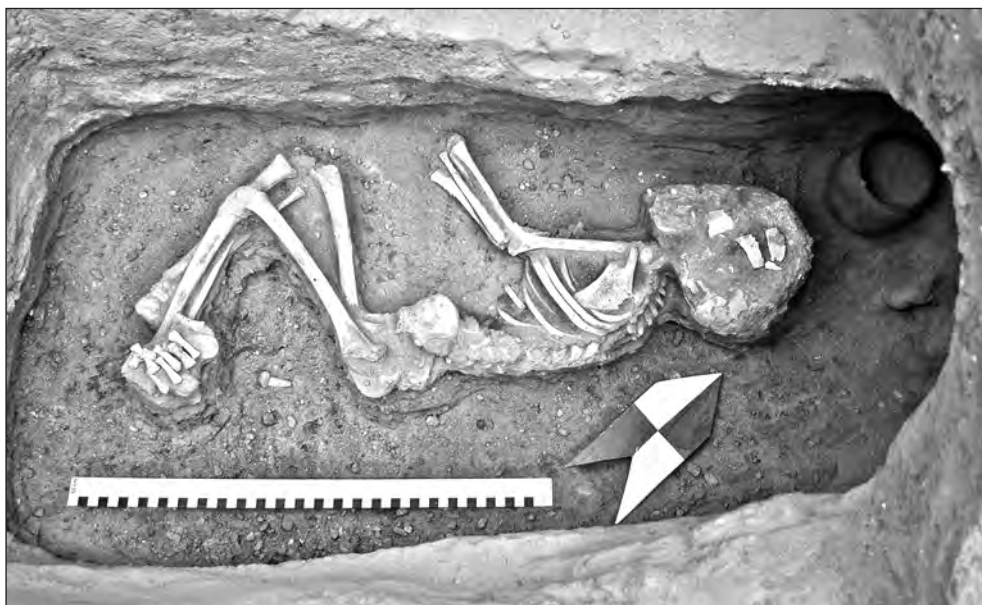
Mud brick tomb [2057] [Figs, 2, 4]

A smaller mud-brick tomb [2057] was found in the eastern part of the excavated area, about 0.60 m east of wall [2065].

Architecture. Tomb [2057], aligned ENE–WSW, was built in a narrow rectangular burial pit <2052> with rounded corners. The burial chamber is trapezoidal, measuring inside 0.99 m by 0.38–0.58 m. The walls were built of two rows of rectangular mud bricks (39×16×10 cm) in stretcher bond. Apart from the eastern gable, the walls of this tomb were only half-a-brick thick. A gabled roof built of pairs of sloping mud bricks propped against each other covered the burial chamber; a single brick laid atop the roof at the



*Fig. 3. Skeleton (2019) in tomb [2009]
(Tell el-Retaba Project/photo L. Hulková)*



*Fig. 4. Young individual (2059) buried in tomb [2057]
(Tell el-Retaba Project/photo L. Hulková)*

eastern end connected it to the gable. The trapezoid form of the burial chamber apart, this tomb corresponds to the Tell el-Dab'a type 3.1 (Forstner-Müller 2008: 28).

Tomb content. A young individual (2059) was buried in this tomb. The skeleton lay in semi-contracted position on its right side, the skull to the east, facing north. The legs were contracted and placed one upon the other. A pottery cup was placed by the head of the burial, in the northeastern corner.

Mud brick tomb [1696=1757]

This large tomb was heavily destroyed by recent building activities. It was already partly excavated in 2015 (Rzepka *et al.* 2016). In 2016, the tomb was demonstrated to be significantly younger than the adjacent SIP architecture and the two tombs previously discussed. It evidently cut wall [2034] and seems to have been dug into layers covering the tombs [2009] and [2057]. Furthermore, the contemporary walking level, represented by ashy layers, was approximately level with the base of the vault.

Architecture. The SE–NW oriented tomb once consisted of a rectangular burial chamber with inner dimensions of 0.90 m by 1.90m + 0.70 m. The northwestern corner of the structure is missing completely and the west wall is heavily damaged. Based on observation of the better preserved east wall, the chamber walls were one-brick thick and six courses high. The brick dimensions are 34×18×12 cm. Remains of mud mortar, once probably covering all the walls of the burial chamber, could be observed on the inside of the east and west walls. A mud-brick vault covered the burial chamber; its lowest part is preserved at the east end. The vault seems never to have

been buried completely underground, as there are thin ashy layers (from offerings?) level with the base of the vault, apparently not disturbed by the construction of the tomb and running toward the vault. The vault was damaged already in antiquity when the Green House (see below) was constructed (perhaps earlier).

Tomb content. A largely disintegrated skeleton of a child [1699], together with scattered bones of two other individuals, were found in the burial chamber. Circular faience beads S2188, 24 in total, were discovered by the child burial. A small bronze socketed spearhead with a pointed leaf-shaped blade S2191 was discovered in the southeastern corner of the burial



Fig. 5. Spearhead S2191 from tomb [1696=1757] (Tell el-Retaba Project/photo R. Rábeková)

chamber (see Philip 1989: 94, 362) [Fig. 5]. It must have been part of the original burial and was either overlooked when the tomb was looted or left in place when the burial was swept aside to

make way for a new one. A potsherd with scratched decoration S2192 was found in the fill of the chamber; it is not clear whether it was placed there intentionally.

[LH and JH]

EIGHTEENTH DYNASTY SETTLEMENT [PHASE F]

GREEN HOUSE [PHASE F4, AREA 4]

In Area 4, there is an intermediary level between phases G1 and F3 represented by greenish mud-brick⁴ architecture, the so-called Green House [700/2033/2037], unearthed to some extent already in 2011 (Rzepka, Hudec, Wodzińska et al. 2014: 55, 60). The walls of Black House 1 were built directly above the Green House or

even cut through its walls on the northern outskirts [Figs 2, 6]. This situation differs from the stratigraphy in Area 7, where the Eighteenth Dynasty phase F3 lay directly above the SIP phase G1.

Based on pottery analysis, both Green House and Black House 1 can be dated to the early Eighteenth Dynasty, but as these two buildings have different orientations [see Fig. 2], some changes in the organization



Fig. 6. Walls of Black House 1 above the walls of Green House, looking west
(Tell el-Retaba Project/photo R. Rábeková)

⁴ Material for the production of such bricks was mined from places with excessive reduction and wash-off conditions. Such greenish deposits were observed in deeper layers of other areas in Wadi Tumilat (Černý and Hudec 2016: 134, Fig. 33; Hudec, Fulajtár, and Stopková 2015: 266).

of the settlement structure presumably took place prior to the construction of Black House 1. More work is needed to investigate the nature of these changes more closely.

As was the case with Black House 1, the architecture of the Green House was truncated on its western side by a drainage channel and a recent pit; its eastern part has not been fully excavated yet as it is partly covered by the northern tower of the Migdol. The Green House is approximately 7 m long (E–W) and 6.6 m wide (N–S), and was of a similar size as the overlying Black House 1, but its N–S axis is oriented more to the east [see *Fig. 2*] than that of

Black House 1. At least four “irregular” (not strictly rectangular) rooms were constructed of half-a-brick thick walls, preserved to a height of maximum six courses of bricks. As seen clearly from the eastern section of room 2, the first course of bricks of the Black House 1 walls stands almost directly on the walls of the Green House. It seems that the construction area of Black House 1 was not even consistently leveled off and the walls of the Green House were at least partly incorporated into the construction of Black House 1.

Walls of the Green House are only half-a-brick thick. The quality of these bricks

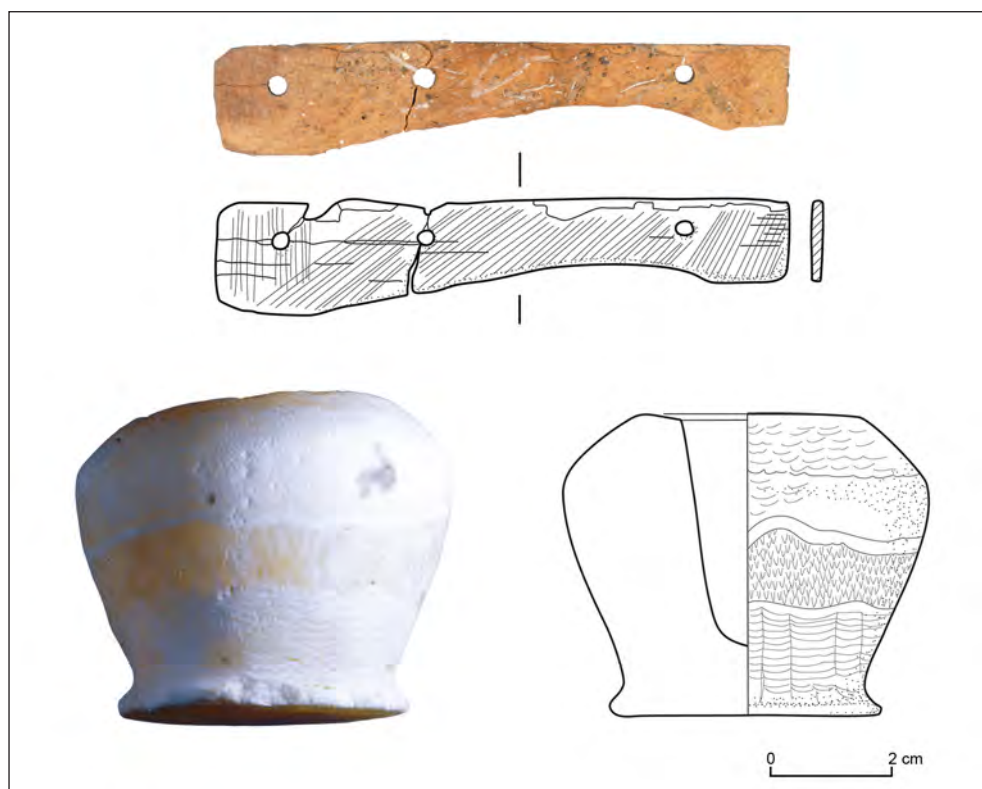


Fig. 7. Finds from the Green House: top, bone plaque S2801 and, bottom, alabaster kohl-pot (Tell el-Retaba Project/photo L. Hulková; drawing R. Knápek)

seems to be inferior to those of Black House 1 above. Despite this the Green House seems to have been in use for quite some time, as at least two distinct floor levels can be distinguished.

Among the small finds from the house was a small calcite vessel and a bone plaque S2801 [*Fig. 7*], which may be interpreted as the casing of a knife handle. A large amount of shells in the room fill of the Green House is noteworthy.

BLACK HOUSE 1

[PHASE F3, AREA 4]

The so-called Black House 1 was preserved underneath the Twentieth Dynasty (Ramesses III) defense wall and the Migdol platform [see *Figs 2, 6*]. Parts of the house were already excavated in previous seasons (Rzepka, Hudec, Wodzińska et al. 2014: 55–64). The walls, made of blackish mud bricks (see Černý and Hudec 2016: 134), were still standing about three to four bricks high. Their thickness of one brick indicates that this was a rather well-built house.

To excavate the full extent of the Black House 1 architecture it was necessary to remove parts of mud-brick platform [1675]. However, the household facilities of Black House 1 probably stretch further south (perhaps also to the southeast), as demonstrated by a silo (and a furnace) excavated in 2011.

The part of Black House 1 unearthed in 2016 was sealed below mud-brick rubble [1691]. With its western part truncated by a modern sewage pit and damaged by a recent rectangular pit, the surviving dimensions of the house are approximately 7.50 m (N–S) by 7.40+x m (E–W). The fill layers and underlying structures of the newly exposed parts of three small rooms to the south (1–3),

adjacent to one big room to the north (4), were excavated. The house was built of one-brick thick walls, preserved mostly to a height of 2–4 courses, with rooms 2 and 3 being separated by a thin half-brick wall. The gaps in the walls on the southern and eastern sides could indicate entrances. The original floor of yellow mud bricks was preserved in some places inside rooms 1 and 4, and there were two postholes, [1998] and [2011], in the center of room 1. A large fireplace discovered in one of the rooms in the southeastern part of the house was used during subsequent occupation (it even damaged the perimeter wall in this part of the house).

Excavation of the largest room to the north (4) was not completed in 2016, but the finds indicated some kind of industrial activity requiring quantities of red ochre pigment beside other materials like antimony.

The main occupation phase was represented by several ashy–sandy layers with black, white and grey burnt areas: stratigraphic units (1688), (1690), (1997), (2001), partly mixed with collapsed walls. The rubble is probably due to ground leveling at the time of the construction of the Ramesses III fortification — layers (2012) and (2051), along with stratigraphic units (682), (685), (688), (690), (694), (708) etc. recorded in 2011. Excavation of a restricted area to the north of the Green House as well as Black House 1 revealed extensive ashy layers that seem to be refuse from the house(s) with many traces of domestic activities (like cooking or heating) as well as industrial activities. Several wooden stakes, covered by the ashes from Black House 1, may have supported a light roof.

[VD and JH]



Fig. 8. Area 9: structures belonging to the Third Intermediate Period (TIP) and Late Period settlements, phases C–B (Tell el-Retaba Project/drawing L. Jarmužek)

THIRD INTERMEDIATE PERIOD (PHASE C)

SETTLEMENT
(PHASE C3, AREA 9)

Two relatively large buildings from phase C3 were partly excavated in 2016 [Fig. 8]. They were situated 2 m to the north of building [991] discovered in earlier seasons (Rzepka, Hudec, Wodzińska et al. 2014: 86–88). The space between these buildings was destroyed by a modern cut. Thus, there is no direct stratigraphic relation between these structures. However, the similar orientation and level of the foundation of the buildings allow them to be placed in the same occupation phase.

Building [2227]

The tops of two walls in the eastern part of the structure were cleared in preparation for future research [Figs 8, 9]. The western

part of the building was probably destroyed by modern cuts abounding in this area. The building was about 8.50 m long and at least 2 m wide, the thickness of walls being 0.60 m.

Building [2147]

This building abutted the east wall of building [2227] [see Figs 8, 9]. It was roughly trapezoidal in plan, 8.50 m long and 4.80–5.50 m wide. Most of the building is relatively well preserved, some walls in the northern part of the building stand 1.30 m high. The condition of the southern part was much worse, the south wall being almost completely destroyed by a large modern cut. The building consisted of two rooms. Room 1, in the northern part of the building, measured 3.70–

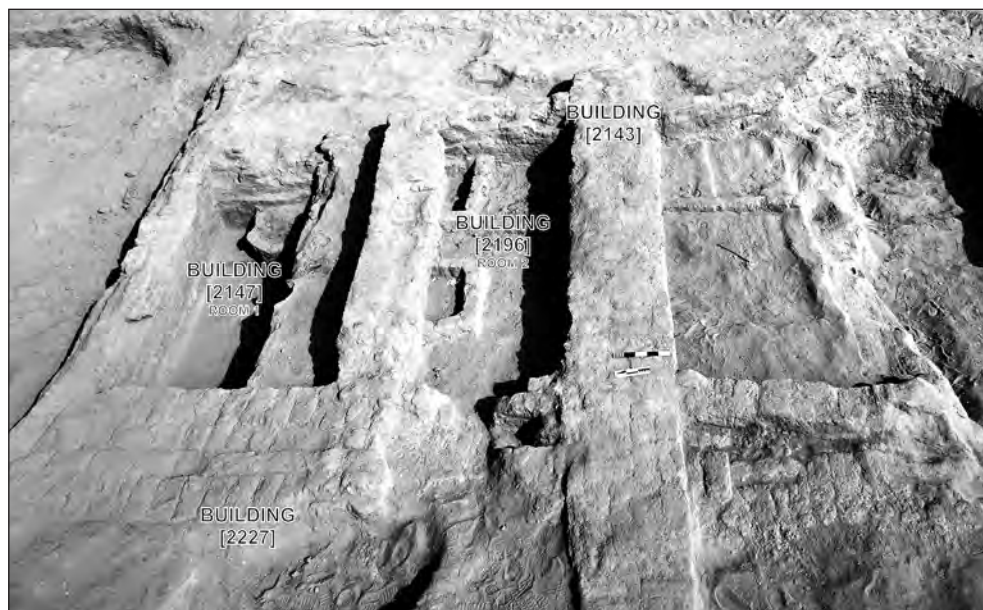
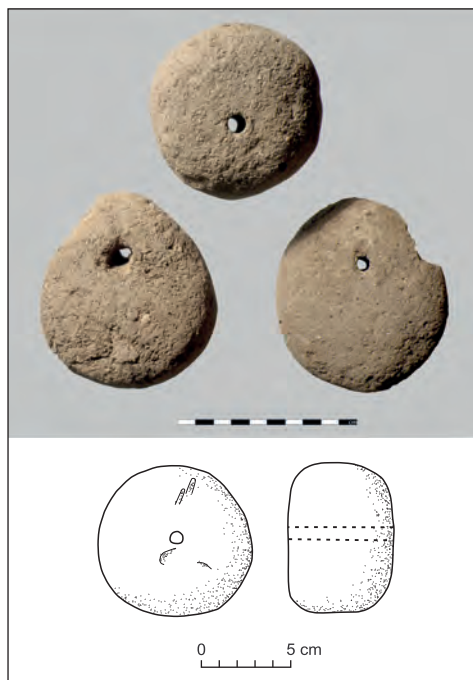


Fig. 9. Building [2147], room 1 (phase C3); building [2196], room 2 (phase C2); building [2227] (phase C3–C2); building [2143] (phase B) (Tell el-Retaba Project/photo S. Rzepka)



Fig. 10. Large storage jar (2213) and mud loom weights found in situ in building [2147], room 1 (Tell el-Retaba Project/photo S. Rzepka)



2.30 m. Until now only its northern part has been excavated. In the northeastern corner of the room, a bin and a completely preserved large storage vessel (2213) were found [Fig. 10]. In the adjacent floor layer (2220), a relatively rich set of small finds was discovered, including nine weights (probably loom weights; for parallels, see Jarmużek 2010) made of unbaked mud [Fig. 11; see also Fig. 10]. They were found in one spot next to the north wall of the room, suggesting that a loom had once stood there. Not only weaving, but also spinning must have taken place in this room, as attested by a limestone spindle whorl S3132 found in the same floor layer.

Fig. 11. Loom weights S3109, S3110, S3112 (Tell el-Retaba Project/photo S. Rzepka; drawing A. Rys)

There were also other tools in the same context (three grinders, three fragments of querns, a slate palette), a fragment of a stone vessel and a faience scarab S3126 [Fig. 12]. Incised figural decoration on the scarab base depicts a king seated on a throne with a smaller human figure standing in front of him.⁵

All the features inside the room were covered with a relatively thick layer of debris (2216). It consisted mainly of sand and fragments of bricks.

The entrance to the room was neither in the north nor the west walls, but at the present stage of research it is impossible to suggest its tentative location. It may be identified once the other half of the deposits inside the room is explored and the faces of the east and south walls are cleaned. Room 2 measured 4.35 m by 4.15 m. The excavation reached the level of debris covering this area, hence other walls may yet be found, bringing up the total number of explored rooms.



Fig. 12. Scarab S3126
(Photo S. Rzepka)

Building [2199]

The structure was situated about 3 m to the north of building [2147] [see Fig. 8]. Only the tops of some of its walls have been cleared so far. The building measured at least 5.30 m by 5.00 m, the walls being about 0.60 m thick. The walls matched in alignment the walls of building [2147], but the level of the foundation was lower. Thus, building [2199] appears to be slightly older (built in phase C4), but both structures functioned concurrently in phase C3.

SETTLEMENT

(PHASE C2, AREA 9)

Building [1095]

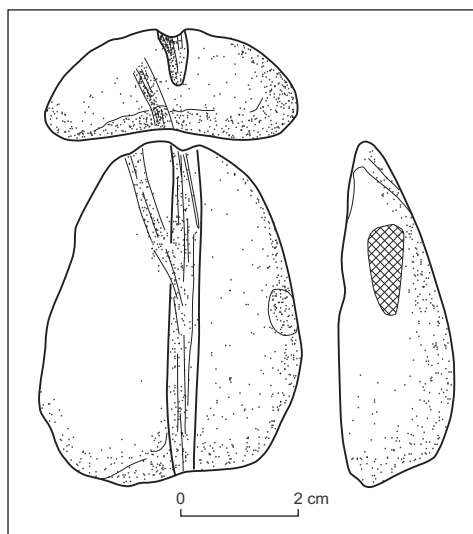
Except for the northern part (which is covered by building [2074] from phase B, see below), building [1095] has been excavated to the foundation level, revealing a trapezoidal ground plan roughly 9 m by 7.70 m which remained unchanged over time [Fig. 13; see Fig. 8]. The four rooms of this building underwent significant alterations in terms of how they were interconnected. Three subphases were discerned on these grounds; during these subphases some old doorways were blocked, some new doorways were cut through walls, some installations (like bins, mastabas, fireplaces) were added, while others ceased to be used.

Room 1 measured 3.90 m by 5.20 m. Floor (2183) of whitish-grey color filled the room. There were no remains of any installations. The floor layer contained a small amount of pottery, animal bones, ashes, and several small finds, mostly tools: two fragments of whetstones, two grinders,

⁵ For a close parallel to this type of decoration, see, for example, a scarab in the Egyptian Museum in Cairo CG 37104, Nineteenth Dynasty (Newberry 1907: 277, Pl. IX). See also: Petrie 1925: 26, Pl. XV (987); Petrie and Duncan 1906: Pl. XXXIII (68).



Fig. 13. Building [1095] (phase C2), northern part (at right) covered by walls of building [2074] (phase B) (Tell el-Retaba Project/photo S. Rzepka)



a pottery disk, a bronze needle and a loom weight S3107 [Fig. 14]. Noteworthy are two faience amulets from this context. The first one, S3054 [Fig. 15 top], is a pendant in the form of an aegis, that is, the head of a goddess with a broad-collar necklace. It is in this case a lion- or cat-headed goddess, with an uraeus and sun disc — either Bastet or Sakhmet.⁶ The other amulet, S3108 [Fig. 15 bottom], is also a pendant, but this time in the form of a full, standing figure of Bastet or Sakhmet.

Room 2 was entered from room 1 via a doorway placed in the western end of the

Fig. 14. Loom weight S3107 (Tell el-Retaba Project, drawing L. Hulková)

⁶ Aegis amulets are quite common in the Third Intermediate Period and later. An aegis (made of silver) with the head of Bastet was found by W.M.F. Petrie in tomb 20 in Tell el-Retaba (Petrie and Duncan 1906: 32, Pl. XXXIVA).

north wall of room 1. This second room has not been excavated; it measures, probably, 3.20 m by 5.30 m.

The eastern entrance to the building was relatively wide at about 1 m and it led to room 4, which measured 2.60 m by 3.00 m. The floor of this room was a cemented, grey layer (2117), which covered the entire area of the room. It contained some ashes, a small amount of potsherds, animal bones, a grinder and a quern. In the northwestern corner of the room there was a kind of small mastaba (or a bin less probably). A doorway in the southern part of the east wall of the room led to the courtyard. Another doorway was placed in the

north wall of the room, giving access to room 3.

Room 3 measures about 2.50 m by 3.00 m. Only the southern part of this room was excavated.

Building [2196]

At the beginning of phase C2 the area to the west of building [1095] was still occupied by building [2147]. There was a passage 2.60 m wide between the two buildings (this area has not been completely excavated). After some time the passage was blocked by wall [2230]. The level of the foundation of the wall is much higher than the level of the walls on either

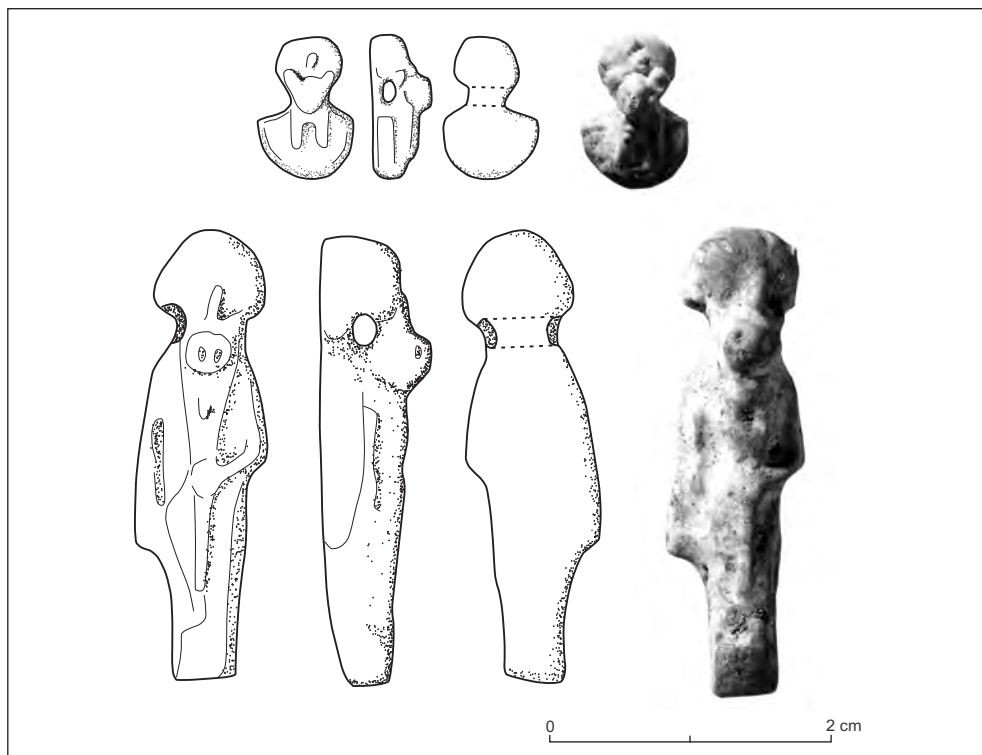


Fig. 15. *Faience amulets: top, Bastet or Sakhmet amulet S3054; bottom, Bastet or Sakhmet amulet S3108 (Tell el-Retaba Project/photos S. Rzepka; drawing L. Hulková, A. Ryš)*

side. When building [2147] fell out of use, most of its walls were used for constructing building [2196] [see *Figs 8, 9*]. The ground plan of building [2196] differed slightly. Rooms 1 and 2 were delimited probably by the same walls as in the case of building [2147]. Room 3 was added where the passage between buildings [2147] and [1095] had once been.

Compared to room 1 of building [2147], the only change is a reconstructed east wall, which was now much thinner, measuring 0.30 m in width. It could have held an entrance to the room, but most of it is lost. The northeastern part of the room was destroyed by a later cut. Other remains suggest the presence of an oven: the room was filled with a 20–30 cm thick layer of

ashes (mostly grey, but also black and white) in which fragments of fired mud bricks and the ceramic walls of an oven were found. Moreover, a fragmentary rounded cut <2211> was found in the middle of the room; it may be the lowermost part of an almost completely destroyed oven. Room 2 was limited by the same walls as room 2 in building [2147], which means that it measured 4.35 m by 4.15 m. Two approximately rectangular bins abutted its north wall.

Building [1047]

Building [1047] was first traced but not fully documented in seasons 2011–2012 (Rzepka, Hudec, Wodzińska *et al.* 2014: 87); it was partly excavated in 2016



*Fig. 16. Building [1047], abutting the west wall of building [991]
(Tell el-Retaba Project/photo S. Rzepka)*

[*Fig. 16*; see *Fig. 8*]. It abutted the west wall of building [991], the walls however being founded at a much higher level than in the latter building, and following a different alignment. It is currently dated tentatively to phases C2 or C1. The overall ground plan of the building and of the individual rooms is trapezoidal. The part of the building excavated in season 2016 consisted of two rooms, but it is very probable that there are other rooms to the west. Room 1 measured 2.80 m by 3.00 m. No entrance to the room is in evidence; it was probably destroyed by one of the later cuts. Two floor levels were found inside the room. A round patch of black ashes (2120) on the floor in the southern part of the room [see *Fig. 16*] yielded several shapeless fragments of bronze and a piece of ceramic vessel with bronze slag attached to the wall face. These finds suggest that bronze-working activities took place in the room, however, no remains of a kiln for melting metal were discovered.

The second room of the building was almost entirely destroyed by a large modern cut.

SETTLEMENT (PHASE C1, AREA 9)

Remains from phase C1 in Area 9 [see *Fig. 8*], discovered in seasons 2011–2012, demonstrated the continued use of building [991]. Another room was added to it. Some poorly preserved structures were also found to the east of the building (Rzepka, Hudec, Wodzińska et al. 2014: 90–91).

Building [1095]

Building [1095] was still in use during phase C1. Its general layout and the interconnection between rooms probably did not change from the last subphase of

phase C2 (see above). New floors were introduced in all of the rooms, on top of a layer of debris.

Fireplace [2209] was found in the southwestern corner of room 1 [see *Fig. 8*]. It was lined with at least two layers of bricks. The fireplace was filled with a layer of ashes (2208), in which a net-weight S3074 made of limestone was found [*Fig. 17*] (see Jarmužek 2010).

The last occupation of the room is marked by a layer of debris (2091) filling the room. This layer contained a relatively high number of small finds: six fragments of stone vessels, a grinder, a pounder and a fragment of a quern.

Floor (2090) in room 4 was a cemented, whitish grey layer. Several big pieces of pottery vessels were found on it and several small pieces of iron were embedded in it. Small finds from the floor comprised four fragments of stone vessels, three querns, two flint tools, a grinder and a fragment of a ceramic animal figurine.

Floor (2093) inside room 3 is similar in its color and consistency to floors in other rooms. A faience ring and a crude limestone bowl S2907 [*Fig. 18* top] were the only finds from this layer. Six more bowls of the same kind, among them S2867 [*Fig. 18* bottom], were found in the debris layer (2070), which covered building [1095] when it was finally abandoned. Bowls of this kind are quite typical of the Third Intermediate Period contexts in Tell el-Retaba; more than 100 fragments have been found so far. They differ in size, but are all of similar, rather crude workmanship. Their outer surfaces are rough, often with visible traces of chiseling. Inside, the surfaces are often smooth, as if from frequent use.

It is noteworthy that all the floors described above were created approximately

0.40–0.50 m above the original foundation level of the building. The height of the walls from phase C2 obviously cannot be determined, but it seems very likely that the roof level in phase C1 must have been raised.

Building [2149]

Remains from phase C1 in the area west of building [1095] were rather poorly preserved. Building [2196] from phase C2

went out of use. Building [2149] was built in its place. The building consisted of some new walls added to old walls from previous phases [Fig. 19; see Fig. 8]. The building comprised at least two rooms. Two layers of loose, grey ash were found inside room 1. These ash layers contained fragments of bowls with flaring rims; their shapes are very characteristic of the Third Intermediate Period (see Aston 1999: e.g., 50–51, also 65, 69; 2007: 34, Fig. 29;

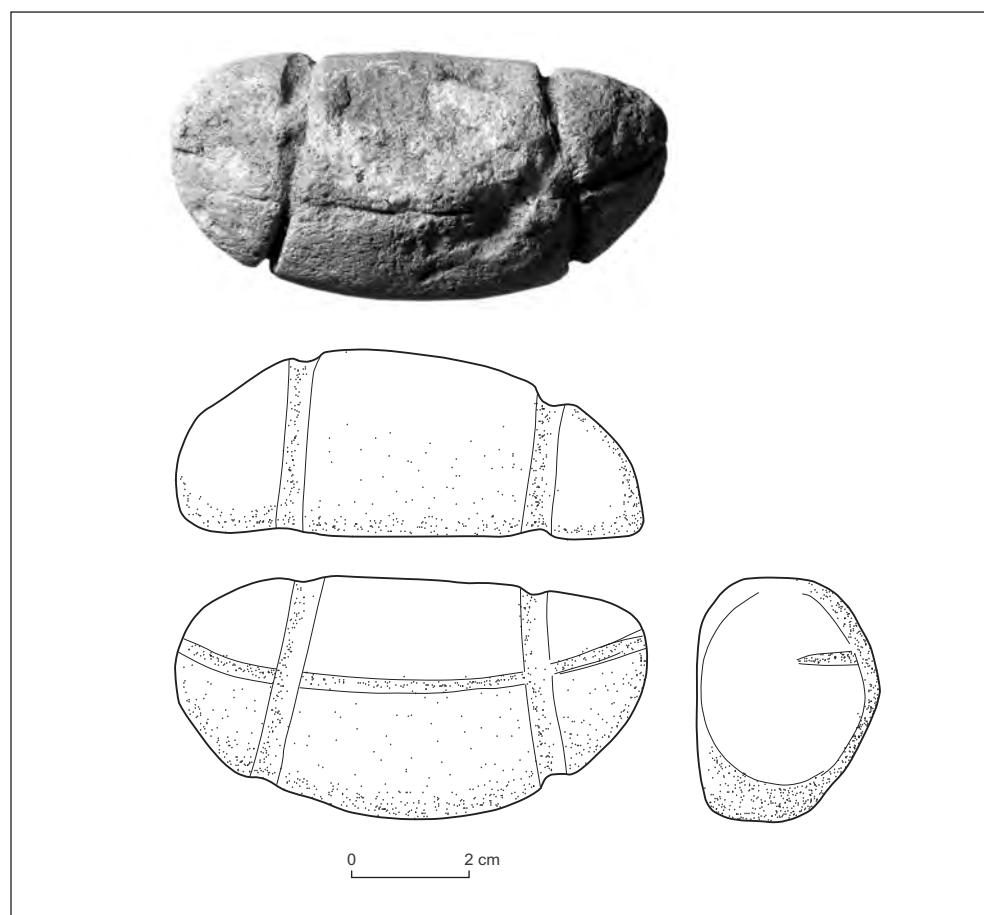


Fig. 17. Net-weight S3074
(Tell el-Retaba Project/photo S. Rzepka; drawing A. Ryś)

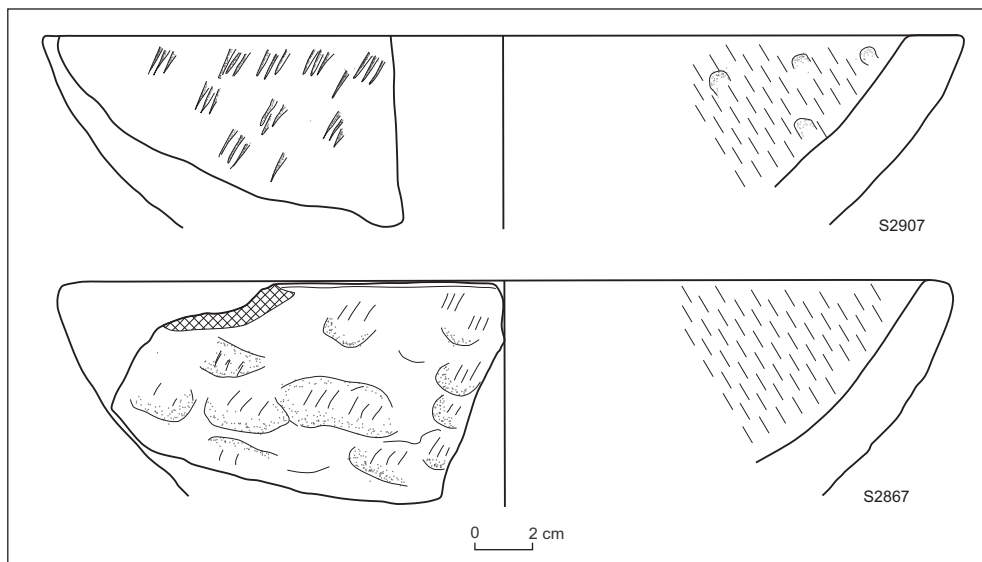


Fig. 18. Limestone bowls S2907 and S2867
(Tell el-Retaba Project/drawing A. Rys)



Fig. 19. Room 1 of building [2149]
(Tell el-Retaba Project/photo S. Rzepka)

Bavay 1998: 323–324, Fig. 34.38–39). They are also very well known from Tell el-Retaba (Wodzińska in Rzepka *et al.* 2009: Fig. 30.7–8). After some time these vessels were covered with another layer of ash (2141). Rooms 1 and 2 may have been connected by a doorway in wall [2152], but the wall was so badly destroyed by

a later cut that it is impossible to determine the location of the doorway. Room 2 was 1.40 m wide and at least 2.50 m long. The east wall of the room is not preserved. It is possible that the wall abutted the west wall of building [1095]. Layers inside room 2 were completely destroyed by a later cut.

[ŁJ and SRz]

LATE PERIOD (PHASE B)

SETTLEMENT (PHASE B, AREA 9)

Before the 2016 season the Late Period was attested in Tell el-Retaba only by some pottery found on the surface or in cuts. Apparently, in the parts of the tell excavated between 2008 and 2015, the Late Period architectural remains were completely obliterated by erosion. In 2016, for the first time, Late Period strata with substantial architectural remains of three large buildings were excavated.

Building [2191]

Building [2191] was found in the northern part of the excavation trench [*Fig. 20*; see *Fig. 8*]. Only the tops of walls were cleared and documented. It seems at present that the building consisted of four rooms. It was 16.30 m long and 9.70 m wide. Wall thickness varied between 0.80 m and 1.00 m.

Building [2074]

Building [2074], which was only partly excavated, was situated to the east of building [2191] [*Fig. 21*; see *Figs 8, 13*]. The building was about 20 m long and at least 10.50 m wide, but the eastern limit of the structure has yet to be located. The architectural features of the building indicate that it was a tower

house (Marouard 2014; Arnold 2003: 170–193). Very thick walls (up to 1.80 m) allowed a very high building to be constructed. The walls formed a casemate structure, that is, closed chambers without doorways between them. Casemates were often used to create a solid foundation for tower houses. In the case of building [2074], there were at least four chambers. Chamber 1 measured 3.10 m by 6.60 m and was roughly trapezoidal in plan [see *Figs 8, 13*]. Most of the chamber and its east wall were destroyed by a huge modern cut. After removing the wind-blown sand fill, the bottom levels of walls surrounding room 1 were exposed, revealing differences of up to one meter. These were due to some parts of the walls being constructed on top of the ruins of earlier structures, while other parts cut into old structures. Room 2 was roughly square in plan; it measured 4.40 m by 4.70 m. Almost the entire area of the chamber was covered with regularly laid bricks (2123) [*Fig. 21*]. Room 3 measured 4.20 m by 4.80 m. Room 4 was mostly destroyed. It was relatively narrow, being only 1.30 m wide. The area east of chamber 2 was cleared only on the surface. Two walls in this area suggest that there was another chamber there. In the case of the area east of room 3, it is still not clear



*Fig. 20. Building [2191]
(Tell el-Retaba Project/photo S. Rzepka)*



*Fig. 21. Tower house [2074], chamber 2
(Tell el-Retaba Project/photo S. Rzepka)*

whether it was covered by a layer of bricks or the east wall of the chamber was very thick. Directly to the north of the building there was a wall, of which the eastern part was straight and the western part was rounded; the latter abutted the north wall of building [2074]. The wall probably defined a courtyard connected with the building.

Similar casemate structures of tower houses, dated to the Late Period, are known from several sites in the Nile Delta, such as Tell el-Dab'a (Lehmann 2011; 2012), Buto (Hartung *et al.* 2003: 211–219; 2007: 120–126; 2009: 115–128), Tell el-Muqdam (Redmount and Friedman 1997) and Tell el-Ghaba (Lupo 2015: 63–95).

Building [2143]

Building [2143] was situated 3.50 m to the southwest of building [2074] [see *Figs* 8, 9]. The destruction of the upper layers of the site in the area led to the loss of all direct stratigraphic relations between the buildings. The state of preservation of building [2143] was also very poor. Several fragmentary walls were uncovered. These walls were constructed in a manner similar to the walls of room 1 in building [2074] (see above); in some parts bricks were laid directly on top of debris from the Third Intermediate Period and in other parts foundation cuts were made.

The number of small finds discovered in deposits linked with the said Late

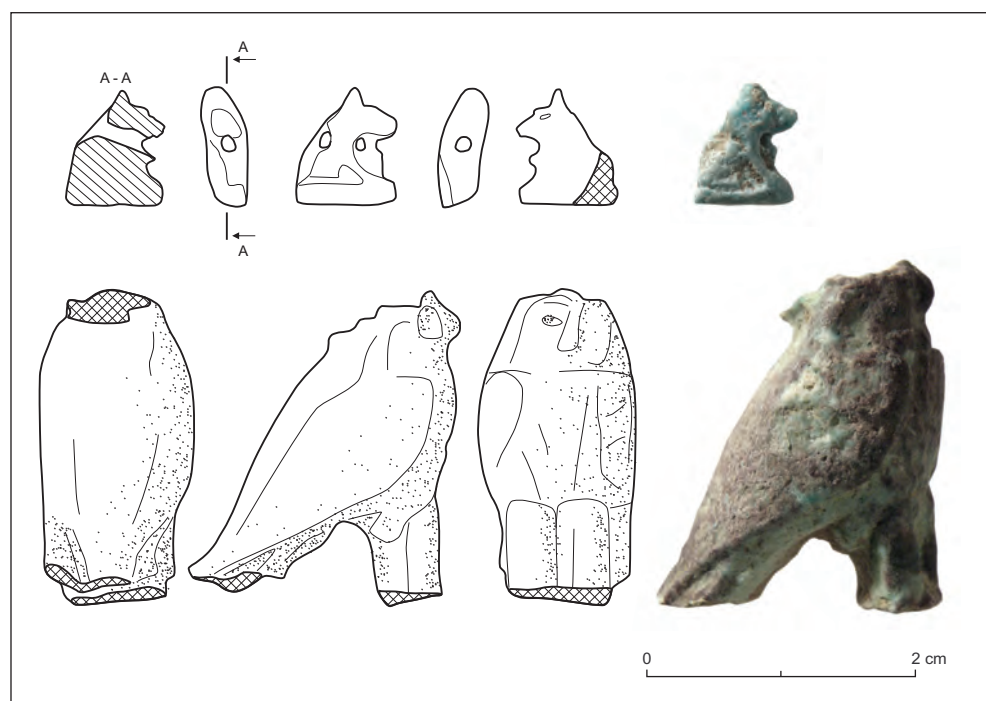


Fig. 22. Late Period artifacts: top, seated jackal amulet S3142; bottom, falcon amulet S3032 (Tell el-Retaba Project/photos S. Rzepka; drawing A. Ryś)

Period structures is still limited owing to the fact that the excavations have only just begun. However, the artifacts from the disturbed top layers above the Late Period ruins should be dated to this

period. Among them are two faience amulets, one (S3032) in the form of a falcon, the other (S3142) showing a seated jackal [*Fig. 22*].

[ŁJ and SRz]

CONCLUSIONS

Excavations in Area 4 have contributed substantially to deciphering early stages of the Tell el-Retaba settlement history. The Second Intermediate Period tomb [1696=1757] has now been confirmed to be not an isolated unit, but part of a more extensive SIP cemetery, discovered in previous seasons. Further, it confirmed that the SIP settlement also continued northwards and was even older than the SIP cemetery. Of particular importance is the stratigraphy below Black House 1, which provides undisturbed levels from the period between the SIP and the early Eighteenth Dynasty. The layers indicate a continuum of occupancy rather than extinction horizon(s).

Another section of the Third Intermediate Period settlement was uncovered

in Area 9. This made possible some new observations on the spatial organization within this settlement. The number of excavated houses is still limited, but it appears that typical domestic structures during all phases of the Third Intermediate Period comprised from two to four rooms with a habitable area varying from 26 m² to 50 m².

A significant discovery in Area 9 are the large buildings (among them at least one “tower house”) from the Late Period. This discovery makes rather doubtful the widespread assumption that Tell el-Retaba was deserted during the Late Period, when its population moved to the nearby Tell el-Maskhuta (see Redford 1982: col. 1055; Goedicke 1986a; 1986b).

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Tell el-Murra (Northeastern Nile Delta Survey): preliminary report on research in 2014–2015

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Abstract: The paper deals with the results of excavation in 2014 and 2015 at the Tell el-Murra site in the northeastern part of the Nile Delta. The investigations covered a settlement mostly from the Old Kingdom period found in trench T5; more specifically, the investigated features seem primarily connected with food production. Settlement remains from the Naqada III–possibly Early Dynastic and Protodynastic(?) periods were also explored in trench S3B. Continued research on the Early Dynastic cemetery in trench S3 yielded 16 more graves, including simple pit burials and chamber graves. In several cases bodies had been placed in pottery coffins. The presence of several mud-brick walls, possibly associated with older settlement structures, was also confirmed within the lattermost trench. Altogether the research provided new data on the settlement architecture, site development processes and burial customs invoked in the beginnings of the Egyptian state.

Keywords: Tell el-Murra, Egypt, Nile Delta, Predynastic, Early Dynastic, Old Kingdom, cemetery, settlement

Two seasons of archaeological excavation were carried out at the site of Tell el-Murra in the northeastern part of the Nile Delta, excavated since 2008 (Jucha 2009; 2010; Jucha et al. 2013: Fig. 1; 2016; Jucha and Bąk-Pryc 2017; Jucha, Bąk-Pryc, and Czarnowicz 2014; Jucha, Bąk-Pryc, and Małecka-Drozd 2015; Jucha and Buszek 2011). In 2014 and 2015, trenches T5 in the northeastern and S3 and S3B in the southwestern part of the tell were explored (Jucha, Bąk-Pryc, and

Małecka-Drozd 2015: Fig. 1). Mostly Old Kingdom settlement remains were the focus in the first area (T5), although the upper levels of structures possibly of Early Dynastic chronology were also reached. Early Dynastic graves were explored in trench S3, which also revealed the remains of a possible settlement from an earlier part of the Naqada III period. Evidence of a settlement of similar chronology has also been found in trench S3B.

TRENCH T5

Research in the northeastern part of the tell was a continuation of the exploration of test trench S1 in 2010 (Jucha *et al.* 2013: 108–110) and trench T5 in 2013 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 208–213). In 2014, the entire area of trench T5 (15 m by 21 m) was excavated (Levels 12 to 17, altitudes respectively 6.50 m and 6.00 m). In the following season, exploration of the southern part of the trench was restricted (are R8, square S8AC), most of the work being in the northern part of the trench (are R7, square S7AC, southern ends of squares

R6CD and S6C), where settlement remains from Level 17 (altitude 6.00 m) to Level 25 (altitude 5.20 m) were excavated. The archaeological material confirmed the Old Kingdom chronology of the latest phase of site habitation, established for this part of the tell during earlier seasons (Jucha, Bąk-Pryc, and Czarnowicz 2014: 150; Jucha *et al.* 2013: 108–110; Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 208–213). Moreover, the lowest levels explored in the northern part of the trench during the 2015 season also provided material dated roughly to the onset of the Old

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Dates of work: 7 March–14 April 2014 and 17 February–29 March 2015

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Kingdom, possibly even the very end of the Early Dynastic period, although structures recognized there were not explored completely before the end of the 2015 season.

EARLY DYNASTIC/ OLD KINGDOM

Building in the west of the trench

In the western part of the trench the upper levels of a building, which started to be recorded at Level 20 (altitude 5.70 m), went down to Level 25 (altitude 5.20 m).

The west wall (T5-203) of this eastern part of a house crossed a perpendicular wall (T5-210) [Fig. 1]. Also exposed was a short wall T5-237, running perpendicularly to wall T5-203, terminating in a kind of a posthole with a mud encasement at the eastern end. The eastern parts of compartments T5-211 and T5-227 were also traced. Remains of a brick silo (T5-229A/T5-229B) were found at the northern end of the latter. The most characteristic feature of the southern compartment (T5-211) was another brick

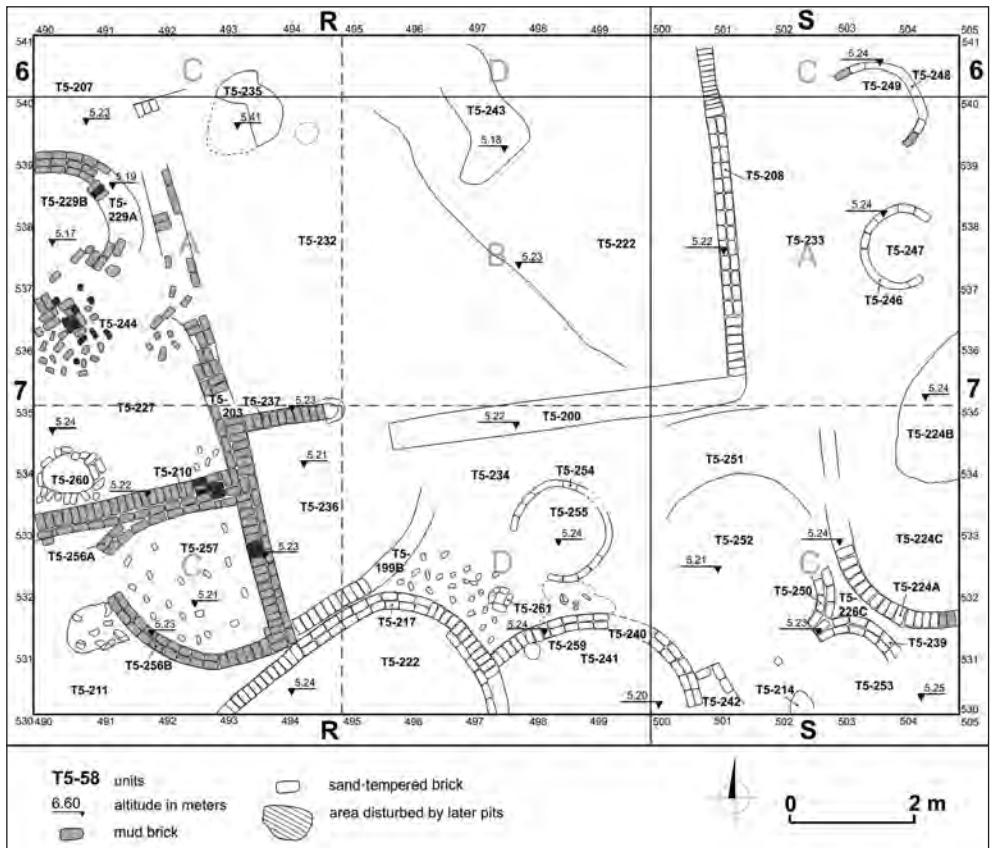


Fig. 1. Trench T5. Settlement structures in the northern part of the trench. Levels 23–25 (Tell el-Murra Expedition Archive/digitizing N. Malecka-Drozdz)

silos (T5-256A/T5-256B/T5-257), built into the corner formed by walls T5-203 and T5-210. An opening visible in its western side is typical of granaries (Badawy 1954: 58–59; Roik 1988: 186–191, Figs 279–304) and was used to access the grain stored inside. The walls of the described building were erected of very bright greyish mud bricks and yellowish sand-tempered bricks, although examples of unbaked but almost black bricks occurred as well.

The structure continues below Level 25, hence its chronology could not be established definitively in 2015. Pottery shapes from the uppermost levels represent forms known already from the latest Early Dynastic period as well as from the onset of the Old Kingdom.

Enclosure wall

Part of another structure made of sand-tempered bricks was recognized in the

middle of the northern part of the trench, east of the building described above. Only its southwestern corner, formed by walls T5-200 and T5-208, could be seen during the described seasons throughout Levels 19–25 (altitude 5.80 m to 5.20 m). The orientation of the walls was practically E–W (T5-200) and N–S (T5-208), the latter wall running under the unexplored area to the north [see *Fig. 1*]. The extent of this structure toward the west was not clear and its foundation not reached during the reported seasons. Pottery forms from the very beginning of the Old Kingdom were recorded from the uppermost levels within the area surrounded by these two walls, while the bottom levels yielded more forms from the later part of the Early Dynastic period. The walls do not appear to have been an original element of the later structures, but it does seem that their upper parts were to be seen and



Fig. 2. Trench T5. Bread moulds in a shallow pit in an ash layer. Level 21, onset of the Old Kingdom (Third Dynasty?) (Tell el-Murra Expedition Archive/photo E. Kuciewicz)

perhaps even served some function during the later occupation of this area (see the bakery below). Layers of reddish soil (T5-228, T5-232) and two fireplaces (T5-235 and T5-243) were recognized inside the area bordered by the said walls. A bowl was found *in situ* next to one of the fireplaces (T5-235), which may suggest cooking activities of some kind taking place here.

Area with silos(?)

Four quite large brick walls of arched outline (T5-199B, T5-217, T5-240, T5-224A) and two smaller ones (T5-239, T5-250), all partly connected to each other, were recognized in Levels 23–25 (altitude 5.40–5.20 m), to the south and southeast of the presumed enclosure wall [see *Fig. 1*]. Between the arches and slightly north of them were a few small circular features (about 1–2 m in diameter), probably silos (T5-246, T5-248, T5-254). Their chronology, as well as layout and function, could not be determined more precisely as they continued below the last level explored in 2015. Similarities to structures discovered in Mendes (Adams 2009: *Fig. 20*) suggested a tentative reconstruction of the area as partly open space related to food storage and processing/production.

Bakery(?)

Structures that do not form any recognizable buildings or rooms occupied the area overlying most of the above-described structures, perhaps even using to some extent the still standing ruins. The first remains of the said structures were observed through Levels 18–20 and continued down to Level 23 (altitude 5.40 m). They are associated with the onset

of the Old Kingdom (probably Third Dynasty), but their nature is uncertain. At least two poorly preserved, circular silo facilities as well as fragments of walls were observed in the eastern part of the trench. The most telling are the numbers of bread moulds positioned upside down in a shallow pit in the ash layer (T5-178) [*Fig. 2*; see *Fig. 5:3*]. A large pottery vat found to the north of them seems also to be related to the said levels. Several smaller vats or large bowls were discovered in the area. Furthermore, traces of mud circles, in which vessels could have been embedded, led to the assumption that more vessels were present in the vicinity. Moreover, there were few Meidum bowls, much less compared to younger levels (see below).

The nature of these finds suggest a production area related to a bakery (see Lehner 1993: 60–66; 1994: 26–29), in which at least some of the activities seem to have been carried out in the open space with the excavated vats and bowls being used as vessels for preparing the bread dough.

To the west of the structures was a 0.20–0.30 m thick layer (T5-169; Levels 18–20, altitude 5.90–5.70 m) containing large quantities of fragmented pottery, mostly bread moulds. Next to them, in the western and southwestern parts of square R7AC, there was a layer of greasy, dark grey mud (T5-190) of similar thickness, overlying the earlier settlement remains.

Pottery

The pottery assemblage collected from Levels 17–24 represents forms related to the onset of the Old Kingdom, as well as those known already during the later part of Early Dynastic period. The repertoire of forms changed over these few levels

with certain types becoming rare or even disappearing completely. Some new forms appeared or became more frequent; among others, Meidum bowls increased in number in levels of later date. Fine wares comprised mostly bowls with convex sides and simple or lip-rims, plates and, rarely, low-stands [see *Fig. 6:23*]. Meanwhile, the assemblage was dominated by coarse wares, including bread moulds, vats and big bowls with thickened rims, beer jars with collars or simple rims, trays, bowls with internal ledges. Additionally, the assemblage included a miniature drop-shaped jar [*Fig. 6:20*] belonging to rough ware, a miniature bowl [*Fig. 6:21*], and a sherd with painted decoration [*Fig. 6:22*]. The assemblage from the lowermost level explored during the 2015 season (Level 24, altitude 5.30–5.20 m) was even less varied, comprising mostly bowls with an angular inner edge of the rim, jars with a lip-rim, bread moulds with a thickened internal part of the rim, and red-coated plates, whereas Meidum bowls, beer jars with a collar, and bowls with an internal ledge were absent.

The gradual changes observable in the pottery assemblage are significant. The absence of fine Meidum bowls from the lowermost levels explored, coupled with more of other forms related to economic and domestic activities (such as bread moulds and plates) suggest a strictly economic character of this area, which may have included storage and distribution functions.

EARLY OLD KINGDOM

Settlement structures

Most of the structures explored (during the described seasons) were dated to the earlier part of the Old Kingdom (Third and Fourth Dynasties). Almost the entire area

of the trench was occupied by the remains of a large building complex [*Figs 3, 4*]. Fragments of two other separate buildings were visible in the southern part. Several rebuilding stages and changes of layout were observed. The walls (about 0.25 m, up to 0.60 m wide) were built of mainly bright, sand-tempered bricks of conventional size (about 12–15 by 25–30 cm), although mud bricks occurred as well. Occasionally, narrow (about 7–10 cm wide) sand-tempered bricks and mud bricks were used. These were probably ordinary bricks but laid on their sides. They may have been used, at least in some cases, to construct brick thresholds.

Large building complex

The most complete and best recognized are the remains of a building complex, the later stages of which were first noted in 2013 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 209–212, *Fig. 11*). It was aligned NW–SE and comprised rectangular rooms, courtyards and corridors.

In the northern part of the trench, two parallel walls touching each other, western T5-56A and eastern T5-56B, formed the borders of adjacent compartments. The west wall was possibly added slightly later [see *Fig. 4*] as it was not visible on the lower levels [see *Fig. 3*]. The area to the east, enclosed by walls T5-56B and T5-13, was subdivided into several compartments, e.g., T5-84, T5-85, T5-88, and T5-155 [see *Fig. 3*]. Some differences in layout were observed between subsequent levels there as well. Yet another compartment (T5-90), limited by walls T5-89 and T5-119A/T5-119B, was distinguished to their west.

Several additional compartments (e.g., T5-93, T5-97/T5-98, T5-112) were also easily recognizable to the south of this

area. Others, however, especially to the south of wall T5-13, had less clear divisions and borders. The only visible set were poorly preserved walls (T5-159, T5-156, T5-109, T5-115), which enclosed possibly several small rooms or passages (T5-157, T5-118, T5-158, T5-160) [see *Fig. 3*]. Some gaps in the lines of the walls could have served as doorways between the rooms. However, the overall interpretation was hindered by a number of animal burrows disturbing the area. Mostly the lower parts of walls were preserved, but in the upper levels, the whole area (T5-58) was almost empty [see *Fig. 4*]. It is difficult to say whether this was due to the poor condition of the walls or intentional levelling under an open-air space.

The further part of the building complex, located in the southern part of the trench, had a clearer arrangement of compartments, corridors and entrances. The remains exposed there also provided better evidence for changes in the general layout between the older [see *Fig. 3*] and younger [see *Fig. 4*] subphases.

An older stage of the building was recognized mainly in its eastern part [see *Fig. 3*]. Its courtyard (T5-133A/T5-133B) was surrounded by walls: T5-21, T5-22, T5-131, T5-132. An additional compartment, T5-57B, adjoined the courtyard to the north. The presence of a limestone yoke in its northeastern corner, close to wall T5-8, points to the location of a doorway there. Two quite small compartments (T5-139 and T5-141) were discovered west of wall T5-131 [*Fig. 3*]. Their eastern and western borders were partly disturbed by later walls T5-11 and T5-29 [see *Fig. 4*]. Southwest of these compartments, a room

or courtyard (T5-137), limited to the west by wall T5-143, was distinguished [*Fig. 3*]. Within this space, traces of a few small, rounded structures (T5-144A/T5-144B, T5-145, T5-146, T5-147, T5-148A/T5-148B) were revealed, in two cases with mud encasements (T5-144A and T5-148B). Such encasements were either a kind of potstand or, at least in a few cases, post holes. The latter indicate that the area could have been sheltered with at least a part-roof constructed of light materials. Scarce remains of walls related possibly to a later subphase (i.e., T5-38) were recognized to the west and northwest of wall T5-143 and so were facilities connected with both the later and earlier sub-phases (i.e., T5-67 and T5-76 forming a corner). Two large ceramic vats were located in the vicinity. However, their association to the described subphase is uncertain, since their bottom parts were situated around 40 cm (Level 21) below the lowermost level (17) explored in that part of the trench in 2014.

In the younger stage [*Fig. 4*], two better preserved main sections divided by a narrow corridor (T5-40D) were still recognized, although the structure was partly disturbed by storage pits of the late Old Kingdom (Jucha et al. 2016: *Fig. 24*; Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 209–213, *Fig. 11*). A limestone threshold in the northern part of the corridor indicated this to be the main entrance to the building. It is impossible to determine whether entrances to adjoining areas on either side of the corridor existed in its southern end, which was disturbed by one of the late Old Kingdom pits (T5-50/T5-63). The area to the northeast of the corridor had a rectangular shape (T5-32/T5-57). It was surrounded by walls T5-8, T5-11, T5-21,

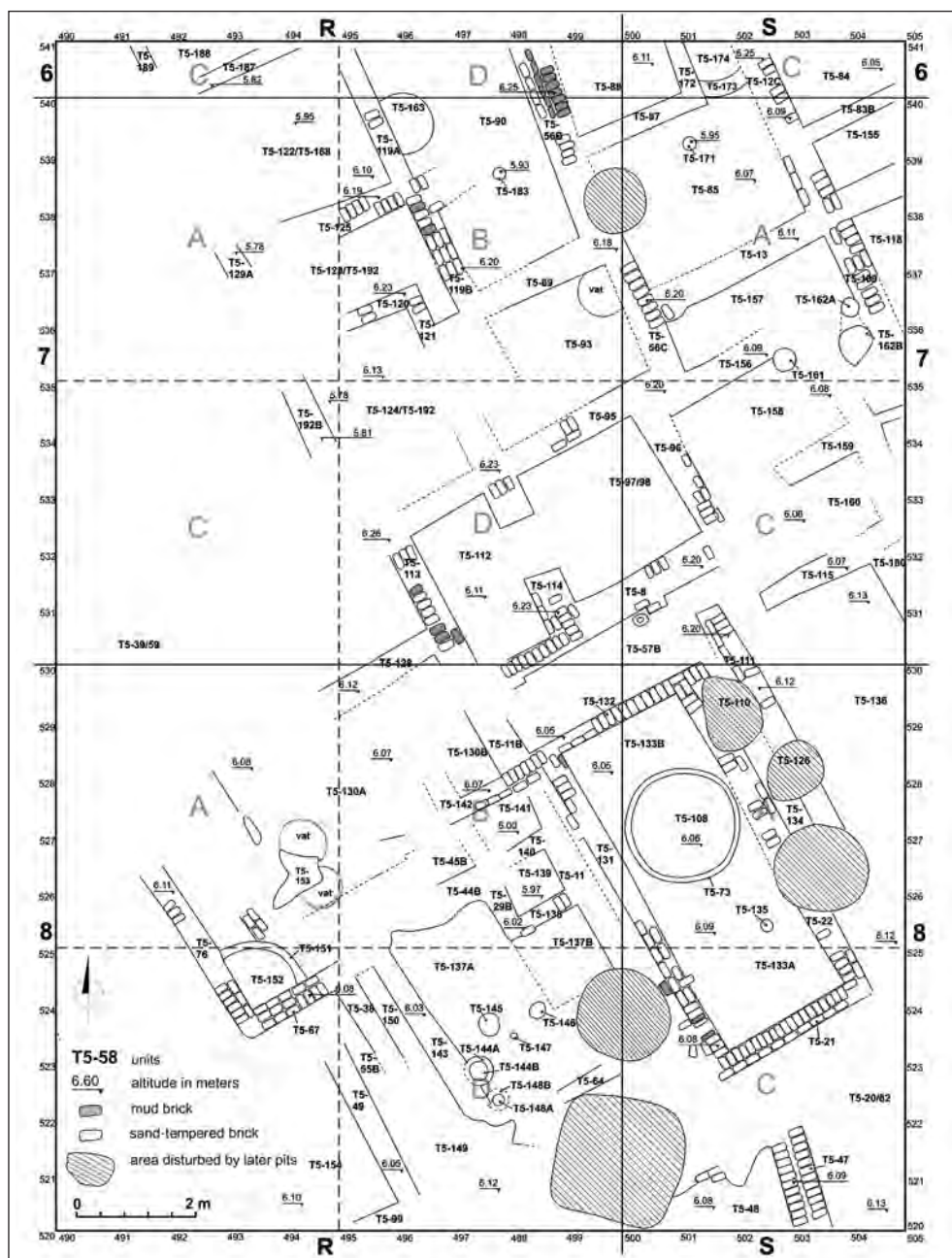


Fig. 3. Trench T5. Settlement structures. Early Old Kingdom (Third–Fourth Dynasties). Levels 15–19 (Tell el-Murra Expedition Archive/digitizing N. Malecka-Drozdz)

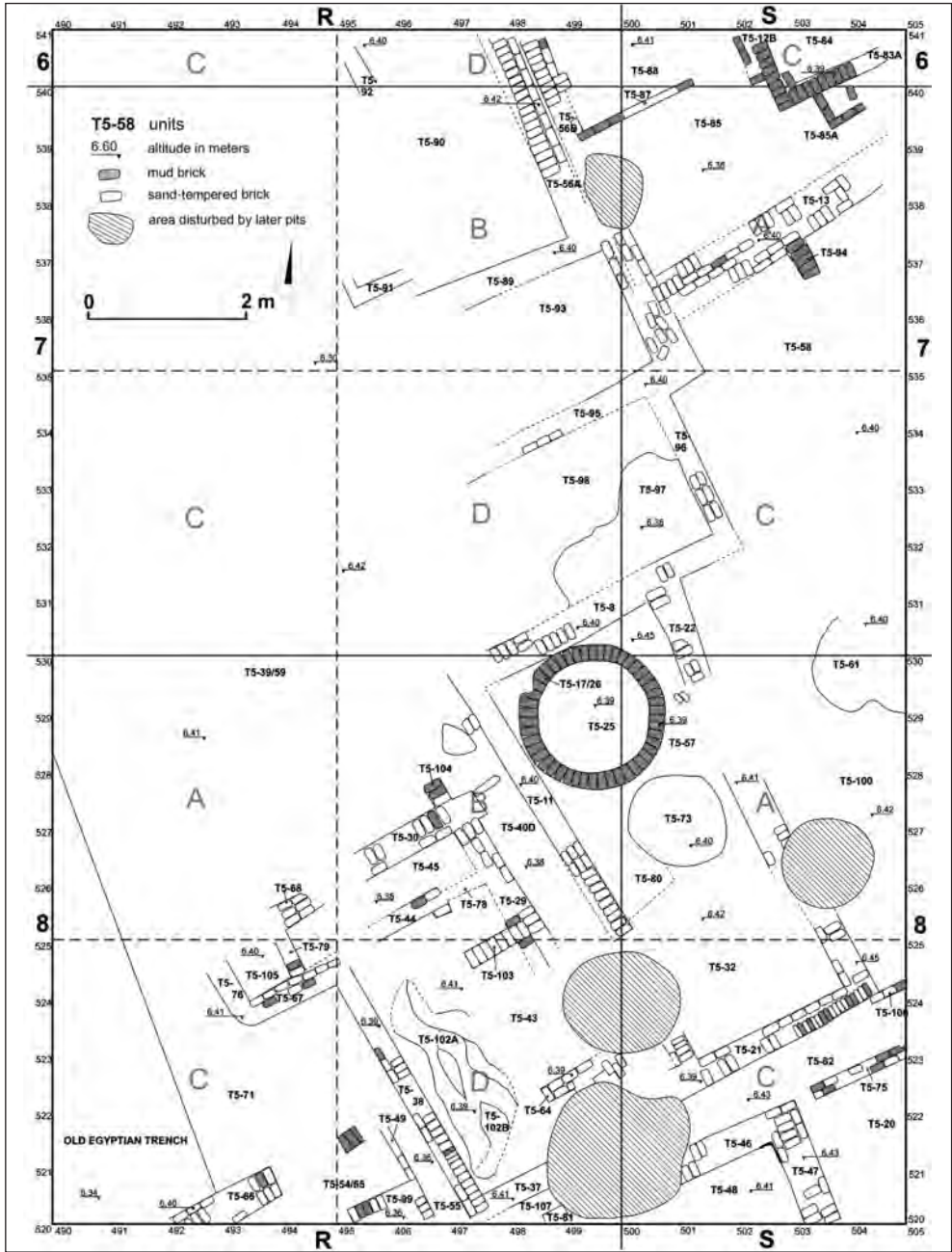


Fig. 4. Trench T5. Settlement structures. Early Old Kingdom (Third–Fourth Dynasties). Level 13 (Tell el-Murra Expedition Archive/digitizing N. Malecka-Drozdz)

and T5-22, of which the latter two were also associated with the older courtyard [see *Fig. 3*]. A silo (T5-17/26/T5-25) was located at the northern end. Directly south of the silo, there was a spot of dark, grey mud (T5-73), which turned out after further exploration to be a kind of pit with a mud encasement. Compartment T5-43 was situated to the southwest of corridor T5-40D. A quite extensive but shallow layer of burnt soil and ash pits (T5-102A/T5-102B) was recognized in its western part. The southeastern corner was disturbed by a storage pit of the late Old Kingdom (T5-6A/T5-6B). The eastern end of the room was divided into three zones by short walls (T5-64 and T5-103), perpendicular to the wall (T5-29), which separated the room from the corridor. The disturbed stratigraphy around pit T5-50/T5-63 made it impossible to determine whether an entrance existed in the latter wall. At any rate, the described room was undoubtedly approached through a corridor (T5-45) situated to the northwest. Its walls (T5-44, T5-30) were disturbed by a pit (T5-72) with animal bones. Doorways, marked by brick thresholds (T5-78 and T5-79), were identified within the corridor. The former one (T5-78) gave direct access to room T5-43.

Buildings in southeastern and southwestern parts of the trench

The southern fringe of trench T5 at Levels 13–17 (altitude 6.50–6.00 m) was occupied by structures oriented on an axis slightly shifted to the east with respect to the above-described building complex. The structures were separated from it by narrow lanes (T5-55, T5-107, T5-82) [see *Fig. 4*]. A probable building (walls T5-66, T5-49 and T5-99) was recognized but not

investigated extensively in the southwestern part of the trench, whereas the structure in the southeastern part consisted of a room (T5-48) with two walls (T5-46 and T5-47) forming a corner. It continued to the south under the unexplored area and might be somehow related to structures discovered in test trench S1 explored during the 2010 season (Jucha *et al.* 2013: 108–109, *Fig. 3*). Its north wall (T5-46) was disturbed by a storage pit of the late Old Kingdom (T5-6A/T5-6B).

Pottery and small objects

Judging by the structures, encompassing storage pits, silos, and fireplaces, as well as by the nature of the finds, the investigated area seems to have been related to agricultural activity. The pottery is numerous and several pots could be fully reconstructed. The range of forms was standard, associated with the early Old Kingdom (Third and Fourth Dynasties), although some of these forms started to occur already at the end of the Early Dynastic period.

A significant group consisted of various kinds of bowls, plates and trays. Many fragments belonged to bowls with convex sides and simple or lip-rims [*Fig. 6:7,8*]. Spouted bowls [*Fig. 6:9*] were fairly frequent, too. An alleged funnel is rather exceptional [*Fig. 6:10*]. Bowls with convex sides and angular inner rim edge occurred sporadically [*Fig. 6:11*]. Other vessel types included plates, usually with an incised line or lines on the outer surface, just below the rim [*Fig. 6:12,13*]. The fabric in all these cases was a fine or medium-coarse Nile clay, tempered with fine to medium-grain sand and straw. Most of the vessels are light red, red or reddish-brown coated, both inside and outside, with surfaces either polished or burnished. In the case of plates,

which could be also made of a medium-coarse Nile clay, only the interior surface was slipped with a red coat and polished or burnished, while the outer surface was usually uncoated and smoothed.

Meidum bowls, typical of the early Old Kingdom, consisted of forms with a maximum diameter at the height of the shoulder. Most such sherds have angular shoulders and well-developed necks

[*Fig. 6:14*], that is, type A3 according to Op de Beeck (2004: 270, Figs 10.3:16,22). Bowls with a maximum diameter at the rounded shoulder and angular transition between the rim and the shoulder [*Fig. 6:15,16*], that is, type B3b according to Op de Beeck (2004: 263, 269, Fig. 10), were rather occasional. Both these types are dated to the early part of the Old Kingdom and even the Early Dynastic Period (First–

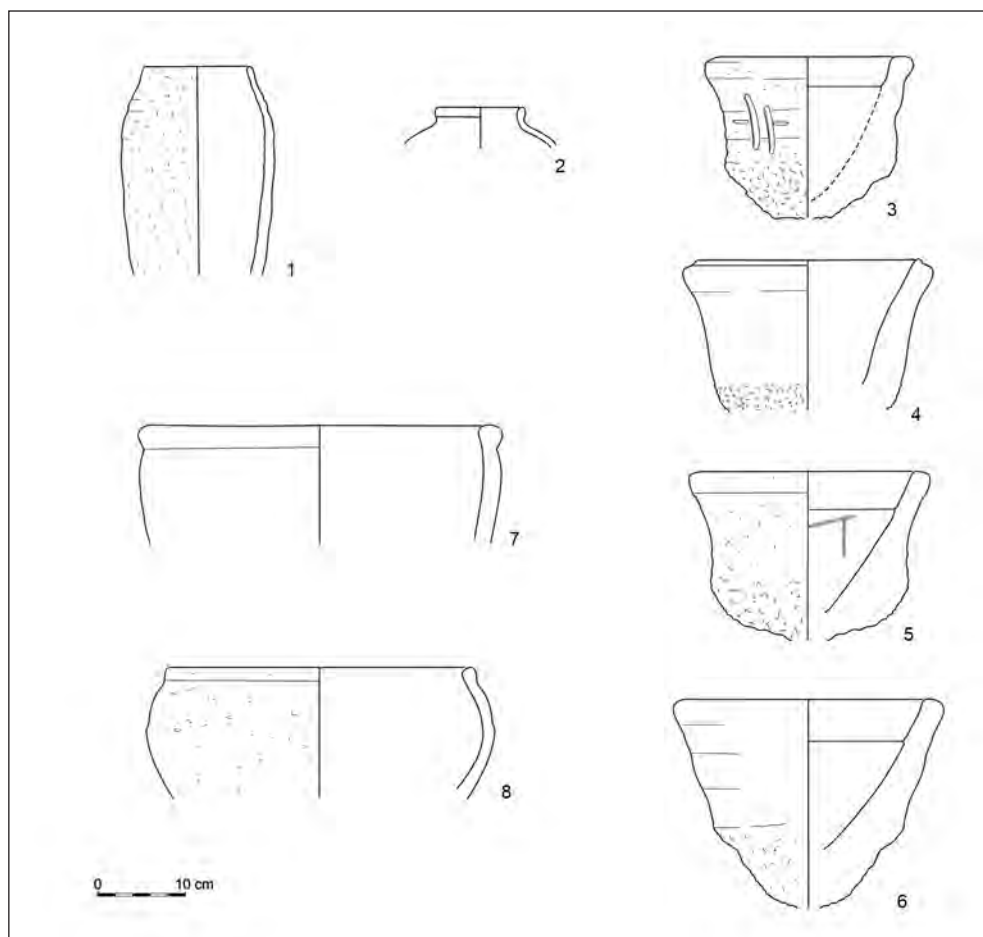


Fig. 5. Trench T5. Pottery from the settlement. Early Old Kingdom: Third–Fourth Dynasties (Tell el-Murra Expedition Archive/digitizing U. Baki)

Second Dynasties), but could occur sporadically also in the Sixth Dynasty (Op de Beeck 2004: 263, 268–269, Fig. 10).

Rough ware bowls with an internal ledge [Fig. 6:17] were also frequent as were miniature bowls with a distinct base and simple rim [Fig. 6:18], and shallow trays with a flat base [Fig. 6:19]. They

were made of medium Nile clay and their surface was usually rough and in some cases only slightly smoothed.

Another numerous group of pottery consisted of different types of jars, among them rough-ware beer jars with collars (Jucha *et al.* 2016: Fig. 47:2,3) or with direct rims [Fig. 5:1], rounded bases

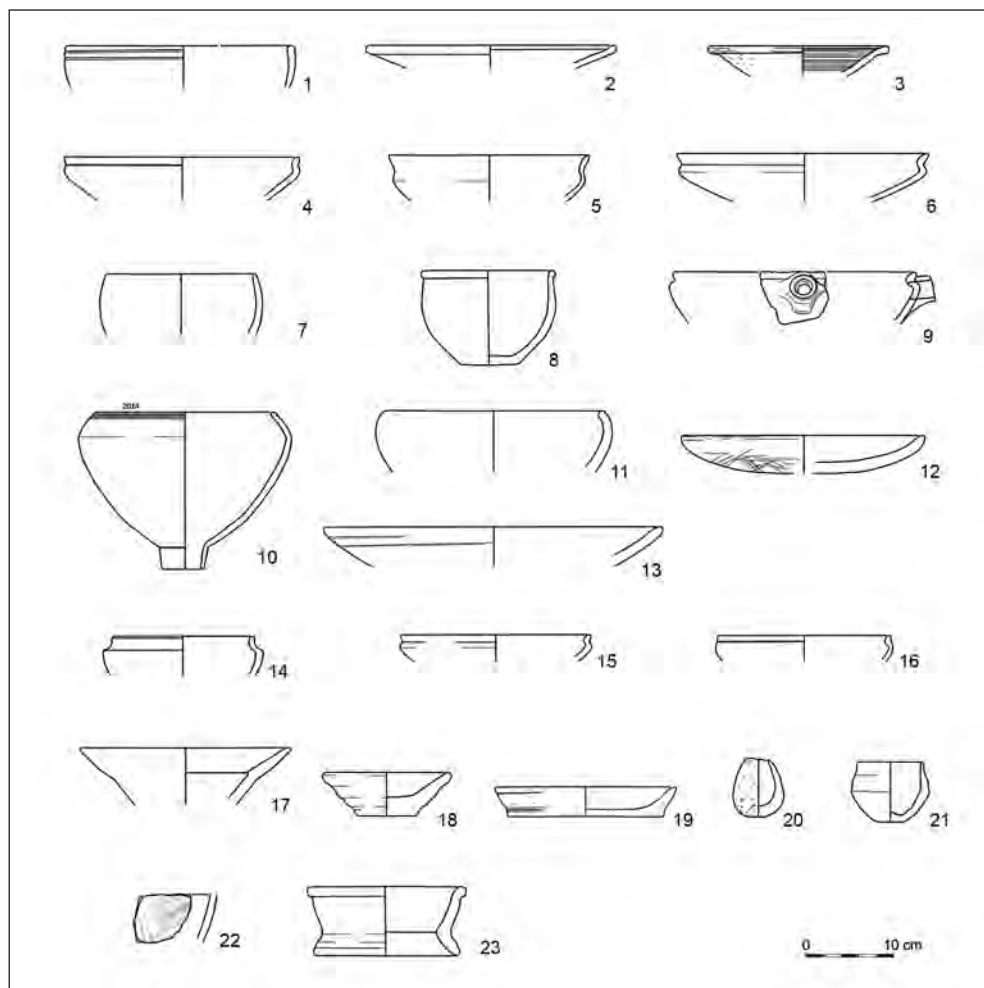


Fig. 6. Trench T5. Pottery from the settlement. 1–6 – Late Old Kingdom, Fifth–Sixth Dynasties; 7–23 – Early Old Kingdom, Third–Fourth Dynasties (Tell el-Murra Expedition Archive/ digitizing U. Bak)

and usually only slightly distinguished shoulders. Fragments of probably ovoid jars, with lip-rims and developed but usually short necks [*Fig. 5:2*], were also found. These were usually made of fine or medium Nile clay, and their surface was rough, sometimes slightly smoothed in the upper part of the vessels (rim and neck).

Different types of bread moulds formed an extremely large group [*Fig. 5:4–6*]. Most of them had an angular transition dividing the body into two zones. The upper part of the outer surface and the inner surface were slightly smoothed and the lower part of the outer surface (with a rounded base) was rough and irregularly formed. Among the forms there are examples with flattened, concave, or rounded rims, as well as a diagonal and flattened outer part of the rim. The internal part of the rim in most of the bread moulds is thickened:¹ type A1, according to Jacquet-Gordon (1981: 11–12, *Figs 1–3*). A few almost completely preserved examples show that the Old Kingdom bread moulds were quite deep, unlike the slightly shallower examples of bread moulds typical of the Early Dynastic period. Additionally, some of the bread moulds from Tell el-Murra bear pot-marks, which were placed on the outer or inner walls of the vessels. Bread moulds collected from trench T5 were made of medium-coarse or coarse Nile clay, tempered with large amounts of sand, rounded quartz and straw.

Large vats (or dough-mixing basins) [*Fig. 5:7,8*] and large bowls were also found in the described levels. These include fragments and almost complete examples.

They usually have thickened rounded rims, convex sides and flat bases. They were made of very coarse Nile clay tempered with large amounts of straw and sand, and their usually irregular surface was covered with some kind of red or yellow wash.

The results of pottery analysis lead to the conclusion that activities within the described structures were connected mostly with food production and consumption. The large number of bread moulds, among others, related to the layers of ashes and pits of strongly burnt soil, may suggest baking activities in some rooms (i.e., T5-43, T5-48 and, especially, T5-97/98; see *Fig. 2*). Two vats, brought out from the lowest strata, could have been used in the process of breadmaking, and fulfilled simple storage functions. A number of millstones and grinders provided evidence that grain stored in local silos or storage pits was milled into flour on the spot.

Flints make for yet another numerous category, including mostly sickle blades, although several knives and their fragments were attested as well. Object location is in this case significant: many flints were found within room or courtyard T5-90, but none within the adjacent room T5-93 [*Fig. 3*].

Personal adornments, among them a few faience and bone beads, two fragments of stone bracelets and two copper pins, were noted as well. Several stone objects, probably tools, were found all in one place in the lower strata in room T5-139. Another interesting find is a faience baboon head.

¹ Similar examples also occur at Saqqara (Emery 1954: 160, *Fig. 222: EE1*), Buto (Köhler 1998), Elephantine (Raue 1999: 174–175, *Fig. 34: 3*). At Tell el-Farkha they are found in phase 6 and especially 7 (Early Dynastic and beginning of the Old Kingdom period), see Jucha 2011: 962–963, 965–966, 968–969, *Figs 2:30, 3:37, 4:27*.

LATE OLD KINGDOM

Settlement structures

Remains related to the latest phase of occupation, the later part of the Old Kingdom, are very poor. These include rounded structures T5-6A/T5-6B, T5-50/T5-63 and T5-51/T5-62, the exploration of which had already started in 2013 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 209; Jucha *et al.* 2016: Fig. 24). These were shaped as fairly deep pits with thin (approximately 10 cm) encasements of grey, greasy mud. In the case of T5-50/T5-63, the pit was about 0.70 m deep. T5-51/T5-62 is believed to be only slightly deeper. Its mud encasement started to vanish at the same level as the bottom of the previous pit and its filling became less visible. The third structure, T5-6A/T5-6B, had changed its shape from irregular, almost circular, into square with rounded corners. This pit, the biggest one, appears to continue down into deeper levels.

In all probability, these structures shared common storage functions, as was confirmed for similar pits found in Edfu and dated to the Old Kingdom (Moeller and Marouard 2013). However, in the present state of research, their intended use remains unclear. One clue could be the presence of spouted bowls within one of the pits (T5-63). Such vessels may have been used for beer or grain distribution

(Hendrickx *et al.* 2002: 292; Wodzińska 2009: 211–212). If so, their presence may suggest some kind of food production in this part of the settlement.

Pottery

The said chronology of settlement remains was confirmed by the presence of pottery vessel forms from the later part of the Old Kingdom (Fifth and Sixth Dynasties). These included bowls with parallel lines or ribs situated on the outer surface just below the rim [Fig. 6:1] and bowls with a rounded inner and outer part of the rim [Fig. 6:2]. Both types are quite frequent. Also a few fragments of bowls with incised parallel lines on the inner surface were registered [Fig. 6:3]. Among Meidum bowls, which were found in significant quantities, several types typical of the Fifth and Sixth Dynasties were distinguished (Kazimierczak 2014a): bowls with the same diameter at the rim and the shoulder as well as a short neck and an angular transition from the shoulder to the rim [Fig. 6:4], type B1b1 after Op de Beeck (2004: 263, 269, Fig. 10); bowls with a greater diameter at the rim than at a rounded shoulder and with the rim curved outwards [Fig. 6:5], type B2a according to Op de Beeck (2004: 263, 269, Fig. 10); and bowls with a rounded shoulder and a clear line below the rim [Fig. 6:6], Op de Beeck's type B2b (2004: 263, 269, Fig. 10).

TRENCH S3

The research in the southwestern part of the tell conducted in seasons 2014–2015 was a continuation of the work initiated there in 2008. The count of tombs explored between 2011 and 2015 stands at 30, including 16 in the two reported seasons. There can be no doubt that at least during

the Naqada III–Early Dynastic period the area functioned as a cemetery. Settlement remains were also recorded.

Six of the graves explored during the reported seasons were found in are J22, where most of the graves excavated previously were also located (Jucha, Bąk-

-Pryc, and Czarnowicz 2014: 143–146, Figs 2–4; Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 200–208, Figs 2–4, 7–9; Jucha et al. 2016: Fig. 3). Grave 23 [Fig. 7 left] in the northwestern part of the square disturbed mud-brick wall S3-57 of an older structure of still uncertain function (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 200, Fig. 2). The rectangular burial chamber, lined with distinct light sand-colored side walls of cohesive consistency, had an external size of 1.50 m by 1.00 m. The burial goods, placed beside a pottery coffin, included five ceramic vessels: two beer jars, a bowl with convex sides, a plate [Fig. 11:5] and a miniature bowl [Fig. 11:4].

Grave 8 [Fig. 7 right] was located further to the south, between the previously explored graves 5 and 9 (Jucha, Bąk-Pryc,

and Małecka-Drozd 2015: 201–203, 207, Figs 2, 4, 5, 8, 9: bottom left). The rectangular burial pit, 1.45 m by 1.00 m in size, contained only one jar [Fig. 11:9]. Grave 25 further to the east also had a rectangular burial pit, only 1.05 m by 0.80 m in size, and did not contain any grave goods. To the east were three other graves, partly disturbed by Grave 2. Grave 22 of almost rectangular shape, 1.00 m by 0.60 m, and Grave 24 [Fig. 8 top], which measured 0.75 m by 0.45 m. Neither contained any pottery or stone vessels, but in the latter case there were two bracelets made of greywacke on the right forearm of the deceased. Grave 24 also disturbed mud-brick wall S3-19 to the west, possibly the remains of a settlement structure of an older date. The third, Grave 20 [Fig. 8 bottom], was rectangular in shape, 1.65 m

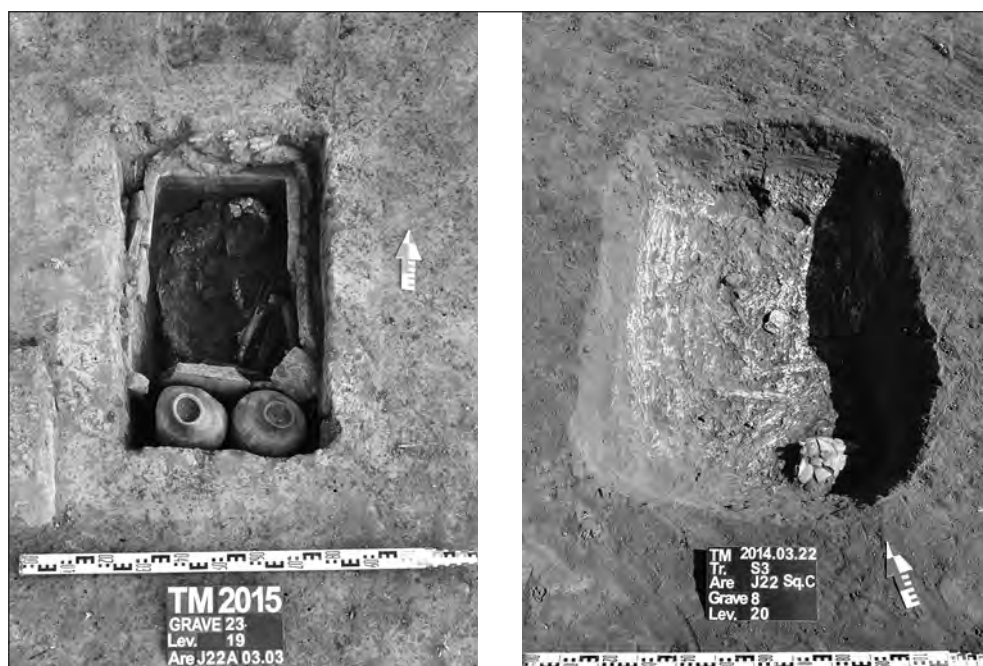


Fig. 7. Burials in trench S3: left, Grave 23; right, Grave 8
(Tell el-Murra Expedition Archive/photos G. Bąk-Pryc)



Fig. 8. Burials in trench S3: top, Grave 24; bottom, Grave 20
(Tell el-Murra Expedition Archive/photos G. Bąk-Pryc, E. Kuciewicz)

by 1.05 m, and contained, among others, a travertine cylindrical jar with engraved sign and a miniature rectangular cosmetic palette made of greywacke, both found inside the pottery coffin. Seven ceramic vessels were placed inside the burial pit. These included three large wine jars [Fig. 11:12], each with two rope bands, a barrel-shaped jar [Fig. 11:13], two smaller broad-shouldered jars [Fig. 11:14] and a plate [Fig. 11:11].

Two more graves were discovered in the southwestern part of the trench, in squares J23A and J23B, the first of the two already known to be densely filled with burials (Jucha et al. 2016: Fig. 3). Grave 30 was located between Graves 12 and 18 explored already in 2013 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 205–208, Figs 8, 9: top right and bottom right). The outline of the burial pit had a poorly defined external borderline. However, it seems to be oval in shape and measured

around 0.80 m by 0.50 m. Only one small pottery jar [Fig. 11:8] made up the burial goods. Grave 19 further to the southeast had a rectangular burial pit with rounded corners, 1.20 m by 0.80 m in size [Fig. 9 left]. The northwestern corner of the grave disturbed wall S3-167, which was aligned NE–SW and was possibly related to an older settlement structure, traced already during the previous season (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 207). The burial goods comprised five ceramic vessels. These included a broad-shouldered beer jar [Fig. 11:18], a small broad-shouldered jar [Fig. 11:17], a wine jar with a rope band on the shoulder [Fig. 11:19], a bowl with convex sides [Fig. 11:15] and a plate [Fig. 11:16].

Four more graves were explored in the southeastern part of the trench, in squares K23A and K23B. Grave 21 [Fig. 9 right] was located to the east of Grave

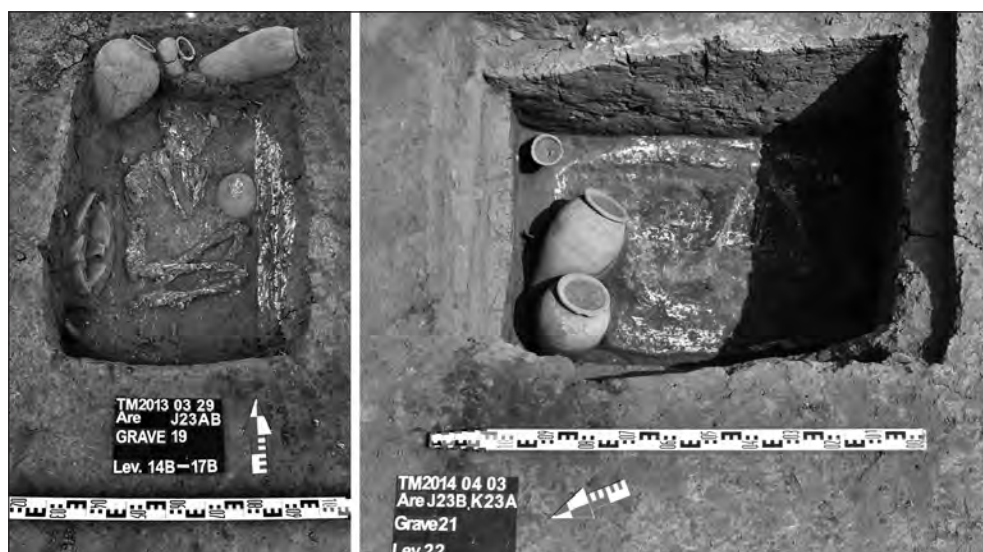


Fig. 9. Burials in trench S3: left, Grave 19; right, Grave 21
(Tell el-Murra Expedition Archive/photos G. Bąk-Pryc, E. Kuciewicz)



Fig. 10. Burials in trench S3: top left, Grave 31; top right, Grave 6; bottom, Graves 27 and 28 (Tell el-Murra Expedition Archive/photos G. Bąk-Pryc, E. Kuciewicz)

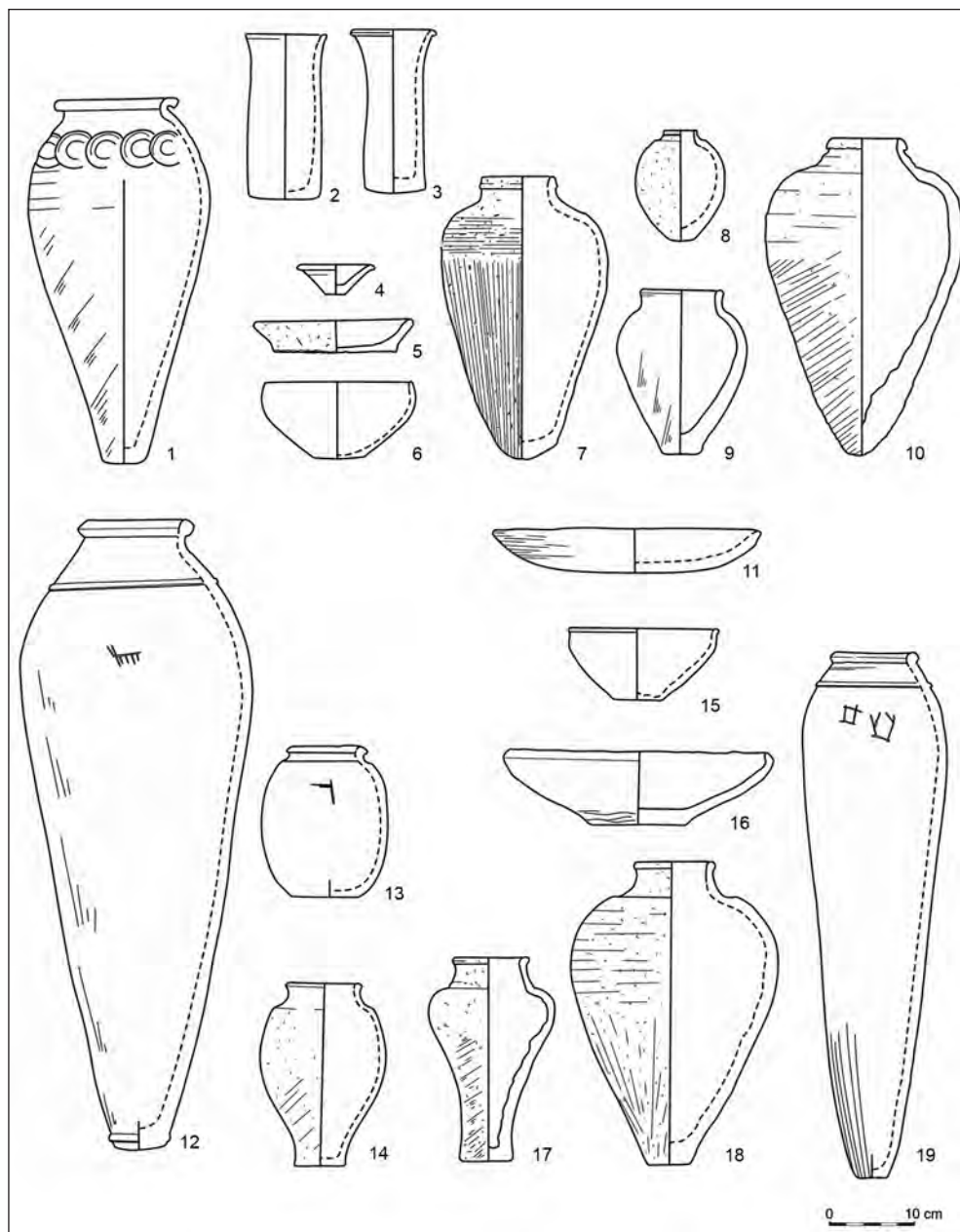


Fig. 11. Pottery from the graves in trench S3: 1–3 – Grave 21; 4–5 – Grave 23; 6–7 – Grave 27; 8 – Grave 30; 9 – Grave 8; 10 – Grave 6; 11–14 – Grave 20; 15–19 – Grave 19 (Tell el-Murra Expedition Archive/digitizing U. Bąk)

19. The rectangular burial pit was 1.20 m by 0.85 m in size. To the south, the grave adjoined a wall of mud brick (S3-201). Five ceramic vessels were placed in the grave. These included two fairly elongated jars [Fig. 11:1], two undecorated cylindrical jars [Fig. 11:2,3] and a bowl with convex sides. The burial goods also contained three copper items: two harpoons and one adze. To the east was Grave 31 [Fig. 10 top left], a shallow rectangular-like burial pit, 1.00 m by 0.70 m in size, containing a pottery coffin. Two beer jars were also associated with the burial. Grave 26, located in the proximity of the previous one on its eastern side, was characterized by a poorly defined external borderline and an oval-like shape. It was 0.80 m by 0.45 m in size. Grave 32 was found slightly to the northeast. The poorly defined burial pit was approximately 0.80 m by 0.60 m in size. Neither of the latter two graves contained any grave goods.

Four more graves were situated in the northeastern part of the trench (squares K22A, K21C and K21D). Grave 29, situated on the spot of a round settlement structure, considered to be a silo (S3-47/ S3-88) (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 203–204, Figs 6, 7) is the sole burial known so far from square K22A. The oval-like burial pit was 0.80 m by 0.50 m in size. Burial goods consisted of one small-sized flat bowl made of greywacke. Grave 6 to the north [Fig. 10 top right] (square K21C) was first apparent in 2012 as an outline of the superstructure (S3-92/ S3-77) to the east of the then explored Grave 7 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 204–205, Figs 7, 9: top left). Its external size proved to be 2.65 m by 1.80 m. A rectangular burial chamber was constructed at the bottom of a pit below

the superstructure. Its size between the external edges was 1.60 m by 1.20 m. The grave assemblage included two pottery jars [Fig. 11:10] and two stone vessels, a slender jar and a squat one. Two other graves, 27 and 28 [Fig. 10 bottom], adjoining each other, were located to the east of Grave 6 (square K21D). The burial chamber of Grave 27 was rectangular in shape, 1.45 m by 1.00 m in size, formed of light sand-colored side walls of cohesive consistency. The burial goods comprised a small squat travertine jar and four ceramic vessels. The latter included three beer jars [Fig. 11:7] and a bowl with convex sides [Fig. 11:6]. Grave 28 adjoined Grave 27 from the west. The outside measurements of the rectangular burial pit containing a pottery coffin were 1.00 m by 0.70 m. The grave did not contain any funerary goods.

Of the described graves explored in 2014–2015, the oldest one, Grave 21, was dated to the beginning of the First Dynasty–Naqada IIIC1. Two others, Graves 22 and 24, although not containing any pottery or stone vessels, were possibly also earlier than Early Dynastic as both were partly disturbed by a later burial (Grave 2) of Naqada IIIC2 date explored in 2011 (Jucha, Bąk-Pryc, and Czarnowicz 2014: 144–145, Figs 2, 3 right, 4, 5; Kazimierczak 2014b: 110–113, Fig. 5). Two graves, 19 and 20, were dated based on the pottery to the second part of the First Dynasty (Naqada IIIC2). Grave 20 had also been disturbed by Grave 2. Thus, although they seem to be of very close chronology, Grave 20 was undoubtedly slightly older. Grave 20 seems also older than Grave 19, the latter being possibly roughly contemporary with Grave 2. The dating of another two graves, 8 and 30, is uncertain, due to the very modest number

of grave goods. It seems, however, that they can be placed during the First Dynasty period (Naqada IIIC). One of them, Grave 8, was partly disturbed by, among others, Grave 5 of Naqada IIID date explored in 2012 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 201–203, Figs 2, 4, 5). Three graves (23, 27 and 31) were dated to the second half of the First Dynasty/first half of the Second Dynasty (Naqada IIIC2/D). Grave 6 also seems to be of similar chronology, as it shared the same alignment as Grave 7, which was located directly to the west and explored in 2012 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: Figs 7, 9: top left). Five graves could not be dated precisely for lack of grave goods (Graves 25, 26, 28, and 32) or having just one type of grave good (Grave 29). Considering, however, that no material later than the Early Dynastic period was collected from layers located above the graves in trench S3, it can be assumed that these graves should be attributed to a time span covering that period.

Most of the graves shared a similar characteristic as regards grave and body orientation: alignment of the burial along a NE–SW axis, bodies in tightly contracted position, on the left side, head to the northeast (Graves 6, 8, 20, 21, 22, 28, 29, 30, and 32). In six cases, burials were oriented along a N–S axis with the body on the left side, head to the north (Graves 19, 23, 24, 25, 27, and 31). In one case (Grave 26), the orientation was NW–SE. The skull was missing in this case, but the position of the skeleton suggested a tightly contracted position of the body

placed on its left side with the torso to the northwest. In four cases (Graves 20, 23, 28, and 31), the burials were made in pottery coffins consisting of rectangular boxes with semi-cylindrical two-part lids.

Several other structures, of other than funeral purpose or of still undefined function, were also explored in trench S3. Their upper parts had been visible earlier. Some were disturbed by the later graves. The precise dating and function of these structures is in most cases still uncertain pending further exploration. At least in some cases, we may be dealing not with grave structures, but the remains of settlement structures. A mud-brick wall of NE–SW orientation in square J23B, traced from Level 13B (altitude 4.95 m), may be a continuation of wall S3-34 (Jucha, Bąk-Pryc, and Czarnowicz 2014: 146, Fig. 4) found during previous seasons in square J22D to the east of Graves 2 and 20. The said wall was possibly joined to yet another mud-brick wall, S3-201, aligned NW–SE, observed from Level 13B (altitude 4.95 m), in square J23B to the south of Grave 21. Another wall, S3-57 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 200, Fig. 2), traced already in 2012 in the northern part of square J22A, to the north of Grave 3, was still visible in the lower levels (Level 16, altitude 4.70 m) explored later. It was ruined from the east by the later Grave 23. Structure S3-163 was located already in 2013 in square J23A, to the east of Grave 17 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 207) and south of Grave 19. Below that structure, the outline of unit S3-257 was recorded but not explored in 2015 at Level 16, altitude 4.70 m.

TRENCH S3B

Work continued in trench S3B in the southwestern part of the tell. The trench, 5 m by 5 m, had been explored already in 2012 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 208). In the 2014 and 2015 seasons, Levels 21–29 (altitude 4.20 m to 3.40 m), and 30–39 (altitude 3.30 m to 2.40 m) were explored successively.

Wall S3-135, the top of which was recorded in Level 18, altitude 4.50 m, in 2012 (Jucha, Bąk-Pryc, and Małecka-Drozd 2015: 208) turned out to reach down to Level 22 (altitude 4.10 m). To the north of it was a brown clayey layer (S3-175), while to the south were light-colored, cohesive layers S3-180, S3-182 and S3-183. Furthermore, layers S3-176, brown and of loose consistency, and S3-177, light brown and of cohesive consistency, were identified in the eastern part of the trench to the east of the said wall. S3-179, a grey layer of loose consistency, was noted in the southeastern part of the trench. Remains of another mud-brick wall, S3-195, appeared in Level 26 (altitude 3.70 m). It formed the corner of a structure aligned NE–SW, continuing to the south and east beyond the trench. A light brown and loose layer (S3-194) with a limited number of potsherds was found inside of this wall corner. The structure continued until Level 31 (altitude 3.20 m). However, remains of several additional walls were distinguished during further exploration. These included mud-brick wall S3-223, joined from the north with the western part of the wall S3-195. Another mud-brick wall (S3-228), distinguished inside the building at Level 31 but further to the south, adjoined wall

S3-195 perpendicularly from the east. The assumed continuation of wall S3-228 to the east was ruined by a mud-filled and cohesive layer, S3-227, and a brown loose layer, S3-241. The said wall divided the inside of the structure into two parts, the northern, S3-225/S3-226, and southern S3-236. A hearth, S3-224, was discovered in the northern one. It was filled with a dark brown layer with traces of burning. The archaeological material from these levels included mainly potsherds, flint tools and animal bones. The pottery was mostly of Naqada III chronology.

The levels located below Level 32 (altitude 3.10 m), where the bottom of the structure was situated, did not contain any distinct walls or other architectural remains. The archaeological material was also very scarce. The same is true of Level 39 (altitude 2.40 m), the last one explored in the 2015 season, where a dark-colored and highly cohesive layer (S3-268) was noted. To the west and south, it adjoined another light-colored and cohesive layer (S3-269). The archaeological material, if present, comprised mostly potsherds, apparently still of Naqada III date. Other finds included flint tools and animal bones.

Layers possibly related to alluvial deposits resulting from natural causes, like high water levels during periodic floods, were also distinguished within the trench. They were represented in the section as layers, mostly grey in color and of a cohesive consistency. These layers were in general devoid of archaeological material or else finds were very scarce compared to layers associated with architectural structures.

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Naqlun 2016 Hermitage EE.50: preliminary report

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Abstract: During the 2016 season in Naqlun, dedicated to an array of specialist studies of material in the storeroom, the team documented one of the hermitages located in the hills west of the monastic compound. The work was necessitated by evident illicit digging which had partly destroyed the compound. The hermitage, which occupied a small valley, appears to have comprised at least three living units, furnished with rock-cut storage pits in the floor and niches in the walls. The doorways and niches bore traces of architectural rendering. The complex may be interpreted tentatively as a residential and religious complex, and it is a good example of a mid-5th century hermitage, the dating confirmed by a study of the pottery assemblage coming from it.

Keywords: Naqlun, hermitage, 5th century

The hills above the monastery in Naqlun are full of rock-cut hermitages that were surveyed and provisionally recorded by a team from the Polish Centre of Mediterranean Archaeology University of Warsaw in the first seasons of exploration, from 1986 through 1988. These 5th and 6th century complexes are scattered over an extensive area that has been divided for the purposes of a forthcoming volume on the topography of the Naqlun hermitages into nine relatively easily distinguishable sectors. These are situated in the gebel as well as on the plateau that extends all the way west to the Bahr el-Gharaq canal on the outskirts of the village of Kalamshach Esba (Dobrowolski 1992).

Sector 5 lies in the northeastern part of the hills and contains nine hermitages [*Fig. 1* bottom left]. The sector, which is located between valleys accessible to motor

cars these days, had not been explored before by the Polish team. Some of the hermitages in this sector were reoccupied by monks from the monastery in the early years of the 21st century, but the others were left undisturbed.

In the autumn of 2016, deep trenches were observed by the team within the grounds of hermitage EE.50 [*Fig. 1* bottom right; *Fig. 2*]. The complex had apparently been destroyed in part, but it was also obvious from the depth of the trenches that the illicit diggers were searching for a burial chamber, believing that the hermitage had been located in the upper part of a pharaonic tomb. Indeed, it seemed from the collection of tools found on site: baskets, hoes, spades and a long rope ladder, that the robbers had been there in September of 2016. The digging was done hastily, probably by a few people

to go by the empty bottles of beverages, feta cheese packaging and cigarette packs.

The site was cleared of the debris and the deep trenches backfilled. The broken and scattered pottery, mainly LR.7 amphorae, was picked up and sorted, and part of this large hermitage was excavated in order to prevent future illicit digging. The team has never found any evidence of pharaonic tomb-cutting activities in the Naqlun hills and it is obvious that the 5th and 6th century hermitages were situated in otherwise uninhabited rocky hills.

The hermitage EE.50 occupied a small valley and comprised at least three living units cut into its slopes. These units were partly ruined and filled with sand and in 2007 there had been no signs of illicit digging [Fig. 1 top].

UNIT EE.50.1

The unit in the northeastern part of the valley was entered from a courtyard on the southern side; it consisted of a large room (EE.50.1.1) and a small room (EE.50.1.2) furnished with a large sleeping cubicle (EE.50.1.3).

Room 50.1.1 was rectangular, 4.90 m by 2.80 m, with an entrance 0.47 m wide

in the southwestern corner of the south wall [Fig. 3 above]. An engaged pillar, 0.45 m wide and 0.60 m long, formed the eastern side of this entrance. A niche was noted in the west wall by the doorway. It was 0.76 m wide and 0.18 m deep; a hollow in its floor, measuring 26 cm in diameter, had held a cooking pot, which was found broken. The niche apparently housed the door when it was open and the vessel may have been used as a door-block, but it may have served other purposes as well.

A long bench lined the west wall of the room. It was a mere 0.12 m high, but ran for 3.50 m and was 0.30 m wide. A storage pit cut into the floor occupied the southeastern corner of the unit [Fig. 3 left]. It was 0.62 m wide, 1.50 m long and no deeper than 1.70 m. A gravelly fill with rock debris contained fragments of the floor that had collapsed into the pit under the weight of the falling roof. The pit was not fully excavated, but the fill that was removed contained absolutely no finds, not even broken potsherds.

Two small niches were cut into the wall above the pit. The northern one of the two was well preserved; it was 0.40 m wide, 0.22 m high and 0.26 m

Team

Dates of works: 5 September–6 October 2016

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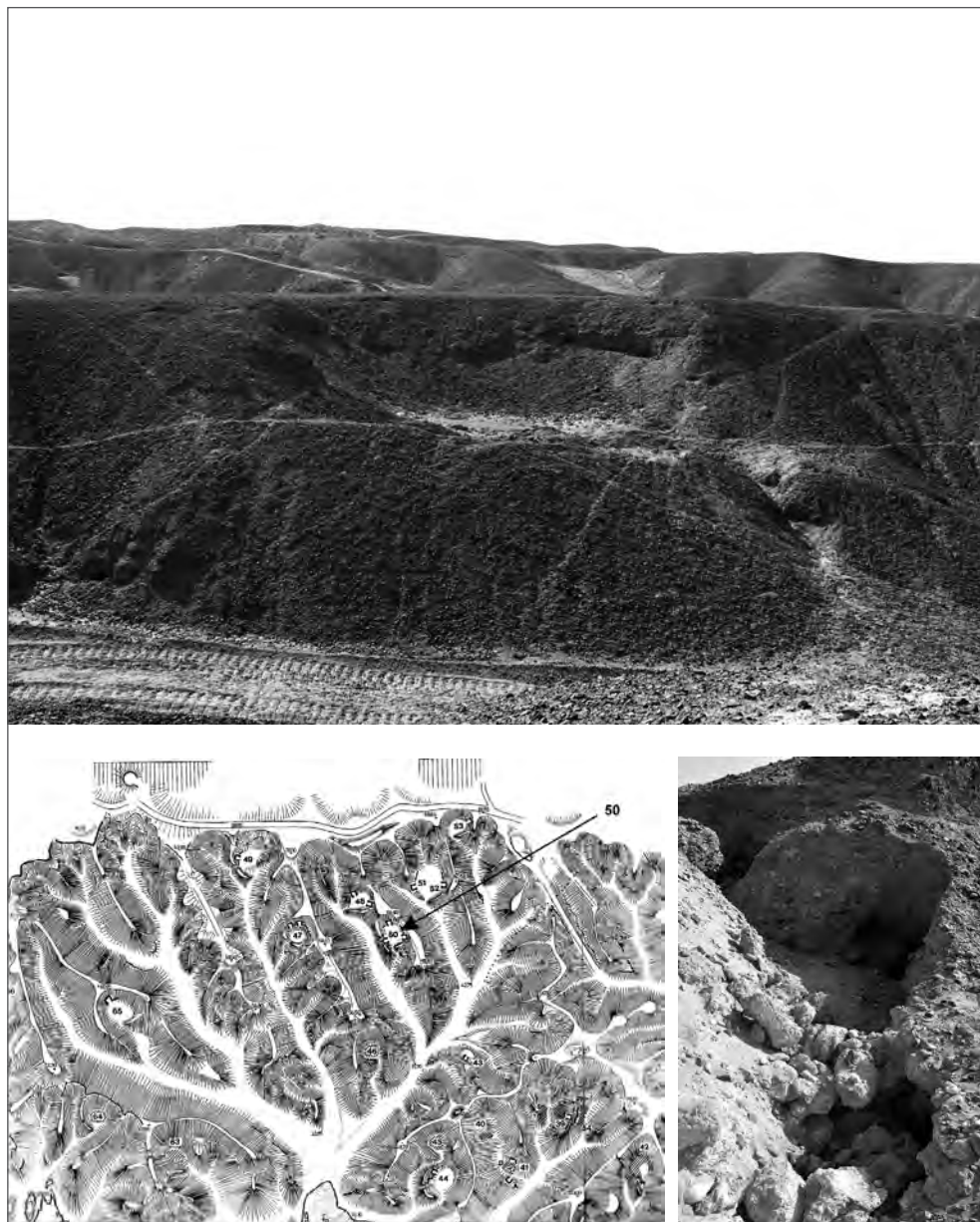


Fig. 1. Hermitage EE.50 in the Naqlun hills east of the site: top, view in 2007; bottom left, location within the segment of the Naqlun hills; bottom right, destroyed part of the complex in September 2016 (PCMA Naqlun Project/plan J. Dobrowolski; photo in 2007 W. Matkowski, in 2016 W. Godlewski)

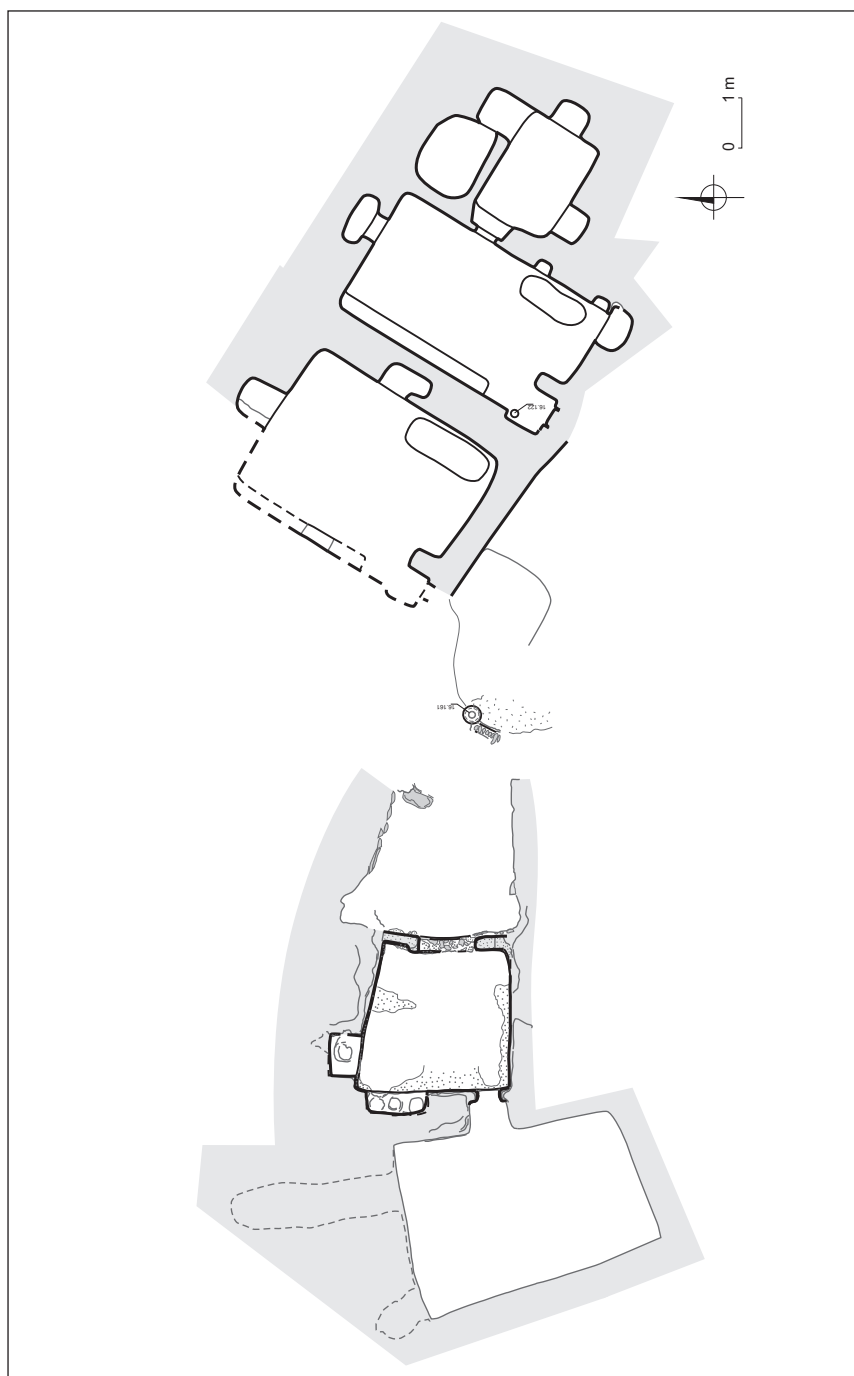


Fig. 2. Plan of the uncovered part of hermitage EE, S0: northeastern unit 1 and unit 2
(PCMA Naqlun Project/S. Maslak, W. Godlewski)



Fig. 3. Unit EE.50.1.1: above, view during the cleaning of the interior, seen from the north; left, detail with storage pit in the southeastern corner and large niche above it; right, two niches in the unit walls, above, niche in the south wall, below, niche in the north wall (PCMA Naqlun Project/photos W. Godlewski)

deep. The southern one was preserved fragmentarily; only its width could be determined and it measured 0.32 m. A third and much larger niche appeared on the south wall, in the southeastern corner and above the pit [Fig. 3 right above]. It was 0.80 m wide and 0.45 m high; its

depth was 0.46 m and it may have had a smaller hollow in the eastern part, but the evidence is not conclusive. Opposite it in the north wall, some 0.70 m from the northeastern corner, was another large niche with two lateral niches. In each there was a small shelf. The opening of this niche



Fig. 4. Unit EE.50.1: right, sleeping cubicle EE.50.1.3 in the foreground, seen from the north, on the left doorway to room 50.1.2 which is in the background with the niche in the south wall and, to the left, of it in the photo, a cut made by recent pillagers; top left, niches cut in the east wall; bottom left, doorway between rooms 50.1.2 and 50.1.1, seen from inside (PCMA Naqlun Project/photos W. Godlewski)

was 0.55 m, whereas the width with the lateral hollows was 1.04 m. The full depth was 0.76 m, while the lateral hollows were 0.36 m wide. The preserved height was 0.60 m, but it was higher once.

The walls were covered with a mud plaster, which was also used to render walls inside the niches. A mud floor filled the room, sealing also part of the storage bin, and large sections were found in the fill of the bin.

An entrance in the central part of the east wall led to the second room. It was just 0.44 m wide and it was placed 2.80 m from the southeastern corner. It broadened on the inside, forming jambs 0.15 m wide and 0.12–0.14 m thick. These were rendered with a mud plaster [Fig. 4 bottom left], unlike the rest of the walls of the room.

Room EE.50.1.2 was small: 1.90 m by 2.60 m, actually 2.20 m with two niches, one by the entrance, measuring 0.75–0.95 m, and the other in the northeastern corner, measuring 0.84 m by 0.84 m. The entrance to the latter was framed with vertical bands of white lime plaster, of which very meager evidence remained [see Fig. 4 top left]. The niche in the east wall had the bottom 0.76 m wide, cut 0.60 m deep into the rock and was 0.50 m high, starting at a level 0.90 m above the floor. The one in the south wall started at 0.95 m above the floor and had similar dimensions (just 2 cm less on the height). The walking level inside the room was lower than in 50.1.1 and there was no preserved mud floor here.

A sleeping cubicle EE.50.1.3 was entered through an opening cut 0.90 m above the walking level in the north wall of room 50.1.2. The room was practically square, 1.40 m by 1.45 m, the entrance to

it just 0.60 m wide. The interior, both walls and floor, was mud-plastered.

UNIT EE.50.2

The unit consists of just one surviving room and was entered quite likely from the south through a doorway, no longer existing, in the southwestern corner [see Fig. 2]. A tentative hypothesis links this room to the third unit described below (EE.50.3), interpreting the whole as a residential and religious complex in which room EE.50.3.2 would have served as an oratory (see below).

Room EE.50.2.1 was a large hall, 4.35 m by 3.60 m, measuring by the remains of the floor and a fragment of a bench by the east wall. Otherwise, the east wall and the northeastern corner of the room have been destroyed. The evidence for the entrance is also poor, merely a jamb in the south wall measuring 0.47 m by 0.46 m. The niche in which the entrance was situated was 0.60 m wide. The bench by the east wall presumably extended the whole length of this wall; the surviving fragment is 0.30 m wide and 0.15 m high. The walls were preserved quite low, but enough to show the remains of a niche in the northwestern corner, 0.87 m deep and at least 0.60 m wide. The bottom of another niche could be observed in the east wall, some 1.40 m from the northeastern corner. It had a lateral hollow that made the interior of the niche at least 1 m wide (with the opening being 0.63 m); the niche was 0.70 m deep [Fig. 5].

A storage bin was cut in the southeastern corner of the mud-plastered floor. It was 2.10 m long by 0.70 m wide, and it reached a depth of at least 1.50 m (the bottom was not explored at this time). The gravelly fill yielded no finds.

The mud floor was thick and burnished on the surface. The walls were rendered in mud plaster, whereas the eastern niche, while plastered with a mud coat, had lime plaster on the floor.

UNIT EE.50.3

The unit consisted of three or four rooms in a row, opening one from the other, tentatively connected with room EE.50.2.1 described above [Fig. 5]. It is now entered

through a small trapezoidal room measuring 3.50 m by 5.05–4.45 m, preserving stubs of walls up to the ceiling only in the southern part [Fig. 7]. The walls were not rendered with plaster and there were no niches (the robbers had attempted to cut a hole in the west wall). The walking level here was not reached at this time.

A passage 0.50 m wide between mud-plastered jambs broadened out to 0.78–0.90 m. The room it gave on was small,



Fig. 5. Unit EE.50.2: top, view from the west; bottom left, jamb and entrance to EE.50.2.1; bottom right, remains of a niche in the east wall (PCMA Naqlun Project/photos W. Godlewski)



*Fig. 6. Cooking pot sunk into the floor of room EE.50.3.4
(PCMA Naqlun Project/photo W. Godlewski)*



*Fig. 7. Unit EE.50.3: Rooms 50.3.1–2, view from the north
(PCMA Naqlun Project/photo W. Godlewski)*



Fig. 8. EE.50.3.2: top, view of the room toward the entrance in the south wall, note patch of lime plaster preserved just above the floor next to the entrance and niche with three circular hollows in its floor; bottom, remains of lime plaster with a painted inscription on the east wall (PCMA Naqlun Project/photos W. Godlewski)

3.00 m by 3.10 m. The walls were also badly destroyed, the highest point being in the southwestern corner [see *Fig. 7*]. Two niches were cut in the walls, close together in the southwestern corner; the tops of these niches have not survived. The niche in the south wall had the bottom 1.20 m wide by 0.40 m deep; three circular hollows were cut in a row inside these two niches (although whether they were part of the original design is not clear). The niche in the west wall measured 0.86 m by 0.66 m on the level of the bottom. It was at least 0.98 m high and may have been topped with a conch.

A wide entrance gave from the north; it was 1.15 m wide and had rounded pillars finishing off the sides. The western one was 0.20 m wide and 0.15 m long. The entrance wall was 0.20–0.25 m thick, the one on the west 0.47 m to the pilaster, the one on the east 0.55 m. Mud bricks were used in the construction. The floor had a much worn surface of white lime mortar. A coat of white lime plaster covered the mud-and-sand rendering of the walls of the room and the inside of the niches. There were red bands painted just above the floor, presumably on all the walls and framing the door in the south wall, which led to the next room. An inscription painted in red, in large letters and with much interlinear space, can be seen on the east wall; its state of preservation and salt efflorescence on the surface make it difficult to decipher.

Room EE.50.3.3 was severely damaged, missing most of the height of the walls; the north wall was entirely lost. The room was originally rectangular, 2.60 m by 4.00 m, and had no regular floor plastering. The next room, EE.50.3.4, survives only in its eastern part with the walls gone. It was 1.90 m by at least 3.00 m and extended

next to room EE.50.2.1. A mud floor survives with a large thick-walled cooking pot sunk into it in its reserved western end [*Fig. 6*]. The raised edges of this floor on the eastern and southern edge are the sole survivors of the lost walls of this room.

SUMMARY

Hermitage EE.50 is a good example of a mid-5th century complex (for the dating, see Danys 2017, in this volume), which must have been abandoned very early on, most probably not later than in AD 641 (Godlewski forthcoming), and was never reopened. The storage bins contained no archaeological material; they seem to have been filled in naturally after the place had been deserted and the interiors destroyed. A complete assessment of the architecture has to wait for the full excavation of the complex; however, it seems to share many features with another early hermitage, EE.44, which is also located in a small valley in the northwestern part of the Naqlun group (Godlewski 2000).

ADDENDUM

The study season concerned other hermitages as well as other finds categories in storage at the site. Prof. Włodzimierz Godlewski studied in detail some of the hermitages provisionally documented in 1986–1988 in the Naqlun hills and the medieval monastic complex. Prof. Tomasz Derda studied Greek documents uncovered previously in hermitage EW.87 and the medieval monastic complex. Szymon Maślak continued investigations of different construction methods applied in the monastic buildings on kom A for his doctoral thesis and Katarzyna Danys studied the pottery collected in storage in preparation for her PhD dissertation.

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Pottery finds from hermitage EE.50 in Naqlun. Preliminary assessment of the assemblage

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Abstract: Rescue excavations undertaken in hermitage EE.50 in Naqlun in 2016 brought to light an extensive pottery assemblage composed of red-slipped goblets, bowls and plates of Egyptian origin, made of alluvial fabrics, and a few specimens imported from North African workshops. The repertoire of tableware was complemented with *qullae* made of marl and alluvial clays. Numerous cooking pots, pans and a single lid represent kitchen equipment. Goods were kept in large vessels of different types. Commodities such as wine, olive oil or fish sauce were delivered in amphorae: Egyptian LRA 7 and imported vessels, originating from North Africa (Tunisia), Cilicia, Cyprus and Rhodes(?). This assemblage has revealed some aspects of everyday life in the hermitage and confirmed the independent self-sufficient lifestyle of its inhabitants. The pottery assemblage is from the middle to the end of the 5th century AD.

Keywords: Egypt, late Roman, 5th century, Naqlun, hermitage, pottery, amphorae, tableware, imports

Hermitage EE.50 is one of the complexes located in the hills to the west of Deir el-Naqlun, investigated by the Polish team following recent serious damage to its substance as a result of illicit digging (for the archaeological report, see Godlewski 2017, in this volume). The investigations revealed a pottery assemblage that was dumped outside the hermitage structures by the unknown diggers and hence can be associated only generally with EE.50. Yet it was deemed worthwhile to report on the find in view of the largely cooking character of this set.

The assemblage was analyzed using the quantification method, counting all diagnostic pieces: rims, bases and handles as well as body sherds (RHBS). Body fragments joined to rims, bases or handles were all deemed diagnostic. A pottery corpus was compiled on these grounds. The minimum vessel count (VMI) method was implemented. The assemblage comprised tableware, including some miscellaneous ceramic objects like a lid and an incense burner, cooking vessels and storage containers as well as amphorae.

TABLEWARE

The tableware group consisted of red-slipped vessels of local production (Hayes Egyptian Red Slipped B), and two specimens imported from North Africa. The repertoire comprised at least three goblets, six bowls, two carinated bowls, ten plates and five *qullae*.

Ledged-body GOBLETS, e.g., Nd.16.150 [Fig. 1] were made of alluvial fabric and find numerous parallels among vessels previously discovered in other Naqlun hermitages: EE.25 (Godlewski, Derda, and Górecki 1994: Figs 22.6–12), EE.6 (Godlewski, Danys, and Maślak 2016: Fig. 16:Nd.15.017), EW.87 (personal

observation, unpublished), as well as in the monastery rubbish dump (Danys-Lasek 2014: Fig. 6:323; 2012: Fig. 4:Nd.08.757). These examples span a time range from the 5th to the 7th century AD.

DEEP AND NECKED BOWLS have globular or angled shoulders, e.g., Nd.16.135 and rounded lower parts, e.g., Nd.16.149 [see Fig. 1]. They are made of hard or soft alluvial fabric. The latter bore a white-painted, wavy band on its shoulders. Forms analogous to Nd.16.135, dated from the beginning to the mid-5th century AD, have also been found in hermitage EW.87 (personal observation, unpublished).

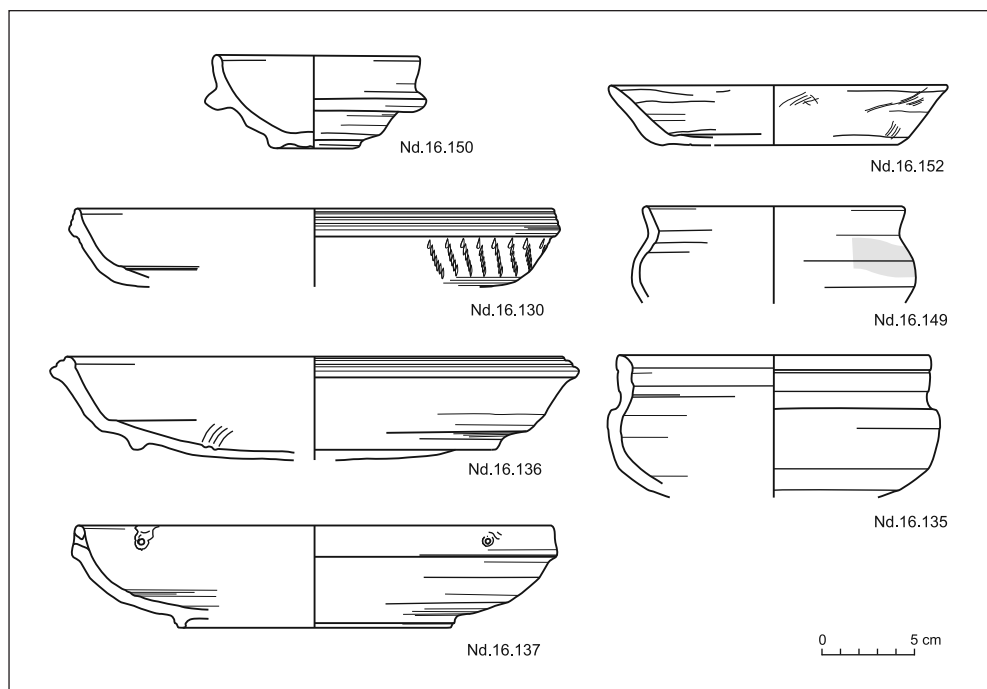


Fig. 1. Tableware selection: plates Nd.16.130, Nd.16.136, Nd.16.137; bowls Nd.16.135, Nd.16.149, Nd.16.152; goblet Nd.16.150 (only Nd.16.130 not of Egyptian production) (All PCMA Naqlun Project/drawing K. Danys)

SHALLOW AND NECKLESS BOWLS have rounded rims, sometimes with a ridge below on the outside, plain walls and flat bases, e.g., Nd.16.152 [see *Fig. 1*]. These bowls were made of a hard, alluvial fabric. One specimen bore traces of burning on the floor, suggesting that it may have been

used as a lamp. A similar shape of bowl was recorded in Pelusium (Ballet 1997: Pl. II:25).

CARINATED BOWLS were rather large and deep, made of soft alluvial fabric, e.g., Nd.16.151, characterized by painted decoration: a black rim band and black

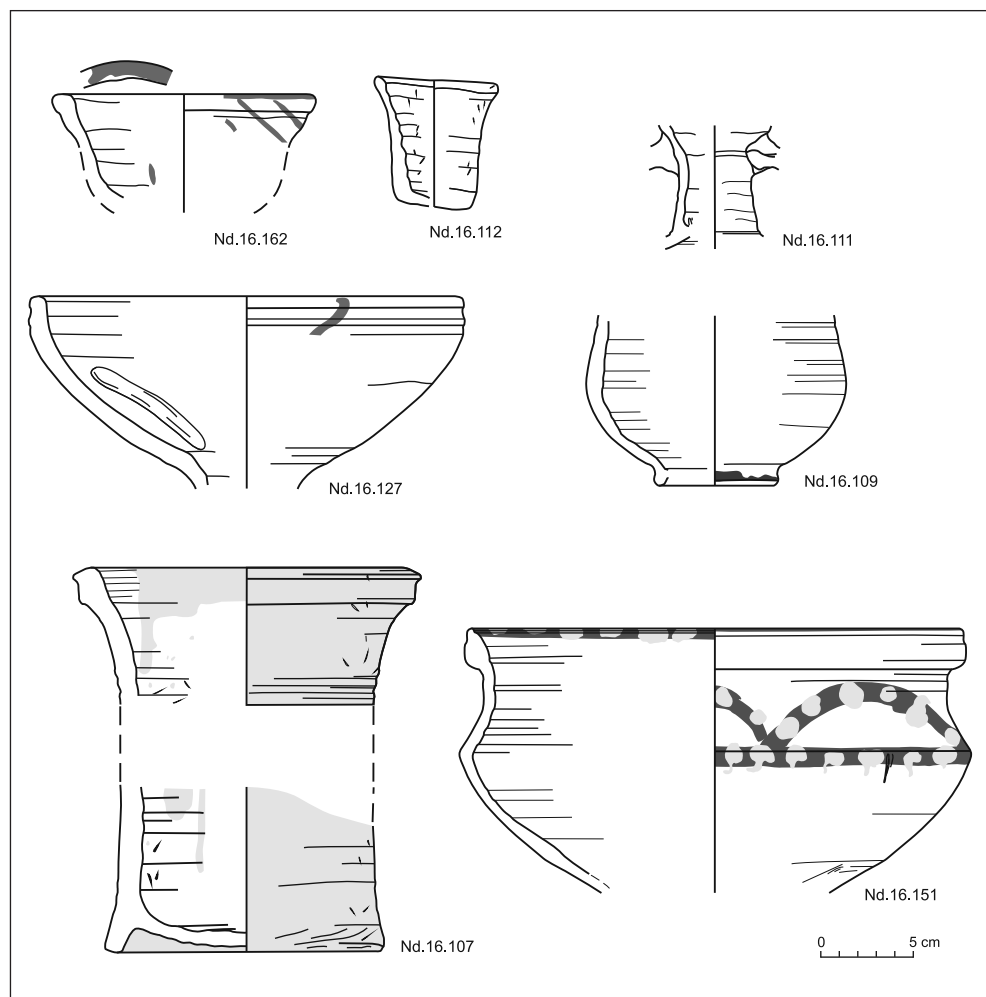


Fig. 2. Selection of tableware: top left, incense burner Nd.16.162 and bell-shaped cup Nd.16.112; center left, funnel Nd.16.127; bottom left, pot-stand Nd.16.107; top right, quillae Nd.16.108a, Nd.16.111; bottom right, carinated bowl Nd.16.151

arcades on a horizontal band in the upper part, all embellished with rows of white spots [*Fig. 2*].

PLATES included Egyptian and imported items. The latter were represented by two specimens of the same type: ARSW Hayes 84, manufactured in Tunisia around AD 440–500 (Hayes 1972: 133, *Fig. 23*). They have a down-turned ('Samian') rim with grooves on it and rows of rouletting on the external body surface, e.g., Nd.16.130 [see *Fig. 1*]. Parallels for these plates were also found at Kellia (Bonnet Borel and Cattin 2003: *Fig. 410:7*). Locally-made plates belonged to four types, distinguished on the grounds of rim shape, including a bead and grooved rim, e.g., Nd.16.136 [see *Fig. 1*], a down-turned rim, e.g., Nd.16.137 [see *Fig. 1*], a plain rim and a rounded rim with ledged body. Preserved bases have the form of a low ring. One specimen was decorated with engraved grooves on the rim and floor (Nd.16.136) and another (Nd.16.137) had a single post-firing hole pierced just below the rim, which does not seem to be a repair hole as there were no others on at least half of the vessel (preserved 50% of the circumference). It may have been for some handling device, like a cord laced between two holes on the opposite sides of the rim to make a handle (assuming there was another hole on the unpreserved part of the vessel), perhaps to protect the content against small animals or insects. Such a way of closing a vessel has parallels among the finds from Karanis (Johnson 1981: Pl. 7:60) and Nd.16.137 is similar to examples from Kellia (Bonnet Borel and Cattin 2003: *Fig. 411:36*).

At least three QULLAE of marl clay were distinguished, probably representing

two different forms, one with globular or slender shoulders and the other with a pear-like bottom shape, e.g., Nd.16.108a [*Fig. 2*]. The narrow neck of Nd.16.111 [see *Fig. 2*] was equipped with a partly preserved filter. At least two items were made of alluvial fabric, cream-slipped on the outside. Small fragments of shoulder bore black and red decoration, unfortunately poorly preserved. However, it seems to be the same as the decoration recorded on the vessels from hermitages EE.6 (Godlewski, Danys, and Maślak 2016: *Fig. 16:Nd.15.056, Nd.15.053*) and EW.87 (unpublished).

MISCELLANEOUS VESSELS from the tableware category include some singular specimens of uncommon form [see *Fig. 2*]. An outstanding small, bell-shaped cup Nd.16.112 was made of alluvial fabric and its coarse surfaces had no slip. A partly-preserved incense burner Nd.16.162 of alluvial fabric, very poorly fired, was coated with cream slip, and traces of purple-painted linear decoration were observed on the rim and on the outside. The upper part of funnel Nd.16.127 was cream-slipped on the outside, and some traces of black-painted decoration were also observed on the exterior. A similar example, although undecorated, was recorded in Kellia (Bonnet Borel and Cattin 2013: *Fig. 59:59*). Last but not least, there was a cylindrical vessel, presumably a pot-stand(?) Nd.16.107, made of a hard, alluvial fabric, white-slipped on the outside and with drips and splashes inside on the grey surface. An analogous object was found in hermitage EW.87 in Naqlun (personal observation, unpublished).

COOKING EQUIPMENT

At least seven vessels were identified as cooking pots [Fig. 3]. All of the pots represented deep and closed forms, made of different alluvial fabrics. External surfaces were covered with red slip. The most common were necked forms, e.g.,

Nd.16.121, which has a white-painted band on the inside rim, being rather unusual for pots in this group. Other cooking equipment from the hermitage included at least two rather shallow pans, with ledge- or down-turned rims, ribbed

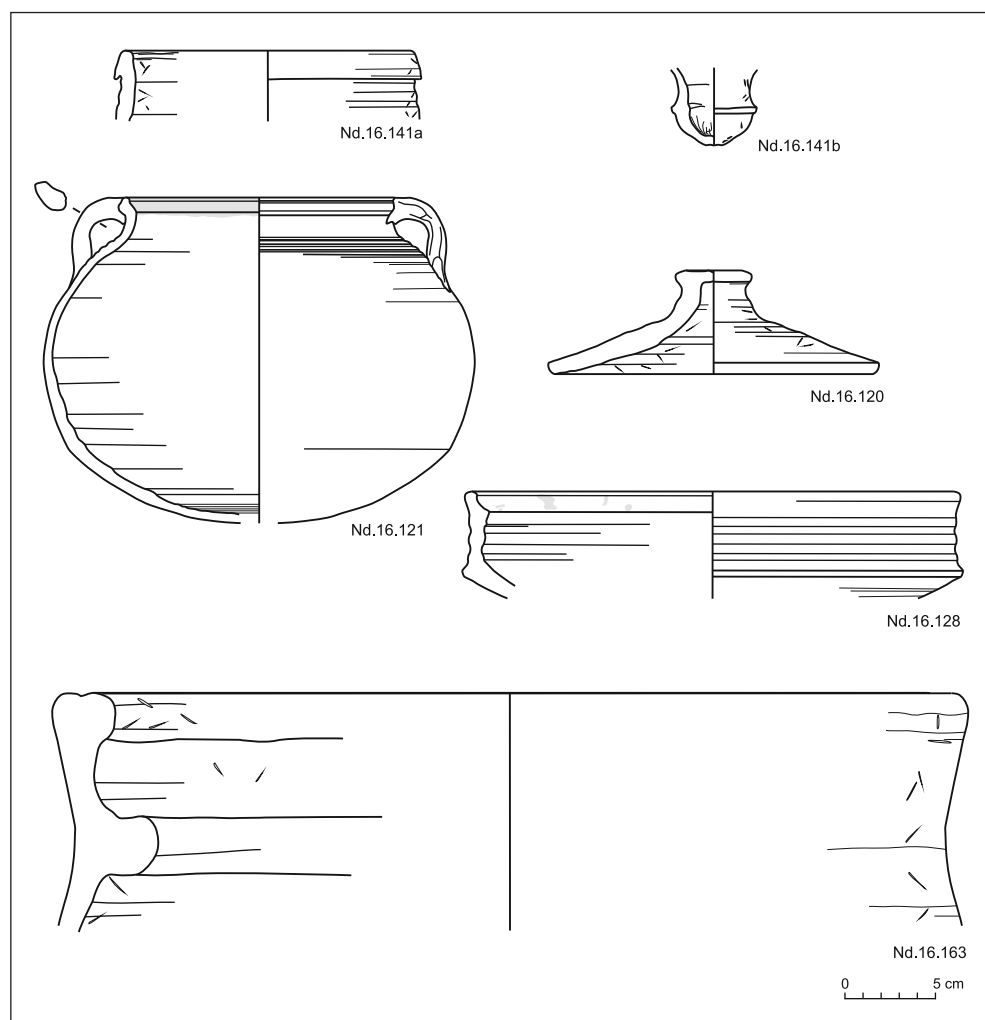


Fig. 3. Selection of cooking pots (Nd.16.120, Nd.16.121, Nd.16.128) and storage vessels (Nd.16.141a–b, Nd.16.163)

upper parts and sharp carination in the middle. Both were made of alluvial fabric and were red-slipped, but only Nd.16.128 had cream-painted splashes on the rim. These forms were paralleled in Kellia by type E85, which was connected with a context of the early 5th century AD (Egloff 1977: Pl. 43:16), and by similar vessels in Karanis (Johnson 1981: Pl. 68:52B). Last but not least, there was a lid Nd.16.120, made of the same fabric and with the same kind of surface treatment as the cooking pots. It has a rounded rim, plain walls, a knobbed handle and bears traces of heavy burning.

Pottery for cooking purposes from EE.50 was similar to groups coming from the other hermitages in Naqlun, e.g., hermitages EW.87 and EE.6. Saucepans were the one exception: deep, closed forms of a circle segment (for the shape, see the example from EE.6 in Godlewski, Danys, and Maślak 2016: Fig. 17:Nd.15.064). None of the fragments discovered in EE.50 could be identified with this group. Could this be connected with the culinary methods used by the inhabitants of this hermitage? Of note is the fact that unlike the pans, the cooking pots and the lid bore traces of use (burning and sooting).

STORAGE VESSELS

The smallest group amongst the pottery from EE.50 was composed of vessels and containers used for storage purposes [see Fig. 3]. At least two *qawwadis* can be distinguished (e.g., Nd.16.141, parts a and b). Besides their primary function as *saqqiya* pots, they might have been used for transporting water to the hermitages, a practical solution in the case of the hill hermitages in Naqlun where goods, including pots full of water could have been transported by donkey trains. *Qawwadis* may have also been used for storing water.

The shape of the base of the specimen from EE.50 is noteworthy: the ledged knob, round-ended and hollow interior

finds parallels in the material from hermitage EW.87 (personal observation, unpublished) from the early to mid 5th century AD, as well as in Tod, dated there to the end of the 5th–mid 7th century AD (Pierrat 1996: Fig. 97), and in el-Ashmunein from the 6th to the mid-7th century AD (Bailey 1998: Pl. 48: H94). The most numerous in this group were large, coarse, wheel-made containers (e.g., Nd.16.163), made of alluvial fabric. Others were handmade, but unfortunately poorly preserved (for a complete handmade large storage vessel, see the example from EE.6 in Godlewski, Danys, and Maślak 2016: Fig. 17:Nd.15.060).

AMPHORAE

Most of the pottery finds belonged to the LRA 7 amphora type (Riley 1979: 225–226) [Fig. 4] and the count of preserved bases indicated that at least 84 containers were present. They represented different states of preservation: the

eroded surface on many suggested long exposure to weather conditions (e.g., Nd.16.103), while those that were almost complete, with only the lower part broken, were most probably reused in (other) structures, e.g., in wall construction.

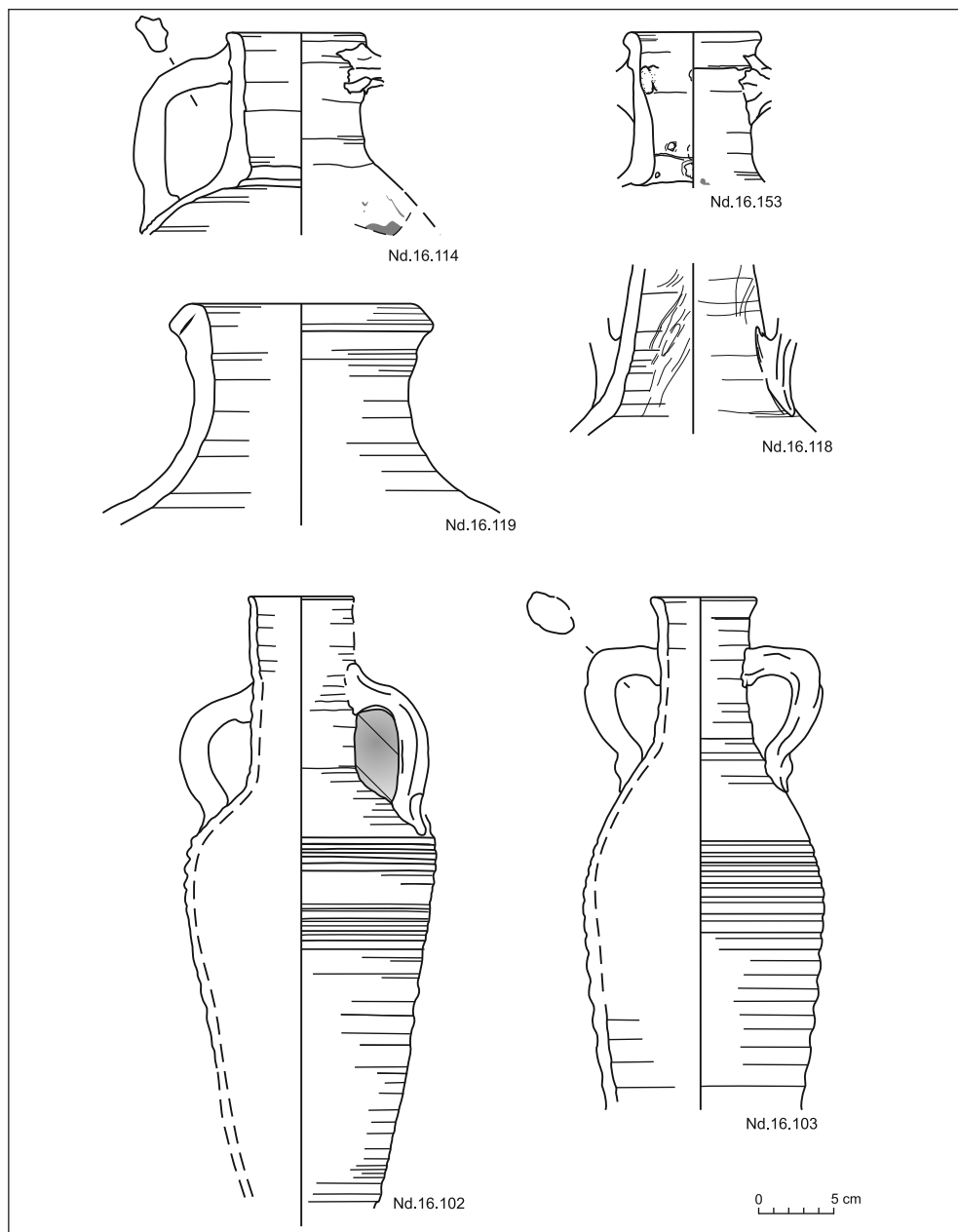


Fig. 4. Selection of amphorae: Cilician and Cypriot LRA 1 (Nd.16.115, Nd.16.143), North African Tripolitania III (Nd.16.119) and LRA Benghazi 8 (Nd.16.118) and Egyptian LRA 7 (Nd.16.102, Nd.16.103)

Traces of mortar noted on the surfaces support this theory (e.g., Nd.16.102). Moreover, the discovery of a wall built in the courtyard of the recently excavated hermitage EE.6 showed amphorae *in situ* as part of the construction. The group of amphorae of type LRA 7 consisted of one general type, E177, according to Michael Egloff's typology (1977: 116, Pl. 59:7), or AE7.1-1 variant A in Delphine Dixneuf's nomenclature (2011: 163–164, Fig. 152). The characteristic elements of these vessels comprise elongated necks, everted rims, rather slender bodies with strong ribbing on the shoulders, while the bases are elongated and twisted or have icicle-like shapes. Specimens found in EE.50 were made of fine Nile fabrics with two main sets of inclusions: quartz with mica flakes and white particles (limestone?), and quartz with carbonated organics and abundant mica. It seems that LRA 7, made of the first fabric group, might be connected with pottery workshops located close to Fayum Oasis, such as Oxyrhynchos (Behnasa), and the other type with Hermopolis Magna (el-Ashmunein), as the large amount of mica and white particles appearing in the clay here might suggest this location (Dixneuf 2011: 157, Fig. 181). Amphorae of type LRA7 represented the earliest types, dated by Dixneuf to the second half of the 4th through the 5th century AD, but other scholars propose a chronology in the 5th–6th century AD for finds from el-Ashmunein and Kom el-Nana (Bailey 1998: 132, Pl. 79: V1; Pyke 2005: Fig. 4.5 KN4). In Naqlun, such specimens were also discovered in other hermitages, such as EE.6 and EW.87, connected with the 5th–6th century AD horizon. They were also recorded at Soknopaiou Nesos (Dixneuf 2012: Cat. 44–54) and Oxyrhynchos

(Subías Pasqual 2007: Pl. 1, Fig. 5) with the same dating.

Among the group of imported LRA Carthage 1 amphorae [see Fig. 4 top row] at least four items can be distinguished. Macroscopic analysis of the fabrics and their comparison to those from identified production centers (Williams 2005) allowed three different places of origin of these amphorae to be distinguished: Cilicia (e.g., Nd.16.114), Cyprus (e.g., Nd.16.153) and, most probably, Rhodes. The Cilician container bore a fragmentary red *dipinto* on its shoulder. A characteristic feature of Nd.16.153 was the presence of large white particles (limestone?) erupting to the inner surface. It seems that LRA Carthage 1 fragments from hermitage EE.50 represent an early production phase of containers of this type, and are widely dated to the 5th century AD (Pieri 2005: 71). With regard to their content, olive oil as well as wine can be taken into consideration (Peacock and Williams 1986: 187; Pieri 2005: 85).

Cylindrical amphorae of North African origin [see Fig. 4: Nd.16.119, Nd.16.118] were represented by at least three specimens belonging to two different types: LRA Carthage 7, also labeled as Tripolitania III or Keay XXIV (henceforth called Tripolitania III) and LRA Benghazi 8. The former, Nd.16.119, was a fragment of a massive, thickened and everted rim with its exterior in greenish-cream coating. Its origin can be identified in the province of Tripolitania (now southeastern Tunisia and western Libya), where kiln sites have been located. It seems that the Naqlun example was manufactured in a Tunisian workshop located at the Zitha/Zian site (Bonifay 2004: 29). The possible contents were olive or oil (Bonifay 2005; Ballet, Bonifay,

and Marchand 2012: 104). Amphorae of this type occurred between the 2nd and 4th century AD (Bonifay 2004: 105; Peacock and Williams 1986: 170), but there are also some examples, like those discovered on Catalan sites (Keay 1984: 393, Fig. 75:2), dated to the 4th through mid-5th century AD or to AD 430–440 in the case of a specimen found in Rome (Bonifay 2005). Two other items recorded in hermitage EE.50 were fragments of necks (e.g., Nd.16.118), belonging to LRA Benghazi 8 (Peacock and Williams class 51), the 'spatheion' type (Riley 1979) and these represent the larger (variant B) version of those containers. These finds were, most probably, manufactured in northern Tunisia, and a macroscopic

analysis of the fabric of the Naqlun specimens suggests that it is similar to the material from northern Tunisia (Keay 1984: 447). The chronology of finds of this type discovered in the western Mediterranean spans the 5th and 6th centuries AD (Keay 1984: 394). Narrow and smaller forms (variant A) are dated to the late 4th century, possibly through the 6th century AD (Peacock and Williams 1986: 203); these occurred in Naqlun, in a rubbish dump on the kom, in layers connected with the 6th century AD. Larger forms (variant B) were recorded in hermitage EW.87 (personal observation, unpublished), dated to the beginning through mid-5th century AD. The principal contents of LRA Benghazi 8 remain unknown, but olive oil is possible.

CONCLUSIONS

The assemblage of pottery collected from hermitage EE.50 was homogenous with respect to vessel types. It replicates the repertoire of vessels from hermitages excavated previously, such as EE.6 and EW.87. The semi-anchoretic character of structures from the Naqlun *laura* is attested by the pottery. Vessels for storage purposes, including large ones, seem to have been an integral part of the hermitage equipment allowing for the self-sufficiency of the inhabitants.

Numerous vessels for cooking purposes came from kitchen facilities and are well known from other Naqlun eremitic complexes. Interestingly, saucepans did not appear in this assemblage, although they were registered among the finds from hermitages EE.6 and EW.87. It remains to be seen whether this was a coincidental choice of cooking vessels or a reflection of cooking techniques and food preferences.

Tableware was composed of locally made plates, bowls and goblets with a small addition of imported vessels manufactured in North Africa, most probably in Tunisia. The absence of Aswan Ware was also conspicuous, considering that vessels of this kind have been recorded in other hermitages in Naqlun.

The presumed self-sufficient lifestyle of the inhabitants of EE.50 is borne out also by the commodities delivered in the amphorae. The most numerous are LRA 7 vessels which represent the earliest examples of this type. Their elongated necks are reminiscent of those of their predecessors, of type AE3 in Dixneuf's typology, the local origin of which in the southwestern part of Fayum is certain (Bailey 2007). The most likely content was wine, but other things, such as fish sauce, can be considered as well. Other amphorae collected from hermitage EE.50

were preserved only in fragments; these were imported Tripolitanian III, LRA Benghazi 8 from North Africa (Tunisia) and LRA Carthage 1 from Cilicia, Cyprus or Rhodes(?). Most probably they were used for olive oil transportation.

This pottery assemblage seems to be placed in the mid 5th century AD, continuing through the end of the 5th century AD. The closest parallels for the tableware types came from other hermitages of early 5th century date. Moreover the quantity and appearance of specific amphorae types, their parallels and chronology at other archaeological sites also suggest this date.

The group of transport containers from EE.50, as well as from hermitages EE.6 and EW.87 revealed significant differences from the materials discovered on the southern

refuse dump of the kom in Naqlun. The earliest layers there, of the 6th century AD(?), yielded no large cylindrical African amphorae, although a narrow version of the LRA Benghazi 8 'spatheion' type was registered. Last but not least, amphorae of an early type of LRA 7 with elongated neck differed from those recorded from the monastery ruins on the plateau and represented mainly AE7.1-1 in Dixneuf's typology, which opts for a date in the second half of the 4th through the 5th century AD (Dixneuf 2011: Fig. 159). In summary, the collection of pottery from hermitage EE.50 should be dated to the mid through end of the 5th century, which allows this complex to be identified as one of the earliest eremitic foundations in the hills of Naqlun.

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The Middle Kingdom tombs of Asasif: work in the 2015/2016 season

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Abstract: In the third season of the Polish Asasif Project at the North Asasif Necropolis in West Thebes archaeological fieldwork concentrated on six of the Middle Kingdom rock-cut tombs: MMA 508/TT 311, MMA 509, MMA 512, MMA 514, MMA 515 and MMA 517/TT 240. The corridors and chambers were cleared and the architecture documented and restored. A surface survey was carried out on the slope. Of greatest interest among the finds are Middle Kingdom stonemason's tools and cartonnages from the Third Intermediate Period.

Keywords: West Thebes, North Asasif, Middle Kingdom, rock-cut tombs, Khety, Meru

Six Middle Kingdom funerary complexes: the tomb of Khety (MMA 508/TT 311), MMA 509, MMA 512, MMA 514, MMA 515 and the tomb of Meru (MMA 517/TT 240) were the focus of the Polish project working in the North Asasif Necropolis at West Thebes in the 2015/2016 season [*Fig. 1*]. Exploration and documentation work was undertaken on the slope and inside the funerary complexes. The

sandstone slabs in the main hall floor and the walls of the burial crypt in the tomb of Khety were restored. Studies on the Middle Kingdom tomb architecture were carried out and material discovered in this and the two earlier seasons were analyzed, especially the Eleventh Dynasty stonemason's tools and burial assemblages, textiles, as well as funerary equipment from the Third Intermediate Period.

TOMB OF KHETY (MMA 508/TT 311)

Current work inside the tomb of the Treasurer Khety focused on documenting the painted decoration of the burial crypt and the fragments coming from the walls of the entrance corridor [*Fig. 2 left*]. The team restored the limestone sarcophagus of the owner and replaced limestone slabs

missing from the pavement in the entrance corridor.

Limited archaeological fieldwork encompassed a survey of the eastern part of the courtyard. Artifacts collected from this area represented mainly Eleventh Dynasty funerary equipment, among them wooden

model fragments and a broken clay tray. In the entrance corridor, the bedding of the sandstone pavement was tested in the gaps left by the missing slabs, removed probably either by thieves or by modern explorers. In all cases crushed limestone was found to be the material used to level the irregular bedrock surface.¹

The “false burial crypt” at the back of the cult chapel continued to be explored. The rock debris filling the western part of the chamber contained inscribed blocks from the limestone sarcophagus of Khety and fragments of a carefully cut limestone slab, which had been used to block the entrance to the next sloping passage after the funeral.²

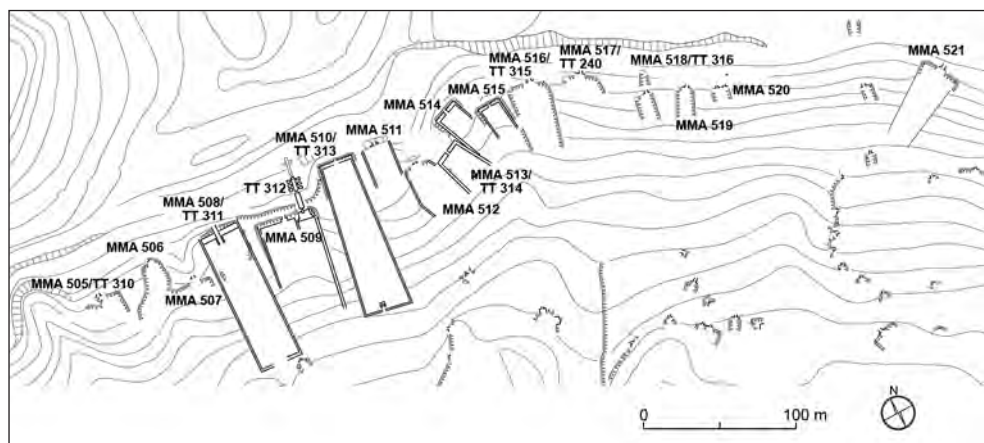


Fig. 1. Tombs in the North Asasif necropolis
(Plan K. Andraka)

Team

Dates of work: 16 November 2015–9 March 2016 (with a break between 17 December 2015 and 15 February 2016)

Director: Patryk Chudzik, archaeologist (Institute of Archaeology, University of Wrocław)

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Architect: Mariusz Caban (PhD candidate, Faculty of Architecture, Wrocław University of Technology)

Engineer: Anna Caban (freelancer)

Conservator: Maria Podkowińska-Lulkiewicz (freelancer)

¹ For a similar layer of powdered limestone found in tomb MMA 1152 at Sheikh Abd el-Gurna, see Chudzik 2013: 195.

² Compare with the blocked entrance to the burial crypt in the unfinished royal mortuary complex in the South Valley (Mond 1905: 78).

In addition, diverse material from different periods was found in the rubble inside the false burial chamber. Fragments of wooden arrows with copper heads and flint edges represented the Middle Kingdom funerary

equipment (see Winlock 1942: 127, Pl. 20; Hayes 1968: 279–280, Fig. 182) [*Fig. 2* right]. There were also painted cartonnages dating from the Third Intermediate Period (Chudzik 2016: 295).

TOMB MMA 509

In tomb MMA 509, corridors and chambers were examined beyond the stone wall standing at the end of the first part of the entrance corridor, where sandstone and limestone floor slabs were discovered in the 2013/2014 season (Chudzik 2015: 240).

A doorway in the center of the mud-brick façade led to a long lofty corridor that was aligned with the north–south axis of the tomb. Its width and height gradually decreased approximately 15 m from the entrance. The second part of the corridor, which is over 20 m long, led to a square chamber already deep in the rock, functioning probably as a funerary cult chapel [*Fig. 3*]. The floor in the corridor and chapel was covered with mud mortar. The north wall of the chapel featured a doorway to another chamber. The entrance, situated on the axis of the main corridor, was carved near the southeastern corner of the room. Two entrances led to corridors sloping down diagonally in the northern and northeastern parts of the room. The entrance in the north wall, located on the axis of the complex, was surmounted by an arch built of mud-bricks and plastered with mud. A gap in the rock in the southern part of the west wall, level with the rock floor, is big enough to have accommodated a coffin in ancient times. A square chamber was carved at the end of each corridor. None

of these rooms contained any material to indicate their function; nevertheless, their role as burial chambers can hardly be denied.

Rock debris filled both sides of the cult chapel, reaching more than 2 m in height in the eastern part of the chapel. It was explored down to the Middle Kingdom mud floor, revealing no stratigraphy and yielding large quantities of potsherds, mud stoppers, textiles, wooden fragments of coffins and chests, faience and carnelian beads [*Fig. 5* top left], mud-bricks and fragments of high quality limestone blocks with relief decoration and red-ink painting.³ Human mummies [*Fig. 4*] and animal remains, including cattle skulls and forelegs, a goat skull and fragments of a neurocranium from a catfish (*Clarias gariepinus*) were unearthed.⁴ Excavations in the cult chapel uncovered some elements of the Middle Kingdom burial assemblages, such as a fragment of a clay tray and wooden model remains. Additionally, three stone hammers made of silicified limestone (see Seton-Karr 1905: 176, Pls I, II, IV–VI, VIII; Petrie 1917: 46, Pl. LIII [83–86]; Clarke and Engelbach 1990: 224, Fig. 266; Arnold 1991: 258–262, Figs 6.12, 6.13) [*Fig. 5* bottom] and a fine limestone plumb-bob(?) were discovered. Deserving the most attention were a small cup made

³ The red-ink painted blocks may have come from the adjacent tomb of vizier Nespakshuti. For similar blocks, see Winlock 1923: Fig. 17 [top]; Pischikova 1998: 93, 96.

⁴ I would like to thank Dr. Urszula Iwaszczuk for identifying the faunal remains.



Fig. 2. Tomb of Khety: left, fragment with a representation of the mummy of Khety from the west wall of the entrance passage; right, Middle Kingdom wooden arrows: an arrowhead (a) and an arrow nick (b) (Photos M. Jawornicki)



Fig. 3. Cult chapel inside tomb MMA 509 (Photo P. Chudzik)



Fig. 4. One of the mummies found in the cult chapel of the funerary complex MMA 509 (Photo M. Jawornicki)

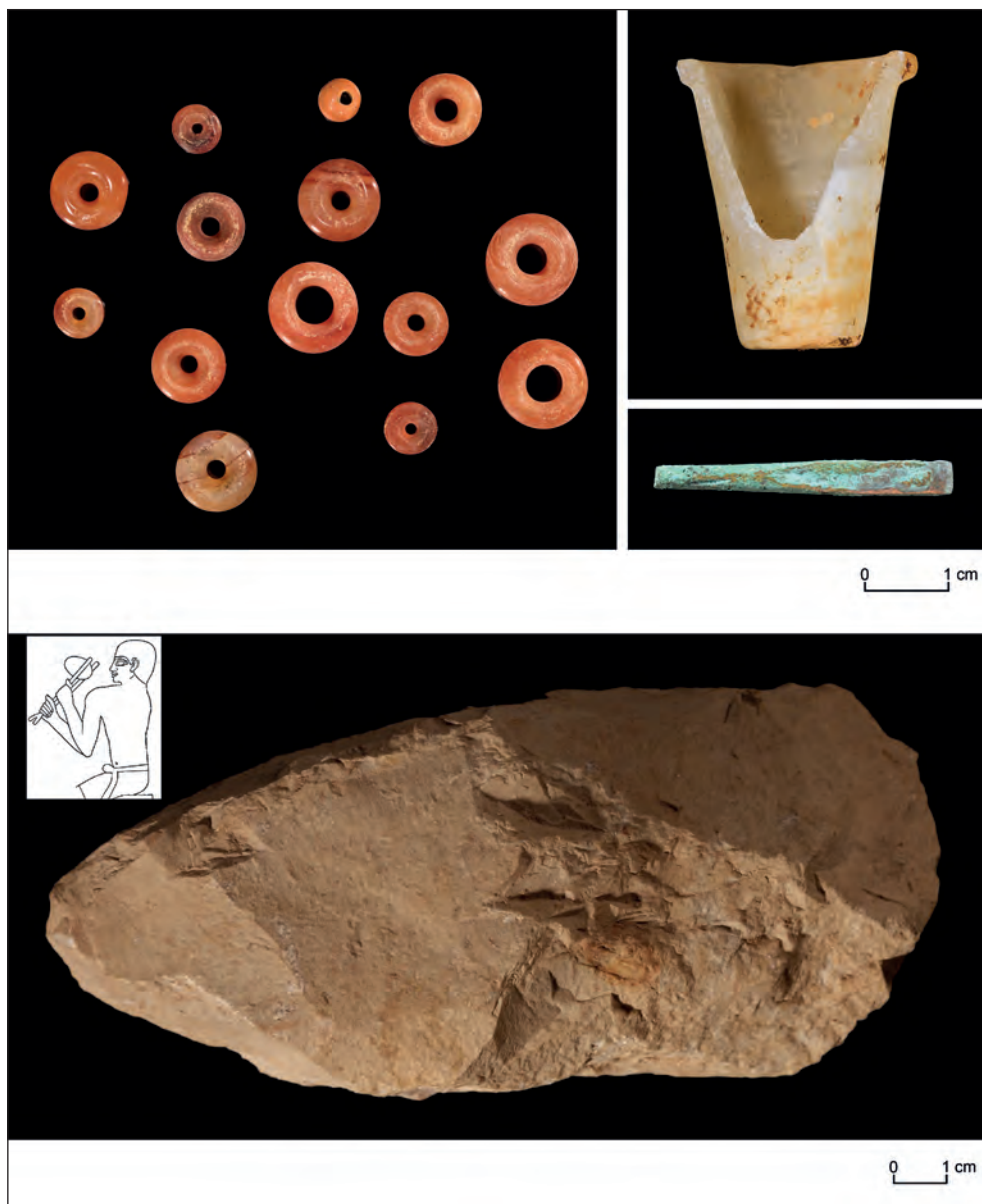


Fig. 5. Finds from tomb MMA 509 (clockwise from bottom): limestone hammer head (inset, drawing of a sculptor with a stone hammer); set of beads made of carnelian; small travertine cup; miniature copper chisel, possibly of Middle Kingdom date (Photos M. Jawornicki; drawing P. Chudzik after Wild 1966: Pl. CLXXIII)



Fig. 6. Cartonnages from tomb MMA 509: top, God Ra on the solar bark with wadjet eyes, Third Intermediate Period; bottom left, God Ra in ram-headed scarab form, Twenty-second Dynasty; right, falcon with the solar disc on its head clutching a shen symbol in its claws, Twenty-second Dynasty (Photos M. Jawornicki)

of travertine [*Fig. 5* top right] and funerary equipment, mainly clay ushabti and finely decorated fragments of cartonnages with representations of the deceased and the underworld deities, dated mostly to the Twenty-second Dynasty [*Fig. 6*].⁵

The fill cleared from the chamber back of the cult chapel was 0.20 m high by the entrance, rising to 0.40 m at the highest

point in the northeastern part of the room. A small copper chisel [*Fig. 5* center right] was discovered among the human and animal remains, textiles and wooden items. This miniature object, measuring 3.60 cm in length, is probably a chisel model from the same set as the small travertine cup found in the cult chapel.⁶ Both can be dated to the Middle Kingdom.

TOMB MMA 512

In the funerary complex of MMA 512, explored already in an earlier season (Chudzik 2015: 241–243), the wall of the courtyard in its eastern part and the entrance corridor were now documented. A significant part of the entrance

corridor is still filled with rock debris and the rock ceiling threatens to collapse at any moment. Measurements taken this season will help to design a proper wooden scaffolding to ensure the safety of future work.

TOMB MMA 514

The doorway in the center of the mud-brick façade leads to a long and lofty corridor. A survey of the tomb revealed three shaft tombs, some still filled with rubble, in the floor of the main passage. Besides, a niche with a shaft in its floor can be seen about 5 m from the corridor entrance. At the end of the corridor is a large and irregular chamber with a rectangular floor, possibly intended as a funerary cult chapel. An irregular niche was carved in the north wall and another in the western part of the room. An entrance to a passage sloping down diagonally, situated in the east wall of the chapel, led eastwards to the burial crypt. A low wall, 0.75 m high, preserved at the entrance to

the chamber, was built of mud-bricks to seal the crypt after the funeral [*Fig. 7*].

The burial chamber proved empty, but artifacts were found in the entrance corridor and chapel. These included funerary equipment from the Middle Kingdom (fragment of a round clay tray with representations of cattle legs and ribs, fragments of wooden models) and the Third Intermediate Period (cartonnages and clay ushabti figurines [*Fig. 8*]) as well as animal bones, textiles, wooden fragments of coffins and pottery vessels.

More material from the Third Intermediate Period (wooden fragments of coffins and chests, cartonnages, textiles and

⁵ For a similar decoration style, see the outer-coffin of Djedamenuifankh in the British Museum collection (EA 29577) (Budge 1924: 121–122; Dawson and Gray 1968: 21; Andrews 1998: 56–57).

⁶ For models of tools from Thebes, see Petrie 1917: 20, Pl. XXI [21, 22]; Winlock 1924: 16, deposit from the Temple of Hatshepsut; Hayes 1968: 287–292, Figs 189–192; Arnold 1981: 52ff., especially 64, Pl. 88c, objects from the tomb of Kemsit.

pottery) came from the fill in the western part of the courtyard in front of the entrance to an associated tomb MMA 514a. The reversed stratigraphy of this fill suggests that it may have been thrown out from the tomb. A handmade ushabti deserves particular attention (see Niwiński 1985: Pl. 31a). It was made of clay and painted blue in imitation of faience [Fig. 8 top

right]. A similar figurine was discovered in this tomb in the 2013/2014 season [Fig. 8 top left].



Fig. 7. Mud-brick wall at the entrance to the burial crypt in tomb MMA 514 (Photo P. Chudzik)



Fig. 8. Finds from funerary complex MMA 514: top, clay ushabtis uncovered in front of the entrance to tomb MMA 514a; bottom, decorated cartonnage from the entrance corridor (Photos M. Jawornicki, P. Chudzik)

TOMB MMA 515

An archaeological survey in the courtyard of funerary complex MMA 515 collected human and animal bones, textiles, coffin or chests remains, pottery sherds and fragments of funerary cones.

The open courtyard of the funerary complex was flanked by mud-brick walls on the east and west. The mud-brick façade in the northern part was much bigger than the other courtyard walls [Fig. 9]. In the center of the façade there is a doorway with a mud-brick doorstep [Fig. 10]. A mud-brick jamb survived in place on the left side of the doorway. A deep niche can be seen above the façade; it was completely empty. Comparable work at the funerary complex of Neferhotep (MMA 518/TT 316) a few years earlier resulted in the discovery of two tightly wrapped cubic statues (Winlock

1923: 19–20, Figs 13–14; 1942: 71–72, Pl. 35). Herbert E. Winlock suggested that a secret statue chamber cut in the mountain above the façade had served as a *ka*-chapel.⁷

Leading into the tomb was a corridor that opened into a square rock-cut chamber. About 1.50 m from the tomb doorway there was a niche cut on the left side of the corridor, one meter above the floor level.

The chamber at the end of the corridor probably functioned as a cult chapel. There is a very deep niche or another corridor, which had never been finished, in its north wall, on the main hall axis. A dromos is located in the floor in the southwestern part of the cult chamber. The entrance of a sloping passage opens in its bottom. The corridor leads down westwards to a small square chamber. Another sloping



Fig. 9. Mud-brick façade of tomb MMA 515; note deep niche above the façade (Photo P. Chudzik)

⁷ For similar statue chapels above the façade, see Davies 1913: 282, Pl. XLIX; Dorman 1988: 91–92, Pls 17–19.

passage opens in the western part of the floor of this chamber. At the end of the corridor there is a burial crypt. In Middle Kingdom times, the doorway to the burial chamber was closed with a mud-brick wall. The lowest courses of this wall have been preserved. An undecorated sarcophagus, similar to that of Meru (MMA 517/TT 240) (Soliman 2009: 102; Chudzik 2016: 299, Fig. 14) was carved in the floor in the eastern part of the chamber.

Exploration work concentrated on clearing the mud-brick walls of the courtyard and façade, as well as the entrance corridor and chapel. A deposit of funerary cones of a Middle Kingdom date was found in the eastern corner of the façade [Fig. 11]. The set consisted of 58 handmade cones,



Fig. 10. Doorway with mud-brick doorstep, tomb MMA 515 (Photo P. Chudzik)



Fig. 11. Deposit of funerary cones in the eastern corner of the façade of funerary complex MMA 515 (Photo P. Chudzik)

each 28–32 cm long and 6.5–7.5 cm in diameter.

Terracotta cones used to be painted red and then partly white. Fragments of this kind were collected from the surface of the courtyard. Funerary cones still in place were discovered by Herbert E. Winlock in two rows above the rock façade of a Middle Kingdom tomb under the avenue leading to the Temple of Hatshepsut at Deir el-Bahari

(Winlock 1928: 6–7, Figs 4–5). Terracotta cone friezes are attested tentatively in some New Kingdom Theban tomb wall scenes (see Davies 1938: 36–38, Figs 2–4, 8, 14). Cones seem to have been brought to the tomb and painted on the spot as implied by marks of red paint on the white plaster of the façade. However, the cones from the deposit, which were not decorated, seem not to have been placed in the brick façade.

TOMB OF MERU (MMA 517/TT 240)

Study of the burial crypt decoration in the tomb of Meru was the prime objective of the 2015/2016 season [Fig. 12]. In addition, an archaeological survey was resumed on the slope in front of the tomb.

A terracotta figurine fragment was discovered during the survey, approximately 30 m away from the entrance to the tomb.

The decorative pattern covering the whole surface of this figurine is fairly uncharacteristic: short and irregular shallow curved lines made with a sharp tool [Fig. 13]. The right leg is placed slightly ahead of the other. Research so far has failed to identify the object conclusively. It is most likely an image of a bird, which is suggested



Fig. 12. False door, offerings and offering list on the east wall of the burial chamber of Meru (MMA 517) (Photo P. Chudzik)

by its profiled body, the upper parts of legs and a big part of the left wing. The broad base of the neck, the wing aligned close to the body and the legs, which are thinner at the bottom and thicker in the upper part, suggesting plumage, could point to a falcon representation. The figurine was made probably in the Hellenistic or Roman period (for similar decoration, see Breccia 1934: Pl. LXXII [370], CX [634]), nevertheless, it is also possible that it is of modern date.

Fig. 13. *Fragmentary terracotta figurine of a bird found in the courtyard of the funerary complex of Meru*
(Photo M. Jawornicki)



CONCLUSIONS

Summing up the third season of archaeological exploration by the Polish Asasif Project, one should point out the importance of discoveries made in the funerary complex MMA 509, where the finds included Eleventh Dynasty stonemason's tools and miniature objects, possibly from a deposit, as well as finely decorated carton-nages from the Twenty-second Dynasty.

From an architectural point of view, all of the funerary complexes examined in the 2015/2016 season represented the corridor tomb of type IIa (Arnold 1971: 43–46). Recorded finds prove a reuse of the Middle Kingdom tombs from the North Asasif Necropolis in the Third Intermediate Period.

ACKNOWLEDGMENTS

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Theoretical reconstruction of the Solar Altar in the Hatshepsut Temple at Deir el-Bahari

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Abstract: In a recent article Andrzej Ćwiek (2015) criticized on ideological grounds one of the hypotheses concerning the reconstruction of the Solar Altar in the Complex of the Sun Cult of the Temple of Hatshepsut in Deir el-Bahari. The theoretical reconstruction in question, presented as one of the possibilities in an earlier text by the present author (Dziedzic 2013), called for two obelisks and a sacrificial table standing on the Solar Altar located in the open courtyard of the complex. Ćwiek also pointed to the practical difficulties associated with transportation and placement of stone obelisks. This article describes the technical aspects of transporting and placing obelisks in two different locations. It also contains calculations concerning the weight impact of the altar elements (obelisks) on the altar structure.

Keywords: Deir el-Bahari, Hatshepsut, temple, Sun cult, Solar Altar, obelisks

Modern research has shown that stone obelisks were extremely varied and were erected as solar symbols from the time of the Old Kingdom (from the mid 3rd millennium BC at least). These slender tapering pillars capped with a pyramidion, easily covered with inscriptions, have also been the subject of investigations by architects and engineers exploring the artistic and technical aspects of these extraordinary objects. The first to discuss the issue was Reginald Engelbach in his book *The problem of the obelisks, from a study of the unfinished obelisk at Aswan*, published in 1923. Other important contributions to the discussion of technical problems involved in the construction,

transport and raising of obelisks were made by Martin Isler (1976) and Labib Habachi (1984). A number of publications have dealt with the tallest and heaviest obelisks, between 19.60 m and 32.18 m long and weighing between 143 and 455 tonnes (Arnold 2003: 166). These required a large expenditure of labor and manpower, as well as near perfect logistic solutions for their transport and positioning in a desired place. The present article discusses issues related to the hypothetical raising of obelisks in the Complex of the Sun Cult in the Temple of Hatshepsut at Deir el-Bahari in Luxor. These obelisks are admittedly much smaller compared to their counterparts in the Karnak or Luxor temples.

MODERN METHODS OF DOCUMENTATION

Modern non-invasive testing methods, such as 3D scanning and digital photography, aided by artificial lighting of the examined area, allow hitherto undetected traces and marks to be identified and documented. Cuts made by the builders of the altar in the Sun Cult Complex in Deir el-Bahari, known already from the first documentation by Édouard Naville's team and from a study by Janusz Karkowski

(2003: 126), were presented by the author in a previous article in the form of drawings and photographs, along with evidence of wear caused by frequent walking on the stone surfaces (Dziedzic 2013). The latter observations could hardly be ignored in an architectural study of the altar, which would have been neither complete nor reliable were it to be based only on earlier extant documentation.

DIMENSIONS AND WEIGHT OF THE PROPOSED OBELISKS

The parameters of the proposed obelisks and their bases were given in numbers and illustrated with clear linear scales in the drawings, although no information on the kind of stone was put forward by the author (Dziedzic 2013: 645). It can be assumed that it was either granite or limestone. The granite could have come from the Aswan region, from the area of the First Cataract, where rich deposits of that stone were located and extracted from the earliest times. The granite has a phanerocrystalline and fine-grained structure (Klemm and Klemm 2008: 233). Its specific gravity ranges from 2.60 to 3.20 kg/dm³ (kg/l) (Arnold 1991: 28).

Limestone, the principal building stone used in the construction of the Temple of Hatshepsut in Deir el-Bahari, may have come from a local quarry located 3 km away from the town of Gurna, on the western bank of the Nile River. Rajmund Gazda has shown that there were two kinds of limestone, soft and hard, in use at the temple. The hard limestone contains

quartz crystals, dolomite and iron oxides, the soft one is a marly limestone bonded with clay (Gazda 2000: 167). The specific gravity value of the limestone from the Hatshepsut Temple, as tested by Stanisław Wojdon in 1970, is 2.2 T/m³ (2.2 kg/l) which based on a classification employed by Janusz Dembek in his unpublished supplementary paper defines the stone as soft (1.72–2.80 T/m³). According to Wojdon's calculations, the limestone has a compressive strength of 700 kg/cm² (68.65 MPa)¹: 1 -2). Dieter Arnold classified this type of limestone as porous: 1.70–2.60 kg/dm³ (kg/l) (Arnold 1991: 28). Based on the data on the obelisk dimensions (Dziedzic 2013: 645), the volume of each of the obelisks was calculated as not exceeding 2.50 m³.

Assuming that the specific gravity of limestone is 2.80 kg/l, the weight of each of the obelisks can be estimated as 7 tonnes. Had the obelisks been made of granite, each of them would have weighed 8 tonnes, given the same volume as above and a specific gravity of 3.20 kg/l.

¹ Data based on tests performed by Stanisław Wojdon in 1970. Similar values for limestone were given by Dieter Arnold (1991: 28).

TRANSPORTING OBELISKS

Once an obelisk had been carved from bedrock, it had to be transported to the temple for which it was destined. Detaching the obelisk from bedrock prior to transportation was a major difficulty according to Engelbach and he described two hypothetical methods that could have been used with regard to the unfinished obelisk from the quarry in Aswan (Engelbach 1923: 53). The Aswan obelisk is 41.75 m long and weighs 1,168 tonnes (Arnold 2003: 166). The obelisks discussed in this paper would not have exceeded 8 tonnes in weight had they been of Aswan granite and 5 m in length, hence the extraction of an appropriate block from bedrock would not have been an issue. In terms of size, the envisioned obelisks would not have differed from the other decorative elements used in the Temple.²

The obelisks could have been transported to the temple on a wooden sledge hauled by a team of men. Engelbach calculated a labor force of 6,000 men needed to move the Aswan obelisk (Engelbach 1923: 56). Referring to a scene painted inside the tomb of governor Djehutihotep at Deir el-Bersha (Middle Kingdom, 19th century BC), Habachi estimated the weight of the

statue depicted in the painting as about 60 tonnes and the number of men pulling it at 172 men. However, he also pointed out that no log rollers were used under the sledge, although the technique was known to contemporaries as a way of reducing the manpower needed for transport. Several thousand men carrying out the task would not have been an effective measure (Habachi 1984: 24). Upon comparing the weight of the monuments with that of the two obelisks from the Hatshepsut Temple, one easily concludes that no more than 40 men would have been needed to transport each of the blocks to Deir el-Bahari. Engelbach also suggested Spanish windlass for securing the obelisks to the sledge, referring to the scene of transportation of obelisks depicted in the Temple of Hatshepsut (Engelbach 1932: 57).

At this point, one should ask how the obelisks could have been brought into the courtyard of the Sun Cult Complex. There are three possibilities. The obelisks may have been delivered before the walls of the northern part of the temple were completed. It would mean that the courtyard arrangement was determined already at the onset of construction and no technical

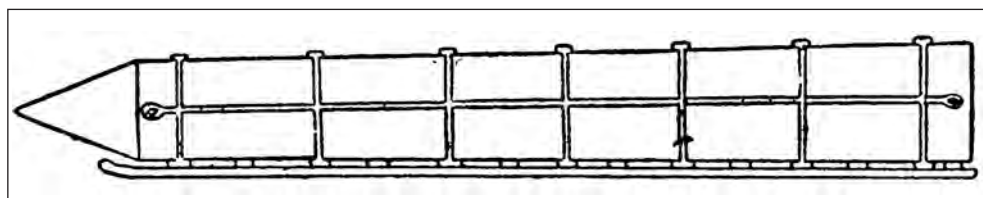


Fig. 1. *The Hatshepsut obelisk secured on a sledge with Spanish windlass*
(After Engelbach 1923: 57)

² The granite false door in the Chapel of Hatshepsut with a cubic volume of 2.80 m³ also weighs about 8 tonnes (author's observation).

or logistical problems occurred. However, let us assume that the decision to bring in the obelisks and place them in front of the altar was made when the Sun Cult Complex with the Small Altar was already in operation and the northern part of the upper terrace was already standing. Changes of the courtyard design and the construction of the Great Altar would have simply required the obelisks to be moved to a higher level. Navigating these massive blocks into a complex that differed little from the present known plan would have constituted a major task. Obstacles would have included not only walls constructed to their full height, but also columns in the Ra-Horakhty Vestibule, but neither the spacing of the columns in the vestibule nor the arrangement of the entrance leading into the Complex and further to the courtyard, and the walls standing to full height would have hindered the transport of the obelisks into the courtyard [Fig. 3 top].

After being brought into the courtyard, the obelisk would have to be placed on

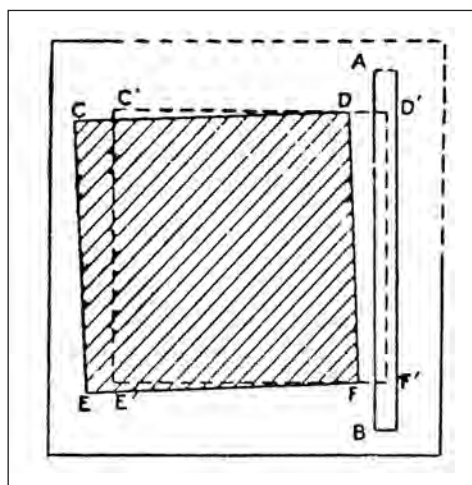


Fig. 2. Pedestal with the site for mounting an obelisk (After Engelbach 1923: 68)

an already prepared pedestal. To compensate for the difference in height between the pedestals and the level on which the transportation took place, there would have to be an embankment inclined up to 2%, that is, 1°. Marks incised into the surface of the pedestal would have specified the precise location of the monument. Engelbach noted that one of the methods of erecting an obelisk, assuming its weight did not exceed 35 tonnes, was to use a lever. Examination of the base of the Hatshepsut obelisk at Karnak by the present author has suggested that an obelisk, while still in horizontal position, should have been positioned with its edge resting on a groove marked on the pedestal (see Engelbach 1923: 67) [Fig. 2]. This method of raising obelisks was described in greater detail by Isler (1976: 33–34). A simple lever consisted of a beam, ropes tied around the obelisk and a container with sand. As sand was fed into the container, the container went down, while the obelisk moved upwards until it was standing in vertical position (Isler 1976: 33) [Fig. 3 bottom]. Had such works been carried out in the courtyard of the Sun Cult Complex, the lever would have been placed in a way enabling the container with sand to come to a rest on the courtyard pavement on the northern and southern sides of an already standing altar. The obelisk raised to the vertical had to be stabilised in its ultimate position. Undoubtedly, the success of this operation would depend on the use of a qualified workforce, of which there must have obviously been an abundance on site during the construction of the Temple of Hatshepsut.

The other possibility is that the courtyard arrangement was changed when the Great Solar Altar already existed in the

Complex of the Sun Cult. It was decided that obelisks would be placed on the already modified altar. The logistical and technological process for bringing in and raising the obelisks would have been the same as in the previously described scenario, the sole difference concerning the height at which the pedestals for mounting

the obelisks were placed [Fig. 4 top]. An embankment would have been needed to achieve a height of about 190 cm (the height of the altar with the pedestal for mounting the obelisk). It would have had to start at the entrance to the Complex, and in the area of the Ra-Horakhty Vestibule it would rise towards the courtyard

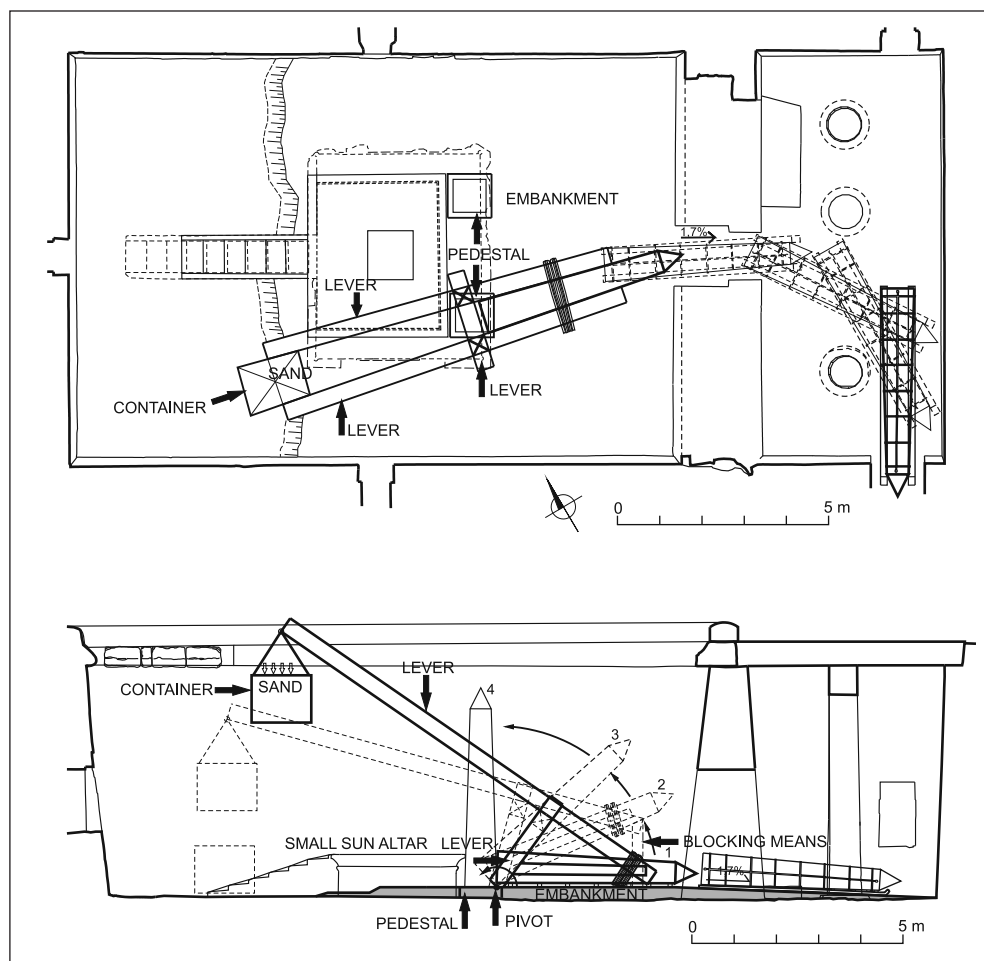


Fig. 3. Theoretical reconstruction of the raising process assuming that the obelisks were placed in front of the Small Altar: top, stages of introducing the obelisk into the courtyard on a sledge and preparing it for raising on the pedestal; bottom, raising of an obelisk using a lever (PCMA Temple of Hatshepsut Project/drawing T. Dziedzic; bottom image, after Isler 1976: 39–40)

by 8.5%, that is, 5°. From the courtyard entrance to the destined location, the slope of the embankment would need to rise by up to 14%, that is, 8°. An embankment of such slope would have decreased the height of the passage from the vestibule into the courtyard, but it would have still been more than 200 cm and would have not

constrained transport of the obelisks by human labor. Another important step in the process was to support the obelisk with a blocking means made of wooden beams when it was raised 45° from the ground [Fig. 4 bottom]. This gave the laborers some breathing space before the next phase of the raising process.

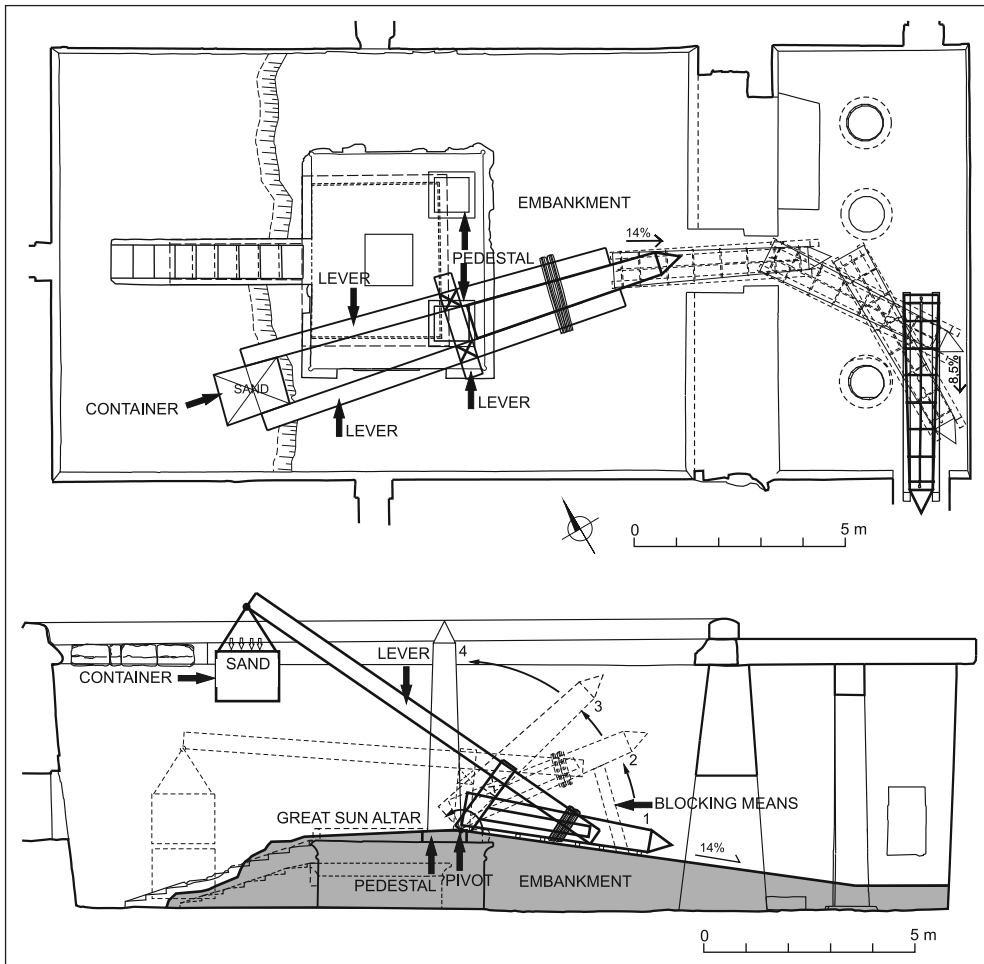


Fig. 4. Theoretical reconstruction of the raising process assuming that the obelisks were placed directly on the Great Altar: top, stages of introducing the obelisk into the courtyard on a sledge and preparing it for erection on the pedestal; bottom, raising of an obelisk using a lever (PCMA Temple of Hatshepsut Project/drawing T. Dziedzic; bottom image, after Isler 1976: 39–40)

DETERMINING ALTAR RESISTANCE TO THE LOAD OF THE OBELISKS

The design compressive strength of the limestone slab altar from the Sun Cult Complex in the Hatshepsut Temple at Deir el-Bahari was calculated by engineer Anna Caban. For the purpose of the calculations, an assumption was made that the obelisks were constructed from a compact limestone, that is, the hard limestone described above.

The mean value of local compressive stresses should satisfy the condition:

$$\sigma_d = \frac{N_{i,d}}{A_b} \leq \frac{f_k}{\gamma_m}$$

$N_{i,d}$ – design concentrated load (specific gravity of the obelisk) = $V \cdot F_k \cdot \gamma_f$ [kN],

V – volume of the obelisk [m³],

F_k – specific gravity of compact limestone 28.0 [kN/m³],

γ_f – load coefficient 1.1 (for permanent loads according to Polish norm PN-82/B-02001),

A_b – load impact area [m²],

f_k – characteristic compressive strength 70.0 [MPa],

γ_m – partial safety factor 2.5 (for category B of conducted construction

works and category I of brick wall components according to Polish norm PN-B-03002:1999);

$$N_{i,d} = 2,49 \cdot 28,0 \cdot 1,1 = 76,69 [\text{kN}]$$

$$A_b = 1,05 \cdot 1,05 = 1,10 [\text{m}^2]$$

$$\delta_d = 69,72 [\text{kN/m}^2] \approx 0,07 [\text{MPa}]$$

Design compressive strength of the altar

$$\frac{f_k}{\gamma_m} = \frac{70,0}{2,5} = 28,0 [\text{MPa}] \geq \sigma_d = 0,07 [\text{MPa}]$$

The condition concerning the mean value of local compressive stresses has been satisfied.

Calculation results show that the altar loaded with the obelisks uses only 0.25% of its bearing capacity. According to calculations by engineer constructor Mieczysław Michiewicz, the stone pavement compressed by an obelisk being raised used only 2–3% of its design compressive strength. The small dimensions of the blocks making up the Great Altar did not significantly reduce the load capacity of the entire structure, and the structure itself was placed on a stone surface.

CONCLUSION

The study revealed that it was technically and logistically feasible to transport and place the obelisks on the Solar Altar in the Temple of Hatshepsut at Deir el-Bahari. The entire transport and placement process could have taken place at any stage of modification of the architectural layout of the courtyard in the Complex of the Sun Cult. The presented analyses indicate that the loads placed on the altar structure by

the obelisks would have had no effect on its resistance, and Andrzej Ćwiek's suggestion that the altar would have been crushed is inaccurate.

Any further discussion of the hypothetical altar arrangement should be based on documented evidence: an inventory of the historic site including all identified marks and traces, and knowledge of worship and religion in ancient Egypt of the relevant period.

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The Southern Room of Amun in the Temple of Hatshepsut at Deir el-Bahari: epigraphic work between 2014 and 2015

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Abstract: The Southern Room of Amun Project is one of the egyptological projects of the PCMA's Polish–Egyptian Archaeological and Conservation Mission in the Temple of Hatshepsut at Deir el-Bahari. The paper presents epigraphic work carried out in this room between 2014 and 2015, during which almost the entire wall decoration was recorded. The article is a wall-by-wall presentation, paying special attention to the most important transformations of the reliefs over time.

Keywords: Southern Room of Amun, Temple of Hatshepsut, Deir el-Bahari, epigraphy, wall decoration

The Southern Room of Amun Project, initiated by the author in 2014, is one of the egyptological projects of the PCMA's Polish–Egyptian Archaeological and Conservation Mission in the Temple of Hatshepsut at Deir el-Bahari. The project aims to prepare a complete documentation and interpretation of this room, replacing Édouard Naville's publication of this part of the temple (1906: 6–7, Pls CXXX–CXXXIII) that has been used by generations of researchers.

The first stages of the project encompass epigraphic work based on facsimiles of inscriptions done *in situ*, aimed at determining the various kinds of alterations made to the decoration, and a search of the stock of collected loose temple blocks to identify missing pieces. Considering

that the function of the Southern Room of Amun in the Upper Courtyard complex is an egyptological issue of prime concern, this kind of precise documentation is an important tool for further studies of the decoration of this room and its role in the ritual topography of the temple.

GENERAL REMARKS

The Southern Room of Amun (also known as the Southern Chapel or the Chamber of Amun) is located in the southwestern corner of the Upper Courtyard of the Temple of Hatshepsut at Deir el-Bahari [Fig. 1]. Its dimensions at ground level are approximately 3.20 m by 2.70 m. All scenes inside and outside were bordered with a dado, block-border and splay-topped *khoker*-frieze (Kołodko-Dolińska

1990: 30–52). The polychromy of the inner decoration is remarkably well-preserved, having been conserved in 2006/2007 (Uchman-Laskowska 2010). The outer decoration consists of jambs and a lintel. No name of the room helpful in defining its function can be found on the jambs. The coronation scene above the outer lintel has been reconstructed by the Polish team (Kwaśnica 2001: 81–87). The decoration of the inner walls of the room consists of a single register carved in raised relief; it depicts offerings of oils performed by Hatshepsut before Amun-Ra-Kamutef (west and east walls; Naville 1906: Pls CXXXI–CXXXII), offerings of two different kinds of linen performed by Hatshepsut and Tuthmosis III before Amun-Ra (double scene on the south wall;

Naville 1906: Pl. CXXXIII; Sankiewicz 2011: Fig. 8) and a scene of Amunet embracing Hatshepsut on the right side of the north inner wall (Naville 1906: Pl. CXXX). A frieze of objects appears on the north inner wall, just above the lintel over the entrance; it presents several vases for oils and chests for linen (Naville 1906: Pl. CXXX; Kapiec 2016b: 96–97, Fig. 2).

Several alterations of the decoration were observed in the course of the epigraphic work. These have been dated to different periods: reign of Tuthmosis III,¹ Amarna² and the late Eighteenth Dynasty/Ramesside period.³ Several graffiti and *dipinti* were added during the Hellenistic and Roman ages (Łajtar 2006: 232–236) and in the Byzantine period (Godlewski 1986: 22, 24–25, 106–107).

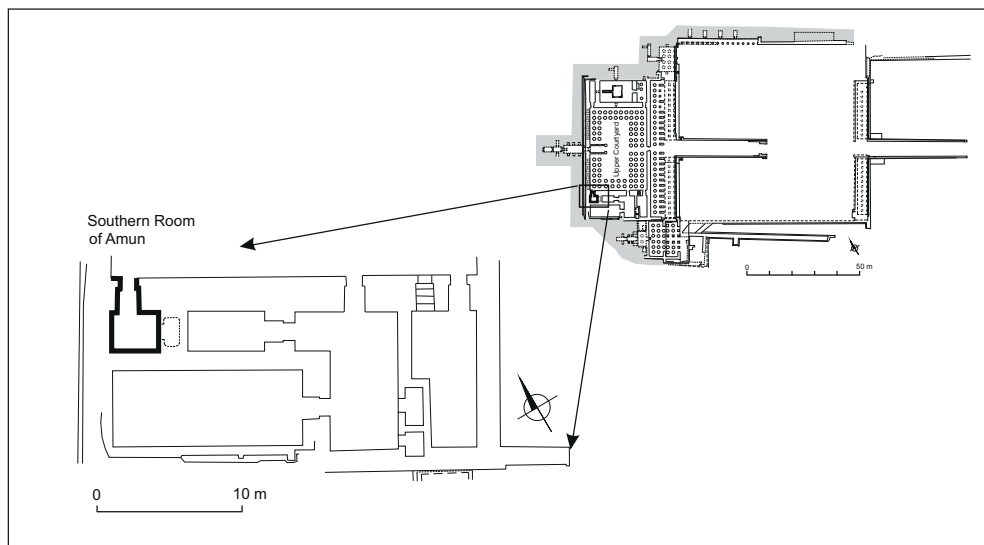


Fig. 1. Plan of the Temple of Hatshepsut at Deir el-Bahari showing the location of the Southern Room of Amun (PCMA Temple of Hatshepsut Project/drawing T. Dziedzic, modified K. Kapiec)

¹ More on the Tuthmosis III erasures of Hatshepsut's memory in Dorman 1988: 46–65; 2005; Nims 1966; Roth 2005.

² More on erasures of the figures of gods and epithets in Assmann 2012; Bickel 1997: 92–94; Dodson 2010: 46–47.

³ Restoration of Amarna period mutilations commenced in the reign of Tutankhamun and was continued by his successors up to the Ramesside period (Brand 1999b: 114; 2010: 6–9; Eaton-Krauss 2003: 195–199).

The Southern Room of Amun was recorded in part and published by Naville (as the Chamber of the South-West Corner of the Upper Court, Naville 1906: 6–7, Pls CXXX–CXXXIII). Despite the undeniable value of this early publication, the method applied at the time was not adequate to the task of recording all the details of the decoration, especially in the recarved areas, including traces of original reliefs and the painted layer. These have now been documented using a tracing technique that involves drawing

with permanent markers on plastic foil in 1:1 scale, then scanning the images and digitizing them for use in the ultimate study and publication.

Documentation started with the east wall (spring and autumn of 2014 and in 2015), continuing and overlapping with the south wall (autumn of 2014), and the west and north walls (autumn of 2014 and autumn of 2015). The outer façade and ceiling started to be documented in 2015 (at time of printing in 2017, the façade was completed).

EPIGRAPHIC DOCUMENTATION

EAST WALL

The original decoration of the east wall depicted Hatshepsut together with her *ka* offering oil(s) in four vases to Amun (-Ra)-Kamutef. Several changes of the relief carving were observed and documented. During the reign of Tuthmosis III the prenomen of Hatshepsut (*M3 't-k3-R'*) was replaced with the prenomen of Tuthmosis II (*'3-hpr-n-R'*) [Fig. 2 top]. The original relief was damaged, the new signs from Tuthmosis II's name being carved into the old ones, which nonetheless remained recognizable. The sign for *r'* was left untouched. The Horus name of Hatshepsut (*Wsrt-k3w*), on the head of her *ka*, was also mutilated and replaced by the Horus name of Tuthmosis II (*K3-nht-wsr-phjtj*), which was not carved but merely painted in red. Another cartouche in the speech of Amun is mutilated as well, but no new name was carved in its place. Most of the feminine endings *.t*, *.t* and *.s* were left untouched, unlike the texts on the other walls of the discussed room.

Mutilation of the names of gods during the Amarna period was much more

invasive than the alterations in the time of Tuthmosis III, making the identification of the original relief outline more of a challenge. The erased decoration was then restored during the late Eighteenth Dynasty/Ramesside period (Brand 1999b: 114; 2010: 6–9; Eaton-Krauss 2003: 195–199). The image of a protective vulture appears above the figure of Hatshepsut. Tracing the original relief outlines indicates that Nekhbet was shown here originally, but during the post-Amarna restoration the name was changed to one designating Wadjet (*dptj ptj*, She of Dep and Pe) [Fig. 2 bottom].

The figure and the epithets of Amun (-Ra)-Kamutef suffered even worse damage than the names of Hatshepsut altered into names of Tuthmosis II; only small traces of the original relief outline can be recognized. The figure of the god was restored slightly bigger, in a manner typical of the late Eighteenth Dynasty/Ramesside period [Fig. 3]. The affected area of the mutilated decoration was levelled first and then filled with plaster and painted with whitewash (Brand 1999a: 40–44). New

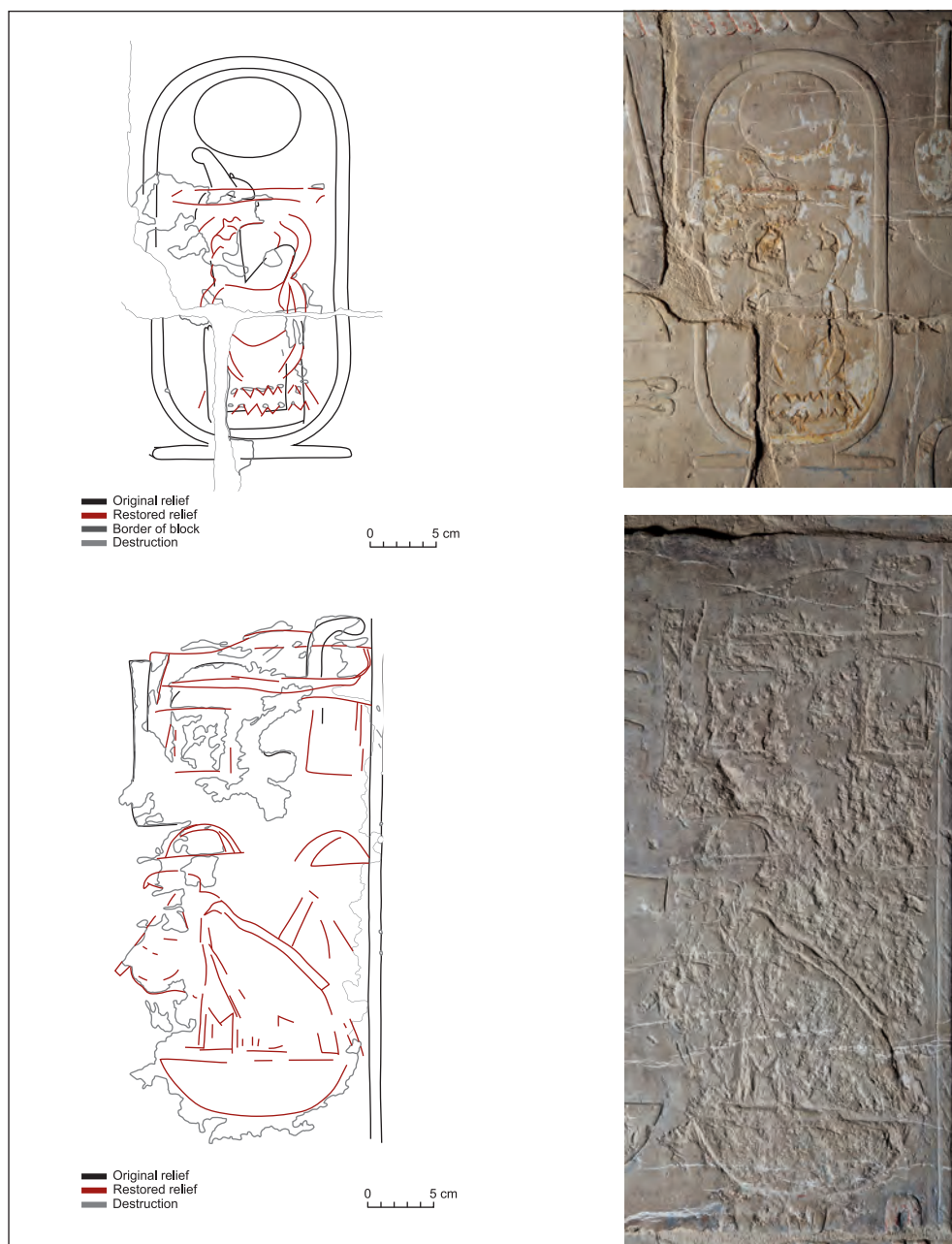


Fig. 2. Top, prenomen of Hatshepsut recarved into that of Tuthmosis II, east wall; bottom, name of Nekhbet recarved into that of Wadjet, east wall (PCMA Temple of Hatshepsut Project/drawing K. Kapiec, photos M. Jawornicki)



Fig. 3. Restored figure of Amun-Ra-Kamutef on the east wall (PCMA Temple of Hatshepsut Project/photo M. Jawornicki)

Fig. 4. Recarved fragment of Amun-Ra-Kamutef's epithets with traces of the original relief (PCMA Temple of Hatshepsut Project/drawing K. Kapiec)





*Fig. 5. Text describing the offering scene on the eastern wall
(PCMA Temple of Hatshepsut Project/photo M. Jawornicki)*

decoration was carved into the prepared surface, in careless raised relief, painted white, yellow, red and black. The choice of colors was rather limited compared to the original depictions. These repairs were not of the highest quality, hence the plaster showed a tendency to peel away, revealing the Amarna mutilations. Erased names and epithets were also restored in the same manner, usually just as a relief carving but sometimes applying red paint as well. Alterations of the text can be observed: the restored name, originally carved merely as Amun-Kamutef, had been changed into Amun-Ra-Kamutef. Moreover, traces of the original relief indicate that the original epithet here was *hrj st.f wrt nb pt* (One who is upon his Great Pedestal, Lord of the Sky),⁴ changing to *ntr '3 nb pt* (Great God, Lord of the Sky) once it was restored [Fig. 5].

Decoration of the east wall is preserved almost completely, the only missing parts of blocks being between the figures of Hatshepsut and Amun. These are fragments with text describing a scene of offering and of the god's speech. Preserved parts of the signs from the descriptive text can suggest that jbr oil was offered. Judging by the length of the scene caption and a parallel depiction on the west wall (see below), one can assume two kinds of oil being mentioned in the text. The gap between the beginning of the designation for jbr oil and the end of the offering caption is too big to be filled with the name of one oil only [Fig. 4]. Four vases are depicted on the west wall and two oils are listed in the offering text.

SOUTH WALL

The depiction on the south wall consists of an antithetic scene representing Hatshepsut offering the *mnht* linen to Amun-Ra on the left, and Tuthmosis III offering another type of linen to a second figure of Amun-Ra on the right. The gods are represented back to back. Hatshepsut is represented in a white crown while Tuthmosis III is wearing a red one. Although the signs of the caption of Tuthmosis III have vanished nearly completely, the first sign, Gardiner's M17, of the name of the linen has been preserved. There are five different possible names by which this textile could have been described in the text: *jrtjw*, *jtjwj*, *jdmj*, *jnsj* and *jfdj* (Scheele 2005: 9). It is worth noting that a chest with *jrtjw*-linen is depicted in the frieze of objects on the north wall (Kapiec 2016b: 97).

The signs in the scene on the right show some alterations dated to the times of Hatshepsut or Tuthmosis III. The speech of Amun seems to contain a spelling mistake: the sign *mrj* ('beloved') was used twice; this was corrected by means of recarving in the times of Hatshepsut/Tuthmosis III. In one case, the word *mrj* was recarved with a different spelling, *mrj*, to fill the gap and in the other with the expression *n ht[j]* ('from my body') [Fig. 6]. Such a mistake could have been made under the influence of a parallel text from the scene on the left, where Hatshepsut is mentioned, and where, therefore, the feminine endings, later erased, were used to designate the queen. This made the composition of the text differ from the one without the feminine

⁴ There is one parallel to this epithet in the Temple of Hatshepsut at Deir el-Bahari – in the northern Lower Portico (Naville 1908: Pl. CLXI). Moreover, this epithet is attested in other buildings dated to the reign of Hatshepsut: in the Eighteenth Dynasty Small Temple at Medinet Habu (Medinet Habu 2009: Pl. 23), in the Chapelle Rouge in Karnak (Burgos and Larché 2006: 153, Block No. 87) and in the Speos Artemidos (Sethe 1906: 282, 15).

endings. To retain the same pattern in both texts, the sign *mrj* was used in the text on the right side unnecessarily in the place where the feminine ending was used in the text on the left. It seems then that it was decided to correct the text and the signs were gently recarved [see Fig. 6].

Other alterations applied on this wall bear features similar to those on the eastern one. There used to be three cartouches with the names of Hatshepsut: two with a nomen and one with a prenomen. The lattermost and one of the names with the nomen located next to the figure of the king were

both recarved with names of Tuthmosis II. The cartouche with the prenomen was recarved in a similar technique as on the east wall. In Hatshepsut's nomen her name was recarved with Tuthmosis II's name, but it seems that due to the presence of Amun's name in her nomen, it was decided to leave it and add the *mr*-sign to be read together as *Dḥwtj-ms(j) mr(j) Jmn* (Tuthmosis, beloved of Amun).⁵ During the Amarna period the name of Amun was erased and then restored only in paint. In the second nomen cartouche, only the name of Amun was restored, the rest remained erased.



Fig. 6. Text above Amun-Ra's figures on the south wall
(PCMA Temple of Hatshepsut Project/photo M. Jawornicki)

⁵ Similar examples are attested in other parts of the Temple of Hatshepsut at Deir el Bahari (Beaux 2012: Pls 8, 10, 25, 29; Beaux et al. 2016: Pls 3x, 7a, 8a, 8c, 22a, 22b; Naville 1901: Pls XCIII, CI, CIII; 1906: Pl. CXX) and in the Eighteenth Dynasty temple in Medinet Habu (Medinet Habu 2009: Pls 29, 31, 43, 45, 57, 61, 65, 69, 71, 81).

The figures of Amun-Ra, his epithets and the epithets of protective birds were erased during the Amarna period and then restored, in a technique similar to that used on the east wall, during the late Eighteenth Dynasty/Ramesside period. The restored figures of Amun-Ra were bigger: the top part of the god's crown overlaps the text above. In the scene with Tuthmosis III on the right, the figures and the text next to Amun were recarved quite deeply, while the text in the scene on the left was restored in much less visible and very fine relief. The names of the protective goddesses (left scene, Nekhbet, right scene, Wadjet) were correctly restored.

The decoration of the south wall is preserved almost completely; the only missing parts are fragments of inscriptions, small fragments of Amun's figure and the crown of Tuthmosis III, all in the scene on the right.

WEST WALL

The original depiction representing Hatshepsut together with her *ka*, offering oils in four vases to Amun(-Ra)-Kamutef, was comparable to the scene on the east wall. Alterations were similar to those on other walls: the names of Hatshepsut were recarved for Tuthmosis II (two prenomen, one nomen and one Horus name). In Hatshepsut's nomen, the name of Amun was restored in relief, this time along with the nomen of Tuthmosis II, mirroring in this respect the south wall [Fig. 7]. Apart from recarving the names of Hatshepsut, her figure was transformed into an offering table.⁶ Still, the contour of her figure is visible and the description of offerings is



Fig. 7. Figure of Hatshepsut recarved for an offering table, west wall (PCMA Temple of Hatshepsut Project/photo M. Jawornicki)

⁶ Similar examples of Hatshepsut's figure recarved into an offering table are attested in the Upper Courtyard of the Temple of Deir el-Bahari (north wall), Karnak (Barguet 1962: 150), Eighteenth Dynasty Small Temple at Medinet Habu (Medinet Habu 2009: Pls 38–41, 50–55, 120, 123–125).

preserved, enumerating two oils: *stj-hb* and *hknw* [Fig. 8]. The figure of Amun together with his epithets was erased and then restored in a similar way as on the previously described walls. The epithet of Wadjet was not entirely erased; only the first sign *d* in her title (*dptj ptj*, She of Dep and Pe) and the determinative depicting a cobra had been mutilated and then restored.

The decoration of this wall is preserved almost completely, missing only some parts of the speech of Amun(-Ra)-Kamutef and the figure of Hatshepsut's *ka*.

NORTH WALL

The decoration of the wall consists of a lintel and jambs, the so-called frieze of objects located above the lintel and an embracing scene with Amunet and Hatshepsut in the western part of the discussed wall. Hatshepsut's names (two prenomens and one nomen) in the embracing scene with Amunet and on the lintel were changed to those of Tuthmosis II in a similar way as on all the other walls in the room. On the right jamb, the original names were erased and no other names were carved inside the cartouches. Only

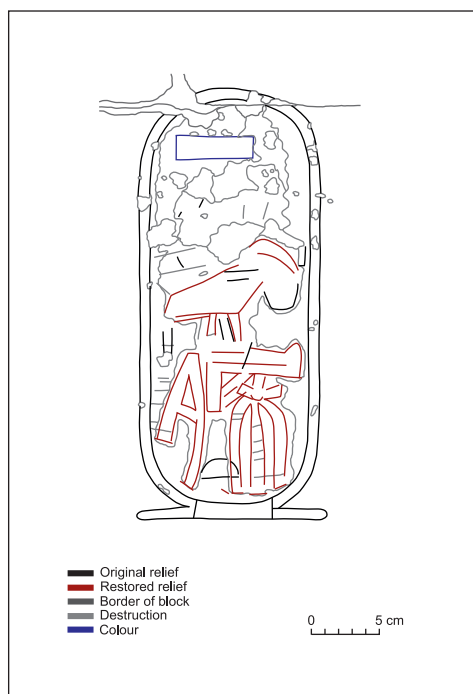


Fig. 8. Recarved nomen of Hatshepsut, west wall (PCMA Temple of Hatshepsut Project/ drawing K. Kapiec)

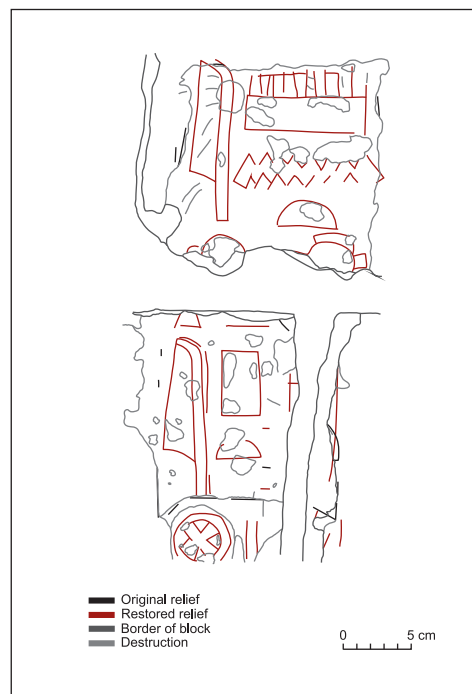


Fig. 9. Restored name and epithets of Amunet with traces of original relief, north wall (PCMA Temple of Hatshepsut Project/ drawing K. Kapiec)

the name of Amun in Hatshepsut's nomen was restored along with epithets of Amun in the text. On the left jamb, the original names of Tuthmosis III were accompanied by restored epithets of Amun. The figure of Amunet and her epithets were erased and restored in the same way as other figures of Amun in the room. At the end of the accompanying inscription there are remains of the *t* and *pt* signs. This probably indicates that prior to the restored epithet *hr(jt)-jb Jpt-swt* (One who resides in Karnak), the signs *nbt pt* (Lady of the sky)⁷ were placed there [Fig. 9]. The so-called frieze of objects consists of two rows of images, one with vessels with oils and the other one with chests containing linen (Naville 1906: Pl. CXXX; Kapiec 2016b: 96–97, Fig. 2). Thanks to careful and detailed documentation it was possible to trace the fine decoration preserved on the two chests. This painted decoration was executed in red on a yellow background (Kapiec 2016b: Figs 2, 3, 5).

Although the general state of preservation of the relief is good, there are some blocks missing, especially from the lintel, jambs and upper parts of the embracing scene with Amunet. A hole in the roof was responsible for washing away part of the polychromy from the frieze of objects, lintel and right jamb.

OUTER DECORATION AND CEILING

The ceiling, painted in blue with yellow stars, started to be recorded. Tracing of the outer façade was started with the recording of the partially preserved cor-

onation scene of Hatshepsut above the lintel (Kwaśnica 2001: 81–87). The scene represents Hatshepsut kneeling in front of an erased figure of Geb seated on the throne in the shrine. In front of them are Inunmutef, Thot and the ancestors of Pe and Nekhen. The reliefs are in quite bad condition as almost the whole scene was erased during the Amarna period and then restored in the late Eighteenth Dynasty/Ramesside period. Only the king's figure and a small part of the text were left untouched. Figures of Amun-Ra, Inunmutef, Thot and depictions of the ancestors of Pe and Nekhen were mutilated. As these blocks come from the collapsed wall and were found during excavations, it is natural that the plaster which filled the Amarna erasures dropped out and not all of the reconstructed lines were preserved.

The lintel and jambs are in slightly better condition with more blocks preserved. Fertility figures symbolizing Upper and Lower Egypt, holding a cartouche with a prenomen of Hatshepsut recarved for a name of Tuthmosis II, are to be seen in the centre of the lintel, under a winged sun disc of Horus Behdety. To the left and right of the lintel are depictions of a restored Amun-Ra figure giving the *nh*-sign to Horus sitting on the top of a serekh with the Horus name of Hatshepsut recarved for that of Tuthmosis II. Each jamb bears three columns of text containing the names and epithets of Hatshepsut, almost all of them recarved for those of Tuthmosis II; only the Horus name in the first column from the left on the left jamb was left untouched.

⁷ Both epithets are common for Amunet (e.g., Burgos and Larché 2006: 80 Block No. 23, 121 Block No. 207, 162 Block No. 161, 169 Block No. 153, 184 Block No. 55, 187 Block No. 209).

SUMMARY

During the three seasons under discussion (2013/2014, 2014/2015 and 2015/2016) almost the entire decoration of the room was recorded with the exception of the outer door of the room, Senenmut's figure on both sides of the passage (completed in March–April 2017) and further fragments of the ceiling. The documentation completed so far has enabled a reconstruction of decoration phases and stimulating a search through decorated blocks in the temple block yard to fill in the extant gaps. Studies were initiated on the decoration program and the results were presented by the author at

international conferences (frieze of objects, Kapiec 2015a; 2015b; Amunet scene, Kapiec 2016a) and in article form (Kapiec 2016b).

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Mammals in the iconography of the Temple of Hatshepsut: a project underway

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Abstract: The project “Mammals in the iconography of the Temple of Queen Hatshepsut”, initiated by the author in the 2011/2012 season, encompasses a detailed documentation of the animals depicted in various parts of Hatshepsut’s temple in Deir el-Bahari as a prerequisite for in-depth research. The study follows a multi-disciplinary approach within faunal analysis, and is complemented with technological observations on the execution of relief representations from the temple. At this stage of the project, a general taxonomic identification of the animal representations is nearly complete and a further detailed study of each taxon has been undertaken. Both complete animals (mainly mammals for now) and animal raw materials were studied in addition to the contexts and scenes in which they appear.

Keywords: animals, mammals, Hatshepsut, temple of Hatshepsut, Deir el-Bahari, temple decoration

The faunal iconography of the Hatshepsut mortuary complex in Deir el-Bahari includes animals of possible native Egyptian origin, as well as some from other zoogeographical areas. The “Mammals in the iconography of the temple of Queen Hatshepsut” project, launched by the author in the 2011/2012 season as part of a broader PhD project, aims at a comprehensive documentation and study of these representations, which encompass images of both complete figures and various animal resources, like skins. The present paper discusses the research objectives of the project and presents some of the initial zoological and taxonomical findings, while reporting the present stage of the documentation.

Therioanthropomorphic deities were not included in this research (unless

relevant to the main point of interest) and neither were hieroglyphs or the like. The focus was on animals in an ordinary, natural setting, that is, as far as anything can be considered as ordinary or natural in an Egyptian mortuary context, and specifically mammals, in spite of the presence of birds, reptiles, fishes, insects and even a crustacean and cephalopod in the temple decoration.

The fieldwork in the initial stage involves drawing (tracing) and photographic documentation of all animal images in their particular contexts. Thereafter input is required from several disciplines, namely Egyptology, zooarchaeology, zoology, zoogeography and ethology, to answer specific questions concerning individual physical features of the taxa, their behavior (an aspect still underestimated in Egypto-

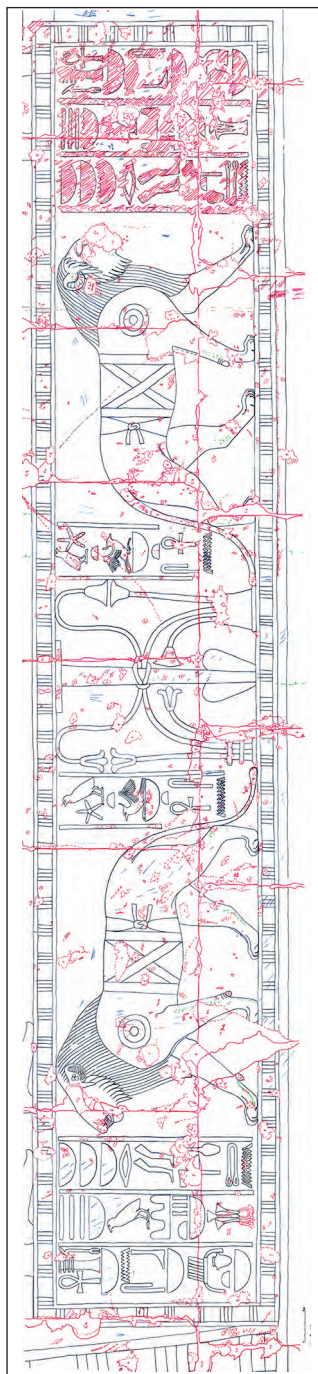


Fig. 1. Lions under the queen's throne. Southern Middle Portico, north wall — example of tracing documentation made for the purposes of the project (Drawing K. Braulińska)

logical analysis), geographical range and more.

The project is aimed primarily at describing the faunal iconography in relation to the temple decoration. The first task is to identify and catalog all the different species, their origin, role and significance, and thereafter their subsequent utilization by the queen in her own environment. This concerns live animals as much as animal raw materials.

The evidence as recorded by the author will be studied in relation to zoological data, as well as to Egyptian representations. The latter analysis, obviously juxtaposed with a study of the textual evidence, may shed light on significantly broader issues within Egyptology, for instance geographical ones. The images of fauna in the temple of Hatshepsut are presented firstly in the natural environment, then while being imported and finally after arrival in Egypt. This unique sequence suggests not only what the actual process of importation was like, but also why particular species were chosen to be brought into Egypt in the first place.

TOPOGRAPHIC AND THEMATIC RANGE

A perusal of the evidence from the mortuary complex provided a list of areas within the complex where mammal depictions are to be found. These are: Southern Lower Portico, Northern Lower Portico, the side balustrades of the Lower Ramp, Southern Middle Portico, Lower Anubis Shrine, Hathor Shrine, Northern Upper Portico and Upper Courtyard (see PAM 24/2: 13 plan with key to the parts of the temple architecture). The iconographic content of these sections was then assessed, using photography to plan tracing work;

this was followed by hand drawings to exact scale and line.¹

The scenes featuring fauna comprise among others: the Punt expedition with its several specific contents; lions under the queen's throne in relation to *sm^c-t3wy* symbols [Fig. 1]; feasts; celebrations; processions; ritual scenes; and offering tables. Interestingly, some images of animals are repeated in other scenes elsewhere in the temple, which seems to illustrate the queen's initial reason for both importing goods and their subsequent use. For instance, a pair of cheetahs depicted initially among the expedition goods, on the western wall of the so-called Punt Portico (properly referred to as the Southern Middle Portico), reappears twice in the scenes of festival celebration in the Upper Courtyard.

TAXONOMIC IDENTIFICATION

The taxonomic identification of mammals represented in the decoration of Queen Hatshepsut's temple followed the latest systematics, classified and juxtaposed for the first time [Table 1]. Several factors can make this problematic, such as animal features dimly pronounced in nature; features differentiating animals barely presented by the artist; features executed only in painting with no trace

in the carving; the artist's poor familiarity with the species or the specimen itself; standardized poses and lack of space for behavioral patterns typical of the species; incoherence of the latter depending on the location of a depiction in the temple (which is to the present author deliberate and indeed, aptly executed); the Egyptian tendency to depict an idea instead of the virtual nature of a particular individual or species as a whole; poor preservation in places decisive for proper recognition; constantly evolving systematics of species, due to zoological revisions; different opinions of biologists on taxa positions within the system; and finally discrepancies in the literature.

From the beginning work on the taxonomic identification concentrated on particular families of species. The first group to be studied belonged to the Carnivora order and the Caniformia and Feliformia suborders [see Fig. 2, Table 1].²

To follow the systematics, Caniformia, documented and studied first, are represented by one family: Canidae with, in this case, one or possibly two tribes: Canini (if one) and Canini and Vulpini (if two) (to be settled within a wider Egyptological study, as further iconographical identification is impossible without an accompanying inscription).

¹ Documentation of mammal decoration from the Chapel of Hatshepsut and the Northern Lower Portico was kindly made available by Anastasia Stupko-Lubczyńska and Franciszek Pawlicki, respectively, who are responsible for individual study projects in these parts of the temple.

² To keep the main text coherent, Latin names are used, as not all have English equivalents. An exception is made for the names of particular species, for a better understanding of the text. These are given in parentheses in the text, which is however not related to the following case of its use. The differentiated citation (with or without parentheses) next to the Latin name of a taxon is due to the complex zoological naming. In brief, if the units (generic or specific name) have moved from their original position in taxonomy, their authors are cited in parentheses, otherwise, they remain without the latter. Unification to all the named authors being cited in parentheses would bring a taxonomical inaccuracy, therefore it was omitted exceptionally in the case of systematical name authorship. The principles are regulated in the International Code of Zoological Nomenclature announced by the International Commission on Zoological Nomenclature. Latin and English naming follows Cichocki et al. 2015. Readers should note that the proper zoological nomenclature requires genus- and species-group to be printed in italics, while the higher taxa, despite the Latin script, are in regular font.

Table 1. Handy guide to the taxonomy classification applied in this paper, in order of appearance.

Taxonomic naming principles, including form, authorship, brackets etc., follow the International Code of Zoological Nomenclature (ICZN) as announced by the International Commission on Zoological Nomenclature. Latin and English (where available) naming follows Cichocki et al. (2015). If a species group-name has been moved from its original position in taxonomy to another genus, the author's name is cited in parentheses (ICZN, Art. 51.3, Cichocki W., personal communication). Square bracket indicates an author's name with title. An author's name which is not unique in the system is given with first-name initials. Both follow Cichocki et al. (2015).

Taxonomic classification				Latin name		Authorship/citation		English Name	
order				Carnivora		Bowdich, 1821		Carnivores	
	suborder			Caniformia		Kretzoi, 1938		Caniforms	
		family		Canidae		G. Fisher [de Waldheim], 1817		Canids	
			genus	<i>Canis</i>		Linnaeus, 1758			
			species	<i>Canis (lupus) familiaris</i>		Linnaeus, 1758		Domestic Dog	
				<i>Canis lupus f. domesticus</i>					
			genus	<i>Vulpes</i>		Frisch, 1775		Foxes	
	suborder			<i>Vulpes vulpes</i>		Linnaeus, 1758		Gross Fox, Silver Fox (?)	
				Feliformia		Kretzoi, 1945		Feliforms	
		family		Felidae		G. Fisher [de Waldheim], 1817		Felids, Cats	
		subfamily		Felineae		G. Fisher [de Waldheim], 1817			
			genus	<i>Actinonyx</i>		Brookes, 1828			
			species	<i>Actinonyx jubatus</i>		(Schreber, 1775)		Cheetah, Hunting Leopard	
		subfamily		Pantherinae		Pocock, 1917			
			genus	<i>Panthera</i>		Oken, 1816		Big Cats	
			species	<i>Panthera leo</i>		(Linnaeus, 1758)		Lion	
			species	<i>Panthera pardus</i>		(Linnaeus, 1758)		Leopard	
		family		Viverridae		J.E. Gray, 1821		Civets and relatives	
		subfamily		Viverrinae		J.E. Gray, 1821			
			genus	<i>Genetta</i>		G. Cuvier, 1816		Genets	
			species	<i>Genetta genetta</i>		(Linnaeus, 1758)		Common Genet, Ibiza Common Genet, Ibiza Genet, Small-spotted Genet, European Genet	
		family		Heprestidae		Bonaparte, 1845		Mongoose	
		subfamily		Hepestinae		Bonaparte, 1845			
			genus	<i>Hepstes</i>		Illiger, 1811		Common Mongooses	
			species	<i>Hepstes ichneumon</i>		(Linnaeus, 1758)		Egyptian Mongoose, Ichneumon, Large Grey Mongoose	
order				Artiodactyla		Owen, 1848		Even-toed Ungulates	
	family			Giraffidae		J.E. Gray, 1821		Giraffes and Okapis	
			genus	<i>Giraffa</i>		Brisson, 1762		Giraffes	
			species	<i>Giraffa camelopardalis</i>		(Linnaeus, 1758)		Giraffe	
		family		Hippopotamidae		J.E. Gray, 1821		Hippopotamuses	
			genus	<i>Hippopotamus</i>		Linnaeus, 1758			
			species	<i>Hippopotamus amphibius</i>		Linnaeus, 1758		Common Hippopotamus, Hippopotamus, Large Hippo	
		family		Bovidae		J.E. Gray, 1821		Cattle, Antelopes, Sheep and Goats	
		subfamily		Bovinae		J.E. Gray, 1821			
			genus	<i>Bos</i>		Linnaeus, 1758		Oxen	
		subfamily		Antilopinae		J.E. Gray, 1821		True Antelopes	
			genus	<i>Gazella</i>		de Blainville, 1816		Gazelles	
		subfamily		Hippotraginae		Brooke, 1876		Grazing antelopes	
			genus	<i>Oryx</i>		de Blainville, 1816		Oryxes	
order				Perissodactyla		Owen, 1848		Odd-toed Ungulate	
				Equidae		J.E. Gray, 1821		Horses, Zebras and Asses	
	family			<i>Equus</i>		Linnaeus, 1758			
			genus	<i>Equus asinus</i>		Linnaeus, 1758		Ass, Donkey	
			species	<i>Equus caballus</i>		Linnaeus, 1758		Horse	
		family		Rhinocerotidae		J.E. Gray, 1821		Rhinoceroses	
			genus	<i>Diceros</i>		J.E. Gray, 1821			
			species	<i>Diceros bicornis</i>		(Linnaeus, 1758)		Black Rhinoceros, Hook-lipped Rhinoceros	
order				Proboscidea		Illiger, 1811		Elephants	
		family		Elephantidae		J.E. Gray, 1821		Elephants	
			genus	<i>Loxodonta</i>		Anonymous, 1827			
			species	<i>Loxodonta africana</i>		(Blumenbach, 1797)		African Bush Elephant, African Elephant, Savanna Elephant	
order				Primates		Linnaeus, 1758			
		family		Cercopithecidae		J.E. Gray, 1821		Old World Monkeys	
		subfamily		Cercopithecinae		J.E. Gray, 1821		Cercopithecine Monkeys	
			genus	<i>Papio</i>		Erxleben, 1777		Baboons	
			species	<i>Papio anubis</i>		Lesson, 1827		Olive Baboon, Anubis Baboon	
			species	<i>Papio hamadryas</i>		(Linnaeus, 1758)		Hamadryas Baboon, Sacred Baboon	
			genus	<i>Chlorocebus</i>		J.E. Gray, 1870			
			species	<i>Chlorocebus aethiops</i>		(Linnaeus, 1758)		Grivet Monkey, Grivet, Malbrouk Monkey, Tantalus, Green Monkey, Vervet Monkey, last two erroneously	

Identified genera were *Canis* in the former case or *Canis* and *Vulpes* in the latter. A debatable representation is *Vulpes vulpes* (Red Fox) raw material. The species *Canis lupus familiaris* (Domestic Dog)³ was represented three times in a fascinating sequence of contexts, namely, in its natural environment of the Land of Punt, resting in the shade of a tree, panting(?); being led towards the loaded ships thereafter, still in a lively pose; afterwards, led and presented among other goods, apparently presenting distinctive behavior.

The Feliformia includes the families Felidae, Viverridae and Herpestidae. Felidae are represented by two subfamilies: Felinae and Pantherinae, the genera *Acinonyx* in the former, and *Panthera* in the latter. In the first genus the only species is *Acinonyx jubatus* (Cheetah), in the latter there are two: *Panthera leo* (Lion) and *Panthera pardus* (Leopard). Consultation with expert zoologists regarding the actual species of one of the felids based on the tracing raised independently the same interesting observation (Maria Krakowiak,

Warsaw Zoological Garden, and John Wyatt, independent researcher, personal communication). The Felidae family is the most frequently represented one in the mortuary complex, next to the Bovidae.

The Canidae and Felidae have been completely documented and presented already at conferences (Braulińska 2014; 2015a; 2015b; 2015c). Part of the lion documentation was made available for publication (Beaux 2015: Figs 4, 6).

Viverridae and Herpestidae are two other Feliformia families depicted in the temple. They are represented by just one animal each, respectively *Genetta genetta* (Common Genet) from the Viverrinae subfamily, *Genetta* genus, and *Herpestes ichneumon* (Egyptian Mongoose) from the Herpestinae subfamily, *Herpestes* genus. The number of representations may be small, but the significance for a general Egyptological discussion substantial.

The Bovidae family, classified to the Artiodactyla order, the current work in progress, is represented by at least three subfamilies with one genus each: Bovinae

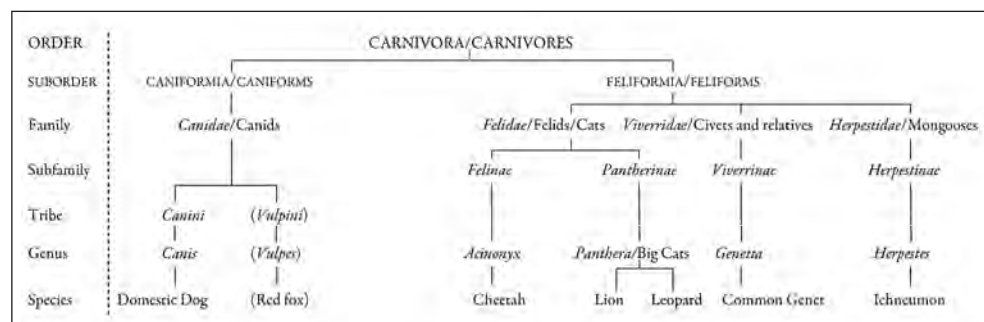


Fig. 2. The Carnivores order: example of the taxonomic zoological structure in the decoration of the temple of Hatshepsut. Tribes and genus of species that are not certain in terms of appearance in the decoration (see text) are in parentheses (Compilation K. Braulińska)

³ *Canis (lupus) familiaris* Linnaeus, 1758 (after Cichocki et al. 2015: 148), or more archaeologically correctly, *Canis lupus f. domestica* (Lasota-Moskalewska 2005: 22–23; translation and addition, Braulińska 2017: Note 1).

with *Bos*, Antilopinae with *Gazella* and Hippotraginae with *Oryx*. The Artiodactyla is represented in the temple by two other families: Giraffidae, with one genus *Giraffa*, species *Giraffa camelopardalis* (Giraffe), and Hippopotamidae with genus *Hippopotamus*, species *Hippopotamus amphibius* (Hippopotamus).

Images of animals from the Perissodactyla order are in the process of being photographed and documented. Representing the order are two families: Equidae, genus *Equus* with at least one species, *Equus asinus* (Donkey),⁴ and Rhinocerotidae with one genus, and one species. Although the genus *Diceros*, species *Diceros bicornis* (Black Rhinoceros) is mentioned in the sources, the final attribution to an actual species is still under investigation.

The order Proboscidea is represented only among the raw materials, that is, tusks of *Loxodonta africana* (African Elephant) from the Elephantidae family.

Documentation of the Primates order is nearly complete and only one family, namely Cercopithecidae, has been noted. Monkeys depicted in the Hatshepsut temple most probably come from two genera within one subfamily of Cercopithecinae and are represented most likely by two genera: genus *Papio* with two species, that is, *Papio anubis* (Olive Baboon) and *Papio hamadryas* (Hamadryas Baboon), and genus *Chlorocebus* with one probable species: *Chlorocebus aethiops* (Grivet Monkey).

The animal raw materials depicted in the temple decoration have been documented within the relevant taxa for the actual animals from which they came.

NEW FINDINGS FROM THE 2015/2016 SEASON

The strict system of analysis by documenting successive families was put aside temporarily on two occasions, firstly when a particular scene depicted several different animal groups and their joint documentation was necessary to keep the tracing consistent, and secondly during the 2015/2016 season, when revised priorities were adopted to aid Filip Taterka in his study of the meaning of ancient Egyptian expeditions to Punt (Taterka n.d.).

In the latter case, scenes on the south and west walls of the so-called Punt Portico (Southern Middle Portico in the official nomenclature) were documented. Both walls had been partly traced and studied in previous seasons as far as they depicted animals. Last season, work was extended to other images on the walls, including the easternmost inscription on the south wall, the chests accompanying the images of Felidae as goods from the expedition, and animal images different in their nature to those hitherto studied, such as the cobras in the frieze decoration along the ceiling edge. All the high-resolution documentation of the Punt Portico from the 2011 season and later was made available to Taterka for his research on the significance of Punt in royal ideology.

Aside from the main tasks of the project, the author discovered a non-faunal graffito that is puzzling because of its dating, style and subject. A study of this item is ongoing.

OTHER PROJECT OBJECTIVES

Added benefits from the study of the faunal decoration of the temple included

⁴ Should symbols be also considered in this research, there would be two species, as *Equus caballus* (Horse) is depicted on one standard.

a successful repositioning of a loose piece of decoration. This block fragment, with part of the head and horns of an animal identified as belonging to the *Oryx* genus, was refitted in the north wall of the Upper Courtyard. Another fragment representing the rear part of a striding animal, probably a member of the Carnivora or less likely Primates order, has yet to be identified with certainty and relocated in the temple walls.

A separate task, only loosely related to the project, called for re-inventorying the bone objects excavated by the Mission, their documentation and further analysis.

Some interesting observations were also made concerning artistic styles and has enabled comparison between the current state of preservation and earlier visualizations. Both the removal and addition of blocks can be clearly identified [Fig. 3]. The accuracy of the early records (by Naville, Carter and others), accessed in London and Oxford, will be confirmed by comparison with the new highly accurate retracings.

Detailed examination of the surface during the documentation process also

revealed a pattern of adjustment of the figures carved in relief, dating perhaps to the Eighteenth and Nineteenth Dynasties. The changeovers concerned animal images specifically, as well as a whole scene at least in one case. This recarving of scenes, sometimes leading to serious changes of the original decoration program, will be the subject of further study.

The completion of zoological taxa documentation and further research within the mentioned disciplines is scheduled for the coming seasons. It is the base of the author's doctoral dissertation and will ultimately be published in a monograph detailing the findings concerning faunal iconography from the Temple of Queen Hatshepsut at Deir el-Bahari.

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I would like to express my gratitude to Dr. Zbigniew E. Szafranski, Director of the Polish–Egyptian Archaeological and Conservation Mission at the Temple of Hatshepsut at Deir el-Bahari, for permission to work on the complete faunal iconographic material from the temple. Thanks are also

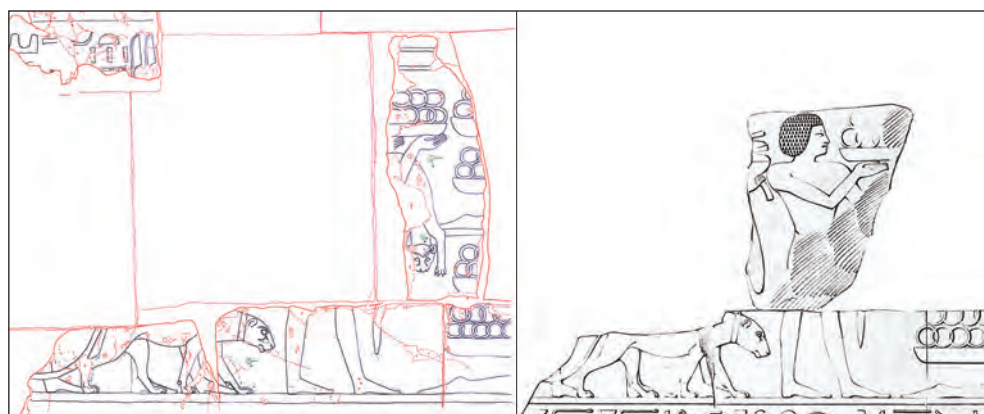


Fig. 3. Comparison between a modern exact tracing (left) and published documentation (Drawing K. Braulińska; old visualization: after Naville 1898: Fig. 76, fragment)

due my colleagues, Anastasiia Stupko-Lubczyńska and Franciszek Pawlicki, who granted me access to their documentation for study purposes, and John Wyatt who assisted me in accessing sources in England and in language correction of the present paper. I am grateful to the Polish Centre of Mediterranean

Archaeology of the University of Warsaw for their support in the form of scholarships to Egypt. And last but not least, I would like to thank the late and greatly missed Krystyna Polaczek who is inconsolably no longer with us, for most generously initiating my first steps into the Temple of Queen Hatshepsut.

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More remarks on the enlarged doorway in the Djeser-akhet temple of Tuthmosis III at Deir el-Bahari

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Abstract: The issue of the enlargement of the entrance to the Bark Hall of the Djeser-akhet temple of Tuthmosis III at Deir el-Bahari was a major focus for the Polish restoration mission from the start. The widening of the passage was noted early on in the research and new data was forthcoming with every successive field season as the decoration of the entrance wall on either side of the Hypostyle Hall and of the Bark Hall was reconstructed. More detailed information continued to add to the recreation of the process of how and when these changes were introduced, as discussed by the author in earlier articles. Further fragments of relief decoration identified in recent years as originating from the cut sections of the walls have offered new data to supplement the author's view, being at the same time a significant source of information on the original decoration predating the destruction phase in the Amarna period.

Keywords: Tuthmosis III, Djeser-akhet, bark of Amun, granite doorway, temple decoration, Hypostyle Hall, Bark Hall

The Djeser-akhet temple of Tuthmosis III was discovered in 1961 by an archaeological mission from the Polish Centre of Mediterranean Archaeology University of Warsaw working at Deir el-Bahari. It was excavated in 1962–1967 and a restoration project was initiated in November 1978, this having continued ever since, albeit with a twelve-year gap in 1996–2007. The present project, which started in 2008, is focused on completing the study and publication of the temple, the third great temple at Deir el-Bahari (Dolińska 2012; 2014; 2015).

EARLIER RESEARCH

One of the few elements of the temple surviving in place is the granite doorway in the entrance from the Hypostyle Hall to the Bark Hall, important for its state of preservation, location, iconography and color scheme. Jadwiga Lipińska (1968; 1977: 17–21) was the first to observe that it had been remodelled, the jambs having been pushed apart in order to widen the passageway. Her description of this part of the Djeser-akhet temple discusses the evidence found on the granite threshold: double sockets for mounting the pivots of

wooden double doors, as well as jambs partly protruding beyond the threshold edge.

The issue has been discussed extensively, the accumulated evidence helping to establish with greater precision the original dimensions of the entrance, its width after the remodelling, the initial appearance of the decoration and the reasons for the alteration. The outcome is a reconstruction of the building history of this complex, historical evidence for the last years of the reign of Tuthmosis III.

Fig. 1. *The Djeser-akhet temple: modified part highlighted in red (PCMA Tuthmosis III Temple Project/M. Caban)*

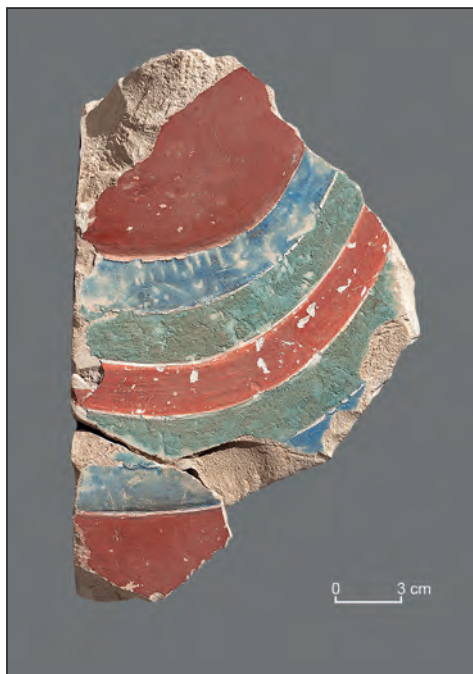
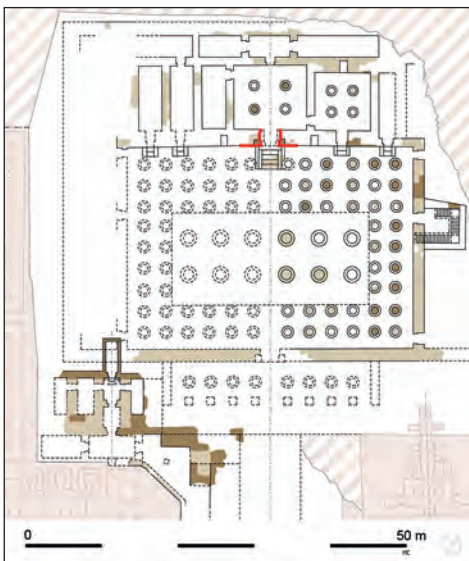


Fig. 2. (and opposite page) *Undamaged fragments of the torso, throne base and throne of Amun from the cut part of the west wall of the Hypostyle Hall, south of the granite doorway (PCMA Tuthmosis III Temple Project/photos Z. Doliński)*

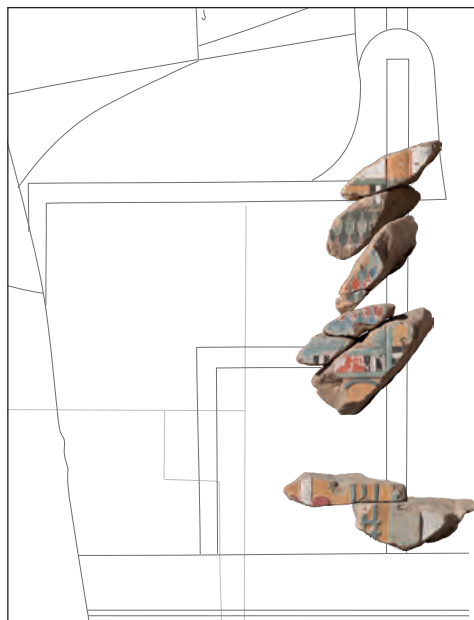
ENLARGED DOORWAY

From the start, the entrance width seems to have been determined by the dimensions of the bark of Amun (Wiercińska 1992). A link between the two is evident considering that the entrance led to the Bark Hall [Fig. 1]. The bark was depicted twice on the walls of this room, and scenes that show it arriving in procession at the Djoser-akhet temple occupy a significant amount of space on the walls of the Hypostyle Hall (Górski and Wiercińska 1983; Wiercińska 1990; Górski 1990). The upper registers of the east, north and most likely the now lost south walls were entirely devoted to this subject.

Modification of the entrance was confirmed by the reconstruction of the decoration of the west wall of the Hypostyle Hall and the east wall of the Bark Hall. This also clarified in detail the hitherto unresolved issue of the dating of these changes. An in-depth analysis of the decoration of wall

sections located immediately next to the entrance, both on the side of the Hypostyle Hall and in the Bark Hall, proved beyond doubt that the scenes located in these places bore evidence of reworking — cutting and modification of the decoration — and that these changes occurred after the temple had been completed (Wiercińska 2010: see especially 221–222 and Figs 5, 6, 8 for a detailed description of the works conducted then). Fragments of walls adjacent to the entrance were cut away, permitting the jambs to be moved further apart: the southern by about 0.45 m and the northern by about 0.30 m. The result of these modifications was an entrance measuring 2.34 m in width (current state), compared to the original width of 1.60 m (Czerner and Melewska 1992: Fig. 3; Czerner 1997: Fig. 6).

Fragments of relief decoration from the sections of walls that had been cut away during this structural change were identified among the remains salvaged from the ruins. Notably fragments of the crown and torso of Amun bore no traces typical of the Amarna-period destruction (Wiercińska 2010: Figs 7, 9). More parts, usually small chips or mere flakes of blocks, were uncovered among thousands of wall fragments in the course of subsequent field seasons. Further fragments of the torso of Amun, as well as of the throne base and of the god's throne were also recorded [Fig. 2]. The assumption is that this decoration was largely removed and discarded during the remodelling. Considering that all the identified fragments discovered to date come from the excavations on the temple platform, it appears that the cut wall fragments were not discarded, but were deposited instead somewhere on the platform, most likely outside the walls, for later reuse, at least in some cases.



Today, these pieces are an invaluable source of knowledge on the original decoration from the time of Tuthmosis III. Needless to say, the Amarna-period destruction affected practically all representations of deities, particularly of Amun-Re, as well as inscriptions with the names of deities, their thrones, and chapels. Surviving divine images are products of a post-Amarna restoration, differing significantly from the Tuthmoside originals. The most notable difference indicated by the cut fragments and carelessly defaced parts of reliefs is that the figure of Amun was painted red; the blue color of the god's body was most likely a post-Amarna addition. Originally, the torso of the deity was adorned with colorful necklaces and bracelets, in which blue-and-green bands are separated by red segments. Throne bases, now a uniform dark blue framed with a narrow geometric band in yellow, were originally polychrome and decorated in relief, with groups of hieroglyphic signs *ḥḥ ḏḏ w3s* on top of the *nb* sign against a yellow background, encircled by a colorful band of geometrical decoration. The adornment of the divine throne in the post-Amarna version is much more modest than the original. It consists of color bands in a blue-green-blue-red sequence with a uniform red square field behind the throne. In an even more modest version, the color bands were replaced with a uniform dark blue. The original divine thrones did not differ from the royal ones. They were adorned with horizontal bands of multicolored plumes in a color sequence paralleling the one mentioned above, with a square field depicted behind the throne and the *sm3 t3wy* scene represented against a yellow background and framed by a band of multicolor geometrical decoration.

In the case of the decoration of the Hypostyle Hall, nearly all the fragments identified in recent seasons originate from the part of the wall located to the south of the granite doorway [Fig. 3]. They are fragmented blocks of limestone (the crown and necklace of Amun) and sandstone (the god's throne and its base). Masonry combining blocks of these two materials is hardly rare in the temple of Djoser-akhet. Of note is an inscription located in the original scene behind the enthroned Amun; its upper part is particularly well preserved on nine granite fragments, which had been part of the lintel above the doorway as determined already in the past (Wiercińska 2010: 222 and Fig. 5). This part of the granite doorway is not preserved. Like the south jamb, it must have been made with too long a block a part of which was then cut flush with the face of the wall. After the entrance had been widened, the vertical inscription behind Amun on the wall that was part of the south jamb was concealed under a coat of white paint (hence its legibility even today). Texts on the wall part of the lintel, namely the beginning of the inscription and the horizontal text reaching as far as the figure of the vulture goddess Nekhbet, as well as the border of the architrave extending into the wall, were cut away. Their discovery on the temple platform seems puzzling, especially since no other fragments attributable to the same lintel were recovered. The lintel dimensions: height about 1.35 m, width about 3.11–3.13 m, can be determined with relative precision thanks to the reconstructed decoration of the west wall of the Hypostyle Hall and the known width and height of the jambs in the doorway, as well as the dimensions of the threshold and architraves mounted

in the walls. The enlarged entrance required a lintel measuring nearly 3.87 m in length, therefore the original stone should have been replaced with a new one. Had that been the case, then it remains to be explained why the wall part of the lintel was cut off; such a solution

would be justified only if the lintel had been left in place and adapted to the new circumstances by shifting it to line up with the new axis of the doorway and extending it sideways with blocks, possibly even made of different material. The Djeser-akhet temple is replete with “construction flaws”;

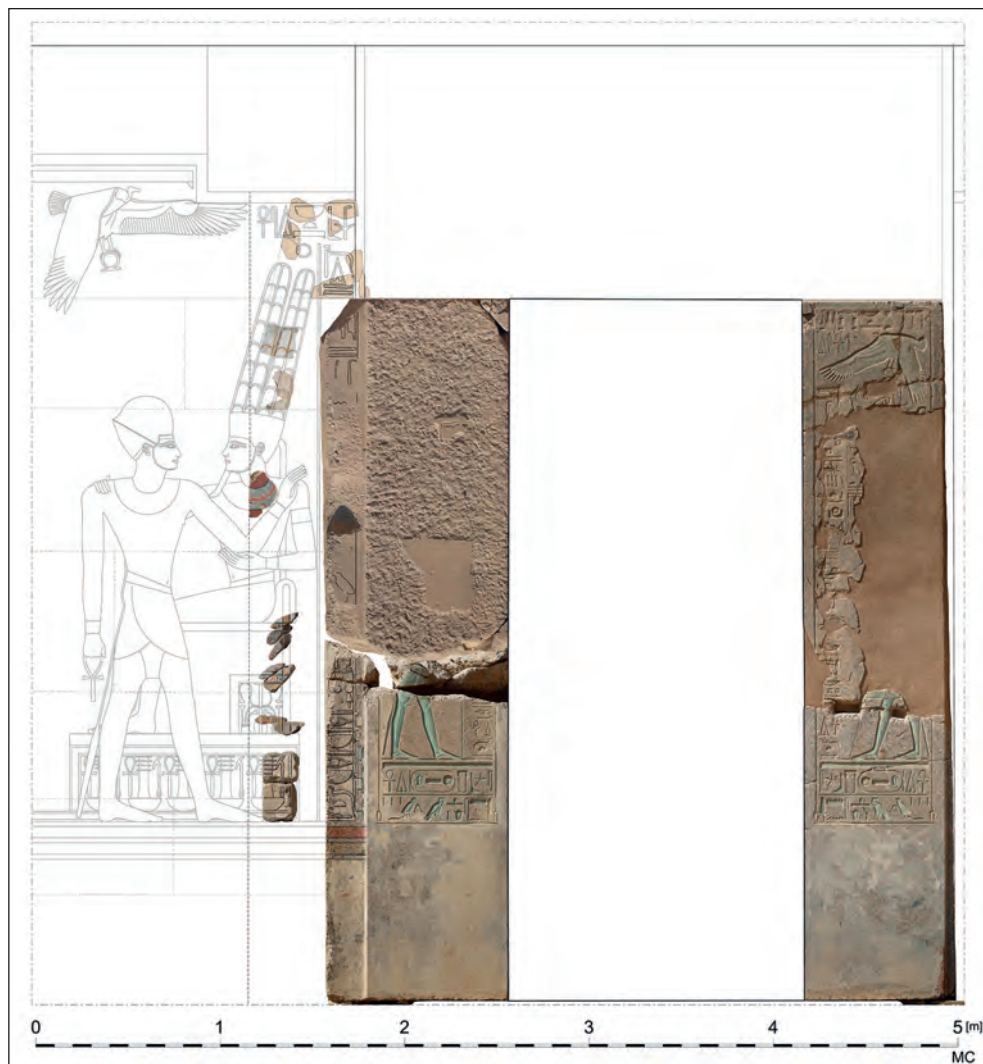


Fig. 3. Hypostyle Hall, granite doorway and the south scene, state before the widening of the doorway (PCMA Tuthmosis III Temple Project/drawing and photo M. Caban)

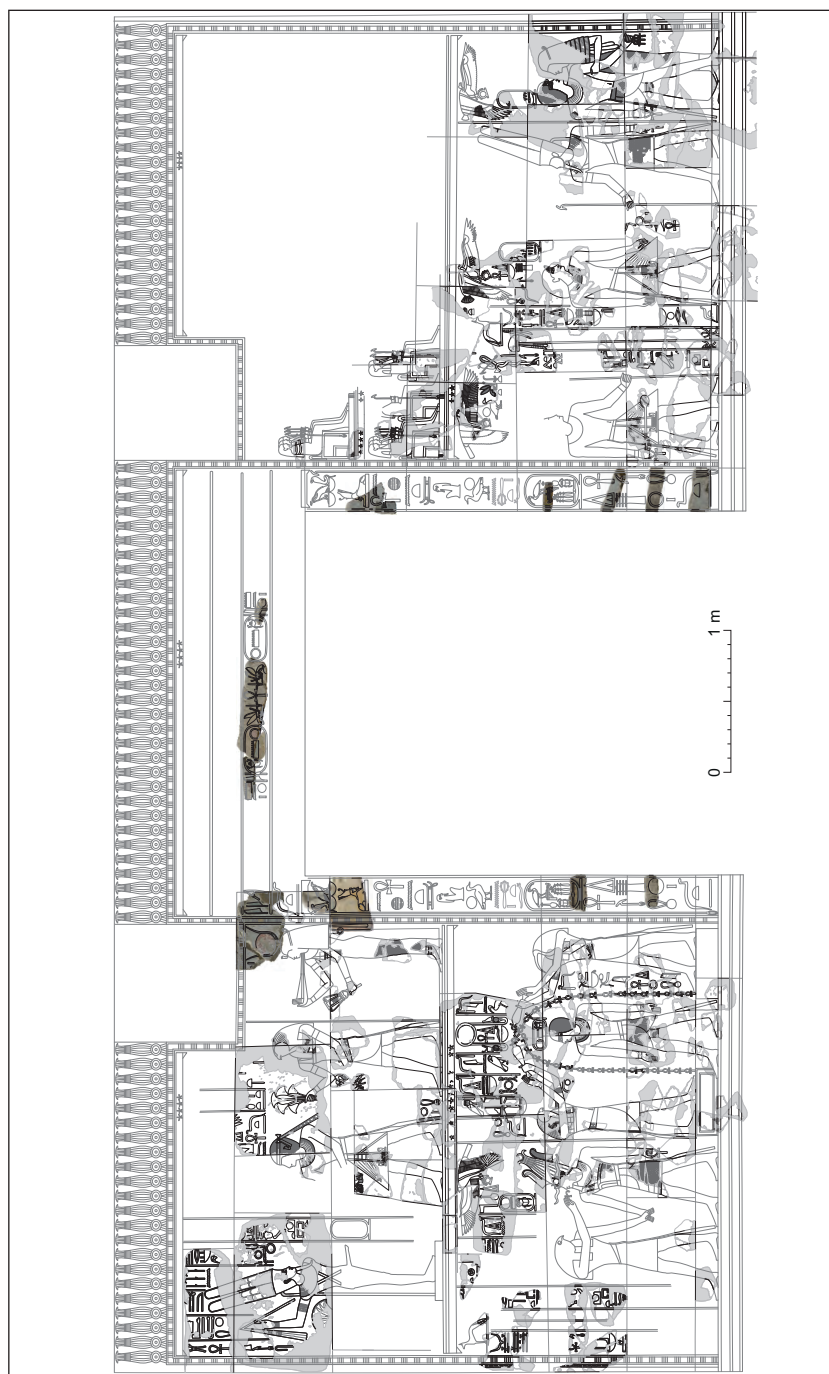


Fig. 4. Bark Hall, east wall with centrally located entrance, state after the widening of the doorway
(PCMA Tutmosis III Temple Project/drawing K. Baturo, G. Zborowska, M. Momot)

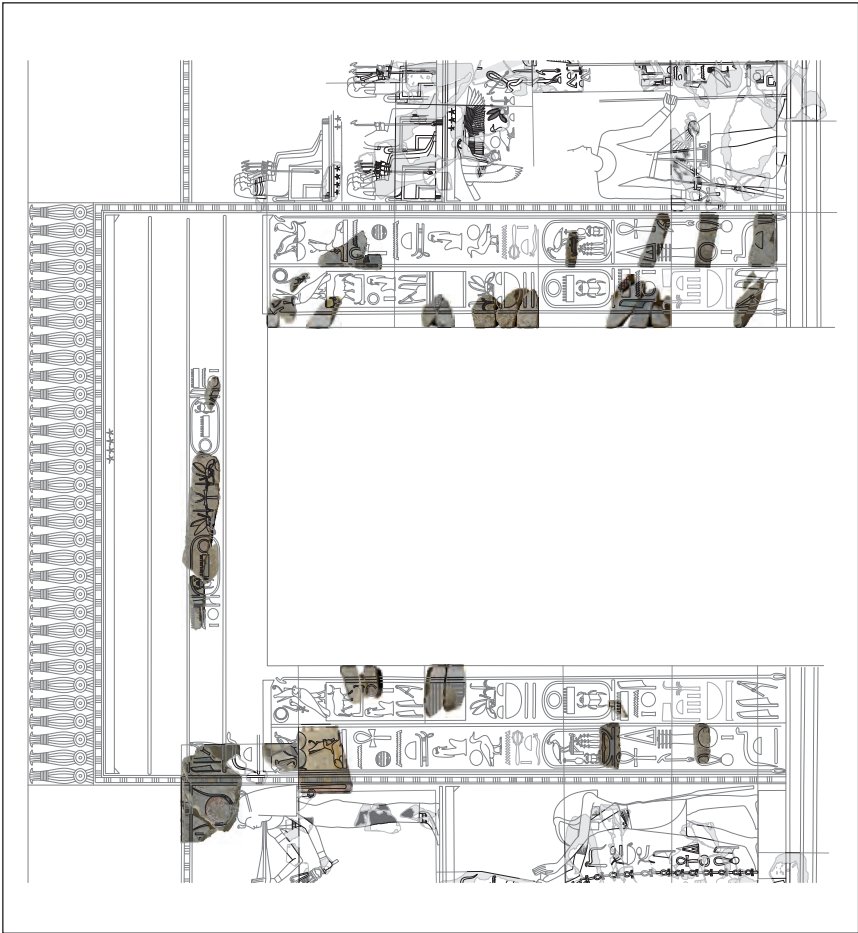


Fig. 5. Bark Hall, east wall with centrally located entrance, state before the widening of the doorway
(PCMA Tuthmosis III Temple Project/drawing M. Momot)

the practice of inserting broken blocks into walls and concealing their damage with mortar and stone fill may also speak in favor of this particular reconstructed course of events.

Similar changes, albeit on a smaller scale, were made on the side of the Bark Hall. Evidence of the widening of the entrance may be observed in the decoration of the east wall. The reconstructed images indicate that the current width of the doorway is about 2.57 m. Its borders are single vertical columns of text topped with the sign for sky, as well as a lintel apparently decorated

with four horizontal bands topped with a band representing the heavens. The whole was enclosed within a narrow band of geometrical decoration [Fig. 4]. Striking at first glance is the atypical composition of the single column of text bearing the royal titulary of Tuthmosis III; it contains only the ruler's *nebt* name and a name inside the second cartouche (*nomen*). Also, on the side of the passageway the entrance lacks a border that is usually present in the form of a blue painted band framing the passage or the *w3s* sign in the same color. The entrance was made wider by cutting off one column of text on each side of its frame, precisely along the vertical line separating the columns, as one can see clearly on the preserved fragments [Fig. 6]. The initial widening of the passageway



Fig. 6. Fragments of the doorframe with the cut along the line separating columns of text (PCMA Tuthmosis III Temple Project/ photos Z. Doliński)



Fig. 7. Undamaged name of Amun on fragments of the cut doorframe in the Bark Hall (PCMA Tuthmosis III Temple Project/ photos Z. Doliński)

was most likely insufficient as additional cuts were made in the recesses for hosting the leaves of the doors (Czerner 1997: Fig. 7). Sandstone fragments with relief decoration, identified in recent field seasons as parts of the wall that had been cut away, permitted a reconstruction of the appearance of the first doorframe and its width [Fig. 5]. The original doorframe had two vertical columns of text with the titulary of Tuthmosis III; the first column, which was cut away, contained the Horus name and the first cartouche with the ruler's prenomen. Particularly noteworthy is the original Amun name, which bears no traces of obliteration [Fig. 7]. The second column mentioned above contained the nebty name (von Beckerath 1999: 137 [N5]) and the second cartouche with the king's nomen. As can be gathered from the reconstructed decoration, approximately 0.35 m was cut off on each side of the entrance; therefore, the original doorway must have been about 1.87 m wide.

DATING OF THE ALTERATION

The dimensions obtained are, of course, approximate. However, they indicate beyond doubt that the doorway was enlarged and suggest the cause of this alteration, while the decoration described above indicates the period when these changes were introduced. The imagery on the cut parts of the walls does not bear traces of effacement, meaning it was reworked before the Amarna period. In turn, the lack of any traces of changes to the decoration and architecture of the temple in a later period associates these operations with the reign of Tuthmosis III; research has shown that at the time the entrance was enlarged,

the space of the Hypostyle Hall was still a courtyard surrounded by a portico. It was Tuthmosis III who subsequently turned it into a hall by erecting taller columns in the central space.

CONCLUSION

To sum up, successive field seasons have contributed to our knowledge of the history of the Djoser-akhet temple but did not change the general conclusions reached to date. The building of the Djoser-akhet temple took place late in the reign of Tuthmosis III; the beginnings of construction work can be dated securely today to year 45 of the ruler's reign, even though royal building activity on this spot began several years earlier (Wiercińska 2010: 224–225). Destruction of the temple of Hatshepsut in Deir el-Bahari most likely began parallel to the building of Djoser-akhet. Also contemporary to Djoser-akhet is the construction of the granite bark shrine erected by Tuthmosis III in Karnak (Van Sichen 1984), replacing the quartzite bark shrine of Hatshepsut. Construction and demolition works in both places are dated to the same period. The entrance to the Djoser-akhet was enlarged when the temple was already standing and its decoration was complete. There is evidence to suggest this may have taken place in year 49 of Tuthmosis III (Wiercińska 2010: 224). One may suspect that after building the new sanctuary Tuthmosis III also funded a new, larger and more lavishly decorated bark for the Theban Amun, which required more priestly carriers. This, in turn, necessitated the widening of all entrances to spaces which the bark visited or which lay in its path during the festive procession.

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Report on the archaeological survey at Gebelein in the 2014, 2015 and 2016 seasons

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Abstract: All periods of Egyptian history are represented at Gebelein and it encompasses many kinds of archaeological site found in the Nile valley (that is, cemeteries, settlements, fortifications, temples, rock quarries etc.). The area was a significant centre in the history of ancient Egypt, but its exact role and the reasons for its importance still awaits explanation. That is why the Gebelein Archaeological Project was initiated. The field survey of Gebelein, which started in 2014, aims to recognise the topography of the area and the degree of destruction of the sites and to locate archaeological remains as well as to determine their interpretation and dating. This report outlines the results of work conducted during seasons 2014, 2015 and 2016, which encompassed the archaeological and epigraphic field surveys, geophysical prospection as well as work conducted in the rock-cut chapel of Hathor.

Keywords: Gebelein, mobile GIS, geophysical prospection, archaeological survey, epigraphic survey, satellite imagery, RTI, decorrelation

The term Gebelein refers to a group of archaeological sites [*Fig. 1*] located 28 km southwest of Luxor on the west bank of the Nile in the Qena Governorate of Egypt. It was an important centre; its role as a predynastic proto-state capital is the subject of ongoing debate (Wilkinson 2000: 390–392) and it was a nome capital in Ptolemaic times (Vandorpe and Waebens 2010). It encompassed two towns (Sumenu and Per-Hathor), cemeteries, cult

places etc. (for an overview, see Ejsmond 2016). Although, many archaeological missions have worked there (e.g.: Fraser 1893; Schiaparelli 1921; Bergamini 2005), but the results are underpublished and the area, despite its importance, often escapes attention in scholarly debate.

A field reconnaissance was conducted in the spring of 2013 at the sites of Khozam, el-Rizeiqat, and Gebelein (Ejsmond, Chyla, and Baka 2015). The last

site was chosen for more comprehensive investigation in view of the threatening encroachment of agricultural fields [Fig. 2]. Recent settlement development has also been observed comparing contemporary satellite images to archival ones and maps as well (Chyla 2017). These observations, along with a lack of information regarding the archaeological topography of the place, are a cause of concern (for an overview, see

Ejsmond 2016). Therefore, the aim of the survey is to register and establish the exact location of all recognisable archaeological remains at Gebelein in their topographical and environmental context. Work conducted so far has shown the potential of the area in improving our understanding of different aspects of Egyptian history and culture (for current work, see Ejsmond 2017a; 2017b).

METHODS

Different non-destructive methods were applied in order to collect a range of data and produce precise documentation of the archaeological material.

ARCHAEOLOGICAL SURVEY

Field prospection started with an analysis of available spatial data: CORONA, Landsat, Google Earth, Pleiades satellite

Team

Dates of work: 16–25 February 2014; 25 January–8 March 2015; 8 February–14 March 2016

Director: Wojciech Ejsmond, archaeologist (University of Warsaw; 2014; 2015; 2016)

Field Director: Julia M. Chyla, archaeologist, GIS specialist (University of Warsaw; 2014; 2015; 2016)

SCA representatives: Mamduh Saad Mostafa (2014); Ali Mohamed Ahmed (2015); Mohammed el-Amir Mohammed Ahmed (2016)

Archaeologists: Adam Grylak (University of Wrocław; 2015), Taichi Kuronuma (Tokyo Metropolitan University; 2016)

Egyptologists: Cezary Baka (PCMA; 2014), Mina Ilić (University of Nis; 2016), Vincent Oeters (Friends of Saqqara Foundation; 2016), Daniel Takács (University of Warsaw; 2015; 2016), Lawrence Xu-Nan (University of Auckland; 2016)

Archaeologist/epigrapher: Dawid F. Wiczorek (Institute of Archaeology, University of Warsaw; Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences; 2015; 2016)

Geologist: Michał Madej (University of Warsaw; 2015)

Geophysicist: Marcin Jakub Ordutowski (Maria Curie-Skłodowska University in Lublin; 2015)

RTI specialist/archaeologist: Piotr Witkowski (independent researcher; 2014; 2015; 2016)

Conservator: Arkadiusz Ostasz (freelance; 2016)

Anthropologist: Marzena Ożarek-Szilke (University of Warsaw; 2015)

Acknowledgments

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images, and also maps made by Pierre Jacotin about 1800 (Jacotin 1826: Pls 4–5; Chyla 2012; Ejsmond, Chyla et al. 2015). A map based on satellite images of the rock formations of Gebelein was made prior to the start of the survey [see Fig. 2].

The site complex is artificially divided into two main areas: Gebelein East and

Gebelein West.¹ The dividing line lies along a canal situated between these mounts, where the hills are further broken up into smaller rocks. The following abbreviations are used in the documentation: GW = Gebelein West, that is, the western area, and GE = Gebelein East, the eastern area. Both parts consist of several rocks (R), which are

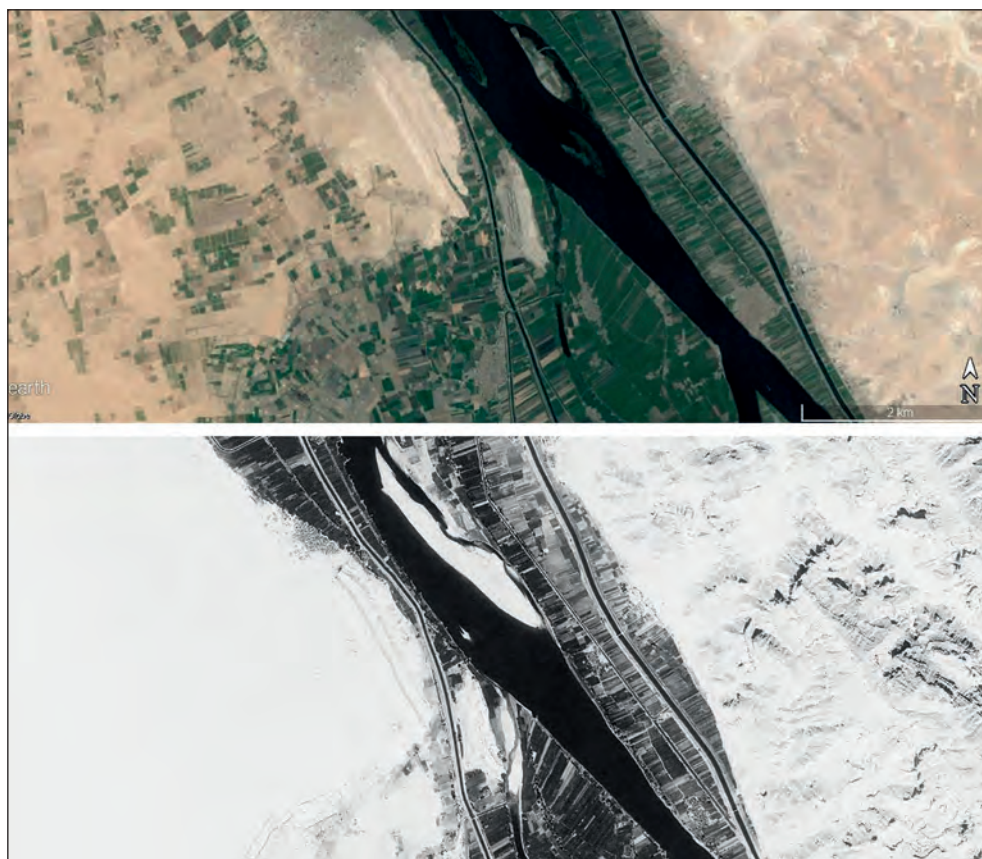


Fig. 1. Changes in the Gebelein landscape observed in satellite images: top, from 2016 (Google Earth) and bottom, from 1968 (CORONA) (Processing J.M. Chyla)

¹ These terminologies differ from those used by the Italian Mission, which sometimes referred to Gebelein West as ‘Gebelein North’ and Gebelein East as ‘Gebelein South’, or Greater and Smaller Rock respectively (see, e.g., Schiaparelli 1921 and Fiore Marochetti 2010). In this report, as well as other publications of the current project, the terms “Hill” and “Mountain” are used interchangeably as designations of the eastern and western rock formations.

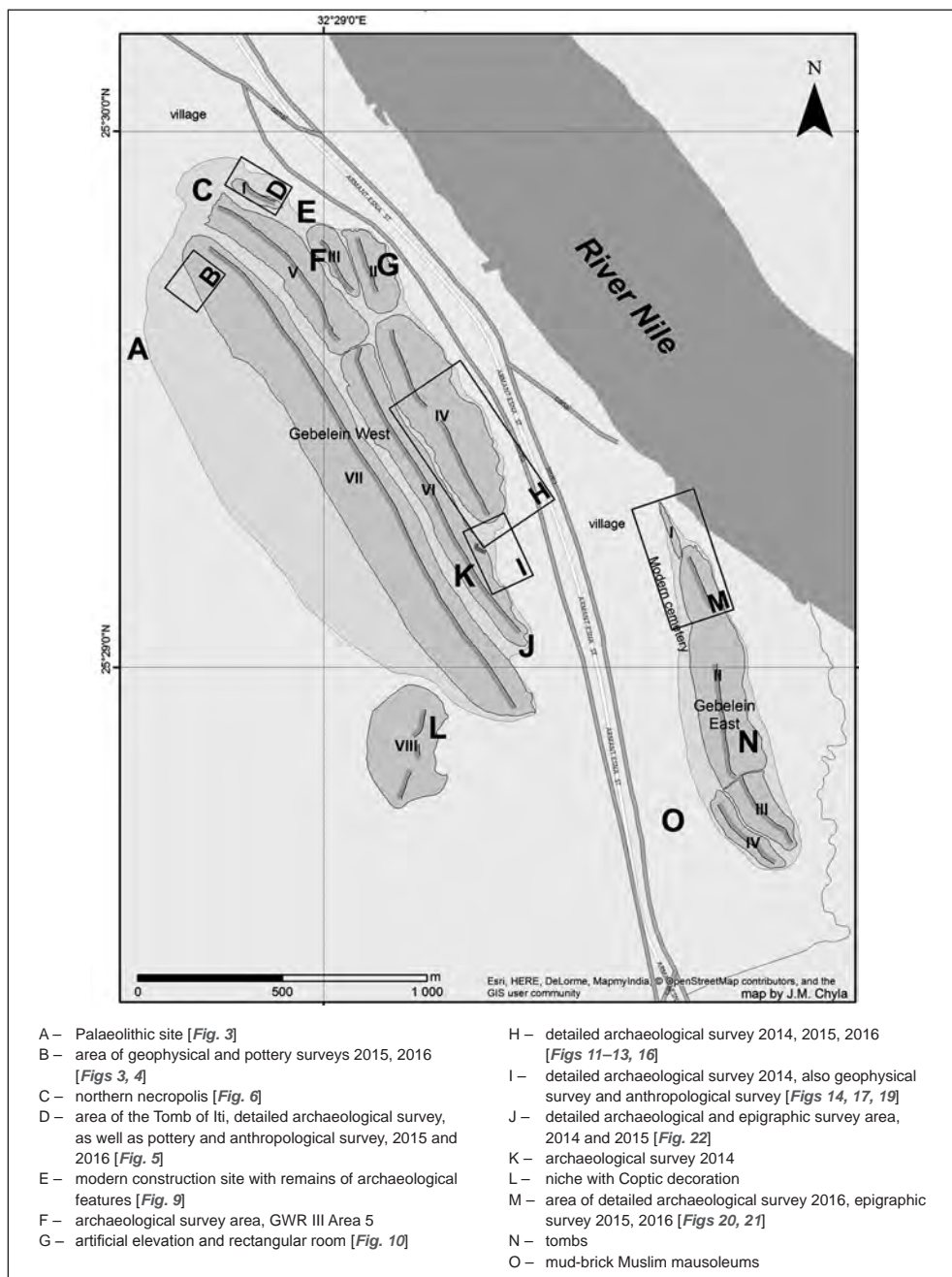


Fig. 2. Gebelein archaeological site complex. Boxes correspond to detailed maps of the investigated area illustrated below as indicated (J.M. Chyla)

designated with Roman numerals (e.g., I, II, III, IV etc.) [see *Fig. 2*]. All the features, like tombs and other man-made structures, are numbered (e.g., 156). The numbering sequences for GE and GW are separate, for example: GWR IV-164 = Gebelein West, Rock No. IV, Object No. 164.

A GIS application ArcPad was used, combined with the mobile measuring tool MobileMapper 20. All the collected archival data was processed and stored in GIS, which was subsequently converted into a mobile version, allowing the research team to retrieve areas marked as being of interest as a result of an analysis of both published and unpublished data. Mobile GIS not only allows the collected information to be inputted immediately, but can also be used directly on site during the fieldwork (see Wagtendonk and De Jeu 2007; Tripcevich and Wernke 2010; Tzvetkova 2012). A database containing the archaeological features connects features of interest with their positions and descriptive information (Bogacki, Giersz et al. 2010). The exact locations of the features are documented as points or lines with their geographical coordinates. These also include attributes consisting of the hill number, inventory number, and the state of preservation of the features. Additionally, recognised threats, archaeological finds, and the type of the material are described as well (e.g. pottery, bones, textiles etc.). The attributes are categorised as double, false/truth, text and date format, depending on the type of information they describe. Also, the data is connected to photographs of archaeological remains (Ejsmond, Chyla et al. 2015: 618). If needed, additional archaeological features or areas could be mapped using lines demarcating the extent of areas of interest (AOI).

The variety of archaeological features and the poor state of preservation of archaeological sites in Gebelein required a new method for conducting the pottery and anthropological surveys to deal with the material (Chyla, Ejsmond et al. 2017). Every collected potsherd or human bone is numbered and described provisionally with detailed information in the mobile GIS database. Their exact location was documented as points with geographical coordinates. Specialists can complement or correct the data upon examination in a laboratory thanks to the accessibility of the Archaeological Information System that stores all the field information. The information from the pottery or bone examination, for instance, can be correlated with the results of other prospections or field data, such as geophysical survey (Ejsmond, Chyla et al. 2015: 618). This method of surveying is still being tested. The method also provides new perspectives on the interpretation of data distribution and helps to plan efficient paths and focus upcoming surveys and excavations. One can effectively produce a detailed map showing the location of the material and have a more complete image of the researched area. Ultimately, this may be used to reconstruct the history of the occupation of a site in different periods by non-invasive means (although excavation are still needed because they produce different kinds of data).

Magnetic prospection was conducted in two areas [B and I in *Fig. 2*; *Figs 4, 17*] using GeoscanResearch fluxgate gradiometer FM 256 with 0.1 nT resolution. The sampling grid was 0.50 m by 0.25 m, giving eight readings per each square meter. These were collected in both parallel and zigzag modes. Additionally, measurements

were taken in 20 m by 20 m squares and covered approximately 1.5 ha. The method was chosen on the presumption that mud brick (used for building in the region) can be easily traced in the predominantly sand and limestone bedrock matrix of the site. This is due to Nile silt, the material from which the bricks were made, being highly magnetic (Herbich 2003: 16; Ordutowski 2016).

EPIGRAPHIC SURVEY

Most of the graffiti were documented by direct tracing on transparent sheets of foil and subsequently photographed. Fragile, cracked and uneven rock surfaces, also poorly lighted, were only photographed due to difficulties with their documentation on foil (reduced shadows, potential damage at points of attachment of the foil to the fragile surface).

Many graffiti and *dipinti* were poorly preserved due to exposure to environmental factors and anthropogenic damage. In order not to contribute to further destruction of the rock surface, as well as to save time, indirect, non-invasive recording techniques were applied, such as direct tracing on digital images (Domingo Sanz 2014; Pagi, Miles, Uueni 2015) generated by RTI (Reflectance Transformation Imaging). The result was the invention of a new technique that combines RTI and color enhancement techniques, and has since been applied to the documentation (Witkowski, Ejsmond, Chyla 2016).

For photography a Canon EOS 500D camera (15 megapixels) and, since 2016, 750D (24 megapixels) was used with the following equipment: different lenses (EF-S 18–55mm f/3,5-5,6 IS and

EF-S 60 mm f/2,8 macro USM), tripod, Fomei Panther 600 mini flash, poles, two blackballs, measuring tape and string. Each of the registered sets is composed of 35–90 images (RAW + JPG). The fewer number of images in some sets is due to the inability to create a full hemisphere using the lamp.

ImageJ software and DStretch² plug-in were applied for color enhancement of the original images of engraved and painted features. The technique has been used in rock art documentation, as well as in remote sensing analysis (Harman 2008), where it has been proven to produce successful results.

The discovery of overlapping engraved, faded, and almost invisible painted elements in both areas of Gebelein prompted the idea to connect two different techniques, RTI and color enhancement, as a means to enhance image clarity. Consequently, another stage was added to the process of creating an interactive RTI file. The combination of RTI and decorrelation is based on the premise that faded elements will become more visible, making it more likely for additional elements that are not visible to the naked eye to be discerned. Photos are then processed in DStretch or another graphics program (e.g. Photoshop or Gimp). The digitally enhanced images are loaded into RTIBuilder software and a RTI file is created (Witkowski, Chyla, and Ejsmond 2016). The resulting images after the digital enhancement process are still high quality photos without the visual artifacts.

A 3D model of the rock-cut *speos* (for the work, see below) was created in 2015 using various techniques of visual

² ImagesJ website : <http://rsb.info.nih.gov/ij/index.html>; more on DStretch: <http://www.dstretch.com>.

lisation, such as exporting the coordinates of each point of the 3D model to a scalar

field³ and applying a radiance scaling shader (see: Vergne, Pacanowski et al. 2010).

ARCHAEOLOGICAL SURVEY

With field prospection still ongoing, the results presented in this paper are only a preliminary description of the different types of features observed and documented in the 2014, 2015 and 2016 seasons. The following presentation accounts for characteristic kinds of archaeological features. Analysis and dating of individual monuments and artifacts takes place simultaneously with field prospection. The processes of dating and interpreting are still ongoing on both the intra- and inter-site scales.

The areas selected for survey, between the two hills and the northern foothill of the West Mount [see *Fig. 2*], are end-angered by agricultural expansion

and modern settlement development [*Figs 6, 7*]. The below description of archaeological features starts with the West Mount in the northwest and proceeds south.

GEBELEIN WEST

A concentration of flints was discovered at the top of a mound located west of the Western Hill in the northwestern part of the surveyed area [A in *Fig. 2*; *Fig. 3*]. The stone tools can be dated to the late Middle or Late Palaeolithic and their context might be secondary. The center of the site was destroyed by an electric post and its southern part by agricultural fields.



Fig. 3. Northwestern part of the surveyed site looking west; A – location of Palaeolithic site, B – western part of the northern necropolis. B also indicates area covered by geophysical prospection (Photo W. Ejsmond)

³ See CloudCompare Version 2.6.1 User manual (<http://cloudcompare.org/>).

The northern necropolis is a large burial ground located at the northern base and northern slope of the Western Hill. The cemetery was probably associated with the nearby town of Sumenu, once located north of the necropolis [C in *Fig. 2*] and destroyed in the 19th and 20th centuries

(Ejsmond 2013: 38–39; Schiaparelli 1921: 27). A pottery survey and geophysical prospection were conducted in the westernmost part of the area (Ejsmond, Chyla *et al.* 2015; Chyla, Ejsmond *et al.* 2017) [B in *Fig. 2*; *Figs 3, 4*]. Two magnetic anomalies of rectangular shape were

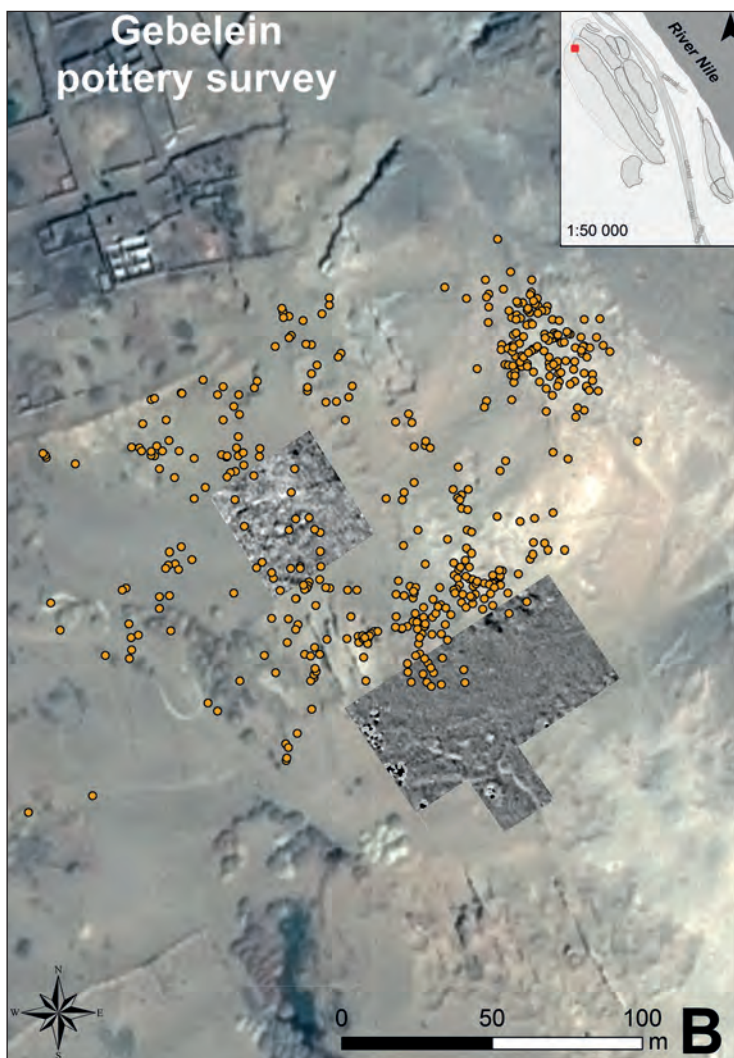


Fig. 4. Area of the geophysical and pottery surveys in 2015 and 2016; dots mark location of collected pottery samples (Map B in Fig. 2) (J.M. Chyla)

identified, while the pottery collected from the surface was largely of Naqada III date. Pottery and archaeological surveys were also conducted in the eastern part of the necropolis [D in *Fig. 2*; *Fig. 5*]. The central part of the cemetery [C in *Fig. 2*] was destroyed by recent extraction of natural resources; a few archaeological

features were noted on the extraction border [see *Fig. 6*]. A comparison of archival and contemporary images shows the exact spot excavated by the Italian Mission in the first half of the 20th century (Ejsmond 2013; Donadoni Roveri 1994: 18–20) [see *Fig. 9*]. Numerous tombs are hewn into Rock I [D in *Fig. 2*; *Fig. 5*;

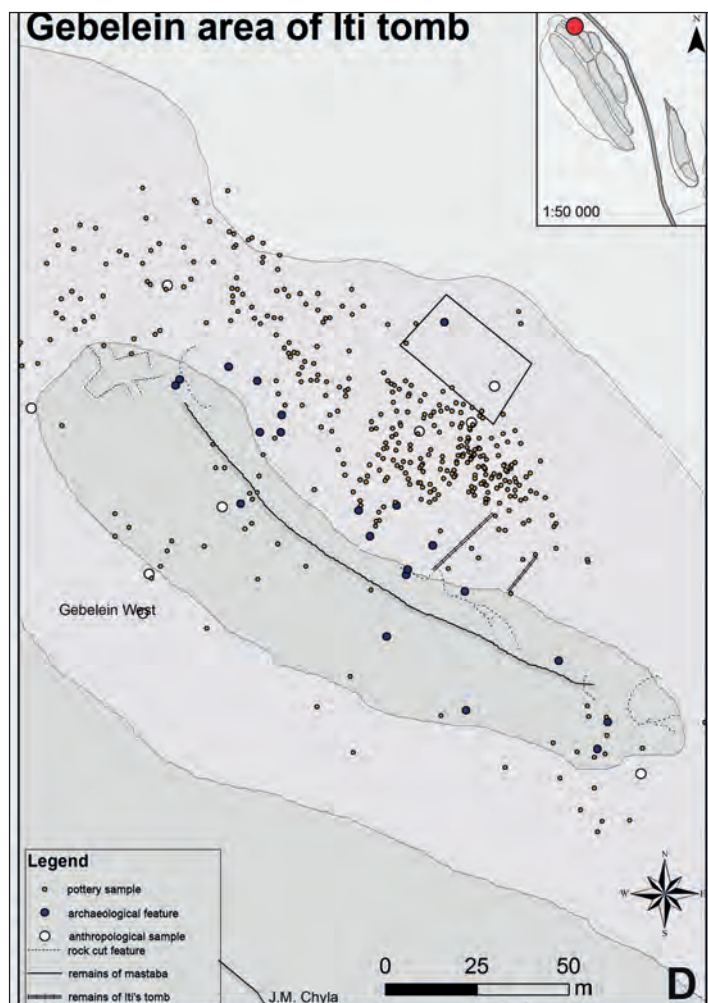


Fig. 5. Tomb of Iti area, detailed archaeological survey area and also pottery and anthropological survey area, 2015 and 2016 (Map D in Fig. 2) (J.M. Chyla)

Fig. 7]. Most of them are shafts located on the top of the rock and features cut into its slopes. Three tombs deserve mention due to their importance and size. One is hewn into the eastern face of the rock [D in *Fig. 2*; A in *Fig. 7*] and consists

of one big room connected to a burial chamber by a corridor in its southern part. Another tomb belongs to Iti, an army commander and priest of Sobek from the First Intermediate Period, who was buried there along with his wife Neferu who

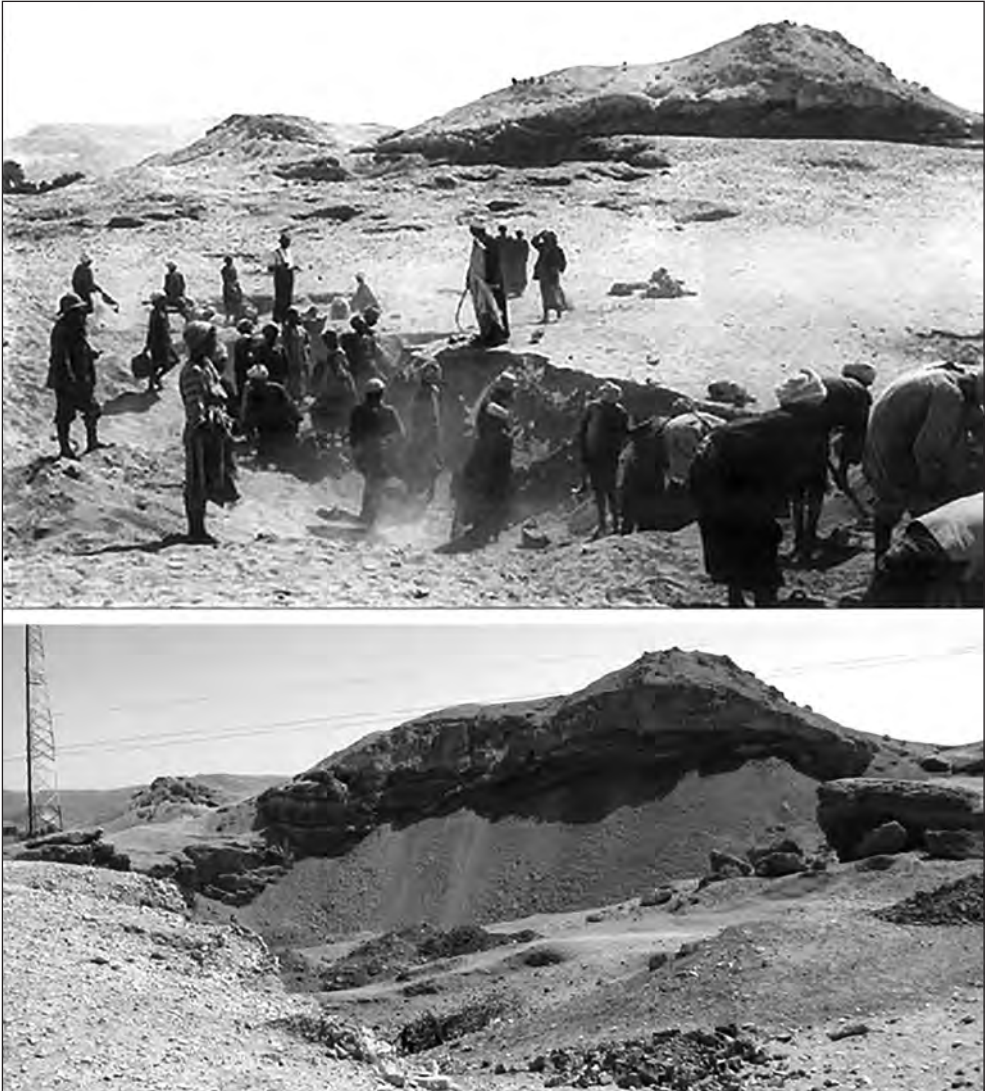


Fig. 6. Central part of the northern necropolis looking southeast: top, during the Italian excavations in the 1930s; bottom, in 2016 (Top, after Donadoni Roveri 1994: 19; bottom, photo W. Ejsmond)



Fig. 7. Eastern part of the northern necropolis: top, looking southeast; bottom, looking west, A – rock-hewn tomb; B – tomb of Iti and Neferu; C – mastaba (Photos W. Ejsmond)

was a priestess of Hathor (Moiso 2015) [B in *Fig. 7*]. The structure was excavated in 1911 and rediscovered by the Italian Mission in the 1990s (Bergamini 2005: 38–39). Today, only its outline (or rather negative imprint) in the rock remains. The last one is a mastaba excavated by Egyptian archaeologists, partly documented and published by the Italian Mission (Bergamini 2005: 36–37) [C in *Fig. 7*]. Only some bricks and two shafts are visible today. The structure is surrounded by pottery sherds.

The area between Rocks I and III contains modern structures [E in *Fig. 2*]. Outlines of structures (most probably tombs) were documented in the northern part. Several undecorated funerary cones made of clay were found in and around one

of the artificial indentations in the rock [*Fig. 8*]. Such finds (see Zenihiro 2009) are usually related to Eleventh Dynasty elite tombs (Arnold 2003: 95) and were also found earlier at Gebelein (Bergamini 2004: 75). The ground in the southern part of the area proved to be disturbed



*Fig. 8. Funerary cones from GWR I
(Photo W. Ejsmond)*



*Fig. 9. GWR III archaeological area 3, looking north
(Photo W. Ejsmond)*

by numerous small depressions between Rocks I, III, and V [F in *Fig. 2*; *Fig. 9*]. They may have been associated with some ancient activity, possibly mining for flint. Individual features were difficult to separate and document, hence the collective designation: GWR III Area 3.

Several features were documented on Rock II. However, their interpretation as archaeological features is not always certain, because they follow the geological structure of the rock and it is sometimes difficult to distinguish manmade from natural. Two should be reported [G in

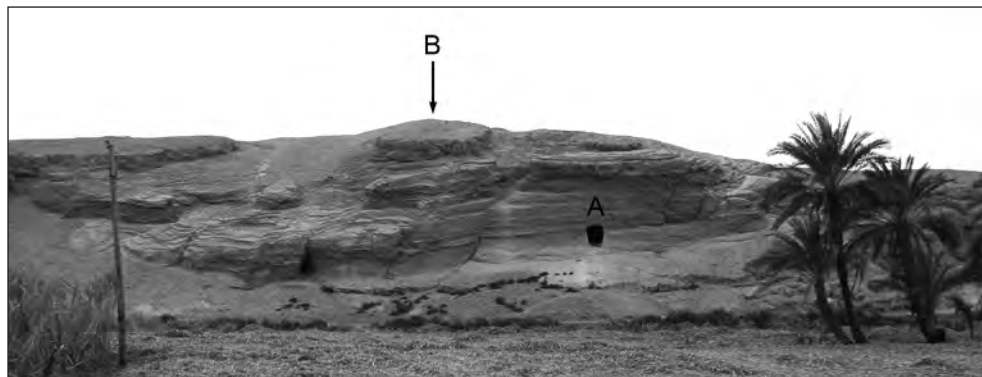


Fig. 10. GWR II, view looking west: A – entrance to the rock-cut feature, B – artificial elevation on top of the rock (Photo W. Ejsmond)



Fig. 11. GWR IV: archaeological area 1 and quarry in the middle part of Rock IV, looking west (Photo W. Ejsmond)

Fig. 2]. The first is located in the eastern face of the rock [A in *Fig. 10*] and consists of a rectangular chamber with walls that have lost their original surface due to the poor quality of the limestone. There is also a small, narrow corridor in its north-

western corner. The second archaeological feature is located at the top of the rock [B in *Fig. 10*]. It is an artificial elevation made of stones, soil, and some limestone blocks, the base of which has a rectangular shape. A rectangular shaft is found to the

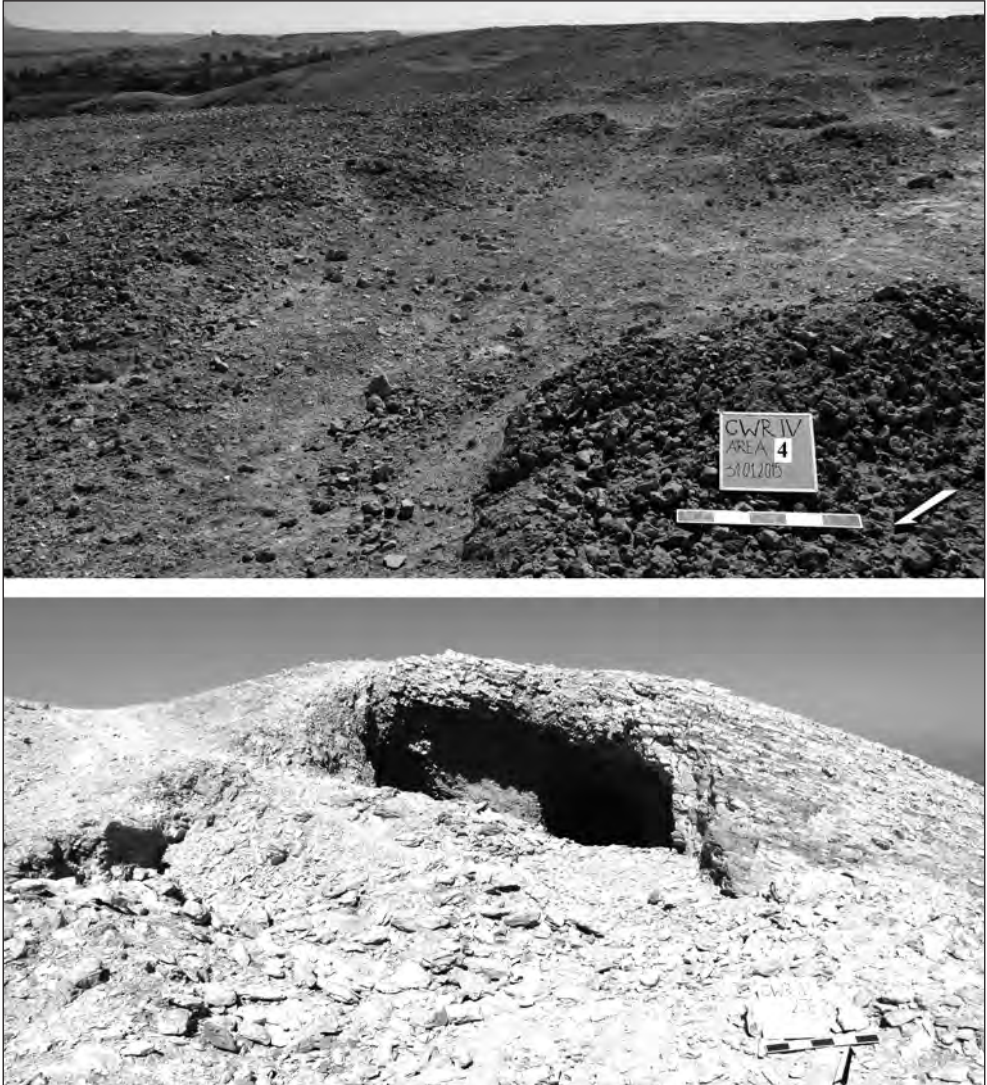


Fig. 12. GWR IV: top, archaeological area 4, looking southeast; bottom, feature GWR IV-276, view from the south (Photos W. Ejsmond)

east of the manmade elevation, where there is a depression to the west of this mound, possibly made by the extraction of limestone.

A rock quarry or mine is located further to the south, around the middle of Rock IV [H in *Fig. 2*; A in *Fig. 13*]. It

has an open cast and a gallery. The area was used as a camp by the Italian Mission excavating at Gebelein (see Moiso 2016: 94, *Fig. 85*).

North of the quarry, on top of the rock, there was another area disturbed by numerous small depressions (archaeo-

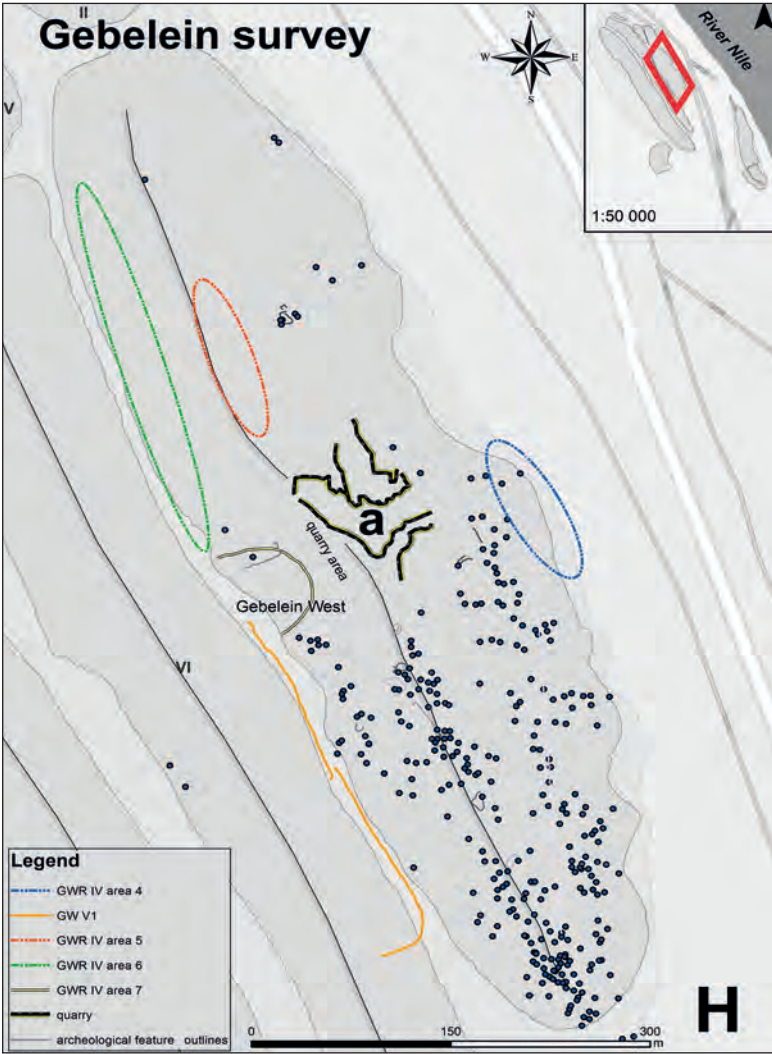


Fig. 13. Detailed archaeological survey in 2014, 2015 and 2016 (Map H in Fig. 1) (J.M. Chyla)

logical area 4) [Fig. 12]. A large, southward-facing niche was carved in the eastern slope of the natural round rock formation of the hill with a platform in front of it (GWR IV-276). The platform has three depressions in the southernmost part and is covered with debris. This area, dubbed area 4, yielded numerous arti-

facts with a preponderance of pottery [Fig. 12].

A heavily destroyed area lies to the west of the quarry. Several rock-cut features and niches here resemble the necropolis in the southern part of the rock (see below), but they could also be part of an open-pit mine. The destruction and debris make any inter-



Fig. 14. Detailed archaeological survey in 2014, also geophysical survey and anthropological survey (Map I in Fig. 2) (J.M. Chyla)

pretation difficult. The same can be said of the poorly preserved features dug or cut in the silt just east of the quarry, at the foot of the eastern part of Rock IV [H in *Fig. 2*].

Many rock-cut features, mostly shafts, were documented on the hilltop and

slopes of the eastern part of GWR IV [see *Figs 13* and *14*]. They are of oblong shape (examples in *Fig. 15*), in some cases lined with bricks in the top part. These may signify the presence of superstructures or revetment walls. One or two niches for



Fig. 15. Examples of shafts with mud-brick superstructures: left, GWR IV-131, looking south; right, GWR IV-139, looking east (Photos W. Ejsmond)



Fig. 16. Rock-cut tomb GWR IV-149:top, entrance, view looking west (Photo W. Ejsmond)

sarcophagi were occasionally found at the bottom of the shafts. As for shafts located on the rock slopes, bricks were used to level the steepness of the terrain. Human bones, wooden objects (remains of sarcophagi), and scraps of bandages as well as pottery were sighted in the rubble.

Some of the features located in the area surrounding the quarry may have been connected with the exploitation of natural resources. Most of the features were partly

covered or surrounded by soil and rubble. Debris mixed with artifacts, including pottery, bones and brick remains, may reflect slope erosion or remains of the fill from the shafts.

Not all of the features documented on Rock IV are shafts. The large niche with opening facing south contains traces of yellow and white plastering. Two tombs were documented on the eastern slope, each consisting of two rooms and a corridor leading to a chamber. One of them [Fig. 16] contained remnants of painted decoration. The spatial relation of the tombs that are concentrated in the southern part of the hilltop and on the slopes needs more attention and further analysis.

Archaeological area 6 was recorded in the valley between Rocks VI and IV [H in Fig. 2; Fig. 13]. In similarity to area 5, the identification and documentation of individual features was practically impossible in view of agricultural encroachment into the valley. Thanks to the efforts of the inspectorate in Esna, this progression of fields has been stopped. Geophysical prospection in this part of the valley produced little in the form of interpretable results in contrast to the area of the *saff*-tombs (Ejsmond, Chyla et al. 2015; Ordutowski 2016) [Fig. 17].

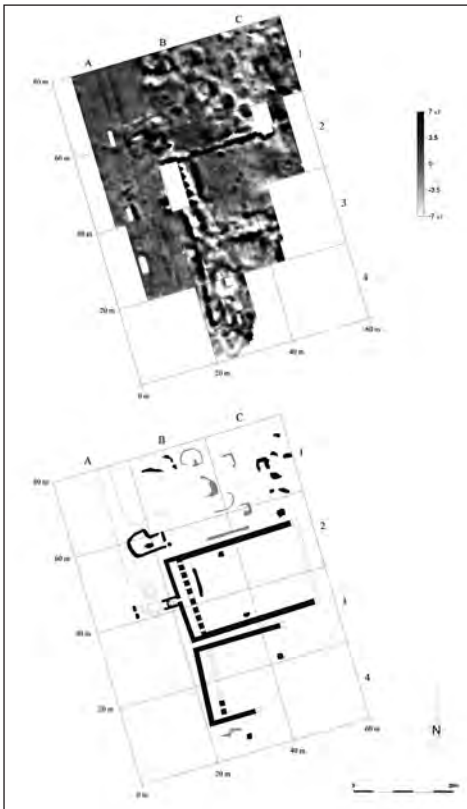


Fig. 17. Archaeological area 6 in the central necropolis: top, result of magnetic prospection (A and around A in Fig. 20); below: schematic interpretation of the geophysical survey results (M.J. Ordutowski)



Fig. 18. Feature GWRVI-9, facing east (Photo W. Ejsmond)

A cemetery located in the eastern central part of Gebelein West, where the Italian Mission discovered the *saff*-tomb in 1996 (Bergamini 2005: 34–36) [I in *Fig. 2*; *Fig. 14*; A in *Fig. 19*] has been heavily damaged by a section approximately 300 m long bulldozed through it.⁴ This damage dates to 2009 as indicated by an analysis of satellite images. The section was dug by a bulldozer. The section cut through at least five graves, the grave pits with human bones protruding from the section wall. These graves are the remains of a bigger necropolis that could still be traced in CORONA satellite imagery of the 1960s (Corona Atlas of the Middle East 2012). The section also cuts through the courtyard of another unexcavated tomb with a portico [B in *Fig. 19*], marked on the surface by a regular concentration of mud bricks. Lastly, the section reveals a large pit featuring a reversed stratigraphy and accompanied by an embankment,

which it is tempting to interpret as a canal. It runs from south to north and along the slope.

Rock-cut features and pits were documented above a concentration of graffiti (see below) in the southern part of Rock VI [J in *Fig. 2*]. In one instance, a pillar-like feature supports the roof of a rock-cut niche [*Fig. 18*]; in another, a niche was cut out in the middle of the longer axis. These features are surrounded by natural boulders, some of them half-extracted from natural layers. Some of the features suggest that trenches and pits were dug in order to extract massive boulders and/or flint (see also Heldal 2008: 137; Bloxam 2008: 168, *fc. 4*). The natural resources which were available at Gebelein could have been exploited since prehistoric times (de Morgan 1912: 49), as attested by traces of human extracting activity on the slopes of the Western Hill, at the foot of the hills, as well as on the hilltops.

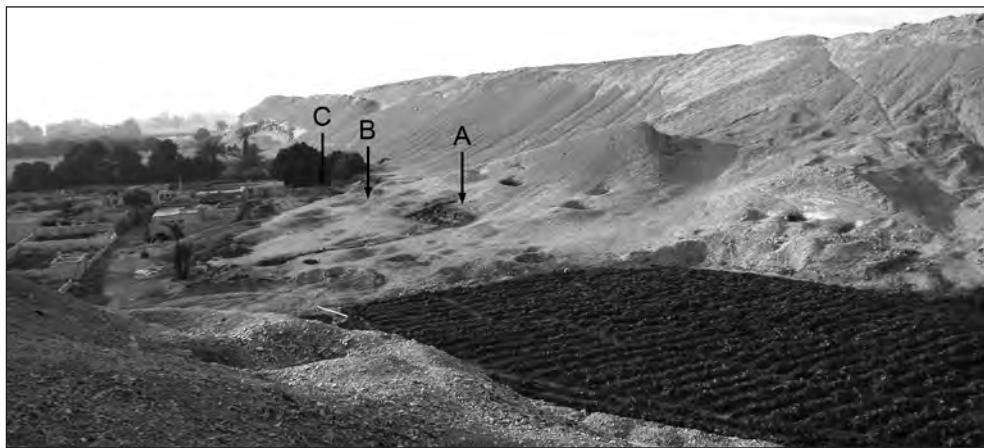


Fig. 19. Central necropolis, looking southwest A – saff-tomb excavated by the Italian Mission, B – saff-tomb, as revealed by geophysical prospection, C – modern trench (Photo W. Ejsmond)

⁴ Destruction of antiquities, such as this, is tracked on the website <http://www.theantiquitiescoalition.org/the-crime/> (article published in 2017, later deleted).

Deep niches, partly filled with sand and stones, are located on the southern slope of Rock VIII facing south [L in *Fig. 2*]. They were plastered and painted, the decoration in one case consisting of crosses and faded inscriptions in Coptic.

GEBELEIN EAST

Research on the East Mount started from its northern part, where the ancient

town of Per-Hathor (Pathyris during the Ptolemaic period) was located (Ejsmond, Chyla, Baka 2015: 267–268; Vandorpe, and Waebens 2010) [M in *Fig. 2*; *Figs 20, 21*]. Satellite images of the area were analysed with the NVDI index and photointerpreted, resulting in the identification of several crop marks in the fields west of the modern village. Further field research and geophysical survey are



Fig. 20. Archaeological survey area in 2016, epigraphic survey in 2015 and 2016 (Map M in *Fig. 2*) (J.M. Chyla)

needed to determine whether these crop marks hint at the remains of an ancient city. Part of the archaeological features on the East Hill were photographed and documented, and an epigraphic survey was initiated along with the documentation and conservation of a rock-cut chapel (see below).

A trench about 112 m long and 27 m wide was noted at the western foot of the Eastern Hill [M in *Figs 2; 20*]. It was excavated in 2016 to accommodate the extension of a modern Muslim cemetery. Several anthropogenic layers and features were documented in the two sections, but they are difficult to interpret and date;

they could just as easily be the remains of the ancient town of Pathyris as of modern settlement or burials. Letters N and O in *Fig. 2* mark the locations of the pharaonic and Muslim cemeteries respectively. These have yet to be surveyed. It should be kept in mind that it is often difficult to distinguish natural from anthropogenic features when they follow natural geological formations in the area. More importantly, research has demonstrated that the shafts and tombs have not been published before and are seldom mentioned whether by scholars or by travelers (e.g., *Les fouilles* 1930: 235; Lane 2000: 393).



Fig. 21. Northern part of GER II, location of ancient Pathyris, archaeological area 1, looking north (Photo W. Ejsmond)

EPIGRAPHIC SURVEY

Two main concentrations of graffiti were located during the survey [J and M in *Fig. 2*]. The first was on the southern slope of GWR VI in the southern part of Gebelein West [J in *Fig. 2*; *Fig. 22*]. Many depictions can be dated to prehistoric times, a few inscriptions to the pharaonic period and possibly later. By combining RTI and colour enhancement techniques, more reliable results have been produced in terms of detecting the graffiti as well as *dipinti* that were not visible *in situ* due to their poor state of preservation and bad lighting conditions [*Fig. 24*]. A graffito with the name of Ramesses IV is dated

to his first regnal year and likely refers to a previously unknown expedition (Wieczorek 2015). Other rock drawings represent animals (e.g., oryxes, dogs) and there is one depiction of the god Min (dated tentatively to the Nineteenth Dynasty; Jean-Guillaume Olette-Pelletier, personal communication). A adjacent depiction may be similar in nature, but it is too badly damaged to be easily deciphered.

The other grouping of inscriptions was located in the eastern part of Gebelein East (GER II-2) [M in *Fig. 2*; *Figs 20*; *23*], near the site of the Hathor temple. Some hieroglyphic graffiti mentioning the god-



Fig. 22. Rock with inscriptions (southern part of GWRVI)
(Photo P. Witkowski)

dess Hathor 'Lady of Gebelein' were noted along a steep rocky slope on the western side of a path leading to a small cave (noted but not published in Morenz 2010: 143). So far five groups of inscriptions (documented as panels) were discovered.

A graffito done with charcoal was documented in the southern part of Rock IV [H in *Fig. 2*]. It represents a human figure in frontal view. Several graffiti were also found on the northern face of Rock II.



Fig. 23. Location of panels of hieroglyphic graffiti mentioning Hathor 'Lady of Gebelein' on the GER II shelf (Photo D.F. Wiczorek)

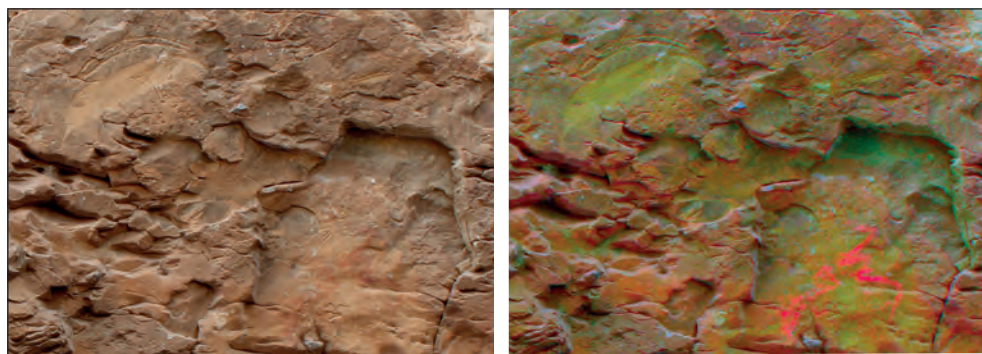


Fig. 24. Comparison of photographic documentation with the original image after using decorrelation (Photos P. Witkowski)

SPEOS

The previously not documented rock-cut chapel (*speos*) dedicated to Hathor 'lady of Inerty (i.e., Gebelein)', located in the northern part of the Eastern Hill (GERII-1) [M in Fig. 2; Figs 20; 25], is badly damaged. Fieldwork in this feature merits a separate discussion, as it involved a combination of epigraphic, archaeological and conservation work.

The entrance to the structure is located on the eastern face of the hill, about 3 m

above the current ground level. The *speos* consists of a broad vestibule and a second chamber. The latter has a perpendicular axis in the east–west direction (as compared to the vestibule's north–south axis). The inner chamber has a chapel façade on its west wall with a rock shelf in front of it. At the eastern end of both the north and south walls there are two openings with similar rock-carved shelves below them but without chapel façades. In the western part of the

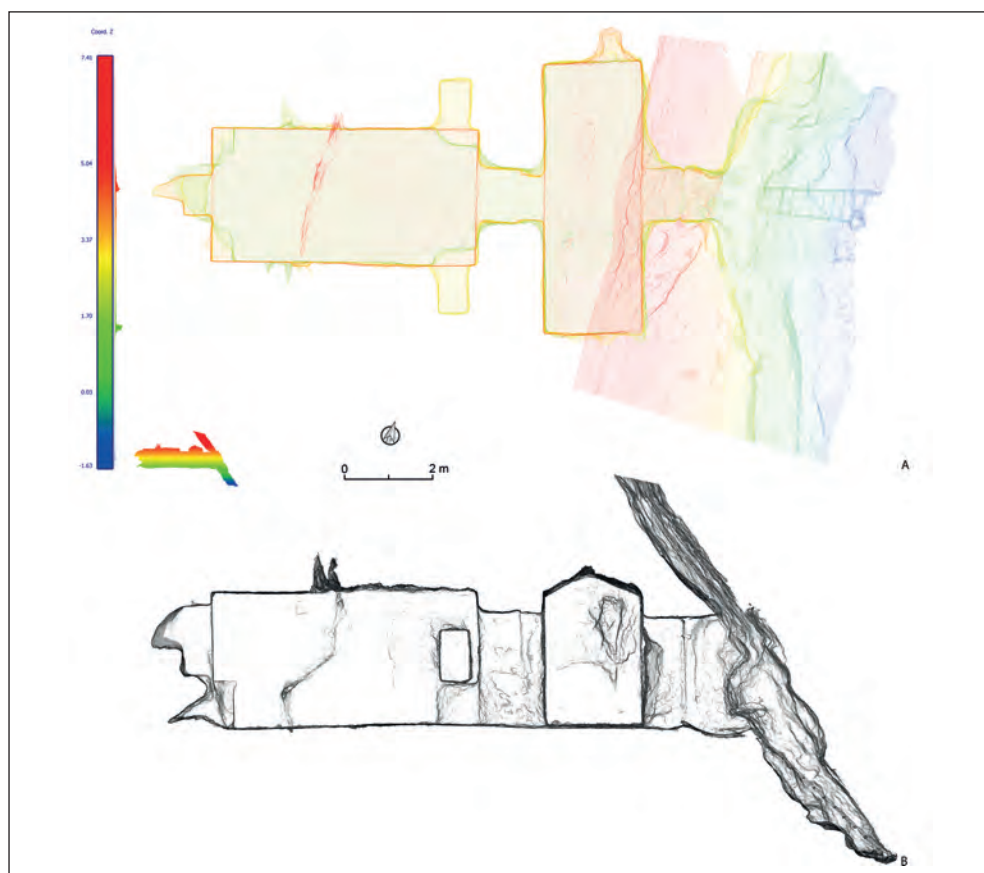


Fig. 25. Rock-cut chapel (*speos*) of Hathor before removing the fill from the bottom part: plan and section looking north (Model P. Witkowski)

inner chamber, sunken reliefs have survived on the north, west, and south walls [Figs 26 and 27].

These decorations are the main aim of the epigraphic and conservational works of the *speos*. They have been traced onto transparent foils as well as photographed and processed with RTI technology starting from season 2015 and continued into 2016. The RTI technique allowed the enhancement

of features that are no longer visible to the naked eye or otherwise very difficult to see.

Conservation treatment initiated in 2016 protected the fragile carvings. Salt encrustations were removed mechanically, using brushes, water, and cotton wherever possible, uncovering additional elements of the decoration.

Once the carvings were traced with the help of RTI images, the decoration pro-

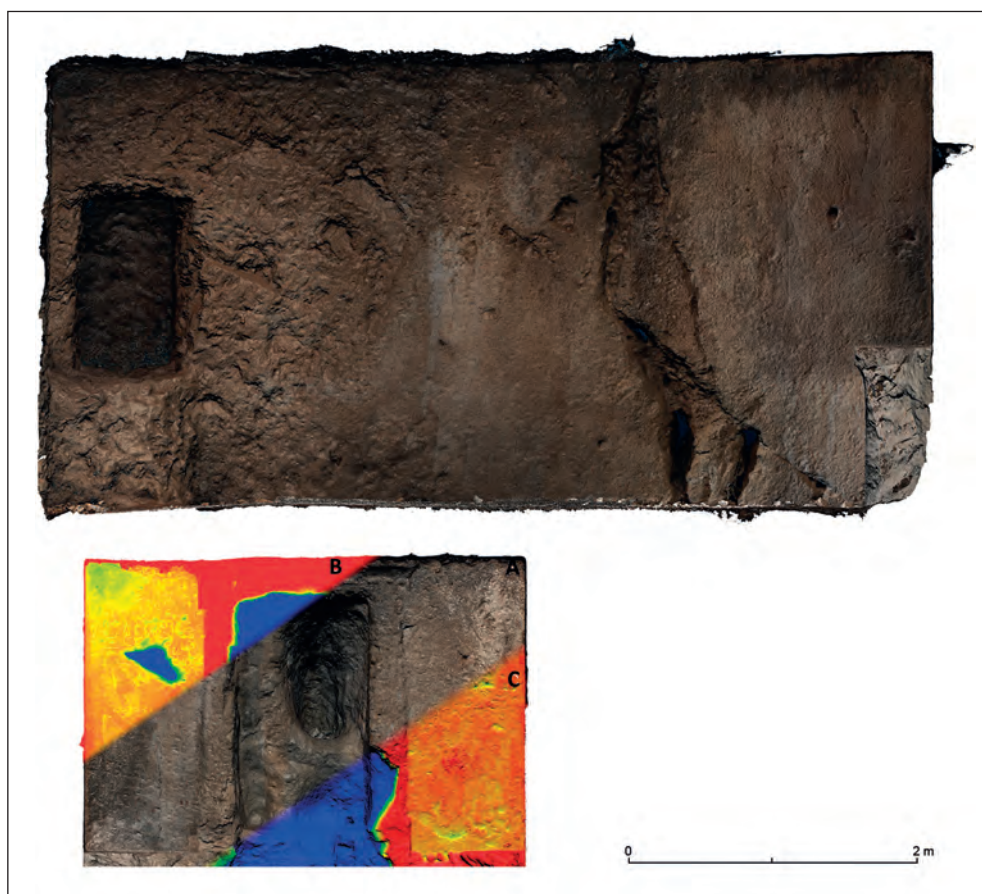


Fig. 26. Examples of different methods of visualisation: top, 3D model of the south wall in the rear room of the *speos*; bottom, the same simple 3D model (A) compared to images of the wall after applying the scalar field technique – without using information about the orientation of normals (B) and using it (C) (Visualisation P. Witkowski)

gram became more apparent; of particular interest is the representation of the goddess Hathor 'Lady of Inerty' with an offering table in front of her (Takács, Ejsmond et al. 2015; for the most current description of the *speos*, see Takács 2016) and a figure of a pharaoh presenting offerings to her on the south wall [see Fig. 27]. The scene is mirrored on the north wall, featuring a possible male deity (most probably the Theban Amun-Ra). The two wall panels flanking the centrally placed chapel façade on the west wall depict the figure of a king being greeted by a deity. There is also a photograph of the inner chamber of the *speos* showing the rock shelf and the floor in front of the main niche in an intact form. The image was made by François Olivier on January 1, 1993.

Archaeological works conducted inside the *speos* so far have been aimed at cleaning the floor area and documenting the layout. The latter was carried out by traditional measuring techniques and supplemented by photogrammetry. Data were inputted then in the Geographical Information System (GIS), which allowed the plan of the chapel to be created in a fast and accurate manner [Fig. 25]. A grid system of 1 m by 1 m squares aligned east to west inside the *speos* was implemented for the cleaning work. Each square was cleaned and documented with the relevant artifactual data. The composite rubble (approximately 30 cm high throughout the *speos*)

proved to be of modern origin (e.g., plastic items found practically on the original walking level). Two major intrusions in the floor (at least the west one is modern) were discovered in the course of the cleaning; they remain to be cleared.



Fig. 27. Image of Hathor 'Lady of Gebelein' on the south wall of the *speos* (Drawing D. Takács)

CONCLUSION

Over the course of three survey season (2014, 2015 and 2016), the Project documented a total of 430 manmade features. Eight archaeological areas were noted, wherever individual archaeological features

could not be distinguished satisfactorily with available surveying techniques.

The main outcome was an assessment of the damage to the archaeological substance in the Gebelein area and identi-

fication of endangered areas. Full digital documentation of recorded sites is in the case of Gebelein the main method of protecting its archaeological heritage from complete destruction and is crucial for the reconstruction of past landscapes (Chyla 2015). Cooperation with the local inspectorate of Esna and Armant afforded improved protection of archaeological sites in the area.

Dealing with urgent conservation issues caused by the progressing destruction of the archaeological heritage in the Gebelein area, the Project developed a new approach to field survey methodology, designed to handle the huge amount of collected field

data and the different kinds of artifacts for specialist examination, while bringing into the analysis all of the archival data from earlier research.

After these three seasons, the Gebelein area with its evidence of practically uninterrupted human occupation from prehistoric to modern times, has demonstrated its great value for further research. Only a small part of the findings has been published so far (Wieczorek 2015; Takács, Ejsmond et al. 2015; Takács 2016), but there are still many features and inscriptions that have never been published and can shed new light on different periods in Egyptian history and culture.

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Fieldwork in 2015/2016 in the Southern Dongola Reach and the Third Cataract Region

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Abstract: The settlement remains surrounding the churches at the sites of Banganarti and Selib continued to be excavated in the 2015/2016 season by a team directed by Bogdan Żurawski. The research focused primarily on the living quarters around the churches and fortifications. An ethnographic survey carried out in Banganarti and Selib, and in the nearby villages documented traditional crafts, such as pottery making, basketry, baking and cooking using traditional techniques and recipes. Conservation and construction work were undertaken simultaneously with preparations for turning the Banganarti and Selib 1 sites into tourist attractions. Skeletal remains from earlier excavation were examined by a physical anthropologist.

A survey combined with aerial documentation was carried out on selected archaeological sites in the Southern Dongola Reach (Soniyat, Diffar, Hettani, Bani Israil) and in the Third Cataract Region (Kissenfarki, Fagirinfenti). Short excavations were also conducted in the temple at Soniyat.

Keywords: Middle Nile valley, Banganarti, Selib, fortification, settlement studies, medieval Nubia, 3D documentation, aerial archaeology, ethnological survey, conservation and preservation, heritage studies

The Polish archaeological mission based at Banganarti and directed by Bogdan Żurawski carried out fieldwork in the 2015/2016 season concurrently at the sites of Banganarti and Selib and at a number of lesser sites. Archaeological research at the main sites was paralleled by a significant effort toward preservation of historical remains and preparations for opening the sites

to tourism, including construction of museum buildings, a visitor's center and creating exhibition spaces.

The second part of the season witnessed more activities in the Southern Dongola Reach and in the Third Cataract region. Research in these areas was a continuation of a program aimed at studying early medieval Nubian strongholds (see Żurawski 2015: 382–387).

BANGANARTI

The archaeological work at Banganarti was carried out outside the Raphaelion. The progress of excavations and the pace of environmental degradation at Banganarti and in its vicinity were documented by means of a remote-controlled camera suspended from a kite. The pictures were processed with the use of the AgiSoft Photoscan program to produce three-dimensional models of the site [Fig. 1].

The team proceeded with the excavation of domestic and military architecture, mostly in the northeastern part of the site. One of the main goals of the archaeological work in this sector was to expose the inner face of the fortifications, explored sporadically until now with most of the investigations taking place on the outside of the enclosure wall. The rectangular trench dug in November and December 2015 reached the top of the culturally sterile sand layer at a depth of

6.08 m below the southern threshold of the Upper Church. The inner face of the foundations was exposed down to a level of 5.11 m below the local reference point (the upper surface of the stone threshold in the southern entrance to the Upper Church). The wall above, made of large mud bricks (42–45 x 23–25 x 8–10 cm), appeared to belong to the first phase of the fortifications (for a detailed report, see Drzewiecki 2017b, in this volume).

Earlier excavations carried out *extra muros* provided interesting data on the character of the buildings outside the enclosure. Trials pits were dug now under the supervision of Mariusz Drzewiecki to check the situation on the opposite side of the enclosure wall. The foundation foot of the enclosure wall was uncovered at a level of 4.84 m below the local reference point. Both trial pits cut through layers containing rich ceramic materials. Part of

Team

Dates of work: 9 November–20 February 2016

Director: Prof. Bogdan Żurawski (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences; 2015, 2016)

NCAM representatives: Tamadur Ali Ebeid (2015), Abdel Raouf Jubara (2016)

Archaeologists: Dr. Mariusz Drzewiecki (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences; 2015, 2016), Dr. Michał Dzik (Institute of Archaeology, University of Rzeszów; 2016), Robert Krzywdziński (Dantiscum; 2015), Agata Momot (Antiquity of Southeastern Europe Research Centre, University of Warsaw; 2015), Paweł Rurka (independent; 2016)

Archaeologist/iconologist: Dr. Magdalena Łaptaś (Cardinal Stefan Wyszyński University in Warsaw; 2016)

Archaeologist/photographer: Paulina Terendy (Dantiscum; 2015)

Ceramologist: Aneta Cedro (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences; 2015, 2016)

Anthropologist: Magdalena Bury (independent; 2015)

Conservator: Tadeusz Badowski (freelance; 2015)

Conservation assistants: Emilia Kujawska, Aleksandra Polańska (both freelance; 2015)

Arabist: Andrzej Leligdowicz (independent; 2015)

Topographer: Roman Łopaciuk (Geomatic; 2016)



Fig. 1. Banganarti: top, airborne photography, season 2015/2016; bottom, orthophotographic image generated from the airborne photographs and geodetic measurements and overlapped with the plan of the Banganarti enclosure, February 2016 (Photo and rendering R. Łopaciuk and B. Żurawski)

this pottery deposit consisted of rubbish dumped outside the wall. One of the layers at the foundation level might be the outcome of water erosion, presumably caused by the Nile flood or heavy rainfall.

A southward extension of the trench in the southeastern corner, supervised by Robert Krzywdziński, who was assisted by Paulina Terendy, aimed at tracing the habitation pattern in the northeastern living quarter. Sixteen rooms were uncovered in an area of 16 m by 18 m. The wall tops were brushed and trowel-enhanced for a tachymetric survey, the results of which were compared with airborne photographs to improve the plan. By the end of the season, a large part of the living quarter extending from the Upper Church to the northeastern corner of the enclosure wall had been revealed [*Fig. 1* bottom].

Excavation of domestic architecture in the sector northeast of the Raphaelion,¹ supervised by Michał Dzik, was a continuation and extension of the fieldwork commenced in 2014 and continued in 2015 (trench E/I/2015). During the second part of the 2015/2016 season, the excavated area was enlarged from approximately 300 m² to 350 m². Four new units were explored in addition to the 29 excavated previously (for this research, see Dzik 2017, in this volume).

ETHNOGRAPHIC SURVEY

Oral testimonies on traditional Sudanese crafts and industries were collected in Banganarti and its neighborhood by Andrzej Leligdowicz, a specialist in the Arabic language and culture. The main goal of his research was to document in particular production techniques that

are in danger of disappearing in the near future. In November and December 2015, Leligdowicz interviewed a number of Banganarti residents on building techniques, the pottery production process in the Debba and Jabaruna potteries, brick-making, making traditional Sudanese beds (Arab. sing. *angareeb*), breadbaking, charcoal burning and fishing. Members of a Gypsy family who occasionally visited the village were also interviewed. The ethnographic survey has provided valuable reference data for interpreting archaeological finds and reconstructing medieval daily life in Banganarti and will be continued.

CONSERVATION AND RESTORATION

Much of the fieldwork at Banganarti focused on the conservation of the Upper Church murals and reconstruction, as well as restoration of the church itself. The building's most vulnerable east wall was abutted with five buttresses made of red brick and coated with waterproof lime mortar. The roof above the Upper Church was repaired and covered in part with a second layer of corrugated iron sheets. A skeletal 1:1 scale model of the central dome, welded from square pipes, was attached to a steel base. The attic wall above the corrugated iron roof was raised to its original, medieval height. New red brick walls were lime-plastered and whitewashed. The entrance to the Upper Church was bridged with an attic supported on a welded construction made of five steel beams.

During the first part of the season a team of four restorers, supervised by Tadeusz Badowski, accomplished an exten-

¹ Now coded as trench I in sector NECH, according to the revised site coding system (see Dzik 2017, in this volume); previously published as Trench I/2015 (see Żurawski 2016: 357).

sive restoration program focused on the eastern chapels of the Upper Church. The murals affected by insects (*arda*) were treated with insecticide. The holes made by termites were sealed with a putty paste mixed with insecticide to stop pene-

tration by termites and to consolidate the background of the murals. Conservation of the murals in the Upper Church proceeded simultaneously with iconographic studies conducted by Magdalena Łaptaś.

SELIB

At Selib, located about 7 km upriver from Banganarti and excavated concurrently with Banganarti since 2010, archaeological and construction works were conducted on the medieval sites of Selib 1 and

Selib 3 [Fig. 2]. The 2015/2016 season at Selib 1 was dedicated to the study of an area adjacent to the enclosure wall and to the wall itself. The research started with a narrow trench dug along the inner and

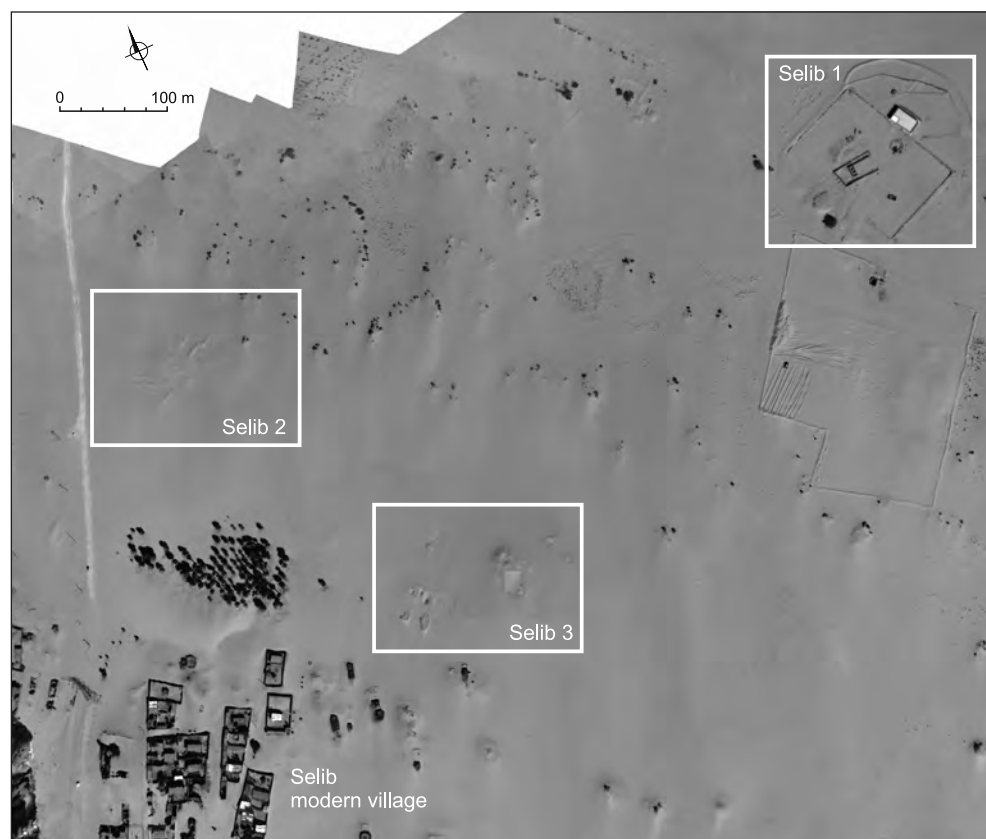


Fig. 2. Orthophoto of the Selib sites
(Photo and rendering B. Żurawski)

outer faces of the wall. In three places, huge sections of the mud-brick wall were found overturned [Fig. 3]. It appeared that in its upper section the outer enclosure wall (the so-called bigger *peribolos* wall), at least 6 m high, was made of mud brick. In its lower part, which averaged 1.30 m

in width, unworked, closely-fitted stone blocks formed an even surface [Fig. 4]. A few stones in vertical position in one place suggest at least one episode of wall repair. A rectangular pit lined with red brick had been dug in the sand close to the northeastern corner of the wall [Fig. 5].

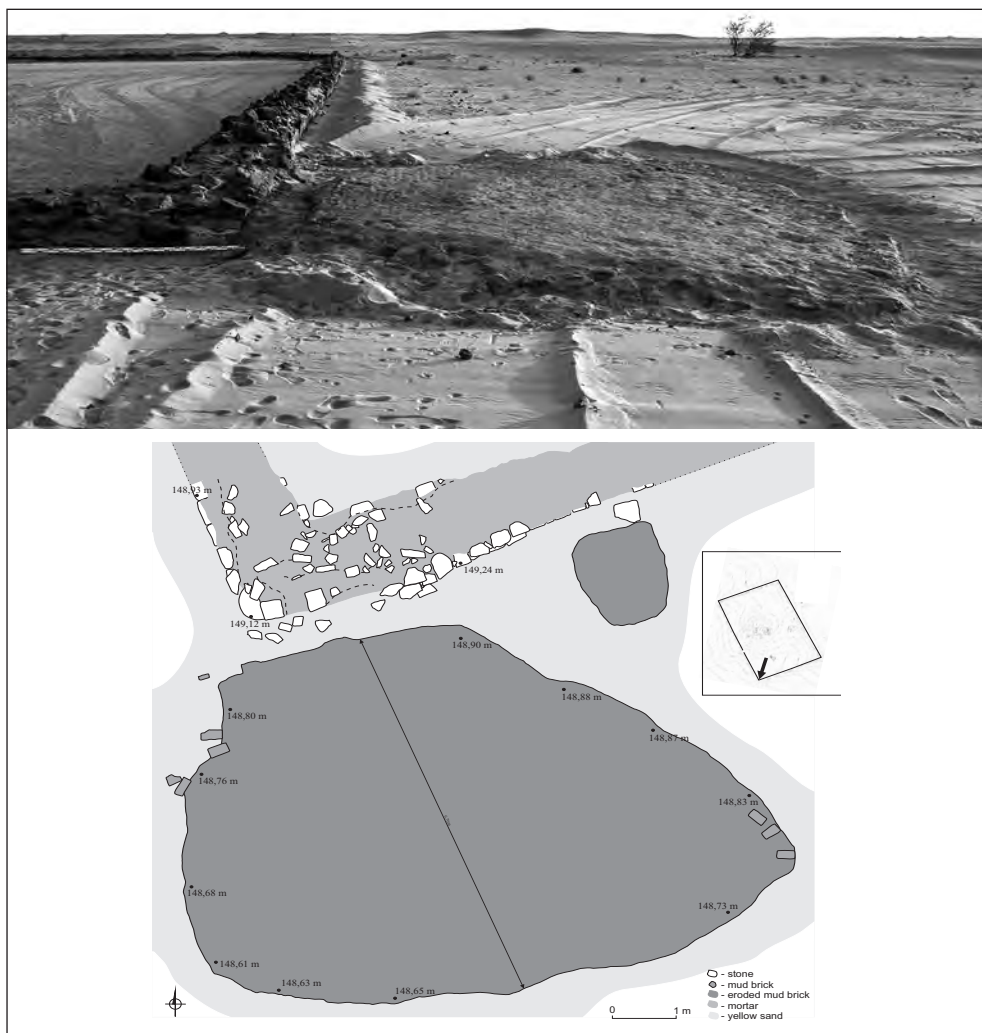


Fig. 3. Selib 1. Southern corner of the bigger *peribolos* with a section of the collapsed wall: plan and view from the west (Photo and drawing P. Terendy)

This resembled the so-called trebuchet sockets known from the fortifications in Banganarti, Suegi West, Shofein, Haraz and Usheir (Żurawski 2013: 133; 2015: 386–387). This was the first indication that the Selib enclosure could have had a defensive character. Next came the discovery of eight double stairways built into the inner face of the *peribolos* wall [Figs 6–7]. Originally, there were probably sixteen or more pairs of these, which entails that the communication with the parapet walk on the wall top was ensured by 32 or more flights of stairs of the type known, for example, from the fortresses of Dar el-Arab and Marakul (Łopaciuk et al. 2014: 239).

The 2015/2016 research in Selib 1 provided conclusive proof that the enclosure wall was in fact a skillfully designed defense built around the well and the church. The well provided water necessary during a prolonged siege, while the church offered sacred patronage and protection of the divine. Before the end of

the season, it became clear that the stairs had not been built into the riverine wall, which included a gate with a heavy stone threshold. This did not come as a surprise, because riverine walls in Nubian fortresses were occasionally of lighter construction. All in all, the outcome of the last season has completely changed the understanding of the Selib enclosure. There is now no doubt that the site used to be a refuge fort serving as a place of retreat in times of danger for the medieval villages scattered along the right bank of the river near Selib. Needless to say, it was not inhabited permanently. The indigenous population would have sought refuge there only when faced with an external threat. In times of peace people probably visited the *intramuros* St Menas church and the sanctuary of St Thecla. In the event of a raid by desert dwellers, they would have moved there together with their livestock.

Refuge forts are well known in the Byzantine world, for instance, from Byzantine Greece in the 6th–10th centuries



Fig. 4. Selib 1. Stones of the inner face of the bigger *peribolos* wall
(Photo M. Drzewiecki)

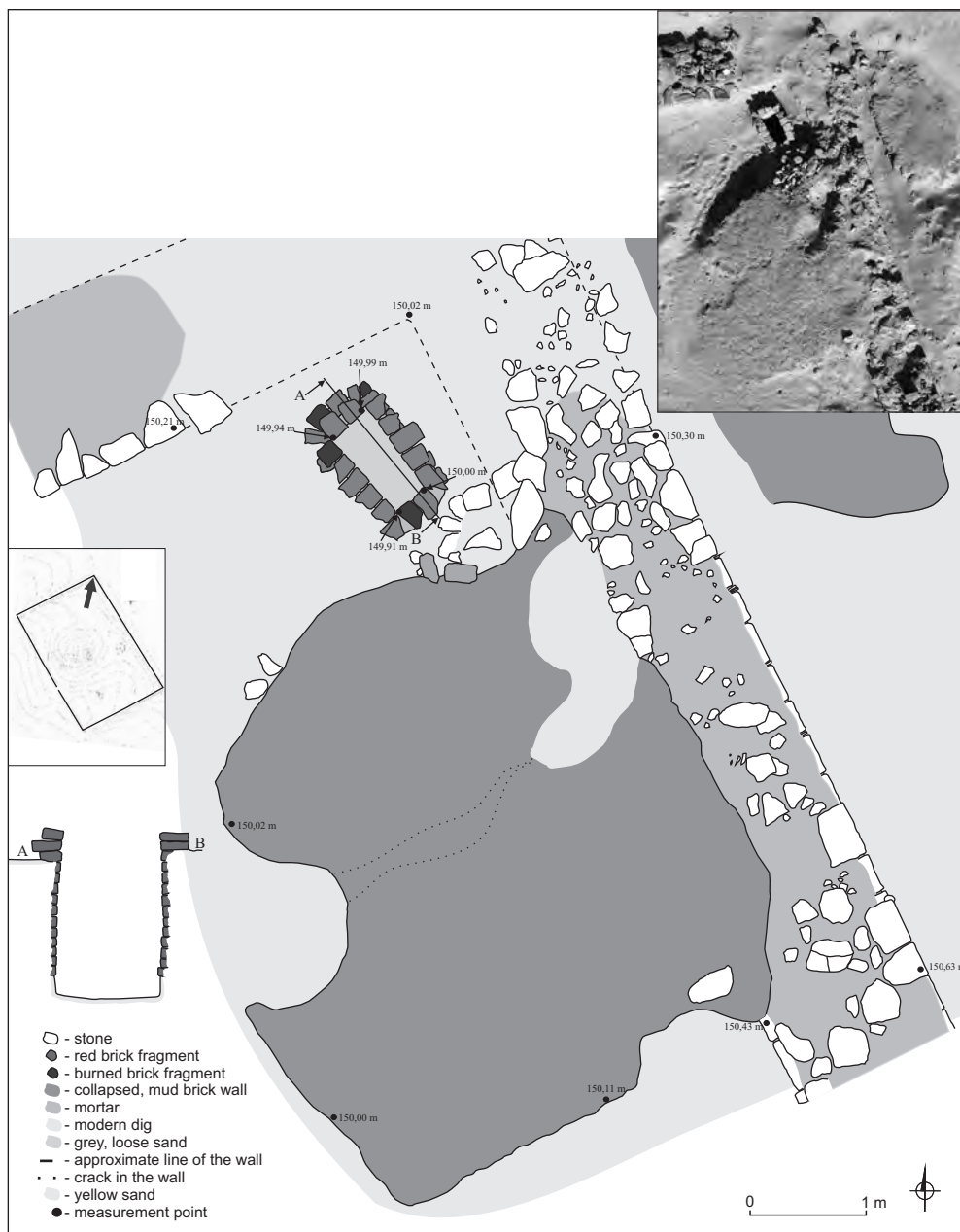
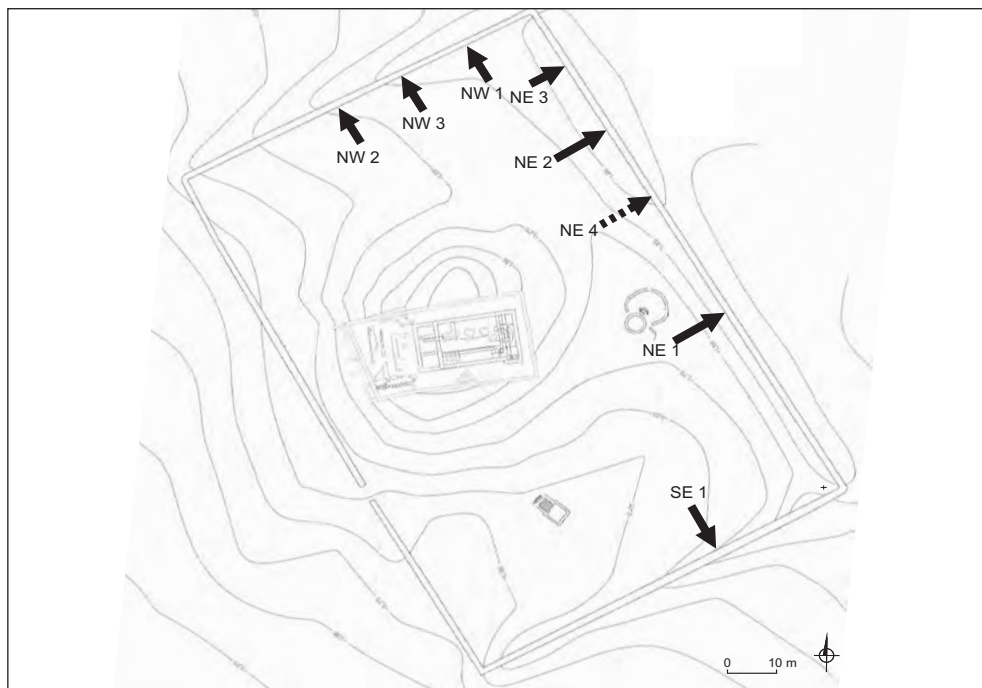


Fig. 5. Selib 1. Northern corner of the bigger peribolos with a section of the collapsed wall and a rectangular red brick structure; plan and cross-section of the red-brick structure (Drawing M. Drzewiecki, P. Terendy; photo B. Żurawski)



*Fig. 6. Selib 1. Plan of the site with location of the staircases (staircase NE 4 is only approximate)
(Drawing R. Łopaciuk and M. Drzewiecki)*



*Fig. 7. Staircase NE 3 at Selib 1
(Photo M. Drzewiecki)*

(Koder 2005: 170). Selib was probably part of a well-developed early warning system. The enemy could be spotted from the nearby Gebel el-Alim, where a structure which may have been a *skopelos* (watchtower) was found (Żurawski 2003: 156–157). Warned of an approaching enemy, the population would seek refuge either in Selib or in the fortress on the island of Tanqasi seen by Evliya Çelebi (Prokosch 1994: 154–155), referred to by Waddington and Hanbury (1822: 66) and drawn by John Gardiner Wilkinson (Żurawski 2003: 50, Fig. 12). Provided with a church, a well and perhaps a basin for watering flocks, Selib can be seen as a model medieval Nubian refuge fort. The specifics of the terrain in the Middle Nile region make it perfectly understandable why people preferred to live in open settlements close to their fields, seeking refuge in specialised defensive structures only in times of danger.

Once the investigation of the sequence of the five St Menas churches at Selib 1 was completed in January 2016, the interior of the latest church was backfilled with sand in preparation for the reinstallment of the pavement made of blocks taken from a nearby Meroitic temple. The numbered blocks are stored on the northern side of the smaller *peribolos*. A reconstruction of the historic *saqia* complex and building of the storeroom were also continued during this season.

In the 2015/2016 season, the exploration of the midden flanking the early medieval settlement at Selib 3 from the south was continued. The elevated kom at Selib 3 turned out to be a natural elevation made of clear aeolian sand. However, a multicultural settlement, spanning the late Meroitic and early Christian periods, was investigated at the foot of the kom.

The mapping of magnetic anomalies does not give an impressive image, but the discoveries were interesting nonetheless. First, they yielded data on the everyday life of the pre-Christian population living there in two-roomed houses and using vessels almost identical to those used in the Meroitic settlement nearby. This phase of the Selib 3 site was almost totally destroyed either by the Nile or by rainwater floods. The subsequent settlement, built in the Transitional/Early Christian period, shared the fate of its predecessor — it was also swept away. The only structure that survived the flood or floods was located in a commanding position on a prominent elevation at the top of the kom (Żurawski et al. 2013: 285–287). Of the short-lived early Christian occupation of Selib 3 there remained a huge midden in the riverine part of the site, which accumulated throughout the 6th and 7th centuries. The magnetic anomalies map marks it as a long linear feature at the foot of the mound. It is composed of ash, animal bones and a multitude of potsherds. The collection of pottery from the midden was studied by Aneta Cedro (see Cedro 2017, in this volume).

The skeletons found buried within the bigger *peribolos* and in the vicinity of St Menas Church were studied concurrently by anthropologist Magdalena Bury. The skeletal material, analysed in the 2015/2016 season, represented two heterogeneous archaeological contexts. The post-Meroitic skeletal assemblage came from the Selib Bahri site, while a set of human bones dated to late medieval times was excavated at Selib 1. The biological identity of 21 individuals was assessed based on three principal parameters: sex, age-at-death, and stature.

SURVEYS IN THE SOUTHERN DONGOLA REACH

Other sites than Banganarti and Selib were also investigated in the Southern Dongola Reach. At Soniyat, a site located about 40 km upriver from Banganarti, trial pits were excavated in the southern part of the Kushite temple. The research continued Bogdan Żurawski's investigations in 1998–2000 during the Southern Dongola Reach Survey (Żurawski 2003: 89, 243–250) and

the geophysical survey in 2013 (Żurawski 2015: 378–379). The aim of the current archaeological work was to trace the pylon entrance to the temple, the only part of the complex which had not been explored at the time due to ongoing agricultural activity and was also not accessible when the temple was first explored (see Drzewiecki 2017a, in this volume).

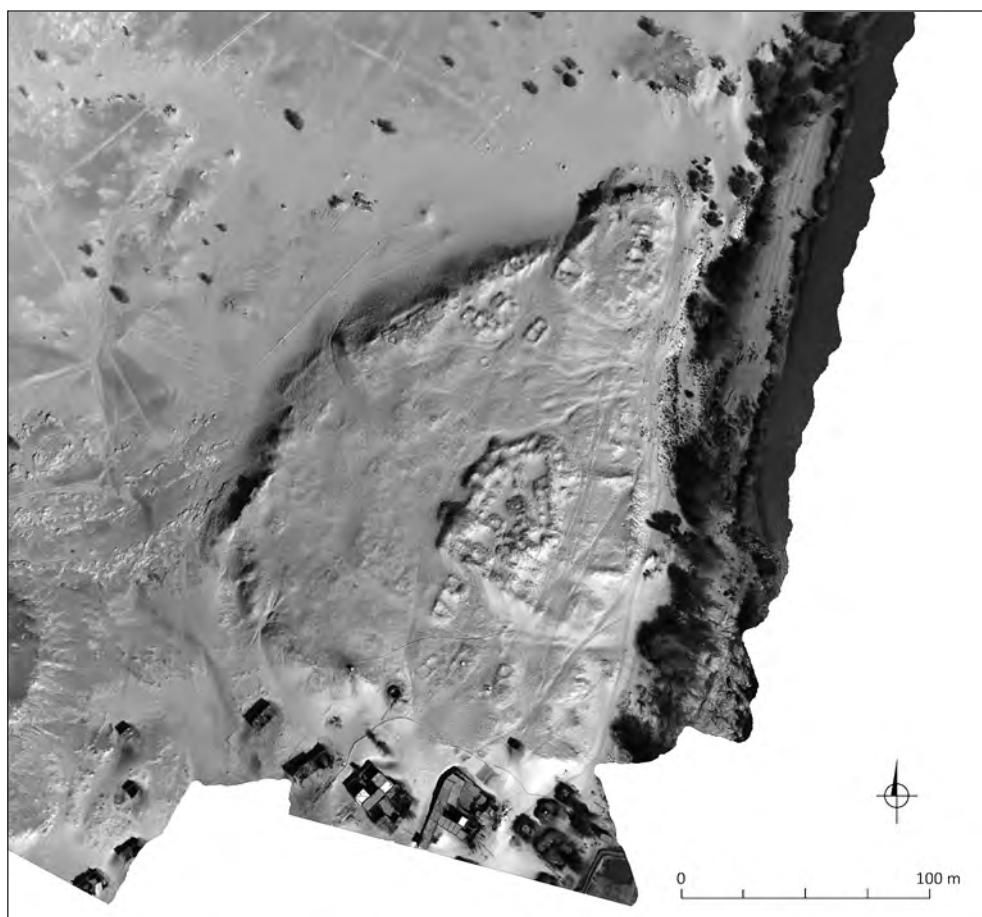
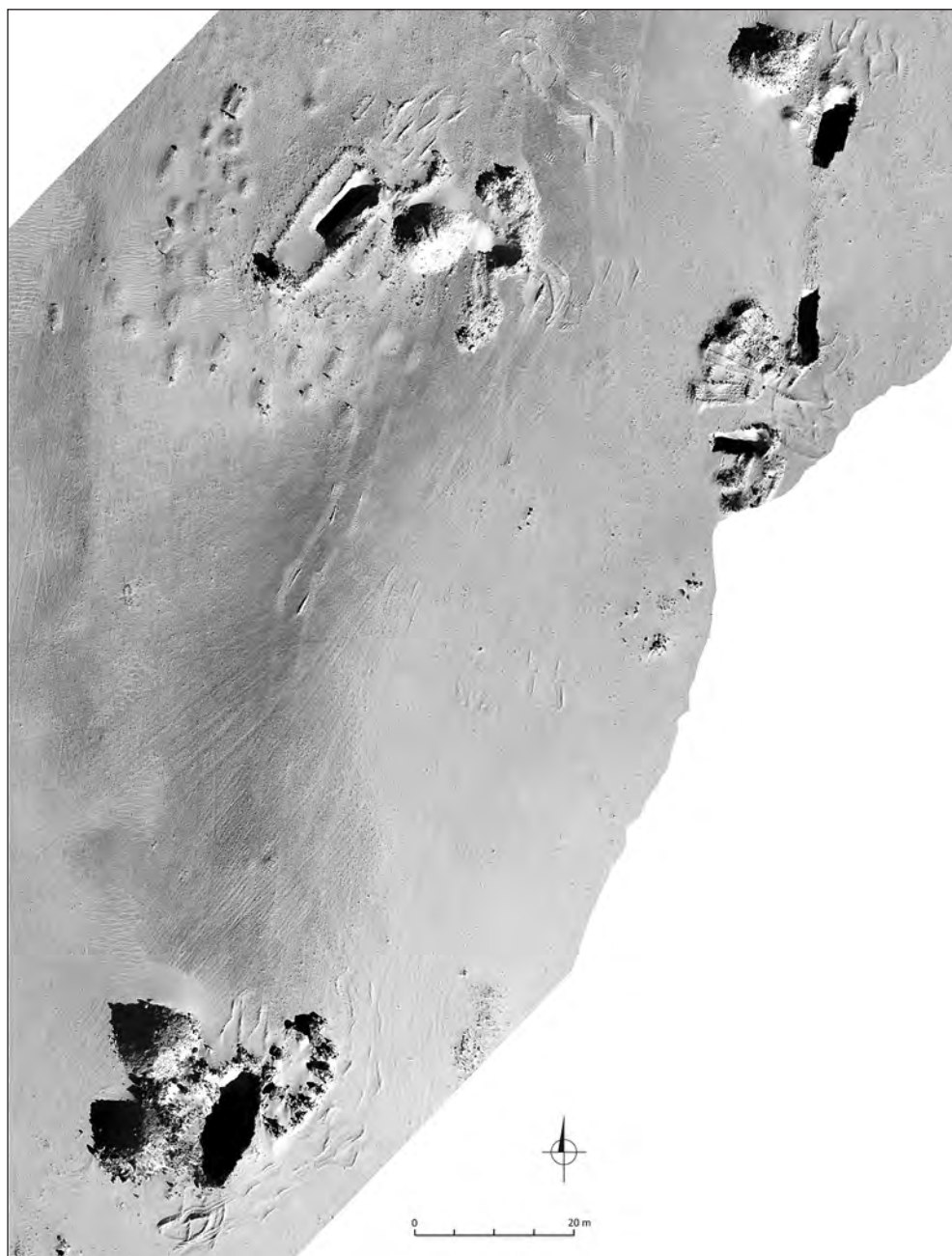


Fig. 8. *El-Diffar: orthophoto of the site made in 2016*
(Photo and rendering B. Żurawski, R. Łopaciuk, and P. Rurka)



*Fig. 9. Bani Israil: orthophoto of the site
(Photo and rendering B. Żurawski, R. Łopaciuk, and P. Rurka)*

Thorough documentation of selected fortified sites in the Southern Dongola Reach was carried out in the second half of the season. Two visits to the el-Diffar fortress permitted the geodesic and 3D photogrammetric documentation of the site to be completed (the initial research was conducted in 1998–2000 and in 2002). The first attempt at composing an airborne image of el-Diffar, unfortunately incomplete, was made in 1998 during the Southern Dongola Reach Survey using a camera suspended from a box kite (Żurawski 2003: 295, Fig. 5). In 2016, this task was accomplished. The ensuing 3D orthophotographic model of the site shows the modern village encroaching gradually into the archaeological zone [Fig. 8]. This poses a serious hazard as the site has never

been explored systematically except for a brief survey in 2002 (Wiewióra 2003: 500). Local residents dispose of their waste on the site. Moreover, the area just outside the enclosure wall is being prepared under cultivation.

The team undertook salvage work outside the concession area at the endangered site called Bani Israil [Fig. 9]. Located in the desert about 1.50 km northeast of the modern village of Banganarti, this place is well known among local residents as the site of the ‘tombs of giants’. A few grand elongated superstructures, overlaid with stones, were constructed there, amidst graves of a standard size and uncertain date. The archaeological inspection was induced by recent acts of robbery that had led to a partial destruction of the site.

RECONNAISSANCE IN THE THIRD CATARACT REGION

The study of fortifications in the Southern Dongola Reach, including Banganarti and Selib, falls within the broader framework of research on the emergence of statehood in early medieval Nubia. In February 2016, the project was taken up in the Third Cataract region, specifically in the area scheduled to be flooded by the proposed Kajbar dam. A number of early medieval sites, fortified settlements included, were recorded from air and reconnoitered on the ground. An extensive program of documentation was carried out in the area within the Polish concession granted in response to a NCAM appeal issued in 2012 for salvage work in areas endangered by dam construction.

KISSENFARKI

The first site to be explored in the Third Cataract region was Kissenfarki. The site was divided into two sections by a modern road [Fig. 10]. There were remains of medieval fortifications in the western area, called Kissenfarki West. The enclosing wall was built of irregular stones bonded with mud mortar in the lower part and of mud brick or mud brick and stone in the upper one [Fig. 11 above and top right]. The two parts were separated by a layer of gravel bonded with mud mortar. Sherds were occasionally used in the mortar. Samples from several parts were collected. A gate was located in the south wall. A large block of stone, which most

probably constituted a threshold in the gate passage, was found a few meters to the south, outside the enclosure. The tentative location of another gate was spotted in the northern curtain, but no architectural remains of the passage were identified. The enclosure wall continued on the other side of the road, where Kissenfarki East is situated. The wall, in the form of a faintly

visible line of stones, disappeared under the rubble from a post-medieval fort built there.

There were at least three towers in Kissenfarki West. Strangely, there were no towers at the opposite ends of the western section, which could mean that the entire western part was added later to an existing smaller fort. It could explain the difference

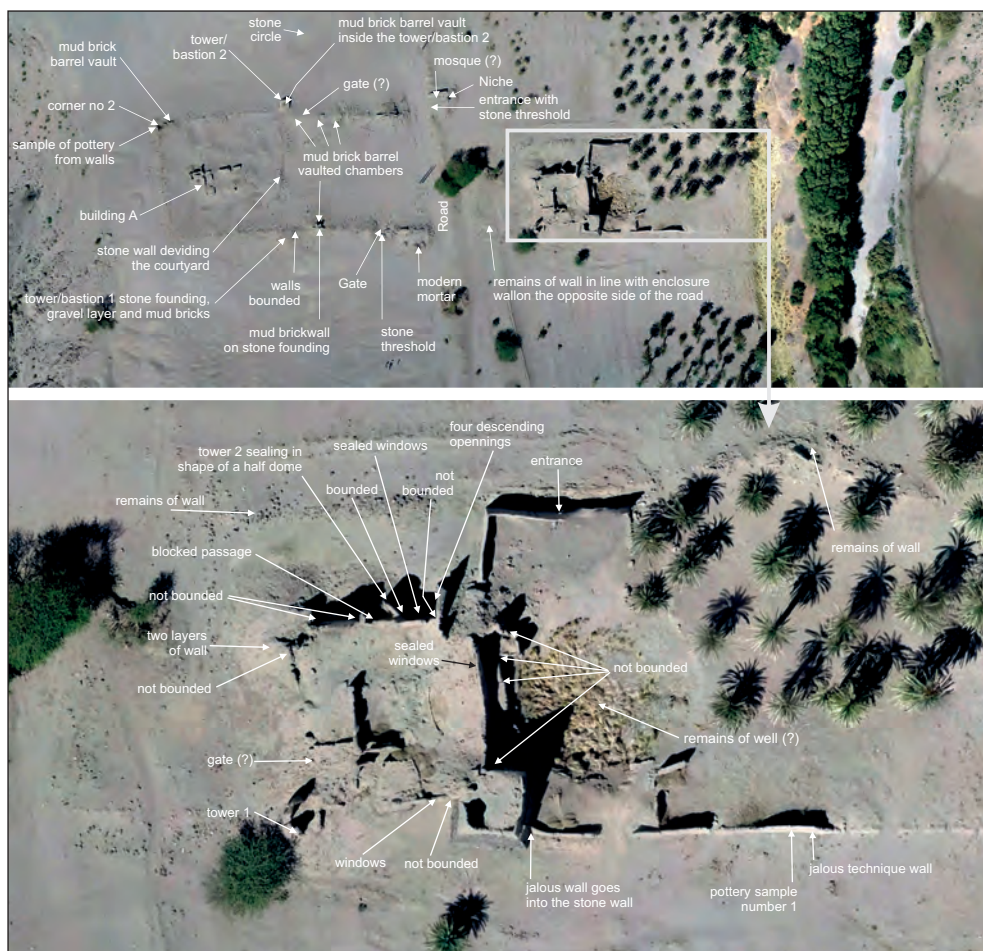


Fig. 10. Kissenfarki: top, view of the entire site with the identification of various features; bottom, close-up of the remains of the fort at Kissenfarki East (Photo B. Żurawski and R. Łopaciuk; description M. Drzewiecki)

in the orientation of the northern curtain wall [see *Fig. 10*: from Corner No. 2 to Tower No. 2 and from Tower No. 2 to the road]. However, this suggestion is still in need of verification.

The courtyard created by the fortification was divided by a stone wall, which was poorly preserved on the surface. The western part of the courtyard housed a large mud-brick building (Building A), most probably a church, in its center. Only a few mud-brick structures were identified in the eastern part of the courtyard; they stood against the northern and southern curtain walls.

A circular stone structure was traced at the southeastern end of the fortification, next to the road. At first it was interpreted as a tower, but upon closer examination modern mortar with the addition of cement was found to be used to bind some of the stones [*Fig. 11*]. It needs to

be clarified beyond doubt whether this feature is a modern addition or part of the original fortification.

There was also a small rectangular building northwest of the fort. It was erected of stone in the lower section and layered mud (Arab. *jalous*) in the upper section. It had an entrance from the south, close to the southwestern corner, and a stone threshold. A niche in the middle of the east wall indicated that it was a mosque [*Fig. 12*].

Kissenfarki East is a small but very well preserved site, interpreted as a post-medieval fort [*Fig. 10* bottom]. The fortifications (there) bear traces of many reconstructions. Mud-brick, stone and *jalous* were used to erect and renovate the walls. Surprisingly, the walls in the corner sections were not bonded. Even more surprisingly, walls raised in the *jalous* technique were not the youngest

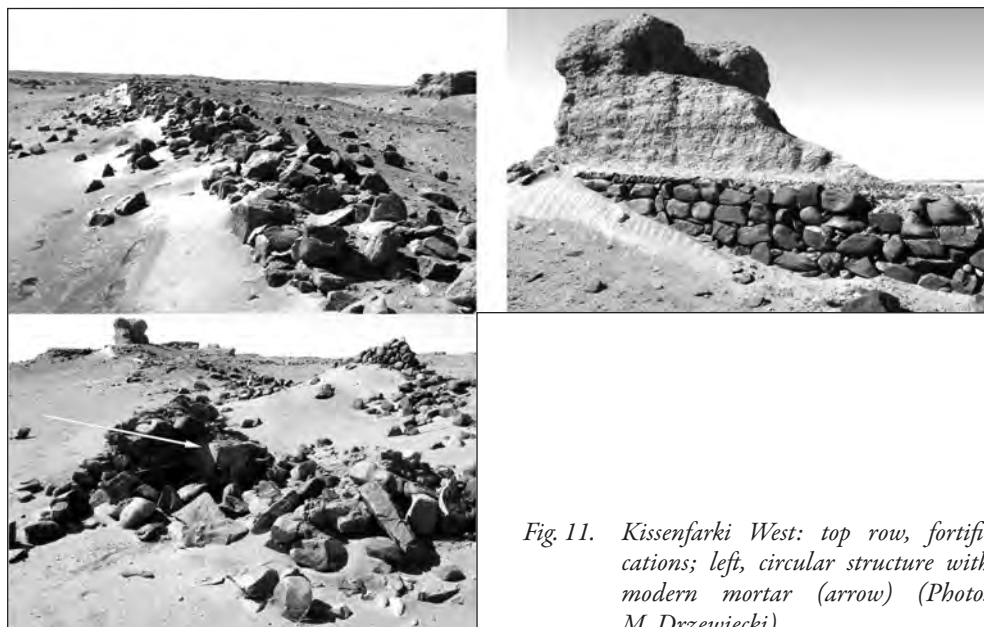


Fig. 11. Kissenfarki West: top row, fortifications; left, circular structure with modern mortar (arrow) (Photos M. Drzewiecki)

addition to the fort. Based on this preliminary study one may conclude that the youngest elements of this complex are the rectangular towers built in the northeastern and southeastern corners [Fig. 13]. It seems that they were built over the older ones. Concluding, the oldest fort was most probably of mud brick with later *jalous* additions, in the last phase reinforced with stone towers.

FAGIRINFENTI

Another place briefly investigated in the Third Cataract region during the 2016 season was Fagirinfenti. Three archae-

ological sites were visited there. Site 1 was an extensive field of ruins with a *sagja* well. Site 2, located about 550 m east of Site 1, was a hilltop fort with stone enclosure walls. Only a few artifacts were found there. Site 3 was an area at the foot of the hill with faint traces of mud-brick architecture visible on the surface and large quantities of pottery sherds (mainly Early and Classic Christian forms).

Architectural remains on Site 1, where most of the work was focused this season, were well visible [Fig. 14]. At least four building techniques were used in their construction. The first, and most popular,



Fig. 12. *Kissenfarki West: left, stone building identified as a mosque; right, niche in the east wall of the building (Photos M. Drzewiecki)*



Fig. 13. *Kissenfarki East: fortifications of a post-medieval fort; arrows indicate construction phases (Photos M. Drzewiecki)*

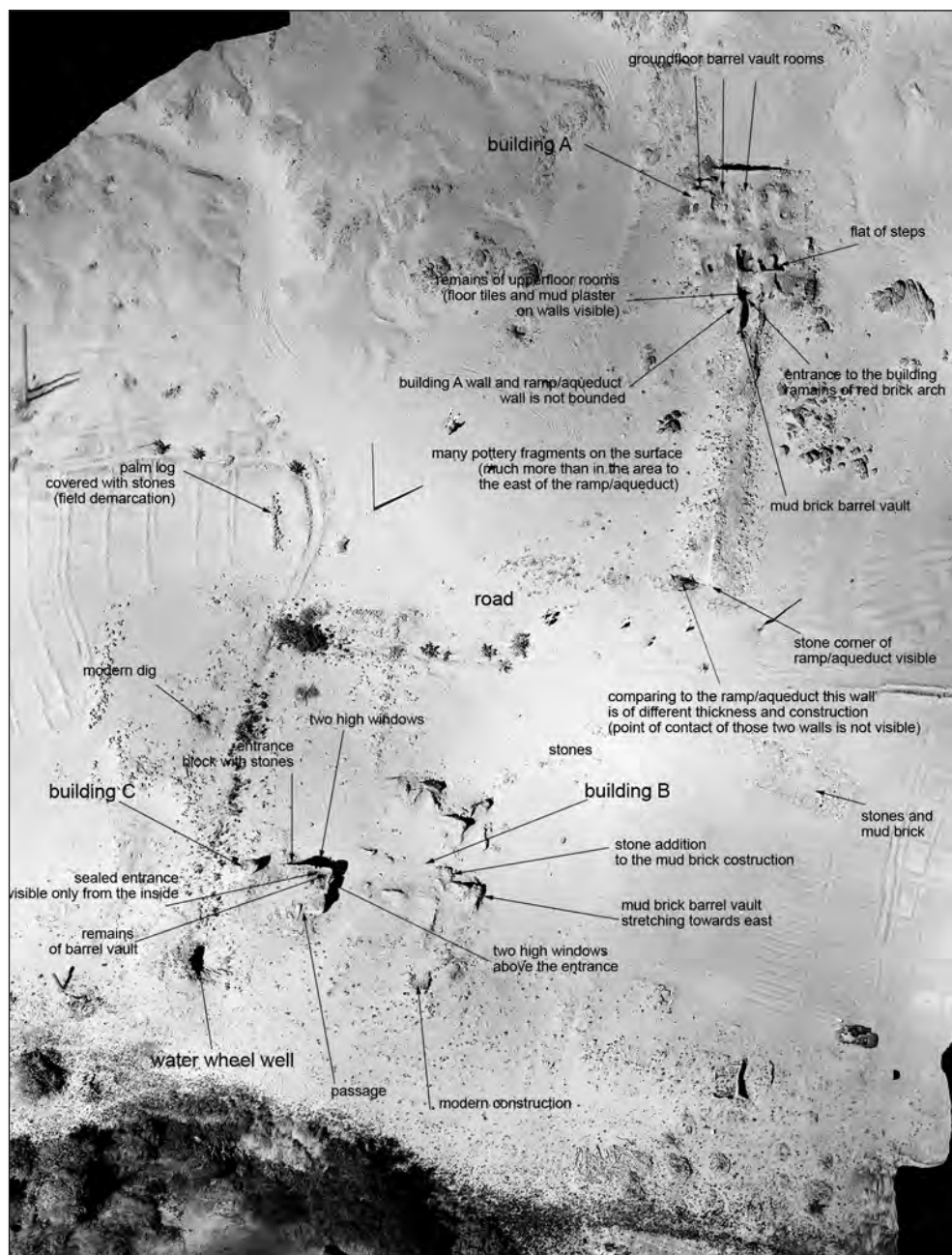


Fig. 14. Plan of Site 1 at Fagirinfonti
(Photo B. Żurawski and R. Łopaciuk; description M. Drzewiecki)

consisted of raising mud-brick walls on a stone substructure. This technique was used for Building A and the ramp/aqueduct [Fig. 15 bottom left]. The stone substructure, finished with flat slabs, was a maximum 1.50 m high. It made for a very stable base for the mud-brick walls.

Building A was two-storeyed, possibly higher. Most of the ground-floor chambers were preserved up to the vaults. The entrance to the building was on ground level in the middle of the south wall and was framed with a red-brick arch. Remains of the upper floor were preserved in the central part of the building and in an area not far from the entrance. A few floor tiles

were visible in place and mud plaster was recorded on some of the first floor walls. It seems that the first floor rooms were also barrel-vaulted. Communication between the ground floor and the first-floor was through a staircase provided with a central pillar located in one of the chambers northeast of the entrance [Fig. 15 top right]. Mud mortar binding the bricks was reinforced with fragments of pottery, especially in the arches. A sample of those sherds was taken.

No architectural phasing of Building A was recognized during this brief inspection. However, a ramp/aqueduct was clearly an addition to the building,



Fig. 15. *Fagirinfenti, Site 1: top row, Building A, details of construction; bottom left, Building A and ramp/aqueduct; bottom right, Building C (Photos M. Drzewiecki)*

despite being built in the same technique [Fig. 15 bottom left]. The ramp/aqueduct reached the building directly at the entrance. There were remains of a mud-brick arch at this end of the aqueduct. This unique structure extended towards the river, taking a 90° turn to the west just before a modern road. It seems that the other end of the ramp/aqueduct was at a well located not far, to the south of Building C.

Buildings in the southern part of the site were made of mud brick only. Buildings B and C were in a better state of preservation. Samples of pottery used in the mortar were taken from both. Building C had at least four high and narrow windows and three entrances, of which two were sealed [Fig. 15 bottom right], one not visible from outside. It seems that the building underwent at least two refurbishments, receiving a new coat of plaster during the second one.

A *sagja* well, in good condition, was found. Its oval shaft was lined with stones. A sample of the pottery was taken from the mortar binding the stones.

There are also some modern features on the site, including places delimited by loose stones, most probably prepared by local farmers. Remains of a rectangular stone building in the southeastern part of the site, raised in the *jalous* technique and furnished with a niche topped with a large stone in the east wall could have once been a mosque.

The survey in the Third Cataract added significantly to the already huge volume of data collected and published by the Mahas Survey team (Osman and Edwards 2012). Closer examination of the pottery samples collected during the reconnaissance, especially those taken from the mortars, will permit a more precise dating of individual buildings on the sites.

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The North-East living quarter of the medieval pilgrim centre in Banganarti. Archaeological research in 2015 and 2016

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Abstract: Two seasons of fieldwork in the northeastern part of Banganarti site brought significant data on its stratification, as well as the architecture of medieval dwellings. This paper presents a summary of the results. Special attention was focused on the layout of the buildings and on vault usage. Remarks concern the functionality of the explored space, based on an interpretation of the stratigraphy. Evidence of strong water erosion in the early stages of the settlement is also discussed.

Keywords: Banganarti, medieval architecture, vaults, archaeology of dwellings

The medieval settlement site of Banganarti is situated on the eastern bank of the Nile, between the Third and Fourth cataracts, about 8 km from Dongola, the capital of the medieval Kingdom of Makuria. Since 2001 (Żurawski 2002: 221–226), the site has been investigated by Prof. Bogdan Żurawski from the Institute of Mediterranean and Oriental Cultures of the Polish Academy of Sciences, working on behalf of the Polish Centre of Mediterranean Archaeology of the University of Warsaw and, since 2016,

in cooperation with the Institute of Archaeology of the University of Rzeszów.

Research had been focused previously on the church in the middle of the site and on the surrounding fortifications. Since 2014, attention has shifted to the living quarters which started to be excavated already in 2008. The excavations in the NECH sector, trench I, have continued since 2015 (Żurawski 2016: 357).¹ This paper presents a summary of the results of the fieldwork, carried out within the said trench in 2015 and 2016.

¹ A new site grid of square sectors (30 × 30 m) was generated in the 2016/2017 season and all the areas (distinguished rooms, streets etc.), layers and features have been numbered separately for each sector; for the new site marking, see *Fig. 1*. In the first of the seasons discussed in this paper, the trench in question was identified as I/2015. Turning out now to be located in two of the newly distinguished sectors, it has been documented as a whole within the NECH sector in order to maintain continuity in the numbering of areas and stratigraphic units.

SCOPE AND METHODOLOGY

Trench I was opened on the northeastern side of the church, near an area explored in part between 2010 and 2014 (Żurawski 2016: 354, 355, Fig. 2). It covered an area of about 350 m² [Figs 1, 2]. The tops of medieval walls from the last phase of the existence of the settlement were exposed under a layer of sand that was 0.10–0.50 m thick. Altogether 33 different areas were distinguished: potential rooms, streets and units of unknown purpose [Fig. 2 bottom]. This division became the basis for further exploration and documentation.

Exploration followed stratigraphic layers. Aeolian sand, backfill and some cultural layers were removed with shovels. Features and most of the cultural layers, including all floor levels, were explored with trowels, spatulas and brushes. Spatial measurements were made with TST in relation to the geodesic site grid. A level instrument was used as well. The whole trench was documented with 3D photogrammetric models of areas and orthophotographic records of walls. Documentation included also digital photos, photogrammetric and drawing documentation of plans and section cuts of distinguished layers and features.

Archaeological finds and samples were registered within area divisions and with

stratigraphic layer and feature data. Bulk pottery material was collected in full, photographed and provisionally examined by Aneta Cedro. A quantifying method, based on determining a minimum number of vessels for each assemblage, was applied. All diagnostic vessel fragments (rims, bases, characteristic vessel-body parts) were recorded. The second most numerous

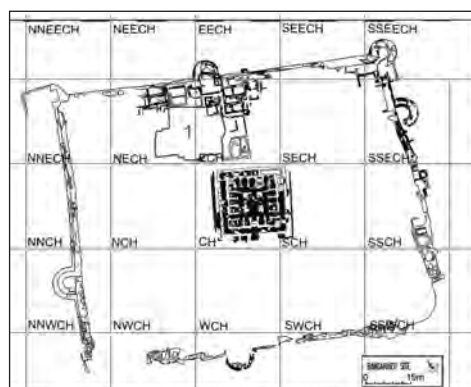


Fig. 1. New site grid of Banganarti with the sector markings and the location of trench I in the NECH sector, shown in relation to the Raphaelion, the surrounding wall and remains of the nearest excavated structures. 1 – trench I; NECH – sector designations (Plan based on drawing by R. Łopaciuk et al.)

Team

Dates of work: 19 January–10 March 2015 and 23 January–16 February 2016

General Director: Assoc. Prof. Bogdan Żurawski (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences)

NCAM representatives: Tamadur Ali Ebeid (2015), Abdel Raouf Jubara (2016)

Trench supervisor: Dr. Michał Dzik (Institute of Archaeology, University of Rzeszów)

Topographer: Roman Łopaciuk (Geomatic, 2015, 2016)

Pottery experts: Aneta Cedro (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences; 2015, 2016); Katarzyna Mich, student-trainee (Adam Mickiewicz University, Poznań; 2015)

group of finds, that is, animal bones, was registered in full, except for material from the latest aeolian sand layers. Selected finds were documented photographically.

Detailed archaeological–architectural documentation was carried out for 13 areas so far: Nos 1, 2, 4, 5, 7, 8a, 11, 13, 17, 19, 21, 22, 25. Separate forms identifying specifically features in each of these areas cover the following data:

- basic information about each wall, its dimensions and MSL (mean sea level);
- descriptions, in tabular form, of

stratigraphic units distinguished on the wall faces, including walls, plasters, passage openings, recesses, stairs and other architectural elements;

- matrix of stratification of explored layers within the area borders, in relation to stratigraphic units specified on the grounds of the architectural analysis;
- photogrammetric documentation marking distinctive stratigraphic units on the wall faces and photos of selected architectural elements.

RESULTS OF EXCAVATION

Characteristic of the part of the site under exploration is its severe destruction by digging for building material (*muna*) and fertile soil (*maroq*), confirmed in 17 areas. This led to devastation of some of the architecture and disturbance of cultural layers. Areas 6, 7, 8, 10, 15, 18c were the most destroyed, the pits dug in these areas reaching 2–3 m below current ground level. Tracing the boundaries of units from the youngest phase was greatly hindered by this situation, especially in areas 8, 18 and to the northwest of area 5.

Exploration in 23 areas was stopped on the level of the youngest medieval cultural layers after removing the post-settlement destruction. Further exploration was conducted in ten areas: 1, 2, 4, 5, 9, 11, 13, 16, 17 and 20. Area 5 was explored to the level of undisturbed subsoil in its northern part (around 146.80 m a.s.l., which is 5.20 m below the top of the preserved walls).

During the two seasons, 52 features and 215 stratigraphic layers were documented. The archaeological material from these excavations included: almost 6600 frag-

ments of pottery (23% out of overall number of nearly 28,600 pieces collected from the site in general) and 23 complete vessels, over 1050 fragments of animal bones, 107 stone tools, some construction elements, including floor tiles, bricks and window crates, clay spindle whorls, part of a stone sepulchral cross, fragments of glass vessels, a few beads made of glass and ostrich eggshell, a fragment of a stone bracelet, an archer's ring and a stone pectoral (Żurawski 2016).

Most of the finds are from a domestic or craft context with the exception of a grave dug in the coping of the wall between areas 6 and 10 (No. 1), related to the last phase of use of this space [see Fig. 2 bottom]. Only a small part of this burial, which lay directly on the wall, was preserved: a fragment of a hip bone, the vertebra and bones of the right forearm. The bones were found lying at an elevation of 151.73 m a.s.l., in a pit 0.50 m wide. The skeleton position was supine, oriented to the southeast, the right arm straight and the hand on the right hip.



Fig. 2. Trench I in the NECH sector: top, view from the southeast; bottom, orthophoto generated from a digital elevation model based on photos taken in February 2016. A–G – section views in Figs 5, 8, 9; H – location of a burial; 1–23 – numbering of areas (Photos and measurements M. Dzik, R. Łopaciuk; processing M. Dzik)

ARCHITECTURE

The good state of architectural preservation despite modern disturbance has resulted in a large amount of data pertaining to issues of dwelling form, construction, changes in spatial division and use. The remarks presented in this paper will be limited to a general characteristic of the archaeological substance, leaving a more detailed examination of the more minutely explored eastern part of the trench, which includes House A, for a separate study.

The apparently chaotic building layout [see *Fig. 2* top] is the result of a multi-phase development with rebuilding of

single units, evolution of house layout and changes in street setting. Buildings discovered in the upper part of trench I can be associated with eight or nine dwellings [*Fig. 3*]. They were in use during the late phase of the settlement, which however was not the final one, as part of the discovered architecture was overbuilt with younger walls, the preservation of which is vestigial. In some cases, these upper structures formed second floors of two storey houses, whose well-retained ground floors were documented. In other buildings, they were founded on the level of the preserved wall

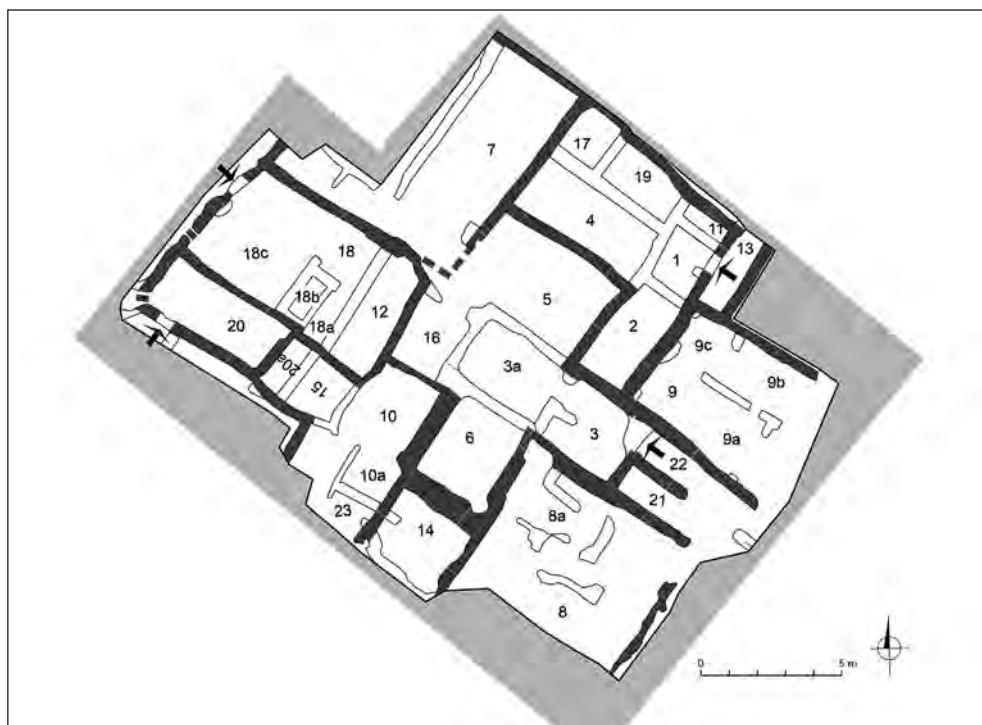


Fig. 3. Wall tops in trench I after removal of the upper layer of sand. Dark grey – boundaries of dwellings from a late phase; arrows mark the entrances to dwellings; 1–23 – numbering of areas (Drawing M. Dzik)

copings and maintained the older layout only by chance.

It needs to be stressed that the documented division of late dwellings, quite haphazard, does not fully reflect the shape of houses in the earlier phases. For example, House A, encompassing areas 1, 2, 4 and 11, came into existence after considerable rebuilding of an older, larger dwelling which included also areas 5 and 7. However, some continuity in the layout of parcels through the ages is clearly visible.

An example of such continuity is the south wall of House A, visible from area 13, that is, from the street [Fig. 4]. This wall was bricked up directly on top of older structure 13.D.1 and kept its course. One of the last investments to be seen on the wall face is its overbuilding with wall 13.D.4. At the same time, the level of

the entrance to the house was raised by 0.95 m and a new opening 13.D.12 with threshold 13.D.14 was built (this was undertaken from a ground level at the top of layer 55b, which is 0.60 m below the threshold). In this case, not only the line of an older wall was kept, but also the location of an entrance, which remained the same despite changing ground level and repeated rebuilding of the dwelling. A similar situation was observed in area 5. The east wall, built partly on top of cultural layers 0.40–0.50 m thick, keeps the line of a wall of a much older building, found 2.10 m underneath.

A characteristic feature of the Bangarti buildings is the ubiquitous use of arches. Conical and barrel vaults covering rooms and staircases, as well as arched door openings were also common in dwellings

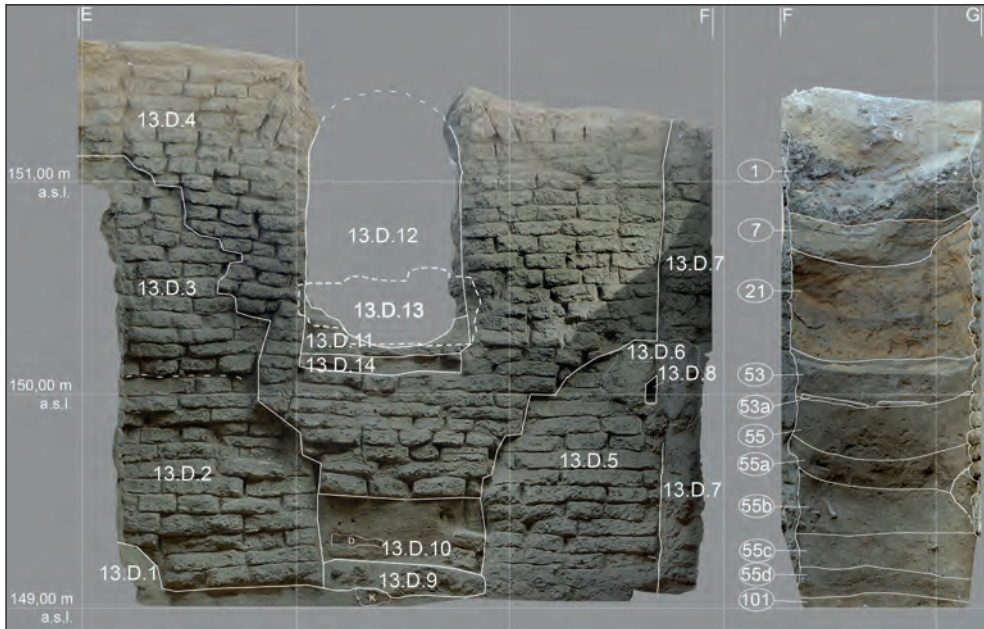


Fig. 4. Photogrammetric documentation of the north wall and east section cut (on right) of area 13 (Processing M. Dzik)



Fig. 5. Examples of arched architecture in trench I (2015): left, staircase in area 8a and right, vault in area 4 (Photos M. Dzik)



Fig. 6. Examples of arched door openings in trench I (2015), areas 13 (foreground) and 1 (background) (Photo M. Dzik)

in the NECH sector [*Figs 5, 6*]. The form of arches over openings varies considerably, from semicircular to segmental and even pointed. Arches were made of mud bricks, complemented sometimes with larger sherds or red bricks. Within trench I, baked bricks were found only in arches above the entrances from the street, as in areas 1 and 18, or from the inner yard (area 7 in an earlier phase). It seems that red bricks were used mainly for decorative purposes. Nevertheless, an apotropaic function cannot be excluded, being probable because of the red colour, the durability of the material and perhaps even a sacred provenance (the only building in Banganarti with red brick walls was the church).

Vaults, made of mud bricks exclusively, were unearthed in 14 areas. In comparison, unequivocal proof of flat roofing resting on wooden beams was found in just one room (area 20). The span and rise of the vaults varied. The inner width of rooms covered with arched ceilings ranged from 1.10 m (area 12) to 2.50 m (areas 5 and 7), and their maximum heights from 0.90 m (area 17) to 2.10 m (area 5). The skewbacks of vaults from the discussed trench were placed 0.30–0.70 m up from the first floor of the room (for the skewback of vault 9.C.5 on top of wall 9.C.4, see *Fig. 7* top). It resulted in a significant reduction of space along the bearing walls, which is unarguably a disadvantage of vaults compared to flat roofs. The advantage, however, was surely the resistance to the vertical load of such construction. Using bricked vaults in dwellings is closely connected with issues of the external shape of their roofing and the presence of two-storey houses. One issue to be considered is whether vaults were used in Banganarti

as roofing only in cases of an upper storey being planned.

In six areas, the state of preservation of the archaeological substance was sufficiently good to determine the presence of an upper level constructed above the vaults. In each case, evidence of the usage of the upper space was found (e.g., hard mud floors, fireplaces). However, a mere layer of hard mud does not allow one to conclude unequivocally whether it was a roof covering (it could also be an occupational level inside a house) or the floor of another room. Evidence of the latter was documented in four areas: 2, 4, 9 and 9c. The first two were rooms of the first floor in a two-storey building (so-called House A). The latter two were vaults functioning as ceilings in basements. House A will not be discussed here and as for area 9, a vaulted basement (approximately 7 m²) and the room above it (9.40 m²) were built in one go. The walls were based in shallow foundation pits approximately 0.15 m deep. These pits were dug in the older cultural layers from the top of layer 62 [*Fig. 7* bottom]. The floor of the upper room was made of mud bricks [see *Fig. 7* bottom, context 9.C.2]. It lay directly on the crown of the vault and the backfill of the haunch areas of the arch, which was composed of fairly compact brown soil with numerous lumps of mud brick and Nile silt, potsherds and fragments of animal bones. The height of the upper room is unknown, the walls being preserved here to a height of no more than a meter. No evidence of the vaulted ceiling over this room was observed. Instead, directly by its north wall, there was a fragment of hewn wooden beam (22 cm by 27 cm, preserved length 40 cm). Its size and archaeological context suggest

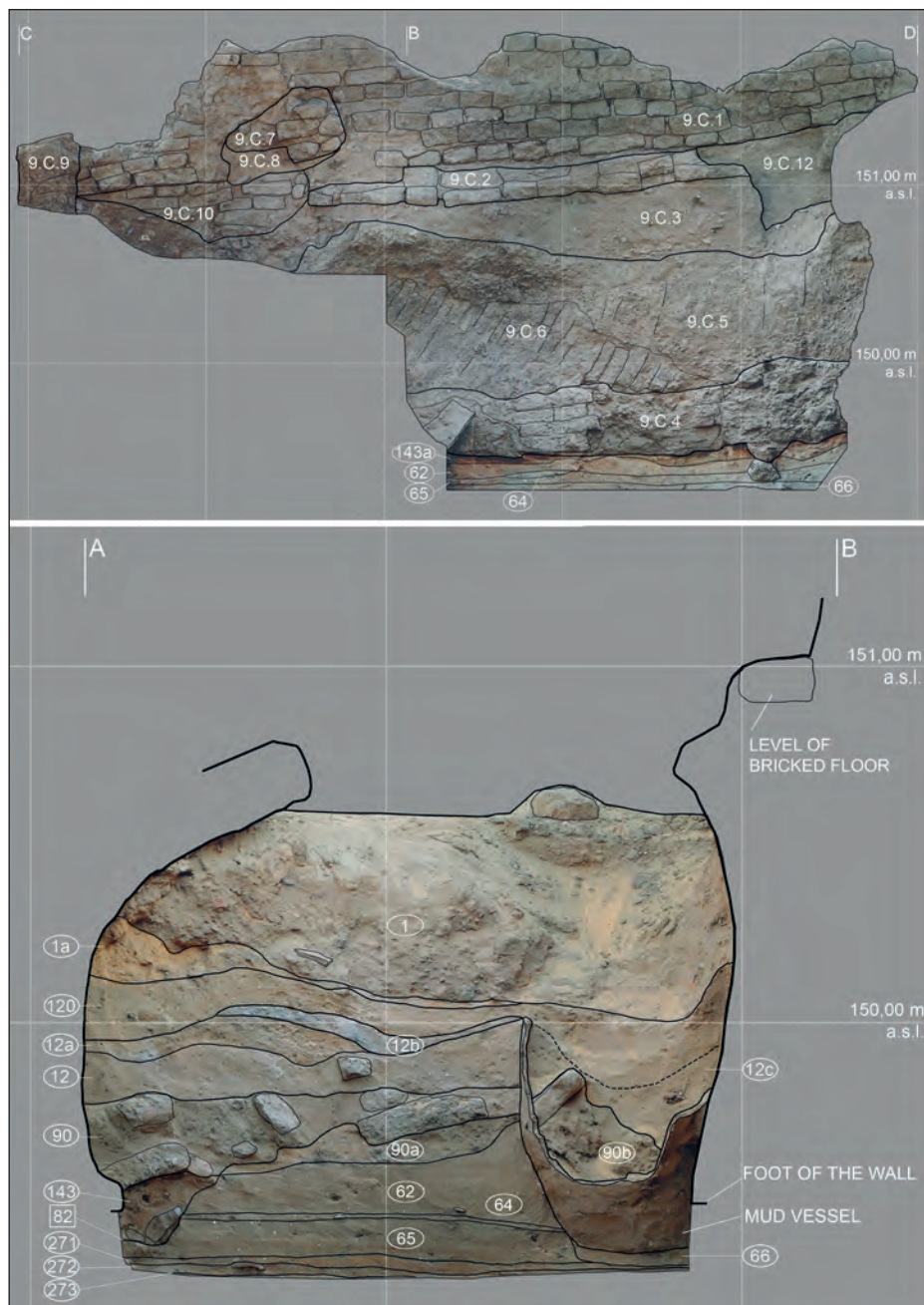


Fig. 7. Photogrammetric documentation in areas 9 and 9b: top, west wall; bottom, east-west profile cut (Processing M. Dzik)

that it may have been part of the wooden ceiling frame.

The poor state of preservation of the floor of this upper room and disturbance of the accumulated cultural layers make a determination of its function difficult. The bricked floor, which is quite rare on the site, suggests residential rather than utilitarian use. More can be said about the basement of this building.

The northern part of this unit reached a maximum height of 1.00–1.20 m above ground level. There was no hardened mud floor. The lowermost archaeological contexts, Nos 90, 90a, which included a great deal of mud-brick debris, assuredly accumulated during the construction of the building. It is worth noting that the west wall was raised on a large, storage mud vessel related to an older context (No. 65) [see *Fig. 7* bottom]. The fact that it was just cut and not destroyed completely suggests that its further usage had been planned.

The first evidence of basement exploitation is layer 12 (0.10–0.15 m thick), in which the following were found: over a hundred potsherds, mostly of cooking and storage wares, a clay spindle whorl, part of a stone quern and a pestle. The physical properties of this layer (slightly compressed, light brown, mixed with yellow sand) is not suggestive of intensive exploitation. The storage mud vessel may have been in use in this phase (it was preserved right to the top of the said layer).

At a time when the maximum height of the basement was 0.90 m or less, its previous (storage?) function had ceased. A common feature of the younger contexts (12a, 12b, 120) is a noticeably larger content of yellow sand (compared to layer No. 12), as well as a great deal of goat coprolites. It seems that at this time the space was used mostly as an animal pen. At the end of its use, the maximum height of the basement was less than 0.70 m.

STRATIFICATION

The upper part of the backfill of the described basement, namely contexts 1 and 1a, consisted of aeolian sand with debris from the collapsed parts of a vault and with mixed archaeological material [see *Fig. 7* bottom]. Similar fill was found in nearly all the areas destroyed by modern digging. These post-settlement layers include more or less numerous potsherds and animal bones, sometimes droppings of domestic animals (mainly goat, less often donkey). They are evidence that the rooms, once abandoned, were used as animal pens and rubbish dumps. The latter is suggested also by the extensive fragmentation of the ceramic material typical of such deposits.

The vast majority of the documented contexts can be interpreted as evidence of intensive exploitation of space linked with household functioning. One of the rare exceptions are some contexts from area 5, approximately 1 m accumulated thickness, representing layers of earth strongly suffused with ash and densely compacted; these were connected with the long usage of several ovens (see below).

In all the areas, cultural layers were found under the topmost aeolian sand, all exhibiting attributes of: colour, thickness, degree of humification and compression, frequent content of charcoal and ash, as well as coprolites and other biofacts

and artifacts, the material evidencing differentiated but usually long and intensive usage. This remark applies to streets (areas 13 and 22) as well as rooms.

In some of the areas (e.g., 1, 4, 5, 16), there was evidence of two and three hard mud floors, laid during the functioning of a given room. These actions were separated by longer episodes of occupation as witnessed by accumulative cultural layers between them.

The stratigraphic relation between earthen layers and some small or large building investments (like walling up an opening or making a new one, building a vault etc.), documented in several areas, allows the chronology of formal and functional changes of individual rooms and dwellings to be established based on the archaeological material. Determining the ground level at any given time of a given structure and the alterations it underwent can be difficult despite appearances. The two areas described above, 9 and 13, are a case in point.

Attention should be focused also on contexts related to the oldest buildings discovered in area 5 (founded on a layer of yellow-greyish, quite compressed sand, approximately 0.60 m thick). The architectural remnants, including a bearing wall rising 0.80 m and a partition wall (height 1.10 m) are strongly leached in their lower parts. At the same elevation, 147.65–147.95 m a.s.l., cultural accumulative layers, 164a and 164b, were revealed, separated by a brown, sandy layer of 1–3 cm thickness). They differed distinctly from almost all the layers above. These were grey-brown, compacted, suffused with grey loam fraction. Their cumulative thickness was approximately 0.25–0.30 m. Similar features were displayed by only one other

context, 157, documented just 0.10 m above the described one. The properties of these layers, as well as the erosion of the walls, are strong premises for the hypothesis of intensive water effect. It could be the result of very heavy rainfalls or, more likely, seasonal Nile flooding. It should be stressed that layers with such physical properties, as well as evidence of strong water erosion of the walls, were found in trench I only on the said level, which is just 1.00–1.50 m above the ground level in the old Nile river-bed (Żurawski 2010: Fig. 1).

Regarding the 52 features distinguished during the excavation, the most numerous (16 features) were pits for ceramic kitchen pots. Some of these vessels, often covered with a large potsherd, were probably used for storage. Others may have served in censuring treatment, known today as *dukhan* (the only evidence of use in a few pots was a thin layer of charcoal on the bottom and ash on the inner surfaces).

Other distinguished features included partitions made of mud brick, stock pits, dump pits, postholes and also fireplaces and ovens. Amid the latter, three ovens were made in walled up areas made just for them, 1.50–2.00 m long, 0.60–0.80 m wide, 0.94–1.60 m² in area (Nos 18a, 18b, 20a; see Fig. 2 bottom). The ovens were domed with mud bricks and finished with hard mud. The height of the chambers was 0.40–0.50 m. These were probably cooking ovens. Layers of ash and charcoal were found at their bottom, along with a few dozen potsherds apiece, mostly cooking wares, also a few fragments of animal bones, including a burnt one (area 18a), and single pestles (areas 18a, 18b). Another oven of different construction, rather poorly preserved, stood on the same level in the east corner of area 18.

The presence of so many utilities of one kind in a very small area is unusual. Similar assemblages of ovens were documented in area 5, approximately 4–5 m away, but at an elevation of 2.50 m to 3.50 m below

the described features. The apparent interpretation is long-lasting human occupation somehow associated with food processing. This needs to be confirmed in further research.

CONCLUSIONS

The excavations in the NECH sector brought extensive archaeological data for a discussion of dwellings and households in Banganarti between the 7th and 13th centuries pending a full recognition of the stratigraphy with regard to the architecture, which is in progress. Complementary specialist studies on the material are

needed, including geomorphological, archaeozoological, archaeobotanical and others. Chronological determinations will be enhanced with a planned series of radiocarbon and thermoluminescence datings. The outcome will be a new assessment of the cultural changes occurring in the Banganarti settlement over time.

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The medieval fortifications at Banganarti after the 2016 season

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Abstract: The state of preservation of Banganarti's unique medieval mud-brick fortifications and the deposits accumulated against them allows a study of the history of these defenses and their immediate surroundings. Trenches excavated in the northeastern corner of the fortifications in 2016 gave a full cross section, starting with the layers preceding the construction of the defenses, through two phases of the fortifications and ending with traces of secondary use of the ruins.

Keywords: fortifications, medieval settlement, Banganarti, Nubia, Sudan

The fieldwork activities in Banganarti in 2016 were focused in part on excavating the northeastern corner of the fortifications [Fig. 1]. The topmost layers in this area were explored in previous seasons, but culturally sterile sand was reached in only one of the earlier digs, outside the enclosure. The purpose now was to investigate the inner face of the fortification down to the foundation level and to compare the record of human activities on either side of the defense wall.

In the case of the Banganarti enclosure wall, the inner face is seldom open to investigation, being usually obscured by extensive remains of buildings hugging it. In turn, the wall top is often damaged quite severely by modern extraction of mud brick as a convenient and effective fertilizer. The northeastern corner, which was covered with yellow sand in the 1990s (Żurawski

2012: Fig. 21) was first explored in 2001 and then in 2006 when the topmost parts were cleared and documented (Drzewiecki 2008: 405–407). A test trench was dug in 2008 (No. II/1), reaching well below the foundation levels on the outside of the enclosure, this followed in 2013 by trench 10/13 (Żurawski 2015: 375; Wasik 2013).

The mud-brick wall turned out to have been reinforced with a tower, approximately 10 m in diameter, reused later as part of a rectangular courtyard outside the curtain [see Fig. 1]. The architecture was dated provisionally, based on pottery finds, to the 10th–14th century (Bagińska 2008: 421–425). The test dug in 2008 checked the brick bonding between the curtain wall and corner tower, finding it to be from one building phase. Regular thin layers next to the outer faces contained large quantities of potsherds and organic material, including

faunal remains (Osypińska 2015). This was most probably rubbish discarded regularly by the residents of the enclosure. Layers below the foundation of the fortifications, reaching a thickness of 0.80–0.90 m, yielded, among others, evidence of two events of intensive fires: charcoal, ashes and dark brown burnt soil. A trench in 2013 uncovered a red-brick staircase where a rectangular courtyard met with the outer face of the curtain wall [Fig. 2]. This

passage enabled traffic through the remains of fortifications. The excavation reached about 0.50 m below the foundation of the staircase without reaching culturally sterile sand. Surface cleaning was undertaken also on the opposite side of the curtain wall (next to the inner face). In late 2015, the area of buildings raised next to the inner face of the eastern curtain and the northeast corner was cleared (Żurawski, Cedro and Drzewiecki 2017, in this volume). The



Fig. 1. Northeastern corner of the fortifications in Baganarti with the location of trenches dug in 2016; inset, general plan of the Baganarti site with the location of the excavation site (Baganarti Mission/drawing R. Łopaciuk, M. Drzewiecki)

Team

Dates of work: 23 January–15 February 2016

General Director: Assoc. Prof. Bogdan Żurawski (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences)

NCAM representative: Abdel Raouf Jubara (2016)

Trench supervisor: Dr. Mariusz Drzewiecki (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences)

whole area was divided into twelve sections and the area closest to the inner corner of the fortifications was labelled as No. 12 [see *Fig. 1*].



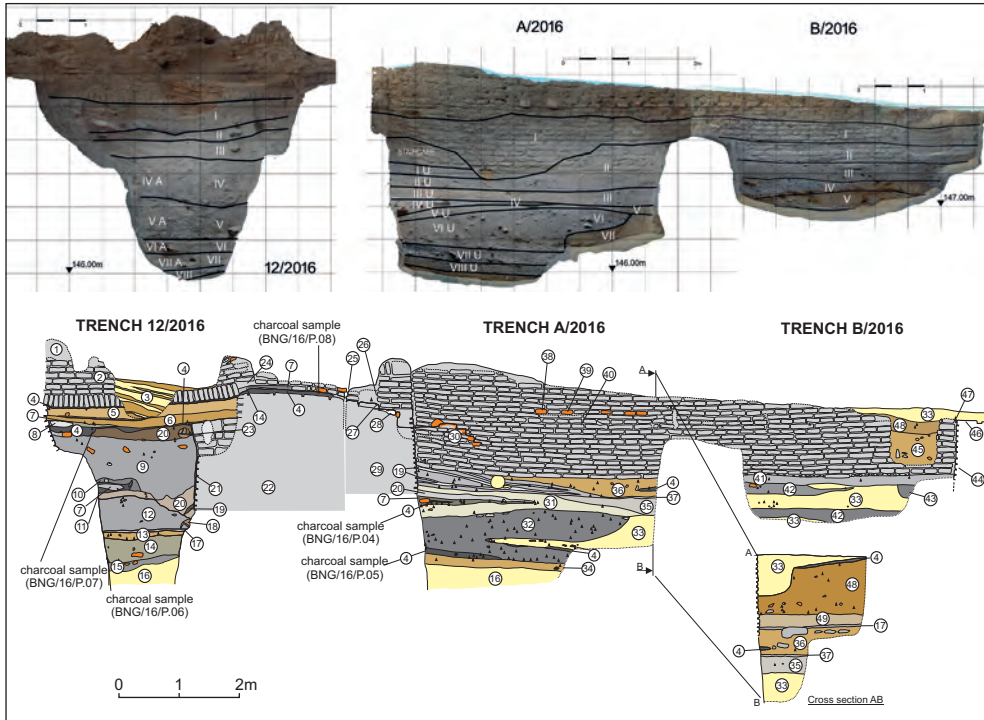
Fig. 2. Staircase and the passage on top of the fortifications (Banganarti Mission/photo M. Drzewiecki)

FIELDWORK AND FIRST OBSERVATIONS

Excavations proceeded in three trenches [see *Fig. 1*], two of which were set in the area of exploration in 2013. Square 12/2016 (2 m by 2 m) lay next to the inner face of the curtain wall. This was where the top-most parts of the fortifications were cleared in 2006, 2013 and 2015. Two trenches (A/2016 and B/2016) were placed outside the enclosure. Trench A (4 m by 2 m) was set in the corner where the outer face of the fortifications meets the wall of the rectangular courtyard. This was the spot of trench 10/13 where remains of a staircase were discovered in 2013. Trench B (3.50 m by 2 m) was located further from

the fortifications, along the south wall of the rectangular courtyard (this locus was investigated briefly in 2006). It was closed after reaching approximately 1.50 m below the surface. The dig went through large deposits of loose yellow sand mixed with archaeological material and occupation layers. Further excavations would have increased the risk of the profile collapsing. The work, however, unearthed the entire height of the south wall of the rectangular courtyard with a 0.70 m wide passage to another space or room [*Fig. 3*]. Trenches A/2016 and 12/2016 struck culturally sterile sand 2.50 m below the surface level [*Fig. 3* top], at a level 6.11 m and 6.08 m below the Upper Church threshold benchmark.

The first occupation layer above culturally sterile sand reflected a time before the construction of the fortifications. The curtain wall foundation level was different inside and outside, pointing to at least two construction phases. The 2-m-high inner face was made of large mud bricks (42–45 x 23–25 x 8–10 cm) and belonged to the first phase of the curtain [*Fig. 4* right]. This wall was about 2.50 m thick as indicated by an approximately 5 cm wide crack going all along the top of the wall and parallel to the faces [see *Fig. 3:25*]. This first phase was founded 5.11 m below the Upper Church threshold benchmark. The second-phase wall foundation registered on a level 27 cm higher than the one from the first phase. The outer face [*Fig. 5* bottom] was made of smaller mud bricks (37–32 x 20–16 x 8–7 cm) and the wall was thicker by 1.10 m, recording a slight inclination (3°) of the outer face. This observation suits the general idea of the Banganarti fortifications having two main construction phases (Drzewiecki 2014: 904–906).



- 1 – eroded bricks
- 2 – mud bricks 32–25 x 20–16 x 7 cm
- 3 – modern trench filled with yellow sand and organic material
- 4 – burning layer
- 5 – mud-brick rubble
- 6 – loose grey sand with lumps of mud
- 7 – ash
- 8 – hearth (ash and burned mud)
- 9 – mud-brick(?) and red-brick rubble
- 10 – dark grey sand
- 11 – dark brown sand
- 12 – mud-brick(?) rubble
- 13 – compact brown sand
- 14 – grey sand with small amounts of charcoal
- 15 – ash, grey sand, mud-brick and red-brick fragments
- 16 – yellow sand (culturally sterile sand)
- 17 – compacted mud (walking level?)
- 18 – large potsherd (basin?)
- 19 – ash and burning
- 20 – loose grey sand
- 21 – mud plaster(?)
- 22 – curtain wall phase 1 (mud bricks 42–45 x 23–25 x 8–10 cm)
- 23 – handmade pottery vessel
- 24 – mud mortar
- 25 – crack in the wall
- 26 – niche with traces of fire
- 27 – pivot socket (diameter 4 cm, depth 1.5 cm)

- 28 – threshold
- 29 – curtain wall phase 2 (mud bricks 37–32 x 20–16 x 8–7 cm)
- 30 – red-brick stairs
- 31 – dark to light grey blur sand (water deposits?)
- 32 – dark brown compacted sand
- 33 – yellow sand
- 34 – dark yellow blur sand
- 35 – blur sand from dark grey to light grey (water deposits?)
- 36 – grey sand, lumps of mud and mud-brick fragments
- 37 – dark grey blur sand
- 38 – red bricks projecting 3–9 cm from outer wall face made of mud brick, severely eroded
- 39 – red bricks (? x 18–14 x 9–7 cm)
- 40 – change in brick bonding
- 41 – grey sand and lumps of mud
- 42 – grey sand, ash and charcoal
- 43 – grey and yellow sand
- 44 – corner of rectangular courtyard, walls not bonded
- 45 – brown sand and lumps of mud
- 46 – high quality mud bricks with lesser temper (33–32 x 19–17 x 7–6 cm)
- 47 – potsherds in the crack between walls
- 48 – brown sand with organic material alternating with grey sand, all with large quantities of potsherds
- 49 – grey sand, brown sand, organic material
- ▲ – potsherd
- + – bone fragment

Secondary use of the ruins of the enclosure wall were noted, taking on the form of a passage going through the remains of the wall between trenches 12/2016 and A/2016. A shallow pivot socket was documented in one of the mud bricks on the top of the wall, 0.60 m from the outer face of the curtain [see *Fig. 3:27*]. Remains of a perpendicular wall, with the lowest row of mud bricks arranged vertically (32–25 x 20–16 x 7 cm), partly overlapped the inner face of the curtain. The red-brick staircase, built next to the outer face, was most probably made to facilitate access to the passage connecting the building/s erected on the remains of the fortifications and the settlement outside, including the rectangular courtyard built when the corner tower was already severely damaged. The courtyard, as indicated by thick deposits of organic materials [see *Fig. 3:48*], was used as an animal pen. A latrine was discovered in the courtyard during earlier work in 2006 (Drzewiecki 2008: 406–407).

Layers recorded in the two trenches on the outside and inside of the curtain wall yielded a variety of small finds, which were collected by layer context. Ceramic sherds were counted and divided into rim, neck, body, and base sherds. Diagnostic, decorated and inscribed sherds were inventoried. All the osteological material, stone, glass and other artifacts were collected and inventoried. (The finds are now in storage at Selib, about 7 km east of Banganarti.)

The overall impression is of there being no comparable layers in terms of composition, level and thickness on both sides of the wall. The curtain wall clearly divided and organized activities in the area. Interestingly, the division continues to be observed in layers underlying the foundations of the oldest fortifications. Thick deposits of dark brown compacted sand with large quantities of pottery sherds [see *Fig. 3:32*] were recorded in trench A/2016 under dark to light grey blur sand with a few potsherds [*Fig. 5 top*; see *Fig. 3:31*]; these are interpreted, the former as remains of a fire and the latter as the result of heavy rains or presence of standing water. In trench 12/2016, a compacted walking level about 5 cm thick [see *Fig. 3:17*] and a massive layer of compressed mud, possibly dissolved mud brick or mud-brick rubble [see *Fig. 3:12*] were documented on the same level. Trench A/2016 appears to have cut across an open area where fire and water had left direct marks, whereas trench 12/2016 hit a closed space of a building which had collapsed and the ruins had dissolved due to water action.

A similar layer of compressed mud, the brick outlines visible in the trench section, was recorded in the same trench (12/2016), above and next to the first phase of the fortifications [see *Fig. 3:9; 4 left*]. The layer was hard and unified, indicating that mud brick and mortar had dissolved into a homogenous mass up to

Opposite page

Fig. 3. The southern side of trenches 12/2016, A/2016 and B/2016: top, orthophoto with superimposed limits of excavation layers numbers and location of exploration layers, including the main levels; bottom, view of combined trenches; bottom right, section view of east side of trench A/2016 (Banganarti Mission/orthophoto R. Łopaciuk, M. Drzewiecki; drawing M. Drzewiecki)

a meter thick. This layer was bulkier than the previous one, indicating that it came from the dissolution of a much larger building. Should it be assumed that it represents mud-brick fortifications heavily damaged by rain or a flood, then we could have here a record of the cause that necessitated the construction of the second phase of the fortifications.

ASSESSMENT AND CONCLUSIONS

Let us consider the results of earlier excavations of the fortifications in Banganarti. The nearest trench (Trench II/1 in *Fig. 1*, see Drzewiecki 2011: 276–278) revealed the same two layers of burning and ashes below the outer face of the wall as in trench A/2016. The upper of

the layers was on a corresponding level and had a similar thickness. In trench A/2016, it started 5 m below the benchmark on the threshold of the Upper Church and was up to 0.22 m thick, in trench II/1(2008) it was respectively a level of 4.94 m and a thickness of 0.18 m. Both were located directly below the foundation of the second phase of the curtain wall.

The lower layer of burning and ashes in trench II/1 started 5.50 m below the benchmark and was up to 0.25 m thick. The corresponding layer in trench A/2016 started 5.80 m below the benchmark, but was also correspondingly thicker (up to 0.60 m), so the upper boundaries of matching layers were on a similar level.



Fig. 4. Trench 12/2016: left, view from the northeast; right, inner face of the curtain wall (phase 1) (Banganarti Mission/photos M. Drzewiecki)



Fig. 5. Trench A/2016: top, view from northeast; bottom, view from the north (Banganarti Mission/photos M. Drzewiecki)

This observation indicates that there were at least two large fires that razed the entire corner of the fortifications. A layer indicating fire was recorded just below the second phase of the fortifications in two out of three trenches along the northern line of the defenses. In a third trench, remains of mud-brick debris were recorded on this level. Fire-related layers were recorded also along the east wall, but not directly below the second curtain. As regards the west and south walls, their stratigraphy is different with the foundation of the curtains being on various levels and with no direct correspondence between the layers; for example, the trenches in the northeastern corner reached 6.11 m below the Upper Church threshold benchmark, while the foundation level of the southern gate is approximately 1 m below it.

As for water traces, a layer of compacted mud about 0.10 m thick was observed in trench II/1 (Drzewiecki 2011: 278). It was interpreted as a walking level during the construction of the second phase of the fortifications and directly afterwards. However, in light of the new observations, this layer might be interpreted as dissolved remains of a mud/mud-brick structure. A heavily damaged structure was also recorded below the second phase of fortifications in trench 3/E/2010 (Drzewiecki 2013: Fig. 3). Traces of water dissolution were also recorded in the southwestern corner of the fortifications. The outer face of the curtain wall was difficult to follow there due to the presence of a layer of compacted mud (Drzewiecki 2010: 348–350). However, the stratigraphy in those places was much

different and all direct associations will be difficult to sustain.

Concluding, it seems that the corner was at least twice on fire. The second fire might have reached as far as the north gate. In other parts of the fortifications, no directly corresponding layers of burning were recorded. Pottery samples, as well as charcoal samples for radiocarbon dating, were collected from both layers in trench A/2016 [see Fig. 3]. Water presence is an interesting issue, which still needs to be confirmed by in-depth studies; it seems, however, that a corresponding layer might have been recorded in trench II/1 in 2008.

ADDENDUM

Samples and materials collected during the excavations are to be analyzed in the near future as part of a project entitled “Angels and Locusts. Everyday life in Banganarti, the pilgrimage center on the Middle Nile between the 6th and 16th century”, directed by Bogdan Żurawski and funded by the National Science Centre (UMO–2016/21/B/HS3/03724). The charcoal samples can set the timeframe for the fires and *terminus ante quem* as well as *terminus post quem* for the main phases of fortification construction, while the pottery and faunal remains are hoped to shed some light on everyday activities in the area. With those analyses in hand, comparisons with other sites will be made possible since, as said at the beginning of this article, the Banganarti fortifications are unique and medieval parallels based solely on the architecture of the defenses are nowhere to be found in Nubia.

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Selib 3. Pottery from the midden

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Abstract: The paper discusses some preliminary research on pottery from the refuse dump at Selib 3. The assemblage comprised a rich repertoire of tableware, cooking and transport vessels. A striking feature of this collection is the abundance of imported products, some fine ware vessels (plates, small bottles etc.) but mostly amphorae, from Egypt and from the Eastern Mediterranean. The material from Selib 3 represents a homogenous chronological assemblage that can be placed in the 6th and early 7th century AD.

Keywords: Selib, refuse dump, pottery, Transitional/early Christian period, 6th–7th century, tableware, cooking vessels, amphorae, oil lamps

The pottery discussed in this paper comes from a series of small trial pits that the author excavated at the site of Selib 3 in the 2014/2015 and 2016 seasons [Fig. 1]. The objective was to examine an area distinguished by a dense scatter of potsherds overlying a long anomaly observed on the magnetic map (for more on the results of the survey and archaeological work, see Żurawski 2016). Trial pits revealed a thick stratum of grayish-brown soil mixed with ashes, charcoal and red brick rubble intercalated with layers of aeolian sand.

The pottery deposit consisted of a large number of vessels, mostly in very fragmented state and often with traces of burning, hindering examination and interpretation of the material. Detailed quantification was undertaken with the general methods proposed by Orton, Tyers

and Vince (1993: 166–175) and involved class-by-class quantification of rims, bases, handles, and body sherds (RBHS), each quantified separately. The documentation process included records of: form, fabric, decoration, weight and sherd type. Overall, 350 kg of ceramics were processed, with the total number of sherds close to 11,000, including about 3000 diagnostic fragments.

The pottery from all the trial pits came from a single extended context, hence it was analyzed and presented as one group. As will be argued later, the chronological range of the material is rather tight and represents activities at the site that could have lasted no longer than a few decades, from 50 to 100 years.

For the purpose of a functional analysis, the fragments were divided into six typological vessel groups: table (29%

(14.5%) and miscellaneous ceramic finds that did not fit in the other categories (0.5%).

Almost every third potsherd of the assemblage represented table vessels, used for consumption and distribution of beverages and food. This group consisted of small bowls with rounded base, middle-sized footed bowls and plates, middle- to larger-sized bowls with straight or flaring walls, as well as closed forms such as bottles with sloping shoulders or cylindrical neck, rounded squat pots, and singularly represented pitchers or flasks [Fig. 2]. Most of them were made of Nile silt, although mixed fabrics and use of

kaolinitic clay was also noted. There were also vessels of imported fabrics, mostly of Upper Egyptian or Lower Nubian origin.

Small bowls or cups with rounded bottoms were the most common in this group. Hemispherical or semi-globular bowls, as they are often described, are drinking-related vessels most fitted for individual use. They were indeed the most popular form in the assemblage, representing mainly the red-slip variant [Fig. 2: RHB type] (52% of the table ware, which equals 15% of the total assemblage) but

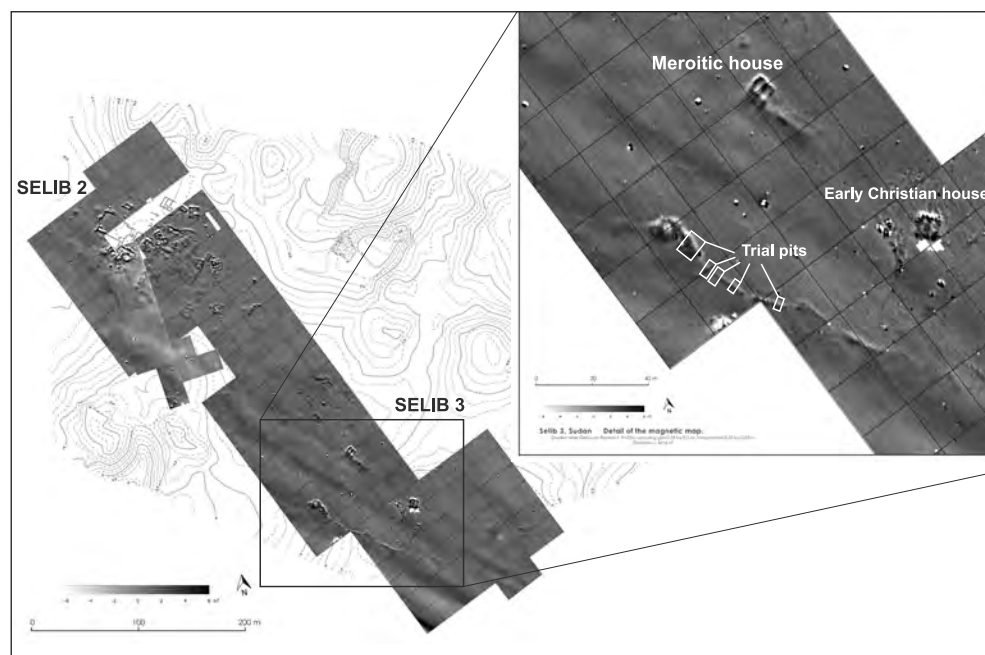


Fig. 1. Magnetic map of the Selib area with the location of trenches (Selib Project/plan T. Herbach, R. Ryndziewicz; editing A. Cedro)

vessels with white slip were also quite numerous (WHB, 3%) as were those in grey ware (GHB, 2%), the latter occurring very rarely among Nubian pottery (see Bagińska 2008: 366, Fig. 3a–c). While many vessel forms present in the assemblage follow models derived from late Roman pottery, and adopted from other regions, the hemispherical bowls are an indigenous contribution of Nubian potters. They were abundant in the earliest levels of the pottery kilns in Old Dongola (Pluskota 2001: 361–363, Fig. 6), and widespread in the whole region in the Transitional/early Christian period (see Phillips 2003: Pls 33, 40).

Red-slipped hemispherical bowls were usually found with one of two kinds of decoration: incised or painted. The first was in the form of grooves, from one to five, engraved 1–2 cm below the rim [Fig. 3: CSC.413, 415, 416]. This decoration was usually associated with more flattened

forms. Their origin can be derived from the post-Meroitic bowls with grooves, best known from tumulus graves, e.g., Jebel Ghaddar North (Żurawski and El-Tayeb 1994: 313–315) and Hammur Abbasiya (Phillips and El-Tayeb 2003: Pl. 4).

Painted decoration was often limited to a simple black stripe on the rim, sometimes, though, other elements, a single groove or painted motifs, were added. More complex ornaments were usually arranged in metope-like motifs or bands, with a yellowish background and black highlighting or these colors applied in reverse, using designs such as cross-hatching, diamonds, guilloche or festoon friezes, as well as Christian-related symbols, mostly variations of a cross [Fig. 3: CSC.242, 397, 245]. Identical motifs were found on vessels from the R1 pottery-kiln-site in Dongola (Pluskota 1991: 42–43)

The repertoire of motifs used in the decoration of white-slipped [Fig. 4: CSC.

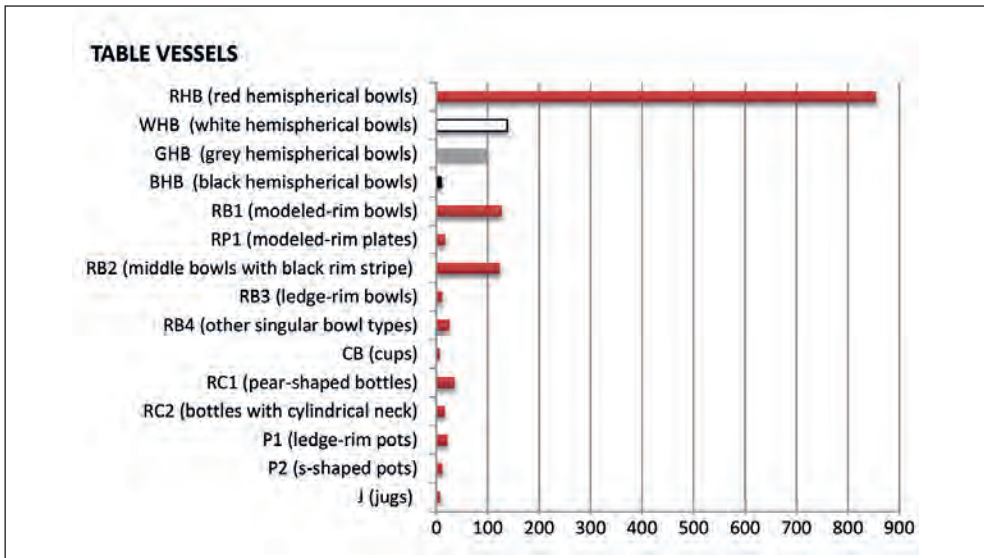


Fig. 2. Distribution of tableware vessel diagnostic sherds

31, 387, 388, 393, 447] and grey bowls [Fig. 4: CSC.39] was much more diverse. The layouts and patterns were unique. Some inspiration in the choice of motifs and techniques could have derived from Meroitic pottery traditions. Not only the decoration but also the excellent quality of these products continued in fact the technological achievements of the previous era.

Small bowls with extremely thin walls, made of kaolinite or mixed fine clay and often decorated with simple stamps, such

as concentric circles, ovals or diamonds, were exceptionally rare [Fig. 6]. These vessels represent the highest technology standard in Nubian pottery. They were fired either in an oxidised or reduced atmosphere, the latter resulting in vessels with hard bodies of a color ranging from light to very dark grey [Fig. 6: CSC.391, 505, 506].

Modest but noteworthy is a group of cups with grooved outer surface covered with dark-brown slip, additionally painted with yellow crosshatching, and white matt

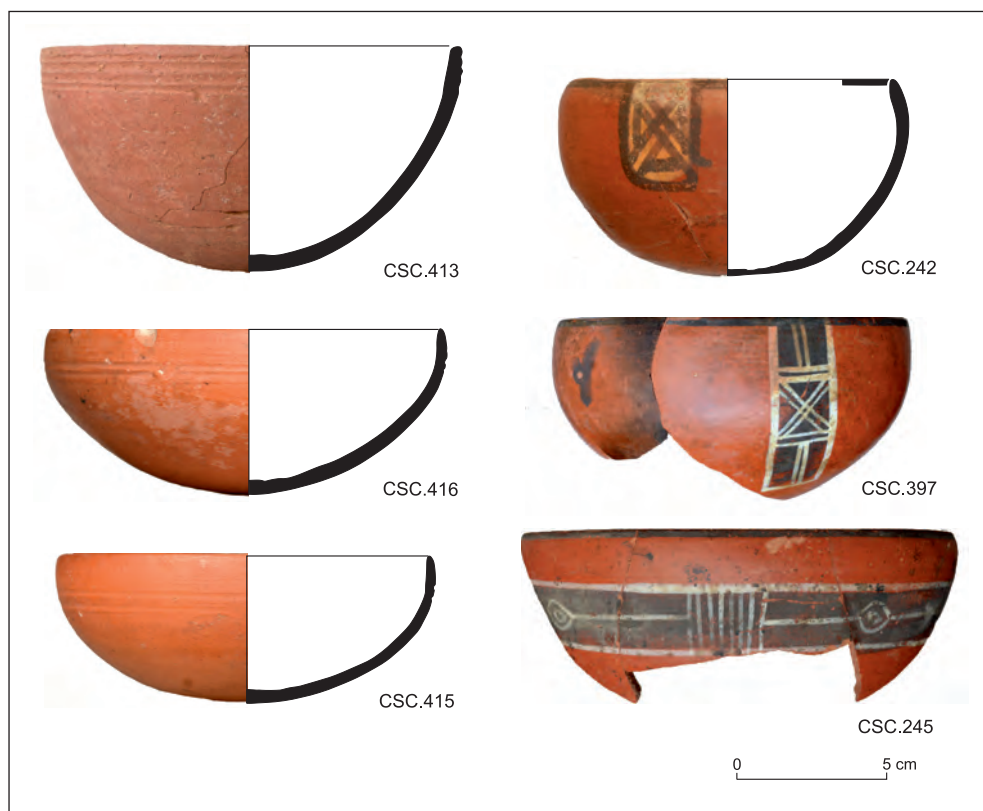


Fig. 3. Red ware hemispherical bowls

Selib Project/all drawings A. Cedro, photos P. Terendy and A. Cedro



Fig. 4. Rounded bowls of white and grey ware



Fig. 5. Cups with grooved and painted walls

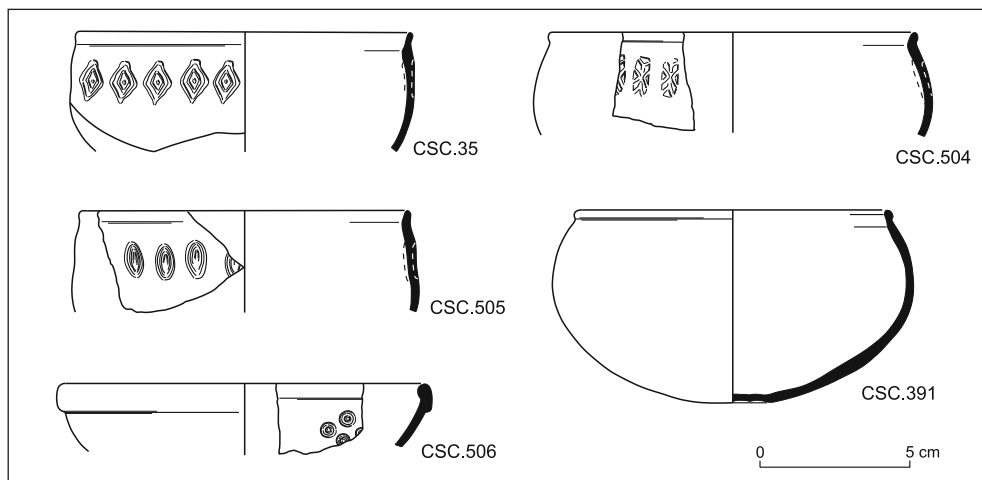


Fig. 6. White and grey bowls made of kaolinitic clay

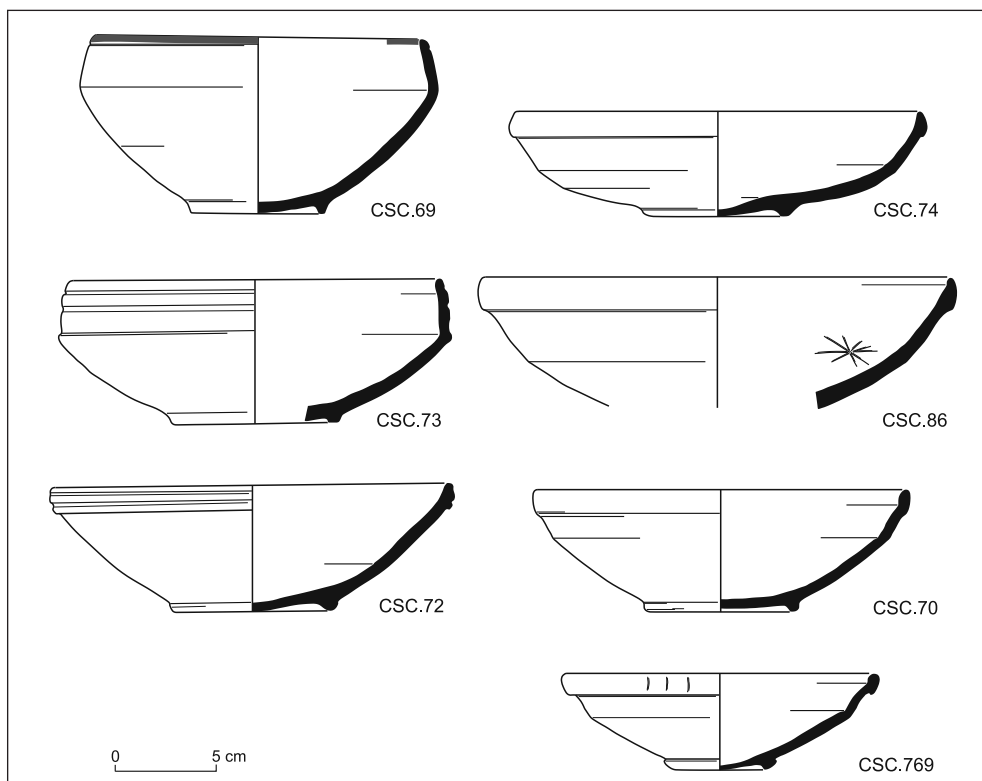


Fig. 7. Footed bowls and plates inspired by Late Roman pottery

interior [Fig. 5: CSC.228, 230]. They were made of a soft, powdery fabric of pinkish color and certainly were not a product of the local potteries.

Bowls [Fig. 2: RB1] and plates [Fig. 2: RP1] of the Red Ware family, distinguished by their ring bases and modelled or grooved rims were distinctive group, accounting for 9% of the table vessels (2.63% of the total assemblage) [Fig. 7]. They best reflect the aesthetic trends, mentioned above, that dominated the Mediterranean in the late Roman period. Similar forms were produced in many workshops along the Nile Valley in the 6th and 7th century AD, from Soba down to Alexandria (see Hayes 1972). Vessels from Selib were executed mostly

in local fabrics, possibly produced in the Dongolan pottery workshops (Pluskota 2001: Fig. 8), but some imported products of Upper Egyptian fabrics were also identified in the assemblage.

The percentage share of tableware closed forms: bottles, pots and pitchers [Fig. 8], was relatively low. All of them constituted less than 2.2% of the finds (7.57% of the table vessels). Among this group, red-slipped bottles with sloping shoulders, grooved rims, and rounded bottoms were predominant [Fig. 2: RC1]. Some of them bear decoration of a similar style as the hemispherical red-slip bowls, with black stripes over the rims, grooves on the shoulders or bands painted in yellow and black [Fig. 8: CSC.198, 199].

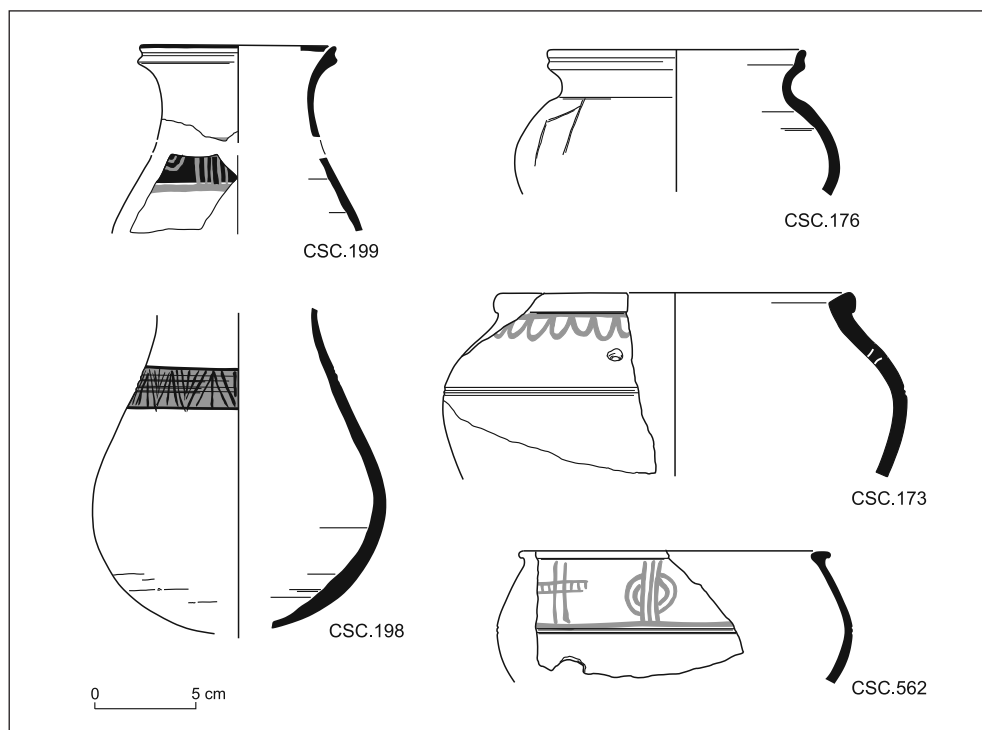


Fig. 8. Red ware closed forms: bottles (CSC.198, 199) and pots (CSC.176, 173, 562)

Similar vessels were also found in the earliest phases of the Dongolan ceramic potteries (Pluskota 1991: Fig. 47), and in the earliest phases of occupation on the Citadel or Kom A (Danys-Lasek 2012: 323, Fig. 6).

The group of closed forms also included small pots with everted or ledge rims and 'S-shaped' profiles. They were often decorated with a yellow painted stripe directly under the rim, and with attached festoons [Fig. 8: CSC.176, 173, 562].

COOKING VESSELS

The group of pottery of utilitarian purpose associated with food preparation and processing consisted of three general types, with sherds distributed quite evenly between them: pots (8.9% of the total assemblage), bowls (11.4%) and *dokat* (sing. *doka*, 8.1%). They were all handmade using similar techniques. They also shared other traits such as the fabric, which was Nile silt with chaff temper in varying proportions, and surface treatment such as burnishing and/or texturing with mat impressions. Depending on the firing, the color of the surface, if not coated with soot or burned with use, was mostly red, ranging from dark-plum or brown-red (pots and *dokat*) to a lighter more orange shade (mostly found on bowls). Black vessels fired in a reduced atmosphere were very rare.

Cooking pots from the Selib 3 midden, globular with a rounded base and everted rim, represent one of the most common forms of Nubian pottery [Fig. 9: CSC.340, 349, 303, 330, 811]. Vessels of this kind are encountered in almost every settlement throughout the Christian era. But while they become quite standardized in later periods (from the Classic Christian onwards), the vessels from the analyzed assemblage still represent some range of variants, differentiated by the shape of rim and neck, surface finishing as well as

decoration, which is completely missing in the later forms.

Different techniques were applied usually in the surface treatment of the vessel body, which can be divided into three zones. The upper part, a few centimeters along the orifice outside and often inside as well, was red-slipped and burnished. Below the shoulders the main body was usually left rough, sometimes textured with mat, basket or fabric impressions [Fig. 9: CSC.349, 303]. This last feature is sometimes treated as decoration, but it resulted from the forming process and was primarily functional, giving additional friction and making the pot easier to grip. The only intentional decoration was usually in the form of an incised geometrical pattern on the shoulders where the burnished zone ends [Fig. 9: CSC.340, 330]. The bottom part was additionally roughed by impressing sticks or fingers, nicking, applying a clay solution and roughing the new surface [Fig. 9: CSC.811].

Pots differed in size and capacity: the smallest example had a rim diameter of 10 cm, while the biggest did not exceed 25 cm. However, two rim diameter sizes were the most common, namely 15–17 cm and 22–24 cm with an estimated capacity of 4.5–6 l and 7.5–10 l, respectively.

Bowl fragments were the most numerous in the cooking vessels category. Rim

diameters ranged between 16 and 40 cm (the most frequent being 21–25 cm). The interior of the vessels was carefully burnished as a rule. The same treatment was often repeated on the exterior, but only in the case of smaller vessels. Otherwise, the outer surface was rather roughed, usually with visible mat impressions. Some bowls had small lug handles attached to the rim, often with a finger-size dimple in the middle. Ornaments were extremely rare. One unique bowl, distinguished by its restricted form and black burnish, had simple decoration in the form of repeated

groups of four vertical incisions [Fig. 9: CSC.810]. Painted decoration, mostly in the form of white bands, occurred seldom. Two other bowls, with wide spouts of 5–6 cm in diameter, attached below the rim, were also identified.

The *doka* is a distinctive Nubian vessel for bread baking generally associated with pottery from the Christian and later periods. The *dokat* from the Selib assemblage [Fig. 10] resembled the bowls in many aspects and wall thickness was sometimes the only distinguishing criterion between the two

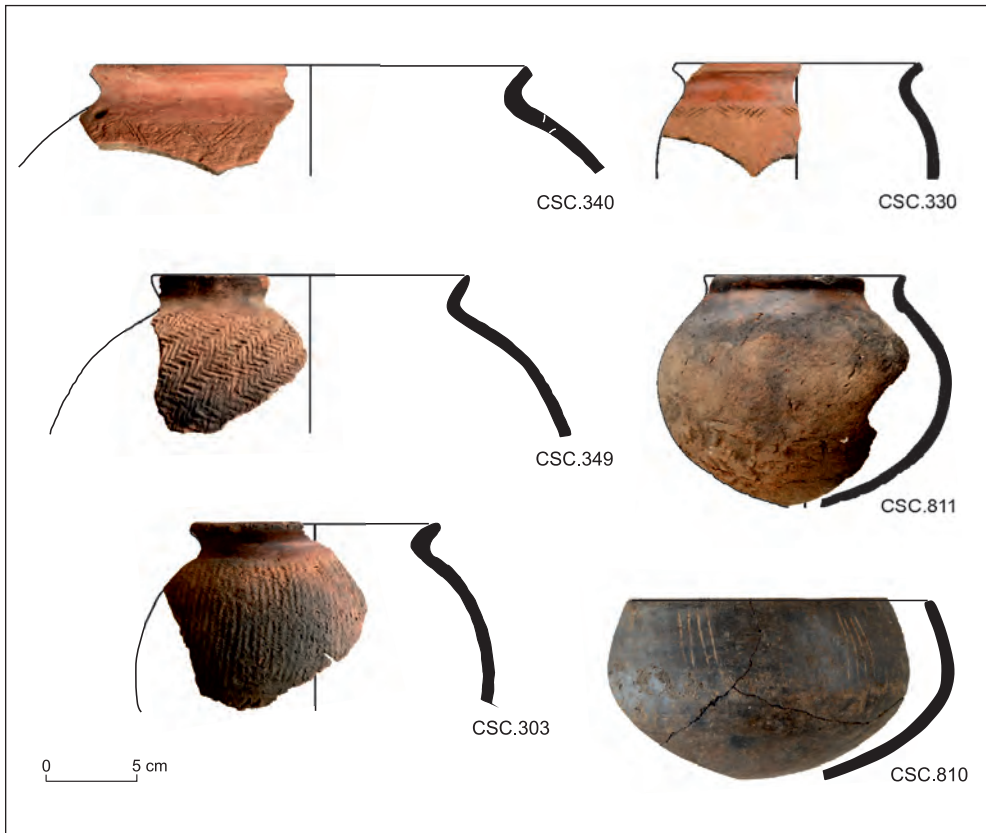


Fig. 9. Cooking vessels: pots (inv. nos CSC.340, 349, 303, 330, 811) and bowl (inv. no. CSC.810)

types. The *doka* rim was usually thickened and the top often incised with diagonal or crosshatched lines. The interior was precisely burnished, while the exterior was treated in ways similar to the cooking pots, that is, rough or mat-impressed surface; the almost-flat base was always roughened much like the pots [Fig. 10 top]. Recent evidence from Meroe (Grzymski 2003: 61) and the Fourth Cataract region (Thomas 2008: 66–67 and Fig. 3) has suggested that the *doka* may have actually been introduced into the middle Nile at an earlier date, possibly in the late Meroitic period (2nd–3rd century AD).

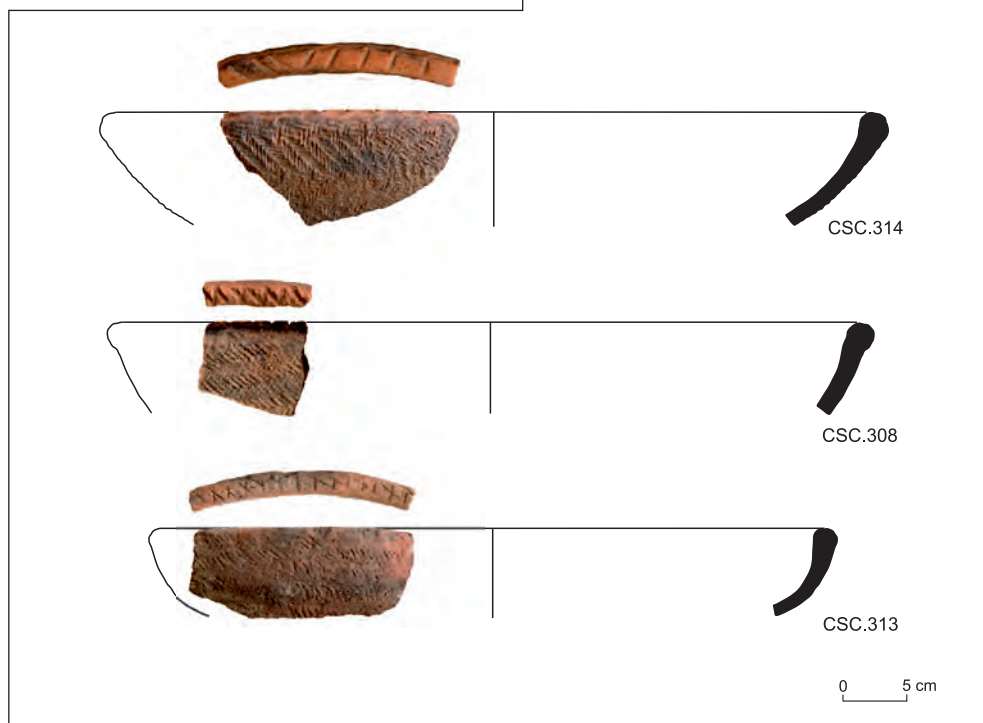


Fig. 10. *Dokat*: top, complete vessel with roughened bottom; bottom, fragments with incised rims

STORAGE

A clear division between vessels used for cooking and for storage purposes is not always obvious as objects could have had multiple functions. Since the analysis of the assemblage from Selib 3 was based not on complete vessels but on sherds, usage identification was sometimes even more ambiguous. Therefore, for the sake of convenience, large vessels well suited to the purpose of keeping liquids or dry food products due to their size were placed in the storage category. They could be both hand-

and wheel-made and were characterized by thick walls and coarse fabric.

Wheel-made storage vessels included red-slipped and unslipped jars, both open and closed form, bottles and large bowls. The handmade group (2.5% of the total assemblage) consisted of bottles of the 'beer-jar' type, and short-necked, wide-mouthed jars [Fig. 11]. The first type was characterized by a tall narrow neck, with flaring rim, smoothed and accurately burnished from the rim to the shoulders,



Fig. 11. Necks of hand-made jars and bottles

and a globular body that often had an impressed mat pattern on the surface. Most of the fragments in the assemblage represented the upper part of the vessels, the tendency being for the vessels to break along the joint between neck and the rest of the body. Therefore, a full characteristic of the type cannot be established from this assemblage. There is no doubt, however, that they represent a type morphologically similar to the so-called beer-jars best

known from the post-Meroitic tumulus graves (see Phillips and El-Tayeb 2003: Pls 3, 5–6, 10; El-Tayeb 2012: Figs 32, 37).

Among the wide-mouthed jars, one particular neck fragment bears special significance, having an inscription in Greek letters, ΣΕΛΛΗΝΗ, incised on it [see *Fig. 11*: CSC.266]. It was interpreted as a record of the date based on a lunar calendar (see Żurawski 2016: 367, *Fig. 16*).

TRANSPORTATION

Fragments of vessels used for transporting goods, mainly amphorae, made up a sizeable group (almost 15% of the total assemblage) and comprised both local and imported wares, the latter being significantly more common. Local products were represented by amphorae that can be associated with Dongolan workshops, well known from the first production levels of kiln R1 (Pluskota 2003: 363) and from other areas of the city (Danys 2015: 118–121). The fragmentary state of preservation does not allow for a specification of the type, but the form of the necks and fragments with light yellow painted monograms fall in Krzysztof Pluskota's earliest type A (2003: *Fig. 9*). Vessels of this type are said to imitate Upper Egyptian ware, produced mostly in the vicinity of Aswan and imported to Nubia in great numbers (Bagińska 2016: 35–41).

These pinkish south Egyptian products were predominant among the imported amphorae. Many were preserved as large sherds. Some examples [*Fig. 13*] are paralleled by type K715 from Elephantine, which was in use from the 6th to the end

of the 7th century (Gempeler 1992: 191, *Fig. 122,1–5*). Examples of Meroitic bag-shaped LRA 5/6 (see Dixneuf 2011: 142–145), characteristic for their yellow slip, combed decoration on the upper part and ribbing below, were present among the imported amphorae, although only as body fragments. In Nubia they were known from Nobadia, Qasr Ibrim (Adams 1996: Pl. 18c) and Meinarti (Adams 2001: Pl. 30e: 1, 2), but a significant representation of this type was identified in Dongola as well (Godlewski 2002: 209, *Fig. 5*; Danys 2015: 123–124).

Another small group of imported fragments represented the LRA 7 type [*Fig. 12*]. These products of Middle Egyptian workshops dominated the late Roman markets along the Egyptian Nile Valley and were recorded on Nubian sites as well (see Adams 1986: 567–568, for the more recent finds, see Danys 2015: 122–123). A few sherds of LRA 1 type produced in the Eastern Mediterranean, mainly Cilicia and Cyprus (see Empereur and Picon 1989: 236–239) were also identified; such vessels have been attested in Nubia mostly at sites associated with

post-Meroitic culture in the north, e.g., Ballaṇa and Qustul, as well as Faras (Adams 1986: 580). In Makuria, apart from the capital city of Dongola (Danys 2015: 124), LRA 1 fragments were recorded in the fortresses of Bakhit and Deiga (Żurawski 2003: 372)



Fig. 12. Fragments of Late Roman Amphorae 7

Fig. 13. Imported amphorae from the Aswan area



QAWADIS

The *qadus* (pl. *qawadis*) is a vessel used for drawing water by means of a water wheel (*saqia*), and the type was singled out as a separate type category because of its distinctive function and a high

representation in the assemblage (more than 14%). The earliest water-wheel pots were attested in Lower Nubia, around the 3rd–4th century AD, e.g., in Arminna West (Trigger 1967: 32–33) and Qasr Ibrim

(Edwards 2004: 165). This technological achievement, which increased the farmland that could be cultivated and intensified agriculture along the Nile, was soon transferred to the regions upstream. Singular finds of *qadus* sherds were recently

identified in the Fourth Cataract region in a deposit dated to the 4th century AD (Thomas 2008: 66); however, it is not until the Christian period that the *saqia* became an inherent element of the Nile Valley landscape. Abundant finds of *qadus* sherds

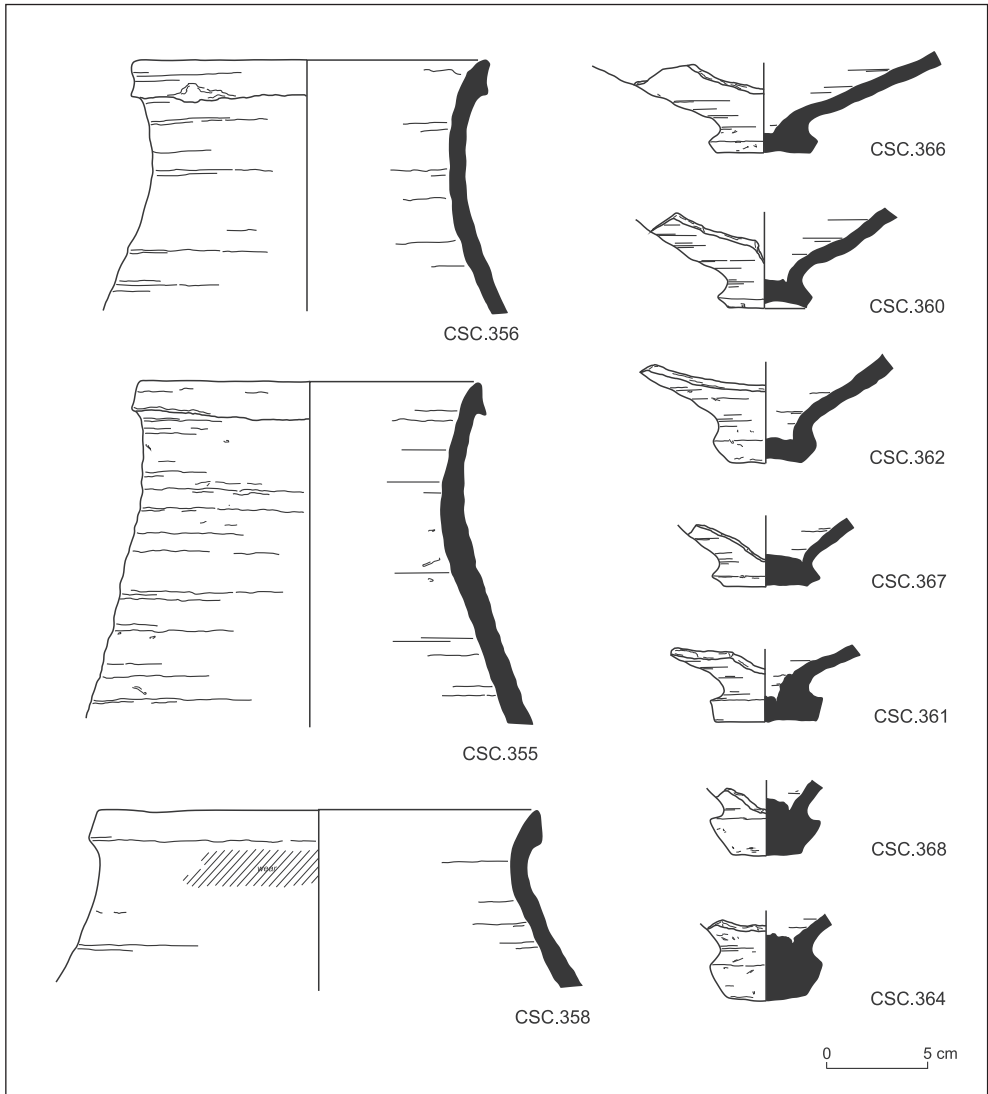


Fig. 14. *Qawadis*: examples of rims and knobs

in Selib indicate intensive use of the water wheel in the period associated with the use of this pottery. Traces of wear at places where the rope was attached were visible on many sherds [Fig. 14: CSC.358].

The suggestion put forward by William Adams (1986: 105) to use the *qadus* knob for determining its chronology is contradicted by the material from

Selib 3, where a variety of profile types comes from a limited time phase. The fragmented material from the deposit permitted only a generic characteristic of the pots: the walls were significantly thin, with distinct ribbing on the exterior. Rim diameters ranged from 15 cm to 23 cm [Fig. 14: CSC.356, 355, 358], while knob diameters were from 4 cm to 5.5 cm.

MISCELLANEOUS

A group of vessels that did not belong to any of the main functional types described above included small bottles, flasks, oil lamps and some unidentified objects. Well represented were small, squat bottles with

flanged necks, made of pinkish, fine paste with slip that ranged from deep red to a light pink hue [Fig. 15: CSC.172, 527, 201, 524]. Their fabric suggests an Upper Egyptian/Aswan origin and analogous

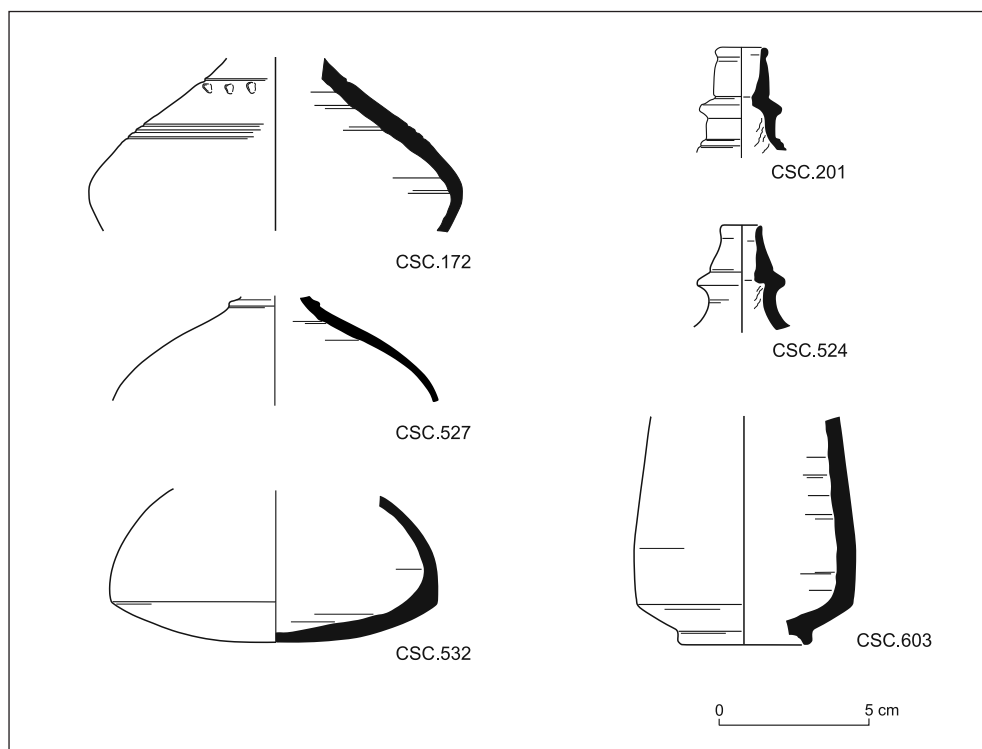


Fig. 15. Small bottles made of pink 'Aswan' clay

examples are known from 6th and 7th century Egypt (see Gempeler 1992: 236, Fig. 77,16–19). Recently they were found at the nearby site of Selib 1, in contexts

dated to the 6th/7th century AD (Cedro 2016: Fig. 25E).

Unique in the assemblage was a small chalice-like artifact, made of greyish marl



Fig. 16. *Presumed censer*



Fig. 17. *Fragments of oil lamps*

clay, almost complete with a small piece of the rim missing (new break) [Fig. 16]. The lack of slip and high clay porosity exclude its usage for liquids and it was interpreted as an incense burner, though no traces of burn or soot were visible.

The ceramic assemblage from Selib 3 contained also several fragments of oil lamps, including two almost complete examples, made of pinkish Aswan clay [Fig. 17]. Among the finds were two distinctive forms: a “candle holder” type

and the so-called Aladdin type, both associated with the pottery repertoire of the late post-Meroitic and Transitional/early Christian periods. The “Aladdin” type was conventionally attributed to Lower Nubia (Adams 1986: 104), but numerous discoveries of such oil lamps made recently on Makurian sites, e.g., Selib 1 (Cedro 2016: Fig. 20), Abkur, el-Zuma (El-Tayeb, Skowrońska, and Czyżewska 2016: Fig. 28) contradict this assumption.

CONCLUSION

The deposit of ceramics from the trial pits excavated at Selib 3 contained a high proportion of tablewares and cooking vessels suggesting that it represents a habitable domestic context. A settlement connected with this pottery has yet to be found, but it should be near the refuse dump, the size of which suggests that it did not result from a single episode of rubbish removal. The homogenous nature of the fill excludes any longer interruptions, hence the accumulation of the rubbish must have been a continuous process, lasting a few decades conceivably.

Some features of the pottery from the Selib 3 midden can be attributed to as early as the late post-Meroitic period (late 5th to mid 6th century AD). This chronological premise should be treated with due caution as elements of material culture are well known to exceed the boundaries of set

historical dates. Most of the imported ‘fine ware’ and amphorae place this assemblage in the 6th or the beginning of the 7th century AD. This corresponds well with the dating of the local pottery, which is based on parallels with the products of Dongolan workshops dated from the mid 6th to the 7th century AD.

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The Kushite temple in Soniyat after the 2016 season

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Abstract: Archaeological fieldwork in the Kushite temple in Soniyat (Tergis 40) was conducted from 1997 to 2001 with an additional short season in 2013. A team supervised by Bogdan Żurawski returned to the site in 2016 to continue the excavation of the southern section of the complex. Remains of substantial mud-brick architecture were discovered together with large quantities of small finds (potsherds and objects made of metal, stone and faience) and faunal remains. A compact layer of Nile alluvial deposits, about 0.10 m thick, covering the remains represented evidence most probably of a flood. A single stone column was visible at that level. The spatial distribution of the discovered architectural features matches the temple orientation; they can be interpreted as the remains of a pylon with an entrance flanked by columns.

Keywords: Kushite temple, Kushite architecture, Meroitic period, Napatan period, Soniyat, Sudan, Middle Nile, archaeological excavations

Soniyat is a hamlet in the Southern Dongola Reach, located on the right bank of the Nile, between the villages of Abkur and Affad (18°1'55.73"N/31°5'57.82"E). First mentioned by Lord Prudhoe (1829: 47), it failed however to be marked on the 1:250,000 Sudan Survey Maps. The name in local Arabic dialect means "plenty of sandstone", which suggests potential archaeological remains in the area (Żurawski 2003: 83). This led Bogdan Żurawski to visit briefly in 1991, guided there by the villagers from Abkur. He identified the remains of a stone temple in a sandy plain to the south of the hamlet. In 1997, he returned with a team (Żurawski 1998b). The site was coded

Tergis 40 in the Southern Dongola Reach Survey. The surface was cleaned and trial pits dug (Żurawski 2003: 83–84). A cache of bronze, stone and faience figures, natural pebbles and ferruginous stones of bizarre shape was discovered next to the southeastern door jamb flanking the entrance to the pronaos. Fieldwork was continued in 1998 (Żurawski 1999: 154–159), 1999 (Żurawski 2000: 216–219) and 2001, yielding more finds that are today in the collection of the Poznań Archaeological Museum (Żurawski 2002: 217–220; 2003: 89, 91–92; Chłodnicki 2015: 145, 164–172, 204–205).

The northern part of the temple was built of stone blocks and was in

a much better state of preservation than the southern mud-brick section, which has suffered from modern agricultural activities. The northern part of the temple was documented in detail, whereas the much eroded southern part was tested only summarily. Many issues concerning the architectural layout of this part of the complex thus remained unexplained. Pottery analysis indicated that the temple was built in the Napatan period and was in use in Meroitic time (Orzechowska 2003: 442–443). It then fell into ruin and was occupied by squatters in medieval and post-medieval times (Żurawski 2003: 246, 248).

Faunal remains from the northern, stone-built part of the temple consisted mostly of cattle and sheep/goat leg bones and crania. The osteological remains from the southern section were less homogeneous, including additionally fish, pigs and mollusks (Osypińska 2003: 492). It was difficult to say whether these differences resulted from different religious practices in the different parts of the temple or from later occupation of the southern part.

At least two architectural phases were distinguished. The Napatan-period temple

had a naos consisting of three chambers, a transverse pronaos and a small transverse hypostyle hall with four columns. It was a typical small, multi-roomed temple (Wenig 1984: 392–394; Wolf 2006: 244). The only baffling element was a small room opening onto the central chamber, which effectively encroached on one of the side chambers. The Meroitic-period temple incorporated earlier architecture, adding two corridor-like chambers on either side of the naos and pronaos to enlarge the sacral space and expanding the hypostyle hall to 16 columns. On the south, the space was limited by a large pylon entrance built of mud brick and stone blocks (Żurawski 2002: 218–219).

Żurawski took up Karl-Heinze Priesé's (1973) identification of the site, situated in the *mantiga* (district) of Tergis, with the Tergedum known from the itinerary of the Neronian expedition to the sources of the Nile and suggested that the temple and its surroundings might have been the place visited by Roman centurions in the 1st century AD (Żurawski 1998a: 79).

The temple is not the only man-made structure visible on the surface of the site. Two large stone blocks located

Team

Dates of work: 24–28 January 2016

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NCAM representative: Abdel Raouf Jubara (2016)

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I would like to express my gratitude to Khalid Hamza Abdelrahman and his family for their hospitality during the fieldwork. I would like to thank the residents of Abkur who took part in the excavations for their precision and patience at work. I admire them for their ever present sense of humor, even during unfavorable weather conditions.

approximately 100 m northwest of the temple and oriented same as the sanctuary were tested in 1998 (Żurawski 2003: 246). They were thought of as remains of a temenos wall with a gate leading either to the temple or to the ruins of another sacral building possibly of Napatan date (Żurawski 2002: 220). A geophysical survey in the area in 2001 confirmed the presence of another building or buildings instead of a wall (Misiewicz 2003: 521) and in 2013, a second magnetic survey revealed detailed traces of a large (at least 82 m latitudinally) and regular building with multiple spaces. The shape and size resembled Kushite palaces (Grzyski 2008: 233–236; Maillot 2014: Fig. 4; 2016). Traces of architecture were also recorded to the south of the edifice and to the west of the temple. Additionally, two paleochannels cutting the site were distinguishable on the magnetic map: a bigger one to the south of the temple and a second much smaller to the north, between the temple and the edifice. Building remains cut through the northern channel suggesting that it is an older feature. Large stones visible on the surface were most probably incorporated into

the walls of the edifice, which was otherwise built of mud brick (Żurawski 2015: 378–379). A new question emerged. Were these stones and mud-brick walls of the same phase as the edifice?

Earlier research at Soniyat had demonstrated its potential interest for the Kushite history of the region. The site is complex and covers a large area. Many issues are still unresolved, like the question of the entrance to the temple which should have been located in the southern part of the complex. Żurawski had suggested a pylon of mudbrick with a stone facing, hypothesizing that it was a later addition in the Meroitic period; he published a visualization of the entrance decorated with motifs common in Kushite religious architecture (Żurawski 2002: Fig. 2). The southern side where the entrance to the temple would have been located was never investigated because of agricultural cultivation in this part of the site. By 2016, however, the fields had been abandoned and were covered with windblown sand. Consultation with the villagers opened the way to scheduling excavation of the temple entrance, which verified in detail the nature of this architectural feature.

METHODOLOGY AND FIELDWORK

The first trench (1A), 7.50 m by 6.50 m, located the southern edge of the area excavated earlier under the archaeological dump from that work. This artificial mound was removed with heavy equipment, after which the exploration was continued manually, assuming a modern agricultural fence as a reference for trench alignment due to difficult weather conditions — most of the time a strong winter wind carrying large volumes of sand was blowing and

it was impossible to align with the main temple axis. The southern edge of trench 1A ran along the fence [Figs 1, 2].

The first layer in trench 1A, approximately one meter thick, consisted of yellow sand with small artifacts. Underlying this were hard mud deposits which created a smooth surface that descended slightly toward the south. It was similar to alluvial mud observed on the river bank, suggesting that flood waters from the

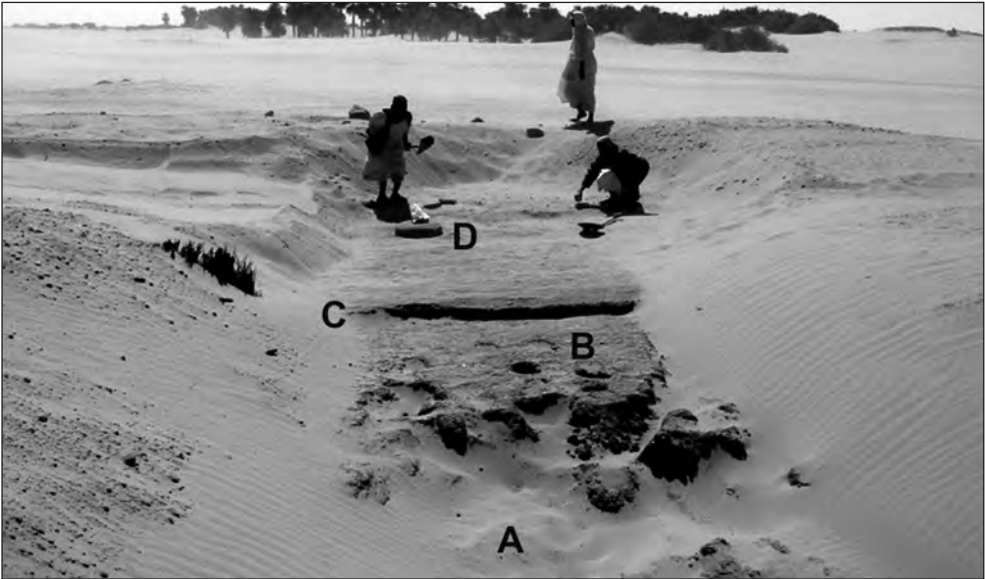


Fig. 1. Excavations in progress: A – area excavated in earlier seasons; B – circular openings in the alluvial surface; C – remains of a fence; D – stone column (Soniyat Project/photo M. Drzewiecki)

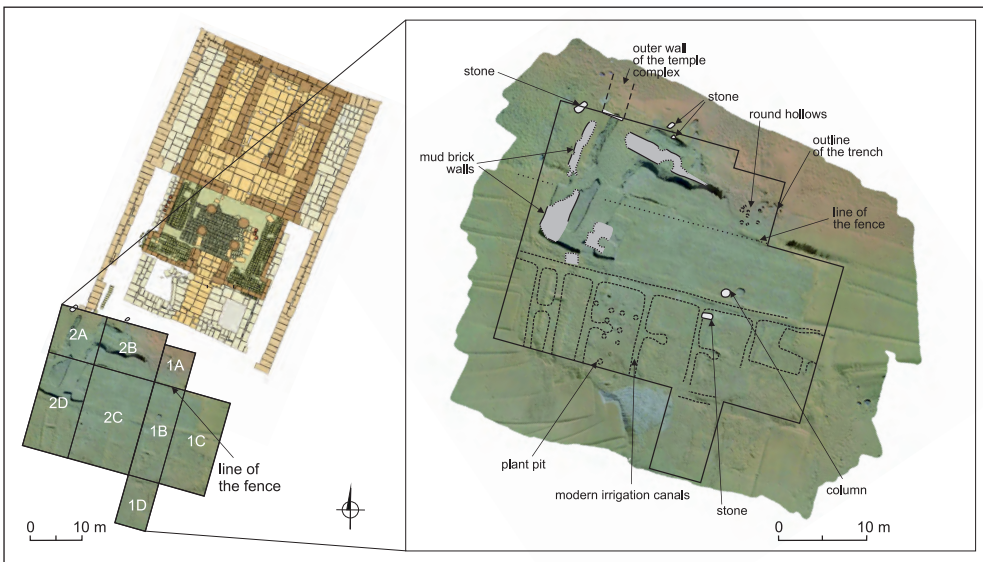


Fig. 2. The temple at Soniyat: left, plan of the temple and location of trenches dug in the 2016 season; inset, orthophoto of the area under excavation with the main features (Soniyat Project/plan after Żurawski 2002: Fig. 1; orthophoto and processing M. Drzewiecki)

Nile had reached Soniyat on at least one occasion. They may even have dissolved parts of the mud-brick structures, adding to the compact layer recorded during

excavations. The surface of this level was cleaned (collecting finds from this level as a separate context), uncovering eight circular features [see *Fig. 2* inset] cutting



Fig. 3. Northern section of the area under excavations: A to E – mud-brick walls; F – stone column (Soniyat Project/photo M. Drzewiecki)



Fig. 4. Eastern section of the area under excavations: A to E – mud-brick walls (Soniyat Project/photo M. Drzewiecki)

into the layer. They were of different diameter extending from 100 mm to 250 mm and reaching from 30 mm to 180 mm in depth. They can be interpreted as postholes, evidencing a light, wooden(?) structure in this spot.

The next trench immediately to the south [1B; see *Fig. 2* left] was located already in the abandoned fields. It was 18 m by 6.50 m and was positioned on the site of the potential entrance and approach to the complex. The first layer again consisted of yellow sand, accumulated over a packed layer of water-accumulated alluvial deposits brought from the Nile. Surface cleaning revealed long, linear hollows, about 50–150 mm deep, as well as a single standing stone column (0.45 m in diameter) projecting up to about 0.10 m from the packed surface [see *Fig. 1*]. The column seemed to be connected with the temple, being located on line with the main axis [see *Fig. 6*]. An eroded stone block was recorded next to the column [*Fig. 2* inset]. Trenches 1C, 1D and 2C were opened in search of other columns and blocks, but failed to locate any architectural elements down to the top of the alluvial deposits. Linear hollows were recorded in all of the trenches, forming a regular pattern, most probably a ghost outline of the irrigation

system, most probably of recent date [see *Fig. 2* inset]. The conclusion from this observation is that all traces observed in the alluvial surface are modern remains, with the exception of the column and the stone block.

Trench 2A in the southwestern corner of the complex was opened in the old archaeological dig and was later extended east (2B) and south (2D) [see *Fig. 2*]. It aimed to explore the partly excavated mud-brick structure interpreted as the side of a temple pylon. Cutting through the alluvial deposits, the excavation revealed faint traces of mud-brick walls just below the packed surface [see *Figs 3, 4*]. The layer surrounding the walls consisted of grey sand mixed with lumps of mud and stones, as well as large quantities of potsherds. The mud-brick walls were from 1 m to 2.50 m thick. The best preserved architecture was recorded in trench 2A, where it reached a height up to 0.40 m maximum, that is, three rows of bricks. Moving southward, the state of preservation declined to a single row of bricks and about 0.10 m of height. All of the walls were founded on the same level, suggesting that they may have been built at the same time or even as one architectural project.

SMALL FINDS AND FAUNAL REMAINS

Archaeological material was collected from three stratigraphic layers with the exception of trench 2A, which was opened in an old archaeological trench [*Fig. 5*]. The first from the top was a layer of yellow, windblown sand (up to 1 m thick) which was superimposed upon Nile alluvial deposits about 0.10 m thick. Finds from the surface of these deposits

were collected as one context (the deposits themselves were void of any artifacts). Below this was a layer consisting of grey sand mixed with mud lumps and stones (up to 0.50 m thick). Remains of mud-brick walls were recorded in this layer in trenches 2B and 2D. Due to time constraints, exploration was stopped about 0.20 m below the wall foundation,

just when a new layer of gravel and stones had started to emerge.

Altogether 1979 potsherds were collected and inventoried (they are stored in a new storage facility constructed at the site of Selib). Other small finds included eight stone objects, eight shells, four small pieces of unidentified metal artifacts (most probably copper alloy) and three faience objects, including a 70 mm high, symbolic representation of a feather (Inv. No. SON/25/2016), which may have been part of a headdress of an anthropomorphic(?) figurine. Faunal

remains were also recorded (altogether 90 fragments of bone).

Statistically, the lowest explored layer (only in trenches 2B and 2D) yielded relatively the largest number of finds: 55 bone fragments, 789 potsherds, all the shells, four stone objects and one metal artifact (but no faience). They may be associated with the mud-brick architecture and the following periods, sealed by the alluvial deposit. Further studies and geomorphological research should be conducted to estimate the date of the potential flood event.

TRENCH 1	TRENCH 2	TRENCH 2A
Layer 1 thickness 0.5 - 1 m yellow sand	Layer 1 thickness 0.5 - 1 m yellow sand	Layer 1 thickness 0.5 - 1.5 m yellow sand (yellow sand, previous archaeological dig)
Layer 2 thickness c. 0.10 m Nile mud + yellow sand artifacts from compacted mud layer cleaning	Layer 2 thickness c. 0.10 m Nile mud + yellow sand artifacts from compacted mud layer cleaning	
compacted mud layer (not explored)	compacted mud layer - no artifacts recorded (thickness c. 0.10 m)	
	Layer 3 thickness c. 0.40 m grey sand + mud lumps + stones layer in which mud brick walls have been recorded	Layer 2 grey sand + stones
	gravel and stones (layer not explored)	gravel and stones (layer not explored)

Fig. 5. Stratigraphy in the area under excavations

RESULTS AND CONCLUSIONS

Remains of mud-brick architecture were recorded in trenches 2A, 2B and 2D where exploration reached below the layer of Nile alluvial deposits. The state of preservation of these remains varied. The re-excavated architecture in trench 2A had suffered considerable decay since its discovery in the 1990s [walls in green at bottom left in *Fig. 6*], but was still in the

best condition. Walls in trench 2B were preserved to a maximum height of about 0.40 m, but were damaged by digging, modern from the west and possibly older from the north and south (the latter may have preceded the flood event as no traces could be discerned when cleaning the Nile alluvial surface). Walls in trench 2D were of massive thickness (up to 2.50 m),

and were preserved to about 0.10 m in height; they had also been disturbed by old digging.

The walls were not connected, but were oriented in a similar way with the exception of wall E [see *Fig. 4*], which was much thinner and recorded in a small section. Moreover, the walls were founded on the same level, suggesting that they were raised as one architectural project. The gaps between them could be the result of the poor state of preservation. The orientation was in line with the direction of the main axis of the temple, suggesting a relation between them. Could these be the remains of the southern part of the temple complex? The pylon perhaps? If yes, then it must have been much bigger than expected and was furnished with an 8 m wide empty space inside, which may have been a chamber(?) or a large staircase(?) [*Fig. 6*].

The idea of pylons with chambers inside was not a common feature of Kushite and Egyptian temples, but examples are known. A direct parallel can be made with temple C at Tabo, where a space 6–7 m wide was recorded within the pylons (Jacquet-Gordon 1999: *Fig. 1*). There are many examples where staircases were built into the pylon structures, for example, in temple M.6 at Meroe, where there was a space about one meter wide opening into the pylon passage. Although no remains of stairs were recorded, László Török suggested that it could have been a staircase (Török, Hofmann, and Nagy 1997/I: 47; 1997/II: *Fig. 11*). Other Kushite temples had staircases built into the structure of pylons, but they were accessible usually from the courtyard, for example, the first and the second pylon in the Amun Temple at Jebel Barkal (Dunham 1970: Plan V).

Some of the great Egyptian temples had chambers as well as staircases within the pylons, for example the temple in Edfu (Cauville 1984: Plan 2; Fauerbach 2004: *Fig. 1*) and the temple at Philae (Sauneron and Stierlin 1975: 142).

Considering the layout of blocks in the northern corner of the Soniyat pylon, Żurawski had suggested an additional facing with stone blocks. Only one block discovered in 2016 [see *Fig. 2* inset] could be interpreted as possible remains of such an outer surface of the pylon.

The column discovered in trench 2B was in line with the possible pylon as well as with the entrances to the naos and pronaos. This suggested that the column was part of the temple complex. However, it is not clear whether it should be connected

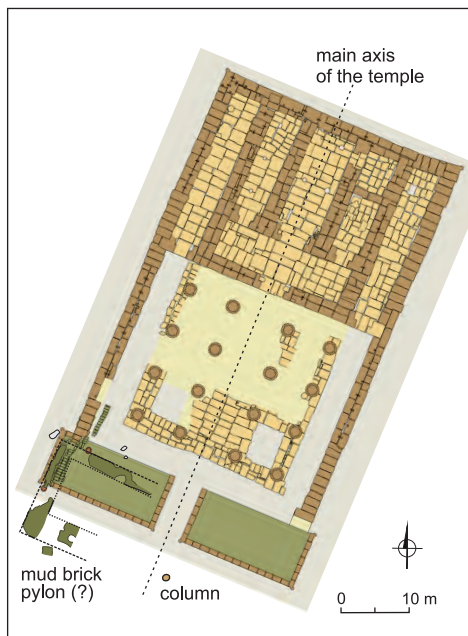


Fig. 6. Location of the pylon (Soniyat project/ drawing M. Drzewiecki; temple plan after Żurawski 2002: Fig. 1)

with the Meroitic mud-brick pylon. The location of the stone facing block not far from the column might confirm to some extent that the column was an integral part of the pylon. It could have flanked the entrance. However, it may be older, as the lower section of the column was not reached during the present excavations due to time constraints. The entrances to the naos and pronaos, built in line with the column, originate from the Napatan phase. The column may have been placed in position during the Napatan period and would indicate a much bigger temple, explaining the presence of the Kushite royal edifice next to it. This hypothesis

needs further research and additional data.

To summarize, the 2016 excavation in front of the temple at Soniyat demonstrated that the mud-brick pylon with stone facing was much bigger than previously expected and that it may have comprised a passage within its gate flanked by stone columns. It may also be theorized, based on the positioning of the column, that the temple from the Napatan phase was much bigger. The southern part of the temple suffered from at least one flood event, which left a deposit of Nile alluvia about 0.10 m thick covering all of the remains.

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Early Makuria Research Project Excavations at el-Zuma, 2017 Preliminary report

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Abstract: During the tenth season of excavations at el-Zuma the mission resumed the previously postponed excavation of the last two tunnels beneath tumuli T.1 and T.4. Both tumuli were classified as Type I burials, based on their large size and unique construction. The exploration of the said two tunnels was essential as each was expected to lead directly to the main burial chamber. Although the chambers were reached, yet they were found seriously rifled. Nonetheless, new modified elements of burial niche construction were discovered. The protection of the tumuli field was also completed during the course of the season.

Keywords: tumuli, el-Zuma, burials, Early Makuria, mound, tunnel, chamber

The tumuli field at el-Zuma has been known, erroneously, as the “El-Zuma Pyramids” since the first half of the 20th century. The first season of the Early Makuria Research Project in the cemetery field (2004–2005) revealed the presence of three types of superstructures still visible on the ground surface and the assumption was made that each of the three categories should have a different type of substructure. Thus, the largest size with a conical shape was designated as Type I. Consequently, the flat-topped middle-sized mounds were classified as Type II, while the smallest mounds, with flat top, were attributed to Type III. Excavation of different tumuli classified according to this system in the first and second seasons

confirmed in effect the proposed classification (Obluski 2007: 400–403; El-Tayeb 2007: 389–399).

The unexpected financial reduction of this season’s budget (about 60%) obliged the mission to make some changes in the original fieldwork plan for the year 2017. It was decided to resume the excavation of tumuli T.1 and T.4. During the sixth season, in 2013, a limited sondage was opened on the southern fringe of tumulus T.4. The main objective was to establish whether or not this tumulus also had an underground tunnel like the other tumuli excavated at this site (i.e., T.2, T.3, T.5, T.6, T.7, and T.8). For the same reason a similar sondage was dug in T.1 during the 2015 season. In both cases, the

mission succeeded in reaching the external shafts and entrances to the tunnels, but neither of the tunnels themselves was explored. The second part of this year's

program focused on adding some more posts around the site perimeter to completely encircle the cemetery and protect it from vehicular traffic.

TUMULUS 4

Tumulus 4 (T.4) is located on the southern side of the cemetery field [*Fig. 1*]. Like the abovementioned tumuli, it has a conical shape, and is built of earth and gravel, covered with small rough black stones. Its maximum preserved diameter is about 34 m with a height of up to 6.20 m, making it one of the largest tumuli designated as Type I burials.

A successful attempt to find the external shaft and the tunnel entrance was made at the end of the sixth season in 2013. Thereafter, for safety reasons the work was suspended till 2017. During the 2017 season work was resumed with the aim of exploring the tunnel in order to reach the burial chamber and thus gain a better

understanding of the burial practice and determine its date. To this end, the external shaft was fully unearthed revealing some damage done by robbers to the top of the tunnel entrance. The external shaft is rectangular in shape, oriented east–west, and measures 3.80 m (E–W) by 2.45 m (N–S) on the ground surface, narrowing towards the bottom, where it measures only 2.00 m × 2.60 m, with a maximum depth of about 3.30 m. Access to the bottom of the shaft was made easy by two steps cut into the southeastern and southwestern corners of the shaft at a depth of about 1.50 m below ground level. The entrance to the tunnel is about 2.70 m wide. During the 2013 season only a stretch 1.50 m from the edge of

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Dates of work: 10 January–26 February 2017

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Archaeologist/surveyor: Magdalena Antos (independent)

Archaeologist/documentalist: Julia Górecka (independent)

Archaeozoologist: Dr. Urszula Iwaszczuk (PCMA UW)

Ceramologist: Ewa Czyżewska-Zalewska (PCMA UW)

Photographers: Adam Kamrowski (Archaeological Museum in Gdańsk), Tomasz Wojtczak (freelance)

Physical anthropology student: Magdalena Srienc (Institute of Archaeology, UW)

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the shaft had been cleared of fill. At a distance of about 2.00 m it appeared that the tunnel was divided into the east and west wings by a partitioning wall cut from the sandstone formation, rather than by pillars such as those constructed in tumuli T.1, T.6, and T.7 (for T.1, see *Fig. 8*; for T.6 and T.7 see El-Tayeb et al 2016: 110–126). The wall itself is about 5.50 m long, provided with one small hole made at a distance of 1.50 m from its southern end. The tunnel height at the entrance point is about 1.62 m, getting lower towards the central area, and measuring about 1.59 m at

its northern end. The eastern wing of the tunnel is only about 8.25 m long, while the western wing is 9.90 m long [*Fig. 2*]. Although both wings come to a dead end at their northern extremity, a small chamber is cut into the west wall of the western wing. The rear entrance of this chamber is cut at about 0.60 m above the floor level of the tunnel. The chamber itself measures approximately 2.70 m in length from north to south and 1.20 m east to west, with a 1.50 m-wide entrance. It was found full of earth from the side of the tunnel, as well as loose sand that had poured into it

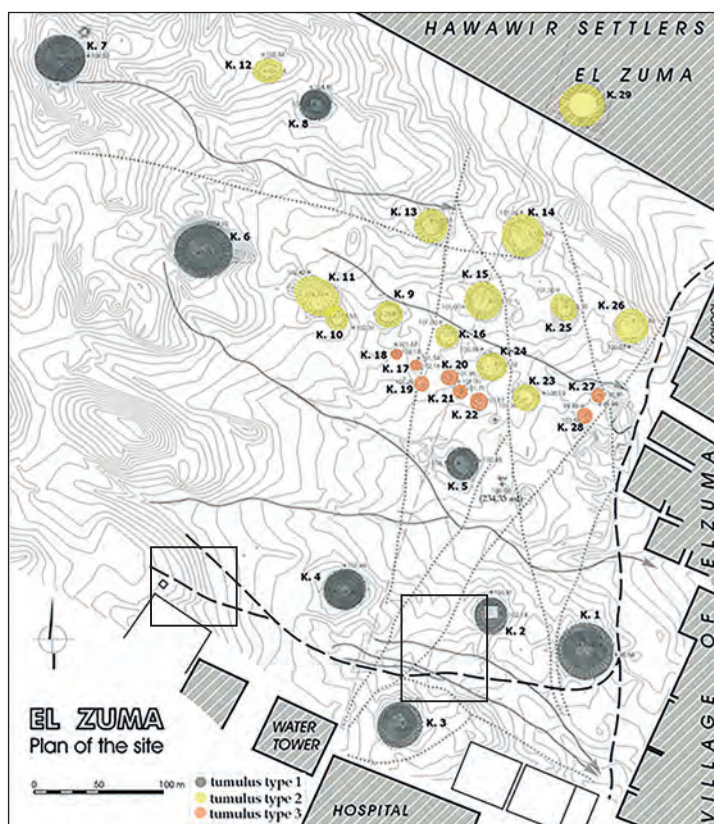


Fig. 1. Plan of the el-Zuma cemetery field (PCMA Early Makuria Research Project/drawing Yassin Mohamed Saeed, digitizing M. Puszarski)

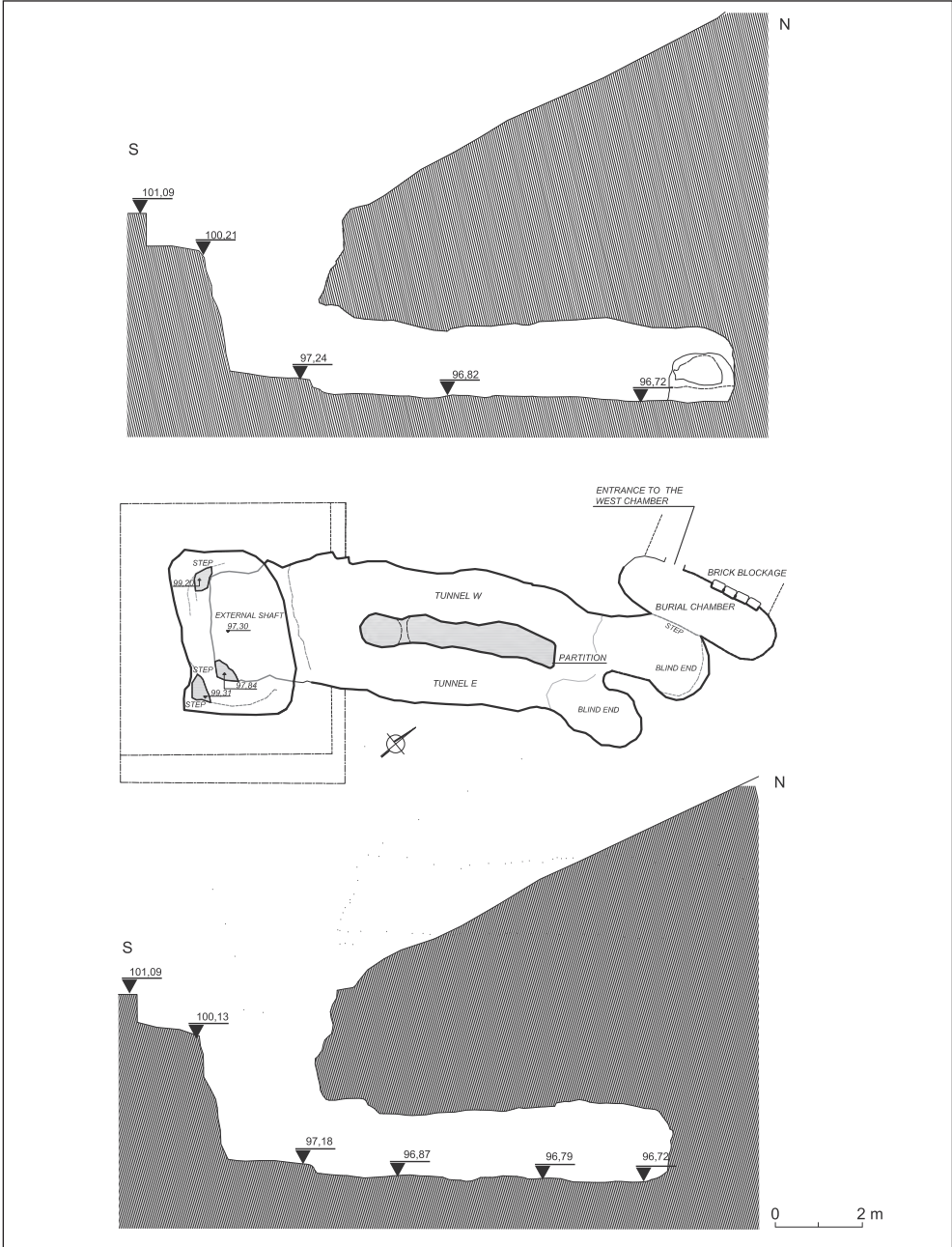


Fig. 2. T.4, plan of the superstructure and tunnels
(PCMA Early Makuria Research Project/drawing M. Antos, E. Czyżewska-Zalewska)

through a hole in its roof, which was later discovered to be dug into the summit of the tumulus [see below, *Fig. 5*]. Part of a wall built of reused red blocking bricks was noted on the far north side of the chamber, almost entirely covered by the sand pouring into it [*Fig. 3*]. Although the location of this relatively small chamber is quite unusual, it was found to contain the remains of offerings that had escaped the robbers' attention and lay mixed with the sand in front of the chamber's rear entrance. These leave no room for doubt that this was the main burial chamber [*Fig. 4*]. Evidently, the grave robbers had forced their way into the burial chamber through the west wing of the tunnel. This is attested by several small finds, pottery vessels and broken human bones which were found

scattered across the floor of the tunnel during the course of excavation. However, the question concerning the hole at the top of the mound remains unresolved. This hole measures about 0.65 m in width and is of irregular shape. It reached down roughly to the northeastern side of the burial chamber directly from the top. The question is did this represent a second attempt to rob the burial, or did it result from structural movement of the sandstone bedrock that caused some damage, including the partial splitting of the roof? Unfortunately, in view of this situation and the serious risk of impending danger, the burial chamber was not explored. Work in it was suspended. The chamber and the northern end of the tunnel's west wing were tightly sealed with sacks full of pure sand. Thereafter, the hole



Fig. 3. T.4, view of the burial chamber. Note the red-brick blocking wall and the entrance to a secondary chamber (PCMA Early Makuria Research Project/photo A. Kamrowski)



Fig. 4. T.4, top left and bottom close-up, objects visible in the sand layer in front of the burial chamber; top and center right, chain with crosses and bronze ring in situ (PCMA Early Makuria Research Project/photos A. Kamrowski)



Fig. 5. T.4, hole in the top of the mound, the tunnel excavation in the background (PCMA Early Makuria Research Project/photo A. Kamrowski)



Fig. 6. T.4, view of the mound from the south, with the roof cover in place (PCMA Early Makuria Research Project/photo A. Kamrowski)

at the top of the tumulus was also filled with sand to avoid any further destruction, and above all as a safety measure [Fig. 5].

At the end, safety measures were also undertaken by constructing a solid cover over the external shaft. Two thirds of the shaft were covered using iron beams

(*kamar*, Arabic كمر) and red bricks, creating a type of vault known in Arabic as *aged* (عقد). The last portion was covered with a metal grid provided with a door that offers easy access to the tunnel whenever needed, until a suitable and permanent solution is found [Fig. 6].

TUMULUS 1

Tumulus 1 (T.1) is located on the far southeastern fringes of the cemetery [see Fig. 1]. It measures about 34 m in diameter and has a preserved height of about 5.37 m. Here also work was resumed by unearthing the external shaft. Apparently, while searching for the shaft, the grave robbers had made at least three attempts to find it on the southern side. They partly succeeded in their fourth attempt, although they missed the center of the external shaft, thus causing serious damage to the roof of the tunnel entrance. The external shaft is rectangular in shape and aligned east–west. It measures 3.70 m in length and 1.70 m in width with a maximum depth of about 2.60 m. The shaft is provided with two steps cut into its southeastern and southwestern corners at respective depths of about 1.13 m and 1.33 m below ground level [Fig. 7].

Initial cleaning of the external shaft proved the existence of a wide tunnel aligned north–south. The entrance of the tunnel is about 3.00 m wide and about 1.60 m high. It is supported on four pillars which divide it into two wings: east and west [Fig. 8]. The first pillar is located at a distance of 5.45 m from the south wall of the external shaft. Analogous to the construction in tumulus 4, the east wing of the tunnel, which measures 13.30 m in length, was found to terminate in a rounded

dead-end at the north. The western wing was a bit longer, measuring 14.20 m, with a wider rounded dead-end. Nine meters into the west wing of the tunnel, there was a highly unusual construction, unlike any ever noted in this type of burial at the el-Zuma cemetery. It was discovered hewn into the west wall of the west wing and took the form of an open niche measuring about 2.00 m by 1.20 m. It is not clear, however, if the original plan had been to construct a side chamber, which was never completed, or if the western lateral niche, provided with a bench-like feature, represented a new aspect in the burial tradition of the period. One large cattle bone (scapula) was the only item found on top of the bench [Fig. 9].

Another innovation in burial practices is the location and construction of the main burial chamber. It was found hewn into the east wall of the west wing of the tunnel, with a rear entrance opening due west. The burial chamber was cut into the sandstone formation at about 1.50 m above the tunnel floor. It was covered by a mixture of sand, earth and partly collapsed roof. Thorough exploration revealed that the burial had been badly ransacked in the past [Fig. 10].

Fragments of a disarticulated human skeleton, one middle-sized beer jar, pottery

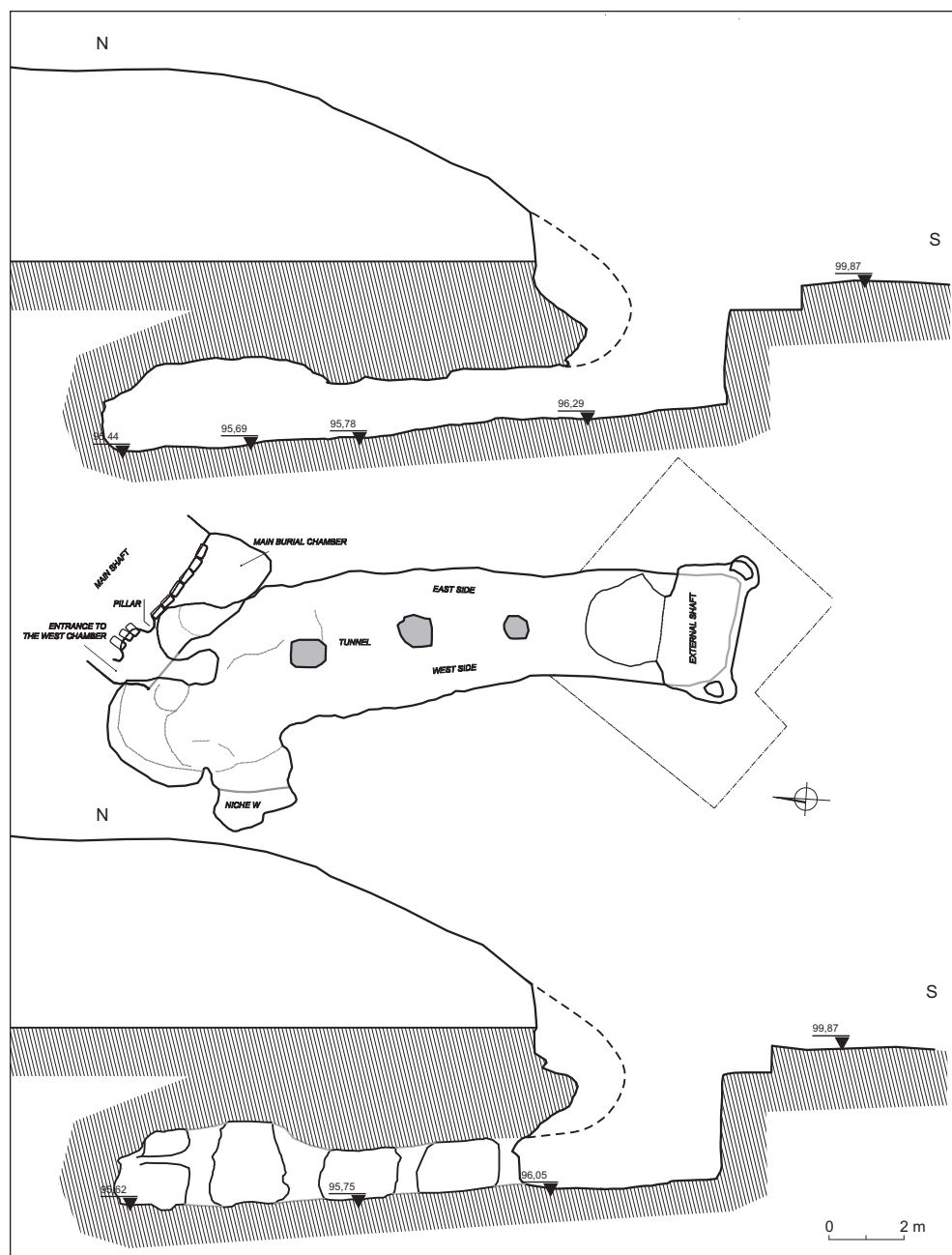
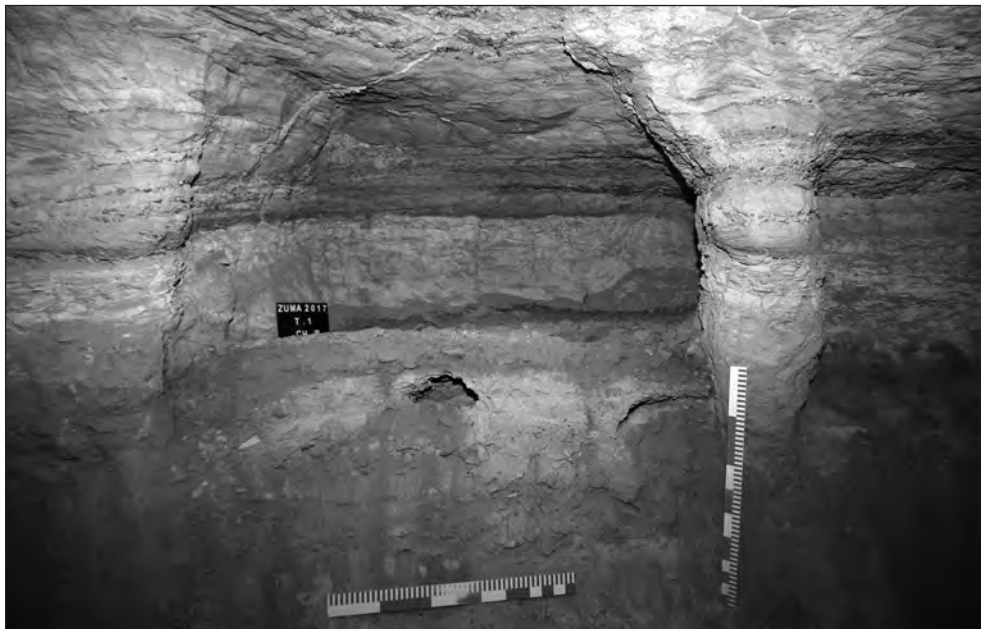


Fig. 7. T.1, plan of the superstructure and tunnels
(PCMA Early Makuria Research Project/drawing M. Antos, E. Czyżewska-Zalewska)



*Fig. 8. T.1, view of the pillars in the tunnel, looking south
(PCMA Early Makuria Research Project/photo A. Kamrowski)*



*Fig. 9. T.1, the western niche, facing west
(PCMA Early Makuria Research Project/photo A. Kamrowski)*

sherds and broken pieces of different ornaments, as well as metal fragments including a gold earring, were noted; they were scattered in the burial chamber and all along the tunnel (see Then-Obluska 2017: 693ff., in this volume). The results of the preliminary bone analysis conducted in the field are of special interest, for they point to the discovery of fragments from at least seven human skulls, in addition to 11 fragments of human right thighbones (femurs). An anthropological examination of the human bones is planned for 2018. The burial chamber is approximately rectangular in shape, oriented NW–SE, measuring 4.56 m in length by 1.30 m in width on the northwestern side and 1.86 m by 0.85 m respectively on the southeastern side, the height being 0.95 m. Its entrance, from the side of the main burial shaft, is about 1.30 m wide and is divided by a small, fragile pillar, incomparable to the one discovered in the burial chamber of T.6 (El-Tayeb et al. 2016). The blocking wall (about 0.85 m high), separating the main shaft and the burial chamber, consists of nine rows of mud bricks lightly bonded with a thin layer of mud mortar [Fig. 11].

Two weeks after the mission left el-Zuma, I received information from the foreman who was in charge of the workers during my absence that a large hole had appeared in the top of the tumulus, similar to the one noted in tumulus 4. On site it appeared that the situation was even worse and more frightening than that of tumulus 4. In contrast to T.4, the top pit on T.1 reached the bottom of the main burial shaft directly in front of the burial blocking wall. The pressure of the falling sand was strong enough to have caused serious damage to the mud bricks of this wall. In consequence, sand had filled half of the burial chamber and poured down on to the tunnel floor. The only suitable way to secure the pit from the top of the tumulus was to seal it with heavy concrete slabs, since these mounds are the favorite playground for the local village children.

The external shaft of the tumulus has been protected by building the same type of construction as in T.4 (a vaulted roof), using metal beams and red bricks. A metal grid was also installed for safety purposes and to provide an easy means of descending to the bottom of the shaft.



Fig. 10. T.1, the burial chamber, before (left) and after (right) exploration, facing southeast (PCMA Early Makuria Research Project/photos A. Kamrowski)



*Fig. 11. T.1, view of the fragile pillar which divides the burial blocking wall
(PCMA Early Makuria Research Project/photo A. Kamrowski)*

The protection plan for the tumulus field was completed by adding some 197 concrete posts directly around the perimeter of the site and its buffer zone.

Hence, no more buses, trucks or cars will be able to drive across the site, as long as these posts remain in place [Fig. 12].

GRAVE OFFERINGS

Exploration of tumuli 1 and 4 revealed that both of them had been penetrated, plundered and devastated repeatedly, most probably since ancient times, and even in the same manner: access being gained through the west side of the tunnel. As mentioned above, the floor of the burial chamber in T.1 was found covered with earth sediment. Beneath this fill the burial contained various types of material in fragmentary states of preservation, including two human lower-limb bones, as well as damaged fragments of a human skull. Among the other objects noted was what

seemed to be a gold earring (Z1/32), one complete middle-sized red bottle (Z1/28) and some sherds of small, red, wheel-made, grooved bowls. There was also a small bronze bell (Z1/33) and fragments of iron nails and other unidentified iron finds. Further material was found scattered along the floor surface of the west side of the tunnel. It included several fragments of human skulls, which appear to represent seven individuals, and eleven fragments of human right thighbones (femurs). In addition to the human bones, grave offerings recovered from the west tunnel comprised a mixture

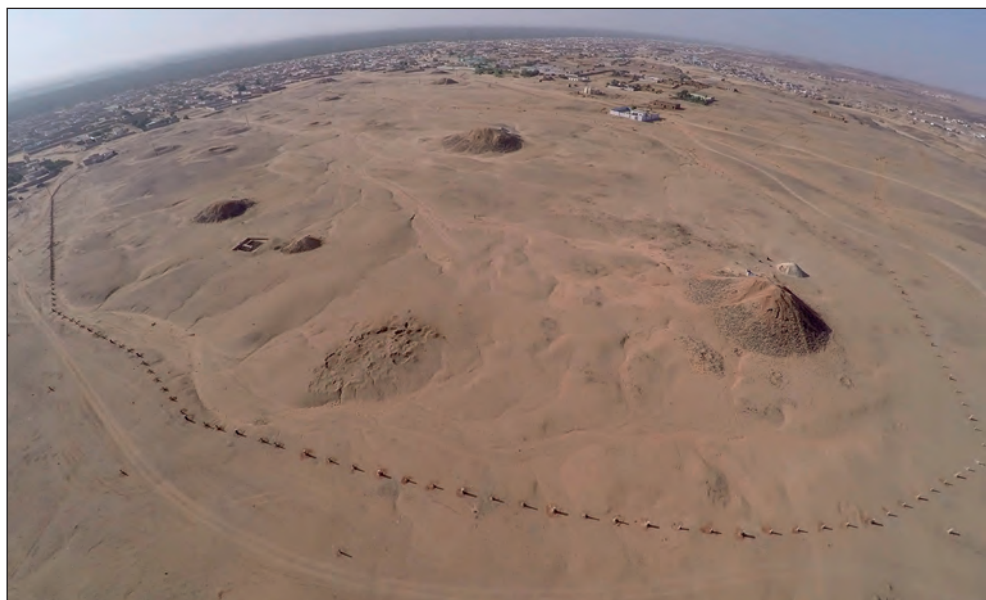


Fig. 12. General view of the line of posts protecting the site
(PCMA Early Makuria Research Project/photo T. Wojtczak)

of fragmented animal bones representing cattle, sheep, goat, donkey, camel, gazelle, bird and probably horse.

Earlier exploration of the external shaft and part of the tunnel of tumulus 4 during the 2013 season had provided ample evidence attesting to the richness of that burial. Amongst the objects found was a very fine gold earring, the upper part of a finely made, decorated amphora and a wonderful decorated bone fragment, which could be part of an ivory kohl container, as suggested by Joanna Then-Obluska (2017: 693ff., in this volume). Thorough cleaning of the entire tunnel in the 2017 season, up to the main burial chamber, clearly revealed how severely the grave had been rifled. Large numbers

of small objects were found covering the whole surface of the west side of the tunnel. The scattered human bones seem to be from a single skeleton, although incomplete. Animal bones of different species, mentioned above, were noted as well. A complete pottery bowl and many sherds of small vessels were also amongst the finds (for the pottery see Czyżewska-Zalewska 2017, in this volume), as were some single barb arrowheads. The wide range of valuable adornments recovered from the west tunnel is particularly noteworthy. The most significant items amongst them are a very fine gold earring (Z4/12), two small, finely made golden crosses attached to a chain (Z4/98), and a gold finger ring.

SOME REMARKS AND COMMENTS

The two tumuli, T.1 and T.4, excavated during the 2017 season deserve some remarks concerning their construction in the context of the burial traditions noted hitherto at this site. First of all, a common feature shared by these and other Type I tumuli (the largest at this cemetery) is the location of the external shaft on the southern edge of the mound. Next, is the almost precisely north–south alignment of the tunnel, which, as is the case with tumuli 6 and 7, is also divided into two wings: east and west (see El-Tayeb et al. 2016: 122, Fig. 7; 123–124, Pl. 33). However, the tunnel in tumulus 4 was found to be divided by a kind of wall cut in the sandstone rock — the first recorded instance of such a feature at this cemetery. Moreover, a small hole had been made in the wall, about 1.50 m from its southern end. What was the purpose and practical function of such a cut? Is it possible that the initial aim was to construct some pillars out of

this rock, but for some reason the idea had been abandoned? At present the answers to these questions remain obscure.

Another marked departure from the grave construction practices noted thus far in Type I tumuli is the completely different location of the main burial chamber. Equally unexpected was the side niche found hewn into the west wall of the west wing of the tunnel, just short of its rounded dead-end. Unfortunately, due to the complications caused by the damage to the chamber roof and the continuous pouring in of sand, it was impossible to explore the chamber. Nonetheless, part of a blocking wall built of reused red bricks was observed on the north side of the chamber, while at its southern end, a hole about 0.60 m wide appeared to lead to what could be a secondary west chamber. Even if that were the case, it would be difficult to say if the chamber under observation is the main burial chamber or not, especially

given that it has not been excavated. The only indicator supporting this assumption is the type and quantity of offerings which were found just in front of the rear entrance to the burial, as well as along the west side of the tunnel, including the human bones. There is no doubt that the quality of the adornments and other small finds discovered there can be compared to the royal objects from Lower Nubia, namely the royal burials at Qustul and Ballaṇa (for comparison see Emery and Kirwan 1938).

The situation in tumulus 1 is more complicated. While the first, southern, part of the tunnel falls within the norm of tunnel construction noted in T.6 and T.7, its northern end appears to be totally different. It presented the first recorded instance of a kind of a niche cut into the west wall of the tunnel and provided with a bench-like feature (*mastaba*), which was found under a thick layer of accumulated earth. To date, such a construction has not been noted anywhere in late antique Nubia. In view of the fact that the burial had been badly plundered, it is even hard to guess what this bench had been constructed for. The single large cattle bone (scapula) and rat droppings found on it suggest that it may have been a place for depositing grave offerings. On the opposite wall of the same west wing, an absolutely unique feature of burial construction was noted. It is difficult to understand how it came about that a chamber was cut at about 1.50 m above the floor surface of the tunnel, while the construction of the blocking wall inside the chamber points to the main burial shaft having been positioned at a higher level. It is worth mentioning that there are two known instances of a burial chamber being located beneath

the level of a tunnel. The first one comes from tumulus 4 at Hammur Abbassiya and the second from T. 6 at el-Zuma (El-Tayeb 2003: 132–134, Fig. 13; 2016: 122–123, Fig. 7, Pl. 29). In the case of T.1, it is uncertain if the location of the main burial chamber was an intentional innovation, or if it was the result of inaccurate estimation and a lack of coordination of the work being carried out in two locations: in the main shaft on one side and the tunnel on the other.

One of the most intriguing problems faced in T.1 is that posed by the disarticulated fragments of human bones. As stated above, fragments representing at least seven human skulls, in addition to 11 fragments of human right thighbones (femurs), were recovered mainly from the west wing of the tunnel. At the current stage of research, it is not possible to determine how these bones found their way into the burial. One of the main obstacles to any further investigations is the state of preservation of the incomplete skeletons. Since only negligible amounts of human bone have been found in the hitherto excavated burials, no conclusions or assumptions can be reached based on previous experience. A range of explanations for their presence spring to mind, including human sacrifice, multiple interment, or sequential family interment. All these are burial traditions deeply rooted in ancient Nubian societies. However, only detailed analysis of these remains may shed any light on this matter.

Finally, Joanna Then-Obluska's study of the personal adornments found in these two burials clearly points to the considerable influence of royal Lower Nubian traditions. On the other hand, the pottery, especially the small, red, wheel-made, grooved bowls, firmly attests a production tradition

originated in the Dongola Reach. Hence, at this stage of research it is safest to identify the owners of these burials as members

of a social elite, because even though there are some indications of royalty, there is still no irrefutable evidence.

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Early Makuria Research Project Remarks on pottery from the recent excavations at el-Zuma

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Abstract: The article presents new material excavated during the last season, discusses production technology and surface treatment. Recently excavated material from el-Zuma throws new light on pottery production and its typology, necessitating thus a reexamination of the already known vessel types. Some types of pottery, discovered in 2017, although known from other tumuli excavated in previous seasons and already published in general reports, still need to be reexamined. New types of vessels have also been identified.

Keywords: el-Zuma, pottery, tumuli, Early Makuria period, surface treatment, pottery typology, wheel-made pottery, imported pottery

In 2017, the archaeological work at the el-Zuma cemetery was focused on the exploration of tunnels in tumuli of type I, T.1 and T.4 (El-Tayeb 2017, in this volume). These burials started to be excavated in earlier seasons (T.1 in 2015 and T.4 in 2013), but the work concentrated on verifying the existence of the tunnels and exploring the external shafts leading to them. Finally, during the last season, the exploration inside the tunnels of tumuli T.1 and T.4 was possible.

Of all the tumuli of type I excavated in previous seasons, tunnel of tumulus 4 was richest in artifacts. More than 250 objects were recorded. Besides pottery, which made for almost half of this assemblage (100 registered items), there were

animal bones, weapons, jewelry and beads (El-Tayeb 2017, in this volume; Then-Obluska 2017, in this volume). The tunnel of tumulus 1, also excavated in 2017, was very poor in objects, and mainly pottery sherds used as digging tools (probably connected with the robbery) were found. Only 38 artifacts were recorded. Other tunnels of tumuli of type I, explored in previous seasons, also yielded few artifacts: 11 in tumulus T.8 (eight pottery sherds, two metal objects and one bead), 20 in T.3 (mainly pottery, a few wood fragments and metal objects) and 58 in T.6 (56 pottery fragments and two stone objects). Tumuli T.2 and T.5 which were explored comprehensively in the 2005 and 2007 seasons, going beyond the tunnels,

produced an assemblage similar in number to that from T.1, that is, about 40 artifacts among which pottery was the most numerous. The quantities of artifacts recorded in the different tumuli may reflect varying

degrees of diligence and time at the robbers' disposal.

The discussion of pottery production presented here is restricted to vessels from tumulus T.4.

REMARKS ON TYPOLOGY

A general pottery typology was established and presented by Edyta Klimaszewska-Drabot after the first excavation seasons on the Zuma site in 2005 and 2007 (Klimaszewska-Drabot 2010: 480–487). The present author, who has undertaken the study of the pottery from el-Zuma since 2016 (Czyżewska-Zalewska 2016), has also started to reexamine the original corpus presented by Klimaszewska-Drabot.

The reexamination has led to the identification of new types and variants in the archaeological material. Two groups are of main interest here:

– Group II, bowls:

Type II.4 (Klimaszewska-Drabot 2010: 481) has already been examined by the author, but needs to be updated, in light of newly identified variants (Czyżewska-Zalewska 2016: 727).

– Group XII, amphorae:

A new group has been created for the amphorae that have not been published yet.

or are straight in the upper part [see *Fig. 1:Z4/199*] of the vessel, and some examples have straight outflared walls [see *Fig. 1:Z4/35*]. Grooved decoration was executed on the body, and sometimes painted decoration occurs on top of the rim.

Klimaszewska-Drabot had described type II.4 as bowls with grooves and painted decoration, but new finds have now prompted further subdivision of the type, based on the presence of grooves and painted decoration (Klimaszewska-Drabot 2010: 481; Czyżewska-Zalewska 2016: 728–730).

Variant II.4a [see *Fig. 2*]

Bowls with rounded base, tapered inwards or straight walls in the upper part, and in some cases with straight outflared walls. The rim is pointed or beveled or, sometimes, rounded. The type is decorated with grooves below the rim. In most cases, three or four grooves can be seen, variants with one or two grooves are rare.

Variant II.4b [see *Fig. 2*]

Bowls with rounded base, tapered in or straight walls in the upper part. The rim is pointed or beveled, or sometimes rounded. The type is decorated, as in type II.4a, with grooves below the rim. In most cases three to four grooves are visible, variants with one or two grooves are rare. The main difference from type 4a is the occurrence of painted decoration at the top of the rim.

TYPE II.4

Shapes

Bowls of type II.4 are mainly medium-sized and medium deep, the height being 7.0–8.5 cm and the rim diameter 10–13 cm, although a few smaller examples with a rim diameter of 10–11 cm and a height of 6–7 cm have been registered too. The bowls are conical in shape with rounded bases. Walls taper inwards [*Fig. 1:Z4/79*]

Variant II.4c (new variant) [see Fig. 2]

Bowls with rounded base, tapered in or straight walls in the upper part, in some cases with straight outflared walls. The rim is pointed or beveled, or sometimes rounded. The type is decorated with grooves below the rim and at mid-height. In general, three to four grooves occur below the rim and one or two grooves at mid-height of the body.

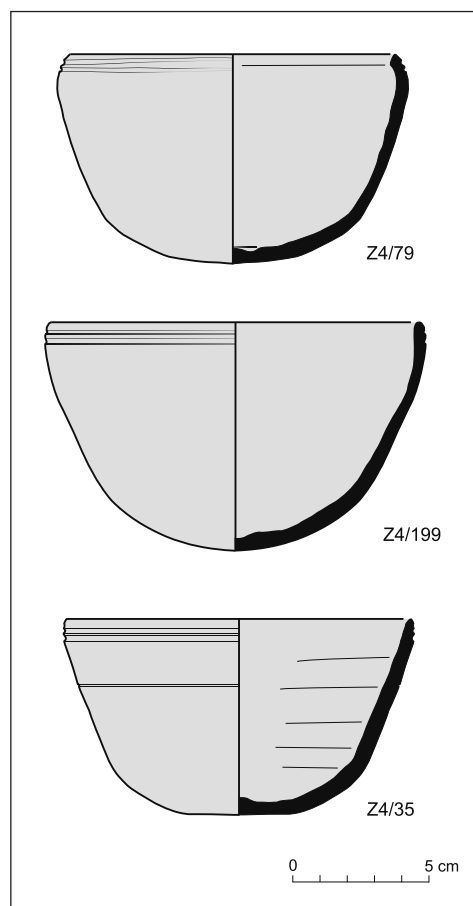


Fig. 1. Type II.4 bowl showing differences of shape (PCMA Early Makuria Research Project/drawing J. Górecka)

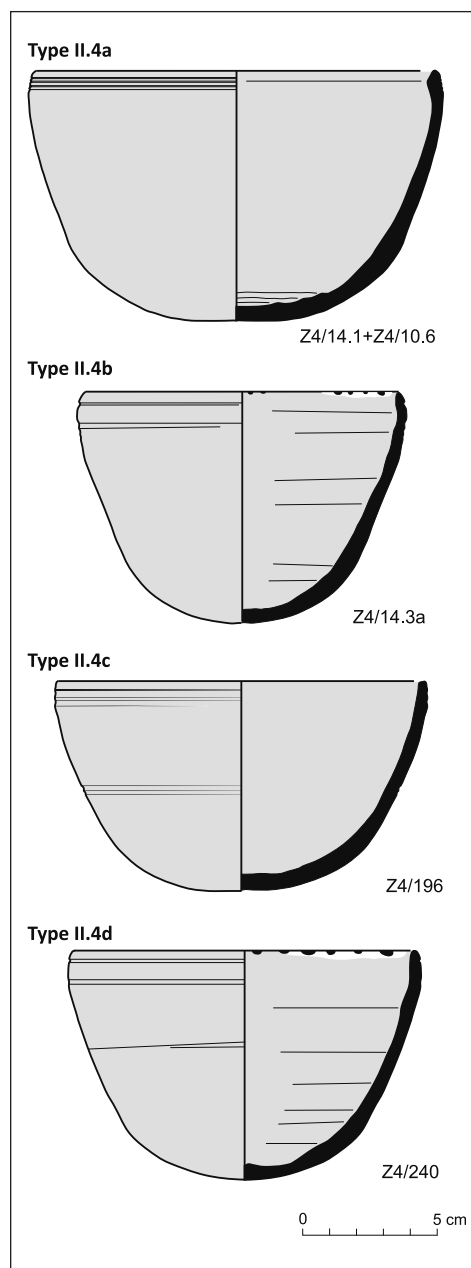


Fig. 2. Type II.4 bowl: all variants (PCMA Early Makuria Research Project/drawing J. Górecka, U. Wicenciak)

Variant II.4d (new variant) [see *Fig. 2*]

Bowls with rounded base, tapered in or straight walls in the upper part. The rim is pointed or beveled, or sometimes rounded. Decorated as in type II.4c, with grooves below the rim and at mid-height of the vessel. In most cases, three to four grooves appear below the rim and one or two grooves at mid-height. The difference from type II.4c is the painted decoration, as in variant II.4b, at the top of the rim.

Production technology

The bowls were wheel-made. After throwing the vessels, some were probably turned upside down on the wheel and the base was scraped by hand with some tool. Scratches from this on the external surface of the vessel can be observed at the base. In these specimens, there is an evident angle between walls and base [*Fig. 3*].

Surface treatment

The bowls were slipped and polished after throwing on the wheel. The slip is clearly visible, mostly medium-shiny, at times very lustrous [*Fig. 4*].

The external surface was better finished than the internal one, probably because of easier access to this area. Polishing and slipping could be executed carelessly, and left traces visible on the surface [*Fig. 5 left*]. Bowls were probably slipped by dipping the vessel in the slip. There are no traces indicative of the typical wiping, as found in type II.5 (Czyżewska-Zalewska 2016: 734) and the slip fills the grooves as well, which would be difficult to achieve by wiping. Most bowls of this type were well smoothed on the external surface, without any technological traces visible on the external surface [see *Fig. 5 right*].

The internal surface was less carefully executed and wheel-marks are often visible. Well finished interior surfaces, without any traces of throwing, occur very rarely [*Fig. 6 bottom*]. Usually, the walls are better smoothed in the upper part and below the rim, and the wheel-marks are visible at the bottom [see *Fig. 6 center*]. Sometimes the surface was well smoothed and only delicate lines are visible inside the vessels [see *Fig. 6 top*].



*Fig. 3. Bowl of type II.4 (Z4/79) with scratches on the base of the vessel
(All photos: PCMA Early Makuria Research Project/photo A. Kamrowski)*

Internal polishing was not so lustrous as that on the exterior. If the surface was badly polished, the polishing is visible only on the wheel marks, on the rim and directly below the rim. If polishing was well executed, then it is visible on the whole surface. However, there are exceptions, in which the surface was well smoothed and the polishing was badly executed [Fig. 7 top] and vice versa [see Fig. 7 bottom].

Painted decoration

Painted decoration is rare. It was applied only on the top of the rim and consisted of dark dots on a white background [Fig. 8 top] or dark and white alternating dots [see Fig. 8 bottom]. The decoration did not cover the whole rim, but was arranged in four sets of four to five or sometimes six dots each.

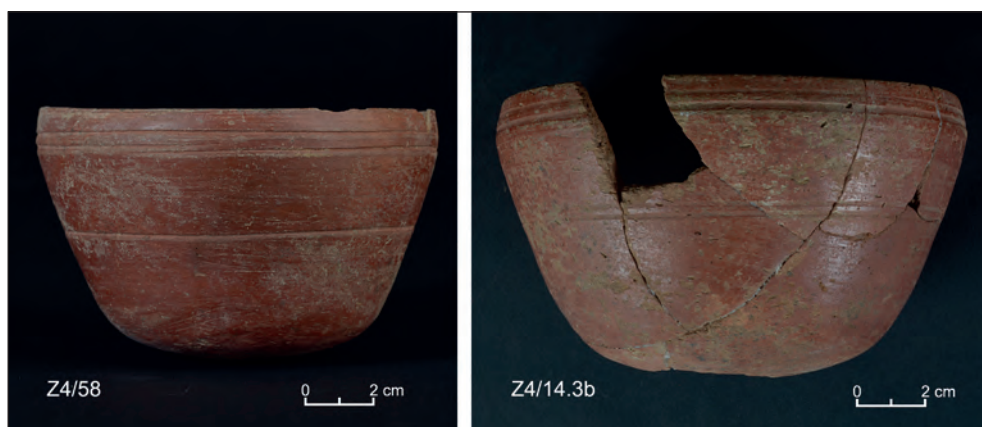


Fig. 4. Bowl of type II.4 showing the slip: left, medium-shiny, and right, shiny

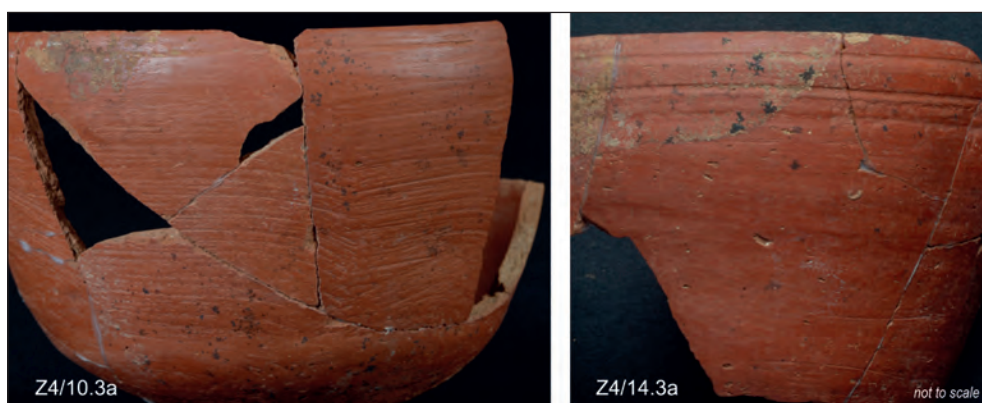


Fig. 5. Bowl of type II.4 showing smoothing and polishing of the external surface: left, badly, and right, well done



Fig. 6. Bowl of type II.4, showing differences in smoothing of the internal surface of the vessel

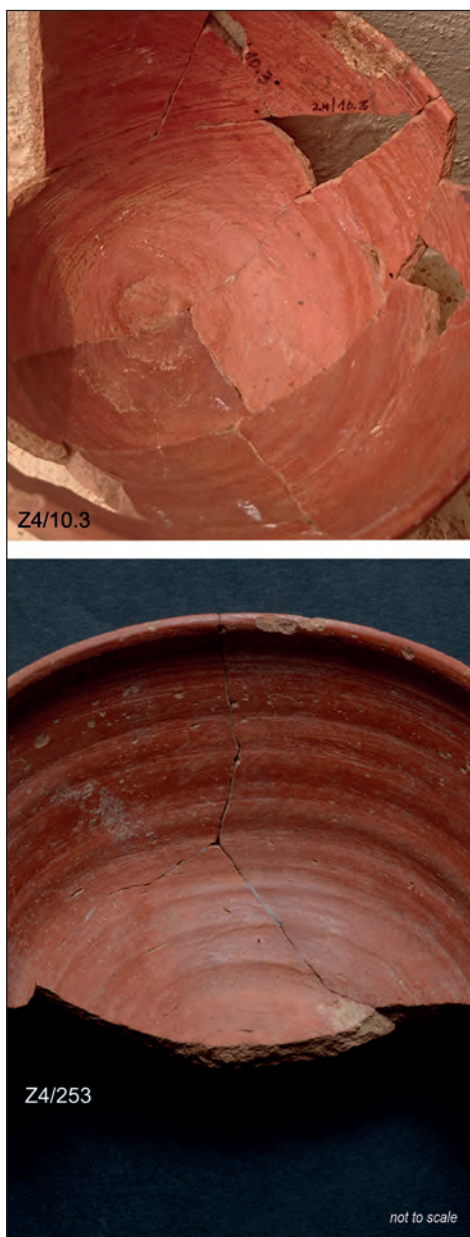


Fig. 7. Bowl of type II.4, showing polishing of the internal surface: top, badly, and bottom, well executed

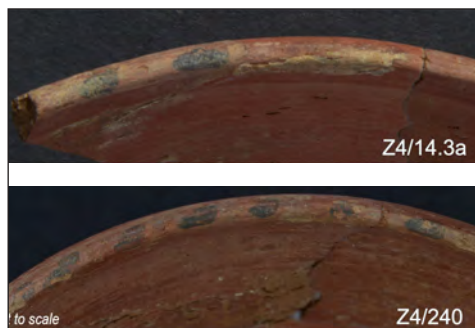


Fig. 8. Bowl of type II.4 with painted decoration on the rim

TYPE XII

A new group of vessels, selected by the author, consists of wheel-made transport amphorae. Amphorae are generally rare at Zuma. Some examples of small table amphorae were discovered in previous seasons, but they need a more detailed study, falling thus outside the scope of this paper (Klimaszewska-Drabot 2010: 485; El-Tayeb 2012: 9, 102–103). The group consists mainly of imported vessels.

Only two types of transport amphorae, Type XII.1 and XII.2, are discussed in this article.

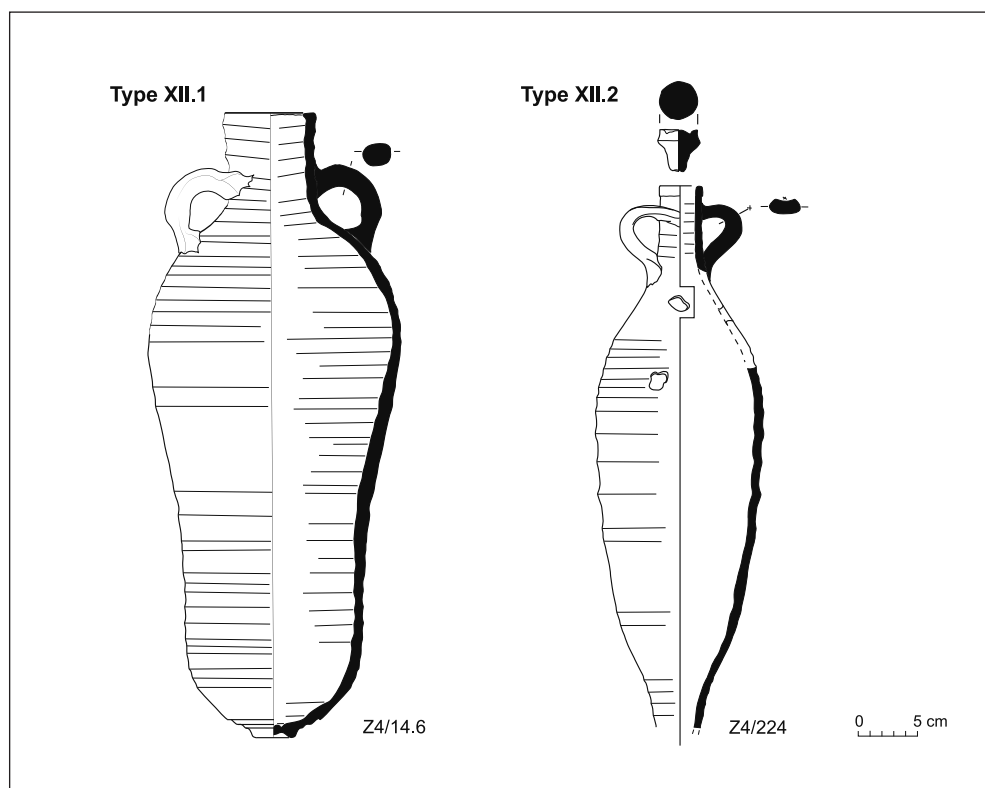


Fig. 9. Amphorae of type XII
(PCMA Early Makuria Research Project/drawing J. Górecka, E. Czyżewska-Zalewska)

TYPE XII.1 [Fig. 9]

Shapes

Type XII.1 comprises a Late Roman “Dongola” amphora (Pluskota type A). This type of amphora is about 50–55 cm in height with slightly concave walls and a medium broad neck. The rim is flat and incurved (internal ledge-rimmed), the handles run from the neck and shoulders, the bottom has a round and navel-shaped foot.

Production technology

Amphorae were thrown on a wheel in two separate parts. The two parts were then joined together, traces of which are visible on the internal surface. The handles were handmade and attached to the vessel probably at the leather-hard stage. On the external surface, on the neck and on the lower part of the body, ribbing is visible [see Fig. 9] (Adams 1986: 193)



Fig. 10. LRA 3 amphora: top right, perhaps used as a lampshade; bottom right, lower part and toe; above, close-up on handles and bung



Surface treatment

There are no traces of slip or additional surface treatment beside the ribbing on the external surface.

TYPE XII.2 [*Figs 9–10*]**Shapes**

Type XII.2 comprises a Late Roman 3 amphora, with slender body and narrow neck. The rim is straight and flat. The handles are small and overlap to form a heart-shaped outline. The bung was executed from the same fabric as the whole vessel and fired [*Fig. 10*]. The preserved height is about 47 cm. There is no trace of resination on the internal surface.

Production technology

The amphora was thrown on the wheel. Handmade handles were attached to the vessel probably at the leather-hard stage. A stopper was executed from the same clay and thrown on the wheel, too.

Surface treatment

Traces of delicate ribbing are visible on the whole external surface [see *Figs 9, 10*]. Handles were attached to the vessel using a kind of a tool, and delicate lines are visible on the handles [see *Fig. 10*]. The internal surface is smoother than the external one.

RECAPITULATION

Bowls of type II.4 were found in earlier excavations of tumuli of type I and type II. When found in tombs of type II, their number was limited, for example only one in T.12, five in T.23, only three fragments in T.25 and three in T.26. Type II.4 bowls, however, were more numerous in some burials of type I. In tumulus T.2, explored completely in 2007, 34 bowls were found. In tunnel of tumulus T.7, more than 20 bowls were found, and in tomb T.4, there were 43 bowls inside the tunnel alone. But in some tunnels of this tomb type, like T.3 and T.6, only a few examples were recorded, and T.8 lacked this type altogether. At this moment we cannot assess the quantity of this type of bowls in tumuli of type I, until exploration of burial chambers will be possible. It seems that bowls with grooved decoration were considered luxurious and as such were not as common as cups of type I, bowls of type II.2 or jars, all of which have already been presented by the author

in the previous season report (Czyżewska-Zalewska 2016: 725–740). These bowls were placed mainly in tumuli of type I, the largest type. Only the tunnel area of these large tumuli has been excavated so far. Therefore, until a full repertoire of pottery from the burial chambers in the largest graves is known, no comparisons with vessels from other tumuli is feasible. Material from the fully explored tumuli of types II (middle-sized tumuli with L-shaped or U-shaped shafts and three to five burial chambers) provides evidence for a sporadic occurrence of type II.4 bowls there. In tumuli of type III (small tumuli with rectangular shafts and one burial chamber), this type has not been found at all.

Such bowls occur at other sites dated to the Early Makuria (post-Meroitic) period. They have been found at Gaddar, in a grave with a rectangular shaft and one burial chamber (Żurawski 1991: 463–464, 483), Hammur (Phillips and El-Tayeb 2003:

458–459, 461) and Kassinger Bahri, there in a grave with a central rectangular shaft and two niches/burial chambers (El-Tayeb and Kołosowska 2007: 37–38, 43, Kołosowska and El-Tayeb 2007: 9, 12–13). Pottery analysis from Kassinger dates this type to AD 350–540 (Daszkiewicz and Goedicke 2007: 124). Large tumuli like type I at el-Zuma do not occur on either of the above-mentioned sites.

The Late Roman “Dongola” amphora (Pluskota type A) (Pluskota 2001: Fig. 9; Danys 2015: 118) has an incurved rim, and its base has a round and navel-shaped foot. Willam Y. Adams published it as Class Z (Adams 1986: 1 and 2:177). Its fabric is similar to the dongolan fabric ALF 1 (Danys 2015: 118).

Six examples of Dongolan amphorae have been found in the material excavated at el-Zuma. Four of them can be assigned to LRA “Dongola”, Pluskota A, two, however, are too fragmentary for a type to be determined. Only one amphora derived from a tumulus of type II, the others being found in tumulus T.4. This type is the earliest of the Dongola amphorae. The earliest use of the Dongola pottery workshop took place about AD 600–950 (Danys 2015: 118).

The LRA 3 amphora is a unique example. The type probably comes from Asia Minor, although the main production center is not known (Riley 1975: 31–32). The earliest examples of this type have only one handle. One-handled amphorae occur in the Mediterranean region from the 1st to the 5th century AD. Two-handled amphorae appeared for the first time in the late 4th century in Rome, and probably were in use from the end of the 4th to the 6th century (Peacock and Williams

1986: 188–189). These amphorae can be found in Berytus, where they are dated to the 6th century AD (Pieri 2007: 113); in Egypt, in Kellia, they are dated to the 4th–5th century AD (Égloff 1977: 110), and in the Athenian Agora they are dated to the 6th century AD (Robinson 1959: 119). In Nubia, this imported ware, U18, was described and dated by Adams to the period from the Meroitic to Christian (Adams 1986: 107, 178). An example of this type was found in the royal tombs at Ballaña and Qustul and was dated to the 4th–6th century AD (Emery and Kirwan 1938: 390, 398–399).

The LRA 3 amphora from tumulus T.4 in el-Zuma was reused [see *Fig. 10*]. This vessel was found in two pieces. In its upper part large holes (1–2 cm in diameter) were executed, while the internal surface was smoked, which may lead to the assumption that maybe the grave robbers could have used amphorae as lampshades protecting the flame when plundering the grave. The bottom part of the vessel is broken off (the join spot is too small to reconstruct the vessel), but the interior of the base is clean without any traces of smoke. No parallel for the reuse of an amphora as a lampshade has been attested. It should be noted that four oil lamps were also found in the tunnel of T.4.

The pottery assemblage from tumulus T.4 is interesting and a better understanding of it will be gained once a comprehensive exploration of the burial chambers is completed. Hurried and careless robbery is probably why the tunnel is so rich in artifacts. Further exploration of tomb chambers in tumuli of type I should yield more finds to throw new light on the pottery from the largest graves.

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The winter seasons of 2013 and 2014 in the Ghazali monastery

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Abstract: The article reports on archaeological and conservation work carried out by the expedition of the Polish Centre of Mediterranean Archaeology University of Warsaw in cooperation with the Sudanese National Corporation for Antiquities and Museums in two consecutive seasons in the winter of 2013 and 2014. The excavations focused on the southeastern part of the site. They led to the discovery of a second monastic church (South Church) adjoining the church (North Church) known from Peter Shinnie's work at the site, as well as a sanitary complex consisting of latrines and associated rooms located along the east wall of the monastery. Building material from the South Church, textual and pottery finds recovered during the two seasons, as well as conservation of the wall plaster preserved in the North Church are reported in this article.

Keywords: medieval Nubia, Makuria, Ghazali, Christianity, monastery, inscriptions, pottery, conservation, building materials, King Basil of Makuria, St Onnophrios, ecclesiastical architecture

The present report covers two seasons of work by the joint Polish–Sudanese Ghazali Archaeological Site Presentation Project, carried out under the auspices of the Polish Centre of Mediterranean Archaeology University of Warsaw. Archaeological exploration at the site resulted in the

discovery of a new church and a complex of latrines. Building materials used in the new church were examined. Conservation measures were applied in order to protect the wall plastering of the main church. The report also includes brief descriptions of the textual and pottery finds.

ARCHAEOLOGICAL EXCAVATION

In 2013, to improve the tourist itineraries at the site, stone debris dumped by earlier excavators inside the monastery, to the south and east of the North

Church, was removed. According to Peter Shinnie's sketch plan, ruins of sun-dried brick structures were to be expected there (Shinnie and Chittick 1961: 11).

Sandstone ashlar and pieces of shattered granite columns were scattered in the area directly east of the southern entrance to the North Church. Windblown sand formed the topsoil here, concealing a meter-thick shapeless mass of sun-dried brick rubble which spread over the whole area. The mud had become tightly packed due to water absorption, making the excavation of such a mass quite a novel thing in the Bayuda desert.

The excavations revealed remains of a church built almost entirely of sun-dried bricks. The South Church [*Fig. 1*], as it was designated to distinguish it from the main church of the monastery, now consequently referred to as the North Church, abuts the southern wall of the latter building. It is an almost equilateral trapezoid, 14.90 m long on the north side, 14.72 m on the south side and 6.46 m and 8.95 m along the west and east sides respectively. The outer sun-dried brick walls (for dimensions, see below) are 0.70 m thick. Four massive pillars were

constructed in place of the intended north wall; they were attached to the southern face of the south wall of the older church. These pillars measured (from west to east): the L-shaped pillar, comprising the northern part of the west wall of the church: 1.10 m (E–W axis) by 1.45 m (N–S axis); the second one (T-shaped): 2.10 m (E–W axis) by 1.12–1.26 m (N–S axis); the third: 1.60 m (E–W axis) by 0.80 m (N–S axis); and the last one (also T-shaped), separating the naos from the NE Room, 1.74 m (E–W axis) by 1.30–1.41 m (N–S axis). As for the spans between the pillars, they were unequal and measured (in the above order): 2.17 m, 1.63 m, 1.67 m and 2.20 m in length, respectively. The other walls of the South Church were also built of sun-dried brick. They were heavily damaged by rainfall long before being excavated.

Three entrances led into the church: one in the south wall, giving access directly to the naos, and two in the west wall of the building [*Fig. 2*]. The south entrance was 1.10 m wide on the outside, broadening

Team

Dates of work: 10 January–21 February 2013; 7 January–31 March 2014

Director: Dr. Artur Obluski, archaeologist (2013, 2014; Oriental Institute, University of Chicago)

NCAM representative: Zaki ed-Din Mahmoud (2013, 2014)

Epigraphist: Dr. Grzegorz Ochała (2014; Department of Papyrology, Institute of Archaeology, University of Warsaw)

Archaeologists: Szymon Maślak (2013, 2014; PCMA UW), Dr. Bruce Williams (2014; Oriental Institute, University of Chicago), Bartosz Wojciechowski (2013; independent)

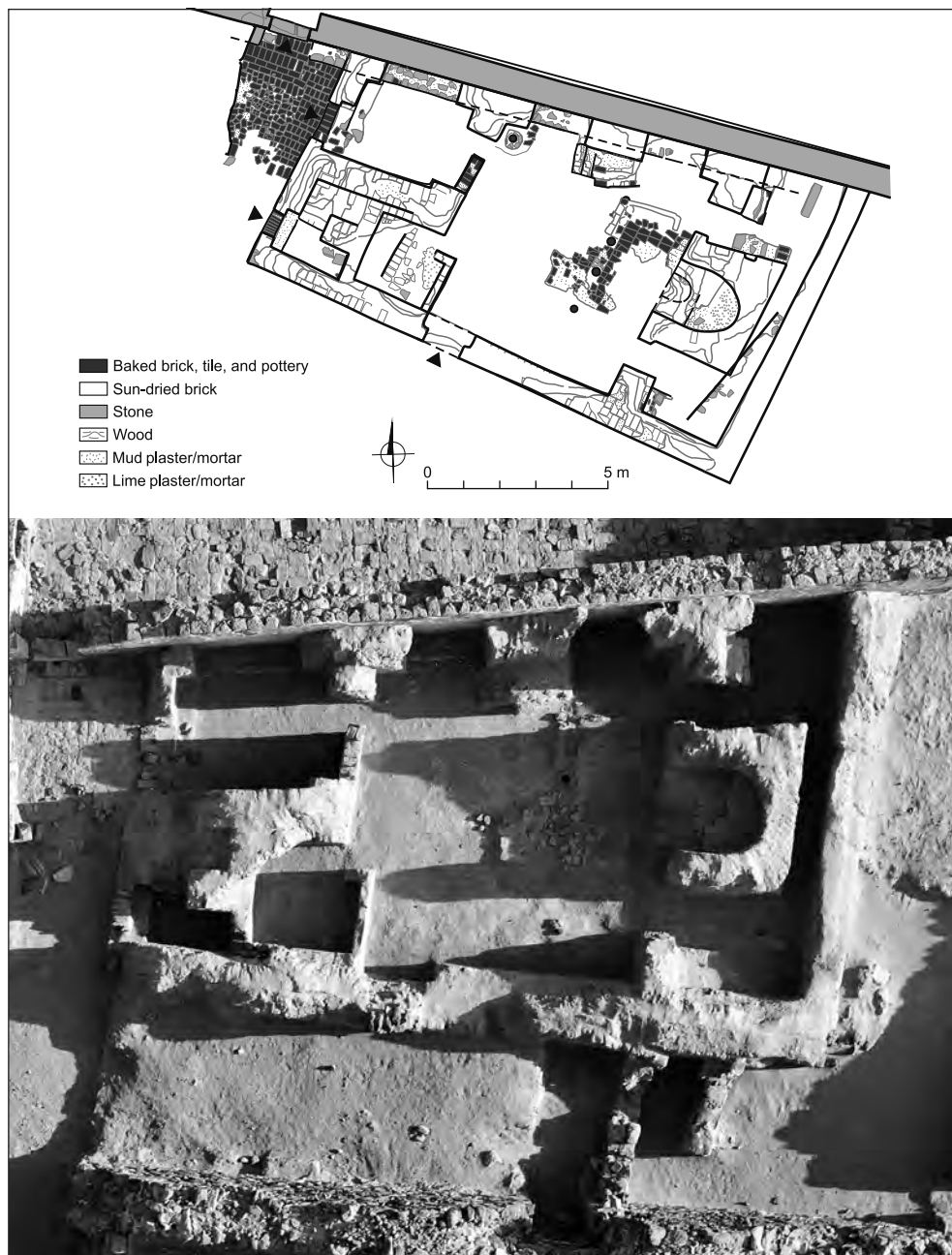
Ceramologist: Małgorzata Korzeniowska (2014; National Museum in Warsaw)

Physical anthropologist: Robert Mahler (2014; PCMA UW)

Restorers: Cristobal Calaforra-Rzepka, Wiśłomira Nicieja, Urszula Kusz, Maciej Żelechowski-Stoń (all 2014; freelance)

Acknowledgments

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*Fig. 1. South Church: plan and aerial view
(G.A.S.P. Project/plan S. Maslak; photo M. Bogacki)*

to 1.47 m on the inside, which indicates that the door must have been locked from the inside. The southwestern entrance opened into a staircase (SW Room) which led in turn to the roof of the church. Like the south entrance, it was wider inside (1.14 m), and much narrower on the outside (0.66 m). The stairs started directly to the north of the entrance, mounted north and then turned east. The width of each step was 0.80 m. The second entrance from the west opened into the northwestern room of the church (NW Room). It broadened from 1.09 m to 1.43 m, like the south and southwestern entrances. The NW Room measured 2.98 m (N–S axis) by 3.14 m (E–W axis). Two pillars formed the northern corners of this room.

The northwestern pillar originally was a cuboid with its longer side abutting the south wall of the North Church. The next pillar to the east comprised the northern jamb of an open passage, 1.65 m wide, between the NW Room and the naos of the church. A thin partition wall of baked brick, which later separated the NW Room from the naos, reduced the width of this passage to 0.60 m. Another room was cut from the naos area to the east of the SW Room (staircase). Only in this shape did the South Church meet the acknowledged standards of Makurian ecclesiastical architecture based on the tripartite division of the western part of the church. This new room was separated from the naos by a partition wall of sun-dried brick.



Fig. 2. South Church: view from the west with the wall with two entrances in the foreground (G.A.S.P. Project/photo A. Obluski)

The wall was 1.66 m long (N–S axis). The passage at its northern end was 0.46 m wide. The room was almost square in plan, measuring 2.09 m (N–S axis) by 2.12 m (E–W axis).

Showing no division into three separate spaces, the naos appeared to be unorthodox for Makurian architecture. It was 6.57 m wide on the west side and 7.40 m on the east side, while its E–W axis reached 6.08 m in length. A three-stepped ambo abutted the southern face of the third pillar (from the west). The ambo was 0.79 m (N–S axis) wide and 1.84 m (E–W axis) long. Further to the southeast there were the remains of a wall, the thickness of which was one brick width, separating the naos from the *hierateion*. A narrow, 0.47 m wide, passage was left between this unit and the northwestern corner of the apse. The distance between this thin wall and the ambo was just 0.33 m and thus the passage there seemed to be impractical and for occasional use alone. The communication with the NE Room of the church was possible through a passage (corridor) behind the apse. A ceramic pipe fragment in the northwestern corner of the naos served as a stand for a holy water font.

The *hierateion* measured 2.22 m (E–W) by approximately 3.70 m (N–S) [Fig. 3]. It comprised an area set off from the eastern part of the naos and included also the apse. At first, it was separated from the naos by a wooden screen, fixed to vertical wooden posts socketed in pots sunk in the floor; then it was replaced with the above mentioned thin partition wall of sun-dried brick. The floor of the *hierateion* was paved with trapezoidal ceramic tiles (for dimensions, see below). The apse, 1.63 m wide at its opening and 2.13 m deep, was

filled with a poorly preserved *synthronon* of sun-dried brick. The floor immediately in front of the apse was severely destroyed. The altar also was not preserved.

The apse was flanked to the south and north by two auxiliary rooms. The NE Room was entered from the west by a 0.90 m wide passage and from the southeast through a corridor behind the apse [Fig. 4], yet another typical Makurian church feature. The room itself was 2.40 m (N–S) and 2.53 m (E–W) in size. A structure with a flat top was preserved against the east face of the pillar in the northwestern corner of the room. It was constructed of stones and brick, both baked and sun-dried, bonded in mud mortar. There was also a small shallow niche in the south wall of the room, 0.31 m wide and 0.14 m deep. At the bottom of the east end of the said south wall were the remains of a structure of baked brick, likely a bench. The passage behind the apse, connecting the NE Room with the SE one, was 0.66 m wide. The SE Room was also accessible via a passage, 0.83 m wide, placed in its northwestern corner. The room was 1.94 m (N–S) wide and 2.37 m (E–W) long. Fragments of a structure of unknown function survived against the south wall. It was built of stones bonded in mud mortar.

With regard to the South Church, its most intriguing aspect is the roofing. The maximum width of the church (6.13 m) is too long to be spanned with a simple timber roof. An almost square (6.08 m by 6.13 m) naos may have been domed similarly to the church at Kulb (Deichmann and Grossmann 1988: 47–53) [Fig. 5]. A huge stone, possibly supporting such a dome over the naos, was found in the NE Room.



*Fig. 3. Hierateion in the South Church, view from the west
(G.A.S.P. Project/photo A. Obluski)*



*Fig. 4. Hierateion in the South Church, looking north
(G.A.S.P. Project/photo A. Obluski)*

Several organic samples retrieved at the foundation level of the South Church, as well as those from the uppermost occupation layer from the passage between the South Church and the south outer wall of the monastery, were collected for radiocarbon dating analysis. The walls of the South Church were built on a leveled layer of crushed baked brick and lime plaster fragments originating from the upper parts of the walls of the North Church. These walls must have been altered when the new roofing over the North Church was introduced.

As for the dating of the monastery, the first radiocarbon dating results point to the late 7th century as the time of construction. The date of the latest C¹⁴ sample, obtained from the uppermost occupation layers at Ghazali, was in the third quarter of the 13th century. Thus, the monastery of Ghazali was in use for over 600 years, from the late 7th to the late 13th century.

A passage between the South Church and the southern outer wall of the

monastery was also excavated in the 2013 season. Arches were traced against the faces of the longer walls. Remains of a water draining installation were found against the said southern outer wall. Two courtyards were identified in the southeastern corner of the monastery. Room 2, which served as a latrine, was entered from the eastern one of the courtyards (Room 1). The facility consisted of a toilet seat on an elevated platform with steps to access it. The sewage channel ran along the west face of the eastern monastic wall.

In 2014, the poorly preserved central part of the monastery was cleared in its entirety, removing several piles of stones and other debris dumped there during excavations in the 1950s. An area of approximately 400 m² was opened thus for excavation. The eastern part of this area was examined, further work being postponed to another season due to a scarcity of funds in 2014. Access to the walls of the North Church was ensured in order for the restoration team to conclude its work on protection of the wall plastering.

Excavations in the worst preserved part of the monastery, next to the eastern outer wall, revealed a row of latrines aligned with the wall [Fig. 6]. The whole complex, 14.44 m long, included about ten separate latrines. Some six of them, comprising the southern part of the complex, are believed to be the oldest. Room 8 further to the south of this complex had a floor coated with hydraulic plaster. The interconnected Rooms 3, 5 and 8 may have functioned as a bathing complex. A new set of four latrines, added to the older southern part of the latrine complex, was bordered to the north by another complex, presumably for bathing (Rooms 18–21); it occupied

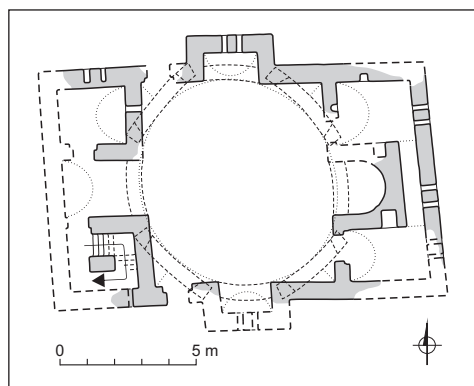


Fig. 5. Plan of the church at Kulb for comparison of roofing strategies (Drawing S. Mašlak after Deichmann and Grossmann 1988: Fig. 25)

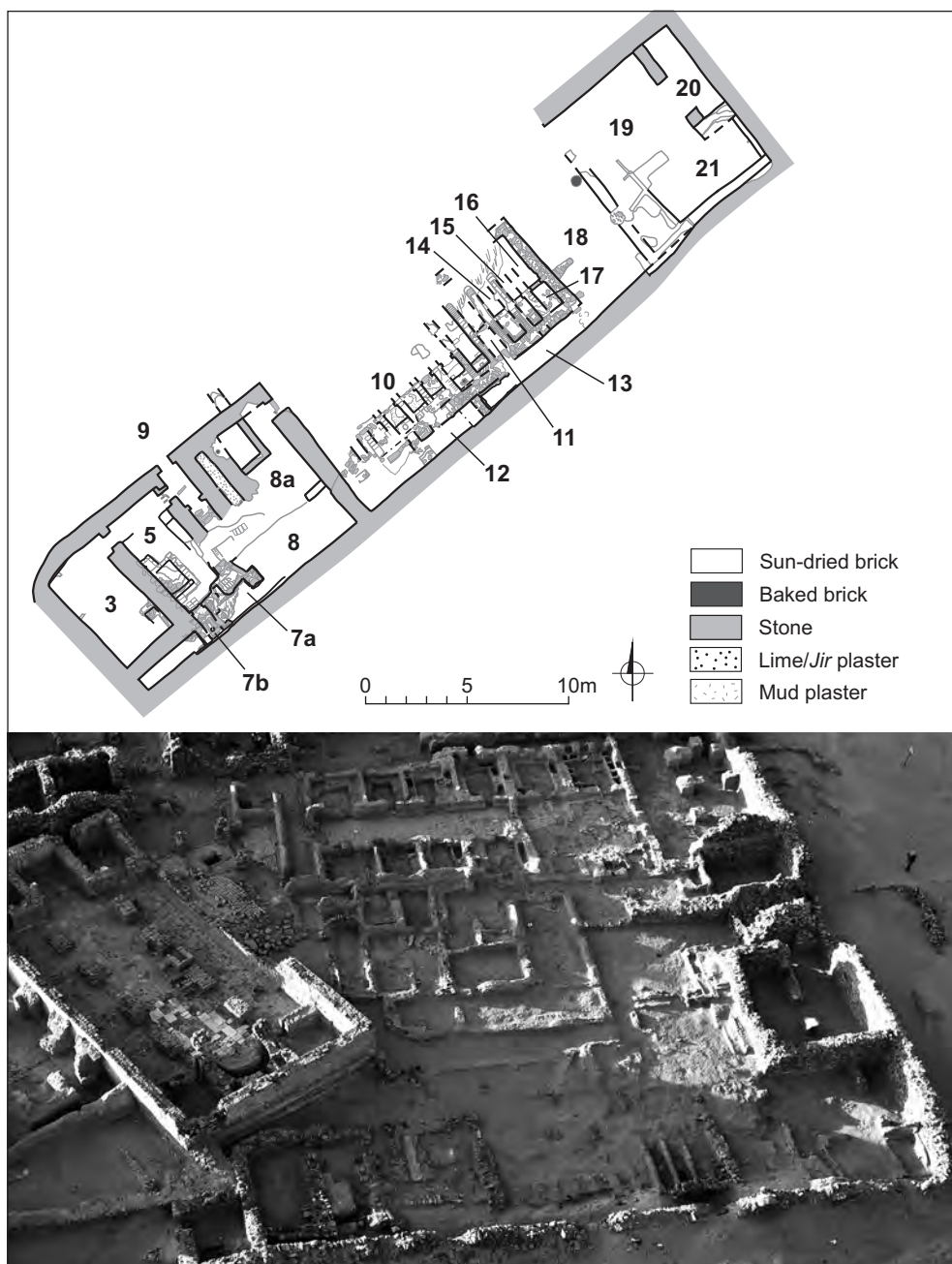


Fig. 6. Latrines by the east outer wall of the monastery: top, plan; bottom, aerial view from the east, row of latrines in the foreground, North Church at left (G.A.S.P. Project/plan S. Maślak; photo M. Bogacki)

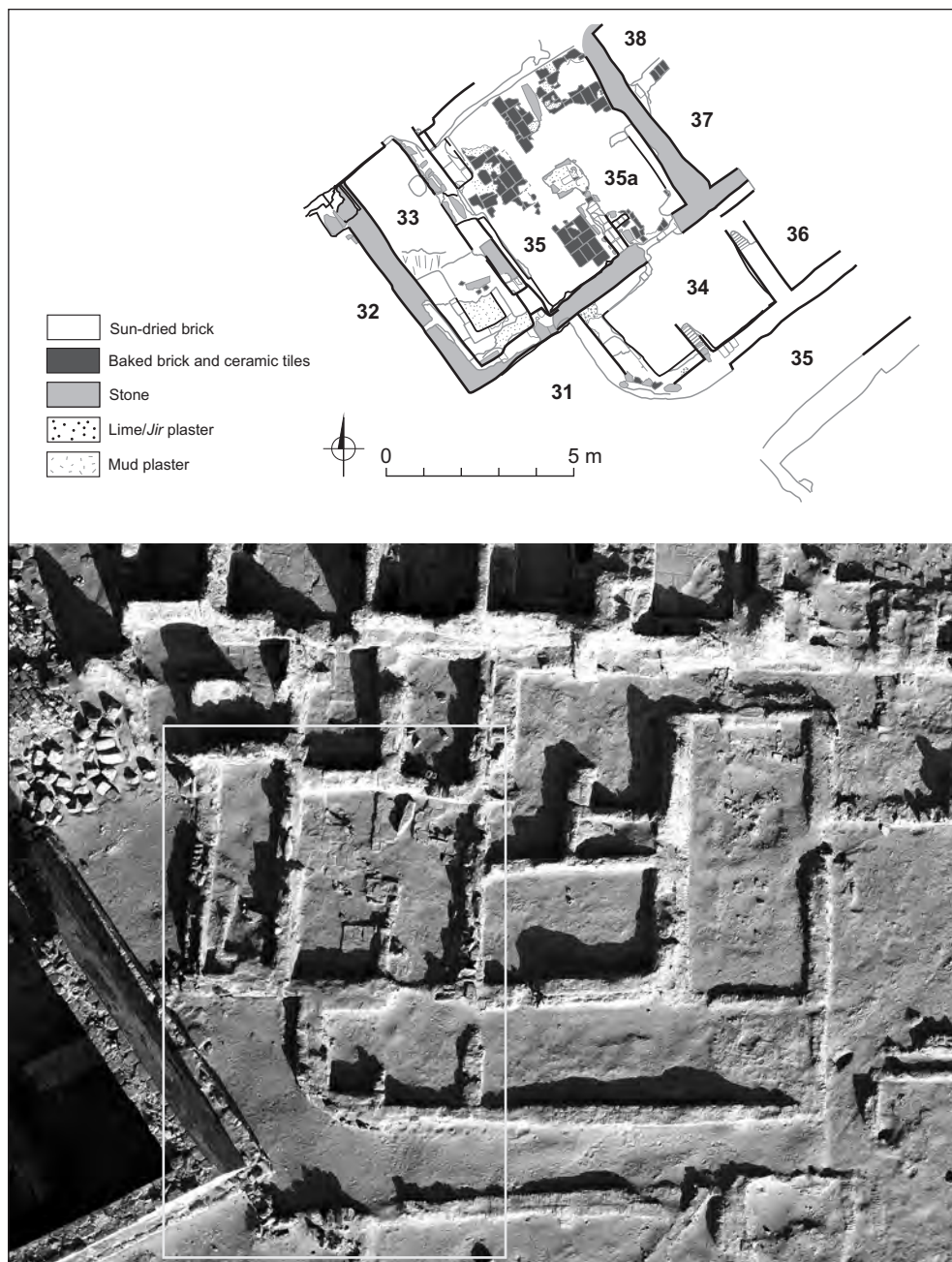


Fig. 7. Rooms located directly to the north of the North Church: top, plan; bottom, aerial view, South Church at left (G.A.S.P. Project/plan S. Maślak; photo M. Bogacki)

the entire northeastern corner of the monastery precinct.

Each latrine, approximately 1.50 m long, occupied the eastern end of an elongated room, which was about 7.80 m long and 0.80 m wide, and was entered from the west. A doorway with a threshold and lateral jambs set off each cubicle, which had a kind of raised platform at the eastern end, equipped with sanitary installations, of which only fragmentary pipes and some other ceramic parts have survived.

The area alongside the eastern outer wall of the monastery and in the southeastern corner of the precinct was severely denuded. The recorded archaeological remains consist mostly of the lowest brick courses, excluding any possibility of reconstructing the theoretical height of the walls. However, since these walls were mostly one brick-length thick, it is unlikely that they were more than 3 m high.

In one of the very last phases of the monastic community existence at Ghazali, three new latrines were added to Rooms 5 and 8 on their eastern sides. They were constructed right above a sewage channel running along the western face of the outer eastern wall of the monastery from Room 2 northward to Room 17.

A group of seven rooms with walls of sun-dried brick was uncovered in the area directly to the north of the North Church [*Fig. 7*]. The orientation of these walls followed that of the buildings in the northern part of the monastery. The newly discovered walls were poorly preserved, none higher than 0.75 m above floor level at present. The rooms were interconnected and bore evidence of at least two phases of construction and occupation. These rooms probably mark one of the latest phases of occupation of the monastery since they were added to the monastic dormitory and overbuilt the monastic northern courtyard.

BUILDING MATERIALS FROM THE SOUTH CHURCH

Unlike the North Church, the South Church was built almost completely of sun-dried brick.

The central pillar of the staircase, the steps and the south wall of the church were constructed of light gray-beige sun-dried brick (36–37 cm x 18–19 cm x 6.0–6.5 cm) containing substantial amounts of sand and chaff. The dimensions of sun-dried bricks from other parts of the church cannot be determined for the most part owing to their poor state of preservation. The walls of the apse were built of light gray-beige bricks with gravel, fine sand and a huge amount of chaff present in the matrix. These bricks were 6 cm thick, wider

than 17 cm, and longer than 35 cm. The east wall of the church was constructed of bricks of the same thickness (6 cm) and with the same inclusions (gravel, chaff). Bricks from other structures inside the church (e.g., the arcades) are of the same color and composition. The sun-dried brick from a thin partition wall separating the nave from the small room east of the staircase was made of light gray-beige clay with extensive sand and gravel but no chaff. Although the partition wall was certainly later than the rest of the church, the bricks hardly differ in size (32.5 cm x unknown width x 6.5 cm; 35–36 cm x unknown width x 7.0–7.5 cm).

The contours of the sun-dried bricks in walls abutting the South Church to the south are very blurred, the only exception being a fragment of wall at the southeastern outer corner of the Church. Here the bricks were 33(?) cm x 18 cm x 7.5–8.0 cm, and were made of light gray-beige clay mixed with substantial amounts of small gravel and lime(?) as indicated by the numerous white particles in the matrix. Some chaff and a few potsherds were added as well.

The structures made of baked brick did not belong to the original building phase of the South Church. The threshold in the entrance to the staircase from the west consisted of baked bricks of uniform size (35.0–36.5 cm x 15–18 cm x 6–7 cm, except for one example: 33 cm x 16 cm x 7–8 cm). They were fired red and dark red-purple. Imperfect in shape (or damaged in the firing process), they contained much chaff as suggested by the numerous cracks and voids left by the burnt-off vegetal component.

Baked bricks in the threshold of the western entrance to the northwestern room (NW Room) of the church were fired dark red-purple with edges and/or parts of surfaces vitrified to black. Like the bricks mentioned above, these bricks were also roughly shaped, displaying multiple cracks and voids left by the burnt-off vegetal component. Dimensions vary between 31 cm and 35.5 cm in length, 15.5 cm and 17 cm in width, and 5–7 cm in thickness. One brick, measuring 33 cm x 16 cm x 6.0–6.5 cm, appears to be the product of another workshop, being light red-whitish in color, well-shaped with no cracks and voids, with an extensive sand and small-gravel filler. Two types of bricks, i.e., well-shaped sandy bricks (31–33 cm x 15 cm x 6.5–7.0 cm) and roughly made

ones with vitrified edges (32–34 cm x 15.5–16.5 cm x 7–8 cm) were also used in a thin partition wall separating the NW Room from the nave, suggesting the same time horizon for the construction of both the threshold and the partition wall. All these bricks were certainly reused. They may have come from two different structures.

In the ambo, both types were in use: purple-gray with vitrified parts and chaff component (34.5 cm x 15 cm x 7 cm) and the sandy type (33 cm x more than 15 cm x 6.5–7.0 cm). An unidentified structure abutting the easternmost pillar was built of various baked bricks (e.g., 33 cm x 16.5 cm x 7.5–8.0 cm with traces of lime mortar; 32 cm x 17 cm x 6 cm; 33 cm x 16.5 cm x 6 cm).

Ceramic pots were sunk into the floor to serve as sockets for the beams probably carrying a wooden screen separating the nave from the *hierateion*. Only one of these remained complete. As the diameter of its inner rim was 18.5 cm, a beam of this size should be expected here. The pot had a depth of 0.34 m. The *hierateion* floor was paved with trapezoidal ceramic tiles. They were fired dark red-purple and were heavy with chaff. All the tiles were of uniform size, being 3–4 cm thick, 20.5–22.0 cm wide at one edge and 11.5–12.0 cm at the other, and 33.5–34.5 cm long.

The pavement in front of the south entrance to the North Church and the west entrance to the South Church demonstrates a diversity of baked brick/tile sizes. In its northwestern corner, two types of bricks were found. The first one included bricks fired dark red-purple with black vitrified edges, displaying multiple cracks and voids left by burnt-off chaff (30.5–31.0 cm x 16–17 cm x 7 cm; 32 cm x 13–

14 cm x 6.5 cm). Bricks of the other type were fired red, well-shaped, with chaff and coarse gravel, and a very micaceous matrix (32–33 cm x 15.5–17.0 cm x 6 cm). Tiles similar in quality to the second type were laid in front of the entrance to the South Church. They were fired red, sometimes smoked (but not vitrified), well-shaped, with extensive amounts of sand and gravel (28 cm x 14.5 cm x unknown thickness; 22.5–23.0 cm x 13–14 cm x 4 cm). The southwestern part of the pavement was made of fragmented baked brick of coarser type. Some baked bricks, both full-sized and broken, bore traces of light gray lime mortar, which should be considered as remains of a pavement coating.

Wall faces inside the church were neatly coated with hard plaster made of light gray-beige clay with much sand but no visible addition of lime. The plastered wall surfaces were whitewashed. The bricks making the floor were treated with equal

care; in a small room between the staircase and the nave, they were coated with a thin layer of light gray-beige clay, which was whitewashed as well.

The bricks in the South Church, both sun-dried and baked, were mortared in light gray-beige clay with much sand. Potsherds and pebbles were occasionally inserted into the joints.

Sandstone ashlar (about 0.25 m high) formed a foundation below the west wall of the South Church; they were likely brought from the dismantled sections of the North Church. A similar stone block, visible in the western face of the apse, may have come from the same demolition.

Wooden elements have survived purely by chance. Among them there is a wooden beam (palm?), replacing partly a course of bricks at the bottom of the northern face of the south church wall.

CONSERVATION

The restoration of the main church of the monastery was prioritized in the 2014 season. Activities were rudimentary but extensive, aimed at consolidating fragile wall plastering of the North Church with numerous graffiti on it. Benches around the building, as well as traces of wall paintings inside it, were restored as well. The results were more than satisfactory at this stage, but for full protection it is necessary still to reconstruct in part the tops of the church walls and cap them with waterproof mortar. The joints between the stones should be filled with such mortar as well. Intervention is needed on the pavement of the church.

Thin layers of mud and dust were removed from the plastering using clean

water, soft sponges and brushes. In the case of persistent dirt, 2% CONTRAD 2000 for regular dirt, and a 20% ammonium carbonate solution in water for salt or gypsum re-crystallization were used with a 30% ethanol solution or pure ethanol and acetone (Calaforra-Rzepka 2014). Plaster consolidation was accomplished in three different ways depending on the state of degradation. In the case of weak surfaces, the first step after cleaning was to impregnate them with lime water applied with sprayers or brushes. Some of the borders needed consolidation with a 10% PRIMAL AC-33 solution in water and ethanol. To facilitate resin penetration the edges were soaked with a 30% ethanol solution in water before conso-

lidation. The powdery mortar was consolidated with a 5% solution of lime casein in water receded by the use of a 30% ethanol solution. This procedure was repeated several times depending on the disintegration of the mortar. Hollows in between the plaster and the construction support were filled with PRIMAL AC-33 (1:5 in water), LEDAN TB1 (1:2 in water) injections or with liquid lime mortar. The detached edges and some gaps

were filled with lime mortar modified with white cement. Two recipes were used depending on the nature of the original material: 1. Slaked lime, white cement, sand (1:1:4); 2. Slaked lime, white cement, calcium carbonate, sand (1:1:1:4). Powdery whitewash was consolidated with lime water adding a 30% ethanol solution. Flaking or powdered paint layers were consolidated with a 5% ammonium casein solution.

EPIGRAPHIC RESEARCH

Epigraphic research constituted an integral part of the mission's activities in the 2013 and 2014 seasons. Several inscriptions had been discovered already in 2012 (for a preliminary assessment, see Ochała in Obłuski et al. 2015: 439–440), yet the abundance of epigraphic finds during the subsequent campaigns came as a surprise, confirming the site's great research potential.

The Ghazali epigraphic record from the 2013 and 2014 excavations can be divided into three general categories: wall inscriptions, funerary stelae, and inscriptions on pottery. Finds from each category were documented on site and studied.

Numerous wall inscriptions (graffiti) and drawings incised on the walls of the monastic church (North Church) were already noted by Peter Shinnie and Neville Chittick in the 1950s, but no documentation or even description was produced at that time (Shinnie and Chittick 1961: 10). One possible reason for this is that the inscriptions are extremely difficult to study. They were executed in a material that is quite hard to write upon, namely the lime plaster lining the walls of the building. This resulted in relatively

shallow incisions, visible only at certain hours of the day when the sun falls at a certain angle or with the help of a strong side light. Moreover, the plaster is poorly preserved; it is heavily eroded and covered with numerous cuts, apparently executed intentionally, which makes it difficult to distinguish letters from accidental shapes [*Fig. 8*]. Recording and a preliminary study of the graffiti were carried out in the 2013 season. The conservation work undertaken during the next campaign, which included cleaning the plaster on the outer façade of the North Church, may reveal further, so far unnoticed texts, which, however, will not be known until the next season.

All of the inscriptions documented in 2013 were found on the outer façade of the church, where the lime plaster was extensively preserved. One can imagine that the walls inside the church were also covered with inscriptions, but only small portions of the plaster there have survived. Only one poorly preserved and unidentifiable inscription was discovered on the east wall of the passage behind the apse. In total, 87 graffiti were identified, of which 47 are located on the west wall, 29 on the south, and five on the north



Fig. 8. *Fragment of the outer façade of the west wall of the North Church before conservation*
(G.A.S.P. Project/photo G. Ochala)



Fig. 9. *Inscription of Iakob, deacon, son of King Basil (GN.II.01)*
(G.A.S.P. Project/photo G. Ochala)

one; to this one should add six inscriptions found on loose stone blocks apparently from the north wall. Differences in the number of inscriptions on particular walls undoubtedly result from the state of preservation of these walls (e.g., the north wall is completely dismantled in its central and western parts) and/or their accessibility.

As said above, the state of preservation of plaster seriously hinders the identification of most of the inscriptions: it is impossible to recognize the character of the texts, not to say their language. In 38 cases, it was possible to decipher the text, permitting a preliminary classification of the graffiti. The inscriptions can be divided into the following categories:

- sacred names, including those of Jesus Christ, Mary, archangels, and St Onnophrios (18 examples),
- visitors' inscriptions (15 examples),
- acclamations and invocations (four examples),
- liturgical prayer (one example).

The above should be supplemented with eight instances of monograms, so far undeciphered, which may be names of saints or laymen.

The most interesting texts identified so far are the prayer *Agnus Dei* in Greek (Inv. No. GS.21), preserved on the south wall of the church (see also Obluski and Ochala 2016: 72, Fig. 5), and the inscription left by a certain Iakob, deacon, son of King Basil (GN.II.01) [Fig. 9], discovered on a loose stone block, most

probably originally from the north wall (see also Obluski and Ochala 2016: 74, 76). The content of these inscriptions, interesting as it is (the former is the only example of *Agnus Dei* known from Nubia and the latter contains a rare mention of a royal family member), is not their only point of interest. It is prospects of a more precise dating that make them so attractive. Among the Ghazali epigraphic sources, most notably the wall inscriptions, they are the only ones the date of which can be established beyond a broad dating of the existence of the whole monastic complex to the 7th–13th century. The ending of the *Agnus Dei* prayer was originally covered by a massive pilaster in the north aisle of the South Church. This means that the inscription was executed before the secondary church was erected some time in the 10th century. And Iakob's inscription can be dated by the mention of the king's name: two reigning Basils are known in the history of Makuria, one from the 11th century and the other from the turn of the 12th century.¹ It is impossible, of course, to assert which of the two Basils is meant, as this would require more circumstantial evidence, but we know at least that the inscription cannot be earlier than the 11th century.

Among the wholly legible and comprehensible graffiti one should mention a list of archangels accompanied by a cross on a stand inscribed with the initials of the Four Living Creatures (north wall, GN.03) (Obluski and Ochala 2016: 73–74, Fig. 6) and an inscription consisting

¹ The former is attested only in the *History of the Patriarchs of Alexandria*, the latter in several legal documents from Qasr Ibrim and Nauri (Obluski and Ochala 2016 followed an old opinion that the document from Nauri should be dated to the 11th century, but recent research by Bartosz Wojciechowski [personal communication] has shown that the king at stake in Nauri and Qasr Ibrim is the same one who reigned at the end of the 12th and beginning of 13th century; see now Ochala forthcoming).

of the name of Archangel Ourouel repeated four times, arranged in the form of a cross, with the first letter of the name being the central point of the cross (west wall, GW.47) (Obluski and Ochala 2016: 74).

Funerary stelae are quite easy to study on the whole. Even though most of them are preserved in tiny fragments, it is quite often possible to recognize their language (Greek or Coptic) or even the funerary formula employed. The Polish excavations have added 20 specimens² to the 135 monuments of this kind discovered at or attributed to Ghazali (see Obluski and Ochala 2016: 69, for bibliography). All those, discovered by the Polish mission, come from secondary contexts; some of them were apparently reused for various repair works in the monastery, for example in the pavement of the church or in the east wall of the entire complex. Numerous small fragments were found in the fill of the South Church as well as in other monastic rooms, indicating that they were used as debris to fill in the empty space between the vault and the floor above.

Among the Ghazali stelae uncovered so far by the Polish mission there are 13 terracotta ones and eight made of sandstone. Their language is either Coptic, found in 11 cases, or Greek identified in three cases; seven pieces are too fragmentary for the language to be recognized.³

Several discoveries in this category deserve mention here. The best preserved examples of funerary stelae found so far by the Polish mission in Ghazali are two almost complete sandstone slabs, both inscribed in Coptic and found near the east monastic wall. They were apparently reused for repairing this section of the wall and because of that the texts are quite worn out and illegible in some places. Fortunately, since the crucial parts of the inscriptions have survived, it is possible to learn that each of them commemorates the death of a monk: 'o[ur brother Io]hannes, the monk' (G.13.057) [*Fig. 10*] and 'our blessed brother [---]' (G.13.038) (see Obluski and Ochala 2016: 70, Fig. 4 [G.13.038], for a more detailed description).

A fragmentary sandstone funerary stela discovered in the fill of the South Church (G.13.013+014+015) is worth mentioning here not because of its content, but because it most probably complements the fragment found by Shinnie and Chittick in the 1950s 'outside monastery to north' (Shinnie and Chittick 1961: 85, No. 56).⁴ The two pieces form the bottom part of an epitaph with the Coptic formula ϣⲁⲙⲛⲏ ⲉϣⲉⲱⲛⲉ ⲉϣⲉⲱⲛⲉ, 'amen, may it happen, may it happen'. Two other fragments come from the upper part of the stone and cannot be matched either with the bottom part or with each other. They are ascribed to the

² The actual number of fragments found by the Polish mission is 21, but three pieces (G.13.013+014+015) most probably belong to the same stela as a fragment found by Shinnie and Chittick (1961: 85 [No. 56]) and republished by Van der Vliet 2003: No. 50. The number includes three stelae found in 2012, for which see Ochala in Obluski et al. 2015: 439–440.

³ The linguistic situation at Ghazali, with a surprisingly strong position of Coptic, has been a matter of debate since the beginning of the 20th century (see Junker 1925: 145–146; Shinnie 1974: 44; van der Vliet 2003: 104). For the most recent analysis on the grounds of new discoveries, see Ochala 2016: 1273–1283.

⁴ The fragment is now stored in the Sudan National Museum in Khartoum (Inv. No. SNM 11272) and was republished by Jacques van der Vliet (2003: No. 50).



*Fig. 10. Epitaph of Ioannes, monk (G.13.057)
(G.A.S.P. Project/photo G. Ochala)*

same object on account of the color of the material as well as the thickness of the slab (7.0–7.5 cm).⁵ The stela should be counted among the most popular type of epitaphs from Ghazali, the ones opening with the ‘Through the providence of God’ formula, attested in both Coptic and Greek.⁶ This discovery clearly demonstrates the extensive disturbance of archaeological contexts in Ghazali,⁷ simultaneously giving hope for more correlations between old finds and new finds in the future.

The final category to be presented here, inscriptions on pottery, is by far the most abundant among the epigraphic finds from Ghazali. In the 2013 and 2014 seasons, the total number of vessels with traces of writing on them was 307 (for an overview

of material from the 2013 season, see Obluski and Ochała 2016: 76, Fig. 7). They supplement the 136 already known examples (published in Monneret de Villard 1935: 256, Fig. 232.1–7; Shinnie and Chittick 1961: 64, 95–99, Figs 33–44; Lethmayer and Zach 1986: 141–143, Figs 1–16), making up the biggest, to the best of our knowledge, collection of this kind recognized from all of the Nile Valley. As the excavations have covered so far roughly a third of the monastery, one expects that the number of finds in this category in the following campaigns will be at least doubled, if not tripled.

The distribution of the finds in the excavated area is uneven: while most of the units yielded at least several inscribed fragments, only a handful of contexts contained a substantial number of such objects. The most abundant were: room 13 (30 pieces), rooms 4 and 18 (29 pieces each), the South Church (27 pieces), room 8 (20 pieces), room 20 (18 pieces), and rooms 19 and 22 (17 pieces each). This most probably results from the state

Table 1. Percentage share of potsherds with inscriptions in the total count of pottery from the units

Unit	Inscriptions on pottery	Diagnostic fragments total recorded	Percentage
13	30	204	15%
4	29	247	12%
18	29	391	7.5%
South Church	27	240	11%
8	20	331	6%
20	18	312	6%
19	17	324	5%
22	17	215	8%

Table 2. Techniques of executing inscriptions on the pottery from Ghazali

Technique	Fine ware	Coarse ware	Total
Scratched after firing	189	62	251
Painted	1?	26	27
Incised before firing	—	29	29
Total	190	117	307

⁵ The recorded thickness of the fragment from the Khartoum museum is 9 cm, but it is assumed to be the maximum thickness recorded near the outer edge.

⁶ For this type of epitaphs, see generally, van der Vliet 2011: 215–220. Our example is unusual in that the text apparently contains *τεπρονοια*, ‘providence’, in line 1, and *τελεγειν*, ‘command’, in line 2. While both nouns are interchangeable in this type of formula (‘through the providence/command of God’), they never occur side by side in the same text.

⁷ This disturbance is most probably the effect of monks’ at work already in the Middle Ages, not modern (pseudo-) archaeological digging.

of preservation of the architecture in the eastern and central parts of the monastery: all these rooms, apart from the South Church, adjoin the eastern monastic wall and are therefore relatively well preserved. The rooms in the central part (31–49) are preserved only on the walking level or slightly above it, and as such they have yielded a small number of finds in general.

While the number of finds in this category is certainly high in absolute terms, it is still rather insignificant when compared with the overall number of pottery fragments unearthed in Ghazali. The 307 inscribed pieces constitute only 13.5% of the total number of 2,264 registered diagnostic fragments. The share of sherds with inscriptions in the total count from any given unit is shown in *Table 1*.

The contexts of these finds are largely, if not entirely, secondary (pottery sherds appear to have been used as filler in building construction) and it is not infrequent to find joining pieces of one vessel in two or more different rooms. Thus, tempting as it is, the inscribed pots cannot be used to tell us anything about the function of particular rooms and spaces. However, although the inscribed pieces of pottery have little archaeological value, they still can shed some light on the lifestyle of the

community. Naturally, nothing final can be said until the excavation is completed, but even so, some provisional conclusions with regard to the form and contents of the inscriptions can be reached.

Of the 307 pieces found by the Polish mission 190 were executed on fine ware (mostly bowls and plates), the remaining 117 on different types of coarse ware (bottles, amphorae, beer jars, storage jars). Three inscription techniques have been identified: scratching after firing, painting, and incising before firing. A rule of thumb is that inscriptions on fine ware are exclusively scratched after firing while those on coarse ware represent all three techniques. Scratching after firing is thus common to both categories of vessels, while painting and incising before firing have so far been attested only for coarse ware [*Table 2*].

As for contents, the inscriptions can be divided into three major categories:

- owners' inscriptions (112),⁸
- names of divine beings/saints (40),
- names (33).⁹

There is also one example of an acclamation in the form of the ⲙⲟⲣ trigram [*Fig. 11:a*].¹⁰ The remaining 121 specimens have all been classified as unidentified due to either their fragmentary state of

⁸ Tentatively included here are the actual signatures of owners of particular pots as well as inscriptions on coarse vessels, mainly amphorae and bottles, that could have served as addresses identifying the receivers of commodities transported in such vessels. A precise distinction between various functions of such texts will require a detailed study of the whole collection once the excavations have been completed.

⁹ Meaning all names that could be equally of an individual as of a saint/divine being (like Raphael and Abraham), as well as undeciphered monograms, undoubtedly representing a proper name, but of unknown character.

¹⁰ This is most probably a variant of the more common ⲙⲁⲣ trigram, itself being a variant of the well-known Christian trigram ⲙⲁⲣ. They both should most probably be understood as acronyms of Greek phrases Μ(αρία) Χ(ριστὸν) Γ(εννᾶ) and Χ(ριστὸν) Μ(αρία) Γ(εννᾶ), respectively, both meaning 'Mary begets Christ' (see Tsakos 2015 for a summary of scholarship, with literature, and a discussion of Nubian instances of ⲙⲁⲣ). Provided that this interpretation is correct, the present example should be analyzed as an acronym standing for the phrase Μ(αρία) Θ(εὸν) Γ(εννᾶ), 'Mary begets God'. It seems that two more examples of this version of the trigram can be identified in the material gathered by Shinnie and Chittick (1961: Figs 34.27, 34.23). According to Adam Łajtar (personal communication), several instances of this trigram on pottery fragments were discovered also in the monastery on Kom H at Dongola.

preservation or difficulties in deciphering and/or interpreting their contents. The latter case is best represented by a group of inscriptions consisting of single letters of the Graeco-Coptic alphabet: an *alpha* (14 instances), a *theta* (seven instances), and a *djandja* (four instances). There are a few instances of two letters occurring jointly on one vessel: an *alpha* and a *theta* or a *theta* and a *djandja*. The meaning of these inscriptions escapes modern learning.

The most interesting in this collection are the owners' inscriptions because they provide some basic information about the residents of the monastery. We learn their names and occasionally their functions. The proper names on pots from Ghazali occur in three forms: in *scriptio plena*, as abbreviations (by suspension or contraction), and as monograms. The most popular name, attested so far in the material discovered by the Polish mission, Ioannes, is found in nine certain examples (abbreviated as $\overline{\text{IOWY}}$ or as a monogram) and in 18 uncertain ones (abbreviated as $\overline{\text{IOW}}$ or $\overline{\text{IOWN}}$, which can be interpreted as either Ioannes or Ionas). The second popular name is Baptistes with seven instances (abbreviated as $\overline{\text{BAP}}$),¹¹ then Ekklesiastes (abbreviated as $\overline{\text{EKKL}}$ [Fig. 11:b]) and Kyriakos (occurring in *scriptio plena*, abbreviated as $\overline{\text{KYPI}}$ or $\overline{\text{KY}}$ or as a monogram), both with four instances. Other names are attested as well, although singularly; these are, for example, Theodoros, Thomas, Samuel, Simon, Antonios, and Philotheos. It is tempting to consider the names occurring in identical or very similar

forms (like Baptistes or Ekklesiastes) as belonging to the same person, but until a precise chronology of the pottery from Ghazali has been established enabling us to compare the forms of vessels bearing those inscriptions, such identifications must remain provisional.

Among the functions and titles mentioned in the owners' inscriptions from Ghazali, the one that is the most frequent is that of a priest, always noted in the form of the $\overline{\text{PI}}$ symbol. It has been attested so far in 26 examples, but in most of them the symbol is the only surviving part of the text. Only a handful of priests from Ghazali is known by name: Baptistes [Fig. 11:c], Antonios, Daudid(?), and Ioannes/Ionas. Apart from the priests, there are four attestations of deacons, but only one with a name, that of a certain Iesou. Three persons are identified by the monastic title *abba*: Markos, Chael [Fig. 11:d], and Iesou. Finally, there are 17 attestations of the abbreviation $\overline{\text{AP}}\overline{\text{X}}$, which appears to be a designation of function, but its exact meaning is uncertain. Unfortunately, almost all the attestations are fragmentary. In three cases only it occurs in combination with other elements: twice with a proper name and the symbol for the priest, once only with the symbol for the priest. It could, thus, stand for 'archpriest'. However, instead of the expected $\overline{\text{AP}}\overline{\text{X}}\overline{\text{PI}}$, standing plainly for $\overline{\text{APX}}(\text{I})\overline{\text{TP}}(\overline{\text{ECBYT}}\overline{\text{EPOC}})$, the two elements appear in the reverse order ($\overline{\text{PI}}\overline{\text{AP}}\overline{\text{X}}$), which obscures this interpretation.¹² Otherwise, $\overline{\text{AP}}\overline{\text{X}}$ could be interpreted as a separate title, for example, 'archimandrite', or another function of

¹¹ Interpretation proposed already by Barnes for two instances of this abbreviation, in Shinnie and Chittick 1961: 96 (Nos 30 and 31).

¹² See, however, Jakobielski 2010: 72, Fig. 6, where the combination $\overline{\text{PI}}\overline{\text{AP}}\overline{\text{X}}$ found on an amphora from Dongola is interpreted as 'archpriest' without any reservations.



Fig. 11. Selected owners' inscriptions (from top):
a – $\text{M}\Theta\Gamma$ trigram (Inv. No. 4603);
b – inscription of Ekklesiastes (Inv. No. 14); c – inscription of Baptistes, priest (Inv. No. 22); d – inscription of abba Chael (Inv. No. 5837) (G.A.S.P. Project/photos G. Ochala)

superior rank beginning with the prefix 'arch-'.¹³

Inscribing sacred names on pottery and other objects probably had an apotropaic function. In Ghazali, as everywhere in Christian Nubia, the most popular name warding off evil forces was that of the Archangel Michael. It could be written down in *scriptio plena*, abbreviated, as a numerical cryptogram $\text{XPI}\Theta$, or in the form of various monograms. It has been attested so far, in one form or another, on 30 vessels from Ghazali. Other names identified so far include Jesus Christ found on six pots, Emmanuel on four, Archangel Gabriel and Mary on one pot each.

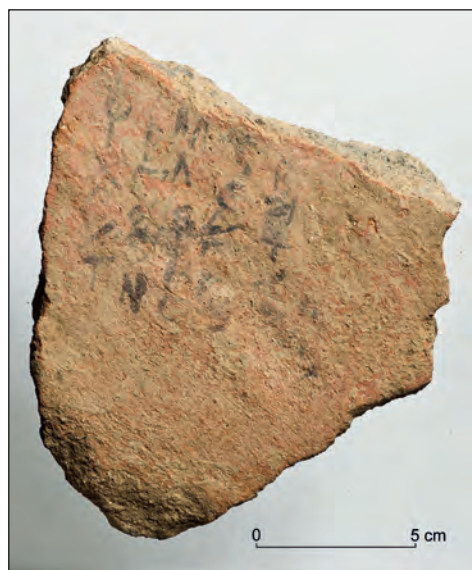


Fig. 12. Terracotta plaque with the Coptic alphabet written on it in black ink (G.13.051) (G.A.S.P. Project/photo M. Bogacki)

¹³ Barnes, in Shinnie and Chittick 1961: 98 (No. 70), Fig. 37.70, suggested that the abbreviation be resolved as αρχ(ων) , but the meaning in combination with a proper name and the symbol for a priest is uncertain.

The last object to be presented here is one of a kind among the Ghazali epigraphic finds. It is a piece of a terracotta plaque of irregular shape and measuring roughly 16 cm by 13 cm without any original margin (G.13.051) [Fig. 12]. On one of its sides there are the letters of the Coptic alphabet put down in black ink by an apparently inexperienced or unskilled scribe. The alphabet is in reverse order: it starts with an *omega* in the upper left corner and continues in five columns to the right until an *alpha* is reached at the end

of the last column. Then the scribe added a set of Coptic letters, but in no apparent order. The other side of the plaque bears another rendering of the alphabet executed by the same scribe. This time it is in the right order, starting with an *alpha* in the upper left corner, but apparently incomplete (the last recognizable sign is a *nu* at the end of the third column). Judging by the character of the inscription as well as by the clumsiness of the letters, this must have been a school exercise, executed at an early stage of education.

POTTERY

Excavations in the southern and central part of the Ghazali monastery enclosure in the 2013 and 2014 seasons yielded a vast amount of pottery fragments. The area of the South Church and the adjoining passage, Rooms 1 through 22, abutting the southeastern part of the enclosure wall and the rooms directly north of the North Church, produced in total over 25,000 pottery sherds. Of these, 1004 and 1260 sherds were recorded in respective seasons.

All the potsherds from each level/room of the monastery enclosure were collected and sorted by category: diagnostic fragments, meaning rims, bases, handles, decorated sherds and all the fragments with monograms and inscriptions, and non-diagnostic sherds, which were counted before being discarded. The diagnostic fragments were sorted by type, fabric and decoration following Shinnie's vessel typology and clay classes developed for the Ghazali site (Shinnie and Chittick 1961: 30–51). The typology and fabric classes need to be improved and developed in order to cover the apparent insufficiencies

of the existing classification system. All diagnostics were numbered and inventoried, and selected ones were drawn as well as photographed.

The ceramics were both hand- and wheel-made, the latter being predominant. Smoothing prior to firing was the most common method of surface treatment. Some of the jars, mostly utility ware, bear no signs of surface treatment. A large number of vessels, including handmade cooking jars and large, globular bottles (beer jars), was covered with a layer of red slip, either on the entire surface or on the upper part of the body (neck, rim).

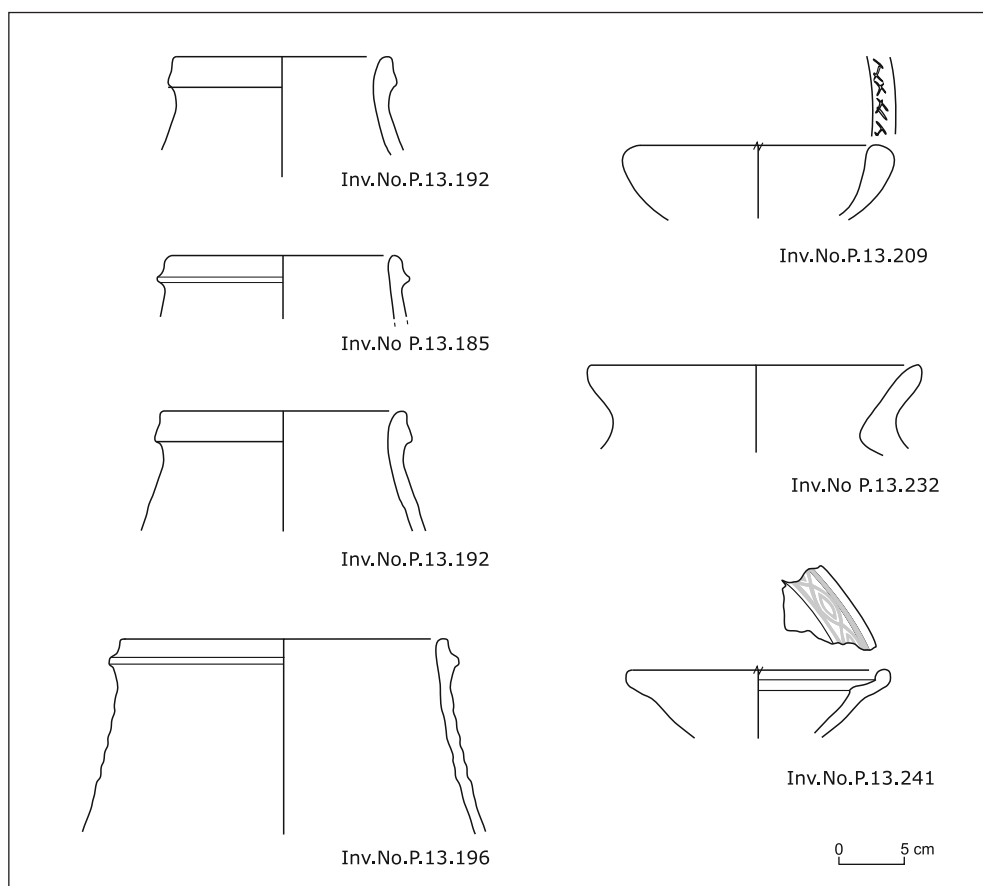
The repertoire of vessel types was extensive, comprising mostly utility vessels: *qawadis*, *dokat* and cooking pots. These represented about 25% of all the diagnostic fragments recovered from every context. The abovementioned pot types were made of Nile clay with a considerable amount of organic material and mica. Among the other types small bowls, both with plain and footed bases, were the most numerous. The "ledge-rim" type plates were also frequent. There was a significant number

of vessels with straight walls and a ridge outside, slightly below the rim, painted with decoration on the outside, below the rim and below the ridge. Vessels of these types belong to Shinnie's Class I in terms of ware classification having homogenous, light beige, light grey or pinkish clay with no organic material (Shinnie 1961: 30–31). The surface was covered with white or cream slip as a rule and some of the vessels, apart from those with painted decoration, were incised or stamped as well. Their

surface was in some cases polished, resulting in a lustrous surface.

A significant number of sherds bears monograms and inscriptions. These were executed mostly on the fine wares, usually bowls and "ledge-rim" plates, but can be also found on the coarser pottery, mostly on the necks and on the inside surface of rims of the bottles and "beer jars" (see the discussion above and *Fig. 11*).

Clearing Room 8, situated southeast of the North Church, produced the greater



*Fig. 13. Pottery vessels from Room 8 (9th–11th century)
(G.A.S.P. Project/drawing M. Korzeniowska)*

part of the pottery fragments collected, yielding about 30% of the total season yield in 2013. The repertoire of vessel types was not extensive, comprising mostly *qawadis* and cooking ware. The least numerous were handmade vessels made of Nile silt fabric, *dokat* and cooking pots, both with rounded bases, having rough, mat- and basket-impressed decoration on the exterior of the surface as a result of the manufacturing process. There is abundant ethnoarchaeological evidence for this way

of pottery forming throughout the region (Tobert 1984: 143; Phillips 2010: 263). All of the *dokat* fragments had the top of the rim decorated with incised crossing lines and burnished interiors. Globular cooking pots were characterized by a short, flaring rim. Only a few fragments of table ware were recovered including a number of inscribed ones. These were mainly large plates and bowls, also with footed bases. Some of these fragments were decorated with painted or incised ornament. The

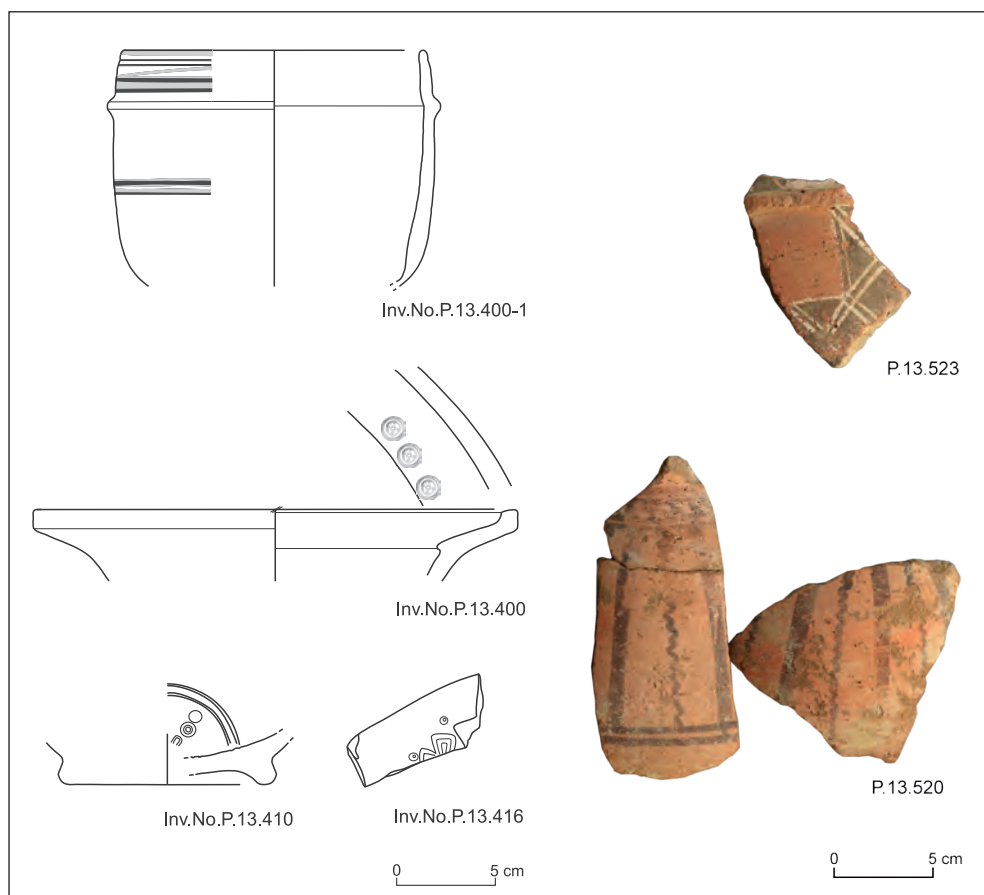


Fig. 14. Pottery vessels from the South Church: left, tableware; at right, 10th–13th century pottery from the upper fill of the church (G.A.S.P. Project/drawing and photo M. Korzeniowska)

material is chronologically diverse and represents mostly Classic and early stages of Late Christian wares of Adams' style N.IV (9th–11th century) and N.V (11th–13th century) (Adams 1986: 245–247) [Fig. 13].

The second most numerous group of pottery fragments (about 25%) during the 2013 season came from the clearing of the South Church. Most of the assemblage was constituted of non-diagnostic sherds, mostly of coarse ware, mainly fragments of, again, *qawadis*, *dokat* and cooking pots. Undiagnostic, but characteristic were the fragments of amphorae with slightly ribbed walls, made of a hard, medium-dense and light red fabric representing early Dongola production (Pluskota 2005: 227–228). Tableware was represented mostly by bowls with slightly rounded as well as footed bases (the latter with walls bent slightly below the rim), a few fragments of plates with a ledge rim and some fragments of vases with a ridge below the rim [Fig. 14: P.13.400-1, P.13.400]. Most of the recovered fragments bear painted decoration; stamped decoration of a stylized cross placed on the inside surface of the bowls and plates was also present. [Fig. 14: P.13.410, P.13.416]. The fill of the South Church produced the only complete vessel of the season: a rather unremarkable small handmade cup with rounded base. The vessel is burnt on the inside, with signs of burning visible also on the rim and right below it on the outside surface, suggesting its use as a lamp.

Given their location in the fill of the church, as well as their size and homogeneity along with their heavily fragmented character, these sherds may have been in secondary use as building material for the South Church vaults.

Dating of the pottery from the floor level also corresponds to the rebuilding of the North Church and the raising of the South Church associated with that rebuilding. The pottery from the upper fill of the church is more diverse chronologically, ranging from the 10th through the 13th century [Fig. 14: P.13.520, P.13.523].

The rest of the ceramic material came from the surface cleaning of the area directly adjacent to the southeastern outer wall of the North Church. As the material was collected from the topmost layers, it was of little significance as a dating factor.

Almost half of the pottery assemblage recovered from Room 2 comprised utility vessels: cooking pots, *dokat* and *qawadis*. The “ledge-rim” plates predominated in the tableware category. Some bore no



Fig. 15. Potsherds from Room 2: later Early Christian to Classic Christian (G.A.S.P. Project/photo M. Korzeniowska)

decoration, others were decorated in the ledge area with stamped ornaments consisting of small concentric circles on the ledge, incised bands in the form of wavy lines and incised decoration in the form of a flower on the ledge and on the inside surface. All these motifs are characteristic of Adams' N.III style (Adams 1986: 307) [Fig. 15: P.13.627, P.13.665]. Small red-ware bowls were also present, as well as a pilgrim flask representing the Classic Christian Adams style IV.A (Adams 1986: 245–246). The form and decoration indicates a date from the later Early Christian to the Classic Christian period [Fig. 15: P.13.685].

Chronologically mixed material came from Room 30. A statistically large number of *qawadis* fragments was accompanied by some early Christian examples, including the rim of a large pot with a wavy ornament right below the rim. A similar motif was noted on a jar from the early Christian period found in Old Dongola (Pluskota 1990: 329). A handmade bottle of a beer

jar type with a wide flaring rim, thick, red slip on the inside and outside surface, and burnished surface is another example. This type of bottle was recorded at many early Christian sites and can be dated to the end of the 6th/beginning of the 7th century AD (Adams 1986: 423–424) [Fig. 16: P.13.14, P.13.8].

Of nearly 2000 potsherds gathered in the 2014 season a little over 400 were diagnostic fragments. They were collected

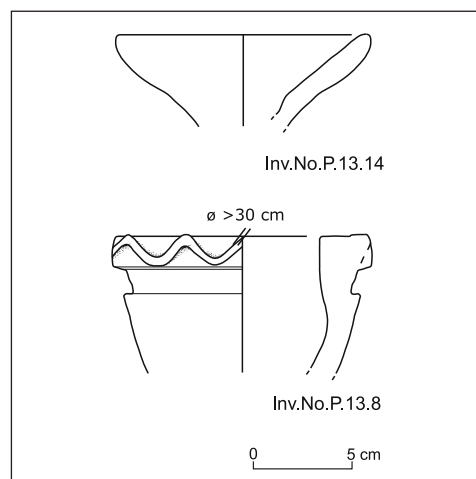


Fig. 16. Pottery vessels from Room 30 (G.A.S.P. Project/drawing M. Korzeniowska)

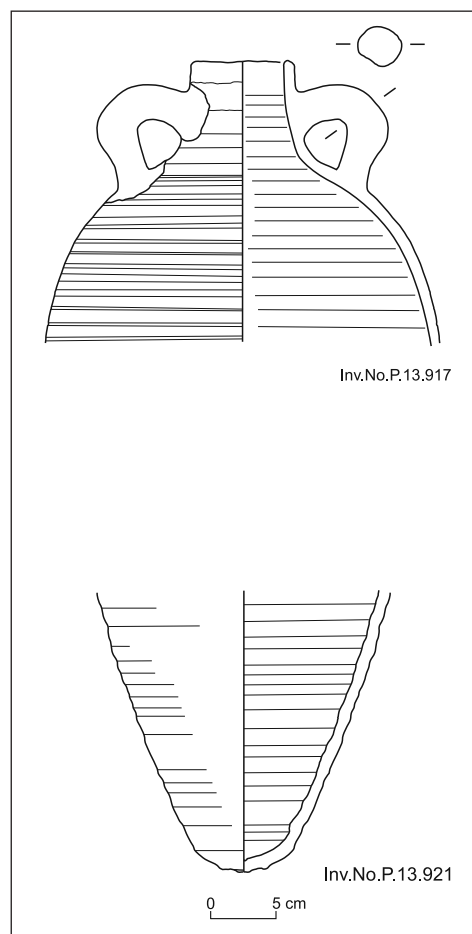
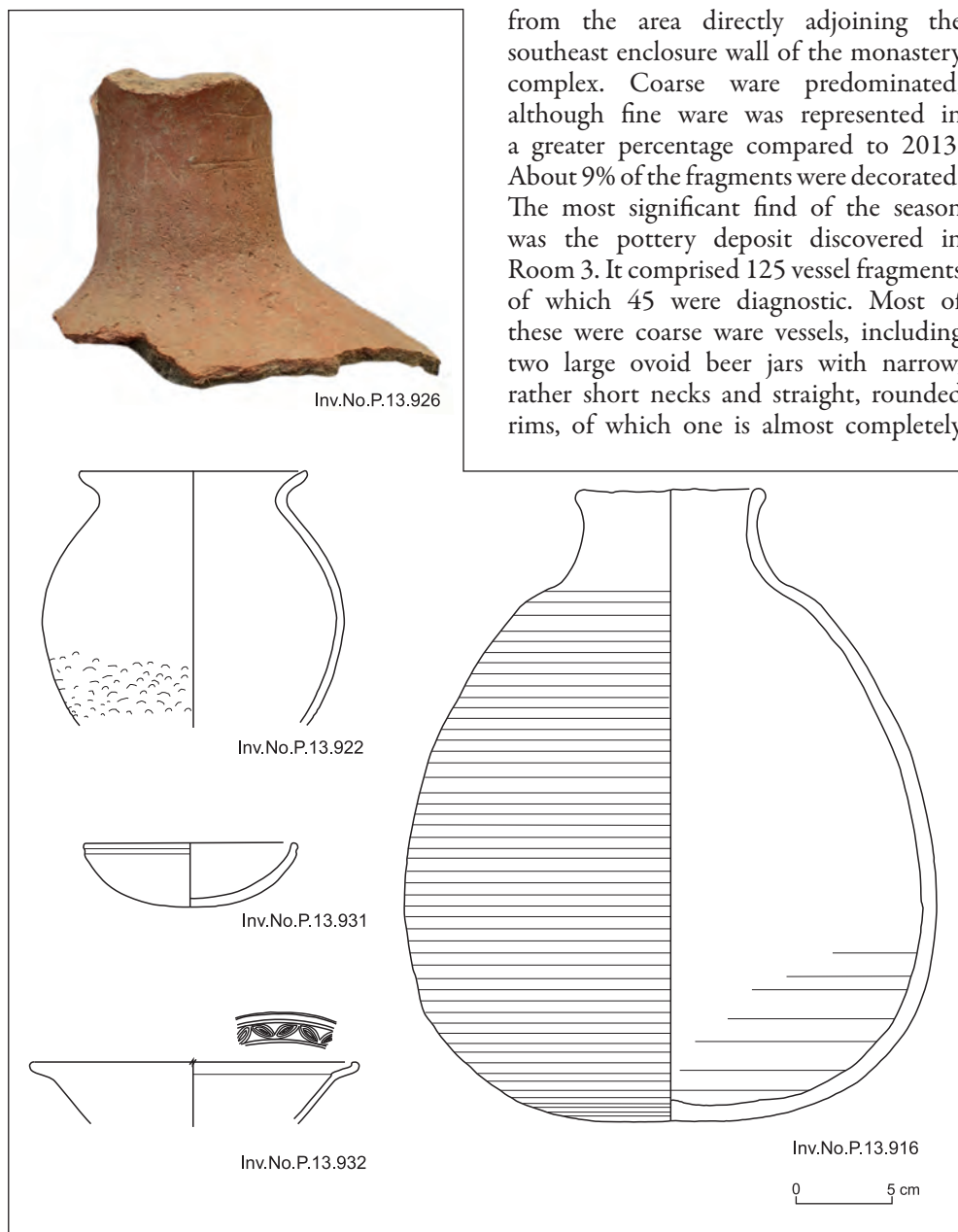


Fig. 17. Amphorae of Dongolan type (G.A.S.P. Project/drawing M. Korzeniowska)



from the area directly adjoining the southeast enclosure wall of the monastery complex. Coarse ware predominated, although fine ware was represented in a greater percentage compared to 2013. About 9% of the fragments were decorated. The most significant find of the season was the pottery deposit discovered in Room 3. It comprised 125 vessel fragments of which 45 were diagnostic. Most of these were coarse ware vessels, including two large ovoid beer jars with narrow, rather short necks and straight, rounded rims, of which one is almost completely

Fig. 18. Pottery deposit from Room 3: handmade cooking pot P.13.922, bowl P.13.931 and plate P.13.932; beer jar P.13.916, jar P.13.926 (G.A.S.P. Project/drawing and photo M. Korzeniewska)

preserved [Fig. 18: P.13.916]. There were also four diagnostic amphora fragments in this set, representing early Dongolan production and belonging to types A and B [Fig. 17: P.13.917, P.13.921], dated by Krzysztof Pluskota to the late 6th/early

7th century AD (Pluskota 2005: 229–230). One of the amphorae bears a yellow painted monogram on its shoulder. A large handmade cooking pot with red slip and shallow mat impression on the outside surface and a neck of an early handmade



Fig. 19. Bottle necks and a possible lid from Room 4
(G.A.S.P. Project/photo M. Korzeniowska)

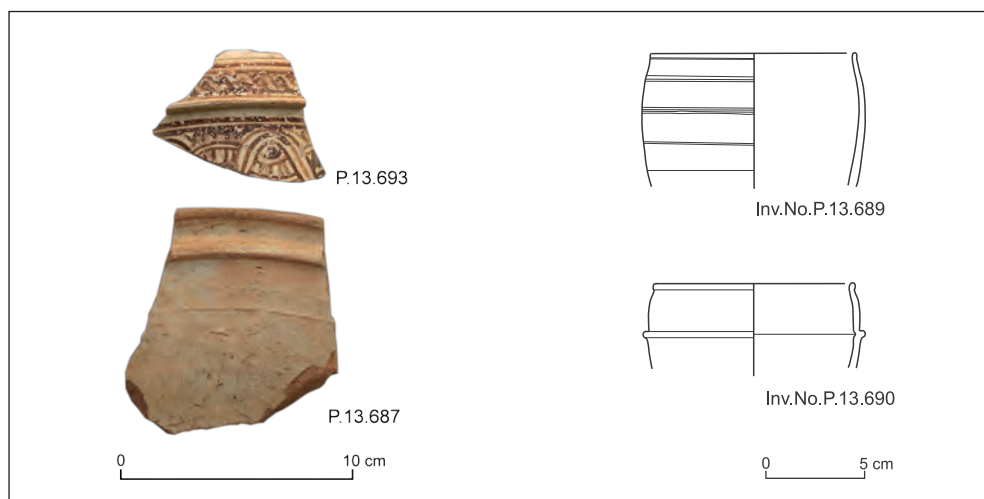


Fig. 20. Pottery fragments from Rooms 7A (tableware) and 10
(G.A.S.P. Project/drawing and photo M. Korzeniowska)

beer jar were present as well [Fig. 18: P.13.922 and P.13.926]. Only a few sherds represented tableware and only one of those had painted decoration. It was a large plate, with a ledged rim and thick red slip complemented with a brown-painted ledge bearing a leaf frieze executed in yellow paint. In addition there were two small

bowls and two bases of, probably, plates. The bowl was made of red clay with a large amount of mica and covered with red slip [see Fig. 18: P.13.931, P.13.932].

Clearing of the area directly adjoining the southeast enclosure wall of the monastery complex (Room 13) revealed a large concentration of pottery sherds, of

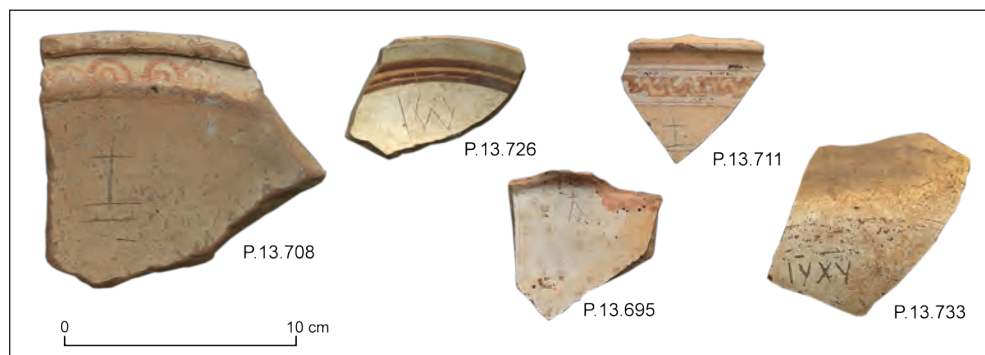


Fig. 21. Vessel fragments with post-firing graffiti from Rooms 11, 17 and 18 (G.A.S.P. Project/photo M. Korzeniowska)



Fig. 22. Jar fragments from Rooms A and C (G.A.S.P. Project/photo M. Korzeniowska)

which 218 were diagnostic fragments. The concentration of the material in a relatively small area and its apparent chronological diversity suggested that it came from Shinnie's pottery dump and as such it is of little dating significance.

A very interesting set came from Room 4. In the upper layers of the fill the predominant forms were *dokat*, cooking pots and *qawadis*. In the lower layers, probably associated with the foundation of the monastery, sherds were few but characteristic: relatively small, reusable fragments with smooth edges. The most probable function is that they were lids cut and smoothed from broken jar fragments, used with globular bottles featuring rather long, cylindrical necks and flaring rim. They were all handmade and some of them decorated with painted vertical and horizontal stripes on the necks and rims. Judging by their shape and decoration, the fragments may date to the end of the 6th/ beginning of the 7th century AD [*Fig. 19*: P.13.745, P.13.746a, P.13.746b].

Thin-walled table vessels fragments, very fragmented, predominated in the pottery assemblages from Rooms 7a, 10, 11, 17 and 18 at their top levels, although they were not very abundant. The vessels were made of desert clay and covered with a thin layer of cream slip. Three specimens from Room 7a: one cup and two vessels with ridge below rim, bore painted, Classic

Christian decoration on the outside [*Fig. 20*: P.13.687, P.13.693, P.13.689, P.13.690]. A fragment from Room 7a representing Shinnie's C-type footed bowl (Shinnie and Chittick 1961: 33), another of a base of a small bowl from Room 10, a fragment of a plate with ledge rim and painted decoration on the ledge from Room 11, one fragment of a vessel with external ridge below the rim found in the upper fill of Room 17 and two bowl fragments from Room 18 bore post-firing graffiti [*Fig. 21*: P.13.695, P.13.708, P.13.711, P.13.726, P.13.733].

Interesting ceramic material came from two rooms directly adjoining the entrance to the monastery enclosure. Room A at floor level produced a large number of sherds from large bottles, some of them with monograms executed in wet clay before firing [*Fig. 22*]. The jars were probably used for storing liquids, wine for example. Room C, opposite Room A, yielded almost 200 diagnostic pottery fragments, mostly parts of cooking pots followed by *dokat*, *qawadis* and storage jars. The latter, recovered *in situ*, were sunk into the floor and served probably as jars for storing grain. At this point, it seems possible that these two rooms served as a storage area or a place where food was prepared. A few fragments of black and polished Soba ware came from this unit as well.

RECAPITULATION

The 2013 and 2014 archaeological seasons (respectively, second and third) at Ghazali resulted in surprising discoveries: a second monastic church and the largest set of latrines known from Nubia so far.

Thanks to the generous help of Prof. Angelika Lohwasser the conservation team preserved the plaster covering the walls of the North Church with numerous graffiti and scratched drawings. The

most interesting texts identified so far are the *Agnus Dei* prayer in Greek, preserved on the south wall of the church, and the inscription left by a certain Iakob, deacon, son of King Basil.

The repertoire of vessel types recovered at the site was very extensive, comprising mostly utility vessels: *qawadis*, *dokat* and

cooking pots. Abundant were also potsherds with monograms and inscriptions containing mostly holy names. They were executed mostly on fine ware pottery, usually bowls and “ledge-rim” plates, but can be found also on the coarser pottery, mostly on the necks and on the inside surface of rims of bottles and “beer jars”.

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Nea Paphos Seasons 2014 and 2016

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Abstract: Excavation below the ancient ground surface of the main courtyard (1) of the “Hellenistic” House in Nea Paphos proved its construction to be later than the beginning of the 2nd century AD. A large rectangular basin and a smaller circular one were found under the western part of the courtyard and east of it. The larger basin had two phases, the first phase being more than a meter deeper than the second one. Strata under the floors of corridor A and room B were shown to belong to the Late Classical and incipient Hellenistic periods. Exploration also continued of a cistern in the southeastern part of the courtyard and of a well in the northeastern corner of the corridor. The building sequence of the porticoes in the main courtyard was investigated in a probe dug in the southwestern corner of the court, whereas the relation between the large reception hall with mosaic floor (10) and the so-called Roman House was tested in a trench dug in corridor 29. Further fragments of “Nabatean” capitals and other decorated blocks were found in pits that had been cut in the courtyard surface in antiquity. Finally, minor excavation at the southwestern corner of the House of Aion revealed a sequence of floors against the southern elevation of a building uncovered under the late Roman street B.

Keywords: Nea Paphos, “Hellenistic” House, early Roman basins, Hellenistic structures under “Hellenistic” House

The University of Warsaw PCMA mission has been working in the Kato Paphos residential quarter since 1965 and the year of the fiftieth anniversary was devoted to preparations for a celebration exhibition at the Cyprus Museum. This was duly opened on 25 May 2015.

The present report covers the season preceding the anniversary year, 2014, as well as the one in 2016. Both were devoted principally to a single excavating

task, the “Hellenistic” House. The only sector excavated to a certain extent was the main courtyard (1). At first, in 2014, a small trench (Sq.1/14) was excavated in the southwestern corner of the courtyard, principally to clarify the relationship between the western portico stylobate and its strangely poor foundation (Meyza et al. 2014: 400, Fig. 13; Meyza 2015: 448–449, Fig. 8) and the southern portico [*Fig. 1*; for location, see plan in *Fig. 2*]. During the

following season this trench was connected to nearby trenches and excavated to bedrock. The phasing in the extended trench is well visible in the corner of the southern and western stylobates. The layer underlying the courtyard surface was soil without larger stones, probably garden soil, just 15 cm thick, yielding artifacts which belonged to the late 1st or beginning of the 2nd century AD, the latest lamps being IP 704–706 and vessels of ESA form 51 (Hayes 1991: 36, Fig. 17.19; 1985: 37, Pl. VI.20). Among the better preserved pieces is an ESA form 22B hemispherical bowl (Hayes 1991: 172, Fig. 17.13; 1985:

23–24, Pl. III: 13) and a Sanded Ware cup rim form Moevs XXXIII/Grataloup (La Mouette 2) (Grataloup 1986: 47–49, Fig. 1 [second left]; Ricci 1985: 275, Pl. LXXXVIII.10–12; Marabini Moevs 1973: 102–104, Pl. 16:169–171) [see below, *Fig. 6A:1–2*], Hellenistic glass bowls [see below, Appendix 1: *Fig. 23:1*], but even earlier, Classical wares were also present. The east–west (further abbreviated E–W) wall S.1/14, which was parallel to the southern portico, was cut and built over when the N–S wall S.3/14 under the western stylobate was constructed. It was found that the E–W wall was founded

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Dates of work: 24 August–22 September 2014; 16 August–29 September 2016

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Volunteer: Karolina Michałowska (Warsaw)

directly on the floor from the 1st century AD, which gives a *terminus post quem* for its foundation and shows that this surface and construction above were short-lived. The layers below did not exhibit used surfaces and belonged respectively to the 1st century AD and to the 3rd century BC. The latter layer was deposited immediately over the bedrock, which was leveled and used probably for some time as a floor (S.19/16), thus constituting phase 1. The walls and floor of the 1st century AD belonged to phase 2. The N–S wall was dismantled and some cuts in the southern face of S.1/14 occurred before or at the time of construction of phase 3 structures, when first the southernmost blocks of the western stylobate were set practically without foundation and the anta of the southern

portico were built overlapping. The lack of foundation of the southern extremity of the western stylobate makes it impossible to relate this section stratigraphically, additionally cut off as it is from the rest of the stylobate by a pipe running E–W, to the northern part of the stylobate. The southern stylobate foundation was built after the construction of the anta foundation.

In the northwestern part of the courtyard (1), a trial pit (2/11TP) excavated in 2011 [see Fig. 2] was cleaned again to check the extent of a cut dividing the stylobate of the western portico from a waterproof reddish floor S.1/11 in the courtyard (1) (Meyza 2015: 446–447, Fig. 7). The cut edge of another (white) watertight floor appeared below in the eastern section (S.2/14) [Fig. 3 bottom].



Fig. 1. Southwestern corner of courtyard 1 (trench Sq.1/16)
(PCMA Nea Paphos project/photo H. Meyza)

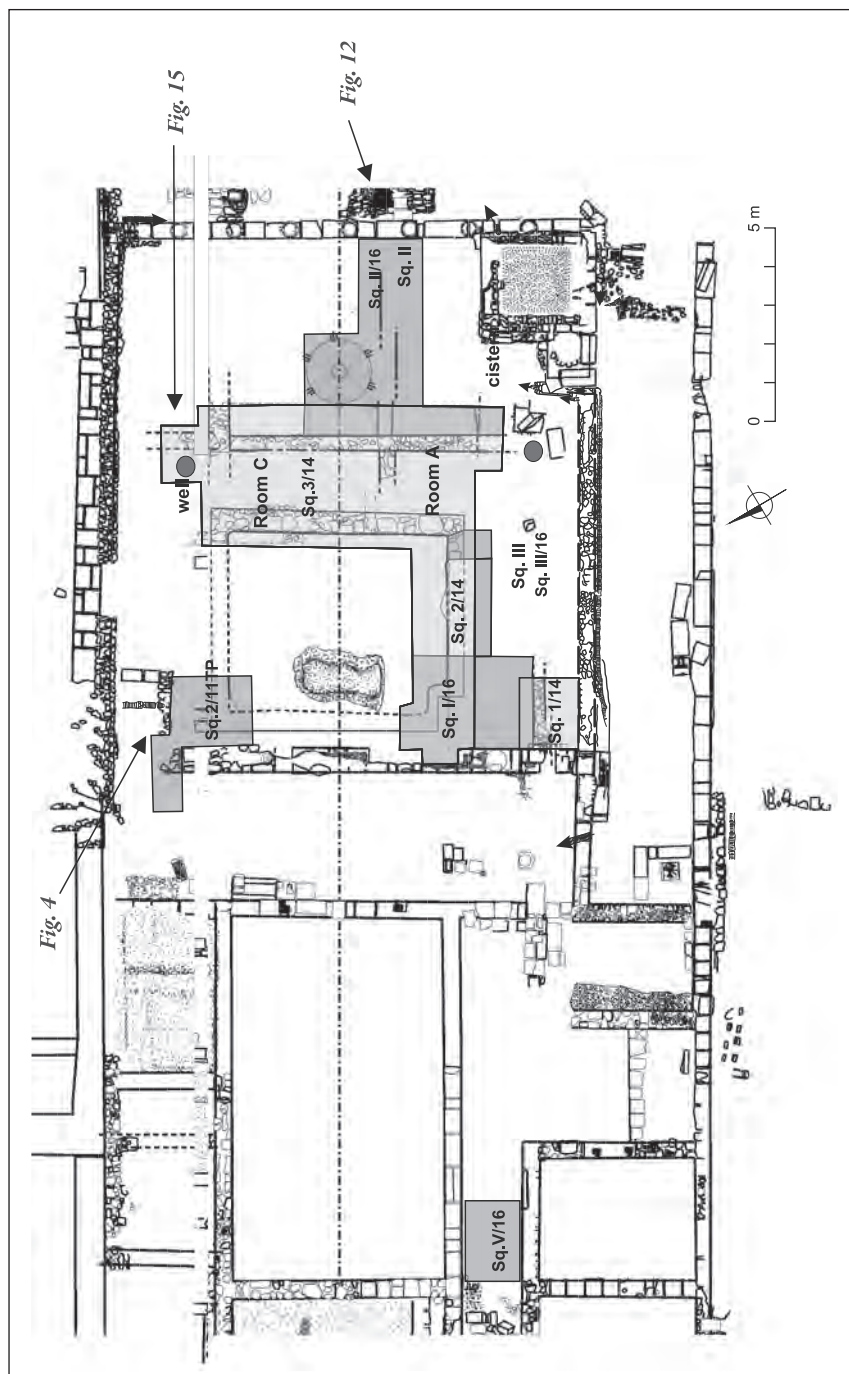
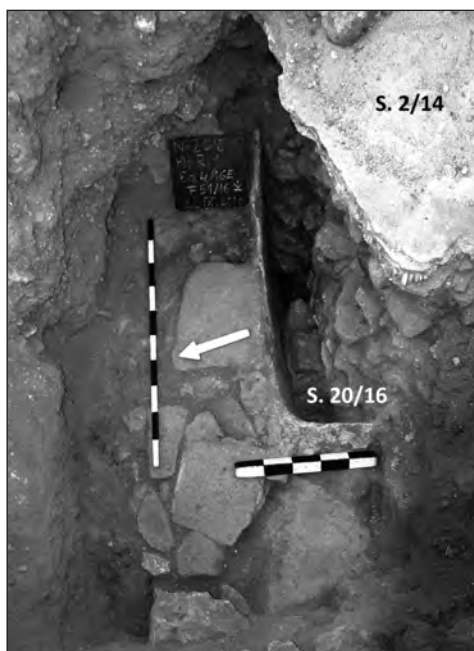


Fig. 2. Central part of the "Hellenistic" House, underlying structures and trenches from the 2014 and 2016 seasons, marked in light and darker grey respectively (PCMA Nea Paphos project/drawing A. Brzozowska, A. Kubicka, S. Medeksza)



It proved to be the northwestern corner of a big basin that had been damaged in antiquity by a cut made to remove its wall (N:9/16); this permitted excavation below the floor level of the basin. Below the bedding of the floor a rubble layer with some voids contained a few non-diagnostic sherds. The edge of a plaster coat on the wall surrounding the basin, smoothed on the inside, was uncovered after exploration to a depth of 0.60 m below the basin floor [see *Fig. 3* top]. The coating plaster bends out apparently at a certain point, suggesting that water was either supplied or discharged here. The only possible interpretation of this feature is that it belonged to an earlier basin (S.20/16) with a floor at a much lower level. The difference between the levels of the floors of the basins turned out to exceed 1.10 m

Fig. 3. Northwestern part of the “Hellenistic” House main courtyard (1): top, corner (cut) of basin S.2/14; bottom, remains of an earlier phase of the rectangular basin, explored to the chamfer near the bottom. Note the damaged northwestern corner of the rectangular basin at top right (PCMA Nea Paphos project/photos H. Meyza)

[Fig. 3 top]. Although the lower floor itself was not uncovered, it seems that its level is not far from that which was reached, as the plaster of this wall in the lowest point curved in to form a chamfer.

South of the remnant of the hydraulic floor in courtyard 1 (S.1/11), an extension trench to the east was aimed at checking the extent of a new hydraulic floor S.2/14. That trench revealed the southwestern corner of a white hydraulic floor on the same level as in trench Sq.2/11TP and belonging to the same basin, its western edge cut. The

corner was indented, possibly for stairs. A robbers' trench, observed first in 2011 in the northwestern part of the courtyard and later identified along its western stylobate, was filled with building rubble (F.4/16) consisting of small and middle-sized irregular stones, some of which were covered with decorative plaster. It was found to continue at least 0.60 m below the floor of the basin, revealing the corner of an earlier one. Next to this was a large block, probably from the original wall corner. Its size and quality may explain

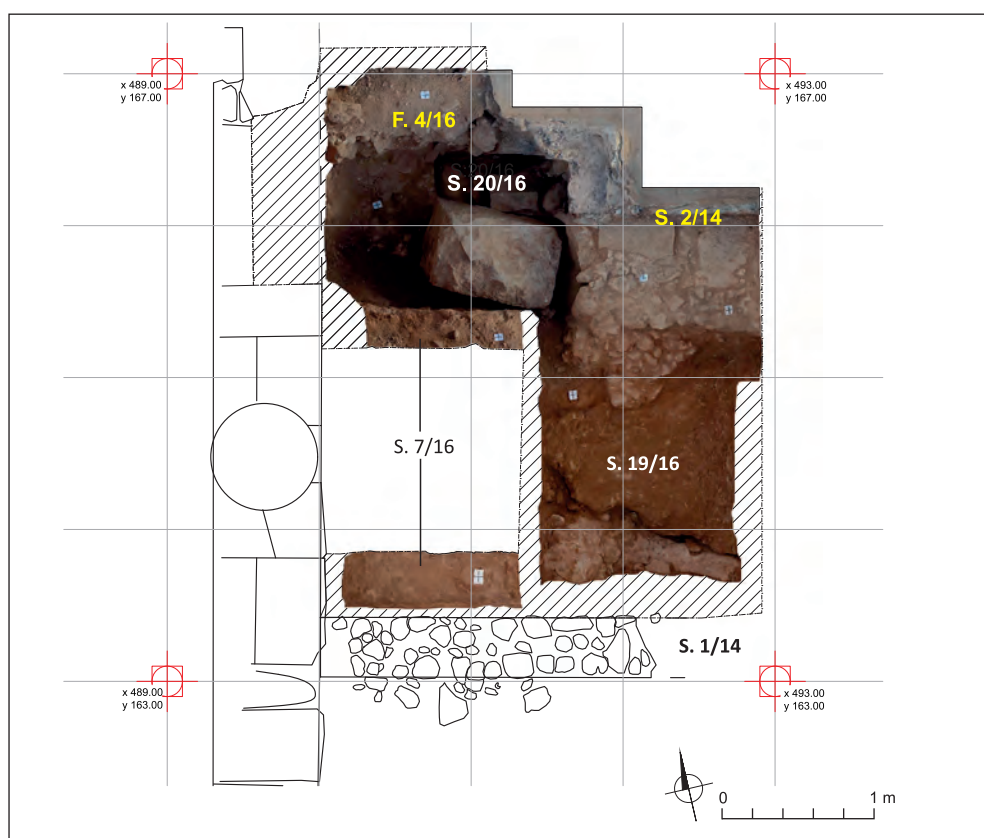


Fig. 4. Southwestern corner of the rectangular basin, edge of the surrounding wall visible under the cornerstone, a fragment of stone trough in the lower basin fill (PCMA Nea Paphos project/orthophoto A. Kubicka, processing M. Romaniuk)

why stone-hunters excavated a trench so deep along the western stylobate of the courtyard, without removing the stylobate itself. The lower basin (S.20/16) was not excavated, but the plastered edge of its wall was identified. It proved to be a rounded corner, not indented as the upper one. A stone channel could be traced in the fill [Fig. 4].

Trench Sq.3/14, which was opened in the center of courtyard 1, initially aimed to verify the presence of a tholos, an idea based on finds of curved lintel fragments in 2012 and 2013 (Meyza 2015: 451–452, Fig. 11). A layer of garden soil occurred once again just below the surface. The lower sections of this layer contained a number of painted plaster fragments. The finds were of the same or even slightly later date, i.e., beginning of the 2nd century AD, with numerous earlier finds [Figs 6:5,8,9]. No tholos was found, revealing instead, after extension of the trench westward and connection to Sq.2/14, the size of basin S.2/14. It was a large structure with a floor

6.86 m by 5.63 m, the shorter side cut at western corner. The wall surrounding the floor was dismantled below floor level and the plinth of the floor was vertically smoothed at the interstice between it and the surrounding wall [Fig. 5]. It confirmed therefore that the wall was built first and the floor was constructed within the existing frame, which clarified also how a secondary floor could have been inserted into the earlier basin walls found on a significantly lower level at the southwestern and northwestern corners.

The edge of the upper basin floor was chamfered up. The northern half of the eastern edge was disturbed and revealed that the visible surface of the floor was preceded by an earlier floor layer on the same bedding. At the southern end of the disturbed area a group of stones may have belonged to some foundation built after the basin was abandoned, but it may as well have been just rubble filling later than the courtyard floor, as in the northern end of the disturbed section, where a fragment



Fig. 5. Edge of the basin floor and foundation of a surrounding wall seen from the east (PCMA Nea Paphos project/photo H. Meyza)

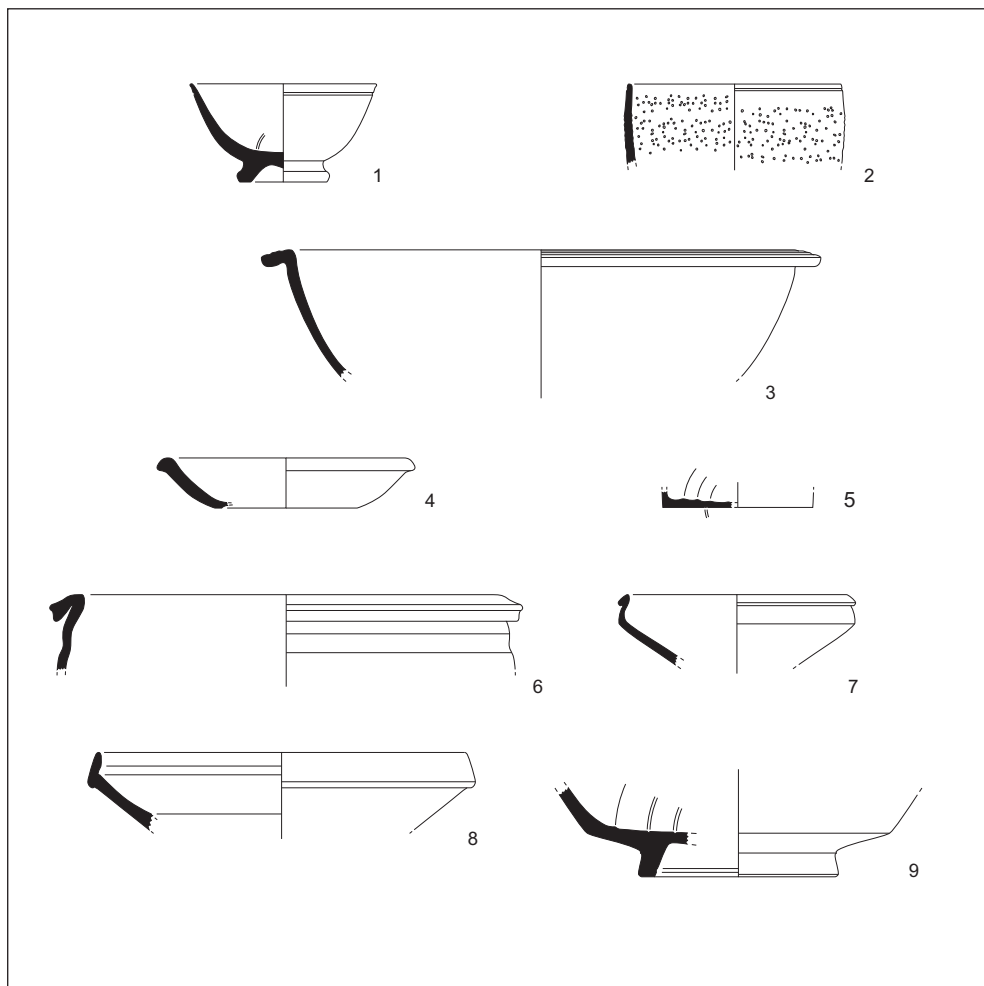


Fig. 6A. Pottery finds from fill layers below the surface of the “Hellenistic” House courtyard 1 (this and opposite page) (PCMA Nea Paphos project/drawing A. Dzwonek; 6 – W. Karpińska, 16 – M. Więch; digital tracing and identification M. Więch)

1 – Eastern Sigillata A form 22B, garden soil context F.3.1

2 – Sanded ware, cup(?), context F.3.2

3 – Cypriot Sigillata form P30, garden(?) soil level, contexts F.26–F.28

4 – Cypriot Sigillata saucer P10(?), base, garden(?) soil with plaster fragments, context F.28.1

5 – Cypriot Sigillata(?) mug P58, garden soil context F.14.1

6 – Cypriot Sigillata deep bowl P40, rim, garden soil above tamped floor, context F.26

7 – Cypriot Sigillata small bowl P22B, rim, garden soil, context F.26.3

8 – Eastern Sigillata B form 60, rim, garden soil with plaster fragments, context F.16.2

9 – Italian Sigillata, Consp 3, base, garden soil with plaster fragments, context F.30.1

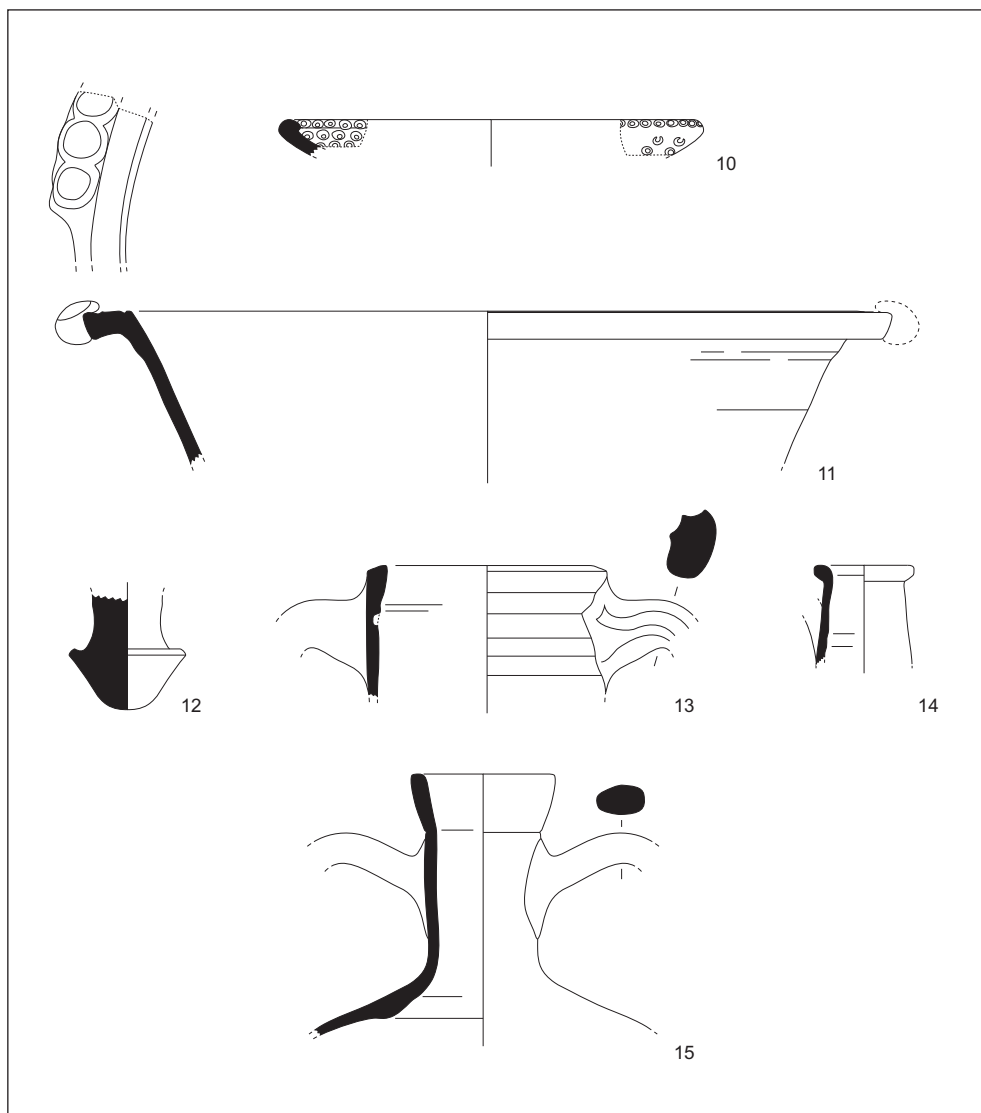


Fig. 6B. Pottery finds from fill layers below the surface of the "Hellenistic" House courtyard 1 (continued):

10 – Coarse fabric plate, stamped decoration, context F.16.1

11 – Buff Ware basin with frilled handle, context F.26.1

12 – Pinched handle amphora, base, garden(?) soil with plaster fragments, context F.28

13 – Beirut amphora 3.1a, rim and neck, context F.28.2

14 – Agora F65–66 micaceous jar, rim and neck, from compact red soil below level with plaster, context F.32.1

15 – Amphora Cretoise 1, upper part, garden(?) soil, context F.35.1

of the lower half of a “Nabatean” capital, most probably belonging to the courtyard 1 porticoes, was found. The finds, both in the disturbed area and in the remaining fill, were almost synchronous and belonged to the end of the 1st or the beginning of the 2nd century AD. Excavation along the southern side of the basin demonstrated that some structures, later than the basin and earlier than the courtyard 1 floor, existed there, albeit possibly nothing but temporary in nature. The finds above and below the tamped floor over the dismantled basin wall did not differ in date and, as in the case of the disturbed fill in the northern part, they belonged to the end of the 1st or the beginning of the 2nd century AD. A deep bowl of Cypriot Sigillata (CS) form P40 and a small bowl form CS P22B (Hayes 1991: 38, 43, 45, 50, 189, Figs 19.40, 66.26) [Fig. 6:6,7] as well as a Buff Ware basin (Hayes 1991: 66f, 204 [No. 25], Fig. 24.7, Pl. 13.12) [Fig. 6:11] were found together with a 2nd century lamp IP742. In corresponding layers, an Italian Sigillata form Consp. 3.2.2 (Ettlinger et al. 1990: 56, Pl. 3), a CS saucer P10 and large bowl P30 (Hayes 1991: 40, 44, Figs 19.30.2, 30.5, 65.20) [Fig. 6:3–4,9], a pinched handle amphora (Lund 2015: 172–174), a Beirut Reynolds’ form 3.1a (Reynolds 2000: 394, Fig. 4 [Cat. 15]), a micaceous water jar rim and a Cretan amphora AC1a upper part, probably from the Dermatos workshop (Marangou-Lerat 1996: 68, 96–97, Fig. 28) were collected [Fig. 6:12–15]. One piece of glass [see below, Appendix 1, Fig. 22] may be a later intrusion.

Remains of floors appeared east of the basin, in the southern part of the trench, confined by a N–S wall (S.6/14) running parallel to the basin edge at a distance of

about 2 m [Fig. 8; see Fig. 11]. The wall was robbed in several sections of its course, both in the central northern part where floors were absent and in the central section where a cut removing a perpendicular wall (S.14/14) that had extended from the basin border to the N–S wall (S.6/14). Excavation of the fill of the cut exposed remains of an E–W wall foundation [Fig. 9]. Pottery from a layer below this fill, possibly preceding the foundation S.14/14, was mixed and included, apart from a number of Classical fragments [Fig. 7:5–8], also a 2nd century BC lamp (possibly contamination). A floor north of that wall foundation was a relatively thin (2–10 cm) greenish-grey clay (*khonnos*) layer; south of the wall foundation it was made of the same material, but much thicker. These floors belonged to rooms A and C on either side of the wall, respectively. Further east, almost in line with S.14/14, the cut removed wall S.8A/16 [see Fig. 11]. At the very north of the excavated area, corresponding to the northern edge of the rectangular basin, an L-shaped corner of another, later wall (S.13/14), but still preceding the construction of courtyard 1, seems to have damaged wall S.6/14. The head of a well or a cistern (S.12/14) was found with a covering slab still in place, situated adjacent to the N–S part of that corner. The upper part of the cistern was empty and pear-shaped in section. It was entered, but not excavated [Fig. 10].

The relation between the foundation of the walls surrounding basin S.2/14 and the adjacent floors was investigated in a small trench east of the basin below the *khonnos* floor (Sq.3/14TP) [see Fig. 2]. Three coins were found on floor S.5/14, the earliest being of Ptolemy I, a small denomination of a pre-reform series, and another one

seeming to be a coin from the Ptolemy II–IV period, of the ΔI series (*iota* uncertain). A few pieces of Colour Coated Hellenistic pottery were also collected. The strata below, with at least one more floor, seem to be even earlier, and much of the pottery is certainly Classical including Greek Red Figured and Black Glazed pieces and transitional Cypro-Classical/Hellenistic

hybrid ware, known from Evreti well TE I at Kouklia (Maier and von Wartburg 1986: 161–164, Figs 34a, 34b, 35a–h) [Fig. 7: 2–4].

A trench was excavated up to the eastern portico of courtyard 1, east of the N–S wall S.6/14 and in line with the robbed out E–W wall S.14/14. On its northern side another circular basin was partly uncovered



Fig. 7. Classical pottery from early contexts (PCMA Nea Paphos project/photo H. Meyza; identification J. Młynarczyk):

- 1 – Red Figured (fragment of an animal?) Attic body sherd of a closed vessel, 5th–4th century BC/early 2nd century AD context F.48.1
- 2 – Black Gloss Attic, rim+handle of a cup (*skyphos*?), layer under fourth floor, Classical context F.59.23
- 3 – Black Gloss Attic, base of inturned-rim bowl? Stamped palmette and ovolo circle inside, layer under fourth floor, F.59.26
- 4 – Black Gloss, Attic?, bottom of an inturned-rim bowl. Stamped palmettes and circle of ovoli inside, layer under fourth floor, context F.59.30
- 5 – Late Cypro-Classical disk base of hybrid ware, red outside and black inside bowl. Late 4th century, under cut dismantling E–W wall S.14/14, early Hellenistic(?) context F.74.18
- 6 – Cypro Classical WhP VII body sherd of a plate, concentric circles in dull paint inside, under cut dismantling E–W wall S.14/14, context F.74.18
- 7 – Late Classical Plain bowl with outturned rim, under cut dismantling E–W wall S.14/14, context F.74.18
- 8 – Late Classical rim and handle of cup of hybrid ware, red outside and black inside, under cut dismantling E–W wall S.14/14, context F.74.18
- 9 – Late Classical BGL Attic? floor of bowl, stamped palmettes and two rows of ovoli, Floor II at the corner of street B and the late Roman street, 1st century BC context F.79.1



Fig. 8. Area east of basin S.2/14 with khonnos floor(s?) between the basin and wall S.6/14, belonging to rooms A and C respectively (PCMA Nea Paphos project/photo H. Meyza)



Fig. 9. Trench Sq.3/14: section between basin S.2/14 on the left and wall S.6/14 on the right, in the middle cut for E–W wall S.14/14 (PCMA Nea Paphos project/photo H. Meyza)



Fig. 10. Corner of wall S.13/14 superimposed on the north end of wall S.6/14 set against the wellhead of cistern S.12/14 (PCMA Nea Paphos project/photo H. Meyza)

and the trench was extended to enclose the entire structure. A basin (S.1/16) about 2 m in diameter had been cut into earlier strata [Figs 11, 12]. Its flat floor was approximately 15 cm below the level of the upper rectangular basin floor (S.2/14). Spouts made of Dressel 6A amphorae necks with handles and rims [Fig. 12 top right], situated a maximum 19.5 cm above the floor, were probably used both to feed and discharge water. Remains of three such spouts were preserved partly in place; there must have been six originally. The level of the preserved spouts is practically the same, the difference being no more than 3 cm, so the water probably kept flowing in

and out all the time. A round imprint, about 47 cm in diameter, was observed in the center of the basin floor [Fig. 12 bottom right]. It implies the presence of some object, perhaps a flower pot, that had left this poorly visible trace on the floor (for more details and other possible interpretations, see Romaniuk 2017, in this volume). The round basin, the large rectangular basin and the main hall of the “Hellenistic” House were all aligned on the same axis [see Fig. 1].

The pottery material from the fill of the basin suggests that it was destroyed and intentionally filled in (see below, Appendix 2). Traces of later intrusions were

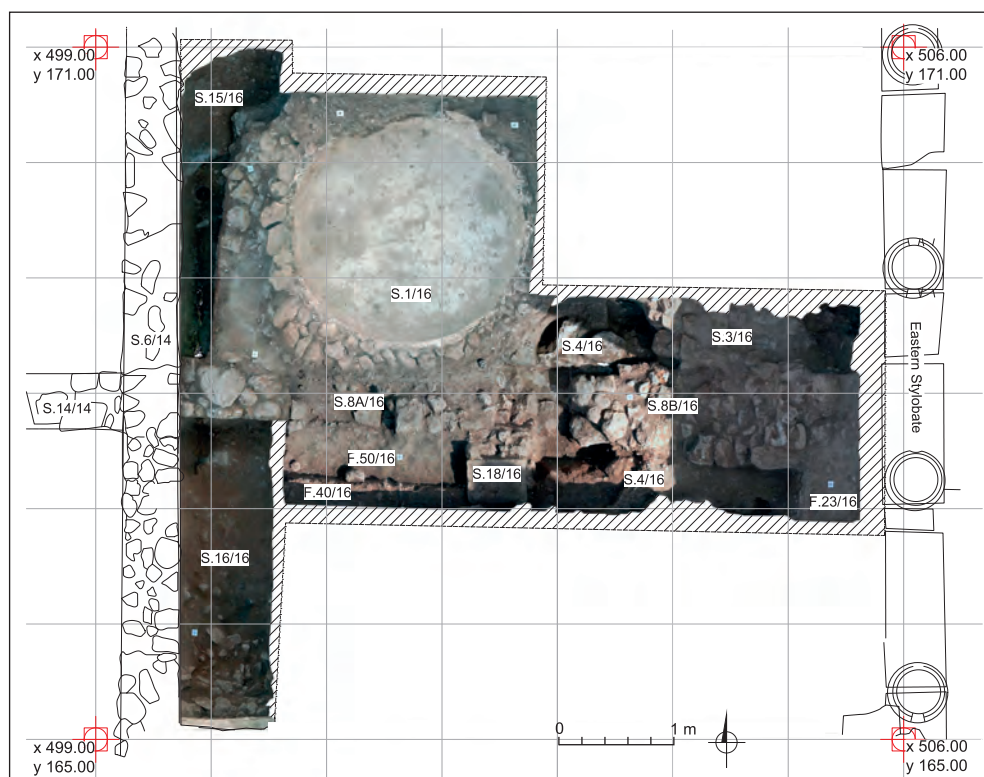


Fig. 11. Plan of the excavation east of wall S.6/14 (see Fig. 1), state at the end of the excavation (PCMA Nea Paphos project/orthophoto A. Kubicka, processing M. Romaniuk)

noted above it. The pottery from the fill and the disturbed layer dated to the late 1st/early 2nd century AD. A similar date was assigned to the stratum under the surface of courtyard 1 in its other parts, supporting an identification of the layer with an artificial garden soil deposit, as suggested in an earlier preliminary report (Daszewski 1994: 104–105). That interpretation generates some problems for a reconstruction of feature functionality and site formation processes; it does not explain, for example, the high level of floors of both basins in the last phase of their existence or the surprising exposure of the south and the eastern portico foundations, which led to the surface of courtyard 1 being too low on these sides. Apart from generally similar garden landscaping known from other sites, nothing suggests that originally both the rectangular and circular basins were surrounded by a garden with plants in soil,

which would have to be removed only to be filled again with a large amount of soil for the last phase of courtyard 1. To the contrary, while much soil may have been removed from the area around the basins, when they themselves were dismantled, it seems that at least some parts of the latest floors and walls preceding the courtyard were preserved in several places. East of wall S.6/14 and south of the L-shaped corner with wall S.13/14, three levels of floors were found. Remains of the upper one, which appears to be contemporary with the L-shaped corner, were limited to the immediate surroundings of the latter. That uppermost floor was largely damaged by a cut filled with small stones, visible in the eastern section.

That late floor probably corresponds to the floor (S.5/14) between wall S.6/14 and the basin, consisting of a thin layer of *khonnos*. The only other corresponding

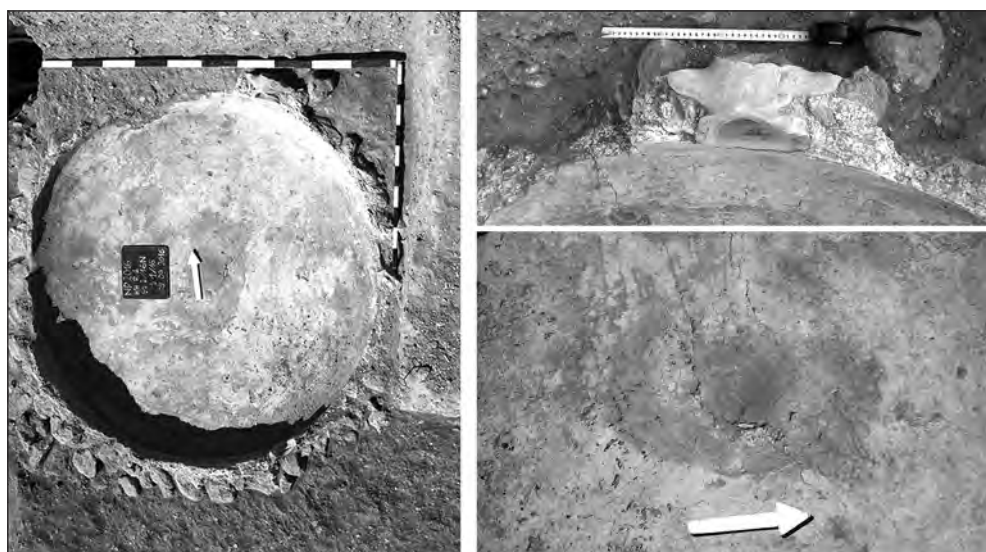


Fig. 12. Circular basin S.1/16 below “Hellenistic” House courtyard 1: left, top view; top right, spout made of a Dressel 6A amphora neck; bottom right, imprint at the center of the basin (PCMA Nea Paphos project/photos T. Scholl and K. Żywicki)



Fig. 13. Wall S.6/14 and chavara floors against the shaft of cistern HH037C. Filled cut north of them, between rectangular basin S.2/14 and wall S.6/14, floor further north (PCMA Nea Paphos project/photo H. Meyza)

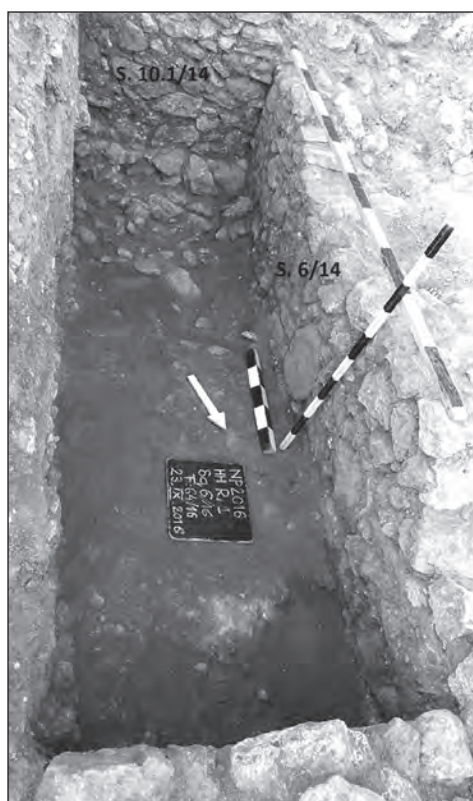


Fig. 14. Floor east of wall S.6/14 (room B), with soot on its surface (PCMA Nea Paphos project/photo H. Meyza)

Fig. 15. Southern part of wall S.6/14 joining north wall of the shaft of cistern HH037C (PCMA Nea Paphos project/photo H. Meyza)

level of similar character (S.7/14), belonging to room B, was found at the south end of wall S.6/14, adjacent to the north wall of the early shaft S.10.1/14 of the cistern HH037C [Fig. 13]. In that area, in the fill of a trench cutting these floors, a glass ring [see below, Appendix 1, Fig. 22:1] was found. Digging down to deposits from the early 3rd century BC has shown that wall S.6/14 is (at least in its southern part) built against the wall of the cistern shaft [Fig. 15].

The two lower floors in the southern part of the trench, about 0.50 m deeper than the floor in the L-shaped corner, are related to wall S.6/14. The upper one is covered with a layer of soot [Fig. 14], the earlier one, which is some 0.25 m below, seems made partly by levelling rock (S.15/16) [see Fig. 11]. It seems also that wall S.6/14, which down to the level of

that floor must have been still in view, was even-faced and built upon that lower floor.

The E–W wall S.8/16 is built perpendicular to wall S.6/14 [Fig. 16]. The fill of the foundation trench (F.37/16) along the southern and (adjoining fragment) eastern faces contains finds dating from the 3rd (into the 2nd?) century BC. The fill contained pottery pieces that can be joined with fragments found in the nearby floor. Both walls with adjoining floors preceded the construction of the circular basin and, moreover, the E–W wall had already been partly destroyed before it was built. Finally, that wall was dismantled by an oblong cut, which was filled not earlier than in the end of the 1st century AD, that is, either at the moment of construction of the circular basin (judging by the bottom level contemporary with the later phase of the large rectangular basin S.2/14) or even at



Fig. 16. Walls S.6/14 (N–S) and S.8/16 (E–W) on the eastern side of the excavated area under courtyard 1 (PCMA Nea Paphos Project/photo H. Meyza)

the moment of its destruction, as there is little difference between the dating of the fill of the circular basin and the fill of that cut (F.29/16).

A layer (F.60/16) cut by the circular cistern construction, lying between it and the wall S.6/14, level with its preserved top, was dated by finds to the 3rd (to early 2nd?) century BC. An almost complete clay shovel [Fig. 17 left], a rare object, was found in that stratum. It is in essence a shallow bowl with slightly concave base and sloping rim that was pushed up on one side where the curved handle is attached. The object was made of buff fabric (break 7.5YR 6/4–6/6, surface 2.5YR 8/3), without slip, and is sooted on its floor. A very similar artifact, although without traces of use in fire, dated to 125–100 BC, comes from the excavations at Knossos, Crete, and resembles, according to Jonas Eiring (2001: 126–127, Fig. 3.17:y),

a “Minoan scuttle”. The fabric of the shovel from the Polish excavation seems to be Cypriot. Another shovel [Fig. 17 right], fragmentarily preserved, was discovered in context F.50/16, below a floor dated to the Classical period. In this case, the fabric is gritty, sandy, light reddish brown (break 5YR 5/8–4/1, surface 5YR 6/6), similar to cooking ware and also local rather than imported.

The eastern, Ionian portico appears to have been built after the circular basin was filled, but an exact date cannot be put forward without deeper excavation, and that could not be risked under the stylobate bearing the reconstructed colonnade. The foundation, if any, was not wider than the stylobate surely; the conditions were probably not radically different from those encountered in a trench excavated in 1993 at the northern preserved end of the stylobate (Daszewski 1994: 103–104),

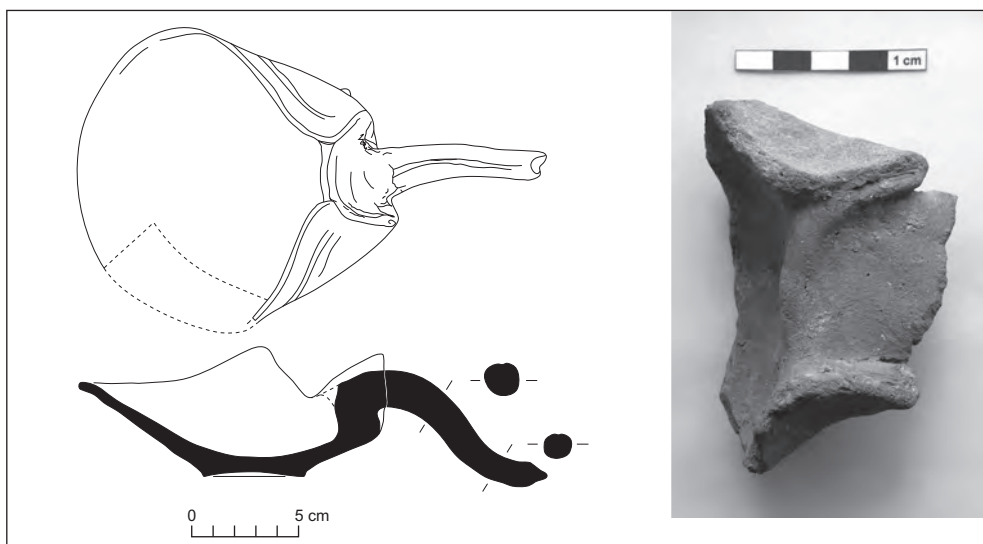


Fig. 17. Clay shovels: left, Plain Ware shovel found between the circular basin and wall S.6/14, in Room B; right, fragmentary shovel found below floor S.5/16 (PCMA Nea Paphos project/ photo, drawing and digitizing M. Więch)

where the stylobate foundation was over 1 m deep [Fig. 18] and was dated by a late 1st century AD lamp.

Remains of several difficult to discern phases were present east of the circular basin below the level of the courtyard. The present tentative description will probably have to be revised once the excavation is extended. Already some 10 cm below the courtyard floor, a small stretch of an even surface has appeared, probably related to the dismantling of earlier structures. Walls of the earlier phase, probably contemporary with the circular basin, preserved as disturbed fill-in foundations or poorly built and decaying walls, were visible only in the eastern part. The rest of the trench was occupied by a large cut, filled with sloping rubble in its eastern part. These remains seem to have been cut also by a narrow foundation trench for the eastern courtyard stylobate. The level

of floors made of thick *chavara* deposits occurred approximately on the same level as floors adjacent to the wellhead of cistern HH0037C. They seem to be related to the E–W wall S.8B/16 and N–S wall(?) S.3/16, should the poorly defined cluster of stones on the southern side of the E–W wall be considered as remains of such a wall. The same(?) structure is better visible on the northern side of the E–W wall, where it was preserved at a lower level and therefore may belong to an earlier phase [Fig. 19, see Fig. 11]. Earlier floors can be seen on the western side of wall S.3/16 in both sections. Judging by the pottery found beneath them, these walls should be dated to the early 3rd century BC. Bedrock appears below all these features, worked in some places to create another floor level.

Another trench was excavated in corridor 29 between the large reception hall 10 with a mosaic floor of broken



Fig. 18. Foundation of the eastern stylobate at its northern end (excavated in 1993)
(PCMA Nea Paphos project/photo W.A. Daszewski)



Fig. 19. Later walls S.8B/16 and S.3/16, earlier wall(?) S.18/16 and bedrock with cuts S.4/16 (PCMA Nea Paphos project/photo H. Meyza)

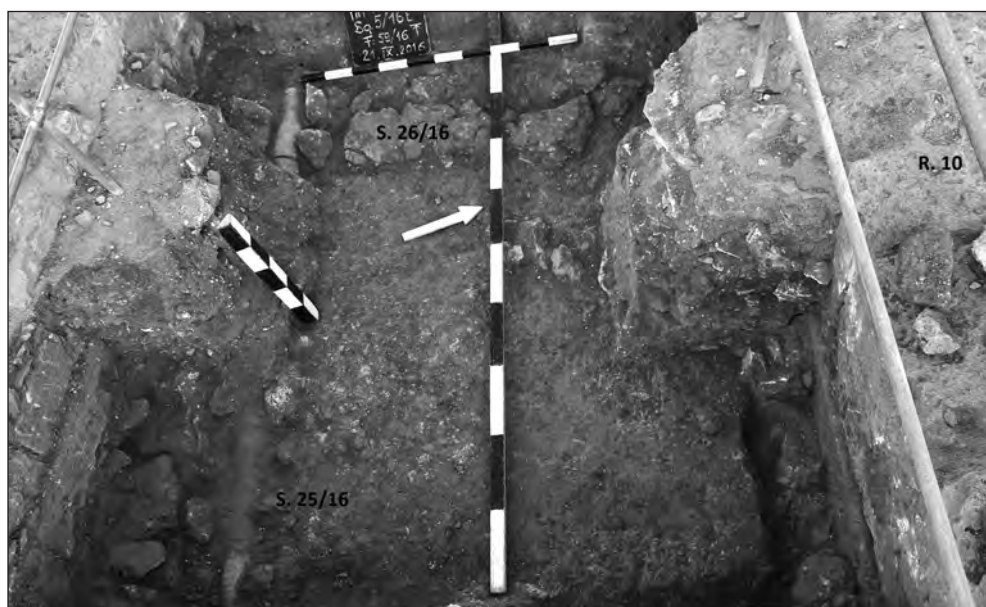


Fig. 20. Trench in corridor 29 of the "Hellenistic" House, floor II, visible cut for foundation of the south wall of room 10 (right); note the pipe along the foundation of the south wall of room 3 of the Roman House and the early N-S wall (PCMA Nea Paphos project/photo A. Kubicka)

pebbles and the Roman House. The goal was to verify the results of earlier trenches dug at the western end of that corridor in 1993, when it was found that its floor, at least at the western end, was well below the mosaics on both sides, and had suffered earthquake-related deformation. The stretch of corridor uncovered in 2016 revealed two more floors below the partly damaged one. The second of these earlier floors was cut by the foundation of the south wall of hall 10, and it must therefore be earlier than this wall [Fig. 20]. A pipe S.25/16 was set in a frame built of fist-sized stones along the wall of the Roman House and no immediate relation of floors to this wall was recognized. The foundation, however, started higher than the pipe and the wall therefore must have been related to the latest of these floors. A perpendicular N-S wall S.26/16 at the western end of the trench preceded the latest floor;

it is supposed to be the oldest structure here. That wall was approximately 0.44 m wide and about 0.70 m high, standing on a tamped earth floor mixed with pebbles, and cut on its northern and southern ends by the foundation trenches for the north and south walls of corridor 29, most probably in the 1st/2nd century AD.

HOUSE OF AION SOUTHWESTERN CORNER PROBE

A sequence of finely stratified horizontal floors was explored in an unlikely place, by the southwestern outside corner of the House of Aion, between modern disturbance caused by the construction of a tank collecting rainwater from the House of Aion shelter on the east and the cut of trench Δ11 dug by the Department of Antiquities in 2003 and extended, mostly south and east, in December 2008, but



Fig. 21. Floors at the corner of Street B and the Late Roman Street, sixth level and fill of construction trench for a wall on the northern side of street B, with cooking pot deposit (PCMA Nea Paphos project/photo D. Mazanek-Somerlik)

also north, revealing a floor sequence. The sequence did not preserve the original stratification of street B as hoped (Meyza et al. 2011: 287). It seems to belong to a building which was built over the northern side of the street. Therefore, the surfaces in street B remain equally poorly defined as in street A, where only the position of pipes and the built channel of the main drain indicate levels of use (Meyza et al. 2011: 293, Fig. 9). A trench appears to have been cut through this floor sequence when building the southern elevation of the building, later razed during the construction

of the Late Roman Street. It is surprising that the south elevation wall possessed a well dressed face on this level, in spite of the existence of a wall remnant, which must have obstructed the view from the south. The foundation trench was explored and a Late Hellenistic cooking pot was found there, almost complete, with a lid made of a Colour Coated in-turned rim bowl [Fig. 21]. The latest pottery piece in the fill was a rim of ESA plate form 2 or 3 (three joining fragments), indicating that the fill should be dated to the early 1st century BC or later.

APPENDIX 1

GLASS FROM THE HH COURTYARD 1

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About 70 diagnostic fragments of glass objects were registered from the excavation of courtyard 1 of the Hellenistic House (HH) in the 2014 season, complementing the large repertoire of glass vessels coming from this structure. Most of the fragments could be assigned to one of the 10 groups already distinguished for the HH assemblage (Mazanek 2014), although in a few cases the typological attribution was tentative owing to incomplete profiles.

The glass is for the most part of a natural hue and translucent. Yellow, amber and blue, colors popular in late Hellenistic and early Roman times, were common as well.

In terms of the typological repertoire, tableware and drinking vessels from domes-

tic contexts of the 1st century and early 2nd century AD were the most common, but there were earlier pieces as well. The earliest piece (dated to the 2nd–1st century BC) was a glass finger ring, fragmentary, with large oval bezel and a hoop carved out of a single piece of translucent colorless glass [Fig. 22:1]. The bezel has a beveled outer edge and deeply concave face. The hoop is D-shaped in cross section, the finger hole is rounded. An associated find is a separate lens-shaped oval gem made of translucent colorless glass, largely fitting the concave face of the ring with the convex side facing outward. The gem is intact but very corroded [Fig. 22:2]. A similar gem or ring eye was found by the Polish Mission in 1977 (FR.36/77). Parallel examples of rings are known from Cypriot sites:

Kourion, Enkomi and Salamis, where they were regarded as amulets (Vessberg and Westholm 1956: 171, Fig. 51:20–21). Other parallels are known from museum exhibitions and catalogs like the Metropolitan Museum of Art in New York (Myres 1914: 425, No. 4294; Alexander

1928: 54, Fig. 122; Froehner 1903: 137, No. 999; Haevernick 1969: 180, No. 52) and the British Museum in London (Marshall 1907: 229–234, Nos 1563, 1564, 1567, 1571).

Five fragments of grooved and linear-cut bowls (not illustrated) (Mazanek 2014:

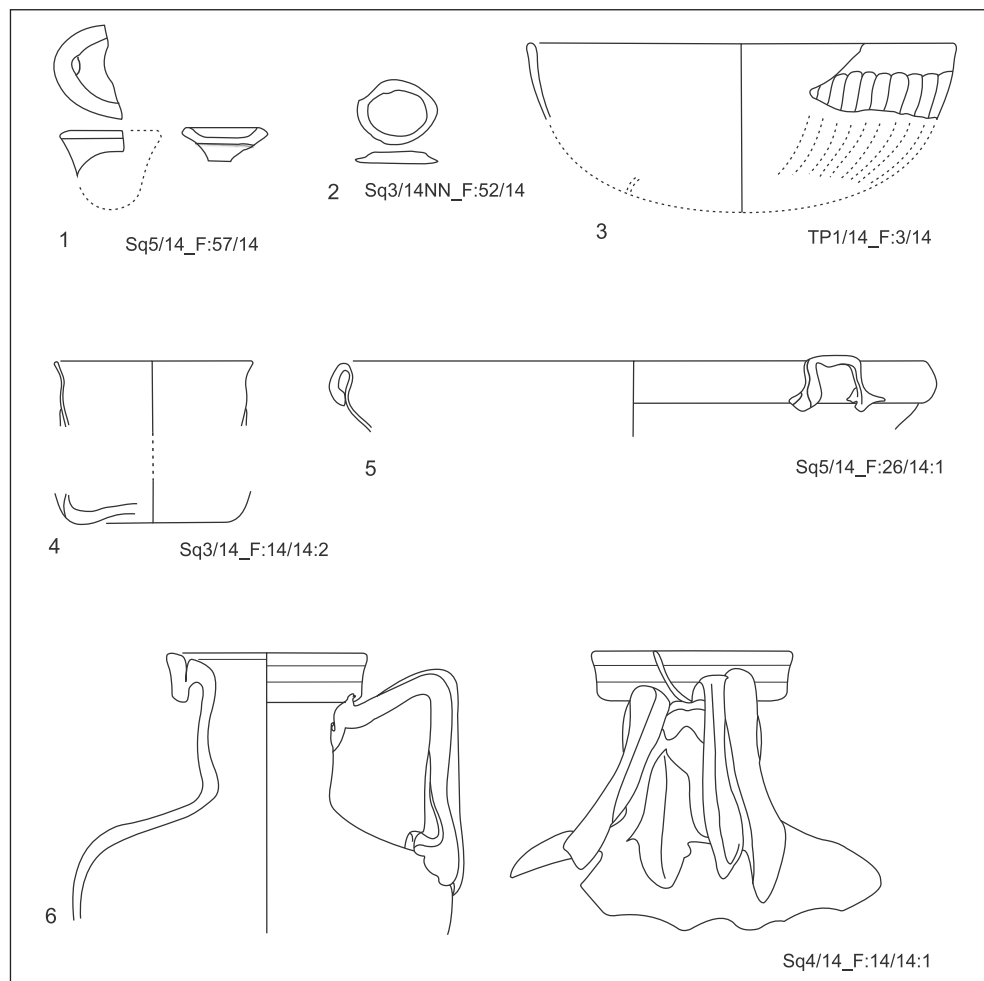


Fig. 22. Glasses from courtyard 1 excavations in the “Hellenistic House”: 1 – glass ring; 2 – oval gem; 3 – cast fluted bowl with form reconstruction; 4 – indented beaker top and base; 5 – folded-out rim with horizontal handle; 6 – single-handled jug (PCMA Nea Paphos project/drawing and digitizing D. Mazanek-Somerlik)

293–294, group A and further references) and one piece of a cast fluted bowl [Fig. 22:3] belong to the Late Hellenistic open form category of cast glass. The last one belongs to Isings Form 3c (Isings 1957: 20–21; Mazanek 2014: 294–295, group B and further references). It is made of pale bluish translucent glass. The rim is vertical with rounded top. The preserved fragment has nine vertical ribs. Vessels usually had about 40 ribs (Myres 1914: 507, Nos 5066, 5073).

Drinking vessels, beakers and cups made of blown glass were common in the courtyard. Ten rim fragments were fire-finished in the process of production and are slightly curved to S-shaped (Mazanek 2014: 299, group I and further references). Full profiles are missing and it cannot be excluded that these rims belonged to “indented beakers”. Only two fragments are certainly from Isings Form 32 f (Isings 1957: 46–47). With the almost square base they can be classified as group N.1 (Mazanek 2014: 302 and further references). This beaker form was extremely popular in Cyprus for a long period of time (as early as beginning of the 2nd century BC–end of 3rd century AD). Bigger open-form vessels, like shallow bowls and deep plates, are well attested (Mazanek 2014: 296, group E), exemplified here by two folded-out rim fragments with crimped handle. Six colorless folded-out rims were part of dishes or bowls of a type difficult to determine (Mazanek 2014: 297, group F). One illustrated example [Fig. 22:5] made of greenish glass is unusual because of a small horizontal handle. It might be intrusive, representing a shallow bowl with three attached handles

that was used in later times as an oil lamp. The form of the preserved walls under the rim let it be assigned to HH group F.1 (Mazanek 2014: 297–298). The bottom parts of beakers, cups, bowls and dishes are divided into two groups: eight glass fragments come from foot-ring bases (Mazanek 2014: 301–302, group M) and five fragments from pushed-in concave bases (Mazanek 2014: 302, group N).

Closed forms of vessels were also present in the glass assemblage from the 2014 excavation. Unguent bottles were represented by six examples with folded-in rims and straight neck, of pale blue and yellowish hue, and four with flaring walls and plain rims that were colorless (Mazanek 2014: 299–300, group J). Moreover, four small glass ribbon handles were registered, suggesting that some of the unguent bottles were furnished with handles. The upper part of a single-handled jug, a translucent blue vessel of early Roman date [Fig. 22:6], was successfully reconstructed. It has a rim that folds out and down, then curves up and into the mouth with a beveled surface. The neck is cylindrical, slightly expanding downward and passing into a sloping shoulder with rounded corners. A strap handle with three ribs was applied to the edge of the shoulder, drawn up vertically, then bent in and down, and attached to the neck with a backward trail above. It is not possible to determine whether the jug had a cylindrical or square body. The jug can be attributed to a group of small jugs (Mazanek 2014: 300, group K). Parallel jugs with three-rib handles are dated to the 1st–2nd century AD (Dussart 1998: 42, Bxi:22; Hayes 1975: 130, Nos 536 or 538).

APPENDIX 2

NOTE ON THE POTTERY FROM THE CIRCULAR BASIN S.1/16

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Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences

A circular basin approximately 2 m in diameter was found under the eastern part of courtyard 1 of the “Hellenistic” House (see above). The floor was flat and there were remains of amphora necks, at least six although only three have been preserved in place, immured in the wall thickness more or less 19.5 cm above the floor. It has been proposed that these Dressel 6A amphora rims and necks (Peacock and Williams 1986: 98–101) may have acted as spouts for the water to enter and exit the basin.

The ceramic material discovered in the basin was rather homogenous in terms of its dating, which is mostly in the end of the 1st century BC and the beginning of the 1st century AD. The set consists of late Hellenistic and early Roman amphorae, a large group of plain wares, cooking pots and table wares. Vessels were mended in a few cases.

A body sherd of a painted amphora of Cypriot origin dated to the Classic period and few black gloss fine ware fragments appear to be the earliest in the context.

The Hellenistic tablewares include a color-coated bowl with incurved rim and slightly carinated body (Hayes 1991: AL: 70, OΔ 786, Fig. XLIX.70) [Fig. 23:1] and an Egyptian Nile Silt plate, plain, fired to brownish-grey, with thickened,

rolled rim and sloping walls (Megaw and Hayes 2003: 455–456, Fig. 4.28) [Fig. 23:2]. Early sigillatas are represented by: a rim fragment of Eastern Sigillata A (ESA) plate form 3 [Fig. 23:5], an almost complete ESA plate form 38 [Fig. 23:3], from the first half of the 1st century AD and a cup with ring base, ESA form 22B [see Fig. 23:4]; as well as fragments of Cypriot sigillata: form P22A [Fig. 23:6], P33, base of P50 [Fig. 23:7]; and Italian Sigillata Consp. form 25.1.1 (Hayes 1985: Pls I.8, III.12, XX.11; Meyza 1998: Fig. 6; Ettlinger et al. 1990: Pl. 23:25.1.1).

Amphorae Dressel 6A from the late 1st century BC to the mid 1st century AD (Peacock and Williams 1986: 98–101), were found not only in place, fixed into the basin walls [Fig. 24:1 and top left], but also inside the basin [Fig. 24:2], together with a complete, plain disk lid [Fig. 24 top right] (Megaw and Hayes 2003: 477, Fig. 17.172) of the same fabric as the amphorae and a diameter suitable to close it (in both cases the inside diameter of the amphora mouth is about 11 cm; the diameter of the lid is slightly smaller). Since no base fragments of Dressel 6A amphora were collected from either inside or outside of the basin, it is viable that only the upper parts were used. Other amphorae fragments included

the Dressel 7 type [Fig. 24:3] in pinkish sandy fabric with creamy wash (Peacock and Williams 1986: 117–119, Fig. 50.A). This type of amphora, made in the region of Cádiz from about 30 BC to AD 75 and used to transport fish-sauce, is not a common find at Nea Paphos.

A plain krater [Fig. 25:2], of which only part of the rim and neck with handle remain, can be dated to the early Roman period based on parallels with the material from the House of Dionysos (Hayes 1991: 66–67, Fig. XXIV.6). The remaining two

plain ware vessels were a small pithos or a jar [Fig. 25:3] (Hayes 1991: Fig. LXXIII.7) and a bowl [Fig. 25:1]. All three vessels demonstrated a very similar, fine, light yellow or pinkish-brown and rather clean fabric, which seems to originate from a region other than Cyprus.

Ceramic building material found in the basin consists of several fragments of roof tiles and pipes made of local buff fabric, as well as an example of a fine, white-fabric pipe [Fig. 25:4] preserved in four pieces, of which one comes from an upper layer.

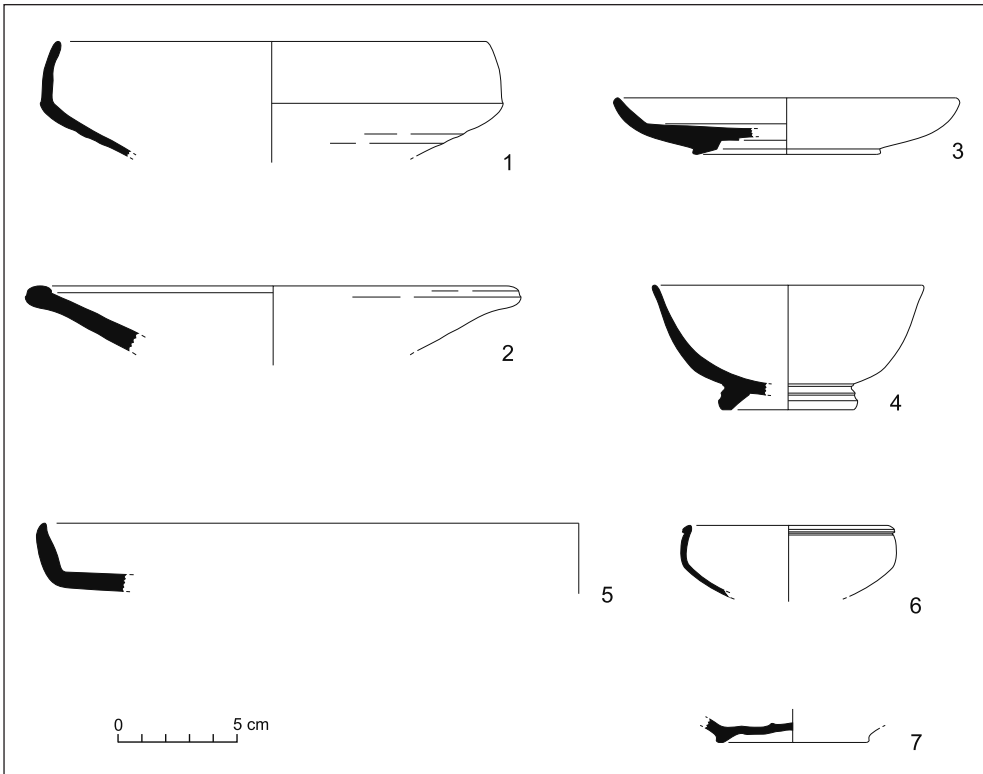


Fig. 23. Selected table ware from the fill of the circular basin: 1 – color-coated bowl; 2 – Egyptian Nile Silt plate; 3 – Eastern Sigillata A plate form 38; 4 – Eastern Sigillata A cup form 22B; 5 – Eastern Sigillata A plate form 3; 6 – Cypriot Sigillata form P22A; 7 – Cypriot Sigillata form P50 (PCMA Nea Paphos project/drawing and digitizing M. Więch)

Summing up, the more or less 700 fragments of pottery from the circular basin demonstrate functional variety from domestic, such as table, cooking

and plain ware, to transport amphorae and ceramic building material. There was no apparent layering of the basin fill and sherds joined across archaeological

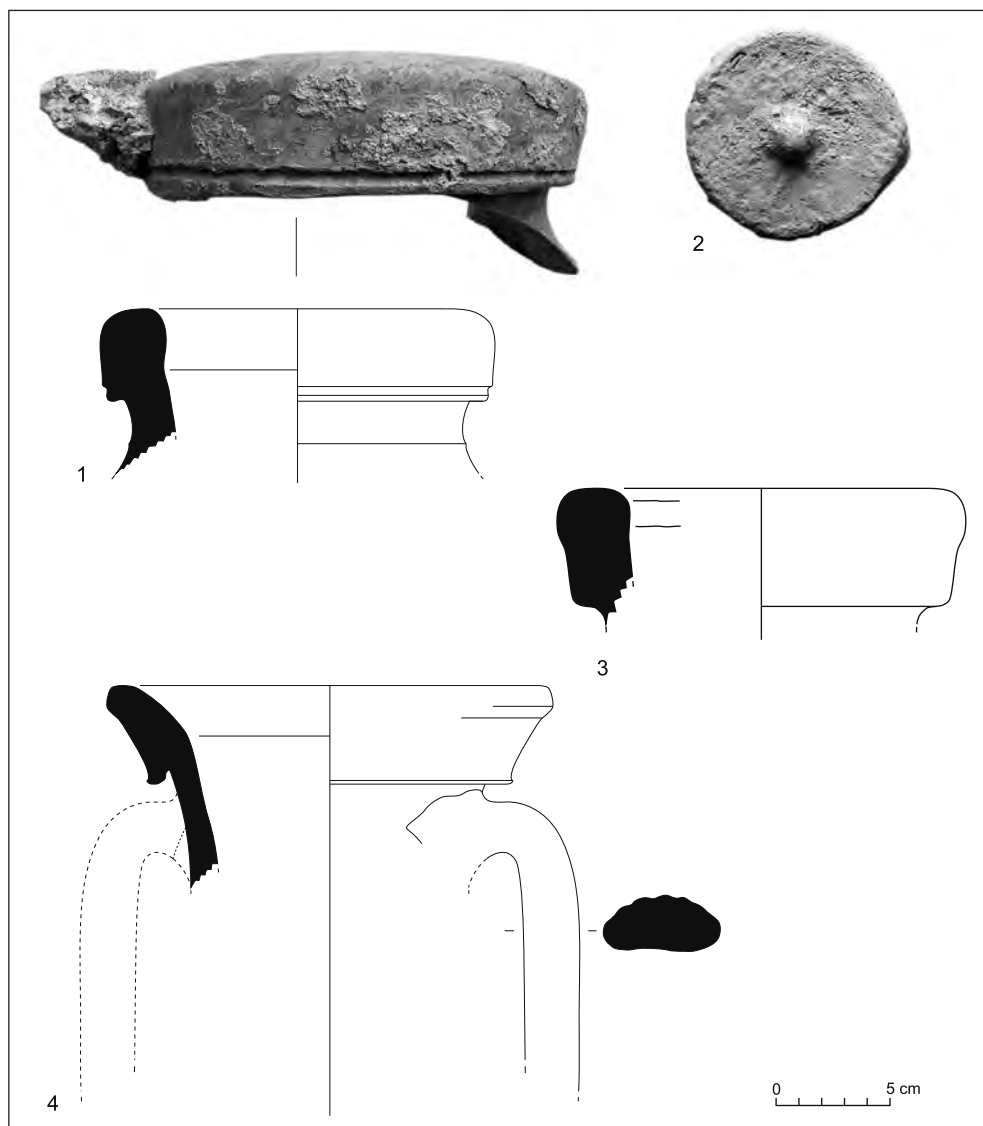


Fig. 24. Selected amphorae from the wall and fill of the circular basin: 1 – Dressel 6A amphora rim from the basin wall; 2 – amphora lid; 3 – Dressel 6A amphora rim, from the fill; 4 – Dressel 7 amphora (PCMA Nea Paphos project/photo, drawing and digitizing M. Więch)

recording contexts (e.g., sherds from contexts 16/2016 and 19/2016, upper and lower fill levels respectively). It means that the basin was filled up rapidly with

rubbish brought from elsewhere, which comprised material from the late 4th century BC through the mid 1st century AD.

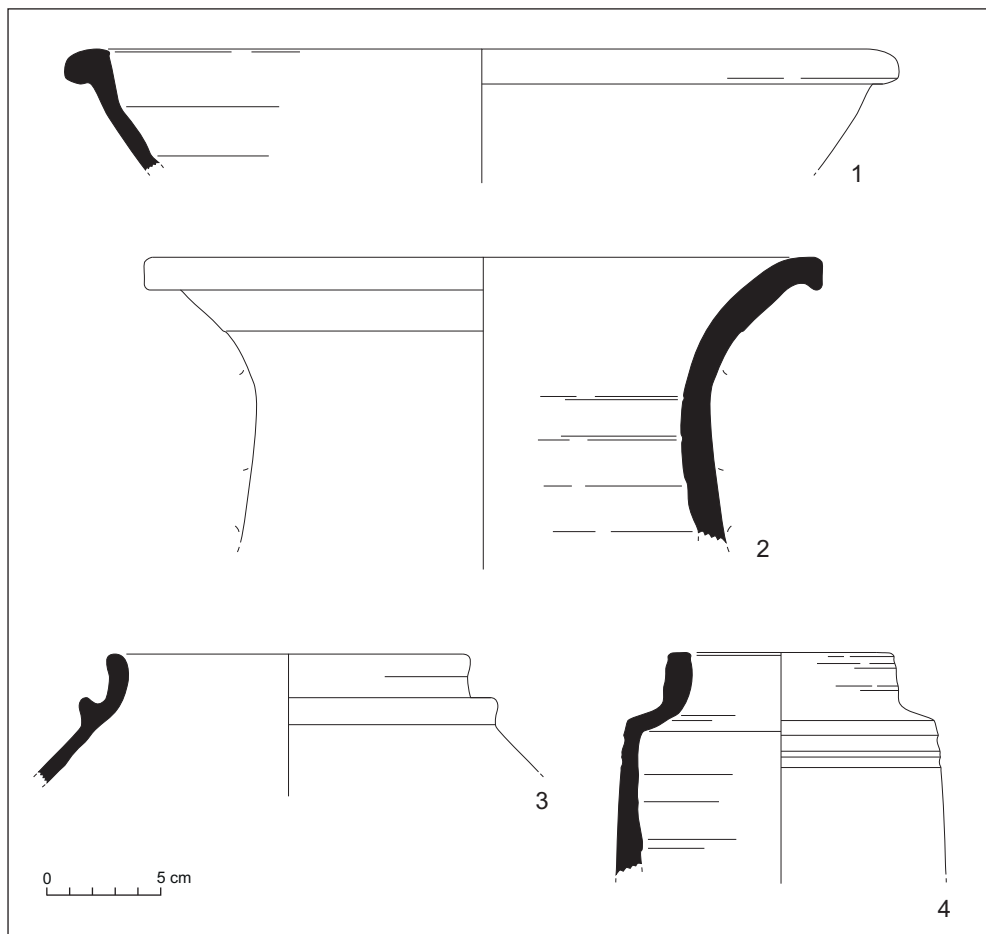


Fig. 25. Selected plain ware (1–3) and ceramic building material from the fill of the circular basin: 1 – bowl; 2 – krater; 3 – small pithos or jar; 4 – pipe (PCMA Nea Paphos project/drawing and digitizing M. Więch)

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A circular pool in the main courtyard of the “Hellenistic” House in Nea Paphos. Preliminary remarks

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Abstract: Excavations in the main courtyard of the “Hellenistic” House in Nea Paphos in 2016, Polish excavations, revealed a small circular pool with immured tops of Dressel 6A amphorae in the wall surrounding it and a circular imprint in the middle of the floor. The paper undertakes a discussion of possible form and function, putting forward a tentative interpretation based on a study of parallels that we are dealing with an ornamental pool, a popular furnishing of wealthy Roman house gardens, functioning perhaps as a fishpond (*piscina*) or a tank with water constantly running in and out, with a *labrum* or columnar pedestal standing in the middle.

Keywords: Nea Paphos, “Hellenistic” House, peristyle, circular pool, fishpond, *piscina*, Dressel 6A amphora, *labrum*, garden

A small circular pool of unusual form, comprising the tops of Dressel 6A amphora immured in its peripheral wall and a circular imprint in the middle of the floor, was discovered in 2016 in the main courtyard of the “Hellenistic” House in Nea Paphos excavated by a team from the Polish Centre of Mediterranean Archaeology University of Warsaw [Fig. 1]. It was situated approximately 0.55 m under the surface of the courtyard floor and was severely damaged. The fill did not contain any material from the demolition of the pool walls, but was replete with pottery dated broadly from the late 4th century BC to the mid 1st century AD. Thus it must have been dismantled intentionally and filled up with material originating from rubbish accumulated

elsewhere (see Meyza, Romaniuk, and Więch 2017, in this volume). Considering the introduction of the amphora type immured in the wall of the pool (Peacock and Williams 1986: 98–101) as a *terminus post quem* and the dating of the latest ceramic material from the fill as a *terminus ante quem*, the time span for the functioning of this feature can be placed somewhere between the late 1st century BC and the mid 1st century AD, that is, in the early Roman period in Cyprus.

The interpretation of the form and function of this pool is not straightforward due to the poor condition of the structure, but enough characteristic features survive to warrant a discussion based on a review of parallels from the Roman world.

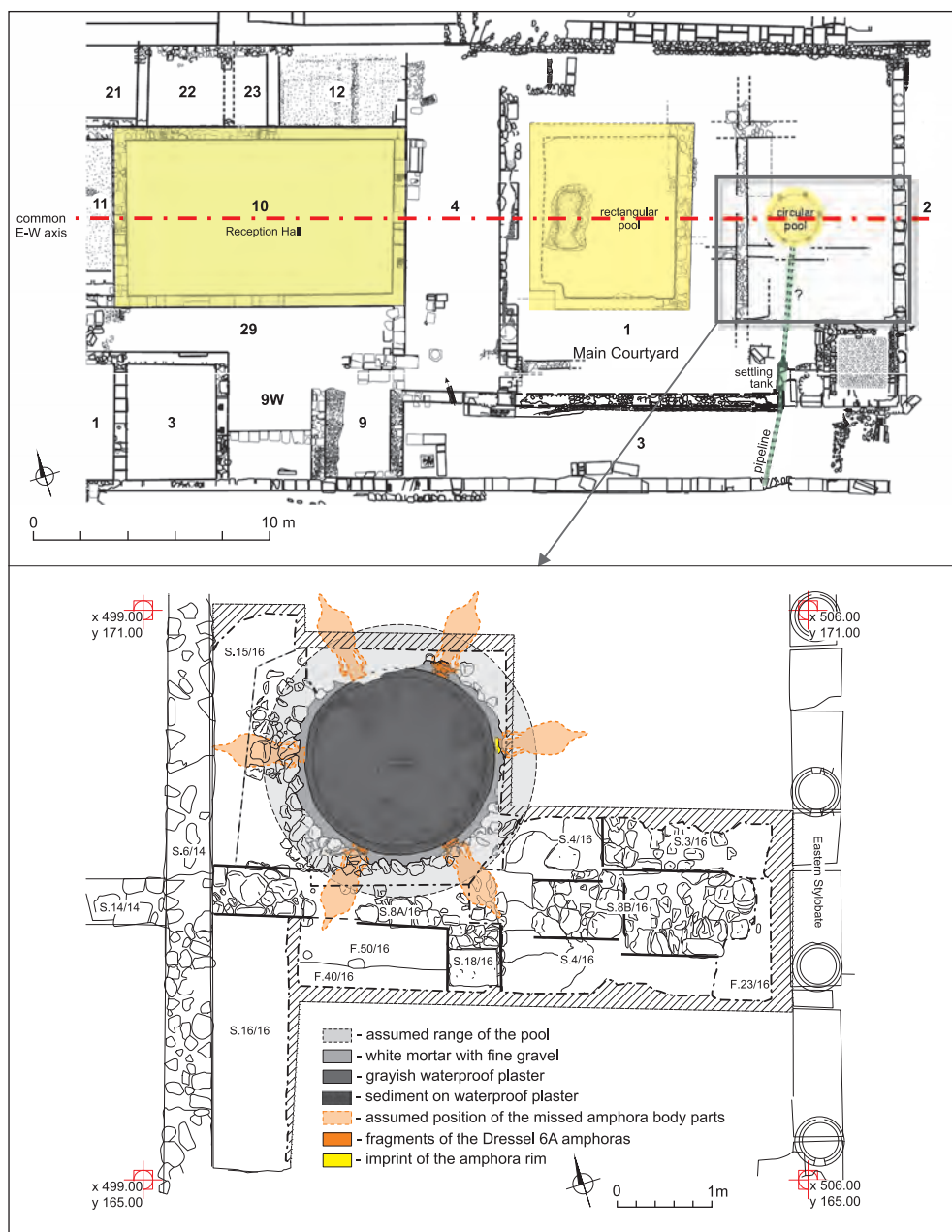


Fig. 1. Plan of the circular pool with its surroundings; above, location of the pool in the main courtyard within the central part of the “Hellenistic” House (PCMA Nea Paphos project/drawing M. Romaniuk; plan A. Brzozowska, A. Kubicka, S. Medeksza; processing M. Romaniuk)

THE POOL

The only preserved parts of the pool are the circular flat floor and the lower parts of the surrounding wall, up to a maximum height of 0.31 m [Fig. 2]. The inner diameter is between 1.95 m and 1.99 m, and the surrounding wall may have been between 0.40 m and 0.60 m thick, although it is impossible to be exact as the outer face of the wall can hardly be seen. The wall, and probably the foundation under the floor, were built of mainly fist-size rough stones (occasionally up to 0.35 m long), set tightly side by side in an earth mortar. The floor and the inner face of the wall were bonded with a diagonal chamfer. The inside face of the structure was covered with white mortar mixed with fine gravel, which penetrated the gaps between the stones, forming a nearly smooth surface, later coated with a thin layer of grayish waterproof plaster.

The tops of Dressel 6A amphora were immured horizontally in the peripheral wall, the mouths oriented towards the center of the pool. They were placed at approximately the same level, the maximum difference being 0.03 m (measuring from the floor to the bottommost inner edge). Fragments of three such installations were preserved *in situ*, but only one consisted of an almost complete rim and neck with parts of the handles; the other two were merely small pieces of the rims. A fourth was clearly in place judging by the imprint of the rim in the wall. Considering the fairly regular arrangement of these fragments, set at intervals of approximately 0.90 m to 1.08 m (measuring straight section lines between the center points of the vessel mouths), it can be assumed that two

more vessels had once been immured in the unpreserved northwestern part of the wall.

A circular imprint, about 0.47 m in diameter, was faintly visible in the middle of the pool floor. It attests to the presence of a round base standing there long enough for such traces to form and be preserved. The base, and the presumed object standing on it, must have been of considerable weight judging by the small cracks in the waterproof plaster running along the edges of the imprint. The white mortar stains within the circle indicate a permanent installation.

Sediment covered the bottom of the pool in places. It seems to be cemented sludge [see Fig. 1] and it is visible mainly up against the wall. It is practically missing from the middle of the floor, suggesting that it had settled while the central standing object was still in place, and thus, while the pool was maybe still in use.

No other structure around the pool could be attributed to it directly. The walls running on the western and southern sides appear to be older (Meyza, Romaniuk, and Więch 2017, in this volume). A stone structure that could probably be related to it is a kind of platform or pedestal on the eastern side (S.3/16) [see Fig. 2], much too massive to be a simple wall. The eastern and northern sides of this structure escape identification, while the other two are only faintly recognizable. An analysis of the stratigraphy showed that both the pool and the structure mentioned above were embedded in the same strata dated to the early 3rd century BC (Meyza, Romaniuk, and Więch 2017, in this volume), but it is not known whether they were introduced

at the same time/level, because the upper layers of this strata were apparently removed together with the upper parts

of the pool. Other structures, potentially correlated with the pool, could have been removed at that time as well.

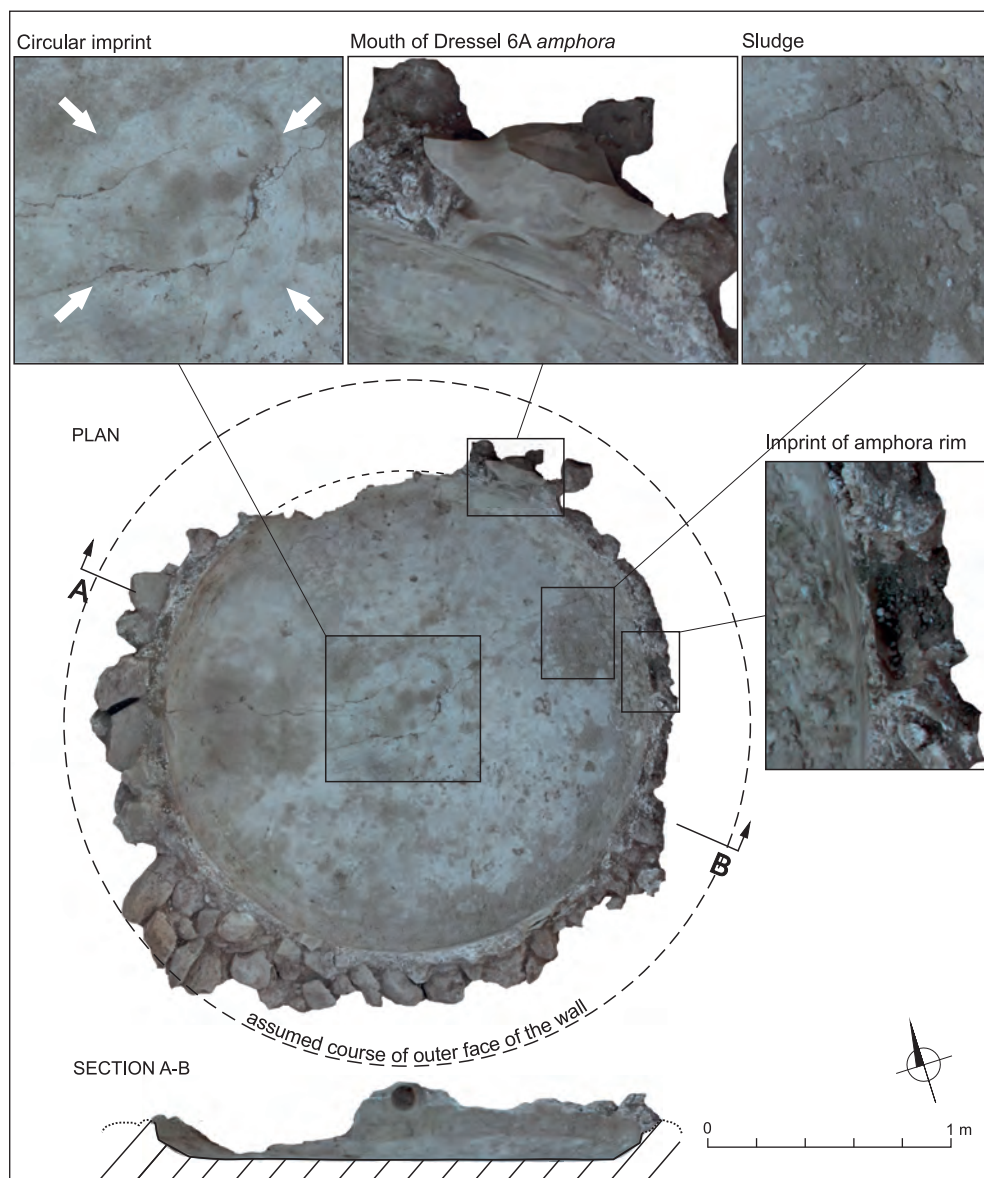


Fig. 2. Orthophoto plan of the circular pool with its characteristic features (PCMA Nea Paphos project/photo A. Kubicka, processing M. Romaniuk)

DISCUSSION

BACKGROUND

Any search for parallels for this feature require the functional context to be determined first and only then can a discussion of the function and original appearance be undertaken. The pool was discovered under the floor of the main courtyard (1), made of garden soil probably and dated, like the associated porticoes, to the end of the 1st and beginning of the 2nd century AD (Meyza, Romaniuk, and Więch 2017, in this volume). An earlier courtyard could have existed in this place as suggested by the earlier foundation of the eastern portico stylobate of this courtyard, associated with layers from the late 2nd and early 1st century BC (Daszewski 1994: 103). Thus, the pool under discussion could have been a later addition, reflecting adaptation of the house in Roman times. Similarly, an earlier date for the reception hall (10), adjoining the courtyard from the west, also supports this idea, as rooms of this kind were an inherent part of wealthy house courtyards of the time. The earlier courtyard had to be slightly larger than the later one, having presumably to accommodate a large rectangular pool at its western end. The relation of the circular pool to the rectangular one is unknown, but their specific set-up suggests some kind of interconnection (at least in one of the two phases of the rectangular pool, see Meyza, Romaniuk, and Więch 2017, in this volume). Namely, both pools were aligned on the same axis as the reception hall (A. Kubicka, personal communication) [see *Fig. 1*]. This correlation can hardly be accidental and it reflects a typical, well considered arrangement of the Roman *domus* with peristyle, giving visitors an

opportunity to admire the wealth and status of the owner as expressed in the magnificent decoration of this part of the building. Therefore, the location of the circular pool, as well as the absence of any installations of an industrial or bathing character in the nearby area, may suggest the pool's mainly decorative role, even if it simultaneously performed other functions, like water collection, for example.

In the Roman world, decorative pools were present more often in peristyle gardens, known mainly from the urban houses in the western provinces, and especially from Pompeii. However, in the case of the Nea Paphos pool, it seems more appropriate to search for parallels in the Near East. Similar structures from a period contemporary with the functioning of the pool in Paphos are hardly common in this region (Kamash 2006: 216, Table 9.2). Hence it is necessary for the purposes of the present discussion to refer repeatedly to finds from Pompeii, these being best known thanks to many years of studies by Wilhelmina Jashemski (for synthetic studies, see Jashemski 1979; 1993). Caution is recommended in view of the geographical differences between Pompeii and Nea Paphos. The latter was located in a more arid area and culturally influenced strongly not only by Roman, but also by Greek, Egyptian and Near Eastern traditions. Hence, the differences in natural conditions and not the least, the absence of any solid grounds for assuming that the said pool functioned within a garden as at Pompeii (Meyza, Romaniuk, and Więch 2017, in this volume). Nevertheless, a pool of ornamental purpose in Nea Paphos at a time when similar structures had become

highly popular in the western Roman provinces, may suggest a growing Roman cultural influence in Cyprus territory, thus making such comparisons tenable.

VESSELS IMMURED IN WALLS

Terracotta vessels or parts of them immured horizontally in the walls of pools are fairly well attested archaeologically, especially in Italy (Higginbotham 1997: 239, Note 69), but also in other parts of the Mediterranean region: France (e.g., Vienne, Clos de la Lombarde), Tunisia (e.g., Cuicul, Timgad), Egypt (Luxor, Abukir peninsula) and Israel (e.g., Khirbet Sabiya) (Marzano 2013: 207–208, Notes 47, 50, 51 with further references). The presence of such vessels is generally considered a prime indication of a pool being a fishpond, the Latin *piscina* (Marzano 2013: 207). Generally, they are interpreted as shady retreats for fish, corresponding probably to the *speci* (sing. *specus*) described by Columella (Col. 8.17.2), or as devices specifically devoted to enable the fish to hide and lay eggs. The latter proposition has been questioned, however, the Romans being thought of as probably unable to breed fish for the entire biological cycle in artificial ponds (Marzano 2013: 208). In any case, the ancient Paphians seem not to have been ignorant of the idea of breeding fish in a domestic context as the *piscina* with niches in the walls from the House of Dionysos may indicate, although that was a later construction (Nicolau 1967: 101).

Interpreting the pool from the “Hellenistic” House as a fishpond raises several concerns, however, one of these being the issue of the amphora size. Since no trace of the bodies of these vessels have been found anywhere in the pool or its vicinity, it is impossible to say whether

they were immured whole or just their top parts. Compared to the regular amphora size (usually about 0.95–0.96 m long, 0.35–0.36 m wide), the pool diameter was exceptionally small, merely twice the length of the amphoras. This makes the first assumption dubious at best. Insofar as examples of bigger vessels are known, like the *dolia* from Monteverde in Rome (Higginbotham 1997: 116), they were usually associated with much larger reservoirs. In the smaller pools interpreted as fishponds, small vessels or the bottom parts of larger ones were preferred as a rule. The case is well illustrated by a small rectangular (1.05 m by 2.15 m) and shallow (0.52 m) pool in the peristyle of the House of Gavius Rufus in Pompeii, where three small amphoras immured in the north wall formed niches only 15 cm deep (Jashemski 1993: 173, Fig. 208). It can be assumed that such small fishponds were intended for small fish not requiring the more spacious kind of niches. In view of this, the use of the upper parts of amphoras alone seems to be evident enough. Yet there was no trace of any closing or sealing elements at the broken end of the largest fragment of the amphora. Moreover, despite not finding any body parts of these vessels, it seems that the location and size of gaps in the wall south of the pool (S.8A/16), aligned with the E–W axis, is consistent with the presence of these vessels [see Fig. 2] and could indicate that, initially, whole vessels had been immured there. The gaps have also led Henryk Meyza to suggest a different solution (Meyza, Romaniuk, and Więch 2017, in this volume), namely, that the immured upper parts of amphoras were intended as spouts for passing water in and out of the pool. Had this been the case, these necked rims would have been connected with pipes

running to the pool through the said gaps in the nearby wall. Reuse of fragments of ceramic vessels, including taking advantage of them as elements of drainage systems, was fairly common (Peña 2007: 180); it seems unreasonable, however, to install so many spouts in a pool of this size, even if only for decorative purposes.

CIRCULAR IMPRINT

It seems obvious that the circular imprint in the middle of the floor of the pool was left by some standing object. None of the parallels found so far combine all the specific features, but pools with an object in the middle seem to be quite common in the peristyles of wealthy Roman houses. Again, the best examples are from Pompeii, where there are at least several features corresponding to the object under discussion. The first suggestion then would be a fountain, which usually took on the form of a *labrum* (a water-filled vessel with overhanging lip), a statue, or a column with or without a circular plate on its top. Such structures were usually supplied with water from a pipe sticking out of the bottom of the pool, connected to their inner channels. Regrettably, the pool discussed here had no such installation. Nonetheless, structures like a *labrum* could have been filled also with water jetted from a fountain located outside the pool [Fig. 3:A], as observed, for example, in the House of Balcony in Pompeii. The circular pattern of sludge distribution across the floor of the pool (see above) would be explained by a *labrum* with a circular top [Fig. 3:A]; the sludge would have been washed sideways, against the wall, by water dripping down in a circle. However, this is merely an assumption and for lack of any convincing traces of a fountain nearby it is difficult to argue

in favor of a *labrum* supplied with water from a nearby fountain. At the moment it seems more probable that the circular imprint was left by a *labrum* filled with water manually or by an object of not strictly hydraulic character, for example a large flower-pot or a columnar pedestal under a decorative element like a small statue [Fig. 3:B]. The presence of a *labrum* or a flower pot seems less likely than that of a pedestal, mainly due to their customary presence in shallower basins not exceeding a dozen centimeters in depth.

WATER SUPPLY

A limited natural supply of water in Nea Paphos forced residents to build wells, collect rainwater in cisterns and transport fresh water, apparently from outside. Both of the above proposed interpretations of the pool are based on the assumption that it was constantly being supplied with fresh water. Remains of a Roman aqueduct bringing water to Nea Paphos, found in several places along its probable course from Nea Paphos (Kato Paphos) to Lemba and higher up (Hadjisavvas 1977: 227–228), would argue in favor of this assumption. At issue is the dating of this facility, but it is assigned on the whole to the Roman period. Even so, it is quite possible that the pool was supplied with water from this aqueduct (for a general discussion of the aqueduct in Nea Paphos, see Młynarczyk 1990: 222–223).

There is a terracotta pipeline in the “Hellenistic” House, running from street A’ to the north, apparently transporting water directly to a longitudinal rectangular settling tank, placed slightly lower in the southeastern corner of the main courtyard (1) [Fig. 4; see Fig. 1]. This pipeline, coming in directly from the street, suggests

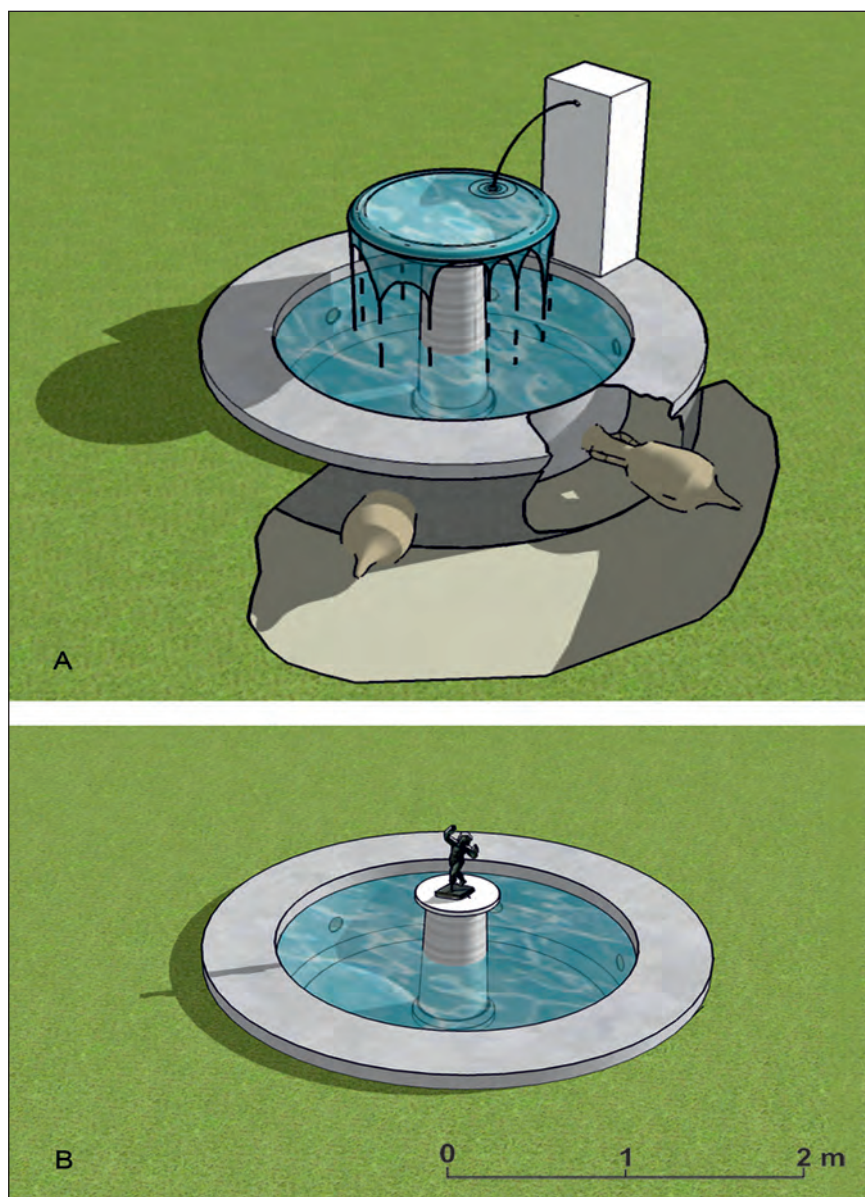


Fig. 3. Two simplified hypothetical 3D models of the circular pool feature from the “Hellenistic” House in Nea Paphos: A – circular basin with labrum and whole amphora; B – circular basin with columnar pedestal (Modeling M. Romaniuk)

that the building was linked to a public water supply system in the city. The pipeline apparently continued north of the tank, there being one, only partly preserved segment of terracotta pipe found there. The channel was directed straight toward the circular pool, but no connection between the two could be traced. The channel may have carried water to the edge of the pool, perhaps to the mouths of the amphoras as hypothesized by Meyza. An alternative destination would be a fountain adjoining the edge of the pool, but the settling tank in the courtyard suggests that the water pressure was insufficient to feed the latter. One cannot exclude of course the presence of devices providing the right pressure, not preserved to this day.

Looking for the discharge of water from the pool, one may assume that there were outlets situated somewhere over the line of inserted amphoras, probably near the top edge of the pool, the purpose of which was to control the water level or, again to follow Meyza’s reasoning, the amphora mouths were put to this purpose.

Apart from the above, there is nothing to say that the “Hellenistic” House was equipped with a freshwater installation at the time when the circular pool was in use. However, in the case that we assume the pool to have been a fishpond, it should be noted that practically all the known fishponds with ceramic vessels were supplied with freshwater (Marzano 2013: 208). It is also to be noted that the



Fig. 4. Terracotta pipeline and settling tank in the southeastern corner of the main courtyard of the “Hellenistic” House; arrows indicating waterflow direction (PCMA Nea Paphos project/photo H. Meyza, processing M. Romaniuk)

spread of ornamental water devices, such as fountains and pools, in the house gardens of Pompeii is generally considered as a consequence of the introduction of a new aqueduct in the city in the Augustan period (Jashemski 1996: 53). Water in sufficient amounts allowed wealthy citizens to use it for purposes other than utilitarian, namely, as a display of wealth and status, expressed by the introduction of decorative elements in their peristyles. It cannot be excluded that a similar situation occurred in Nea Paphos, especially when one remembers Dio Cassius's mention (Cass. Dio. LIV, 23) of August laying out funds for the city's rebuilding after the earthquake of about 15 BC. The aqueduct could have been built at that time.

POOL DEPTH, SHAPE AND SIZE

The assumed depth of the pool differs depending on the hypothesis. As a fish-

pond, its minimum sufficient depth should have been roughly 0.50 m or more to contain fish (Farrar 1998: 70). This was feasible in terms of wall thickness. Keeping in mind the standard practice of placing vessels in the bottom parts of the walls and no higher than halfway to the top, the pool's depth should be at least twice the distance between the vessels and the bottom of the pool, that is, about 0.50 m in total. However, if the pool is assumed to have been little more than a tank with constantly flowing water, as Meyza thinks, it would not have to be much deeper than what has been preserved.

As regards the circular shape and size of the pool, it can be assigned to Farrar's type A (1998: 71–74), that is, simple forms of varied sizes, most common in all the provinces of the Empire, constructed throughout the Roman period, perhaps because of the simplicity of the design.

CONCLUSION

Preliminary research on the newly discovered circular pool from the "Hellenistic" House in Nea Paphos shows that this structure, with its small size, circular shape, amphoras inserted in its walls and some object standing probably in the middle of its floor, was uncommon, not only in Cyprus, but also across Roman territory as such. No direct and comprehensive parallel, comprising all the features mentioned here, has been identified so far. This hinders a thorough understanding of its original form and function, especially considering its poor state of preservation.

It seems most likely that the pool constituted part of a decorative courtyard design from a wealthy Roman house, which

the "Hellenistic" House indeed was in this phase. The location of the pool, aligned on the same axis as a large rectangular reservoir and the reception hall, evokes a well considered arrangement, aimed at demonstrating the high status and wealth of the house owner. The specific construction of the pool suggests that it was something more than a typical ornamental pond, although its exact character remains unclear.

A closer examination resulted in at least two ideas, differing mainly with regard to the interpretation of the immured vessels. The first one, more feasible in the author's opinion, is that the pool was a small fishpond, a Roman *piscina*, where whole amphoras or their upper parts were installed as fish shelters and nests. The

second one, proposed by Henryk Meyza, says that only the mouths of the vessels were immured, the idea being to use them as spouts and outlets providing a constant flow of the water. Regardless of which hypothesis is the more feasible one, both are based on the same assumption that the pool was supplied with fresh water, carried perhaps from a nearby aqueduct. This must remain merely a supposition until there is evidence for the functioning of an aqueduct in Nea Paphos so early in the Roman period.

As regards the object within the pool, the most probable interpretation for now is that it was a pedestal supporting some decorative element. It seems more appropriate than a *labrum* or a large flower-pot considering the depth of the

pool, which was probably between 0.31 m and 0.50 m or more, and so relatively too deep for these two.

None of the above hypotheses is free of doubt, yet they remain for now the best possible ideas for interpreting the newest finds of the Polish project excavating in Nea Paphos. Further work in the area may yet clarify the doubts raised with regard to the function and design of the circular pool from the "Hellenistic" House in the city.

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Cooking ware pottery from the “Hellenistic” House at Nea Paphos Seasons 2014 and 2016

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Abstract: The paper presents a selection of cooking ware pottery excavated in 2014 and 2016 from the fill under the central and eastern parts of the main courtyard (1) of the “Hellenistic” House in Nea Paphos–Maloutena. Most of the studied vessels are of early Roman date and, for the most part, Cypriot production, although there is a spattering of imports from the Aegean, Italy, the Levant and Egypt.

Keywords: Nea Paphos, “Hellenistic” House, early Roman period, Cypriot cooking ware pottery, Aegean cooking ware pottery

The cooking ware pottery assemblage discussed in this paper comes from layers underlying the central and eastern parts of the main courtyard (1) of the “Hellenistic” House in the Maloutena district of Paphos in Cyprus. The building in question is situated directly to the south of the Villa of Theseus and was inhabited from the middle of the Hellenistic period (mid-2nd century BC) through the mid-2nd century AD (Mazanek 2014: 280). The layers under discussion were excavated in the 2014 and 2016 seasons within the frame of an archaeological project run by the Polish Centre of Mediterranean Archaeology University of Warsaw.

An expected sizable ceramic assemblage was recovered, including large quantities of cooking ware. The preservation of the pottery is fairly good, including some bigger sherds, but even so no complete or fully restorable pots were found. A selection of the better preserved finds from the two seasons is discussed in the following pages, representing the contexts: F.13, F.16, F.26, F.32, F.52 and F.76 from the 2014 season and F.2, F.7, F.8, F.12, F.17 and F.50 from the 2016 season. The merit of certain of these finds is their very rare occurrence at Nea Paphos–Maloutena.

Most of the contexts, except for F.76/14 and F.50/16 which are clearly

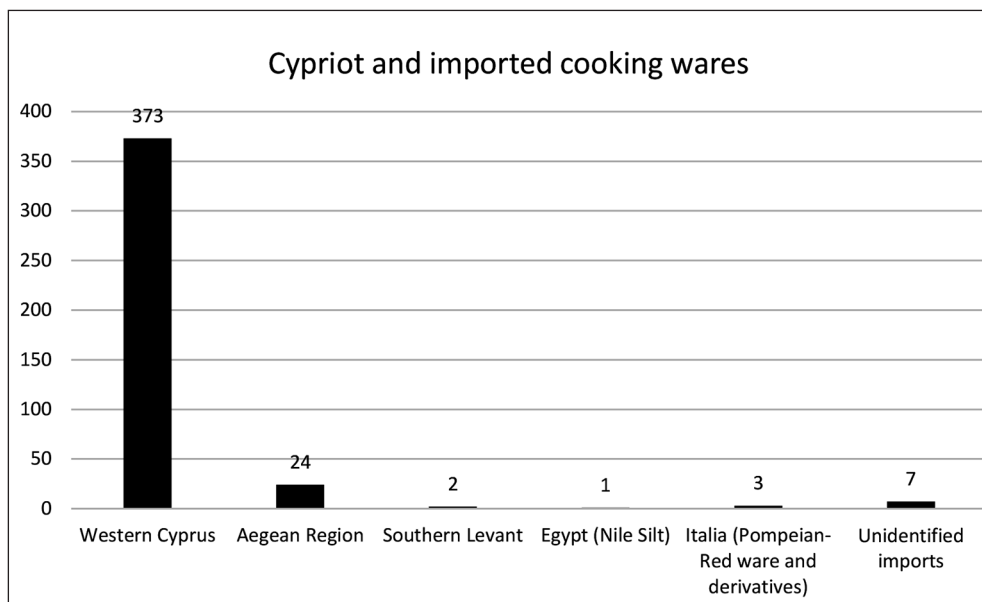


Fig. 1. *Quantitative comparison of Cypriot and imported cooking wares based on the early Roman contexts from fieldwork seasons 2014 and 2016 ("Hellenistic" House, below courtyard 1)*

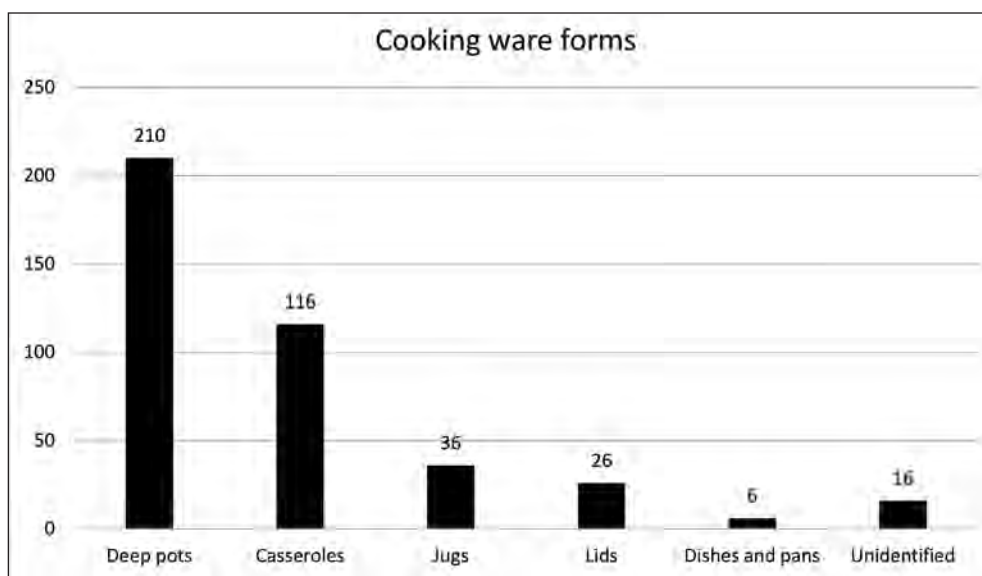


Fig. 2. *Quantitative comparison of cooking forms of Cypriot and imported origin, based on early Roman contexts from fieldwork seasons 2014 and 2016 ("Hellenistic" House, below courtyard 1)*

earlier, constituted the fill of the main courtyard and the immediately underlying layer, namely, loose soil without larger stones, interpreted as garden soil (Meyza, Romaniuk and Więch 2017, in this volume: 398). The ceramics coming from these contexts are very homogenous and, in the light of the latest finds, should be dated to the late 1st or early 2nd century AD (Meyza, Romaniuk, and Więch 2017, in this volume). The material from the two excavations seasons, presented jointly, is important inasmuch as it covers a considerable timespan from the late Classical to the early Roman period, creating an opportunity for some general observations on the appearance of specific cooking ware forms and imports. It should be emphasized that none of the contexts is Hellenistic, but the early Roman contexts contain numerous pieces from earlier periods.

The assemblage consists of potsherds recovered by sieving the soil from all contexts through screens with 1-cm mesh. The sherds were counted and weighed in order to produce preliminary statistical data regarding cooking vessels of local and imported production. Statistics were based on diagnostic fragments from the studied contexts, considered together due to extensive joining of fragments and the

overall similarity of the cooking wares from the early Roman contexts dug in 2014 and 2016 [Figs 1, 2]. Joining pieces were naturally treated as one piece, as were also sherds evidently belonging to a single vessel. Contexts dated to the late Classical period (F.76/14 and F.50/16) were omitted from the statistics as they yielded very few cooking ware remains. It is worth noting, however, that these early contexts contained only Cypriot products.

A quantitative evaluation of the number of locally made and imported cooking wares shows that more than 90% of the products came from western Cyprus [Fig. 1]. The only significant group of imports (6%) was from the Aegean. Compared with the material from the House of Dionysos site, where the Italian and Aegean types are considered to be the main imports (Hayes 1991: 78–80), it seems that the latter were more numerous at the Maloutena site. A quantitative comparison of cooking utensils, namely deep pots, casseroles, jugs, lids and flat-bottomed baking dishes demonstrates the predominance of deep round-bottomed pots and casseroles over the thick flat-based pans with internally slipped, “non-stick” surface. This shows that Paphos dwellers preferred dishes requiring thermal processing in water or oil.

CYPRIOT COOKING POTS

DEEP POTS AND CASSEROLES

Cypriot pots of the Classical and Hellenistic periods are characterized by their plain, simply sloping rims, strap handles attached directly at the lip and slightly protruding above, and perfectly round bottoms (Papuci-Władyka 1995: 70, 217, Cat. 418, Pl. 55). Surface treatment and the ware

differ from later-period pots: the external surface is not very smooth, especially in the lower part of the body where there are scratches left from the turning process, the fabric is grittier, with more frequent and larger inclusions.

Of the few small cooking ware sherds from context F.50/16, which is dated to

the late Classical(?) period, one was a body fragment from a small casserole with round bottom [Fig. 3:1] (Hayes 1991: 97, Fig. 40:14).

A rim fragment from a deep pot [Fig. 3:2], although found in an early Roman context (F.8/16), should be dated to the Hellenistic period. Its fabric is

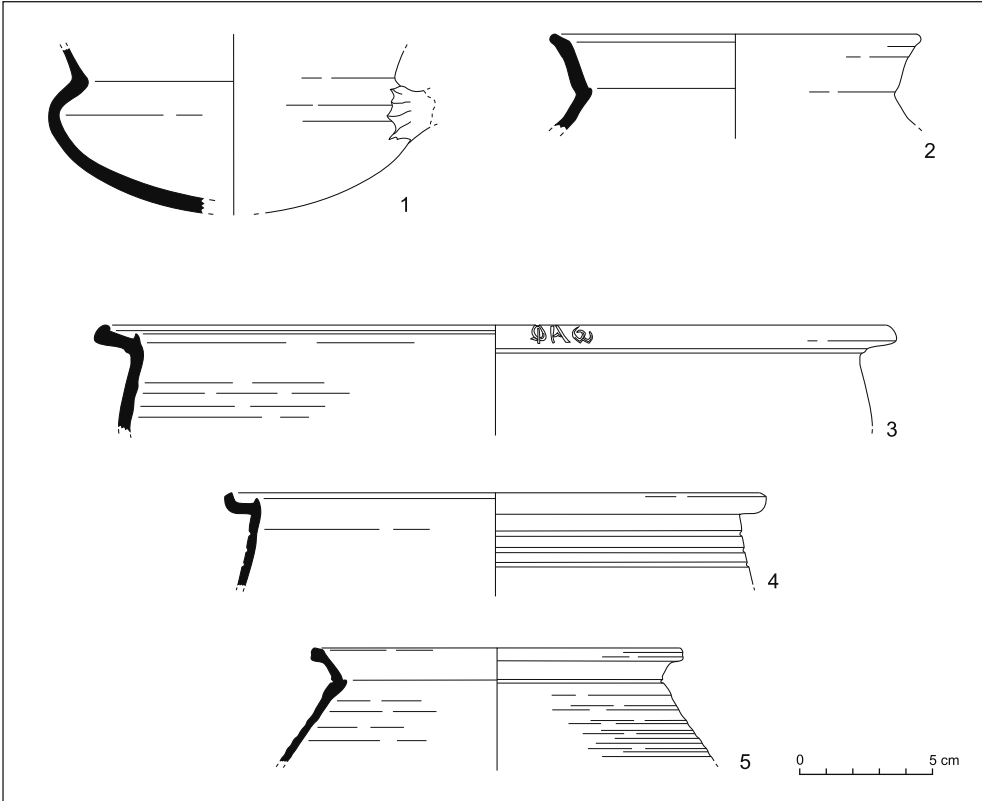


Fig. 3. Selection of Cypriot cooking ware pottery from layers preceding the “Hellenistic” House courtyard (1): 1 – small round-bottomed casserole; 2 – deep pot; 3 – large casserole [see Fig. 4]; 4, 5 – ribbed pots (PCMA Nea Paphos project/drawing and digitizing M. Więch)

Fig. 4. Casserole with Greek inscription on the rim [see Fig. 3:3] (PCMA Nea Paphos project/photo M. Więch)



gritty, but less sandy and with more white inclusions than in the case of the Classical casserole. The same type of Hellenistic pot was found at the House of Dionysos in a context dated to the late 2nd or early 1st century BC (Hayes 1991: 81–82, Figs 29:4, 30:1, OΔ 3572).

A fragment of a large casserole with plain walls and Greek inscription $\phi\alpha\omega$ on the rim [see Figs 3:3, 4] was found in context F.16/14. The three-letter graffito was clearly made before firing, which means that the potter, and possibly also the customer, were Greeks in a cultural, if not ethnic sense. A similar type of casserole, although smaller in size, with flat rim and ridges along both edges, was found in the House of Dionysos, in Well 4, dated to the late 1st century AD (Hayes 1991: 187, 192, OΔ 4707, Fig. 35:7).

Most of the Cypriot deep pots and casseroles from the Hellenistic and early

Roman period are consistently unribbed. A number of ribbed pots with various rim types have occurred in contexts dated to the late 1st/early 2nd century AD [see Fig. 3:4–5], but the mixed nature of the contexts considered here does not help in determining whether the ribbed forms are slightly later than the plain types or should be assigned the same date (Hayes 1991: 81). Ribbing on the body of Roman-period vessels was already observed in the material from the cemetery known as the Tombs of the Kings, which constitutes part of a large burial ground to the north of the city wall of ancient Nea Paphos, as well as from the theater site which lies by the northeast gate of the ancient town (Gabrieli and Merryweather 2002: 36).

JUGS

The last two seasons brought to light a set of Cypriot cooking ware jugs. Two of the

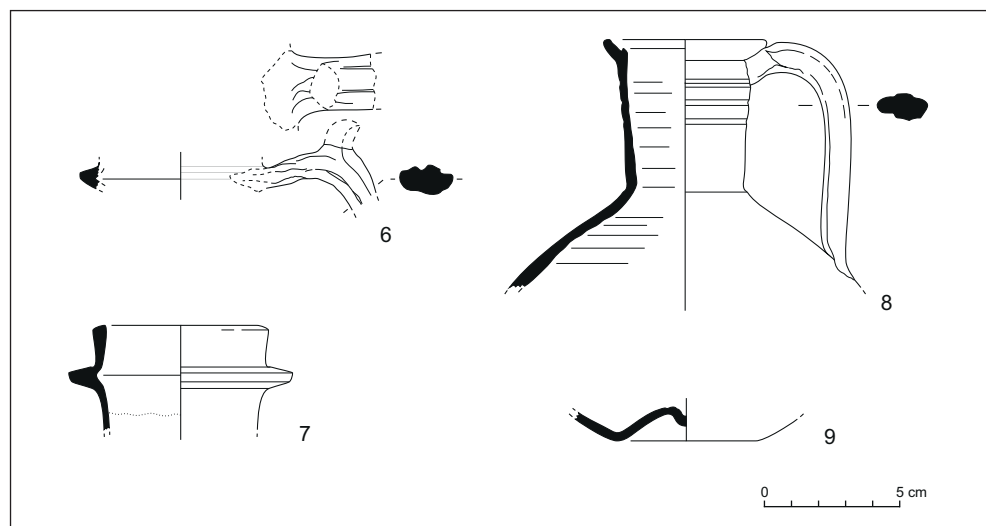


Fig. 5. Selection of Cypriot cooking ware jugs from layers preceding the “Hellenistic” House courtyard (1): 6, 7 – flanged rim type [see Fig. 6]; 8 – ledge-rim type; 9 – concave bottom of either type (PCMA Nea Paphos project/drawing and digitizing M. Więch)

presented examples belong to a flanged rim type [Figs 5:6–7; 6]. A small neck fragment retained the spurred handle (spur missing), bearing two grooves. According



Fig. 6. *Cyriot cooking ware jug with white deposit on the interior (PCMA Nea Paphos project/photo M. Więch)*

to Hayes the flanged-rim type jug from the House of Dionysos may originate from the Soli region (Hayes 1991: 82, 84, OΔ 4981, Fig. 35:10), however the example from the Maloutena site shows no visible differences from the standard western Cyprus cooking fabric. Another type of jug, with ledged rim and double-ribbed handle, was found in context F.32/14 [Fig. 5:8].

Although no complete example of a cooking-ware jug has been discovered so far at the site of the Polish excavations, parallels from the House of Dionysos let it be assumed that both illustrated types had the same thin-walled concave bottom with central “button”, such as the fragment from context F.8/16 [Fig. 5:9]. It is also assumed that they should be dated to the end of the 1st or the beginning of the 2nd century AD (Hayes 1991: 193–194, Fig. 67:19–20; deposit presumably of Trajanic date). All specimens, except for a small



Fig. 7. *“Pompeian-Red” ware pan [see Fig. 8:11] (PCMA Nea Paphos project/photo M. Więch)*

neck fragment, have a white (lime?) deposit on the interior walls [see *Fig. 6*], same as that observed on an imported Aegean jug [see below, *Fig. 9:14*], and on a bottom fragment [see *Fig. 5:9*] which also shows signs of blackening by fire.

BAKING DISHES

CYPRriot AND IMPORTED

A coarse baking dish [*Fig. 8:10*] was found in context F.26/14, which was interpreted as fill accumulated above a floor (S.4/14). The vessel is similar to a find from the House of Dionysos, a deposit dated to the late 3rd–early 2nd century BC (Hayes

1991: 82, 84, 104, *Fig. 32:8*, 11, 124, OΔ 5145, *Fig. 45:24*, local ware, uncertain date of deposit, probably late Hellenistic).

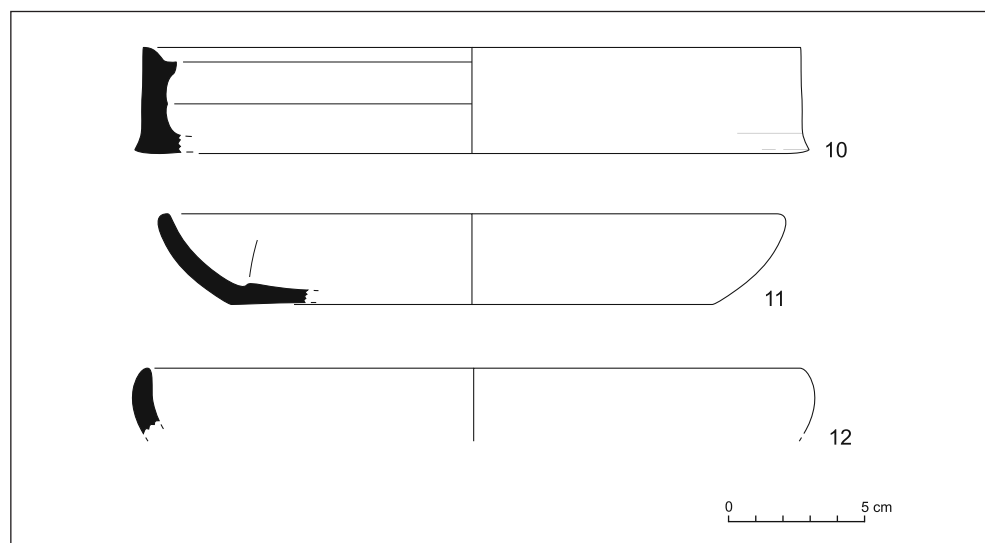
Two dishes were imports. A “Pompeian-Red” ware pan [see *Figs 7; 8:11*] from context F.52/14, above the well-head of cistern S.12/14, is an example of late Campanian “black sand” fabric (Blakely and Bennett 1989: 205–225; Hayes 1991: 78, 205, OΔ 55, *Fig. 28:1–5*). A small rim fragment of a Nile silt dish from context F.12/16, its interior surface reddish in color, may be an Egyptian imitation of an Italian “Pompeian-Red” ware pan [see *Fig. 8:12*].

IMPORTED COOKING WARES

AEGEAN IMPORTS

The most frequent cooking ware imports at the Maloutena site are products from

the Aegean, mostly thick flat-bottomed baking-dishes (a form not discussed in this paper) and deep baggy pots and carinated



*Fig. 8. Cypriot and imported baking dishes from layers preceding the “Hellenistic” House courtyard (1): 10 – Cypriot coarse ware baking dish ; 11 – “Pompeian Red” ware pan of the Campanian “black sand” fabric [see *Fig. 7*]; 12 – Egyptian Nile-silt imitation of an Italian “Pompeian Red” ware pan (PCMA Nea Paphos project/drawing and digitizing M. Więch)*

casseroles with concave walls, wide flat rims and two small “sliced” handles (Knossos type 2).

Rare finds in Nea Paphos and elsewhere are two forms: a pot with a short vertical, triangular rim [Fig. 9:13], representing Knossos type 1 (Hayes 1983: 105, 122, Fig. 5:56, 57), and a jug (Hayes 1983: 106, 122, Fig. 6:76–77). A fragment of an Aegean jug [Fig. 9:14] from context F.7/16 is just like an unillustrated small base fragment from context F.2/16 in that it has a white deposit on the inner wall surface. According to J.W. Hayes and G. Forster, these jugs often bear limescale deposits attesting to their

use for boiling water (Hayes 1983: 107; Forster 2001: 158, Fig. 4.11:c). Numerous small pieces of trefoil-mouthed rims, probably belonging to this type of jug, were discovered at the Maloutena site. An Aegean cooking ware pot with triangular rim [Fig. 9:13] and a casserole with sloping rim [Fig. 9:16] were found in context F.8/16; a deep pot with ribbed body [Figs 9:15; 10] comes from context F.52/14. Both contexts are dated to the end of the 1st–beginning of the 2nd century AD; the casserole type with triangular rim is considered to be earlier, however, than the types with wide sloping rim (Hayes 1983: 105).

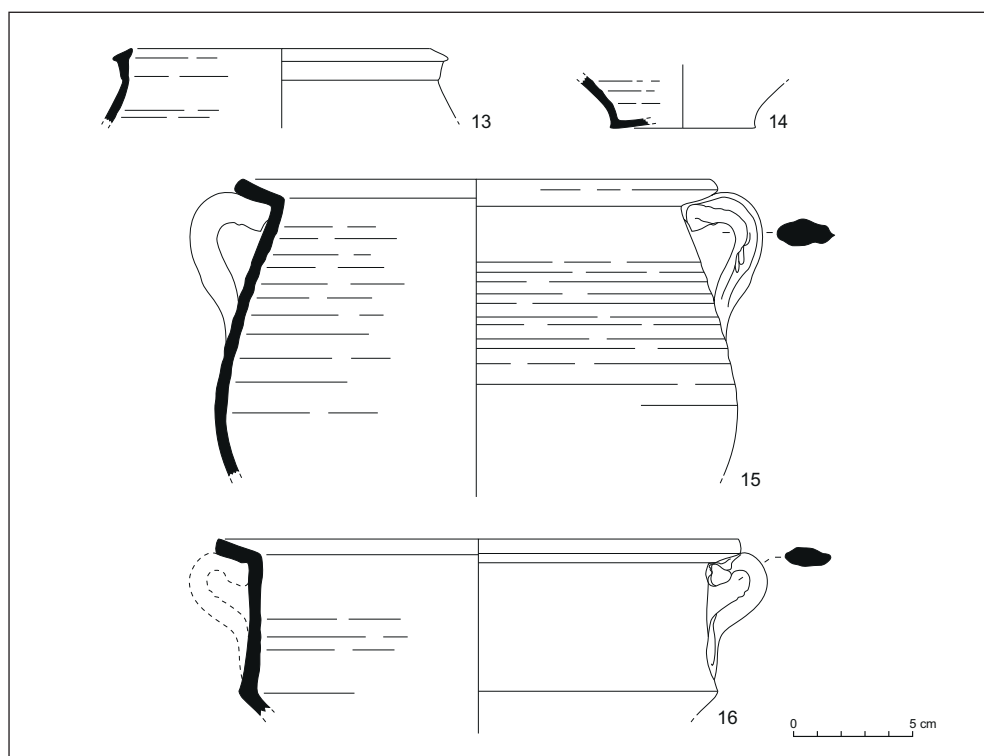


Fig. 9. Aegean cooking ware imports from layers preceding the “Hellenistic” House courtyard (1): 13 – Knossos type 1 pot; 14 – jug base; 15 – deep cooking pot; 16 – casserole (PCMA Nea Paphos project/drawing and digitizing M. Więch)

SOUTHERN LEVANTINE IMPORTS

Cooking ware imports from the Levantine coast are very rare at the Maloutena site, especially in the early contexts, but they do



Fig. 10. *Aegean cooking ware pot (PCMA Nea Paphos project/photo M. Więch)*

occur sporadically. A rim fragment of a pot, preserving just one handle [Fig. 11:17], is most probably a product of a pottery workshop working in the industrial quarter of Beirut (BEY 015 site) in the late 1st to early 2nd century AD. The fabric is reddish brown with gray surface, very hard, similar to the fabric of Beirut amphora type 3, and the form with a tall collar rim and the “Beirut” handle closely corresponds with cooking pot form 1.1–1.2 from BEY 015, dated to the mid to late 1st century AD (Reynolds at al. 2010: 80, 89, Fig. 18.1–7).

AFRICAN IMPORTS

Two small fragments of African Red Slip ware casseroles were found in contexts F.2/16 and F.17/16 [Fig. 11:18,19 respectively]. The rim fragment no doubt belongs to Hayes form 197 (Hayes 1972:

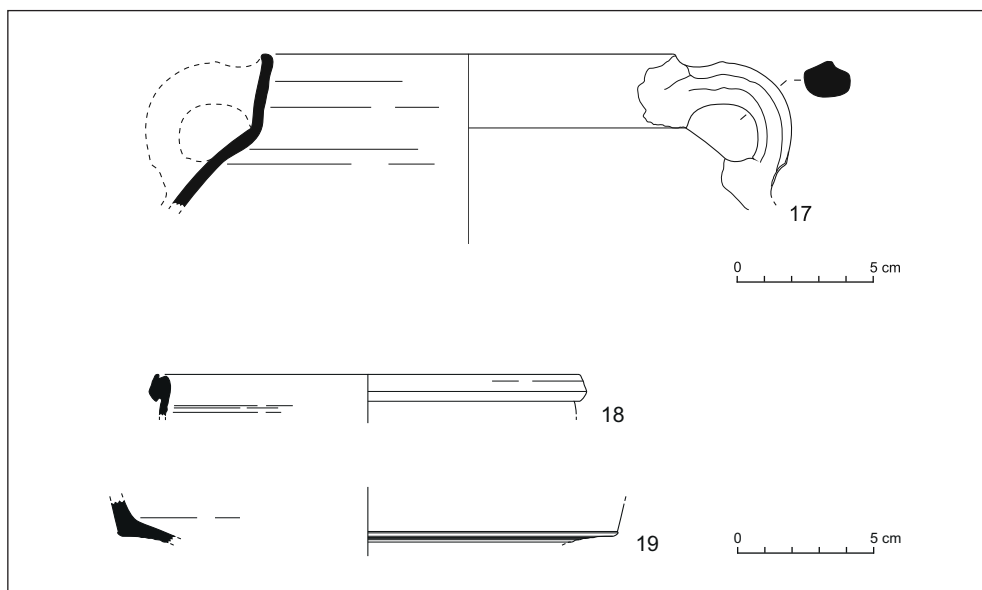


Fig. 11. *Levantine (17) and North African (African Red Slip casseroles, 18, 19) cooking ware imports from layers preceding the “Hellenistic” House courtyard (PCMA Nea Paphos project/drawing and digitizing M. Więch)*

209, Fig. 36). Identification of the body fragment with carination [see *Fig. 11:19*] is more difficult. The fragment is unslipped, with blackened exterior surface, like the above mentioned ARSW form 197, but with a more pronounced flange. Taking into consideration the dating suggested for this form — late 2nd to the mid 3rd century AD — both sherds, found in early Roman contexts, can be intrusive.

COOKING POT-SUPPORTS

Two supports, designed for different cooking vessels, were found during the last two excavations seasons. A Classical or early Hellenistic cylindrical, bent cooking pot-support (Hayes 1991: 82–83, 100, OΔ 4716–4717, 4723, Fig. 30:6–7, Pl. 16 bottom; Morris 1985; Grandjean 1985: Fig. 16; Papadopoulos 1992)¹ comes from context F.76/14, an early context below the floor, dated by a heavily corroded Ptolemaic coin, possibly of Soter (Svoronos 1904: Pl. 8a:4), which was found under it. Only the upper part and half of the rim is preserved [*Fig. 12:20*]. The fabric of the pot-support illustrated here is non-micaceous, light brown to reddish, corresponding to Cypriot cooking ware.

A grille fragment [see *Fig. 12:21*] from context F.8/16, bearing clear marks of soot, was meant to support flat-bottomed baking dishes. This kind of utensil, round or square, was used in Greek kitchens already in the Classical period. It was placed straight over the coals, or across the top of a portable brazier (Sparkes 1962: 129, Pl. V.5).

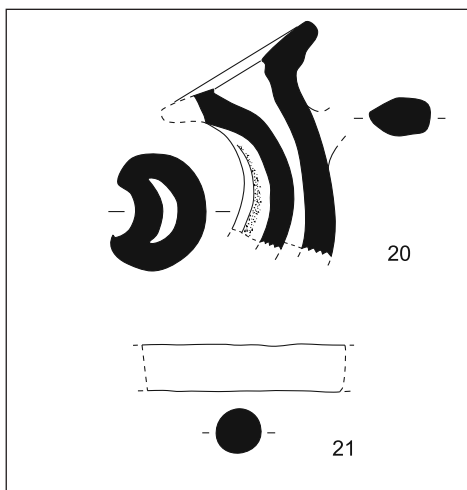


Fig. 12. Miscellaneous finds: 20 – pot-stand, 21– grille fragment (PCMA Nea Paphos project/drawing and digitizing M. Więch)

CONCLUSIONS

Petrographic differences, visible also to the naked eye, were observed between late Classical, Hellenistic and early Roman Cypriot cooking ware fabrics. The fabric of the pots dated to the earlier periods is more gritty and rough on the whole, with larger and more frequent inclusions, and it seems to be less standardized than

that of the early Roman period. Surface treatment also shows clear chronological changes. Roughness and scratches left from the turning process, often visible in the lower parts of Hellenistic pots, are not present on vessels from later periods. Most of the cooking ware pots and casseroles of the early Roman period are plain, but

¹ S.P. Morris (1985) suggested that props of this kind could have been used during metalworking, but J.K. Papadopoulos (1992) argued against this idea.

parallel slightly ribbed examples occur in the same contexts as well. Aegean cooking ware appears at the Nea Paphos site no earlier than the late 1st century AD and it comprises a whole set of forms: deep pots, casseroles and jugs. Much less frequent are

the cooking wares from Italy, Levant and Egypt. It seems that the only intentionally imported cooking utensils were flat-based pans, which represented a form that was not manufactured in western Cyprus during the early Roman period.

APPENDIX

Inscription on a casserole rim

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The inscription on a casserole rim [*Fig. 33*] from an early Roman context was executed before the vessel was fired and can be read as ΦΑΩ. Its interpretation, however, is difficult. Taking it as a complete word is rather out of the question, because the only possible meaning would be the 1st person singular of the present tense of the verb φαίνειν, that is, φάω, 'I shine', which is nonsensical in the given context. Otherwise, one can take it to be an abbreviated form (although no sign of abbreviation is present) of, for example, the proper name Phaon (Gr. Φάων, -ος) or the name of the Egyptian month Phaophi (Gr. Φαῶφι). In the former case, Phaon could be a producer of the vessel or a person who ordered the production; in the latter, in turn, the name of the month could indicate the date of production.

Alternatively, the inscription can be read as ΦΙΑΩ. This could be interpreted

as either the 1st person singular of the present tense of φιλεῖν, that is φιλῶ, 'I love', or dative singular of the noun φίλος, that is φίλῳ, 'to/for a friend'. While the former explanation is nonsensical in the given context, the latter could be understood as a message inscribed by the potter who wanted to present his vessel as a gift. Tempting as it appears, such an interpretation cannot be supported by any parallel known to us. Moreover, the reading of ΦΙΑΩ is palaeographically difficult, because the left-hand oblique bar of the supposed *lambda* is unusually short: we would have to assume that the author of the inscription started writing this letter too close to the preceding one, and the resulting space allowed only for a short second stroke. Note also that the space between the putative *iota* and *lambda* would be much smaller than the spaces between other letters.

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Mammals in the economy of ancient Porphyreon (Lebanon)

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Abstract: An archaeozoological analysis of mammal remains recovered from the dwelling units and streets of ancient Porphyreon excavated in 2009, 2010 and 2012, gives insight into the importance of mammals for the residents of this quarter in succeeding periods: from the Iron Age through the Persian and Hellenistic periods to Byzantine times. Husbandry lay at the base of the animal economy and was supplemented with hunting various species of gazelle. Cattle, sheep and goat were the most numerous livestock species represented in the archaeological record. The high percentage of cattle observed in Iron Age deposits could have resulted from the agricultural lifestyle of the population. Starting from the Persian period, sheep and goat played the most prominent role in the animal economy, implying a pastoral model of husbandry. Raising goats for meat was more significant initially; from the Hellenistic period onwards, the number of sheep reared for milk and wool increased. Pigs constituted a minor percentage of the livestock. The presence of equid remains, including horse and donkey, was confirmed for the Persian period, when these animals were used for transportation.

Keywords: Levant, archaeozoology, animal husbandry, hunting, pastoralism

The town of Jiyeh is located on the coast of the Mediterranean Sea, halfway between Berytus and Sidon. Ruins of an ancient city identified as Porphyreon on the grounds of archaeological evidence and written sources, are located in the central part of the modern town. Its convenient location and favorable climate conditions enhanced settlement, from the Bronze Age through the 7th century AD (Waliszewski and Wicienciak 2015).

The first archaeological exploration of the site was conducted in the second half of the 19th century and in the first

half of the 20th century (Renan 1864: 513; Contenau 1920: 295). Studies were undertaken again in 1975 by a team from the Lebanese Directorate General of Antiquities under the supervision of Roger Saidah (1977). After a break of two decades, the work was resumed in 1997 as an archaeological project of the Polish Centre of Mediterranean Archaeology of the University of Warsaw conducted in cooperation with the Lebanese Directorate General of Antiquities; the project is headed by Tomasz Waliszewski from the Institute of Archaeology, University of Warsaw and

is still in progress (Waliszewski et al. 2008). The research over the last 20 years has involved four sectors: a residential quarter (sector D), basilica (sector Q), necropolis (sector A) and an area where pottery was produced (sector B) (Waliszewski et al. 2008; Waliszewski and Gwiazda 2015) [Fig. 1]. Excavations have yielded a rich assemblage

of finds, including animal remains, which are the subject of this paper. The archaeozoological analysis of this material has served as a base for reconstructing the meat diet as well as the activities involved in the animal economy in terms of mammal husbandry and hunting in ancient Jiyeh from the Iron Age to the Byzantine period.



Fig. 1. Plan of the residential quarter (sector D), marking rooms which yielded faunal remains; inset, location of the site in modern Jiyeh (PCMA Jiyeh Project/drawing M. Puzkarski, J. Juchniewicz, M. Gwiazda)

MATERIAL AND METHODS

Post-consumption animal bone remains and teeth constituted the material for analysis. The post-consumption nature of the assemblage is implied by the state of preservation as well as surface marks. The bones are in the form of flaky fragments and show extensive marks associated with the preparation of meat for consumption and culinary processing. They were recovered from cultural layers identified in the late ancient residential quarter (sector D) in the course of excavations conducted in three seasons: 2009 (Waliszewski, Juchniewicz, and Gwiazda 2012), 2010 (Waliszewski and Gwiazda 2013) and 2012 (Waliszewski et al. 2015). Remains from earlier seasons (1997, 1998 and 2004) were not associated with particular periods, and the remains unearthed in 2013 and 2014 have not been identified yet.

The bone material was collected manually. This may well have influenced the relatively low number of remains of small animals and fishes as the significance of fishing, estimated solely based on the number of ichthyological remains, does not appear to reflect the actual situation. The location of the site in the immediate vicinity of the Mediterranean Sea and close to rivers, Nahr Damour in the north and Nahr Awwali in the south, flowing into the sea, suggests a bigger share in the general animal economy of the site, as do the artifacts connected with fishing that have been recovered from the site (Szulc-Kajak 2013; Gwiazda 2014: 37).

Sparse fish and bird remains were omitted from the analysis even as mammal bones from contexts of established chronology were included.¹ They were discovered in the area of the residential quarter, in several rooms numbered 4, 20, 23, 47, 72 and 101, and two streets, 115 and 116 [see *Fig. 1*]. The remains were assigned to stratigraphic units of established chronology. Four horizons were distinguished: Iron Age (8th–7th century BC), Persian (6th–4th century BC), Hellenistic (3rd–2nd/1st century BC) and Byzantine (5th–6th/7th century AD). Part of the material came from mixed layers, representing a widely distributed chronology; they were included in the general statistics [*Table 1*] but ignored in the detailed studies. Each distinguished period was analysed separately and then the results were compared to trace possible changes of mammal significance in the economy over time. A planigraphic analysis was not possible due to the generally low number of remains associated with particular periods and their recovery from different areas.

Animal remains were identified to the level of species and skeletal elements. Identification of species involved association of fragments with particular animal species. For each of the four periods, the number of remains was estimated using the NISP method. The number of identified bone fragments was counted and within this group the bones of wild mammals, equids which could include domesticated and/

¹ Dr. Mariusz Gwiazda assigned identifiers of the bone material to the stratigraphic units distinguished at the site and thus identified the chronology of particular assemblages. I would like to thank him for that effort; without his work and patience in answering my questions, this analysis would not have been possible.

Table 1. *Animal remains discovered in the residential district at Ijeh*

Context	Street 115	Street 116	Room 4			Room 20		Room 23		Room 47	Room 72			Room 101
			IA	BYZ	MIX	IA	PER	HEL	MIX	MIX	PER	HEL	MIX	BYZ
Chronology	BYZ	BYZ												
Cattle	-	6	-	-	1	50	5	19	3	14	20	16	1	-
Sheep/goat	5	33	-	1	84	39	19	104	14	215	81	73	11	13
Sheep	-	-	-	-	1	1	2	2	1	7	9	2	-	-
Goat	-	-	-	-	4	1	1	2	-	8	14	-	-	1
Pig	-	4	4	-	-	8	-	1	-	24	11	1	-	2
Equid	1	-	-	-	-	-	6	-	-	2	-	-	-	-
Donkey	-	-	-	-	-	-	-	-	-	10	10	-	-	-
Gazelle	1	-	-	-	-	1	1	2	-	13	1	2	-	-
Bird	1	6	-	-	1	1	-	3	-	7	1	3	3	1
Fish	-	5	-	1	1	2	-	10	-	6	8	3	-	1
Turtle	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Shell	-	-	1	-	2	-	1	-	-	2	-	-	-	2
Unidentified	-	26	3	-	280	15	6	36	5	127	82	52	9	11

Key: IA – Iron Age, PER – Persian, HEL – Hellenistic, BYZ – Byzantine, MIX – mixed layers

or wild forms, and domestic species were distinguished. Percentages of bones of cattle, of sheep and goat counted together, as well as pig, were calculated for the group of domestic animals, providing grounds for estimating the importance of particular groups and species in husbandry and hunting. Small ruminant bones were distinguished as a joint group of sheep/goat due to problems with identification, although certain diagnostic elements can be used to identify species as set down by Z. Schramm (1967) and by Melinda Zeder and Heather Lapham (2010), permitting some differential identification.

Anatomical identification involved attribution of fragments of particular species to indicated skeletal elements. In the case of remains of small ruminants recovered from layers dated to the Persian and Hellenistic periods, anatomical distribution was also analysed. For this purpose, elements were combined into groups of similar value for consumption. Carcass parts of low value for consumption include the head (skull, mandible and teeth²), and distal parts of the forelimb and hind limb (carpal, metacarpal and metatarsal bones, as well as phalanges, which constitute a separate group). Parts of carcass of high value include osteological elements forming the thorax, i.e., vertebrae and ribs, as well as proximal parts of the forelimb (scapula, humerus, and radius with ulna) and hind limb (pelvis, femur, tibia with fibula). Percentages were calculated for each group and compared with the standard distribution, i.e., the one actually found in the skeleton (Lasota-Moskalewska 2008). The low number of remains (below 100) of

each species did not allow the anatomical distribution of sheep and goat, as well as cattle and pig remains from other periods to be analyzed.

The age of the animals was established on the basis of epiphyseal fusion and teeth development (Kolda 1936; Lutnicki 1972; Silver 1969). For each species, bones and teeth of animals killed at a young age, before they reached morphological maturity, i.e., younger than 3.5–4 years old, were distinguished. In some cases, it was possible to identify bones and teeth of very young animals, younger than one year of age. If the number of remains of a species exceeded 100 in a given chronological phase, the ratio of bones of juvenile individuals to all individuals was calculated. This criterion was met in the case of bones of small ruminants recovered from layers dated to the Persian and Hellenistic periods.

The sex of animals was established on the basis of distinctive features: the shape and size of horncores in the case of sheep (Lasota-Moskalewska 2008: 166). Measurements were taken according to a method presented by von den Driesch (1976). The results of some measurements were exploited for a reconstruction of the morphology of livestock species. A 100-point scale was used for cattle; the values of breadth measurements of some bones were plotted against calculated point values (Lasota-Moskalewska 1984). Additionally, the withers height of sheep was calculated on the basis of Teichert's (1975) coefficients. Marks found on the surfaces of some bones were examined and analyzed.

² Teeth do not belong to the skeleton but were subjected to archaeozoological analysis nonetheless.

ASSEMBLAGE

The total number of bone remains and teeth discovered in the course of three seasons in the residential quarter at Jiyeh was 1940. Of these, 1230 (63.4%) were identified to the level of species and skeletal element. The preservation of the material was rather poor; many fragments were devoid of features indicative of species or place in the skeleton. Apart from that, a significant number came from mixed layers with a very broad chronology [see *Table 1*]. The identified fragments were categorized according to four chronological

horizons: Iron Age, Persian, Hellenistic and Byzantine. The representation of bone remains in these groups differed in number, thus affecting the reliability of the results. Layers from the Persian and Hellenistic periods yielded the most data, which made it possible to reconstruct the importance of mammals in diet and economy. The least information came from layers dated to the Byzantine period. As a consequence, the results are relatively uncertain and should be treated with caution until confirmed by further research.

IRON AGE (8TH–7TH CENTURY BC)

The layers from this period, found in rooms 4 and 20, contained 122 osteological fragments, out of which 104 (85.2%) were identified. All remains, except for a gazelle tibia, belonged to domesticated species. Cattle bones were the most numerous (48.5%), followed by small ruminant bones (39.9%), and pig bones the lowest of all (11.7%) [*Table 2*]. The remains represented various anatomical parts [*Table 3*], but their

low number overall excluded an anatomical distribution.

Nearly half of the remains of cattle belonged to animals slaughtered before the age of four (22 out of 50 fragments). Slightly different proportions were observed in the case of small ruminants: bones of young individuals constituted approximately a fourth of all the remains of these species (11 out of 41 fragments).

Table 2. Species composition of animal remains discovered in the residential district at Jiyeh

Taxon	Iron Age		Persian		Hellenistic		Byzantine	
Cattle	50	48.5%	25	11.0%	35	15.1%	6	9.2%
Sheep/goat	39	37.9%	166	72.8%	185	79.7%	52	80.0%
Sheep	1	1.0%	11	4.8%	4	1.7%		0.0%
Goat	1	1.0%	15	6.6%	2	0.9%	1	1.5%
Pig	12	11.7%	11	4.8%	6	2.6%	6	9.2%
Livestock (total)	103	100.0%	228	100.0%	232	100.0%	65	100.0%
Equid	–	–	16	–	–	–	–	–
Gazelle	1	–	2	–	4	–	1	–
Unidentified	18	–	88	–	88	–	37	–

Almost all of the relatively sparse pig bones came from young animals, between one and four years old (10 out of 12 fragments). It was not possible to establish the sex of the animals.

Two measurements of the distal end of metatarsal cattle bones were taken and

plotted on a 100-point scale, the resulting values correspond to 6 and 25 points [Table 4]. This means that the individuals represented little variety. Withers height of sheep, calculated on the basis of the length of a metacarpal bone, reached 55.2 cm. This value indicates a small form of the sheep.

Table 3. *Skeletal elements of animal remains in the Iron Age and Persian period layers at Jiyeh*

Skeletal element	Iron Age				Persian				
	Cattle	Sheep/goat	Pig	Gazelle	Cattle	Sheep/goat	Pig	Equid	Gazelle
Horncore	–	–	–	–	1	9	–	–	–
Cranium	3	–	3	–	2	4	3	–	–
Mandible	3	5	–	–	1	9	1	1	–
Teeth	2	2	1	–	1	9	–	5	–
Vertebrae	6	5	2	–	6	30	–	–	–
Ribs	12	11	1	–	3	45	3	1	–
Scapula	1	4	–	–	2	14	–	1	–
Humerus	–	2	1	–	–	7	–	2	–
Radius	2	–	1	–	1	14	–	1	1
Ulna	2	–	–	–	–	2	–	–	–
Carpals	2	–	–	–	1	–	–	–	–
Metacarpals	1	2	–	–	1	1	–	–	–
Pelvis	1	–	–	–	–	3	1	–	–
Femur	1	5	1	–	–	16	1	1	–
Tibia	3	4	–	1	4	10	–	1	–
Fibula	–	–	–	–	–	–	–	–	–
Talus	1	–	–	–	–	–	–	1	–
Calcaneus	1	–	–	–	2	5	–	–	–
Tarsus	2	–	–	–	–	–	–	–	–
Metatarsals	2	–	–	–	–	3	–	–	–
Phalanx I	–	1	–	–	–	3	2	1	1
Phalanx II	2	–	–	–	–	–	–	–	–
Phalanx III	2	–	–	–	–	1	–	–	–
Metapodium	1	–	2	–	–	7	–	1	–
Long bone	–	–	–	–	–	–	–	–	–
Total	50	41	12	1	25	192	11	16	2

Table 4. *Measurements of animal remains discovered at Jiyeh*

Chronology	Species	Anatomical elements	Measurement	mm	Points	WH (cm)
Iron Age	Cattle	Metatarsal	Bd	40, 47	6, 25	–
	Sheep	Metacarpal	GL-Bp-Bd-SD	113-23-18-14	–	55.2
Persian period	Cattle	Phalanx I	GL-Bp-Bd	62-26-25	55	–
		Metacarpal	Bd	54	40	–
	Sheep	Horncore	circumference	115	–	–
		Scapula	SLC	30	–	–
		Humerus	Bd-BT	34-33, 37-35	–	–
		Radius	Bp	21	–	–
		Radius	Bd	29	–	–
		Pelvis	LA	27	–	–
		Tibia	Bd	30	–	–
		Phalanx III	DLS-Ld-HP	38-34-22	–	–
	Goat	Scapula	SLC	21	–	–
		Radius	Bp	32, 34	–	–
		Tibia	Bd	28	–	–
	Donkey	Talus	GB-GH	40-41	–	–
	Horse	Humerus	Bp	56	–	–
		Phalanx I	GL-Bp-Bd-SD/DD	98-45-42-24/26	–	–
	Gazelle	Radius	Bd	36	–	–
Hellenistic period	Cattle	Metatarsal	Bd	48	60	–
		Phalanx I	GL-Bp-Bd	42-27-23	5	–
		Phalanx II	GL	36	–	–
	Sheep	Scapula	SLC	18	–	–
		Humerus	Bd-BT	38-35	–	–
		Radius	Bp	39	–	–
		Talus	GLI-GLm-Bd	29-29-19	–	65.7
		Phalanx I	GL	38, 38, 40	–	–
	Goat	Humerus	Bd-BT	35-34	–	–
		Talus	GLI-GLm-Bd	31-29-20, 29-28-29	–	–
		Phalanx I	GL	39	–	–
	Gazelle	Talus	GLI-GLm-Bd	26-25-18	–	–
		Phalanx I	GL	46	–	–

PERSIAN PERIOD (6TH–4TH CENTURY BC)

The material dated to the Persian period was recovered from two rooms, units 20 and 72. The total number of remains reached 334 bone fragments and teeth, out of which 246 (73.6%) were identified. Most of the material came from livestock species (92.7%); relatively few fragments belonged to different species of gazelles (0.8%) and equids (6.5%). The latter included bones of two species that differed in terms of size, most likely donkey and horse [see *Table 2*]. Most of the domestic animals represented were small ruminants (84.2%), with slightly more goats than sheep. Cattle were the second most represented species (11.0%), and pig the third (4.8%).

Various parts of the skeleton were found in the material [see *Table 3*]. In the case of sheep and goat remains, it was possible to perform an analysis of anatomical

distribution. All skeletal elements were represented, including phalanges. Bones that are associated with high yields of meat were the most numerous. In comparison with the standard distribution, bones of the proximal parts of both limbs were overrepresented (forelimb 19.3%, hind limb 15.1%) and phalanges were underrepresented (2.1%). Other elements were found in proportions corresponding to the standard distribution [*Table 5*].

Cattle and pig bones included four fragments which came from individuals slaughtered at a young age. The percentage of remains of young individuals among sheep and goat reached 15.6%. Two fragments of equid bones belonged to animals that died before the age of four. The sex was established in one case, based on a sheep horncore belonging to a female.

Table 5. Anatomical distribution of sheep and goat remains (counted together) recovered from the Persian and Hellenistic period layers at Jiye

Anatomical part	Persian		Hellenistic		STANDARD
Head	31	16.1%	39	20.4%	20%
Thorax	75	39.1%	85	44.5%	43%
Forelimb, proximal part	37	19.3%	26	13.6%	5%
Forelimb, distal part	6	3.1%	4	2.1%	8%
Hind limb, proximal part	29	15.1%	23	12.0%	3%
Hind limb, distal part	10	5.2%	8	4.2%	7%
Phalanges	4	2.1%	6	3.1%	14%
Total	192	100.0%	191	100.0%	100%

Key:

Bd – greatest breadth of the distal end, GL – greatest length, Bp – greatest breadth of the proximal end, SD – smallest breadth of diaphysis, SLC – smallest length of the Collum scapulae, BT – greatest breadth of the trochlea, LA – length of the acetabulum including the lip, DLS – greatest diagonal length of the sole, Ld – length of the dorsal surface, HP – height in the region of the extensor process, GB – greatest breadth, GH – greatest height, DD – smallest depth of the diaphysis, GLI – greatest length of the lateral half, GLm – greatest length of the medial half, WH – withers height

More than ten bone fragments were measured [see *Table 4*]. The measurements of the length of phalanx I and the breadth of the proximal end of a metacarpal bone

of cattle were plotted on a 100-point scale, which yielded 55 and 40 points respectively. It means that the individuals that they came from were middle-sized.

HELLENISTIC PERIOD (3RD–2ND/1ST CENTURY BC)

Rooms 23 and 72 contained layers from the Hellenistic period with faunal remains; 324 bone fragments and teeth were recovered. Of these, 236 (72.8%) pieces were identified to the level of species and skeletal element. Apart from fragments of a humerus, talus, metatarsal and phalanx I of an unidentified gazelle species, all other remains came from domesticates. Bones of small ruminants constituted a significant majority (82.3%) [see *Table 2*], with more sheep than goat. Cattle bones were much less represented (15.1%), and pig remains were very sparse (2.6%).

Domestic species were represented by various anatomical elements [*Table 6*]. An analysis of anatomical distribution was performed for sheep and goat remains [see *Table 5*]. It can be concluded from the results of the analysis that the assemblage of small ruminant bones comprised all parts of the body, including phalanges. The latter were underrepresented in com-

parison with the standard distribution (3.1%). Moreover, the proximal parts of the forelimb (13.6%) and hind limb (12.0%) were overrepresented. The remaining parts of the body were found in percentages comparable to the standard distribution.

There were no bones of young animals among the cattle and pig remains. The percentage of remains of young sheep and goat slaughtered before reaching the age of four reached 5.7%. The sex was not established.

Measurements of two fragments of cattle bones (breadth of the proximal end of the metacarpal and length of phalanx I) were taken, and the values were plotted on a 100-point scale, corresponding with 5 and 60 points [see *Table 4*]. It implies that the animals were of small or medium size. The withers height of sheep was calculated on the basis of the length of a talus bone which reached 65.7 cm.

BYZANTINE PERIOD (5TH–6TH/7TH CENTURY AD)

Bone material from layers dated to the Byzantine period was recovered from rooms 4 and 11, as well as streets 115 and 116. In total, there were 103 fragments of bones and teeth; 66 items (64.1%) were identified to the level of species and skeletal element. Among the identified remains, there was a fragment of the shaft of a gazelle radius and bones of domestic mammals, mainly

sheep and goat (81.5%), with fewer fragments of cattle and pig (9.2% each) [see *Table 2*]. Various parts of the skeleton of domestic animals were represented [see *Table 6*]. Sheep, goat, cattle and pig remains included bones of young individuals: four fragments in each case. There was no further data to be gleaned from an examination of this material.

Table 6. *Skeletal elements of animal remains in the Hellenistic period and Byzantine period layers at Jiyeh*

Skeletal element	Hellenistic				Byzantine			
	Cattle	Sheep/goat	Pig	Gazelle	Cattle	Sheep/goat	Pig	Gazelle
Horncore	–	–	–	–	–	1	–	–
Cranium	3	9	1	–	–	3	1	–
Mandible	–	10	–	–	–	1	–	–
Teeth	1	20	1	–	1	6	1	–
Vertebrae	7	21	–	–	2	6	1	–
Ribs	10	64	1	–	1	19	–	–
Scapula	3	10	–	–	1	3	–	–
Humerus	1	6	–	1	–	–	1	–
Radius	4	10	–	–	1	4	–	1
Ulna	1	–	1	–	–	–	–	–
Carpals	–	1	–	–	–	–	–	–
Metacarpals	–	2	–	–	–	–	–	–
Pelvis	–	4	–	–	–	–	–	–
Femur	1	7	1	–	–	2	–	–
Tibia	–	12	–	–	–	4	–	–
Fibula	–	–	–	–	–	–	1	–
Talus	–	4	–	1	–	1	–	–
Calcaneus	–	–	–	–	–	–	–	–
Tarsus	–	1	–	–	–	–	–	–
Metatarsals	1	3	–	1	–	2	–	–
Phalanx I	1	5	1	1	–	1	1	–
Phalanx II	2	1	–	–	–	–	–	–
Phalanx III	–	–	–	–	–	–	–	–
Metapodium	–	1	–	–	–	–	–	–
Long bone	–	–	–	–	–	–	–	–
Total	35	191	6	4	6	53	6	1

SPECIES COMPOSITION

Remains of livestock species constituted a majority in the four chronological horizons. Only sparse, isolated bone fragments belonged to wild mammals, in this case some unidentified species of gazelles and antelopes. Remains of equids, which included horse and donkey bones, were found exclusively in layers from the Persian period. In all chronological phases, livestock species were mainly represented by sheep and goat bones, reaching approximately 80%. Cattle remains were the second most numerous in the material, amounting to approximately

12%. Pigs were the rarest among livestock, with approximately 8% of all remains. The Iron Age was the only exception to this tendency with nearly half of the material being composed of cattle bone fragments, sheep and goat remains were the second most represented and pig bones were found in the lowest number [Fig. 3]. Nevertheless, it must be remembered that Persian and Hellenistic period material delivered the most reliable data. No significant differences in the distributions of the species between these chronological phases were noted.

MARKS ON BONES

Some anatomical elements recovered from layers associated with different chronological horizons, mostly belonging to domestic animals, but not excluding wild

species, bore consumption-related marks. These were, above all, chopping and cutting marks, most likely connected with the division of carcass into smaller fragments

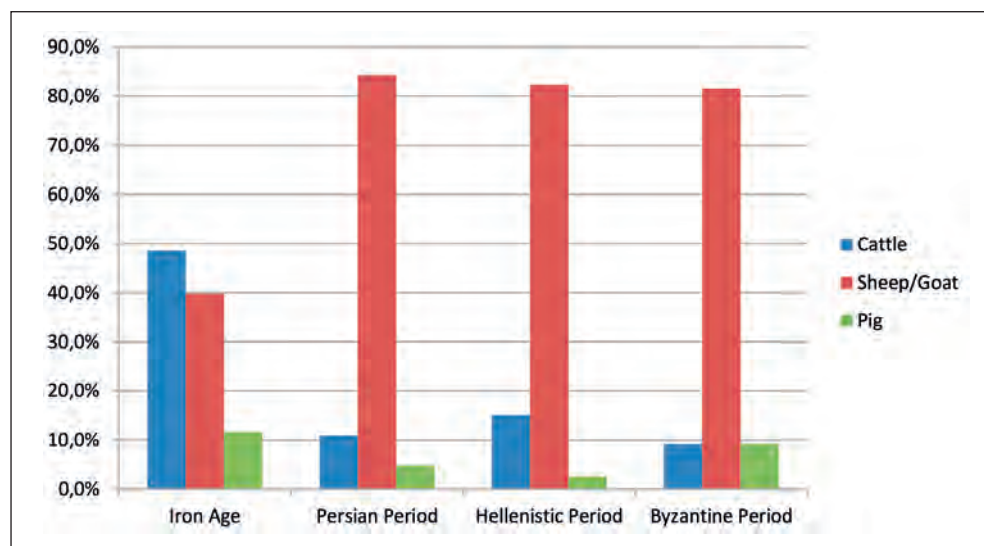


Fig. 3. Comparison of percentages of livestock species in different periods



Fig. 4. Consumption-related marks on bones: top left, fragment of a cattle humerus with chopping marks across the shaft above the distal end, cut marks on the surface of the distal; top right, fragment of the distal end of a sheep or goat metapodium with cut marks; bottom, fragment of a goat horncore with marks of chopping off from the skull (PCMA Jiyeh Project/photos M. Bogacki)



Fig. 5. Marks on bones: left, pathological changes on the shaft of a horse phalanx I; right, marks of demineralization on a cattle phalanx II (PCMA Jiyeh Project/photos M. Bogacki)

in the course of preparation (of meat) for consumption. Long bones were chopped longitudinally and transversely, across the shafts. Marks of this provenance were relatively frequently found on rib fragments and long bones representing proximal parts of the forelimb and hind limb [Fig. 4 top left]. They were observed much less often on other anatomical elements, such as cranial bones and distal parts of the limbs [Fig. 4 top right]. This type of marks was also noticed on horncores of small ruminants, which were cut off the skulls [Fig. 4 bottom]. Apart from cutting and chopping, some bone fragments, together with meat, were subjected to thermal processing, roasting in this case as attested by the black color of some of the long bones.

Pathological changes were also observed. Increased growth of bone tissue on the shaft near the proximal end was noted on phalanx I of a horse [Fig. 5 left]; it constituted most probably remains of a so-called osteophyte. A growth of this type

usually emerges as a consequence of an injury or uneven distribution of pressure on the limbs (Lasota-Moskalewska 2008). Its development involves bleeding from the injured periosteum and production of a scarring substance, which forms an osteophyte after healing. A pathology of this kind might lead to lameness and locomotor dysfunction. Decreased bone porosity observed on a cattle phalanx II [Fig. 5 right] from the Persian period layers could also be associated with pathological changes, formed most likely as a result of strong demineralization of the bone, although various depositional factors could have also had an influence. Were this so, however, it should have been observed on a higher number of bone fragments, hence seems less likely.

The bone remains showed no marks of gnawing by carnivorous animals. This suggests that kitchen waste was collected and deposited in waste pits or middens and buried without much ado.

IMPORTANCE OF MAMMALS IN THE ECONOMY

Domestic species, particularly livestock, constituted the base of the animal economy in ancient Porphyreon from the 8th/7th century BC to the 6th/7th century AD. Hunting wild animals to supplement the meat supply was of marginal importance. Unidentified species of gazelle (no horncores or cranial bones in the record precluded specific identification) were hunted and it is reasonable based on species recorded historically (see Horwitz, Tchernov, and Dar 1990; Bökönyi 1990; Vila 2004) to expect remains of Dorcas gazelle (*Gazella dorcas*), mountain gazelle (*Gazella gazella*) and goitered gazelle (*Gazella subgutturosa*). They differ in

terms of body size and weight, as well as the size and shape of the horncores. The first two species are approximately 55–65 cm tall and weigh 15–20 kg, the third one is taller, reaching a withers height of 80 cm and weighing approximately 35–40 kg. Differently sized bones indicate the presence of diverse species (Harrison 1986; Tchernov, Dayan, and Yom-Tov 1986).

The mountain gazelle inhabited various biotopes; it was found in the mountains and foothills, and additionally on the coastal plains. This species, therefore, seems particularly available to the inhabitants of Porphyreon, a site on the coast of the Mediterranean Sea, yet close to the

Lebanese mountains, with a stretch of land approximately 2 km wide, used for agriculture. Polybius (5.69.1) describes the area adjacent to the site in the following manner: "At this part of the coast it is reduced by the slopes of Libanus to a small and narrow zone, and across this itself runs a steep and rocky ridge, leaving only a very narrow and difficult passage along the sea shore." It is surprising that the possibility of hunting wild mammals was exploited so sporadically and that the range of hunted animals was limited to different species of gazelle. Hunting habitually played an auxiliary role in the animal economy, but the range of hunted species was much broader at other sites. Apart from gazelles, other even-toed ungulates, such as red deer, roe-deer and fallow deer, as well as wild boar and bear were hunted (e.g., Horwitz, Tchernov, and Dar 1990; Bökönyi 1990), and thus more diverse natural environments were exploited. Remains of other species, for instance, hippopotamus (Davis 1985) and lion (Wapnish 1997), can be found sporadically.

Ruminants, that is, sheep, goats and cattle, played a major role in animal husbandry. The two species of small ruminants functioned as the most important livestock group in the Persian, Hellenistic and Byzantine periods. Earlier, in the Iron Age, these animals were the second most represented group of livestock after cattle. The superior role of cattle is usually associated with well-developed agricultural practices and the use of these animals for traction in the course of farming procedures (see, e.g., Rosen 1986; Grigson 1995). The limited amount of archaeozoological data concerning the age of cattle, based on the bones from Jiyeh, and the absence of data on their sex, prevent

drawing definite conclusions regarding the husbandry model at Jiyeh. There is no direct evidence indicating that cattle were raised to an advanced age or that they were exploited for secondary products. Archaeological and archaeobotanical data do not confirm a particularly sophisticated model of agriculture and land cultivation. Preliminary results of plant material analysis confirm the presence of cereal crops, including barley whose remains were deposited in the Iron Age and Hellenistic period layers, as well as wheat, recovered from layers dated from the Persian to the Byzantine period (Badura et al. 2016). The cattle raised at Jiyeh was of small or medium size typically. The dominant role of cattle was noted also in the case of the nearby site at Sidon, although for Bronze Age layers (Vila 2004; Chauhoud and Vila 2012).

The change in animal husbandry practices, which occurred in the Persian period as evidenced by the decrease in the percentage of cattle remains and a rise in the number of sheep and, to a greater degree, goat bones, might have been caused by either environmental or cultural factors. Climate change in the Iron Age did not take a drastic form (Weiss and Bradley 2001). However, locally it could have led to decreased precipitation levels and more acute aridification. Environmental factors may have induced adjustments in the husbandry model and resulted in sheep and goat raising taking on increased importance compared to cattle breeding. Goats especially are better adapted to dry conditions (Horwitz, Tchernov, and Dar 1990; King 1999) and constituted the base for animal husbandry from the Bronze Age to the Islamic period at most sites located in the Levant. These species are best adapted for life in conditions of that region. Cultural

factors should also be considered as inducing modifications in the economy. The results of archaeological research indicate that the area was reoccupied in the Persian period. New buildings were erected applying different construction techniques from those used in the preceding period, that is, in the Iron Age (Waliszewski and Gwiazda 2015: 334). It is possible then that this society preferred a different model of the animal economy based on pastoralism.

It is often emphasized in the literature that a higher representation of sheep than goat is connected with a more specialized economy model, since this species provides more secondary products such as milk and wool (Davis 1984). There are even some claims that the preference for sheep was associated with a higher social status and economic standard among the inhabitants of a given area (Zeder 1998). Written sources also indicate that goats were raised for milk and sheep for wool (Safrai 1994: 177). In the case of the site at Jiyeh, the highest representation of sheep and goat remains was observed as of the Persian period. Goat remains were more numerous in the Persian period. At that time, the species was raised mainly for meat, which is confirmed by a considerable percentage, exceeding 15%, of individuals killed at a young age (before reaching morphological maturity). In the Hellenistic period, this situation changed: sheep remains were found in higher numbers than goat remains and the share of young individuals fell from over 15% to below 6%. It seems that the animal economy shifted focus from production of high amounts of meat to a more balanced model, that is, the proportion of animals killed for meat and those kept for further development of the herd and secondary

products, in this case milk and wool, was adjusted to favor the latter type of economy.

It seems that small ruminants were slaughtered and the carcasses divided, at least partly, in a different location from the place of consumption. It is implied by the underrepresentation of phalanges of these animals in the material found in the explored rooms. Phalanges constitute useless elements of the carcass and they are usually left behind at the butchering spot. The absence or a low number of these elements at the site suggests that the animals were slaughtered elsewhere and that skinned carcasses were delivered to the area of the settlement. It is impossible to indicate the place where the killing took place. Apart from the lower number of phalanges, a slight overrepresentation of the proximal parts of the forelimb and hind limb was observed in the case of sheep and goat remains dated to the Persian and Hellenistic periods. It most likely resulted from the division of these parts of carcass, which are highly valued for consumption and bear significant amounts of palatable meat, into smaller fragments later subjected to culinary processing. Division of bones into smaller pieces is also confirmed by numerous chopping marks observed along and across shafts of long bones that form the proximal parts of the limbs. This is additionally implied by the state of preservation of the material. It has been noted that the state of preservation of the osteological material from layers dated to the Persian and Hellenistic periods was slightly poorer than in the case of remains from the preceding period, i.e., the Iron Age. The percentage of identified bones somewhat exceeded 70% in the case of the Persian and Hellenistic periods, while in the latter case it was more than 85%.

This difference might have been caused by culinary processing and division of bones, together with meat, into smaller elements. It appears that people from the area of Jiyeh usually cooked meat by stewing and simmering; it was much less frequently roasted, as suggested by a very low percentage of bones bearing burning marks.

Information concerning morphology of small ruminants is rather sparse. Some data were collected solely for sheep. Withers height of the few individuals whose remains were recovered from layers dated to the Iron Age and Hellenistic period fell in the range between 55.2 and 65.7 cm. These values show that the sheep represented a small form, similar to mouflon, i.e., the direct ancestor of the domestic sheep.

Pork marginally supplemented the diet based on ruminants. The percentage of pig remains was low, below 5%, only slightly exceeding 11% in the Iron Age. Regardless of chronology, the animals were kept as an additional source of meat for consumption. It is possible that a higher share of pig remains resulted from a different strategy of herd management than in later periods. The most prominent role of cattle at that time, most likely used also for secondary products, generated the necessity to produce more meat for consumption. Pigs are the best candidates for this purpose, since they can have young twice a year and thus deliver a high number of animals that could be killed and processed for consumption within a relatively short period. These animals practically do not deliver any secondary products. Meat-oriented management is confirmed by data on the age of death of the animals. Most pig bone remains from various

periods belonged to individuals killed at a young age, younger than four years old. Moreover, a high share of cattle with associated pig remains imply a sedentary instead of pastoral lifestyle. The size of the remains indicates that the animals belonged to the fully domesticated form, however, it cannot be confirmed whether they came from a local population or from other regions. The possibility of local domestication of pig was corroborated in the case of archaeozoological studies at the site of Kamid el-Loz (Bökönyi 1990). In addition to that, sources frequently suggest the relationship between the presence of pig remains and societies representing low social and economic status (Hesse and Wapnish 1997; 1998; Zeder 1998). With respect to pig remains, explanations referring to the ban on eating pork, as well as correlations between the presence of remains of these animals at archaeological sites and the ethnicity of the population, namely Philistines and Israelites in the case of the Iron Age, are often presented (see Sapir-Hen et al. 2013; Sapir-Hen, Meiri, and Finkelstein 2015, see more references there). The latest research added the results of DNA analysis to the existing set of archaeological and archaeozoological data. They imply that at least some pigs were delivered to the region of the southern Levant from other areas, including the Aegean Islands.

Remains of equids have been found only in layers from the Persian period. It is impossible to state conclusively on the basis of the skeletal elements whether they belonged to wild or domesticated forms. The sparse remains found at Jiyeh came from forms which differed in terms of size. It can be stated with high probability that there were some bones of donkey and even

fewer of horse. The situation is similar at other sites in the region, where donkeys were the most popular animals used for transportation (Safrai 1994: 289). Camel bones have been found at some sites, however, it is assumed that this species was exploited for long-distance transportation (Grigson 2012). Very few were discovered at Jiyeh, but not connected with any particular context. The use of horses and donkeys for transportation is indirectly confirmed by data on their age. Very few fragments belonged to animals slaughtered at a young age; a great majority came from adult, but not old individuals. It can be concluded that horses and donkeys were kept for a long time and used as pack animals. An osteophyte was observed on a horse phalanx I, which might have emerged due to overloading of this individual with heavy burdens. Pathological marks on faunal remains from Levantine sites are not very frequently described. They mostly involved pathological changes associated with injuries, infections and dentition defects observed on bones and teeth of cattle, sheep and goat from eight sites situated in Israel, dated to various periods from the Neolithic to the Middle Ages (Sapir-Hen et al. 2008).

Summing up, it may be said that the population of ancient Porphyreon from

the 7th/6th century BC to the 6th/7th century AD based the animal economy mostly on mammal husbandry, marginally supplemented with hunting various species of gazelles. Cattle, sheep and goat were the most represented livestock species. Cattle played a more prominent role in the Iron Age, then its significance decreased in favor of small ruminants. As a consequence, the economic model changed from a typically sedentary one, associated with a population that mostly deals with land cultivation, to a more mobile one, connected with pastoralism. The Persian period was a time when goats were the most represented species, raised mainly as source of meat. From the Hellenistic period, sheep played the most important role. They were raised not only for meat, but also for secondary products, such as milk and wool. Apart from ruminants, pigs constituted a marginal part of the livestock at Jiyeh; they had the highest share in the Iron Age, and then the percentage fell. The low significance of pig is typical of a pastoral model of the economy. This species was raised for meat exclusively. The use of horses and donkeys as pack and draft animals is confirmed for the Persian period.

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Beit Ras/Capitolias: an archaeological project 2014–2016

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Abstract: Polish excavations at the site of Beit Ras (ancient Capitolias) in the governorate of Irbid, northern Jordan, investigated an area in the northern part of the ancient town, to the west of the Roman-age theater. Three seasons of fieldwork were conducted, starting in 2014 with a survey using the electric resistivity method to detect ancient structures. The presence of architectural features was noted, dated by surface finds spanning a period from the 1st–2nd through the 12th–13th centuries AD. In the next two seasons, in 2015 and 2016, excavation of three archaeological trenches led to the discovery of the remains of a winery and a section of the city wall, as well as a sequence of floors. This established a chronology of usage from the Roman to the early medieval period and proved that this part of the town was mostly domestic in character, at least during the Byzantine and early Islamic periods. Evidence of destruction of a nearby church was also found, tentatively attributed to a Sassanian raid in AD 614 or soon after.

Keywords: Beit Ras, ancient Capitolias, archaeological survey, excavations, winery, city wall, church equipment, Roman to medieval period

Beit Ras (Bayt Rās) is a large village in the Irbid governorate in northern Jordan (part of the Biblical land of Gilead), a few kilometers to the north of Irbid (ancient Arbela) (Jordan archaeological data bases JADIS 2322001 and MEGA 2760). A significant part of Beit Ras overlaps the area of the Roman and Byzantine town of Capitolias, mentioned by Claudius Ptolemaeus in the 2nd century AD as one of the Decapolis towns (Ptol. *Geog.* 5.7.14). It is generally agreed that Capitolias achieved the status of *polis* as late as AD 97/98 (Lenzen 2000: 19), significantly later than other cities of the so-called Decapolis.

The etymology of the name is disputed; it is commonly believed to have been derived from the name of Jupiter Capitolinus. However, since the Semitic name of the settlement was Beit Ras (as today) already in the pre-Roman period, it seems very probable that a simple substitution of “ras” for “caput” may have taken place (Lenzen and Knauf 1987: 25; see also Schumacher 1890: 168). Viticulture, olive and grain (wheat, barley, lentils) production, as well as livestock breeding seem to have constituted the base of the town’s economic subsistence (Lenzen 2000: 16). The town was situated on a plateau rising toward the western end

(approximately 614 m above sea level). The extent of the walled town was mapped by Gottlieb Schumacher on his visit in 1885 (Schumacher 1890: 154). It shows a roughly rectangular outline of urban space aligned east–west.

Modern archaeological research began in 1983 and continued through the end of the 1980s. It was conducted by Cherie J. Lenzen within the framework of a Joint Excavation Project of Yarmouk University in Irbid and the Department of Antiquities of Jordan (for full references, see Lenzen 2000: Note 4; 2002; 2003: 75, Note 5). The excavation was focused on so-called Area A, situated roughly in the center of the ancient town approximately at mid-length of the *decumanus*, the latter overlaid by a modern road. By then most of ancient

Capitolias had been built up with modern houses. Nevertheless, the archaeological work in question, largely of a salvage nature, identified part of a market place with a series of vaulted shops (hence the designation of the area as “Vaults”), established in the Roman period and active through the early Islamic period. A church (only partly excavated due to modern usage of the area) was added probably in the latter part of the 5th century (Lenzen 1990: 474). The team also carried out a series of probes on the western, most elevated part of the ancient town (“Ras” or “acropolis”), as well as at what appeared to be the eastern extremity of the northern city wall as identified by Schumacher (Lenzen 1990: 474–475). Soon after that, at the latter site, the Department of Antiquities of Jordan unearthed

Team

Dates of works: 9–27 November 2014; 3–27 May 2015; 10 April–7 May 2016

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DOA Representative: Eng. Amjad Batayneh (2014; 2015), Asmaa and Nehad Rousan (2016)

Archaeologists: Dr. Mariusz Burdajewicz (Institute of Mediterranean and Oriental Cultures, Polish Academy of Sciences, 2014; 2015; independent researcher, 2016), Dr. Mariusz Drzewiecki (Adam Mickiewicz University, Poznań; 2015; 2016), Dorota Mazanek (PhD candidate, University of Warsaw; 2015; 2016)

Electrical resistivity survey: Jakub Ordutowski (Maria Curie-Skłodowska University, Lublin; 2014)

Documentalist: Iwona Laskowska (freelance; 2014; 2015)

Student-trainee: Rafał Bieńkowski (Institute of Archaeology, University of Warsaw, 2015; PhD candidate, Institute of Archaeology and Ethnology, Polish Academy of Sciences, 2016).

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and partly reconstructed a Roman-period theater built against the northern slope of the plateau once occupied by the ancient town (Al-Shami 2005). All in all, Lenzen's

project distinguished seven chronological phases from the foundation of Capitolias to the 20th century (Lenzen, Gordon, and McQuitty 1985: 236; Lenzen 2003: 74).

FIELDWORK IN 2014–2016

In November 2014, a team from the Polish Centre of Mediterranean Archaeology University of Warsaw undertook field research in an olive grove free of modern structures, situated on the northern slope of the Beit Ras plateau, to the west of the theater and to the northeast of Area A investigated by Lenzen's Joint Expedition [Fig. 1]. Non-invasive research in the first season aimed to detect the presence of ancient structures within the area in question and to examine its functional nature based on local topography and collected surface finds. A grid of six pairs

of squares, each 20 m by 20 m in size, was established, embracing an area of 40 m north–south by 120 m east–west; the pairs were marked as Sq. (=squares) 1-N and 1-S, 2-N and 2-S, 3-N and 3-S, etc., starting from the northwestern corner [Fig. 2]. An electrical resistivity survey coupled with a regular ground survey were carried out in search of archaeological features and artifacts.

The results of the geophysical survey strongly suggested the existence of an east–west wall, running from the Roman theater for some 150 m westwards; its western part

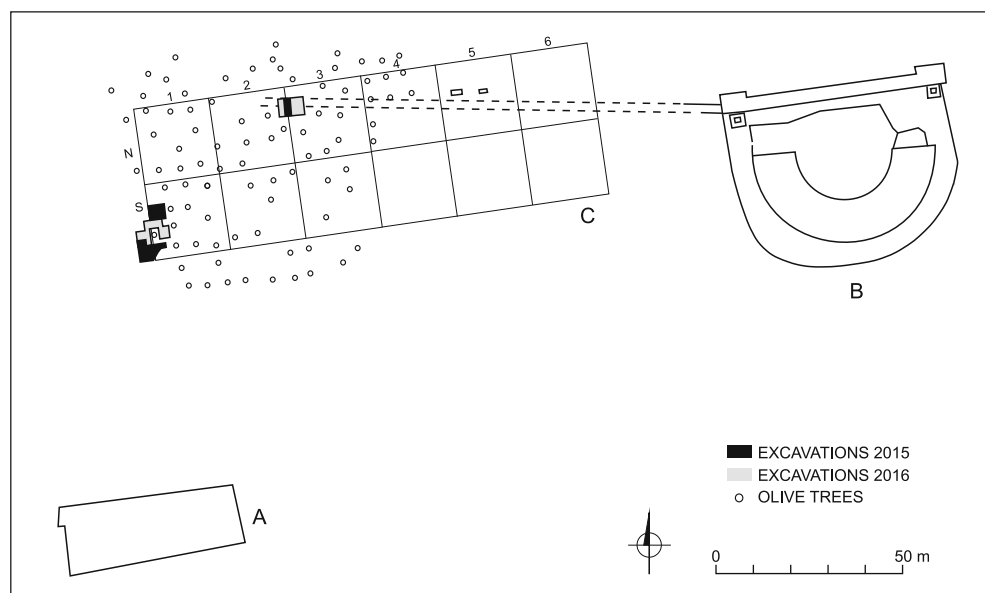


Fig. 1. Trenches excavated by the PCMA project (C) in relation to the Vaults area (A) and the Theater (B) (PCMA Beit Ras Project/R. Bienkowski)

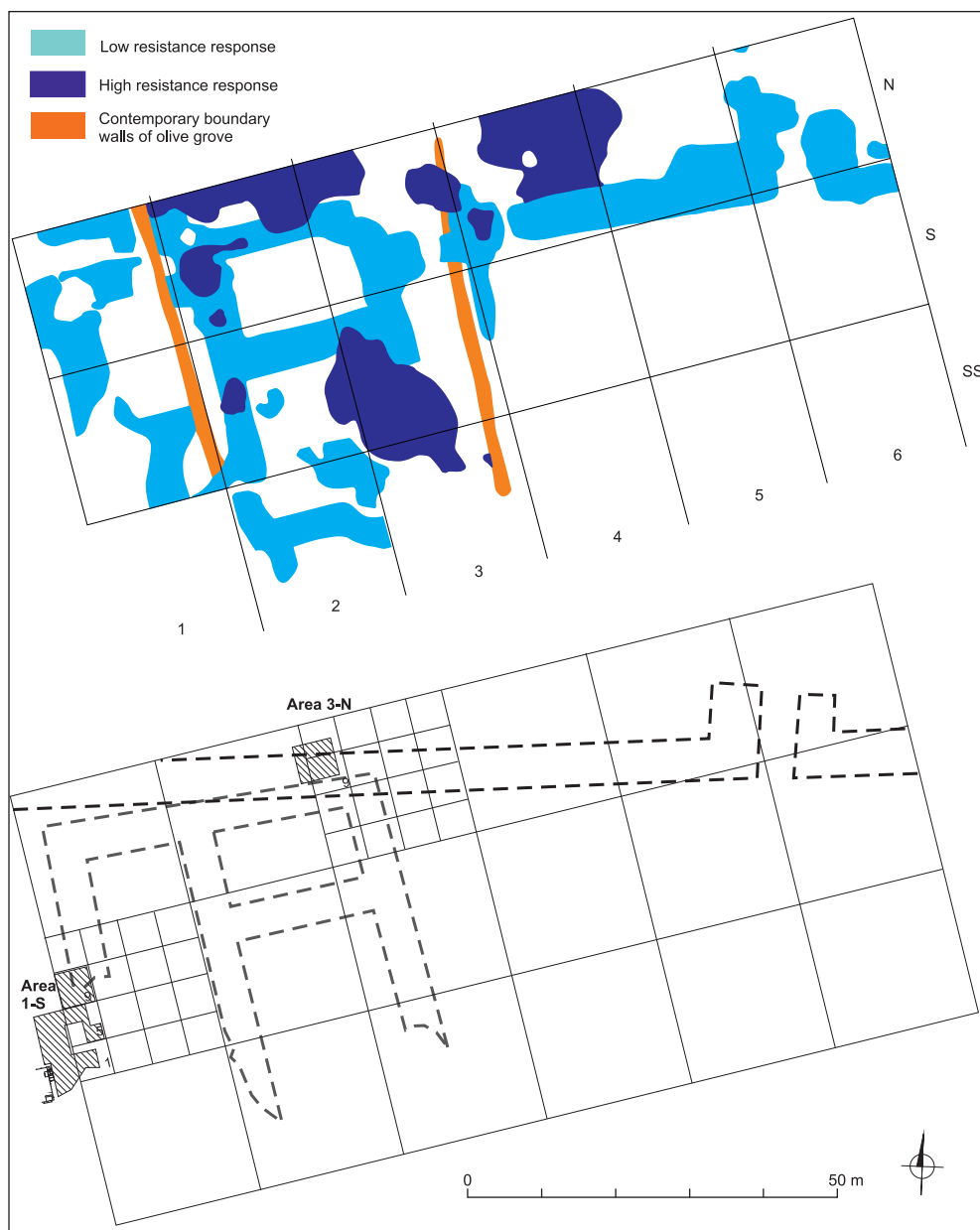


Fig. 2. Sector investigated by the PCMA Project: top, results of the electrical resistivity survey (2014); bottom, extent of trenches excavated in 2015–2016 in relation to the results of the electrical resistivity survey (PCMA Beit Ras Project/interpretation of survey results J. Ordutowski; plan J. Ordutowski [2014] and M. Burdajewicz [2015–2016])

seemed to be superposed by another large structure or structures [see *Fig. 2* top]. A fragment of a north–south wall to the southwest of the investigated area, partly visible above the ground, was identified as “Wall 4” of the Joint Excavation Project of 1985 (Lenzen and Knauf 1987: 33, *Fig. 5*). Re-cleaning of the western face of this wall now revealed three phases of relative chronology [*Fig. 3*]: 1) a small rectangular (water collecting?) basin; 2) north–south wall; 3) later east–west wall, its foundation sitting on the edge of the basin, with a threshold visible above. The probable cultural dating sequence is: 1) late Roman, 2) Byzantine, 3) early Islamic.



Fig. 3. “Wall 4” of the Joint Excavation Project as seen from the west, revealing three phases of relative chronology (PCMA Beit Ras Project/photo M. Burdajewicz)

A roughly circular opening, apparently of a water cistern, was recorded in Square 4-S. It was surrounded by mounds of earth, suggesting that at least the top of the fill had been disturbed rather recently by local treasure hunters. The rubble mixed with earth yielded pieces of the clay body of a domestic oven or perhaps a workshop kiln or furnace. Traces of charcoal and pieces of slag suggested a workshop (glass-making? pot-making?), while the assorted pottery finds gave a date in the Byzantine and Umayyad periods. Other remains of industrial activities from the surveyed area included many small fragments of handmade rings of clay that had been used most probably as “separators” between individual vessels placed in a potter’s kiln for firing [*Fig. 4* top], as well as raw glass chunks and slag pieces with adhering glass “crystals” (Burdajewicz 2017, in this volume). Also collected during the ground survey of the area were mosaic cubes, fragments of marble slabs, roof tiles, and fairly abundant potsherds, dated from the 1st–2nd through the 12th–13th centuries AD, that is, from the Roman, Byzantine, early Islamic and Ayyubid/Mamluk periods [*Fig. 4* center and bottom].

Probes dug in May 2015 verified the results of the geophysical survey and established a chronological phasing for this part of ancient Capitolias. The grid squares of 2014 were renamed “Areas” and subdivided into squares 5 m by 5 m to facilitate mapping of trenches that had to avoid the olive trees from the private grove. Of the three trenches opened at the site one was situated directly to the west of Area 1-S/Squares 1 and 5, the second in Area 1-S/Square 9 and the third in Area 3-N/Square 9 [see *Fig. 2*].



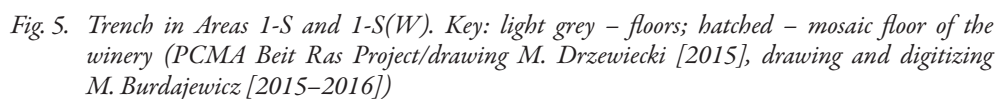
Fig. 4. Finds from Square 4-S: top, fragments of clay rings, probably used as “separators” in a kiln; center, sherds of glazed pottery (including Early Lead Glazed imports from Egypt), 8th–10th century; bottom, sherds of Mamluk painted pottery, 12th century (PCMA Beit Ras Project/ photos J. Młynarczyk)

AREA 1-S(W), SQ.1(W)

The first trench, 1-S(W), Sq.1(W) in its main part, was located directly to the west of the southwestern corner of Area 1-S [Fig. 5]; it was opened in order to understand the chronology of the north–south wall designated as W I, and identified as “Wall 4” of the Joint Excavation Project of 1985 (Lenzen and Knauf 1987: 33, Fig. 5). The western face of this wall, the lowest course of which rested on bedrock with clear traces of quarrying, was cleaned in 2014 and revealed three phases of relative chronology [see above and Fig. 3]. In 2015, the eastern side of the wall was exposed and its width was determined at 0.65 m. The trench was enlarged to the north and east, assuming an L-shaped outline, covering most of Sq.1(W) and part of Sq.5(W), both of them in Area 1-S, as well as the southwestern corner of Sq.1 in Area 1-S.

The rock-cut foundation of a wall (W V, not strictly perpendicular to W I) is aligned with the east–west axis of the trench. The wall was robbed out entirely with the exception of a few blocks still in place at the west end, leaving a thin layer of earth with pale grey spots (disintegrated limestone? mortar remains?). Exploration of this ghost wall revealed a series of rectilinear cuts, apparently evidence of stone quarrying prior to the construction of the wall.

Floor F I was identified to the east of W I (between W I and W V) [Fig. 6 background]. It consisted of small irregular stones set in pale brown earth with some lime mortar and some larger stone slabs. Upon this floor, there was a layer up to 0.50 m thick, particularly rich in pottery. Most of the potsherds represented “Beisan” type jars (that is, jars of the Palestinian “baggy” shape with linear decoration



painted in white against a dark grey, grey-brown or orange-brown surface); a few of the jars had circular holes drilled through their shoulders, probably in order to ensure safe wine fermentation [Fig. 7]. One should bear in mind a number of mentions of wine production and the wine trade at Beit Ras in the 6th–7th centuries and probably later (Lenzen and Knauf 1987: 35 and notes 61, 62). The shape and decoration of the wine jars discovered on the floor were typical of the 7th century rather than late 7th-to-8th centuries (for a closely comparable 7th-century type of wine jar from Susita/Hippus on the eastern coast of the Sea of Galilee, see Młynarczyk 2013: 480–481 and 484–485, Figs 15–32). The Byzantine date of this deposit of wine jars is confirmed by single examples of fine wares like the rim of a Jerash(?)

dish/bowl (Inv. 002.6) imitating an LRC ware dish, form Hayes 10C (Hayes 1972: 343–346, Fig. 71:13) of the early and mid-7th century AD, and the rim of an ARSW bowl/dish (Inv. 003.1), form Hayes 104C (Hayes 1972: Fig. 30:23), dated to about AD 550–625 (for the pottery from that trench, see Młynarczyk in press).

A still later floor or rather rough walking level, which would be designated as F “0”, is detectable directly upon the layer containing wine jar sherds. It seemed to be marked by some blocks laid flat, possibly tumbled from the wall W I. The topsoil above them yielded very mixed ceramic material, from a fragment of a jug in Eastern Sigillata A ware of not later than 1st century AD date to some pieces of glazed (Islamic) pottery. Thus, the dating of the presumed late walking



Fig. 6. Two successive floor levels: F I (background) and F II (foreground), W I to the right, view facing south (PCMA Beit Ras Project/photo J. Młynarczyk)

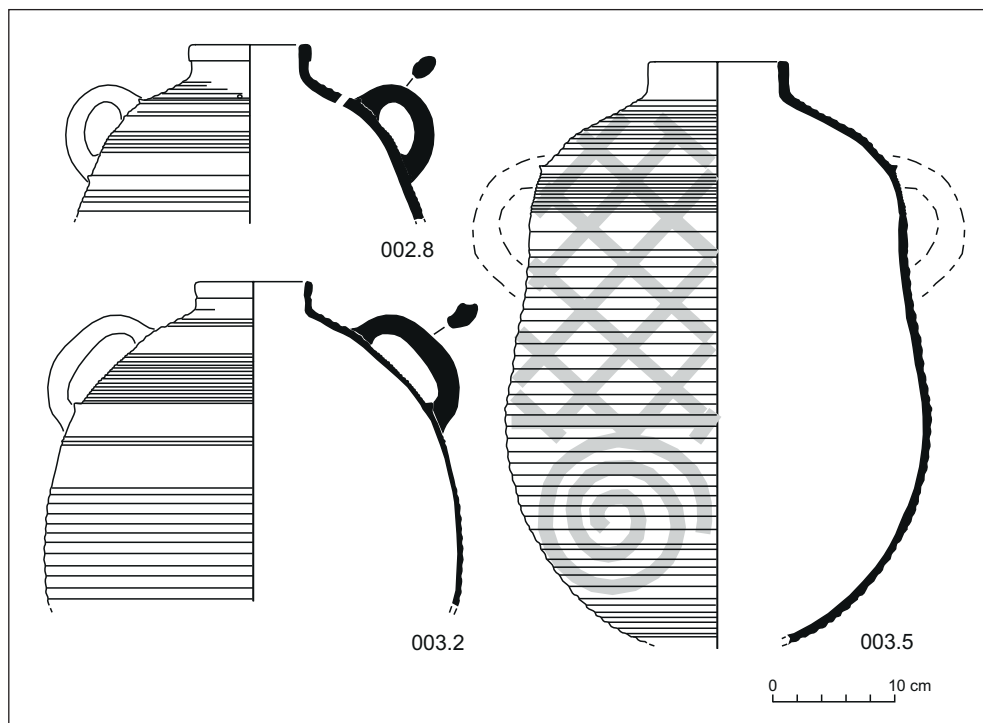


Fig. 7. Wine jars (fragments) of the “Beisan” type from the deposit above floor F I; 7th century (PCMA Beit Ras Project/drawing M. Burdajewicz)



Fig. 8. Terracotta lamps: left and center, fragments from the deposit under F I; right, found on F I; 6th century AD (PCMA Beit Ras Project/photos J. Młynarczyk)

level remains uncertain. Moreover, the chronology of the structures discovered to the east of W I remains obscure. Under the debris accumulated against the eastern face of W I (Loc. 001) were two additional features: W VI described provisionally as a “pillar” buttressing W I, and W VII which looks like a blockage [see *Fig. 6* background right]. However, since this spot could not be explored further to the south or east, it is not clear whether there was another wall running east–west to which the blockage could have belonged. All three vertical elements (W I, W VI, W VII) rested on the level of floor F I, which means that they were more recent than the floor in question.

Finds from the layer below floor F I date its construction fairly closely to not later than the 6th century AD. These included, apart from potsherds, Late Roman (4th/5th century?) bronze coins (BR 2015/19/5, 6 and 7), as well as five fragments of terracotta oil lamps [see *Fig. 8* left and center], all of them pertaining to the same “North Jordan type” dated to the 5th-to-6th century (da Costa 2010: 75–76 and *Fig. 15*); another lamp of the same type (BR 2015/19/1) was found upon the floor F I [*Fig. 8* right].

An earlier floor, F II [*Fig. 6* foreground], of tamped earth and overlying a thin layer of soil directly on bedrock, was discovered about 0.50 m below F I. Potsherds from under F II were few, but they were notably accompanied by a bronze Roman coin (BR 2015/19/8), probably from the mid-3rd century AD. It is possible then that F II may have been constructed not later than the 4th century AD; it was connected probably with an east–west wall W V.

The northern edge of the robbed-out W V was extended as a walking level or

floor of rather poor quality (F III), of whitish earth (mortar or eroded limestone?), further to the north in Sq.5(W). It is limited on the west by the remains of a north–south wall (W VIII) that is stratigraphically unrelated to W I. A concentration of rubble (Loc. 003 in Area 1-S, Sq.1) with a small trough for domestic animals(?) carved from a limestone block [*Fig. 9*] seems to be part of the same occupation phase. The removal of F III in Sq.5(W) yielded two fragments of Islamic glazed pottery of presumably Fatimid and Ayyubid date, that is, of the 10th/11th through the 13th century, unlike the fill of the W V trench which contained late Byzantine and Umayyad potsherds. The presence of glazed pottery confirmed the results of the Joint Excavation Project (1985), which had found a deposit of 11th century pottery in the nearby Cave A4 (Lenzen and Knauf 1987: 44); it may indicate some kind of domestic activity taking place in the area in the medieval period.

F III rested in part upon quake-related debris of mostly regular limestone blocks tumbled in a northerly direction, doubtlessly from W V [*Fig. 10*]. The blocks lay on a compacted earthen floor F IV, approximately 0.65 m below F III. The ceramic material sealed below F IV does not seem to be contaminated and pertains to the late Byzantine to Umayyad period. It is to be assumed, therefore, that the earthquake evidenced by the collapsed blocks was that of AD 749.

An earlier floor (F V) in Sq.5(W) lay about 0.52 m below F IV. It was a layer of dark orange-brown soil with some ashes, small pieces of burnt limestone and remains of a destroyed clay *taboun* (domestic oven). Two architectural elements were



Fig. 9. Late habitation level (corresponding to F III) on the northern side of W V, view facing west (PCMA Beit Ras Project/photo M. Burdajewicz)

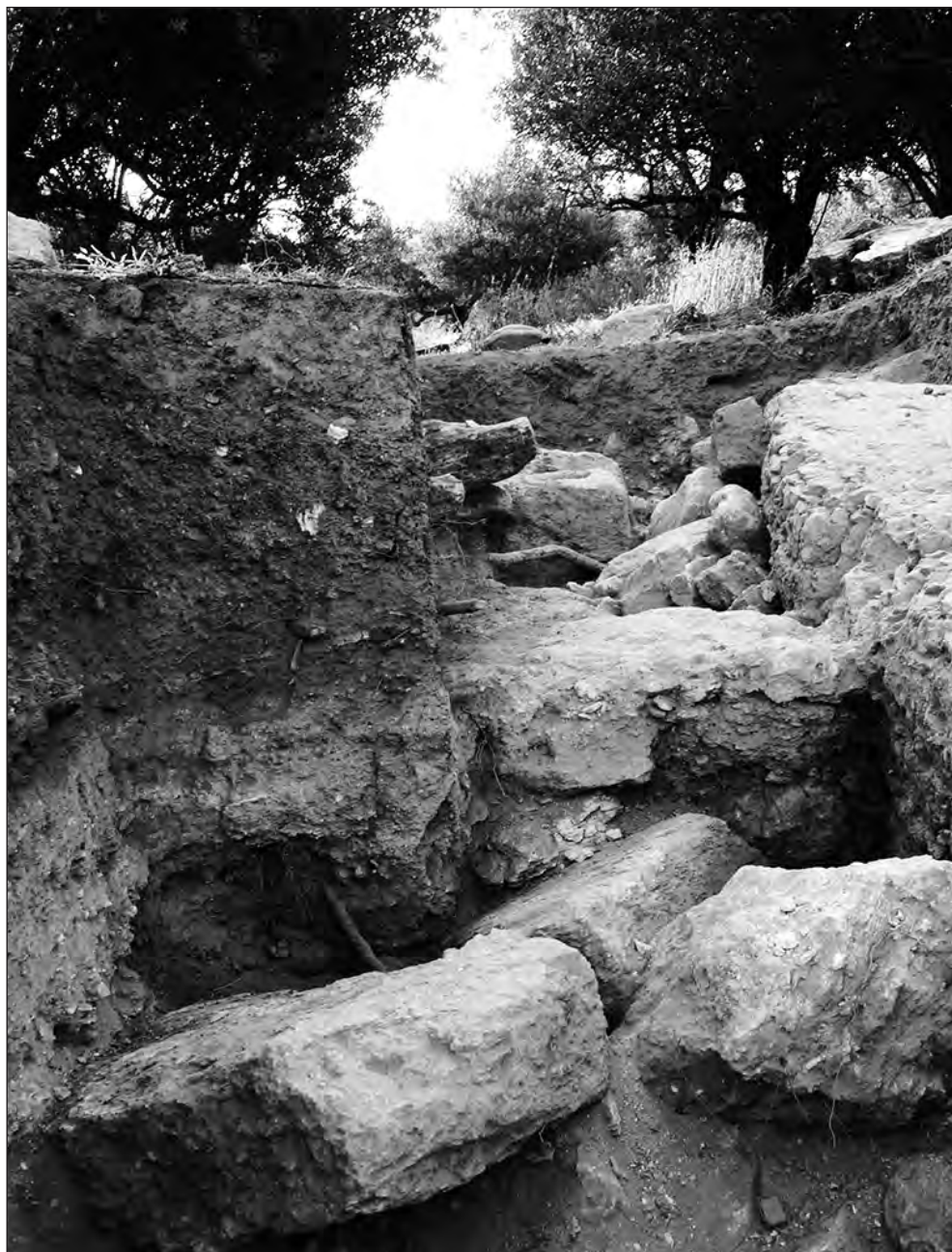


Fig. 10. Blocks tumbled from wall W V, with part of floor F III above, view facing east (PCMA Beit Ras Project/photo J. Młynarczyk)

placed horizontally, apparently marking the walking level [Fig. 11 left]. One was a fragmentary shaft of a small limestone column, the other part of a marble colonnette (BR 2015/19/20), doubtlessly from a church chancel [Fig. 11 right], of a type common in the 6th to 7th centuries (for the use of identical colonnettes, see a lateral chancel dated to the 6th/7th century in the Northwest Church in Susita/Hippos of the Decapolis, Młynarczyk and Burdajewicz 2013: 207, Figs 279a–279b). The presence of these elements in the purely domestic area, out of their original context, may be due to the destruction of a nearby church, in all likelihood the one found in

front of the “Vaults” on the northern edge of the plateau above our site (Lenzen 1995: 330; 1990: 474). This destruction may have occurred during the Sassanian invasion of Palestine, in AD 614 or soon after. A Byzantine *folli* of the 6th (or early 7th?) century (BR 2015/19/4), found in the layer directly above F V, confirms this date. A north–south wall (W VIII) also rested on F V; its somewhat sloppy eastern face (about 1.20 m high), consisting of three courses of blocks, gives it the appearance of a retaining wall.

The earliest floor, which was about 0.20 m below F V, was reached to the north of W V. This is a very hard and



Fig. 11. Elements of architectural decoration from a church: left, as found on F V, view facing north; right, fragmentary marble colonnette (BR 2015/19/20), probably from a church chancel (PCMA Beit Ras Project/photos M. Burdajewicz)

smooth earthen floor with large patches of lime mortar, directly overlying the bedrock. To the east, it borders on W IX, a well fitted row of ashlar just 0.30–0.32 m wide, set directly on bedrock [Fig. 12]. It frames a shallow basin (Loc. 004) paved with a plain mosaic made of big cubes (“industrial” mosaic type). In 2015, only the southwestern corner was uncovered, lined inside with white plaster of excellent quality [Fig. 13]. To judge by the preserved height of the plaster, W IX had at least two rows of ashlar. The plaster extends also up to the vertical rock-cut surface, approximately 1.30 m high, which also served as a foundation for W V. Neither the size nor the nature of

the basin could be determined during that season; the corner explored in 2015 was found filled with extremely compacted, stone-hard pure clay sediment. It seemed obvious that the basin pertained to the same architectural phase as F VI, both attributed to the Byzantine period (6th century?), probably contemporary with F I on the upper “terrace” (south of W V).

AREA 1-S, SQ. 9

A second trench [see Figs 2, 5] was opened in Area 1-S, Sq. 9, a short distance (about 6 m) to the north of the first. The rock-cut foundation of an east–west wall (W II) was found running parallel to the northern edge of the trench [see Fig. 14].

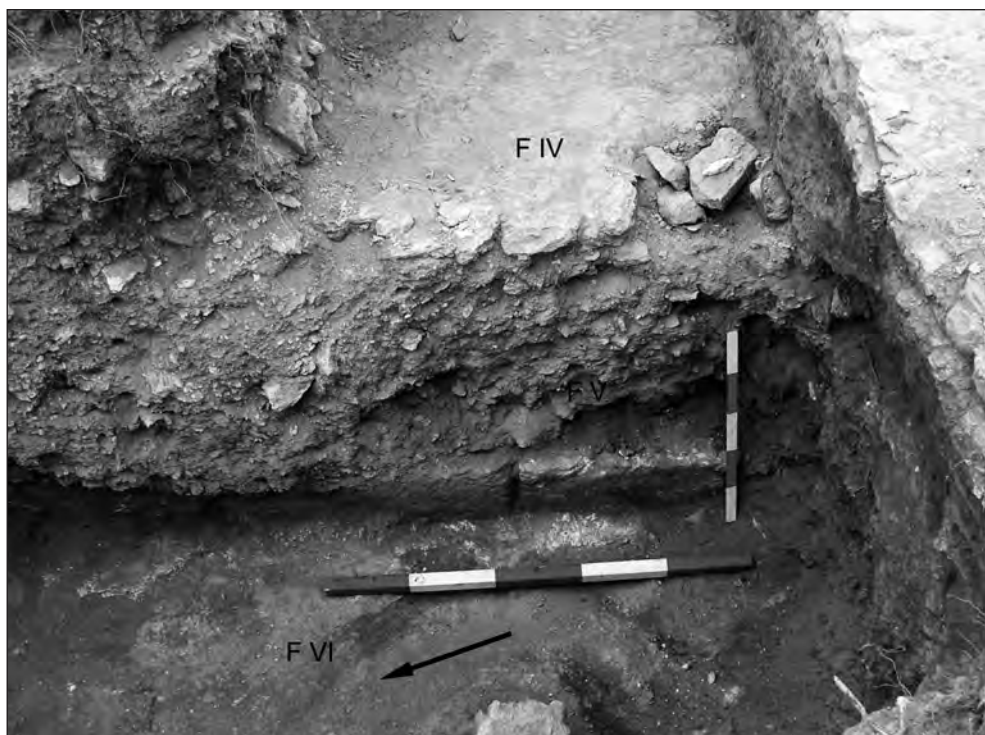


Fig. 12. Floor F VI and the western frame of a basin (Loc. 004) with floors F V and F IV sealing it; view facing east (PCMA Beit Ras Project/photo J. Młynarczyk)

It resembled closely the rock foundation of W V, which lay some 12 m away to the south. The two walls (W II and W V) were not only parallel, but also of the same width (about 1.15 m), both standing on bedrock that bore traces of stone quarrying carried out prior to their construction. Some of the ashlar blocks from W II were preserved at the western end where it intersected another wall (W III), also built on a rock-cut foundation and running north.

The space between W II and W III in the northeastern part of the trench was found filled with ashlars tumbled from the wall(s). The collected pottery is evidence

of earthquake destruction in AD 749, even if this unsealed debris contained some intrusive material of a later (Abbasid) period. The lack of a floor above this deposit proves that habitation ceased in this particular area after the earthquake. The rubble was left in place without ascertaining the floor on which it rested.

Continuing the line of W III on the southern side of W II was another north–south wall. W IV was only 0.35 m wide, and of most careless structure, more like a fence than a wall. It stood on a floor of compacted silty earth (F IX) which directly overlay the bedrock and must have been contemporary



Fig. 13. Southwestern corner of basin Loc. 004, as viewed against the rocky terrace of W V, facing southeast (PCMA Beit Ras Project/photo J. Młynarczyk)



Fig. 14. Trench 1-S, Sq. 9, with W II in the background, W IV to the left and stone casing of the cistern (Loc. 006) in the foreground, facing northwest (PCMA Beit Ras Project/photo J. Młynarczyk)



Fig. 15. Cistern casing (Loc. 006) with well-head about 0.70 m above the original floor level (F IX); view facing southeast (PCMA Beit Ras Project/photo M. Drzewiecki)

with W II. However, no sealed layers were found in this part of the trench; even the trench sections did not reveal any definite levels. The prevailing ceramic material from the trench dated from the late Byzantine and early Islamic (Umayyad) period (6th/7th–8th centuries AD), although the presence of some Abbasid-period potsherds should be noted as well.

In the middle of the southern edge of the trench, a heap of both dressed blocks and irregular stones [*Fig. 14* foreground] was initially interpreted as a would-be part of a dismantled well; however, it soon became evident that it was a makeshift boarding of a water cistern (rather than a well). Its original opening was cut into bedrock, most probably during the first habitation period, when W II with accompanying F IX were constructed. This water installation was then reused only after the place had been abandoned, most probably due to the earthquake of AD 749. Not only was that later-period well-head placed as high as approximately 0.70 m above F IX without any clear floors in between [*Fig. 15*], but also the boarding of the cistern was of extremely poor construction. The well-head frame, its opening about 0.30 m in diameter, rested simply on top of what appeared to be the most carelessly made “chimney”, maybe constructed from above (in an excavated shaft?). The well-head was assumed to correspond to a walking level, even if no specific floor was noted around it; if so, it would pertain to the same chronological phase as the makeshift wall W IV and as F III in trench Area 1-S(W), Sq.5(W). The very presence of a water cistern proved that the space to the south of wall W II was unroofed in both phases of its use.

During the field season of 2016, the two neighboring trenches (in Area 1-S together with 1-S(W), and in Area 3-N, Sq.9), termed the “southern” and the “northern” respectively, were joined, the overriding goal being to work around the olive trees [see *Figs 2, 5*]. The southern trench was extended north- and eastwards in an attempt to determine the size and nature of the mosaic-paved basin (Loc. 004), as well as to clarify the stratigraphical and spatial relations between the basin and the opening of the cistern in neighboring Sq.9. The exploration revealed the northwestern corner of the basin, uncovering 3.73 m of its length north–south. Both the west (W IX) and the north wall (W XIII) of the basin were constructed of ashlar placed as stretchers, of which just one course has survived [*Fig. 17*]. It should be noted, however, that the state of preservation of the plaster which used to line the interior of the basin, as found in 2015 at the south end of W IX, strongly suggests that there were once at least two courses of ashlar framing the basin.

The western part of the basin was divided into two compartments by an east–west wall (W XII); two ashlar belonging to this wall were discovered in upright position, their faces covered on both sides with white plaster (not hydraulic in nature), the same as in the basin. The laying of mosaic cubes on the basin floor (F VII) on both sides of this partition wall proves that the division into compartments was part of the original arrangement. The eastward extent of this partition wall could not be determined because of the obstacle posed by an olive tree in the middle. The dimensions of the basin had to be estimated for the same reason; the length east–west

did not exceed 6.60 m. Probing 3.50 m to the east of the northwestern corner of the basin, in a space available for digging, revealed another section of the north wall of the basin with a well-preserved mosaic floor (F VIIc) inside it [Fig. 16]. This eastern section of the wall (W XIV) was constructed of two (and not one) parallel rows of blocks, amounting to an average width of 0.50 m, unlike its western section (W XIII), built of a single row of ashlar, just 0.35 m wide. In all probability, there is a north-south wall closing the two compartments of the basin from the east. No further subdivisions of the main basin could be identified.



Fig. 16. Eastern part of the north wall (W XIV) of a winery basin with mosaic floor (F VIIc) to the left; later floor (F V) to the right; view facing west (PCMA Beit Ras Project/photo M. Burdajewicz)



Fig. 17. Western part of a winery basin with two compartments: left, view facing north; right, view facing southeast (PCMA Beit Ras Project/photos M. Burdajewicz, D. Mazanek)

There is no doubt that we are dealing with part of a winery installation, containing at least two (and perhaps more) compartments, apparently intended for storing grapes before pressing the juice. Similar compartments were found in two Byzantine–Umayyad period wineries in Susita/Hippos, another town of the Decapolis (Młynarczyk and Burdajewicz 2013: 215). It has also become clear that the basin in question was the very first structure made on this particular level of the slope, that is, to the north of the rock-cut “platform” on which W V stood perhaps since as early as the 4th century AD. Specifically, the vertical rock surface was shaped into a right angle to create the southwestern corner of an apparently open-air room [see *Fig. 5*]. The cavities in the northern face of the rock were filled with small blocks in the shape and size of bricks in order to obtain a vertical surface to be plastered [*Fig. 17* far end].



Fig. 18. Floor (F V) of 7th century(?) date, sealing the winery basin; note thick ash deposit, view facing east (PCMA Beit Ras Project/ photo M. Burdajewicz)

The circumstances that led to the winery basin going out of use are unclear. The function of two ashlar orderly placed on the mosaic floor of the northern compartment [see *Fig. 17*] is unknown, but they do not seem to have ever had any logical connection with the functioning of the winery. Moreover, they were found covered with a leveling layer topped by a floor (F V), made of a mixture of earth and limestone chips, with large amounts of ashes upon it, pieces of charcoal included [*Fig. 18*]. The latter most probably came from a domestic oven, many parts of which were discovered in place during the exploration of the same floor level in 2015, directly to the west of the basin, associated with sherds of cooking vessels. Apparently, it was during the same chronological phase (F V) that the rock-cut southwestern corner of the space previously housing the winery basin was extended to the north by constructing W VIII [see *Fig. 5*]. This new open-air room must have served as a domestic (kitchen) yard, containing the said oven.

The fragmentary marble colonnette described above [see *Fig. 11*], most probably pertaining to the chancel screen of a church, was associated with precisely the same “kitchen level” (F V), the date of which was established as most probably the first half of the 7th century. A miniature bronze spoon [*Fig. 19* top right], apparently an Eucharistic spoon pertaining to the liturgical equipment of the church in question, was found in 2016 in the same layer, above the western end of the winery basin. Fragments of two terracotta oil lamps with Christian symbols were also discovered in connection with the basin fill, dated to the 6th and into the 7th century. One of them, with a cross on the nozzle,

represented the so-called North Jordan lamp type, tentatively dated to the 5th-to-6th century and probably manufactured at Beit Ras itself (da Costa 2010: 75–76, Fig. 15). The other, with two birds flanking

a tree, presumably in expression of Christian symbolism [Fig. 19 top left], was of the so-called Jerash type, manufactured between the latter part of the 6th and 8th century (da Costa 2010: 78–79,

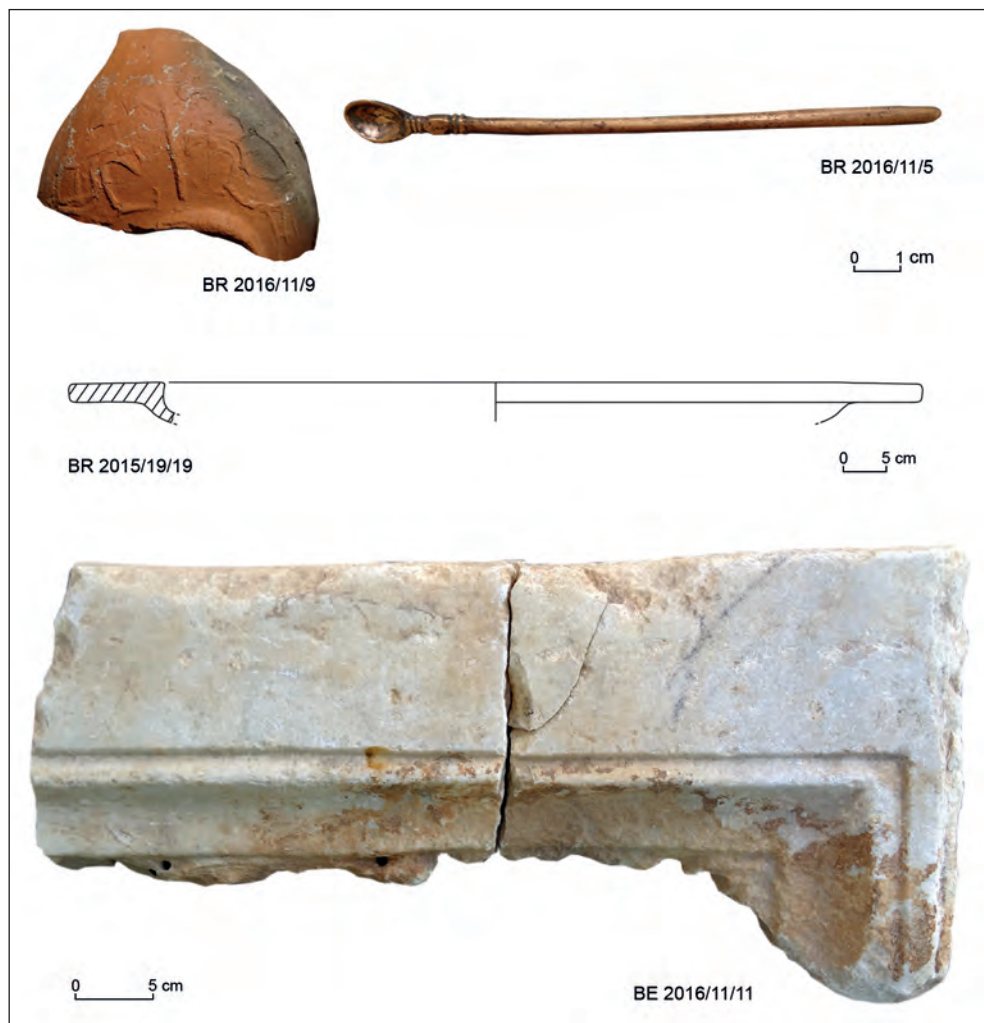


Fig. 19. Finds from the basin fill: top left, fragmentary lamp of the Jerash type with depiction of two birds adoring a tree, 6th/7th century; top right, miniature bronze spoon, 6th century(?); center, marble tray fragment, probably an auxiliary mensa from a church; bottom, marble chancel screen fragment, 6th–7th century (PCMA Beit Ras Project/photos M. Burdajewicz, drawing J. Młynarczyk)

Fig. 25), and of a characteristic Jerash fabric. All of the above suggests a rather violent destruction of the church, the equipment of which would have been dumped and dispersed.

Two more objects doubtlessly belonging to a church came from the exploration of the neighboring trench in Area 1-S, Sq.9. One of them was a fragment of the rim of a large circular tray of white marble [*Fig. 19* center] retrieved from the debris out of any stratified context; its diameter approaches 0.90 m. This kind of tray may have been used in churches as an auxiliary altar. It represents type E in the classification of altars by Eugenia Chalkia (1991: 47–53 and 195–215), who notes that they are as a rule of white marble and that their diameter rarely exceeded 1.00 m, usually amounting to just 0.60 m. According to Chalkia, they are rather rare in the Levant (the modern countries of Lebanon, Israel/Palestine and Jordan), unlike in Greece and Italy. However, of importance is the fact that a similar “plate” of white marble, 0.96 m in diameter and almost complete, was found, apparently in place, in the northern pastophorium of the church in Khan Khaldé (Chéhab 1957: 118; 1959: Pl. LXXIX:5) meaning that it could have served as a prothesis altar for the preparation of Eucharistic offerings. Another meaningful fragment of the church equipment was part of the frame of a chancel screen, also of white marble [*Fig. 19* bottom]. It was found reused in the late casing of a cistern in the same trench.

Two churches have been archaeologically attested in Beit Ras. One of these was situated *extra muros*, to the north of the town (Lenzen 2000: 21; 2003: 75, Note 14). The other church, however, was

erected a short distance away to the south of our trenches (no more than 60 m, see *Fig. 1:A*), and right above them, on the northern edge of the plateau, in front of the “Vaults” of the Roman-to-Islamic-period market place. The church was first recognized by Gottlieb Schumacher (1890: 159; Lenzen and Knauf 1987: 29, Fig. 3) who identified the existing remains as those of the northern aisle; Lenzen’s team reinvestigated (Lenzen and Knauf 1987: 33, Fig. 5) what was defined as “two-thirds of the main or central apse and approximately one-third of the northern aisle” (Lenzen 1990: 474), but what looks like a part of the southern aisle today. No detailed account of the exploration of this church was ever published and the information available is far from clear. The date of church construction (which the excavators initially described as three-apsidal, built on the spot of a non-descript Roman-period structure) was proposed first “on pottery” as the latter part of the 5th century (Lenzen, Gordon, and McQuitty 1985: 236–237 and Note 14), and then changed to the first half of the 6th century (Lenzen 2000: 21). No date was proposed for the abandonment of this building (Lenzen, Gordon, and McQuitty 1985: 237), and the statement that the church may have functioned “well into the 9th century and perhaps beyond” (Lenzen 1995: 331) is unjustified. An 8th century story of the martyrdom of St. Peter of Capitolias, which allegedly took place in AD 715, gives the name of the Virgin Mary or Theotokos, probably referring to a cathedral (main church of the town) (Peeters 1939: 301, 314; Milik 1959–1960: 170–173); Milik specifically wanted to place the cathedral close to the modern mosque, which is the precise location of “our” church.

In the light of the excavations by the PCMA team, it is fairly clear that the church in question was damaged, its interior decoration and equipment destroyed and dumped. This is most likely to have happened during the Sassanian occupation of Palestine in AD 614–629, to judge by the 7th century context of the colonnette from the chancel [see *Fig. 11* right], even if some authors question the very fact of a Sassanian occupation in Transjordan (Shboul and Walmsley 1998: 278). The church may have been rebuilt soon afterwards, and it apparently was, assuming that it was the building of the Virgin Mary/Theotokos church mentioned in the martyrdom story of St. Peter, during the second decade of the 8th century.

However, while the stratigraphy above the southwestern part of the winery basin excavated in 2015, supported by well-known pottery types and coins, seemed to be fairly clear in reflecting the chronological sequence from the Byzantine to the early medieval period, the picture obtained during the 2016 season was rather confusing. The same sequence of floors was recorded, with as many as three “walking levels” (counting from the top: F III, F IV, F V) above the Byzantine-period basin floor (F VII), but none of the layers yielded uncontaminated pottery. To the contrary, throughout all the contexts the ceramics represented the same Byzantine–Umayyad wares and shapes, mostly fragments of wine jars and cooking vessels [*Fig. 20*], but also many pieces of jugs and amphorae made of pale-bodied fabric with linear ornaments painted in red of a rather late Umayyad date [*Fig. 21* top]. Moreover, the level assigned during the 2015 season to the Umayyad period (F IV, equated to F X of

2016) contained several examples of types considered to be of an Abbasid date, the 8th to 9th century [see *Fig. 21* bottom]. The only explanation of this state of affairs are serious disturbances, most probably caused by the re-arrangement of the access to the cistern (during the 11th century?) within the border area between Sq.5 and Sq.9 in Area 1-S.

The stratigraphy of the surroundings of the cistern was double-checked in 2016, as was the connection between the northern border of the winery basin and the rim of the cistern to the north of it [see *Fig. 14*]. The northern frame of the basin and the cistern mouth are just 3.50 m apart, making it more than probable that they originated



Fig. 20. Cooking pot lid (fragment), Byzantine/Umayyad period, from Area 1-S trench Sq.9 (season 2016) (PCMA Beit Ras Project/photo J. Młynarczyk)



Fig. 21. Pottery from Area 1-S, trench Sq. 9 (season 2016): top, closed-form vessels of Umayyad Painted Ware; bottom, vessels of "Islamic Cream ware", Abbasid period (PCMA Beit Ras Project/photos J. Młynarczyk)

in the same period and pertained to the same industrial installation.

A series of floors corresponding to those recorded to the west of the winery basin were identified above the eastern part of the basin (that is, in Area 1-S, Sq.5) as well. The uppermost of them (F III), probably of early medieval date, sloped northward rather steeply down to the mouth of the cistern. The framing of the cistern, as already noted during the 2015 season, was a rather careless construction of reused stones, apparently retrieved from earlier (mid-8th century?) earthquake debris. The square capstone of the cistern corresponded to the level of F III identified in Squares 1, 5 and 5(W),

and equaling F VIII in Sq.9. The stone boarding of the cistern was approximately 0.70–0.80 m high, spanning the distance between the lowest floor (F VI = F IX) and the uppermost one (F III = F VIII) [Fig. 22]. Upon dismantling the shaft, the said fragment of a marble chancel screen was found [see Fig. 19 bottom], doubtlessly coming from the church situated above the site, and reused in the casing of the cistern.

The first phase of use of the cistern must have been connected with a Byzantine period (6th century?) floor F VI in Sq.5 and Sq.5(W), equaling F IX in Sq.9, that is, with the clayey/earthen floor directly above bedrock. The original mouth of the cistern, 0.75–0.70 m in diameter, was



Fig. 22. Cistern framing (Loc. 006) in Area 1-S, Sq.9 on bedrock with traces of the original stone quarrying; note the semicircular line of W IV to the left; view facing north (PCMA Beit Ras Project/photo D. Mazanek)

cut into the bedrock surface, which bore right-angled traces of an earlier episode of quarrying stone blocks [see *Fig. 22*]. The interior of the cistern appeared to be bottle-shaped, but exploration ceased for safety reasons at about 2 m below the opening. The excavated upper part of the fill yielded pottery mostly of Umayyad, but also of early medieval date (11th century?), proving a lengthy period of use of this water facility.

Single examples of glazed potsherds of the 9th–11th centuries were found also to the south of the cistern mouth at a considerable depth, pointing to some disturbances having occurred at the site after the Umayyad period. The pottery may have been linked not only to the cistern reuse, but also to the construction of a narrow, fence-like wall (W IV) resting directly on the lowermost floor (F VI = F IX). The south end of the wall in question was found to the west of the cistern mouth. Unexpectedly, it curved away to the west [see *Figs 14, 22*], leaving the issue of its exact purpose without resolution.

Wine jars dominated the pottery assemblage from the trench in question, from all the layers dated to between the Byzantine and the Umayyad/Abbasid periods. Even if the winery basin appears to have gone out of use after the Byzantine period, the shape and ware details of the wine jars recorded at the site prove that wine-making in this particular place or anywhere nearby must have continued at least until the mid-8th century and probably beyond. Written sources confirm that the “proverbial wines of Bayt Ras (Capitolias) and Baysan” were still being enjoyed at the end of the 7th century (Shboul and Walmsley 1998: 272). Citations from Arabic literature gathered by Lenzen and

Knauf leave no doubt that the local wine of Beit Ras was highly valued not only in the 6th–7th centuries (Lenzen and Knauf 1987: 35–37 and Notes 61–63), but also throughout the Umayyad period (Lenzen and Knauf 1987: 38–39 and Note 81) to as late as the Abbasid period (Lenzen and Knauf 1987: 41 and Note 92).

Other popular ceramic categories represented in this trench included closed-shaped vessels (jugs, table amphorae) of Umayyad Painted Ware [see *Fig. 21* top] and Grey Ware basins (most probably milking vessels), the latter made by hand and adorned with grooved/incised decoration. Traditionally considered to be of the Umayyad period, they are first observed in late Byzantine layers. This last group is particularly well-represented in Beit Ras, featuring the many variants of rim shape and a range of color variants of the fabric that is strongly suggestive of a well-developed regional (if not strictly local) industry.

AREA 3-N, SQ.9

The third trench of 2015 was opened in Area 3-N, Sq.9, approximately 40 m to the northeast of the trenches in Area 1-S and 1-S(W), in order to verify the nature of a long NE–SW wall detected by the electrical resistivity survey in 2014 [see *Fig. 2*]. Two successive lime mortar floors, F I and F II, were uncovered, presumably abutting an east–west wall (W I) constructed of fine limestone ashlar. The ashlar from the upper courses of this wall have been robbed out leaving only a robbery trench (for this first stage of exploration, see Młynarczyk in press: *Figs 27–30*). Time constraints in 2015 permitted only the southern face of the wall to be exposed, and the exploration was halted at about 1.40 m below the

modern surface without determining the thickness of the wall.

In 2016, the trench was extended to the north, east and west to cover parts of Area 3-N Sq.9 and 13, and Area 2-N Sq.12 and 16 [see *Figs 1, 2* bottom]. This enlargement revealed a section about 3.80 m long of the northern defense wall of Capitolias [*Figs 23–25*]. Its inner (southern) face has been excavated to a depth of 3.20 m without having reached bedrock yet. The outer (northern) side of the wall was explored to a depth of only about 1.50 m, that is, down to the first preserved course of its facing blocks. The city wall was 2.50 m wide, its inner face carefully constructed of limestone ashlars [see *Figs 23, 25* top]. In its present state of preservation, one can see three rows of headers and stretchers in between two layers of stretchers. The lowermost layer of the stretchers is in fact the top of the wall plinth of unknown height. The core of the wall was made of both undressed and semi-dressed stones, and was faced with square basalt blocks on the outer (northern) side [*Fig. 25* bottom]. The eastern part of the trench in question revealed a robbery pit 1.45–1.60 m deep [*Fig. 24*] associated with the dismantling of the wall, in particular with the removal of the limestone ashlars from the inward wall facing. The pit cut through as many as three floors recorded on the southern side of the wall: F IV (equaling F I/2015), F V (equaling F II/2015) and F VI. Examination of the pottery retrieved from the robbers' pit strongly suggests that the blocks were extracted not earlier than at the end of the Umayyad period, perhaps even later. This must certainly have happened after the city wall had been destroyed by an earthquake, as suggested by a concentration of collapsed ashlar

visible in the northern section of the trench [see *Fig. 25* top].

After the destruction of the city wall during an earthquake (presumably that of AD 749), but before the robbing out of what had been preserved of it, a north–south wall was built, apparently encroaching upon the remaining part of the defenses; on its eastern side there was a cobbled surface with a carefully constructed and tightly covered channel running parallel to the wall [*Fig. 27*]. Its purpose may have been to evacuate rainwater(?) or sewage(?) toward the north, beyond the abandoned city wall. Although the scarce pottery collected from under the cobbled floor (F I) was of late Roman date, it seems logical to assume that its construction pertained to a later period, possibly to early Islamic (late Umayyad or Abbasid?) times.

Two other floor levels abutting the city wall on the south were associated with the period of its functioning as a defensive structure [see *Fig. 24*]. Of these, floor F V (corresponding to F II of the 2015 exploration) has been dated provisionally by the ceramics from the underlying layers to the late Roman period (4th–5th centuries AD). The lower floor, F VI, can confidently be considered as being of an earlier (3rd century AD) date, on the basis of scores of Roman-period pottery tentatively dated to between the late 1st and the 2nd/3rd(?) century. The pottery collected from the layers distinguished below F VI, even when not very easy to be dated (most of them being plain-ware domestic vessels of local/regional types), definitely pertains to middle Roman times. Therefore, the construction of the city wall can be dated securely to the Roman period, apparently not later than the 2nd century AD. It should be emphasized



Fig. 23. Central north trench (Areas 2-N and 3-N): plan and southern elevation of the city wall (W I) (PCMA Beit Ras Project/drawing M. Drzewiecki; digitizing M. Burdajewicz)

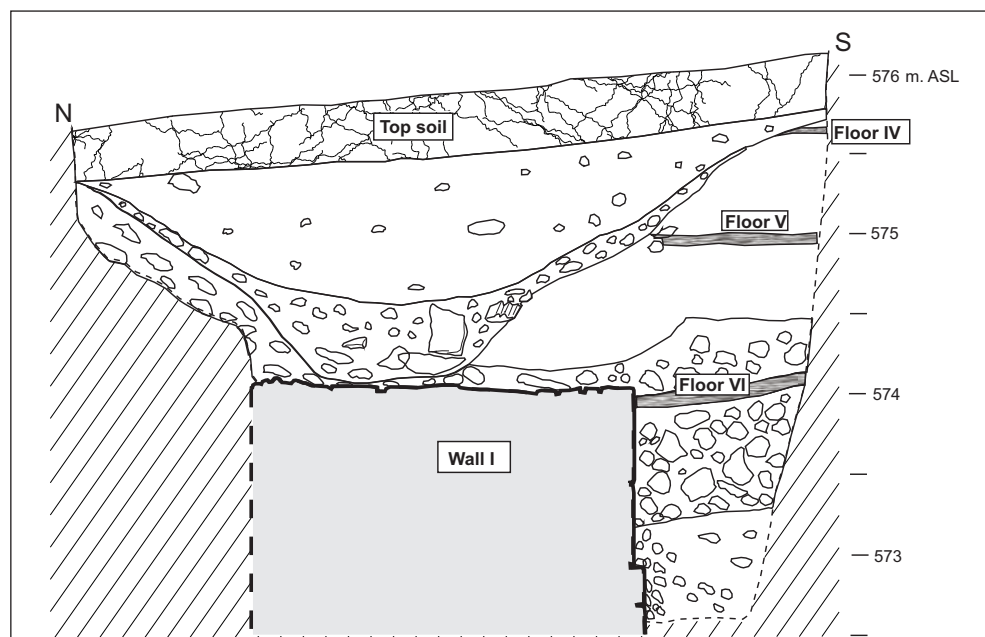


Fig. 24. Eastern section of the central north trench showing the depth of the robbers' pit in Area 3-N, Sq.9 and 13 (PCMA Beit Ras Project/drawing M. Drzewiecki; digitizing M. Burdajewicz)

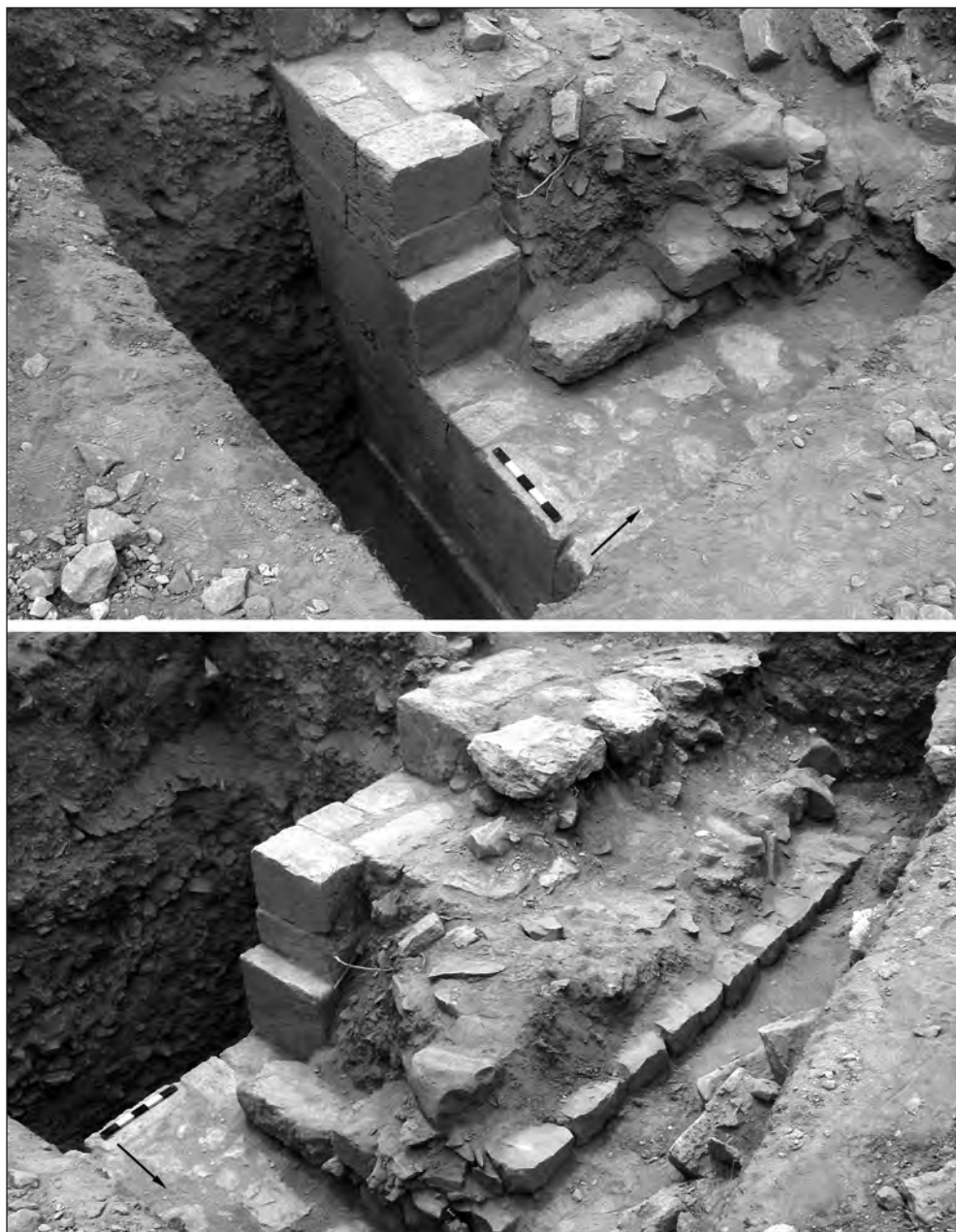


Fig. 25. Northern city wall of Capitolias (WI in Areas 2-N and 3-N): top, core of unhewn stones and inner (southward) face of limestone ashlars, view facing northwest; bottom, outer (northward) face of basalt blocks, view facing southwest (PCMA Beit Ras Project/photos M. Drzewiecki)



that the wall foundation was not reached, the exploration halting just below the top level of the plinth without uncovering the lowermost floor with its associated material pertaining to the period of wall construction.

A fragmentary juglet of common ware found in this context bears evidence of deformation during firing [Fig. 26]. This kind of kiln waster is sound proof of pottery manufacturing taking place at that site during the Roman-period (as probably was the case with the Byzantine and Umayyad periods). Indeed, many fragments of clay installations (kilns? ovens?) were also retrieved from the leveling layers under

Fig. 26. Kiln waster: fragmentary juglet (No. 118.2) deformed during the firing process (PCMA Beit Ras Project/photo J. Młynarczyk)



Fig. 27. Stone-paved area with covered channel constructed after the city wall fell into disuse, view facing southeast (PCMA Beit Ras Project/photo M. Drzewiecki)

the floors abutting the inner side of the city wall, together with pottery slag. All these finds, on top of the glass chunks discovered in the trenches and on the surface (Burdajewicz 2017, in this volume) as well as remains of iron slag recorded

during the surface survey in 2014, strongly confirm the artisanal character of this part of the Roman–Byzantine Capitolias, with workshops typically located on the outskirts to prevent environmental inconvenience to local inhabitants.

CONCLUSIONS

The excavations of 2015–2016, even if limited in scope, verified the results of the electrical resistivity investigation of 2014. The line and an actual section of the city wall of Roman imperial times as well as a fragment of superposed building presumably of the early Islamic (Umayyad or Abbasid) period were located in the north-central trench (Areas 3-N and 2-N). The earliest pottery finds from the excavated site (single objects, found in stratigraphical contexts) were a couple of ESA ware sherds of the 1st century BC–1st century AD. This would be in favor of the hitherto prevailing view that Capitolias was founded in the latter part of the 1st century AD. However, one has to remember that the site, situated at the northern edge of the town circuit, on the slope of the plateau, is not necessarily representative of the cityscape of Capitolias. The research proved beyond any doubt that this part of the town, even if comprised within the city walls, was primarily destined for industrial activity (wine-pressing, pot making, glass production). Especially well recorded was the wine-making, both thanks to the discovery of part of a winery installation and the abundant finds of wine jars.

The southwestern trench in Area 1-S and 1-S(W) presented a stratigraphical sequence ranging from the late Roman (4th/5th century) to medieval, with

structures of strictly domestic character. A terrace-shaped slope was recorded with two parallel E–W walls: W V (upper terrace) and W II (lower terrace). This arrangement was presumably connected to the stone quarrying phase as reflected by cuts present in the bedrock of both terraces. The earliest occupation, probably during the late Roman period, is reflected by the F II level, presumably with accompanying W V. Directly to the north of it, on a lower terrace, there was a wine-pressing facility (winery basin with accompanying floor F VI = F IX and cistern), apparently of 6th century date; it is possible that also F I, with its wine jars deposit, belonged to the same period. The winery complex probably flourished into the 7th century, when it may have been abandoned; the mosaic-paved basin was succeeded by an earthen floor associated with a domestic oven. Fragments of liturgical equipment of a church found in this secondary context may testify to the destruction caused by the Sassanians in AD 614 or soon after.

Beside that episode, however, the Byzantine and Umayyad periods must have been a time of the *floruit* of Beit Ras in terms of economy and prestige. According to the sources, caliph Yazid II and his favorite wife Hababah had their palace there (Lenzen and Knauf 1987: 39–40). It seems also that under the Umayyads the territories of Capitolias, Abila and

Gadara formed a unique administrative unit called Trichora, the “Land of Three” (Peeters 1939: 305; Lenzen and Knauf 1987: 40). Even in the 8th/9th century Beit Ras was still a place of importance, since it was mentioned as a *kurah* (one of 13 administrative districts) of the province Jund el-Urdunn (Walmsley 1988: 144).

Both trenches, the southwestern and the north-central one, excavated by the PCMA mission, yielded clear evidence of an earthquake, presumably that of AD 749. After that date this particular area seems to have been semi-abandoned, serving as a source of building material

and a place for grazing livestock. One possible exception could have been an enigmatic building, a small part of which was uncovered in Area 2-N, Sq.12, encroaching upon the destroyed city wall; it lacked, however, any chronological indications. Other traces of some kind of post-Umayyad occupation may be attested by the makeshift floors (F III, F VIII, perhaps also F 0) on roughly leveled debris of the mid-8th century, recorded in Areas 1-S(W) and 1-S and used apparently in the early medieval (Fatimid/Ayyubid?) period alongside the water cistern.

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Failaka Archaeological Research Project Preliminary results after the second and third season of excavation at Kharaib el-Desht in 2015–2016

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Abstract: Excavation at the site of Kharaib el-Desht on Failaka Island, Kuwait, began in 2013 and continued in 2015 and 2016. The second season focused on the northwestern part of the site, namely Areas 1 and 4. In the third season, work also encompassed the southeastern part of the site, Area 3, where the exploration of a stone structure was resumed. A fragment of a residential complex was also unearthed in this area. Test trenches, opened inside the stone structure and below the foundation level of the residential remains, confirmed the existence of an earlier phase, predating the Desht settlement.

Keywords: Gulf archaeology, Failaka, Kuwait, Islamic period

The Islamic-period site of Kharaib el-Desht stretches along the northwestern coast of Failaka Island, Kuwait. The site is known from early 20th century accounts of travelers and the first explorers of the Gulf (Lorimer 1908: 514–515; Dickson 1968: 57; Bibby 1969: 195–212), and was later surveyed in 1974 (Patitucci and Uggeri 1984: 419). Excavation at Kharaib el-Desht begun in 2013, conducted by the Kuwaiti–Polish Archaeological Mission of the Polish Centre of Mediterranean Archaeology UW

(PCMA) at the invitation of the National Council for Culture Arts, and Letters (NCCAL) (Pieńkowska 2015). Two subsequent campaigns took place in 2015 and 2016: the second season focused on the northwestern part of the site, namely Areas 1 and 4 (Squares III and XII–XIII), while in the third season work was also continued in Area 3, in Square XXXV, where a fragment of a stone structure was uncovered in the first season, and in the previously unexcavated Square XXXIV.

AREA 1 (SQUARE III)

Investigation of Area 1 (Square III), which covers a small elevation about 40 m by 60 m, was conducted in the 2015 and 2016 seasons in the central part of the area (Square III-C6,C7), as well as in its northeastern part (Square III-D5–D7) [Fig. 1]. The excavation, which began in 2013, continued in a sondage on the western slope in Square III-B7 (Test Trench 1). A new trench was also opened (Test Trench 3), intersecting the slope and some structural remains aligned north–south in Square III-D5 [Fig. 3].

A level with over a dozen small clay stoves, a few refuse pits, and traces of hearths was unearthed in Square III-C6,C7 and in the southern part of Square III-D7. No structural remnants were uncovered, save for a few concentrations of small stones forming short rows. A small sondage (Test Trench 2) dug in 2013 in the southeastern corner of Square III-C7 had shown that the stoves were founded on or dug into the bedrock constituting the core of the elevation.

Almost 60 small clay stoves were recorded on the elevation, located mostly

Team

Dates of work: 15 March–26 April 2015, 13 March–24 April 2016

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Archaeologists and archaeological team support: Hamed Al-Mutairi, Mustafa Ansari, Talal Abdullah Shameri (Department of Antiquities and Museums of the State of Kuwait)

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Topographer: Jolanta Juchniewicz (independent), Antoni Mrozowski (independent), Piotr Zakrzewski (Institute of Archaeology, University of Warsaw)

Archaeologist/ceramologist: Marta Mierzejewska (PCMA)

Photographer: Adam Oleksiak (freelance)

Documentalist: Marek Puskarski (PCMA)

Scuba divers: Magdalena Nowakowska, Szymon Lenarczyk, Anika Kamińska (Institute of Archaeology, University of Warsaw)

Student-trainees: Anna Graczyk, Jakub Stępnik, Katarzyna Cieślak, Karol Ochnio

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in its central and southern parts [Fig. 3]. Typically, the stoves measured 25–30 cm in diameter, though larger examples – approximately 40 cm in diameter – were also found. Their walls, made of unbaked clay, were 2–3 cm thick. The shape of the walls differed depending on the height: the highest examples (25–30 cm) had cylindrical walls, while the lower ones

(5–10 cm) could be, if not straight, then slightly tapered towards the top, surrounding a shallow cavity [Fig. 2:a,b,d]. One of the explored stoves featured a distinct convex bottom, slightly sunk into the ground [Fig. 2:c].

Two structures were unearthed in Square III-D5–D7. House 1 measured 4 m by 8 m and was situated in the northern part

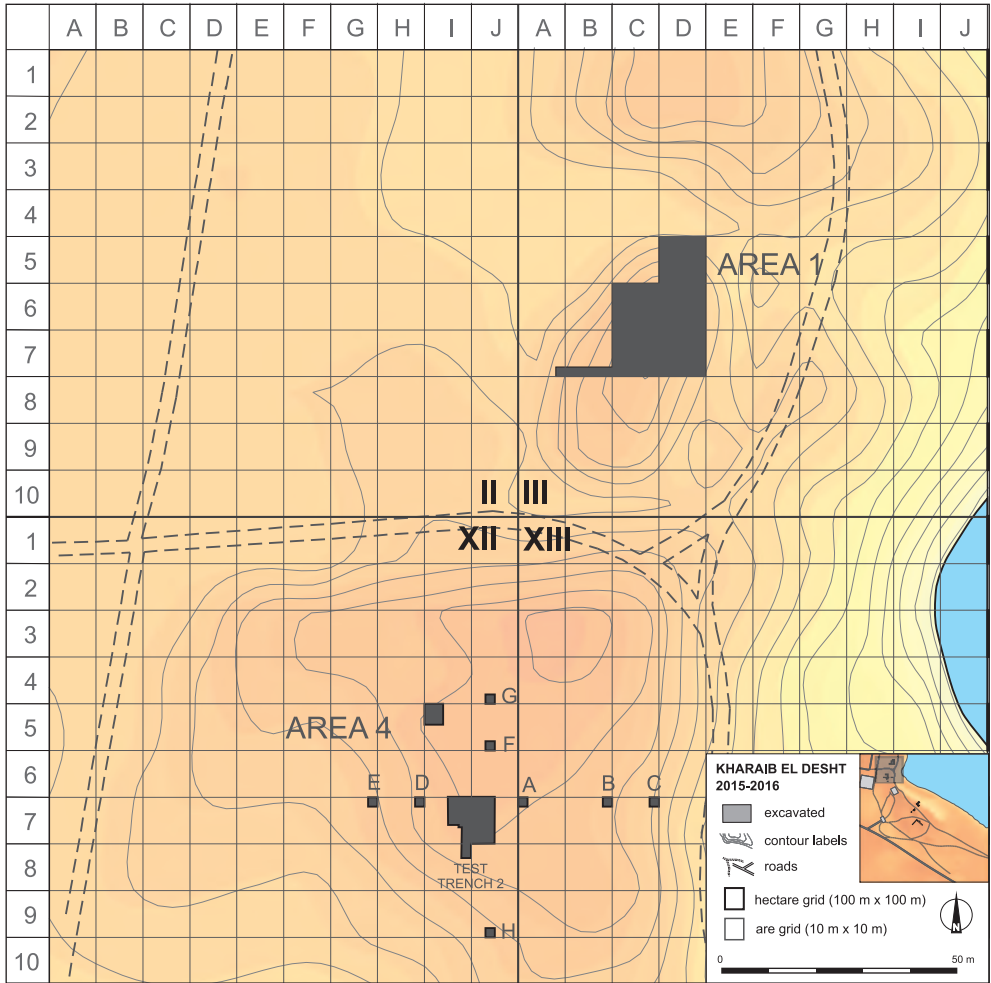


Fig. 1. Northwestern part of the site (Areas 1 and 4)
(Failaka Archaeological Research Project, PCMA/map P. Zakrzewski)

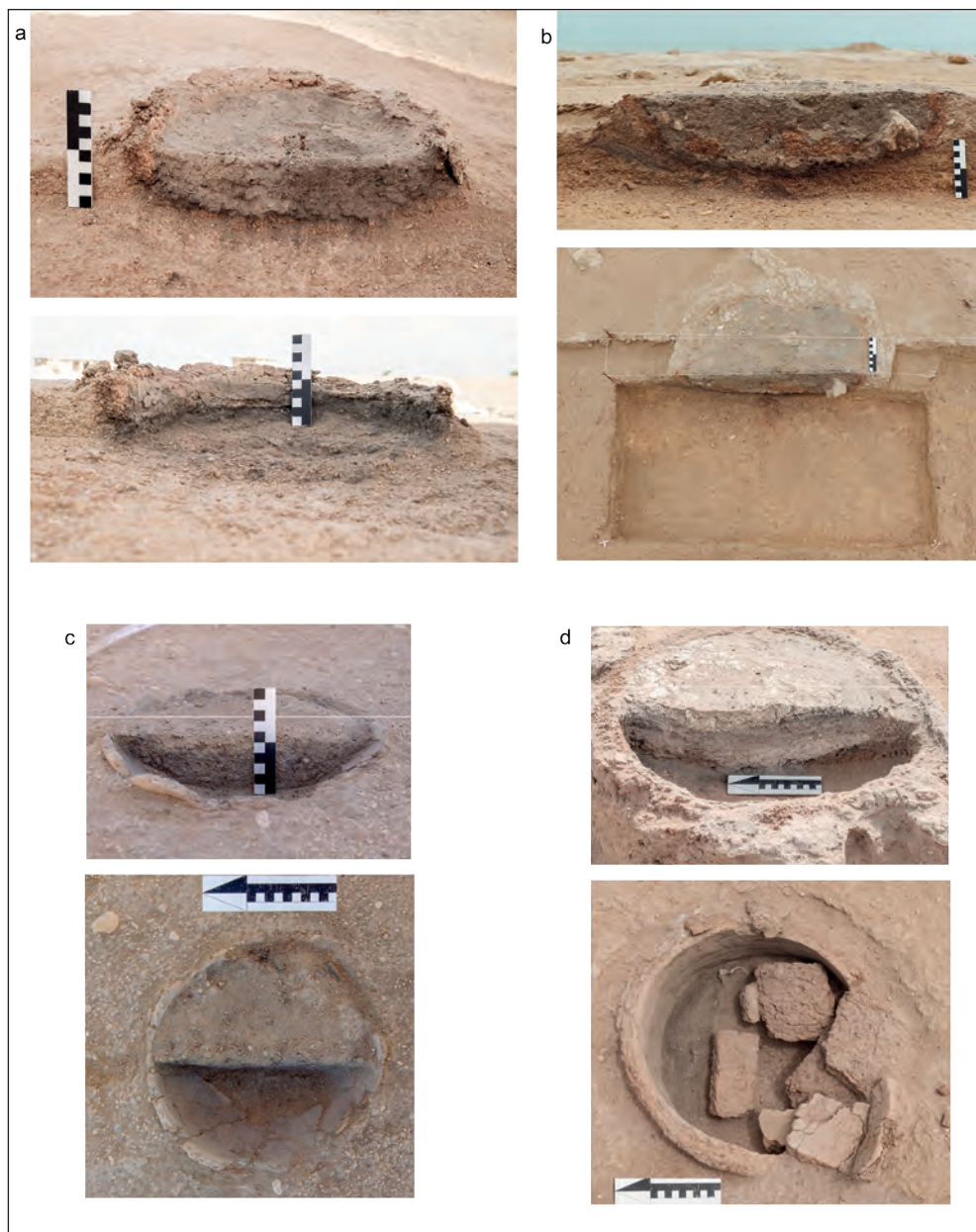


Fig. 2. Various types of ovens attested at the site: a, b, d – ovens with straight walls; c – oven with convex bottom (Failaka Archaeological Research Project, PCMA/photos A. Oleksiak, P. Zakrzewski)

of the elevation. Although its size was not impressive, its walls were apparently very solid. The west and south walls were best visible, but even they were preserved only as single courses of stones. Judging by the best-preserved fragment, the west wall was approximately 0.80 m thick and consisted

of two rows of large flat stone slabs, overlaid on the outside with smaller stones. In the 2016 season, the inside of the structure was excavated, but nothing like a usage level was found. Pits and hearths uncovered in the house, as well as stoves and hearths overlying its east wall most likely belonged

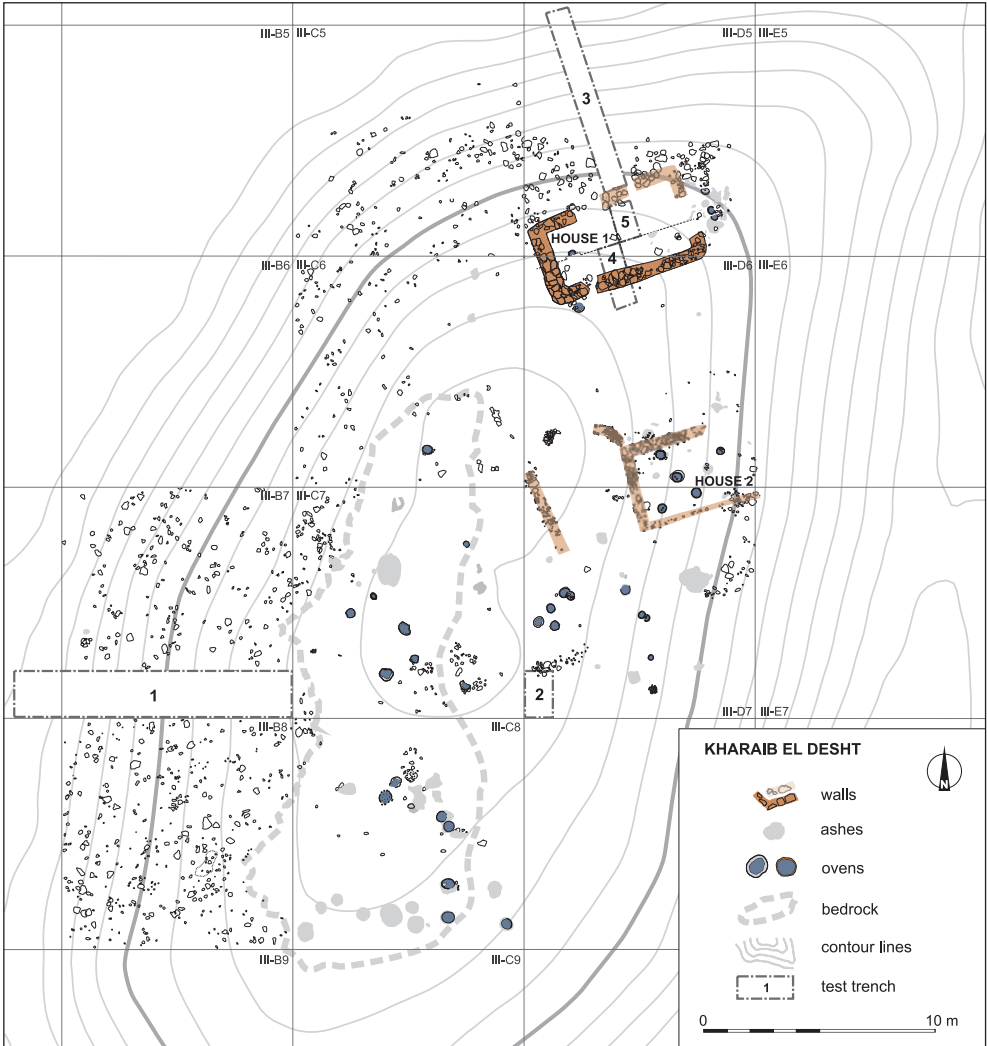


Fig. 3. Square III (Area 1): plan of identified remains
(Failaka Archaeological Research Project, PCMA/map E. Mizak, M. Puskarski, P. Zakrzewski)

to a later occupational phase and were dug in after the structure had been abandoned. Small sondages (Test Trenches 4 and 5) intersecting the north and south walls of House 1 revealed no structural remnants below the wall foundation level. However, they did uncover remnants of hearths and pits, which indicate that, at least in this part of the elevation, there used to be some settlement activity predating the structures.

House 2 was situated about 6 m to the southeast of House 1. Its walls were preserved in the negative, as traces of lime mortar. The north and west walls were best-visible, and both measured about 4 m in preserved length. The south wall was visible as a narrow strip of lime mortar. It is possible that both houses had the same or very similar dimensions. These small structures, composed of one or two rooms, are known as fishing huts, and were also recorded along the coast of the island by the survey in 2012 (Pawlicki 2012: 26–52; 2015).

Bedrock lying below a 10-cm-thick layer of compact clay was revealed in all three sondages. It drops off quite steeply toward the north. The sequence of layers revealed in Test Trench 3 shows that House 1 was built on the very edge of the bedrock rise, explaining the fragmentary preservation of the north wall, which has probably slid down the steep slope.

The central part of the elevation, both in-between the houses and in Square III-D7, was covered with a thick layer of

hard clay, which looked almost like a usage level. However, the hardness of this layer was due to precipitation followed by drying in the sun. The natural character of this layer was evident in the northeastern part of the elevation, where traces of occupational activity were still preserved and a very hard white layer of clay mixed with lime stretched between Houses 1 and 2. This layer was effected most likely by the disintegration of walls made of soft lime and clay bricks which, dissolved in rainwater and drying naturally, enhanced the hardening of the ground surface in this area.

Given the fragmentariness of the remains, it is difficult to establish the chronological relation between the houses and stoves. Stoves dug into the walls of House 1 must have been in use after the structure was abandoned, stoves located inside House 2 probably also belonged to the later occupational phase. It is possible that the house walls were still standing when the stoves were in use, providing shelter against the wind. It could account for the placement of the stoves.

In sum, at least three occupational phases can be distinguished in Area 1. The earliest one, revealed on the northern slope below House 1, is represented by remnants of hearths and pits. The second phase corresponds to the use of Houses 1 and 2, possibly along with some of the stoves. The third phase followed the abandonment of the houses and seems to have been connected with intensive stove-related activities.

AREA 4 (SQUARES XII–XIII)

Area 4 is located in the northern part of the site, some 60 m to the southwest of Area 1, and features a natural elevation,

along with over a dozen stone mounds (Squares XII and XIII) [see *Fig. 1*]. In the 2013 season, one of the mounds

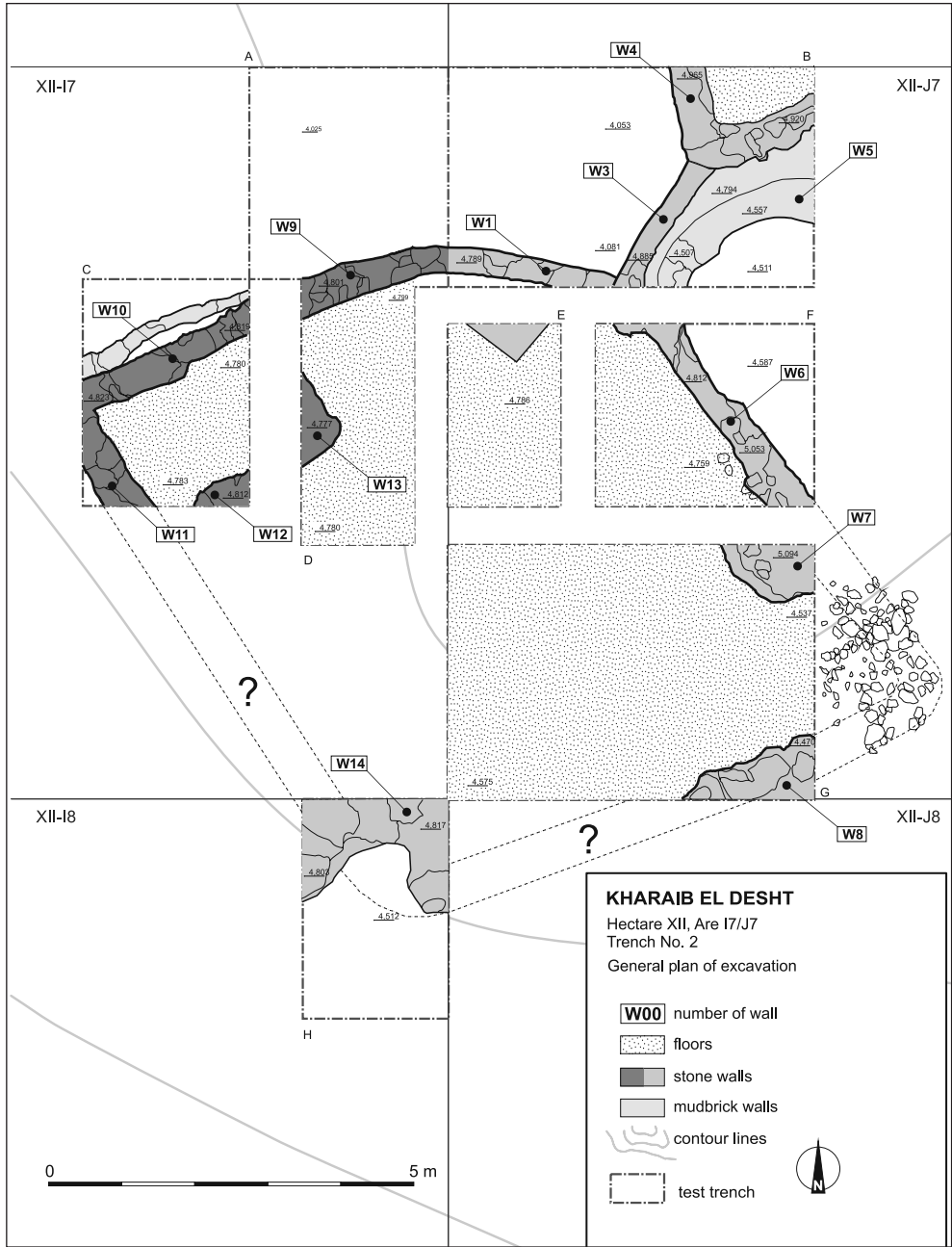


Fig. 4. Square XII (Area 4), plan of Trench 2 (sondages A to G)
(Failaka Archaeological Research Project, PCMA/plan Ł. Miechowicz, M. Puzskarski)

was explored. It revealed a fragment of a wall, but not much could be said about the character of the settlement in this area on these grounds. Further investigation of Area 4 was aimed at determining the stratigraphic and chronological sequences, as well as the function of the settlement. Another mound was excavated (Mound 6 in Square XII-I7,J7), and eight small sondages (2 m by 2 m) were opened: three aligned north–south and five east–west (Squares XII-J-4,5,9 and XIII-7-H, I, A-C) [see *Fig. 1*].

Test Trench 2 in Square XII-I7,J7 revealed three functional phases. The latest one, phase 1, yielded fragmentarily preserved structures, refuse pits and a square stove with a stone outer cover. Both the fill of the stove and the refuse around it left no room for doubt as to the date of these remains between the end of the 19th and the first half of the 20th century AD.

Below this level, in the northern part of the trench, remains of at least two structures representing phase 2 were uncovered. One structure, located in the northeastern part of the trench, was visible only as a corner. The other was a much larger structure, as it covered most of the trench and had an atypical rhomboid outline [*Fig. 4*]. Although the north wall (W10) of the

structure was uncovered to 5 m of preserved length, the overall state of preservation of the walls was too poor to determine whether they indeed formed a single building or belonged to different structures. Hindering the interpretation were many later pits and modern refuse. Moreover, the use of diverse building materials for the walls, that is, stone, mudbrick, and tamped clay, resulted in a different pace and manner of disintegration, which made the task of retracing the walls even harder.

Nonetheless, it was possible to distinguish a small room, 2 m by 3 m, with a floor level of hard tamped clay. The same floor level was also traced along the north wall and in the space between W1, W6 and W8.

Remnants of the earliest phase, that is phase 3, were uncovered directly below phase 2. They were represented by a usage level with an abundance of ashes, hearths and stoves.

Of the eight sondages in Area 4 only Test Trench A yielded structural remains, namely the corner of a house. Moreover, Test Trenches A (XIII-A7), C (XIII-C7) and F (XII-H7) revealed hearths and fragmentarily preserved clay stoves. The uncovered remains can be dated to a period contemporary with phases 2 and 3 in the trench in Square XII-I7,J7.

AREA 3 (SQUARES XXXIV–XXXV)

In the 2016 season, the team tested the previously unexcavated southeastern part of Area 3, where the survey in 2012 had recorded settlement remains in the form of small stone mounds together with an abundance of pottery sherds. This area is well-visible in the 1960s aerial photographs which show the outlines of

over a dozen structures forming a fairly dense and regular residential complex. The houses were arranged in a U-shape around a courtyard (Pieńkowska 2015: *Fig. 2*, 563). A test trench in Square XXXIV-H9–10,I9–10, measuring 14 m by 2 m, was opened at the western end of the village [*Fig. 5*].

The trench revealed corners of at least three structures or rooms [Fig. 6]. Two walls (W22 and W4) were discovered along the southern trench wall. Both were made of stones joined with lime mortar and clay. Wall W22 was 2.50 m long and preserved to a height of 0.30–0.40 m, while W4 measured 6.50 m in uncovered length, and was approximately 0.70–0.80 m high.

Judging by the fact that the foundation level of W4 was some 0.35 m lower than that of W22, it must have been built at an earlier date. An eastward extension of the trench revealed yet another wall, W17, which formed the southwestern corner of a structure. The unearthed part of the interior revealed a usage level with a large shell and a 2-cm-thick patch of unbaked

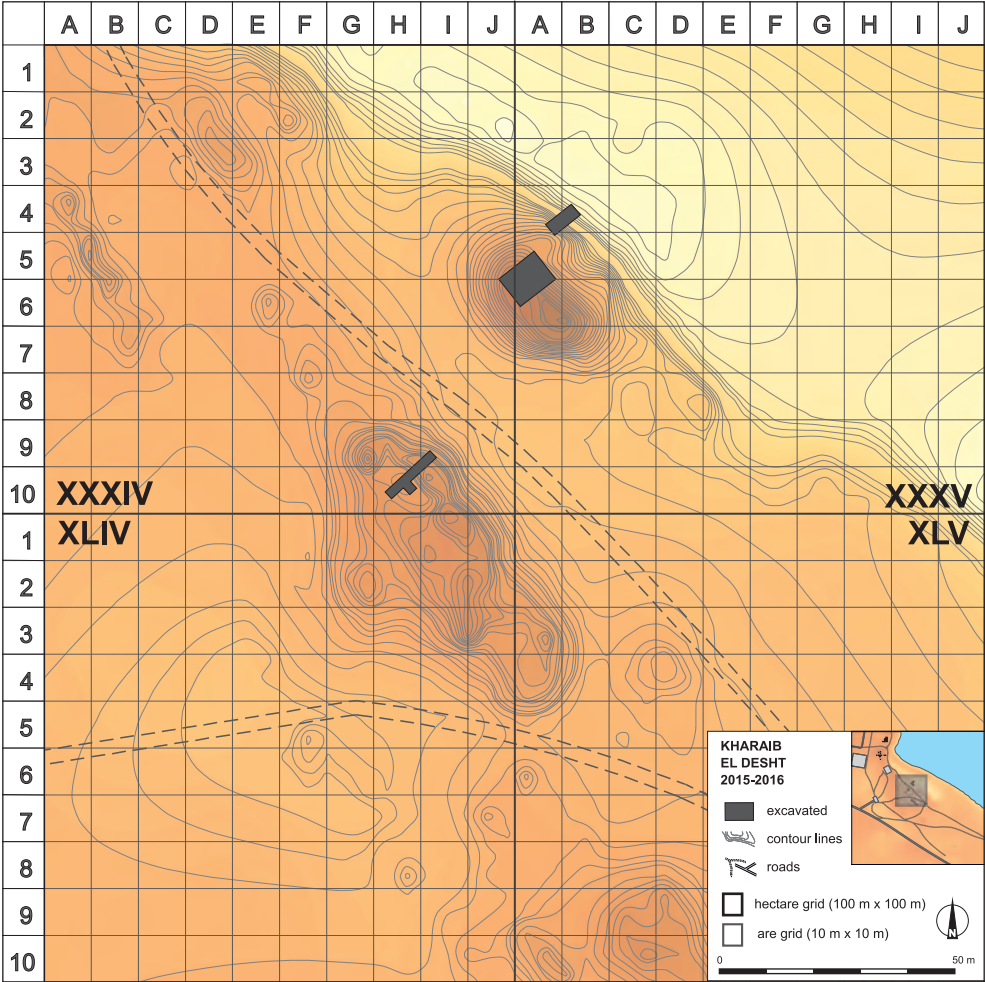


Fig. 5. Southeastern part of the site (Area 3)
(Failaka Archaeological Research Project, PCMA/plan P. Zakrzewski)

clay, round in shape, measuring 0.50 m in diameter, which was perhaps used as a stand.

In the northern part of the trench, a wall, W5, was found to be perpendicular to W22 and founded on the same level, but not bonded [Fig. 7] Another wall fragment, emerging from the trench profile, formed a corner with W5. The features unearthed in the gap between W5 and W22, namely remnants of a stove, some traces of hearths,

and a refuse pit filled with bones and pottery, suggest this was an outside space and not a room interior.

A corner of yet another structure was unearthed in the southeastern part of the trench. Its longer wall (W11) was 2.50 m long and was oriented almost the same as W5 and W22. It was preserved up to two courses of stones, that is about 0.35–0.40 m. To the east of W11 a row of stones and mud bricks was unearthed, running

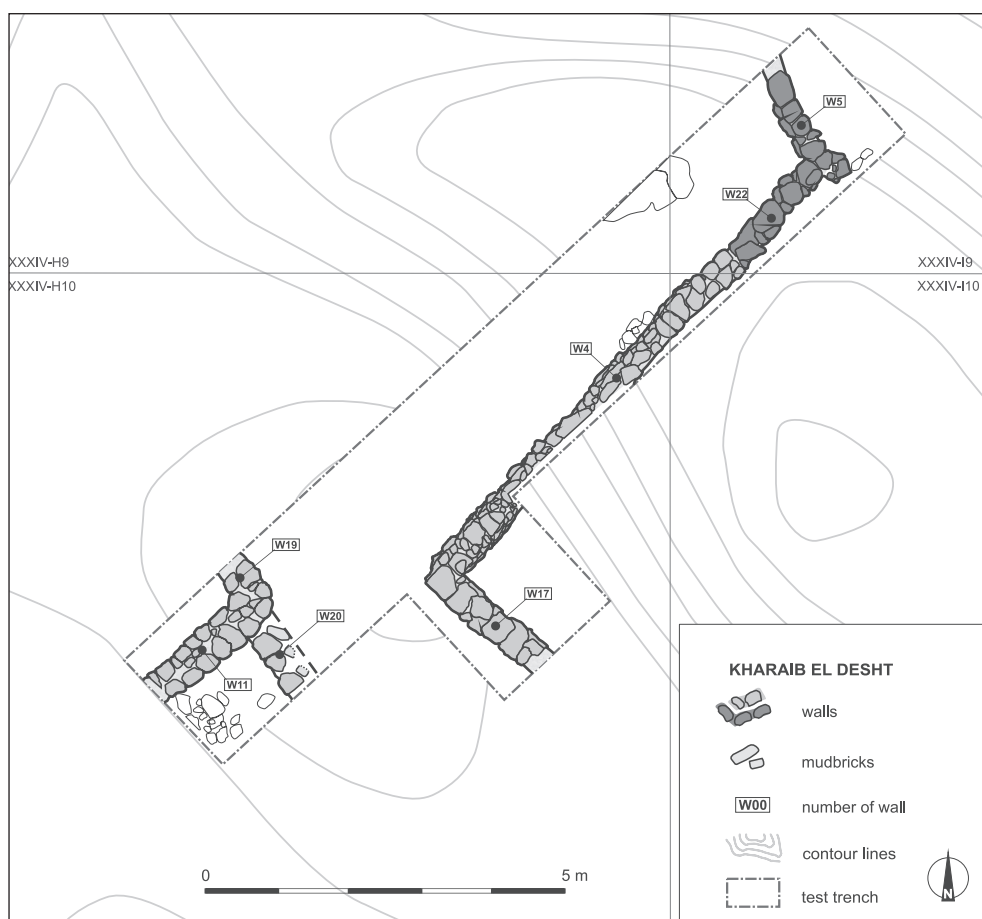


Fig. 6. Test trench in Square XXXIV (Area 3) with architectural remains
(Failaka Archaeological Research Project, PCMA/plan M. Iskra, M. Puzkarski)



Fig. 7. Building walls in Square XXXIV (Area 3), view looking west
(Failaka Archaeological Research Project, PCMA/photo A. Oleksiak)



Fig. 8. Test trench between walls W5 and W22
(Failaka Archaeological Research Project, PCMA/photo A. Oleksiak)

perpendicularly to the wall, but it cannot be interpreted without further excavation in this part of the settlement.

In the corner formed by walls W5 and W22, a test trench (Square XXXIV-I9) revealed a stove of the same type as those frequently uncovered in Areas 1 and 4. The stove was dug into culturally sterile soil, which was separated from the foundation level of W5 by at least two layers of aeolian sand of a joint thickness of 0.90 m [Fig. 8]. The time gap between the building of the houses and of the stove could not be established for lack of dated finds. However, the presence of a stove on this level proves that there was a phase preceding the occupation connected with the structural remnants still visible on the surface.

STONE STRUCTURE

A corner of a stone structure together with a massive buttress was uncovered in this part of the site in 2013. In 2016, Trench 1

was extended to 7.50 m by 9.50 m, revealing a room (Locus 1) which measured 2.50 m in width and 4 m in uncovered length, and was delimited by W23, W15 and the

buttress from the south, by W11 from the west and by W24 from the north. The east wall of the room has yet to be found [Figs 9, 11].

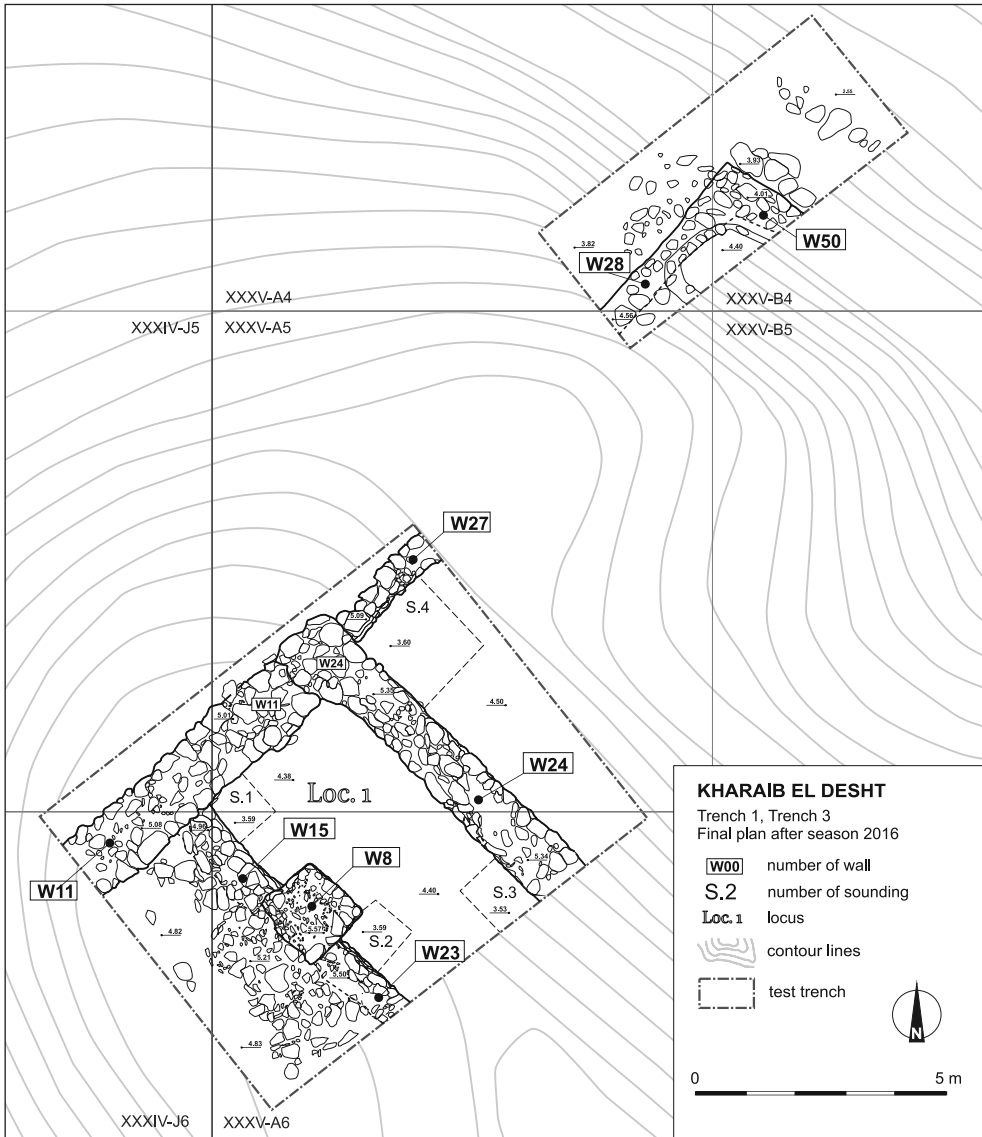
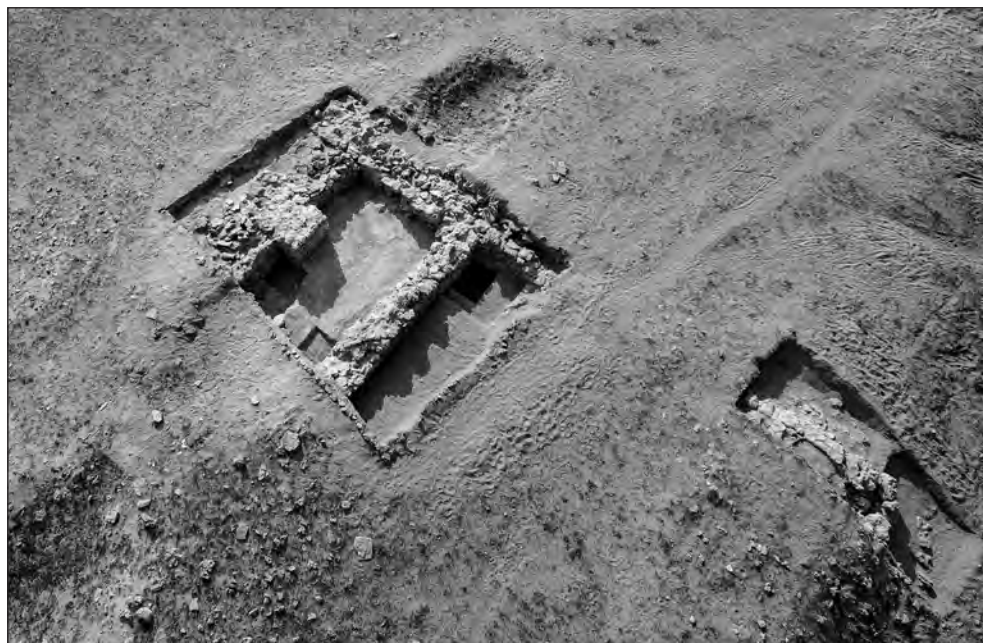


Fig. 9. Plan of the stone structure in Squares XXXIV-XXX3 (Area 3)
(Failaka Archaeological Research Project, PCMA/plan M. Truszkowski, M. PuszkarSKI)

The walls of the structure were made of some kind of conglomerate with an abundance of shells bonded in lime mortar mixed with clay. The peripheral wall (W11), which was 1.40–1.50 m wide and preserved up to 1.40 m in height, was the sturdiest. At the present stage of research, as the southwestern part of the structure has not been excavated yet, it is difficult to determine the width of the walls. However, it seems that W15 and W23, which abutted the buttress and were founded some 0.40 m higher than W11 and W24, were in fact much narrower than the remaining walls.



*Fig. 10. Buttress inside the stone structure
(Failaka Archaeological Research
Project, PCMA/photo A. Oleksiak)*



*Fig. 11. Top view of the stone structure
(Failaka Archaeological Research Project, PCMA/photo A. Oleksiak)*

The most characteristic feature of the structure was the said buttress which supported but was not bonded with W15 and W23. In addition, the material from which it was built, namely large stone slabs fitted closely together, further differentiated it from the abutting walls. The buttress was also the most solid element of the structure, preserved to 1.96 m in height, dug some 0.15 m deep into culturally sterile soil and founded 0.65 m lower than the remaining walls [Fig. 10].

A fragment of a courtyard (or another room), closed from the west by W27,



Fig. 12. *Vessel found on the floor level in Locus 1 of the stone structure (Failaka Archaeological Research Project, PCMA/ photo A. Oleksiak)*

was unearthed to the north of Locus 1. Its probable western and northern limits (W28 and W50, respectively) were uncovered in Test Trench 3 which was opened in 2016 on the northwestern part of the elevation. It also seems that W28 was a continuation of W27. The courtyard's dimensions were tentatively estimated at 12 m by 20 m. In the space between walls W28 and W50, an interesting feature was found, namely bricks and stones forming a semicircle measuring 2 m in the widest part. They limited a space filled with hard tamped clay. It seems plausible that these are remnants of a tower, perhaps a fortified one, located at the corner of the structure.

Three sondages were opened in Locus 1, each measuring 1 m by 1 m. The first one was placed in the corner formed by W11 and W15, the second one in the corner between the buttress and W23, and the third one adjoined W24 and the southeastern border of the trench. In all three sondages, a usage/floor level was revealed, made of hard yellowish clay mixed with sand. The clay also covered the lower parts of the walls. In Test Trench 2, this level yielded a complete handmade (brittle) open bowl [Fig. 12]. The wall foundations were found directly beneath the usage level in all three sondages.

Interestingly, below the wall foundations in Test Trenches 1 and 2, a layer of dark grey ashes was uncovered, including the remains of small round stoves with diameters of 0.20–0.30 m and walls about 1–2 cm thick. The stoves were of the same type as those uncovered in Area 1. Underlying them in Test Trench 1 was another layer lying directly on culturally sterile soil. The layer yielded a few undiagnostic, late Islamic sherds.

Test Trench 4 (2 m by 2 m) was opened in the courtyard next to Locus 1, in the corner formed by W24 and W27. As was the case in Test Trenches 1

and 2, a layer with ashes and two clay stoves, set directly on culturally sterile soil, was unearthed below a sand layer.

CONCLUSIONS

Results of the excavation in the northwestern part of the settlement, namely in Areas 1 and 4 (Squares III, XII, XIII) indicate that there were at least three occupational phases at the site. Pottery analysis has demonstrated it to be probably the youngest part of a village established between the 18th and early 20th century. Remnants of the residential structure uncovered in Area 3 (Square XXXIV) can surely be dated to an earlier period, that is between the 18th and 19th centuries AD.

Part of the stone structure uncovered in 2016 (Square XXXV–Area 3) clearly shows that it was not a typical residential structure. At the present stage of research it is difficult to establish whether it was a type of fort or a watchtower. The interpretation of its function is further hindered by the scarceness of finds. Nonetheless, there are reasons to suppose that this structure

predated the remaining part of the settlement. It is possible that it was built in the 17th or 18th century, or perhaps even in the early Islamic period (Pieńkowska and Mierzejewska in press). However, it must be emphasized that the above dating is based on but a few sherds and therefore is of a very preliminary and tentative character.

Another important discovery was made in Area 3 where yet another layer was unearthed below the foundations of house walls and an accumulation of aeolian sand. A clay stove was dug into this layer. A layer with stoves, situated on the same level, was also uncovered below the floor of the stone structure. Apparently, this is the oldest occupational phase discovered so far at the site, undoubtedly related to the use of stoves, and it preceded, but was not necessarily connected with the period of occupation of the Desht village.

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Archaeological investigation of Early Bronze Age burial site QA 1 in Wadi al-Fajj in northern Oman: results of the 2016 season

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Abstract: The first excavation season of a joint project of the PCMA and Department of Archaeology and Excavations, Ministry of Heritage and Culture, Oman, was carried out in the microregion of Qumayrah in the fall of 2016. A single tomb was investigated at an Umm an-Nar period burial site in the area of the village of Al-Ayn. A complete ground-plan was traced, identifying the tomb as an example of a well-known type with interior divided into four burial chambers by crosswalls. The excavated quadrant yielded commingled skeletal remains and mortuary gifts: numerous beads, a number of pottery sherds and a single complete vessel, a few metal objects and a score of stone vessel fragments.

Keywords: Oman, Early Bronze Age, Umm an-Nar culture, burial site, circular tombs, Qumayrah–Ayn, QA 1

SITE QUMAYRAH–AYN 1 (QA 1)

QA 1¹ is a small burial ground of ancient circular tombs near the village of Al-Ayn in the microregion of Qumayrah (Al Dhahirah Governorate, Wilayat Dhank). The site is known to the Oman Department of Antiquities from 1998 at least, when it was first surveyed and reported by Paolo M. Costa (2006). In 2015, team

from the Polish Centre of Mediterranean Archaeology University of Warsaw carried out a brief reconnaissance in the area, mapping individual stone structures on the site and identifying them provisionally based on overall appearance as sepulchral monuments of the Early Bronze Age Umm an-Nar culture (2700/2600–2000 BC).

¹ The acronym “QA” for designating the sites is considered more distinctive, taking into account that the full name of the village is Al-‘Ayn Bani Sa‘dah, distinguishing it among all the toponyms containing the Arabic word "عين" which is used in the meaning of a “spring (water)”.

The burial site sits on a flat narrow terrace that extends along the southern foot of the mountain ridge Jabal Sanqah, not far off the Yanqul–Al Buraymi Road, at the crossroads, where a road to Qumayrah begins skirting the south side of site QA 1 [Figs 1, 2]. On the east the terrace overlooks Wadi al-Fajj which runs by the village of Al-Ayn and on the south there is a wide depression between the mountain ranges. A cultivated area stretches from the base of the terrace to the wadi edge. An Islamic graveyard enclosed within a concrete wall occupies the entire western part of the terrace. A cluster of ancient tombs (coded QA 1-1 through QA 1-10) is situated immediately to the east of the modern graveyard. Structure QA 1-9 is the only exception, standing solitary, about 65 m to the northwest from the rest of the monuments, on the other side of the road where a prehistoric site QA 2 was identified (see Białowarczuk 2017, in

this volume). Another isolated tomb of this type (site QA 9) is located approximately 450 m to the northeast of the cemetery, near the wadi.

Site QA 1 covers an area of approximately 0.40 ha overall (about 1 ha when measured together with QA 1-9 and the eastern part of the terrace). The site contains 10 circular structures, ranging in diameter from about 6 m to 11 m. The exterior base walls are constructed of well dressed stone blocks, well assembled, typical of the so-called Umm an-Nar tombs. Presently most of these structures are in a similar state of preservation. Save for the fragmentarily preserved QA 1-3, QA 1-7 and QA 1-10 [Fig. 3:b,f], the structures resemble round flattened mounds, thickly capped with heaps of stone blocks, rising not higher than 1 m above ground level [Figs 2 top; 3:a,c-e], more often preserving only a course or two of stones and sometimes only the outline

Team

Dates of work: 20 November–20 December 2016

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of the stone plinth (the lowermost and the outermost part of the structure). Straight line segments seen sporadically among the jumbled stones inside the features indicate the presence of internal divisions. These were particularly clear at the start in the case of QA 1-10, which is the only structure to be located on the premises of the Islamic graveyard and which has suffered extensive dismantling in the past, most probably to provide building material for the construction of modern graves in the neighborhood. Cross-walls divided up the interior of the tomb, the ground plan resembling an encircled cross. The same cross-walls turned out to be present in QA 1-1 and QA 1-2.

The main cluster of tombs extends SW-NE for nearly 100 m. Five structures, QA 1-10, QA 1-1, QA 1-5, QA 1-7 and QA 1-8, are aligned in a row; the remaining four tombs in the middle of the cluster break out from this configuration; they are set two on either side of the line of symmetry [Fig. 2 bottom]. The tombs are spaced from 2–3 m to 12–14 m apart. Other features on the site include three vague stone alignments in the vicinity of QA 1-1 and QA 1-3, and a 14-m-long low stump of a freestanding stone wall, aligned N–S, in the eastern part of the terrace. Several irregular stone clusters are scattered next to it.

Keeping in mind the collective nature of the Umm an-Nar tombs, it is interesting

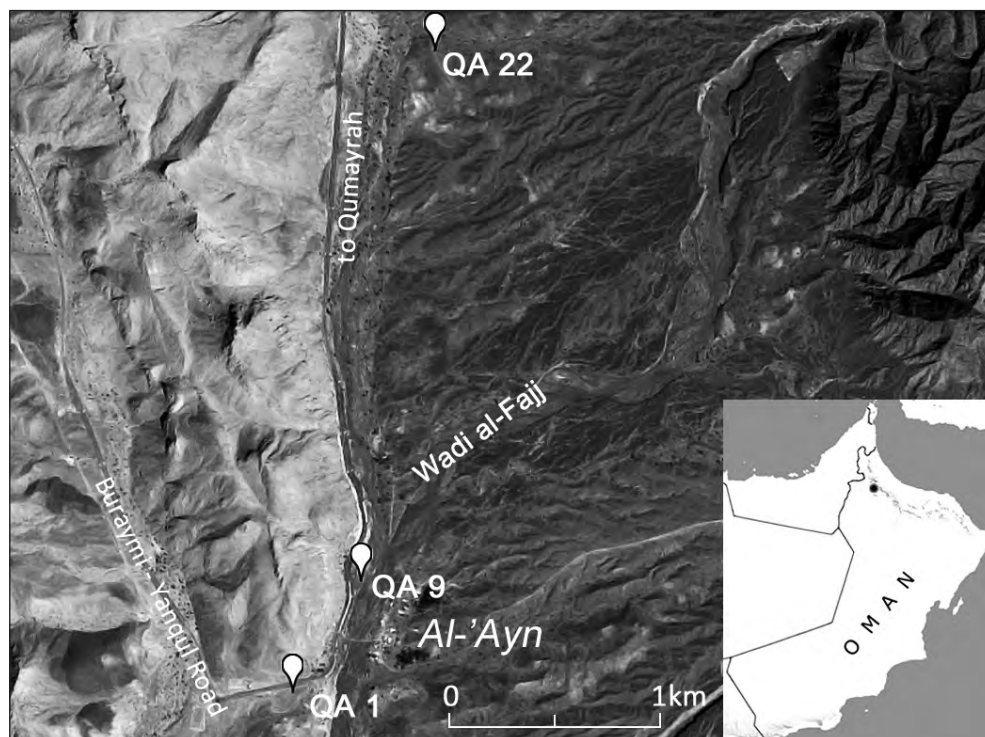
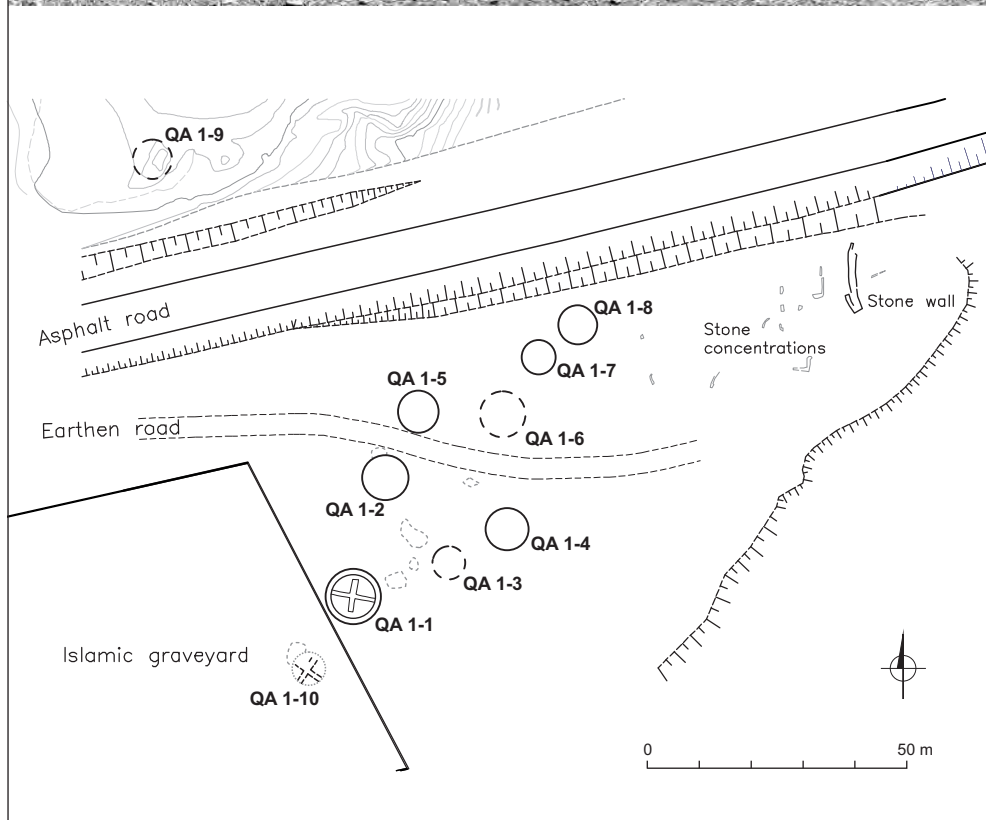


Fig. 1. Map showing the location of burial sites in the vicinity of Wadi al-Fajj (based on Google Earth) (PCMA Qumayrah Project/E. Rutkowski)



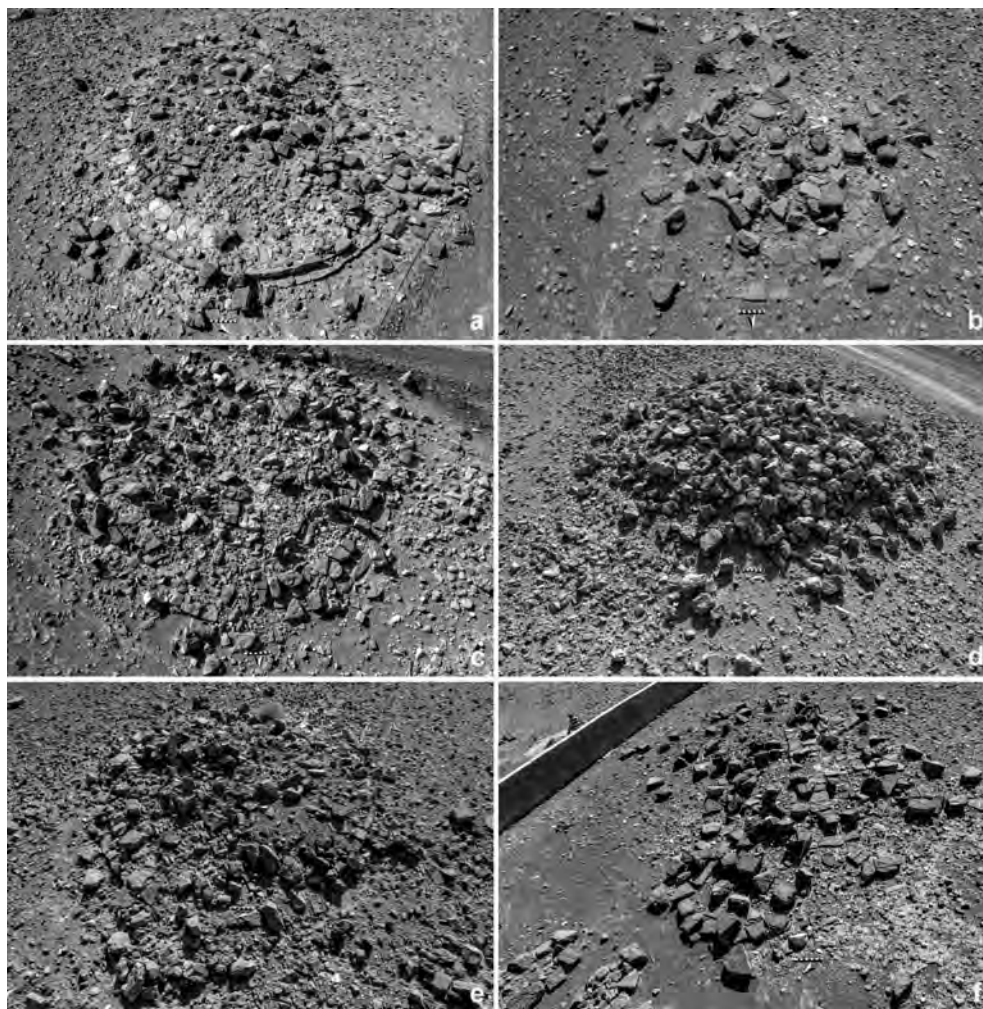


Fig. 3. Tombs of QA 1 site (selection) as seen from the above: a) QA 1-2, b) QA 1-3, c) QA 1-5, d) QA 1-6, e) QA 1-8, f) QA 1-10; in the foreground on the left Islamic graves (PCMA Qumayrah Project/photos A. Oleksiak)

◀ *Fig. 2. Site QA 1: top, panoramic view from the north; QA 1-1 at the utmost right; bottom, plan (PCMA Qumayrah Project/photo A. Oleksiak; mapping and processing R. Łopaciuk, M. Antos, Ł. Rutkowski)*

to note a whole cluster of burial structures gathered in a relatively small area. It implies the presence of a 3rd millennium settlement in the vicinity of the graveyard. Remnants of three large stone towers (each about 20 m in diameter) may be associated with this settlement. They are situated close to the wadi bed and below the terrace with the cemetery. The nearest one (QA 4) is only 100 m to the east of the cemetery.

Consequently, one can argue that the settlement linked to this cemetery could have had more importance than an ordinary village of the kind presently found on site.

It is also worth noting that cemetery QA 1 is exactly in the middle between two major centers of Umm an-Nar culture — Bat to the southeast and Hili to the northwest, which could mean that it was a midpoint station along the communication route along the Al-Hadjar mountain region or even an intermediate level center (midway between Hili and Bat). Save for the abovementioned towers, there is a potential settlement site (QA 3) on the other side of the wadi. Isolated pottery finds on the surface indicate an earlier occupation under the superimposed remains of later habitation.

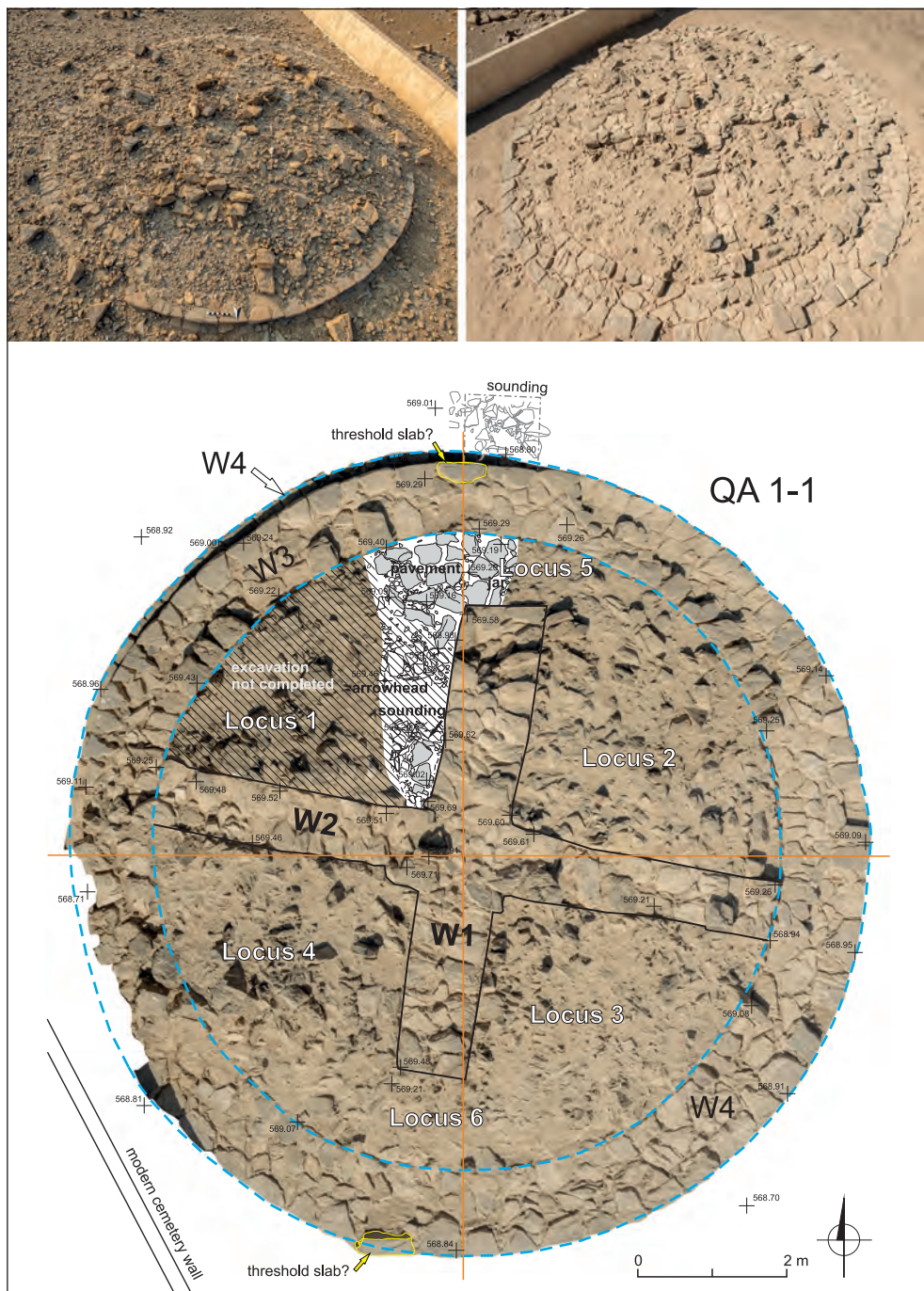
TOMB QA 1-1

QA 1-1 is located in the western part of the site, next to the wall of the Islamic cemetery. The structure is built on a circular plan delimited by a massive outer wall, now ruined but still distinct. The main wall (W3) stands on a plinth (W4), which projects beyond W3 wherever the two are preserved together. Thus, W4 forms the outermost edge of the tomb on ground level, being about 10.80 m in diameter on average (10.78 m measured on the E–W axis and 10.83 m on the N–S axis), making it one of the largest structures on site. Its preserved height is about 0.90 m above the modern ground level (as measured in the center of the structure). After cleaning, the structure turned out to be divided into four chambers (Loci 1–4) by two inner partition walls (W1, W2) which are crossed in the middle of the tomb [Fig. 4]. The partition walls are not

identical in their course. W2 abuts W4, while W1, which is shorter in length than W2, does not adjoin the outer wall (W3/W4) leaving an empty area at either end. This is easily interpreted as an internal communication passage between chambers, that is, the northern passage between loci 1 and 2 (Locus 5) and the southern passage between loci 3 and 4 (Locus 6). In consequence, W2 evidently divided the tomb into two non-communicating halves, which implies that it was provided with separate entrances for each half. The location of these are suspected, but not confirmed: just in front of the ends of W1, where abnormally oblong stone blocks were inset, within the stonework of W3 (on the north) and W4 (on the south).

As far as the ground plan is concerned, QA 1-1 represents a type which is known from the Umm an-Nar island, but it is

Fig. 4. Tomb QA 1-1: top, bird's eye view from the north before cleaning (left) and from the east after cleaning (right); bottom, schematic plan based on photogrammetric image (PCMA Qumayrah Project/photo A. Oleksiak; orthophoto A. Oleksiak, M. Antos; processing Ł. Rutkowski)



nearly twice as big, resembling in size Tomb 87 at Bat. This tomb is similarly compartmented, the difference being that the cross-walls adjoin the exterior wall in one place (see Frifelt 1975: 76, Figs 24–25; Cleuziou and Tosi 2007: 109, Fig. 96).

EXCAVATION PROCEDURE

The surface of the structure was cleared first of the 50 or so stone blocks lying in disarray on the surface and then of the layer of soil and debris, exposing in effect the undisturbed tops of walls [Fig. 4 top]. This allowed the ground plan of the structure to be traced and revealed the bonding of stones along the length of the walls; photogrammetry was used to document this state as an orthophoto image [see Fig. 4 bottom].

Locus 1 (henceforth L1) in the north-western quadrant of the tomb was selected for excavation. A significant deposit of stone rubble was recorded inside L1. Part of it was removed, uncovering a stone pavement on the presumed chamber bottom, extending over a limited area in the north-eastern part of the chamber and in the western half of passage L5. Exploration in the rest of L1 stopped in the lower part of the chamber fill. Probes were dug in L1 (in the corner of W1/W2) to assess the presence of paving in the central part of the structure and in W4 outside the tomb to test the depth of the masonry. All the spoil tips were sieved.

DETAILS OF CONSTRUCTION

W1 is one of the two interior walls inside the tomb. It is aligned NNW–SSE (inclined 11 degrees from the north clockwise) and crossed in the center of the tomb with W2. It measures 6.50 m in length, with the width ranging from about

1.10 m (northern wing) to about 1.00 m (southern wing). W1 does not abut the exterior wall of the tomb. At both ends it terminates in a straight face, leaving an empty space in front, interpreted as passageways between adjacent chambers, that is, L5 (about 0.90 m in width) and L6 (1.15 m in width). The wall was built of rough-hewn stone slabs, stacked at least four courses high, reaching a maximum preserved height of about 0.70 m (foundation level not confirmed yet). It consists of two rows of large blocks with small stones placed in the core; in places, a third row can be distinguished in the northern wing. Stone blocks are for the most part of an irregular quadrilateral shape and random size, sometimes almost rectangular or square, exemplary dimensions being 56 x 36 cm, 50 x 48 cm, 46 x 37 cm, 40 x 39 cm; their thickness (height) varies between 12 cm and 20 cm (the thickest block is 27 cm).

The second interior wall, W2, is aligned EEN–WWS. It is 8.40 m long and clearly thinner than W1 (0.75–0.80 m wide). Unlike W1, by which it is crossed in the middle of its length, W2 abuts at its base the plinth (W4) on both ends; it may have been bonded with the outer wall of the tomb (at least a single stone of W2 overlaps the circuit of W3 as can be seen at the western junction between them), which may imply that the division of the tomb into four chambers and its partitioning into two separately accessible halves was intended from the start. W2 is preserved at least three courses high (foundation level not confirmed yet). It consists of two rows of large undressed blocks, irregular quadrilateral or trapezoid in shape (dimensions: 57 x 37 cm, 46 x 33 cm, 43 x 36 cm and 12–16 cm in

thickness). For most of its length on the western, better preserved wing, as can be observed in the topmost course, the triangular inner (back) faces of stone blocks are interlocked in zipper-like manner and the joints between them are filled with small stones. As can be seen from the side, the lower courses show a few exceptionally large blocks: 70 cm and 60 cm in length and 20 cm and 28 cm in thickness.

The exterior wall of the tomb, W3, nowadays very fragmentary, was built in the shape of a circle, measuring 10.50 m in reconstructed diameter at the base. It is 0.93–1.00 m wide. W3 was erected directly upon the plinth (W4). A single course of blocks was preserved on the northwestern side of the tomb and only individual blocks from the second course of the internal face of the wall (five blocks in the northwestern quadrant and four blocks in the southwestern quadrant). For the most part, W3 consists of three rows of stone blocks (sporadically two or four rows). W3 is characterized by the presence of well-cut and closely-fitted stone blocks (“ashlars”) in its external face. Only 21 of them have remained in place. All of them are either of trapezoid or triangular shape, having the outward-facing side smoothed, slightly convex and finely finished (dimensions: triangular blocks 32 x 26 cm, 26 x 20 cm, trapezoid blocks 57 x 40 cm, 39 x 26 cm, and both kinds about 20 cm in thickness, which equals the height of the whole course). They are fitted so as to match the roundness of the tomb. One is clearly longer than the others (66 cm in length) and is therefore presumed to be a “threshold slab”, indicating the possible location of the northern entrance to the tomb. Blocks belonging to the internal rows

of W3 are undressed and of an irregular quadrilateral shape. As observed from inside L1, the preserved blocks of the second course appear to be slightly stepped in compared to the bottommost course; this suggests an inward incline of the wall toward the center, that is, the facade tapered towards the top. Little can be said of the exterior wall because it has not been preserved and few facing stones were actually found in the rubble of L1 (perhaps because it was inside the chamber). It is reasonable to assume, however, that these well-worked stone blocks constituted ready building material and were the first to be looted once the tomb went out of use. Interestingly, the face stones used for the higher parts of the wall were visibly smaller than those of the bottommost course of W3. They vary in shape from an oblong rectangle to more of a square (dimensions: 30 x 15 cm, 23 x 14 cm, 29 x 19 cm) [*Fig. 5* top and bottom right].

The issue of color is even more intriguing. These small facing blocks, recovered from the debris, are white or off-white, resembling “sugar lumps”, which is a figurative term often used in descriptions of these tombs. In turn, the facing blocks in the bottommost course of W3 are all grey. However, this might not be their natural color. Judging from a single ashlar that was found fallen outside the structure, partly buried in the soil and partly exposed to the air, the exposed part of which was visibly darker (light-grey) in shade compared to the unexposed part (which was off-white), one may wonder whether these blocks had not been once a lighter color (that is, white) and had turned grey over time due to the atmospheric conditions or exposure to sunlight [*Fig. 5* bottom left]. A petrographic analysis determined that

the stone used for the facade is mudstone [= micritic limestone].² Microscopic examination of samples of the lighter and darker kinds of rock revealed no differences. The problem is more complex and challenging, especially when it is taken into account that the exposed facade of an Umm an-Nar tomb located close to the village of Bilt (10 km north of the QA 1 site), surveyed by the team in 2015, is built largely of white blocks, apparently unchanged over time.

Similarly, several facing blocks, mostly white or off-white, were seen scattered on the surface of a hillock at site QA 20 situated 300 m southeast of QA 1; these were likely facing stones of an Umm an-Nar period tomb, possibly taken from the cemetery at QA 1. It cannot be ruled out that the tomb builders appreciated the differences between different natural stone deposits and quarries and exploited them in their work. Besides, different parts of the exterior

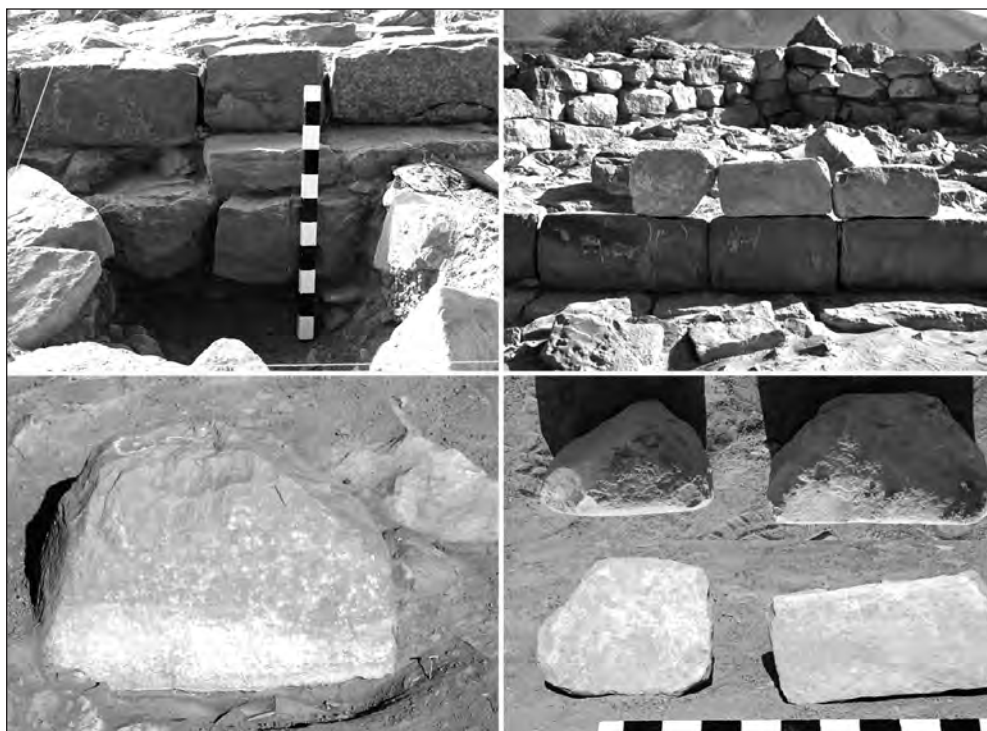


Fig. 5. Tomb QA 1-1, details of construction: top left, relation between W3 and W4 as seen in the probe; top right, white facing stones recovered from the debris and placed on the bottommost course of W3 for the sake of comparison; bottom left, fallen ashlar showing the difference in color between sun-exposed and unexposed surfaces; bottom right, sizes and shapes of white facing stones (PCMA Qumayrah Project/photos M. Makowski, Ł. Rutkowski)

² Petrographic examination by Dr. Marek Jasionowski, Polish Geological Institute – National Research Institute (PGI-NRI), 2017.

wall may have differed in color from the start. These issues and others regarding the appearance of the tomb facades and their construction will be addressed in future research.

Wall W4 is a ring wall base (or plinth) on which W3 rested. Save for its western-most margin, which was evidently destroyed by the construction of the fencing wall of the modern cemetery, the plinth is preserved around the whole perimeter of the tomb. It measures approximately 10.80 m in outer diameter and 1.15–1.18 m in width. W4 projects outside W3 by about 15–16 cm. A sounding dug outside the tomb revealed it to consist of two courses of stones: the upper course 10–12 cm thick, the lower one 16 cm, giving an overall height of 28 cm [Fig. 5 top left]. The lower course is preserved all around the monument, while the upper course is missing in places on the southern side. W4 consists of three rows of irregular quadrilateral blocks (dimensions: 60 x 60 cm, 60 x 48 cm, 45 x 35 cm). Similarly, as in the case of W3, but this time on the opposite site of the tomb, a single block is longer than the others (77 cm in length and 29 cm in width); it is the presumed “threshold” of the southern entrance. In turn, unlike W3, the blocks within the outer face of W4 are only roughly dressed. At present, the top of the plinth is flush with the surrounding ground surface. Excavation of the sounding outside the tomb structure revealed the presence of fallen stones accumulated outside the wall, which implies that the original walking level associated with the tomb must have been lower than nowadays. However, it is not yet certain whether the full height of the

base was meant to be seen or whether it was partly dug into the ground from the start.

EXPLORATION OF THE CHAMBER

The interior of chamber L1 was densely filled with rubble and fallen blocks. Voids



Fig. 6. Top view of the pavement uncovered in the northeastern expanse of L1 and in the passage L5 (PCMA Qumayrah Project/photo M. Makowski)



Fig. 7. Chamber L1 at the end of the season: one of the bone scatters seen just above the scale bar; paving slabs visible in the probe (PCMA Qumayrah Project/photo M. Makowski)

between stones were filled with loose soil and intermingled with numerous bone fragments. A layer of sand up to 10 cm thick was mixed with gravel at the bottom of the chamber. This deposit, recognized only in a restricted area of the excavation so far, was rich in finds that can be dated to the Umm an-Nar period, including fine black-on-red ware sherds, beads, and fragments of stone vessels. This deposit must have accumulated when the tomb stood open for some time.

The chamber had a stone pavement consisting of roughly flat, middle-sized stones (30–40 cm x 25–30 cm), laid in a loose and haphazard pattern, that is, with wide joints between them, sporadically disturbed by upright stones stuck in the ground. The flooring was recognized in two spots inside the chamber, covering the northeastern expanse of L1 along with the western half of passage L5 (within an area approximately 1.60 m by 1.80 m) and in the probe at the corner of W1/W2, essentially on two different levels [*Figs 6, 7*]. Excavation of the debris between the two places will show whether the pavement, the bottom of which is level with the top of W4 in the outermost part, descends gradually towards the center of the tomb. An alternative explanation is that these two pavements are not the same feature and belong to different architectural phases. Most of the bigger finds, including a complete miniature jar and fragments of stone vessels, have turned up on the pavement or just above it, especially in passage L5 or close to it. A few metal finds, including a bronze arrowhead, were found in the upper part of the fill. In turn, beads were found dispersed throughout the fill (including the tomb surface) and they were practically all recovered from sieving.

BONES

Skeletal remains were in abundance despite excavating only a small part of the chamber. The bones were found dispersed throughout the stone fill of the chamber. Small loose fragments were collected from the surface, then bones or bone fragments, often grouped in scatters, came from between the stones at different levels of the fill. They were more abundant in the lower part of it, but not necessarily at the very bottom of the chamber as could be expected. Most of the retrieved remains consisted of disarticulated and fragmented human bones. There were also some animal bones mixed in.

Pending specialist examination, it is quite apparent that more than one individual was buried in the chamber under discussion. No individual skeletons or even parts of them could formally be distinguished (no human skulls were recorded) and the poor preservation of the skeletal material precluded lifting them intact, even if longer fragments or assumed anatomical relations between bones were observed. The bones were generally fragile and additionally crushed by overlying stones. Whenever they adhered to the stone surface, they were destroyed once the stones were moved.

In general, the current impression is of a largely random and chaotic disposition of skeletal remains inside the explored chamber. It is reasonable to suppose that the breaking and intermingling occurred already in antiquity. One is entitled to wonder why some bone scatters were found well above the chamber bottom and what caused the fragmentation of the skeletons. Several scenarios can be taken into account to explain this situation, such as crushing of the skeletons beneath the fallen walls,

rearrangements of the original deposition pattern during later interments, reuse of an older sepulchral structure in later times (i.e., interring bodies in the fill of an already

ruined tomb), possible disturbance due to post-depositional penetration. Future exploration should elucidate at least some of these issues.

PRELIMINARY ASSESSMENT OF THE FINDS

POTTERY

The pottery assemblage from the current excavation includes 75 diagnostic sherds and one complete miniature vessel.

Two dozen common and coarse ware sherds collected from the surface of the tomb and the upper part of the fill of L1 may be later inclusions (among others, plain bowl rims, bowl decorated with crisscross

incisions on the rim top, two body sherds with a grooved wavy line, a ribbed red-slipped body sherd, a slightly concave tray with a combed undulating band around the edge, an amphora-like base, a storage jar rim, a vertically perforated knob handle).

The rest of the assemblage consists of fine ware sherds most of which can be attributed to the Umm an-Nar period.

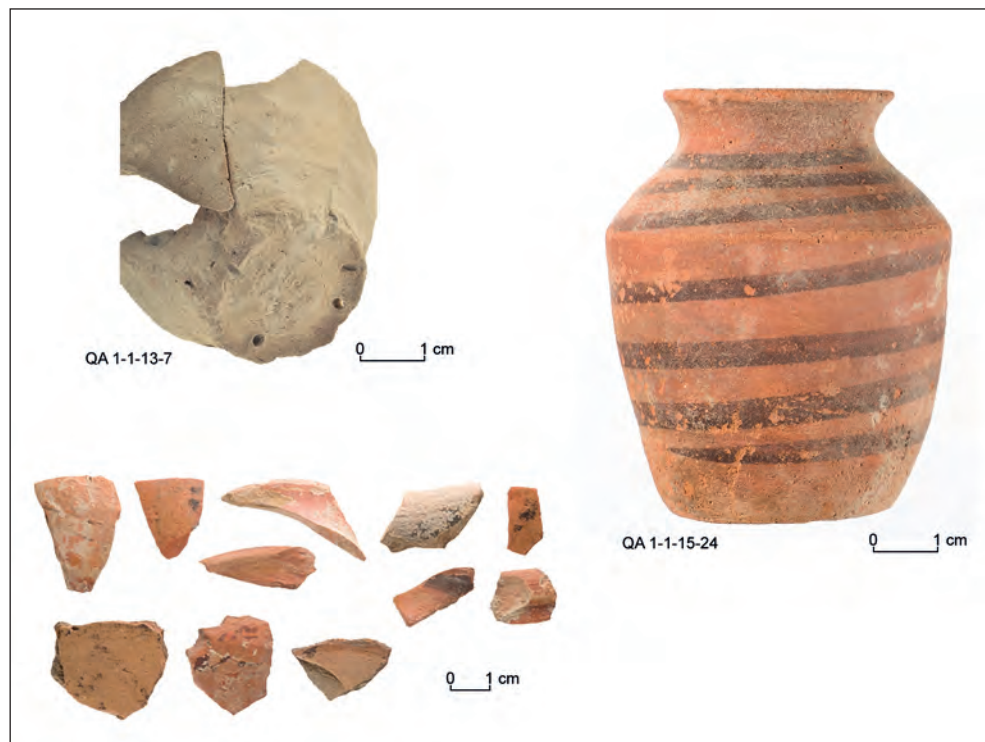


Fig. 8. Tomb QA 1-1, selection of pottery: above left, painted sherds; bottom right, miniature jar; top right, "suspension vessel" base (PCMA Qumayrah Project/photos A. Oleksiak, M. Makowski)

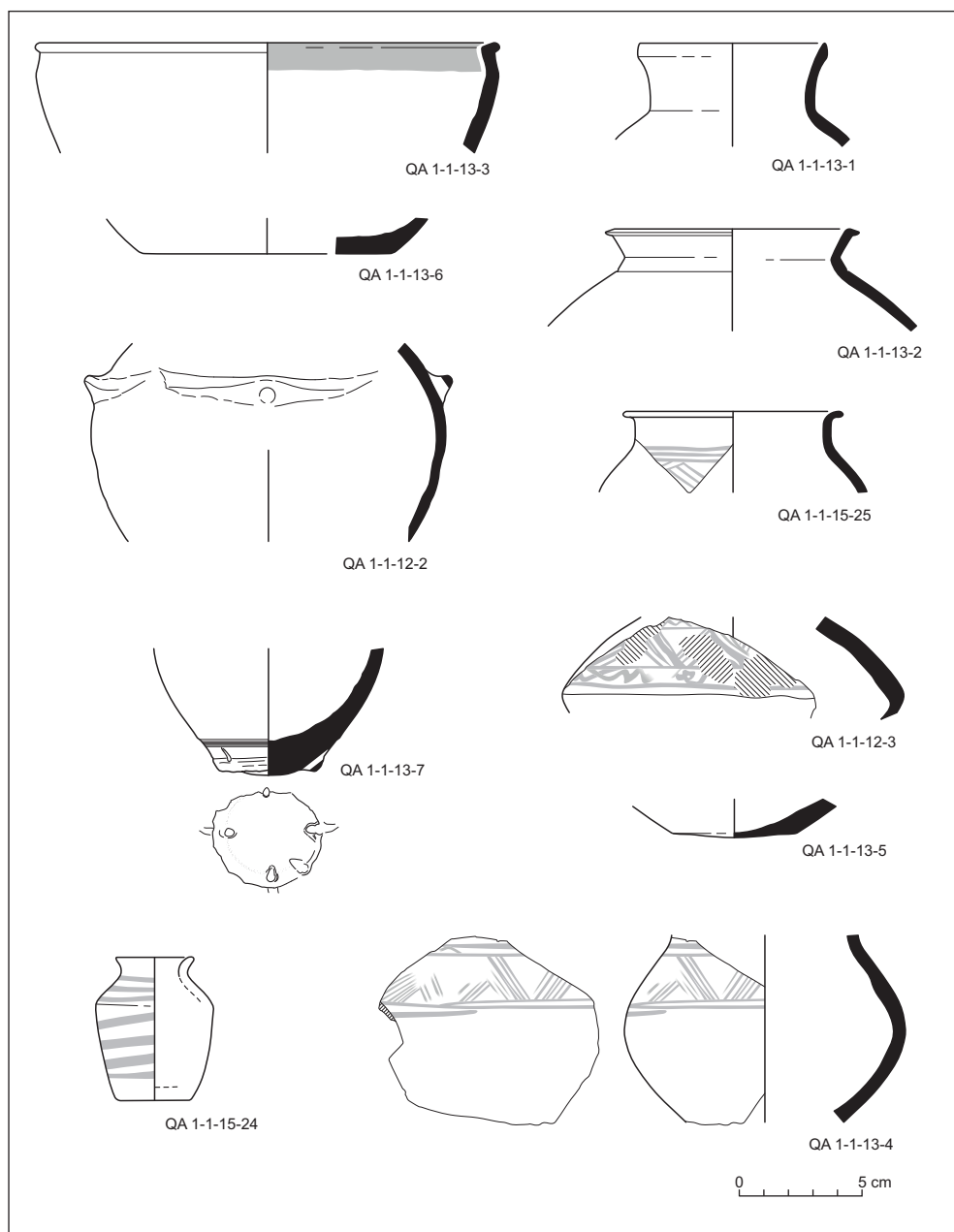


Fig. 9. Tomb QA 1-1, selection of pottery from the lower part of the fill of chamber L1, including miniature jar and "suspension vessel" base (PCMA Qumayrah Project/drawing and digitizing M. Momot)

There are over 20 fragments of painted pottery (black or dark brown on red/buff ware). In general, design motifs are not clear due to the fragmentation of most of the sherds and their abrasion [Fig. 8 left]. A few better preserved painted jar fragments show a typical Umm an-Nar design, that is,

a frieze of chevrons framed by horizontal stripes. One specimen, a strongly carinated body sherd, shows an additional wavy line between the horizontal stripes [QA 1-1-12-3, Fig. 9 middle right]. As far as vessel forms are concerned, small to medium jars (necked pots) appear to be prevalent in the



Fig. 10. Tomb QA 1-1, Incised Grey Ware vessel
(PCMA Qumayrah Project/drawing and digitizing M. Momot, photo Ł. Rutkowski)

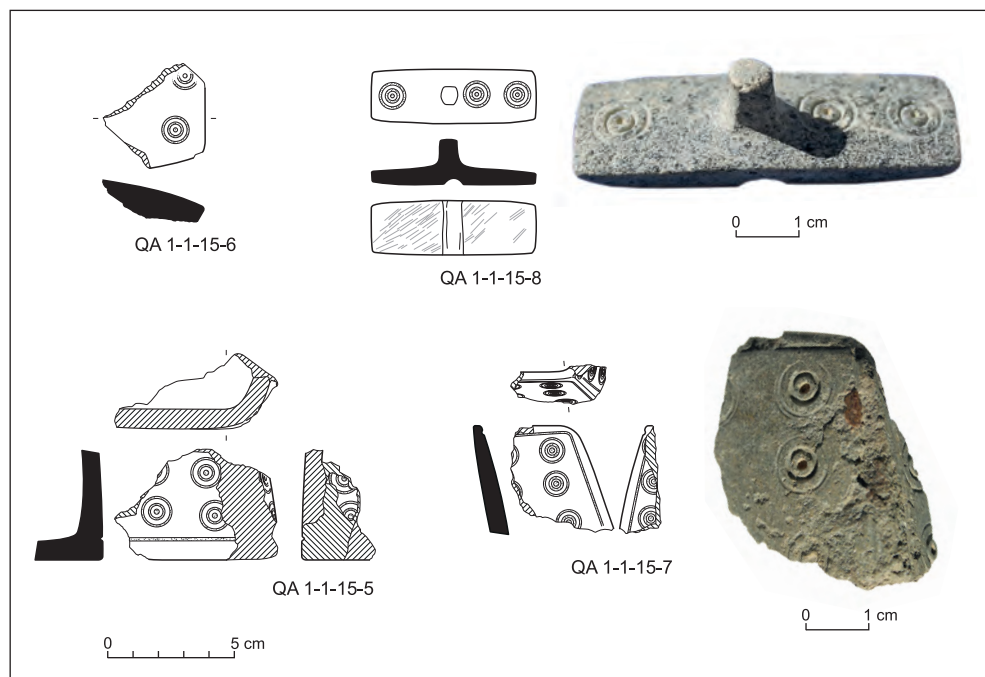


Fig. 11. Tomb QA 1-1, selection of soft stone vessel fragments, including lid and rectangular box rim
(PCMA Qumayrah Project/drawing and digitizing M. Momot; photos Ł. Rutkowski)

fine ware ceramics. Flat bases predominate with the exception of a ring base having four narrow holes at the base, which represents a so-called “suspension vessel”, well known from the Umm an-Nar pottery repertoire (e.g., Méry 1997: 176–177; Thornton and Ghazal 2016: 199). Vessels typically have a horizontal ridge along the shoulder, shaped in the form of four vertically perforated lugs. Such a shoulder fragment was also found in QA 1-1, but evidently from another vessel of this type. These two specimens from QA 1-1 are plain [QA 1-1-13-7, *Figs 8* top left; 9], while suspension vessels are usually decorated from the shoulder ridge to the base.

The miniature jar [QA 1-1-15-24, *Figs 8* right; 9] was found lying on its side on the pavement in the middle of passage L5. As far as its form is concerned, it is simply a miniature version of a “vase-like” jar with high shoulders and slender proportions, while its decoration pattern of horizontal stripes all over the body (an unfamiliar design in the known repertoire) finds parallels in a miniature vessel from Tomb A in Hili North (dated to about 2400–2200/2100 BC) (see Méry 1997: 176, *Fig. 4.6*; on the dating, see McSweeney, Méry, and Macchiarelli 2008: 10). The jar is 5.90 cm high; the rim diameter is 3.20 cm, the maximum diameter at the shoulder carination being 4.80 cm and the calculated volume 40 ml. It is of fine, orange fabric, and the well-fired, light red/orange surface is smoothed under the black paint of the ornament, which is slightly faded (technological features of the pottery assemblage have yet to be examined).

An incised body sherd of a bowl deserves special mention [*Fig. 10*]. It is an example of Incised Grey Ware imported from

Iran. A plain “metallic” ware jar rim sherd is probably another example of Iranian grey ware imports in the pottery set of QA-1.

STONE VESSELS

A total of 21 fragments of soft stone (chlorite/steatite) vessels were found in the tomb. The collection comprises rims, bases, body fragments, and lids: seven rim bowl fragments, four fragments of rectangular boxes, including one rim, one base and two lids (one fragmentary and one complete), seven small body fragments, and three base fragments (two of bowls and one thick base of an oval vessel). Eight specimens of this category are decorated with a dot in double ring motif (“double dotted circle”). This ornament occurs on all fragments belonging to rectangular boxes, covering evenly the whole exterior surface [QA 1-1-15-5, *Fig. 11*]. In turn, the decoration of a bowl is limited to below the rim, which appears to be a typical design for soapstone vessels of the Umm an-Nar period (David 1996: 37). In addition, another rim bowl fragment, plain on the sides, has a double-incised line around the top of the rim. A lid that was found is flat and rectangular in shape. It must have been fitted to a small rectangular double compartmented box, as indicated by a horizontal indentation in its bottom surface [QA 1-1-15-8, *Fig. 11*].

BEADS

Until now QA 1-1 has produced 84 beads. The set is dominated by microbeads, 70 in all (mostly made of stone of various kinds and colors). The remaining beads are represented by singular examples of ornaments. They are made of shell, stone (including semi-precious stones), and vitreous material, the material still to be identified. Five

beads in the collection represent an eye-catching range of materials [Fig. 12]: one multifaceted bead (tetradecahedron) of white translucent stone, one spheroid of orange semi-translucent stone (orange agate/quartz?), one banded agate tubular

bead, two beads of carnelian (one cylindrical disc and one circular oblate).

A broken spherical bead deserves special mention. It was made of vitreous material (glass/frit?) with traces of enamel pattern and punctuated with a blue (ultramarine) dot [Fig. 12 bottom right]. This kind of material indicates a later date than the Umm an-Nar period, thus it can be considered as evidence of a later reuse of the tomb.³ Although fragmentarily preserved, the ornament resembles that of the so-called “eye beads”, known from the Iron Age onwards, especially popular in the Islamic period and even today. This specimen was collected from the upper part of the fill of L1, where later inclusions are very likely to have occurred.

Apart from two tusk shell beads, there were four marine bivalve shells, including one with traces of some greenish substance on the inside, possibly a cosmetic pigment. A chemical analysis of a sample revealed high lead content, implying the presence of a lead-based paint.

METALS

Only three metal items were found in the tomb so far. This small set consists of two similar small fragments of a tool/weapon handle with copper/bronze rivets still in position and one complete copper/bronze arrowhead [Fig. 13]. Riveted scraps of metal are most likely of iron, which again indicates a later addition to the original 3rd millennium BC tomb. It is worth mentioning that the practice of reusing Bronze Age tombs by later inhabitants, especially those of the Iron Age, is a widespread phenomenon

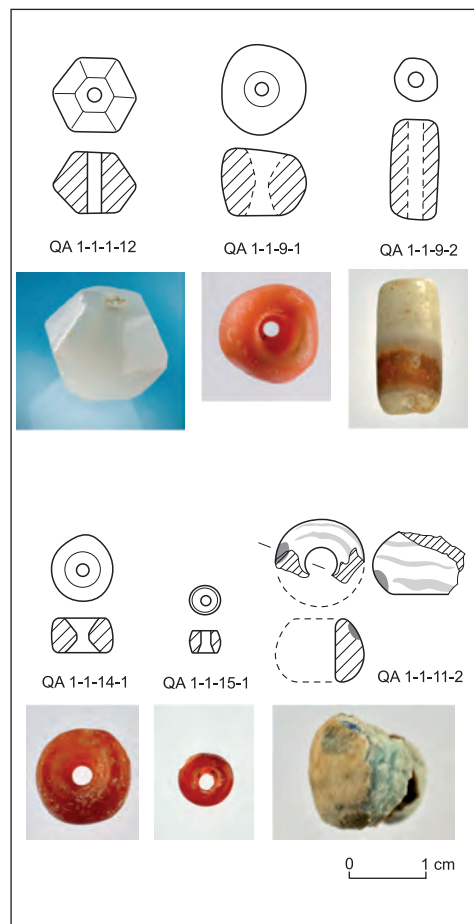


Fig. 12. Tomb QA 1-1: selection of beads (PCMA Qumayrah Project/photos A. Oleksiak, M. Makowski; drawing and digitizing M. Momot)

³ Two glass beads “with blue/green enamel details” are reported from Bat, from a mixed Umm an-Nar/Wadi Suq context related to a probable Wadi Suq mortuary structure (Williams and Gregoricka 2016: 305).

in the northern Arabian Peninsula (see Jasim 2006; Döpper 2014). As for the arrowhead, its chronological attribution is doubtful. It is a small lanceolate tanged arrowhead (3.70 cm in length and 3 g in weight), with a flat tang and lenticular cross-section of a blade (with a slight central line gradually appearing near the point). No exact parallels are known; however generic comparisons can be made with specimens from Iron Age contexts in the Arabian Peninsula (e.g., see Jasim 2006). The arrowhead was also found in the upper part of the fill, just about 10 cm below the actual surface level (in the same batch as the abovementioned enamel bead). For this reason, the arrowhead was suspected of being part of grave goods associated with a probable later burial interred inside the debris of QA 1-1.

To sum up, a provisional assessment of the finds secures a dating in the Umm an-Nar period for most of the grave goods collected from the tomb. A number of the finds, however, like the enamel-decorated bead, iron artifacts, later pottery as well as bone scatters in the upper part of the fill, suggest later reuse of the burial place.

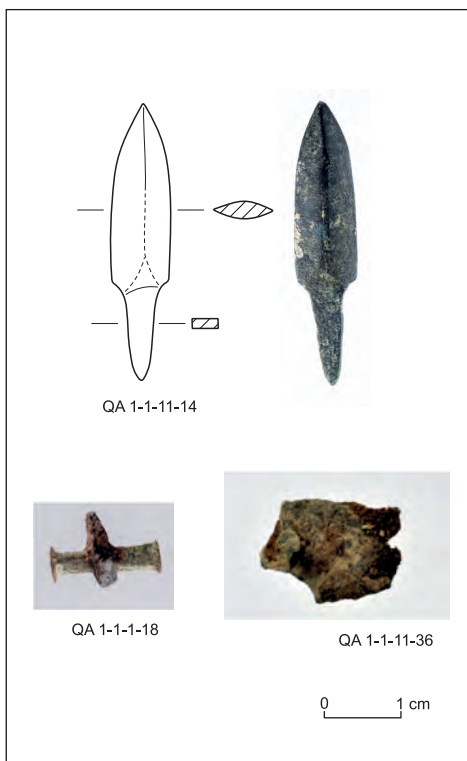


Fig. 13. Tomb QA 1-1: selection of metal finds (PCMA Qumayrah Project/photos A. Oleksiak, M. Makowski; drawing and digitizing M. Momot)

HAFIT BURIAL FIELD (SITE QA 22)

Remains of Hafit type tombs (about 3100–2700 BC) were also noted during a brief reconnaissance in the study area. The site (QA 22) is located in a hilly area approximately 2 km to the north of the village of Al-Ayn, stretching from the road leading to Qumayrah [see Figs 1, 14]. The tombs are scattered on low, narrow ridges separated by gullies, three near the road and two more on the next ridge. The

individual structures will be inventoried and described in an upcoming season. As far as the rules of location of Hafit cemeteries are known to the author, this place promises more finds of the kind. It is an important discovery for the microregion of Qumayrah, because it corroborates observations from other regions of Oman that Hafit and Umm an-Nar remains occur in the same territories.



Fig. 14. A Hafit tomb at the site QA 22
(PCMA Qumayrah Project/photo Ł. Rutkowski)

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Preliminary report on Qumayrah–Ayn 2, a new prehistoric site in northern Oman

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Abstract: This paper reports briefly on the results of a short reconnaissance at the site of Qumayrah–Ayn 2 (QA 2), a new prehistoric site located in a poorly studied part of the Qumayrah Valley in northern Oman. A survey and limited probing by the Omani–Polish Qumayrah Archaeological Project confirmed the presence of a sediment, approximately 15–20 cm thick, which yielded not just lithics, but also stone installations discovered *in situ*. One of these installations was evidently a hearth, the other a kind of platform. The lithic assemblage is characterized by a prevalence of flake technology with rare blade products. Predominant in the tools group are side-scrapers, notches and perforators produced by direct-scaled retouch. The most characteristic tools are tanged projectile points made on flakes. The main problem is contextualizing these materials. On the grounds of certain premises they may be associated with the Fasad technocomplex, but not necessarily the pre-Neolithic one as is the case of the classic types. However, a much later chronology is also quite possible.

Keywords: Arabian Peninsula, Oman, lithic technology, Qumayrah–Ayn, late Stone Age

A prehistoric site at Qumayrah–Ayn 2 (=QA 2) in northern Oman was tested in the fall of 2016 by the Omani–Polish Qumayrah Archaeological Project directed by Piotr Bieliński (Institute of Archaeology, University of Warsaw) from the Polish Centre of Mediterranean Archaeology University of Warsaw in cooperation with the Ministry of Heritage and Culture of the Sultanate of Oman.

The site was first recorded in 2015 during a short reconnaissance survey of a little known part of the southern Qumayrah Valley (locally known also as Wadi al-Fajj) in the Al-Ayn village area.

A large lithic scatter was noted on the surface. The Project then established that the scatter was not displaced from an eroded prehistoric site situated further to south and surveyed the immediate vicinity to check for the presence of other traces of settlement.

A survey in a radius of about 2.5 km from QA 2 identified 15 settling points, including ones from prehistoric times. It thus appears that this poorly studied area of the Qumayrah Valley was explored intensively during the late Stone Age. The new information coming from this area is of particular significance considering the

continuous disproportion between the state of research of the coastal areas and inland territories (Cleuziou and Tosi 2007; Magee 2014).

SITE DESCRIPTION

The site of QA 2 is the first prehistoric settlement discovered in Qumayrah Valley. No traces of Stone Age occupation had been reported by the previous two surveys of the area (Costa 2006; H      David-Cluny, personal communication). The site is located on the left bank of a wadi, on a flat terrace approximately 90 m by 110 m [Fig. 1], judged by the distribution of material remains on the surface. A hill slope limits it on the north, whereas the southern end is cut by the modern asphalt road to Al-Ayn and Qumayrah, which actually separates the site from an Umm

al-Nar cemetery (QA 1) located further to the south (see Rutkowski 2017, in this volume). The surviving part of the site is in good condition. The lithic scatter on the surface is spread over the entire terrace, but the largest clusters were noted in the central and southern parts [Fig. 2]. A similar lithic assemblage was recorded on the surface among the Umm al-Nar tombs at QA 1, suggesting a much larger extent of the site. A working assumption for the present is that the cemetery on the opposite side of the modern road overlies part of the prehistoric site.

TESTING QA 2

Two probes were dug to determine whether the lithic scatter was accidental or not. The site was thus tested for the presence of sediments and the stratigraphy was



Fig. 1. Location of prehistoric site QA 2 in the Qumayrah Valley (PCMA Qumayrah Project/L. Rutkowski)

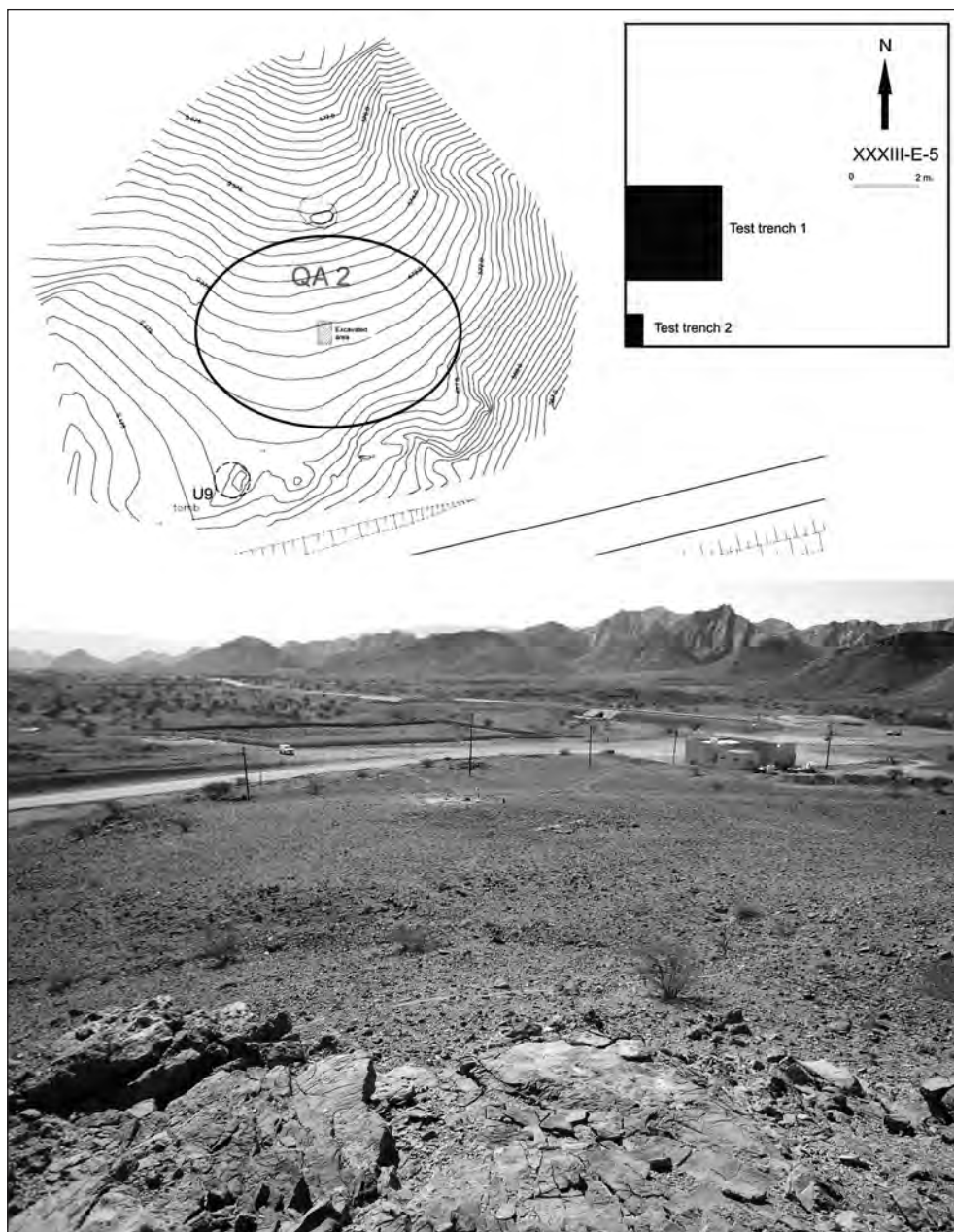
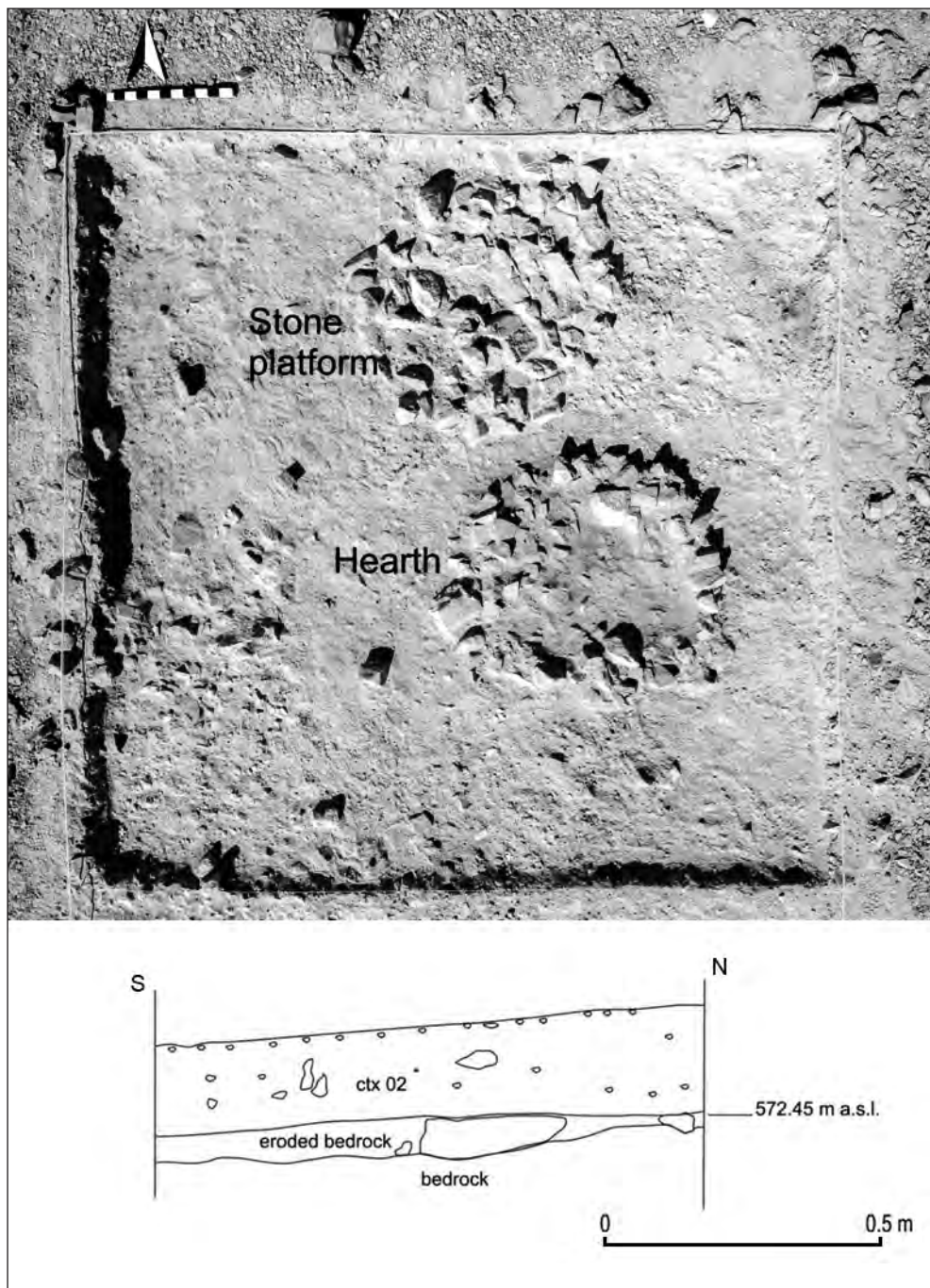


Fig. 2. The site QA 2: top, schematic range of settlement and location of the excavated area; inset, square XXXIII-E-5 with location of test trenches 1 and 2; bottom, general view of the site (PCMA Qumayrah Project/photo M. Białowarczuk; plan M. Antos)



established. A detailed spatial analysis of lithic distribution indicated a higher density of the clustering in the central part of the site, which was also the flattest part of the terrace. This situation promised the undisturbed character of sediment accumulation in this spot.

The southwestern corner of square XXXIII-E-5 was investigated with two probes [Fig. 2 inset]. Test trench 1 was 3 m by 3 m and was explored by arbitrary levels more or less 5 cm thick. The presence of a sediment 15–20 cm thick was confirmed. It encompassed lithics as well as stone installations. A detailed planigraphy of the lithic scatter was made. Lithics in the explored levels contained mostly waste debitage and blank flakes, although the number of retouched flakes and various tools was also substantial. The uniform distribution of the lithics indicated regular occupation. They were concentrated around two stone structures discovered *in situ* [Fig. 3 top]; no workshop areas were noted however.

The two installations were circular, approximately 1 m in diameter, placed on bedrock. One was definitely a hearth: semi-subterranean, surrounded by stones and with a rich layer of ash on the bottom. The other, located directly next to the first one, may have been a kind of circular platform. It was of a similar size, but constructed of a single layer of pebbles without any traces of fire.

Test trench 2 was a small but deep probe, 1.00 m by 0.50 m, dug to test the stratigraphy. It reached slightly below

bedrock and confirmed the existence of a single layer of sediment accumulated directly on the limestone bedrock [Fig. 3 bottom].

LITHIC ASSEMBLAGE

The analyzed lithic assemblage contained 440 artifacts including 342 from the excavation and 97 from the surface collection [Table 1]. All the artifacts seem to be made of raw materials from local sources, with a variety of radiolarites in predominance, as well as yellow and reddish flints easily available in the near vicinity of the site. The diversity of raw materials as well as the forms of the tested nodules and cores indicate use of nodules collected from the surface rather than extracted from an outcrop.

The lithic assemblage from QA 2 is characterized by a domination of flake technology with rare blade products. Flake

Table 1. Basic structure of the QA 2 lithic assemblage

	Quantity	
	Surface collection 2015-2016	Probes 2016
Cores	24	28
Flake blanks	7	101
Retouched flakes	3	29
Blade blanks	2	32
Retouched tools	61	55
Waste debitage	0	97
Total	97	342

◀ Fig. 3. Probes: top, ortophoto plan of test trench 1 with two stone installations *in situ*; bottom, west section of test trench 2 (PCMA Qumayrah Project/photo A. Oleksiak; drawing M. Białowarczuk, digitizing A. Szymczak)

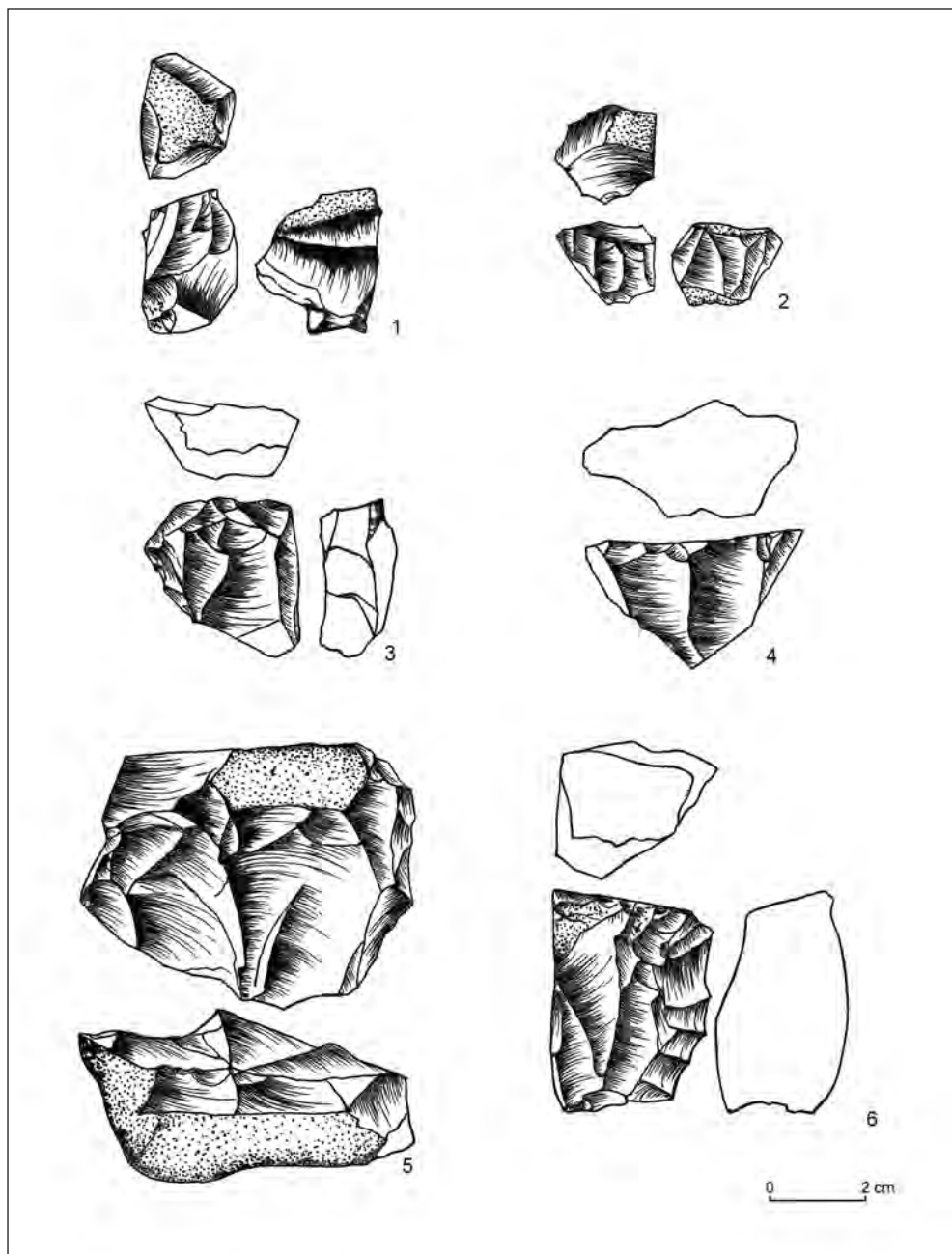


Fig. 4. Cores
(PCMA Qumayrah Project/drawing M. Białowarczuk)

blanks were struck mostly from single-platform cores [Fig. 4:5] or sometimes from unpatterned changed-orientation cores [Fig. 4:1]. Use of unprepared tabular cores is also common. In this case selected slab fragments were exploited directly from naturally flat surfaces used as a striking platform. Three kinds of flakes are distinctive: oval non cortical, fan-shaped non cortical and massive crescent cortical. All of them are characterized by wide butts, usually flat or dihedral, and prominent bulbs which are indicative of a direct hard-hammer technique.

Standardized blade blanks are rare and came from prepared conical, single-platform cores [Fig. 4:2–4], some with crested backs [Fig. 4:6]. These blades are regular and have small bulbs as well as linear or punctiform butts [Fig. 6:1–3, 5, 10]. They are also narrow, have parallel

and straight sides. Most of them have a sectioned distal extremity.

The most common blade products present unstandardized forms [Fig. 6:4, 6–9]. They have various sizes, less regular shape and flat butts. Some of them also have a sectioned distal extremity. It is also possible that the most irregular ones are indeed para-blade blanks, struck accidentally rather than in effect of preplanned organized debitage.

The tools typology is diversified [Table 2]. A preliminary typological list of retouched tools lists the following types:

Table 2. Basic typology of retouched tools identified in the QA 2 lithic assemblage

	Quantity	
	Surface collection 2015-2016	Probes 2016
End-scrapers	9	11
Side scrapers	13	6
Notches	12	5
Burins	1	2
Backed blades	0	3
Retouched blades	8	11
Perforators	6	8
Combined tools	5	0
Points	2	3
Splintered pieces	5	6
Total	61	55



Fig. 5. Side scraper made on a massive rock fragment (PCMA Qumayrah Project/photo A. Oleksiak)

1. End-scrapers [Fig. 6:11–13]

A common and diversified type of tool, made mostly on various flakes where one abrupt edge could easily be adapted as an end-scrapers front, which can be straight, arched or diagonal. Some also with retouch on the ventral face.

2. Side scrapers

Numerous tool types, usually made on massive flakes with one naturally semi-abrupt or low angle edge, which was slightly retouched only by direct short-scaled or margin retouch, total on one longer edge [Fig. 5]. Delineation of

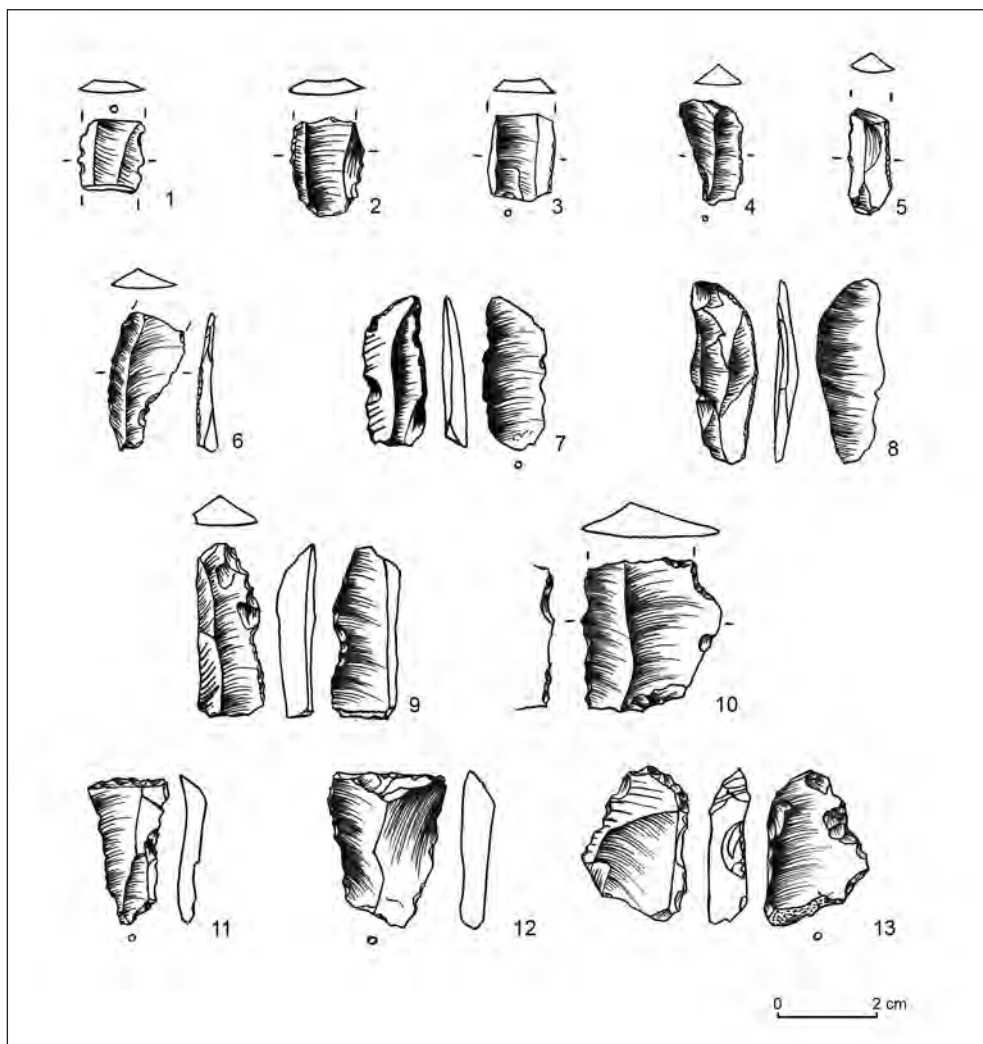


Fig. 6. Various lithics: 1–10 – retouched blades, 11–13 – end-scrapers (PCMA Qumayrah Project/drawing M. Białowarczuk)

the edge is usually convex, but it can be rectilinear, too. A single example with bifacially retouched edge was identified as well.

Fig. 7. Combined tool – side scraper and burin (PCMA Qumayrah Project/photo A. Oleksiak)

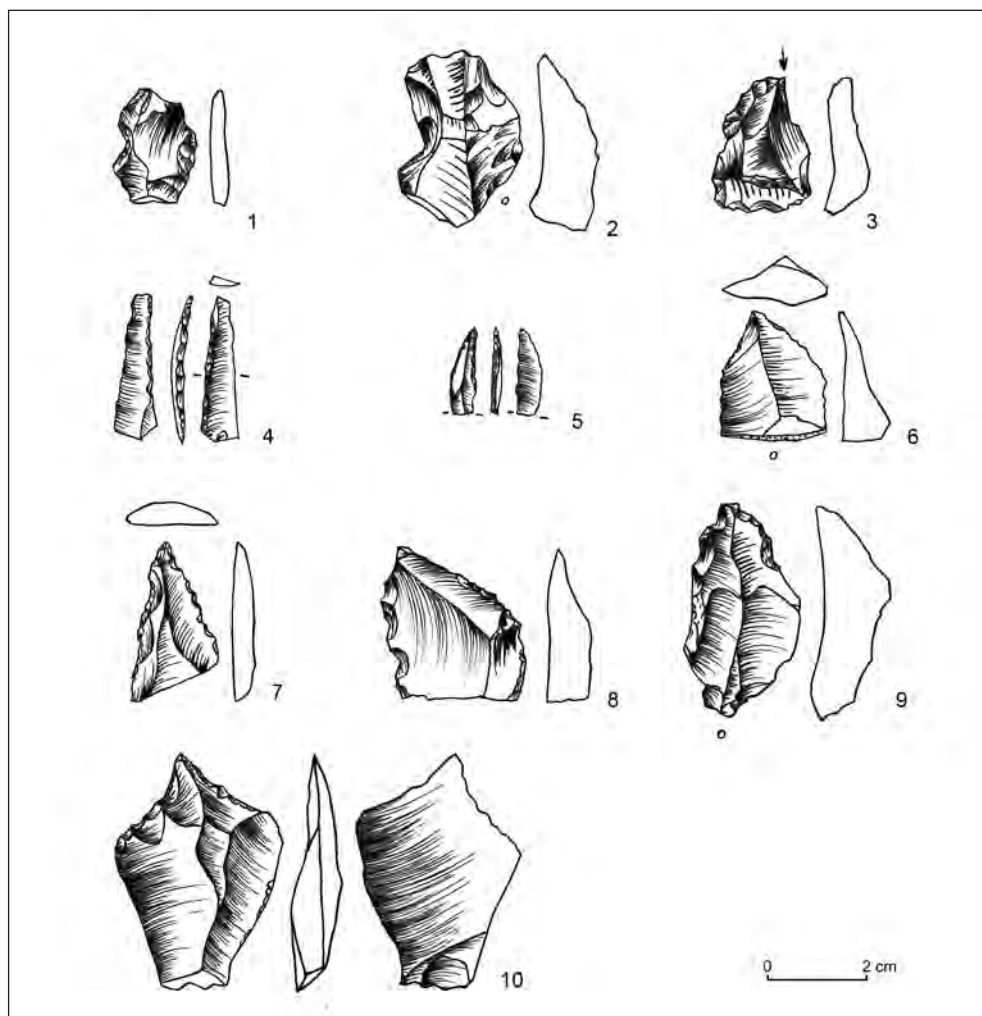
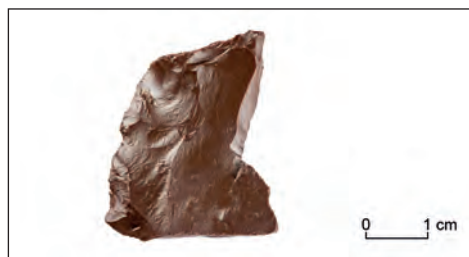


Fig. 8. Various lithics: 1–2 – notches, 3 – burin, 4 – backed blade, 5–10 – perforators (PCMA Qumayrah Project/drawing M. Białowarczuk)

3. Notches

Another numerous and varied tool type in the QA 2 lithic assemblage. Mostly on flakes with single shallow notch retouched directly [Fig. 8:1–2].

4. Burins [Fig. 8:3]

Very rare type of tool with two subtypes: single blow burin and dihedral angle burin. All the identified tools were made on flakes.

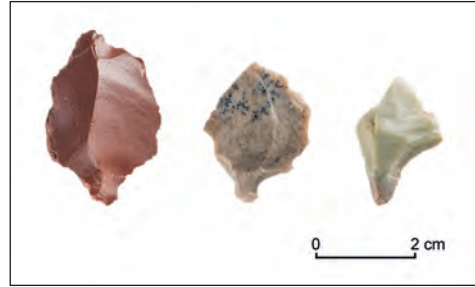


Fig. 9. Tanged points (PCMA Qumayrah Project/photo A. Oleksiak)

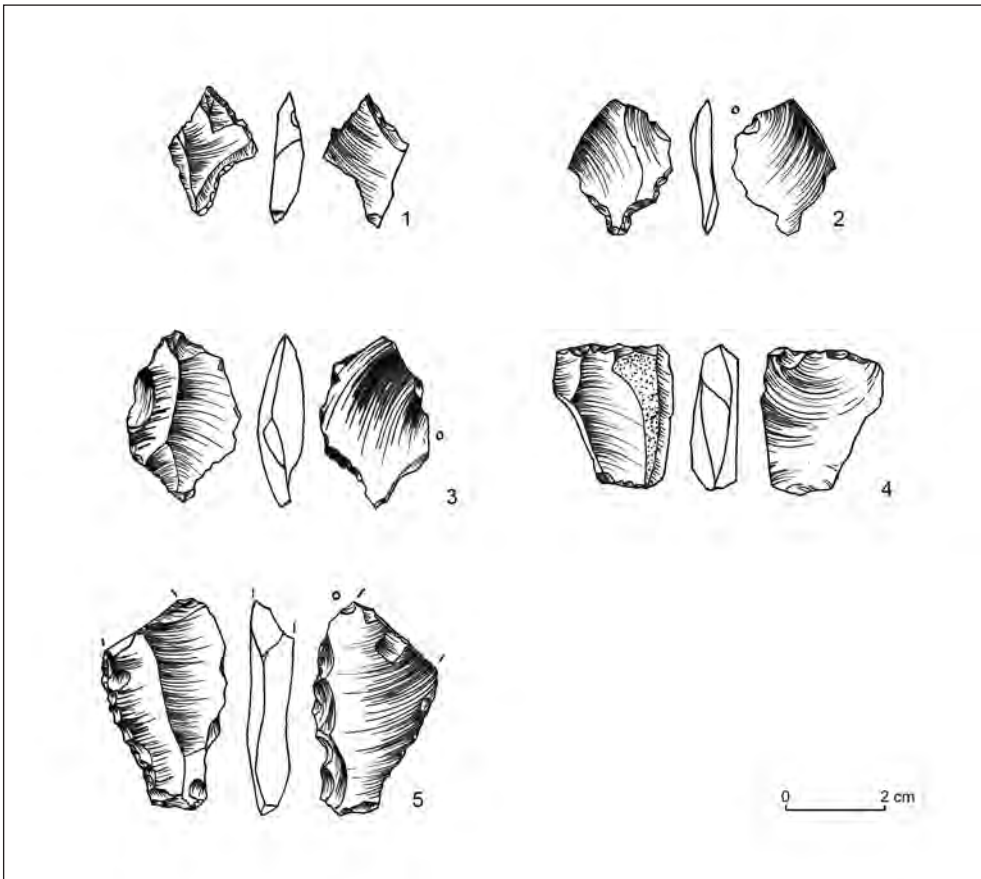


Fig. 10. Various lithics: 1-3 – tanged points, 4 – splintered piece, 5 – probably unfinished point (PCMA Qumayrah Project/drawing M. Białowarczuk)

5. Backed blades [*Fig. 8:4*]
Only three examples of fragmentarily preserved pieces were identified.
6. Retouched blades
Rare type of tool made on blades with pointed tips. It has a typically low-angle direct margin retouch along one larger edge [*Figs 6:1–10*].
7. Perforators
Two kinds of perforators can be distinguished: small forms on blades or bladelets with narrow sting retouched by direct partial retouch on both edges [*Fig. 8:5*], and bigger forms, made on flakes, with a characteristic triangular wide sting retouched by direct retouch along both edges [*Fig. 8:6–10*].
8. Combined tools
Tools with dual function are not numerous in the QA 2 lithic industry, but noted nevertheless. The most common combination are side scraper and burin [*Fig. 7*] or side scraper and perforator.
9. Points
Projectile points are the most typical, usually made on short and wide blanks, giving the points a robust appearance. The tang is generally short and fashioned simply by direct or inverse retouch. The distal extremity of these points is naturally sharp and not retouched, although some are sometimes reworked by intentional breaking of an edge or a series of short marginal retouches [*Figs 9, 10:1–3,5*].
6. Splintered pieces [*Fig. 10:4*]
Rare. They were made on small nodules or massive flakes and rock fragments. Their purpose in this industry is not clear. Some examples have an intentionally retouched one pole forming a slightly concave notch.

CONTEXTUALIZING THE MATERIAL

It is too early with the limited data available to associate the material from QA 2 with any of the known lithic assemblages from prehistoric Oman. Similar tool types are known from various sites of the Arabian Neolithic. Certain characteristic features of the QA 2 lithic assemblage show some links with the Fasad lithic technocomplex connected with the early Holocene hunters prior to the development of the Arabian Neolithic (Charpentier 1996; 2008; Charpentier and Crassard 2013). The technocomplex is characterized by a variety of projectile points with pointed distal extremity and a tang clearly shaped by retouching. The so-called Fasad points have been discovered in Oman and the United Arab Emirates for decades. Owing to their large territorial spread they represent a high variability of shape and blank-production methods (Charpentier and Crassard 2013: 28).

The points from QA 2 remain in the Al-Haddah tradition of “Type 3” points in the Fasad point taxonomy proposed by Vincent Charpentier and Remy Crassard (2013: 32–34). This type of point is made on a short, thick flake that is usually irregular in shape. A natural pointed or cutting (transverse) edge is used as the distal part. The tang is made by all types of retouch. This type presents a high variability of final shapes. The points found in the test trench in QA 2 reveal the closest similarity to Fasad points known from the site of Ra’s al-Jinz (RJ-37) (Charpentier 1991) and Al-Haddah (BJD-1) (Charpentier, Cremashi, and Demnard 1997). Of greatest significance is that one of them [see *Fig. 10:5*] is nearly of the same shape and size as some of the

points found on sites in the Ja'alan region of northeast Oman (see Charpentier and Crassard 2013: Fig. 5:10). On the other hand, there are also points with completely different features. The most significant are shorter tangs with less pronounced retouch. Some of QA 2 arrowheads could thus be much later, despite similar ubiquitous technological simplicity. Such examples are known from Hadramawt (Crassard 2008: Fig. 152) and along the Wahiba coasts (Charpentier et al. 2012: Fig. 2/5).

Other lithics beside the said points from QA 2 also reveal multicultural connections, starting from the Fasad technocomplex to the end of the Neolithic and beyond. The domination of side-scrapers, notches, and perforators produced by direct-scaled retouch is significant for the Fasad industry (Charpentier 2008: 61–63). Additionally, the lithic assemblage from QA 2 is represented by different perforators, including micro-lithic ones [Fig. 8:5–10]. All of them are close parallels to RJ-37 (see Charpentier 1991: Fig. 5:3–10 and Charpentier, Cremashi, and Demnard 1997: Fig. 3:9). However, parallel types of tools exist in the Late Neolithic or even Early Bronze Age industries. Some perforators and side scrapers for example present close similarities to those known from Neolithic Khor al Hajar and Ra's al-Hadd 1 dated to Umm an-Nar (Charpentier 2001: Figs 2 and 8:3–4).

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CONCLUSION

A short exploration season and no radiocarbon dates as yet do not permit an unambiguous contextualization of the site and its material: possibilities start with the Fasad facie and run through the end of the Neolithic and even the Early Bronze Age.

The reconnaissance nature of the field-work at QA 2 necessitates the working character of the hypotheses presented here to be verified in the coming seasons. The survey that was carried out within a radius of about 2.5 km from the site resulted in the discovery of 15 other settling points. At least six of these could be referred to the Stone Age indicating intensive exploration of the Omani interior in prehistoric times. Because of its location and spliced as it is between the well recognized Ja'alan region and UAE territory, the site of QA 2 as well as the whole Qumayrah valley has a good chance of becoming an important link for understanding the spread of late Stone Age occupation in northern Oman.

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Preliminary report on the 2016 season in Metsamor (Armenia)

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Abstract: Excavation in Metsamor in 2016 was focused on the settlement area as well as necropolis. Extended trenches uncovered a substantial part of the settlement and contributed new stratigraphic and chronological data on the three phases of occupation, especially the heavy fire that appears to have destroyed the buildings in the early 8th century BC. A unique find from this level of destruction was a necklace made of sardonyx, agate and gold beads. In the post-Urartian period, the north-eastern part of the settlement was clearly rearranged. Exploration of a kurgan tomb in the cemetery showed that the tomb had been reused for the most recent burial, looted, which may have included a symbolic horse burial. The construction of the tomb, based on finds from a layer at the bottom of the burial chamber, which included several golden adornments and beads of different materials, can be dated to the Middle Bronze Age, the latest burials to the Iron I period.

Keywords: Metsamor, Armenia, Middle Bronze Age, gold jewelry, beads, cemetery, kurgans

The archaeological site of Metsamor is situated about 35 km southwest of the city center of Yerevan. Its citadel on top of the Mets Blur hill dominates the surrounding landscape in the northwestern part of the Ararat Plain. An Armenian–Polish Archaeological Mission has been excavating on the site since 2013 (Piliposyan et al. 2013; Piliposyan 2014; Jakubiak 2015; Piliposyan et al. 2015: 44–45). It has proved to be one of the most significant excavated settlements within the territory of the Republic of Armenia to date.

The excavated part of the settlement revealed a square stone structure, which was designated as the North Settlement Building (=NSB) 2, but the relation to the surrounding stone architecture was elusive and difficult to interpret due to the limited area uncovered in the trenches (Jakubiak et al. 2016: 562). The present work concentrated on uncovering the northern part of the site. The trenches from the previous seasons were extended in all directions, giving in effect a broader view of the settlement [*Fig. 1*].



*Fig. 1. Metsamor: general view of the excavated area of the settlement
(PCMA Metsamor Project/photo M. Truszkowski)*

Team

Dates of work: 16 August–30 September 2016

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Volunteers: Joanna Dzik, Karol Zajdowski

In the cemetery, which is located about 500 m east of the settlement, more than 100 tombs were explored in the past. More graves were now explored and an aerial

survey was carried out, covering the already known area of the cemetery and the fields nearby (for the results, see Truszkowski and Bagi 2017, in this volume).

SETTLEMENT

The excavated area was now enlarged to the east (squares B16, B17, C16, C17), northwest (squares R15, R16, S16) and southwest (squares P18, P19, P20, R19, R20) [see *Fig. 3*]. The eastern extension of the trench investigated the area around the remains of building NSB 1 uncovered in the 2013 and 2014 seasons (Jakubiak et al. 2016: 564–566; Piliposyan et al. 2015: 48–51) [see *Figs 3, 4*]. At the time, a flagstone floor and a wall foundation were recorded overlying the NSB 1/1 chamber. Further remains of this stone structure,

in a very poor state of preservation, were recorded in the extension, barely 0.20 m below the ground surface (squares B16, B17 and C17). They rested squarely on top of the partly destroyed walls of chamber NSB 1/1. The layout of this structure cannot be determined based on the evidence; it was probably a rectangular room with a flagged floor. Similar structures unearthed in Benjamin (Ter-Martirosov 2007; Ter-Martirosov et al. 2012: 200) and Tsaghkahovit were dated by the excavators to the Iron III/Achaemenid period (6th–



Fig. 2. Necklace from the debris of building NSB 1 (PCMA Metsamor Project/photo T. Zaqyan)

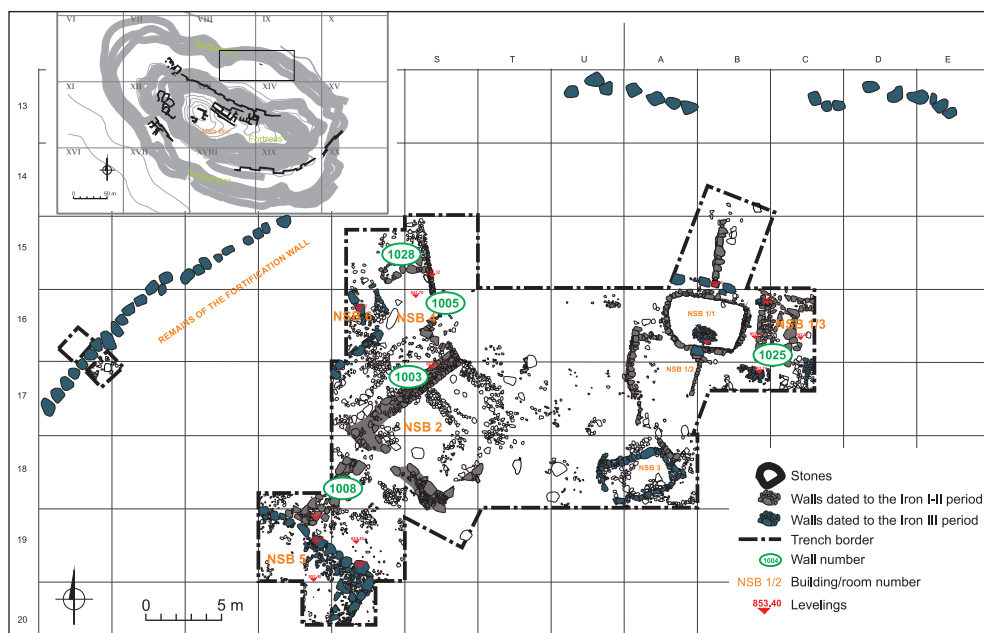


Fig. 3. Metsamor: general plan of the excavated sector after the 2016 season (PCMA Metsamor Project/drawing M. Iskra)



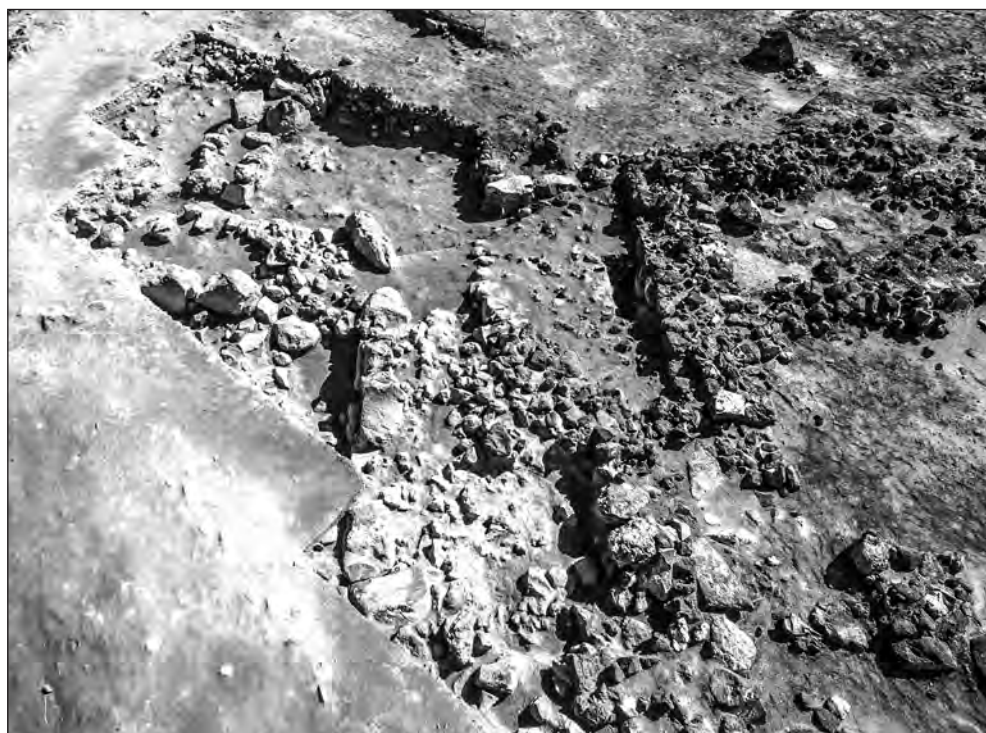
Fig. 4. Eastern part of the excavated area: Building NSB 1 and surrounding stone architecture (PCMA Metsamor Project/photo M. Truskowski)

4th century BC). The Metsamor structure may be dated to the same period on the grounds of pottery recovered from the wall foundation layer.

The underlying stone architecture turned out to be the eastern part of building NSB 1. Finds from a thin clay floor (squares B16 and B17) included abundant potsherds from the Iron I period (12th–9th century BC) as well as numerous animal bones. Unexpectedly, an almost fully preserved agate and carnelian necklace, including two relatively big golden beads [see *Fig. 2*], was discovered *in situ* in an ash and charcoal context, which can be associated with a sudden abandonment of this building. The context shows evidence

of a heavy conflagration that destroyed the settlement, corresponding to a similar layer discovered in 2013 inside chamber NSB1/1.

Six large storage jars had been discovered previously inside chamber NSB 1/1, crushed by the collapsing roof; they and other artifacts from this context are not older than the beginning of the 8th century BC (Piliposyan et al. 2015: 48–51, Pl. XXVII, Fig. 1–3, Pl. XXVIII, Fig. 1–4; Jakubiak et al. 2016: 566). Sherds presently collected from the floor of the adjoining rooms represent the Lchashen-Metsamor 5 and 6 pottery horizons. Of greatest significance from the chronological point of view are fragments



*Fig. 5. Buildings NSB 2 and NSB 4
(PCMA Metsamor Project/photo M. Truszkowski)*

of pots and jars decorated with vertical flutes or with applied bands with multiple-row linear decoration [Fig. 7]. Such pottery is usually dated to the 9th–8th century BC (Avetisyan 2009: 63), but in the case of Metsamor it may be even later, dating from the Iron II/Urartian period (8th–6th century BC) (Khanzadyan, Mkrtchyan, and Parsamyan 1973: Pl. XIV). Moreover, many unusual ceramic fragments in the shape of flattened tubular objects with openings at both ends were found in the same context. Similar finds come from the shrines of Metsamor and Gegharot (Kalantaryan 2007b: 20; Smith and Leon 2014: 554, Fig. 5) where they were interpreted as so-called *manghals*, a type of brazier. Their true function is still uncertain.

Architecture underlying building NSB 1 consisted of a stone-built structure; its layout was repeated by the later structure [see Fig. 4]. There were some remains of a stone-paved platform, badly damaged by the later building. It was originally aligned north–south and was attached to the west wall of the eastern oval chamber (NSB 1/3). Taking into consideration numerous parallels from early Bronze Age sites in Transcaucasia and Eastern Anatolia, such stone structures should rather be interpreted as the remains of a paved corral for sheep or cattle (Martirosyan 1974: 114).

Chamber NSB 1/3 to the east was excavated down to a layer of charcoal interpreted as evidence of a fire that destroyed the settlement at the beginning of the 8th century BC. Layers corresponding

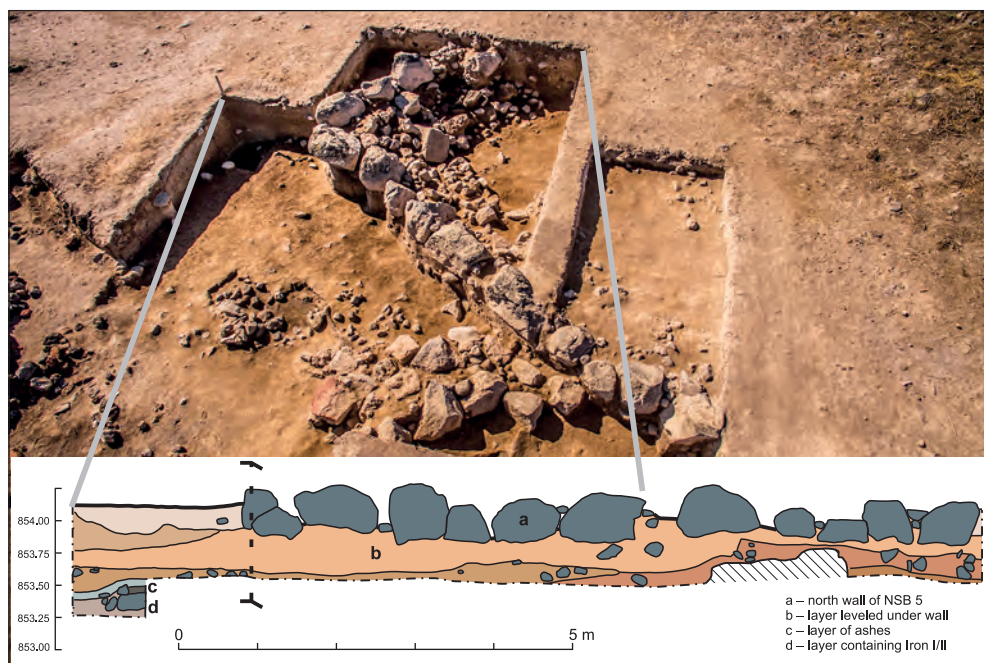
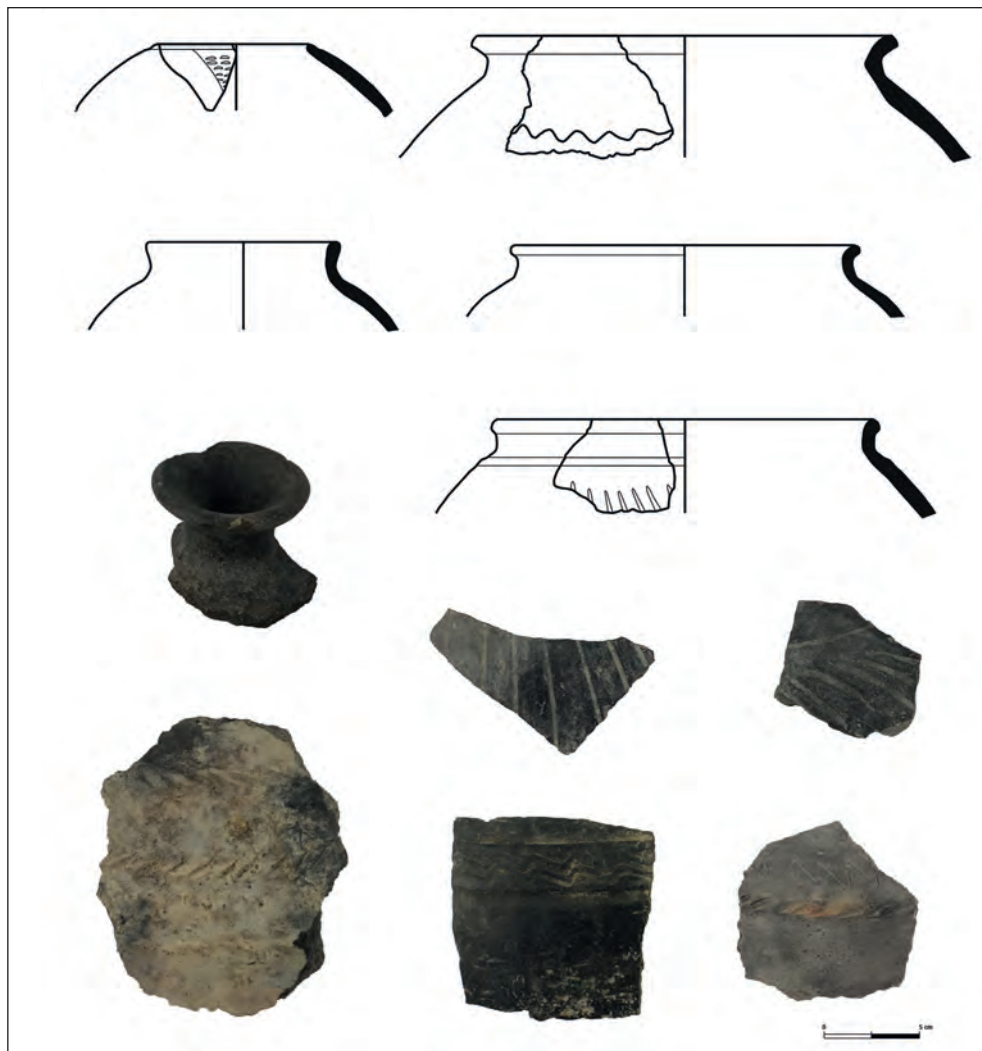


Fig. 6. Building NSB 5
(PCMA Metsamor Project/photo M. Truszkowski, drawing M. Iskra)

to the occupation of this structure, explored in the eastern part of the archaeological sector, have yielded artifacts like clay spindle whorls, pottery polishing tools and light pumice fishing net floats, which are indicative of a workshop function of this structure.

In the northwest extension of the excavated area, the relations between architectural structures NSB 2 and NSB 4 were investigated, contributing new observations to the study of the stratigraphic sequence of layers and building construction in this area [see *Fig. 5*]. A probe by the west



*Fig. 7. Selected pottery from the 2016 season
(PCMA Metsamor Project/ photos T. Zaqyan, drawing M. Iskra,)*

side of wall 1003 revealed its structural connection with wall 1005. Inside structure NSB 4, remains of an irregular and poorly built stone wall (1028) were recorded. It appears to have partitioned the original chamber into two. A relatively thick layer of stones was recorded along both sides of the wall. Interspersed among the stones were some human bones and a child burial (see below). The pottery from the debris filling the structure is not helpful for the dating, as it is quite mixed, representing a chronological horizon from the Middle Bronze Age until early medieval times. It cannot be excluded that the burial was dug into the ruins of structure NSB 4 and suffered from the same erosional processes that have damaged the entire site.

The child burial, made in a shallow grave pit, belonged to a six-year-old. Post-depositional processes effected severe damage: the lower part of the skeleton was completely decomposed, while several bones from the upper body were scattered; the hands were relatively well preserved. A small bronze bracelet was the only personal adornment found with the skeleton and there were no other artifacts to date the burial. However, an earlier discovery of an adult male burial from the 7th century BC in neighboring square S16 (Mkrtchyan and Simonyan 2015; Jakubiak *et al.* 2016: 561) suggests a similar dating for this child burial.

Another stone structure, designated as NSB 6, was uncovered in square R16. The remains were just below the surface. Only the southeastern corner of a large building fell within the excavated area, but it is certainly younger than structure NSB 4 and can be dated roughly to the post-Urartian period (based on just a few potsherds from the fill). Taking into

consideration the northeast–southwest alignment of the building, the structure could have functioned parallel to structure NSB 5 in the southwestern part of the excavated area. Based on the dimensions of the uncovered part of structure NSB 6 and its distance from the fortification wall, it is reasonable to assume that it was attached to it, but for now its specific function cannot be determined.

The largest extension in the southwestern part of the excavation uncovered the northeastern corner of a large stone structure NSB 5, built of large well-dressed ashlar [Fig. 6]. Several architectural elements, mainly fragments of lintels, were found reused in the wall structure and it is reasonable to assume that they came from an older building that had been either destroyed or dismantled. NSB 5 was built on a leveled layer of compacted clay that was 0.40 m thick. This layer was also recognized near the enclosure wall situated a little farther to the west and northwest and in squares R18, S18 and T18, where the compact clay layer partly covered wall 1000. Pottery from below this layer resembles late Urartian ceramics. It is plausible that the settlement was briefly deserted in the post-Urartian period, following which the northern terrace of the Mets Blur hill was rearranged and new architecture introduced.

A better preserved section of wall 1008, recognized earlier in square R18, was traced in squares P18 and P19. It runs towards the northern part of structure NSB 5 and disappears under its north wall. A compact clay installation was uncovered along the east face of wall 1008, covered with a thick layer of soft ash and enclosed by a short stub wall. The northern side of this installation is badly eroded making it difficult to

establish its original size. It resembles in appearance the clay basins found in shrines at Gegharot (Smith and Leon 2014: 553–555), but at Metsamor it probably served a domestic function, for cooking or heating food. The installation was part of a Late Bronze Age or Early Iron Age building, which has yet to be investigated in the excavation. However, it seems likely that the empty area in squares R18 and R19 was the interior of a dwelling chamber associated with this installation.

Isolated artifacts from the southwestern extension included numerous beads made of sardonyx and bronze, an alabaster pendant and a bone ring with circular decoration. Ordinary objects,

like pumice tools and fishing net floats, numerous obsidian arrowheads and a flint sickle blade, attesting to the everyday life of the inhabitants of the settlement, were also unearthed.

Small probes were dug in squares M16, M17, N16 and N17 on the opposite sides of a line of stones observed on the surface and presumed to be an enclosure wall. Remains of this wall were recorded in the previous season; the sequence of layers recorded in the probes has confirmed the same chronological and stratigraphic context of the enclosure wall and building NSB 5. More importantly, the sequence reached the late LBA phase.

CEMETERY

Renewed exploration of the cemetery started with the clearing of Kurgan XVIII, part of which had been uncovered in the 2013 season.

A layer of pebbles was found above the burial chamber (5.00 m by 4.40 m) and filling the whole interior [*Fig. 8*]. Stone slabs moved from their original position indicated ancient looting. Numerous black-burnished sherds were found in the pebble layer. Some horse bones, including three mandibles, were discovered in the same context, just underneath large stones originally closing the chamber. A fragment of a bronze horse bit was the only artifact found in the deposit. Two concentrations of human bones were discovered, suggesting two separate burials. The horse remains could have constituted a symbolic horse burial. Examples of such practices have been recorded elsewhere and are typical of Early Iron Age burial customs (Keti: Petrosyan 1989: 88–90;

Artik, Spandaryan: Khachatryan 1975: 258–259).

However, a study of the stratigraphy suggests that the stone chamber itself was older and had been reused for these burials. A layer of mixed archaeological material was recorded at the bottom of the chamber. It contained numerous pottery fragments and pieces of jewelry, the latter including 22 golden beads and a pendant [*Fig. 9*]. The golden beads represented four different types; the most unique forms are a heart-shaped bead with a tubular midrib string hole and two open-work melon-shaped beads. Similar beads were found in tomb 60 at Metsamor (Khanzadyan 1995: Pl. VII.3), as well as at the Lori Berd and Lchashen sites (Kalantaryan 2007a: 401f.) and in Marlik (Negahban 1996: Pls 50, 160). The objects from these excavations are conventionally dated between the 15th and 12th century BC, and they provide an excellent parallel for the present finds.

Unique in this set is a crescent-shaped pendant made of golden sheet. It is the third object of its kind discovered in the Metsamor cemetery (Piliposyan *et al.* 2016: 11). The other two have not been published yet. No parallels exist from Armenia. Hundreds of other beads, made of carnelian and agate, but also of metal alloys, such as tin and bronze, were also found in the layer at the bottom of the chamber. They would have made up a number of different necklaces. The metal beads find no parallels in the region. Perhaps they were manufactured locally. Emma Khanzadyan discovered similar pieces of jewelry in other Metsamor tombs, but her discoveries were never published.

These artifacts, by analogy with material recorded earlier from the cemetery and from other excavation projects in the region (Shirakavan: Torosyan, Khnkikyan,

and Petrosyan 2002: Pl. XXXII.18, XXXIII.13,14, LXXXI.6; Lori Berd: Devedjyan 1981: Pl. IX.6), can be dated to the 12th–11th century BC. In other words, the tomb should be associated with the last phase of the Late Bronze Age III period or with the beginning of Iron Age I. Since only small objects have been recovered from this layer, it is likely that all the bigger objects made of gold or bronze, which may have formed part of the original deposit, were looted or taken out in antiquity, possibly even in the Early Iron Age. Indeed, the fact that no bones belonging to the original burial or burials were discovered could suggest that the tomb, rather than being looted, was reopened and cleared to make place for new burials.

The last element to shed light on usage practices was discovered in the northeastern part of the burial structure. It was another



Fig. 8. General view of Kurgan XVIII
(PCMA Metsamor Project/photo M. Truszkowski)

burial located under the stone wall of the chamber. A single individual had been buried in a pit, furnished with several pottery jars that were assigned to the Middle Bronze Age III period. Burials from this period are well known from various Armenian archaeological sites (Karmir Berd, Karashamb, Arich, Verin Naver, Lchashen, Sisian, etc.) where they are dated

to the 19th–16th centuries BC (Simonyan 1996: 58–62; Smith et al. 2009: 65–68; Simonyan 2013). Thus, it appears that the cemetery at Metsamor was used as a burial ground already in the Middle Bronze Age and continued in this function through the Iron Age period, clearly corresponding to the three phases of activity identified in the excavation of the settlement area.

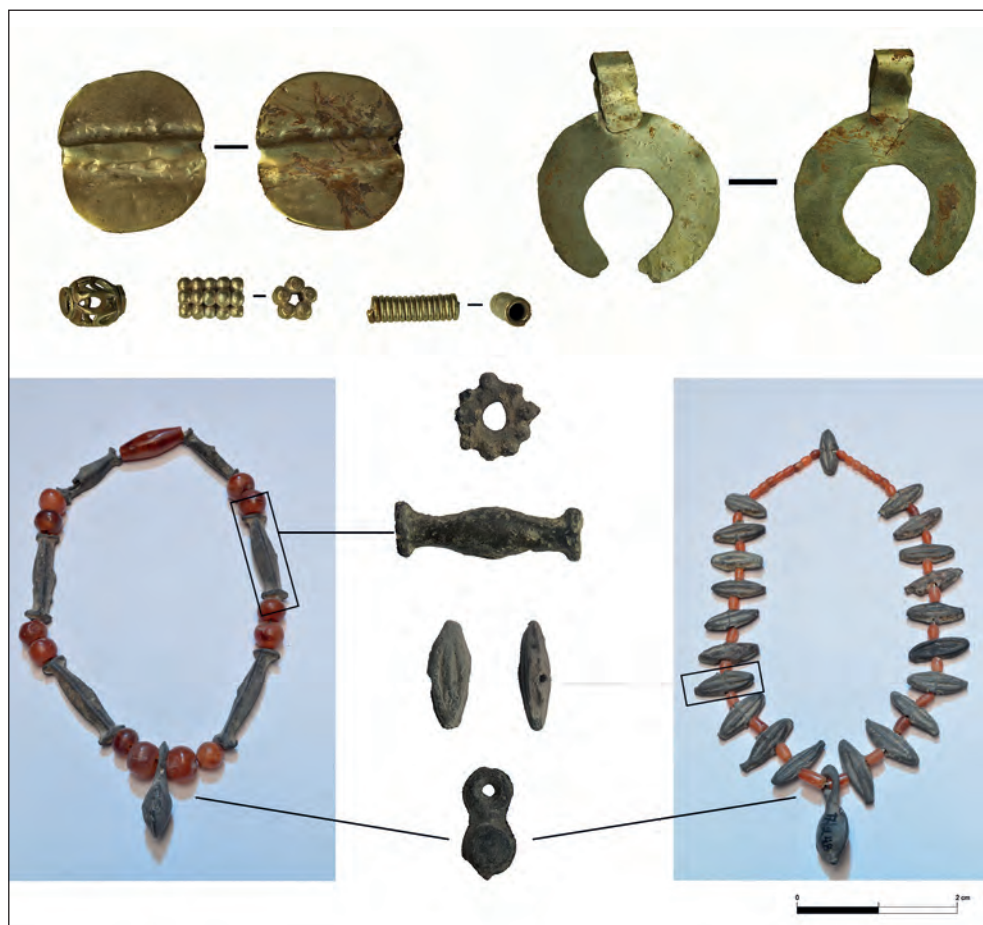


Fig. 9. Jewelry and beads from the bottom of the burial chamber of Kurgan XVIII: top, golden beads; bottom left and right, reconstructed necklaces composed of carnelian and tin beads from the Metsamor Museum; center, the most frequent forms of tin beads (position indicated in the reconstructed necklaces) (PCMA Metsamor Project/photos T. Zaqyan)

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Aerial survey of the cemetery and surrounding fields at Metsamor

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Abstract: The first aerial survey conducted within the vicinity of the ancient city of Metsamor and its cemetery detected several promising anomalies in the aerial photos and processed images within and beyond the known limits of the burial ground. The survey results are discussed in this article along with a brief outline of the burial types found in this cemetery.

Keywords: aerial photography, survey, photogrammetry, Metsamor, necropolis, kurgan, cromlech, Karmir-Berd culture, Lchashen-Metsamor culture

The ancient city of Metsamor lies within the boundaries of the Metsamor Historical-Archaeological Museum-Reserve near the modern village of Taronik about 35 km west from the capital, Yerevan [Fig. 1]. The area was settled as early as the end of 5th – beginning of the 4th millennium BC and remained as such, with intervals, until the 17th century AD. The nucleus of the settlement is located on and around the main citadel, while the necropolis is situated outside the limits of the protected area about 500 m directly to the east.

The site, including the cemetery, was intensively excavated from the 1960s to the 1990s by Armenian archaeologists Emma Khanzadyan and Koryun Mkrtchyan, while further works, carried out by Ashot Piliposyan in 2011–2013, focused solely on the

burial ground. More than 100 burials have been unearthed in the area since the 1960s. The earliest assemblage of excavated tombs, mainly rectangular cist graves, can be dated to the Middle Bronze Age III¹ and represents for the most part the Karmir-Berd horizon (Khanzadyan 1995: 5–37). However, the most numerous burial types are small cist and box graves belonging to the Lchashen-Metsamor culture, dated now anywhere from the Late Bronze Age until Iron II (Khanzadyan, Mkrtchyan, and Parsamyan 1973: 178). The latest burials come from the first half of the 7th century BC.

The best-known funerary structure of the period between the Middle Bronze Age and Iron II in this region is a kurgan (tumulus burial or barrow). These structures are typically circular in shape with an earth

¹ Periodisation after Smith, Badalyan, and Avetisyan 2009: 34, Fig. 2.

or stone mound (in some cases both) covering single or multiple earthen burial pits or stone-built chambers. The tumulus is sometimes surrounded by a ditch or a ring of stones, the so-called cromlech (Badalyan et al. 2008: 59). A new type of circular superstructure, confusingly referred to also as a cromlech, appeared in the region in the Late Bronze–Iron I Age. This is a layer of stones on a flat surface, arranged in circular fashion atop the burial cham-

ber (Marshall 2012: 162–163). It co-exists with the kurgan tradition sharing many of its attributes to such an extent that without a superstructure it is often difficult to determine the typology of the burial. Despite the popularity of burial structures of this kind, only a dozen or so have been excavated at Metsamor. Typically, they are dated to the Late Bronze–Iron I Age and contain single burials within well-built rectangular stone chambers.

THE SURVEY

Excavations in the cemetery area were resumed in 2016 by a joint Armenian–Polish archaeological mission. The arable land surrounding the main necropolis and a field situated about 400 m north of the citadel were investigated with aerial photography and with photogrammetric documentation methods. The size of the areas in question are 22 and 4 ha respectively. The larger field was understandably known

to contain burials but the full extent of the burial ground had never been determined. The second, smaller field had not been investigated by archaeologists to date. Moreover, no aerial survey had ever been conducted in any of these areas before.

The survey of the necropolis took place on 16 September while the second field was photographed the following day, 17 September. On both days the weather

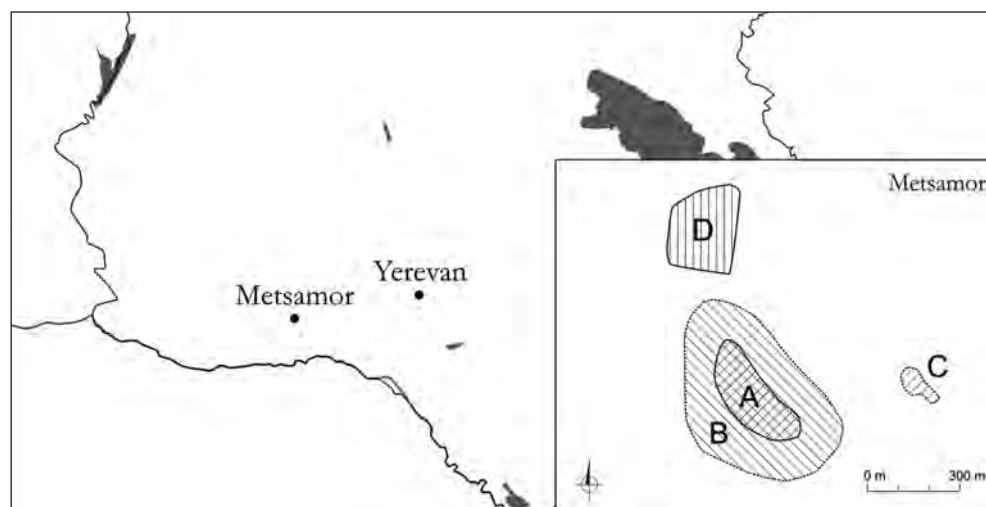
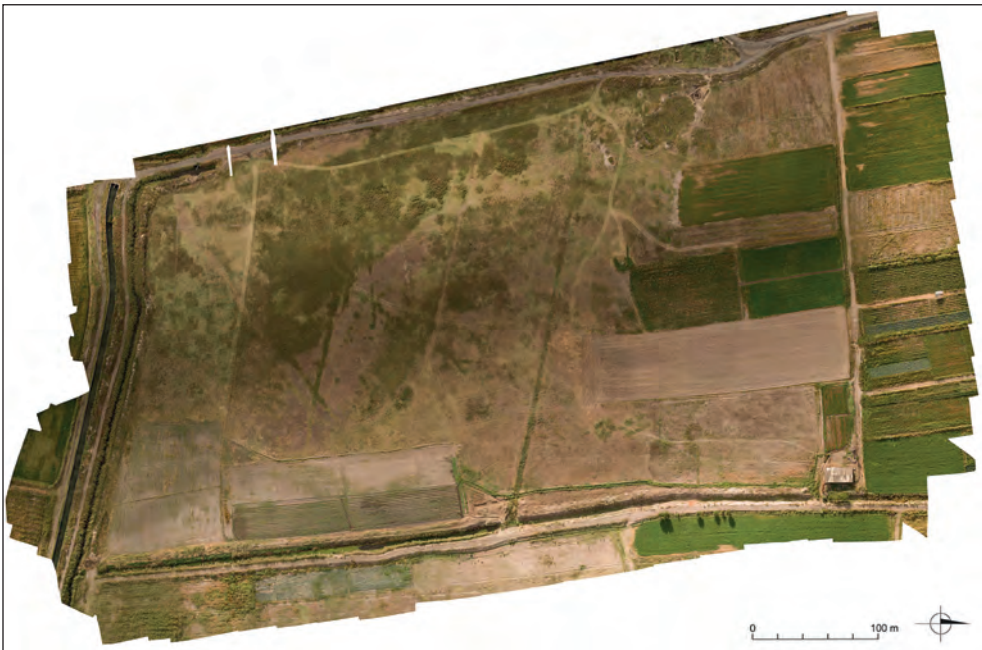


Fig. 1. Metsamor on the map and the location of the citadel (A), "lower town" (B), cemetery (C) and "northern field" (D) within the archaeological site (Drawing O. Bagi)

conditions were favorable for aerial photography, the wind was below 1 m/s and the sky was cloudy, however there were a few short sunny intervals during the survey, which resulted in some shadow and color differences between pictures. A DJI Phantom 3 Advanced Quadcopter was used for aerial photography. It was equipped with a built-in Sony EXMOR 1/2.3" 12.4 Mpix camera fitted with a 20 mm (35 mm format equivalent) f/2.8 lens producing 4000×3000 pixel resolution images. A 2.4 GHz DJI (in-built) radio controller in conjunction with a NVIDIA Shield K1 tablet running the DJI Go application to display flight parameters and live video transmission were used to control the aircraft, which helped to frame the pictures while photographing.

In total, 291 pictures were taken over the cemetery field from an average height of 61.50 m. The images were captured in DNG format with ISO set to 100 to minimize noise and increase accuracy during the photogrammetric processing. Six ground control points were placed in the field for referencing using high visibility red paint spray. High accuracy measurements of the said points in a locally established coordinate system were taken with a Leica TCR 407 Total Station. The second, smaller field was surveyed provisionally without taking reference points and measurements. Altogether 20 vertical and oblique pictures for visual reconnaissance purposes were taken from a height of 200 m.

The images showing the cemetery field were converted to lossless TIFF format and



*Fig. 2. Orthophoto of the cemetery
(Photo M. Truszkowski, O. Bagi)*

fed into the Agisoft Photoscan software for further processing. Once the camera was aligned, a dense cloud was generated using medium settings producing 47.4 million points. The mesh was also created in medium details resulting in 750573 faces. The resolution of the texture was set to 8192×8192 pixels. After camera optimization, the obtained model accuracy was outstandingly high: 2.2 cm on the X, 1.2 cm on the Y and 0.7 cm on the Z (elevation) axis. The next step, after generating a 3D model, was the creation of an orthophoto [Fig. 2] and a Digital Elevation Model (DEM) with resolutions of 11952×12288 and 8426×9654 pixels

respectively. Therefore, the attained ground resolution for the orthophoto was as high as 2.4 cm/pixel while that for the DEM was 9.61 cm/pixel. The project was saved in Photoscan's native psx file format, as well as in OBJ, for increased compatibility with other 3D software. The orthophoto and the DEM were exported as geoTIFF and further processed in XnView and QGIS. In XnView, a relief filter was applied to the orthophoto, while in QGIS the DEM was further enhanced by applying different colors to elevation thresholds. Also, a new layer was created utilizing the hill shade terrain analysis algorithm to make surface details more visible.

INTERPRETATION

Examination of the results from the necropolis, once the evidence of modern activity covering most of the field was disregarded, allowed five anomalies to be marked as possible traces of past human activity. All were located in the northwestern corner of the photographed area, in the vicinity of the known burials; they have been numbered continuously from 1 to 5 [Fig. 3]. Some of them likely date to the same period as the settlement excavated by the Armenian–Polish team on the slope of the citadel.

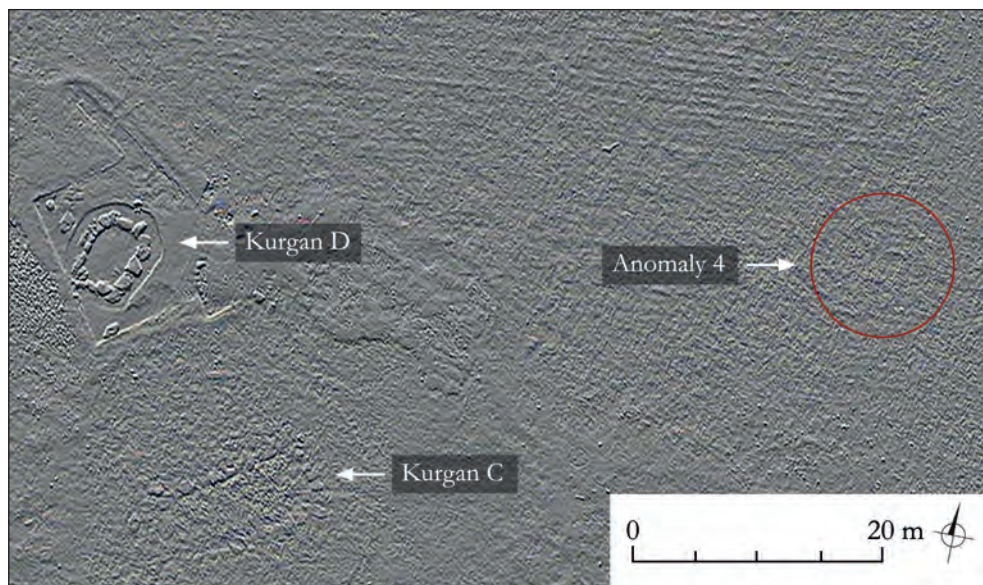
Some of the already unearthed larger burial structures are visible in the aerial pictures, hence they will be used as reference points in this article for convenience. However, due to imprecise documentation techniques typical of the early excavations in the region and the general lack of relevant data, neither the correct numbering nor the typology of the tombs excavated earlier could be established to this date. Therefore, to avoid confusing the reader, the three

circular burial structures visible in the photos and the one unearthed by the joint Armenian–Polish team (for a preliminary report from this excavation, see Jakubiak et al. 2017, in this volume) have been marked with capital letters (A to D) and will be referred to accordingly [see Fig. 3].

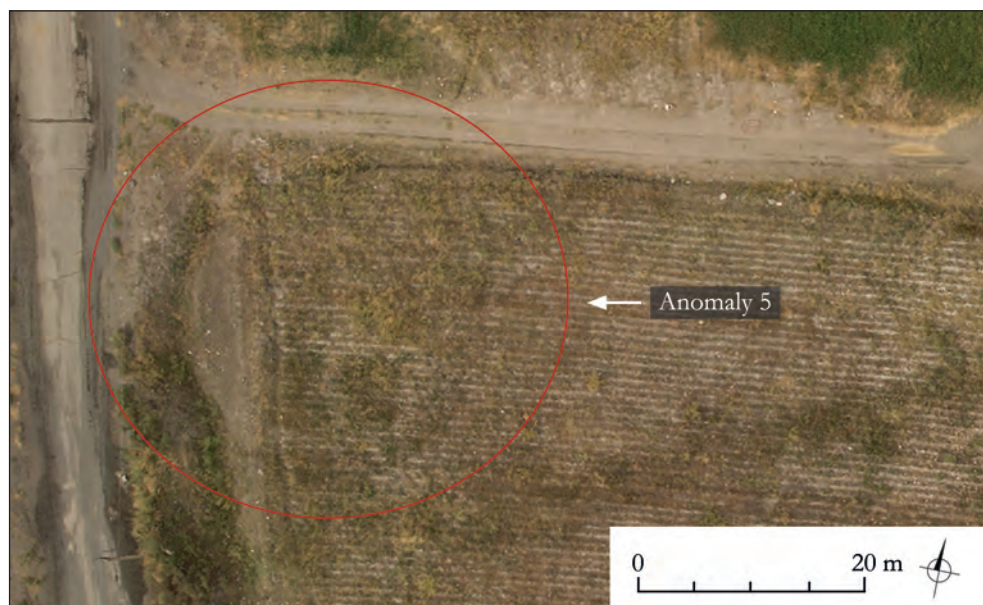
Anomalies 1 and 2 [see Fig. 3] are situated respectively about 67 m and 79 m southeast of kurgan D. They appear similar in shape, size (8 × 4 m and 11 × 5 m) and alignment to the burial chambers of the nearby Late Bronze III–Iron I kurgans (A, B, C) excavated by Emma Khanzadyan. The yellow discoloration of vegetation indicates less moisture in the ground, suggestive of a concentration of underlying stones (Riley 1996: 25–31). These anomalies are persistent since they appear in satellite images taken in previous years. Therefore, it is highly plausible that they are traces of burial chambers built in a fashion and period similar to that of kurgans A, B, and C.



Fig. 3. *Anomalies (1 to 5) and previously excavated burials (kurgans A to D) marked on an orthophoto of the cemetery (Photo M. Truszkowski, O. Bagi)*



*Fig. 4. Anomaly 4 marked on a relief image of the area
(Photo M. Truszkowski)*



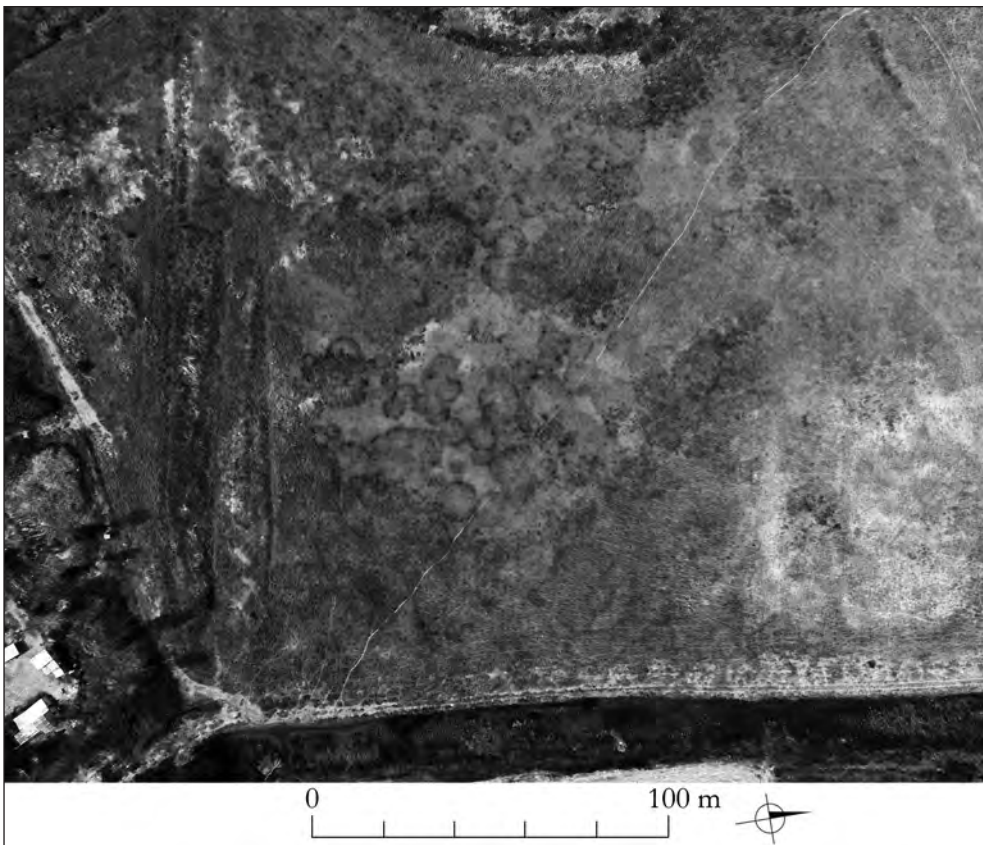
*Fig. 5. Anomaly 5 marked on the orthophoto of the cemetery (close-up)
(Photo M. Truszkowski, O. Bagi)*

Anomaly 3 [see *Fig. 3*] is located directly southeast of kurgan A and shares some characteristics with anomalies 1 and 2. However, there is a road running across it, thus discoloration caused by traffic rather than an underlying structure cannot be ruled out.

Anomaly 4 is situated about 47 m to the east of kurgan D. In both the orthophoto and the relief image [*Figs 3, 4*], it appears circular in shape with a smaller oval anomaly in its center. The effect seems to be due to a color difference between the

shrubs growing on the top of the anomaly and the bushes surrounding it. The yellow discoloration of the vegetation atop the anomaly suggests, in similarity to anomalies 1 and 2, a lower moisture level in the ground. However, further interpretation of this target without additional examination in the field is not possible at the moment due to its ambiguous nature and the lack of additional supporting data.

Anomaly 5 [see *Figs 3, 5*] is located in the extreme northwestern corner of the field, approximately 95 m northwest



*Fig. 6. Aerial photo of the field to the north of the citadel
(Photo M. Truszkowski)*

of kurgan D. Similarly to anomaly 4, it appears as a circle in the orthophoto, but much larger in size, about 21 m in diameter. Again, its occurrence is caused by a difference in color of the low vegetation growing on and around the area. In opposition to anomaly 4, the circular band of flora appears darker than the vegetation around it. This suggests either a higher concentration of moisture underground caused by disturbed soil or a high level of humus, a reminiscence of long gone organic material (Lasaponara and Masini 2007: 214). It, too, cannot be interpreted as a burial structure at the moment, but its appearance seems to resemble a kurgan surrounded by a ditch. This circular trench may be the source of the soil that had once formed the mound over the burial. Had there been such a superstructure, it must have been ploughed under by now, because there is no significant elevation difference between the anomaly and its surroundings.

The survey of the second, smaller field situated north of the citadel and approximately 800 m northwest of the necropolis yielded similarly interesting and surprising results. No traces of archaeological remains were noted there previously, yet many stand-alone and intersecting circular anomalies are visible in the aerial photos [Fig. 6]. They appear as dark green shapes in the lower vegetation. Like anomaly 5, they are caused possibly either by increased moisture content of the soil or by humus concentration. The lack of data regarding similar structures or features within the region would make any further archaeological interpretation highly speculative. Moreover, certain types of fungi are known to cause circular, deep green discoloration in the low vegetation (also known as “fairy rings”), thus, natural causes cannot be excluded from the list of possible interpretations (Dowson, Rayner, and Boddy 1989: 699).

CONCLUSIONS

The first comprehensive, large scale implementation of aerial photography in combination with photogrammetric methods at Metsamor proved to be a success. The results of the survey of the cemetery and the smaller field to the north of the citadel helped to better understand the extent of past human activity within the landscape surrounding the ancient city. Undoubtedly,

the results, especially with regard to the northern field, will provide ample new targets for the upcoming excavation seasons. While it was not possible to interpret any of these targets, apart from anomalies 1 and 2, with sufficient confidence, it is hoped that future investigations will provide the hard data necessary to determine their exact nature and date.

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Settlement history of Iraqi Kurdistan: an assessment halfway into the project

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Abstract: The objectives of the “Settlement history of Iraqi Kurdistan” project include the identification and recording of archaeological sites and other heritage monuments across an area of more than 3000 km² located on both banks of the Greater Zab river, north of Erbil. A full survey of the western bank was carried out over three field seasons, in 2013, 2014 and 2015 (leaving the Erbil/Haūler province to be studied in the next two seasons). To date, at least 147 archaeological sites dating from the early Neolithic Hassuna culture to late Ottoman times have been registered. Moreover, the project documented 39 architectural monuments, as well as the oldest rock reliefs in Mesopotamia dating from the mid 3rd millennium BC, located in the village of Günduk. Altogether 91 caves and rock shelters were visited in search of Paleolithic and Pre-Pottery Neolithic remains. The paper is an interim assessment of the results halfway into the project, showing the trends and illuminating gaps in the current knowledge.

Keywords: settlement history, North Mesopotamia, Iraq, Kurdistan, heritage, Paleolithic, Neolithic, Chalcolithic, Bronze Age, Iron Age

The “Settlement history of Iraqi Kurdistan” project has been identifying and documenting prehistoric and historic settlement along the plains at the foot of the mountains of Kurdistan on both sides of the Greater Zab river ever since 2012, working under two consecutive grants from the Polish National Science Centre (2012/07/B/HS3/01472 and 2014/13/B/HS3/04872). An essential part of the project is the Upper Greater Zab Archaeological Reconnaissance (UGZAR), which is tasked with data collection from both banks of the Greater Zab river north of Erbil, an area which has

so far escaped any intensive archaeological research (Braidwood and Howe 1960; Boehmer and von Gall 1973; Reade and Anderson 2013).

To date, the survey has covered approximately two-thirds of the study area, amounting to 3058 km². In 2012, which was a short season, fieldwork concentrated in the province of Erbil, on the left bank of the Greater Zab and along the northern bank of the substantial seasonal stream Bastora Çai. In the course of three further survey campaigns in 2013–2015, the team moved through the province of Dohuk, on the right bank of the Greater Zab,

completing by the end of 2015 the study of the entire area allotted to the project in this province. The collected dataset can thus be easily compared to the results of a similar survey conducted toward the west by a team from the University of Udine within the framework of the Land of Nineveh Archaeological Project (LoNAP) (Morandi Bonacossi 2012–2013; Morandi Bonacossi and Iamoni 2015; Gavagnin,

Iamoni, and Palermo 2016). In fact, the dividing line between the two projects was entirely artificial, being set on the 43° 40' meridian, thus splitting the fertile Navkūr Plain into two uneven parts, the smaller of which constituted the western part of the UGZAR project study area. It is thus both feasible and reasonable to consider the UGZAR results in the context of data recorded by Italian colleagues.

RESEARCH OBJECTIVES AND METHODS

The UGZAR project has followed other major survey projects active in the region in implementing fieldwork methodology provided by the informal Assyrian Landscapes Research Group. This is a platform for contact and cooperation for all the major survey projects now being carried out in North–Central Iraqi Kurdistan, namely the Eastern Ḥabur Archaeological Survey by Eberhard Karls Universität Tübingen around Zaxo (Pfälzner, Sconzo, and Puljiz 2015; Pfälzner and Sconzo 2016), and Erbil Plain Archaeological Survey by Harvard University around Erbil/Haūler (Ur et al. 2013). The methodology called for extensive use of satellite imagery, in addition to other sources, in the initial phase of the project. Both historical (CORONA and HEXAGON spy satellite programs of the late 1960s and early 1970s) and modern satellite imagery (GeoEye, QuickBird satellite imagery freely accessible on the internet, as well as LANDSAT, ASTER and others) were used in combination. Other sources used during this phase of the project included the results of earlier archaeological research in the surveyed areas, accounts by travelers and other Europeans visiting the area, as well as a wealth of information collected

by the Iraqi State Board of Antiquities and Heritage (formerly the Antiquities Service of Iraq) (Salman 1970; 1976)

A list of tentative identifications of archaeological sites and heritage monuments was then verified during the field seasons in Iraqi Kurdistan. It turned out during the fieldwork that, at least in the UGZAR working area, identifying sites from satellite imagery was much more difficult than expected. It worked on the alluvial plain constituting the western part of the project area, but not really in the highlands and mountains (Koliński 2015). Consequently, to a large extent, the sites successfully identified on satellite imagery proved to be known already from the *Atlas of Archaeological Sites in Iraq* (Salman 1976, henceforth *Atlas*).

Thus the UGZAR field team relied more on other methods of tracking archaeological sites, namely, interviews with the indigenous population and transects [Table 1]. The interviews were carried out mainly with the *mokhtars* (village heads) and occasionally with employees of regional offices of the Direction of Antiquities of Kurdistan originating from villages located in areas of particular interest. A limited number of

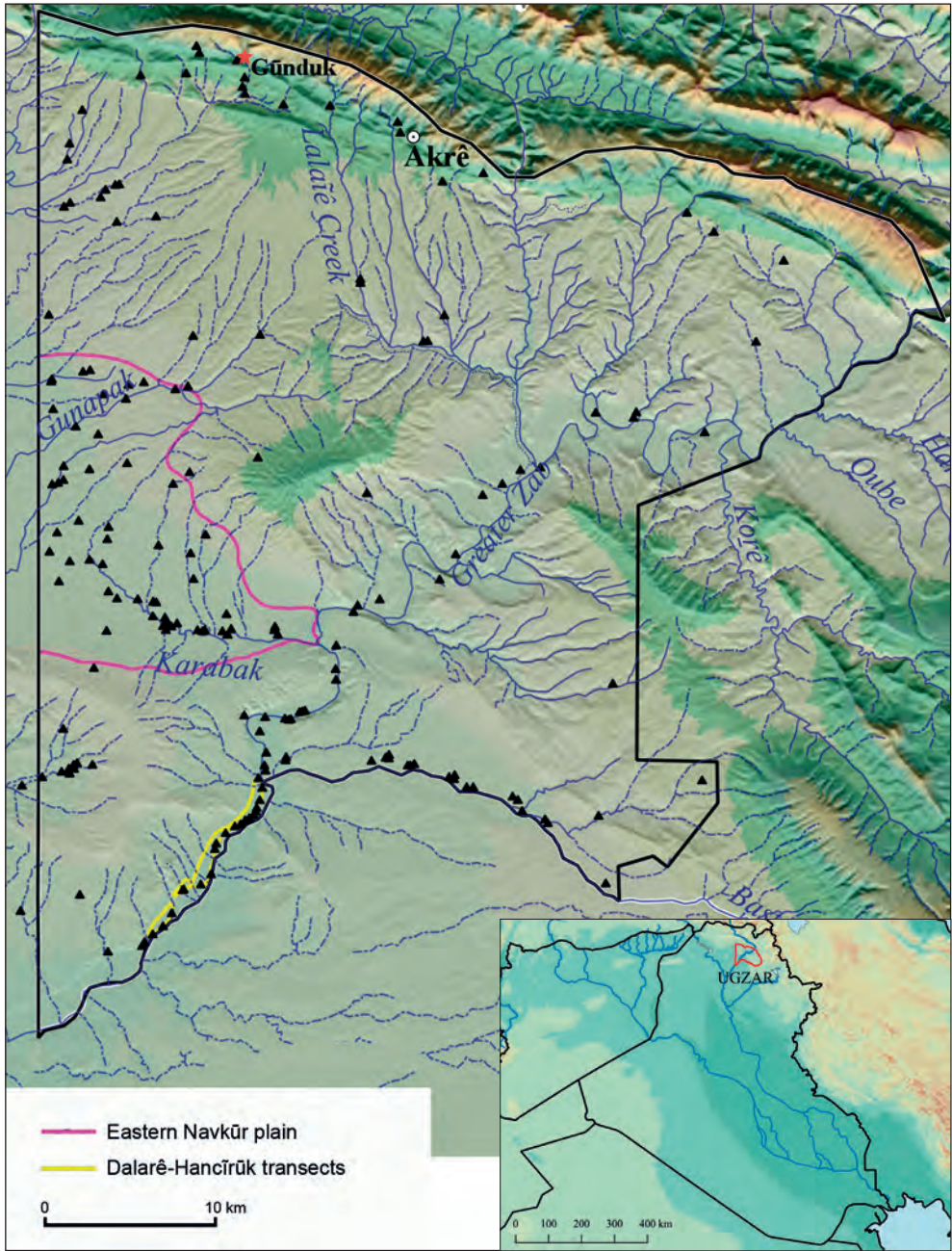


Fig. 1. Location of archaeological sites identified by the UGZAR project in the area surveyed in 2012–2015; inset, location of the UGZAR survey area (©UGZAR project/drawing J. Mardas)

transects was carried out in 2013 and 2014, taking on bigger proportions in 2015 to a considerable success.¹ The three seasons in Duhok province have identified 147 archaeological settlement sites [Fig. 1]. Most of the new identifications were made during the transects, especially the small and/or flat sites, which were likely to escape the attention of local residents. The interviews proved an almost equally efficient method of identifying new sites (interviewees usually also indicated sites known from the *Atlas*, which were not taken into account in Table 1), more so than interpretation of satellite imagery, which was of limited efficiency in specific landscapes, although the number of sites identified by this method is still higher than the number of sites indicated in the *Atlas*.²

Table 1. *Methods of archaeological site identification in Duhok province in the UGZAR area (sites listed in the Atlas are not included in the total of sites)*

Identification methods	Number of sites	Percentage share
<i>Atlas of Archaeological Sites in Iraq</i>	30	20.4%
Satellite imagery	34	23.1%
Interviews	40	27.2%
Transects	71	48.3%
Others	2	1.4%
Total	147	100%

The identified sites were documented with photographs, written descriptions and, in most cases, measurements necessary to plot a contour plan of the site. On smaller sites or sites with scarce sherd scatter, archaeological material was collected from the entire surface. On bigger sites or sites with more abundant finds, specific collection areas were marked, corresponding to the morphology of the sites. Material was collected selectively from these few points, covering only diagnostic sherds, like rims, bases, handles and decorated fragments. These were subsequently cleaned, inventoried and recorded at the base camp. Large finds, like baked bricks, and large stone implements (querns, mortars) were documented in the field.

During the three field seasons in Dohuk province, 7500 pottery sherds were collected and documented, of which 2811 (37.5%) were identified as to period using the Working Ceramic Typology (Ur 2013). These identifications served as a basis for determining site chronology and constituted the starting point for a reconstruction of the settlement history in the studied area.

At the end of each season, a list of documented sites including description, contour plan and dating was submitted to the Direction of Antiquities of Kurdistan; the same list was later published on the project's website, together with a map showing the distribution of the sites and a report on the concluded season (<http://archo.amu.edu.pl/ugzar/indexen.htm>).

¹ A mixed strategy, combining intensive transecting and extensive reconnaissance, implemented in 2016, covered with transects altogether 42 km², that is, nearly 10% of the area studied in the course of the season.

² The northern part of the study area, corresponding to the *qada* of Akre, is not covered by any of the maps in the *Atlas*.

SETTLEMENT HISTORY

The collected dataset has demonstrated the necessity of subdividing the surveyed UGZAR area into several morphological and environmental zones based on the geographical setting and in line with the differing trajectories of development (Koliński 2016: 163–166; forthcoming). Some areas, like the eastern, alluvial part of the Navkūr plain and the adjacent Karabak plain, show intensive settlement from the Neolithic down to late Ottoman(?) times [Fig. 2:A]. Other areas, like the bad-lands between Akrê and the Greater Zab valley, seem to have witnessed no settlement prior to the Neo-Assyrian period. It seems reasonable thus to present here an insight into settlement history only on the grounds of two of the most intensively studied areas, namely the eastern Navkūr/Karabak plain and the area on the western bank of the Greater Zab covered by the Dalarê–Hancîrûk transects. It certainly deserves note that the settlement pattern and the trajectories of development differ considerably for the Prehistoric period and the Bronze Age.

Neolithic settlement is nearly entirely absent from the area of the Dalarê–Hancîrûk transects. It is represented by a single Halaf–Ubaid period site (S170 = US139) [Fig. 2:B].³ Conversely, the Navkūr plain reveals a much richer settlement history, featuring slow growth in terms of both the number of sites and the aggregate site area with an apex in the Halaf

period, when as many as nine sites were occupied [Fig. 3]. After a decline during the Ubaid period, the late Chalcolithic featured a dynamic increase of sites in the Navkūr plain (up to 13.5 sites), despite a likeness of their description: all were small, typically less than 1 hectare in area. Similarly to earlier periods, the evidence for the late Chalcolithic period is hardly present in the Dalarê–Hancîrûk area, where only two sherds of this period were discovered [Fig. 4]; one of them represents a Beveled Rim bowl of possible South Mesopotamian origin.⁴ The first half of the 3rd millennium BC, belonging already to the Bronze Age, represented a settlement pattern very similar to the earlier one. Small sites dominated the plain in Navkūr, reaching 15 in number. The western bank of the Greater Zab seems to have been colonized in this period as it is then that settlement sites start to appear, albeit in limited number.

During the later part of the 3rd millennium BC a significant change occurred in the Navkūr plain. An urban settlement (S074 = US018), covering approximately 33 hectares in area, appeared for the first time in this area. Sites from this period in the UGZAR working area tend to be small settlements and no site of this size has been noted so far either in the western or in the central part of the Navkūr plain, although middle-sized settlements have been identified (D. Morandi Bonacossi,

³ The site numbers starting with an S refer to the field numbering, reflecting an increasing number of sites during successive seasons. The US numbers, to be used in the final publication of the project, reflect geographical site distribution.

⁴ The issue of so-called Southern Uruk pottery presence was addressed extensively by Dorota Ławecka in her paper ‘New-comers and autochthons. Preliminary report on 2014–2015 survey activities in Kurdistan Autonomous Region, Iraq’ read at the first ‘Poles in the Near East’ conference organized in 2016 in Warsaw by the Polish Centre of Mediterranean Archaeology University of Warsaw.

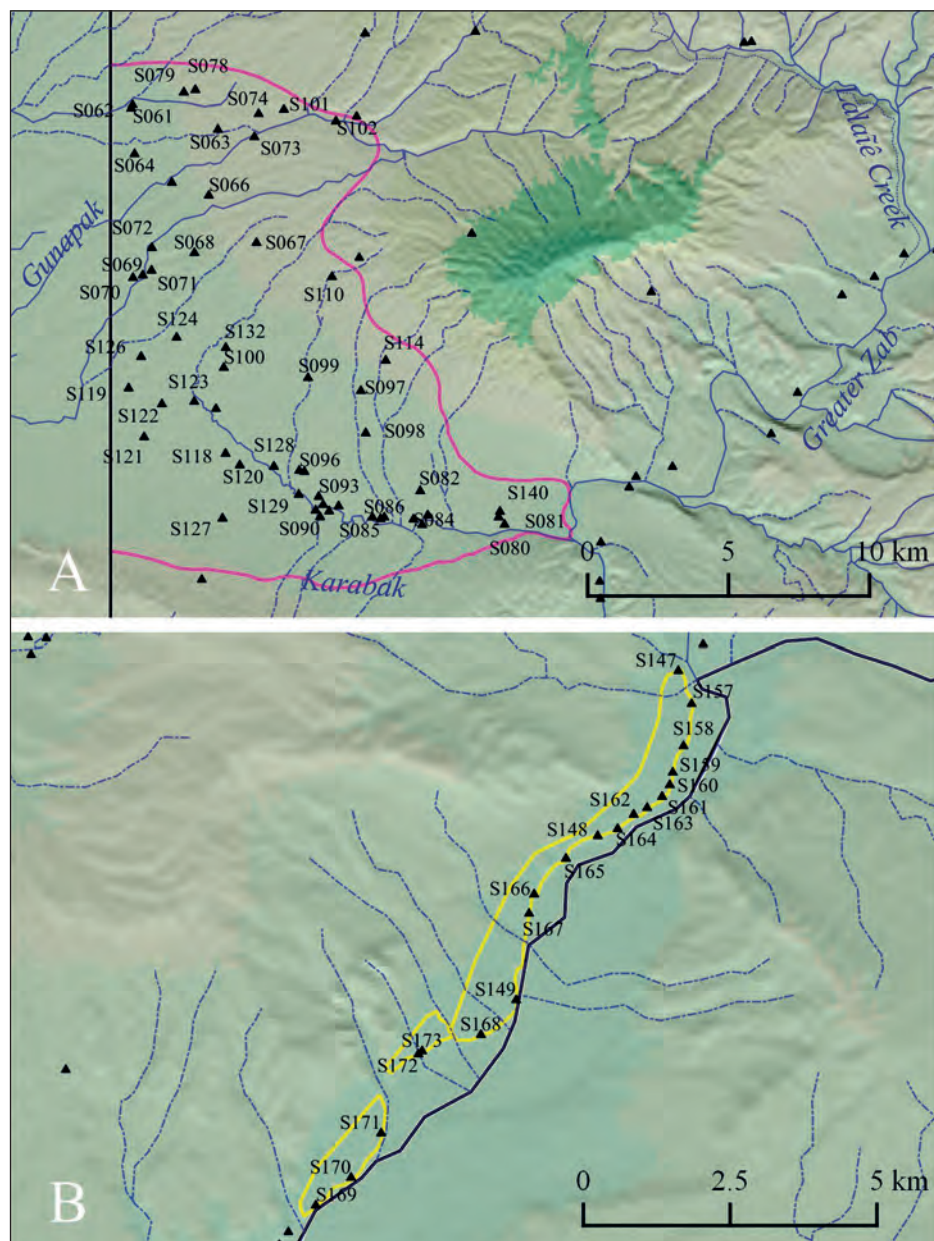


Fig. 2. Distribution of archaeological sites: in the Navkūr/Karabak study area (A) and in the Dalarê–Hancîrûk transect area (B) (©UGZAR project/drawing J. Mardas)

personal communication). It seems very likely then that here was a power center of the later 3rd millennium BC (corresponding to the Akkadian and post-Akkadian periods), extending its authority probably to the entire Navkūr plain. Settlement density during the Middle

and Late Bronze Age increased, in terms of both the number of sites and the mean site area, but no comparable urban center to S074 = US018 from the close of the 3rd millennium BC has been attested. Instead, there are three sites of comparable area, topping 10 hectares, distributed

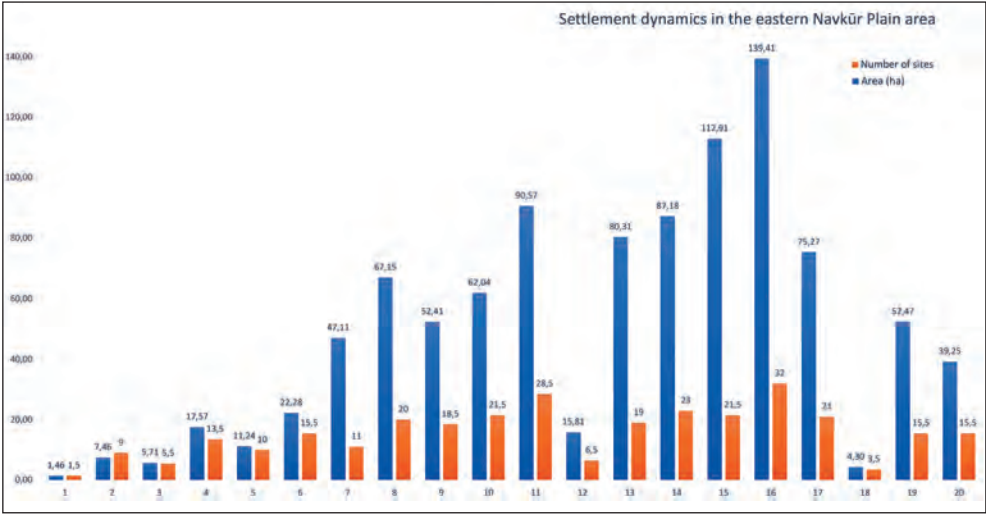


Fig. 3. Settlement dynamics in the Navkūr/Karabak study area (©UGZAR project/R. Koliński)

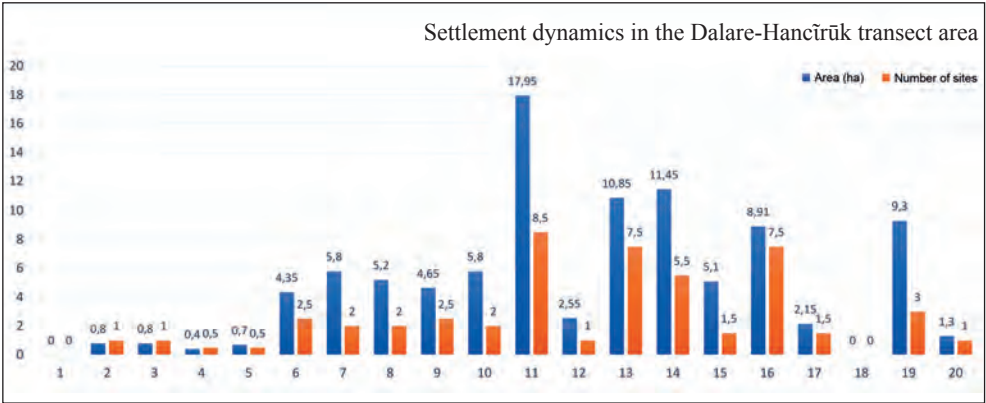


Fig. 4. Settlement dynamics in the Dalarê-Hancîrûk transect area (©UGZAR project/R. Koliński)

more or less evenly across the plain. A similar situation is observed in the remaining part of the Navkūr plain (D. Morandi Bonacossi, personal communication), suggesting that the main political center(s) of this period was or were located outside of the Navkūr plain. These changes did not, apparently, affect the Dalarê–Hancîrūk area, where the number of sites (2) and their size (about 5 ha altogether) remained stable throughout the 3rd and the 2nd millennium BC.

The area along the Zab witnessed a four-fold increase in Neo-Assyrian settlement. This is attested in the number of sites as well as the aggregate settled area. A similar change is clearly observable in the Navkūr plain and the neighboring survey areas, although it scores only about 50% owing to the quite high settlement density during the Bronze Age. The change could perhaps be attributed to the Assyrian imperial policy of agricultural development, which would have led to colonization of areas settled scarcely before, if at all (Morandi Bonacossi and Iamoni 2015: 25–29; Ur and Osborne 2016). The Neo-Assyrian period also marks the beginning of a new era, bringing in line finally the settlement development trajectories in the two regions here discussed. It may reflect the incorporation of the studied area into a supraregional imperial network starting with the Neo-Assyrian period.

The following so-called post-Assyrian period was characterized by a settlement collapse in both areas, a phenomenon typical of all of northeastern Mesopotamia at this time (Koliński 2017). Denser settlement was reestablished at the onset of the Hellenistic period and this rising tendency peaked in Sasanian and late Sasanian/early Islamic times, most probably due to

the presence of Christian communities fleeing Byzantium following the banning of the Nestorians in the 4th century AD. In the middle Islamic period, the number of settlements in both areas dropped by approximately 50% and the settlement density continues on this level until pre-modern times.

In terms of other heritage recorded by the survey, one should mention rock reliefs, caves and historical architectural sites.

ROCK RELIEFS

Four rock relief panels were recorded on the slopes of the mountain chains on the northern border of the UGZAR working area. Three of these, located in a rock shelter above the village of Günduk, date to the 3rd millennium BC and are currently the oldest known Mesopotamian rock reliefs. More



Fig. 5. *The Harîr relief in October 2014*
(©UGZAR project/photo D. Piasecki)

the pity that they were partly destroyed by treasure hunters either in 1994 or in 1996 (Reade and Anderson 2013: 82; Koliński 2016: 168). Explosives placed under one of the carvings destroyed one of the reliefs entirely (Panel 2), and seriously damaged the other (Panel 1). Only Panel 3, located deep inside the shelter, avoided damage. In 2013, the UGZAR team recovered two fragments of the destroyed Panel 2 on the slope below the rock shelter, allowing a critical reevaluation of published representations of the panel and excluding two of four as not being correct (Koliński 2016: 168–169).

The fourth and much younger panel is located in the eastern part of the area, above the Harîr township. The relief, showing a Parthian ruler (Grabowski 2011), was documented by Reiner Boehmer in 1970 (Boehmer and von Gall 1973). It has since deteriorated badly, most probably due to climatic conditions and the increased traffic on the Erbil–Roûanduz road located at the base of the hill where it is located [Fig. 5].

CAVES

Numerous caves are located in the UGZAR working area, especially in the limestone ranges of the Akrê, Prt and Harîr mountains. A few of them were visited by Robert John Braidwood during his pioneering research in the area (Braidwood and Howe 1960: 29, 59–60), and as much as 37 caves were listed in the Akrê area alone (Salman 1970). The near location of the Şanidar cave (Solecki 1963), just 35 km to the northeast of Akrê, prompted the UGZAR team to visit as many caves in

an effort to assess their potential for future research.

As many as 91 caves and rock shelters were visited during the 2013 season, but relatively little archaeological material was recovered due to continuous use of these places as animal shelters. In most cases finds were scattered on the slopes below cave openings and more often than not, pottery collected there represented very recent period(s), covering approximately the past two centuries at best. Flint or stone implements were also relatively rare, being registered in 19 documented cases. One should keep in mind, however, that most caves in Kurdistan, including the Şanidar cave, have witnessed extensive use in modern times and it was only after excavations began that the discoveries for which the Şanidar cave is famous were made (Solecki 1979). A coring project is recommended, if the cave deposits are to be fully evaluated in terms of their research potential. In any case, speleothems observed in about half of the documented caves offer opportunities for climatological studies.

ARCHITECTURE

Numerous architectural remains were documented, first of all in villages located in the valleys cutting into the southern slopes of the Şax-î Akrê mountain range. According to medieval sources, most of the villages located there were founded by Christian communities. Religious structures stand in most of these locations, either churches as in Şarman, Şuş, Xrdîs, Xerpe and Akrê or monasteries as in Günduk, Akrê and Narûa.⁵ A synagogue

⁵ Discussed in Xenia Kolińska's unpublished paper "L'architecture chrétienne dans la région d'Akrê. 50 ans après J.M. Fiey", read at the first "Poles in the Near East" conference in Warsaw in 2016.

documented in Şuş, as well as mosques in Akrê and in Bûsêl, attest to the presence of other religious communities in the area, a situation which is typical of northern Iraq even today. Other buildings, like castles for example, were also encountered in the region (in Şuş and Akrê). Moreover, the team documented

a group of industrial buildings, namely grist mills consisting of a stone drip tower and a mill-house at its base (Neely 2011), demonstrating that the tradition of horizontal water-wheel mills, known from Iran from the Sasanian period onward, had reached Iraqi Kurdistan as well.

HERITAGE MANAGEMENT

One of the aims of the project included documentation and monitoring of the damage sustained by archaeological sites in recent decades. Photographic and written assessment of such damage was made in the field. Generally speaking, illicit digging was found to be relatively rare at sites in the vicinity of Akrê in contrast to the heavily looted locations in southern Iraq. More dangerous and widespread was damage

resulting from human activities related to the rapid development of a settlement network, infrastructure and intensified agriculture (Mardas 2017, in this volume). It is clear that archaeological sites in the area need more protection than they have received until now, and that awareness-building activities in Kurdish society are a must in order for the country's rich cultural heritage to be preserved for the future.

SUMMARY

Four years of fieldwork carried out by the UGZAR project team in an area barely touched by earlier research revealed a rich and complex picture of ancient heritage in the studied area. The region appears to be a patchwork of sub-regions differing considerably in terms of settlement density and development trajectories. Some of the observed traits are typical of northeastern Mesopotamia as a whole, while others represent evidently local changes that still defy a full understanding. The acquired dataset provides the grounds for more comprehensive study of settlement history in the region.

The concurrent monitoring of the state of cultural heritage has also proved seminal in view of the rapid development of Iraqi Kurdistan in recent times which has

placed many archaeological remains and historical monuments in danger. Indeed, instances of unfortunate destruction have been witnessed by the project team even during its short time in the field.

The presented outline of results for part of the project area is an interim report and should be treated as provisional at best. Following two more field seasons, which will focus on the eastern bank of the Greater Zab river (Harîr township in 2016 and Şaqlaûa in 2017), the project will concentrate on producing the final publication of the survey results. Together with the results of the other major survey projects working in the region, it will provide a comprehensive and informative view of settlement history in the Iraqi Kurdistan area.

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Argishti I in the Arax valley: consequences of the conquest

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Abstract: The conquest of the fertile Arax valley by Argishti I in the mid 8th century BC was a major point in Urartian imperial policy, the valley having been a target of Urartian expansion from the start. The article outlines Argishti's actions, including the evidence of violence discovered during recent excavation at Metsamor in Armenia, thus highlighting the dynamics and significance of Urartian expansionism. A contribution is also made to a study of the emergence and development of urban settlement in the Arax valley through an examination of surviving Urartian inscriptions.

Keywords: Urartu, Argishti I, Erebuni, Argishtikhinili, Oshakan, Metsamor, Arax valley

Recent work at Metsamor in Armenia (excavated since 2013 by a Polish–Armenian joint expedition) has uncovered telling evidence of a turbulent times accompanying Urartian expansion in the 9th–8th century BC. The burning and abandonment of the city of Metsamor is written into the history of the Urartian kingdom, highlighting the dynamics and significance of the processes of expansion, accompanying the emergence and development of urban settlement in the Arax valley.

From the time of its emergence in the region of Lake Van the Urartian kingdom was set on a policy of expansion, constrained at first by the vulnerability of its economy. Unable to sustain dynamic growth on the available arable land and pastures (Zimansky 1985: 9–31), the kingdom embarked on a long-lasting process of

subjugating and exploiting new territories around Lake Van and gradually advancing further east into the lands west of Lake Urmia. This secured a solid base for economic growth (Kleiss 1969–1970).

The Arax valley and adjoining territories with their fertile arable lands and mild climate were attractive from an economic point of view, but also seminal in terms of the anticipated political implications of the expansion. Relentless and methodical territorial expansion by Urartian kings led to the establishment of most likely tribal proto-states. The state-forming process was analyzed extensively by Smith (1996; 2012), yet the underpinnings and dynamics remain unknown. The results of recent excavation at Metsamor, attesting to sweeping violence that destroyed the settlement and fortress in the times of Argishti I, stand

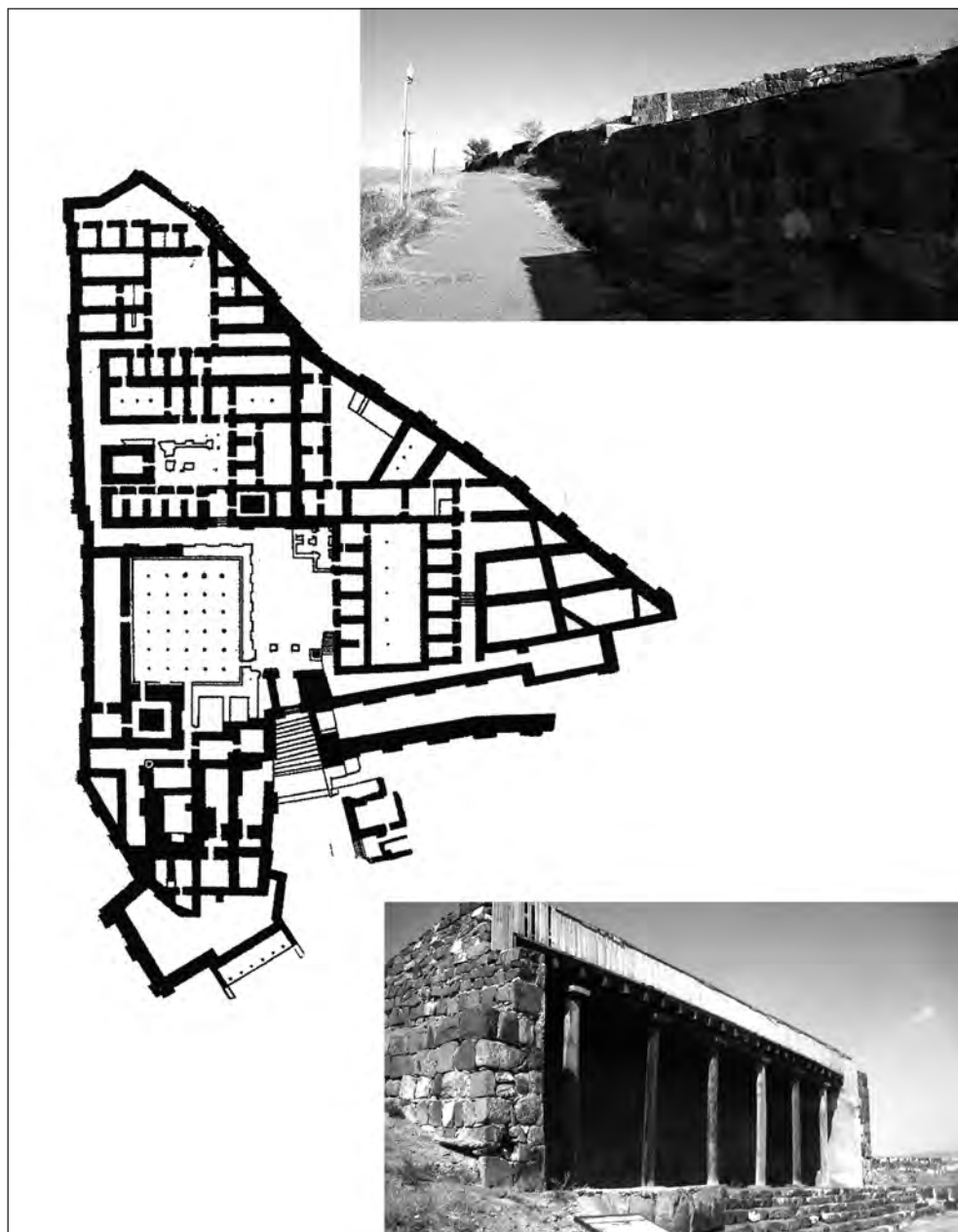


Fig. 2. The citadel in Erebuni; inset top right, southern part of the defense wall; inset bottom right, the peristyle hall facade viewed from the south (Plan after Hodžaš, Truhtanova, and Oganesyan 1979: Fig. 3 on page 21; photos K. Jakubiak)



Fig. 3. *The Arax valley with Mount Ararat in the center, view from the citadel in Argishtikhinili looking southwest (Photo K. Jakubiak)*

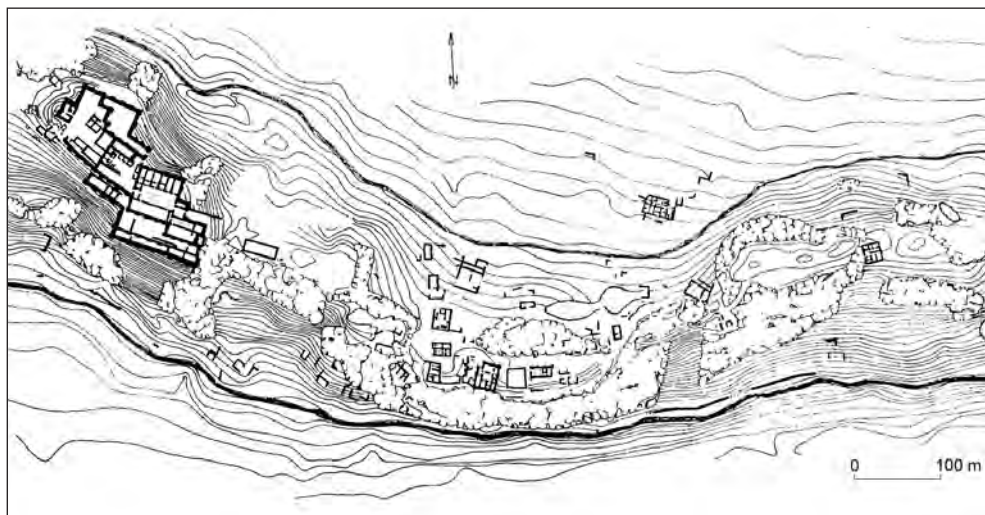


Fig. 4. *Argishtikhinili: plan of the western citadel (After Martirosyan 1974: Fig. 11)*

buttressed circuit wall taking advantage of the terrain [Fig. 5 top]. The stone work and the building methods reflect good knowledge of military architecture and building skills. The eastern citadel shows equally good use of the natural topography and the application of the same technical and architectural criteria, indicating a well-prepared fortification concept, which ensured maximum security and offered protection to the newly conquered lands.

Inscriptions discovered in the ruins of Argishtikhinili and in the vicinity shed light on land use, reflecting the policies

of Argishti I with regard to control over that part of the Arax valley. Inscription K91 found in the vicinity of Armavir gives the ancient name of the site and states Argishti's role in the development of the surrounding region: "Through the god Haldi's power, Argishti, son of Menua, speaks: a city for my power I erected, and gave it the name of Argishtihinli. The land around was never inhabited, nothing was established here, therefore I have led four canals from the Manu river, I had vineyards and orchards established, I have done good things here. I am Argishti, son of Menua,

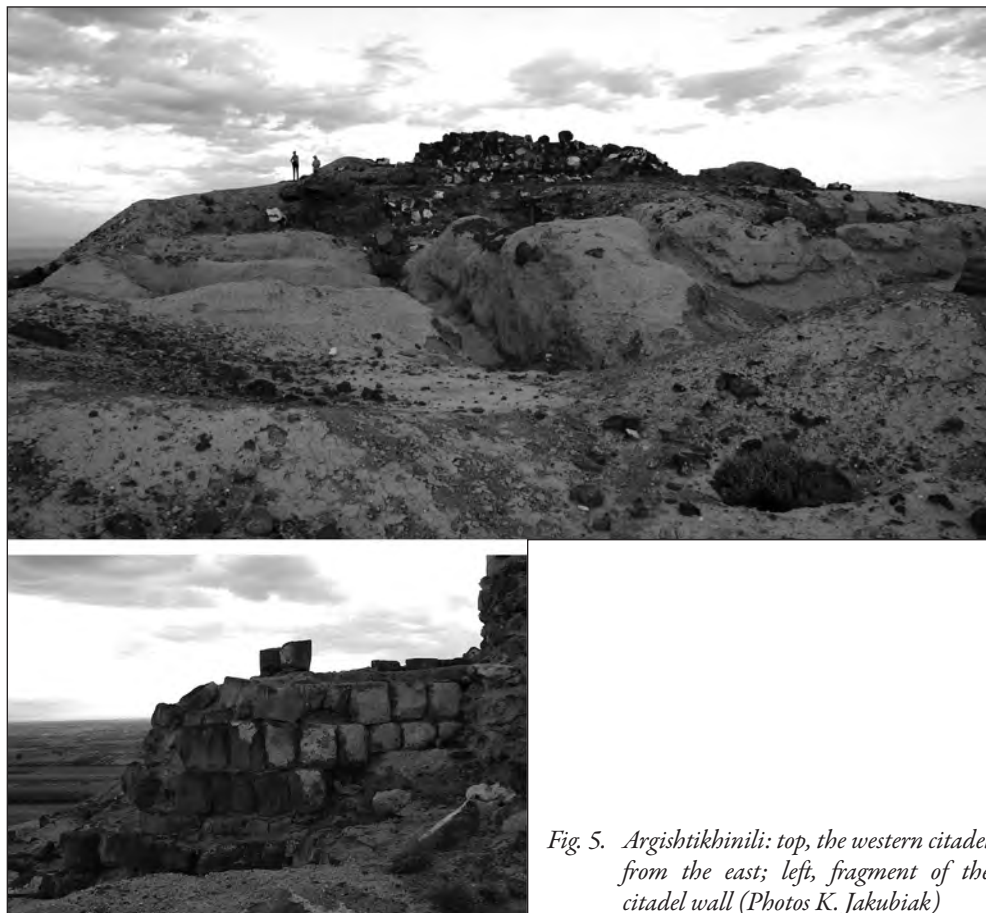


Fig. 5. *Argishtikhinili: top, the western citadel from the east; left, fragment of the citadel wall (Photos K. Jakubiak)*

powerful king, the great king, the king of the Land Biai, the Lord of the city of Tushpa" (König 1955–1957: 109; Salvini 2008: 354). The text makes it clear that this part of the valley had not been exploited before for either economic, agricultural or colonization purposes. Taken at face value, the text highlights Arishti's role as the one who established real power and brought civilization, kick-starting a period of economic prosperity. It can also be read as a piece of propaganda, making it one of the most important inscriptions discovered in Armavir. After all, it is hard to believe that such a fertile part of the Arax valley had been uninhabited and unused before the Urartian conquest. Whichever the case, the discoveries in the western citadel and lower town of Arishtikhinili imply new opportunities for dynamic development of this part of the province resulting from Arishti's endeavors. This certainly went along with the process of the ever growing administrative control over the conquered territories.

The Arishtikhinili fortress appears to have been planned as a local religious center as well with at least three structures in the western citadel interpreted as temples (Forbes 1983: 74). The deities worshipped in these establishments are not identified for lack of epigraphic evidence. However, Inscription K97 mentioning several deities from the Urartian pantheon (König 1955–1957: 110–111) can be of some help in this regard. It was discovered in the vicinity of the fortress and listed some sacrifices to the gods worshipped in Arishtikhinili in the times of Arishti. The list opens, as usual, with Haldi, to whom a lamb, a sheep and an ox (or rather a bull), were offered in sacrifice. Another deity mentioned there is Urabani, more commonly known as

Arubani, the wife of Haldi, to whom a bull was offered. Armavir must have thus been a sacred center of the main deities of the Urartian pantheon from the beginning of its functioning. It cannot be excluded however that the absence of indigenous deities means that the people living there had been resettled from the central zone of the Urartian kingdom. If the supposition is correct, theirs was the responsibility of organizing a new administrative, religious and military center. Theirs was also the task to supervise one of the most important, strategic roads leading to the heart of the kingdom.

The territorial expansion and growth of the Arishti kingdom led to the emergence of some lesser fortresses as well, like the relatively small fort of Oshakan (Esayan and Kalantaryan 1988) [Fig. 6]. Constructed on a steep hill, it nevertheless does not seem to have been intended as a defense point against possible attack, rather as a checkpoint situated at an important crossroads, supervising the flow of people and goods. It cannot be excluded that it was constructed to protect and supervise local trade, acting probably as a local tax collection unit. Taking into consideration the size of the fortress, it could house only a small military force.

Irrespective of its size, the fort might have benefited from some sort of settlement in its vicinity, facilitating its maintenance. The settlement or rather set of dwellings located near the military structure, most probably only partly enclosed by walls, is unique in Urartian territories and may have served a different purpose altogether [Fig. 6]. The wall protected or rather hid the dwellings, most certainly not being designed to resist a serious attack; however, its refugial role seems to have been

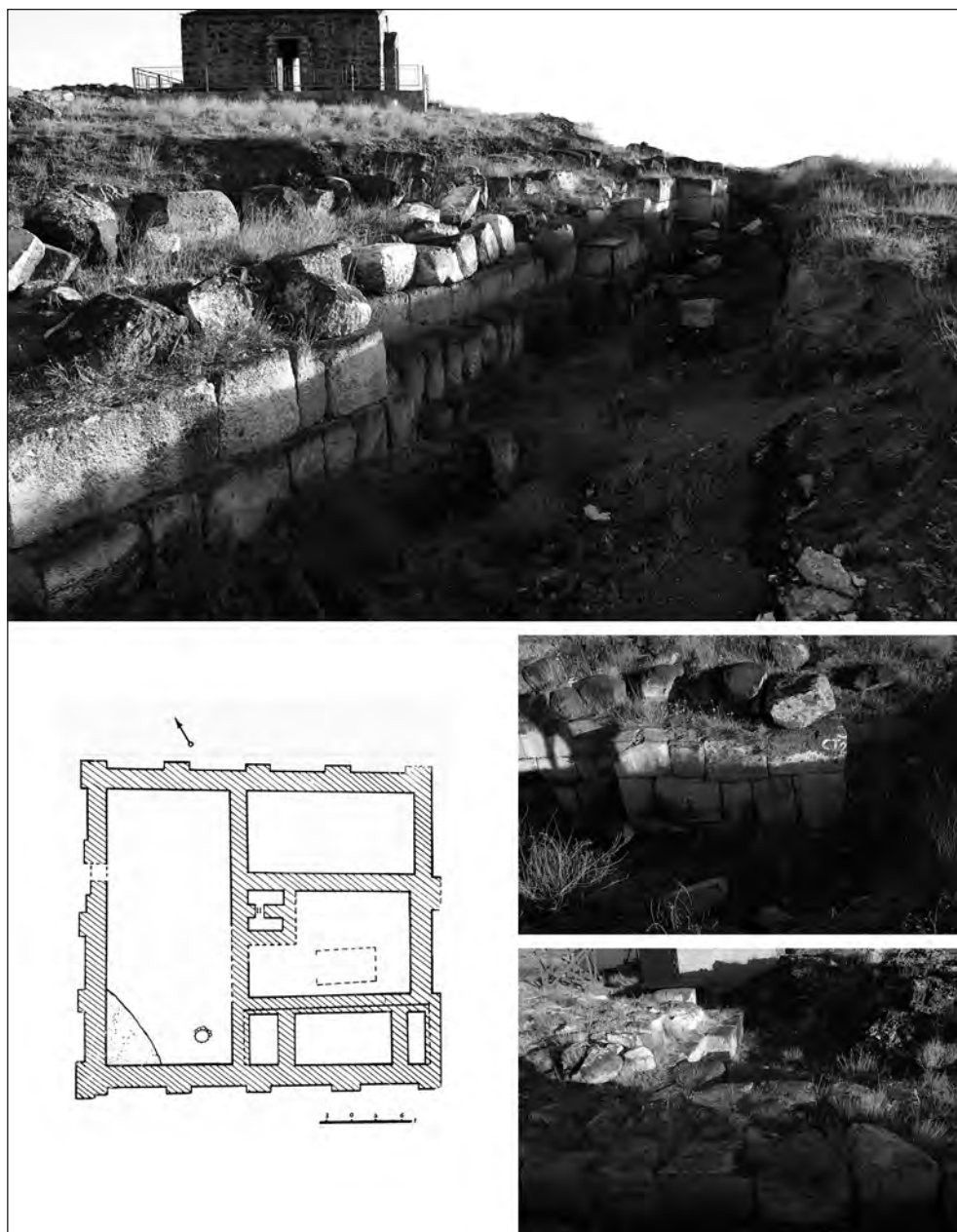


Fig. 6. Oshakan: bottom left, plan of the hilltop fort; top, remains of a defense wall; center and bottom right, a corner buttress and stone blocks from the curtain wall (Plan after Esayan and Kalantaryan 1988: Fig. 110; photos K. Jakubiak)

appreciated. The question is what kind of menace was involved in this area. Assuming that Argishti's conquest was not complete and that strong local resistance to Urartian rule remained, Oshakan could be seen as proof of the less than comfortable situation of the Urartians outside the big cities and large fortresses, such as Erebuni and Argishtikhinili, which constituted an ostentatious demonstration of Urartian power. It is very likely that Urartian presence was still quite unstable and not grounded enough to give the Oshakan dwellers full protection. Guerrilla fighting tactics may have still been in use against the Urartian invaders. Speculatively speaking, the settlers who decided to build a village on the top of the hill in the area of the already functioning fort must have been

counting on the protection of the Urartian military unit in case of an attack.

The Oshakan fort may have been constructed in the times of Argishti I considering its layout, building techniques and materials. The characteristic buttress system of the curtain wall layout, so different from the large and heavy buttresses distinctive for early Urartian military architecture, was an innovation introduced in the first half of the 8th century BC.

While the fortresses of Erebuni and Argishtikhinili show Argishti's involvement in this part of the Arax valley, the recent excavations in Metsamor shed light on the brutality of the incorporation of the provinces of Liquini and Etuini into the Urartian kingdom. The archaeological evidence from the settlement located



*Fig. 7. Metsamor: skeleton discovered in the ruins of the settlement
(Photo K. Jakubiak)*

north of the Metsamor citadel reveals traces of a conflagration and destruction of the buildings, including bodies apparently left in the rubble (both discovered in 2014). One was of a woman who had been beheaded, the skull being found about 10 m from the rest of the body. The other belonged to an adult male who had been fleeing the disaster (Mkrtchyan and Simonyan 2016: 566–567) [Fig. 7]. At the time of his death he seems to have been clutching for safekeeping a small pitcher with an engraved trident symbol usually associated with the god Haldi. The relevant stratigraphic evidence dates the skeleton to the rule of Argishti I, making it thus an unfortunate victim of this ruler's push to the north.

To conclude, Argishti's taking of the Arax valley was a dynamic and sometimes brutal process, in keeping with the times when local rulers and their holdings had to bow to the new political and military power from Van. From an economic perspective, local communities could have benefited from the prosperity coming with the Urartian kingdom, but it is equally possible

that some of the indigenous peoples were resettled to other regions of the Urartian kingdom, being replaced by others who came to settle in the Arax valley, a process of population exchange that was not uncommon in the ancient Middle East.

Argishti I presumably embarked on the incorporation and unification of the newly acquired provinces supposedly right after the conquest, based on administrative and military supremacy. The process was quick and apparently violent as the Metsamor perspective would suggest. The main goal was to fully incorporate the most important provinces because of their economic and strategic potential, as well as to dismantle the barriers between the old and new provinces. The success of the project depended on a flurry of economic, military and architectural undertakings. In the end, this part of the Arax valley can be seen as one of the most important, if not crucial economic and agricultural centers of Urartu. It can be even postulated that under Argishti I the Arax valley flourished to an extent not enjoyed at any other time after the kingdom's fall.

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Metal garment elements from the Late Bronze Age–Early Iron Age cemetery at Beshtasheni (eastern Georgia)

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Abstract: The paper presents metal elements of garments and jewellery dating to the Late Bronze Age–Early Iron Age period (13th–6th century BC) coming from the excavation of the Beshtasheni cemetery in eastern Georgia carried out from the mid-1930s until 2014. A brief historical and cultural background, including a short description and chronology of the Beshtasheni cemetery, is given before presenting the assemblage of metal garment elements found in the graves: pins, belts and buckles, finger rings, bracelets, parts of buckles and beads, including a preliminary typology of some of these artifacts. The typology takes into account the decoration and shape, as well as ornamental elements and motifs. The paper goes on to describe the observed relation between metal garment elements and the gender and age of the deceased.

Keywords: Beshtasheni, bronze, Early Iron Age, Georgia, Late Bronze Age, metal artifacts, dress elements

Excavations in the Late Bronze Age–Early Iron Age period cemetery in Beshtasheni in southeastern Georgia, carried out from the 1930s through 2014, yielded an assemblage of metal elements consisting of pins, belts, finger rings, bracelets, parts of buckles and beads. These finds have been published separately for the most part, but never studied as a group.

The main objective of the present paper is to reconstruct the manner in which the discussed metal elements of adornment were worn and observe the possible links to gender and age attested in the individual burials. For this purpose the authors present a small catalogue of the finds and a provisional typology of the metal pins category.

THE CEMETERY OF BESHTASHENI: SITE, EXCAVATION AND CHRONOLOGY

The cemetery of Beshtasheni in southeastern Georgia is located on the right bank of the Baiburt-Chai River,

which runs through a fairly deep gorge, separating the burial ground from the settlement which lies in the bifurcation

of this river and the Bashkov-Su stream (G. Narimanishvili 2010: 313; 2012: 89). The archaeological site lies in the territory of Tsalka municipality in the Kvemo Kartli region, on a plateau of the same name as the municipality, which corresponds to it in its extent, and to the northwest of the modern village (D. Narimanishvili, Karelidze, and Hamburg 2015: 104) [Fig. 1].

Boris Kuftin, who studied many sites belonging to Kura-Araxes, Trialeti and Late Bronze Age–Early Iron Age periods, excavated the settlement and cemetery within the frame of the Tsalka reservoir construction project. Between 1936 and 1941 he discovered and studied 49 pit graves and stone cists (Kuftin 1939: 93;

1941). The cemetery was investigated again between 1991 and 1998 by the Tsalka–Trialeti Archaeological Expedition which explored another 11 graves, starting off a new numbering system that has been continued to this day. Progressive erosion of the riverbanks, which threatened the site of the cemetery, resulted in the Beshtasheni Expedition conducting from 2012 excavations on the site of the cemetery and in the surrounding territory on behalf of the Kldekari Historical-Architectural Museum-Reserve (D. Narimanishvili, Karelidze, and Hamburg 2015: 104–105). Graves 12–56, altogether 45 in number, were uncovered between 2012 and 2016.¹ Since 2016 a Georgian–Polish



Fig. 1. Location of the Beshtasheni cemetery and settlement; inset, location of the site and the Kvemo Kartli region in Georgia (Processing R. Bieńkowski; drawing J. Hamburg)

¹ The expedition team included undergraduate, graduate and post-graduate students from various universities, including: Ivane Javakhishvili Tbilisi State University, University of Warsaw, Georgian National Agrarian University, Tbilisi

Joint Archaeological Expedition has been operating within the frame of an official agreement signed between the Georgian National Museum and the University of Warsaw. The main part of the excavation was conducted to the west of the ancient settlement site, near the road from Beshtasheni village to Khareba (earlier Saphar-Kharaba) village.

The Beshtasheni cemetery is dated to the 13th–6th century BC and is divided into two phases corresponding to the Late Bronze Age and Early Iron Age periods (D. Narimanishvili, Karelidze, and Hamburg 2015: 104). The graves can be dated on typological grounds, verified by a few radiocarbon dates on human bones, which still need to be confirmed by more specialized research (samples from graves 19, 21 and 29 in verification, as yet unpublished).

The beginning of the Late Bronze Age in Georgia corresponds to the middle of the 2nd millennium BC (Kušnareva 1997: 81). A number of chronological systems have been suggested for the chronology of the Late Bronze Age–Early Iron Age periods, stipulating sometimes consi-

derably different divisions, e.g., systems proposed by Michael Abramishvili (1957), Arutyun Martirosyan (1964), Konstantin Pitskhelauri (1990), Nino Akhvlediani (2005: 257) and Adam Smith (Smith, Badalyan, and Avetisyan 2009: 29–33, 39–40, 68–90). Most of these chronological systems place the Late Bronze Age–Early Iron Age between 1500–700/600 BC.² The main difficulty with the South Caucasus chronology is determining the date of the transition from the Late Bronze Age to the Early Iron Age, which is traditionally identified with a very early adoption of iron on a larger scale (Smith, Badalyan, and Avetisyan 2009: 40). Martirosyan (1964: 81–293, 299–305) placed the transition from the Late Bronze Age to the Early Iron Age around 900–800 BC, while Pitskhelauri (1990: 248–249) set the break at 1000 BC and the end of the Early Iron Age at 700 BC. For Smith, the Early Iron Age (which he renamed as Iron I) started relatively early, in 1150 BC (Smith, Badalyan, and Avetisyan 2009: 29–30, 34, Fig. 2), but his research has focused mainly on archaeological sites and artifacts found in the territory of modern Armenia.

THE CULTURAL BACKGROUND

Remains of metal and pottery workshops have been found on a large number of Late Bronze Age–Early Iron Age cemetery and settlement sites in eastern Georgia. The advanced technology of the period is well attested in the metalwork. The Late Bronze

Age metal artifacts were made of alloys of many elements (G. Narimanishvili et al. 2007: 18). The Beshtasheni metalwork is represented by weapons, such as daggers, spearheads, arrowheads, axes, and parts of horse harness (Kuftin 1941: 60), as well as

Free University, Jagiellonian University, Adam Mickiewicz University in Poznań (D. Narimanishvili, Karelidze, and Hamburg 2015: 104–105), University of Wrocław and students from the Mtsignobartukhutsesi secondary school (D. Narimanishvili 2014: 69).

² The first half of the 6th century BC is considered as the beginning of the so-called pre-antique period in the territory of Georgia. From the beginning of this century eastern Georgia was occupied with lesser intensity, whereas the rather different Colchian Culture developed in western Georgian, see Braund 1994.

jewellery and garment accessories in the form of pins, belts (Kuftin 1941: 66–68), finger rings, bracelets, parts of buckles and beads (D. Narimanishvili, Karelidze, and Hamburg 2015: 106–108).

There is a large body of evidence for artifacts of this kind from the Late Bronze Age and Early Iron Age sites in the Tsalka Region. Settlements from this period were excavated at Eli-Baba (Shanshashvili and G. Narimanishvili 2012: 179), Avranlo (G. Narimanishvili et al. 2010: 384), Bareti (G. Narimanishvili and Shanshashvili 2001: 9), Santa, Gumbati (G. Narimanishvili et al. 2007: 18), and Knole (G. Narimanishvili 2010: 89), while cemeteries were found at Beshtasheni, Khareba (G. Narimanishvili and Shanshashvili 2001: 9) and Avranlo (G. Narimanishvili et al. 2010: 387) and again in Eli-Baba (Murvanidze 2010: 417), as well as in many cyclopean complexes in the nearby highlands.

The first artifacts made of iron appeared at this time but bronze, being the malleable material it is, remained in common use, alongside iron, mainly for decorative purposes. This is evidenced by some bronze belts decorated with a great variety of incised ornaments inscribed into geometric figures, waves, chevrons and schematic animal and human figures (Khidasheli 1982: 139–144).

The Late Bronze Age was a period when the proto-Kartvelian tribes and their political alliances emerged in the ancient Near East (G. Narimanishvili et al. 2007: 19). Assyrian and Urartian written sources provide the first references to the proto-Kartvelian tribes and states from this time (A. Sagona and C. Sagona 2005: 30). No other written sources exist on the local societies in the Late Bronze

Age and Early Iron Age specifically from the territory of Georgia, but the material culture is richly represented at several archaeological sites as mentioned above (mainly cemeteries), e.g., the Late Bronze Age Khareba cemetery, located just 2.2 km north of the Beshtasheni site discussed in this paper, excavated in 2003–2005 within the frame of the British Petroleum pipeline construction project (G. Narimanishvili et al. 2007: 10).

The graves of Beshtasheni are of the pit burial type, usually covered with pebbles of different size or earth, or the two combined; stone slabs were also used. Some of the burials had a layer of threshing(?) stones either below or above the skeleton. In almost all the cases the deceased were buried with their heads to

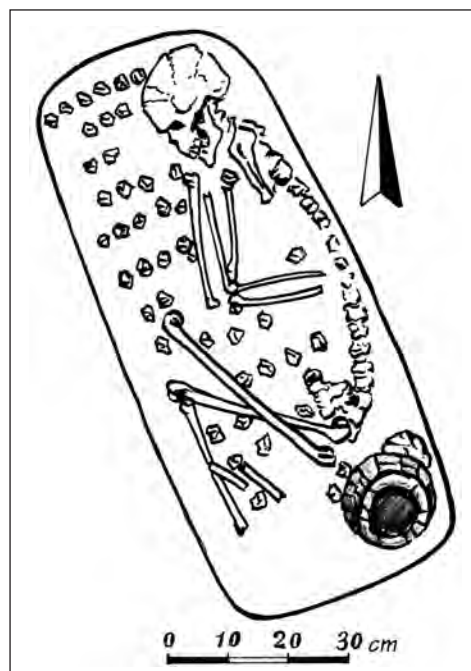


Fig. 2. Grave 13 excavated in the Beshtasheni cemetery in 2012 (Drawing G. Tatishvili)

the north (D. Narimanishvili, Karelidze, and Hamburg 2015: 105) [Fig. 2]. Graves in the form of stone boxes were also recorded (Kuftin 1941: 65). A more

detailed characteristic of the graves comes from the recent excavations at the site in 2012–2014 (D. Narimanishvili, Karelidze, and Hamburg 2015).

THE ARTIFACTS

The collection of metal artifacts discussed here, not including weaponry, comes from the excavations at the Beshtasheni cemetery site conducted, at intervals, from the 1930s through 2014. It includes clothing elements and jewellery items, such as A) pins (four general types), B) belts, C) bracelets and finger rings, D) buckles and shanks (three types); and E) beads [Table 1].

A. PINS

Pins from the Beshtasheni cemetery represent a wide selection of shapes and decoration methods, and can be divided into four general types [Fig. 3].

I. Pins with wide heads

Petal-shaped in section. Length from 13.7 to 20.6 cm.

- a) Body decorated with ribs, a dot placed on each rib;
- b) Body decorated with a vertical band, filled with a chevron or herring-bone motif.

II. Pins with spiral heads

Body round in section. Length from 11.1 to 16.1 cm. Top one third to one half of the shaft decorated with a twisting continuous line or with incised multiple vertical chevrons.

III. Pins with either flat or rounded head

- a) Length from 8.2 to 16 cm. This kind has a flat head with ribbing just under it and a hole through the shaft below the ribs. The head can be decorated with three additional tabs.

- b) Length from 9.5 to 16 cm. Pins of this kind have rounded heads and a hole at a quarter-length of the pin below the head. Some are decorated with wide segments separated by narrow hoops just under the head. The shaft of the pins widens around the section with the hole.

IV. Pins without distinct head

Body oblong in section. Length from 15 to 28 cm. The body is decorated with vertical chevrons and herring-bone motifs.

B. BELTS

The four belts from the burials excavated at Beshtasheni were richly decorated with a variety of incised and excised ornaments. Motifs included geometrical figures like triangles, crosshatching patterns, chevrons, spirals, waves, as well as schematic figures of animals, most probably from the Equidae or Cervidae taxa, and of humans. Some of the depictions appear to have made up narrative scenes.

The bronze belt from Grave 21, excavated in 2013, depicts a hunting scene. Two horsemen, armed with bows, are shown in the act of shooting arrows. They are rendered at the two ends of the belt, facing to the right, in each case with two other horses abreast. One of these seems to be led on a rope by the horseman, the others are shown loose. Between the two groups is a central panel surrounded by a decorative band composed of two bands of dots,

separated by a zigzag and fringed with dot-filled triangles. On either side of the panel are images of horned animals, two at the top between the horsemen and three at the bottom, between the loose horses. A line of seven horned animals, the first slightly distanced from the rest, is shown inside the panel. These animals are smaller in size than their counterparts on the outside margin. A band of the same kind of ornament as that around the central panel delineates two triangular panels near either end of the belt, the apices of these panels pointing in. Filling

the triangles are five horizontal bands of dots with a fringe of dot-filled triangles. Snakes and tortoises are depicted in the lower left and upper right corners of the scene, while the representations in the upper left and lower right corners may be interpreted as water birds. An elaborate decorative band composed of a double band of dotted zigzag fringed with dotted triangles runs around the edges of the belt. This belt is about 85 cm long (D. Narimanishvili, Karelidze, and Hamburg 2015: 106–107) [*Fig. 4:a*]. It should be kept in mind



Fig. 3. Pins found at the Beshtasheni cemetery: I–IV – four different types (Photos D. Narimanishvili; processing K. Pawłowska)

that the belt was found in pieces and the reconstruction as presented here fails to take into consideration one fragment that bears the representation of a most probably unmounted human figure.

The bronze belt from Grave 25, excavated in 2014, is decorated with bands of geometrical patterns. The band running around the edge of the belt consists of a band of crosshatching between two

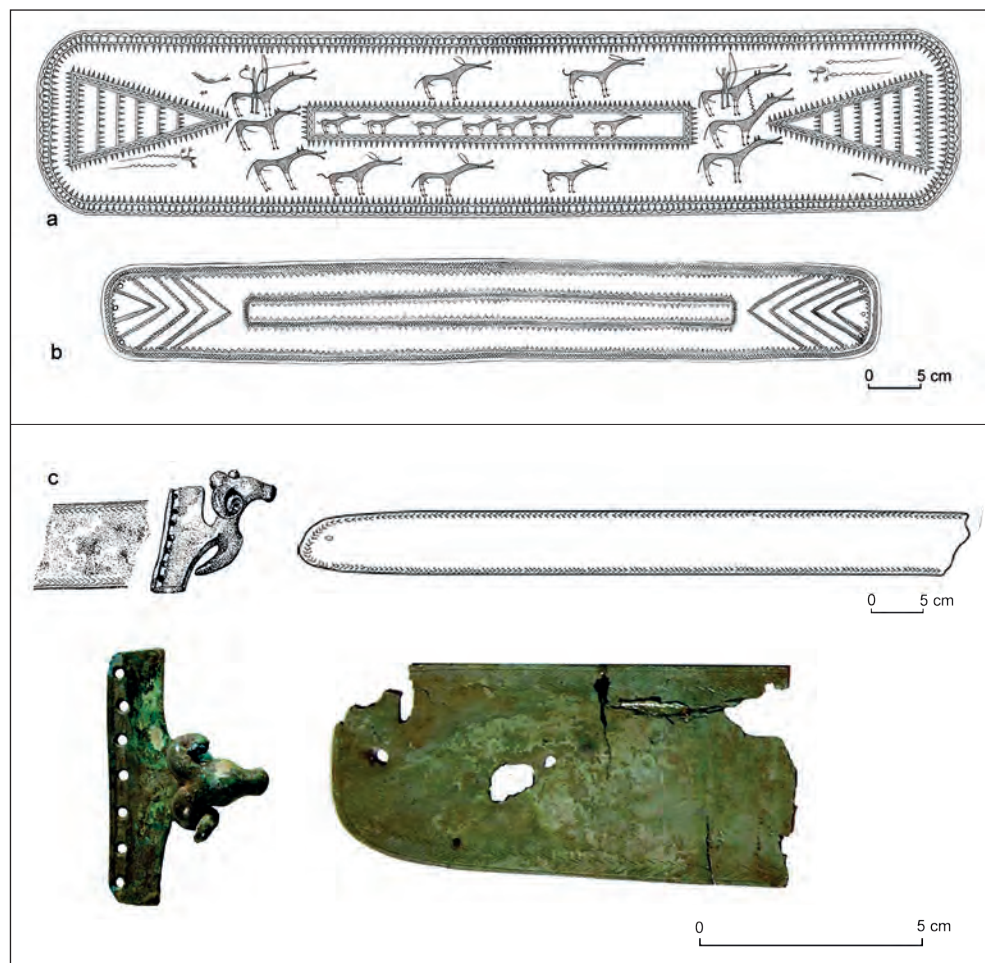


Fig. 4. Bronze belts and buckles from the Beshtasheni cemetery: a – belt with a hunting scene (reconstruction), from Grave 21; b – belt with geometric decoration (reconstruction), from Grave 25; c – undecorated belt, with ornate buckle, from Kuftin's excavation (reconstruction); bottom right, fragment of belt; bottom left, zoomorphic buckle with a ram's head (Drawing I. Esvanjia; K. Pawłowska; and (c) after Castelluccia 2017: Pl. 20:84; processing K. Pawłowska; bottom right, after Kuftin 1941: Fig. 70 and photos D. Narimanishvili)

bands of dots, fringed with triangles filled with diagonal hatching. The same kind of ornamental band, but proportionately smaller and with triangles fringing both sides, sets off a long rectangular panel in the middle. Five V-shaped bands, the apices pointing in, appear at either end of the belt; they are filled with either crosshatching or a herringbone pattern. At either end of the belt there are three holes for attaching the fastening straps. This belt is about 70 cm long [see *Fig. 4:b*].

Kuftin's excavations in the 1930s yielded four belts. One had a very simple decoration consisting of a continuous line of chevrons running around the edge and a single hole at either end for lacing the leather strap. This belt was about 60 cm long. A second belt, fragmentarily preserved, featured a slightly rounded end with a hole in the centre for the fastening; the decoration consisted of a continuous herringbone band running along the edge and two additional vertical rows of the same decoration near the hole. The third was preserved only as three rather small fragments, most probably from the upper or lower central part of the belt, including part of an edge featuring a herringbone decoration.

The last belt, undecorated except for a continuous line of chevrons around the edge, is still one of the most interesting in Kuftin's collection because of a bronze zoomorphic buckle in the shape of an animal's head that came with it [see *Fig. 4:c*]. The head resembles a ram or a mouflon with prominent spiraling horns; the front legs were shaped to hook into the strap. The flat piece to which this ornament was attached had seven holes spaced in a vertical line along the opposite edge for fastening to the belt. A single rounded

hole at the other end of the belt would have served to hook the buckle [see *Fig. 4* bottom right].

Geometric and figurative motifs similar in style to those occurring in the set of the decorated belts are common on finds from this period and region (Castelluccia 2017: 16). One of the best parallels for the zoomorphic buckle from Beshtasheni comes from Grave 208 in Tlia located in South Ossetia and consists of two decorated belts linked to bronze buckles representing animal heads resembling rams (Tehov 1980: Pl. 90). Zoomorphic buckles with a representation of stylized animal heads with spiral horns were also found in Abkhazia (Castelluccia 2017: 27), at the Kulanurchva cemetery, for example, where two belts with ram-like head buckles were discovered; these finds were dated to the 9th century BC (Trapš 1970: Pls 1 and 3).

Late Bronze and Early Iron Age metal belts are known from other archaeological sites from the territory of Georgia (e.g., Tlia, Samtavro, Treli) and also from Iran, Armenia, western Azerbaijan and southern Russia. Certain typical features, such as the style and techniques of decoration, make them recognizable throughout the Caucasus (Castelluccia 2017: 11). The belts from the Hasanlu citadel and cemetery, several made of copper/bronze sheet, are not all surely identified as belts owing to their poor state of preservation (Rubinson 2012: 393). Those from Märlik in Iran (Negahban 1996), also mostly fragmentary, are distinguished from the other Caucasian belts by the end parts which are neither square nor round, but are rather decorated with two spirals resembling the head decoration of some distinctive Caucasian-style pins.

Metal belts were also in use in the Kingdom of Urartu, which existed from

the 9th to the 7th century BC. While the archaeological context for most of them is not precisely identified (Castelluccia 2017: 12), they come from regular and documented excavations which are confined to the burial context, and several of the specimens were found in buildings inside cities or fortresses (e.g., Karmir-Blur, Rubinson 2012: 392) and in one case inside a *susi*-type temple at Erebuni (Esayan 1984: 133). Compared to the belts from modern Georgia, the Urartian belts feature a richer decoration, which is rendered with greater accuracy and realism with regard to figures and animals; the decoration is also more apt to include images of fantastic creatures. The

fastening method is also different than in the Caucasian belts. Generally, the Urartian belts are equipped with a buckle consisting of a hook and ring placed at opposite ends of the belt (Castelluccia 2017: 12–13).

C. BRACELETS AND FINGER RINGS

Bracelets were usually discovered near or on the wrist or forearm of the buried individual and rarely around the ankles (Kuftin 1941: 71). The two bracelets from Grave 19, found on the wrists of a female skeleton, were of a simple form, open-ended, the body rounded in section. The maximum diameter was 12 cm [Fig. 5:a–b].

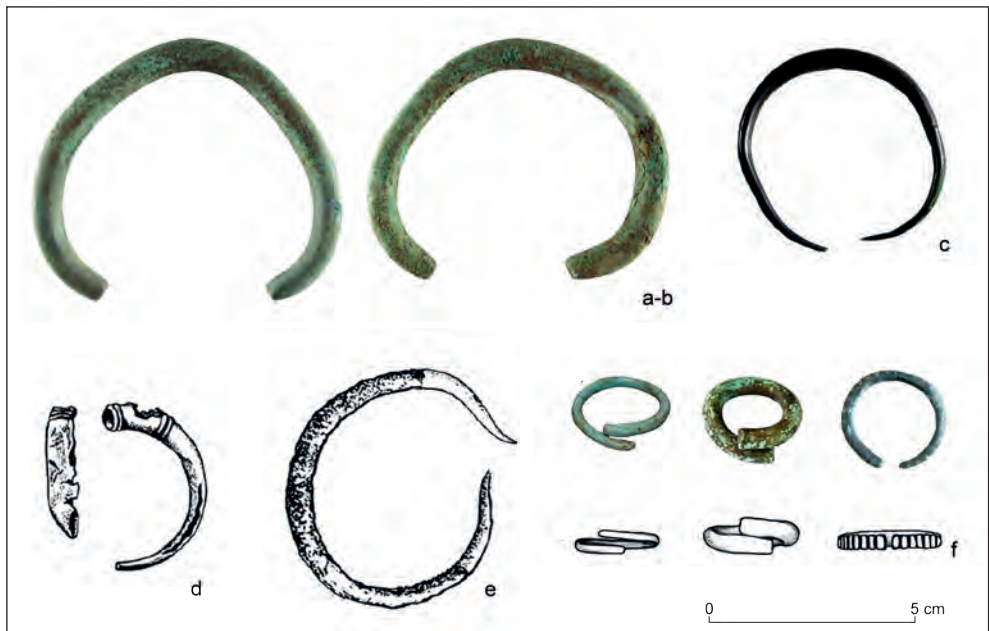


Fig. 5. Bracelets from the burials in Beshtasheni: a–b – two simple open bracelets from Grave 19; c – open bracelet plated with electrum(?) from Grave 20 KUF; d – fragment of a bracelet with decoration in the form of segmental hoops; e – bracelet with one gold-capped end; f – finger rings (a–b – after D. Narimanishvili, Karelidze, and Hamburg 2015: Pl. III:2-3; c – photo D. Narimanishvili; d, e – after Kuftin 1941: Fig. 79:3-4, 6; f – after D. Narimanishvili, Karelidze, and Hamburg 2015: Pl. VI:6-8; processing K. Pawłowska)

One of the bracelets is probably made of bronze and is faced with electrum(?) [Fig. 5:c]. A group of bracelets from the Beshtasheni cemetery has decoration in the form of segmental hoops (Kuftin 1941: 69, 74, 323) [Fig. 5:d]. They are made of bronze and one of them was found with gold cap applied to one of the sharp endings [Fig. 5:e]. Other similar exemplars are heavily damaged and broken into small pieces.

Bronze finger rings were found in Graves 27 and 29 (D. Narimanishvili, Karelidze, and Hamburg 2015: 108). Most of them are undecorated or have very simple grooved decoration [Fig. 5:f]. In terms of execution, rings can be divided into two types: open and closed. The closed ones, with overlapping ends, may have been made by less experienced craftsmen, compared with the decorated and open forms. The open forms are characterized by a much gentler image, detailed decoration and could have been made by more skilled craftsmen. The average diameter of these artifacts is 2–3 cm.

D. BUCKLES AND SHANKS

Buckles were found mainly near the ribs of the skeletons, indicating that they could have been used to fasten sword belts (Kuftin 1941: 73) or a simple leather strap on the chest. These artifacts consisted of a metal ring, a shank and a spike.

The shanks differed in shape. The first kind is like a cylindrical earplug and is 5 cm long [Fig. 6:a]. An example was found in 2013 in Grave 17, while another one is known from Kuftin's excavation [Fig. 6:a left, c]. The ends of the second kind, also found by Kuftin, are similar to a modern chess pawn; these shanks are 7 cm long [Fig. 6:d]. In both kinds, the constriction in the middle was intentional, most probably, for a spike or for tying a string (for example, with a needle(s)?, found at the Samtavro cemetery, see Kuftin 1941: Fig. 70). The third kind is straight, 6 cm long, slightly narrowing toward the center where there is a rectangular hole; examples were found by Kuftin (D. Narimanishvili, Karelidze, and Hamburg 2015: 108). The hole has the same function as the indentation in



Fig. 6. Buckle rings and shanks: a–b – cylindrical earplug-like shank and metal ring; c – metal buckle ring from Kuftin's excavation; d – cylindrical earplug-like shank from Kuftin's excavation; e – shank with rounded caps at the ends; f – straight shank found with the buckle ring (c) (a – after D. Narimanishvili, Karelidze, and Hamburg 2015: Pl. II:5; b–e – photo D. Narimanishvili; processing K. Pawłowska)

the other shanks and was probably used to pass a string through it for fastening items [Fig. 6:e].

Bronze rings were also found, one in Grave 17 together with the shank (D. Narimanishvili, Karelidze, and Hamburg 2015: 108), and similar ones in burials excavated by Kuftin's expedition. The former are large and octagonal in cross-section [see Fig. 6:a right], the latter look big and are rhomboid in shape with slightly rounded edges in cross-section [Fig. 6:b].

E. BEADS

Two gold beads, coming from Kuftin's excavations, are unique at Beshtasheni [Fig. 7]. They were made from extremely thin gold foil and were hollow inside. Other beads from the burials were not of metal, being made of reddish and white carnelian,

frit paste or animal bones. An exceptional non-metal discovery came from a child burial in Grave 22: 17 apparent beads made from ankle bones of sheep/goat, presumably threaded to form a necklace that probably served as an amulet (D. Narimanishvili, Karelidze, and Hamburg 2015: 107). These ornaments vary in size from 2.8 cm to 3.7 cm.

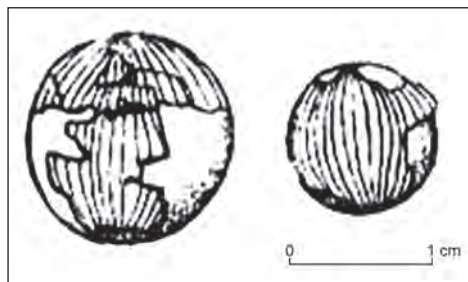


Fig. 7. Gold beads (After Kuftin 1941: Fig. 84; processing K. Pawłowska)

TEXTILES, GARMENT ELEMENTS AND JEWELLERY

The metal garment elements from the Beshtasheni burials are dated to a period for which there is very little known about the dress of either men or women. No written or sufficiently accurate iconographic sources are extant for the Late Bronze Age–Early Iron Age period, thus necessitating a look at the archaeological evidence of the earlier periods in order to hint at what the period dress was like.

Imprints of cloth are known from the bases of pots dating from the Early Bronze Age, whereas textile fragments were discovered in the kurgans of the Trialeti culture existing from the 3rd through the second half of the 2nd millennium BC. Decoration of the silver goblets from Trialeti in Georgia and Karashamb in Armenia

has provided data from the end of the 3rd and beginning of the 2nd millennium BC. A cylinder seal, found in the Khareba cemetery, showed a human figure wearing a short belted tunic, hat and shoes with an upturned toe of Anatolian style. Nothing can be said of colors or garment style of the 3rd millennium dress. However, the 16th/15th century BC textiles from Khareba, which have been identified as being made of flax, wool and cotton, were mostly brown, blue, yellow, red and black. It may be assumed that both clothing types, as well as fabrics and colors remained largely unchanged until the Late Bronze and Early Iron Ages (D. Narimanishvili 2015: 266–268). The accuracy of most representations leaves much to be desired, hence the

inordinate significance of the finds from a primary context, such as the Beshtasheni cemetery, even though they do not give full insight into the garments of the period.

Men may have worn jewellery made of stone and metal (G. Narimanishvili 2010: 315, 320), but it is the women who were buried with a variety of neck adornments, e.g., necklaces composed mainly of carnelian beads and bronze bracelets of various sizes and types around wrists and ankles (Tehov 1977: 68) [Table 1]. Only wrist bracelets have been found so far in the Beshtasheni cemetery, but ankle bracelets were recorded

in a burial from Tlia (Grave 276 containing ankle bracelets, Tehov 1977: Fig. 56). This group of metal garment elements appears to have been popular mostly with women there (80% of all the presented bracelets came from the discussed cemetery).

Apart from weapons found usually near the hip bones of male skeletons (Kuftin 1941: 69), burial furnishings have included pins serving to fasten the clothing in place (D. Narimanishvili, Karelidze, and Hamburg 2015: 106, and discussion below). Indeed, pins were worn to fasten clothes without gender differentiation.

Table 1. Grave assemblages of metal garment elements sorted by the gender of the deceased (female, male and unidentified) and by the burials (KUF = abbreviation used by B. Kuftin in his research)

Grave No.	Gender/ age (years) if known	Location in grave	Metal element	Inventory No.	First published in:
19	Female (18–24)	On the wrist (northeastern part)	Bracelet	2013-116	D. Narimanishvili, Karelidze, and Hamburg 2015: 106 [Fig. 5:a–b]
		On the wrist (northeastern part)	Bracelet	2013-117	D. Narimanishvili, Karelidze, and Hamburg 2015: 106 [Fig. 5:a–b]
		Near the left arm and head (northeastern part)	Pin	2013-118	D. Narimanishvili, Karelidze, and Hamburg 2015: 106 [Fig. 3:I]
27	Female (most probably) (20–30)	On a finger bone (center)	Ring	2014-306	D. Narimanishvili, Karelidze, and Hamburg 2015: 108 [Fig. 5:f]
		On a finger bone (center)	Ring	2014-307	D. Narimanishvili, Karelidze, and Hamburg 2015: 108 [Fig. 5:f]
1 KUF	Female?	No data	Pin	42-64:5	Kuftin 1941: 49 [Fig. 3:I]
3 KUF	Female?	No data	Pin	42-64:18	Kuftin 1941: 339 [Fig. 3:II]
4 KUF	Female	Northern part	Bracelet	42-64:191	Kuftin 1941: 281 –
		Northern part	Bracelet	42-64:34	Kuftin 1941: 74 [Fig. 5:d]
		Near the legs	Pin	42-64:33	Kuftin 1941: 323 [Fig. 3:III]
		No data	Pin	42-64:209	Kuftin 1941: 323 [Fig. 3:III]
17	Male (35–40)	Near the chest (center)	Buckle ring and shank	2013-90	D. Narimanishvili, Karelidze, and Hamburg 2015: 106 [Fig. 6:a–b]
21	Male (45–50)	By the arms (north-western corner)	Belt	2013-157	D. Narimanishvili, Karelidze, and Hamburg 2015: 106–107 [Fig. 4:a]

Table 1. (continued)

Grave No.	Gender/age (years) if known	Location in grave	Metal element	Inventory No.	First published in:	
25	Male (20–30) Female (25–30)	Above the head of the female skeleton (northern part)	Belt	2014-281	D. Narimanishvili, Karelidze, and Hamburg 2015: 106	[Fig. 4:b]
29	Male (16–20)	On a finger bone (center)	Ring	2014-323	D. Narimanishvili, Karelidze, and Hamburg 2015: 108	[Fig. 5:f]
11 KUF	Male	No data	Gold bead	–	Kuftin 1941: 74	[Fig. 7]
		Near the hips (center part)	Belt	42-64:81	Kuftin 1941: 68, 317, 329	[Fig. 4:c]
		Near the hips (center part)	Zoo-morphic buckle	42-64:83	Kuftin 1941: 68, 333	[Fig. 4:c]
13 KUF	Male	No data	Belt	42-64:117	Akhvlediani 2001: Fig. 1	–
		Near the ribs (northern part)	Buckle shank	42-64:249	Kuftin 1941: 329	[Fig. 6:e]
		Near the head	Pin	42-64:108	Akhvlediani 2001: Fig. 1	[Fig. 3:III]
19 KUF	Male?	Near the ribs (northern part)	Buckle ring	42-64:152	Kuftin 1941: 325	[Fig. 6:c]
		Between the head and ribs (northern part)	Buckle shank	42-64:155	Kuftin 1941: 73, 324	[Fig. 6:f]
		No data	Pin	42-64:142	Kuftin 1941: 325	[Fig. 3:IV]
20 KUF	Male?	No data	Belt	42-64:181	Akhvlediani 2001: Fig. 2	–
			Bracelet	42-64:183	Kuftin 1941: 335	[Fig. 5:c]
			Pin	42-64:180	Kuftin 1941: 73	–
34 KUF	Male	Near the chest	Buckle shank	42-64:242	Kuftin 1941: 67, 73, 311	[Fig. 6:d]
37 KUF	Male	No data	Pin	42-64:265	Kuftin 1941: 73	–
			Pin	42-64:264		[Fig. 3:III]
			Bracelet	42-64:183	Kuftin 1941: 335	[Fig. 5:c]
			Pin	42-64:180	Kuftin 1941: 73	–
			Pin	42-64:241	Kuftin 1941: 311	[Fig. 3:IV]
2 KUF	Not determined	No data	Ring	42-64:233	Kuftin 1941: 231	–
21 KUF	Not determined	No data	Pin	42-64:188	Kuftin 1941: 73	[Fig. 3:III]
32 KUF	Not determined	No data	Pin	42-64:220	Kuftin 1941: 339	[Fig. 3:II]

The presented set from the Beshtasheni cemetery includes 15 pins. Eight of them were found in male graves, five in female ones, and two came from graves where the gender of the deceased was not determined. The age of the deceased could be specified only in two cases: an 18–24 year old female burial and a 45–50 year old male burial. Pins with a well-known location within the grave were mainly situated around the head of the deceased or near the metacarpal bones placed near the facial part of the skull. Only one of the specimens hitherto discovered was found near the feet.

The different sizes and weights of the pins defy a clear functional interpretation. Some certainly were used to fasten clothes or to tie up hair (Bertman 2003: 329; Cifarelli 2014: 305; Těhov 1977: 39, 42). Pins found with male burials furnished with weapons can also be interpreted as sign of status indicating their use by members of a military elite (see, e.g., Marcus 1994: 12). Bronze rings may have been worn on the fingers. Two of the Beshtasheni rings came from male burials, and one from a female one. In one case, the gender of the deceased could not be specified.

Around the hips men, and perhaps women as well, wore decorated belts made of bronze and commonly fastened with a buckle or fringed with thongs or straps. There is no evidence, however, for the use of these belts on an everyday basis. Five have been found in the Beshtasheni burials, all apparently belonging to males. One was a 45–50 year old man (Grave 21), whose grave furnishings included two iron daggers, six bronze and five iron arrowheads and some pottery (D. Narimanishvili, Karelidze, and Hamburg 2015: 106). Another was a double burial (Grave 25) of a 25–30 year old female and a 20–

30 year old male, hence it cannot be said with certainty that the male actually wore the belt, especially as it was found above the woman's head. Other finds from this burial included a very small amount of pottery, a long iron dagger and a copper/bronze pin (D. Narimanishvili, Karelidze, and Hamburg 2015: 107). The burial in Kuftin's Grave 11 KUF also yielded a belt, placed around the hips, and although the bones were not identified to gender, the grave goods, such as a bronze dagger, helmet, spearhead, and horse harness elements, indicated that the deceased was most likely an adult male. With regard to the remaining two belts, nothing definite can be said about the gender, age and position of the deceased.

Belts found at other archaeological sites include a complete specimen from the burial of a 25–35 year old male at Hasanlu (now in the Metropolitan Museum of Art). The grave goods included some pottery, a bronze spear, an iron dagger, carnelian beads and bronze and iron ornaments. The burial was dated to the end of the 9th century BC (Hasanlu IVB; Robinson 2012: 394). At another Iranian site, Märlik, the gender of the deceased was not determined due to the rather poor preservation of the bones, but some of the grave goods suggest adult male burials. The graves contained, in a few cases, more than one belt and, additionally, other objects made of precious metals (Negahban 1996: 19–20 and 23–24).

The length of some of these objects defies their identification as belts, but there are belts clearly exceeding a meter in length, e.g., examples from Tlia or Adilcevaz (Kellner 1991: 73). Decorated belts from Tlia, found in burials from the 12th–10th century BC, were localized

near the waist and hips (Tehov 1980: Pl. 75), although some of them were clearly too long to function as conventional belts. Interestingly, all objects of the kind from the Tlia cemetery were recovered from male graves (taking into consideration only the burials in which gender was clearly specified).

In Urartian burials, belts were found mostly in graves of adult males, together with metal weaponry and adornments. In just a few examples, the belt was placed on the waist or hips of the deceased. Since the Urartian burial practices involve also cremation, in such cases the belts were

usually broken or bent and placed beside the urn (Castelluccia 2017: 12).

The above review of belt finds from the region and period indicates that belts were found usually in graves and that these were usually male burials. Moreover, they are usually assumed to be part of military garments (e.g., Marcus 1995: 2501). Their position in the grave depended upon the burial type. There is, however, no convincing evidence so far allowing for incontestable association of metal decorated belts with the gender of their bearers. Nor can their function be clearly defined.

SUMMARY

A study of the metal garment elements coming from archaeological excavations in the Beshtasheni cemetery has resulted in a provisional classification of the pins, bracelets, finger rings and buckle parts that make up this assemblage. A reconstruction of how these elements were worn by men and women of the Late Bronze and Early Iron Ages, the period to which the Beshtasheni site is dated, is limited by the absence of written sources and accurate iconographic depictions. Even so, the

finds from the graves coupled with data from earlier periods can lead to certain assumptions regarding the dress code. The question remains as to the extent to which the metal garment elements from Beshtasheni were of everyday use or ceremonial in nature.

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GLASS FROM THE TELL FARAMA/PELUSIUM EXCAVATIONS 2003–2006

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Abstract: The paper presents 89 selected glass fragments found during the four seasons of excavation in Pelusium, in and around the theater. They represent mostly tableware and lamps dated from the 1st century to the 7th, but most of the material is from the 5th century or earlier. It parallels the finds from the Egyptian Mediterranean coast, and shows close affinities to the glass of Syria-Palestine.

Keywords: Pelusium, glass, tableware, lamps

The glass material comes from the Polish–Egyptian excavations in Tell Farama (ancient Pelusium), which were started in 2003 near the *proscenium* and west *parodos* of the theater, and which were continued in 2004 in and around the theater and in Sector 1 north of it [Fig. 1]. In 2005–2006, investigations were continued in Sector 1 and opened in Sector 2 situated 75 m east of it. The excavations were directed in the first two seasons by Michał Gawlikowski and in the next two seasons by Krzysztof Jakubiak.

The theater was dismantled, probably in late Antiquity (Gawlikowski 2004; Jakubiak 2004). Only parts of red brick substructures remained in place, further damaged in modern times by a military post installed in the orchestra. The stratigraphy in this area was heavily disturbed, resulting in the few glass fragments from

the theater being dated on typological grounds alone. The pottery from the theater building came from the late 4th to early 5th century AD, while the earlier structures beneath have been dated to the 1st century AD (Jakubiak 2005).

Sector 1 represented a row of shops fronting a house and opening onto a street. Brick recovery and numerous excavated pits combined to destroy the structure. It was dated to the late 3rd and the early 4th century, but the area was used well into the 7th century (Jakubiak 2007).

Sector 2 included a corridor covered with a mosaic, part of a larger unit. Coins of the early 4th century and Gaza 4 amphorae provide a date for the building in the 4th–5th centuries. Fragmentary remains of a presumed church in the same sector should be attributed to the 6th century (Jakubiak 2008).

THE GLASS ASSEMBLAGE: GENERAL CHARACTERISTIC

Glass from Tell Farama is neither abundant nor well preserved. There are now whole vessels except for two nearly complete objects. The poor condition of the finds is due to the salinity and humidity of the soil. The small assemblage of glass finds from the theater area in 2003 was increased substantially in the later seasons, when excavation started in the residential area in Sectors 1 and 2.

Finds from the theater area are heavily weathered and feature a brown coating. In other areas, a milky crust and various stages of iridescence are predominant. A thick, flaking layer of weathering makes it in most cases impossible to determine the original color and distinguish the decoration patterns in detail. Among the identified colors light to dark green is predominant and olive-green well represented, while light and dark blue, as well as grayish to colorless, were also noted.

All in all, 140 fragments were found, some of them on the surface. A selection of 89 identifiable pieces were drawn on site by Krzysztof Jakubiak, Szymon Maślak, and Olga Wasilewska. The selected fragments include bases, rims, necks, stems, handles, and some decorated body shards. Fragments not selected are tiny and severely corroded, making them of little use.

The finds include mostly everyday tableware: bowls, beakers and goblets, bottles, and single examples of jugs and dishes (52 pieces altogether). Lighting devices are numerous (fragments of 30 lamps). There are also cosmetic utensils (unguentaria or kohl containers) and finally some heavily corroded items of adornment, such as bracelets and necklace beads. Orange and blue glass cubes can be found among

the stone tesserae on the floor mosaic in Sector 2.

Bowls from the Roman times include a "zarte Rippenschale" of the 1st century (Cat. 2), a wheel-cut vessel (Cat. 3) of the 3rd century and one with pinched out projections of the 4th century (Cat. 4). Bowls with pinched base and toes are dated to the 3rd through 7th centuries (Cat. 62–63). They were very popular in Egypt, Cyprus, and Syria–Palestine. One bowl from the 6th century has three marvered threads, darker than the body, under the rim (Cat. 5). Another example is a large deep bowl (Cat. 6), dated to the late 5th century.

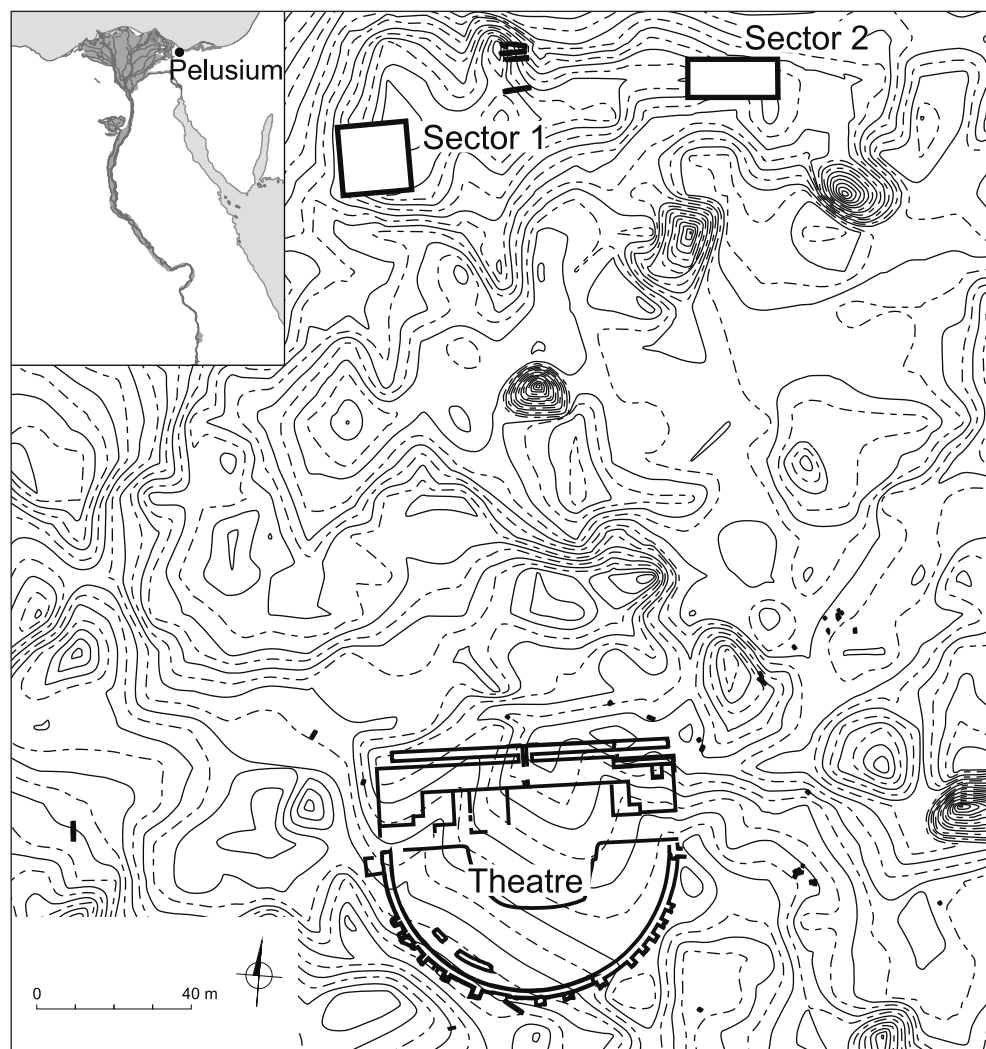
Beakers and goblets constitute a large group. They have flat or slightly concave bases (Cat. 40–43), cut-out (Cat. 44, 45, 54, 55) or pad bases (Cat. 56, 59). Goblets with cracked-off or rounded rim and cylindrical hollow stem (Cat. 33–36) are contemporary to those with plain beaded stem and foot either plain or hollow and pushed-in (Cat. 37–39). All are from the 6th–7th centuries.

Two bottles (Cat. 65, 72) came from structures of 3rd–4th centuries date, while others (Cat. 66, 68, 71) were rather from the 4th–5th centuries or later. The date of a small bottle found out of context (Cat. 73) cannot be determined and another (Cat. 74) is even later. A jug with one large thread on the neck and partly preserved strap handle (Cat. 85) goes back to the 2nd–3rd centuries. There is also a fragment of a decorated dish (Cat. 1) with best parallels in the 3rd century, and another fragmentary dish (Cat. 60) from the 4th century.

Finally, there are two cosmetic utensils: a twin tubular container of the 3rd–4th centuries, wound spirally with marvered threads (Cat. 84), and a thick unguent bottle of the 2nd–3rd centuries (Cat. 83).

A third of the blown vessels shows decoration in various techniques: applied

coils (Cat. 34, 66–67, 71, 85) and impressed blobs (Cat. 7, 8), marvered or fused-in threads (Cat. 5, 84), pinched out projections (Cat. 4), and indents (Cat. 44). Sometimes they are supplemented with wheel-cut roundels and wheel-abraded lines and scratch engraving (Cat. 1) or



*Fig. 1. Sectors of the Polish–Egyptian excavations at Tell Farama/Pelusium (2003–2006)
(PCMA Pelusium Project/drawing S. Maślak)*

facets and grooves (Cat. 3). Stems of lamps can be swirled (Cat. 27–29) and bracelets drawn and twisted (Cat. 87, 88).

A variety of bases for various vessel types were recorded: hollow or solid base-rings (Cat. 46, 61), a tall base-ring (Cat. 60), pad or disk bases (Cat. 56, 57), concave cut-out bases (Cat. 44, 45, 54, 55) (Hayes 1975: No. 374, with extensive bibliography; Weinberg and Goldstein 1988: 60–62, for their Near Eastern origin; Cohen 1997: 410–411, Pl. III 14–17), bases pinched and with toes, frequently found on many Eastern Mediterranean sites (Cat. 62, 63). Also well represented are coil bases of bowls, flasks or jugs, wound one to four times around the bottom from 2 cm to 8 cm in diameter (Cat. 47–49, 50–53) (frequent in late Roman Egypt; see also Weinberg and Goldstein 1988: 58–59; Sternini 1999: Figs 116–132; Sternini 2001: Fig. 20; Gorin-Rosen and Katsnelson 2007: 88–90). There are also some goblet feet, plain or folded (Cat. 37–39).

Necks of bottles or flasks are cylindrical, flaring, or funnel-shaped (Cat. 65–74). They can be constricted at the junction with the body (Cat. 72, 73) or have a horizontally ribbed neck (Cat. 74).

The rims of bottles, goblets, and bowls can be rounded, outspread (Cat. 4, 70) or everted horizontally (Cat. 6). Cracked-off rims occur on goblets or lamps (Cat. 32, 33). This type of rim is frequent on the Mediterranean coast (for Beirut, see Jennings et al. 2006: 84–102; for Marina el-Alamein, see Kucharczyk 2010b: Fig. 6). Ground rims belonged to beakers or lamps (Cat. 7–9) and to a bowl (Cat. 3).

The lighting devices included different kinds of lamps, both standing and hanging: tumbler lamps (Cat. 12–13), beaker-shaped lamps with grooves and sometimes with blobs (Cat. 7–9), tumblers with handles

(Cat. 76, 77). Chandelier lamps have various stems, solid or hollow, made to be inserted into polycandela. Solid stems are short with rounded or coil wound knobs (Cat. 14–16). Hollow stems can be bulbous (Cat. 32), pear-shaped (Cat. 10–11), long with thick, rounded or pointed bases (Cat. 18–21) (Olczak 1995: Pls G, H, I, J) or with flat and thin bases (Cat. 17, 26). Stems can be hollow and beaded (Cat. 22) or solid and constricted (Cat. 25). All these types of stems can be dated to the 4th–6th centuries. Twisted stems are generally rare, but there are four (Cat. 27–29 and one not drawn). They are dated to the 6th–7th centuries. Some lamps (Cat. 23, 30, 31) are preserved with a pontil wad still attached to their rounded bases.

The finds are dated from the 1st to the 7th centuries AD, extending from the Roman to the early Byzantine periods. The chronological spectrum is the broadest in Sector 1, the bulk of finds coming from the 2nd to the 5th centuries. The ribbed bowl of the “zarte Rippenschale” type with pronounced ribs and thick arcades is dated to the 1st century. The forms here are also varied: small or large bottles, beakers, goblets, and lamps with different stems, and with or without handles. The 43 fragments from this sector seem haphazard and do not form a consistent assemblage. By contrast, practically all the 37 fragments from Sector 2 are placed in the 4th–5th centuries. Stemmed lamps dominate, but vessels with coil bases are also numerous, footed goblets coming second. Not surprisingly these solid parts of vessels tend to be preserved more often. Only a few beaker or goblet rims were noted in the assemblage. The few remaining fragments come from the theater area, from mixed contexts, and include forms from the 1st through 4th centuries AD.

CATALOGUE

Key: L. = length; W. = width; H = height; Th. = thickness; Dia. = diameter; est. = estimated; pres. = preserved; all dimensions given in centimeters (cm).

Cat. 1	Dish, flat base, fragment	[Fig. 2:1]
<i>Site Inv. No.</i> P.03/loc.2/24	<i>Dimensions:</i> L. 5; W. 6.5; Th. 0.4	<i>Dating:</i> 3rd century
<i>Provenance:</i> Theater, Locus 2	<p><i>Material and technique:</i> Color unidentified under black patina and heavy corrosion. Thick glass, wheel-cut, engraved and scratched.</p> <p><i>Description:</i> Continuous tortoise-shell-like pattern on the flat exterior: irregular adjoining octagons containing wheel-cut roundels with raised centers; four cross-hatched rectangles on opposite sides of each octagon.</p> <p><i>Parallels:</i> Pattern similar to Fremersdorf 1967: 37, Pl. 163 and 99, Fig. 14, Pl. 94; Whitehouse 1988: Fig. 5; for shape, compare Fremersdorf 1967: Pl. 103; Whitehouse 1997: No. 446</p>	
Cat. 2	Bowl, finely ribbed, fragment	[Fig. 2:2]
<i>Site Inv. No.</i> PL 05/134	<i>Dimensions:</i> H. 3; W. 3.6	<i>Dating:</i> 1st century
<i>Provenance:</i> Sector 1, area 1, context 19	<p><i>Material and technique:</i> Dull, milky white glass, silver iridescence. Applied, tooled.</p> <p><i>Description:</i> Decoration on body and shoulder consisting of vertical ribs (two of them preserved) joined under the shoulder (type known as “zarte Rippenschale”).</p> <p><i>Parallels:</i> See Isings 1957: Form 17; Berger 1960: Pls 14.218, 18.40 (218); Saldern et al. 1974: No. 263; Hayes 1975: No. 636 (arcaded effect); Matheson 1980: No. 101; Jennings 1997–1998: Figs 4:6–8, 5 (top left); Kunina 1997: No. 204–211; Fünfschilling 1999: Nos 175–177; Whitehouse 2001: Nos 758–767, especially 762; Jennings et al. 2006: Fig. 3.2</p>	
Cat. 3	Bowl, fragment	[Fig. 2:3]
<i>Site Inv. No.</i> P.03/loc.2/50	<i>Dimensions:</i> H. 3.4; W. 3.5; Th. 0.3; Dia. 12 (est.)	<i>Dating:</i> 3rd century
<i>Provenance:</i> Theater, Locus 2	<p><i>Material and technique:</i> Color unidentified under enamel-like patina, corroded. Thick glass, wheel-cut, grooved.</p> <p><i>Description:</i> Decorated with a row of cut, vertical, elongated oval facets (three facets forming a sloping line, partly preserved), above them three horizontal grooves.</p> <p><i>Parallels:</i> See Clairmont 1963: No. 353, Pls IX, XXXI; Dussart 1998: Pl. 5:6; Brun 2003: Nos 36–40, Fig. 241</p>	

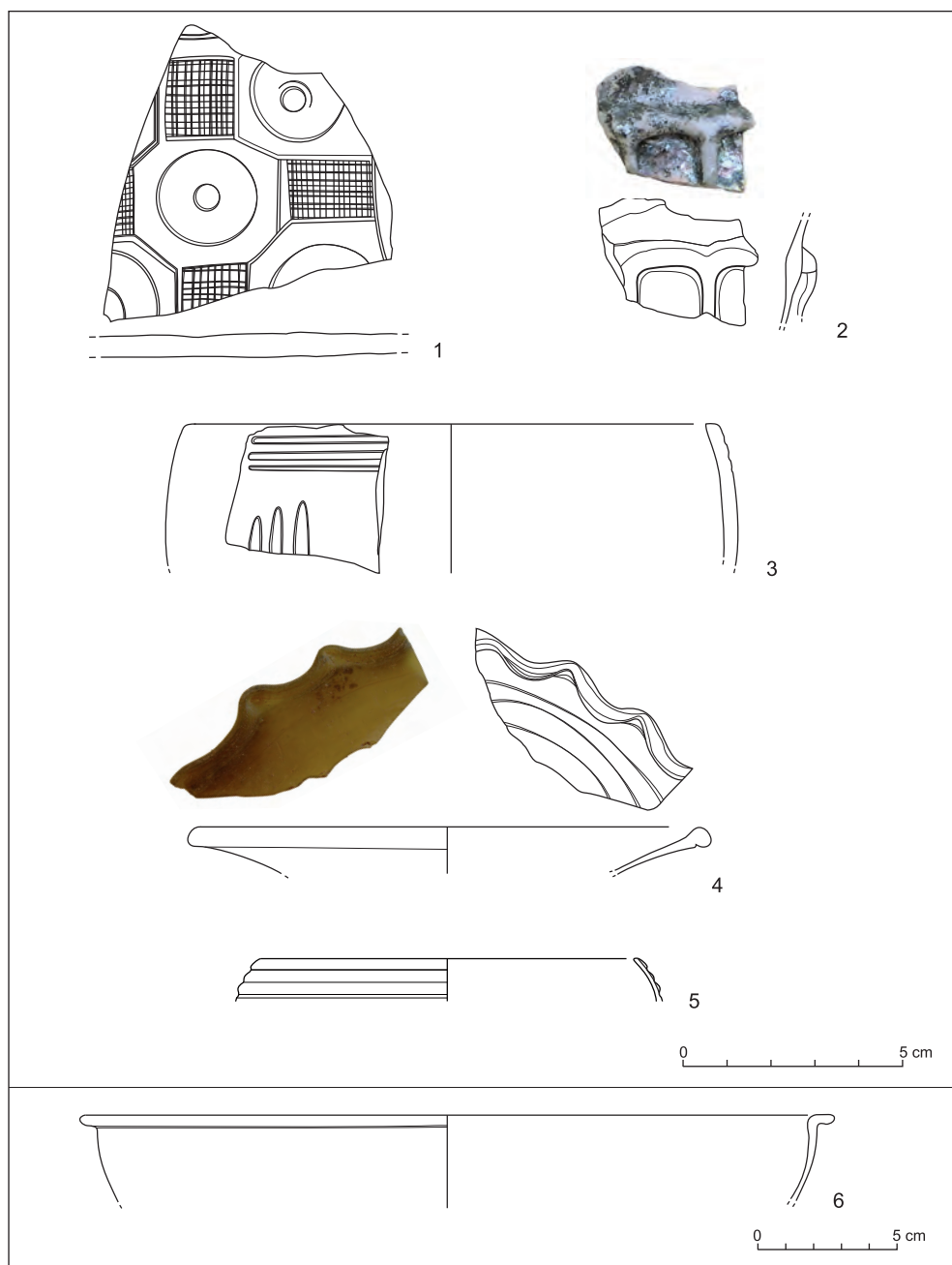


Fig. 2. Dish and bowls

Cat. 4		Deep bowl, rim and side, fragment	[Fig. 2:4]
Site Inv. No. PL 06/2/399	Dimensions: Dia. est. 12; L. pres. 5.8	Dating: 4th century	
Provenance: Sector 2, locus VIII	Material and technique: Olive green, without iridescence. Pinched and pulled.		
	Description: Rounded, thickened, outspread rim with four pointed scallops preserved. Three circular incised lines on the inside.		
	Parallels: Harden 1936: Nos 257, 259, Pl. XIV; Tatton-Brown 1984: Fig. 65, No. 10; Foy 1995: Pl. 11:102–105 (Form 16); Sternini 1995: Figs 6, 33, 34; Kondoleon 2000: No. 83 (Egyptian manufacture, imitation of silver bowls); Whitehouse 2001: No. 650; Arveiller-Dulong and Nenna 2005: Nos 965, 1270 (footed deep bowl); Jennings et al. 2006: Fig. 4.9, No. 1 (rim with pinched out projections, very small number in Beirut, imports).		
Cat. 5		Bowl, rim, fragment	[Fig. 2:5]
Site Inv. No. PL 06/2/126	Dimensions: Dia. est. 8	Dating: 6th century	
Provenance: Sector 2, locus IV	Material and technique: Blue with dark blue threads. Applied.		
	Description: Rounded rim, inclined. Three applied and fused-in threads around the rim.		
	Parallels: See Katsnelson 1999: Fig. 2.9–11; Shindo 2003: Fig. 2.2; Dussart 2007: Fig. 8.5a		
Cat. 6		Deep bowl	[Fig. 2:6]
Site Inv. No. PL 06/2/276	Dimensions: Dia. 26; H. pres. 3	Dating: 5th century	
Provenance: Sector 2, locus IV	Material and technique: Heavily corroded.		
	Description: Horizontally everted rim in the form of a hook.		
	Parallels: See Riis 1957: Fig. 23; Hayes 1975: No. 591 (4th century AD); Meyer 1992: Pl. 17, No. 442; Jennings et al. 2006: Fig. 9, 11:6–9 and pages 208–209; Kucharczyk 2010b: Fig. 4:5		
	Comment: The form of the rim is well represented in early Islamic contexts.		

Illustrations: PCMA Pelusium Project/drawings O. Wasilewska, S. Maślak, E. Czyżewska-Zalewska

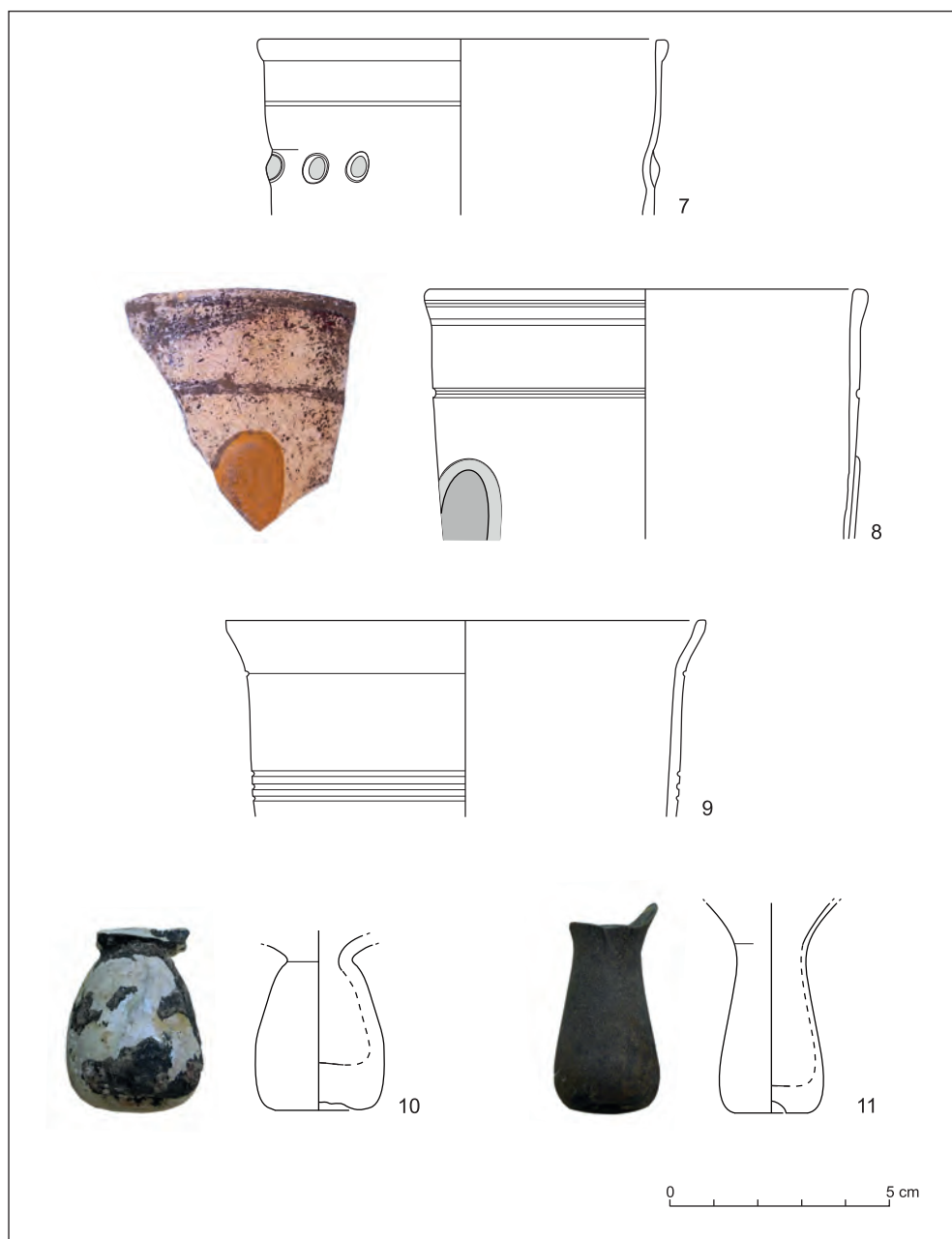


Fig. 3. Conical beakers/lamps and lamp stems

Cat. 7 Conical beaker or lamp		[Fig. 3:7]
Site Inv. No. PL 06/2/180	Dimensions: H. pres. 4; Dia. 9	Dating: 4th–5th centuries
Provenance: Sector 2, locus I	<p><i>Material and technique:</i> Green with dark blue blobs under heavy corrosion. Wheel-abraded, impressed.</p> <p><i>Description:</i> Ground rim, wheel-abraded lines underneath. At 3 cm below the rim, a row of small, circular blobs are impressed (three preserved, ca 6 cm wide).</p> <p><i>Parallels:</i> See Harden 1936: No. 460, Pls V, XVI; Fontaine 1952: Pl. 2,9; Isings 1957: Form 106b2; Sorokina 1967: Fig. 4-10; Saldern et al. 1974: No. 728; Weinberg and Goldstein 1988: Fig. 4-46:406; Foy 1995: Pl. 9; Dussart 1997: Pl. 26:6; Bailey 1998: Pl. 93, Y38; Dussart 1998: Pl. 13,5; Foy 2001: Pl. 1,2 (5th–6th centuries); Jennings et al. 2006: Fig. 5.17 (mid-4th–early 5th centuries); Jones 2006: No. 84</p>	
Cat. 8 Conical beaker or lamp		[Fig. 3:8]
Site Inv. No. PL 06/2/64	Dimensions: Dia. 10; H. pres. 5.6	Dating: 4th–5th centuries
Provenance: Sector 2, locus II	<p><i>Material and technique:</i> Dark green with a brown blob. Heavily corroded. Wheel-abraded, grooved, impressed.</p> <p><i>Description:</i> Straight body, ground rim, several parallel abraded lines under the rim and 2.5 cm below. One large, ovoid, elongated blob, impressed, 3.8 cm under the rim, H. pres. 1.7 cm.</p> <p><i>Parallels:</i> See Harden 1936: No. 457, Pls V, XVI; Isings 1957: Form 106 b2; Cohen 1997: Pl. III,6; Rodziewicz 2005: Pl. 9.187, 188</p>	
Cat. 9 Beaker or lamp		[Fig. 3:9]
Site Inv. No. PL 06/2/T1	Dimensions: H. pres. 4.8; Dia. 11	Dating: 4th century
Provenance: Theater, test trench	<p><i>Material and technique:</i> Color unidentified under dark heavy crust. Grooved.</p> <p><i>Description:</i> Vertical wall, everted ground rim, four horizontal cut grooves on the body, one at 1.2 cm, the other three at 3.5–4 cm under the rim.</p> <p><i>Parallels:</i> See Isings 1957: Form 106 b2; Clairmont 1963: Pl. III,94; Rütli 1991: AR 68; Meyer 1992: Nos 133–140; Dussart 1998: Pl. 8,32; Peacock 2011: Fig. 7.7:81</p>	
Cat. 10 Lamp, stem		[Fig. 3:10]
Site Inv. No. PL 05/446	Dimensions: H. pres. 4; Dia. base 2.2	Dating: early 5th century
Provenance: Sector 2, area 1, surface	<p><i>Material and technique:</i> Olive-green under white and brown crust. Pontil mark.</p> <p><i>Description:</i> Pear-shaped hollow stem, flaring bowl, base 1 cm thick.</p> <p><i>Parallels:</i> See Harden 1962: No. 54 (5th–7th centuries); Jennings 1997–1998: Type 2b, Figs 20,15, and 18 (left); Jennings et al. 2006: Type 3 (bulbous-stem lamp), Figs 6.12:11,15, 6.14</p>	

Cat. 11		Lamp, stem	[Fig. 3:11]
Site Inv. No. PL 05/143	Dimensions: H. pres. 4.8; Dia. base 1.8		Dating: early 5th century
Provenance: Sector 2, area 1, surface	Material and technique: Olive-green, covered with brown patina.		
	Description: Thick base, pontil mark, pear-shaped hollow stem, flaring bowl.		
	Comment: Similar to Cat. 10.		
Cat. 12		Lamp, base	[Fig. 4:12]
Site Inv. No. PL 05/199	Dimensions: Dia. 1.6		Dating: 4th–5th centuries
Provenance: Sector 1, area 1, no context	Material and technique: Olive-green, translucent, pitted.		
	Description: Thick, slightly concave base, pontil mark. Similar fragment PL 05/347, not illustrated.		
	Parallels: See Crowfoot and Harden 1931: Pl. XXIX,26; Erdmann 1977: Pl. 2, No. 96; Kucharczyk 2007a: Fig. 1:11; Russo 2007 Pl. 3,60		

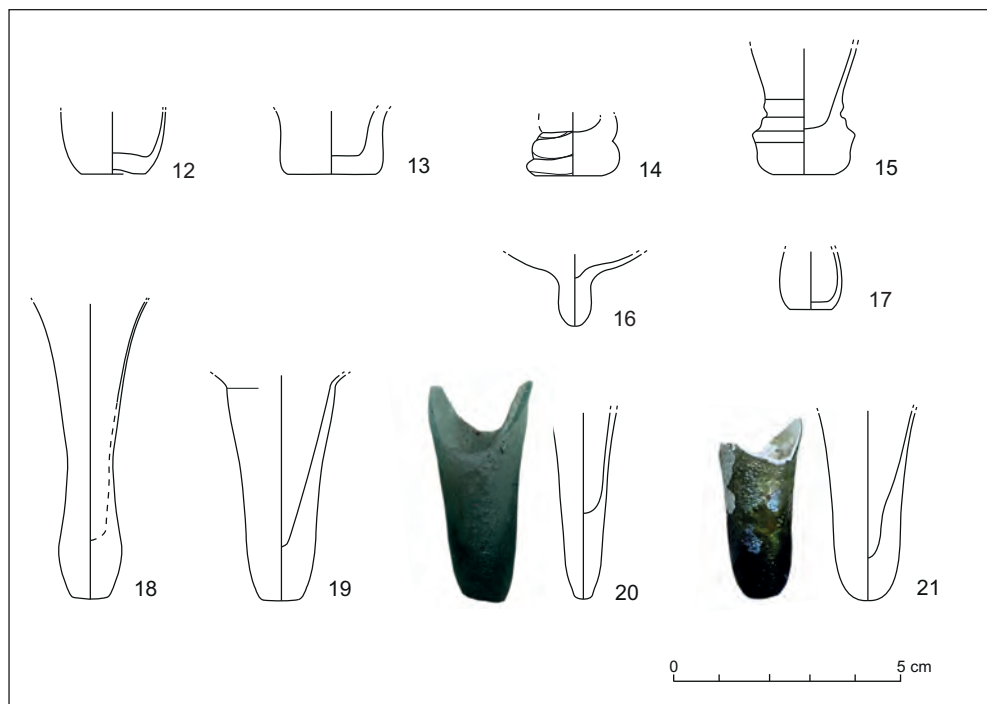


Fig. 4. Bases and lamp stems

Cat. 13 Lamp, base [Fig. 4:13]	
<i>Site Inv. No.</i> PL 05/197	<i>Dimensions:</i> Dia. 2.2; H. pres. 1.4 <i>Dating:</i> 4th–5th centuries
<i>Provenance:</i> Sector 1, area 1, no context	<i>Material and technique:</i> Color unidentified under brown crust.
	<i>Description:</i> Thick flat base, thick walls, slightly flaring.
	<i>Parallels:</i> See Baur 1938: No. 9, Fig. 17 (tumbler-shaped lamp, Type C); Erdmann 1977: Pl. 2, No. 86; Dussart 1997: Pl. 23:17; Russo 2007: Pl. 3,61
Cat. 14 Lamp, base [Fig. 4:14]	
<i>Site Inv. No.</i> PL 05/429	<i>Dimensions:</i> Dia. 1.8 <i>Dating:</i> 4th–6th centuries
<i>Provenance:</i> Surface	<i>Material and technique:</i> Color unidentified under enamel-like patina.
	<i>Description:</i> Terminal knob, wound two times, conical body missing.
	<i>Parallels:</i> See Fontaine 1952: Pl. 1,2; Ubaldi 1995: Type II.3; Mossakowska-Gaubert 2000: Type 3, Nos 18, 19, 21; Mossakowska-Gaubert 2004: VI 3, Fig. 4; Kucharczyk 2007a: Fig. 1:4–6; Kucharczyk 2007b: Fig. 3:1; Antonaras 2008: Pls 3:7, 5:7
Cat. 15 Lamp, base [Fig. 4:15]	
<i>Site Inv. No.</i> PL 04/303	<i>Dimensions:</i> Dia. 1.8 <i>Dating:</i> 4th–6th centuries
<i>Provenance:</i> Surface	<i>Material and technique:</i> Olive-green, enamel-like patina on the knob.
	<i>Description:</i> Conical body, three times wound knob, made separately.
	<i>Comment:</i> Similar to Cat. 14.
Cat. 16 Lamp, base [Fig. 4:16]	
<i>Site Inv. No.</i> P.04/343	<i>Dimensions:</i> H. pres. 1.4 <i>Dating:</i> 5th century
<i>Provenance:</i> Surface	<i>Material and technique:</i> Olive-green, pitted, translucent.
	<i>Description:</i> Flaring bowl with a small, rounded plain terminal knob (rounded base).
	<i>Parallels:</i> See Isings 1965: Fig. 434; Chavane 1975: Pls 63, 172, 173; Saldern 1980a: Nos 287–290; Foy 1995: Pl. 8:59 (form 11); Ubaldi 1995: Fig. 4,19, Type III.1; Sternini 1999: No. 58; Foy 2000: Fig. 28,3; Jennings et al. 2006: Fig. 6.20:10, Type 5 (short solid pad-stem lamp)

Cat. 17	Lamp, stem	[Fig. 4:17]
Site Inv. No. PL 06/2/111	Dimensions: H. pres. 1.5	Dating: 5th century
Provenance: Sector 2, locus II	Material and technique: Color unidentified.	
	Description: Flat base, hollow stem.	
	Parallels: See Nenna 2001: Fig. 15; Nenna et al. 2003: Fig. 20	
Cat. 18	Lamp, stem	[Fig. 4:18]
Site Inv. No. PL 06/2/384	Dimensions: H. pres. 6.5	Dating: 5th–6th centuries
Provenance: Sector 2, locus VII	Material and technique: Light green, bubbly, flaky iridescence.	
	Description: High hollow stem, thick rounded base.	
	Parallels: See Fontaine 1952: Pl. 1,5; Crowfoot 1957: Figs 96,2,6, 98,4; Pirling 1978: Fig. 5 (lower left); Dussart 1998: Pl. 16,7 (late 6th century)	
Cat. 19	Lamp, stem	[Fig. 4:19]
Site Inv. No. PL 05/393	Dimensions: H. pres. 5	Dating: 5th–6th centuries
Provenance: Sector 1, area 1, no context	Material and technique: Light green, dulled.	
	Description: Hollow thick stem, flaring bowl, pontil mark.	
	Parallels: See Kawatoko 1996: Pl. 37:3; Katsnelson 1999: Fig. 5,5; Mossakowska-Gaubert 2000: No. 7, Fig. 3	
Cat. 20	Lamp, stem	[Fig. 4:20]
Site Inv. No. PL 06/2/427	Dimensions: H. pres. 4.4	Dating: 5th century or later
Provenance: Sector 2, locus VIII	Material and technique: Greenish blue.	
	Description: Hollow stem with thick, pointed base.	
	Parallels: See Crowfoot-Harden 1931: Pl. XXIX,24; Meyer 1992: No. 479; Foy 2000: Fig. 8,5	
Cat. 21	Lamp, stem	[Fig. 4:21]
Site Inv. No. PL 05/226	Dimensions: H. pres. 4	Dating: 5th century
Provenance: Sector 2, area 1, no context	Material and technique: Olive-green, white flaky patina.	
	Description: Hollow thick stem, pontil mark.	
	Parallels: See Dussart 1998: Pl. 16,5	

Cat. 22		Lamp, stem	[Fig. 5:22]
Site Inv. No. PL 05/341	Dimensions: H. pres. 2.2	Dating: 5th century or later	
Provenance: Sector 1, area 1, no context	Material and technique: Green, white iridescence.		
	Description: Beaded hollow stem (three beads preserved).		
	Parallels: See Riis 1957: Fig. 129; Foy 2000: Fig. 8:25; Gill 2002: Fig. 1/5, Nos 56–62; Sternini 2004: Pl. IV, No. 46		
Cat. 23		Lamp, stem	[Fig. 5:23]
Site Inv. No. PL 06/2/225	Dimensions: H. pres. 4	Dating: 4th–5th centuries	
Provenance: Sector 2, locus IV	Material and technique: Green, heavy iridescence.		
	Description: Hollow rounded stem with a pontil wad attached.		
	Parallels: See Crowfoot-Harden 1931: Pl. XXIX,25; Jennings et al. 2006: Figs 6.10:1, 6.11 (Type 1a)		
Cat. 24		Lamp, stem	[Fig. 5:24]
Site Inv. No. PL 06/02/298	Dimensions: H. pres. 3	Dating: 4th–5th centuries	
Provenance: Sector 2, locus IV	Material and technique: Color unidentified under heavy white patina.		
	Description: Lower fragment of a hollow stem, thick rounded base.		
	Parallels: See Crowfoot 1957: Fig. 99,5; Isings 1965: Fig. 436; Ubaldi 1995: Fig. 5,30 (Type IV.2); Jennings et al. 2006: Fig. 6.10:3, Type 1a (conical lamp, 4th–5th centuries)		
Cat. 25		Lamp, stem	[Fig. 5:25]
Site Inv. No. PL 05/438	Dimensions: H. pres. 6.3	Dating: 5th–6th centuries	
Provenance: Sector 2, area 1, surface	Material and technique: Light green, creamy white iridescence, pontil mark.		
	Description: Four constrictions on a solid cylindrical stem, fragment of flaring bowl.		
	Parallels: See Baur 1938: Type A (goblet-shaped lamp with beaded stem); Chavane 1975: Pl. 63,170; Gawlikowski and Musa 1986 (glass consultant K. Gawlikowska): Pl. VII B; Foy 1996: Fig. 2:40–41; Cohen 1997: II 21; Foy 2000: Figs 6:12, 7:19–20; Jennings et al. 2006: Fig. 6.21, Type 4c		

Cat. 26	Lamp, long stem	[Fig. 5:26]
Site Inv. No. PL 06/2/80	Dimensions: H. pres. 6.3	Dating: 5th century
Provenance: Sector 2, locus II	Material and technique: Color unidentified under brown crust.	
	Description: High, hollow cylindrical stem, flat base.	
	Parallels: See Pirling 1978: Fig. 5 (upper left); Cohen 1997: Pl. II 16; Dussart 1998: Pl. 16,8 (with exhaustive parallels on page 87); Foy 2000: Fig. 8,17; Jennings et al. 2006: Fig. 6.16:2, Type 4a, Fig. 11.17:5; Jones 2006: No. 107	

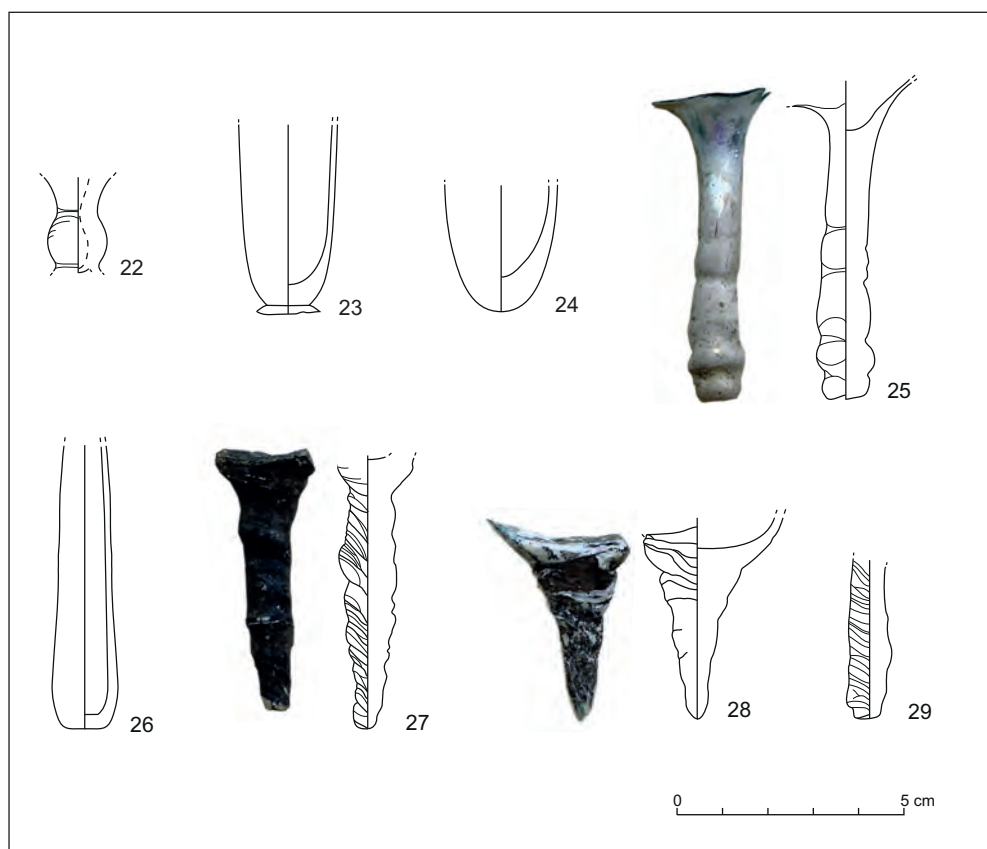


Fig. 5. Lamp stems and bases

Cat. 27	Lamp, stem	[Fig. 5:27]
Site Inv. No. PL 06/2/335	Dimensions: H. pres. 5.7	Dating: 6th–7th centuries
Provenance: Sector 2, locus IV	Material and technique: Green, metallic patina.	
	Description: Solid twisted stem, tapering to a pointed base.	
	Parallels: For twisted lamp stems, see Crowfoot and Harden 1931: Pl. XXIX 28; Fontaine 1952: Pl. 5,27; Gawlikowski and Musa 1986 (glass consultant K. Gawlikowska): Pl. VIIB, first from left in the lower row; Hadad 1998: Fig. 2:26; Fünfschilling 1999: No. 464A; Foy 2000: Figs 4:6, 6:18; Goldstein and Lindgren 2005: Nos. 34–36; Antonaras 2008: Pl. 5.5i For twisted goblet stems, see Young 1993: Fig. 3; Foy 1995: Pl. 17,209–211, 219–224; Jennings et al. 2006: Fig. 6.3:21. Only one twisted lamp stem found among many goblet stems at the site of Kom el-Dikka, Alexandria, Egypt (R. Kucharczyk, personal communication)	
Cat. 28	Lamp, stem	[Fig. 5:28]
Site Inv. No. PL 05/435	Dimensions: H. pres. 4.6	Dating: 6th–7th centuries
Provenance: Sector 1, area 1, no context	Material and technique: Light bluish green, white and brown iridescence.	
	Description: Stem with applied twisted thread, flaring bowl.	
	Parallels: See Gorin-Rosen 2000: Fig. 2:8 (mould-blown, ribbed decoration)	
Cat. 29	Lamp, stem	[Fig. 5:29]
Site Inv. No. PL 06/2/13	Dimensions: H. pres. 3.9	Dating: 6th–7th centuries
Provenance: Sector 2, area B	Material and technique: Color unidentified under dark patina.	
	Description: Solid twisted stem.	
	Comment: Similar to Cat. 27 and an unillustrated fragment P. 04/334	
Cat. 30	Lamp, stem	[Fig. 6:30]
Site Inv. No. PL 06/2/181	Dimensions: H. pres. 6.2	Dating: 4th–5th centuries
Provenance: Sector 2, locus I	Material and technique: Blue, bubbly, grey patina.	
	Description: Hollow stem with thick, rounded base with a pontil wad attached, flaring body.	
	Parallels: See Harden 1936: Nos 436, 449–454, Pl. XVI (conical beakers, solid pointed base); Baur 1938: Type E (vase-shaped lamp); Isings 1957: Form 106 d	

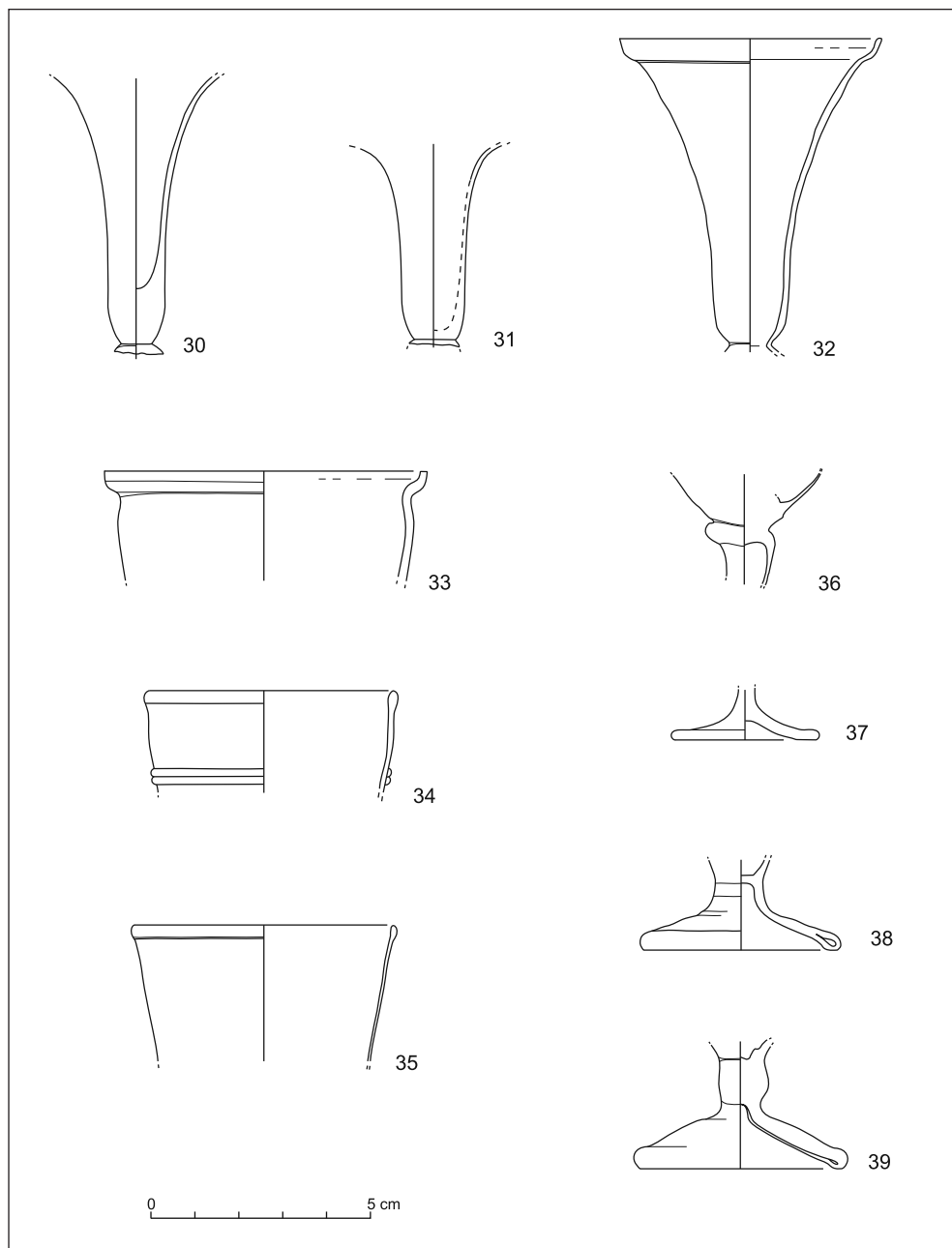


Fig. 6. Lamps (30–32); goblets (33–39)

Cat. 31	Lamp, stem	[Fig. 6:31]
<i>Site Inv. No.</i> PL 06/2/323	<i>Dimensions:</i> H. pres. 4.4; Dia. base 1	<i>Dating:</i> 4th–5th centuries
<i>Provenance:</i> Sector 2, locus IV	<i>Material and technique:</i> Light green, flaky crust. <i>Description:</i> Hollow stem, flaring to the partly preserved bowl. Rounded base with wad attached. <i>Parallels:</i> See Baur 1938: Type E, Fig. 18,12; Kehrberg 1986: Fig. 9,63; Meyer 1987: Fig. 10,I	
Cat. 32	Lamp	[Fig. 6:32]
<i>Site Inv. No.</i> PL 06/2/79	<i>Dimensions:</i> H. pres. 6.8; Dia. rim 5.8, base 1	<i>Dating:</i> late 4th–early 5th centuries
<i>Provenance:</i> Sector 2, locus II	<i>Material and technique:</i> Color unidentified under brown crust. <i>Description:</i> Flaring conical bowl, cracked-off rim, rounded base, constricted at junction with fragmentary preserved hollow bulb. <i>Parallels:</i> See Baur 1938: Type E (vase-shaped lamp with rounded bottom); Isings 1957: Form 106d; Jennings et al. 2006: 138–140, Type 3 bulbous-stem lamps, Fig. 6.12:1–4, 6	
Cat. 33	Goblet or cup, rim and body wall	[Fig. 6:33]
<i>Site Inv. No.</i> PL 05/163	<i>Dimensions:</i> Dia. rim 7.3; Th. 0.3	<i>Dating:</i> 3rd–4th centuries
<i>Provenance:</i> Sector 1, area 1, context 13	<i>Material and technique:</i> Olive-green, flaky, brown crust. <i>Description:</i> Flaring, wheel-polished cracked-off rim, thick, vertical walls, slightly tapering to the bottom. <i>Parallels:</i> See Isings 1957: Form 96; Weinberg and Goldstein 1988: Nos 477, 479; Meyer 1992: Nos 131–140; Brun 2003: Nos 25, 27; Jennings et al. 2006: Fig. 5.3:1,7; Kucharczyk 2007a: Fig. 2:1	
Cat. 34	Goblet, rim and body wall, or Flask, neck	[Fig. 6:34]
<i>Site Inv. No.</i> PL 05/178	<i>Dimensions:</i> H. pres. 2.3 cm; Dia. rim 5.6	<i>Dating:</i> 4th century
<i>Provenance:</i> Sector 1, area 1, no context	<i>Material and technique:</i> Dull white, silver iridescence. <i>Description:</i> Rounded, thickened rim, straight wall with two broad threads around the vessel at 1.8 cm below the rim. <i>Parallels:</i> See Erdmann 1977: No. 562; Dussart 1997: Pl. 25:17; Mossakowska-Gaubert 2000: Fig. 4:22	

Cat. 35		Goblet, rim and body wall	[Fig. 6:35]
Site Inv. No. PL 05/396	Dimensions:	Dia. rim 6	Dating: 6th–7th centuries
Provenance: Sector 1, area 1, no context	Material and technique: Light blue, slightly iridescent.		
	Description: Rounded rim, conical body, walls tapering toward the bottom.		
	Parallels: See Mossakowska-Gaubert 2000: Nos 28, 29, Fig. 4		
Cat. 36		Goblet, stem and body wall	[Fig. 6:36]
Site Inv. No. PL 06/2/408	Dimensions:	H. pres. 2.8	Dating: 5th–6th centuries
Provenance: Sector 2, locus VIII	Material and technique: Blue green, iridescent.		
	Description: Part of a hollow stem and the lower part of a bowl.		
	Parallels: See Saldern 1980a: 57, No. 323, 62, No. 384 (maybe a lamp); Weinberg and Goldstein 1988: No. 201; Jennings et al. 2006: Fig. 11.25:14		
Cat. 37		Goblet, foot, small	[Fig. 6:37]
Site Inv. No. PL 05/190	Dimensions:	Dia. 3.2	Dating: 6th–7th centuries
Provenance: Sector 1, area 1, no context	Material and technique: Blue, white flaky weathering.		
	Description: Plain, slightly pushed-up base, narrow, cylindrical stem.		
	Parallels: See Harden 1936: Nos 479, 482, 484, Pls VI, XVI; Foy 2001: Nos 40–44; Jennings et al. 2006: Type 3		
Comment: This form of small base is frequent in Egypt and the Levant (e.g., Karanis, Alexandria, Gerasa, Palmyra)			
Cat. 38		Goblet, foot	[Fig. 6:38]
Site Inv. No. PL 06/2/310	Dimensions:	Dia. 4.5; H. pres. 2	Dating: 6th century
Provenance: Sector 2, locus IV	Material and technique: Light green, milky iridescence.		
	Description: Folded hollow pushed-in foot, cylindrical stem.		
	Parallels: See Jennings et al. 2006: Type 1b (short-stem folded-base goblets)		

Cat. 39	Goblet, foot and stem	[Fig. 6:39]
Site Inv. No. PL 05/365	Dimensions: Dia. 5	Dating: 6th–7th centuries
Provenance: Sector 1, area 1, context 30	Material and technique: Color unidentified under heavy white patina.	
	Description: Folded pushed-up foot, one-bead stem, flaring bowl.	
	Parallels: See Jennings et al. 2006: Fig. 6.1, 123–134, Type 1a (knobbed-stem goblets, very common late Roman/early Byzantine form)	
Cat. 40	Beaker	[Fig. 7:40]
Site Inv. No. PL 05/428	Dimensions: H. pres. 5.4; Dia. base 2.4	Dating: 4th century
Provenance: Sector 1, area 1, context 36	Material and technique: Color unidentified under yellow and grey crust.	
	Description: Thick flat base, walls slightly flaring towards missing rim.	
	Parallels: See Slim 1971–1972: Nos 31–38, Figs 112–115; Weinberg and Goldstein 1988: Fig. 4-47:454; Sternini 1995: Fig. 13:175	
Cat. 41	Beaker, base	[Fig. 7:41]
Site Inv. No. PL 05/431	Dimensions: Dia. base 4.6	Dating: 6th–7th centuries
Provenance: Sector 1, area 1, context 23	Material and technique: Light green to colorless. White flaky crust.	
	Description: Thick, slightly concave base.	
	Parallels: See Sternini 1995: Fig. 13:169; Jennings et al. 2006: Fig. 8.2:9	
Cat. 42	Beaker, base	[Fig. 7:42]
Site Inv. No. PL 06/2/401	Dimensions: Dia. 3.4; H. pres. 1	Dating: 4th–5th centuries
Provenance: Sector 2, locus VIII	Material and technique: Olive green.	
	Description: Concave base, straight walls.	
	Parallels: See Katsnelson 1999: Fig. 3:17; Jennings et al. 2006: Fig. 8.1:3	
Cat. 43	Beaker, three fragments	[Fig. 7:43]
Site Inv. No. PL 05/407	Dimensions: H. pres. 2; Dia. base 2.7	Dating: 4th century
Provenance: Sector 1, area 1, context 26	Material and technique: Light green, brown patina.	
	Description: Flat, thick base, flaring walls.	
	Comment: Similar to Cat. 40.	

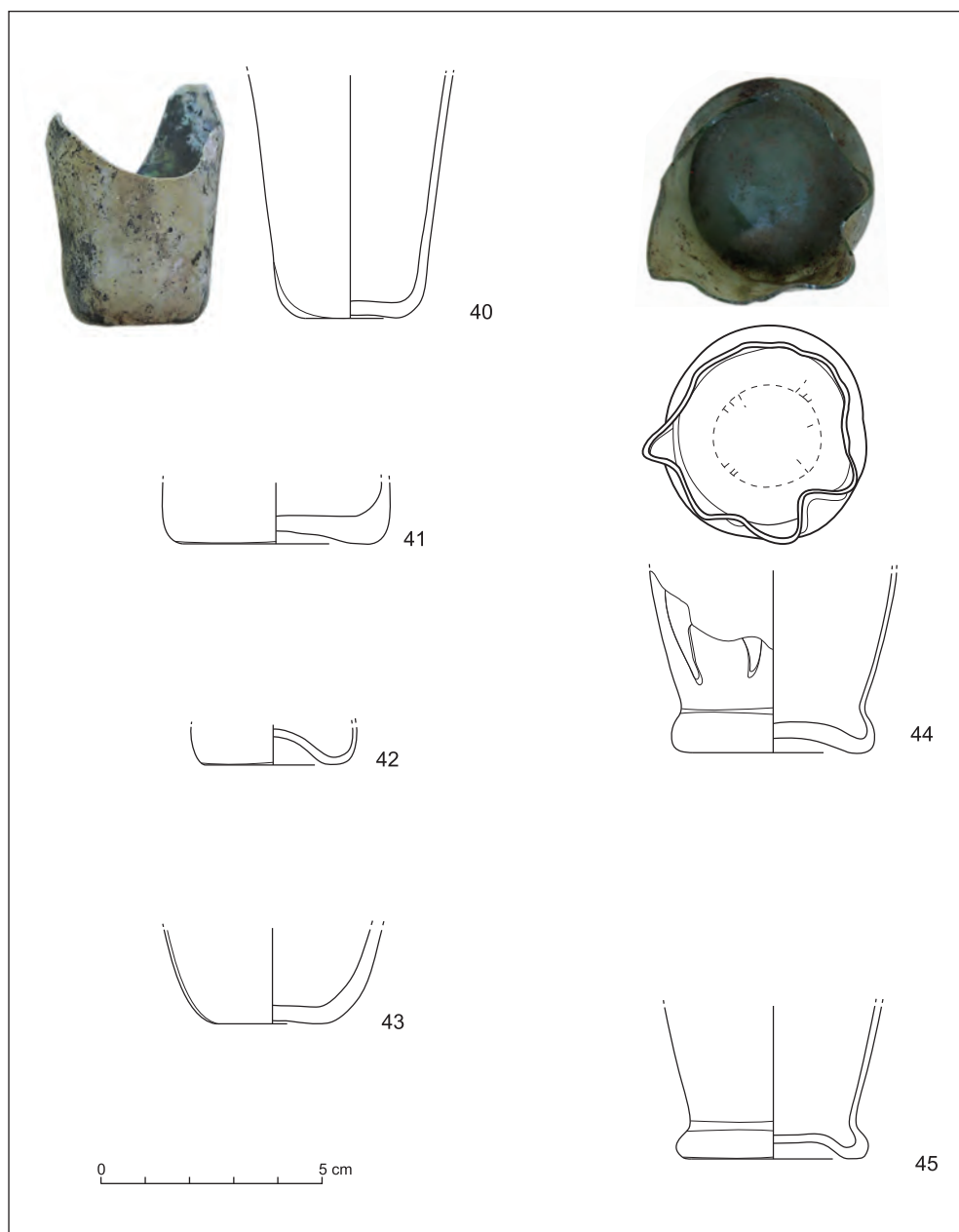


Fig. 7. Beaker bases

Cat. 44			Beaker	[Fig. 7:44]
Site Inv. No. PL 05/326		Dimensions: H. pres. 4.1; Dia. 4.4		Dating: 4th century
Provenance: Sector 1, area 1, context 34		Material and technique: Green, white iridescence. Indented.		
		Description: Slightly concave, cut-out base, three vertical indentations on the preserved side of the body.		
		Parallels: See Harden 1936: No. 396, Pl. XV; Vessberg 1952: Pl. IV:14, Type BIV a (beaker with indented sides); Crowfoot 1957: Fig. 95,21 (4th–5th centuries); Clairmont 1963: Pl. X:443 (late 2nd–early 3rd centuries); Saldern 1980b: No. 103; Tatton-Brown 1984: Fig. 67, No. 85 (flask)		
Cat. 45			Beaker	[Fig. 7:45]
Site Inv. No. PL 05/133		Dimensions: H. pres. 3.4; Dia. base 4.25		Dating: 4th–5th centuries
Provenance: Sector 1, area 1, context 19		Material and technique: Color unidentified under flaky, milky weathering.		
		Description: Concave, cut-out base, flaring walls.		
		Parallels: See Meyer 1992: No. 282; Foy 1995: Pl. 9, Nos 81–82; Cohen 1997: Pl. III 21		
Cat. 46			Bowl, base and body wall	[Fig. 8:46]
Site Inv. No. PL 06/2/124–125		Dimensions: Dia. base 3		Dating: 4th century
Provenance: Sector 2, locus IV		Material and technique: Light grayish green, translucent.		
		Description: Flat, applied base with hollow ring; middle part of the body flaring toward the missing rim with one thick thread around (not drawn).		
		Parallels: See Cohen 1997: Pl. III 23; Bailey 1998: Pl. 93, Y70-73; Dussart 2007: Fig. 3:6a		
Cat. 47			Coil base	[Fig. 8:47]
Site Inv. No. PL 05/328		Dimensions: Dia. 3		Dating: 4th century
Provenance: Surface		Material and technique: Olive-green to dark green.		
		Description: One-coil base-ring, flaring sides.		
		Parallels: See Tatton-Brown 1984: Fig. 68, No. 100 (4th century); Jennings et al. 2006: Fig. 4.14:1 (2nd century)		

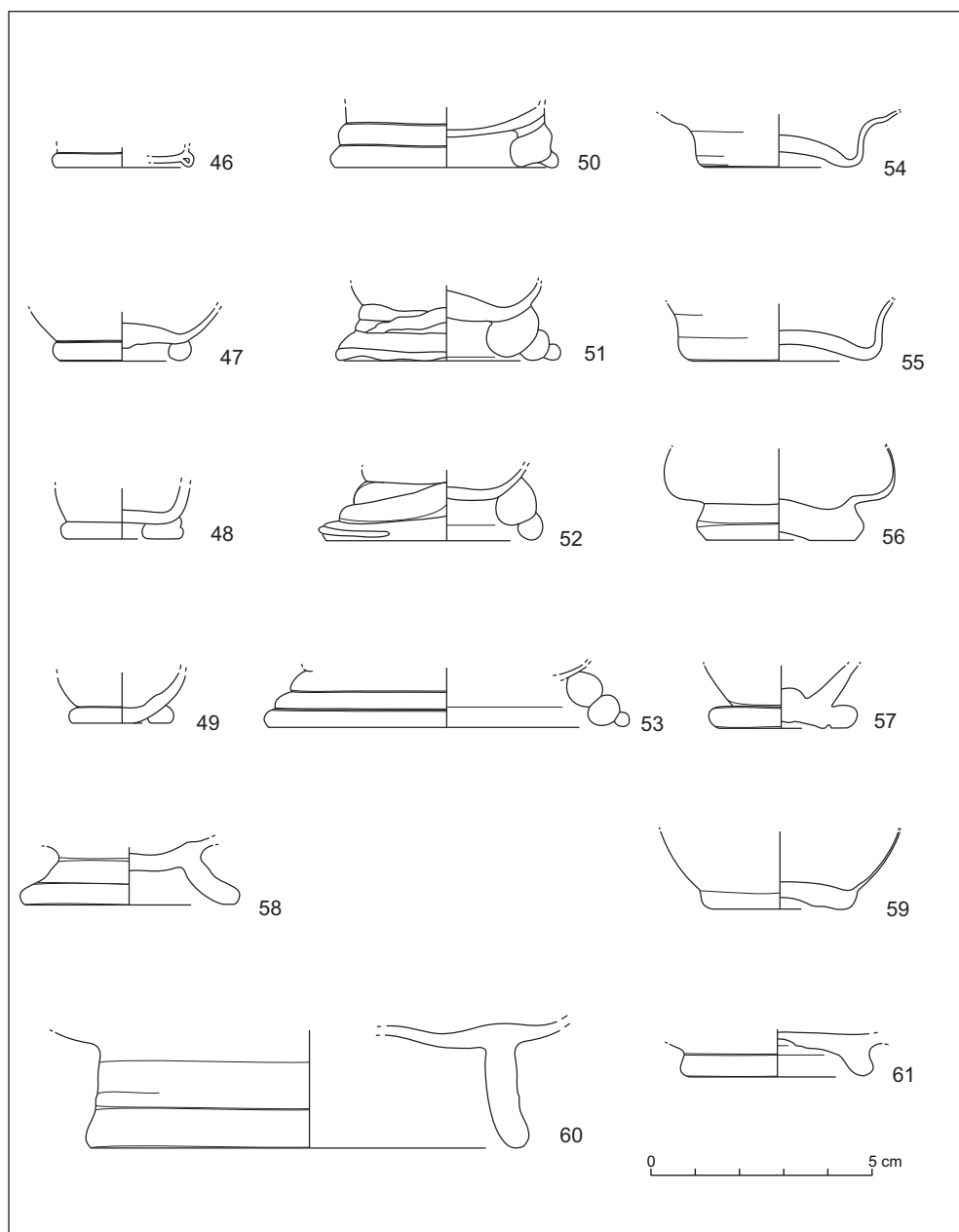


Fig. 8. Bases: one-coil bases (46–49), spiral-wound bases (50–53), pad bases (56, 59), cut-out bases (54–55), base rings (58, 61), disc base (57) and pedestal base (60)

Cat. 48			Coil base	[Fig. 8:48]
Site Inv. No. PL 05/198		Dimensions: Dia. 2.8		Dating: early 5th century
Provenance: Sector 1, area 1, no context		Material and technique: Brown crust, corroded.		
		Description: Plain coil base-ring.		
		Comments: PL 06/3/16 and PL 06/2/398 (not illustrated) are similar.		
Cat. 49			Coil base, small	[Fig. 8:49]
Site Inv. No. PL 05/419		Dimensions: Dia. 2.4		Dating: early 5th century
Provenance: Sector 1, area 1, context 26		Material and technique: Olive-green, white and brown crust.		
		Description: Regular base-ring, flaring walls.		
		Parallels: See Jennings et al. 2006: Fig. 8.4:3		
Cat. 50			Coil-wound base	[Fig. 8:50]
Site Inv. No. P. 04/342		Dimensions: Dia. 5		Dating: 4th century
Provenance: Surface		Material and technique: Light green, enamel-like patina.		
		Description: Flat base formed by three coils, floor sloping down.		
		Parallels: See Fontaine 1952: Pl. 3,16–17		
Cat. 51			Coil-wound base	[Fig. 8:51]
Site Inv. No. PL 05/205		Dimensions: Dia. 5		Dating: 4th century or later
Provenance: Sector 1, area 1, no context		Material and technique: Brown crust.		
		Description: Pushed-up base, wound four times. Pushed-up floor.		
		Parallels: See Harden 1936: Nos 658, 666; Isings 1965: No. 197, Fig. 447, No. 63, Fig. 457; Saldern 1980a: No. 196; Tatton-Brown 1984: Fig. 68, 103–105 (double coil base of a flask or jug, 4th century or later; 105 triple coil); Weinberg and Goldstein 1988: Nos 152–156; Foy 1995: Pl. 7:41–44; Sternini 1995: Fig. 15,188–193; Dussart 1997: Pl. 29:2–2ab; Jennings 1997–1998: Fig. 24,12; Katsnelson 1999: Fig. 2, Nos 3–4; Sternini 2001: Fig. 20, Nos 214–219; Kucharczyk 2001: 65; Nenna 2001: Fig. 13; Jennings et al. 2006: Fig. 8.4:8–10; Gorin-Rosen and Katsnelson 2007: Fig. 7:3–7; Kucharczyk 2007a: Fig. 3,13		

Cat. 52 Coil-wound base [Fig. 8:52]	
<i>Site Inv. No.</i> PL 05/220	<i>Dimensions:</i> Dia. 5.1 <i>Dating:</i> 4th century
<i>Provenance:</i> Sector 1, area 1, context 27	<i>Material and technique:</i> Brown crust, heavy corrosion.
	<i>Description:</i> Flat base wound three times, sunken floor.
	<i>Comments:</i> Similar to Cat. 50 and PL 05/301 (not illustrated).
Cat. 53 Coil-wound base, large [Fig. 8:53]	
<i>Site Inv. No.</i> PL 06/2/309	<i>Dimensions:</i> H. pres. 1.6; Dia. 8 <i>Dating:</i> 4th century
<i>Provenance:</i> Sector 2, locus IV	<i>Material and technique:</i> Dark blue.
	<i>Description:</i> Coil base wound three times.
	<i>Parallels:</i> See Weinberg and Goldstein 1988: Fig. 4-21:155
Cat. 54 Beaker, base [Fig. 8:54]	
<i>Site Inv. No.</i> PL 05/355	<i>Dimensions:</i> Dia. 3.8 <i>Dating:</i> 4th century
<i>Provenance:</i> Sector 1, area 1, context 33	<i>Material and technique:</i> Color unidentified, enamel-like patina.
	<i>Description:</i> Slightly concave pad-like cut-out base.
	<i>Parallels:</i> See Hayes 1975: Nos 374–377; Weinberg and Goldstein 1988: Nos 169–179; Dussart 1998: Pl. 21; Whitehouse 2001: Nos 662, 664, 665; Arveiller-Dulong and Nenna 2005: No. 989; Atallah and Gawlikowska 2007: Nos 106–108
	<i>Comments:</i> Bases Cat. 54 to Cat. 56, and Cat. 61, made separately or in one piece, are typical of the 4th-century cylindrical beakers produced in the Eastern provinces.
Cat. 55 Beaker, base (2 fragments) [Fig. 8:55]	
<i>Site Inv. No.</i> PL 05/333	<i>Dimensions:</i> Dia. 3.8 <i>Dating:</i> 4th century
<i>Provenance:</i> Sector 1, area 1, context 23	<i>Material and technique:</i> Light green, silver patina.
	<i>Description:</i> Slightly concave cut-out base, flaring walls.
	<i>Comments:</i> See Cat. 54.

Cat. 56	Beaker, base	[Fig. 8:56]
Site Inv. No. PL 06/2/312	Dimensions: Dia. 3.3; H. pres. 2.2	Dating: 4th–5th centuries
Provenance: Sector 2, locus IV	Material and technique: Dark green.	
	Description: Thick pad base slightly pushed in, incurved walls.	
	Parallels: See Harden 1936: No. 362, Pl. XV; Crowfoot 1957: Figs 94,14, 95,20; Hayes 1975: Nos 375, 377; Kehrberg 1986: Fig. 9:20–21; Meyer 1987: Fig. 7,A; Weinberg and Goldstein 1988: Fig. 4-23 (4th century); Erdmann 1977: Pl. 1, Nos 13–15 (4th century); Dussart 1998: Pl. 21:18, 23 (5th–6th centuries); Jennings et al. 2006: Fig. 8.2:1	
	Comments: See Cat. 59.	
Cat. 57	Beaker, base	[Fig. 8:57]
Site Inv. No. PL 06/2/168	Dimensions: Dia. base 3.3; H. pres. 1.5	Dating: 4th–5th centuries
Provenance: Sector 2, locus IV	Material and technique: Light blue, white heavy iridescence.	
	Description: Thick solid disk base, floor bulged in the middle, flaring sides.	
	Parallels: Similar forms are dated to the 1st–early 2nd centuries (Hayes 1975: Nos 133–134, 136; Saldern 1980a: Pl. 21,107; Hayes 1986: Fig. 119 A10; Lightfoot and Arslan 1992: No. 25; Arveiller-Dulong and Nenna 2005: Nos 21, 25), but see late Roman parallels: Hayes 1975: No. 375; Erdmann 1977: Pl. 1, No. 16; Meyer 1987: Fig. 7C; Jennings et al. 2006: Fig. 11.4:18; Gorin-Rosen and Katsnelson 2007: Fig. 8:5; Kucharczyk 2011: 66–67, Fig. 9 with references. The ceramic context of locus IV points to a late dating, but it is not excluded that this fragment is a residuum of early Roman times.	
Cat. 58	Beaker or bowl, base ring	[Fig. 8:58]
Site Inv. No. PL 05/423	Dimensions: Dia. base 5	Dating: 3rd–4th centuries
Provenance: Sector 1, area 1, context 26	Material and technique: Light green, heavy yellow crust.	
	Description: Applied high plain base-ring with a flat floor.	
	Parallels: See Clairmont 1963: Pl. IX:384, 390; Saldern 1980a: Pl. 22,188 (bowl with pronounced base-ring); Weinberg and Goldstein 1988: Fig. 4-20, No. 145 (2nd century); Dussart 1998: Pl. 7: 16–17 (3rd–4th centuries)	
Cat. 59	Pad base	[Fig. 8:59]
Site Inv. No. PL 05/362	Dimensions: H. pres. 1.8; Dia. 3.8	Dating: 4th century
Provenance: Sector 1, area 1, no context	Material and technique: Light green to colorless, white iridescence. Pontil mark.	
	Description: Slightly concave cut-out pad base, flaring walls.	
	Parallels: Jennings et al. 2006: Fig. 3.4:22 (1st century)	
	Comments: See Cat. 56.	

Cat. 60			Plate or large dish, base ring	[Fig. 8:60]
Site Inv. No. PL 05/366		Dimensions: H. pres. 2.8; Dia. 18		Dating: 4th century
Provenance: Sector 1, area 1, context 14		Material and technique: Olive-green, brown crust, rainbow iridescence.		
		Description: Applied plain pedestal base, slightly concave floor.		
		Parallels: See Harden 1936: Nos 83, 130, Pl. XII; Saldern 1980a: Pl. 25, No. 463 (5th–6th centuries); Bailey 1998: Y33; Mossakowska-Gaubert 2004: Fig. 5 (base only); Jennings et al. 2006: Fig. 8.5:15 and pages 191–193; Kucharczyk 2008: Fig. 46:26; Kucharczyk 2010b: Fig. 8:11		
Cat. 61			Base, on solid ring	[Fig. 8:61]
Site Inv. No. PL 06/2/286		Dimensions: Dia. 4		Dating: 4th–5th centuries
Provenance: Sector 2, locus IV		Material and technique: Color unidentified, corroded.		
		Description: Plain, slightly concave base ring.		
		Parallels: Jennings et al. 2006: Fig. 8.2:4		
		Comments: See Cat. 56.		
Cat. 62			Base, with toes	[Fig. 9:62]
Site Inv. No. PL 06/2/386		Dimensions: Dia. base 4		Dating: 3rd–4th centuries
Provenance: Sector 2, locus VII		Material and technique: Green.		
		Description: Slightly pushed up base, pincer irregular small points around the edge.		
		Parallels: See Harden 1936: Nos 678–685, Pls XVII, XIX; Fontaine 1952: Pl. 1,4; Vessberg 1952: Pl. IV:12; Clairmont 1963: 50–51, Nos 204, 207, 208, 211; Isings 1965: Fig. 463 (base with pinched toes), Nos 53/X/242, 105; Weinberg and Goldstein 1988: Fig. 4-22:161; Whitehouse 2003: Nos 1113–1117; Rodziewicz 2005: Pl. 8,174 (pointed foot-ring); Arveiller-Dulong and Nenna 2005: No. 1211; Jennings et al. 2006: Fig. 8.8:3; Gorin-Rosen and Katsnelson 2007: Fig. 15:3; Kucharczyk 2010a: Fig. 1: 14–16; Kucharczyk 2010b: Fig. 1:8–10, Fig. 2:4		
Cat. 63			Bowl, base with toes	[Fig. 9:63]
Site Inv. No. PL 06/2/151		Dimensions: Dia. base 7		Dating: 3rd–4th centuries
Provenance: Sector 2, locus II		Material and technique: Green(?) under brown patina. Pinched.		
		Description: Base-ring decorated with pinched toes with a tiny cavity (four preserved).		
		Parallels: See Israeli 2008: No. 101; Kucharczyk 2010b: Fig. 1:8-10, Fig. 2:4		

Cat. 64 Beaker or bottle, base [Fig. 9:64]	
Site Inv. No. PL 06/2/343	Dimensions: Dia. base 6.3 Dating: 4th century
Provenance: Sector 2, locus IV	Material and technique: Bluish green. Description: Pushed-in base, straight wall. Parallels: See Weinberg and Goldstein 1988: Fig. 4-29:230; Shindo 1992: Fig. 6-10:6; Sternini 1995: Fig. 14:177; Cohen 1997: Pl. III 12; Gorin-Rosen and Katsnelson 2007: Fig. 8:11–15
Cat. 65 Bottle, neck [Fig. 10:65]	
Site Inv. No. PL 05/153	Dimensions: Dia. 4.8 Dating: 3rd–4th century
Provenance: Sector 1, area 1, context 13	Material and technique: Color unidentified under brown patina. Description: Rounded, thickened, flaring rim, funnel-shaped neck. Parallels: See Dussart 1997: Pl. 27:4; Dussart 1998: Pl. 56,35; Katsnelson 1999: Fig. 3:5; Brun 2003: Fig. 243,70; Dussart 2003: Fig. 5,5–5b; Dussart 2007: Fig. 10:14
Cat. 66 Bottle, neck [Fig. 10:66]	
Site Inv. No. PL 06/2/311	Dimensions: Dia. 4 Dating: 4th–5th centuries
Provenance: Sector 2, locus IV	Material and technique: Color unidentified, brown crust. Description: Flaring neck with folded out and flattened rim, one thick thread around. Parallels: See Sternini 1995: Fig. 11:119; Foy 2001: No. 13

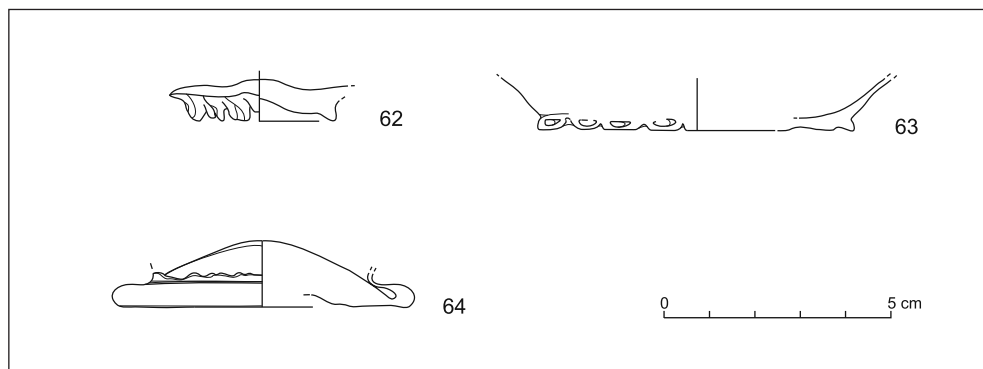


Fig. 9. Bases with toes (62, 63) and a pushed-in base (64)

Cat. 67		Flask, neck	[Fig. 10:67]
Site Inv. No. PL 06/2/429	Dimensions: H. pres. 1.8; Dia. at rim 6	Dating: 3rd century (pottery dating of context)	
Provenance: Sector 2, locus VIII	Material and technique: White patina.		
	Description: Flaring neck with rounded rim, one thread around.		
	Parallels: See Weinberg and Goldstein 1988: Fig. 4-31:265		
Cat. 68		Bottle, neck	[Fig. 10:68]
Site Inv. No. PL 05/187	Dimensions: H. pres. 2.2; Dia. 3.4	Dating: 4th century	
Provenance: Sector 1, area 1, context 10	Material and technique: Color unidentified under brown crust.		
	Description: Flaring neck, folded inside rim.		
	Parallels: See Sternini 1995: Fig. 11:136; Dussart 1998: Pl. 44,27		
Cat. 69		Flask, neck	[Fig. 10:69]
Site Inv. No. PL 05/394	Dimensions: H. pres. 3.4; Dia. 4	Dating: 4th century	
Provenance: Sector 1, area 1, no context	Material and technique: Light blue, transparent, white flaky iridescence.		
	Description: Cylindrical neck, rounded rim.		
	Parallels: See Rodziewicz 1984: Pl. 74:400; Weinberg and Goldstein 1988: Fig. 4-35:293		
Cat. 70		Bottle, neck	[Fig. 10:70]
Site Inv. No. P. 04/302	Dimensions: Dia. rim 4	Dating: 6th–7th centuries	
Provenance: Surface	Material and technique: Light green, pitted, dark patina.		
	Description: Cylindrical neck with an outspread rounded rim.		
	Parallels: See Shindo 1992: No. 7B, page 574		
Cat. 71		Bottle, neck	[Fig. 10:71]
Site Inv. No. PL 06/2/66	Dimensions: Dia. 3.5	Dating: 4th–5th centuries	
Provenance: Sector 2, locus II	Material and technique: Dark green, heavily corroded.		
	Description: Flaring neck, one thread beneath the rounded rim.		
	Parallels: See Sternini 1995: Fig. 11:128; Saldern 1980a: Pl. 27, 633; Weinberg and Goldstein 1988: Fig. 4-28:219–220; Dussart 1997: Pl. 28:1,1a; 1998: Pl. 41:19,20; Fünfschilling 1999: No. 298; Jennings et al. 2006: Fig. 5.27:1–7		

Cat. 72	Bottle, neck and shoulder	[Fig. 10:72]
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Site Inv. No.
PL 05/325

Dimensions: H. pres. 6.2; Dia. rim 2.3

Dating: 3rd–4th centuries

Provenance:
Sector 1,
area 1,
context 34

Material and technique: Greyish to colorless, transparent, pitted, slightly iridescent.

Description: Cylindrical, tall neck with a rounded flaring rim, constricted at junction with the globular body.

Parallels: See Fontaine 1952: Pl. 3,13; Sternini 1995: Fig. 11:130; Dussart 1997: Pl. 27:11; Dussart 2007: Fig. 6:13; Kucharczyk 2008: Fig. 45-11

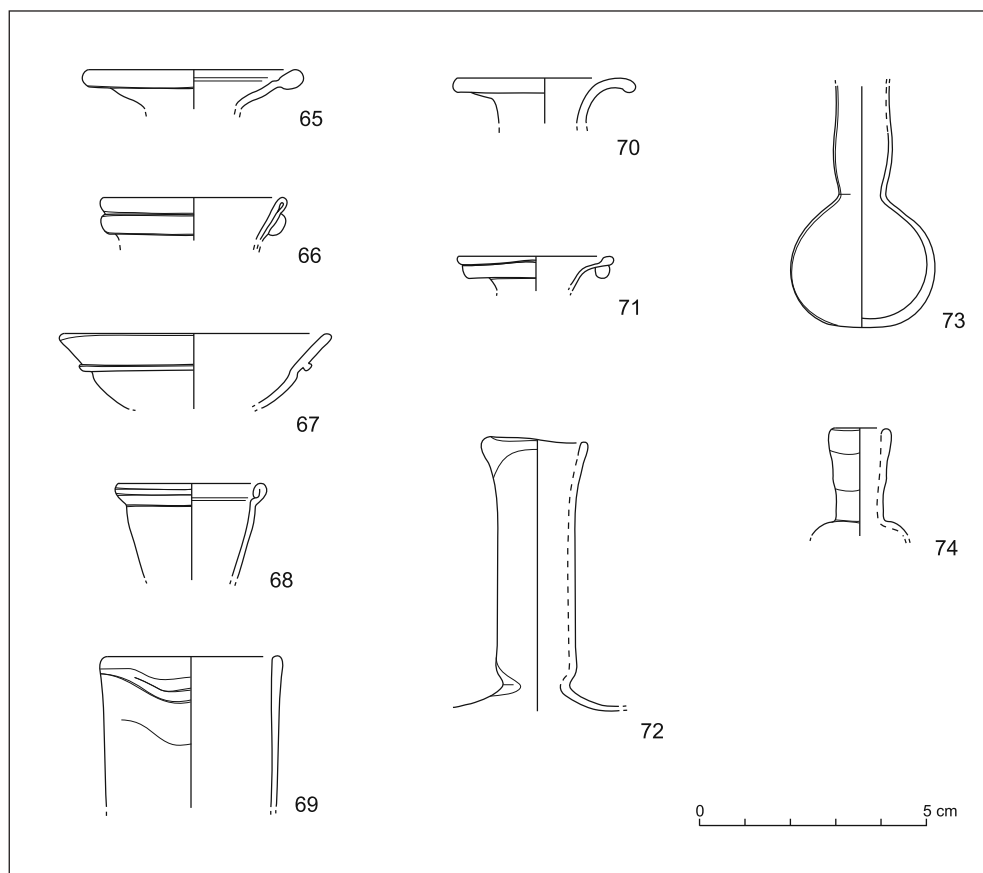


Fig. 10. Bottles and flasks

Cat. 73	Small bottle	[Fig. 10:73]
Site Inv. No. PL 05/439	Dimensions: H. pres. 5.4; Dia. max. 3	Dating: Undetermined
Provenance: Sector 1, area 1, no context	Material and technique: Olive-green, oval small bubbles, yellow iridescence inside, white outside.	
	Description: Spherical body, flat small base, cylindrical neck constricted at junction with body, rim missing.	
	Parallels: See Vessberg 1956: Fig. 48.9; Isings 1957: Form 6 (1st century); Hayes 1975: Nos 217, 571 (1st century); Katsnelson 1999: Fig. 3, Nos 13–14 (5th–6th centuries); Nenna 2001: Figs 3, 4; Nenna et al. 2003: Fig. 13	
Cat. 74	Small bottle, neck and shoulders	[Fig. 10:74]
Site Inv. No. PL 05/338	Dimensions: H. pres. 2.5; Dia. 1.4	Dating: 6th century or later
Provenance: Sector 1, area 1, no context	Material and technique: Light blue, pitted, slightly iridescent. Ribbed.	
	Description: Cylindrical, horizontally ribbed neck, flaring toward the rounded rim.	
	Parallels: See Shindo 1992: 599, Nos 26–31; Bailey 1998: Pl. 93, Y53; Dussart 1998: Pl. 48,10; Foy 2001: No. 148 (Islamic); Dussart 2003: Fig. 5,4–4e; Shindo 2003: Fig. 2:4; Kucharczyk 2005a: Fig. 1:8–11, and page 33 for other examples from Egypt; Dussart 2007: Fig. 10:10, page 216 for examples from Palestine	
Cat. 75	Handle (tumbler lamp)	[Fig. 11:75]
Site Inv. No. PL 05/398	Dimensions: H. 4.3; oval section 0.7	Dating: Undetermined
Provenance: Sector 1, area 1, no context	Material and technique: Olive-green, pitted, slightly iridescent.	
	Description: Handle of a tumbler lamp, attached to a straight wall.	
	Parallels: See Fontaine 1952: Pl. 3,13; Sternini 1995: Fig. 11:130; Dussart 1997: Pl. 27:11; Dussart 2007: Fig. 6:13; Kucharczyk 2008: Fig. 45-11	
Comment: Strap handles Cat. 75–82 are mostly plain and circular in cross-section; two are ribbed (Cat. 79, Cat. 82). Their dating is highly problematic. See handles from Beirut, Jennings et al. 2006: 195–198.		

Cat. 76	Handles (2) (tumbler lamp)	[Fig. 11:76]
Site Inv. No. PL 06/2/277 PL 06/2/291	Dimensions: H. 4.6	Dating: Undetermined
Provenance: Surface	Material and technique: Heavy white patina.	
	Description: Handles joining rim and mid-height of body wall, bent on top at right angle.	
	Parallels: Erdmann 1977: Pl. 3, No. 182	
	Comment: See Cat. 75	
Cat. 77	Handle (tumbler lamp)	[Fig. 11:77]
Site Inv. No. PL 05/200	Dimensions: H. 5.3; Dia. 0.6	Dating: Undetermined
Provenance: Sector 1, area 1, no context	Material and technique: Flaky yellow weathering.	
	Description: Handle with round section, flattened at the lower attachment point, curved at top.	
	Parallels: Fontaine 1952: Pl. 4,12; Meyer 1987: Fig. 12,R; Dussart 2007: Fig. 7:2h–2j (6th–8th centuries)	
	Comment: See Cat. 75	
Cat. 78	Handle (bowl-shaped lamp)	[Fig. 11:78]
Site Inv. No. PL 05/229	Dimensions: H. 4.8; oval section 0.9	Dating: Undetermined
Provenance: Sector 1, area 1, no context	Material and technique: Green, flaky white iridescence.	
	Description: Handle of a bowl-shaped lamp, once attached to a flaring wall, folded in two and flattened, narrow suspension loop.	
	Comment: See Cat. 75	
Cat. 79	Handle (jug)	[Fig. 11:79]
Site Inv. No. PL 05/228	Dimensions: H. 3.7; W. max. 2.8	Dating: Undetermined
Provenance: Sector 1, area 1, no context	Material and technique: Olive-green, no iridescence.	
	Description: Ear-shaped handle once attached to a flaring neck and bulbous body. Flat section.	
	Comment: See Cat. 75.	

Cat. 80	Handle or pendant waster	[Fig. 11:80]
<i>Site Inv. No.</i> PL 05/340	<i>Dimensions:</i> L. 2.5; section 0.8	<i>Dating:</i> Undetermined
<i>Provenance:</i> Sector 1, area 1, no context	<i>Material and technique:</i> Black, no iridescence. <i>Description:</i> Probably wasted handle or drop-shaped pendant with suspension loop. <i>Parallels:</i> Davidson 1952: Nos 2125–2127; Weinberg and Goldstein 1988: Pl. 3–8 A	

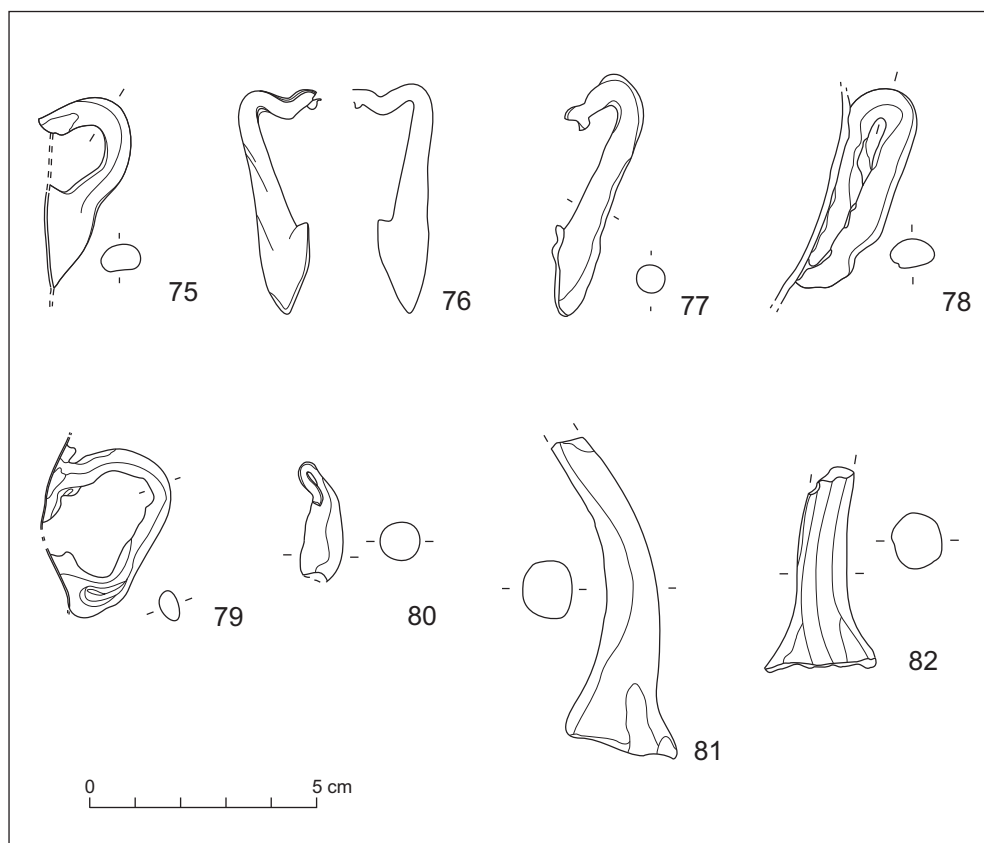


Fig. 11. Handles

Cat. 81 Handle [Fig. 11:81]	
<i>Site Inv. No.</i> PL 05/329	<i>Dimensions:</i> H. pres. 7; round section 1.3 <i>Dating:</i> Undetermined
<i>Provenance:</i> Sector 1, area 1, no context	<i>Material and technique:</i> Color unidentified under brown patina. <i>Description:</i> Strap handle, lower part. <i>Comment:</i> See Cat. 75
Cat. 82 Handle [Fig. 11:82]	
<i>Site Inv. No.</i> PL 05/214	<i>Dimensions:</i> H. pres. 4.8 <i>Dating:</i> Undetermined
<i>Provenance:</i> Sector 1, area 1, no context	<i>Material and technique:</i> Green, flaky white iridescence. <i>Description:</i> Fragment of a handle, lower part, ribbed. <i>Comment:</i> See Cat. 75
Cat. 83 Small unguent or kohl container flask [Fig. 12:83]	
<i>Site Inv. No.</i> PL 05/432	<i>Dimensions:</i> H. pres. 5 <i>Dating:</i> 2nd–3rd centuries
<i>Provenance:</i> Sector 1, area 1, no context	<i>Material and technique:</i> Dark green, pitted, heavy yellow and brown corrosion. <i>Description:</i> Very thick flat base and thick walls, narrow inside, upper neck broken. Small interior space for the precious contents, protected by thick base and walls. <i>Parallels:</i> See Harden 1936: Class XIII, Nos 823–832 (ceased to be made in the 3rd century); Hayes 1975: No. 578; Meyer 1992: Nos 168, 203–206, 208, 210 (unguentaria with solid base); Brun 2003: Fig. 245:87–93 (2nd century); Arveiller-Dulong and Nenna 2005: No. 782, Pl. 58 (Egyptian type); Kucharczyk 2005b: Fig. 3:1; 2010b: Fig. 9: 6,9; Peacock 2011: Fig. 7.2:16
Cat. 84 Double cosmetic tube [Fig. 12:84]	
<i>Site Inv. No.</i> PL 06/2/324	<i>Dimensions:</i> H. pres. 5.4; W. 3.8; Dia. 2 and 1.5 <i>Dating:</i> 3rd–4th centuries
<i>Provenance:</i> Sector 2, locus IV	<i>Material and technique:</i> Olive green with dark green marvered threads, translucent. <i>Description:</i> Lower part preserved. Two tubes joint by a flat wall 0.3 cm thick. Thread 0.3–0.4 cm spirally wounding up and marvered. <i>Parallels:</i> See Sorokina 1967: Fig. 2-25; Auth 1976: No. 483; Christie's 1985: No. 23A; Arveiller-Dulong et al. 1996: Nos 96–98; Caron and Zoitopoulou 2008: No. 133

Cat. 85		Jug, neck and body	[Fig. 12:85]
Site Inv. No. PL 05/436	Dimensions:	H. pres. 4.8	Dating: 2nd–3rd centuries
Provenance: Sector 1, area 1, no context	Material and technique: Light olive-green, corroded.		
	Description: Pear-shaped body, constricted at junction with neck. One large thread all around the mid-height of the flaring neck. Rim missing. Strap handle, partly preserved, attached to the neck.		
Cat. 86		Bead	[Fig. 12:86]
Site Inv. No. PL 05/191	Dimensions:	Dia. 1.2	Dating: Undetermined
Provenance: Sector 1, area 1, no context	Material and technique: Completely corroded, white iridescence.		
	Description: Circular, flattened bead with cylindrical perforation.		
Cat. 87		Bracelet, fragment	[Fig. 12:87]
Site Inv. No. PL 06/02/299	Dimensions:	Dia. est. 6.2; round section 0.7	Dating: 6th century
Provenance: Sector 2, locus IV	Material and technique: Color unidentified under heavy iridescence.		
	Description: Spirally twisted (dense twist).		
	Parallels: Spaer 1988: Type C1a		
Cat. 88		Bracelet, fragment	[Fig. 12:88]
Site Inv. No. PL 05/152	Dimensions:	Dia. est. 9	Dating: 6th century
Provenance: Sector 1, area 1, context 13	Material and technique: Color unidentified, dull white weathering.		
	Description: Circular in cross section, spirally twisted (loose twist).		
	Parallels: Spaer 1988: Type C1b		
Cat. 89		Bracelet, fragment	[Fig. 12:89]
Site Inv. No. PL 06/2/278	Dimensions:	Dia. est. 4	Dating: 6th century
Provenance: Sector 2, locus IV	Material and technique: Brown, black lines all around inside.		
	Description: Rounded semicircular section		
	Parallels: Spaer 1988: Type A2a		

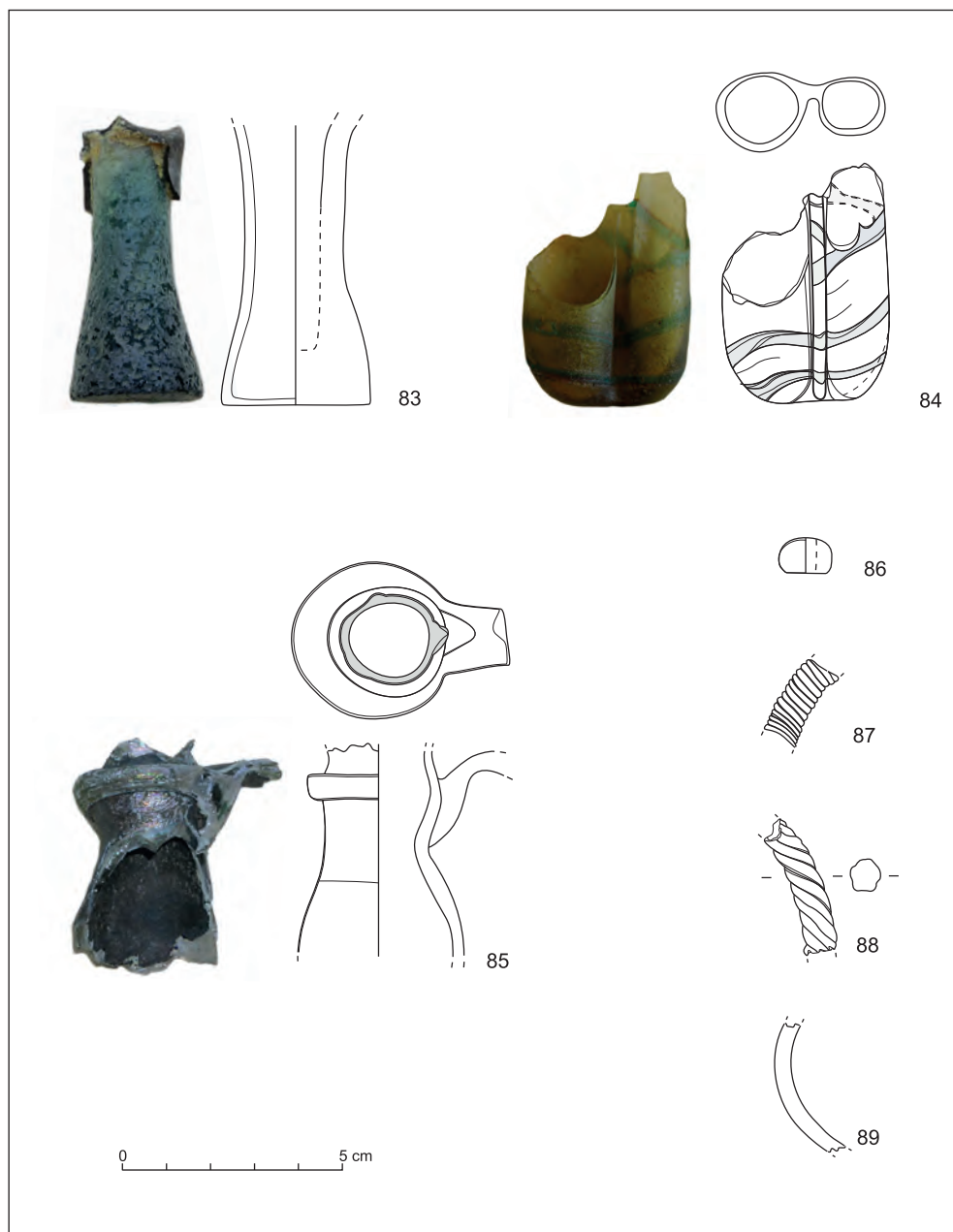


Fig. 12. Unguent flask (83), double cosmetic tube (84), jug (85), bead (86) and bracelets (87–89)

EXTERNAL PARALLELS

A surface survey in Tell el-Kana'is, a site located a small distance away to the east of the excavation, and earlier investigations in Pelusium yielded glass fragments (Rodziewicz 1996; Fontaine 1952) mostly comparable to the present assemblage. The glass from Tell Farama fits also very well the evidence from other Egyptian sites, especially on the Mediterranean coast, including the glass mentioned in yearly reports from Alexandria (Rodziewicz 1984; Kucharczyk 2005a; 2007a; 2010a), Marina el-Alamein (Kucharczyk 2005b; 2010b), Marea (Kucharczyk 2008), as well as sites of Sinai Peninsula (Kawatoko 1996; Shindo 2003). Further close parallels come from sites throughout Egypt: Karanis (Harden 1936), Tebtynis (Foy 2001) and Naqlun in Fayum Oasis (Mossakowska-Gaubert 2000; 2004), as well as el-Ashmunein (Bailey 1998), Elephantine (Rodziewicz 2005), Eastern Desert sites (Brun 2003) and Qusair al-Qadim/Myos

Hormos on the Red Sea (Meyer 1992; Peacock 2011).

Because Pelusium is situated on the main road between the Levant and Egypt, a close resemblance to Near Eastern products is only to be expected (Foy 1996; 2000; Jennings 1997–1998; Jennings et al. 2006; Atallah and Gawlikowska 2007). More parallel forms and techniques are to be found in Syria and Jordan (Baur 1938; Riis 1957; Clairmont 1963; Gawlikowska 1986 (general remarks); Kehrberg 1986; Meyer 1987; Dussart 1998; Jones 2006; Russo 2007), as well as on Cyprus (Vessberg 1952; 1956; Chavanes 1975; Young 1993).

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Glass finds from Beit Ras/Capitolias (Jordan)

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Abstract: This paper discusses glass finds from the Polish excavations at Beit Ras, ancient Capitolias. During two seasons (2015–2016) of fieldwork a relatively large amount of glass fragments was unearthed in the two main excavated areas. The material is from contexts dated to the late Roman through early Islamic periods, spanning a time from the 4th to roughly the 8th century AD. The assemblage includes mainly tableware like bowls, plates, drinking vessels, and also a significant amount of raw-glass chunks. Apart from glass material coming from the excavated squares, a selection of items from the survey in 2014 completes the corpora of glass coming from the ancient settlement.

Keywords: Decapolis, Capitolias, Beit Ras, Roman glass, Byzantine glass, Umayyad glass, glass chunks

Remains of ancient Capitolias, one of the cities of the Regio Decapolitana, lie today in northwestern Jordan, on the outskirts and within the extensively built-up area of the modern village of Beit Ras, situated approximately 10 km to the north of modern Irbid. Excavations in one of a few places still accessible for fieldwork were conducted recently by a team from the Polish Centre of Mediterranean Archaeology University of Warsaw, under the direction of Prof. Jolanta Młynarczyk (on the excavations, see Młynarczyk 2017, in this volume).

Apart from various architectural structures, pottery, and other small finds, the excavations brought to light several hundred glass fragments. From this group

161 objects were registered during the two seasons of excavations in 2015 and 2016. The best preserved objects from the excavated areas, along with a selection of glass finds collected during the survey in 2014, illustrate this report.

In general, the finds date from the late Roman and, for the most part, from the Byzantine and Umayyad periods (late 4th through the mid-8th century). However, a few fragments may be dated tentatively to the second half of the 8th century (early Abbasid period). As for the repertoire of glass types, it is relatively limited and includes mainly table vessels, like bottles, drinking vessels (cups/beakers/goblets) and bowls. A few fragments, possibly

belonging to oil lamps, were also found [Table 1] alongside numerous raw-glass chunks.

The finds represent well-known types of glass vessels, with parallels coming from a large area of the Roman-period Decapolis and the provinces of *Palaestina Prima*, *Secunda* and *Tertia*, which were successively replaced by the Byzantine Diocese of the East, and the territory of Bilad el-Sham (after the Muslim conquests in the first half of the 7th century).

Dating of the glass finds as proposed in this paper is based both on associated pottery finds from specific stratigraphical/chronological contexts and on published comparanda, first and foremost from the sites located within the Decapolis area and, whenever appropriate, also from other more distant sites and regions. All dates are AD.

Table 1. Overview of glass types from the excavated areas

Type	Overall fragment count	Estimated vessel equivalents
Bottles/jugs	36	27
Bowls/plates	4	4
Bowls	29	28
Drinking vessels	32	30
Drinking vessels: bases and stems	20	20
Bowls/lamps	6	6
Miscellanea: jar and lid	2	2
Various vessel parts: handles, trails	12	–
Unspecified bases and rims	14	–
Unspecified fragments	6	–
Total	161	117

AREA 1-S AND 1-S(W)

Architectural remains and other finds clearly confirm the industrial character of this part of the site. Throughout the Byzantine and later periods, the northern part of the ancient town was destined specifically for crafts like wine-pressing, kitchen activity, possibly also glass and pottery production in the near vicinity.

The glass finds were classified according to their morphological features, from closed to open shapes.

CLOSED SHAPES:

BOTTLES/JUGS/JUGLETS

This is one of the largest groups of vessels retrieved from the site, but the glass is heavily fragmented with the rim and neck shards too small for a secure and justified

identification of the form based on complete vessels from elsewhere. The time span for the use of the vessel types attested at the site is very broad, from Roman up to Byzantine and early Islamic. The chronological context of the associated pottery types narrows the dating to the 5th/6th–8th centuries.

Fragments Nos 1–3 [Fig. 1] belong either to bottles or jugs with slightly thickened, rounded or in-folded rims, and shallow funnel mouths sharply tapering down to cylindrical necks. In the case of other fragments, namely Nos 4–18 [see Fig. 1], the broad rims gradually slope down to the shoulders. No. 14 is apparently part of a jug with an attached broad handle rising above the rim [see Fig. 1]. A good

parallel to it is the jug from the Umayyad period from Beth Shean (Hadad 2005: Pl. 20:382).

The funnel-shaped mouths can be associated with many variations of the body (globular, cylindrical, pear-shaped) and base shapes (flat, concave). Such a diverse family of closed shapes constitutes a hallmark of mass production of glass vessels during the Byzantine, Umayyad and later periods. Some of them were plain, others decorated with horizontal threads wrapped below the rim, around the mouths and/or necks [see *Fig. 1:5,6,11,16*].

The vessels with funnel-shaped mouth correspond to Dussart Type BX flacons (1998: 18–19, 128–158). Numerous parallels can be cited from: the Umayyad house at Bosra (Wilson and Sa'd 1984: Fig. 568), Amman (Dussart 1998: 128–158), Jerash (Kehrberg 1986: Fig. 9:11, 32, 33, 43, 44; Meyer 1988: 202, Fig. 9:O–S), 'Ain ez-Zara/Callirrhoe (Dussart 1997: Pl. 27:4–6, 13–15), Hammat Gader (Cohen 1997: 419–425, Pls VI, VII:1–6), Beth Shean, Byzantine and Umayyad periods (Hadad 2006: Fig. 19.3:34, 38–45; 2005: Pls 7:114–124, 132–138; 8:157–164), and Khirbat el-Ni'ana (Gorin-Rosen and Katsnelson 2007: 98–103, Figs 11–13, and further parallels therein).

A fragment of an upright in-folded and thickened rim [see *Fig. 1:17*] preserves also the upper part of a cylindrical, narrow neck. It is dated, by its context, to the 6th/7th century. Parallels can be found in Cave 1071 at Horbat Qastra, late 6th–7th centuries (Gorin-Rosen 2013: Fig. 25:16), and at Burial Caves 1 and 2 at Khirbat el-Shubeika, 6th century (Gorin-Rosen 2002a: 297–298, Fig. 6:43; 306–307, Fig. 2:9, and references therein).

Vessel No. 19 [see *Fig. 1*] is characterized by a narrow and tapering neck and a simple, slightly thickened rim, beneath which there are several horizontal threads.

Of interest is an incomplete bottle found in the earth fill between the wall of a wine press and a “wall” cut in bedrock (see Młynarczyk 2017, in this volume). The vessel [see *Fig. 1:20*] is characterized by an unevenly flattened rim bent out, up and in. A long cylindrical neck tapers slightly downward. Convex shoulder indicates a globular body. It is made of light green glass. The pottery associated with the wine press is in general mixed and dates from the Byzantine and Umayyad period. The vessel can be classified beyond doubt as belonging to a group of bottles very typical during the 7th–8th and 9th centuries (Pollak 2007: 121), which, apart from a flattened rim and slanting neck, had a squat or globular body and a slightly concave base. Two intact bottles of this kind were found in a destruction context related to the AD 749 earthquake in the atrium of the North-West Church at Sussita, as part of an assemblage of various artifacts, including a hoard of Umayyad coins (Burdajewicz 2006: 128–129, Figs 1:6, 7; 3:A, B; in press b). Other exact parallels are known from the late Byzantine and/or Umayyad contexts at Kursi (Barag 1983: Fig. 9:5, 6), Hammat Gader (Cohen 1997: Pl. IX:1–5), Umayyad–Abbasid period at Tiberias (Lester 2004: 182–184, Fig. 7.7:75–80, 85; Hadad 2008: Pl. 5.5:71, 72), Beth-Shean (Hadad 2005: Nos 182–194, Pls 9–11), Horbat 'Illin (Upper) (Katsnelson 2012: 53*, Fig. 2:20–23), Khirbat 'Adasa (Gorin-Rosen 2008: 126, Fig. 2:10, 11), and Ramla (Pollak 2007: 121, Fig. 10:61, 62).

Fragments of two bases made of light bluish glass, one flat and one concave, complete the picture of finds associated with

the bottles [see *Fig. 1:21, 22*]. They were found in a late 6th–early 7th century pottery context. Both items represent common

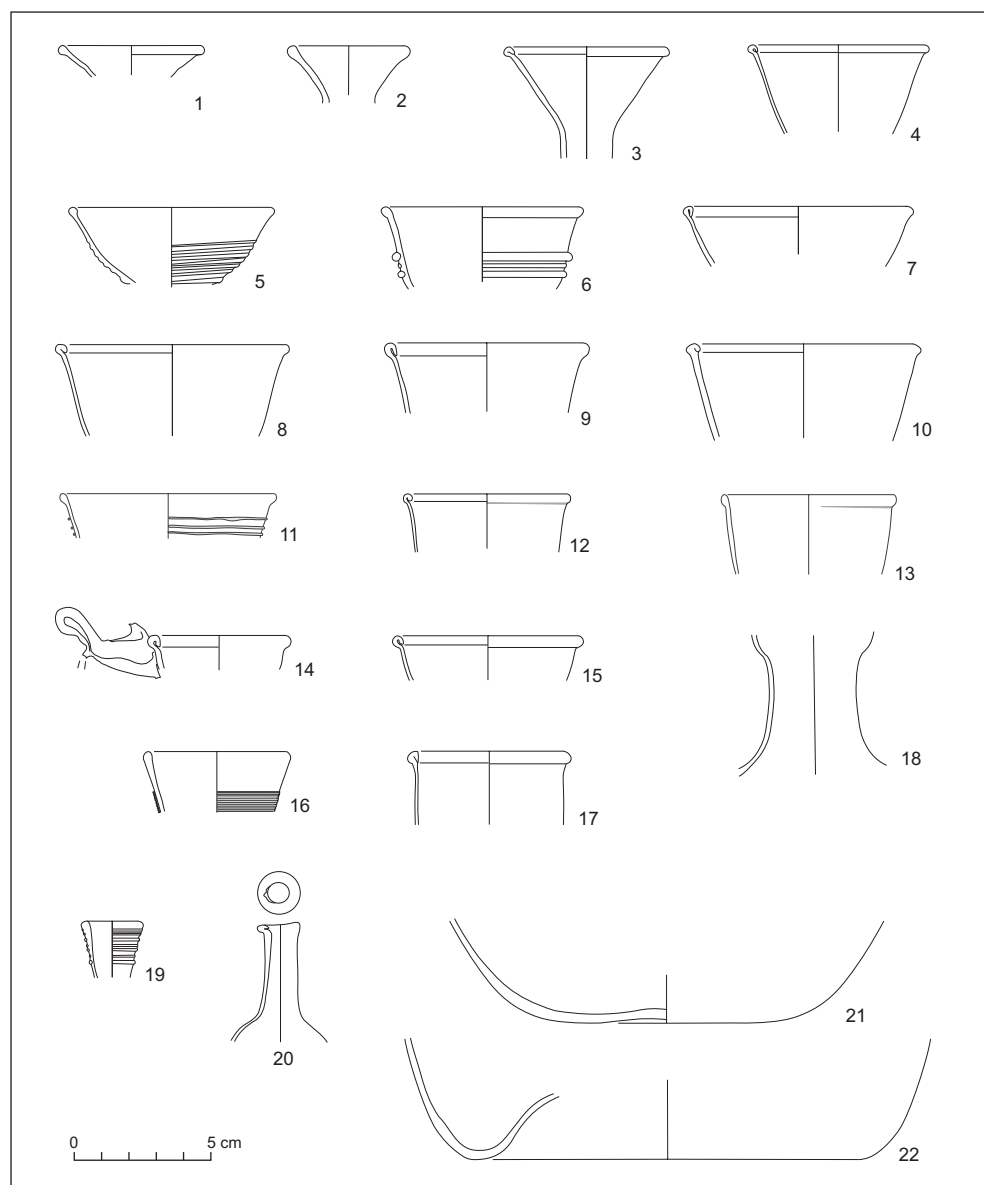


Fig. 1. Bottles

(PCMA Beit Ras Project/drawing and digitizing D. Mazanek and M. Burdajewicz)

types of bases well known throughout the Mediterranean since the Roman period, thus an attempt to look for references to similar finds would serve no purpose.

BOWLS/PLATES

A bowl fragment No. 1 (from top soil) is characterized by a double fold placed below a rounded, flaring rim [*Fig. 2:1*]. Such deep bowls are known from the early Roman period up to the early 5th century. They correspond to Dussart type BL 4213a22 (1998: 67, Pl. 6). A fragment of a parallel bowl unearthed at 'Ain ez-Zara/Callirrhoe is firmly dated to the 2nd century by its position in the stratigraphy of the site (Dussart 1997: 97, Pl. 22:7). The Sanctuary of Zeus in Jerash yielded a double-fold rim, dated by the context to the 5th–6th centuries (Dussart 1998: 67, Pl. 6:23). A similar rim comes from the mid-2nd/3rd to 4th century context in Beirut Souk 2 (Jennings 2006: 76, Fig. 4.8:1). Other close parallels are published from Meiron, late 4th century (Meyers, Strange, and Meyers 1981: Pl. 9.10:6), Khirbat el-Ni'ana, 4th century (Gorin-Rosen and Katsnelson 2007: 82, Fig. 3:3,4), Khirbet el-Shubeika, 5th century (Gorin-Rosen 2002a: Fig. 1:2) and from an unstratified context in the Migdal Ashqelon tomb (Katsnelson 1999: 67*, Fig. 1:1).

Fragment No. 2 belongs to a bowl featuring an upright broad tubular collar, formed by folding the rim out and down with its edge folded up [*Fig. 2:2*]. It was found in a context dated to the 6th/7th century. Fragment No. 3, from topsoil, represents undoubtedly the same type of bowl [*Fig. 2:3*]. Various types of bases were associated with such bowls, usually pushed-in ones (Israeli 2008: 376, No. 76; Weinberg and Goldstein 1988: 47–48,

Fig. 4-7). These bowls correspond to Isings Form 118 (1957: 148), Barag Type 2.16 (1970: Pl. 31), and Dussart Type BII.311 (1998: 75, 251). According to Odile Dussart (1998: 75), these bowls were common in the middle of the 4th century, with a possible continuation into the 8th century.

Parallels are known from Jerash, Ain el-Zara, Amman (Dussart 1998: 75, Pl. 11:2–10), 'Iraq al-Amir (Dussart 1991: 299, Fig. 36:1–3), Paneas (Gorin-Rosen and Jackson-Tal 2008: 83, Fig. 5.2:5), Kisra (Stern 1997: 106, Fig. 1:6), Jalame, the second half of the 4th century (Weinberg and Goldstein 1988: 47–49, Fig. 4-7), Meiron Strata IV and V (Meyers, Strange, and Meyers 1981: Figs 9.10:15, 16; 11:1–4), Hammat Gader (Cohen 1997: 400, Pls 10–12), Tiberias (Amitai-Preiss 2004: 178, Fig. 11.1:3), Flavia Neapolis, area of the hippodrome, 1st–5th centuries (Sarig 2009: Pl. 41:8), Tell Tanninim (Pollak 2006: 158–159, Fig. 128). Other parallels come from Beirut, mid-2nd/3rd to 4th centuries (Jennings 2006: 75, Fig. 4.7:3, 4) and Athens, late 3rd to 4th centuries (Weinberg and Stern 2009: 143, Nos 309, 310, Fig. 18, and further parallels therein). Complete bowls were found, among others, in Tyre, dated to the mid-2nd to 4th century (Harden 1949: 151–152, Fig. 1:7) and at Beth-Shean (Hayes 1975: 120, No. 468).

Small fragment No. 4 [*Fig. 2:4*] probably belongs to a vessel with a horizontal pinched rim, a type of bowl which is discussed in more detail in the next section of this paper (Areas 3-N and 2-N).

A characteristic feature of bowls Nos 5–10 is a rim folded outwards, down and flattened, ranging in diameter between about 22 cm and 26 cm [*Fig. 2:5–8*]. The

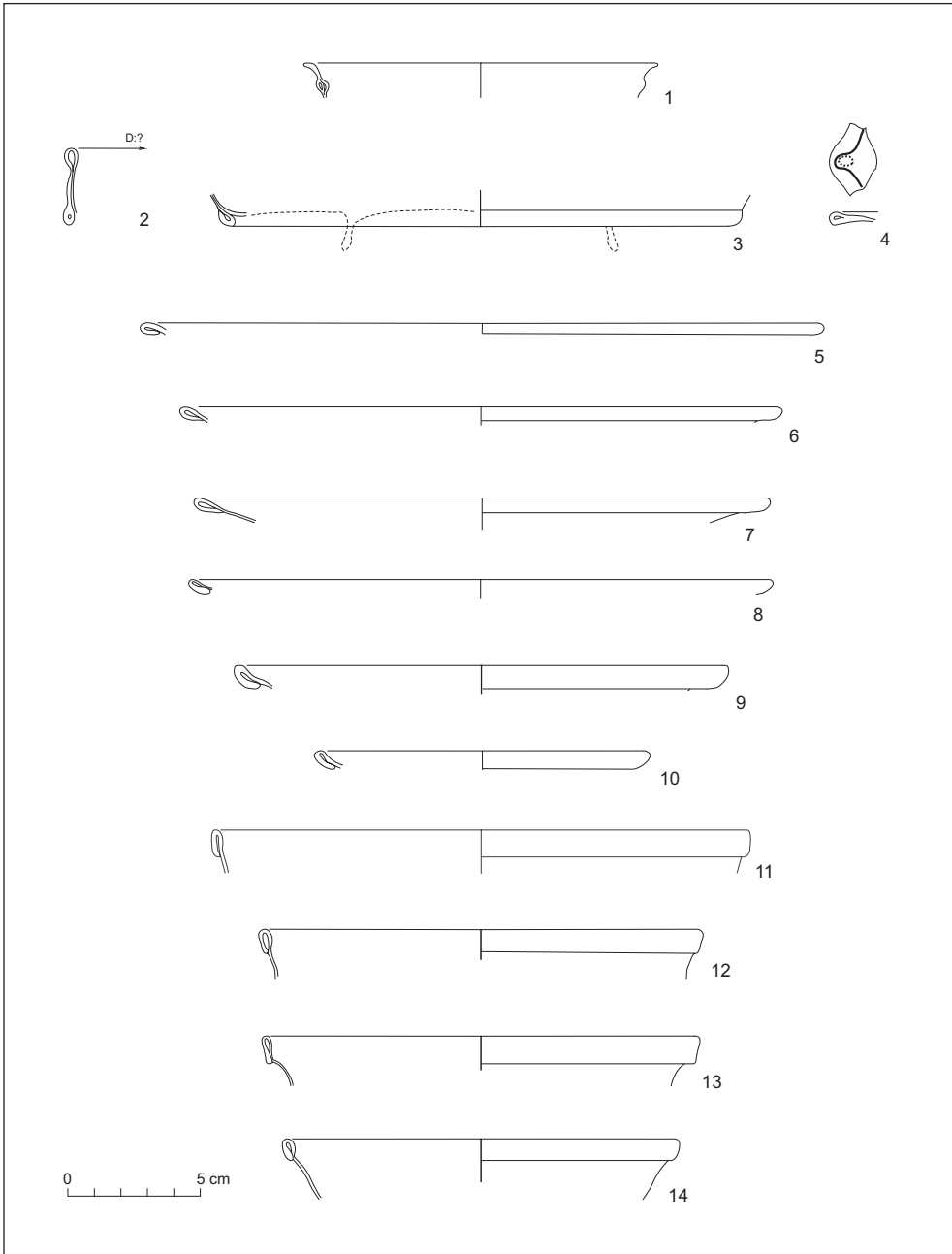


Fig. 2. Bowls/plates
(PCMA Beit Ras Project/drawing and digitizing D. Mazanek and M. Burdajewicz)

associated ceramic material is dated to the 6th–8th centuries. These rims belong to a large group of bowls widespread in the Eastern Mediterranean. They can vary considerably in size and form of the body, thickness of walls, and type of base. Bowls Nos 5–8 with a diameter between roughly 22 cm and 26 cm may represent shallow

bowls or plates. Nos 9–10 with rim below 20 cm were probably deep vessels.

Some parallels can be cited from Beth Shean, the Byzantine–Umayyad periods (Hadad 2005: Pl. 3:51–71; 2006: Fig. 19.1:11–14), Sussita/Hippos, the Byzantine–Umayyad periods (Burdajewicz 2006: 133, Fig. 1-30; 2011: Figs 2-B:26–

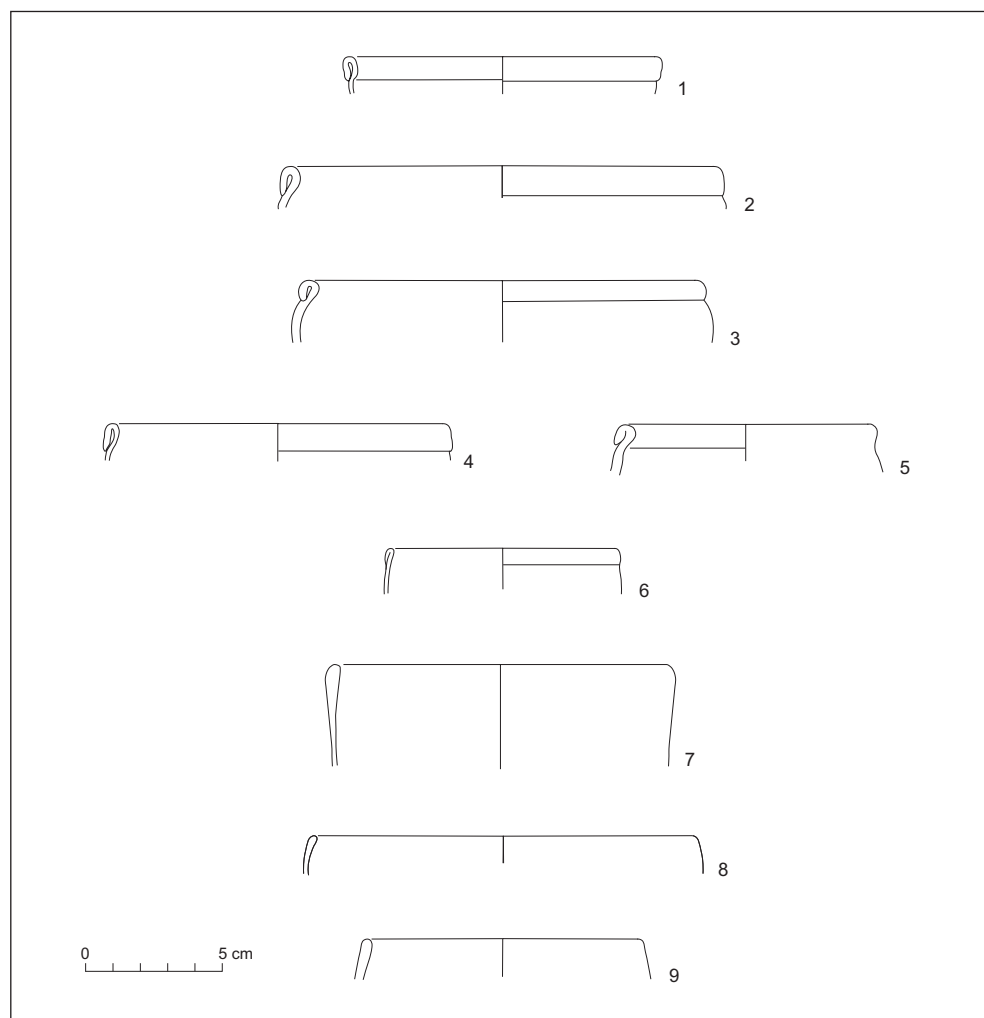


Fig. 3. Bowls and alleged lamps
(PCMA Beit Ras Project/drawing and digitizing D. Mazanek and M. Burdajewicz)

28; 4:8, 10; in press b), Jalame, the second half of the 4th century (Weinberg and Goldstein 1988: 41–44, Fig. 4-3), and Hammat Gader, end of the Roman period (Cohen 1997: 396–398, Pl. I:1–3). They were also common in Cyprus, around the 3rd–4th centuries (Vessberg 1956: 132, Fig. 42:10–13, Type II α) and at Karanis in Egypt (Harden 1936: Pl. XI:1–29).

Fragments Nos 11–14 [Fig. 2:11–14] represent variants of the same (general) type of bowls with out-folded rims. Flattened rims, upright instead of horizontal or diagonal, are folded outwards and downwards. These bowls were deeper and, judging by the preserved parts of their walls, had convex or conical body profile. Similar bowls were excavated in the burial cave at Hurfeish dated to the 3rd century (Gorin-Rosen 2002b: Fig. 7). Parallel rims are known from the 5th–7th century tomb at Ashqelon, where they were attributed to big suspended bowl-lamps (Katsnelson 1999: 78*, Fig. 5:1–3). The items from Beit Ras pertain to stratigraphical contexts yielding pottery finds from the 6th/7th century through the Umayyad period.

A few rims may possibly be related to lamps. One of them is an out-folded flattened rim with a small section of tapering wall preserved [Fig. 3:1]. It can represent a bowl-lamp type originally provided with three suspension vertical handles (for metal chains) attached to the rim and the body. We may assume that also fragment No. 6 [Fig. 3:6], with very flat out-folded rim, was used as a suspended bowl-lamp. It is associated with a pottery context dated to the 7th–8th century, whereas No. 1 belongs to a 6th–7th century assemblage.

A small group of bowls includes vessels characterized by a convex profile of relatively thick walls, indicating a globular

body. They have out-folded tubular, incurved rims [see Fig. 3:2–5]. Such bowls, dated in general to the Byzantine and Umayyad periods, are known from Amman and Jerash; they correspond to Dussart's Type BVII.11 (1998: 88–89, Pl. 16).

Vessel No. 7 [Fig. 3:7] is a simple bowl with a vertical rounded and thickened rim. Nos 8–9 [Fig. 3:8–9] have rounded, incurving rims. These three vessels are somewhat difficult to classify, but their profiles seem to be typical of bowls dated to the Umayyad and possibly early Abbasid period (see Gorin-Rosen and Katsnelson 2005: Figs 3:108; 4:30).

DRINKING VESSELS: CUPS/

BEAKERS/GOBLET/WINE GLASS

Drinking vessels are difficult to assign to a specific type. Usually a beaker/cup is defined as a vessel that has a flat bottom, while a goblet has a stem and a base. However, both beakers/cups and goblets may share a body profile, especially at the rim. Therefore, as long as we are dealing with small fragments of rims and walls, precise classification is in most cases almost impossible. Since most of the bases discovered in Beit Ras are stemmed bases, we assume that also most of the rims must belong to goblets rather than to beakers/cups. It cannot be excluded, however, that some of the simple rims, particularly of a small diameter, may actually represent closed forms, like jugs, bottles or flasks.

Fragments Nos 1–6 [Fig. 4:1–6] are characterized by flaring, rounded and, in some cases, slightly thickened rims. They belong to a large family of drinking vessels, which used to be classified as stemmed goblets, or wineglasses. There is a wide range of possible body profiles, including conical, cylindrical, and bell-shaped,

vessels with concave walls, as well as several variants of rims (simple, rounded), stems (hollow, solid, knobbed), and bases (pushed-in, tubular ring, flat disk or slightly concave disk). A great number of such vessels was found at various sites throughout the Byzantine and Umayyad periods. Here reference is made to just a few parallels from the Umayyad house at Bosra (Wilson and Sa'd 1984: Fig. 553), Pella (Smith and Day 1989: Pl. 60:9), Jerash (Kehrberg 1986: 375, Fig. 9:25–28; Meyer 1988: Fig. 10:V, X–Z), Amman (Dussart 1998: 114, Pl. 26:BVIII.332; 27–33 with

further parallels therein), Hammat Gader (Cohen 1997: 405–407, Pl. III:1–4), Beth Shean (Hadad 2005: Pl. 21:400–411), and Horbat Castra (Gorin-Rosen 2013: 99, Fig. 24:7). Examples securely dated to the first half of the 8th century were also found at Sussita/Hippus (Burdajewicz 2011: 38, Fig. 9; 2006: 129–130, Figs 1:12, 13, 15; 5). Another parallel example comes from the Umayyad glass assemblage unearthed at Ramla and well-dated within this period to after AD 712–715 (Gorin-Rosen 2010: 221, Pl. 10.2:5). Outside Palestine, similar stemmed goblets are known, among others,

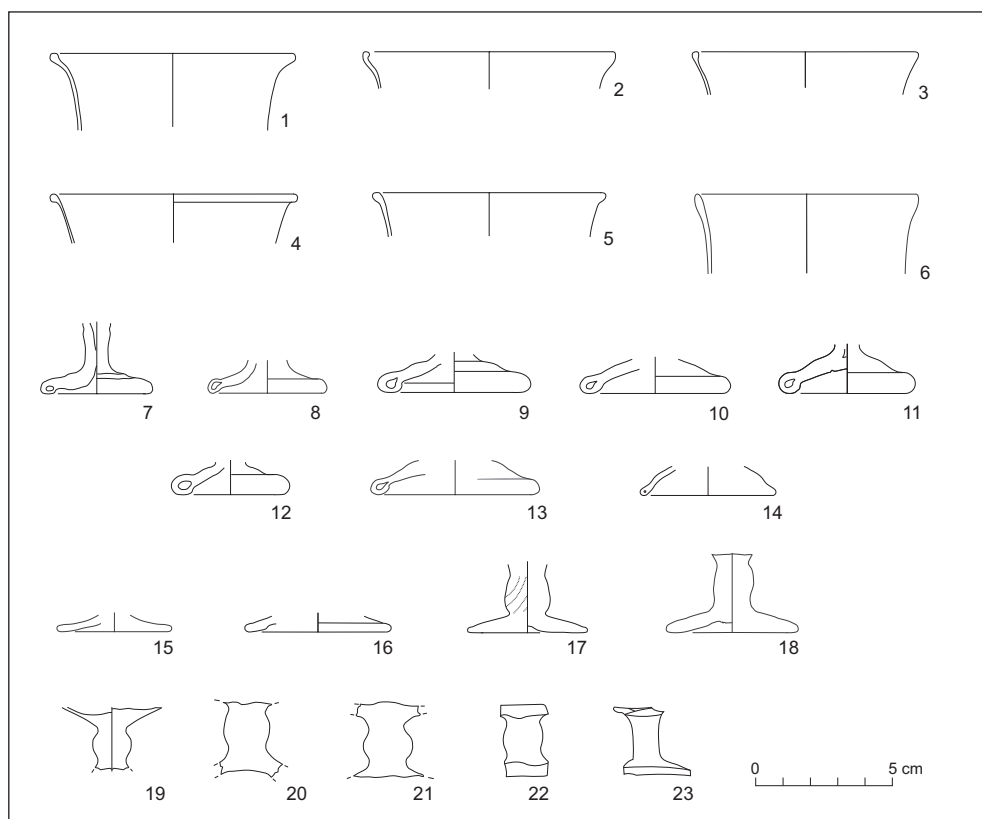


Fig. 4. Drinking vessels

(PCMA Beit Ras Project/drawing and digitizing D. Mazanek and M. Burdajewicz)

from Beirut in Phoenicia (Jennings 2006: Figs 1.6–1.9), Karanis in Egypt (Harden 1936: Pl. XVI:479–484) and Sardis in Lydia (von Saldern 1980: 53–60). They correspond to Isings Form 111 (1957: 139–140) and Dussart type BVIII.3321 (1998: 114, Pl. 26).

Bases of stemmed goblets vary from hollow tubular base rings (Nos 7–14) to solid and flat, sometimes with concave centers (Nos 15–18), while the stems vary from hollow or solid plain cylindrical (Nos 7, 23) to solid knobbed stems (Nos 17–22) [see *Fig. 4*]. Stratigraphical and chronological sequences observed at some sites in Palestine would suggest that solid bases gradually replaced hollow ring bases in the course of the 6th and 7th centuries (Winter 2015: 219).

All the variants of body profiles, stems and bases were common during the Byzantine and Umayyad periods in

Syria, Palestine, and the entire Eastern Mediterranean region in general, and can appear in various combinations (see von Saldern 1980: 53).

Another distinctive group of vessels is characterized by relatively thin walls and plain, slightly thickened and incurving rims [*Fig. 5*]. Rims of this type and with a diameter larger than 10 cm are usually associated with bowls, while rims with smaller diameter are usually attributed to beakers with flat (sometimes slightly concave) and thickened base. Such drinking vessels were typical of the late Byzantine and Umayyad periods (Gorin-Rosen 2016: 46; Dussart 1998: 106) and many examples of them have been excavated at various sites on both sides of the Jordan River: Pella (O’Hea 1992: 259, Fig. 10), Jerash (Meyer 1988: Fig. 11:V), Iraq al-Amir (Dussart 1991: Fig. 37:21), Sussita/Hippus (Burdajewicz in press b),

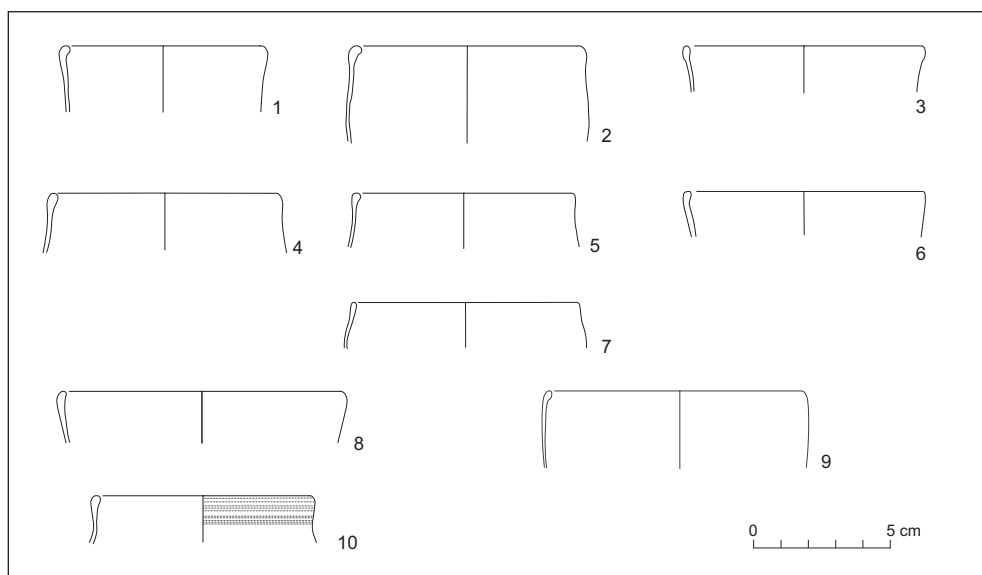


Fig. 5. Drinking vessels

(PCMA Beit Ras Project/drawing and digitizing D. Mazanek and M. Burdajewicz)

Khirbat al-Karak (Delougaz and Haines 1960: Pl. 59:14), Beth Shean (Hadad 2005: Pl. 1:14, 15, 25, 26), Ramla (Gorin-Rosen 2016: 46, Fig. 2:8–16), and Caesarea Maritima (Israeli 2008: Nos 155, 158).

Bowl No. 10 [Fig. 5:10] is decorated with applied and fused-in trails from the lip downward. Their dark yellowish-green color contrasts with the light blue color of the walls. Goblets with similar decoration on the rim have been found in a 5th–7th century tomb at Ashqelon (Katsnelson 1999: 70, 80, Fig. 2:9–11). Parallels from the end of the Byzantine and Umayyad periods are found at Horbat 'Illin (Upper) (Katsnelson 2012: 49*, Fig. 2:8), Khirbat 'Adasa (Gorin-Rosen 2008: Fig. 2:3), and from the 8th–9th century context at Ramla (Pollak 2007: 110, Fig. 6:31). At Tel Tanninim such decorated goblets were found in a locus dated from the Byzantine to the Abbasid periods (Pollak 2006: 174, 190, Figs 137, 147).

MISCELLANEA

A single example of what appears to be a glass lid [Fig. 6:1] was found in a 6th–7th century context. It is of domed shape with a slightly rounded section at the top and a wide flange (edge not preserved). It may belong to a large group of domed glass lids corresponding to Isings Form 66a (1957: 85) and Vessberg Type II (1956: 173). Somewhat similar lids, dated to a period from the 3rd to the mid-4th century, were found in Hanita Tomb XV (Barag 1978: 31–32, Fig. 15:68, 69, and further parallels therein). Another fragment of a possible lid was found in the Sanctuary of Lot at Deir 'Ain 'Abata (O'Hea 2012: 310–311, Fig. 687).

Numerous lids of various kinds, probably from the 3rd century, are known

from Cyprus (Vessberg 1956: 172–173). A similar domed lid with a button, of Italian provenance, is in the glass collection of the Louvre (Arveiller-Dulong and Nenna 2005: 179, No. 515, Pl. 35).

Fragment No. 3 was found in a 6th–7th century context and may belong to a bowl-lamp [Fig. 6:3]. A similar rim classified as a *polycandelon* lamp is reported from the church on the Roman–Byzantine terrace at Gadara (Keller 2015: Fig. XVI.3:46–49). Another possibility is that it belongs to a goblet with a knobbed stem, with comparable examples known from the Sanctuary of Lot at Deir 'Ain 'Abata (O'Hea 2012: 302, Fig. 609) and the church of St. John the Baptist in Samaria (Crowfoot 1957: Fig. 99:4). However, this kind of rim can also be associated with ovoid or globular goblets with flat solid base (see Arveiller-Dulong and Nenna 2005: 40, No. 23, Pl. 4).

Fragment No. 4 is probably part of a beaker characterized by a cylindrical body with straight wall tapering toward the bottom [Fig. 6:4]. A thread appears in its upper part, above which the wall begins to flare. This type generally has a rounded rim and a very thick flat base, like No. 5 [Fig. 6:5]. A beaker with a similar profile of the wall and a horizontal thread was found in the Roman Baths at Hammat Gader (Cohen 1997: 410, Pl. III:18, identified as a cup). It seems that this type made its appearance in the late Roman period. A large quantity of such vessels, dated to the second half of the 4th century, was found in the glass workshops at Jalame (Weinberg and Goldstein 1988: 60–61, Fig. 4-23). The type continued in the 6th century as well, for example at Sussita/Hippos (Burdajewicz in press a).

Fragment No. 6 [Fig. 6:6] comes from the lower part of a mold-blown flask, characterized by a long tapering body decorated with seven uneven flutes, and slightly concave base; the glass is colorless with a bluish tinge. It was found in a fill below Floor V, the date of which was established as most probably in the first half of the 7th century. An almost identical fragmentary flask, dated to the Abbasid period, was found at Beth Shean (Youth Hostel); however, the dating of the

Abbasid glass assemblage from this specific site was based mainly on parallels from other sites (Katsnelson 2014: 45*–46*, Fig. 11:9).

A bowl characterized by an up-right cracked-off rim and an S-shaped body profile [see Fig. 6:7] can be classified as a hanging lamp. It was found in a context related to the 6th–7th centuries. This type of vessel was very popular during the 4th and 5th centuries, but was continued also in the 7th century. Bowls of this shape,

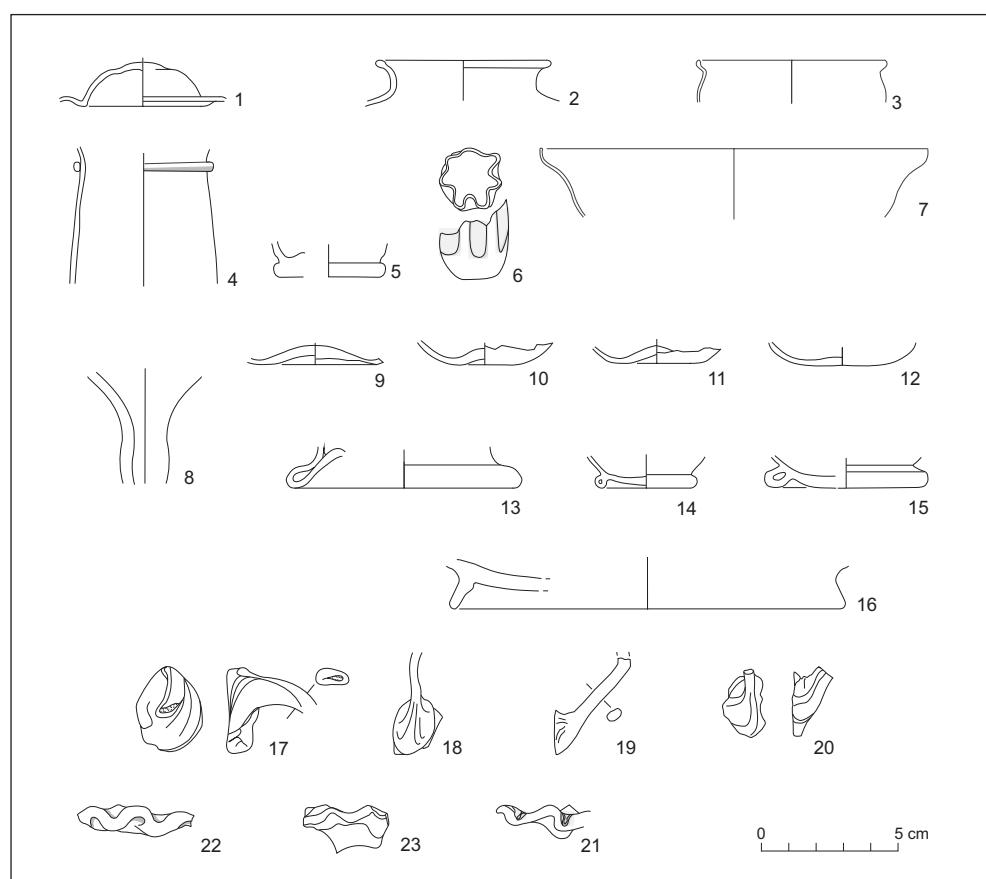


Fig. 6. *Miscellanea*

(PCMA Beit Ras Project/drawing and digitizing D. Mazanek and M. Burdajewicz)

either with cracked-off or rounded rim, could be used equally as oil lamps, hence the fragment of a vessel dated to the 5th–7th century, found in the Northern Church at Rehovot-in-the-Negev (Patrich 1988: 139, Fig. 14:32), was identified as such. The closest parallels to the shape are to be found among plain bowls dated to the Byzantine and Umayyad periods at Beth Shean (Hadad 2006: Fig. 19.1:3; 2005: Pls 1:4; 2:34–36). A deep bowl with a similarly shaped rim, found in Khirbat el-Ni'ana (Gorin-Rosen and Katsnelson 2007: 84, Fig. 4:2) is dated to the late Roman–early Byzantine periods. An example from Tiberias is broadly dated to the Umayyad and Abbasid–Fatimid periods (Hadad 2008: Fig. 5.1:13). An earlier example of a comparable bowl comes from a mid-3rd century context in the Athenian agora (Weinberg and Stern 2009: 100, No. 214, Fig. 15 and Pl. 20).

Numerous examples of such vessels were found, among others, in Beirut. They could be placed in metal rings and suspended on three chains (Jennings 2006: 92–95, Figs 5.8:2; 5.9:12, 15–19).

A likely example of a *polycandelon* lamp was found in the earliest context related to a floor dated to the 6th century. It is a fragmentarily preserved bowl with convex wall and sloping hollow stem [see Fig. 6:8]. Alongside three-handled suspended bowl-lamps [see Fig. 10:1], stemmed lamps were in common use during the Byzantine and Umayyad periods. While bowls had usually convex walls and simple upright or flaring rounded rims, stems were more differentiated. They were either short or long, hollow or solid. Solid stems could be either smooth or multi-knobbed. Examples of stemmed lamps, dated to the Byzantine and Umayyad periods, have

been published from many sites, for example Gadara (Keller 2015: Fig. XVI.2:42–40), Gerasa, Amman (Dussart 1998: 86–88, types BVI.211–BVI.23), Hammat Gader (Cohen 1997: 403–404, Pl. II:16: 16–22), Sussita/Hippos (Burdajewicz 2011: 32–33, Figs 2-B:32–38; 4:13, 14, 26; 5:7, 13, 26, 27), and Beth Shean (Hadad 2005: Pl. 22:424–442).

Stemmed lamps were placed in the openings of metal chandeliers, that is multiple-lamp holders known as *polycandela*, *palamai*, *stephanitai* (Bouras 1982: 480). Such devices were equipped with three chains and suspended vertically from the ceilings. Many such lighting devices were found in churches, synagogues and other buildings, for example, the Bishop Marianos Church at Jerash (Gawlikowski and Musa 1986: 153, Figs 9–10), North-Western Church at Sussita/Hippos (Burdajewicz 2011: 36, Fig. 8), and the synagogue at Beth Shean (Zori 1967: Fig. 11.5). Another way of using stemmed lamps was to place them in metal holders attached to the wall (Hadad 2003: 194).

Four bases with slightly concave centers [Fig. 6:9–12] represent a common type and can belong to small bottles/jugs/juglets or goblets. No. 13 [Fig. 6:13] is a relatively high pushed-in, hollow ring base, typical of bowls during the late Roman and Byzantine periods (Gorin-Rosen and Katsnelson 2007: 86–88, Fig. 6). Two other specimens represent pushed-in ring bases [Fig. 6:14, 15]. No. 16 is a single example of low, solid ring base [Fig. 6:16], a type which appears during the late Roman and Byzantine periods.

A few fragments of handles have also been retrieved [Fig. 6:17–20]. They belong to various types of small closed vessels, like

juglets and possibly also suspended bowl-lamps.

Three fragments [Fig. 6:21–23] represent decorative elements, namely the thick, wavy trails once wound around the mouth or tall funnel necks of bottles. Bottles with such embellishment were found in contexts dated to the Umayyad period at Khirbet el-Kerak (Delougaz and Haines 1960: 49, Pl. 59:27, 29), Hammat Gader (Cohen 1997: 425–426, Pls VII:1; VIII:16, 17), Beth Shean (Winter 2011: 349, Fig. 12.1:18–20; Katsnelson 2014: 38*, Fig. 7:7, 8), and the first quarter of the 8th century at Pella (Smith and Day 1989: 114–115, Pl. 56:3).

The lower part of a small bottle [Fig. 7] is of particular importance being a very rare type of vessel. Its very thick, greenish blue walls are decorated with uneven deep blue bosses or disks applied around the body. It was found in a stratigraphical context connected with the destruction caused by the quake of AD 749.

The best, almost completely preserved example of this type of vessel was found at Horbat 'Illin (Upper) on a hilltop in the Judean Shephelah, in the settlement dated from the end of the Byzantine period (6th–7th centuries) until the end of the early Islamic period (10th century) (Katsnelson 2012: 55, Fig. 3:32). It has a short cylindrical neck, two small looped handles on the shoulders, a cylindrical body divided into two by a horizontal constriction, and a flat base. The bottle, 5.6 cm high, is decorated with 14 applied bosses. The stratigraphic context of the bottle seems to indicate its date around the mid-8th century (Weksler-Bdolah 2012).

Another partly preserved bottle of this type was found in an unspecified chronological context on the western slope of the tell at Beth Shean (Fitzgerald 1931: 42, Pl. XXXIX:15). Five fragments from the early Islamic period are reported also from the city of Beth Shean, near Valley Street (Hadad 2005: 43, Pl. 41:852, 853). A fragment of a square bottle with similar decoration was found in Nazareth; the context was not clear, but an early Islamic date was assigned on stylistic grounds (Alexandre 2012: 89–90, Fig. 4.2). A similar globular bottle with bosses, dated to the 8th century and of unknown provenance (Eastern Mediterranean), is part of the Eliahu Dobkin Collection in the Israel Museum (Israeli 2003: 336, No. 436).

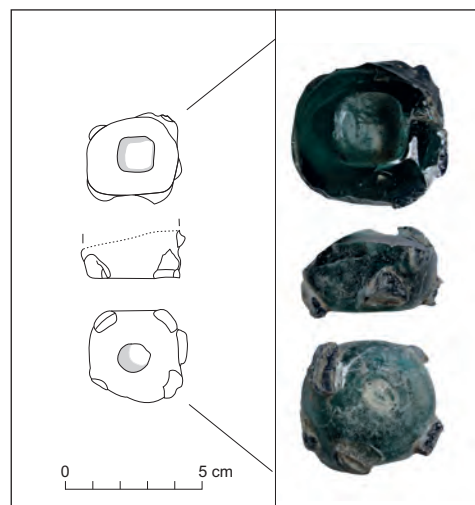


Fig. 7. Bottle: three views – top, side, bottom (PCMA Beit Ras Project/drawing and digitizing D. Mazanek; photos M. Burdajewicz)

AREAS 3-N AND 2-N

A section of the northern fortification wall of the city was exposed in this trench. Its construction in Roman times was established based on the pottery finds from the lowermost excavated layer. In terms of quantity, the glass finds from this area were relatively few in comparison to the previously discussed assemblage, but it is also true that the city wall was the largest singular architectural element filling the trench, leaving very little occupation layers to be explored around it.

Three fragments of closed shapes were found in the trench. One is a fragment of a funnel-shaped mouth decorated with a single trail beneath it [Fig. 8:1]. This item belonged probably to a bottle or a juglet, of a type common in the late Roman and

Byzantine periods, found for example at Beth Shean (Winter 2011: 357, Fig. 12.4:4). No. 2 [Fig. 8:2] is characterized by a simple, thickened and rounded rim and probably cylindrical neck, perhaps similar to a piece from the trench in Area 1-S and 1-S(W) [Fig. 1:17]. Still another type, probably a small globular or elliptical bottle, is represented by No. 3 [Fig. 8:3]. It has a short, very narrow cylindrical neck flaring toward the shoulders, and a simple rounded rim.

Of greatest interest is a fragment belonging to a bowl with a wide pinched horizontal rim shaped like a scallop shell [Fig. 8:4]. The pottery context in which it was found links it to the 5th century. This bowl represents a rather uncommon

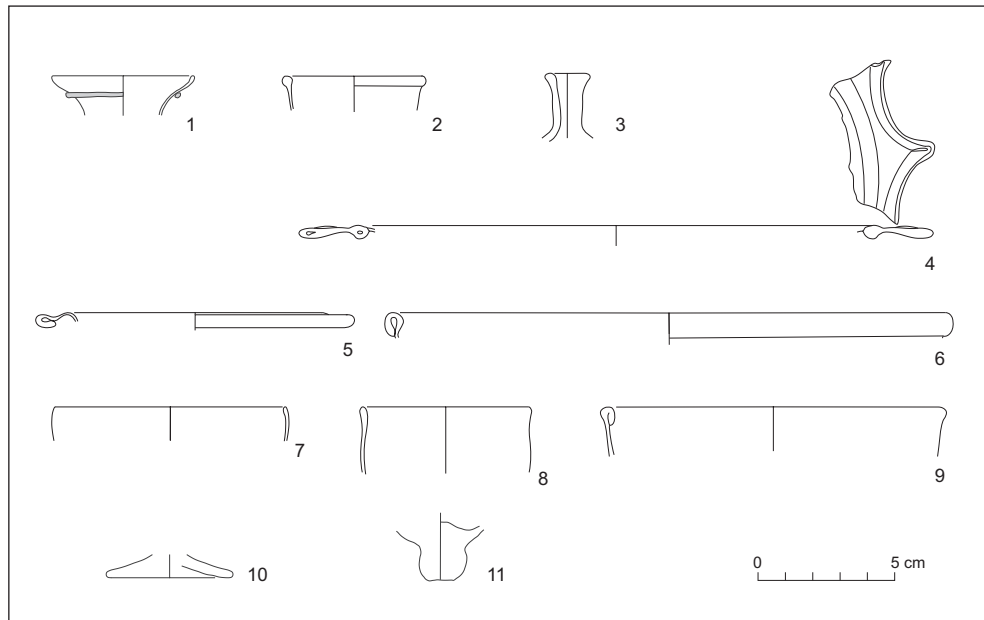


Fig. 8. Glass finds from Areas 3-N and 2-N
(PCMA Beit Ras report/drawing and digitizing D. Mazanek and M. Burdajewicz)

type, and a very small number of parallels have been published thus far. A similar fragment (probably with a polygonal rim) was unearthed in a 5th century context in Sussita/Hippos (Burdajewicz in press a). Another close parallel from a Byzantine monastery at Khirbet el-Suyyagh is dated to the late Byzantine/early Umayyad period (Taxel 2009: 145, Fig. 1:1). Such rims were unearthed also in the late Roman fort at Yotvata (Swan 2015: 148–149, Fig. 3.1:15) and in En-Gedi strata II–III from the late Roman–Byzantine period (Jackson-Tal 2007: 483, Pl. 6:1, and additional parallels therein). Similar examples are known also from the late 4th–early 5th century glass assemblage in Beirut (Jennings 2006: 77, Fig. 4.9:1), Karanis in Egypt, dated to the 4th–5th centuries (Harden 1936: Pl. XIV:259), Ayios Philon in Cyprus, Roman period (du Plat Taylor and Megaw 1981: Fig. 46:7), and the mid-4th and mid-5th century deposit from the Palatine in Rome (Sternini 2001: 26, Fig. 8:51, 52).

Another small fragment of a pinched rim representing probably the same kind of vessel comes also from the top soil in Area 1-S and 1-S(W) [see Fig. 2:4].

Rim fragment No. 5 [Fig. 8:5] was found in an occupation layer dated to the 2nd–3rd centuries, corresponding in date to a similar bowl of Dussart Type BI. 1311 from the Amman citadel (1998: 58–59, Pl. 3:24).

Fragment No. 6 is part of a folded outward tubular and slightly incurved rim of a rather large bowl with a diameter of roughly 20–21 cm [Fig. 8:6]. The fragment is too small to ascertain the shape of the

vessel, but the wall seems to have sloped inward. The bowl could be either shallow or deep. This type of bowl seems to have made its appearance in the 3rd century and continued to be in use into the 5th century. It was common in Syria–Palaestina; some parallels can be cited from Jalame (Weinberg and Goldestein 1988: 41–43, Fig. 4-3:14–19), Khirbet el-Ni'ana (Gorin-Rosen and Katsnelson 2007: 79–80, Fig. 2:1–3), and Ramat Hanadiv (Cohen 2000: 166–168, Pl. I:5 and further discussion therein).

Identification of two fragments is uncertain. No. 7 represents a drinking vessel with slightly incurved rim, while No. 8 possibly belongs to a bottle or a small goblet [Fig. 8:7,8].

A fragment of a shallow or deep bowl, No. 9, has an in-folded vertical rim, slightly out-turned [Fig. 8:9]. It resembles bowls from Bosra, Gadara and Jerash, representing Dussart Type BI. 4222b2 (1998: Pl. 70), dated generally to the late 6th–8th century.

No. 10 is a small fragment of a solid base pertaining to stemmed goblet (or wine-glass), a common type already mentioned above [Fig. 8:10].

No. 11 [Fig. 8:11], a short rounded solid-stem with a small fragment of flaring walls, made of dark amber glass, was found in the top soil of the trench. It belongs to a lamp of rather uncommon type in the Syria–Palaestina region. Very similar knob bases of lamps, although in different fabric (natural green or nearly colorless glass) are known from Beirut, where they are dated to the 5th and 6th centuries (Jennings 2006: 147–148, Fig. 6.20:8, 9).

SURVEY 2014

The corpora of glass finds from Beit Ras can be supplemented with items collected during the 2014 survey of an area 120 m long by 40 m wide, extending directly west of the Roman theater. Most of the finds

(which totaled 50), came from Squares 4-6 N and 3-4 S (see Młynarczyk 2017: Fig. 1, in this volume). They represent all the types already discussed above and add to the group of closed vessels, either bottles

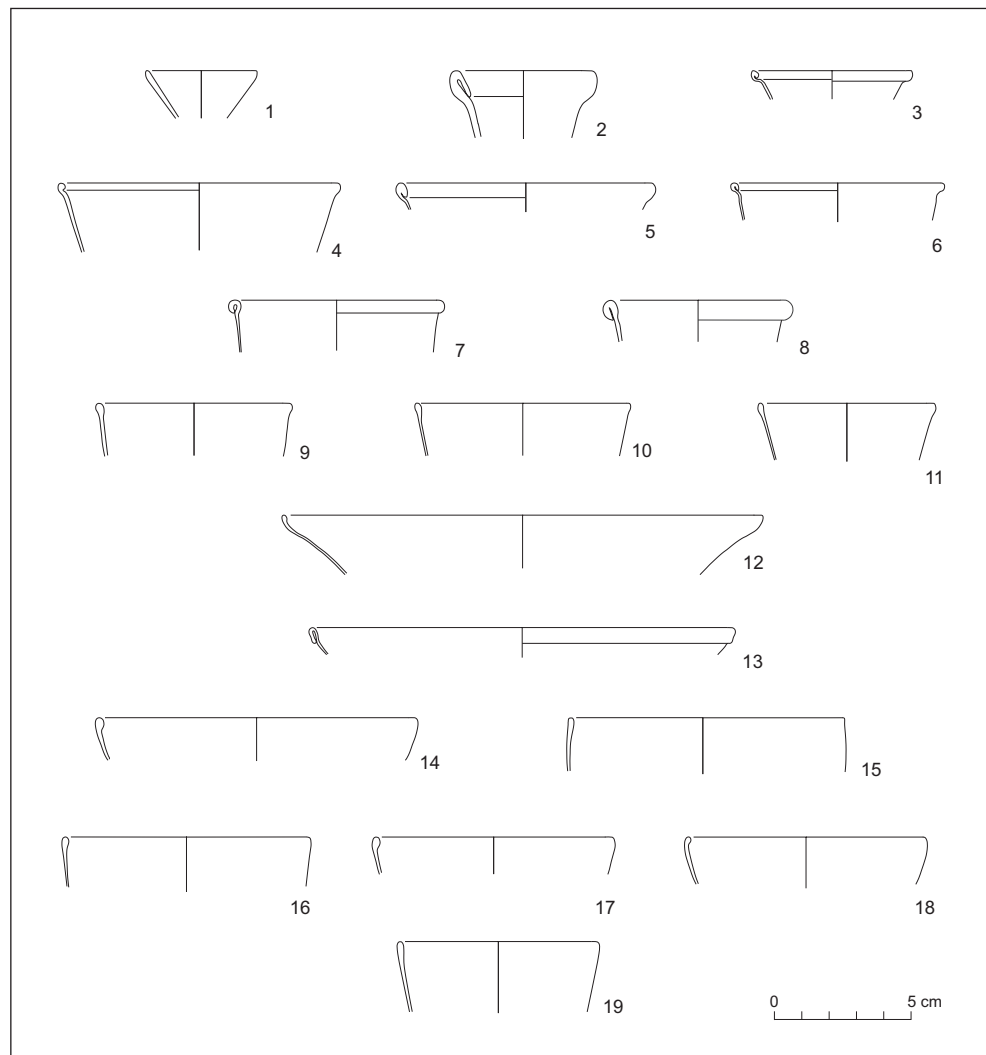


Fig. 9. Glass finds from the survey in 2014
(PCMA Beit Ras Project/drawing and digitizing M. Burdajewicz)

or jugs with funnel shaped mouths and simple, in-folded or outward folded rims [Fig. 9:1–11].

Fragment No. 12 [Fig. 9:12] is a middle-sized, shallow or deep bowl with an in-curving, rounded and slightly thickened rim, very thin wall and blowing spirals. Its shape and light green fabric would indicate a date in the 2nd–3rd centuries. Similar bowls were found in the 2nd–3rd century assemblage from Tomb 13 at Pella (McNicoll, Smith, and Hennessy 1982: 84–85, Pl. 133:1) and the area of the Severan Theatre at Beth Shan (Winter 2015: 207, Fig. 5.1:1). It may have served as a lamp (see discussion above).

A common type of bowl with out-folded rim is represented by No. 13 [Fig. 9:13]. Nos 14–19 [see Fig. 9] belong either to bowls or goblets with incurved

and rounded rims, comparable to vessels from Area 1-S and 1-S(W) [see Fig. 5].

No. 20 [Fig. 10:20] is the best preserved fragment of a suspended bowl-lamp with outward-folded flattened rim and three vertical handles. No. 21 belongs possibly to the same type of bowl-lamps [Fig. 10:21]. Such suspension bowl-lamps made their appearance first in the 5th century and were, alongside the stemmed bowl-shaped lamps, the most frequent type of lighting devices throughout the Byzantine and Umayyad periods and even later on (Gorin-Rosen and Winter 2010: 172–175). Among the many parallels one may refer to the following examples: Jerash (Meyer 1988: 205, Figs 11:N–Q; 12:P, Q), Hammat Gader (Cohen 1997: 402–403, Pl. II:13–15), Sussita/Hippus (Burdajewicz 2011: 33–35, Figs 2-B:31;

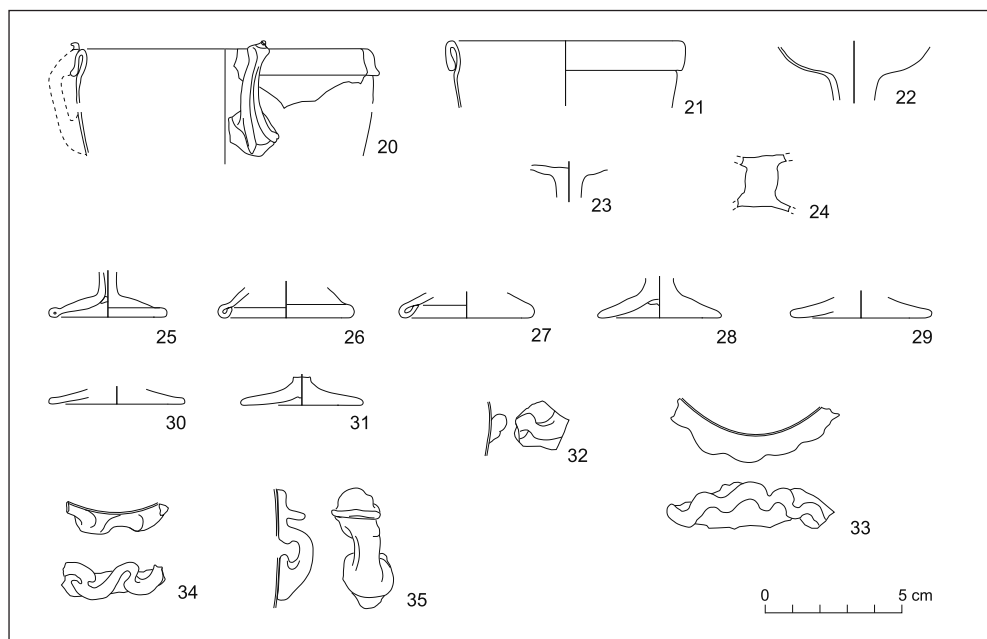


Fig. 10. Glass finds from the survey in 2014
(PCMA Beit Ras Project/drawing and digitizing M. Burdajewicz)

5:29), and Beth Shean (Hadad 2005: Pl. 22:413–422). Such lamps belong to Dussart Type BVI.1221 (1998: 82–85 and with further parallels therein).

A fragment of a hollow stem and convex wall [Fig. 10:22] may belong either to the *polycandelon* type of lamp discussed above or to a funnel (see, for example, Arveiller-Dulong and Nenna 2005: 44, No. 37, Pl. 7).

Stem No. 23 pertained either to a stemmed bowl-lamp or a stemmed goblet such as No. 24 [Fig. 10:23,24], but its extremely fragmentary state of preservation does not

allow for a precise identification. Stemmed goblets are represented also by relatively numerous bases, both tubular and solid flat [Fig. 10:25–31].

Several fragments of applied wavy trail decoration belonging to bottles were also found [see Fig. 10:32–34].

A rod handle belonging probably to a jug has a thumb-rest pinched in the upper part [see Fig. 10:35]. A handle of identical shape, but almost twice as large has been published as part of the Abbasid glass assemblage from Ramla (Gorin-Rosen and Katsnelson 2005: 103, Fig. 1:6).

GLASS CHUNKS

Several dozen pieces of raw glass were collected during the survey [Fig. 11] and in the excavation [Fig. 12]. Their total weight was about 3 kg. The most numerous are small and middle-sized pieces (up to

5 cm) of translucent bright green, bluish-green and bluish glass. Another sort of raw material is represented by fragments of cakes comprising yellow and olive-green glass of uneven consistency. Several stones

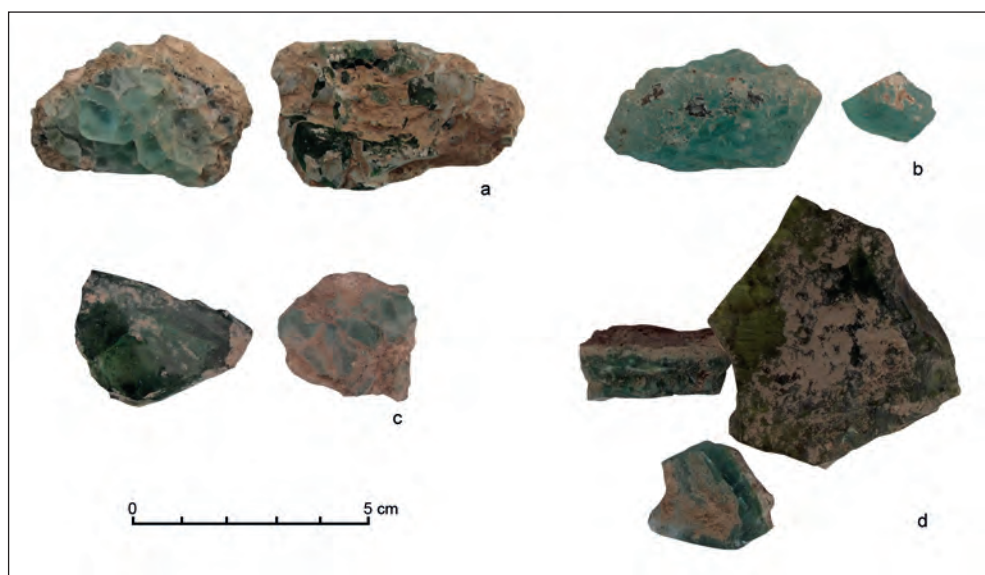


Fig. 11. Chunks of raw glass: a – Sq.6-S; b – Sq.4-S; c – Sq.6-N; d – Sq.5-W (PCMA Beit Ras Project/photos M. Burdajewicz)

amalgamated with small chunks of glass remains were also found. They may be part of glass furnace debris.

These finds significantly expand the collection of glass chunks retrieved from the nearby area of the Roman theater during the archaeological works conducted by the Irbid/Beit Ras Project and the Department of Antiquities of Jordan. Apart from the chunks, fragments of kiln and fuel ash slag were also reported (Abd-Allah 2010; Al-Shami 2005). Such evidence seems to suggest that a glass workshop or workshops were located somewhere in the close vicinity. It is not surprising, since at many sites in the

Roman-Byzantine East various kinds of evidence of both primary and secondary glass production have been found, especially in present-day Israel (Gorin-Rosen 2000). There is also significant evidence of possible local secondary glass production workshops in some other cities within the Decapolis area: at Gerasa and Pella (O’Hea 1992; Dussart 2000), Umm el-Jimal (Al-Bashaireh et al. 2016), Gadara (El-Khoury 2014), Beth Shean (Gorin-Rosen and Winter 2010: 177–178; Gorin-Rosen 2000: 59–60), Sussita/Hippos (Burdajewicz in press a). Chemical analyses of glass composition from Umm el-Jimal, Gadara and Beit Ras have revealed

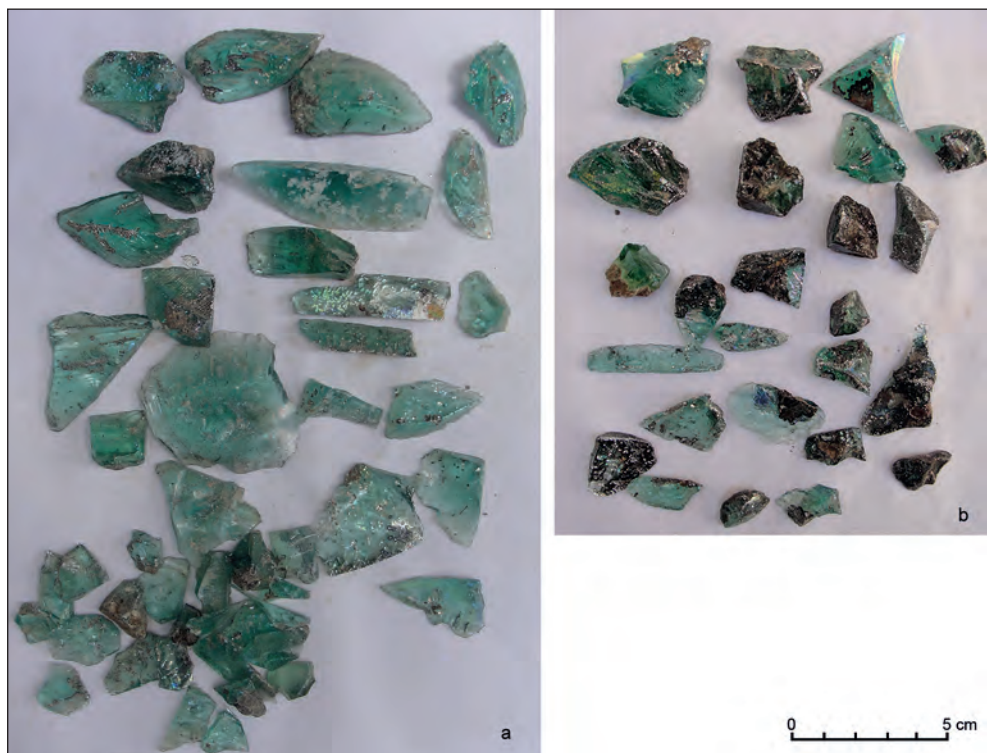


Fig. 12. Chunks of raw glass: a – B.026; b – B.027
(PCMA Beit Ras Project/photo M. Burdajewicz)

its similarity to the 'Levantine I' group of glass manufactured between the 4th and 7th centuries and to the 'Levantine II'

group produced during the early Islamic period (Al-Bashaireh et al. 2016; El-Khoury 2014; Abd-Allah 2010).

SUMMARY AND CONCLUSIONS

Most of the glass finds from the Polish excavations at Beit Ras represent common forms comparable to other assemblages from contemporary sites of the Decapolis and the Eastern Mediterranean in general. The finds from Beit Ras were used in everyday life for storing, serving and consuming food and drink. However, most of them come from an industrial context — Area 1-S and 1-S(W). This fact indicates that they should be interpreted as dumped rubbish, perhaps associated with recycled cullet.

Only a few late Roman items were retrieved, mainly from Area 3-N. It seems that the Byzantine and Umayyad periods were represented by the largest quantity and variety of types. In turn, there is no clear evidence of glass finds from the Abbasid and later periods, despite the fact that pottery finds testify to some activity at this time. This lack of glass finds could be explained by a presumed shift in the character and use of the area.

Most of the vessels were produced of light blue, light green or light bluish-green translucent glass typical of the late Roman, Byzantine and Umayyad periods. The homogeneity of the fabric suggests that they were probably produced in a local workshop. The large quantities of chunk glass indicate that vessels were indeed being manufactured in the vicinity. This assumption is not surprising in view of the growing evidence for secondary glassmaking in several cities of the region

during the Byzantine and Umayyad periods. However, some of the vessels, for example, Nos 4 and 11 [see *Fig. 8:4,11*], show a fabric apparently distinct from the rest of the glass material from Beit Ras, and thus we cannot exclude that they were imported.

Although the quantity of glass finds from Beit Ras would appear relatively small in comparison with other sites, its significance lies in the fact that this is the first published glass assemblage excavated in this particular city and thus contributes significantly to a general picture of glass use and production in this region.

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Royal ornaments of a late antique African kingdom, Early Makuria, Nubia (AD 450–550)

Early Makuria Research Project

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Abstract: After the fall of the Meroe kingdom, three entities – Nobadia, Early Makuria, and Alwa (Alodia) – emerged in northeast Africa between the 4th and the 6th centuries AD. Richly furnished elite cemeteries with tombs of the Nobadian kings are known from Qustul and Ballaṇa in Lower Nubia (Emery and Kirwan 1938), but until now no royal tombs of Early Makuria have been identified. A comparative analysis of some recently excavated adornments and ornaments from the tumulus cemetery of el-Zuma in Upper Nubia have now enabled the Early Makuria royal tombs (AD 450–550) to be placed there. The assemblages from three large tumuli are dominated by personal adornments (beads, pendants, earrings, chains, crosses, and a ring), royal regalia (cabochons and settings), and other decorated items (metal sheets, an intarsia and ivory gaming pieces). Apart from beads of various materials, like marine mollusk shell, ostrich eggshell, faience and stone, which were made probably in local workshops, the remaining items were imports from the Mediterranean and Sri Lanka/South India (glass beads in the latter case). Moreover, many of the decorated objects and the techniques used to make them find parallels in the elite Nobadian cemeteries of Qustul and Ballaṇa, hinting at the royal origin of some of the Early Makuria tomb owners at el-Zuma. These parallels induce the thought that there was a single workshop in late antique Nubia producing artifacts for the elite.

Keywords: beads, pendants, jewelry, cabochons in silver settings, ivory containers, intarsia, ivory gaming pieces, Nubia, AD 450–550, late antiquity, Early Makuria, Indo-Pacific trade, Christian symbols

INTRODUCTION

Nubia is a region in northeastern Africa, encompassing northern Sudan and the southern fringes of Egypt. It consists of two parts, the names of which – Lower Nubia in the north and Upper Nubia in the south – correspond to the flow of the Nile. Regions in Nubia are separated by

the Nile cataracts, the First Cataract being located south of Aswan and the last one, the Sixth, north of modern-day Khartoum. After the fall of the Meroe Kingdom, which probably extended as far south as the confluence of the Blue and White Nile and beyond, three entities emerged between the 4th and 6th centuries AD. These were

Nobadia in Lower Nubia, Early Makuria in Upper Nubia, and Alwa (Alodia) in the region upriver from the Fifth Cataract. Single burials in tumuli as well as massive tombs containing bronze horse harnesses and wide-bladed iron spears appeared throughout Sudan. Cemeteries for Nobadian kings, queens and members of the elites were excavated in Qustul and Ballaṇa (Emery and Kirwan 1938; Farid 1963). The largest of the great tumuli covering such burials was nearly 80 m in diameter and 12 m high. Several had multi-chambered substructures containing burials and large quantities of other material. The kings were buried with their regalia, including silver crowns, spears and other military equipment. The burials also contained imported materials, including metal vessels, items of furniture, horse harnesses, wooden boxes with ivory inlays, a game board and gaming pieces, toiletries, a large quantity of pottery probably used in funerary rituals, including Mediterranean amphora, as well as rich beadwork and jewelry.

Following excavations at sites to the south: Tanqasi, Hammur, and el-Hobagi (e.g., Shinnie 1954; Jacquet-Gordon and Bonnet 1971; Żurawski 2000; Lenoble 2004 and references), tumulus cemeteries were assumed to be counterparts of the Nobadian cemeteries at Qustul and Ballaṇa. However, royal burials have yet to be identified in the Early Makuria and Alwa region. Recent finds of ornaments and adornments at el-Zuma have provided evidence of the royal character of at least some of them.

The el-Zuma site is situated between the Third and Fourth Cataracts in the Dongola Reach in Upper Nubia, a region that occupies a strategic position controlling the north-south and east-west desert

roads, as well as riverine communication routes (El-Tayeb 2012: 15). The el-Zuma tumulus cemetery field is being excavated by the Early Makuria Research Project, a joint research program of the Polish Centre of Mediterranean Archaeology of the University of Warsaw (PCMA) and the National Corporation for Antiquities and Museums of Sudan. The project is sponsored by the Qatar–Sudan Archaeological Project and the PCMA. The site has been dated to the late post-Meroitic period, otherwise called Early Makuria Phase II (AD 450–550) (El-Tayeb 2012: 61–75; El-Tayeb, Skowrońska, and Czyżewska 2016 and references).

Over the course of seven excavation seasons between 2005 and 2014, more than one thousand remains of personal adornments associated with 21 tumuli were uncovered at el-Zuma (Then-Obluska 2016c). The objects were found in the fill of chambers, shafts, tunnels, and in plunderers' pits. Although the graves were heavily robbed, the remains of personal adornments provided a broad overview of the materials and techniques applied in their production. The provenance of the materials and manufacturing techniques suggest el-Zuma's involvement in regional and long-distance commercial exchange in this period. A comparative synopsis of contemporary Nubian adornments from private cemeteries has shown parallels with the objects from el-Zuma (Then-Obluska 2016c).

This paper presents an overview of the ornaments found in the three largest el-Zuma tumuli: T.1, T.4, and T.7, which have been partly excavated over the course of the two most recent seasons in 2015 and 2017 (for adornments from earlier excavations of tumuli T.4 and T.7, see Then-

-Obłuska 2016c). While the objects from tumulus T.1 were found in chamber 1, the ones from T.4 were collected from the fill of the tunnel, and in the case of T.7 from the tunnel close to the first pillar. Among the finds, a few fragments of inlays may come from a *duodecim scripta* gaming board, one of the most extraordinary artifacts found in Nubia. A decorated metal tube topped with a bead must have been a lid knob. Embossed silver sheet fragments were once scabbard or saddle fittings. While the discovered earrings, bells, chains, ring, and fly shank-bead are elements of elite jewelry, the numerous silver cabochon settings are most probably examples of royal regalia. Altogether, along with the broad diversity of beads and pendants, these items have many parallels in the royal burials of Qustul and Ballaña, suggesting that el-Zuma was the cemetery of Early Makuria royalty and elite.

The overview presented in this paper, comprising beads (centrally perforated objects) and pendants (objects with off-center perforation or with attached loop), follows a classification by material (marine mollusk shell, stone, faience, glass, metal-in-glass, metal) and by the techniques used to make them. A shank-bead and bell pendants are also included. The described jewelry elements also include earrings, chain fragments, cabochons (those with settings as well), a ring and a pin. The metal finds comprise of a rosette stud and pins, a badge with an embossed cross, as well as embossed sheet decoration. A lid knob and ivory containers make up a separate category. Moreover, various ivory fragments were identified as being parts of toilet containers or dice-boxes and gaming pieces.

The identification of metal objects is tentative, the material being subject to future laboratory analysis.

BEADS AND PENDANTS

Marine mollusk shells, stone, faience and glass were used to produce the beads found in the three el-Zuma tombs. Ostrich eggshell beads were missing from the present assemblage, but had occurred earlier (Then-Obłuska 2016c).

MARINE MOLLUSK SHELLS

Two marine mollusk species of Red Sea origin were found, *Cypraea annulus* sp. and *Marginella* sp. The former was recorded in all three of the tumuli, the latter solely in T.7. Nine complete shells and one shell fragment were identified as *Cypraea annulus* sp. (Z1/27, Z1/30, Z4/52.1–2, Z7/8.1.1–4, Z7/9.1, Z7/10.1) [Fig. 1]. They were perforated by removing the

convex part of their bodies, which resulted in large hole openings. Five cowry shells identified as *Cypraea annulus* sp. were found in previous seasons, including one from tumulus T.7 discovered in 2011 (Then-Obłuska 2016c: Nos Z7/1 – new number Z7/79, Z12/2, Z27/5). Similar specimens were discovered in post-Meroitic Tumulus 4 on Uli Island (Godlewski, Obłuski, and Zielińska 2005: Fig. 8). Interestingly, a necklet of cowry shells came from a camel burial found under a large tumulus in Firka (Kirwan 1939: 3, Object A11/5).

Two *Marginella* sp. shells were found in T.7 (Z7/8.2, Z7/9.2). Their apices were removed. *Marginella* sp. shells perforated in the same way were found in a late antique

trash dump in Berenike (Then-Obluska 2015b: Fig. 1:6) and in a post-Meroitic Ashkeit grave (Then-Obluska in press b: Pl. 2.4). *Marginella* sp. specimens known from Meroitic and early Roman bead assemblages rather tend to have their bodies removed (Then-Obluska 2015a; 2015b).

MINERALS AND STONES

Stone beads were produced using one of two techniques: perforation from either one or both ends.

Stone beads drilled from one end

Most of the beads were drilled from one end and they are characterized by truncated conically-shaped perforations. Among the 16 beads there are examples that are truncated and conical (Z4/49.1–4, Z4/175), globular (Z4/50.1), long and ellipsoid (Z4/176, Z4/178) and pear-shaped (Z4/48.1–2) [Fig. 2].

Small beads of black steatite, and white and red chalcedony, are the most characteristic types in late post-Meroitic



Fig. 1. Marine mollusk shell beads (PCMA Early Makuria Research Project)

Figures designed by the author. Photos in the figures by Adam Kamrowski and Zofia Kowarska. Drawing and reconstruction in Fig. 14 by Marta Momot. Objects illustrated in the figures are identified by their find numbers. Lower case letters indicate different views. Scale = 10 mm.



Fig. 2. Stone and silver-in-glass beads (PCMA Early Makuria Research Project)

el-Zuma (Then-Obluska 2016c). They have already been identified in the Fourth Cataract region. They are also known from many post-Meroitic sites in Lower Nubia (Then-Obluska 2016a; 2016c and references), including the royal cemeteries of Qustul and Ballaña (Emery and Kirwan 1938: Pl. 43, Types 53–54 = JE [= Egyptian Museum, Cairo] 80899, 70264, 70275, 70260, personal observation). White, red and black beads were found strung alternately at the latter site. Furthermore, truncated conical beads made of a variety of stones were found on the neck of a king buried in Tomb 80 at Ballaña (Emery and Kirwan 1938: 211, Cat. No. 152, Pl. 46C = JE 70258).

Stone beads drilled from both ends

Some beads were perforated from both ends, resulting in a double parallel shape of the perforations. Examples include four large transparent rock crystal beads (Z4/48.3) [see *Fig. 2*], along with similar ones discovered in 4th–7th century Kharga in the Western Desert, Egypt (MET [=Metropolitan Museum of Art, New York] 25.10.20.96; 31.8.33, personal observation). In Nubia, beads of this kind were found only on the necks of kings from the Ballaña burials: Tomb 80 (Emery and Kirwan 1938: 211, object B.80-130, Cat. 155 = JE 70283) and Tomb 95 (Emery and Kirwan 1938: 212, object B.95-68, Cat. 157). The clarity and transparency of this material is said to have been especially valued in religious spheres as a symbol of purity (e.g., Dubin 2009: 77). A few rock crystal beads were discovered in an early Christian context in the Church of the Granite Columns in Dongola (Then-Obluska 2013: *Fig. 3:1*).

Two large lenticular beads of dark carnelian or garnet were picked up from a context associated with tumulus T.7 (Z7/10.2 and Z7/16) [see *Fig. 2*]. They measure approximately 23 mm in diameter. Sawing traces visible next to the hole openings are typical of Egyptian and Nubian stone perforating (Then-Obluska 2015a; 2015b). A bead of this kind was found in a tomb at el-Detti, a cemetery contemporary with the site at el-Zuma (Then-Obluska 2016a: *Fig. 1F*, col. *Fig. 3F*). Similar large lenticular beads were found on the left arm of a man buried in Ballaña Tomb 9 from the 4th century AD; this man was apparently a warrior (Emery and Kirwan 1938: Pl. 38B: B.9-3; Wenig 1978: 309, Cat. 309, personal observation). Tomb B.9 is dated to AD 430/440 (Török 1986: 197). However, another two bracelets were found on the right and left wrists of an adult queen in Tomb B.47 (Emery and Kirwan 1938: Pl. 38A: B.47-26, 27), dated to AD 430. Similar beads are exhibited at the Sudan National Museum (SNM 3230); they were registered as coming from the Oxford Excavations at Firka. Indeed, the beads were found as a bracelet on the body marked as E, that of an adult in Tomb A.11 at cemetery A (Kirwan 1939: 6, object A.11/62, Pl. XX: Type 5a, described as carnelian). The Firka site is considered to be of rather late date, that is, AD 490–570 (Williams 1991: 12).

Z7/10.3 is a perforated pebble pendant [see *Fig. 2*]. Traces of sawing are visible next to the hole opening.

FAIENCE

The total number of faience beads found in tumulus T.4 amounts to 569 (Z4/45–47, Z4/137, Z4/177, Z4/179, Z4/209)

[Fig. 3]; tumulus T.7 yielded 10 such beads (Z7/8.3), added to the 15 beads discovered in 2013 (Then-Obluska 2016c: Z4/3.1). Short and standard beads measure from 3 mm to 6 mm in diameter and from 2 mm to 4 mm in length. Together with the long tubular beads, they make for the more than one thousand preserved specimens constituting an overwhelming majority in the el-Zuma bead assemblage (Then-Obluska 2016c). These beads are common finds at Lower Nubian and the Fourth Cataract sites (e.g., Then-Obluska 2014: Pl. 2; Longa 2011: Fig. 4; Then-Obluska 2016a) and extend south to the Sixth Cataract region (Pokorná et al. 2014), to Botri south of Khartoum (Bashir 2007: Pl. 5), and to the west of the White Nile in Al Khiday (Maritan et al. 2014: Fig. 3).

GLASS

Drawn glass tubes were cut up and the pieces were more or less rounded. Seven examples are made of green, orange, and orange-on-red glass (Z4/51.1-3) [Fig. 3]; (another 22 drawn and rounded green glass beads were found in tumulus T.4 in 2013, Then-Obluska 2016c). Altogether there are 59 beads of this type (together with previously discovered drawn and rounded beads in green, blue, yellow and orange glass) coming from el-Zuma (Then-Obluska 2016c).

Drawn and rounded beads were excavated in many private and royal Post-Meroitic cemeteries in Lower and Upper Nubia (Then-Obluska in press b; Then-Obluska and Wagner in press). Small monochrome beads with rounded ends come from the late antique Red Sea port sites of Berenike and Marsa Nakari (e.g., Then-Obluska 2015b: Fig. 4:33-41). Those

in the form of an opaque orange layer above a translucent red one are rare. Ten such beads were identified from the Serra East 25 site and four from Nag el-Arab. Another two beads were recorded in Berenike (BE95-005-013#72, BE95-005-TS#97).

In general, drawn and rounded beads are well known from South Asian, Indian and Sri Lankan sites, where they were most probably produced (Dussubieux 2001: 105; Hannibal-Deraniyagala 2013: Note 13). Chemical compositional analyses of beads from early Roman Quseir/Myos Hormos in Egypt and from Lower Nubian sites have confirmed their South Indian/Sri Lankan origin (Then-Obluska and Dussubieux 2016; Then-Obluska and Wagner 2017).



Fig. 3. Faience and glass beads and pendants (PCMA Early Makuria Research Project)

Two beads appear to be segments of a tube made of two layers of glass with silver foil in-between (Z4/174, Z4/50.2, see *Fig. 2*). Segmenting glass tubes in open molds is a well-recognized Egyptian technique used in the manufacture of glass and metal-in-glass beads. Silver-in-glass specimens are one of the most characteristic features of post-Meroitic assemblages in Lower and Upper Nubia (e.g., Then-Obluska 2014; in press b).

A large flattened tear-drop was perforated by rod-piercing the dark blue glass in its upper part (Z4/210) [see *Fig. 3*]. A similar example comes from a Coptic burial at Matmar (UC59788, tomb 1101). While blue and blue-green glass tear-drop pendants characterize post-Meroitic assemblages in Lower Nubia (Then-Obluska in press b), they have so far not been identified in Upper Nubia.

METAL SHANK-BEAD AND BELLS

One solid-cast silver fly amulet has a body decorated by stippling. It has a perforation running through the narrow part protruding at the back, making it a so-called shank-bead (Z4/95.2) [*Fig. 4*]. Amulets in the form of shank-beads and made of diverse materials are well known from Meroitic assemblages (Then-Obluska 2016b; Rose, Then-Obluska, and Pyke forthcoming). Unlike Egypt where fly amulets were common, they had special significance in Nubia. Made of precious metals, these amulets characterized rich assemblages, starting with a gold fly in the royal A-Group tomb in Qustul (Williams 1986: 306, Pl. 110a, b). Later on, large fly pendants made of ivory and gold were found in elite tombs in Kerma. Many small fly amulets were recorded in Nubia from

the period of Egyptian domination in New Kingdom times. Gold flies are known from the First Archaeological Survey of Nubia (Firth 1927: Pl. 28 b), such as the gold fly pendant found in el-Kurru, Ku. 16 tomb of Tanwetamani (MFA [=Museum of Fine Arts, Boston] 21.314). Gold fly pendants with an attached loop or fly beads were also identified as having originated from the Meroitic period. A bracelet, consisting of 13 such gold fly beads, strung together in original order, was found in Meroe, in tomb Beg. W 179, on the right wrist of the deceased (Dunham 1963: Fig. 133 =MFA 24.1092). Another 11 gold fly elements were also found in Meroe (MFA 24.538). Two gold fly pendants were found in the Eastern Desert, in Wadi Terfowi, tomb D 16.1. Each fly has a suspension loop on its head (Castiglioni and Castiglioni 2004: Cat. 106=SNM 31347). Last but not least, six silver toe rings, consisting of a ring and an attached fly were found in the Nobadian royal Tomb, B. 47, at Ballaña (Emery and Kirwan 1938: Pl. 42, object B.47-48). A similar fly ring was also found in the large tumulus tomb at Firka, A.11/55 (Kirwan 1939: Pl. XXI). Although the fly shank-bead from the el-Zuma tomb has no strict parallel, it is an example of an elite style that was popular for a long time in Nubia.

Small metal bells, found in tumulus T.4 at el-Zuma, were made of silver (Z4/11), copper alloy (Z1/33) and copper alloy with an iron clapper (Z4/82) [see *Fig. 4*]. A better-preserved specimen was cast with a half-elliptical profile and outlined rim. On the top of the bell there was a hole, both for the passage of the wire forming the handle and of the hook for the clapper. The clapper is made of wire bent at its extremity to clasp the handle. Copper-alloy bells similar in their construction



Fig. 4. Metal fly amulet and bell pendants (PCMA Early Makuria Research Project)

were found in two other el-Zuma tumuli (Then-Obluska 2016c: Figs 8:Z15.9, 9:Z16.24). The el-Zuma examples resemble a specimen known from the Napatan site of Hillat-el-Arab, although they can also be associated with some post-Meroitic objects (Vincentelli 2006: A.18:857). They are also reminiscent of two bells from the post-Meroitic graves, T1 and T300, in Nag el-Arab (Pellicer Catalán and Llongueras Campaña 1965: 89, 98, 177, Fig. 33:5; MAN [= National Archaeological Museum, Madrid] 1980/95/20bis and 206bis, personal observation). A very similar bronze specimen was found among the beads from grave S56/T2 on Saffi Island in the Fourth Cataract region.

One of the bells made of copper alloy has an iron clapper (Z4/82) [see Fig. 4].

The bell is 17 mm in diameter. The handle is made of a wire bent at its extremity into a hook to clasp the clapper. However, the clapper is not bent, but simply perforated. Three bronze bells with iron clappers on a string were found around the neck of a camel at Firka (Kirwan 1939: Pl. 16:A. 11/6). A chain bracelet with bronze bells and iron clappers similar to the el-Zuma example was found with a human body (Kirwan 1939: 6, Pl. 18:A.11/50).

The copper-alloy bell Z1/33 is larger in terms of its diameter [see Fig. 4]. Traces of a most probably iron handle and clapper can be discerned at the top and inside the bell.

Although the bell could have been part of a copper-alloy necklace dated to the late Roman period (Petrina 2014: Fig. 8), small



Fig. 5. Earrings (PCMA Early Makuria Research Project)

metal bells might have been employed in a variety of adornment forms in Nubia in the period under discussion (Then-Obłuska 2016c and references therein). In one case in el-Zuma, the bells were found in a burial chamber next to a human skull (Then-Obłuska 2016c: object Z16/24). It is not certain that the bells from tumuli T.1 and T.4 were associated with a necklace worn by a person.

EARRINGS

Two earrings were found in el-Zuma. In both cases, a pendant was attached to a crescent-shaped hoop. One was a fine copper-alloy – most probably brass – earring found together with a silver bell pendant in Tumulus T.4 at el-Zuma (Then-Obłuska 2016c: Fig. 12:Z4/12) [Fig. 5]. The earring measures about 12 mm in width and 22 mm in height. It consists of two parts, the hoop and the pendant, soldered with an alloy. The hoop is a crescent-shaped penannular ring with a circular section. One terminal is markedly thinner than the other. Crescent-shaped earrings¹ are known from Nubia (Allason-Jones 1991: Cats 17–18, and references therein) and Aksum (Phillipson 2000: 344, Fig. 299e; Munro-Hay 1989: Fig. 15.189). Similar hoops of diverse metals are known from Nubia from the period under discussion, such as the upper part of pendant earrings, as in the case of this example from el-Zuma (Then-Obłuska 2016c and references therein).² The wire pendant attached to the hoop has two rolled up spiral terminals with thinned ends. One segment was beaded by using a rolling technique and it is bent to solder onto it a semi-spherical

boss made of sheet metal. The side of the boss protrudes out onto what was presumably the earring's front side. Loops with spiral ends constitute a very common element of ancient jewelry, including Nubian and pre-Aksumite (Then-Obłuska 2016c and references therein).

The second earring, made of gold, also has a hoop and pendant soldered with an alloy (Z1/32) [see Fig. 5]. The hoop is again a crescent-shaped penannular ring with a circular section. The pendant attached to the hoop consists of two conical caps containing a faded coral bead in between. The upper cap is made by assembling a ring of beaded wire at the top and bottom, and four looped wires soldered between them. The looped wires have outwardly bent ends. The lower cap was made with the same technique, but the bottom has a claw setting additionally soldered onto it. Similarly constructed earrings with a hoop and a pendant, made of silver and with a coral bead, are known from the royal Nobadian cemeteries at Qustul and Ballaña (Emery and Kirwan 1938: Pl. 41A: B.47-21, 53, B:Q.14-65, C:Q.14-59 = JE 70361a,b, 70352a,b, 70365a,b). A pair of silver hoop earrings with coral bead was also found in Grave 64 at Cemetery E at Gamai (Bates and Dunham 1927: 59, Pls 38.2.D, D', 68: Fig. 37; =Peabody Museum 24-24-50/B4037)

RING

The gold or copper-rich gold finger ring consists of a lozenge bezel (set with mosaic glass) and a hoop [Fig. 6]. The box-type shield of thin beaten metal is bordered by beaded wire, while the hoop, round in

¹ For Late Meroitic metal lunate nose-rings with pointed ends that are much larger in size, see Żurawski 2010: Fig. 43.

² The style of a lunate hoop with soldered pendant(s) was observed to exist already in the Meroitic period (e.g., Dunham 1963: W27 (45–50)?, Figs 79f, 80f).

section, is grooved. The glass inlay is made of mosaic glass cane section in a checkerboard pattern of yellow, red, white, and black. Checkerboard mosaic glass has been identified mainly in Meroitic and post-Meroitic bead assemblages (e.g., Then-Obluska 2015a). Globular checkerboard beads were found in post-Meroitic Nubian royal tombs (Emery and Kirwan 1938: Pl. 46D, No. 157) and post-Meroitic contexts at Serra (Williams 1993: 230; OIM E19841). It is uncertain whether these are reused Meroitic items. Checkerboard glass with diverse color patterns is known to have been in use as of late antiquity (Lankton 2003: Fig. 7.0, 596) and the production of checkerboard mosaic beads continued into the medieval period (e.g., Siegmann 1997: 138, Pl. 3, 4 – H11/A1).

A similar ring but with a bezel of thin beaten gold set with a beryl was found in Ballaña (Emery and Kirwan 1938: Pl. 42B,

object B.2-15). A ring with a similarly executed grooved hoop was found at Gamai (Bates and Dunham 1927: Pl. LXXVIII: Figs 6, E/R52, 18, Z4/R11). Two bronze finger-rings with beaded hoops and simple silver bezels were found at Kosha (Kirwan 1939: Pl. XIX:K1/23). A silver ring from Soba is said to have had incised grooves (Allason-Jones 1991: 126, Cat. 3).

CHAINS

Two types of chain were found in el-Zuma: single and double loop-in-loop. The first is a fragment made of copper alloy or copper-rich gold, in the form of a basic single loop-in-loop chain [Fig. 7:Z4/98]. It has two cross-shaped elements: a perforated cross with flared arms simply threaded onto the chain, and a decorated cross with wire loops at its ends attached to the chain. One loop wire is bent upward, while the other is bent to one side.

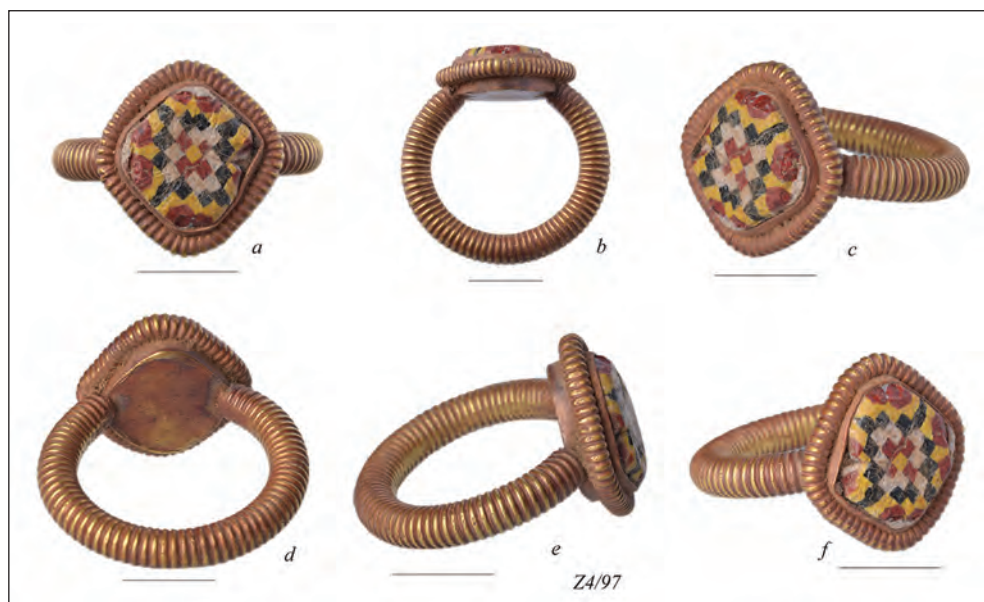


Fig. 6. Ring (PCMA Early Makuria Research Project)



Fig. 7. Chain fragments and a pin (PCMA Early Makuria Research Project)

The second is a silver basic double loop-in-loop chain [see *Fig. 7:Z4/113*]. In contrast to single loop-in-loop chains, in which the link being added is inserted through the last link on the growing chain, double loop-in-loop chains are made by inserting a link through both the next-to-last and the last links (Stark and Smith 1997). This chain type can be observed attached to archer bracelets made of metal sheet, most probably to be hung on a thumb (Emery and Kirwan 1938: *Fig. 86C, Pl. 52A, B, objects B.80-49, B.9-28*). A much larger (in terms of its thickness) chain of this type was also used for the silver horse equipment bits in *Q.3-93* and *Q.31-48* (Emery and Kirwan 1938: *Pl. 59*).

PIN

A silver pin consists of a long thin shaft, circular in section, with a round end [see *Fig. 7:Z4/212*]. It is 70 mm long, 2.5 mm thick and 6 mm in head diameter. Its thickness at the terminal was smaller. It might have been a hairpin. Still, in Roman times hairpins were mostly carved in bone and ivory, while dress pins were usually made of metal (Rodziewicz 2007: 28–30).

CABOCHONS AND SETTINGS

Fifty round, oval and rectangular cabochons made of precious stone and glass were found in the tunnel of tumulus T.4 at el-Zuma [*Fig. 8*]. Some of them (26 in all) were mounted in silver settings. Additionally, eight beaded settings (*Z4/144.1, Z4/146.1–3, Z4/147, Z4/148, Z4/149, Z4/171*) and many fragments were collected (*Z4/138, Z4/144.2–6, Z4/145, Z4/150, Z4/172.1–8*).

Round cabochons outnumber the oval and rectangular ones. In the case of one rectangular cabochon, the exterior part

was faceted. Some are lentoidal in shape. Most of the cabochons were made of carnelian or red agate, while the remaining ones seem to be garnet, green or green and yellow glass, and differ in size. With regard to round cabochons those measuring 7 to 11 mm in diameter dominate (*Z4/118–125, 27–131, 136, 140–141, 154–158, 161, 164, 166–168, 170*). Smaller ones, 4 to 5 mm in diameter (*Z4/126, 151, 153*), or larger measuring 15.5 mm in diameter (*Z4/163*) are also found. The largest oval cabochon (*Z4/159*) measures 16 mm in width and 22 mm in length, and the smallest ovals are 6 mm by 11 mm (*Z4/152, 173*). The rectangular cabochons are 10 mm by 14 mm in size (*Z4/114, 117*).

The bottom and the sides of the box-type settings are made of thin beaten and soldered silver, and are bordered with beaded wire, which goes around the sides. The settings are filled with white plaster to keep their shape and to facilitate the setting of the cabochon. The metal sheet at the bottom is usually partly preserved and shows an irregular layer of plaster. The plain surface of the plaster reveals the negative of the cabochon that was once set in it. Most of the round specimens measure from 11 mm to 15 mm in diameter (*Z4/118–125, 127–130, 136, 164, 166–168*). The smallest are 9 mm in diameter (*Z4/126*) and the largest is 20 mm in diameter (*Z4/163*). Oval settings measure 10 mm by 14 mm to 17 mm by 21 mm (*Z4/115, 116, 162, 173*). The rectangular settings are 14 mm by 17 mm and 14 mm by 19 mm in size (*Z4/114, 117*).

Silver settings with stone cabochons were found at the Nobadian royal cemetery of Qustul in the following objects: a jeweled collar that was an element of horse equipment (Emery and Kirwan 1938:



Fig. 8. Cabochons and settings (PCMA Early Makuria Research Project)

Pl. 62A, Q.3-93, 94), a child's bracelet (Emery and Kirwan 1938: Q.14-60 Pl. 38F), and rings Q.14-84 (Emery and Kirwan 1938: Pl. 42B,D), however they lacked the beaded wire decoration. Furthermore, two bracelets from Ballaña (Emery and Kirwan 1938: Fig. 80, Pl. 40: object B.47-14, and B.47-15 = The Nubian Museum in Aswan) and two from the royal cemetery at Meroe (Dunham 1963: Fig. 126, 127a = MFA 24.1001, 24.1002, W 130 (55-65?)³) were encrusted with round, oval and rectangular settings. However, unlike the Nobadian crowns and the el-Zuma finds, the bracelets lack the beaded settings around the small cabochons. Approximately 50 round, large and small, oval and rectangular bezels of carnelian, garnet, emerald and green glass adorned three of the Nobadian crowns; thus, the 50 cabochons from el-Zuma would definitely have made at least one of the crowns as illustrated in Ballaña (Emery and Kirwan 1938; Török 1988). The Ballaña crowns were simple circlets or circlets encrusted with stones. Additionally, some of them have elements attached at the edges,⁴ sometimes encrusted with stones. The Nobadian crowns were constructed of silver, iron, plaster and wood, and often encrusted with precious stones. The circlets were fastened at the back with a metal strap and nails. All the circlets were decorated with embossed friezes (Emery and Kirwan 1938: 183-186).

Except for B.6-20 and B.4, found in one of the princes' tombs, crowns decorated with stones were found in royal tombs (Emery and Kirwan 1938: B.47-

13, Pl. 35A; B 80-48, Pl. 33A; B.95-22, Pl. 32B; B.114-11, Pl. 34A; B.118-29, Pl. 36A) dated to between AD 420 and 490 (Török 1986: 197). Some of them were encrusted solely with round and oval cabochons (B.6-20, B.47-13, B.80-48). Others were decorated with large round, oval and rectangular settings arranged in three rows (B.95-22, B.114-11, B.118-29). Stone settings are found in the upper and lower rows, as well as in the middle row, alternating with embossed kings' busts in B.95-22 and B.114-11, and *udjat* eyes in B.118-29. Additionally, small stones adorn the *nef-nef* crown of embossed kings' busts motifs (B.95-22) and *udjat* eye motifs (B.118-29). Furthermore, the eyes of a ram's head attached to the circlet's edge are set with tiny cabochon settings in B.95-22 and B.114-11, without beaded wire. It should be added that some of the cabochons in B.114-11 and B.118-29 are made of green glass.

The three tombs in which crowns with round, oval and rectangular settings (B.95-22, B.114-11, B.118-29) were found have been dated to a period between AD 470 and 490 (Török 1986: 197).

OTHER DECORATED METAL FINDS

Many pieces of embossed metal sheet, beaded wires and cabochon settings, as well as studs, nails and staples were found in tumulus T.4, and a few in tumulus T.7 [Fig. 9]. Four fragments of a flower-embossed silver sheet, Z4/23.13-16, find exact parallels among certain metal fittings

³ The bracelets were found with a faceted long square bicone of carnelian that belongs to the post-Meroitic repertoire (e.g., Then-Obluska 2016c).

⁴ Four types were distinguished according to the elements at the edges: a circlet with a ram's head at the front and surmounted by a plumed crest on the forehead and uraei around the edge of the circlet, the same without uraei, a circlet surmounted by three plumed crests, a circlet with uraei around the upper edge (Török 1988: 169).

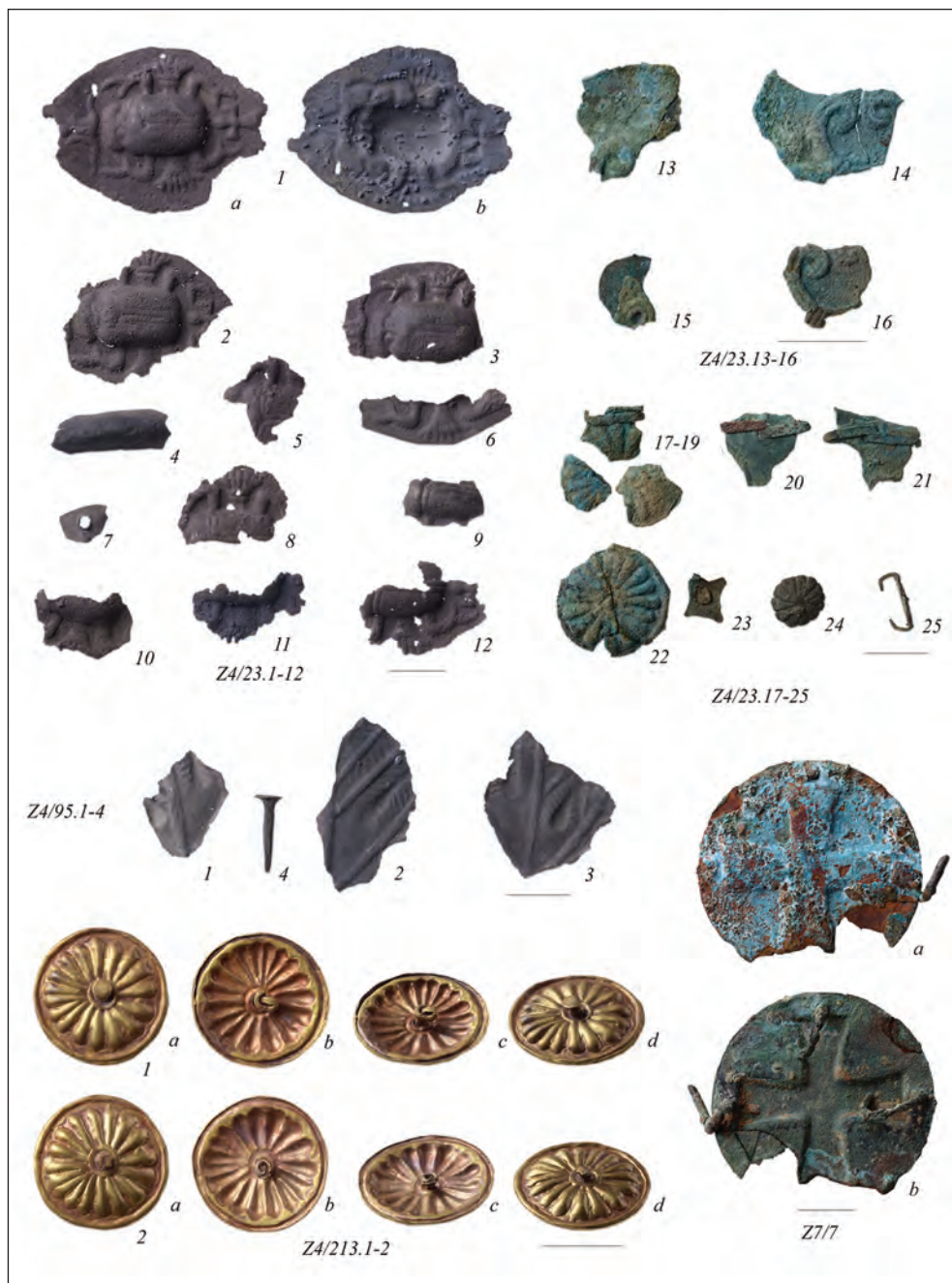


Fig. 9. Decorated metal fittings (PCMA Early Makuria Research Project)

found in Ballaña. In one case, a pattern was embossed on a scabbard sheet found in royal tomb B.80-36 (Emery and Kirwan 1938: 220, Pl. 49D), dated to about AD 420 (Török 1986: 197, Fig. 81A). The Ballaña scabbard consists of two flat pieces of wood held together with a sheet of silver embossed with a variety of patterns (Emery and Kirwan 1938: 219, Fig. 81A–D). The same motif can be observed on the back side of a saddle fitting that was an element of horse equipment (Emery and Kirwan 1938: object Q.36-165, Pl. 63E). Tomb Q.36 was dated to about AD 400 (Török 1986: 197). However, while sword fragments have been found, no horse bones have been identified from tumulus T.4 (U. Iwaszczuk, personal communication).

There are a few fragments of embossed silver 18-petal rosettes, about 20 mm in diameter (Z4/23.17–22) [see Fig. 9]. Some fragments have staples preserved in certain places. Whereas the same rosette motif can be observed on a saddle fitting from Qustul tomb Q.31-40 (Emery and Kirwan 1938: Pl. 63G), a silver wreath with a series of rosettes that has been illustrated from Ballaña would be a better fit for the el-Zuma remains (Farid 1963: 101, Fig. 57-1, Pl. 26).

Many fragments of elongated plaques were embossed with a scarab motif with a *hem-hem* crown and an *ankh* cross between the rear legs (Z4/23.1–3, 5–6, 8–12). The best-preserved fragment, Z4/23.1, measures approximately 38 mm by 28 mm. Fragments Z4/23.3 and Z4/23.6 appear to be parts of one element. The *hem-hem* crown is set above horizontal ram's horns, and consists of stylized bundles of reeds and a sun disk, flanked on each side by a single ostrich feather and a uraeus. No parallels have been found for

the plaques so far. However, the scarab motif is reproduced in repoussé technique on a jeweled horse collar (Emery and Kirwan 1938: Pl. 62A) and embossed on an archer's bracelet (Emery and Kirwan 1938: Pl. 86C). It remains a moot point whether the scarab was a motif applied frequently, alongside the rosettes, on Early Makuria crowns.

Three fragments of a silver sheet with embossed plumes were found (Z4/95.1–5) together with the fly bead-shank mentioned above and a nail. No parallel for such a motif could be traced so far.

Z4/23.24 [see Fig. 9] is a 12-petal rosette stud. Two anklets of red leather decorated with a series of silver disks in the form of rosettes are mentioned as having been found in Burial C of prince's tomb B.6 at Ballaña. The leather was cut into narrow strips and hemstitched with the disks attached with wire pins (Emery and Kirwan 1938: 187, Cat. No. 15). The tomb was dated to about AD 420 (Török 1986: 197). Leather elements with lead rosette studs were also found in private grave R 49-5e in Qustul (Williams 1991: Pl. 66c, Fig. 53c,e,f). They have been interpreted as armor studs.

Two rosette plaques are probably made of debased gold sheets (Z4/213.1–2). They measure 18 mm in diameter. The rosettes were punched with a patir on a mould and consist of 17 petals. They are perforated in the middle. Both examples have a nail driven through the perforation. They might be leather decoration, similarly to the above-mentioned examples.

A copper-alloy badge takes the form of a round shield with a punched cross with flared arms and four nits (Z7/7). It measures about 40 mm in diameter and might have served as a leather ornament.

A similar motif of a cross with flared arms is punched into a bronze pan found in one of the Ballaña tombs (Emery and Kirwan 1938: Pl. 76B, B. 118-5).

LID KNOB

One copper-alloy object (Z4/96) is a profiled cylinder made out of a beaten metal sheet [Fig. 10]. At one end, the edge was



Fig. 10. Lid knob: top, bottom and side views (PCMA Early Makuria Research Project)

bent outward and decorated with bosses. The top of the cylinder is decorated with a beaded ring that has the function of a setting for a carnelian bead. The bead is most probably threaded onto a wire that ends with a spherical ball. Its shape and construction are the same as of the metal knobs known from Ballaña, although they differ in the type of metal used. Silver cups with convex lids surmounted with a cylindrical knob are known from Ballaña tombs (Emery and Kirwan 1938: Pl. 66C-F). A carnelian bead is set on the top of one of them, B.6-11 (Emery and Kirwan 1938: 275, size 13.4 cm in height). Again, the above-mentioned objects were found in a prince's tomb dated to the period between AD 420 and 440 (Török 1986: 197).

IVORY CONTAINERS

All the fragments of ivory containers are small in diameter and they feature external decoration consisting of incised lines and dotted circles. Four ivory fragments form one cylindrical container [*Fig. 11:Z4/8.3, Z4/8.19, Z4/54*]. It has its top edge cut back to receive the lid, and there is a step back inside to fix the bottom. It measures 26 mm in diameter. The interior is smoothly finished, while the exterior surface is decorated with four alternating panels. Two of them are made of rows of four incised parallel lines, with four rows at the top and six at the bottom. These bands are alternated with "dot-in-a-circle" rows, three and two accordingly. The other two are decorated with pairs of semicircles with three dotted circles at their ends.

Another fragment [*Fig. 11:Z4/8.4*] was part of a cylindrical container with edges cut back to receive the lid and to fix the bottom. It measures 25 mm in diameter and about 45 mm in height. The exterior

surface is decorated with rows of incised parallel lines alternated with two rows of a "dot-in-circle" motif. The main panel is decorated with dotted circles which form a swastika meander pattern.

Z4/207 and Z4/221 are most probably fragments of the same object [*Fig. 12*]. The diameter of the top is 25 mm. They form a container with two recesses inside, one on top to receive the lid, the second on the base to fix the bottom. Tiny traces of blue-green and red paste can be discerned in the incised lines and dotted circles. Bone plaques with colored geometric patterns have been found in Alexandria (Rodziewicz 2007: 55–56, Cat. Nos 82, 83, 87).

Another small fragment [*Fig. 12: Z4/211.1*] originates from a cylindrical container with one edge cut back probably to receive the lid. The exterior surface is decorated with three incised bands consisting of three and four lines. A row of dotted circles lies between the first and the second linear band. A wide band of dotted circles in triangular arrangements is placed between the second and the third linear band.

A fragment of a cylindrical container (Z4/211.2) has its exterior surface decorated with linear bands alternated with dotted circles in a row. Except for the widest band that is decorated with quadruple dotted circle motifs arranged in a checkerboard pattern, the other bands are simple rows of a "dot-in-a-circle" motif or they are arranged in the form of a garland.

One other fragment (Z4/106) also belongs to a cylinder container. The exterior surface is decorated with a band of four parallel lines between two bands of dotted circles.

The small diameter of the el-Zuma remains would point to their use as toilet containers: kohl tubes or ointment containers. The round pyxides may have also served as dice-boxes (Rodziewicz 2007). Ivory kohl tubes and a vessel have been identified at Gabati (Edwards 1998: 126–

127, Fig. 5.11; = 2004: Cat. 177, Fig. 5.12, object 8309) and at Qasr Ibrim cemetery 123 (Mills 1982: object 123.22.15), but they lack the incised decorations. A few ivory and wood kohl flasks and remains of ivory ointment containers were found at the Qustul cemeteries (Emery and Kirwan



Fig. 11. Ivory containers (PCMA Early Makuria Research Project)

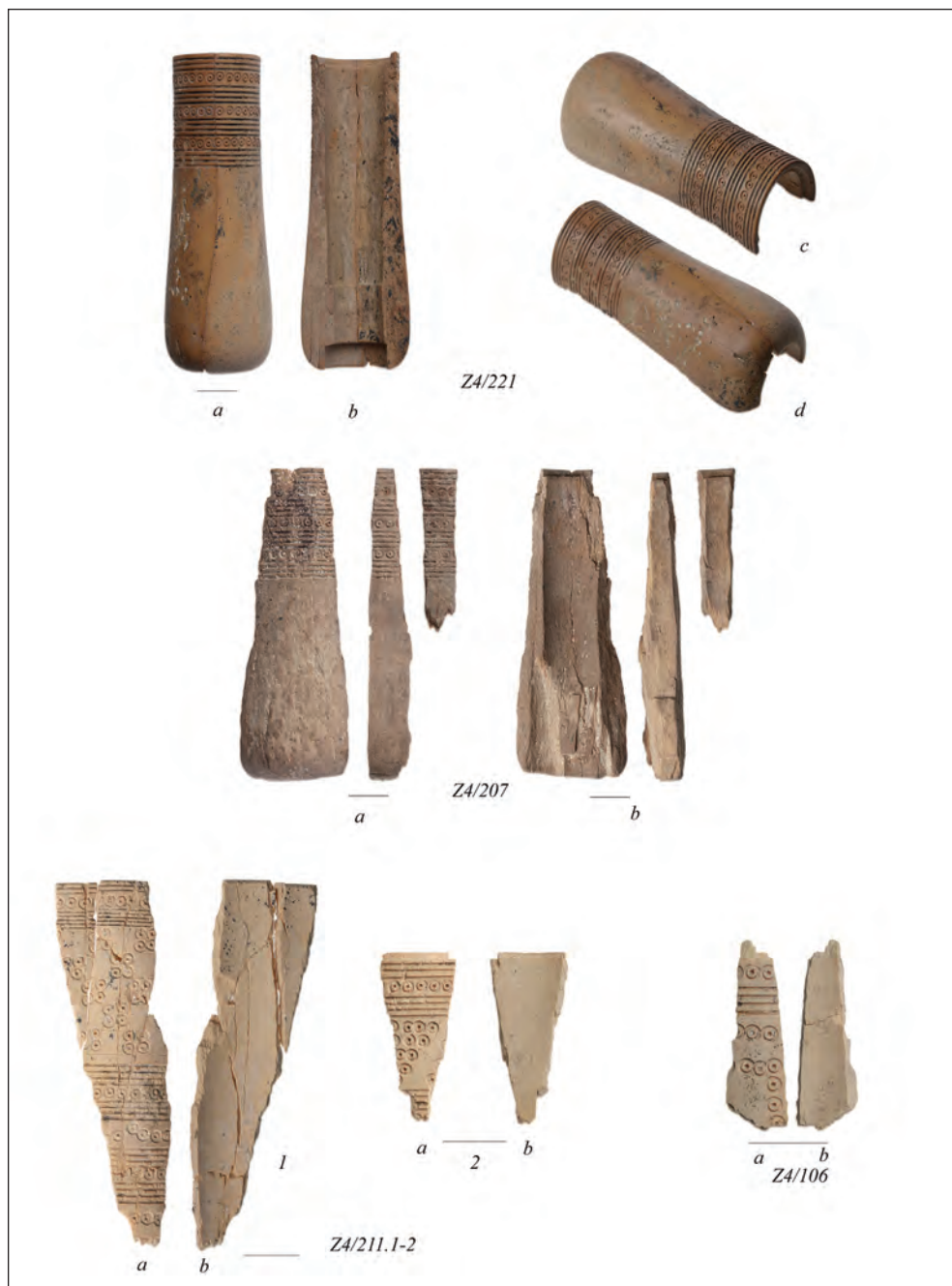


Fig. 12. Ivory containers (PCMA Early Makuria Research Project)

1938: 342–343, Pl. 86; Williams 1991: Fig. 154b).⁵ They also lack any decoration in the form of dotted circles or they are figural in shape and do not fit the el-Zuma fragments. Bone fragments decorated with incised lines and dotted circles were excavated in Kharga Oasis, where they were dated to the 4th–7th centuries AD (MET X.606.2a–x). Decoration consisting of incised lines and dotted circles can also be observed on an elongated fragment of a wooden vessel in Wadi Qitna (P 3004) and another unidentified object (P 3005) (Strouhal 1984: 237–238, Fig. 155). An ivory kohl tube, similar in shape and with a similar decoration to Z4/207 and Z4/221, is presently on exhibition at the Bibliotheca Alexandrina Antiquities Museum (BAAM Serial 0907; showcase 24; Inv. Coptic Museum 1077). It measures 12.5 cm in height and is dated to the Byzantine Period (AD 395–641).

INTARSIA AND IVORY GAMING PIECES

Five fragments of an ivory intarsia have been found in el-Zuma in Tumulus T.7. They are floral-shaped but without any incised decoration. The fragments, 1.8 mm to 2 mm thick, form a pattern [Figs 13: Z7/66, 14:b] that to some extent resembles an ivory vegetal motif that was set in the central panel of a wooden gaming board as found at Qustul [Fig. 14:a]. The board was found in the mound above Tomb 3 (Emery 1932: Pl. III, bottom; Emery and Kirwan 1938: 345, Pl. 87A, Q.3-95, Cat. No. 742; currently in the Nubian Museum, Aswan), and it was decorated with three rows of 12 squares of a floral design. Each



Fig. 13. Intarsia and gaming pieces (PCMA Early Makuria Research Project)

⁵ For a bronze kohl flask with a lid from Ballaña, see Farid 1963: Fig. 65.2, Pl. 38B, from Jebel Adda (Millet 1963: 163).

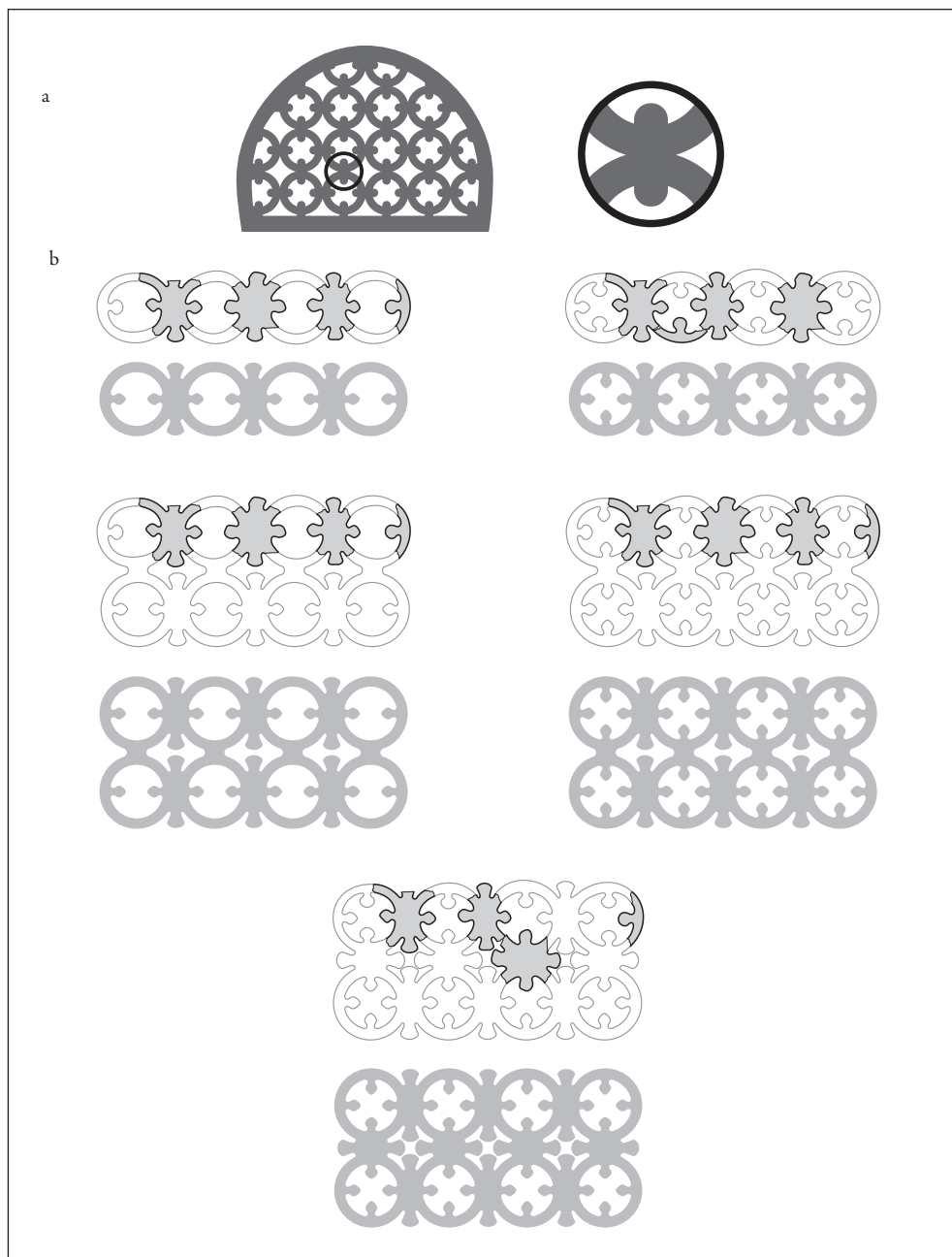


Fig. 14. Intarsia patterns: a – pattern on a gaming board from Qustul, not to scale; b – reconstruction of various intarsia patterns, not to scale (PCMA Early Makuria Research Project)

line is divided by center pieces, in the form of a circle and two semi-circles with small bolted rings inside, into groups of six. The gaming board measures 77.5 cm by 37 cm. This would mean that the central panels are about 8.5 cm in diameter, while the decorative fragments, analogously to the el-Zuma ones, would be about 1 cm wide. Thus, in terms of their size, the el-Zuma remains would correspond to the Qustul board decoration.

Furthermore, half of a large game piece made of ivory was found in the same el-Zuma tumulus (Z7/83). It measures about 40 mm in diameter and 40 mm in height. It is possible that Z7/82, Z7/83 and Z7/84 (not illustrated) are fragments of gaming pieces.⁶ A leather bag with similar ivory gaming pieces was found beneath the board in the said Qustul tomb (Emery and Kirwan 1938: 345, Pls 87B,C,D,F). It contained a set of 15 parallel white ivory game pieces, together with 15 black wooden pieces, five dice and remains of a *fritillus* (dice-box) (Emery and Kirwan 1938: 345, Pl. 9F, 87C. A:Q.3-96). Furthermore, two ivory gaming pieces were found by the Finnish Expedition together with a bone die in grave 154 at Gamai Site 2. One is nearly cylindrical in shape with the top decorated with concentric circles (22 mm in height and 20–25 mm in diameter) (Donner 1998: 282, Object 2/154A:11). The second item, Object 2/154A:15, is similar in shape and size to the el-Zuma and Qustul pieces and measures 50x45x45 mm (Donner 1998: 282, Pl. 201:4).

A fragment of bone dice showing a “five”, marked with dotted double circles,

was found in the same tomb (Z4/108). The fragment measures 15.5 mm in length. Various bone fragments, including one with a dotted circle incision (Z4/180, not illustrated), might also belong to another die. They measure about 15 mm in length. Bone/ivory dice were found throughout the late Roman Mediterranean world (e.g., Rodziewicz 2007: Cat. 558, Alexandria; Davidson 1952: Pl. 100, No. 1745, Corinth). Similar dice of bone and ivory can be traced to post-Meroitic sites in Lower Nubia, for example, in a single mound burial at Faras East (Säve-Söderbergh 1981: 68, object 19/1:13, Pl. 95:3, 12x14x16 mm, AD 500–600) and at Site 2 in Gamai East (Donner 1998: 282, Pl. 209:3, object 154A:4, 10.6x9.6x8 mm), and they also accompanied the Qustul gaming board and pieces mentioned above (Emery and Kirwan 1938: Pl. 87F).

The Qustul game board was found in a royal tomb dated to about AD 380 (Török 1986: 197). Bell (1979: 28–29) suggested that the board has the same layout as a *duodecim scripta*, for which there was apparently a preference in the early Roman period, replaced later by a variant called *tabula* (Bell 1979: 31). In Nubia, remains of *duodecim scripta* game boards, gaming pieces and dice were found in two Meroitic graves from the 1st century AD at Sedeinga (Crist, Dunn-Vaturi, and de Voogt 2016: 136; de Voogt, Francigny, and Baas 2017 and references). However, their inlays lack the sophisticated decoration of the boards found at Qustul. According to László Török (1988: 102), the decorative ivory inlays of the Qustul board imitate *opus interrabile* jewels, suggesting that

⁶ Two likely gaming pieces were also found in the el-Zuma Tumulus Z4 (Z4/53, not illustrated here). They are much smaller (about 2.5 cm in length) than the newly excavated examples.

the game board was made sometime in the last few decades of the 4th century AD. In the history of Roman games, the el-Zuma fragments would constitute the

southernmost example of a *duodecim scripta* board found in a grave context, which is dated between the mid-5th and mid-6th century AD.

DISCUSSION AND CONCLUSIONS

Although found in robbed and not fully excavated contexts, the Early Makuria adornments from the largest el-Zuma tumuli represent a wide range of materials and types identified at other contemporary private and royal Nubian cemeteries. While silver-in-glass, faience, and small stone beads perforated from one end are widely found at post-Meroitic sites throughout Nubia, the el-Zuma assemblage contributes a few bead types that are quite rare. These are large beads of carnelian and rock crystal, a flattened tear-drop pendant of cobalt blue glass and green and orange-on-red glass beads. The green and orange-on-red beads are made of drawn and rounded glass of Sri Lankan/South Indian origin.

Imported glass beads have been recently identified in tombs at private cemeteries in post-Meroitic Nubia (Then-Obluska 2016a; 2016c; in press b). Furthermore, the body of a queen from Tomb 47 in Ballaña was richly adorned, also with four anklets made of South Asian drawn and rounded orange glass beads (JE 88820). What is more, she was found with large lenticular carnelian beads of a type usually found in warrior tombs. Thus, it might be that the large carnelian beads found at el-Zuma under tumulus Z7 belonged to the burial of either a queen or an elite warrior.

Interestingly, glass beads are not present on the kings' bodies in Tomb 80 and 95 at Ballaña (Emery and Kirwan 1938). Instead, local types, i.e., stone, faience and ostrich eggshell, were used to make the

kings' beadwork, necklaces and bracelets. The rock crystal beads, such as the ones from T.4 (Z4/48.2-3), have so far only been found with the bodies of Nobadian kings. Large truncated cone stone bead types, illustrated by Z4/49.2, were also found with a king's body in Ballaña. The presence of rock crystal and truncated cone stones would support the idea of a king's burial in tumulus T.4. The presence of glass beads might indicate additional burials under tumulus T.4.

Török (1988: 174) claims that it was a workshop of Egyptian origin that manufactured the Nobadian silverwork. It is characterized by embossing done with the help of matrices instead of proper repoussé work, the white plaster fillings of the jewels, and cabochon box settings bordered by wire. Török emphasizes that both royal insignia and objects of everyday use were made in the same royal workshop by Egyptian silversmiths, at least at the beginning, who had brought Egyptian matrices with them. The finding of similar silverwork in Nobadian and Early Makuria tombs suggests the existence of a prosperous, mobile workshop run by a family over a few generations, that is, over a long period of time and across a wide area, though it remains uncertain whether it was Egyptian or not.

While Egyptian religious iconography (e.g., the scarab motif) remained strong in post-Meroitic Nubia and some elements of jewelry style, like the hooped earrings, were

continued since the Meroitic period, some jewelry techniques used in late antique Nubian adornments (e.g., beaded wire) were inspired by Byzantine workshops rather than the pharaonic Egyptian ones.

The royal jewelry of Meroe was produced mainly with the repoussé, cloisonné and enamel techniques, as well as granulation (e.g., Markowitz and Doxey 2014; Rose, Then-Obluska, and Pyke forthcoming), but the post-Meroitic craft employed embossing and cabochon box-settings and beaded wire. It must be emphasized that beaded wire appears to be a characteristic feature of late antique jewelry in Nubia. Aside from the examples of metalwork with beaded wire from royal Qustul and Ballaña (cabochon settings, hoops of earrings, lid knobs, wire bracelets) and el-Zuma (earrings, cabochon settings, a finger ring, a lid knob), more examples come from Gamai and Kosha (rings) (Bates and Dunham 1927: Pl. LXXVIII: Fig. 6, E/R52, Fig. 18, Z4/R11; Kirwan 1939: Pl. XIX:K1/23). Furthermore, a silver beaded wire bracelet with projecting knobs, topped with red glass inlay was found at Firka (Kirwan 1939: 6, object A11/49, Pl. XVII: A11/59⁷). Beaded wires appeared in the Mediterranean world about the 7th century BC, and became a common decorative motif in Byzantine jewelry, and spread in India by or during the Sasanian period (Williams and Ogden 1994; Ogden 1994: 166; 2003: 4–5, Fig. 5).

Silver dominated Nobadian and Early Makuria jewelry metal assemblages. The unlooted Ballaña tombs, such as B.6, 9, 10, and especially 95, 114 and 118, indicate that gold jewels were also incidentally found accompanying such burials. Török (1988: 173) considers the

more elaborate pieces, like some bracelets decorated with stones and certain earrings, as undoubtedly imports from Egypt. However, some silver and gold earrings from Nobadian royal cemeteries and from el-Zuma were composed of a bent hoop with an attached pendant. Such a composition is a continuation of indigenous Meroitic style (e.g., Markowitz and Doxey 2014).

Hoop earrings with coral pendants, including the one from el-Zuma, are a characteristic feature of elite jewelry in Nobadia (Emery and Kirwan 1938). In general, coral beads were one of the main Mediterranean products (*Corallium rubrum* sp.) imported to Roman and Coptic Egypt and exported as far as China (Francis 2002: 156). Although known from many Nubian sites, no doubt the largest assemblage of coral beads comes from the royal cemeteries in Lower Nubia (Then-Obluska in press b; Emery and Kirwan 1938: Pl. 43, Type 8, 9, 17, 27–29, 38). The Mediterranean coral together with the Red Sea mollusk shells and imported Sri Lankan/South Indian glass beads are well known from Red Sea cosmopolitan port sites (Then-Obluska 2015b; Then-Obluska and Dussubieux 2016). It might be that mollusk shell and imported glass beads reached the el-Zuma site via the Red Sea ports.

Archaeological traces of pagan religions – Christianity, Judaism and Buddhism have been recorded at cosmopolitan Red Sea port sites (e.g., Sidebotham, Hense, and Nouwens 2008: 144–150; Then-Obluska in press a). No doubt, Nubia was exposed to Christianity in the post-Meroitic period (Edwards 2001; Dijkstra 2013 and references). The road from the

⁷ Note the incorrect description on the Plate in Kirwan 1939.

Red Sea coast across the Eastern Desert into the Nubian Nile Valley might also have been an alternative to the Nile Valley route along which Christian symbols (Z4/98, Z7/7) (e.g., Emery and Kirwan 1938: object B.2-7, Pl. 48F; Williams 1991: 305, Fig. 145c; Edwards 2001; Then-Obluska 2016c: Fig. 9) arrived in post-Meroitic Nubia.

Archaeological evidence regarding the production of ivory objects in late Roman and Byzantine Alexandria is increasing (Rodziewicz 2007). The remains from el-Zuma tumulus T.4 constitute the largest assemblage of decorated small ivory containers found in late antique Nubia. They may have served not only as toilet containers, but also as dice-boxes. A few fragments of intarsia, imitating *opus intarsiale*, found together with ivory gaming pieces in the tumulus T.7

at el-Zuma, might be elements of one of the most splendid artifacts of the late antique world, a *duodecim scripta* game board.

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Between the Nile and the Ocean The bead assemblage from Shenshef in the Eastern Desert (4th–6th centuries AD)

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Abstract: More than 200 beads and pendants were found in seven trash middens excavated at the 4th/5th to the 6th century AD settlement site in Shenshef in the Eastern Desert of Egypt. The site lies close to the Sudanese border and the Red Sea coast, and about 20 km to the southwest of the ancient port of Berenike. Although the purpose of the settlement has not been established, excavations provided a wide range of imports from the Mediterranean region and the Indian Ocean. An overview of the materials and manufacturing techniques applied in the production of the beads and pendants confirms the short- and long-distance contacts of Shenshef inhabitants. In addition to the many bead parallels that link the site with the Red Sea ports and the Nile Valley region up to the First Cataract, the presence of South Indian/Sri Lankan beads at Shenshef is especially meaningful. They may be proof of the intermediary role played by the Shenshef inhabitants in trading overseas imports into the Nubian Nile Valley region.

Keywords: beads, pendants, material culture, Indian trade, Red Sea, Eastern Desert, Egypt, Nubia

During the 1997 season the Berenike Project American–Dutch team excavated a few trenches in the Eastern Desert settlement at Wadi Shenshef. This settlement, also known as Hitan Shenshef, is situated in the extreme southeast of Egypt, 12 km west of the Red Sea and 21.3 km south-southwest of the site of Berenike (Gould 1999: 371). The site comprises approximately 300 structures of various sizes and functions, and at least 500 tumulus tombs. The settlement stretches for about 800 m east–west by almost 300 m north–south (Gould 1999; Aldsworth 1999; Sidebotham, Hense, and Nouwens 2008: 360; Sidebotham

2011: 275–276). The purpose of this large and well-built settlement has yet to be established.

Excavation of seven trenches, BE97-Sch.1 to BE97-Sch.7, in the 4th/5th to 6th century AD refuse middens near the houses has demonstrated close contacts between Shenshef, Berenike and many distant lands. Walnuts, olives, almonds, and umbrella pine were imported from the Mediterranean; amphoras came from the Eastern Mediterranean, mainly Cyprus and Cilicia (Tomber 1998: 170–179); black pepper, sorghum, and teak stemmed from South Asia; a sapphire from Sri

Lanka was also found. Interestingly, faunal remains indicated a population dependent on herding goats and sheep, but the Red Sea fish were poorly represented (Cappers 1999; Van Neer and Ervynck 1999; Sidebotham, Hense, and Nouwens 2008: 363; Sidebotham 2011: 276 and references therein). What is more, quantities of so-called Eastern Desert Ware have also been recovered at Shenshef. This pottery has been associated with a population living in the Eastern Desert. It was also found at the Red Sea ports (e.g., Barnard 2005–2006; 2008) and Nubian sites, and is usually ascribed to the Blemmyes (e.g., Ricke 1967; Strouhal 1984; Barnard and Magid 2006), a population known from textual sources (e.g., Dijkstra 2012; Obluski 2014).

An important collection of 200 beads, pendants and their fragments was excavated at the Shenshef settlement and is presently kept in the Supreme Council of Antiquities (SCA) storage room at Quft.

While perforated mollusk shells of Red Sea origin have been described in detail (Van Neer and Ervynck 1999: Table 24-2, Pl. 24-3), the pre-sense of beads and pendants made of other materials, including glass beads from Sri Lanka, was mentioned only briefly in the excavation reports (Gould 1999: 375; Francis 2000).

This paper aims at illustrating and expanding the typology of ancient beads found around the Indian Ocean between the 4th and the 6th century AD. This was the time when the Meroitic Kushite kingdom in Nubia fell and new kingdoms emerged: Nobadia in Lower Nubia and Early Makuria in Upper Nubia. Many bead types from Shenshef find parallels at contemporary late Roman Red Sea port sites and post-Meroitic Nubian ones. Therefore, the paper suggests that the Shenshef dwellers were potential middlemen who may have traded overseas items between the Red Sea coast and the inland sites of Northeast Africa.

OVERVIEW OF BEAD MATERIALS AND TECHNIQUES

Beads and pendants found at Shenshef were made of organic (wood, bone, mollusk shells, ostrich eggshell), inorganic (carnelian), and man-made materials (faience, glass), and in this order they are described below. While glass objects ($n=180$) dominated the assemblage, the remaining materials were found in meager quantities ($n=20$).

WOOD

One large oblate bead is made of wood and measures 7.3 mm in diameter and 8.3 mm in length [*Fig. 6:3*]. Wooden beads are rarely recognized in the bead

repertoires of Egypt and Nubia. Still, the most significant examples come from the Lower Nubian burial assemblages at Wadi Qitna, Kalabsha, and the royal cemetery at Ballaña, and they have been tentatively associated with the Eastern Desert population (Then-Obluska 2016a; in press b and references).

MOLLUSK SHELL

A group of faunal remains registered from the Shenshef settlement included 25 perforated mollusk shells (Van Neer and Ervynck 1999: Table 24-2, Pl. 24-3). The published photo shows them to be per-

forated in two ways, either by removing the shell apex or by making a hole in the shell body. The shells belong to the following species: *Conus tessulatus* (n=8), *Conus* sp. (n=3), *Dentalium reevei* (n=1), *Engina mendicaria* (n=2), *Mitridae* (n=1), *Natica gualteriana* (n=1), *Nerita albicilla* (n=8), *Pyrene testudinaria* (n=1) (Van Neer and Ervynck 1999: Table 24-2, Pl. 24-3). The mollusk shell objects illustrated here are a shell of *Conus* sp. with the apex cut or ground down and perforated [Fig. 5:5], and a fragment of *Dentalium reevei* [Fig. 6:11]. Mollusk shells of unidentified species worked into beads were found as well [Figs 7:20; 9:18].

A similar abundance of perforated Red Sea mollusk shell species can be observed at the late 4th to 6th century AD port of Berenike (Then-Obluska 2015: Fig. 1). They are also recorded from post-Meroitic sites in Lower Nubia (Then-Obluska in press b: Fig. 2).

OSTRICH EGGSHELL

A few ostrich eggshell beads come from Shenshef [Figs 1:17–19; 2:5, 4:7; 5:4; 8:9; 9:2]. They are cylinder disks and short cylinders. A few specimens were also recognized from the Red Sea ports of Berenike and Marsa Nakari (Then-Obluska 2015; in press a). Ostrich eggshell beads are one of the most common materials used in bead production at Nubian Nile Valley burial sites of the post-Meroitic period (e.g., Then-Obluska 2014: Fig. Pl.3; 2016a: 41).

BONE

A preserved half of a large globular bead is most probably made of bone [Fig. 2:16]. The bead was partly perforated and split, apparently during the drilling process.

STONE

A few stone beads were found in the Shenshef assemblage. They were perforated from both ends. These are a small carnelian bead that was slightly faceted into a hexagonal bicone and well polished [Fig. 8:6], and a fragment of an oblate [Fig. 2:3]. Specimens faceted similarly to the former are known from late 4th to 6th century Berenike contexts (Then-Obluska 2015: Fig. 3:9,10; 2017a: Fig. 7:8,9; 2017b: Fig. 2:70).

FAIENCE

Even though faience beads almost disappeared from Egypt in the late Roman period, they were still to be found in Nubia. Two small faience beads are blue [Fig. 8:11] or yellow-glazed [Fig. 1:15]. A long tubular bead has a very porous core and partly washed glaze [Fig. 7:23]. It belongs to one of the most common bead types found in Nubia between the Fourth and Sixth Cataracts and dated from the late Meroitic to the post-Meroitic periods (e.g., Then-Obluska 2014: Pl. 2; 2016b: Fig. 1).

One green-glazed faience amulet is a schematic representation of Bes [Fig. 10:6]. Its appearance in the late Roman trash at Shenshef is not a surprise. Napatan- and Meroitic/Roman-dated Bes amulets have been found reused at late Roman sites in Egypt and at post-Meroitic ones in Nubia (Then-Obluska 2017b and references).

GLASS

Glass material dominates the bead and pendant assemblage at Shenshef (n=180). Glass bead bodies were made using a variety of techniques (drawing, winding, coiling, folding, or rod-piercing). Many beads are monochrome or additionally decorated

with trails or stripes while others are made of mosaic glass or metal-in-glass.

MANDREL-WOUND GLASS BEADS
Single- and multiple-coiled blue ring beads are rather large in size, measuring 6 mm to almost 9 mm in diameter [Figs 2:15; 5:9]. Similar beads are present at the Blemmyan sites of Wadi Qitna, in the 4th century AD cemeteries (Then-Obluska 2016a: Fig. 6: P3039) and Bab Kalabsha (OIM E42035¹), as well as at the late Roman Red Sea ports of Berenike (Then-Obluska 2015: Fig. 5:7,9) and Marsa Nakari (Then-Obluska in press a: Fig. 3.8).

Other coiled beads are a translucent purple in color [Fig. 6:4,10] and similar specimens can be observed in the bead assemblage of the late Red Sea port of Marsa Nakari (Then-Obluska in press a: Fig. 3.5–6).

Some beads were granular and most probably shaped in molds [Figs 6:7; 8:2,13]. While in the Meroitic period granular beads were usually made of faience (Then-Obluska 2016c: 699, Fig. 4:7), the post-Meroitic specimens were made of glass (OIM E19950 Qustul, blue glass; SJE25/47:4² Serra East; SJE332/9:1 Ashkeit; 333/31:2 Faras).

One black bead body was decorated with a central white trail [Fig. 9:19], whereas a large fragment of what is most probably a mandrel-wound bead is characterized by a black body decorated with a green wavy trail [Fig. 1:3].

Two beads with deeply applied white trails were most probably made of wound glass [Figs 7:18; 9:11].

ROD-PIERCED GLASS BEADS

A large teardrop-shaped pendant in opaque red may have had a rod-pierced perforation that is now broken [Fig. 4:5]. While glass and stone teardrop pendants are well known from Meroitic assemblages (e.g., Then-Obluska 2016c), this large roughly shaped specimen belongs to a red-glass type known from other post-Meroitic sites (e.g., MAN 1980/95/572³ Nag el-Arab; OIM E20209J Qustul, Q 84-4).

A few beads made of rod-pierced mosaic cane sections with so-called flower motifs were recorded. A pattern with radial “petals” in yellow and green emanating from a yellow center within a red ring was shaped into two globular beads [Fig. 6:5,6]. A fragment of a conical bead was made most probably with similar mosaic glass [Fig. 4:4]. A similar pattern, but in tabular shape, was found at the post-Meroitic Lower Nubian sites of Wadi Qitna (Then-Obluska 2016a: Fig. 3: P3027d), Qustul (Williams 1991b: 143 and 300c; about AD 370/380–410), Serra East (Then-Obluska in press b: Fig. 7), and Ballaña (Williams 1991a: 235, Fig. 48h). In the latter instance, although published as Meroitic, the beads relate to the post-Meroitic reuse of the grave (Williams 1991b: 401). Egyptian parallels include specimens from the late Roman sites at Bagawat in Kharga Oasis (Metropolitan

¹ Oriental Institute Museum University of Chicago (OIM), personal observation.

² Scandinavian Joint Expedition (SJE) assemblage, stored in the Museum of Archaeology, University of Stavanger, personal observation.

³ Museo Arqueológico Nacional (MAN), Madrid, personal observation.

Museum of Art, Accession No. 31.8.6, 4th–7th centuries AD), Gurob in the Fayum (Petrie Museum, UC58113, late Roman), and the port of Berenike (Then-Obluska 2015: Fig. 5:37, 4th to 6th centuries AD). Similar yellow and green beads, with red centers, come from the late Meroitic contexts at Karanog in Nubia (Woolley and Randall-MacIver 1910: Pl. 40:7906). The Shenshef assemblage provides similar examples of the mosaic motif, but with blue, instead of green “petals” [Fig. 2:6].

A mosaic-cane section with purple and white radial stripes atop a red-on-yellow layer was rod-pierced and shaped into a tabular bead [Fig. 5:11]. A similar motif but with red-on-white centers can be observed in a tabular bead from late Berenike (Then-Obluska 2015: Fig. 5:38) and a globular one from Wadi Qitna (Then-Obluska 2016a: Fig. 7: P3044b).

Pear-shaped ‘date beads’ are characterized by a green or striped body with a yellow stripe added at the larger end. These beads, either with a green body and yellow stripe [Figs 5:1; 8:18] or with a striped yellow and purple body with a yellow stripe [Fig. 6:1], were found at Shenshef. Made with a variety of techniques, these ‘date beads’ were common finds in Egypt and Nubia, but they seldom occurred elsewhere (e.g., Lankton 2003: 58; Then-Obluska 2015, Berenike; Kucharczyk 2011: 66, Fig. 8:9, folded ‘date bead’ from Alexandria, layer dated to the 2nd–3rd century AD; Francis 2002b: 15, Fig. 1; Arveiller-Dulong and Nenna 2011: 176; Spaer 2001: 102, 111–112, Cat. 160a–c, 161, early 2nd century AD; Winter 2013: 19, Fig. 3:2 for late Roman and Byzantine period examples).

A biconical bead is made of yellow and green striped mosaic glass [Fig. 8:4]. Bicone striped beads, also in other colors, were very common in Roman Egypt (Arveiller-Dulong and Nenna 2011: 176).

A white-banded red bead is made of a mosaic strip most probably rod-pierced and folded around a rod [Fig. 9:17], resulting in a seam that is discernible next to the larger perforation (Then-Obluska 2015: Fig. 5:33, late Berenike).

MANDREL-FORMED GLASS BEADS

A fragment of a long cylinder bead was made by folding a banded mosaic strip consisting of a blue central band bordered at both ends by red, white, and yellow [Fig. 2:12]. Another long bead seems to be made of double-folded mosaic cane sections [Fig. 5:10]. The banded mosaic pattern is white-blue-white on a red background.

A large conical, slightly faceted bead was made of mosaic glass in black and white [Fig. 3:1]. No parallel has yet been found. Two long dark blue beads were slightly faceted [Figs 3:9; 9:16].

DRAWN AND SEGMENTED GLASS BEADS

The beads from Shenshef also included drawn glass tubes that were most probably segmented in molds and broken up into single-segment and double-segment beads (n=46). Such molds were found in Alexandria in both early Roman and late Roman/early Byzantine contexts (Kucharczyk 2011; Rodziewicz 1984). Colors of the segmented beads include a monochrome opaque red (n=3), translucent dark blue (n=22), translucent

and opaque green and turquoise (n=15), opaque yellow (n=2), white (n=1), translucent purple (n=1), and black (n=2) [Figs 1:1,16,20; 2:1,2,10,11,14; 3:8; 4:1,8,9,12,13,16–25,26–29; 5:7,12,15; 6:2,9; 7:1,2,5,16,17; 8:8,10,15; 9:7,13,15; 10:3,4]. Monochrome segmented beads in green, blue and red are the most common glass objects at post-Meroitic Nubian sites (Then-Obluska in press b).

One bead is made of two glass layers with gold foil in between [Fig. 5:2]. Four single-segment drawn glass beads are made of two transparent glass layers with or without silver foil between them [Figs 4:3; 7:19,22; 9:8].

DRAWN AND ROUNDED GLASS BEADS

Drawn glass tubes could be cut into sections and then heat-rounded in some container. These types are associated with the Indo-Pacific bead tradition (Francis 2002a). Drawn and rounded beads comprise one-third of the Shenshef assemblage (n=69) [Figs 1:2,4–12,13; 2:1–29; 3:4,5,10–16; 4:6,10,11,14,15,30–33; 5:6,8; 7:3,4,10–13; 8:3,5,7,14,16,17,19–21; 9:3,6,10,12,14,20–24; 10:1,2]. They measure from 1.5 to 7.0 mm in diameter. Green (n=29) and blue-green (n=15) beads

dominate this type, but yellow (n=8), orange (n=7), red (n=6), white (n=2), and black (n=1) are also present in smaller quantities. Additionally, one black bead is decorated with stripes in white and red [Fig. 1:14].

Drawn and rounded beads in similar colors have been associated with a Sri Lankan origin (Francis 2000; 2002a). Monochrome drawn and rounded beads were macroscopically analyzed at the Red Sea ports of Quseir, Berenike, and Marsa Nakari and found to stem from a Sri Lankan location (Francis 2000; Then-Obluska 2015: Fig. 4:31–41; in press a). Furthermore, South Indian or Sri Lankan provenance for one yellow bead from Quseir has been confirmed by laboratory analysis (Then-Obluska and Dussubieux 2016). Interestingly, drawn and rounded beads appear at many post-Meroitic Nile Valley sites (Then-Obluska 2016a; 2016b; 2016d; in press b), and a study of the chemical composition of the specimens found in Lower Nubia has also indicated their South Indian/Sri Lankan provenance (Then-Obluska and Wagner 2017).

MODERN BEADS

Two beads in opaque red [Fig. 3:3] and light blue [Fig. 5:14] are modern intrusions.

Beads and pendants from Shenshef Trash No. 1, recorded by locus and PB number

1–3	–	BE97-SH.01/002/PB002	Glass
4–14	–	BE97-SH.01/004/PB004	Glass
15	–	BE97-SH.01/004/PB004	Faience
16	–	BE97-SH.01/004/PB004	Glass
17–19	–	BE97-SH.01/004/PB004	Ostrich eggshell
20–29	–	BE97-SH.01/005/PB005	Glass



Fig. 1. Beads and pendants from Shenshef Trash No. 1, recorded by locus and PB number (for a description, see opposite page)

Beads and pendants from Shenshef Trash No. 1 (continued), recorded by locus and PB number

1–2	–	BE97-SH.01/005/PB005	Glass
3	–	BE97-SH.01/005/PB005	Carnelian
4	–	BE97-SH.01/005/PB005	Glass
5	–	BE97-SH.01/005/PB005	Ostrich eggshell
6	–	BE97-SH.01/005/PB005	Glass
7–12	–	BE97-SH.01/006/PB006	Glass
13–15	–	BE97-SH.01/007/PB007	Glass
16	–	BE97-SH.01/007/PB007	Bone

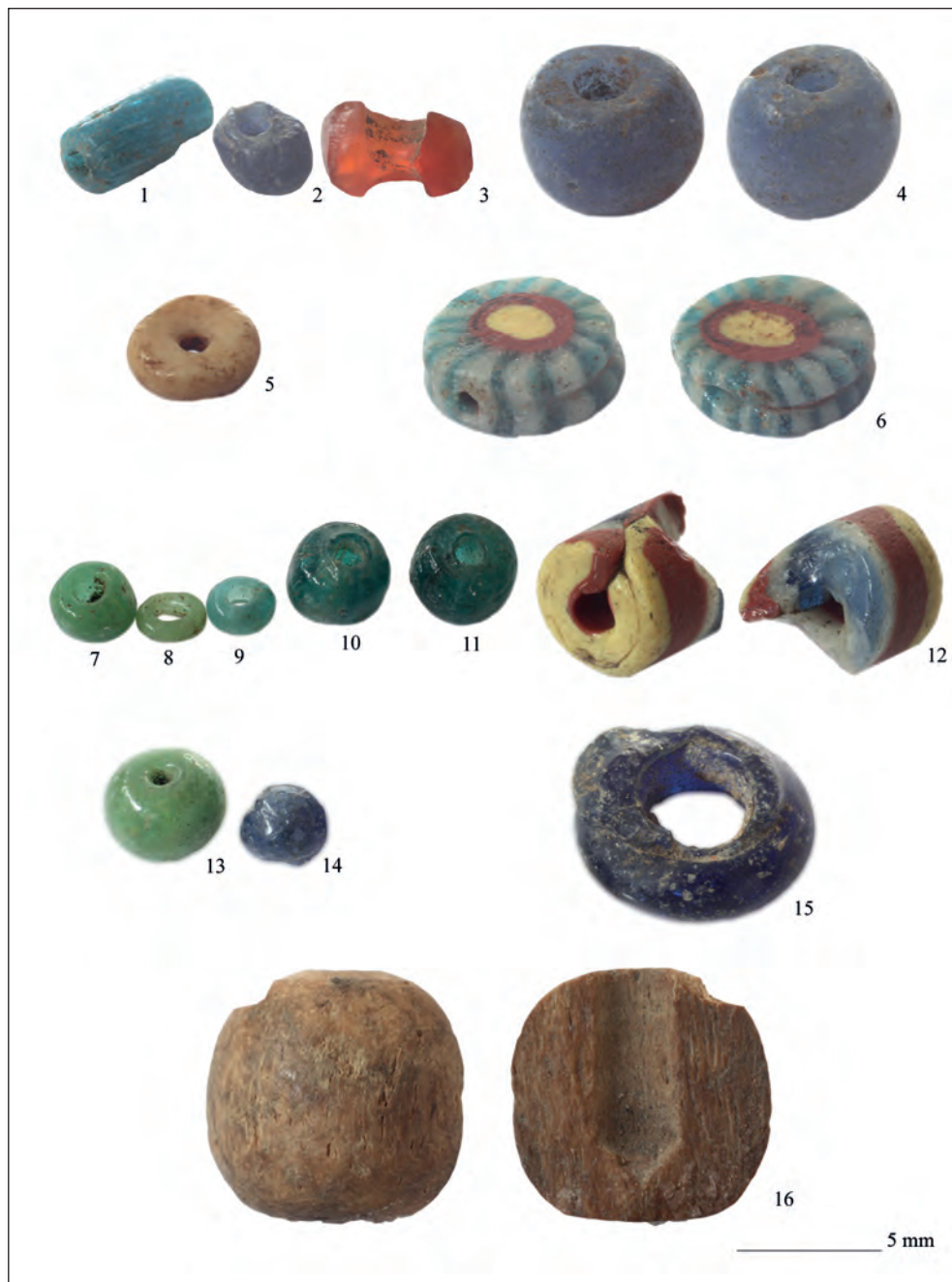


Fig. 2. Beads and pendants from Shenshef Trash No. 1, recorded by locus and PB number

Beads and pendants from Shenshef Trash No. 1 (continued), recorded by locus and PB number

1-7	-	BE97-SH.01/008/PB009	Glass
8-9	-	BE97-SH.01/012/PB012	Glass
10	-	BE97-SH.01/003/PB003	Glass
11-16	-	BE97-SH.01/baulk clean/PB008	Glass



Fig. 3. Beads and pendants from Shenshef Trash No. 1, recorded by locus and PB number

Beads and pendants from Shenshef Trash Nos 1 (continued) and 2, recorded by locus and PB number

1-6	-	BE97-SH.01/ baulk clean/PB008	Glass
7	-	BE97-SH.01/baulk clean/PB008	Ostrich eggshell
8-11	-	BE97-SH.02/001/PB001	Glass
12-34	-	BE97-SH.02/003/PB003	Glass



Fig. 4. Beads and pendants from Shenshef Trash Nos 1 and 2, recorded by locus and PB number

Beads and pendants from Shenshef Trash No. 2 (continued), recorded by locus and PB number

1	–	BE97-SH.02/003/PB003	Glass
2	–	BE97-SH.02/003/PB003	Gold-in-glass
3	–	BE97-SH.02/003/PB003	Glass
4	–	BE97-SH.02/003/PB003	Ostrich eggshell
5	–	BE97-SH.02/003/PB003	Mollusk shell
6–11	–	BE97-SH.02/004/PB005	Glass
12–13	–	BE97-SH.02/005/PB006	Glass
14–16	–	BE97-SH.02/006/PB007	Glass



Fig. 5. Beads and pendants from Shenshef Trash No. 2, recorded by locus and PB number

Beads and pendants from Shenshef Trash No. 3, recorded by locus and PB number

1-2	-	BE97-SH.03/001/PB001	Glass
3	-	BE97-SH.03/001/PB001	Wood
4-10	-	BE97-SH.03/002/PB002	Glass
11	-	BE97-SH.03/002/PB002	Mollusk shell



Fig. 6. Beads and pendants from Shenshef Trash No. 3, recorded by locus and PB number

Beads and pendants from Shenshef Trash No. 3 (continued), recorded by locus and PB number

1–9	–	BE97-SH.03/002/PB002	Glass
10–19	–	BE97-SH.03/003/PB003	Glass
20	–	BE97-SH.03/003/PB003	Mollusk shell
21–22	–	BE97-SH.03/003/PB003	Glass
23	–	BE97-SH.03/003/PB003	Faience

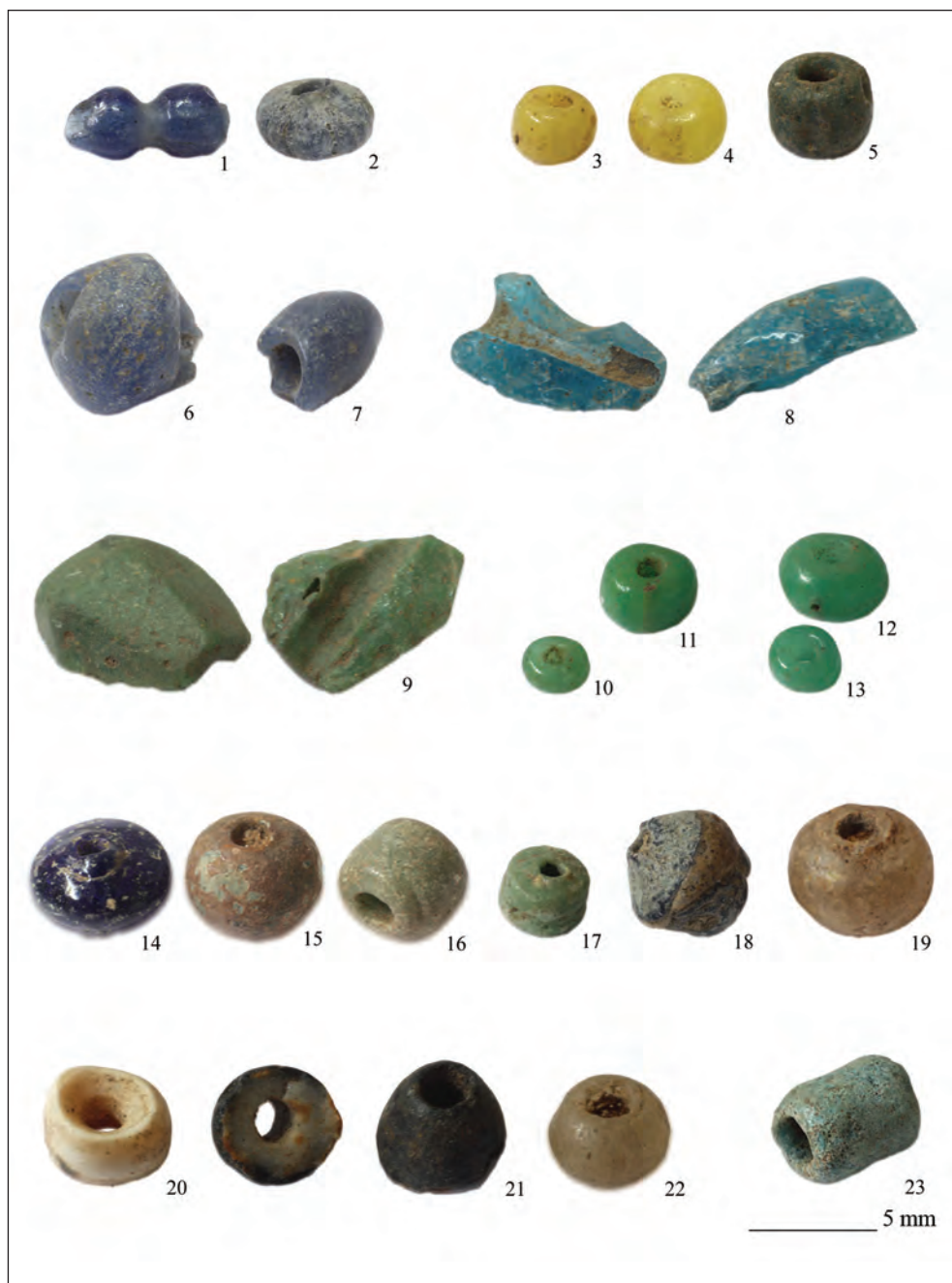


Fig. 7. Beads and pendants from Shenshef Trash No. 3, recorded by locus and PB number

Beads and pendants from Shenshef Trash Nos 3 (continued) and 4, recorded by locus and PB number

1	– BE97-SH.03/003/PB003	Glass
2–5	– BE97-SH.04/001/PB001	Glass
6	– BE97-SH.04/001/PB001	Carnelian
7	– BE97-SH.04/001/PB001	Glass
8	– BE97-SH.04/002/PB002	Glass
9	– BE97-SH.04/002/PB002	Ostrich eggshell
10	– BE97-SH.04/004/PB004	Glass
11	– BE97-SH.04/005/PB005	Faience
12	– BE97-SH.04/005/PB005	Glass
13	– BE97-SH.04/006/PB006	Glass
14–15	– BE97-SH.04/006/PB006	Glass
16–18	– BE97-SH.04/006/PB008	Glass
19–22	– BE97-SH.04/007/PB009	Glass



Fig. 8. Beads and pendants from Shenshef Trash Nos 3 and 4, recorded by locus and PB number

Beads and pendants from Shenshef Trash Nos 4 (continued) to 6, recorded by locus and PB number

1	–	BE97-SH.04/010/PB010	Glass
2	–	BE97-SH.04/010/PB010	Ostrich eggshell
3	–	BE97-SH.04/010/PB010	Glass
4–8	–	BE97-SH.05/001/PB001	Glass
9–10	–	BE97-SH.05/001/PB002	Glass
11–13	–	BE97-SH.05/001/PB002	Glass
14–17	–	BE97-SH.05/002/PB003	Glass
18	–	BE97-SH.05/002/PB003	Mollusk shell
19–21	–	BE97-SH.05/003/PB004	Glass
22–23	–	BE97-SH.05/004/PB005	Glass
24	–	BE97-SH.06/001/PB001	Glass



Fig. 9. Beads and pendants from Shenshef Trash Nos 4 to 6, recorded by locus and PB number

Beads and pendants from Shenshef Trash No. 7, recorded by locus and PB number

- | | | | |
|-----|---|----------------------|---------|
| 1 | – | BE97-SH.07/001/PB001 | Glass |
| 2–5 | – | BE97-SH.07/002/PB003 | Glass |
| 6 | – | BE97-SH.07/002/PB003 | Faience |
| 7 | – | BE97-SH.07/003/PB004 | Glass |



Fig. 10. Beads and pendants from Shenshef Trash No. 7, recorded by locus and PB number

SUMMARY AND CONCLUSIONS

Trash middens at the late antique settlement of Shenshef in the Eastern Desert, about 23 km from the Roman Red Sea port of Berenike, provided a rich bead assemblage that is dominated by glass. While 70 drawn and rounded glass specimens are most probably of South Indian or Sri Lankan provenance, the remaining glass beads can be associated with the Egyptian and Eastern Mediterranean tradition. They all find parallels at contemporary sites in the Nubian Nile Valley and at Red Sea coastal sites. A similar domination of glass beads, with a comparable share of drawn and rounded ones, can be observed only at the 4th to 6th century AD Red Sea port sites of Berenike and Marsa Nakari (e.g., Then-Obluska 2015; 2017a; in press a). However, the green, blue-green and orange colors of the drawn and rounded beads at Shenshef are found not only at the Red Sea port sites, but also at the Lower Nubian Nile Valley sites, dated to between the 4th and 6th century AD (Then-Obluska 2016a; in press b). Furthermore, such drawn beads with rounded ends accompanied the typical early Makurian beads at the el-Zuma and el-Detti tumuli cemeteries, which are dated to the second half of the 5th and first half of the 6th century AD (Then-Obluska 2016b; 2016d; 2017c).

A few beads from Shenshef represented organic materials (wood, mollusk shells, ostrich eggshell, bone), stone, not to mention faience. Interestingly, many of them have also been documented in the Nubian Nile Valley. Some wooden beads were recorded in the Blemmyan and royal Nobadian tombs, where they were tentatively associated with the beadwork of the Eastern Desert dwellers (Then-

Obluska in press b). Ostrich eggshell beads dominated the post-Meroitic bead assemblages in Lower Nubia (Then-Obluska 2014: Pl. 3; 2016), but some specimens are also recorded at the late Red Sea ports of Berenike and Marsa Nakari. The few faience objects from Shenshef belong to a Nubian bead repertoire. A reused Napatan or early Roman/Meroitic pendant in the form of the god Bes, a type usually made of faience or glazed bone, is one of the most widely recognized amulets at post-Meroitic and late Roman sites. Many of the Shenshef bead types were also found in the Nubian Nile Valley and, in particular, in graves from the royal Nobadian and Blemmyan cemeteries. Together with the glass parallels, their presence at Shenshef would indicate a strong connection of the site with the Red Sea ports and, to some extent, with post-Meroitic Nubia.

Other archaeological artifacts linking the Red Sea ports, the Eastern Desert (Shenshef included) and the Nubian Nile Valley comprise sherds of handmade pottery called Eastern Desert Ware (see above). They were associated with a population from the Eastern Desert and Lower Nubia.

The archaeological evidence for long-distance imports is abundant in general lists created for both the Meroitic and post-Meroitic periods in Nubia (e.g., Török 1988; 1989); they, however, do not mention Asian finds. Still, in tracing the overseas trade contacts, black pepper of Indian origin could be of high significance. Pepper was uncovered both in Berenike and at Wadi Shenshef (Cappers 1998; 1999; 2006). A find of one Indian peppercorn in the Nile Valley has been confirmed from

Qasr Ibrim in Nubia (Cappers 2006: 117). Furthermore, a Coptic letter from Moses to the phylarchos of Nobadia, Tantani, dated to about AD 450 and found at Qasr Ibrim, suggests a transport of pepper to Philae (Egypt) from Nubia. This stands in contrast to the expected direct transport from one of the Roman Red Sea ports to Philae (Obluski 2014). This letter may be an indication that Nobadia was also involved in trading Asian goods into the Nile Valley.

Although proof of Nubian contact with Asia is scarce, the drawn and rounded glass bead imports in Nubia provide the main evidence for this link in the post-Meroitic period. This is supported by other finds of imported beads from the Asian region, namely the 'etched' carnelian beads found in the Fourth Cataract region (Then-

-Obluska 2013; in press b). The presence of South Asian glass beads in Nubia may derive from contacts with the Egyptian Red Sea ports via the middlemen living at Shenshef, thus making the site a significant link in the overseas trade.

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The utility ware assemblage from the hermitage in tomb MMA 1152 in West Thebes

Selected issues, provisional characteristics, research methodology*

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Abstract: The text concerns a pottery assemblage from one isolated site (a hermitage installed inside a Pharaonic tomb) in Sheikh Abd el-Gurna, inhabited by monks from the end of the 5th to the beginning of the 8th century. The specific nature of the place, that is, its isolation, rocky terrain and lack of clear stratigraphy, called for different research and documentation methods compared to those used on extensive settlement sites. Less attention was paid to taxonomic research in favor of observations regarding the function and importance of vessels in the everyday life of the monks living in the hermitage, a reconstruction of their dietary habits and the nature of the work that they did.

Keywords: pottery, utility ware, transport containers, vessel usage, monasticism, hermitage, Sheikh Abd el-Gurna

Pottery dominates the bulk finds from the hermitage that was installed inside the Pharaonic tomb MMA 1152, and there can be no question that in this case, save for the evident finds of Pharaonic date, all of the artifacts coming from the area of the tomb can be associated with the latest

users, that is, the monks. The location of the tomb, one of two virtually identical Middle Kingdom tombs (the other one being MMA 1151) that the monks adapted for their purposes, is of key importance. Both tombs were cut into the highest parts of a rocky hill rising above the rock massif,¹

* This study is presented posthumously, the Author having died suddenly while preparing the contribution. However, the synthetic approach to the material the Author was studying in recent years, from his excavation project in the hermitage in Sheikh Abd el-Gurna, prompted the editors to undertake the task of bringing the paper to print. The Author's original text has been respected, limiting the editing to essentials and taking into account only the most obvious of the reviewers' comments. We would like to thank the Author's family for help in completing the print-quality illustrations, which the Author had selected.

¹ For a detailed description of the two tombs, see Górecki 2004; 2005; 2007; 2010; 2011; Górecki and Szpakowska 2013. A third and much smaller tomb lies a few dozen meters to the south of MMA 1152. It may be of Middle Kingdom date (P. Chudzik, personal communication) and could have belonged to a lower-rank official subordinate to the noble buried in MMA 1152. For the most detailed plan of this tomb-turned-hermitage, see Wipszycka 2009: Fig. 48.

and they were off the beaten track, creating little opportunity for obtrusive (from our modern point of view) finds to enter the assemblage. Hence anything found inside the hermitage was used one way or another by the monks residing in this unit.² With the exception of some objects left in the past one hundred years by modern tourists and archaeologists, nothing at the site was brought there intentionally or unintentionally by later travelers. There is nothing to cloud the issue of the local stratigraphy and its proper interpretation.

A “pure” archaeological context of this kind is rare in the Theban necropolis with researchers usually having to distinguish between artifacts used at a given site versus ones dropped there by chance. Lower-lying tombs changed into hermitages may also be contaminated by the archaeological dumps from tombs/hermitages at higher elevations.³ In the case of the hermitage inside tomb MMA 1152, there is no shadow of a doubt that each and every ceramic vessel found there belonged to the resident monks. This has important implications for the pottery data collection program and the documentation methodology that was applied. The choice of research methods was driven by this archaeologically significant observation. The goal was to collect all the pottery material from the area within reason in order to be able to date with the greatest possible precision the monastic unit as a whole and perhaps also individual phases. Other issues that were apparent for research on the nature of the assemblage included a reconstruction of the monks’

dietary habits, meal preparation practices, the nature of the meals and the quantities of food involved.

MOST IMPORTANT AND EVIDENT POTTERY GROUPS

Surface pottery: The first group collected in 2004 and 2005 comprised vessels found on the slope. Separate collection points, seven in all, were formed on the ground below the courtyard terrace. In the case of

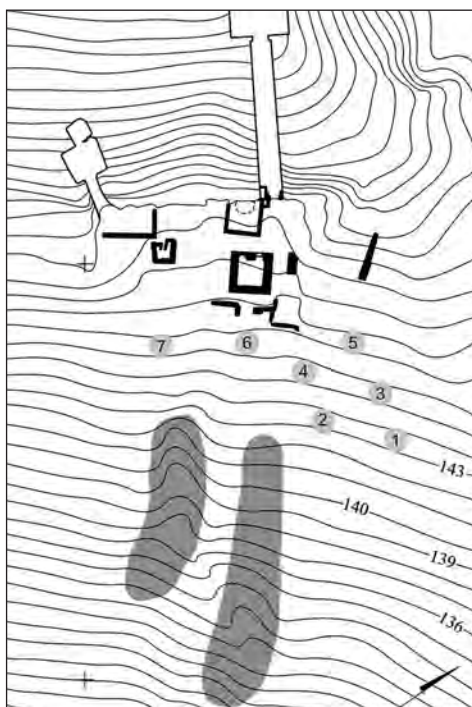


Fig. 1. Collection points below the courtyard terrace (PCMA Sheikh Abd el-Gurna Project/drawing M. Trzeciecki and J. Górecka)

² Including adapted objects coming from the pre-Christian furnishings of tomb MMA 1152 and brought to the hermitage by monks scavenging for goods in the close vicinity, see Górecki 2014: 19–40.

³ The terracing of the tombs in Sheikh Abd el-Gurna is the reason why lower-lying rows of tombs were buried under the debris, including missed or unwanted artifacts, generated by early archaeologists and before that by robbers plundering the tombs located higher up on the slope.

each point potsherds were collected from a radius of a few meters [Fig. 1]. The pottery was mainly domestic in kind and one of the largest groups in this assemblage was formed by characteristic light-colored late containers/amphorae from Tunisia. These were initially misinterpreted as being “early Islamic” of uncertain chronology.

Stratified pottery: Secure contexts/loci were determined once a provisional stratigraphy of the site was in place following the first seasons of excavations. These contexts

varied in size and were distinguished as separate deposits based on distinctive features such as location, structure and color of the deposits [Fig. 2]. The extent of these loci was verified in the course of archaeological investigation and their boundaries were much less regular than in this schematic illustration.

Sealed deposits were the most important, e.g., leveling layers under the floor of tower B (loci 86–93),⁴ fill inside the tower (locus 5), pottery leveling the upper

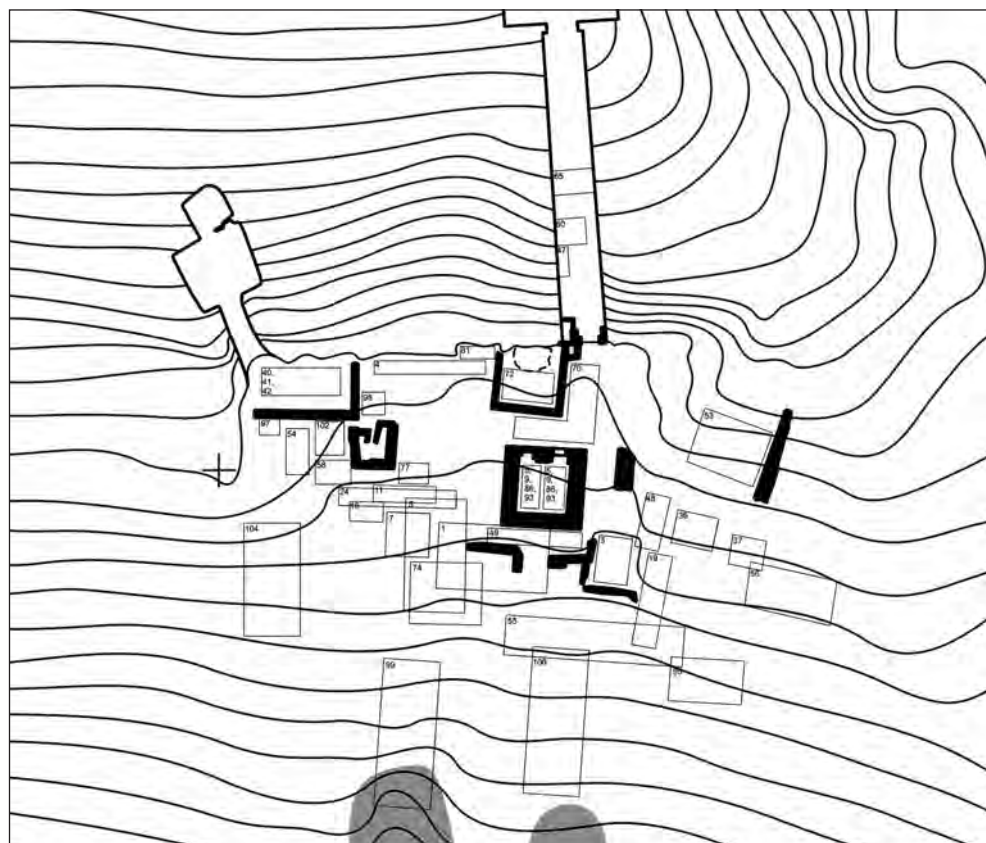


Fig. 2. Secure contexts/loci distinguished in the hermitage (PCMA Sheikh Abd el-Gurna Project/ drawing M. Trzeciecki and J. Górecka)

⁴ Letter identification according to the plan in Wipszycka 2009: Fig. 48; for a different plan, see Górecki 2011: Fig. 4.

sections of the rock slope to construct the lowest of the steps leading to the hermitage alongside the north wall of the tower (locus 3), an assemblage of pottery from the layer (locus 108) above the rock kitchen units (so-called kitchen D), pottery from bank F in front of the small tomb (loci 40–46), pottery from a subterranean chamber (cache for models?) in corridor A of the tomb (locus 60).⁵ Another group of loci was made up of extensive deposits without strictly determined boundaries and a depositional history that was more extended in time: pottery from the hermitage courtyard (H) (locus 70), from the rubbish dump below the tower (B, loci 86–93), steps (E) and unit G (loci 1, 7, 19, 24, 49, 55), pottery from the North Wadi (locus 100) and the South Wadi (locus 99) (Górecki 2013: Fig. 1).⁶

The collection and identification of particular pottery groups was governed by a numerical coding system, a separate number from 1 to 108 being assigned to each distinguished group. Sherds were first labeled with these identification numbers and then assigned to different formal groups. The labels were useful in successive seasons when reconstructing vessels from the same or adjoining deposits. Once this stage was over, it was possible to compare the contents of the loci. The presence of the same kind of vessels in different contexts pointed to their chronological similarity, thus determining the contemporaneity or lack thereof for selected deposits and parts of hermitage architecture. A distribution analysis of the

deposits also gave an idea of how dispersed the vessels were throughout the hermitage.

FINDSPOTS OF THE POTTERY

Pottery was found in the following findspots:

a) Rubbish dump (east of B, E, G; loci 1, 6, 13–15, 20, 23, 26) occupying a large area, 15 m by 40 m, on the rock slope in front of the hermitage, from 0.30 m to 0.60 m thick.⁷ It yielded all kinds of vessel types, the prevalent forms encompassing LRA 7 and late Roman tableware. Sherds belonging to African containers were found in the topmost layers of this context.

b) North and south wadis: different vessel types, represented mostly by large sherds, which had either rolled downslope directly or had been washed out by the rains from the rubbish dump and moved downhill.

c) “Rock kitchen” (D, locus 108) consisting of three small cooking installations in rock crevices a few meters to the north of the tomb entrance and filled with ceramics from the last phase of the occupation of the hermitage, coming from unidentified, perhaps temporary cooking sites. The deposits contained primarily cooking and domestic wares, and African transport containers/amphorae. They were mixed with small rock debris and large amounts of ashes.

d) Tower (B). Working in MMA 1151, Herbert Winlock noted a preserved vaulted ceiling inside the tower, over the ground-floor room (Winlock and Crum 1926: 10–11). Bins of dried and baked

⁵ Suggested by Patryk Chudzik (2013: 194–195, Fig. 1, section A-A). The entrance to this niche is illustrated in Górecki 2010: 301–303, Fig. 5.

⁶ Practically 100% of the pottery was found in the area occupied by the hermitage (courtyard, rubbish dump, wadi).

⁷ The biggest concentration of finds was recorded opposite the entrance to the hermitage. Rubbish accumulated in this area until the construction of tower B, which is located in part on the rubbish layers; the clay floor of the tower covered part of the dump.

mud evidently filled this room⁸ and were destroyed when the ceiling fell sometime in the 1930s. The remains of these containers constituted most of the finds from the tower fill, mixed in with fragments of baskets and mats.

e) Cache for models (locus 60), which may have been used by the monks as a convenient underground store, perhaps also as a refugium, meaning a place of isolation for meditation. Not many vessels were discovered in the fill of this unit, but one should note the presence of five well preserved water containers (bottles and *qullae* with filter necks).

f) Niche (funerary?) in corridor A (not marked on the plan), adapted as a small store closed probably with a wooden door. This was the only place in the hermitage to yield a set of 20 to 30 mud-stoppers, attesting to the storage of wine in amphorae in this place [Fig. 3].



Fig. 3. Mud stopper (PCMA Sheikh Abd el-Gurna Project/photo T. Górecki)

DOCUMENTATION STRATEGY AND METHODS

Most of the vessels preserved either completely or to a large extent were drawn. The most typical vessels for given types were also photographed. The Munsell color scale was used mainly in the case of containers identified as transport vessels for olive oil, coming most probably from the territory of modern-day Tunisia. This ensured credible comparison with material similarly documented from other sites, permitting easier identification of imported vessels, assuming of course that this method of description was used at the Tunisian or Libyan sites. The Munsell scale was not used for describing vessels made of Nile silt or the so-called Aswan (Upper Egyptian) ware, due to the fairly typical surface color of both groups, sufficiently well researched and described in other publications (Gempeler 1992: 19–23).

Color determinations for small sherds is a simple procedure, as all ceramologists know. It is not so for many whole vessels, the surface color of which may be different in different parts due mainly to the vessel's place inside the kiln and/or direct contact in the furnace with other vessels; the Munsell scale in these cases notes a range of colors. To test this idea, a Munsell color identification of all individual fragments before restoration of the vessel was made, resulting in variable color identification.

For the same reason, hardness on the Mohs' scale was not applied, the hardness of baked silt not being that different for all products of Nile silt. In this wide group, a similar hardness is shown for all the plates, which is different from that for cooking pots, and even more different

⁸ Identical mud grain-bins, decorated in much the same way, were discovered in the Monastery of Cyriacus (Winlock and Crum 1926: Fig. 11).

(the softest) in the case of household bowls and storage jars, which were frequently made of poorly baked or often even unfired clay. The hardness of different ceramic types from the large Upper Egyptian (Aswan) product group is also very similar.

GENERAL CHARACTERISTIC OF EGYPTIAN FABRICS

The alluvial fabric is not unlike that from other sites in the region (Gurna, Edfu, Tod, Shenhur, Esna, etc.). All the domestic, cooking and storage vessels (found inside tomb MMA 1152) were made of Nile silt and coated with a red-brown slip. The quality of the fabric (degree of cleaning and the kind of temper used) is directly dependent on the function of the end product and the intended aesthetic effect. Tableware has minimal amounts of thick mineral temper and small quantities of plant temper, among other reasons because of the desire to achieve a smooth surface. Water containers needed to have enough plant temper to make them porous in order to ensure good cooling properties.

Vessels were all painted before firing using paint of either cream, red or black colors. Different combinations of geometric motifs were used, mainly zigzags, waves, dotted arcades with the dots on the lines or in the loops. No figural motifs were recorded on the pottery from the hermitage.

Not all examples of a given form were made of the same fabric. *Saqiyah* pots (for drawing water) were produced of both silt (this being more often the case) and marl clay. Tableware is represented most commonly by products of Aswan clay (both plates and bottles); a significantly smaller group was made of Nile silt. The reverse is true with regard to amphorae

for transporting wine, which were made mainly of Nile silt, both the typical LRA 7 and the so-called Pseudo-Aswan vessels imitating Aswan amphorae (Bavay 2007: 395–397, Fig. 10). Real Aswan amphorae are clearly in the minority. As for cooking pots, Nile silt is the sole fabric used for their production. The same is true of all kinds of basins, bottles, *qullae*, trays, ladles, funnels and most of the pottery found in the hermitage.

SELECTED ISSUES

Selected issues discussed here include user–vessel relations, vessel usage, division by function, identification of function based on formal criteria and use traces, and finally vessel capacity and weight. These issues have largely given direction to the research, and relate to social archaeology and ethnoarchaeology. A descriptive (typological) classification seemed insufficient to the present author when considering the material from the hermitage. It was deemed important to determine not only distinctive features, including morphological differences, but also changes in vessel function over time, especially with regard to the possibility of a second life in a different, later context. In terms of a second life, one needs to consider reuse of vessels by other residents of the hermitage at a later time, as well as reuse by adaptation to a new purpose. Experimental archaeology and ethnography may be quite helpful in the interpretation of pottery artifacts from the hermitage.

A “biographical” approach (that is, describing the whole lifespan of the pottery) is important in the case of some of the finds, and more weight is put on a reconstruction of user–vessel relations than a perfect quantification of the ceramic material.

Hence the present tabular presentation [Table 1], which is still in need of improvement and not final, is more a functional than a formal division, despite the temptation to put them on par. Vessels like plates, cups, jars and bottles, that is, forms directly associated with the “table” in the sense of

food consumption, evidently need to be included in the tableware group. Yet they are treated separately here, the author having chosen to consider them as a separate group because of the formal criterion.

Plates with their considerable repertoire of forms are definitely the largest

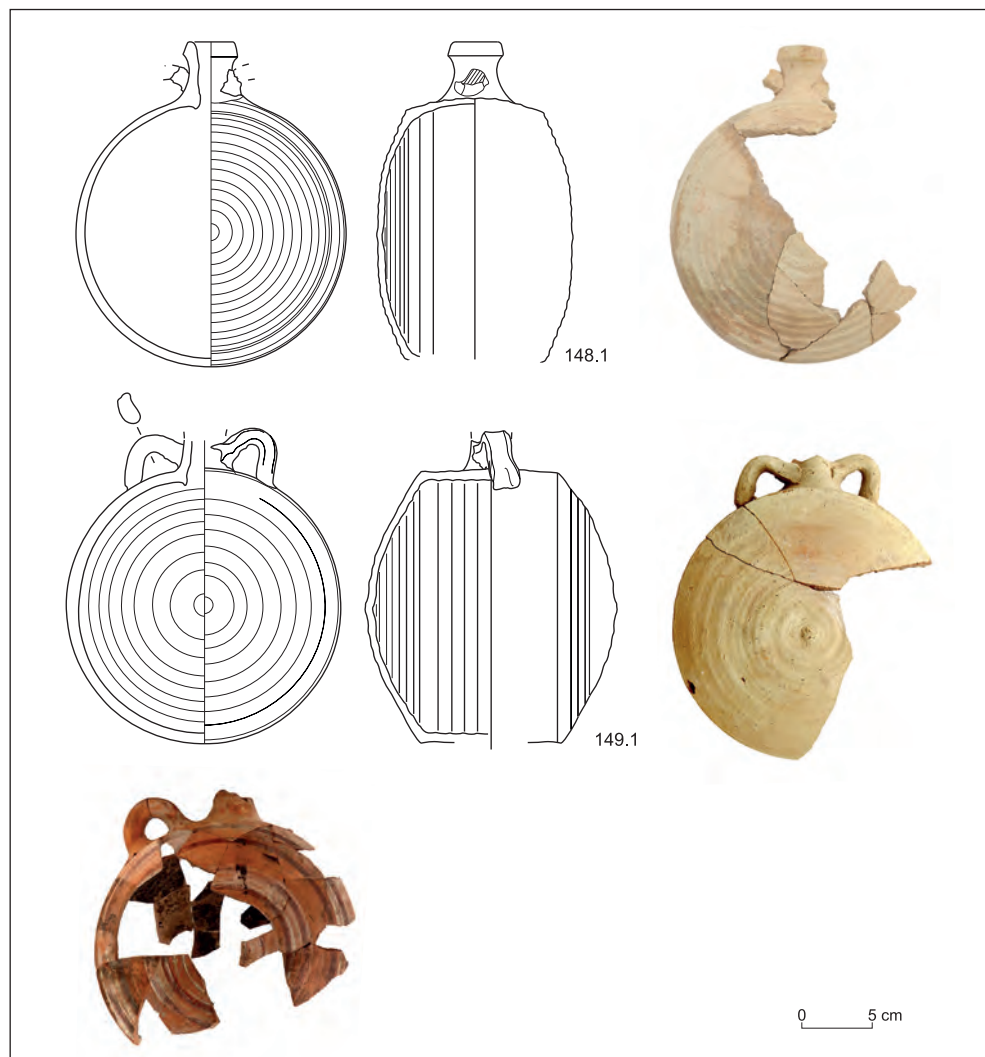


Fig. 4. Liquid storage vessels: bottles
(PCMA Sheikh Abd el-Gurna Project/photos D. Dąbkowski; drawing T. Górecki and J. Górecka)

group among the tableware. Cups and beakers constitute a separate group, although the wide small bowls could have also been used for drinking. The group of vessels for holding water (or other beverages) includes at this stage of the study vessels for the storage of liquids (bottles, including table bottles), their distribution (pots, jugs, *qullae*) and transport (flasks) (Górecki 2013: Fig. 9) [Fig. 4]. Thus, a simplified functional criterion was applied here, grouping together vessels of different shapes, but used for the same purpose. In turn, some of the carinated bowls (always furnished with a base) that look like tablewares might well be tableware still considering the diameter, but those of larger size could be vessels of household use. All the other bowls, for the most part plain or decorated very modestly, were assigned provisionally to a single group of vessels intended for mixing and storing food and for other domestic purposes.

Two groups of cooking pots were distinguished within the functional priority category of cooking, because of significant formal differences. One group was formed of globular cooking-pots (closed forms), the other of open vessels of different heights and with slightly flaring walls (pans). Cooking and heating food is a shared function for both groups, but they differ clearly in how the intended effect was achieved. Cooking in a covered vessel with a rim diameter lesser than the maximum diameter aims at retaining the moistness of meals, whereas cooking in a wide and open pan has the opposite effect, namely allowing the food to lose its liquid content (frying, for instance). The same dual nature is true of the convex lids. Most of them do not have apertures for letting steam out, because their purpose was to seal the

vessel tightly. A few have one opening in the knob to permit very limited escape of steam, some others have several holes all over the surface for intensive evaporation. The last items in the tableware are “silos” and other miscellaneous objects: stands, incense burners, lamps etc., that cannot be classified as vessels belonging to one category.

It is an interesting exercise to reconstruct the usage of three different vessels intended for one specific purpose: straining wine. A shallow strainer has the same diameter as a funnel, the lower end of

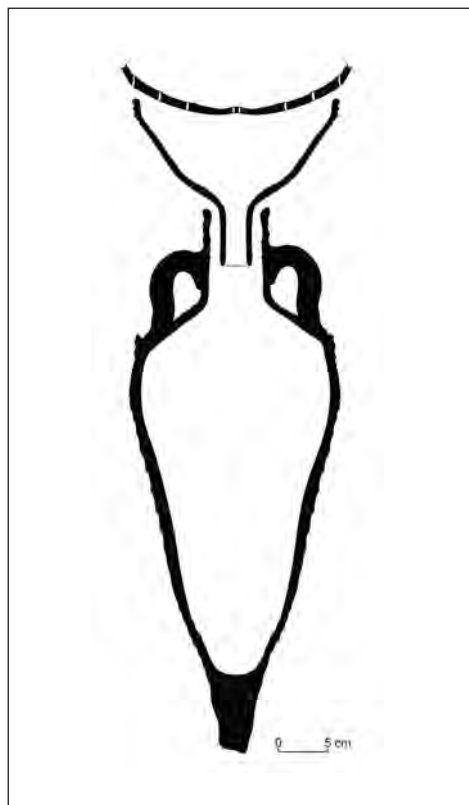


Fig. 5. Reconstruction of strainer usage (PCMA Sheikh Abd el-Gurna Project/Drawing T. Górecki and J. Górecka)



Fig. 6. Vessels adapted for other use: top left, a closed form adapted into a vessel; top right, small bowl turned into an open oil lamp; center, large pottery sherds used for shoveling rubbish; bottom, two examples of small bases reused as lids for storage vessels (PCMA Sheikh Abd el-Gurna Project/photos D. Dąbkowski and T. Górecki, photo processing J. Górecka; drawing T. Górecki and J. Górecka)

which fits an amphora neck (much smaller funnels were used for pouring liquids into *qullae* and jars).⁹ It is easy to imagine the strainer being placed on the funnel, which was inserted into an amphora neck [Fig. 5], and then filling an amphora. Perhaps wine was also poured out in this way.

This equipment looks much more suitable for straining wine when filling or refilling an amphora. Otherwise how would this apparatus of three separate vessels be held together when pouring wine? A full amphora is heavy and manipulating an amphora while trying to hold two different vessels at its neck would be extremely difficult, even with two people doing it.

Determining vessel function is obfuscated to some degree by the practice of remodeling vessels to serve other purposes (Peña 2007: 61–208). Closed forms (large bottles or jars, for example) were adapted most often into vessels of different size and height [Fig. 6 top left]. The damaged or unwanted part, such as the upper half of a pot, would be struck off and the sharp break polished smooth. The effect was a vessel that could then be used as a bowl. Small bottles were thus changed into bowl-like cups or open oil lamps [Fig. 6 top right]. Large sherds from shallow vessels/plates could have served for mixing mortar or plaster, for shoveling rock debris or for dumping rubbish. Two sherds (from a plate produced of Aswan fabric and from a bowl made of Nile silt) had sharp edges at the break where they were held by the user, while all the other edges were blunted and smoothed from dragging rubbish, for example, over a rock surface [Fig. 6 center].

Another category to consider are the ring bases of various vessels, which were usually preserved intact when a vessel was shattered. The body walls around the ring base were struck off, sometimes regularly and sometimes summarily. Small bases [Fig. 6 bottom] were used as lids to cover the mouths of certain water vessels and storage amphorae. Those with a diameter of no more than 7–8 cm evince this use. Once the lower parts had been cut away and the handles broken off, the upper part of amphorae turned upside down was used as a funnel. Necks of LRA 1 amphorae with an evenly broken lower edge served as stands for small vessels. Many vessels, especially containers for liquids, had a presumed second life without being modified in any way; containers emptied of their contents were reused by local communities for transporting water and as storage vessels. Hence the need for a different approach to this group. Research on the pottery material from the site involved standard studies (from the author's point of view): a) measuring capacity of containers/amphorae,¹⁰ used for transporting liquids (water, wine, olive oil) and estimating volume of appropriate storage vessels (amphorae, *qullae*, jars), and b) calculating the weight of empty containers.

In connection with the author's research at other sites (Naqlun, Abu Fano, Shenhur), it is of importance to know how much liquid filled a container. If the weight of the content is added to the weight of the container, we get the weight of a full container and an idea as to how many full containers could have been packed on a camel or donkey. Water supplies and

⁹ Sets of this kind (strainer and funnel, but made of bronze) are known from the Roman world, see Baratte 1984: Fig. 17.

¹⁰ The most reliable methods are pouring water into complete vessels and, for damaged vessels, a mathematical-computer reconstruction.

“means” of transport are attested in some Theban ostraka (Heurtel 2003: 297–306). It should be kept in mind that water was needed not just for drinking, but also for building work (making mortar) in the hermitage. Bottle and cup capacities may also be useful for studies of beverage consumption in the hermitage. Weighing vessels was applied solely to containers.

Of greatest accuracy when calculating the volume of whole vessels was the simple method of measuring the water that was poured into them. The best effect for reconstructed vessels with gaps and cracks in them was obtained with mathematical and computer methods applied to drawings giving the full dimensions. Weight was determined based on the specific gravity of the clay used (after firing). This method, developed by Mariusz Caban with guidelines from the author, was applied by the author primarily to the study of containers from Naqlun and Gurna (Górecki 2016).

STATISTICAL RESEARCH METHOD

The outcome of statistical research is the most reliable for vessel types preserving elements typical of one specific vessel category. The best and most precise results concern the following ceramic product groups, the vessel parts given in parentheses being the most typical of a given group: LRA 7 amphorae (spike), Aswan and pseudo-Aswan amphorae (small circular bulge of clay in the very center of the bottom exterior surface), *saqiya*-pots (knob base), *qullae* (neck sections with strainers are apt to be well preserved), ladles (massive handles, Fig. 7), cooking vessels (characteristic bulge in the center of the floor) and lids (knob handles).

Statistical calculations for categories such as plates, shallow bowls, pans and storage vessels with large rim diameters are more difficult. Reconstruction drawings of whole forms helped in these cases to distinguish groups of sherds with the



Fig. 7. Ceramic ladle
(PCMA Sheikh Abd el-Gurna Project/photo D. Dąbkowski)

Table 1. Preliminary statistics: minimum number of vessels and ceramic artifacts in use by successive groups of monks living in the hermitage from the end of the 5th through the early 8th century

Vessel categories		Nile silt	Marl clay	Minimum vessel number
1	Late Roman tableware [Fig. 8]	✓	✓	406
2	Water containers (jars, bottles, <i>qullae</i> , flasks) [Fig. 4]	✓	✓	125
3	Beakers, cups [Fig. 10 top left]	✓	✓	42
4	Carinated bowls	✓		12
5	Domestic bowls (conical and semi-globular)	✓		60
6	Cooking vessels: closed (pots) and open (pans)	✓		300
7	Convex lids* [Fig. 10 top right]	✓		50
8	Ladles [Fig. 7]	✓		18
9	Funnels [Fig. 9 top]	✓		8
10	Strainers [Fig. 9 bottom]	✓		5
11	Transport containers (amphorae)** [Fig. 11]	✓	✓	4928
12	Cylindrical pot stands*** [Fig. 10 bottom right]	✓		9
13	Shallow flat-bottomed trays (oval or round) [Fig. 10 bottom left]	✓		11
14	Mobile cookers or heaters	✓		2
15	Vessels for watering fields (<i>saqiyah</i> -pots) [Fig. 12]	✓		188
16	Pigeon pots [Fig. 12]	✓		1
17	Long clay basins (for soaking palm leaves?) [Fig. 13 bottom]	✓		5
18	Round basins	✓		2
19	Large mud-bins (dried) (for grain or as caches for objects of daily use)	✓		5
20	Large mud-bins (fired)	✓		1
21	Ceramic bread-baking oven	✓		1
22	Incense burners [Fig. 13 top right]	✓		10
23	Lamps	✓	✓	9
24	Lamp shade? [Fig. 13 top left] ****	✓		1
TOTAL				6199

Key: * Concave lids are absent entirely; ** in this count, LRA 7 constitute 91.46 %, Pseudo-Aswan 4.31%, Aswan 2.84%, African (conical) 1.74%, African or Aegean (globular) 0.35%, LRA 1 0.20%, LRA 4 0.06%, LRA 5/6 0.04%; *** three of these (the lower ones) may be older and reused; **** the bell-shaped object had no bottom and no pierced holes hence it was not a lantern and was not used for burning incense, for example.

same profile (section) and approximately the same diameter (e.g., diameters from 18 to 20 cm, next 21–23 cm, 24–27 cm, etc.). Then, the percentage of the preserved rim circumference was determined for each group separately, giving a minimum number of plates and bowls present at the site, taking into account their function without dividing them into different type and their variants. For the sake of an example, five

plate fragments (same color, fabric, profile and diameter), each constituting 20% of the circumference, add up to 100%. There is a minimum of one such vessel on site at this time or five identical or almost identical vessels. Another example: measuring as a percentage the preserved rim on four sherds of an Aswan ERSW plate of Hayes type 84 gives a result of more than 100% ($17\% + 38\% + 11\% + 43\% = 109\%$).

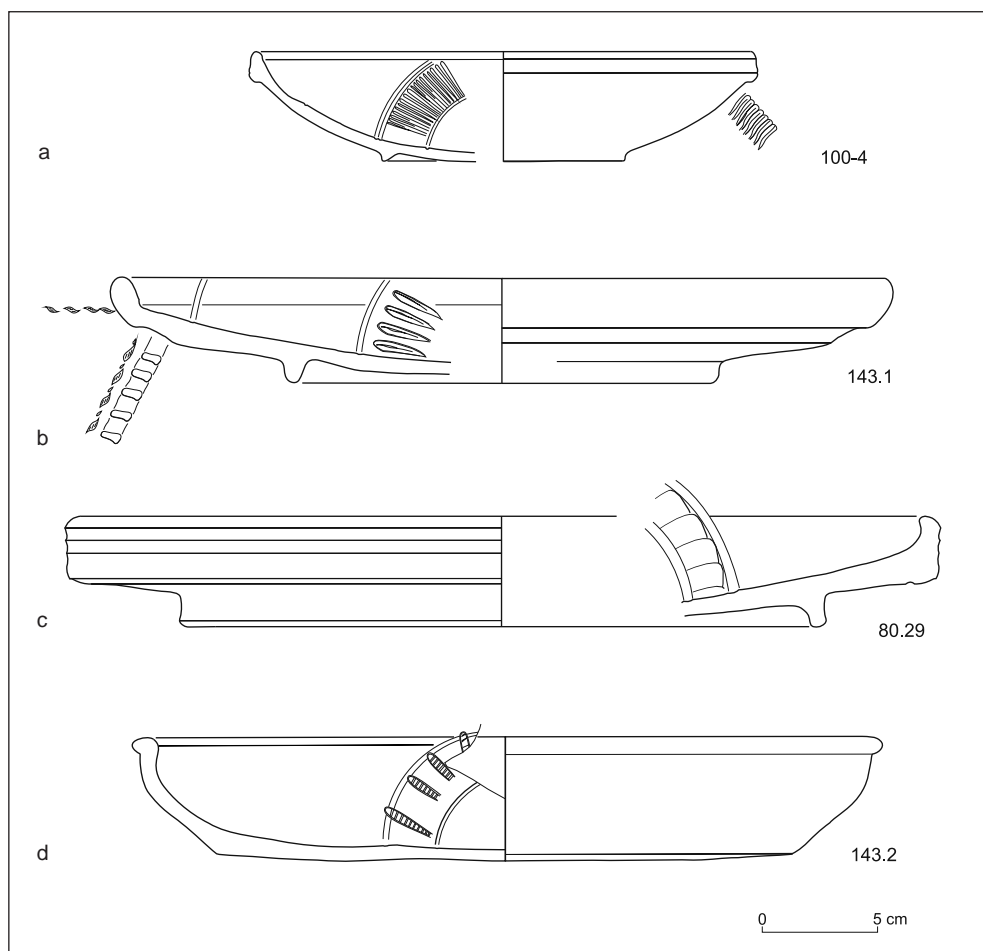


Fig. 8. Fine ware: a – ARS; b–d – ERS-A Ware plates
(PCMA Sheikh Abd el-Gurna Project/drawing T. Górecki and J. Górecka)

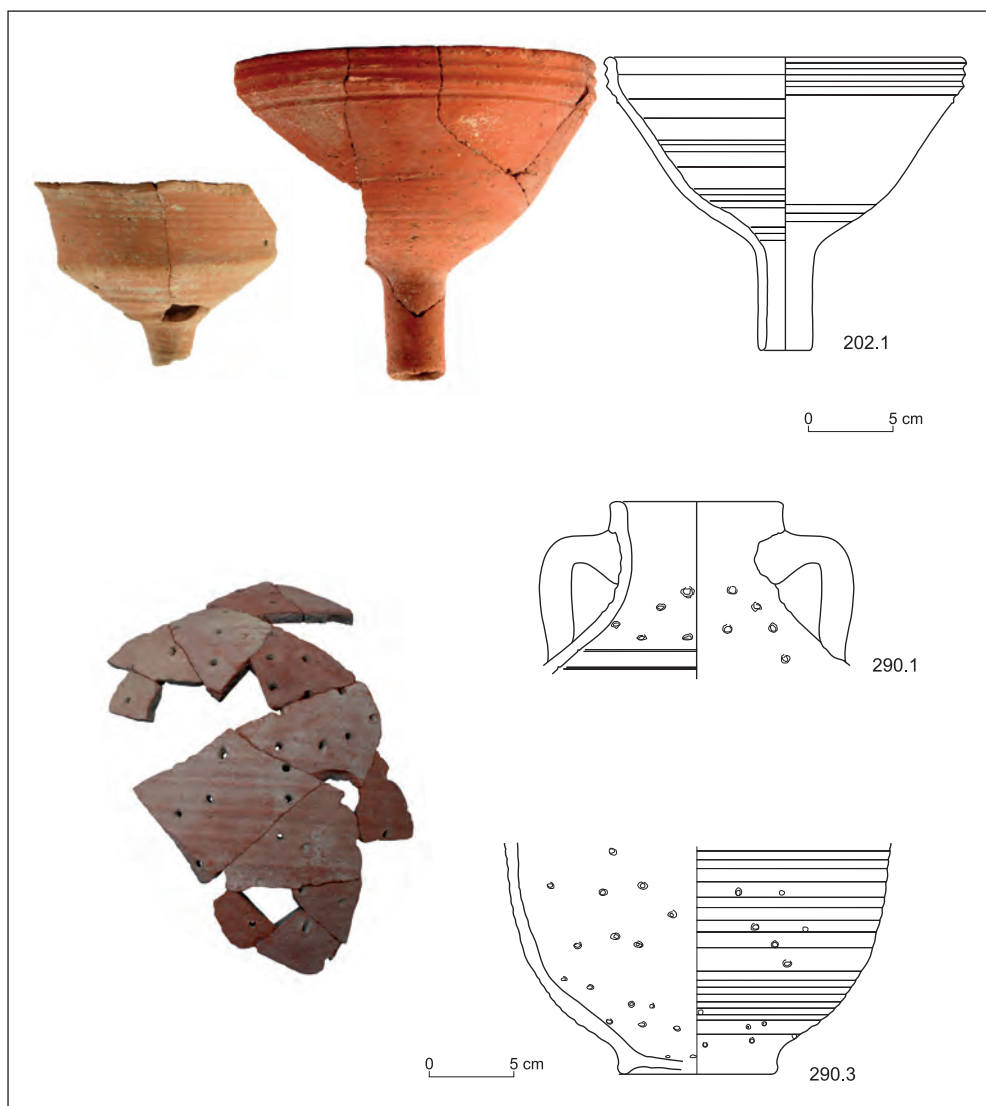
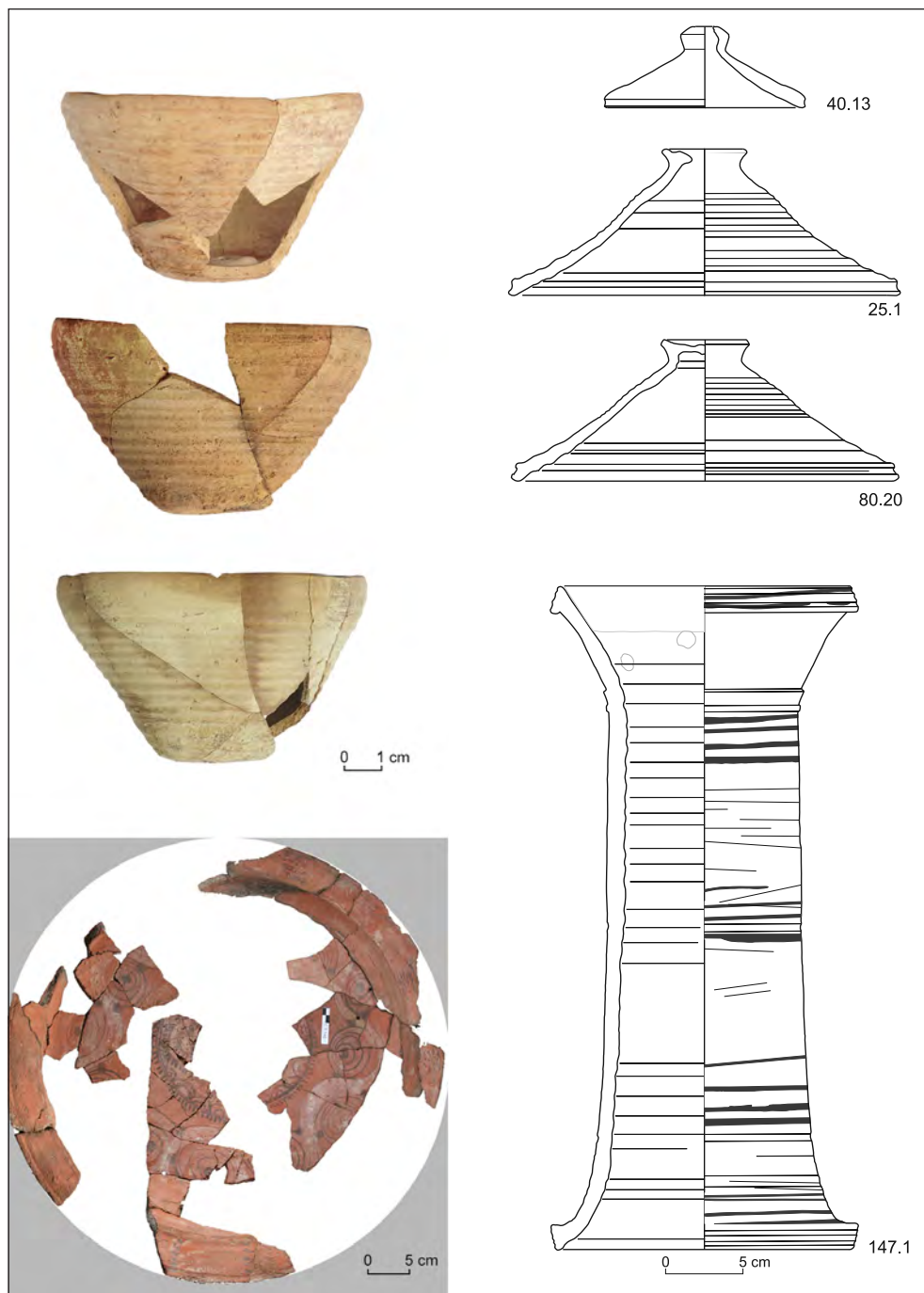


Fig. 9. Functional pottery categories from the hermitage assemblage: top, funnels; bottom, strainer (PCMA Sheikh Abd el-Gurna Project/photos D. Dąbkowski and T. Górecki; drawing T. Górecki and J. Górecka)

Fig. 10. Functional pottery categories from the hermitage assemblage: top left, three examples of cups; bottom left, shallow tray; top right, three different lids; bottom right, cylindrical pot stand (PCMA Sheikh Abd el-Gurna Project/photos D. Dąbkowski and T. Górecki, processing J. Górecka; drawing T. Górecki and J. Górecka; tray reconstruction M. Caban)



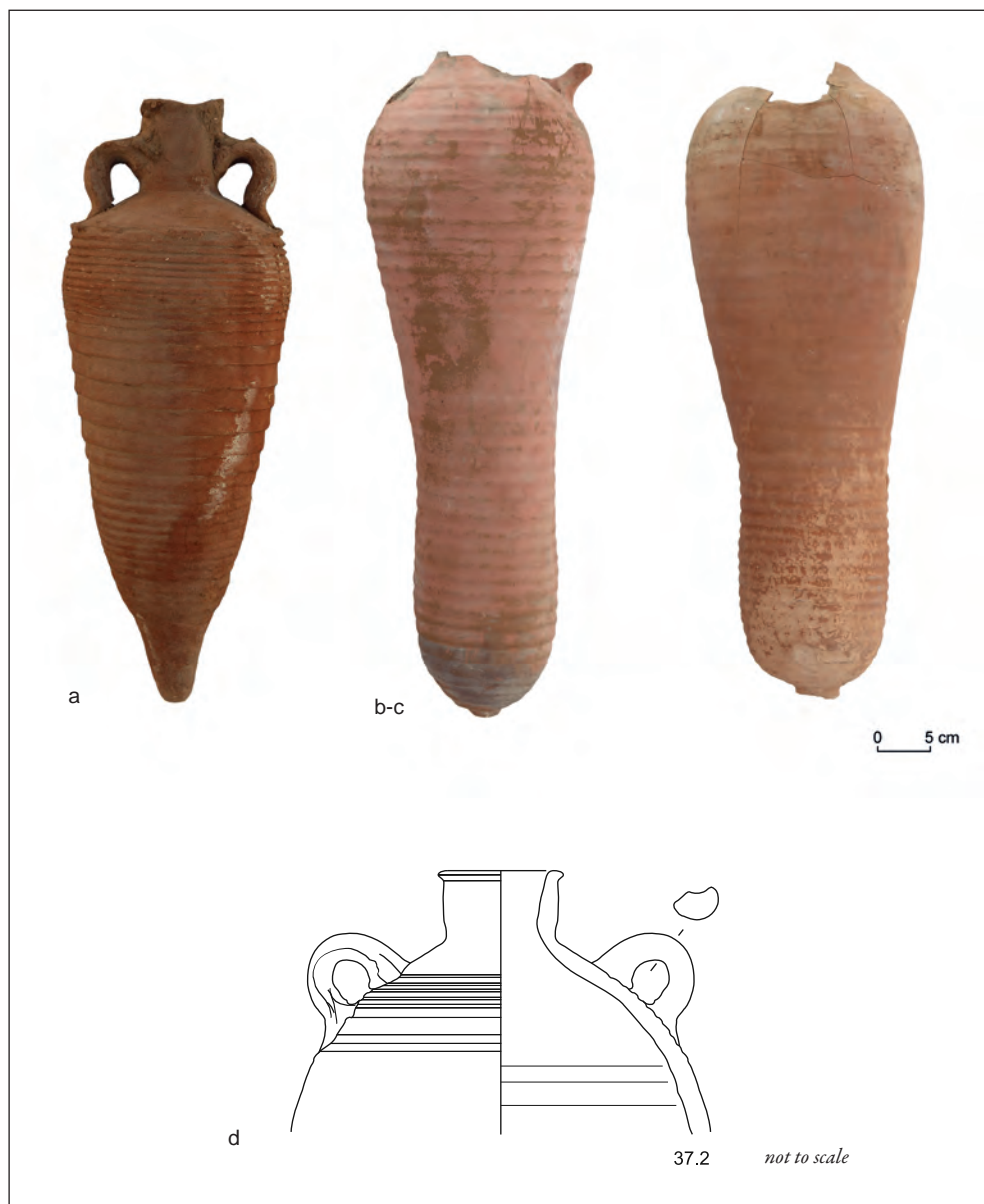
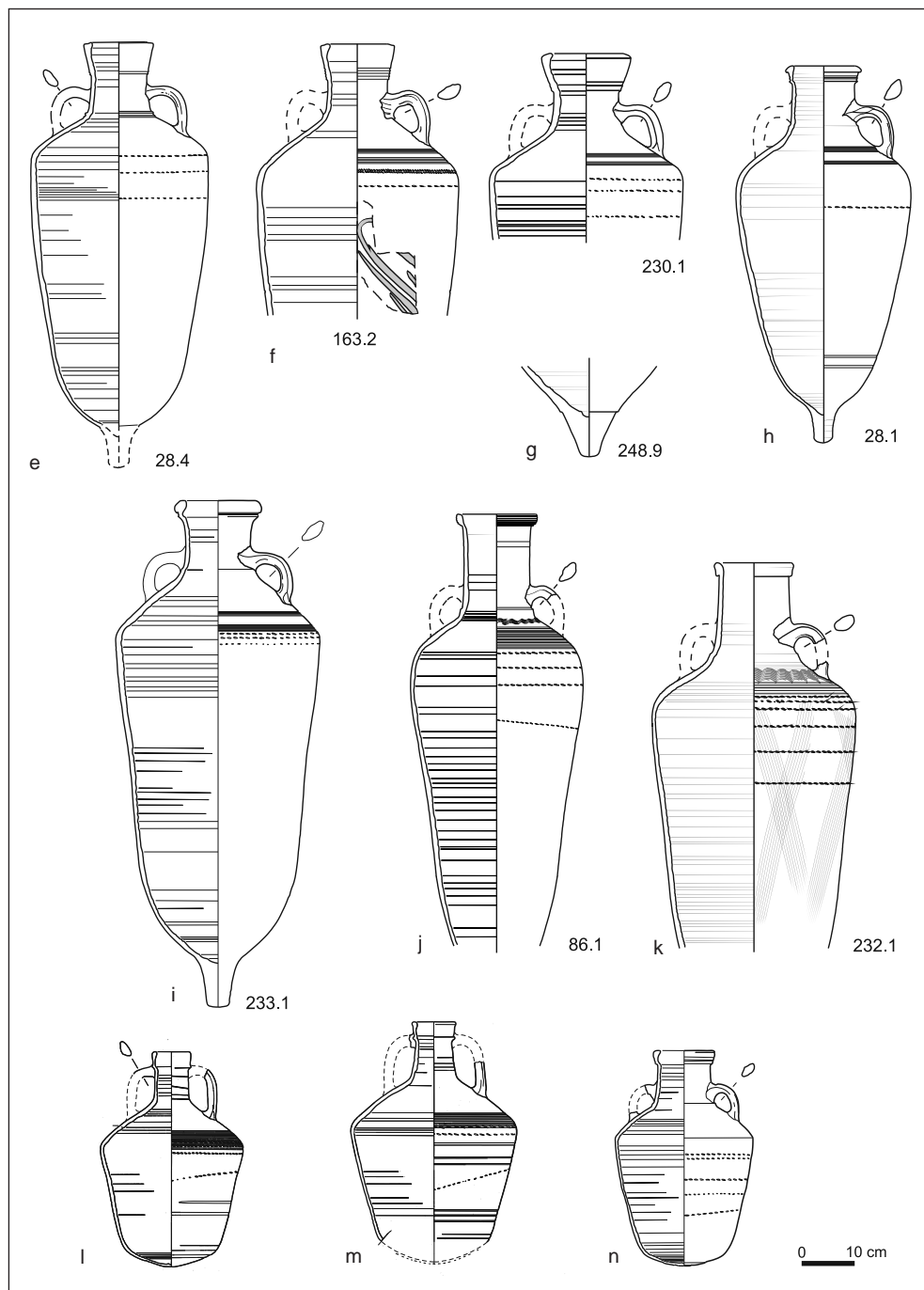


Fig. 11. *Amphoras/transport containers:*
a – LRA 7; b–c – Aswan amphoras; d – LRA 5/6; e–h – conical IA; i–k – conical IB; l–m – globular IIA; n – globular IIB (PCMA Sheikh Abdel-Gurna Project/photos D. Dąbkowski and T. Górecki, processing J. Górecka; drawing T. Górecki and J. Górecka, digitizing J. Górecka and M. Momot)



From a statistical point of view, there must have been a minimum of two plates or a maximum of four that were morphologically indistinguishable on the whole.

Statistics require a minimum number of vessels to be given for each group. An ideal determination of the correct number of vessels is impossible, but it is

equally unfounded to treat each fragment as a separate vessel.

CHRONOLOGICAL SPAN OF THE POTTERY FROM THE HERMITAGE

A large set of well dated pottery of the Late Roman type gives hope for a precise dating

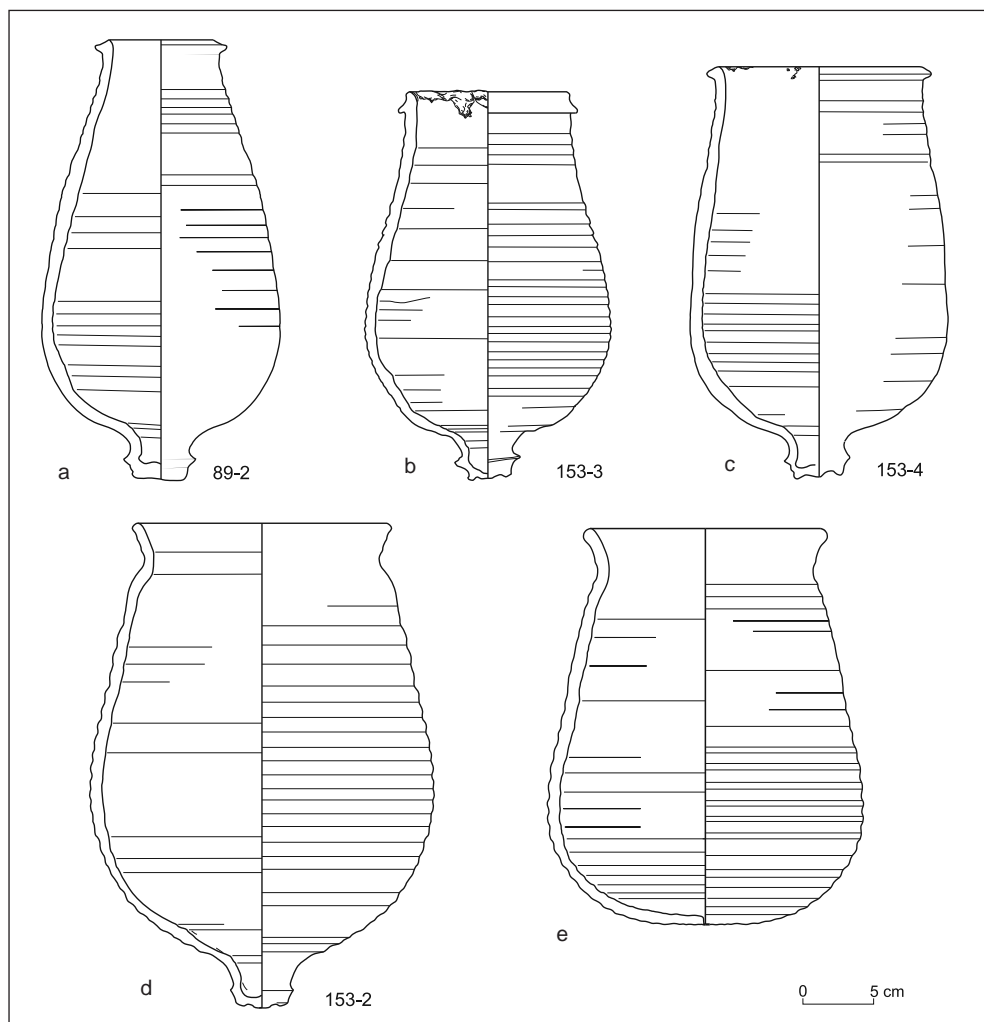


Fig. 12. *Qawadis (saqiya pots): a–d – regular qawadis; e – pigeon pot*
(PCMA Sheikh Abd el-Gurna Project/drawing T. Górecki, J. Górecka and K. Danys)

of the monastic complex. Yet it is difficult to establish the chronological boundaries of particular occupation phases of the hermitage. The evidence argues in favor of an interrupted occupation of the tomb by the monks, but the actual length of periods of occupation and the intervals cannot be determined easily. The ceramic material merely gives a provisional and hypothetical date for when the monks first adapted the tomb for their purpose and when they left it for good.

The hermitage was founded most probably in the end of the 5th century. The date is attested by fragments of two ARS plates (Hayes form 82.2 or 86.2; *Fig. 8:a*) found in the early layers of the rubbish dump. These

plates could have been found somewhere by the monks and brought back to the hermitage at a slightly later date, but the end of 5th century date for the earliest phase of the hermitage is confirmed by ERS-A Ware plates copying ARS forms Hayes 61–62, 82.1 [*Fig. 8:d, 8:b–c*], which are present in the assemblage and which are known to begin around the end of the 5th century. A large number of examples of ERS-A Ware forms 84 and 91 are not helpful in terms of a more precise dating, because they were long in production in Egypt, at least until the mid 7th century. Their number in layers of importance for the hermitage chronology merely indicates that the occupation of the hermitage was at its most intense



Fig. 13. Miscellanea: top left, lamp shade; top right, incense burner; bottom, clay basin (PCMA Sheikh Abd el-Gurna Project/photos T. Górecki and D. Dąbkowski)

from the mid 6th through the end of the 7th century. At the other end of the time spectrum, the date for the abandonment of the hermitage is marked by a large group of containers for olive oil probably imported from Tunisia (see *Appendix* below) dated to after the mid 7th century [*Fig. 11:e–n*], and two fragments of bag-shaped Egyptian amphorae from the 7th–8th century [*Fig. 11:d*]. The dating emerging from an examination of the pottery is supported by the early results of papyrological studies. Anne Boud'hors

and Esther Garel, who are studying the set of ostraka from the hermitage, have found that a certain group of texts may be dated securely to the first half of the 7th century and a second rather distinct set to the early 8th century (Garel 2016). At this stage of their research, the case is hardly settled, but (unlike the pottery) there are no earlier texts from the 6th century. Therefore, the chronological span of the residency in the hermitage could have been fairly broad, from the end of the 5th to the beginning of the 8th century.

APPENDIX

African and Aegean(?) packaging containers (amphoras)

Initial surface sharding provided a sizable collection of typical transport containers. It turned out later that these particular types were practically “unknown” and seldom published from sites of late Roman date from Egypt.¹¹ They are considerably different from other amphoras produced in Egypt in terms of production technique (and the product itself) and the clay color

in the break and on the surface. The fabric is hard, the breaks clean with fairly regular arched or straight edges. Outer surface of three measured containers (28.1, 28.4 and 164.1 respectively) is usually pink (10YR8/2–8/4; 7.5YR8/3; 10R8/3), while inner surface and break are light to pale red (10R6/6; 10R7/4–6; 7.5R7/4–6). Recognizing sherds coming from the

¹¹ Gempeler 1992: Fig. 128.6–7 (globular), 129.1 (conical); Shenhur (personal observation of the author); Lecuyot and Pierrat-Bonnefois 2004: 175, Pls 9.124–125 (conical), 9.126 (globular); Winlock and Crum 1926: Pl. 30A; Myśliwiec 1987: 176–178, Nos 2156–2159, 2163–2164, Pl. XXX, 6–7 (mid 7th–mid 8th century); Bavay 2007: 393–394; Beckh 2007: 210, Fig. 3 (mistakenly compared to form Egloff 167 in my opinion); Beckh 2013: 75–78 (the author presents different views on the provenance of these containers), Pls 97–102 (conical), 106–108 (globular); Jacquet-Gordon 1972: Pl. CCXXVII, 13. These publications demonstrate clearly that there are no finds of such containers from the region north of Tod and Shenhur. A prosaic explanation is that sherds of this kind went unobserved in other archaeological material than that cited above. A different explanation is possible, if we verify our views on the routes by which commodities were transported from territories to the west of Egypt. Goods could have been transported to Alexandria and up the Nile to the regions in the south, but they could also have been brought by caravans coming from the west via the oases of Siwa, Bahariya, Farafra and Dakhlah (Wilson 2012) to the Theban region and then further to the south; for a similar view, see Ballet, Bonifay, and Marchand 2012: 115–117, Figs 9–10. This other delivery route for oil imports to Upper Egypt could explain why these containers are missing from sites in the north.

relatively thin walls of these vessels (for the transport containers, the thickness is from 0.6 cm to 1.0 cm) led to the observation that the sherds of this “new” group gave out an exceptional metallic clang when struck, completely different from the typical Nile silt sherds which have a rather muted sound due to the porosity of the clay and presence of organic temper.

Two groups of these containers could be distinguished: conical (Type IA, IB) and globular (Type IIA, IIB). The morphological traits of the conical group (about 90 vessels) include a distinct profiled rim, pushed inward (rim diameter from 13 cm to 16 cm) [*Fig. 11:e-h*] or a simple and rounded one, a cylindrical or slightly flaring neck and a cylindrical–conical body (Diam. max. from 27 cm to 35 cm) terminated in a spike, sometimes slightly profiled. The handles have an oval section and are regular and neatly formed. The surface is very smooth, covered with a skin (Peacock 1984: 263–264), the evidence of turning is smoothed vertically, mostly with almost imperceptible traces of a tool from the line of the maximum diameter towards the bottom. The inner surface is also quite characteristic, covered with clear parallel and very shallow grooves that are a reflection of the turning process.¹² Most of the containers feature a clearly visible rope impression around the maximum vessel diameter (3–5 rows); it shows that the pots were tied for the

duration of the drying process. Most of the vessels bear decoration in the form of various engraved motifs (single lines around the vessel circumference in different places) or combed ornaments forming either horizontal straight or wavy lines, horizontal on the shoulders or vertical (Type IB), sometimes at a slight angle (X-shaped) on the body [*Fig. 11:i-k*].¹³

Globular amphoras form a much smaller group (about 30 pieces, Type IIA). They have a rounded bottom [*Fig. 11:l-m*], cylindrical neck (Diam. 7.0–8.5 cm) with extended collar located 2.5–3.0 cm below the rounded rim. The maximum diameter of the container occurs above the mid-height of the body. The containers are not decorated. Apart from globular containers with narrow necks, there are a few vessels of similar shape (Type IIB) with a wide neck (Diam. 12–13 cm) and slightly profiled rim [*Fig. 11:n*]. The handles are smaller relative to the high handles of amphoras of Type IIA. The origin of containers of Type IIB is difficult to determine.

None of the containers of either type (altogether about 120 vessels) preserved traces of bitumen inside, something that was typical of most Egyptian containers of the LRA 7 type intended to hold wine. The conical containers were produced most probably in Tunisia (Byzacena), possibly Libya (Tripolitania),¹⁴ as indicated by the turning technique, color

¹² Identical characteristics were observed by the present author in the small assemblage of African cylindrical containers from excavations in Athribis/Tell Atrib, dated to the 5th–6th century. One of them had an inscription distinctly indicating oil as its content (unpublished material).

¹³ Only one vessel (No. 163.2) preserves traces of painted decoration on the body (oblique beige bands ending in a spiral?). A similar decoration can be observed on bag-shaped containers from Beisan (second half of 7th–beginning of 8th century?), see Młynarczyk 2013: Figs 12, 15, 17, 20. It is hard to tell whether the comparison is justified, considering how fragmentary the decoration from Gurna is.

¹⁴ This hypothesis regarding the place of production of these containers was proposed in Górecki 2004: 179, Fig. 6 (the scale for both these vessels in Fig. 6 was incorrect).

of the clay and use of salty water for clay production, a characteristic trait of the pottery production process in this region. The place of origin of these containers suggests that they contained something other than wine, especially as the inside surface was not resinated. None of the amphorae had apertures pierced in the neck or upper body (the holes were either for fermentation or wine tasting, see Vogt et al. 2002), a characteristic element of some wine containers in Egypt. These containers may have been produced locally for olive oil pressed in North Africa already for several centuries.¹⁵ As for the globular vessels, their form suggests that one should look for their place of origin in places where containers of the LRA 1 and LRA 2 types were produced (southern Asia Minor, Cyprus, Aegean region?); with this assumption in mind, wine should be considered as a commodity imported into Egypt despite the absence of resination.

Such a large number of African containers (about 90) in the hermitage in MMA 1152 cannot be explained by the simple need to supply a few monks with imported oil for dietary purposes. Oil was used as fuel for lighting, but it is unlikely that the excellent oil from North Africa would have been imported for such a prosaic purpose, if cheaper and inferior oils (such as castor or radish oils) from Egypt were available locally. I am convinced that empty containers of both Type I and Type II, capacious as well as very durable (see the capacity of selected amphoras in *Table 2*), may have been reused for transporting potable water to the hermitage. Alternately, water would have been used in some quantity for soaking palm leaves used for basketwork and for pre-paring clay mortar for building purposes to bond the mud bricks of which the hermitage walls were constructed. Looking at the data in *Table 2*, we see that the vessels were lighter

Table 2. Capacity and weight of selected amphorae of types I and II

	Number	Weight in kg	Capacity in liters	Weight to volume proportions	Diam. rim cm	Diam. max. cm	Height in cm
	(kg : liter)						
1	28.1	5.58	18.5	01:03.3	13.2	30.2	65.6
2	28.4	9.18	28.5	01:03.1	13.0	32.6	about 80
3	164.1	5.77	17.8	01:03.1	8.2	29.0	about 70
4	233.1	9.65	35.0	01:03.6	14.8	34.5	85.5
5	162.0	2.78	10.9	01:03.9	12.1	27.0	42.7
6	247.1	3.35	10.8	01:03.2	7.7	28.2	42.6
7	236.0	3.70	12.0	01:03.2	8.6	32.4	about 44
8	251.0	3.90	12.4	01:03.2	–	32.5	about 45

¹⁵ On the later than currently assumed termination of the end of production of olive oil and ceramic containers for its transport after the Arab conquest, see Leone 2003: 24–26; Fenwick 2013: 9–33, especially 13, 20, 25, 28, 30, 32.

and much more capacious (from 10 liters to 35 liters) than the Egyptian containers. It could mean that they were considered as very eco-nomical when reused for water transport because they held more water than Egyptian containers.¹⁶ Thus, the same quantity of water could be transported in a fewer number of containers of African

(or Aegean?) origin, rather than the heavy LRA 7.

The reuse of most of the imported African containers does not exclude the possibility that at least some of them had held oil, either for consumption or as fuel for lighting purposes, or (in the case of globular amphorae) possibly wine.

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¹⁶ On Egyptian wine containers, see the assemblage of medieval LRA 7 amphorae and wine containers/bottles, Górecki 2016.

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A decorated bronze censer from the Cathedral in Old Dongola

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Abstract: A bronze censer found in the Church of Brick Pillars in Old Dongola in 1968 provides unique insight into the role of such liturgical vessels in medieval Nubia. In this new study of the iconography and production technique of this vessel, coupled with an epigraphical analysis of the Greek and Old Nubian inscription around the edge, the author suggests that the vessel was crafted by Makurian craftsmen sometime in the first few hundred years after the conversion of the Nubian kingdoms to Christianity (in the 6th or 7th century AD). Seeking sources of inspiration for the Dongolan masters of the metal-working craft, the author looks to the Byzantine Empire, where close parallels for the decoration of the Nubian censer can be found in late antique silver objects. This leads to a discussion of trade relations between the Byzantine Empire and the Kingdom of Makuria, and the possible exchange of official gifts.

Keywords: Old Dongola, censer, liturgical vessels, Makuria, Old Nubian, Nubian studies, toreutics

The censer with figural decoration from Old Dongola is the only vessel of its kind from the territory of Nubia from the time between the conversion and the collapse of the Christian kingdoms. It was discovered in the 1967/1968 season during the excavation of the Church of Brick Pillars, which is believed to represent the last phase of the Dongolan cathedral following the rebuilding of the Church of Granite Columns in the 9th century (Godlewski 2006: 282).

The find was mentioned in early reports and studies (Michałowski 1970; Gartkiewicz 1990; Scholz 2001; Godlewski 2013), but never actually published. It merits a full technological and iconographical analysis, made possible by high quality photographs which the author had the opportunity to study, but without actual first-hand examination, without which any discussion of technological aspects must remain an educated guess at best.

DESCRIPTION

FORM AND EXECUTION

The censer has the form of a small shallow bowl on a low stand, 5.5 cm high and

13.2 cm in diameter, with three chains attached to the rim [*Fig. 1*]. The body of the vessel is decorated.

Neither the material nor the technique of execution can be determined with certainty from the photographs. It looks like it was made from a copper alloy, possibly bronze or brass. The most plausible technique is casting as there are no apparent traces of hammering and turning. The decoration also suggests this technique. Firstly, it shows no negatives on the inner surface of the vessel and, secondly, the elongated grooves outlining the medallions and floral motifs are presumed proof of carving executed on a model. Some of the mistakes by the craftsman could also indicate casting.

Hammering should rather be excluded as the rough surface of the vessel is not like the smooth surfaces of hammered artifacts. As for the casting technique used, lost-wax is preferable over molding, as no casting seams can be seen.

The engraved details of the decoration and inscription were the last to be added. The grooves, imitating the leaves of a laurel wreath and the beards, were probably made with a burin. A punch was used to make the circle-like details and the serifs of the inscription. A semi-circular burin was also used to cut the eyes and circular



Fig. 1. Censer from Old Dongola, view of the underside (PCMA Dongola Project/photo W. Godlewski)

parts of floral motifs. The different length of individual grooves suggest burins of different width. A graver may have also been used by the craftsman.

Three chains were riveted to the rim at three points spaced evenly around the circumference. A cast handle for suspension connected the three chains at the top.

DECORATION

The body of the censer is divided into two registers. The upper one contains an incised inscription, the lower one a figural and floral decoration centered on four framed medallions placed at even intervals around the body. Inside each

medallion there is a male bust with a halo around the head. The figures are dressed in antique garb and each one holds a codex. A simplified wreath frames each medallion.

Of the four busts, only one is easily recognizable as a depiction of Christ. It shows a male countenance with long hair and a beard, depicted with a cruciform halo around his head [Fig. 2 top left]. The figure is dressed in a tunic with a *pallium* and is shown raising his right hand in blessing.

The other busts are not recognizable on account of their attributes and appearances. The garb in these cases suggests that they may be identified as prophets, apostles or evangelists. To the right side of the bust



Fig. 2. Busts of biblical figures on a censer from Dongola: top left, Christ; bottom left, figure to the right of Christ; top right, figure to the left of Christ; bottom right, figure opposite to the Christ medallion (PCMA Dongola Project/photos W. Godlewski)

of Christ there is a figure with short hair and no beard. He is clothed in a tunic and seems to be pointing with a finger of his right hand at the codex held in his left hand. However, only the middle finger of his hand is stretched out, unlike in the case of the other two busts, where both middle and index fingers are stretched out in a canonical composition. It may suggest in this case a craftsman's mistake [Fig. 2 bottom left]. The bust on the other side of Christ is depicted with almost the same kind of haircut as the one described above, but the gesture and clothing are different. The figure is clearly wearing a tunic and a *pallium*. His hand is raised in blessing



Fig. 3. *Floral motif separating the medallions on the censer (PCMA Dongola Project/ photo W. Godlewski)*

[Fig. 2 top right]. Lastly, there is the bust opposite Christ, dressed also in a tunic and a *pallium*. Unlike the other two figures, he has a pointed beard. With two fingers of his right hand he points at the codex in his left hand [Fig. 2 bottom right].

The medallions are separated from one another by a floral motif composed of a trifoliate plant at the bottom and a bud with petals shooting up from the middle [Fig. 3].

INSCRIPTION

The inscription under the rim of the vessel on the outside was either cast or incised — without direct examination it is difficult to say — but the serifs were undoubtedly stamped with a punch. From a palaeographic perspective, the letters of the inscription can be described as vertical epigraphic majuscules, essentially round, however some letters, like the *sigma*, occasionally show angular forms. The *alpha* has the form of an oblique stroke provided with a loop, however, the one at the end of the inscription is of the “*alpha* with a broken bar” type. The serifs are in the form of dots.

The script, such as was used in the inscription, occurred in Nubia generally before the 10th century when it was replaced with the Nubian majuscule. The inscription is written in *scripto continua*, but there is a space between *προσέενκ(ον)* and *τοῦ*. Of the three words written in Greek, one, *ἀποστόλ(ου)*, was abbreviated by shifting the last preserved letter; in other cases, the abbreviations were not marked. The shifted letters were probably also used to mark abbreviations in the Old Nubian part of the inscription. The first letter of the inscription, a *sigma*, was mistakenly used instead of an *epsilon* expected there.

† <ε>ὕχαριστή(ριον) προσένεγκ(ον)
τοῦ ἁγίου ἀποστόλ(ου) Πέτρο(υ) λ τ ο
ΔΔΥΔΥΤΛΚα

The only indubitable element in this part of the inscription is the word $\tau\tilde{\lambda}\lambda$, “God” (Browne 1996: 171). The word occurs probably in the accusative, either $\tau\tilde{\lambda}\lambda\kappa\alpha$ or the unattested form $\tau\tilde{\lambda}\lambda\kappa\omicron\alpha$. Providing the above suggestion is correct, the element $\tau\tilde{\lambda}\lambda\kappa\alpha$ ($\tau\tilde{\lambda}\lambda\kappa\omicron\alpha$) can be translated as: “to (the church of) God”.

In spite of scribe's lapses, assumed in this interpretation, the whole inscription can be also interpreted as follows: "Sacrificial gift belonging to the Saint Apostle (by) the great David (whom) God has."

777

This second interpretation is also more suitable to the tradition as the donor, Dauti, is a person. The name is well-attested in corpus of Nubian inscriptions.

The characteristic formula, beginning with the word *εὐχαριστήριον*, occurs in late Christian votive inscriptions from the Eastern Mediterranean (Łajtar 2004: 92). There are no examples of such an inscription on a metal object from Makuria,

and in any case the censer from Old Dongola is the only inscribed metal object known from the kingdom so far. The formula, however, is not unknown in Nubia as a keystone with a formula beginning with *εὐχαριστήριον* was found in a church in Maharraka in Lower Nubia; in this case, the “sacrificial gift” was most probably the church itself (Łajtar 2004: 89–94).

DISCUSSION

Censers discovered in Nubian territory have been few in number, but in form they all resemble Byzantine examples. And for lack of evidence to the contrary, it may be assumed that they were all made of copper alloy. The three censers from Naga el-Sheima consisted in two cases of a chalice on a low stand with geometrical decoration while the third one was a shallow bowl on a low stand decorated with diagonal grooves (Bietak and Schwarz 1987: 152). Each had three ring-shaped handles and attached chain with a hook. A bronze censer from Abdallah-n Irqi, in the form of a chalice on a high stand, is almost identical to the piece from Old Dongola (van Moorsel, Jacquet, and Schneider 1975: 20–22).

Numerous examples of censers are represented in Nubian wall painting. A mural depicting an archpriest holding a censer suspended from three chains with small globular bells attached was located in one of the pastophories of the cathedral in Faras; it was dated to the 10th century. The censer itself took on the form of a chalice on a low stand. The archdeacon pictured in an 11th-century wall painting from the Monastery on Kom H in Old Dongola is portrayed swinging a bowl-shaped censer,

which is composed of four hemispheres and also fitted with small bells (Martens-Czarnecka 2011: 219–220). This form seems to have been common in Nubia, because the censer held by the archdeacon depicted in Tamit and the one held by a presbyter in the B.V church in Old Dongola also have the form of a chalice fitted with globular bells. The censer held by Zacharias, depicted in Abdallah-n Irqi, is of a different, hexagonal shape, also fitted with bells (van Moorsel, Jacquet, and Schneider 1975: 20–22). Thus far, the only image of a censer without bells is the one of a censer held by an angel in the church in Kulubnarti.

This clear difference between the censers excavated so far and their depictions in Nubian art is puzzling. On the one hand, none of the censers found in Nubia has the characteristic bells; on the other hand, the images of censers lack the hook commonly found along with the excavated specimens. The issue to be investigated is whether these censers were used for incensing or they had different function, possibly as standing incense burners or even lamps (for a discussion of the function of the Dongola censer, see below).

Outside Nubia, the nearest parallels for a censer of the form and decoration as discovered in Old Dongola, come from the Byzantine Empire. Decoration in the form of images of busts of saints in medallions are typical of Byzantine art, including paintings, ivory and metalwork, the latter especially important for the present discussion. Among silver liturgical equipment and reliquaries, censers are in the majority and they resemble the Dongola censer closely as far as the decoration is concerned, although not in the metal used. They are all of silver, the number of medallions in the decoration vary, and they are dated from the 6th to the 7th century. Censers made of a different material than silver and bearing similar decoration have not been found.

A hexagonal censer from the Sion treasure, dated to AD 550–560, is embellished with three medallions containing three busts, of Christ and two saints, Peter and Paul, identified on the grounds of their iconography and attributes (Mundell Mango 1992: Figs S18.1, S18.2). A censer from the Cypriot treasure, also of hexagonal form, is decorated with six busts in medallions. Three depict the same triad as the censer from the Sion treasure: Christ in the middle and the saints Peter and Paul. Depicted on the opposite side are the Virgin Mary and, according to Cruishank Dodd (1961: 130–131), the saints Jacob and John. Another three censers are known from the Attarouthi treasure, dated to the 6th–7th centuries. The first of them bears a decoration of four medallions separated by crosses. Based on the attributes of the depicted persons, only two could be identified: John the Baptist and saint Stephen (<http://www.metmuseum.org/art/collection/search/466131> [accessed: 1.03.2016]). The second censer had a similar

decoration: four medallions with busts of Christ-Emmanuel, the Virgin Mary and John the Baptist (<http://www.metmuseum.org/art/collection/search/466132> [accessed: 1.03.2016]). The third one is decorated with three medallions separated by crosses. Christ-Emmanuel is surrounded by two archangels, the composition resembling the decoration of the first Attarouthi censer (<http://www.metmuseum.org/art/collection/search/466133> [accessed: 1.03.2016]).

The composition of the decoration on the censer from Dongola is found also on other liturgical vessels. A good example of this is a vase from Homs dated to the 7th century. Its body is decorated with medallions with busts of saints. Identifiable are Christ, the saints Peter and Paul, the Virgin Mary and an angel, two other busts probably represent John the Baptist and John the Evangelist (Metzger 1992: 107–109). It is also relevant to point out the floral motifs separating the medallions, which clearly resemble the floral motifs of the Dongolan censer. A 6th-century silver lamp from the Hermitage collection has a similar decoration. Medallions with busts of biblical figures, with Christ-Emmanuel among them, are placed between floral motifs (Effenberger et al. 1978: 162–163). Medallions with busts of biblical figures are also present on silver chalices from the Beth Misona treasure, dated to the 6th or 7th century. Figures depicted on them are easily identifiable as Christ and two saints, Peter and Paul (Mundell Mango 1986: 228–229).

The motif of busts in medallions is found mainly on silver reliquaries. A bust of Christ among the Apostles is the most common and is found on the Capsella Vaticana manufactured during the reign

of the Emperor Heraclius as well as on a silver pyxis from a private collection in Switzerland, on a silver reliquary from the times of Justinian I found in Chersonessos and on a silver reliquary from Grado in Italy dated to the 6th century (Kalinowski 2011: 152–155). The medallions on the Capsella Vaticana and the two reliquaries mentioned above present the same order of figures with Christ flanked by the saints Peter and Paul, making this the most widespread sequence of images of this kind.

Floral ornaments appear on a great number of artifacts. Some examples include

a silver lamp from the reign of Tiberius Constantine, now in the Abbeig Stiftung collection in Switzerland (Cruishank Dodd 1974: 65) and a 6th-century silver reliquary from Novalja in Croatia (Kalinowski 2011: 181–182), as well as a casket from Esquiline Hill, dated to the 4th century (Buschhausen 1971: 214–217) [Fig. 4].

Almost all the objects mentioned above were manufactured in the 6th and 7th centuries. Although not all of them have the same place of origin, most were manufactured in imperial workshops, which is indicated by imperial stamps.

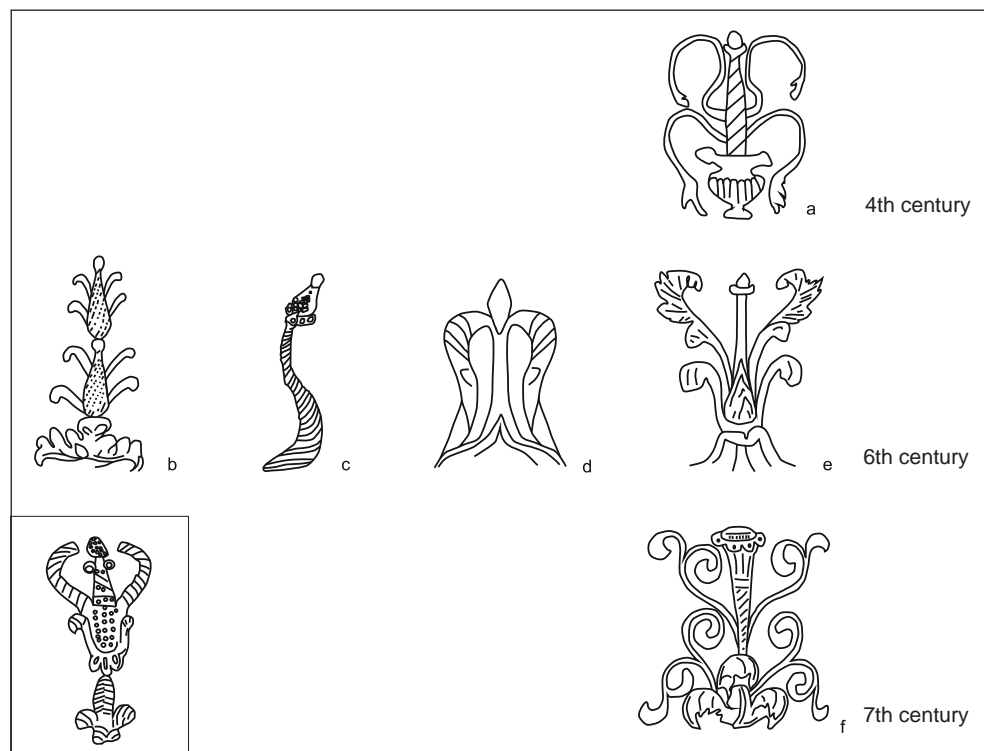


Fig. 4. Floral elements from Byzantine liturgical vessels: a – Projecta casket from the Esquiline Hoard, 4th century; b – reliquary from Novalja (Croatia), 6th century; c – reliquary from Grado (Italy), 6th century; d – lamp/reliquary from Chersonessos, 6th century; e – lamp from the Abbeig Stiftung collection (Riggisberg, Switzerland), AD 578–582; f – vase from Homs (Syria), now in the Louvre, 7th century; inset, censer from Old Dongola (Drawing M. Wyzgoł)

They also share one feature, namely they were all made of silver. No examples of objects of copper-alloy of this kind, decorated with busts in medallions, have been found so far.

THE ICONOGRAPHY

The only figure from the Dongolan censer that could be identified without any doubt is Christ. A strong argument for this identification was the cruciform halo: thus far, in Byzantine as well as in Nubian art, it has been shown to be restricted to images of Christ. Only on two of the parallels cited above, the Grado reliquary and the vase from Homs, Christ was depicted without the halo. The figure on the Dongolan censer is identified as the Christ Pantokrator type, widespread in Byzantium, including all the typical attributes, like the codex, the blessing gesture and the attire: a tunic and a *pallium*.

The other busts could not be identified with certainty for lack of exclusively characteristic features and attributes. They are nonetheless either prophets, apostles or evangelists, as suggested by their garb and the codices in their hands. One may probably exclude prophets, as the only prophet to be depicted on liturgical objects is John the Baptist and his image differs significantly from those depicted on the Dongolan censer.

The saints on both sides of Christ are beardless, which was probably intended to imply their young age, while the saint opposite to Christ is depicted with a beard. This is in accordance with the canon in Nubian art calling for the Twelve Apostles to be presented alternately as young and old. Saint John the Evangelist is usually represented as a young man on Byzantine metalwork, e.g., the figures on the Cyprus

censer and on the vase from Homs. An unidentified beardless saint is depicted on the Attarouthi censer; also one of the Apostles on the Swiss reliquary is beardless. The characteristic feature of the saint on the opposite side to Christ on the Dongolan censer is his pointed beard. In Byzantine tradition, this feature is attributed to saint Paul, although it appears exclusively along with a bald forehead.

Another way to identify the saints depicted on the Dongolan censer is to analyze the order in which they used to be depicted in Byzantine and Nubian art. Christ is, in most cases, depicted between the saints Peter and Paul, as is the case of the censers from Cyprus, Sion, the vase from Homs, the chalices from Beth Misona, and the reliquaries from Chersonessos and Grado. Thus, it might be assumed that the saints on either side of Christ are Peter and Paul. However, the lack of features characteristic to their images makes this assumption somewhat less plausible. Assuming that the saints on the Dongolan censer are the Apostles, the number of possible identifications could be restricted to the first three of the apostolic college. Referring to the list of the Apostles in the Synoptic Gospels (i.e., Gospels of St Matthew and St Luke), the first three mentioned, thus the most important, are Peter, Andrew and Jacob. There is a slight difference in the order of the Apostles given in the Gospel of St. Mark: Peter, Jacob and John come as the first three. In the list of the Apostles from room 29 of the Northwest Annex in the Monastery on Kom H in Old Dongola, the first three appear in the order given in the Gospels of St Matthew and St Luke. This sequence is presented in wall painting. A different order could be observed in room 13: the first three are the

saints Peter, Andrew and John (Martens-Czarnecka 2011: 201).

In fact, there are no obvious premises that would allow the saints' images on the Dongolan censer to be identified; therefore it may be assumed that we have here a representation of Christ with the apostolic college *pars pro toto* as on the Capsella Vaticana or the Capsella Africana (Kalinowski 2011: 148–150). It would correspond with a trend present in late Roman toreutics engaged in depicting "anonymous" saints. The transition from depicting individual features to conventional images, where saints could not be distinguished without captions, allowed viewers to identify images with a multiplicity of saints. It was believed to increase the "power" of an object. Some reliquaries labeled as a "reliquary of many saints" are known from the Byzantine Empire. Identifying images presented there with particular saints was not necessary (Kalinowski 2011: 148–150), thus the busts on the Dongola censer could also represent any one of the saints, or more precisely, any one of the Apostles.

The only artistic genre in Nubia depicting Christ and the Apostles is wall painting and a comparison with the Dongolan censer reveals several features in common that are significantly the same as in Byzantine art: garments, gestures and haloes. The sole Nubian distinctive feature, a schematic human head, is not present on the censer. The craftsman in this case made an effort to depict an anatomically correct head shape. However, the two, painting and toreutics, are basically incomparable as crafts, and in any case, most examples of Nubian wall paintings are from the 8th to 12th century, while the 6th century is a *terminus post quem* for the Dongolan censer judged by the decoration and the 8th century according

to the inscription. Surely Nubian art remained under strong Byzantine influence during the first decades after conversion to Christianity, a statement supported by the 7th century wall paintings from Abu Oda (Godlewski 1992: 287–288). Thus objects manufactured then need not have necessarily resembled later examples of Nubian art.

The floral ornaments separating the medallions on the Dongolan censer could be identified only in reference to liturgical objects from Byzantine and Roman art. A floral motif resembling that from the Dongolan censer occurs on a silver casket from Esquiline Hill. There, a thyrsus was placed in a kantharos ending in a pine-like bud, also decorated with stripes in the same manner as the motif on the Dongolan censer. The floral motifs depicted on the lamp from the Abbeig Stiftung collection, the vase from Homs, the lamp from the Hermitage and the reliquaries from Novalja and Grado also represent a similar acanthus plant. Most of them share common set of features: three leaves at the bottom from which a stem rises in the middle. Topping the stem is a pine-like bud with petals. Sprouts spring laterally from the stem. All these features are present on the Dongolan censer.

ORIGIN AND DATING OF THE CENSER

The iconography is not sufficient to establish the origin of the Dongolan censer. The iconographic motifs used are typical of the decoration on liturgical vessels in the Byzantine Empire. Images from the Dongolan censer differ stylistically from liturgical vessels, whether from the Constantinople workshops with imperial stamps as, for example, the censers from

Cyprus and Sion, the Chersonese reliquary, or from provincial workshops as the Chersonese lamp or the Swiss reliquary. The differences, along with the fact that all similar objects are made of silver, suggest that the Dongolan censer is an imitation of a Byzantine artifact made outside the Empire. The only Nubian element is the Greek–Nubian inscription written with epigraphic majuscule. The Nubian part could confirm the censer's Nubian origin, if only the inscription had been executed at the same time or in the same place as the entire artifact. That assuming the serifs were executed with the same punch as the other details of the decoration.

A gift exchange tradition, which included liturgical equipment, is well attested by the annalists. John of Ephesus in his *Ecclesiastical History* described two alleged missions sent by Justinian and by Theodora (although one needs to keep in mind the legendary nature of these missions). In his description he referred to gifts sent by the Emperor (*Eccl. Hist.* IV.6). He also described a mission sent by the Empress Theodora, led by Julian, who brought gifts for the Nobadian king (*Eccl. Hist.* IV.7). Delivery of church equipment to the newly converted kingdom is mentioned in a letter of the king of Alwa to the Nobadian king (*Eccl. Hist.* IV.52). Exchange of gifts between Makuria and the Byzantine Empire is also confirmed by John of Biclar in his chronicle (*Biclar. Chron.*, p. 213). These sources indicate that gift exchanges took place immediately after the conversion to Christianity, as well as in the course of later relations between the Byzantine Empire and the Nubian kingdoms. Thus, Byzantine liturgical equipment, including probably silver censers, was delivered to Makuria between the

6th and the 7th century as a gift. It is then that the censers could have been copied by local craftsmen, the Dongola censer being one such copy.

The archaeological context of the find has given a *terminus ante quem* in the 13th century. The censer was found, covered with bricks, in a shallow depression in the pavement next to the sanctuary in the immediate vicinity of the side of the altar (Gartkiewicz 1990: 297–298), just like a censer from Naga el-Sheima. Either the depression was a common place for the deposition of liturgical equipment or it was hidden there to protect it, effectively as it is, from being plundered during the siege of Dongola in the 13th century (Gartkiewicz 1990: 306–308).

When archaeological methods do not provide a sound enough dating, iconography and/or palaeography need to be relied on instead. Liturgical vessels decorated with medallions with busts of biblical figures were most popular in the 6th and 7th centuries. All the parallels discussed in this paper were manufactured during this period. The oldest, which is dated on the grounds of an imperial stamp to AD 527–565, is the Chersonese reliquary, the youngest the Capsella Vaticana dated by a stamp of the Emperor Heraclius to AD 610–641. The narrowest dating, established on the basis of a palaeographic analysis of the letters of the inscription, ascribes the Dongola censer to the 7th–10th or even to the 6th century. The palaeographic dating is consistent with a theory of an existing model for the Nubian copy, which would have been manufactured around the time of production of similar Byzantine artifacts. It is thus plausible to date the model to the 6th to 7th century and the copy to anywhere between the 6th to 10th century.

FUNCTION

Last but not least, the function of the Dongolan vessel should be considered. Like the censers from Abdallah-n Irqi and Naga el-Sheima, the artifact from Dongola was found without any small round bells attached to it, as it is shown in Nubian wall painting, while the painted images never have the hooks at the top for suspension. Perhaps then there were two kinds of censers in Nubia: stationary, known as *katzion*, and portable. Or it could be a matter of artistic convention.

There was also a wide range of hanging lamps, similar in form to the censers, which were present in ciboria. This kind of lamp is depicted on the 6th century silver paten from Stuma with an image of the Communion of the Apostles (Cruikshank Dodd 1974: 40–45). The form of this lamp is similar to the silver lamps from the

Abbeg Stiftung collection and from the Hermitage.

The absence of little bells suggests that the Dongolan censer may have been stationary or perhaps even a lamp. The censers from Abdallah-n Irqi and Naga el-Sheima, both with hooks, could have been suspended and not necessarily used for incense. However, there is no iconographic evidence for such function of censers in Nubia. The painted decoration of one of the niches in the cathedral in Faras, presenting a ciborium with chains hanging at two corners, suggests that censers or lamps could have been suspended from these chains. Unfortunately, this part of the painting is not preserved, so it cannot be confirmed that the painting resembles ciboria known from Byzantium. The precise function of the Dongolan censer remains uncertain.

CONCLUSION

The Dongolan censer is most probably of Nubian origin. The Greek–Nubian inscription engraved below the rim of the vessel concurrently with the decoration proves its origins. The material and technique are also evidence of a non-Byzantine origin, as they were simply not used for objects with similar decoration in the Byzantine Empire. Thus, the censer under discussion must be a copy made in Nubia based on a silver original from the Byzantine sphere. The copy was quite faithful as, apart from the Nubian part of the inscription, there are no specifically Nubian iconographical features to be discerned. The dating of the copy, based on the palaeography of the inscription, places it sometime between the 6th and the 10th century.

Apart from conclusions concerning the nature, origin and dating of the object, as well as an interpretation of the iconography, one may also draw conclusions on the inter-Makurian and Makurian–Byzantine relations. Claiming that the censer was of Byzantine origin, Gartkiewicz had suggested strong ties between Makurian and Byzantine clergy in the 10th and the 11th century (1990), but now, based on the proposed date of production and the fact that the censer was made in Nubia, his ideas can be refuted. In fact, the presence of 6th–7th century Byzantine patterns on the Dongolan censer could indicate the opposite: namely, that the import of liturgical vessels decreased or even ceased altogether directly after the 7th century and that the need for liturgical equipment was

met on the spot by indigenous craftsmen already in the 6th–7th century.

The presence of such a low quality copper-alloy copy of a byzantine silver censer in the cathedral equipment is puzzling. A most likely explanation is the general scarcity of silver in Makuria. Silver liturgical objects produced in Nubia have yet to be attested and the general ratio of silver to copper-alloy artifacts from Nubia is hardly to be compared to that in the Byzantine Empire. That is why perhaps the cathedral in Dongola was equipped with a copper-alloy censer, while even less important churches in Byzantium owned silver liturgical objects. Moreover, the quality of the Dongolan censer appears low only when compared with Byzantine liturgical vessels. As a Nubian artifact, it might be considered exceptional.

Ornamental patterns from Byzantium flowing to Nubia in the 6th–7th century are undoubtedly evidence of a gift exchange between Byzantium and Nubia. As the references in John of Ephesus and John of Biclar indicate, the original censer that served as a prototype for the Dongolan piece may have arrived in Makuria brought by one of the first Christian missions to

Dongola. It is equally possible that the original censer was traded into Nubia. An opulence of evidence for regular trade between the Byzantine Empire and Nubia has issued from the excavation by the Polish Centre of Mediterranean Archaeology team of the Ioannes palace on Kom A in Old Dongola. Deposits found there contained amphorae from the 6th and 7th century, originating from Aswan, Mareotis, Syria and Palestine (Godlewski 2002: 206–210). Apart from the wine, other traded merchandise included glass and metal objects of Egyptian origin (Godlewski 2007: 290). There is no reason to exclude the possibility that a silver Byzantine censer reached Nubia in this way.

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Four encolpia from a monastery complex in Naqlun – a preliminary iconographic analysis

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Abstract: The article discusses the iconography of the four cross-shaped encolpia made of lead that were discovered in a monastery complex in Naqlun, Egypt, in 2011. The pendants were found together, apparently mislaid in the northeastern corner of the main room of building K.1 (Northern Building). The iconographic analysis of the decorative elements on these encolpia is based on a comparison with other objects of this type coming from a Byzantine culture context. The dating based on the iconographic analysis is compatible with the archaeological context placing the deposition before the end of the 10th century

Keywords: Naqlun/Nekluni, cross-shaped encolpia, iconography of the Crucifixion, Coptic art, Byzantine iconography, lead cross-shaped pendants

The four cross-shaped encolpia that are the subject of this paper were found in a deposit together with a lead plate inscribed in Arabic with an excerpt from Surah 112 and a copper bell (Godlewski 2014: 187). The artifacts were wrapped in a linen cloth and abandoned in one of the rooms of the so-called Northern or K.1 building at the northernmost end of the monastery compound at Naqlun, Egypt. Excavations by a team from the Polish Centre of Mediterranean Archaeology University of Warsaw uncovered in 2011 not only this deposit, but also some Coptic and Arabic texts, written on paper, in a storage pit situated in the northeastern part of the building.

Other finds included some well preserved, locally produced amphorae, broken basins and storage jars found in the main two rooms explored in this part of the building. The building was destroyed by fire, the collapse of the burning roof sealing a deposit dated to the 9th or 10th century based on an evaluation of the pottery finds (Godlewski 2014: 187; Danys-Lasek 2014: 589).

The cross-shaped encolpia were made of lead. The seam lines at the edges of the pendants prove that they were cast from a mold made of stone, clay or metal. That these traces were not removed from the final product indicates serial production in

local workshops.¹ Any further remarks on the technique and craftsmanship require

technological analyses which are currently not feasible in Egypt.

ENCOLPIA FROM THE DEPOSIT: DESCRIPTION

Based on shape and decoration, the four encolpia found in Naqlun can be classified into two types: Type A (Nd.11.149.1, Nd.11.149.2, Nd.11.149.3; H. 4.86 cm, W. 3.16 cm) and Type B (Nd.11.150; H. 4.73 cm, W. 3.05 cm) [Fig. 1].

TYPE A

Form

Cross with the vertical beam broadening to either end and rounded at top and bottom. The horizontal beam is straight, the ends just a little concave. Pairs of ringed circular elements appear at the corners of the endings of each of the arms of the cross.

Decoration

The design on the obverse features a depiction of Christ in a long tunic (*colobium*). His head is inclined slightly towards the right arm and is framed by a nimbus marked with round spikes. The eyes are wide open. Nail marks can be observed on Christ's hands. Two crosses, with relief dots at the ends of equal-length arms, are located below his arms. Three lines ending in oval spikes spring from a single place above Christ's head. Below the feet is a round element. The moon and the sun are located in the upper part of the vertical arm of the cross.

On the reverse there is a figure in a long tunic. The head is inclined to the left

side and framed by a nimbus with round spikes. The eyes are wide open. The left arm, with the fist clenched, rests against the chest, while the right one is raised in blessing. On both sides of the figure there are two badly preserved heads of figures in medallions marked with a continuous line. A cross with triangular arms springing from a dotted circle at the center appears above the head of the figure in the center.

TYPE B

Form

Cross with broadening arms and convex endings, decorated with round elements one per corner. Additionally, the horizontal beam ends in an extra relief dot in the center of the arm of the cross.

Decoration

The obverse bears an image of Christ crucified. His head is pitched slightly to the right and is framed by a nimbus marked with a continuous line. His eyes are closed and he wears a loincloth (*perizonium*). There is a round element below his feet. Above Christ's head there is a cross with straight arms and split V-shaped terminals.

On the reverse is a cross with straight arms and split V-shaped endings, nesting relief dots between the tips. An arched band of relief dots, three on the horizontal arms, four on the vertical ones, parallels the convex endings.

¹ These observations come from metal conservator Władysław Weker (State Archaeological Museum in Warsaw), who conserved the artifacts at the site in 2011.

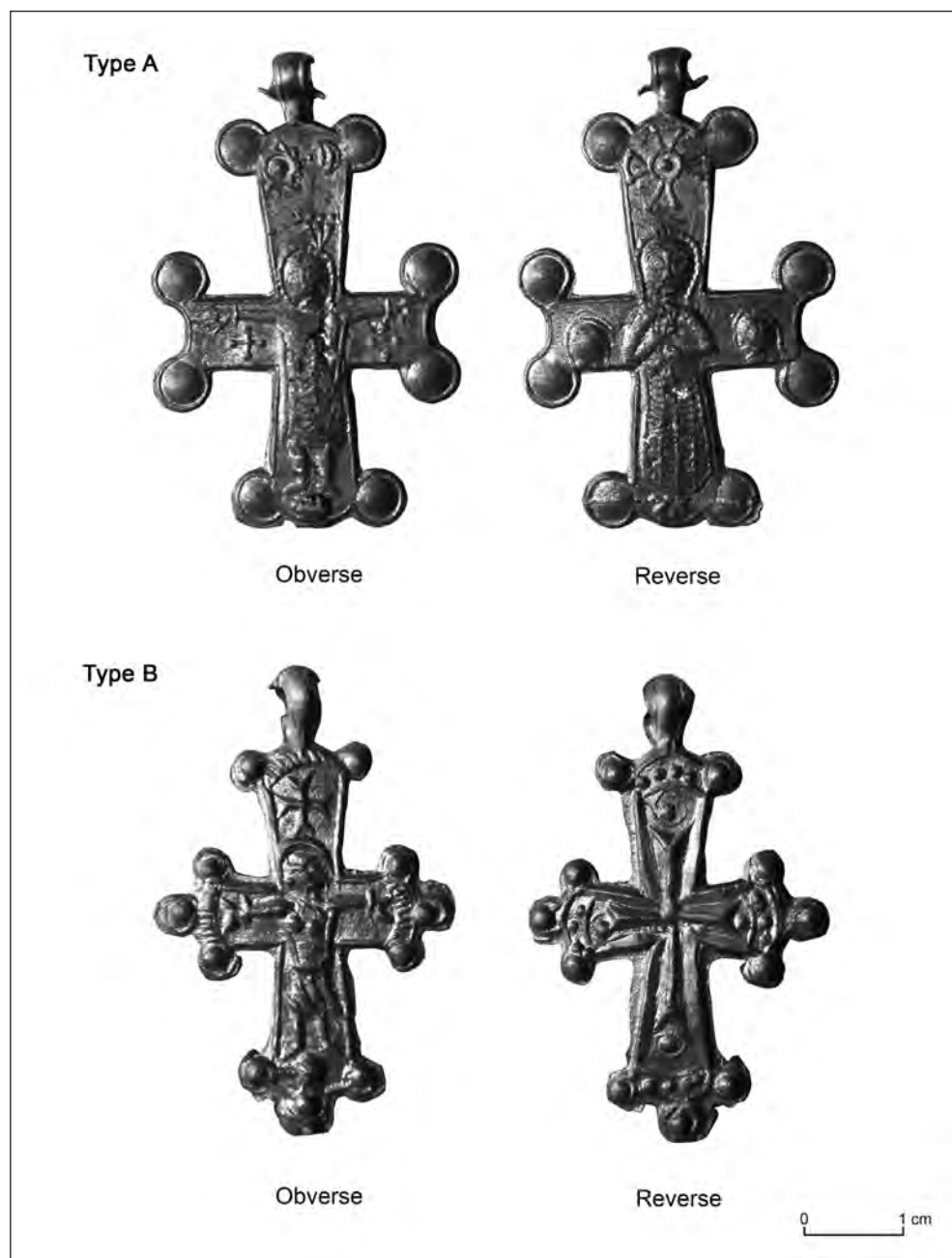


Fig. 1. The encolpia from Naqlun: top, Type A (Nd.11.149.1); bottom, Type B (Nd.11.150) (PCMA Naqlun Project/photos W. Godlewski)

ICONOGRAPHIC ANALYSIS

Encolpia like the ones from Naqlun are seldom seen in Coptic art (Godlewski 2014: 187), hence the difficulty with finding direct parallels from Egypt. However, encolpia were very popular in the whole region influenced by Byzantine culture of the 6th century (Pitarakis 2006: 23). Being well documented, the latter are a good source for comparative analyses, placing the pendants from Naqlun in a broader cultural context and providing insight into the possible dating of these artifacts.

FIGURE OF CHRIST

The Crucifixion scene is depicted on the obverse of both types of encolpia from Naqlun. There are two iconographic types of the Crucifixion in the Byzantine tradition, coexisting for some time. The one that is earlier depicts Christ alive on the Cross and wearing a long tunic. The later shows Christ dead, his eyes closed and wearing only a loincloth. Instances of a mixed image, combining both types, can also be found, as, for example, in the so-called Theodore Psalter from 1066, originating from Constantinople and now kept in the British Museum in London. In one illustration, the crucified Jesus is shown with eyes closed and wearing a loincloth, in another Christ is in the same pose, but wearing a *colobium*. John Martin (1955: 191) believes that the transition period from one iconographic tradition to the other lasted from the late 9th century to the beginning of the 10th century. It corresponds well with Anna Kartsonis's research, suggesting that the two iconographic traditions were in use simultaneously until the end of the Macedonian period, that is, until the

middle of the 11th century (Kartsonis 1986: 68).

The crucified Christ is present on the obverse of both types of encolpia from Naqlun, but the representation is different. Christ on Type A pendants is wearing a *colobium*, a sleeveless kind of tunic, wider than a *chiton*; in Type B, he is shown in a loincloth, the so-called *perizonium*, which appeared in Crucifixion iconography after the 10th century. Moreover, in Type A, Christ's eyes are open, in Type B they are closed.

The motif of three lines terminating in oval spikes springing from the head of the crucified Christ merits attention as it is not found in representations on related objects. Nor are they present in the Byzantine iconography of the Crucifixion, although similar elements can be found in Coptic iconography.

The last page of the Glazier Codex from the 4th/5th century contains a depiction of a cross encircled by peacocks, sprigs and doves (Weitzmann 1979: Cat. No. 444a). The cross refers in form to the Egyptian hieroglyph sign *ankh*, which means 'life'. A similar kind of cross, encircled by floral elements, is also found in paintings from Kellia (Bolman 2007: Figs 20.2, 20.3). Sprigs and peacocks, often appearing in Christian art, symbolize peace and the Resurrection (Weitzmann 1979: 494). Therefore, it is probable that the element placed above Christ's head on the obverse of Type A pendants from Naqlun was meant to depict sprigs. It could also be a crest of feathers, like that on a peacock's head (for example, Leroy 1974: Pl. 2.1). The rendering of this element as three lines ending in round spikes is common.

Whichever the case with regard to the pendants from Naqlun, the main purpose of including this motif would have been to symbolize the Resurrection of Jesus Christ.

SKULL OF ADAM

A skull is found in place of the *suppedaneum* below the feet of the crucified Christ in both types from Naqlun. This motif was supposed to be a reminder of the victory over death and a symbol of the Redemption (Pitarakis 2006: 58). In the description of the Crucifixion in the Gospels, the hill where Jesus died is called “Golgotha, place of a skull”. The skull shown under the cross symbolizes Adam’s grave, which in the Jewish tradition was located on one of the hills near Jerusalem. The Roman tradition referred to the hill where executions took place as Calvaria (Latin for the dome of the skull). This tradition is represented in the iconography of the Crucifixion. According to Pierre Maraval (1985: 56–57), the cross standing on the skull not only represents Golgotha, but is a symbol of Adam’s sin being washed away by the death of Jesus. Nevertheless, as André Grabar (1984: 239) pointed out, the skull is not present in depictions where the crucified Jesus is shown alive. In Byzantine iconography, it appears to have coexisted with representations of the dead Christ and appeared in the Crucifixion scene by the late 9th century.

The depiction on Type A pendants with Christ alive standing on Adam’s skull is incompatible with Grabar’s conclusion. It could mean that the pendants were of local production and the craftsmen making them were not aware of this complex symbolism. This is plausible considering that Egypt under Arab rule from the 7th century onward was isolated from Byzantine mainstream art.

SYMBOLS OF THE SUN AND THE MOON

A disk and a crescent, the sun and the moon, are depicted on the obverse of pendants of Type A, at the top of the vertical beam of the cross. These elements, which were typically situated above the *titulus* (missing on the pendants from Naqlun), became a standard component of the Crucifixion scenes after the period of the iconoclasm, although they could have appeared even earlier, as for example in an 8th century icon from Saint Catherine’s Monastery on Mount Sinai.

The sun and the moon in the Crucifixion scenes could refer to the text in the Gospels (Lk 23, 44–45): “... and there was a darkness over all the earth until the ninth hour, and the sun was darkened, and the veil of the temple was rent in the midst ...”, and to the Old Testament prophecy concerning the coming of the Messiah (Am 8, 9): “... the sun go down at noon, and I will darken the earth in the clear day ...”.

In Byzantine art, the sun and the moon were shown in a schematic way: as a disc or a star and as a half-moon respectively, their appearance being not limited solely to the Crucifixion scenes. They appear, among others, in an ivory plate from the 6th century showing Justinian, which is now kept in the Louvre, as well as in the Joshua Roll from the 10th century, which is in the Vatican Library (Cutler 1991).

These symbols are not helpful in dating the object, because lunar and solar symbols are universal and do not change much through time. Thus, conclusions here are untenable.

TWO SMALL CROSSES UNDER THE ARMS OF CHRIST

Two small crosses under the arms of the crucified Christ, seen on the obverse of

Type A encolpia, are rather atypical for objects of this kind. However, a look at the iconography of the Crucifixion leads to assumptions regarding their symbolism. Early depictions of the Crucifixion, as presented for instance on an ivory plate stored in the British Museum, or as described in the Rabbula Gospels from the 6th century, comprise other figures beside Christ on the cross. They are: the Mother of God, John the Apostle, soldiers, weepers, angels. An assembly of figures limited to Mary, Saint John and angels, all above the cross, first appeared in the 8th century icon from Saint Catherine's Monastery in Sinai. Despite a changing iconographic tradition of depicting certain figures in the Crucifixion, two figures, namely the Mother of God and John the Apostle, were regularly featured under the cross (Podskalsky and Weyl Carr 1991). The same rule was observed with regard to encolpia. Already in the early cross-shaped pendants, these two figures were depicted at the end of the horizontal beam (Pitarakis 2006: 56, Fig. 34). Therefore, two small crosses could symbolize the Mother of God and Saint John.

Another explanation is that these elements symbolized the other two crosses on Golgotha. In the Crucifixion iconography, the two crucified villains often appear next to the crucified Jesus. The use of perspective, meaning that the cross to which Christ is nailed is in the foreground, gives the illusion of His cross being bigger than the other two crosses. The craftsman who made the encolpia from Naqlun might have had this aim in mind, but a binding conclusion cannot be reached for lack of similar depictions on other pendants of this kind.

FIGURE ON THE REVERSE OF TYPE A ENCOLPIA

The figure depicted centrally on the reverse of Type A pendants most likely represents the Mother of God. It is a typical motif observed on the back of encolpia (Pitarakis 2006: 55–84). This juxtaposition with the Crucifixion scene on the other side emphasizes the divine and human nature of Christ, and highlights the important role of the Mother of God in the Incarnation of Christ (Pitarakis 2006: 57; Vassilaki and Tsironis 2000: 453).

The way that the Mother of God was depicted on encolpia changed over time. The most common type used from the 9th to the 10th century was the Kyriotisa Mother of God (Pitarakis 2006: 57–60); in the 10th century, a new iconographic type was introduced and developed into the most popular type until the end of the 11th century (Pitarakis 2006: 68–75). The Kyriotisa-type was replaced with Mary in the orans pose, her hands raised in a praying gesture, followed in the 11th century by the Hodegetria, the oldest and the most widespread depiction of Mary with Jesus in her arms. According to Pitarakis (2006: 76), the presence of such depictions on the reverses of encolpia corresponds with a dynamically growing cult of the Hodegetria icon in Constantinople.

The Mother of God on reverses of Type A encolpia from Naqlun holds her hands to her breast and is not holding Jesus Child. This type most likely resembles Mary of the Kyriotisa type. Pitarakis emphasizes the fact that in most depictions of this type Jesus is held in the arms of his Mother, although there are examples from the 9th and 10th centuries where the Child is not present (Pitarakis 2006: Cat. Nos 9, 10).

Mary on the pendants from Naqlun can be classified as a Kyriotisa based on the fact that such a depiction on the reverse was always accompanied by the crucified Jesus wearing a *colobium* (Pitarakis 2006: 57).

HEADS IN MEDALLIONS

Two elements visible on either side of the Mother of God on the reverse of pendants of Type A could depict human heads surrounded by a nimbus or placed in a medallion. Parallels for this element can be found on other encolpia from a Byzantium culture context. The reverse of early cross-shaped encolpia from the 8th century features a depiction of the Mother of God and the Child in the center and half-figures of archangels in each of the arms (Pitarakis

2006: 35). This form of decoration became very popular in later periods. Another popular type of decoration on the reverse comprised the Four Evangelists on the arms of the cross (Pitarakis 2006: Fig. 38). A third decorative style consisted of images of other saints placed on the cross arms: as half-figures (Pitarakis 2006: Fig. 35), in medallions (Pitarakis 2006: Cat. No. 95), or as whole figures (Pitarakis 2006: Fig. 36). Examples of pendants where the Mother of God is depicted alone are known as well (Pitarakis 2006: Fig. 46).

Therefore, the two elements on the reverse of Type A encolpia can be depictions of angels or of one of the Four Evangelists. It is puzzling, however, why there are only two figures and not four.

CONCLUSIONS

The iconographic analysis indicated that the pendants from Naqlun were local substitutes for objects of this kind originating from the Byzantine world. The decoration of the encolpia matched the Byzantine tradition in part, but there are also motifs without direct parallels, for instance, the peacock feathers above Christ's head on Type A pendants. Again, this can be proof that the encolpia from Naqlun were made in a local workshop. Neither type from Naqlun matches any of the types of cross-shaped pendants from an established Byzantine cultural context (Pitarakis 2006: 30–40). Their execution implies serial production, therefore it is probable that they were manufactured in a place where objects of this kind would have been merchandised on a large scale.

The iconography is useful also for determining the time when the pendants were produced, although in the case of the

encolpia from Naqlun, the coexistence of different motifs as well as iconographic types makes the dating more difficult. The earlier iconographic type of the Crucifixion, that is, Christ alive and in a *colobium*, on pendants of Type A, was in use until the mid-11th century. The later tradition, present on Type B pendants, depicting Christ with eyes closed and in a *perizonium*, started at the end of the 8th century and on cross-shaped encolpia in the 9th century. The two types coexisted until the mid-11th century. Moreover, on both pendant types from Naqlun Christ was depicted standing on Adam's skull. This motif was not present in Byzantine iconography of the Crucifixion in the 9th century and did not appear with representations of Christ alive.

The Mother of God image on the reverse of Type A pendants, assuming that it is the Kyriotisa type coexisting with

Christ wearing a *colobium*, narrows down the probable time of its production to the period between the 9th and 10th century. In turn, the cross on the reverse of Type B pendants is characteristic of pendants from the 8th century (Pitarakis 2006: 56), although such an early date is not commensurate with the image of Christ in a *perizonium* on the obverse.

Assuming that the presented objects are from the same period, they can be said to be from the mid-9th until the end of the 10th century. The dating derived from an iconographic analysis of the artifacts is compatible with the archaeological context, suggesting that the encolpia were deposited before the end of the 10th century.

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3D documentation in archaeological fieldwork: a case study from the site of Metsamor

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Abstract: Three-dimensional recording techniques, although growing rapidly in efficiency and applicability for archaeologists, have still not been turned to full account, mainly because they require for the most part expensive equipment and know-how. In this respect, photogrammetry is unique, being relatively cheap and easy to use. The joint Armenian–Polish archaeological project in Metsamor drew on the possibilities of this technology, which is relatively new to archaeological proceedings, in the daily recording system used at the site. The following article discusses the step-by-step application of photogrammetry in field documentation and its positive impact on archaeological work, Metsamor being taken as a case in point.

Keywords: Metsamor, three-dimensional registration, 3D, photogrammetry, digital documentation method, digital archaeology

The Early Bronze Age–Iron Age III archaeological site of Metsamor in Armenia, excavated since 2013 by a joint Polish–Armenian team, was targeted from the start as a testing ground for various new methods and technologies to improve the efficiency of archaeological fieldwork, while keeping costs at bay. The site, which lies on the outskirts of modern-day Taronik, some 35 km west of Yerevan, is a large citadel on a hilltop and a lower town on terraces situated around the hill (for recent archaeological fieldwork, see Jakubiak 2017, in this volume).

A previous case study (De Reu, De Clercq et al. 2013) demonstrated that implementing three-dimensional recording methods in the daily system of documenting archaeological fieldwork

can considerably speed up the process of drawing plans, enhancing at the same time their accuracy. Moreover, excavation is in essence a destructive process, hence the importance of recording as much information as possible during fieldwork. Three-dimensional models of an excavated area capture not just the surface geometry in previously unimaginable detail, but also the surface colors of the site, making it easier to detect soil discolorations and patterns. Repeating the process at regular intervals will create a series of models that will encapsulate the progress of the excavation. Taken together, the models provide archaeologists with an extensive and mobile — meaning easy to transport and available at any time for reinterpretation — backup of the work carried out through

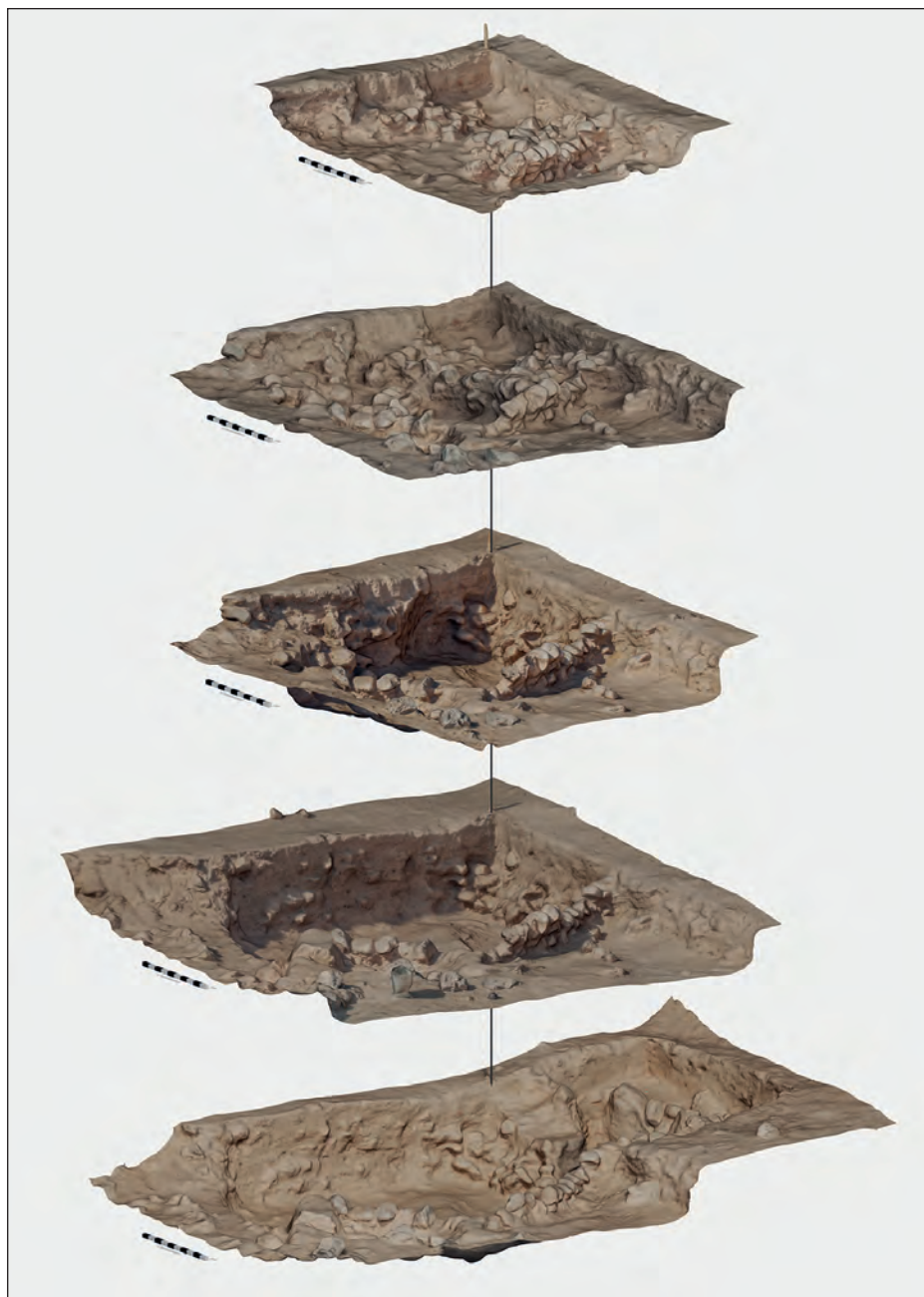


Fig. 1. Sequence of selected three-dimensional models from Metsamor sector VIII square S16 showing the progress of excavation in the 2015 season (3D models and visualization O. Bagi)

the season(s), something previously impossible [Fig. 1]. At Metsamor, the key issue was to overhaul the conventional paper-and-pencil documentation system and

replace it with digital plans and profile drawings based on orthophotos¹ generated from three-dimensional surface models.

METHODS

In general, there are two ways of obtaining an accurate image of a surface without perspective distortion, and both involve generating three-dimensional surface models. The use of laser scanners is a somewhat more sophisticated method, but for most excavation projects the high cost and the need for specially trained staff to operate the equipment are restrictive. The Metsamor team needed a substitute technology that was more readily available and, most importantly, more user-friendly. Photogrammetry, in conjunction with the low-cost Agisoft Photoscan software package, offered a potent alternative for a fraction of the cost of laser scanners, considering that earlier studies (Doneus et al. 2011; Grussenmeyer et al. 2008) have demonstrated its accuracy to be comparable to laser-scanning.

The main advantage of photogrammetry is that it requires neither special equipment nor extensive expertise in order to achieve highly accurate results. Therefore, its application costs are significantly lower than in the case of other three-dimensional recording methods. A digital camera of any kind suffices (Callieri et al. 2011: 36), although a full-frame DSLR camera equipped with a wide-angle lens² is preferred. With the application of advanced computer vision algorithms embedded

into Photoscan, such as structure-from-motion (SfM), it is possible to obtain three-dimensional data from a sequence of two-dimensional pictures taken in the field by a digital camera. The concept of the algorithm is based on the automatic detection of feature points and tracking of their movement throughout a sequence of

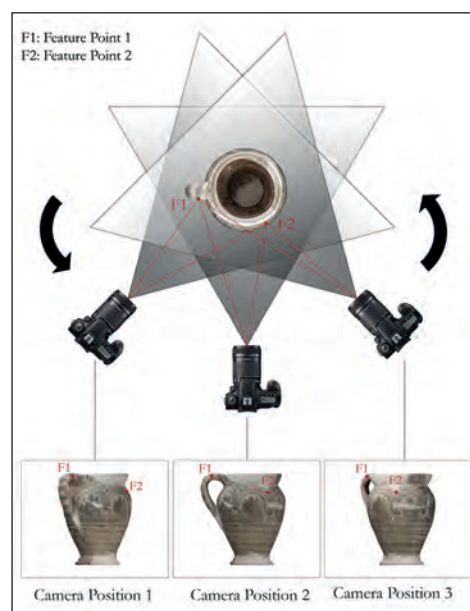


Fig. 2. Concept of feature point tracking and three-dimensional registration used by the structure-from-motion algorithm (Photo O. Bagi)

¹ "Orthophoto offers a geometrically correct image in which all possible deformations, due to camera tilt and variations in object height, are corrected" (De Reu, Plets et al. 2013: 1111).

² 18 mm or lower focal length lenses offer a substantial field-of-view even in combination with crop-sensor cameras, although ultra wide-angle objectives, such as fish-eye lenses should be avoided because of their extreme image distortion.

overlapping pictures taken from different camera positions [Fig. 2]. With the help of collected data it is possible to determine not only the exact location of each camera, but also the precise location of each feature point in three-dimensional space (Westoby et al. 2012: 301–302). The collected information, in combination with data retrieved by multi-view stereo reconstruction algorithms, allows the software to recreate the geometry of an object with high precision (Verhoeven 2011: 68). Moreover, the addition of manually established ground control points (GCP),³ measured by a total station in the field, allows archaeologists to check the accuracy of the three-dimensional model. Besides, knowing the exact location of these marker points allows the software to automatically

scale the model to its real-world dimensions and align it to the established coordinate system used for the excavation project's documentation system. Therefore, it is possible to perform precise measurements directly on the three-dimensional model without the need of visiting the excavation field.

Since the workflow within the software is highly automated, the level of human intervention needed to attain the final result is minimal. Thus, it provides an extremely user-friendly experience, one that does not require extensive knowledge in order to achieve sufficient results. However, experience and practice, especially in the field of photography, can significantly shorten the processing time, and increase the accuracy and quality of the final result.

WORKFLOW

In principle, the workflow of the whole process can be broken down into three main stages: photographing, photogrammetric processing and drawing. The first is just two steps, the others comprise several sub-steps. Importantly, in opposition to the conventional paper-and-pencil documentation system, photographing is the only phase that takes place in the field. This allows archaeologists to complete most of the documentation work indoors, thus minimizing mistakes due to fatigue and increasing the possibility of multi-tasking due to the highly-automated nature of the photogrammetric process.

PHOTOGRAPHING

Before the photographing starts, GCPs have to be placed and measured in the

documented area. A minimum of three of these points should be present in the photographed area (Verhoeven et al. 2013: 47), but it is advisable to aim for more (at least 5–6) in order to have sufficient backup GCPs in case of error. Their placement is completely arbitrary, but it is good practice to disperse them evenly across the area of interest.

The photogrammetric process, as said above, is based on a sequence (or several sequences) of photos taken from various camera angles and positions covering the whole area of interest. The way of acquiring these images can have significant impact on the time spent in the field as well as on the speed of photogrammetric processing and the quality and accuracy of the final result. Therefore, this stage is considered the most

³ A number of highly visible marker points placed within the photographed area and measured along the three axes (x,y,z) by a total station or GNSS RTK.

important within the whole documentation process (Kjellman 2012: 20).

In the case of a surface, whether excavation trench or architecture, there are several possible approaches to obtaining the photos needed for the three-dimensional documentation. The photographer can either use ground pictures taken by a hand-held or mounted camera (on a tripod or a photography mast), an UAV,⁴ or a combination of the two. The highest resolution and quality are obtained, not surprisingly, by the first method thanks to the proximity of the camera to the subject. However, it also produces the highest number of images because of the smaller field-of-view of a camera held closer to the ground. More photos are needed to cover the whole area of interest and this can significantly increase the time spent in the

field as well as the size of data generated and the speed of photogrammetric processing. Mounting a camera high on a tripod or mast will lower orthophoto quality, but will increase the camera's field-of-view substantially, accelerating therefore the process of photographing by decreasing the number of pictures required to cover the subject of the documentation. Undeniably, the deployment of UAVs provides the largest field-of-view and the fastest process of photographing, however this comes with a significant trade-off in image resolution and, in some cases, precision [Fig. 3].

As always, a middle way seems to be the best solution. Combining the methods, that is, using an UAV to photograph large swathes of horizontal surfaces, and a hand-held or mounted camera for important details and vertical or near-vertical surfaces,



Fig. 3. Two magnified fragments of orthophotos covering the same area: left, created from close-range images taken early in the morning and right, generated from photos taken in the afternoon at higher altitude with an UAV. Note the difference in sharpness and visibility (Photos M. Truszkowski, O. Bagi)

⁴ UAV stands for Unmanned Aerial Vehicle; this includes remotely operated multirotors, popularly known as drones, that are capable of carrying digital cameras.

can provide a flexible compromise between speed and quality that can be easily adjusted to fit individual scenarios [Fig. 4].

Naturally, working outdoors gives one little or no control over light conditions, yet the amount of shadow in the pictures can affect the quality of the orthophoto [see Fig. 3]. This in turn could have a negative effect on the legibility and interpretability of the acquired data. Therefore, photographing should ideally take place in cloudy weather, a rare instance on sites in the Middle East to start with. A suitable alternative is to photograph early in the morning when the whole trench is in the shade or at midday when shadows are the shortest.

In all cases, after manually establishing and measuring the ground control points, one has to aim at obtaining a sequence of overlapping and sharp⁵ images parallel to the photographed surface(s) [see Fig. 4]. This can take an experienced photographer as little as 15–20 minutes in the case of a standard 5 m by 5 m trench depending on its depth and content. As discussed before, a higher number of pictures results in higher accuracy and quality, but also in longer processing time. Therefore, it is important to find a reasonable compromise between the two extremities. Beginnings can be difficult, but with practice and experience this will become considerably easier.

PHOTOGRAMMETRIC PROCESSING

Depending on the light conditions during a photographing session, an optional step can be included into the workflow

before moving on to the photogrammetric processing. In the case of the presence of unwanted shadows, the images can be enhanced by increasing the brightness of the dark areas⁶ using open source image manipulation software, such as GIMP. This can increase the quality of the final orthophoto substantially, helping at the same time the photogrammetry software to read as many pixels as possible in the sequence of images, which in turn can lead to increased accuracy.

Photo alignment

As mentioned before, Agisoft Photoscan workflow is divided into clearly distinguishable steps. The first step, after feeding the photos into the software, consists of determining the precise locations of the camera in the three-dimensional space relative to the photographed subject at the moment of taking each individual picture. This step is called photo alignment. Agisoft Photoscan utilizes the previously discussed fully automated structure-from-motion algorithm to register and track a set number of feature points. Therefore, human input needed during this initial step is minimal. Calculating camera locations is based entirely on the information collected automatically from the images by the software.

Upon finishing the photo alignment, the processed data is presented as a draft, a so-called sparse point cloud [Fig. 5 top]. This is essentially a loosely spaced group of points floating in the three-dimensional space that represents the approximate shape and color of the photographed subject.

⁵ In order to ensure that all of the photographed area stays in focus, it is advisable to use a narrow aperture setting ($f/18$ or higher), while keeping ISO as low as possible (100–400) to avoid noise in the pictures.

⁶ Compared to compressed JPEG, shooting pictures in the RAW file format makes the process of enhancing areas covered by deep shadows much faster and easier. To save storage space, images can be converted to JPEG following this step.

This allows archaeologists to have a general overview of the collected information and detect any errors that might have occurred either during the photographing

or alignment process. The software offers an option to disable or realign any photos that are not correctly displayed. Moreover, using simple tools one can crop the area of

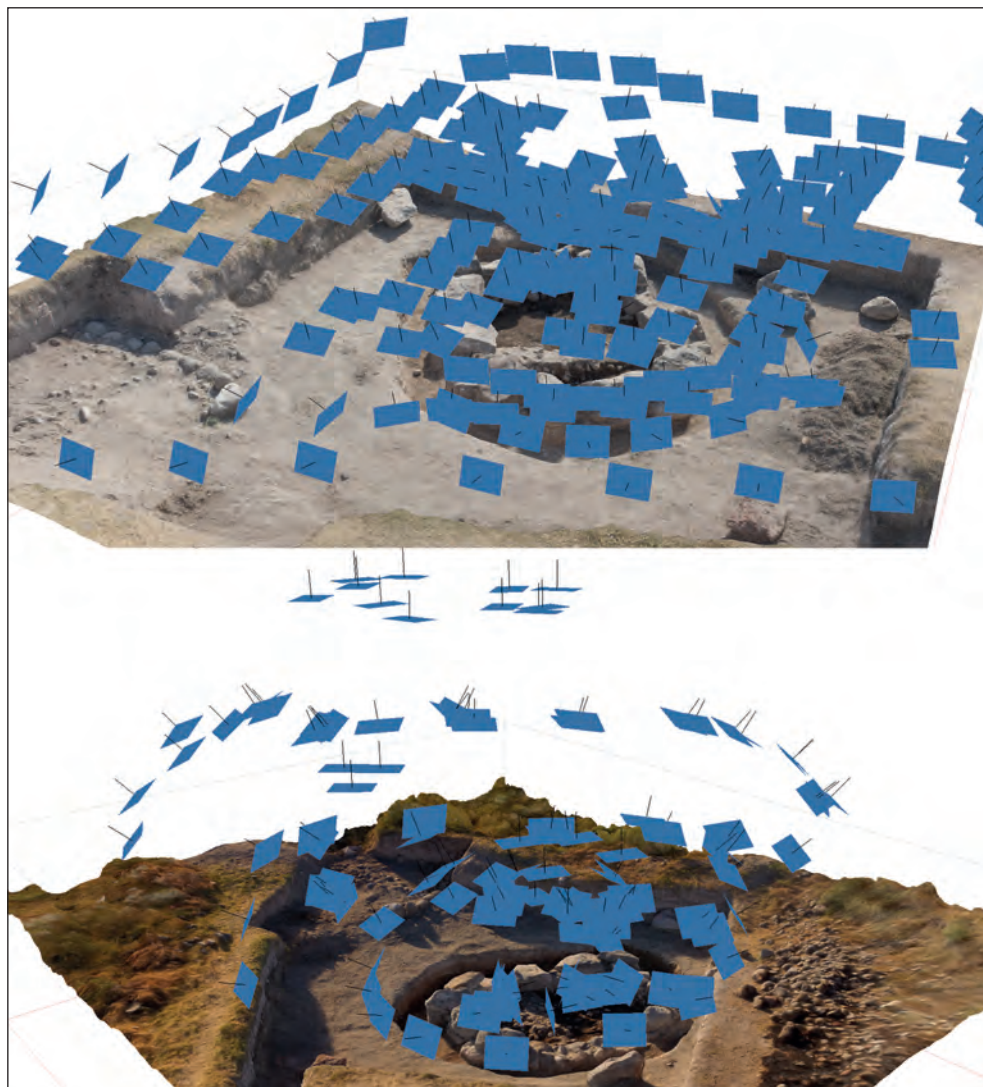


Fig. 4. Comparison of camera positions while capturing the same area with two different methods: top, only close-range images, and bottom, a combination of UAV and close-range photos. Note the difference in the number of pictures needed to cover the same area, 222 and 124, respectively (3D models and visualization M. Truszkowski, O. Bagi)

interest and delete all the unwanted noise generated during photo alignment before moving on to the next, more hardware-demanding step.

Dense point cloud generation

Dense point cloud generation is principally the resolution enhancement of the sparse point cloud. The number of floating points is increased by the software from the range

of tens of thousands to millions [see *Fig. 5* bottom]. Although the process is based on different algorithms, such as multiview stereo (Szeliski 2010: 558–570), it is just as fully automated as the one used during the previous phase. However, it is important to note that the process is considerably more hardware-demanding.

This leads to one genuine drawback of the photogrammetric documentation

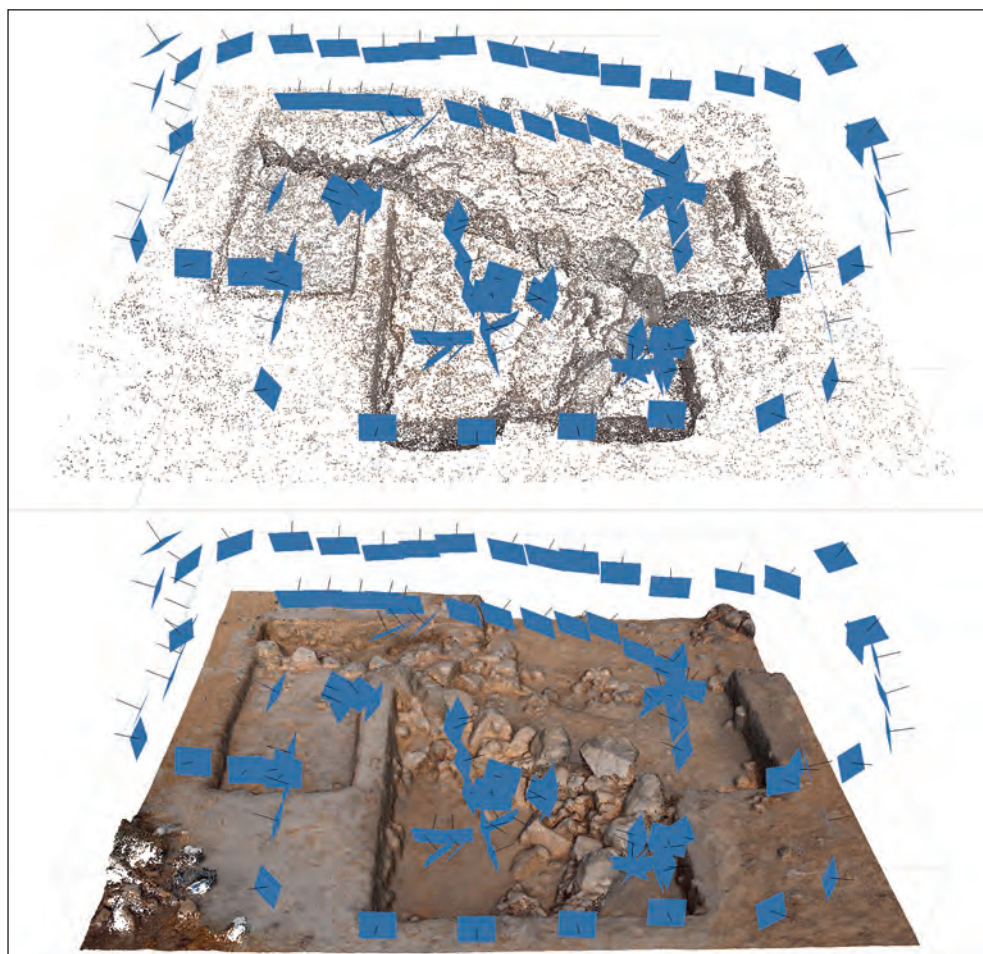


Fig. 5. Sparse point cloud (top) and dense point cloud (bottom) of the same excavation trench containing 125,572 and 6,690,955 points, respectively (3D model and visualization O. Bagi)

method, namely the sheer amount of computing power required by the software for calculations. In order to reconstruct a subject in detail, Photoscan analyzes and attempts to find a match for all pixels in each consecutive image. Depending on the number and resolution of the photos this can be a cumbersome task requiring a powerful laptop⁷ to complete the task within an acceptable (satisfactory) timeframe. As said, the approach used in the field during photographing can have a significant impact on the processing time, especially during this step. Therefore, it cannot be stressed enough that for efficient documentation work, it is essential to find the ideal method that will produce the lowest number of photos, while yielding a sufficiently detailed orthophoto adequate for plan drawing.

Mesh and texture generation

As the name suggests, a dense point cloud is a group of unconnected points organized in the shape of the photographed subject. In order to obtain a detailed three-dimensional copy of the target of the documentation, Agisoft Photoscan needs a solid surface, a so-called mesh [Fig. 6], upon which the texture⁸ can be projected.

After optimizing the number of points, the mesh is, essentially, generated by connecting the remaining individual points (vertices) to form a pattern of triangles that describes the surface of the subject [Fig. 7]. The result can be displayed in

three different ways: by showing only the connecting lines (edges); by displaying the uniformly colored triangular planes (faces) filling the space between points; or by rendering to each of the aforementioned triangular planes a rough estimate of their original color. These display modes are referred to as wireframe, solid and shaded [see Fig. 6].

Upon completing mesh generation, a highly detailed geometry of the documented object is ready. However, at this point the color information is still rather sketchy. Texture is required to attain the real surface colors of the target in ultra-high resolution. Just as all the previous steps, this one is also highly automated in Agisoft Photoscan. After entering the initial resolution parameters,⁹ the software automatically calculates the texture from the original photo sequence.

The mesh and texture calculations are somewhat less hardware-demanding than the first two steps and can be completed in a relatively short period of time.¹⁰

Reference points and orthophoto generation

Before being able to extract an orthophoto from a finished three-dimensional model, it needs to be scaled and aligned to its real-world size and orientation. In order to do so, the software needs external reference points with precise three-axial (x, y, z) measurements. Each previously established marker (prior to photographing) needs to

⁷ At least a higher mid-range or lower high-end laptop equipped with a dedicated video card and at least 16 GB of memory is recommended.

⁸ This is essentially a montage of photos created from the pictures taken in the field that is stretched upon the whole area of the three-dimensional model.

⁹ The recommended resolution for plan drawing is 8192 or 12,288 pixels width depending on the size of the documented area.

¹⁰ Based on personal experience, the processing time of mesh and texture generation is approximately ten times shorter than the combined calculation time of photo alignment and dense cloud generation.

be manually located and marked on the model [Fig. 8]. Once the task is done, the coordinates, measured earlier with a total station, can be entered into the project file. The inserted data is used by the software not only to automatically scale and position the model, but also to assess its accuracy. Agisoft Photoscan can provide accuracy

measurements separately along the x, y and z axes (easting, northing and elevation), as well as the average of the three axes. If the result is not satisfactory, the program offers an option for optimization. This automated algorithm recalculates the camera locations taking into account the recently entered total station measure-

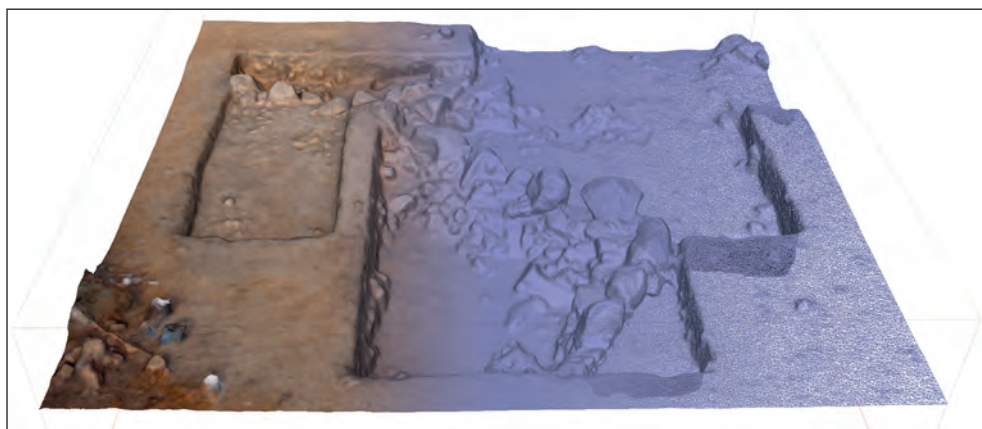


Fig. 6. Combined three-dimensional model of an excavation trench showing (left to right) the mesh in shaded, solid and wireframe modes (3D model and visualization O. Bagi)

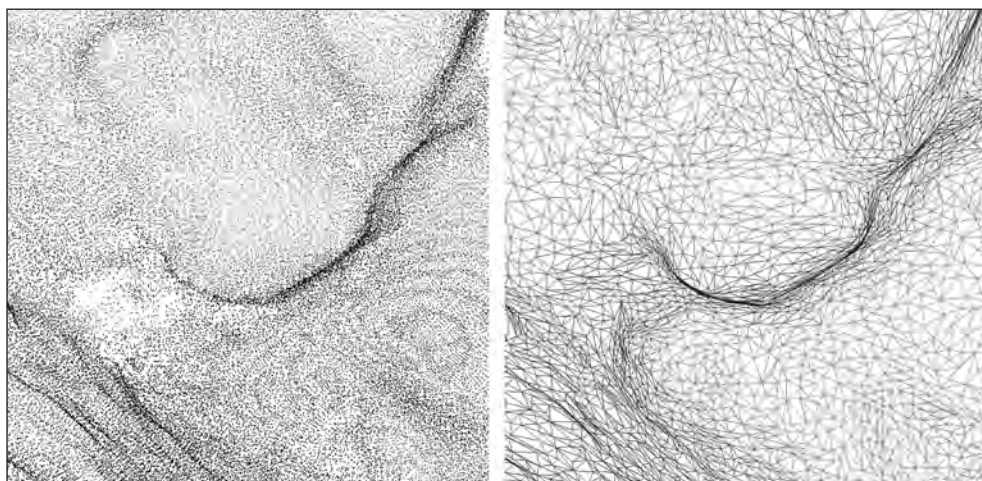


Fig. 7. Dense point cloud (left) and wireframe (right) of the same segment of a three-dimensional model (3D model and visualization O. Bagi)

ments. This process can significantly improve the accuracy of the geometry, however, it requires repeating of all the previous steps, which can consume valuable time.

Yet again, it cannot be emphasized enough that the way the photos were obtained in the field can have a significant impact on the accuracy of the 3D model. With practice and experience one can achieve precision measured in millimeters even in the case of larger excavation trenches.

From this point onwards the orthophoto generation process is fairly straightforward. After entering the resolution parameters, the software calculates the horizontal (plan) or vertical (profile) orthographic projection of the documented object automatically. Moreover, the user may also generate, just as effortlessly, a digital elevation model (DEM) of the target with contour lines at pre-set intervals [Fig. 9]. This allows archaeologists to conduct basic measurements, such



Fig. 8. Reference point (plastic bottle cap) marked on the finished three-dimensional model (Photo O. Bagi)

as elevation, distance, volume or even cross-section, with ease directly on the three-dimensional model. The finished orthophoto can be exported in three file formats; JPEG, TIFF or PNG.

DRAWING

Archaeologists have several software solutions at their disposal to render three-dimensional data into two-dimensional plans. Beside the most popular vector graphic programs, such as CorelDraw or Adobe Illustrator, there are some fairly competitive open source solutions, like Inkscape, that can provide a viable alternative for expeditions operating on a tight budget. Regardless of the software in use, the workflow during plan drawing is relatively similar in all cases. It can be broken down into two simple steps: scaling and drawing.

Scaling

The file formats offered for exportation by Agisoft Photoscan are widely recognized by most vector graphic programs. Therefore, it should not pose a problem to import the finished orthophoto into the drawing software used in the documentation system of the archaeological mission. The purpose of doing so is to use the image as a backdrop to the plan [Fig. 10]. This allows the user to trace the outline of each feature of interest, be it architecture, soil discoloration or any other element of the orthophoto worth recording. However, before one proceeds with drawing, the imported image has to be resized to match the scale used in the documentation.

It is highly advisable to use a uniform scale in the two-dimensional documentation throughout the season, which can make life much easier when one attempts

to combine drawings from different areas. The only information required to resize the orthophoto to the desired scale is the known distance between at least two distinguishable points. There are various features in the image that can be used to this end, for instance the corners of a trench or the markers used during photographing. The required measurements can be easily obtained from Agisoft Photoscan.

Drawing

After successfully scaling the image, drawing is simply a matter of retracing

the features visible in the orthophoto [see *Fig. 10*]. This step is very much like digitizing hand-drawn plans, therefore should be familiar even to those who are accustomed only to pencil-and-paper documentation and have never used a fully digital recording system before.

Even though the final result might look similar to drawings done by traditional methods (after digitization), the crucial difference lies in the details. That is to say, the level of accuracy measured in millimeters and the amount of effort put into the workflow in order to obtain a plan

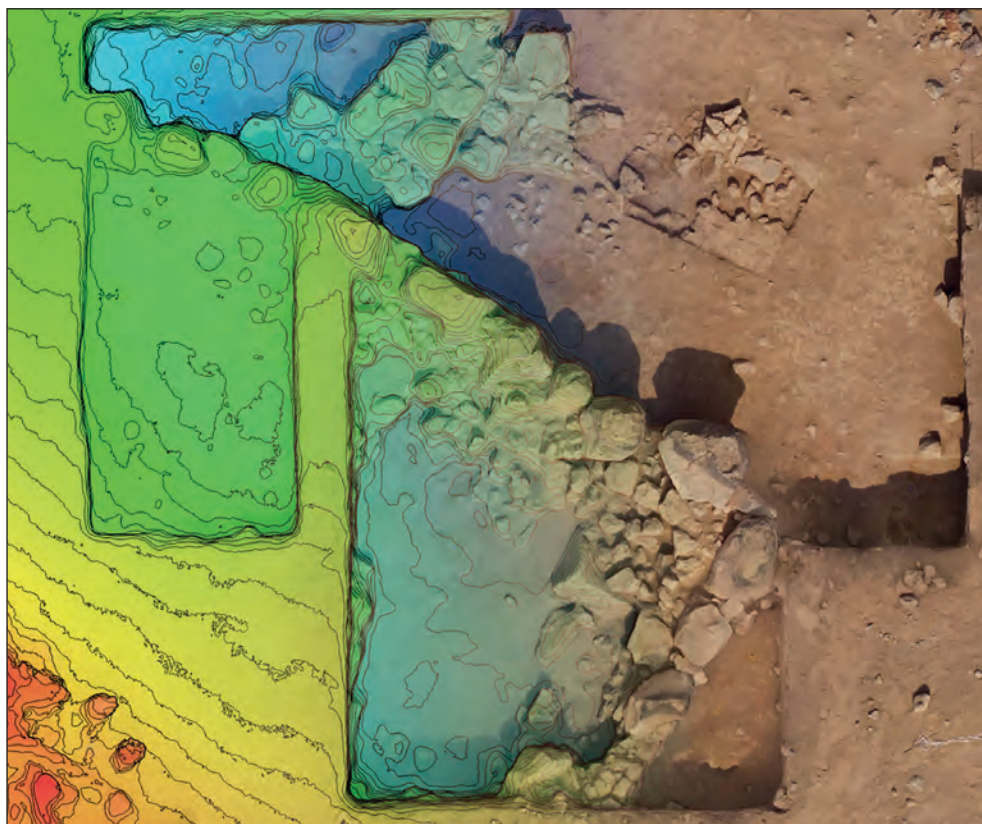


Fig. 9. Combined image of a final orthophoto (right) and DEM (left) with contour lines set to every 5 cm (Photo O. Bagi)

or section drawing. As a matter of fact, the whole process can be finished within a few hours.¹¹ This allows archaeologists to use digital recording on a daily basis, therefore

making the excavation documentation not only more comprehensive, but also more useful in decision-making during the fieldwork.

CONCLUSIONS

Documentation techniques used in the field have changed little over the years and most excavation projects in the early 21st century are still relying on recording methods developed over a hundred years

ago. With rapid development of photogrammetric software, three-dimensional documentation can offer a highly potent alternative to the traditional pencil-and-paper approach. It provides unmatched

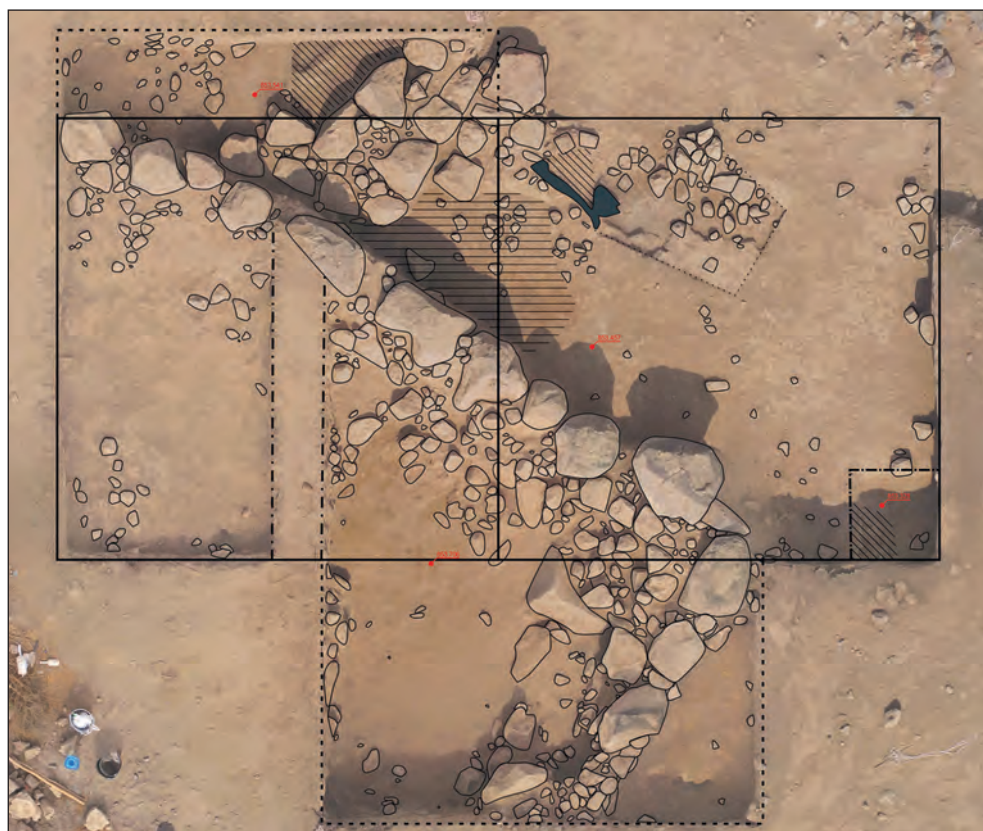


Fig. 10. Plan drawing based on an orthophoto placed in the background (Photo and drawing O. Bagi)

¹¹ Based on personal experience, for an advanced user the whole process of recording takes on average, depending on the scenario, approximately 2 to 4 hours for a 5 m x 5 m trench.

accuracy that can be achieved within a fraction of the time needed for hand-drawn plans.

The unparalleled speed of the process allowed the team at Metsamor to implement it into the daily recording system of the excavation. This resulted in a more thorough documentation throughout the season. Each excavated area was recorded in detail on a regular basis by the

process discussed in this article. This led to reduced workload by eliminating the need for spending hours or days measuring and drawing in the field. The new approach can help archaeologists in decision-making on-the-go, while providing a comprehensive back-up of their work, which can be used even after the end of the season for interpretation and stratigraphy analysis.

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Iraqi Kurdistan's heritage in the face of regional development: state of preservation of archaeological sites and damage assessment – preliminary report

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Abstract: The five-year Upper Greater Zab Archaeological Reconnaissance (UGZAR) project was initiated in 2012 as one of a number of survey projects in the Iraqi Kurdistan aimed at, among others, damage assessment of archaeological sites and new threats to the preservation of these sites, resulting from Iraqi Kurdistan's recent rapid development. The database produced within the frame of the UGZAR project can be used in heritage management. The paper presents the project's interim results and discusses the main factors endangering archaeological sites in Iraqi Kurdistan today.

Keywords: damage assessment, heritage management, Iraqi Kurdistan, development pressure, GIS database

The ongoing war in Syria has prompted many archaeological missions to shift their research interests to Iraqi Kurdistan, one of the few politically stable areas in the Near East with a working government and efficient security force.¹ Among these are The Land of Nineveh Archaeological Project led by Dr. Daniele Morandi Bonacossi of the University of Udine, The Erbil Plain Archaeological Project led by Dr. Jason Ur of Harvard University, The Eastern Habur Archaeological Survey led by

Dr. Peter Pfälzner of Tübingen University, the Archaeological Survey of the Sulaymaniyah Governorate led by Dr. Jessica Giraud of IFPO-Erbil (for information on the projects, see Kopanias and MacGinnis 2016). The Polish are represented by the UGZAR project (2012–2017) directed by Dr. Rafał Koliński from the Institute of Archaeology of Adam Mickiewicz University in Poznań.² The UGZAR project focuses on surveying the Upper Greater Zab area, which is still much of a *terra*

¹ The Asayish (Kurdish police, or security service which deals with terrorism among others) ensures security in the region. Vehicular traffic and passengers are checked regularly at frequent army road checkpoints.

² UGZAR is a designation of the field activities of the "Settlement History of Kurdistan" project financed by a generous grant awarded the Adam Mickiewicz University in Poznań by the National Centre of Science, Republic of Poland (project ID 2014/13/B/HS3/04872).

incognita in terms of archaeological finds. The Iraqi catalogue of archaeological sites *Archaeological Sites in Iraq* (Salman 1970) and atlas of maps showing the localization of these sites, *Atlas of the Archaeological Sites in Iraq* (Salman 1976), are not sufficiently precise and comprehensive. Thus, the aim of the project was to verify information from the atlas and the catalogue, while on the lookout for new, previously undocumented sites. An important component of the UGZAR project plan was also an assessment of the condition of particular archaeological sites and identification of the damage-threatening factors relevant to each site.

The destruction of archaeological sites (just as architectural monuments and individual artifacts) is associated usually with military action, especially in view of the war in Syria. This creates ample opportunities in a given region for robbers and antique dealers, although ordinary activities like building and agriculture can result equally well in the destruction of archaeological sites. Safety and a stable situation in a region do not mean that sites and monuments are not endangered. Iraqi Kurdistan is a fast developing region with building investment at every turn. A short visit to Erbil suffices to see the

rate at which change is taking place and it may be dangerous for Kurdistan's heritage. The aim of this article is to assess the damage to the archaeological sites that the UGZAR project has documented. The report together with a database will serve the local antiquity authorities to properly manage and protect archaeological sites in Iraqi Kurdistan.

A brief background on Iraqi Kurdistan's unstable past will help in understanding the present drive toward fast development of the region and the most important goals of the region's development strategy, most of which threaten to impact in a negative way the preservation of archaeological sites, even if sometimes contributing to their protection and promotion. The results of the damage assessment process will be discussed, followed by a case study of how the application of procedures prepared by Tsunokawa and Hoban (1997) with regard to an archaeological site threatened by road construction could be applied in other situations. These procedures could be considered as one of the elements of heritage management. Concluding on the challenges to heritage protection in Iraqi Kurdistan, the paper will outline some ideas which could also be implemented in Iraqi Kurdistan's heritage management.

AN UNSTABLE PAST

Kurdistan's partition between Turkey, Iran, Syria and Iraq cannot be easily explained without going into the historical intricacies of the political struggle for influence in the Near East after World War I and the collapse of the Ottoman Empire. It is a fact that the Kurds did not gain independence then and this situation of a nation without

a country continues to bear consequences (see McDowall 2007).

Iraqi Kurdistan was once considered Iraq's bread-basket, but for years the political situation has inhibited the agricultural sector. After the Algiers Agreement in 1975 Iran withdrew its support for the KDP (Kurdistan Democratic Party) and

the Kurdish movement was defeated in effect. To prevent the Kurds from massing in the foothills, the Iraqi government created a forbidden zone from 5 km to 30 km wide along the borders with Turkey and Iran. Villages there were destroyed and people were deported to collective towns (Stansfield 2003: 44–45). Destruction of the rural infrastructure and deportations continued through the 1980s (Stansfield 2003: 45).

The Iraq–Iran war (1980–1988) devastated the economy of Iraq. The Anfal campaign by the Ba’ath party in 1988 added to the destruction of rural structures and the foundations of agriculture in Iraqi Kurdistan (Stansfield 2003: 40–41). Villages were ruined, people deported and from 50,000 to 200,000 lives were lost, the government even using chemical weapons

against civilians (Stansfield 2003: 46; Logan 2009: 166).

The First Gulf War (1990–1991) resulted in new hardships for the region, which had to deal with United Nations and Government of Iraq sanctions (especially the United Nations Security Council Resolution UN SCR 661, §3–4).³ Surprisingly, the loss of external support boosted Kurdish economy, which improved gradually, especially in the agricultural sector, at least until the 1995 UN Security Council Resolution 986,⁴ which halted the rebuilding of the agricultural sector in Kurdistan (Stansfield 2003: 41). UN SCR 986 was later known as the Oil for Food Program, under which Iraq was allowed to export oil in exchange for humanitarian aid.

THE PRESENT AND THE FUTURE

The constitution of Iraq introduced on 15 October 2005, following the US invasion and the overthrow of Saddam Hussein’s dictatorship, guaranteed the autonomy of Iraqi Kurdistan with the Kurdistan Regional Government in charge of the region (Jamsheer 2007: 141). This gave the Kurds the opportunity to concentrate on rebuilding and developing the region. The Regional Development Strategy for Kurdistan Region 2013–2017 (2012; RDSKR), prepared by the Ministry of Planning (MoP), assumes growth in sectors like agriculture, industry, infrastructure, tourism, education, and others, impacting the archaeological heritage of Iraqi Kurdistan in several important ways, which will be discussed below.

Almost half the area of Iraqi Kurdistan is cultivable land (1,535,794 ha = 41.84% of the region; Kurdistan Regional Government, Ministry of Planning 2012: 61). Wheat and barley dominate the crop structure. Maize, sunflower and rice are cultivated on a smaller scale. Agriculture includes also production of vegetables, such as tomatoes, eggplants, cucumbers, cabbages. Food security is a major goal of the Regional Development Strategy and it is essential “to increase areas of agricultural land and raise production and productivity levels” to achieve this; it is also important to “protect agricultural lands” (Kurdistan Regional Government, Ministry of Planning 2012: 76). Industry is the other important sector of Kurdistan

³ <https://www.treasury.gov/resource-center/sanctions/Documents/661.pdf> [accessed: 9.02.2017].

⁴ [http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/986\(1995\)](http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/986(1995)) [accessed: 31.03.2016].

economy to be developed. Invested capital has grown by 85.1% in 2006–2008. The number of factories and industrial projects has grown from 1529 in 2006 to 2224 in 2010 (Kurdistan Regional Government, Ministry of Planning 2012: 80–86).

Damage to the existing infrastructure in the recent unstable past now requires its modernization and development. Infrastructure is interlinked closely with other sectors (e.g., agriculture, trade, tourism, industry) and thus it is one of the most important elements in Iraqi Kurdistan's development. According to the RDSKR, the road network, and especially the rural roads, "do not meet present demands" (Kurdistan Regional Government, Ministry of Planning 2012: 99). Thus, the goal is to improve the road network by constructing three highways, "alternative routes for 10% of the arterial and main roads per year, especially the roads reaching maximum absorption capacity", "increasing the total length of paved rural roads to 45,000 km within five years, to ensure the rates of these roads are in conformity with international standards (1 km² of paved roads per 100 inhabitants/km²) to link populated areas and the agricultural production sites with cities and markets" (Kurdistan Regional Government, Ministry of Planning 2012: 103–104).

Another sector in development and modernization is the construction industry. The RDSKR notes shortages of basic building materials, such as cement, bricks, concrete blocks, ceramics, and also windows, plumbing supplies etc. (Kurdistan Regional Government, Ministry of Planning 2012: 111). There is a housing deficit. Moreover, rural houses, still built of perishable building material, need renewal (Kurdistan Regional Government, Ministry of

Planning 2012: 112). Houses in the past were built of natural materials, mainly stone and clay. In the mountains people used chipped stone, boulders from streams or field stones, whereas sun-dried bricks on foundations of field stones from a half a meter to a meter deep predominated in the lower-lying areas (Dziegiel 1981: 104–105). Nowadays, houses are built mainly of concrete and plots under new buildings are often leveled with bulldozers.

Tourism, culture and heritage weigh in importantly in plans for development. Iraqi Kurdistan has a huge potential in this regard: archaeological sites, old mosques and churches, reliefs, and other heritage monuments. The challenges are equally huge, such as limited financial resources, poor infrastructure (hotels, roads) and a nascent tourism administration, as well as "poor database available on tourism, heritage and cultural activities" (Kurdistan Regional Government, Ministry of Planning 2012: 149). Thus, it is important to "exploit the religious, historical, natural, cultural and civilizational tourism features and potentials", as well as to develop the infrastructure (hotels, roads, tourist information) (Kurdistan Regional Government, Ministry of Planning 2012: 149–150).

The conflict of interest, at least to an extent, between tourism and the other mentioned sectors of the economy is apparent. Developments in the agriculture, industry, infrastructure and building sectors can and will impact the preservation of archaeological sites. Modern agriculture uses deep plowing, irrigation and chemical fertilizers, the industry, infrastructure and building sectors use bulldozers and other heavy machinery. Moreover, emphasis on low costs and on rapid implementation of ill-considered investments can cause

damage to or complete destruction of archaeological sites. All of these sectors, including agriculture, can easily change the landscape, also the archaeological one. However, the goals related to the tourism sector assume preservation and exploi-

tation of the cultural potential of Iraqi Kurdistan. Thus, it can be said that Iraqi Kurdistan is facing a quandary in reconciling the country's rapid development with the preservation of its important cultural heritage.⁵

FACTORS ENDANGERING ARCHAEOLOGICAL SITES

During four seasons of work in 2012–2014 the UGZAR project documented 181 archaeological sites, as well as numerous caves and architectural features. This paper will concentrate on the archaeological sites, which constitute the dataset for the damage assessment that the project concluded with regard to the Iraqi Kurdistan's goals for heritage protection.

In most cases the borders of the sites could be traced (173 out of 181); in the remaining eight instances, the sites were covered by modern villages and in one case, ancient remains could be discerned only in the profile of a large pit for collecting water (there were no potsherds on the surface). Damage assessment was based on data recorded during the fieldwork: site description cards, GPS measurements, photos and site plans, as well as satellite imagery available from BingMaps and Google Earth. These data were used to vectorize damaged parts of the sites in

QGIS 2.12.1 (Lyon). The damaged area was compared with the total site area. It should be noted that destruction frequently extends deep into the archaeological layers, causing serious damage. Thus, some activities can be more destructive despite affecting only a small part of the site surface.

The damage assessment concentrated on the impact of human activities, not natural factors, like erosion. The destructive activities identified by the UGZAR team during the archaeological reconnaissance include military trenches, fish ponds, greenhouses, football pitches, well-pits, chicken farms, animal pens, irrigation basins, canals, pits, ground roads and asphalt roads, gravel extraction, houses/buildings, other building activities, cemeteries, gardens, agriculture (meaning fields under cultivation). Some were more frequent, while others were recorded sporadically.

DAMAGE ASSESSMENT

The most destructive and frequent threats, that also relate to one another, will be des-

cribed first, followed by those with less harmful impact and those that occur sporadically.

⁵ Another issue is the antiquity law, a discussion of which is beyond the scope of this paper. The law in force in Iraqi Kurdistan today is Antiquity Law No. 59 of 1936 with amendments No. 120 of 1974 and No. 164 of 1975, approved in 1976. The Antiquities and Heritage Law No. 55 of 2002 is not applicable in Kurdistan because of its severity (Ali 2017). For example, it prohibits building and agricultural activities on archaeological sites, while the law from 1976 says nothing in this matter. Also, the penalty for destruction of archaeological sites or objects is much more severe (in some cases including the death sentence) in the law from 2002. For both laws, see <http://www.unesco.org/culture/natlaws/>.

Table 1. Sites with noted damage listing causes (as for 2016)

Site	Site type	Area (m2)	Causes of damage
S002	Flat settlement	9347.74	Gravel extraction; agriculture
S003	Tell with lower city	15562.17	Cemetery; agriculture
S006	Tell	12785.17	Cemetery; agriculture
S010	Flat settlement	25246.93	Bulldozers/digging for clay; agriculture
S012	Tell with lower city	3527.59	Pits; houses/buildings; cemetery
S013	Flat settlement	40132.56	Other building activities; cemetery; agriculture
S020	Tell	2614.41	Bulldozers/digging for clay
S026	Tell with lower city	34811.90	Cemetery; agriculture
S028	Flat settlement	12832.47	Cemetery; agriculture
S030	Flat settlement	59911.85	Irrigation basin; pits; agriculture
S035	Tell with lower city	15903.72	Bulldozers/digging for clay; pits; houses/buildings; cemetery; gardens; agriculture; ground road
S036	Flat settlement	2435.40	Agriculture; ground road
S037	Tell	8437.92	Bulldozers/digging for clay; houses/buildings
S052	Tell	9505.70	Bulldozers/digging for clay; houses/buildings; cemetery
S055	Tell	21223.65	Bulldozers/digging for clay; houses/buildings; agriculture; ground road
S056	Tell	2915.81	Bulldozers/digging for clay; houses/buildings
S061	Tell with lower city	12278.90	Houses/buildings; cemetery; gardens; asphalt road
S062	Tell	32663.92	Bulldozers/digging for clay; houses/buildings; gardens; asphalt road
S063	Tell	33528.68	Bulldozers/digging for clay; houses/buildings; cemetery; gardens; asphalt road; ground road
S065	Tell	3819.92	Bulldozers/digging for clay; houses/buildings; cemetery
S074	Tell with lower city	337443.43	Chicken farms; animal pen; houses/buildings; cemetery; garden; agriculture
S080	Tell with lower city	99138.30	Well-pit; bulldozers/digging for clay; pits; cemetery; agriculture
S082	Tell with lower city	163989.14	Bulldozers/digging for clay; pits; agriculture
S084	Tell	17649.80	Bulldozers/digging for clay; houses/buildings; gardens; agriculture
S085	Tell with lower city	37282.21	Bulldozers/digging for clay; pits; agriculture
S089	Tell with lower city	39166.70	Bulldozers/digging for clay; pits; agriculture
S098	Tell with lower city	44518.45	Bulldozers/digging for clay; pits; agriculture
S102	Tell	15858.23	Bulldozers/digging for clay; houses/buildings; gardens
S104	Tell	9637.48	Military trenches

Table 1. *continued*

Site	Site type	Area (m2)	Causes of damage
S110	Tell	9341.19	Bulldozers/digging for clay; pits; houses/buildings
S114	Tell with lower city	154852.41	Bulldozers/digging for clay; pits; houses/buildings; gardens; agriculture; asphalt road
S116	Flat settlement	138644.16	Football pitch; pits; houses/buildings; agriculture; asphalt road
S118	Tell with lower city	96221.83	Bulldozers/digging for clay; pits; agriculture
S133	Tell	17085.40	Houses/buildings; gardens
S143	Tell with lower city	144888.74	Other building activities; bulldozers/digging for clay; pits; houses/buildings; cemetery; garden; agriculture; ground road
S148	Tell	18815.82	Fish pond; houses/buildings
S149	Tell	17370.93	Houses/buildings; gardens
S151	Tell with lower city	38759.22	Green house; pits; houses/buildings; cemetery; gardens; ground road
S160	Flat settlement	625.20	Agriculture; ground road
S163	Flat settlement	6446.16	Fish pond; houses/buildings; gardens; agriculture; ground road

A. BULLDOZING AND DIGGING FOR CLAY

The most shocking damage to the archaeological sites within the surveyed zone was by bulldozing and digging for clay. These are analyzed jointly as the outcome of both is very similar.

Rapid building development and road construction in Iraqi Kurdistan requires extensive ground leveling works. Bulldozers and excavators usually employed for this task will affect both tells and flat sites. Digging for clay primarily affects the tells. Frequently, so much of the slope has been destroyed that one can see practically the entire section [Fig. 1]. This kind of damage is caused by the inhabitants of villages in the immediate vicinity of an archaeological site. Visiting S089 (for a listing of assessed sites, see Table 1) in 2013, the team came across a man with his wife and grandchildren

from one of the neighboring villages who was “excavating” in the already damaged slope of the tell and loading the clay onto his pickup truck.

Few of the sites were actually destroyed by bulldozers or digging for clay [Fig. 2:A], but in 20 out of 34 such cases up to 5% of the total site surface area had been damaged. Two sites were highly affected, the damaged area reaching 40–50%. Of these two, S010 is a flat site and lies on the Greater Zab river. In 2012, the site was covered by agricultural fields; now (imagery from BingMaps acquired in 2014) part of the site has been bulldozed most probably to make fish ponds. Construction of a new road through the village of Xarabe Se Girdik has leveled away most, if not all, of the cultural layers from the center of site S062. A similar situation occurred at site S114, which lies in Palasan. Site S055,

which used to be a tell averaging 4 m in height, was leveled to a height of just 0.30–0.50 m above the surrounding area. Tell S110 in the center of Darbestan village now looks like an apple core; its north-western and northeastern slopes were completely destroyed, most probably by bulldozers and excavators used to make space for modern buildings. The same happened at S037, where nearly half the tell was removed to create space for houses, and at S020, where the tell was destroyed to make a ground road through the village and space for the expansion of the settlement. In both cases, the clay from these tells may have been used as building material. Sites S118, S098, S089, S085, S082 and S080 are tells with one of the slopes damaged in a characteristic way. The damage is the result not of building construction as they all lie in the middle of agricultural fields, but of a local quest for clay needed as a building material (mortar or plaster). Archaeological sites are a ready source of such material.

B. CONSTRUCTION OF ASPHALT AND GROUND ROADS

Bulldozing damage to archaeological sites is related to asphalt road construction, as in the case of S062 mentioned above (the asphalt road now covers 36.95% of the site). At another six sites [see *Fig. 2:B.1*], the area destroyed by asphalt roads is less than 5%. The most serious destruction was noted at sites S063 and S114. At S063, the asphalt road runs along the western slope up to the buildings covering the top of the tell, then turns into a ground road which runs down along the eastern slope and curves to the south along the base of the mound.

Ground roads are more frequent and do not usually entail bulldozing. In the case of S035, S063 and S143, they run along the slopes of tells and cut at their bases, enough to expose cultural layers, which are then in danger of erosional impact due to wind and rain. Moreover, artifacts potentially found to be below such road surface may be damaged by cars and heavy agricultural machinery running



*Fig. 1. S089 damaged by digging for clay
(All photos J. Mardas)*

over them. Ground roads were noted at 23 sites [see *Fig. 2:B.2*]; at 18 sites they cover less than 5% of the total site area. At two sites, S036 and S160, the damaged area was proportionally higher. At S160, which is a small site lying on the bank of the Greater Zab river, the narrow ground road runs through its center. At S036, which is a slightly bigger site lying in a hilly area, the ground road also runs through the center of the site, but is much wider than in the other case. This road did not exist

in 2012 when the site was documented (it may have been a gravel road but without on the spot verification it cannot be said with any certainty). The road is most probably related to an industrial complex in the vicinity.

C. BUILDING CONSTRUCTION DAMAGE

Building construction is perhaps the single most demanding activity in terms of ground leveling. Houses, outbuildings and

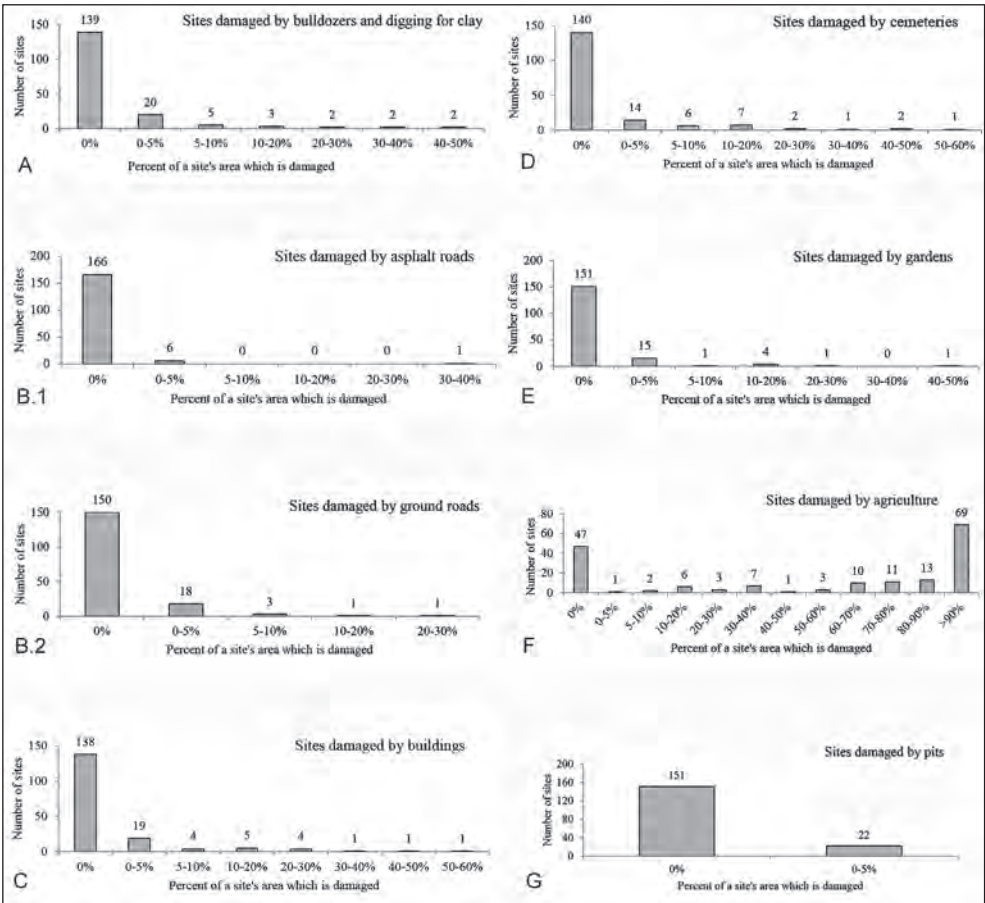


Fig. 2. Damage assessment for the different factors endangering the preservation of archaeological sites (Processing J. Mardas)

public buildings, for example schools, can be highly destructive for archaeological sites, the building process requiring deep digging for foundations that can disturb deeper cultural layers. Houses in Iraqi Kurdistan today are built of concrete blocks instead of the mud brick and stone used in the past. Areas around the buildings may be taken up by gardens, garbage pits and cesspits, being thus susceptible to further damage. Garbage and cesspits can also contaminate the site and affect the state of preservation of the artifacts.

Buildings on 35 of the 173 sites [see *Fig. 2:C*] have damaged the ancient substance and in five cases (sites S001, S023, S032, S058, S059) the village overruns the site, making it difficult to determine their area. At 19 sites, buildings covered less than 5% of the total site surface, but the presence of buildings on the fringes of some of these sites poses a strong threat of further expansion that can disturb the site. A cemetery at the top of a tell, as at S065 which is in the center of the village, can impede village expansion, thus limiting the damages to what the burial ground will do. Building expansion into archaeological areas is to be expected in the author's opinion at sites S012 and S143 (5–10% of the site area covered by buildings), S084 and S102 (10–20% site area under buildings) and also S056, S110 and S114 (20–30% under buildings). In the case of S110 and S037, parts of the tell have already been removed to make room for houses. Three of the sites with set borders are heavily damaged by building construction: S063 (30–40%), S149 (40–50%), S133 (50–60%). The tell of S063 is quite big with steep slopes and a flat top covered by the buildings of

the town of Rovia. Buildings also line the foot of this tell. S149 lies on the bank of Greater Zab river and is also densely built over; it is difficult to determine with certainty how far the site extended into the village, but its northern and southern limits could be determined (the Greater Zab borders it on the east).

D. CEMETERIES

Cemeteries can protect a site from more extensive damage by building construction, but they are destructive in their own right. Graves penetrate the deeper layers of a site. Moreover, graves tend to be grouped together resulting in consequence in a series of pits. For the purpose of this paper no distinction was made between operating and abandoned cemeteries [*Fig. 3*].

Graves were recorded at 33 sites. At 14 sites, graves covered less than 5% of the total site area, at six 5–10%, at seven 10–20% (including S006, Gird Ali Agha, the site that was excavated by Braidwood's expedition, see Braidwood and Howe 1960). At another six sites, cemeteries extended over more than 20% but less than 60% of the total area [see *Fig. 2:D*]. The biggest areas occupied by graves can be found at S052 (51.67%), S065 (43.62%) and S003 (42.69%), all of them being tells, the first two quite low and located in the center of a village.

E. GARDENS

Gardens may also have an adverse impact on the state of preservation of archaeological sites. Digging, planting, fertilizing, and irrigating in gardens can destroy archaeological layers and artifacts. Few gardens were recorded at the surveyed sites – 22 in all – and in most cases they did not require ground leveling. They



Fig. 3. Graves on one of the slopes of site S061



Fig. 4. Site S002 (in the center) destroyed by gravel extraction

were also small as a rule: at 15 sites they covered less than 5% of the total site area [see *Fig. 2:E*]. At four sites the damaged area varied between 10% and 20% of the total site area. Only one greenhouse was recorded in the garden area of site S151. At S102 gardens occupied 23.60% of the total area, which was also densely occupied mainly by houses. The olive grove at S061 covered 43.42% of the total site area. Olive trees grew in the area of the lower city, while the slopes of the mound were largely covered with graves.

F. AGRICULTURE

Agriculture, meaning arable land, is the most common threat and the severity of this threat depends on plowing depth, kind of agricultural machinery, use of fertilizers and irrigation. Deep plowing in particular can disturb archaeological layers or even completely erase a small site from the cultural landscape (although it also makes a contribution by exposing sites: pulling out potsherds, stone tools and other pieces from the past). The plowzone, the thickness of which may vary 20–30 cm, disturbs the upper layers of a site (Diez-Martín 2010: 33).⁶ Tillage destroys artifacts (for artifact size, see Dunnell and Simek 1995) that are buried in the ground, as well as their vertical and horizontal context.⁷ Artifacts may also be affected adversely by fertilizers used in agriculture. Flat sites, tells with a lower city and low tells are especially susceptible to agricultural damage. Yet the process of destruction is slower than in the case of bulldozing. Of the total of

173 sites, 126 are threatened by agriculture. At 69 sites [see *Fig. 2:F*], more than 90% of the total area is given over to agriculture; these are mostly flat sites, low tells or tells with gentle slopes and a lower city.

G. PITS

The pits surveyed by the UZGAR project are of varying origin, some of them robbery trenches possibly, others related to unspecified activities. They usually occur at sites which are tells with a lower city, a few were on tells without a lower city and on flat sites. There are 22 sites damaged by pits [see *Fig. 2:G*] and in all cases less than 5% of the total site area was affected.

H. SPORADIC DAMAGE

Sporadic harmful human interventions of other kinds were also recorded on the surveyed archaeological sites. Most common were small irrigation canals, which occupied less than 5% of the total site area (nine sites). Irrigation canals feed agriculture and thus they occur only on flat sites, which are the most endangered by agricultural development. At five sites pens for animals were noted, covering again less than 5% of the total site area.

At four sites well-pits, used for field irrigation, were encountered. Wells and sometimes motor pumps were found at the bottom of these rather large pits of an elongated triangular, teardrop or rectangular shape. With lengths between 25 m and 35 m (sometimes reaching 45 m) and widths between 10 m and 15 m, these pits occupy a relatively small area (0.65–

⁶ Subsoilers reach even deeper; subsoiling depth depends on the type of soil, the tractor used and the subsoiler (see Weill 2015). Subsoiling is used once in a few years to reduce soil compaction. Compacted layers occur usually at a depth of 30–55 cm and the subsoiler should reach up to 5 cm below the compacted layer (see Kees 2008).

⁷ The archaeological material obtained from the plowzone is not useless, even though its vertical and horizontal location is disturbed. Artifacts from the plowzone are an indication of the presence of subsurface features (see Harvey 2012).

1.33%) of the sites at which they were recorded, but can cause serious damage because of their depth, which ranges from 3 m to 5 m. Interestingly, site S140 would not have been discovered otherwise as it can be seen only down in the well-pit and is completely invisible on the surface.

Fish ponds are a serious threat as they involve groundwork by bulldozer and the building of embankments of the soil removed from the pond area. Ponds were recorded at two sites (S163 and S148), and the damage at S010 also suggests preparations for making a fish pond. They are usually rectangular in shape. At S163 there is one fish pond, which damaged a large part of the site, and at S148 there are four big ponds which damaged a third of the total site area; their length varies between 54 m and 65 m, while the width is between 24 m and 30 m.

Singular instances were recorded of a chicken farm (S074), a football pitch (S116), a greenhouse (S151; see above), an irrigation basin (S030) and old military trenches (S104, at the top of the tell), a flight of concrete stairs leading to the top of the tell (S143) and a kind of embankment of unknown purpose (S013, the embankment stretches far beyond the site, during our visit in 2012 it had not been built yet). In most cases the damaged area was quite small (0.02%–1.16%), being slightly larger only at S104 and S013 (3.91% and 4.02% respectively).

The last threatening factor to be discussed is gravel extraction from the banks of the Greater Zab river and Wadi Bastora. The damage caused by this activity, which is usually related to river valleys, can be extensive and serious. It has taken away 80.97% of site S002, practically removing it

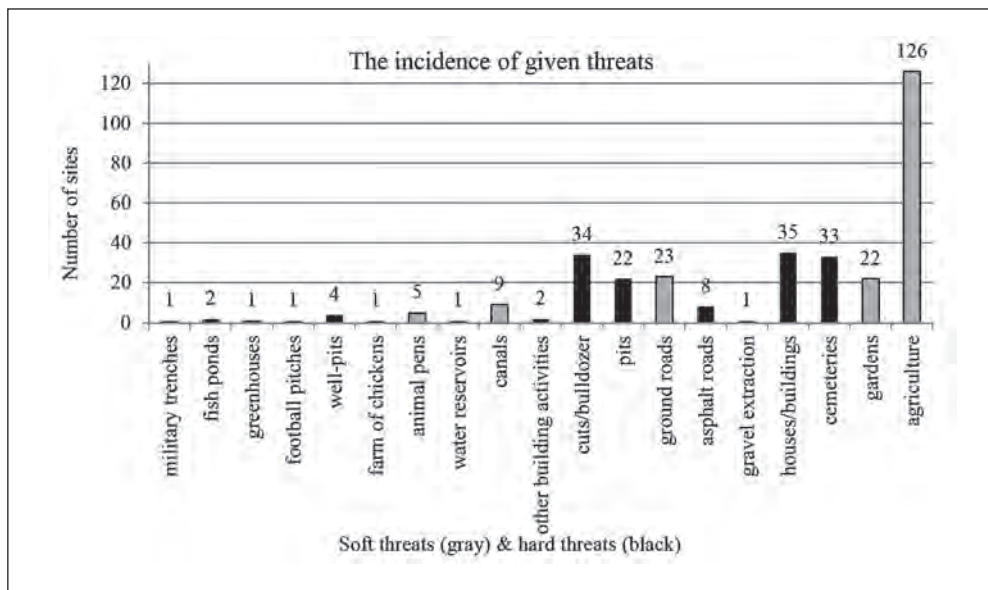


Fig. 5. Incidence of given threats
(Processing J. Mardas)

completely [Fig. 4]. This type of work has taken place also in the immediate vicinity of S006, located on the Greater Zab river. Also S026 and S028, located in Wadi Bastora, are endangered by similar works taking place nearby.

“SOFT” AND “HARD” THREATS SUMMARY

The threats discussed above vary in the degree of destructiveness. Some cause less damage, others are much more serious in their outcome. Thus, they can be divided into two groups: “soft” threats and “hard” threats. The former affect only the upper layers of a site and are generally less invasive. This group includes pens for animals, greenhouses, irrigation canals, ground roads, gardens and agriculture. The latter damage deeper-lying layers and destroy a larger volume of the site. This group includes military trenches, fish ponds, football pitches, well-pits, chicken farms, water reservoirs, bulldozing, digging for clay, pits, asphalt roads, gravel extraction, cemeteries, buildings and other constructions. It should be kept in mind, however, that even “softer” damage, agricultural activities in particular, can be highly destructive on smaller, flat or slightly mounded sites with thin archaeological layers. Such sites are easily destroyed by plowing. The extent of the damage can be ascertained by excavation, but that is destructive, too.

In the case of sites documented by the UGZAR project, the incidence of soft and hard threats was different and so was the level of damage caused. “Soft” threats were encountered at 141 sites, while the

“hard” ones at 80 sites [Fig. 5]. Among the “soft” threats the most common (126 sites) was agriculture. Other threats were less frequent: gardens damaged 22 sites, ground roads 23 sites, irrigation canals nine and animal pens five sites. Four frequent “hard” threats were identified: building construction at 35 sites, bulldozing and digging for clay at 34, cemeteries at 33 and pits at 22. Other threats of the “hard” kind occurred much less frequently: asphalt roads at eight sites, fish ponds and other building activities each at two sites, and some water reservoirs, military trenches, a football pitch, a chicken farm and gravel extraction only at single sites. “Soft” threats damaged almost 70% of the total area of all sites (68% of this by agriculture), while the “hard” ones damaged nearly 6%. The surface area damaged by the “hard” threats is much smaller, but these threats are more dangerous as they disturb the archaeological context severely, and may even erase a site from the landscape (for example S002).

It is interesting to note the more extensive set of “hard” threats. Human activities are indeed becoming more and more destructive for archaeological sites (as well as for the natural environment). A few years ago houses were still being built of mud brick or stones, agriculture was less intensive, bulldozers were not in use, the few cars managed well without asphalt roads. Nowadays Iraqi Kurdistan is focused on modernization and intense development, but what about its heritage? What can be done to prevent an archaeological site from being damaged by fast development?

EXEMPLARY PROCEDURES IN THE CASE OF ENDANGERED ARCHAEOLOGICAL SITES

Procedures should be created to minimize or prevent destruction to archaeological sites due to construction projects and regional development. Tsunokawa and Hoban (1997) elaborated a model for proceeding with a situation in which a site was endangered by road construction. It is a very reasonable model that could be an inspiration in other cases. Road construction and related activities can cause damage to archaeological sites or historical monuments, but they can also give better access and hence impact positively the tourist industry (Tsunokawa and Hoban 1997: 140–141). The procedure in the case of planning a new road is to double-check first for historical or archaeological sites along the planned route or within its close vicinity. Attention should be paid to four elements: 1) secondary sources of information (such as inventories of sites etc., bibliographic sources, maps presenting the cultural heritage, toponyms on old maps and drawings helping to identify no longer extant settlements, aerial photography and/or high-resolution satellite imagery, both contemporary and old), 2) survey necessary to determine site borders, chronology and state of pre-servation, 3) establishment of cultural significance and priorities (which sites should be preserved intact, which require exploration), 4) assessment of the scale and costs of the impact (extent of the damage, assessment of direct and indirect impact, costs of preservation of an archaeological site, benefits for tourism, if preserved, and losses, if damaged (Tsunokawa and Hoban 1997: 141–143).

To prevent destruction of an archaeological site, the construction of a road should “avoid any alignment that cuts through known cultural sites” (Tsunokawa and Hoban 1997: 144). Should a previously unknown archaeological site be discovered in the course of the construction project, then the route of the road should be changed or “in unusual cases it is preferable to leave a cultural site buried beneath the road” (raising the road level, for instance) (Tsunokawa and Hoban 1997: 144). If neither is possible, then salvage excavations are required (Tsunokawa and Hoban 1997: 144).

The procedure proposed by Tsunokawa and Hoban could be implemented by the antiquity authorities of Iraqi Kurdistan, even if the task is challenging for Kurdish archaeologists. The site of Bassetki, a large tell in the province of Dohuk (lying within the concession of the Eastern Habur Archaeological Survey), was thus saved by Peter Pfälzner and Hasan Ahmad Qasim (Directorate of Antiquities in Dohuk), whose excavation, prior to road construction which threatened to go through the center of the site, led to the relocation of the route (Pfälzner 2017). No database of archaeological sites exists that would include their chronology and precise location and remote sensing data is not in use by local archaeologists. The results of the ongoing survey projects will surely help to resolve these problems, at least in part, but there are still many challenges facing Kurdish archaeologists.

THE FUTURE OF THE PAST: CONCLUSIONS

The problem of cultural heritage protection in Kurdistan is a complicated issue. First, we should keep in mind that stability is a new situation in Iraqi Kurdistan. For years poverty and war have determined the state of the region. It is not surprising that the Kurds are raring to seize the opportunity for a better life and they are setting priorities. However, fast development of Iraqi Kurdistan can speed up further destruction of its archaeological heritage. Sites in the region are endangered by various kinds of human activities, like road construction, house building, gravel extraction, agriculture, etc. Most of them are more or less related to one another, and some of the sites are damaged by more than just one destructive factor. The second problem is the lack of an archaeological sites database. Due to the political situation the region has never been intensively investigated by archaeologists. There are two publications: *Archaeological Sites in Iraq* and *Atlas of Archaeological Sites in Iraq*, but they are from the 1970s, the maps are inaccurate and information about sites is scarce; moreover, they do not cover all the sites. The archaeological survey is a good start for creating a GIS database for the purposes of heritage management.

Other elements could be included by Kurdish archaeologists. Data from the survey could be combined with remote sensing methods,⁸ aiding in the interpre-

tation of site damage and monitoring. These two methods are complementary. For example, not all damage will be visible on satellite imagery (depending on resolution and on the season during which they were acquired), but it can be documented during the survey or later field visits. Satellite imagery, however, can provide interesting information about sites. The older imagery can also be used to trace changes at the sites. Commercial imagery is usually of better quality, although quite expensive, but there are also satellite imageries that can be viewed for free, like BingMaps and Google Earth. Drones can be used as a low-cost source of information and up-to-date data can be obtained. Moreover, photographs taken by drones can be used to create DTMs (digital terrain models) of archaeological sites.

A detailed digital database and trained staff are crucial for site protection. The ongoing archaeological surveys and excavations now in Kurdistan will hopefully provide such a database of archaeological sites. The database should be used during the first stages of planning of any road or building construction. It would also be a good idea to implement a solution known from Syria, that is, site guards. Moreover, the involvement of local communities could raise awareness of archaeological heritage among people. The current law, in the view of the author, is ineffective and

⁸ There are various remote sensing methods which can be used in heritage management, e.g., satellite imagery may serve to investigate patterns of looting (Stone 2008), to document features like hollow ways, which are visible on old satellite imageries but invisible from the ground (Wilkinson et al. 2010), to monitor archaeological sites (Parcak 2007), to document damage of sites which are impossible to visit at the moment (Casana and Panahipour 2014), ditches and embankments covered by forests can be detected by LiDAR (Kostyrko and Ruciński 2015), the limits of an archaeological site and its subsurface features can be traced with geophysical methods (Pfälzner 2017; Mühl and Fassbinder 2016). More methods, including LiDAR, geophysical techniques, aerial photos and satellite imagery, are discussed in Cowley 2011.

should be improved to face the challenges imposed by the fast development of Iraqi Kurdistan. These elements could improve the state of preservation of the cultural heritage of the region.

The Regional Development Strategy for Kurdistan Region 2013–2017 recognizes

culture and heritage as important elements of the development. Kurdistan has a huge potential for tourism, but it needs a good infrastructure (roads, transport and hotels) and a program of cultural heritage protection and promotion (digital database, museums).

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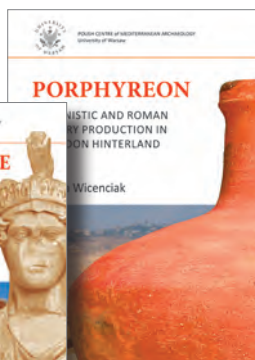
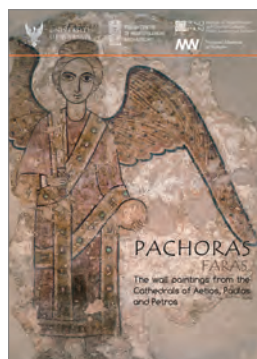


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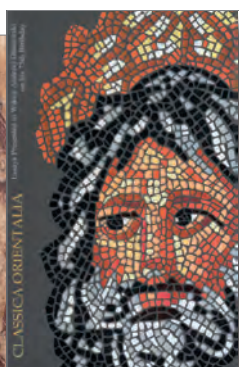
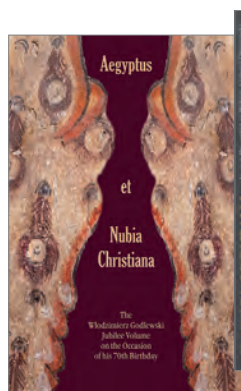
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