# OLD DONGOLA DEVELOPMENT, HERITAGE, ARCHAEOLOGY

FIELDWORK IN 2018–2019. Vol. 2. MATERIAL STUDIES EDITED BY Artur Obłuski and Dorota Dzierzbicka



# OLD DONGOLA: DEVELOPMENT, HERITAGE, ARCHAEOLOGY FIELDWORK IN 2018–2019

VOLUME 2. MATERIAL STUDIES

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# OLD DONGOLA: DEVELOPMENT, HERITAGE, ARCHAEOLOGY

# Fieldwork in 2018–2019

Volume 2. Material Studies

Edited by

# Artur OBŁUSKI and Dorota DZIERZBICKA



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About the authors	ix
CHAPTER 1 MATERIAL STUDIES IN OLD DONGOLA: INTRODUCTION Artur Obłuski and Dorota Dzierzbicka	1
Material studies in Old Dongola: past, present and future	3
Policy of finds collection and processing	5
Sampling strategy	8
Structure of the assemblage collected in the 2018–2019 season	8
The local narratives on past material culture	11
CHAPTER 2 METHODOLOGY OF POTTERY PROCESSING	17
Introduction	17
Work method	17
Collection strategy	17
Handling pottery prior to recording	18
Recording collected ceramic material	18
Archaeometric studies and sampling strategy	29
Identifying sources of raw material	30
Identifying products of one kiln	30
Establishing a model for identifying production techniques	30
Identifying vessel function	31
Dating.	31
Research perspectives	31
CHAPTER 3 POTTERY FROM THE 17TH-18TH CENTURY SETTLEMENT:	
A TYPOLOGICAL STUDY	35
Introduction	35
General description of the assemblage	36
Fabrics	37
Decoration	40
Texture impressions	41
Finger impressions	41
Object impressions	43
Incised simple patterns	45
Incised complex patterns	49

vi

Applied decoration	51
Painted motifs	51
Combined techniques	54
Potmarks	54
Typology of forms	57
Bowls	63
Jars	92
Bottles	119
Baking plates	121
Waterwheel pots/ <i>qawwadis</i>	129
Lids	133
Incense burners	138
Varia	140
Discussion.	142
Conclusions	147
CHAPTER 4 SMOKING PIPES	159
Katarzyna DANYS and Maciej WyżgOł	
Internation	150
	1)9
Description of the second last <i>Katarzyna DANYS</i>	100
Description of the assemblage – Katarzyna DANYS	1/0
Smoking pipes in context – <i>Maciej WYZGOŁ</i>	1/2
	1/6
	101
CHAPTER 5 BASKEIRY AND CORDAGE	181
Magdalena WAROWNA	
Introduction	181
Raw materials	184
Techniques	184
Types of basketry objects	185
Mats	185
Baskets	194
Lids/plates	201
Sandals	204
Cordage	208
Other	212
Concluding remarks	215
	=1)
CHAPTER 6 LEATHERWORK	219
Angola CEDVI	21)
Ingen VERVI	
Introduction	219
Leather objects	219
Rahat	221

Hijbat amulets	222
Sandals	225
Sacks and containers	233
Unidentified objects	235
Concluding remarks and research perspectives	239
CHAPTER 7 WOODWORK	243
Introduction	243
Types of wooden objects	244
Vessels.	244
Gaming pieces (?)	248
	251
Pegs, stakes and rods	254
Objects with tentative identifications (agricultural implements?)	256
Concluding remarks and research perspectives	258
	290
CHAPTER 8 GLASS BANGLES	263
Context	263
Method	264
Material	264
Technique of production and decoration	264
Types and parallels	2.77
Discussion.	2.77
Provenance and dating	277
Bangle owners and gendered spaces	279
Conclusions	279
CHAPTER 9 BEADS, PENDANTS, AND CABOCHONS	287
Introduction	287
Methods	291
Materials and techniques	291
Wood	291
Coral	291
Marine mollusk shell	306
Ostrich eggshell	306
Stone	307
Clav.	308
Faience	308
Glass	309

Discussion	316
Evidence of beadmaking at Old Dongola	316
Provenance of glass beads	317
Traces of beadwork and function of beads	318
Bead owners	320
Bead colors of Old Dongola	320
Conclusions	322
CHAPTER 10 CONCLUSIONS	353
Continuity and change in technology	353
Household assemblages and daily life	355
Interregional connections	359
Concluding remarks	361
Appendix: List of dated contexts excavated in the 2018–2019 season $\ldots$ .	365
List of tables and figures	395

viii

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### CHAPTER 1

# MATERIAL STUDIES IN OLD DONGOLA: INTRODUCTION

### Artur OBŁUSKI and Dorota DZIERZBICKA

Old Dongola was the capital of the kingdom of Makuria, which flourished in the Middle Nile Valley between the 5th and 15th centuries CE. Polish excavations at the site conducted by the Polish Centre of Mediterranean Archaeology, University of Warsaw, began in 1964, promptly after the conclusion of the International Campaign to Save the Monuments of Nubia. Over the next 50 years, the works conducted on the site resulted in the discovery of several monumental churches (Cruciform Church, Church of the Granite Columns, Church SWN.B.V), a palace (Building SWN.B.I) and two monasteries (on Kom D and Kom H) (for overview and bibliography, see Jakobielski and Scholz 2001; Godlewski and Dzierzbicka 2015; Godlewski, Dzierzbicka, and Łajtar 2018).

The European Research Council Starting Grant project "UMMA: Urban Metamorphosis of the Community of a Medieval African Capital City" is a multidisciplinary undertaking to study the liminal phases of the Christian African community of Dongola, the capital city of Makuria, as well as its transformation into a city-state in the Funj period. It studies the metamorphosis of its urban community into a new entity organized according to different social and religious paradigms. The project investigates the impact of the weakening of central authority and of migrations of Arab tribes on the kingdom's capital city and its community and on the survival of the old traditions on a household level (for a broader introduction to the site and research, as well as a historical overview of the Funj period, see Obłuski 2021: 4–6).

Excavations carried out in the 2018–2019 season uncovered dwelling compounds in urban residential districts on the citadel hill, as well as outside the city walls [*Fig. 1.1*]. Within the enclosure, the compounds were built along narrow streets and a ring road running parallel to the walls. They comprised courtyards and one or more buildings that featured living quarters, narrow storerooms, and sometimes a kitchen. Compounds outside the walls dated to the 17th century differed in building material used for their construction. In addition to walls of sun-dried brick, some of which had belonged to earlier, 16th-century houses, the buildings outside the walls were mostly constructed in the wattle-and-daub technique, attested only sporadically on the citadel hill. A peculiar feature of several uncovered Funj-period houses is a module consisting of a narrow storage unit with a large multifunctional room. The earliest example of such a layout dates from the 16th century (building U26a/26b) and the latest from the 18th century (building U76/77) (see Deptuła and Maślak 2021: 60–62; Wyżgoł 2021: 187–192).

The excavated houses were fairly similar to each other, but there were also some differences. Two may potentially stem from social or economic diversity among their inhabitants: the difference in building traditions described above, and variation in size. While the average household size was about  $200-250 \text{ m}^2$ , the smallest complete compound measured 66 m<sup>2</sup> and the largest



Fig. 1.1. Area excavated in the 2018-2019 season, with indicated zones and unit numbers

was at least 445 m<sup>2</sup> in area (Obłuski, Dzierzbicka, and Maślak 2021: 242). The main consequence that apparently followed from this disparity in size lay in the functional differentiation of space. Multifunctionality seems to have been the dominant feature of units comprising the smaller compounds, while the larger households had rooms that served, i.a., as storerooms and kitchens. The excavated finds, several groups of which are published in this volume, may throw some light on the social and religious identities of the inhabitants of the examined households. At first glance they, too, seem similar from one compound to another, but closer investigation of the objects and, ultimately, of their distribution, may offer a more nuanced picture of the society of Funjperiod Old Dongola.

Archaeology entails the necessity of exploring later archaeological contexts before earlier ones. Also at Old Dongola, uncovering the transitional-period layers targeted by the project must follow the removal of later contexts. While the excavations in the first season have not reached the layers dated to the transition period, state-of-the-art fieldwork on 17th-18th century Old Dongola coupled with quality parallel research will be useful in further inquiries. The benefit of this situation is an opportunity to study the entire extent of the Funj period in Old Dongola, not just its beginnings. Research on the latter part of the Funj era, when Islam should have already been embedded in society, delivers core information of importance for the UMMA research objectives. For instance, if we cannot identify religious architecture in 17th-18th century archaeological strata, we may infer that Islam was not institutionalized at that time, and therefore a lack of such remains in earlier strata following the transition period may not come as a surprise. Complementary information may also be obtained from ethnographic surveys, which show that despite the previous regime's efforts at Arabization, in the villages of this area there are still people who speak the Nubian language. This is indication that for centuries Nubian functioned as a language of everyday communication, while Arabic was chiefly used in the official contexts of religious ceremonies as well as for formal written communication and administrative management. The same applies to the material culture studied in this volume. Investigation of finds assemblages from 17th- and 18th-century layers provides comparative material for prospective studies on the objects from earlier, transitional-period strata. It helps describe the end result of the process of urban and social changes initiated after the decline of Makuria, and it enriches our understanding of the community of Funj-period Old Dongola.

MATERIAL STUDIES IN OLD DONGOLA: PAST, PRESENT AND FUTURE

The study of archaeological material from the Polish excavations at Old Dongola has so far reflected the goals of past projects. An overwhelming majority of the publications focused on sacral architecture and wall paintings, while studies on artifact assemblages and their social implications were considered of secondary importance. The exceptions were textual finds (i.a., Łajtar 1995; 2002; 2011; 2018; Łajtar and Pluskota 2001; Jakobielski and van der Vliet 2011; Vanthieghem 2015; 2018) and ceramics (i.a., Pluskota 1994; 1997; 2001; 2005; 2010; Bagińska 2008; Danys-Lasek 2012; 2014; Danys 2015; 2018a; 2018b; Wodzińska 2015). A few other categories of finds received sporadic attention (i.a., beads, Then-Obłuska 2013; mud sealings, Dzierzbicka 2015; drainage installations, Ryś and Wyżgoł 2015; smoking pipes, Danys and Wyżgoł 2018; and items

interesting for their uniqueness, Czaja 2018; Godlewski, Kusz, and Łajtar 2018; Idzikowska 2018). The studies on excavated materials were mostly macroscopic. The few published archaeometric studies were limited to wall paintings and textual finds (Jeżewska and Zadrożna 2015; Koss 2015; Godlewski, Zerek, and Nowicka 2018). No archaeobotanical studies have been conducted on the site, and archaeozoological research began only in 2001 (Osypińska 2004; 2008; 2013; 2015; 2018). What is more, the results of these earlier studies require verification. Given the absence of a single-context excavation system and the lack of a uniform collection strategy for finds and samples from the site, any quantitative or contextual considerations based on material recovered prior to 2018 should be attempted only with utmost caution. The same applies to chronological indications, as the use of scientific dating methods (radiocarbon or optically stimulated luminescence) was rare before 2018, and the few results obtained were mentioned only briefly in publications (Godlewski 2015: 19; Godlewski, Danys, and Osypińska 2015: 84; however, see recently Dzierzbicka and Danys 2021).

Despite decades of research conducted on pottery uncovered during excavations, Makuria, or more precisely the territory upstream from the Third Nile Cataract, still awaits a publication comparable to William Adams's seminal *Ceramic Industries of Medieval Nubia* (Adams 1986). The UMMA project covers roughly the period from the gradual decline of the kingdom of Makuria (14th–15th centuries CE) to the Egyptian invasion in 1820. This period is virtually absent from scholarly enquiry to date, except for two works—a general study on Funj-period Sudan (Elzein 2004) and a publication devoted to Qasr Ibrim (Alexander and Adams 2018). The UMMA project brings not only a change of emphasis in the research, but also a qualitative change in fieldwork methods, artifact processing and sample collection, coupled with an archaeometric approach in order to gauge reliable data.

In our publication strategy, the primary material studies are separated from the results of the fieldwork *per se*. Our intention has been to make the successive research results available for the wider scholarly audience as soon as possible, while the interpretation of the archaeological information would be presented at the end of the project. For this reason, the first volume covering the fieldwork of the first four-month season of 2018–2019 contains solely the results of excavations. It is to serve as a basis for further research and a point of reference for considerations on finds assemblages. The present volume features studies on pottery, smoking pipes, basketry, leatherwork, woodwork, bangles and beads. The research, carried out during and after the 2018–2019 field season, focuses on material found in excavated contexts described in volume 1. Some important and large categories of finds, for instance textiles, stone tools, metal objects and texts, await analysis, or studies on them are in progress. These objects, as well as finds from future excavations, will be published in successive "material studies" volumes following prospective seasons.

One drawback of such a publication strategy is that, while swiftly making the material available for other scholars, it decreases the depth of the analyses, rendering the conclusions preliminary and the assemblages arbitrarily divided by excavation season. In order to address this issue, each major artifact category will have a dedicated final volume at the end of the project that will include archaeometric studies (where available) and GIS analyses, as well as in-depth comparative studies.

Another drawback of "material studies" volumes is that they present the assemblage detached from its context and subdivided into groups according to type and material. While convenient for experts working on specific categories of finds, like pottery or beads, from an archaeological and

5

historical viewpoint this approach requires subsequent reintegration of objects with their context data. Such a study is also planned for the end of the project. With GIS analyses, final excavation data and published material studies, such a study will offer an opportunity for a full, holistic consideration that will place the analyzed objects back in their context. The material studies are one of the pillars of this project, as household inventories will ultimately be used as markers of religious conversion from Christianity to Islam as well as affiliation of inhabitants to different social groups.

This volume is a collection of preliminary reports presenting the state of research conducted in the 2018–2019 season on distinct categories of finds. It is by no means an attempt at a comprehensive analysis of the material culture of the Funj-period settlement. The division of finds by material, as in the case of woodwork and leatherwork, and the omission of certain categories in this volume (textiles, stone tools), was dictated by practical considerations and limitations of the project in the first excavation season.

### POLICY OF FINDS COLLECTION AND PROCESSING

The handful of methodological remarks presented below is intended to give the Reader an overview of the work method that led to the acquisition of finds and data presented in this volume. It may also serve as a reference for future publications of project finds. All finds recovered from the excavated area were collected in context bags (for the numbering of contexts and the excavation method, see Dzierzbicka 2021a). If the context was disturbed or otherwise unreliable, bones and soil samples were not collected.

So-called "small finds" (ostraca, amulets, gaming pieces, beads, etc.) and larger objects (worked stone blocks, complete vessels, etc.) were always recorded in detail. Every object that was individually documented in its context was assigned a field number (FN) by the archaeologist. The finds can be divided into three categories depending on the processing method: stones, pottery, and other (for details, see *Table 1.1*). Large fragments of worked stone were recorded and processed onsite as individual objects. Roughly hewn and squared construction blocks of local stone found loose in depositions were plotted, photographed *in situ*, and their elevation and dimensions were recorded on the context form. The stone was then discarded or stored for further processing or identification. Fragments of moulded stone and objects of identifiable function (tools, basins, architectural details, etc.) received a field number (FN) and an inventory number, and were moved to a storage area.

Pottery is the most numerous category of finds recovered on each day of excavations. Its typology is instrumental for all further studies on this material, hence the part of the volume devoted to this category (Chapters 2 and 3) is substantial. UMMA-project excavations at Old Dongola have delivered an extensive pottery assemblage. In a dedicated chapter, Anna Wodzińska presents the methodology applied in the processing of the pottery finds, including the pottery collection strategy and how vessels and their fragments were handled and recorded (Chapter 2, this volume). The typology (Chapter 3, this volume) has been based chiefly on vessel shape, which makes it a handy tool for daily use in the field. The general pottery classes follow Adams's categories (Adams 1986), distinguishing bowls, jars, baking plates, lids, incense burners, bottles, *qawwadis*, as well as a *varia* category that comprises outstanding forms. The idea to employ fabric as a distinguishing feature was abandoned due to the great variety of attested materials, which would only inflate the number of types without adding value to the pottery studies. The research on fabrics is an important element of ongoing analyses, the preliminary results of which point to the presence of multiple pottery-making techniques or production centers (see Chapter 3, this volume: 37–40).

Non-pottery objects were first sorted based on their diagnostic value, and then selected finds (complete items and diagnostic fragments of human-made or worked materials) were processed individually. All objects lacking diagnostic value were mass-classified (grouped, counted and recorded) according to the Context Quantitative Data form, which allowed for consistency and standardization in recording. Bones were weighed by context and kept for zooarchaeological analysis. All fragments of glass vessels, including the non-diagnostic ones, were kept. Diagnostic glass sherds, including decorated specimens, were first classified, counted and recorded according to their shapes, and then individually documented and assigned inventory numbers. Non-diagnostic pieces were kept in context bags for future reference, but not registered. Information about them was added to the Context Quantitative Data. Unworked stones were mass-classified according to material. All fragments of metal objects were kept, but only the diagnostic ones were recorded in detail. Information on the non-diagnostic ones was added to the Context Quantitative Data and the fragments were retained in context bags. Basketry and cordage was grouped according to category (see Chapter 5, this volume). Non-diagnostic, unidentifiable pieces were measured, counted and discarded. Textiles and stone tools were grouped by context and kept for processing in forthcoming seasons.

Each non-pottery artifact selected for individual registration received an inventory number and was recorded in detail. Objects that were individually documented in context also had a separate field number (FN) that helped trace the find to its precise location and tied it to field documentation (plans and photographs *in situ*). The inventory number constituted the last part of the object inventory code written on the object or its label. The inventory code consisted of the following elements: site code (D) and year / sector / context number / inventory number; for example, D18/1/12/1456.

The policies of finds collection and preliminary sorting of objects were governed by material rather than by functional categories of the uncovered items. The aim was to simplify the work of the archaeologists and registrars at the first stages of processing and to prevent errors in interpretation. A more functional approach will be possible upon completion of the project, when more data is collected and objects will be analyzed across different categories and materials. Such a classification of finds, according to categories of usage, was, for instance, applied in the publication of artifacts from Kulubnarti, where a large collection of objects of similar date was recovered (Adams and Adams 1998: 6 and 8–9, Table 2.1).

# CHAPTER 1 MATERIAL STUDIES IN OLD DONGOLA: INTRODUCTION

Object category	Collection policy	Processing and storage policy
Pottery vessels (baked clay only)	All fragments grouped by context; complete and <i>in situ</i> : FN	See Chapter 2, this volume
Other clay objects (unbaked clay objects, hydraulic pipes, fire-dogs, pot-stands, lamps)	All fragments grouped by context; <i>in situ</i> : FN	All complete specimens and diagnostic or recognizable fragments kept. The rest were recorded on quantitative data forms and discarded
Baked bricks, floor tiles	Measured and discarded	
Bones, shells	All fragments from secure contexts in collective context bags; marine shells collected separately	Bones weighed by context and stowed for processing and registration by an expert. Marine shells: all fragments recorded
Textiles	All fragments grouped by context	Grouped by context, wrapped in aluminium foil for protection against insects and stowed for processing and registration by an expert
Glass	All fragments grouped by context	Diagnostic fragments processed individually. Non-diagnostic pieces recorded on a context quantitative data form and kept in collective context bags
Decorated plaster fragments	All fragments in collective context boxes/trays; each tray assigned FN, collection area of each FN marked on field drawing. If more fragments found over a wider area, subdivide into squares of 1 m <sup>2</sup>	Sorted, classified, sampled after consulting a conservator. Identifiable pieces assigned IN. Unidentifiable pieces are recorded on a quantitative data form and discarded
Leather	All fragments by context	Recorded by registrar. Very small, unidentifiable fragments recorded on a quantitative data form and discarded
Marble	All fragments; FN	All fragments recorded
Coins	All fragments; FN	All fragments recorded
Metal objects	All fragments; FN (unidentifiable pieces, too)	All fragments recorded. Identifiable pieces assigned IN. Unidentifiable pieces are recorded on a quantitative data form and discarded
Worked wood	All fragments; FN in secure contexts	All fragments recorded. Identifiable pieces get IN. Unidentifiable pieces are recorded on a quantitative data form and discarded
Stone tools and implements	All fragments; FN in secure contexts	All fragments recorded. Identifiable pieces assigned IN. Unidentifiable, fragmentary pieces are recorded on a quantitative data form and discarded. Material consulted with a geologist

# Table 1.1. Finds collection policy at Old Dongola (most common items);FN = field number; IN = inventory number

Object category	Collection policy	Processing and storage policy
Hand-picked plant remains	Secure contexts only. Collective context bags	Recorded as archaeobotanical samples context by context and left for analysis
Gaming pieces	All fragments; FN	All fragments recorded
Spindle whorls	All fragments; FN	All fragments recorded
Loom weights	All fragments; FN	All fragments recorded
Cordage, basketry and their impressions	Secure contexts only. All fragments in collective context boxes; FN. Impressions photographed <i>in situ</i>	All fragments grouped by context. Sorted and registered by an expert. Identifiable and diagnostic fragments are kept, the rest is recorded on a quantitative data form and discarded
Textual finds	All fragments; FN	All fragments recorded
Smoking pipes	All fragments; FN	All fragments recorded
Jewelry, personal adornment	All fragments; FN in secure contexts	All fragments recorded. Beads from one context are grouped by type for registration
Decorated building material, window grilles	All fragments; FN	All fragments recorded. Identifiable pieces assigned IN. Unidentifiable pieces are recorded on a quantitative data form and discarded
Mud sealings	All fragments; FN	All fragments with impressions of vessels/stamps or markings are recorded. Fragments without markings are recorded on a quantitative data form and discarded
Human remains	One FN per skeleton	Processed by an anthropologist

### SAMPLING STRATEGY

Samples were taken when there was material that could be used for laboratory testing and when the context was secure (not a surface or disturbed layer). Wood, charcoal or burnt or desiccated plant remains were collected for radiocarbon dating and archaeobotanical analysis. Soil samples for archaeobotanical analysis (around 1 L each) were taken from all secure contexts. Samples of pottery were collected for prospective analyses (see Chapter 2, this volume), and so were other materials, including textiles, glass, bone, shells, ochre and plaster. Samples were marked by a capital letter S, followed by a number. All samples were recorded with the reason for sampling and context description provided in each case. The place of sampling was marked on the field drawings, and its elevation was recorded.

### Structure of the assemblage collected in the 2018-2019 season

At this early stage in the UMMA project, the study of finds uncovered during excavation is in progress and the different categories of objects are at various stages of investigation. By necessity,

this volume presents the state of research after the 2018–2019 season, during which only some groups of the material were studied. From the viewpoint of the stage of processing, the finds assemblage can be divided into four main categories: pottery, textiles, bones, and other small finds. Ceramic items were processed separately from other objects and are discussed in detail in this volume. Textiles, packed by context and stowed for processing by a specialist, were not recorded in the inventory to avoid damage to the fragile pieces. Also the collected bones were set aside for future processing. Thus, the inventory of finds from the season does not contain a full set of objects representing the material culture of the Funj-period households excavated as part of the 2018–2019 fieldwork.

The chart below [*Fig. 1.2*] shows the main categories of inventoried objects, while *Table 1.2* specifies the types of finds forming part of each of these categories. Stone implements made predominantly of locally available sandstone and quartzite constitute the largest group in the assemblage. They include handheld stone tools (grinders/pounders, pestles, and polishing stones), querns, and other stone objects. This very numerous category (some inventory numbers include more than one object) requires further detailed investigation within the framework of studies on technology and food processing.

Objects of personal adornment—primarily beads and bangles—comprise the second largest category studied in detail and discussed in dedicated chapters below (Chapters 8 and 9, this volume). In the case of beads, the number of inventory entries does not reflect the staggering total number of individual beads, as beads were grouped by type and material for the purposes of the inventory. The total number of individual specimens exceeds 1,000, making this the largest category of



Fig. 1.2. Structure of the assemblage of registered finds (n=1816); \* – includes only a small number of recorded garments, while most finds in this category await registration

Category	Object type	Inventory objects	Remarks	
	Stone tools	472	Grinders/pounders, pestles, polishing stones	
Stone implements	Querns	14		
	Stone objects	37	Including incense burner	
	Beads, pendants, cabochon	401	Groups of beads received one inventory number	
Personal adornment	Bangles	76		
	Other	11	Including pins (2), rings (3), clay cross	
D 1 . 1 1	Basketry	91		
Basketry and cordage	Cordage	61		
	Footwear	34		
Garments and footwear	Garments (non-textile)	5		
	Amulets	3		
	Balls (clay)	16		
	Figurines (clay)	3		
Personal objects	Gaming pieces (?)	30		
	Smoking pipes	95		
	Texts	10	Documents on paper, ostraca, graffiti on sherds	
	Spindle whorls	35		
	Fire-dogs	29		
	Wooden objects	39	Including pegs (3)	
	Weight, glass	1		
Household objects	Metal objects	57	Including bell, coins (3), blades (2), hooks (2), nail, needle, rings (2)	
	Leather objects	16	Including skins (5)	
	Clay objects	63	Including scraper, net weight, pot stand, heater, headrest (2), discs (3)	
	Wooden vessels	13		
X7 1	Gourd vessels	43		
Vessels	Glass vessels	76		
	Other materials	9	Unfired and fired clay, stone, leather	
Building materials	Building materials	19		
	Shells	26		
Other	Natural objects	26		
	Textile objects	3		

# Table 1.2. Finds registered in the 2018–2019 season, grouped by category and object type(categories in bold discussed in this volume)

objects found onsite. The group of other personal objects includes over 80 smoking pipes of local and foreign origin, which are also presented below (Chapter 4, this volume). Other objects from this category, namely, textual finds and amulets, are still under study, yet initial examination of the material shows that these finds are similar to those found in Old Dongola in previous seasons (Vanthieghem 2015; 2018). Some of the gaming pieces, made of wood, are discussed with the wooden finds (Chapter 7, this volume). The category of garments and footwear will inevitably be incomplete until the processing and inventory of textile finds is finished. Currently, this group comprises mostly footwear of leather and palm fiber, which is described in chapters devoted to objects made from these materials (Chapter 5 and 6, this volume).

Three large groups (household objects, vessels, basketry and cordage) include a plethora of objects found in very small numbers (two metal blades, a single stone vessel, two headrests, three coins, etc.). These objects, on the one hand, show the considerable variety and richness of the assemblage, and, on the other hand, each of these small categories requires separate in-depth investigation. Preliminary studies on this part of the assemblage have grouped the objects according to the material used in their manufacture. Basketry objects and cordage are presented below (Chapter 5, this volume), as are wooden bowls (Chapter 7, this volume) and household leather items (Chapter 6, this volume). These objects still require analyses within the context of their household inventories, together with ceramics and stone implements. As research progresses, integration of information from these studies in combination with GIS-based spatial analysis will help produce a broad-scope picture of Funj-period house inventories from Old Dongola and reveal relationships between the different categories. The chronology of the finds and their respective contexts is based on analyses of the stratigraphy, the presence of imported glazed wares and ceramic smoking pipes, and on a series of radiocarbon datings (Dzierzbicka 2021b). A list of dated contexts excavated in the 2018-2019 season is included for reference in the Appendix at the end of the volume.

### The local narratives on past material culture

The UMMA project has benefitted from collaboration with the Qatar-Sudan Archaeological Project (two projects, QSAP.A.10 and QSAP.A.31) and a project funded by the Ministry of Science and Higher Education of the Republic of Poland within the Dialog funding scheme (agreement no. 0298/2018). Within the framework of the latter, Tomomi Fushiya has introduced community engagement activities as a new instrument in the archaeological toolbox at Old Dongola in our effort to turn colonial-style archaeology practiced at the site in the past into the community archaeology of today and of the future (Fushiya and Radziwiłko 2019; Fushiya 2021b).

In connection with the community engagement project, we organized an event at the expedition dighouse at Old Dongola in the winter of 2020: the Finds Open Day [*Fig. 1.3*]. Its aim was to show the objects uncovered during UMMA-project excavations to the local community and to discuss these finds together. Since Tomomi Fushiya and Mohammad Hassan Siedahmed, the event organizers, thought it best to limit the number of participants due to space constraints and safety of the artifacts, we invited men and women interested in the local heritage or involved in local craft production. We decided to set the meeting as a *wanasa*—an informal gathering during



Fig. 1.3. The wanasa at the Old Dongola dighouse, winter 2020

which friends and neighbors drop by spontaneously to discuss different issues. At such events the people of Ghaddar share gossip and jokes. This type of informal meeting is useful for information sharing as well as discussion in our community engagement activities (Fushiya 2021b: 98).

During the event, we exchanged information on the function of the artifacts and on the techniques used in their manufacture. From a research perspective, the Finds Open Day allowed us to include local narratives and know-how in the research (see, e.g., Chapters 6 and 7, this volume). We hoped to strengthen the partnership between the archaeological team and the local community by building trust and mutual understanding. We wanted the voice of the local people to be heard while their heritage was being discussed. It was important for us to let these people know that we value their knowledge and that it can play an important role in archaeological interpretations.

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### CHAPTER 2

## METHODOLOGY OF POTTERY PROCESSING

### Anna WODZIŃSKA

### INTRODUCTION

The aim of this chapter is to present our method of pottery processing in the field and the preparation of material for further studies, including archaeometric analyses. It is intended to show the organization of the workflow when dealing with complex mass material. The adopted system allowed for the description of all pottery recovered from the excavated contexts, giving us the chance to analyze virtually all aspects of the material, not only selected facets of it.

The methodological framework for pottery processing at Old Dongola was prepared for the needs of the ERC project "UMMA: Urban Metamorphosis of the Community of a Medieval African Capital City" (Wodzińska and Danys 2018). It was based on published general manuals (Rice 1987; Barclay 2001; Orton, Tyers, and Vince 2003; Hunt 2017) and the personal experience of the author gained during fieldwork in Egypt, Sudan and Turkey. As work progressed, some alterations to the method were made following suggestions of pottery team members Katarzyna Danys and Bogusław Franczyk in order to further adjust it to suit the specific nature of the material and site.

The pottery-processing system was designed to be flexible enough to allow modification if necessary, according to special needs. Fieldwork sometimes required adaptations and changes, for instance, when the amount of ceramic material was overwhelming. On such occassions, processing continued according to general rules, but certain description categories were omitted if it was decided to concentrate only on selected aspects of the material. If that was the case, however, all of the pottery was stored following recording, so that further work could be done in the future with new sets of questions, as part of a different project.

#### Work method

### Collection strategy

Assessment and sorting of the material was the responsibility of the ceramics processing team, rather than the archaeologists, who were obliged to collect every sherd in the excavated area. The material was assembled in standardized bags, which were labeled with information about the context (see also Dzierzbicka et al. 2018) and method of recovery, particularly indicating if the material had come from sieving. The latter helped the pottery-processing team to correctly evaluate the quantity of vessels coming from one context. The weighing of bags introduced at the beginning was ultimately discontinued.

Pottery bagged according to context was transported to the pottery lab and stored in a designated place clearly marked as "Ceramic material – not processed". All complete pots and vessels found in their original position (on floors; embedded in structures and floors, etc.), as well as interesting pottery assemblages and inscribed or otherwise remarkable fragments received field numbers (FN; see Chapter 1, this volume, and Dzierzbicka 2021a). Their location and position were precisely documented, and they were delivered to the pottery lab separately from bulk finds.

### Handling pottery prior to recording

Prior to processing, each pottery bag was checked for the following items:

- fragile vessels that had to be handled with special care to keep them from falling apart;
- vessels with painted decoration applied after firing, which could be easily removed during the process of washing;
- pots with soot;
- pots with visible residues;
- unfired pottery;
- inscribed sherds;
- sherds or pots that could be sampled for potential archaeometric analysis, for instance, chromatography.

When found, such sherds/vessels were handled with care and were not washed. They were recorded according to the same principles as other vessels.

All other ceramic material coming from excavated areas was washed and dried by a pottery team member or a qualified workman supervised by the pottery team, making sure that each bag of pottery had its context label. Clean and dry pottery was stored in one place, with pottery bags grouped by context.

### Recording collected ceramic material

Every pottery fragment coming from the field was subject to assessment. The pottery team also recorded all other clay objects, modified ceramic body sherds, as well as sherds with inscriptions, before handing them over to finds registration and other specialists. The material was stored for prospective studies, including research planned for after the end of the current project.

The list below shows documentation methods and tools used in recording pottery at Old Dongola:

Pottery bag form	Recording general data on the volume of the excavated pottery from a given context [see below and $Fig. 2.1$ ]						
Pottery recording form	ing form Detailed recording of every sherd and complete vessel coming from th excavated area, from a given context [see below and <i>Fig. 2.2</i> ]						
Fabric recording form	Detailed studies of ceramic fabrics [see below and Fig. 2.3]						
Type recording form	Detailed studies of ceramic types [see below and Fig. 2.4]						
Decoration recording form	Detailed studies of pottery decoration [see below and Fig. 2.5]						
Digital database	Pottery data stored in a Microsoft Access database especially designed for the project (see below)						

Pencil drawings of pottery	Pottery drawings made in the field [Fig. 2.6]
Digital drawings of pottery	Digital drawings of pottery based on the pencil drawings, completed in the field if possible [Chapter 3, this volume, e.g., <i>Fig. 3.21</i> ]
Photographs of pottery	Photographs of pottery, including general context views; single vessels/sherds; fabrics; special features [Chapter 3, this volume, <i>Figs 3.91–3.95</i> ]

The organization of pottery recording was based on the following general workflow:

Organizing bags with pottery according to archaeological context Separating fragile pottery Collecting samples for chromatography Pottery washing and drying Photographing of pottery from each bag Pottery bag form Pottery recording form (paper or digital) Fabric recording form Type recording form Decoration recording form Pencil drawings Photography of single pots Scan of all forms and drawings Digital drawings Digital database entry (if not yet entered) Preparation of catalogue of registered and drawn pottery Report on pottery written at the end of the excavation season Preparation of publication based on the season reports and catalogue of registered, drawn and photographed pottery

## Recording pottery bags

Number of wheel made pots:

20

The first stage of pottery registration focused on obtaining general information on the contents of pottery bags coming from the excavation areas. The information was recorded using the pottery bag form [*Fig. 2.1*]. The collected data was then passed back to archeologists seeking general information on different categories of finds from the excavated contexts.

DONGOLA pottery bag form	Page:			
SEASON:	Dating:	Remarks:		
Context	General fabrics	Diag./Non-diag.		
Sector: 1	Number of Nile silt sherds:	Number of diag. pieces:		
Square:				
Context:	Number of other fabrics:	Number of non-diag. pieces:		
Unit:				
Bag number:	Weight of Nile silt sherds:	Weight of diag. pieces:		
Field/sample nr:	Weight of other fabrics:	Weight of non-diag. pieces:		
Inv. nr.				
Number of all sherds:	Weight of all sherds (in kg.):	Number of re-deposited sherds:		
Number of handmade pots:	Date of processing:	Photo:		
Number of wheel made pots:	Name of ceramicist:	Storage:		
SEASON:	Dating:	Remarks:		
Context	General fabrics	Diag./Non-diag.		
Sector: 1	Number of Nile silt sherds:	Number of diag. pieces:		
Square:				
Context:	Number of other fabrics:	Number of non-diag. pieces:		
Unit:				
Bag number:	Weight of Nile silt sherds:	Weight of diag. pieces:		
Field/sample nr:	Weight of other fabrics:	Weight of non-diag. pieces:		
Inv. nr.				
Number of all sherds:	Weight of all sherds (in kg.):	Number of re-deposited sherds:		
Number of handmade pots:	Date of processing:	Photo:		

Fig. 2.1. Old Dongola pottery bag form

Storage:

Name of ceramicist:

All sherds and complete vessels from a given bag were counted and weighed (in kilograms), making sure to treat matching sherds as one fragment rather than counting them as several different items ("general quantity"). In addition, the number and weight of Nile silt sherds versus sherds in other fabrics (including imported wares) was assessed ("general fabric"). Diagnostic and non-diagnostic pieces from each bag were counted, combining matching sherds as described above ("diagnostics/non-diagnostics"). Information on the total weight of diagnostics and non-diagnostics was given separately. Due to the overwhelming amount of pottery coming from the excavated areas, it was decided to stop the weighing. However, the already weighed material can be considered a good sample for possible future studies.

Diagnostics were complete vessels or fragments helpful in identifying a form or providing further information about its use/reuse. The following finds were counted as diagnostic: complete pots, complete profiles of pots, rims, bases, handles, fragments with decoration, fragments with potmarks, sherds with inscriptions, and body sherds identified as imported wares. In addition, all objects made of ceramic body sherds or of clay were counted as diagnostic. Non-diagnostics, in turn, were body sherds that could not be put together to form a diagnostic fragment and lacked decoration, potmarks, or any other potentially interesting features. Due to the sheer volume of pottery coming from the excavation, after being recorded the non-diagnostics were discarded in a designated place onsite.

The number of handmade versus wheel-made pots was also given for each bag. Identification of the general technique of manufacture helped quickly identify the function of uncovered structures. Redeposited pottery was also counted. Such material was not functionally and chronologically associated with the context and was, therefore, not processed together with the rest of the pottery. Instead, it was set aside for future studies.

Lastly, a collective photo showing pottery from each bag was taken, and the material was then stowed for further processing, with the place of storage indicated on the form.

### Recording vessels

Detailed descriptions were prepared for each sherd/vessel categorized as diagnostic. For their recording, a special form—the pottery recording form [*Fig. 2.2*]—was used, and the collected data were subsequently entered into a digital database (data were also entered directly into the digital database in order to save time). Every complete pot, complete profile or sherd that could not be attached to other fragments was recorded as a separate entry. Each described item received a consecutive number ("Pot no.") written on the sherd/pot in the following form: D18/4/12/P345, incorporating information about the season of excavation/sector/unit/consecutive pottery number (see also Dzierzbicka et al. 2018).

The sherd was assigned to a "type" created on the basis of several features analyzed on a separate form (see below), and to a "class" based on the shape. The distinguished classes comprised bowls, jars, baking plates, *qawwadis*, lids, incense burners, bottles, and *varia* (see Chapter 3, this volume). Also the vessel part was identified with a code designation indicating a rim (R), base (B), body sherd (S), or handle (H). In case of better-preserved specimens, code names for a complete pot (Cpot) or complete profile (Cpr) were used. The fabric type given in the pottery recording form was specified according to data given in a separate form containing descriptions of kinds of material used during production (see below, *Fig. 2.3*).

Sea	son:							Context:				Unit:		
Sec	tor:				Square									
Fie	Field/sample number:			Inv. nu	Inv. number:			Date of processing: Remark			Remarks:			
Bag number:				1					erami	icist:	Dating:			
Pot no.	Туре	Class	Part	Fabric Type	Prod. Tech.	Sur Treat.	Decor./ Place	R/B Ø	Wt	FC	C Remarks (use, function, potmarks, additional info)		D	Ph
P	PT			F										
Р	PT			F										
Р	PT			F										
Р	РТ			F										
Ρ	РТ			F										
P	РТ			F										
Р	PT			F										
P	РТ			F										
P	РТ			F										
P	РТ			F										
P	РТ			F										
P	РТ			F										

Page:

Fig. 2.2. Pottery recording form

The production technique used for shaping the given pot was determined ("Prod. Tech. [manufacture]"). Pots were described as wheel-made (WM) or handmade. The handmade techniques were further classified as:

- pinching and hollowing (HM-PH)
- coiling (HM-coil)
- paddle and anvil (HM-paddle)
- made on a mold (HM-onM)
- made in a mold (HM-inM).

In some cases, combinations of methods were identified, for example, a handmade pot was later finished on a wheel (HM-coil and WM). When dealing with large fragments or complete vessels, in order to be more precise the shaping methods were given separately for the rim, body and base. For example, WM/HM-coil/HM-PH indicated a vessel with a base made in the pinching and hollowing method, a body made of coils, and a rim turned on a wheel.

Surface treatment ("Surf. Treat.") was described separately for the external and internal surfaces and for the very base of each studied pot, if possible. The pottery was smoothed (Sm), burnished using a hard tool (B), or polished with a soft fabric or fur (P). Sometimes the surface was intentionally roughened (Ro) in a manner very characteristic of Nubian pottery. Additionally, the surfaces were coated (C) or glazed (G). The color of the coat or slip depended on the

22

firing conditions, and prior to archaeometric analysis only basic terms were used to describe it: red (R), black (Bl), brown (Br), white (Wh), orange (Or), yellow (Y), pink (Pi), green (Gr), blue (Be), turquoise (Tr), and purple (Pu). The latter seems to be a conscious choice of the potter in Nubian material (K. Danys, personal communication, February 2019). A complete description of the internal and external surfaces was abbreviated: for instance, "RCSm-in, Sm-ex, Sm-base" stood for "red coated and smoothed internal surface, smoothed external surface and smoothed very base of vessel". Another example of such a description would be "GrG, WhCSm-in, GrG, WhCSm-rim ex, Sm-ex, Sm-base", meaning "green glazed on top of white coat smoothed internal surface, green glazed on top of white coat smoothed external surface on the rim, smoothed external surface below rim, and smoothed very base". In case of uncertainty, if a slip was applied, the color of the surface was recorded as well. The original surface was described using the same color codes as above but with more color options, for instance, grey (Gy), beige (Bei), etc. Decoration ("Décor") was characterized using names/symbols specified in the decoration recording form (see below).

The pottery recording form also included basic metric information, like rim/base diameter (" $R/B\emptyset$ "), with indication of the percentage of the preserved rim or base, for example  $R\emptyset$  25 cm, 5%. The weight ("Wt") of the vessel or sherd was measured and given in kilograms. Firing conditions ("FC") were indicated as reduced (RF), oxidized (OF), or both, depending on how pots were placed in a kiln or firing place. Information about the state of preservation and traces left on the surface during usage, as well as visible potmarks, inscriptions (made before or after firing, on external or internal surfaces) and any information concerning sherds from the same pot found in a different context were placed in the remarks section. Lastly, the form contained an indication of whether the given fragment was documented on a drawing (D) or photograph (Ph).

### Recording fabrics

Material used during pottery production was described in detail in the fabric recording form [*Fig. 2.3*]. It constituted the basis for the classification of fabrics (see Chapter 3, this volume) used in the pottery recording forms. The fabric forms were also crucial for the process of selecting samples for archaeometric analyses (see below). Each type of fabric received a different code name, was photographed and sampled.

Each new fabric became a "Fabric type" and received a unique code name consisting of the capital letter F and a number (F1, F2, etc.). Every form created for a fabric type indicated the "Method of observation", or information about the instrument used during description (hand lens, microscope), and its magnification, the number of macro photographs taken of the fabric (if any), the number of samples prepared for archaeometric analyses, and information on where the fabric was stored.

The following criteria were analyzed as part of recording fabrics:

 Groundmass homogeneity (texture), or the general appearance of the fabric in a fresh break, was described as "very homogenous", "medium homogenous", or "coarse". Sorting of the groundmass material visible in the fresh break was defined (based on Westman 1994) as "well sorted" when grains of the groundmass had more or less the same size and were evenly distributed in the fabric; "moderately sorted" when grains of the groundmass had different

### OLD DONGOLA: FIELDWORK IN 2018-2019. VOL 2. MATERIAL STUDIES

Season:		Context:	Unit:		
Sector:	Square:				
Field/sample nr:	Inv. nr:	Pot number:			
Bag number:	1	Date of processing:			
		Name of ceramicist:			

Fabric type	Method of observation	Macro photo	Sample taken	Storage

Groundmass homogeneity	Groundmass sorting	Break sections/colors	Self-slip

Inclusion	Amount	Shape	Size [mm]	Sorting	Remarks
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		
			L:		
			T:		

Porosity	Permeability	Hardness	Feel

General remarks

Fig. 2.3. Old Dongola fabric recording form

sizes but were more or less evenly distributed in the fabric; "poorly sorted" when grains of the groundmass had different sizes and were not evenly distributed in the fabric; and "very poorly sorted" when grains of the groundmass had significantly different sizes and were not well distributed in the fabric.

24

- Break sections/colors of the fabric were recorded when visible. An example of a description is red/black/red indicating there was a black core and red coats. Another example is ex-red/ black/brown-in, indicating that the fabric in the break was red near the external surface, had a black core and a brown section near the internal surface.
- Self-slip, a natural scum layer visible on the surface of some fabrics, was also recorded when present.
- Inclusions, or materials found in the fabric which were either part of the raw source or were added later in the course of pottery production, were identified as organic, like straw, chaff, or dung; mineral, like quartz, crushed rocks (granite, feldspar, sandstone, limestone), and grog (crushed and powdered ceramic sherds). Indication of visible voids in the fabric was also given. The amount of each inclusion visible in a space of 1 cm<sup>2</sup> was given. The shape of grains and voids, especially minerals, was characterized on a scale from "very angular" to "very rounded" (based on Westman 1994). Size ranges were given for each type of inclusion and for voids (length [L] and thickness [T] in milimeters). The sorting of inclusions and voids was defined, as in the case of the groundmass (see above), as "well sorted", "moderately sorted", "poorly sorted" and "very poorly sorted" (Westman 1994). Any general observations concerning the inclusions and voids, including if they were visible on the surface, not only in the break, were added in the remarks section.
- Porosity, or information about visible voids, was described as "not porous" if there were no visible voids in the break, "moderately porous" when voids were visible in the fabric but were moderately numerous, and "very porous" when voids were very numerous in the fabric.
- Permeability of the fabric was determined through an experiment. A fabric was described as "open" when water penetrated the ceramic wall in minutes after it was poured into the pot in a way that it could not be collected again; "medium" when water penetrated the ceramic wall but did not go through it; and "dense" when water did not penetrate the ceramic wall. Permeability is not necessarily connected to porosity. Very porous fabrics can be dense, not allowing liquids to penetrate the walls of vessels (personal observation).
- Hardness was measured with the use of a Mohs hardness kit (scale 1–10). For a quick assessment, a simpler scale was used: 1 to 2 soft and medium (scratched with fingernail), 3 hard (scratched with copper wire or a steel knife), 4 very hard (scratched with glass) (Whitbread 2017: 204).
- The feel, or the personal impression left after touching the surface of the fabric, was described as soapy, sandy, gritty, powdery, or smoothed.

### Recording types

The typology of vessels was built in the field to keep track of the new forms appearing in the material. It was based on defined pottery types (see Chapter 3, this volume) documented using the type recording form [*Fig. 2.4*].

Types were distinguished on the basis of shape, fabric, manufacture technique and surface treatment. The code name assigned to a type consisted of the letters PT, which stand for "pottery type", and a number (PT1, PT2, etc.). Each type was assigned to a class in order to place it in a general group of shapes, like bowls, jars, baking plates, *qawwadis*, lids, incense burners, bottles,
#### OLD DONGOLA: FIELDWORK IN 2018-2019. VOL 2. MATERIAL STUDIES

Season		Context:	Unit:
Sector:	Square:		
Field/sample nr:	Inv. nr.	Pot number:	
Bag number:	Date of processing:	Dating:	
	Name of ceramicist:		

TYPE: PT	Class	Fabric type F	Pencil drawing
			Digital drawing

Production technique	Surface treatment	Decoration

Rim Shape	Rim orientation	Handle shape	Body shape	Base shape
~				
Sketch drawing				
Pomorks:				
ixemarks.				
RØ	MaxØ	BØ	Height	Volume

Fig. 2.4. Old Dongola type recording form

or *varia* (see Chapter 3, this volume). The fabric types were recorded according to the fabric classification (see above).

The production techniques used for shaping the given pot type were established. Pots were first defined as wheel-made (WM) or handmade (HM). The handmade techniques were further classified as: pinching and hollowing (HM-PH), coiling (HM-coil), paddle and anvil (HM-paddle),

26

made on a mold (HM-onM), made in a mold (HM-inM). Sometimes combinations of methods were identified, for example, a handmade pot was later finished on a wheel (HM-coil and WM).

Surface treatment was described separately for external and internal surfaces, as well as for the very base of the pots within a given type. The following treatments were distinguished: smoothed (Sm), burnished using a hard tool (B), and polished with a soft fabric or fur (P). Sometimes the surface was intentionally roughened (Ro) in a manner very characteristic of Nubian ceramics. Additionally, the surfaces were coated (C) or glazed (G). The color of the coat or slip was defined in basic terms: red (R), black (Bl), brown (Br), white (Wh), yellow (Y), pink (Pi), green (Gr), blue (Be) (see also above). Decoration was described using code names specified in the decoration recording form (see below). The shape of the vessels was described in detail using the following categories and terms:

- rim shape (round, pointed, flat, recurved, flange),
- rim orientation (straight, flaring, narrowing),
- neck shape (cylindrical, trapezoid, conical, wavy),
- handle shape (angled, looped, strapped, eyelet, ducktail),
- body shape (conical, biconical, cylindrical, spherical, semispherical, trapezoidal, hyperboloid, ovoid),
- base shape (round, pointed, flat, ring [low and high], disc, knob, solid stand).

Measurements were taken of the rim diameter  $(R\emptyset)$ , body diameter  $(Max\emptyset)$ , base diameter  $(B\emptyset)$ , and height. The body diameter and height were measured from drawings for better precision. All dimensions were given in centimeters. The volume of the vessel was given in liters. It was calculated on the basis of exact measurements from drawings, unless the volume could be calculated differently (e.g., using sand) if the vessel was very well preserved.

## Recording decoration

The studied pottery was decorated using various techniques and motifs. It was, therefore, necessary to use a special form for describing the decoration (decoration recording form; *Fig. 2.5*). The resulting classification of decoration methods and motifs (see Chapter 3, this volume) turned out to be a good comparative tool.

Each decoration type received a code name consisting of the letters DT and a consecutive number (DT1, DT2, etc.). The decoration recording form included information on the pottery type (PT) decorated in a particular way (or multiple pottery types if the same decoration type was used on many different vessels). Also the fabric types correlated with a given decoration type were specified (see above).

The decoration method was classified as painted, incised, stamped, impressed, roulette, applied, or made in a mold. However, some variations were possible when more than one method was used. For example, a very popular method of decoration was mat impressions visible on the bodies and bases of many pots (Phillips 2010: 227). All pottery with mat impressions was consulted with a basketry specialist in order to determine the type of mats used in making the decoration.

Decorative motifs were described in detail. The ornaments used in the Terminal Christian and Islamic periods were usually geometric (Chapter 3, this volume). The most common motifs were the following: a straight line; parallel horizontal lines; parallel horizontal lines filled with a zigzag;

#### OLD DONGOLA: FIELDWORK IN 2018-2019. VOL 2. MATERIAL STUDIES

Decoration recording forn

Season					Context:		Unit:	
Sector:	Square:							
Field/sample nr:	Inv. nr.				Pot numbe	er:		
Bag number:	Date of	processing:			Dating:			
0	Name of	f ceramicist:						
					•			
Decoration type:		Pottery typ	e	Fabric ty	/pe	Pencil o	lrawing	
DT		PT		F		Digital	drawing	
						Digitai	urawing	
Decoration method	Decorati	on Color	Descrip	tion of de	coration			
			-					
			1					
Sketch drawing	1		I					
Sketen drawing								

Fig. 2.5. Old Dongola decoration recording form

a zigzag made of two parallel lines filled with short parallel strokes; triangles made of simple lines; triangles made of two parallel lines; triangles made of two parallel lines and filled with crosshatching, solid triangles, "oculi" elements in friezes. The decoration color was defined in basic terms: red (R), black (Bl), brown (Br), white (Wh), yellow (Y), pink (Pi), purple (Pu), green (Gr), blue (Be), and turquoise (Tr).



Fig. 2.6. Example of a pencil drawing

# Digital database

All data recorded on forms were transferred to the Old Dongola Pottery Database designed in Microsoft Access. The database served not only as a repository but also as a very useful analytical tool. It was constructed around several tables corresponding to the recording forms described above and linked by pot number and stratigraphic context. The pottery database contains all information collected in the course of excavations and during research between seasons. In the future, it will also include results of archaeometric analyses.

#### ARCHAEOMETRIC STUDIES AND SAMPLING STRATEGY

Samples for archaeometric analyses were collected in order to answer questions concerning the production sites, manufacturing techniques and usage of the studied vessels. Few archaeometric analyses have been performed thus far on material from the Terminal Christian and Islamic periods in Sudan. It is, therefore, necessary to collect data and gradually analyze the results. Several research directions are pursued within the scope of the project: identifying sources of raw material; identifying products of one kiln; establishing a model for identifying production techniques; identifying contents of vessels; and dating the vessels.

### Identifying sources of raw material

Description of ceramic fabrics conducted in the field is usually only the beginning of more detailed work on the material used during pottery production. In order to identify the exact sources of raw material, further analyses are necessary. Once the sources are known, it will be possible to identify the potential production centers and determine their proximity to the excavated site. First of all, using archaeometry should enable us to determine if local fabrics were used for the production of the studied pottery. If not, the vessels can be considered imports. For such imported vessels it is necessary to collect archaeometric data and compare them with other vessels coming from different sites, if available.

The first step in the studies on raw material was to collect geological samples of local clays/silts from the site and its vicinity. It was necessary to take as many different samples as possible to have a good frame of reference. It is recommended to obtain samples of raw material also from excavated areas and geological core drillings, if possible.

Second, samples of archaeological ceramic fabrics were prepared according to the fabric classification. Each defined fabric type was sampled. The material of known pottery types was sampled, ensuring that the size of the samples was large enough to allow for analyses using several methods. In cases when rim sherds/complete profiles could not be obtained, a body sherd was cut parallel to the rim.

Not only the clay itself, but also the inclusions will be subjected to analysis. The clay groundmass contains local inclusions that can be associated with different regions, providing information about the manufacture process and implications connected with obtaining raw materials (Barclay 2001).

The prospective analytical methods are as follows: ceramic petrography, SEM and XRD (identification of minerals in the groundmass; inclusions and their size, shape and amount; firing temperature), XRF (obtaining a full spectrum of elements present in the sample, especially rare elements) (see also Barclay 2001).

## Identifying products of one kiln

Comparison of fabrics with pottery types can help identify products coming from the same workshop, or even the same kiln. It is important to define production traditions even if we cannot find the exact production places. The pottery assemblage will be, as a result, subdivided into smaller groups, possibly associated with different manufacture traditions. In this kind of analysis, only archaeological fabrics are compared in an attempt to find common (but also different) features. The samples prepared for raw-material analysis will be used for this purpose.

The prospective analytical methods are as follows: ceramic petrography, SEM and XRD (identification of minerals in the groundmass; inclusions and their size, shape and amount; firing temperature), XRF (obtaining a full spectrum of elements present in the sample, especially rare elements) (see also Barclay 2001).

# Establishing a model for identifying production techniques

Nubian pottery was made in several different ways. In the Terminal Christian and Islamic periods, wheel-made vessels are attested in the material, but most pots are handmade. Making pottery by

hand has a very long tradition in the region. Attempts have been made to define the exact methods of manufacture, but it is not always possible to identify the method through simple observation of the pot surface or even fabric. In such cases, archaeometric methods are useful. Information about the manufacturing technique, combined with mineralogical and elemental analyses, may give more information about not only different production traditions, but also locations of possible production centers. In preparation for this study, special samples were collected of complete profiles of pots cut perpendicularly to their rims. Material was selected from known pottery types. The prospective analytical methods are ceramic petrography and X-ray examination.

## Identifying vessel function

One of the most important tasks in pottery studies is defining the function of vessels. It can be done through several methods, such as the study of the shape and size of pots, but also through the analysis of fabrics and noting traces of possible use (scratches on the surface, traces of burning and soot, etc.). Chromatography can be employed to identify visible, but also invisible, organic contents of pots. Two sets of samples will be prepared, one for acidic remains and the second for oils. Samples for chromatography cannot be stored for long periods and have to be analyzed as soon as possible because the organic materials usually quickly disintegrate after they are taken out of their archaeological context; therefore, sample collection is planned for the final year of the project. The prospective analytical methods are as follows: metrical study, ceramic petrography, SEM, chromatography (see also Barclay 2001).

# Dating

The Terminal Christian and Islamic periods are well established in Nubian archaeology. In order to construct a more detailed chronological framework of the studied material, some archaeometric methods may be applied. The method used thus far was radiocarbon dating of archaeological contexts (Dzierzbicka 2021b). Many different materials can be analyzed, but samples taken directly from pottery require fabrics with organic material used as temper. Thermoluminescence may also be used (see Barclay 2001), but the broad chronological spans of datings obtained with this method make it less useful for this project.

## RESEARCH PERSPECTIVES

The first presentations of the material show the ceramic fabric classification, used methods of production, surface treatment methods, decoration kinds and motifs summarized in a pottery typology (see Chapter 3, this volume), as well as statistical analyses of relative pottery occurrences, especially in comparison with pottery distribution between phases, buildings, rooms etc. (Wodzińska, in preparation).

However, the fabric classification and typology will be updated after each season of work in order to add new forms if they appear in the material. The final publication of pottery studies as part of the project will summarize the results and address particular questions, including those OLD DONGOLA: FIELDWORK IN 2018-2019. VOL 2. MATERIAL STUDIES

asked by the project leader and archaeologists. Other prospective publications are planned as detailed studies of ceramic fabrics based on archaeometric analyses, including petrographic studies, elemental analyses, determination of firing temperature, etc., research on imported fabrics and forms (Danys, in preparation), and comparison of the excavated vessels with ethnographic material.

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# CHAPTER 3

# POTTERY FROM THE 17TH–18TH CENTURY SETTLEMENT: A TYPOLOGICAL STUDY

## Katarzyna DANYS

Excavations conducted at Old Dongola in the autumn of 2018 and winter of 2019 revealed a part of a settlement from the Funj period on the citadel hill and in its neighborhood (Obłuski and Dzierzbicka 2021). Archaeological works concentrated in the central-eastern part of the citadel hill. The uncovered features formed compounds interpreted as household spaces. The artifact assemblage recovered from the excavated houses included massive amounts of pottery: complete and almost complete vessels as well as their fragments.

#### INTRODUCTION

Among the key research objectives of the 2018–2019 season was to investigate the ceramics of the Funj period: their phasing, functions, and distribution at the site. The typologies of fabrics, forms, and decoration presented below were prepared with these goals in mind. In addition, patterns of occurrence of different vessel types were analyzed in order to establish the function of particular spaces. Studies were also conducted on the technological aspects of vessel manufacture. Pottery analysis followed methods and procedures of processing mass material described in the *Manual for Terminal Christian and Islamic period pottery from Sudan* (see also Chapter 2, this volume).

The aim of this paper is to present and characterize the pottery assemblage of the 17th and 18th centuries, which constituted the bulk of the material found in context. The chronology of pottery finds excavated this season is based on the stratigraphic sequence and results of radiocarbon analyses (Dzierzbicka 2021: 226–229), as well as on the presence of imported glazed wares and ceramic smoking pipes. The latter two types of finds are widely used for dating post-medieval archaeological sites in the Near East (Vroom 2007: 84). At Old Dongola, early modern glazed ceramics were found mainly in surface layers. These contexts contained a broad repertoire of imported wares dated to the 18th–19th centuries, including Kütahya Ware (Danys, in preparation) and European porcelain analogous to finds from the Abandoned Village in Old Dongola (Godlewski 2012: 306–309, Fig. 26). Ceramic smoking pipes, in turn, were found in occupational levels. They comprised mainly large, locally made specimens that seem to date from the mid-17th to 18th century and have parallels among finds from previous excavations on the site (Danys and Wyżgoł 2018). Once a framework for the chronology of the pottery finds was established, the pottery aided in dating the excavated structures.

Pottery dated to chronological periods other than the 17th–18th centuries was also recorded during the 2018–2019 season. In addition to redeposited vessels of Makurian date (600–1300 CE),

some sherds belonged to the Terminal Christian period (1300–1500 CE). Other fragments were connected with Funj-period structures predating the 17th–18th centuries, for instance, spaces used during the 16th century (de Lellis and Maślak 2021b: 85; Wyżgoł 2021: 192). These finds were stowed for future analysis.

## GENERAL DESCRIPTION OF THE ASSEMBLAGE

The collected pottery represented domestic assemblages found either in occupational contexts of the excavated houses or in secondary deposits (middens) filling abandoned structures. The assemblage comprised 47,113 fragments (altogether 2909 kg), including 7763 diagnostics and 35,457 non-diagnostics dated to the Funj period, associated with occupational layers and middens inside excavated structures, and 3,893 fragments of redeposited Makurian-period pottery, which came from destroyed older structures and were neither functionally nor chronologically connected with the investigated layers [*Fig. 3.1*].

Diagnostic fragments processed in detail numbered 2970. Due to the importance of pottery from the Terminal Christian period for the urban metamorphosis of Old Dongola, and generally for the changes in pottery production between Christian and Islamic periods, all Terminal Christian pottery fragments were classified as diagnostics in the database. In a few cases, also redeposited Makurian-date potsherds were registered as diagnostics if they bore features of importance for general studies on ceramics found at the site.



Fig. 3.1. Diagnostic, non-diagnostic, and redeposited sherds in the assemblage

An overwhelming majority of the Funj-period pottery was handmade (98%, n=42,089), while wheel-made vessels were scarce (2%, n=1131) among both diagnostics and non-diagnostics. This salient feature of material dated to the post-medieval period had been recognized previously at Old Dongola (Wodzińska 2015), as well as at other sites (Adams 1986: 49). The handmade vessels represented various techniques of manufacture: pinching and hollowing, coiling, the paddle-and-anvil method, and mold-forming. According to preliminary observations, none of these techniques were dedicated to the manufacture of specific vessel types. The group of diagnostic fragments of wheel-made vessels was composed mainly of *qawwadis* (*saqiya* pots) and imported wares. Each of these groups amounted to 41% (n=211). Other wheel-made vessels of the Funj period, like bowls and bottles, constituted 18% (n=93) of this assemblage [*Fig. 3.2*].

It is worth noting that despite the large share of imported vessels in the group of diagnostic wheel-made fragments, imports constituted only 0.48% of the whole pottery assemblage. Their relatively rare occurrence among vessels found in the investigated houses suggests that such objects were uncommon among household utensils in Old Dongola in the investigated period. This group was relevant for establishing the chronology of the assemblage and for studies on trade relations between Old Dongola and other regions during the Funj period (Danys, in preparation).



Fig. 3.2. Shares of different groups of diagnostic wheel-made fragments

## FABRICS

The analyzed ceramics were mostly made of Nile alluvium, which accounted for 90% of the fabrics in the assemblage. A small share of the pots was of wadi clay, but none of the analyzed finds were manufactured of kaolin clay [*Fig.* 3.3]. One of the most characteristic features of the material was the frequent appearance of grog in the alluvial fabrics (fabric F6). Grog was also used as a temper with wadi clay (fabric F12).

Some correlation can be seen between fabrics and forms. For instance, a fabric with large grains of limestone (F3) was frequently recorded for thin-walled jars, like PT21 [*Figs 3.49, 3.92:1*], while Nile fabric with grog was the most common in the group of baking plates, for example, PT13 [*Fig. 3.72*]. Bowls of pottery type PT8 were made of a variety of fabrics, but fine, dense Nile clay (F1) was dominant.

Petrographic and elemental analyses are in preparation. Local fabrics are listed below with brief descriptions of the composition, main inclusions and tempers (for explanations of quantitative designations, see Chapter 2, this volume):

#### OLD DONGOLA: FIELDWORK IN 2018-2019. VOL 2. MATERIAL STUDIES

- F1 Nile fabric, very fine and dense, with only some small organic inclusions, occasional sand and grog
- F2 Nile fabric, fine, similar to F1 but with a moderate amount of organic inclusions and a moderate amount of sand
- F3 Nile fabric with a moderate amount of organic inclusions and sand, as in F2, but with a moderate amount of white particles (limestone) measuring between 1 and 5 mm
- F4 Nile fabric, porous, with many organic inclusions measuring up to 1 cm in the break, and with some grains of sand and occasional mica
- F5 Nile fabric with abundant grains of sand and occasional organic inclusions
- F6 Nile fabric with a small amount of organic inclusions, a moderate amount of sand, and numerous pieces of grog measuring from 1 to even 5 mm
- F7 Nile fabric with plenty of seed inclusions
- F8 Nile fabric with crushed rocks (presumably granite) used as temper
- F9 Nile fabric with some organic inclusions, many grains of sand and grog, as well as a moderate amount of white particles (limestone)
- F10 Nile fabric with crushed grey rocks of sedimentary origin, a moderate amount of sand and mica
- F11 Nile fabric similar to F3, but with fewer organic inclusions and of greater hardness
- F12 Wadi fabric with a moderate amount of organics and abundant large pieces of grog
- F13 Nile fabric of gritty texture with large, yellow particles, occasional red and black particles
- F14 Nile fabric tempered with large schist particles measuring up to 2 cm, a moderate amount of grey particles, and abundant mica
- F15 Nile fabric tempered with crushed quartz, also moderate amount of organics and sand
- F16 Nile fabric with a large amount of mica (flakes of mica also visible on the surface), occasional grains of sand and quartz
- F17 Nile fabric, coarse, with semi-rounded grains of quartz and mica, and also some black grog and organic material
- F19 Nile fabric with numerous quartz grains of moderate size and moderately angular shape
- F20 Wadi fabric with many pieces of quartz of rather small size
- F21 Nile fabric with yellow particles of moderately angular shape visible also on the surface, occasional elongated voids
- F24 Nile fabric with large, angular mica flakes

The most commonly used fabrics consisted of Nile alluvium with different inclusions: minerals, organics and other solid matter like grog (crushed ceramics). Statistical analyses of diagnostic fragments [*Fig. 3.4*] indicate that the preferred fabrics were F1 and F6 (35% and 30% respectively of n=5140). Other materials, like F2 and F3 (15% and 7.7% respectively), were less frequent. Fabrics with percentage shares smaller than 5% were F4 (2.6%), F5 (3.7%), and F9 (3.2%). The remaining fabrics occurred in less than 1% of the fragments.



wadi clay n = 23 imported wares n = 220

Fig. 3.3. Percentage shares of groups of fabrics in the assemblage of diagnostic fragments



Fig. 3.4. Percentage shares of Nile fabrics according to type (n=5140)

#### DECORATION

The investigated pottery of the Funj period was richly decorated. As much as 38% of all diagnostic sherds bore some form of decoration. The great variability of patterns and techniques led to distinguishing a total of 215 different decoration types. Ornamentation was executed using four techniques: incising, impressing, applying, and painting. It appeared as single patterns or compositions made in one or more techniques. Many vessels bore more than one type of decoration.

Statistical analysis of the decorated fragments revealed that the most common form of decoration were impressed patterns, which amounted to 47.4% of this group [*Fig. 3.5*]. They were executed using three different techniques generating impressions of textures (mat or roulette), potter's fingers, and objects, which were uncovered respectively on 32.62%, 8.47%, and 6.31% of the decorated potsherds.

Another numerous group comprised incised decorations found on 30.9% of the decorated fragments. Applied motifs were found on almost 9.9% of the decorated potsherds, while painted motifs adorned 7.7% of the sherds in this group. Decorative compositions comprising motifs executed in more than one technique were uncommon, comprising 2.4% of the decorated fragments. Potmarks constituted only 1.7%.



impressed n = 1408 incised n = 91 applied n = 294 painted n = 229 combined n = 71 potmarks n = 50

Fig. 3.5. Decoration techniques in the assemblage of diagnostic fragments (n=2970)

Decorative motifs were divided into groups according to the technique of execution and character of the patterns:

- texture impressions: pattern impressed with an object, for instance, a mat or roulette [Fig. 3.6];
- finger impressions: pattern of finger impressions made without the use of a tool [Fig. 3.7];
- object impressions: patterns executed with different stamps [Fig. 3.8];
- incised simple patterns: single pattern [Figs 3.9, 3.10, 3.11];
- incised complex patterns: decoration composed of more than one motif [Figs 3.12, 3.13];
- applied: pieces of clay attached to the body of a vessel [Fig. 3.14];
- painted: motifs painted mainly in black and red [Fig. 3.15];

- combined techniques: decoration composed of more than one motif, executed in more than one technique [*Fig. 3.16*];
- potmarks: isolated motifs executed before or after baking [Fig. 3.17].

## Texture impressions

A characteristic trait of Funj-period pottery is the occurrence on the bodies of vessels of impressions made using different materials, for instance, mats and roulettes [Fig. 3.6]. Apart from being intentional markings, impressions of mats or textiles might be technological in origin. For example, one of the most common traditions in pottery making, the paddle-and-anvil technique, requires, among others, a hollow in the ground lined with a mat, on which the lump of clay is processed. Such a technique was still in use in Darfur at the beginning of the 20th century (Arkell 1939: 80). Therefore, an impression of a mat or textile may be a by-product of the vessel-shaping process. Some of these impressions, identified as basketry imprints, are referred to in published research. For instance, DT24, which bears an impression of "wickerwork" basketry, was recorded on pottery found in the Dongola Reach (Phillips 2010: Fig. 5). Decoration type DT13 might be another such impression, as suggested by Jacke Phillips (Phillips 2010: Fig. 5), but it is also possible that this ornament was made using a textile (M. Woźniak, personal communication, February 2020). This decoration type was recorded at other sites as well: Abkur in the Dongola Reach (Phillips 2003: Pl. 115f), Gebel Kadamusa in the Third Cataract region (Said 2015: Fig. 4), and Dar el-Mek in the South Gezira Plain (Crawford and Addison 1951: Pl. XLVI:B2). Some types, for instance DT62 or DT97, were easily recognizable as impressions of a mat or basket made in the sewn-plaits technique (see Chapter 5, this volume). Others, like DT49, might constitute impressions of a roulette, a textured object rolled to create a pattern. In the case of DT90, groups of cord impressions formed the decorative pattern. They may have been made by short moves of a roll and by using a simple roulette. Some impressions, like DT60, were likely made with a textile. Decoration type DT14, in turn, was made by repeatedly impressing a piece of cord in different directions. Lastly, type DT47 featured impressions resulting in a pattern of raised squares, which might have been achieved by using a kind of net. The occurrence of texture impressions made with mats and baskets is attested in the pottery production of earlier epochs, starting from the Kerma period (Phillips 2010: 228–230), and rouletting can be traced back even further, to proto-Neolithic groups of the 8th-3rd millennia BCE (D'Ercole 2017: 67). The tradition of impressing a rouletting tool can be considered part of a broader African tradition (Ogunfolakan 2009: 93; Soper 1985). The distribution of rouletting designs, previously reported only for the southern part of Sudan and modern-day South Sudan (Smith 2007), seems to have been more widespread, as the Old Dongola assemblage attests to their presence further to the north.

## **Finger impressions**

Motifs in this group [*Fig. 3.7*] were composed of impressions of the potter's fingers. Included in this category are also various kinds of fingernail impressions. Among the latter, type DT35 was the most common. Deep, wide, almond-shaped impressions characteristic for this decoration type were found mainly on rims of baking plates. Another notable decoration type is DT114, a group



Fig. 3.6. Impressed decoration types: texture impressions



Fig. 3.7. Impressed decoration types: patterns of finger impressions

of finger impressions executed on the external surfaces of bases of jars. This tradition can be traced back to the early Makurian period, when we find it, for instance, on cooking pots of the late 6th century found at Old Dongola (Danys-Lasek 2012: Fig. 6).

# **Object** impressions

This decoration type [*Fig. 3.8*] is part of the large group of impressed motifs, but it has been distinguished due to the use of specific tools, like stamps, for its execution. It seems, however, that potters used objects found in their immediate surroundings rather than intentionally created seals. For instance, some of the stamped motifs, like DT77, seem to have been made using date stones. Such impressions usually formed a circumferential row on the upper part of the body of the vessel. Decoration classifiable as DT77 is identical to the U.2 design of Style D.III, dated to 1000–1500 CE (Adams 1986: Fig. 121), and therefore seems to have been a long-lived and wide-spread motif in Nubia. In types DT152, DT154, DT208, the impressions appeared on the shoulders in groups of two or three. Decoration type DT23, in turn, was composed of circular impressions possibly made with a reed, which completely covered the inner surfaces of coarse bowls belonging to pottery type PT38 [see below, *Fig. 3.39B*]. There were also rare examples of elaborate decoration, like pendant motifs in types DT57 and DT141.



Fig. 3.8. Impressed decoration types: object impressions

#### Incised simple patterns

One of the most frequent decoration types in this group was DT8, composed of two parallel lines and crosshatching between them. This pattern, executed mainly on bowls and jars, was found on 7.8% of all decorated sherds. Its variants included DT127 with irregular crosshatching and DT120 with vertical and horizontal lines forming the crosshatching pattern [*Fig. 3.9*]. A unique example of DT206 bore a square panel filled with crosshatching. Three types of decoration (DT59, DT174, DT215) featured randomly placed lines running in different directions [see *Fig. 3.9*].

The pottery found in the Funj-period settlement in Old Dongola boasted a huge variety of designs composed of parallel lines with crosshatching between them. Some motifs find parallels in the decoration of earlier ceramics of Lower Nubia (1000–1500 CE). For instance, the simple pattern DT16 corresponds to QR.6-3 of Style D.III (Adams 1986: Fig. 120). The plain cross-hatching pattern with no borderlines (DT131) also finds analogies among Lower Nubian specimens of motif QR.6-1, also belonging to Style D.III (Adams 1986: Fig. 120). Perhaps the schematic presentation of earlier decorative motifs led to their simplification over time, resulting in a motif like DT8. However, none of the numerous friezes noted in Lower Nubia (Adams 1986: Fig. 121) resembled the aforementioned panel filled with crosshatching (DT206).

Other types, like DT19, DT157, DT7 and DT162 [*Fig. 3.10*], consisted of one or more circumferential grooves. They were usually found below the rims of bowls, as in vessels belonging to pottery type PT10. A similar pattern of two parallel grooves was recorded in Lower Nubia and classified as the "body bands and borders" motif QR.1-1 belonging to Style D.III dated to 1000–1500 CE (Adams 1986: Fig. 120). Bands composed of two parallel lines with diagonal or vertical lines between them, as in decoration types DT29 and DT188, were rather rare. Variants with a wavy line, like DT54, DT135, and DT159, were also uncommon.

Some incised patterns seem to be associated with specific vessel groups. Only fine bowls belonging to pottery types PT206, PT207 and PT208 bore motifs consisting of a series of oblique intersecting lines (DT144) and of the same pattern between two horizontal lines (DT163), as well as variants featuring festoons (DT138, DT143). Decorations with two parallel zigzag lines (DT11 and DT172, *Fig. 3.11*) occurred on the shoulders of jars. Multiple wavy lines probably made with a toothed tool were rare, but they too were executed only on jars. A separate group of decorative patterns comprised incised motifs placed on tops of rims of baking plates [see *Fig. 3.11*]. They consisted of short incisions, like the simple pattern DT10, its denser version DT151, and the more widely spaced out DT50. Decoration type DT151 finds analogies among pottery from Lower Nubia decorated with motif QR.11-1 of Style D.III dated to 1000–1500 CE (Adams 1986: Fig. 120). In other types, like DT178 and DT210, the incisions were more regular. Pattern DT210 was placed on the rim of a coarse bowl belonging to pottery type PT287.

Crosshatching was among the most common decorative patterns found on Funj-period pottery. William Adams described such vessels as Ware H6—Late Christian Red Domestic Ware on which both single and complex patterns were present (Adams 1986: 431). Vessels decorated with this motif were found along the Nile Valley in the Third Cataract region (Edwards and Elzein 2011: Fig. 7.29), in the Dongola Reach (Phillips 2004: Fig. 1B), and in the Gezira Plain (Crawford and Addison 1951: Pl. LXXXIII).



Fig. 3.9. Incised decoration types: simple patterns



Fig. 3.10. Incised decoration types: simple patterns



Fig. 3.11. Incised decoration types: simple patterns

# Incised complex patterns

The most frequent in this group was decoration type DT41 [*Fig. 3.13*] combining two bands filled with crosshatching, the lower one horizontal and the upper one forming a zigzag. It occurred mainly on jars, just below the rim. Other decoration types represent variants of this decorative scheme. The execution of crosshatching in such compositions is very often irregular and careless,



Fig. 3.12. Incised decoration types: complex patterns



Fig. 3.13. Incised decoration types: complex patterns

as in DT100 and DT109 [see *Fig. 3.13*]. Some patterns—for instance, DT25, DT147 and DT168—featured a zigzag motif composed of oblique lines [see *Fig. 3.13*]. Compositions like DT108, with bands filled with diagonal lines, are rare [see *Fig. 3.13*].

Characteristic of this group are decorations divided into fields or panels alternately plain and filled with crosshatching. The most common type is DT133, in which crosshatched panels formed a checkerboard pattern [*Fig. 3.12*]. It was found incised on thick-walled jars, like PT102 [see below, *Fig. 3.59A*]. The origins of this decoration may be sought in Makurian pottery described by Adams as Style D.III and widely dated from 1000 up to 1500 CE (Adams 1986: Fig. 82). A large jar decorated with a composition similar to DT133 was found at Gebel Kadamusa in the Third Cataract region (Edwards and Elzein 2011: Fig. 7.30:11). Such decoration corresponds with Ware H6, described by Adams (1986: 431) as Late Christian Red Domestic Ware.

### Applied decoration

Two types most characteristic of this group [*Fig. 3.14*] were DT20 (a pair of lumps) and DT34 (a large, flattened lump with a hollow in the middle). They were mainly attached to shoulders of cooking and storage jars, on the border between the slipped upper part and the lower part covered with impressions. Other forms of applied decoration in this group are elon-gated strips positioned either horizontally (DT48) or vertically (DT64). Some horizontal coils (DT48) were placed on tops of rims of baking plates to imitate handles. Applied decoration also included cordons attached to necks or shoulders of jars (DT58), often with impressions of the potter's fingers along their entire length. Short pendant coils, like in DT149, were rather rare. Arched, curved coils as in DT200 were attached in the upper parts of jars; a number of them also bore some impressed decoration, like in types DT193 and DT198. Decoration similar to DT58 was recorded on vessels from Dar el-Mek in southern Sudan (Crawford and Addison 1951: Pl. LXXXV:B7, 9).

## Painted motifs

Painted decoration [*Fig. 3.15*] was rather infrequent in the assemblage, and it was executed mostly on incense burners (*mubharun*). The typical colors were red, black and yellow. Most compositions were continuous friezes divided into panels, with the fields filled by two triangles meeting at one vertex. The triangles were filled with crosshatching (DT74) or with a solid color (DT53). These compositions resembled painted frieze panels H.6-10–13 characteristic of Lower Nubian Style D.III broadly dated to 1000–1500 CE (Adams 1986: Fig. 118). Some motifs combined these two options and had the upper triangle filled with crosshatching and the lower one with solid color (DT3). The latter decoration type seems to be among the most characteristic in this assemblage. It was executed on incense burners belonging to pottery type PT4 [see below, *Fig. 3.87A*]. Some painted decoration, for instance DT205, occurred on bowls of pottery type PT67 (not illustrated).

The second most common type among the painted designs was DT6, found on 6.2% of the decorated sherds. It had the form of white or yellow drips applied on the external surfaces of *saqiya* pots (*qawwadis*). The direction of the drips suggests that the vessels were placed upside down and the paint was poured on them starting from the base. Painted decoration akin to DT74, on an incense burner similar to PT4, was found at Gebel Kadamusa in the Third Cataract region (Said 2015: Fig. 4). The painted decoration on red-slipped vessels (for instance, bowls of the 17th–18th centuries CE from Old Dongola) corresponded with that of Ware H7, or the Late Christian Painted Red Domestic Ware, occurring in 1350–1600 CE (Adams 1986: 431–432). In turn, PT4 incense burners decorated with the DT3 motif can be associated with Ware H14 of Lower Nubia, the so-called Late Christian Painted White Domestic Ware. This group of vessels was described as "an uncommon cream-slipped variant of the painted red domestic Ware H7" (Adams 1986: 432–433).



Fig. 3.14. Applied decoration types



Fig. 3.15. Painted decoration types

## Combined techniques

Decoration in this category was composed of more than one motif executed in more than one technique [Fig. 3.16]. For instance, continuous bands of incised lines were applied alongside impressed stamps, as in DT84. The most frequent types in this group were DT26 and DT27. Both feature a continuous band delimited by incised parallel lines and filled with an incised zigzag also composed of parallel lines, with dots impressed on the zigzag vertices. These two types differ in the number of lines that comprise the elements of the composition, as DT26 features two lines, and DT27 three or four. Such patterns occurred mainly on large bowls [see below, Fig. 3.68]. Some decoration types, like DT70 and DT103, consist of simple bands of two parallel lines with short impressed strokes between them. A unique example of type DT89 featured a composition that covered the whole surface of a cup belonging to pottery type PT167 [see below, Fig. 3.90B]. A band with a quasi-guilloche pattern was incised below the rim. The rest of the body was divided into panels separated by vertical incised lines flanked by short, oblique strokes. The panels were filled with impressed dots. A small group of bowls was adorned with incised and impressed motifs belonging to decoration types DT189 and DT207, which were filled with white paste. This unique decoration finds parallels in pottery from Dar el-Mek in the southern part of modern-day Sudan (Crawford and Addison 1951: Pl. LXXXV:B1, 2, 6).

# Potmarks

This category [*Fig. 3.17*] comprised isolated motifs executed before or after firing by the potter or by the user of the vessel. Most potmarks were placed on the external walls of *qawwadis*, on the very base or in the lower part of the belly. They usually occurred as unique examples of a particular design, although sometimes two vessels bore the same mark. Only two motifs occurred more frequently: DT101 and DT102. The first one consisted of two intersecting lines. Similar designs were DT56, DT126, and DT137. The second decoration type (DT102) was composed of two triangles meeting at one vertex. An analogous potmark was found on handles of early Makurian amphorae and interpreted as the mirrored letter M (Danys 2015: Fig. 10-5). This type of potmark may have been associated with Archangel Michael (A. Łajtar, personal communication, 2020), the most commonly venerated and important supernatural figure in Christian Nubian culture (Zielińska and Tsakos 2019). Other motifs also resembled Greek letters: for instance, DT202 resembled the letter A, and DT112 the letter  $\Delta$ . Those marks are very simple and, therefore, multiple interpretations are possible, yet their inspiration by imagery and symbols belonging to an earlier tradition cannot be excluded.



Fig. 3.16. Decoration types composed of patterns in combined techniques



Fig. 3.17. Potmarks

#### TYPOLOGY OF FORMS

Pottery types were distinguished on the basis of vessel shape. Other criteria, like fabric, were not taken into consideration. Otherwise, the variety of different types of fabrics attested for each shape would lead to a dramatic increase in the number of types. The focus on the form made the typology easier to use. Statistical analyses were based on diagnostic fragments. Charts showing pottery groups numbering less than 100 potsherds have been included here for the sake of presentation of the collected data, but they cannot be considered a sufficient basis for statistical considerations.

The assemblage was divided into the following classes according to vessel form: bowls, jars, baking plates, *qawwadis*, lids, incense burners, and others (*varia*). Within these classes, groups and subgroups were distinguished according to the most distinctive characteristics of each form. The subgroups were further subdivided into variants, which constituted the lowest level of the typology. The whole structure, together with pottery types and references to illustrations, is presented in *Table 3.1* (see below).

The question of vessel function remains open and requires more detailed studies (see Chapter 2, this volume). Generally, the vessels can be divided into containers (bowls and jars, bottles and baking plates) used for storage and food processing-that is, preparing, cooking and serving meals-and vessels used for other purposes. However, archaeological contexts at Old Dongola have provided us with information on other possible uses of containers. For instance, some bowls of type PT8 also served as collectors in grain-grinding facilities (see F384 in de Lellis and Maślak 2021: 72) [see below, Fig. 3.91:2] and were embedded in floors, for instance, F378 in the floor of the main room of compound U2/11/12/13/14/33/34/82/83/84/85/86 (de Lellis, Maślak, and Wyżgoł 2021: 101). Traces of burning and ashes found in these bowls suggest that they could have been used as small fire-pots or incense burners, like douhan in the houses of modern-day Sudan. Another example is jars like type PT21 [see below, Figs 3.49, 3.92:1], which may have served for storage, as well as cooking and even serving food. Specimens that bore traces of burning were undoubtedly used as cooking pots. It is not clear if this was their primary function or if the function changed during use. Other apparently multifunctional vessels were qawwadis. These pots were primarily used in the water wheel (saqiya), but no traces of such an installation have been discovered at Old Dongola. They might have been used as containers for water carried up from the Nile, but examples found in situ inside rooms were embedded in benches. They bore traces of burning on their internal walls and were probably part of stoves used for heating (e.g., de Lellis and Maślak 2021: 91). This multifunctionality is one of the distinctive traits of Funj-period pottery and stands in contrast to the well-established functional groups of Makurian ceramics (Danys 2018).

The division of Funj-period pottery into categories and vessel classes is difficult and in many cases far from clear. The shapes of, for instance, jars of type PT41 vary depending on the hand-shaping technique used. It also seems that pottery was manufactured in short series, which resulted in considerable variety. Some vessels exhibiting different treatment than the rest of their group might be outliers but not entirely different wares. Therefore, also the structure of the typology is less clear-cut than in the case of Makurian pottery with its well-defined categories and shapes (Danys 2018).

Form	Group	Sub-eroup	Variant	Description	Potterv tvpe	Figures
	-		Variant 1	Rounded rim, hemispherical body, reduced firing atmosphere	PT65, PT71, PT73	3.21A
			Variant 2	Rounded or pointed rim, hemispherical or conical body, concave or flat base	PT8, PT66, PT86, PT151, PT252	3.21B, 3.91: 1–2
		Open	Variant 3	Rounded or flat rim, hemispherical or carinated body, flat base	PT132, PT134, PT206, PT207, PT208, PT321	3.21C, 3.91: 7
			Variant 4	Rounded rim, trapezoidal body, flat base	PT261	3.30A, 3.91: 6
			Variant 5	Cup-like form, rounded rim, hemispherical body, low-ring base	PT175, PT218	3.30B
			Variant 1	Rounded or flat rim, hemispherical body	PT123, PT197, PT233	3.30C
			Variant 2	Rounded rim with necking beneath, spherical body	PT70, PT124, PT181	3.30D
	Fine	Closed, small	Variant 3	Rounded rim thickened from the outside, spherical body	PT11, PT12, PT30, PT55, PT56, PT146	3.30E, 3.91: 4
		and medium	Variant 4	Pointed rim thickened from the outside, spherical body	PT10, PT67, PT182	3.33A
			Variant 5	Plain, rounded rim, spherical body	PT29, PT110, PT153, PT210	3.33B
			Variant 6	Flat rim, spherical body	PT114, PT135	3.33C
			Variant 1	Flanged rim	PT100, PT248	3.33D
Bowls		Closed, large	Variant 2	Rounded or pointed rim thickened from the outside	РТ25, РТ40, РТ50, РТ62, РТ77	3.34A, 3.91: 3
			Variant 3	Rounded or pointed plain rim, slightly out-curved	PT130, PT203	3.34B
			Variant 4	Rounded rim, strongly in-curved	PT178	3.34C
			Variant 1	Trapezoidal shape	PT37, PT74, PT201, PT205, PT227, PT253	3.39A
			Variant 2	Hemispherical body, impressions on internal surface	PT38, PT184, PT287	3.39B
			Variant 3	Small, hemispherical body	PT66, PT160, PT162, PT234, PT258, PT267	3.42A
		2020	Variant 4	Small, hemispherical body, cup-like shape	PT151, PT232, PT257	3.42B
		Indo	Variant 5	Flanged rim, hemispherical body	PT152, PT198	3.42C
	Coarse		Variant 6	Conical shape	PT171, PT220	3.42D
			Variant 7	Large, hemispherical, basin shape	PTS	3.42E
			Variant 8	Cylindrical shape	PT112	3.45A
		Closed	Variant 1	Spherical shape	РТ139, РТ211, РТ264	3.45B, 3.91: 5
		Clocad	Variant 2	Cylindrical shape	PT221	3.45C
			Variant 3	Hemispherical shape	PT174, PT265	3.45D

Table 3.1. Structure of the typology of forms

58

Form Gro	dno.	Sub-group	Variant	Description	Pottery type	Figures
			Variant 1	Thin walls and spherical body	PT20, PT21, PT34, PT35, PT41, PT43, PT49, PT127, PT172	3.49, 3.92: 1, 3
			Variant 2	Flat or rounded rim, cylindrical neck	PT26, PT32, PT149, PT240	3.52A, 3.93: 2
		Short-necked	Variant 3	Rounded rim, often thickened from the outside, spherical body	PT48, PT89, PT103, PT212	3.52B, 3.92: 2
			Variant 4	Rounded rim, S-shaped neck	PT2, PT52, PT57, PT90, PT145, PT179, PT266	3.53, 3.92: 4
			Variant 5	Straight or rounded rim, angled shoulders, almost cylindrical body, flattish base	PT190	3.54A
		Long-necked		Rounded and flanged rim	PT137, PT200	3.54B
			Variant 1	Rim rounded and thickened from the outside, hemispherical body	PT101, PT170, PT191, PT192	3.57A
W	miipe		Variant 2	Rounded and flanged rim, slender body	PT78, PT259	3.57B
		Neckless out	Variant 3	Rounded, flanged, and down-turned flanged rim, slender, almost cylindrical body	РТ59, РТ223, РТ228	3.57C
s	5	curved rim	Variant 4	Rounded, rarely pointed rim, spherical, bulbous body	РТ68, РТ79, РТ85, РТ105, РТ180	3.58A, 3.93: 1
			Variant 5	Rounded rim, flanged rim thickened from the outside, thick walls, spherical body	PT24, PT99, PT106, PT154, PT155	3.58B
			Variant 6	Straight, rounded and thickened from the outside rim, spherical body	РТ47, РТ63, РТ64, РТ102	3.59A
			Variant 1	Sounded, flat and thickened rim	PT133, PT193	3.59B
		Neckless. in-	Variant 2	Rounded rim, spherical and stocky body, flat base	PT1, PT117	3.62
		curved rim	Variant 3	Plain, rounded rim, elongated, trapezoidal upper part, concave base	PT159	3.63A
			Variant 4	Rounded and flat rim	РТ16, РТ68, РТ231, РТ243	3.63B
Laı	rge	Long-lecked		Cylindrical neck	PT254	3.65, 3.93: 3–4
S.		Necked		Rounded, flat, and pointed rim	PT15, PT80, PT109	3.68A
n l		Neckless		Rounded, flat, and pointed rim	PT131	3.68B
Un fie	d	Handled			PT111	3.68C

Table 3.1. (cont.)

Form	Group	Sub-group	Variant	Description	Pottery type	Figures
				Rounded rim, narrow and short necks	PT161, PT189, PT251	3.68D
Bottles	Narrow r	necks		Rounded rim, elongated necks, two handles (one with a hole), bulbous body, solid, flat base	PT18, PT116, PT282	3.68E, 3.94: 1–3
				Rounded rim, trapezoidal body	PT13, PT33, PT163	3.72A, 3.94: 4
	:			Rounded rim, shallow and hemispherical body	PT213	3.72B
	Medium			Rounded rim, trapezoidal body	PT129	3.72C
				Semi-flanged rim, trapezoidal body	PT108	3.72D
				Flanged rim, trapezoidal body	PT182	3.72E
Baking				Rounded and flattish rim, hemispherical body	PT256	3.75A
plates	onre			Flat rim, trapezoidal body	PT75	3.75B
	Laigo			Rounded rim, trapezoidal body, rounded base	PT195	3.75C
				Rounded rim, almost cylindrical body	PT81	3.79A
				Rounded rim, hemispherical body	PT125, PT204	3.79B
	Cmol			Rounded, thick rim, trapezoidal body, flat, solid base	PT176, PT177	3.79C
				Rounded rim, cylindrical body, flat base	PT69	3.79D
				Rounded, in-curved rim, hemispherical body, flat base	PT249	3.79E
Qawwa	Rim			Flanged, semi-flanged, down-turned flange, semi-double bead	РТЗ9, РТ54, РТ158, РТ236	3.80A
dis	Base			Rectangular, semi-rectangular, concave, rounded, flat base	РТ6, РТ7, РТ31, РТ92, РТ87	3.80B, 3.94: 5

(cont.)
3.1.
Table

Form	Group	Sub-group	Variant	Description	Pottery type	Figures
	Potsherd			Disc-like body. rounded rim. no handle	PT107. PT230. PT241	3.85A,
						3.95: 7
			Variant 1	Up-turned walls, rounded rim	PT183, PT185, PT196	3.85B
			Variant 2	Down-turned walls. flat. rounded rim	PT84. PT115. PT169. PT216	3.85C,
		-				3.95:8
Lids	Class clab	Knob handle	Variant 3	Down-turned, concave walls, rounded rim	PT83	3.85D
			Variant 4	Down-turned walls, conical, stepped rim	PT166	3.85E
			Variant 5	Disc-shaped, rounded rim	PT260	3.86B
		Archad handle	J	Dounded rim two handles	71716 26710	3.86A,
			G		L1220, L121/	3.95: 6
				Dounded rim high ring hereo	DT4 DT412	3.87A,
					L14, L1113	3.95: 3
				l ww.ring hase narrower lower nart	DT3/6 DT777	3.87B,
ncense	-					3.95:4
burners	Hyperboli	Ical		Tulip-shaped, low-ring base	РТ94, РТ97	3.87C
				Stacky chana low-ring haca	DTG8 DT1// DT755	3.87D,
					1.100,1.1.442,1.1.400	3.95: 5
				Miniature form	PT187, PT276	3.87E
	Qulla			Narrow neck	PT164	3.90A
	Cup			Rounded rim, cylindrical body, rounded base	PT167	3.90B
	Cnout-od b	1000		Dounded constant view howicathorized hade variated have	bT1E0	3.90C,
Varia	shoured 1			הטמוועבט, אטטענכט ווווו, וופוווואטוופוונטו אטטען, וטמוועכט אמצב	OCTIA	3.95: 1
	Miniature	e vessel: bowl			PT156	3.90D
	Miniature	input lesson			n710C	3.90E,
	IVIIIIatule	ב מבססבוי לחממי	0		00114	3.95: 2

(cont.)	
3.1.	
Table	

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In order to give the typology a hierarchic structure, rather than have a simple list of types, it was decided to first distinguish containers associated with food processing, which includes activities like supplying water, storing and processing foodstuffs, cooking, and serving of meals. Such vessels mainly had the form of bowls, jars, baking plates and *qawwadis*. Bowls were the most numerous (43.3%), followed by jars (33.1%), baking plates (15.9%) and *qawwadis* (4.2%) [*Fig. 3.18*]. The remaining pottery finds represented incense burners (*mubharun*), lids, miniature vessels whose function is unclear, and other isolated objects. These items constituted 3.5% of the assemblage [see *Fig. 3.18*].



Fig. 3.18. Percentage shares of different groups of diagnostic vessel fragments (n=5093)

#### Bowls

This most numerous group comprises bowls of different shapes and sizes. Of the total number of 2129 bowls recorded, 1,944 were assigned to particular types. In addition, bases and walls of bowls that were decorated but could not be assigned to type amounted to 185 fragments, constituting 8.6% of the assemblage of bowls (n=2129). Overall, decorated specimens were not numerous in this group and amounted to 22% of the total (n=2129). Some bowls could be described as cups or basins. However, since they belong to the general category of vessels used mainly for preparing and serving food, they were placed in the broadly defined category of bowls. Bowls were divided into "fine" and "coarse" wares on the basis of their surface treatment, and into "open" and "closed" shapes. Thus, four large groups were distinguished: fine open, fine closed, coarse open, and coarse closed. These were further subdivided into 26 variants described below.

## Fine open bowls

Fine open bowls formed one of the most distinctive subgroups [*Figs 3.21, 3.30A–B*]. They comprised five variants, the second of which largely dominated, constituting 94% of this subgroup. Most vessels assigned to this variant belonged to one type, PT8 [*Fig. 3.21B*], which was the most common find in the whole Funj-period pottery assemblage. Other variants were infrequent, and variants 4 and 5 were rare [*Fig. 3.19*]. Bowls belonging to variants 1 and 2 had rounded rims, hemispherical or conical bodies and flat or concave bases. They differed in surface treatment. Variant 1 comprised specimens covered in red, burnished slip on the outside, and variant 2 had burnished, black walls obtained by firing in a reduced atmosphere. Variant 3 featured bowls with rounded or flat rims, hemispherical or carinated bodies, and flat bases. The vessels with carinated walls were among the most distinctive for the Funj-period pottery from Old Dongola. Of the less frequent variants, variant 4 comprised bowls with rounded rims, trapezoidal bodies, and flat bases. Variant 5 was represented by cup-like forms with rounded rims, hemispherical bodies, and low-ring bases.

Fine open bowls were made predominantly of fine, dense Nile fabric, F1 (n=905). The high share of fabric F1 in this subgroup was also caused by the dominance of type PT8, but statistical analysis of other types showed that this tendency was also apparent in other variants. A marked presence of the grog fabric F6 (n=207) was attested for different types. Other fabrics, like F2 and F3, were also present in this subgroup. Fabrics F17, F19, and F24 each occurred only once [*Fig. 3.20*] and were connected with specimens belonging to type PT8. Most fine open bowls were undecorated, yet, for instance, PT55 vessels were all decorated. The most common forms of ornamentation were patterns with crosshatching, like decoration type DT8, or with circumferential grooves, like in the case of DT19 and DT157. Compositions of incised motifs, like decoration type DT171, were rather infrequent. Notably, decoration was always executed below the rim on the external surface. Exceptional PT261 bowls bore a unique form of decoration composed of incised motifs filled with white paste. While bowls of this subgroup may have been used for food preparation and serving, PT8 forms might have been multipurpose, meant for use in activities other than only food processing (see below). Vessels similar to PT261 were found at Dar el-Mek, a settlement of the Funj period in the south of modern-day Sudan (Crawford and Addison 1951: Pl. LXXXV:B1, 2, 6).



Fig. 3.19. Fine open bowls divided according to variant



Fig. 3.20. Fine open bowls divided according to fabric

The first variant of fine open bowls comprised vessels with rounded rims and hemispherical bodies baked in a reduced atmosphere [*Fig. 3.21A*]. All of them (n=40) had black, carefully burnished surfaces. Rim diameters varied from 21 cm to 29.5 cm. The most common type in this variant was PT73 (n=27). Other vessel types, like PT65 and PT71, were rather infrequent [*Fig. 3.22*]. They were predominantly made of fine, dense Nile fabric (F1), which was used for making three-quarters of the vessels in this variant. Other fabrics were registered for individual specimens, and few more fragments were identified as F10 (n=3) and F3 (n=3). Notably, the grog fabric F6 was unattested for this variant, and so was F9. These two fabrics occurred in all bowl variants except this one. In addition, fabrics F17 and F19 [*Fig. 3.23*] were not identified elsewhere in the assemblage. The presence of quartz within the latter two fabrics might suggest that bowls belonging to this variant were made outside Old Dongola. Bowls of variant 1 were burnished and predominantly black, but a few exceptional specimens bore red slip. Vessels of type



Fig. 3.21. Types of fine open bowls



Fig. 3.22. Fine open bowls of variant 1 divided according to type



Fig. 3.23. Fine open bowls of variant 1 divided according to fabric

PT73 were usually decorated with incised crosshatching motifs belonging to decoration types DT39 and DT8, the latter of which in fact may have been partly preserved DT39. Other incised designs, like DT51 and DT29, were rare. Such a bowl was also found at Ed-Diffar, where it was connected with post-medieval occupation of the fortress (Phillips 2004: Fig. 6E), and at Gebel Kadamusa (Edwards and Elzein 2011: Figs 7.29:9–9).

# Variant 2

Bowls of the second variant had rounded or pointed rims, hemispherical or conical bodies, and concave or flat bases [*Figs 3.21B, 3.91:1–2*]. They also exhibited similar surface treatment. The outer walls were coated with a burnished red slip, while the internal surfaces were black and burnished, except for the area just below the rim, which was brown. In some cases it was possible to observe the edge of the red slip, which always appeared on the outside. The brown-colored interior seems to have been a result of the firing process.

Five different types belonged to this variant. They differed in size, the smallest ones being PT151 and PT66 with rim diameters ranging from 12 cm to 17 cm. One completely preserved PT252 bowl had a rim diameter of 12.5 cm, a base diameter of 5.2 cm and a height of 6.8 cm. Notably, these forms seem to have been smaller versions of type PT8, but their bases were thick and flat. The aforementioned PT8 bowls had a rim diameter of 32 cm, base diameter of 8 cm, and height of 15 cm. Forms of type PT86 were the largest, with a rim diameter of 36 cm. Bowls of type PT8 were the most common vessels in this variant (n=1164), in the group of bowls, and in the whole assemblage of Funj-period pottery. Aside from this major type, other vessels assigned to this variant were rather infrequent. Forms PT66 and PT86 were represented by several examples, and PT151 and PT252 by very few specimens [*Fig. 3.24*].



Fig. 3.24. Fine open bowls of variant 2 divided according to type

Vessels of this variant were made of the widest variety of fabrics – 11 in total [*Fig. 3.25*]. It is noteworthy, however, that the large number and diversity of fabrics were a result of the presence of PT8 bowls. To counter this bias, the vessels of different fabrics were also counted excluding this type [*Fig. 3.26*]. The resulting diagram seems more statistically correct for this variant. The most frequent fabric for variant 2 vessels other than PT8 was F6 tempered with grog. It was recorded for every type except PT86 and PT252. On the other hand, bowls of type PT86 were mainly made of F4, a fabric that was otherwise infrequent in the other subgroups of fine bowls. A large share of the assemblage was also made of the fine and dense F1 fabric. Fabrics F2 and F9 were rare [see *Fig. 3.26*]. Variant 2 vessels were mostly undecorated, although plain, incised grooves assigned to decoration type DT7 were attested on PT86 bowls. A PT252 vessel had a potmark scratched on the external surface of the base. A vessel similar to PT77 bowls and decorated with incisions classifiable as DT144 with some impressions in the lower part was found at Banganarti (Phillips 2003: Pl. 107b).

PT8 bowls constituted the most characteristic group of finds in the analyzed Funj-period pottery assemblage from Old Dongola. They were made of various fabrics, which might suggest different places of manufacture. The presence of rare fabrics, like F12, wadi clay tempered with



Fig. 3.25. Fine open bowls of variant 2 divided according to fabric



Fig. 3.26. Fine open bowls of variant 2 excluding PT8 bowls, divided according to fabric



Fig. 3.27. Fine open bowls of variant 2, type PT8, divided according to fabric

grog, and F24 containing silver mica, suggests that some of these workshops might have been located far from Old Dongola. The bulk of the finds, however, were made of the fine and dense Nile F1 fabric, which was used for 72% of vessels of this type [*Fig. 3.27*]. Nile material tempered with grog was the second most numerous fabric, with a share of 16.5%. Fabric F3 characterized by large particles of limestone was fairly rare among bowls of other types, but it was rather commonly used for thin-walled jars like PT41 (see below). It is possible, therefore, that these jars and the PT8 bowls in fabric F3 were made in the same workshop or in a nearby workshop that shared the same tradition in collecting and tempering clay.

As mentioned above, one of the characteristic traits of PT8 bowls was their surface treatment. Another such distinctive feature was the almost complete lack of decoration. The very few exceptions (n=9) constituted 0.7% of the total number of PT8 vessels. The decorated specimens bore incised simple patterns incorporating crosshatching (DT1), as well as grooves attributable to decoration type DT7. PT8 bowls also bore potmarks (n=10), which were unusual features on other bowls. Potmarks appeared on yet another group of vessels, *qawwadis* (see below), but in their case most marks were made before firing. In the case of PT8 vessels, all potmarks were executed after firing. A recurring type among the potmarks was DT101 (n=4) composed of two intersecting strokes. The potmarks were placed on the external side of the base. Two more attested decoration types, DT26 and DT137, were very similar to DT101. Compositions of lines, like in DT150 and DT158, also occurred in the same spot on the vessels.

A number of PT8 specimens bore repairing holes (n=36). Despite the large share of PT8 bowls in the assemblage and their presence in nearly every excavated context, they seem to have had enough value to their owners to make attempts at their repair. They are also an excellent example of the multifunctionality of Funj-period pottery. Bowls of this type were used for food preparation and possibly for serving meals. However, they were also found in domestic workspaces, where they served as collectors in grinding installations. Lastly, they were embedded in floors and filled with ash and charcoal from unspecified fire-related activity. It is possible that the potmarks were used to "sign" vessels by their users, either to mark them as their property or to distinguish vessels used for a specific purpose from others of the same kind.

### Variant 3

Bowls of variant 3 had rounded or flat rims, hemispherical or carinated bodies, and flat bases [*Figs 3.21C, 3.91:7*]. Their rim diameters ranged from 22 cm to 31.6 cm. A complete profile was preserved for a specimen of PT321, which had a base diameter of 14 cm and a complete height of 14 cm. The variant comprised six pottery types, among which PT321 was the most numerous (n=12). Bowls PT206, PT207, PT208 and PT134 were each represented by a handful of examples (four to five). Only two specimens belonged to type PT132 [*Fig. 3.28*]. Variant 3 bowls were mainly made of fabric F1 (n=18), although F6 was also common. Other fabrics (F1/F2, F2, F5, F9, and F10) were infrequent [*Fig. 3.29*]. Most bowls were covered with red slip on the outside and were black on the inside. All were carefully burnished. A few examples of PT206, PT207 and PT321 were black due to reduced firing conditions. Moreover, one specimen of PT134 had plain, brown, smoothed walls.

The vessels were mostly undecorated, although some PT134 bowls had incised grooves classifiable as decoration type DT7. Bowls PT206, PT207 and PT208 bore decoration that rarely occurred on other vessels: alternating incised motifs composed of intersecting strokes categorized as decoration types DT144 and DT163. A motif consisting of a circumferential groove with pendant arcades (DT143) was incised on a bowl belonging to pottery type PT208. Interestingly, the pattern was executed before slipping, which is a unique feature in the studied assemblage of Funjperiod pottery.

Variant 3 vessels seem to have been used for food preparation and serving. Bowls analogous to PT206 were discovered at the Abkur fortress in the Dongola Reach (Phillips 2004: Fig. 6A), as well as at Arduan in the Third Cataract region (Edwards and Elzein 2011: Fig. 32). Bowls similar to PT208 were found at Banganarti near Old Dongola (Phillips 2003: Pl. 103a), as well as at Arduan (Edwards and Elzein 2011: Fig. 7.32).



Fig. 3.28. Fine open bowls of variant 3 divided according to type



Fig. 3.29. Fine open bowls of variant 3 divided according to fabric



Fig. 3.30. Types of fine open bowls (A-B), and small and medium fine closed bowls (C-E)

Variant 4 comprised bowls with rounded rims, trapezoidal bodies and flat bases [*Figs 3.30A*, *3.91:6*]. Three specimens of type PT261 formed a unique group in the Funj-period pottery assemblage excavated on the site. Dimensions of the most complete bowl were as follows: rim diameter 18.2 cm, base diameter 12 cm, and complete height 9 cm. They were made of fine and dense Nile clay, which might have come from elsewhere in the Nile Valley. One specimen was made of the grog fabric, F6. All the bowls were black and burnished. They bore a unique type of decoration: incised motifs composed of triangles were combined with grooves and impressed circles to form a rich and elaborate composition. In addition, all the incisions were filled with white paste. The bowls boasting white patterns against black, glossy surfaces stand out as examples of the aesthetic tastes of Funj-period potters.

# Variant 5

Variant 5 comprised cup-like forms with rounded rims, hemispherical bodies, and low-ring bases [*Fig. 3.30B*]. Two specimens constituting this variant belonged to two different types: PT175 and PT218. The first one, preserved only in the lower part, had a base diameter of 2.9 cm. The second one preserved a complete profile with a rim diameter of 9.6 cm, a base diameter of 1.6 cm, and a total height of 5 cm. The bowls were made of fabrics F1 and F2, respectively. Their surfaces were carefully burnished and black due to a reducing atmosphere of firing. No decoration was recorded, but the bowl attributed to PT218 had scratched lines on the external surface of the base. Such vessels might have been used as drinking cups.

## Fine closed bowls of small and medium size

Fine closed bowls of small and medium size formed another subgroup [*Figs 3.30C-E, 3.33A-C*]. Six variants were distinguished on the basis of the shape of the rims and, in some cases, also the shape of the bodies. The most numerous was variant 4 with pointed rims thickened from the outside (almost 38% of this subgroup). Variant 3 was also common, constituting almost 30%. These bowls had rounded rims thickened from the outside. Vessels of variant 2, exhibiting rounded rims and necking, made up 13% of the subgroup. Variant 5 with plain, rounded rims had slightly fewer specimens and constituted 11%. Bowls of variants 1 (rounded or flat rims, hemispherical bodies) and 6 (flat rims, spherical bodies) were infrequent, amounting to 5% and 3%, respectively [*Fig. 3.31*].

Bowls of this subgroup were made mostly of fine and dense Nile fabric F1, used in 54% of the vessels. The second most common fabric was F6 tempered with grog, which made up 23% of the subgroup. The remaining vessels were made of nine different fabrics, each of which is attested by a handful of examples. Notably, four specimens were made of wadi fabric F12 [*Fig. 3.32*]. The wide array of fabrics might suggest that these bowls were made in a number of independent workshops or by several potters who used different materials. On the other hand, trends in production, like the use of fabrics F1 and F6, are clearly visible in the assemblage. It seems that the bowls were used for serving food and possibly for drinking. However, they could have also been used in food preparation. The presence of repair holes suggests their extended use and the value they had for their owners.

72



Fig. 3.31. Fine closed bowls of small and medium size divided according to variant

The first variant of this subgroup comprised forms with rounded or flat rims and hemispherical bodies [*Fig. 3.30C*]. Their diameters ranged from 9.6 cm to 16.3 cm. The single complete bowl attributable to PT197 indicated that this vessel had a rounded base and its complete height was 8.6 cm. This variant is represented by three types: PT123, the aforementioned PT197, and PT233. The first two were the most numerous, with eight and nine specimens, respectively. The third was recorded only once. Nearly half of the finds in this variant were made of fabric F1, a fine and dense Nile clay (n=8). The grog fabric F6 was also recurrent (n=4). Notably, several other fabrics were also attested, altogether five different ones per six vessels [see *Fig. 3.32*]. Possibly the main fabrics for this variant were F1 and F6, but the same vessel types may have been made in different workshops, where other fabrics were usually used.

Bowls of this variant received similar surface treatment: they were burnished on all surfaces, with red slip on the outside and black on the inside. Two specimens of PT197 were burnished and black throughout due to the reducing firing process. Six of the bowls were decorated. Vessels of type PT123 bore an incised band with crosshatching (DT8, n=2) and a frieze of crosshatched contiguous triangles executed in red and black paint (DT117, n=1). Bowls of type PT197 were mainly decorated with incised circumferential grooves, either single (DT19, n=1) or double (DT157, n=2). One specimen bore a more complex incised design (DT8). All motifs were executed just below the rim on the external surface.

### Variant 2

Bowls of variant 2 had rounded rims with necking beneath and spherical bodies [*Fig. 3.30D*]. Their rim diameters spanned from 10.5 cm to 17 cm, but the average was around 13 cm. They were represented by three types, but PT124 was the most common, comprising three-quarters of the variant set. Bowls of types PT70 and PT181 were less numerous. They were made mainly of fabric F1 (n=26), while the six other fabrics recorded were infrequent. Notably, the grog fabric, F6, which was rather common among other variants of this subgroup (see below), was not numer-



Fig. 3.32. Fine closed bowls of small and medium size divided according to fabric (n=332)



Fig. 3.33. Types of small and medium closed bowls of fine wares (A–C), and large closed bowls of fine wares (D)

ous here. On the other hand, F9 seemed to be more common here than in other variants [see *Fig. 3.32*].

Most vessels were covered with red slip and burnished on the outside, while their inner surfaces were black and smoothed. In addition, individual examples of PT70 and PT181 were brown and smoothed, while two specimens of PT124 were black due to reduced firing conditions and had burnished surfaces. Type PT181 bore no decoration, but some other bowls in this variant were adorned with ornamental motifs. A single example of PT70 preserved two incised circumferential grooves below the rim (DT157). Several PT124 bowls (n=9) also bore plain incised motifs (DT7, DT19). Two specimens exhibited more elaborate designs incorporating bands of crosshatching (DT39, DT171). Moreover, four of the nine decorated PT124 bowls were painted. They were adorned with motifs composed of panels with intersecting strokes painted in purple and yellow (DT31) or in white (DT44). Another specimen bore more elaborate panel decoration (DT117), in which the outlines were painted in red and the fill pattern in black. Inside the panels were contiguous triangles filled with crosshatching. PT124 vessels were the only type among the whole group of bowls to be so richly decorated with painted motifs. This decoration type (DT117) occurred also on incense burners and may be considered one of the characteristic features of the Funj-period assemblage. Notably, a whole set of bowls decorated with painted motifs very similar to DT44 were found during the survey at Gebel Kadamusa and dated to the post-medieval period (Edwards and Elzein 2011: Fig. 7.28:7-9).

# Variant 3

Variant 3 consisted of bowls with rounded rims thickened from the outside and with spherical bodies [*Fig. 3.30E*]. The rim diameters ranged from 12 cm to 28 cm, but the average was from 16 cm to 20 cm. Six different types were assigned to this variant, the most common being PT55, constituting over 50% of the subset. Bowls of types PT12 and PT11 were also frequent, while PT30 and PT146 were represented by only a few specimens. Almost half of the vessels assigned to this variant (n=51) were made of fine and dense Nile clay (F1). The grog fabric (F6) was also frequently recorded (n=29). Other fabrics had small shares [see *Fig. 3.32*]. Their presence might suggest that the vessels were produced in different workshops or made by several potters who used various materials.

Bowls of this variant were very often decorated, with ornamented specimens making up almost three-quarters of the whole subset (n=74). All PT51 vessels were decorated, while PT30 and PT146 ones were invariably plain and undecorated. The motifs were usually incised and the most common pattern was crosshatching (DT8, n=16). Other decoration consisted of incised plain grooves in different combinations, for instance, DT29, DT66 and DT68. Very few specimens of PT51 bore more elaborate motifs, like compositions of incised and impressed motifs (DT27). Bowls of types PT11, PT12 and PT56 were decorated with similar ornaments, most commonly those incorporating the crosshatching pattern (DT8 and DT16). Circumferential grooves (DT18 and DT19) were also common. Notably, type PT56 included two painted specimens decorated with motif DT44. A bowl resembling type PT11 and another bowl decorated with DT144 were discovered at Gebel Kadamusa and dated to the post-medieval period (Edwards and Elzein 2011: Figs 7.28:7–9, 7.30:16).

Bowls of variant 4 had pointed rims thickened from the outside and spherical bodies [*Fig. 3.33A*]. Their rim diameters ranged from 14 cm to 20.5 cm, but the average rim size was 16 cm. Three types belonged to this variant: PT10, PT67 and PT182. Forms of the second type were the most numerous, constituting almost 70% of the subset. Vessels of the third type, in turn, were represented only by a single specimen. They were made mainly of F1 fabric (n=80), but the grog fabric, F6, was also common (n=32). Other fabrics were also recorded, but they were represented by only a few vessels [see *Fig. 3.32*].

All vessels were red-slipped and burnished on the outside, except for a single specimen that lacked slip and had a brown and smoothed external surface. The interiors were invariably black and burnished. Notably, one PT182 vessel was burnished and black due to reduced firing conditions. This specimen also bore no decoration. The most common bowls (type PT67) were decorated in less than one-quarter of the cases. Decoration consisted of simple incised patterns, like DT7, DT8, DT11, DT131 and DT143, and was based mainly on crosshatching. A few examples bore more elaborate decoration, like compositions DT26 and DT203, in which incised and impressed designs were combined into friezes with zigzags and crosshatching. Notably, two specimens were painted with a frieze of triangles filled with crosshatching (DT205). Out of the 37 PT10 bowls, 24 were decorated and almost half of the decorated vessels bore a pattern consisting of four circumferential grooves incised below the rim (DT7). These bowls were among the most characteristic of the Funj-period pottery assemblage. Other vessels bore simple incised patterns, like DT8.

A bowl similar to PT67 was found at the Ed-Diffar fortress and was dated to the post-medieval period (Wiewióra 2005: Fig. 39c). A vessel analogous to PT10 was found at Abkur, another site in the Dongola Reach (Phillips 2004: Fig. 5B).

#### Variant 5

Variant 5 comprised bowls with plain, rounded rims and spherical bodies [*Figs 3.33B, 3.91:4*]. Their diameters spanned from 14 cm to 22 cm. Four types of this variant were identified, among which PT153 was the most numerous. Type PT29 was also common. The majority of the vessels were made of fine and dense Nile clay, F1, although the grog fabric, F6, was also frequently used. Other fabrics were rare but followed the general trends of the fabric repertoire for fine bowls, for instance F3, F5, and F9 were also recorded [see *Fig. 3.32*]. The bowls were covered with red slip on the outside; the inside was black and burnished. Two specimens were exceptional. One was brown and smooth, and the other was burnished and black due to reduced firing conditions. A large share of this subset (57%) was decorated with patterns placed below the rim. Usually the decoration consisted of simple incised patterns (DT7, DT8, DT18 and DT19) incorporating crosshatching and circumferential grooves. Few examples bore more elaborate patterns, like DT39, or compositions such as DT8 or DT11. One specimen bore finger impressions on the rim and a zigzag (DT11) below the rim. One bowl had a potmark (DT126) scratched on the outer surface.

Variant 6 of fine closed bowls comprised specimens with flat rims and spherical bodies [*Fig. 3.33C*]. It was represented by two types, PT114 (n=3) and PT135 (n=4). They had diameters equal to 16 cm. The vessels were made mainly of fabrics F2 and F3 (n=3 for each), and a single specimen was made of F13 [see *Fig. 3.32*]. The outsides were covered with red slip and burnished, and the insides were black and burnished, while a single example had brown and smoothed surfaces. Almost all examples were decorated (n=6), mainly with crosshatching patterns, like DT8, DT131 and DT171. Notably, an analogous form to PT114 was found at Diffinarti north of Old Dongola (Edwards 2018: Pl. 2). The outer surface of the vessel was covered with red slip and corresponded to Adams's Ware H6. It was embellished with an incised band with crosshatching below the rim on the outside, which is analogous to the DT8 motif from Dongola.

# Fine closed bowls of large size

Fine closed bowls of large size [*Figs 3.33D, 3.34, 3.91:3*] constitute another subgroup. Characteristic features such as size and thickness of walls distinguish them from small and medium fine closed bowls. Both subgroups were used in food processing, but it is possible that large bowls also served as containers for storing goods. On the other hand, they very often bore some traces of burning on the outside. It is possible that these bowls were used for heating already prepared food. They were divided into four variants according to the shape of the rim (see detailed descriptions below): variant 1 with flange rims, variant 2 with rounded or pointed rims thickened from the outside, variant 3 with rounded or pointed plain rims, and variant 4 with rounded and flat, strongly in-curved rims. Their diameters ranged from 19 cm to 35.5 cm. The largest number of vessels was assigned to variant 2, in which PT62 seems to be the most typical. Other variants, except for variant 3, were infrequent [*Fig. 3.35*]. Bowls in this subgroup were made of coils and slabs and were mostly covered with red slip on the outside.

Fine closed bowls of large size were manufactured in several different fabrics, but it is possible to distinguish some main trends in their production. Most of them were made of fine and dense Nile clay (F1), which was used in 40% of the vessels in this subgroup. Fabric F6 tempered with grog was also common and made up 31% of the set. Notably, a recurring fabric was F9 (11%), which constituted a small minority in other subgroups [*Fig. 3.36*]. It was composed of Nile clay and tempered with grog and particles of limestone. The bowls were richly decorated with incised and impressed designs. The most characteristic type of decoration was DT26, a frieze filled with a double zigzag of parallel strokes and with impressed hollows made using a date pit. This composition was placed below the rim and reached the middle of the body. The rest of the belly was often covered with mat and roulette impressions (DT15, DT90).

### Variant 1

Variant 1 comprised vessels with flanged rims [see *Fig. 3.33D*] assigned to two types: PT100 and PT248. Their diameters ranged from 24.5 cm to 34.5 cm. The first type was made of fabrics F2 (n=1) and F3 (n=3), while the second of F10 (n=1). The vessels were covered with red slip and burnished on the outside, while the inside was black and burnished. Single specimens of each



Fig. 3.34. Types of large closed bowls of fine wares



Fig. 3.35. Variants and types of fine closed bowls of large size (n=203)

type were decorated. A PT100 bowl bore a composition consisting of two incised patterns, DT8 and DT11, and a PT248 bowl was adorned with composition DT171. A vessel similar to PT248, decorated with incised patterns akin to DT39, was found at Gebel Kadamusa in the Third Cataract region (Edwards and Elzein 2011: Fig. 7.29:12).

## Variant 2

Variant 2 of fine closed bowls of large size was characterized by rounded or pointed rims thickened from the outside [Fig. 3.34A]. Their diameters ranged from 21 cm to 28 cm. Vessels assigned to this variant constituted the largest set in the subgroup (n=164). The share of each type in this variant was rather balanced, with a bias toward PT40 and PT62 [see Fig. 3.35]. The vessels were made of several fabrics, but the most commonly used fabric was F1 (45%). The grog fabric, F6, was also frequently recorded (31%). Other fabrics were rather rare [see Fig. 3.36]. The bowls were built from coils or slabs; their outer surfaces were covered with red slip and burnished, while the insides were black and burnished. Two specimens were exceptions, as their walls were plain brown and smoothed. Of variant 2 vessels, 65% were decorated. Type PT25 had fewer decorated examples. The most common decoration types were incised single motifs (DT7, DT8) and their combinations (DT8, DT11) placed below the rim. More elaborate designs combining incised and impressed patterns, like DT2, DT25, DT75 and DT86, were placed below the rim, while impressions such as DT15, DT55 and DT90 covered the rest of the body. One of the characteristic decoration types was DT26, a continuous frieze with a double zigzag and impressions of a date stone on its vertices. This pattern also co-occurred with impressions covering the whole body, like DT15. Some of the vessels bore traces of burning, so it is possible that they were used in food processing, cooking or heating. A number of them also had repairing holes pierced in the upper parts.



Fig. 3.36. Fine closed bowls of large size divided according to fabric

Bowls of variant 3 [*Fig. 3.34B*] had rounded or pointed plain rims that were slightly out-curved. They belonged to two types: PT130 (n=13) and PT203 (n=19) [see *Fig. 3.35*]. Their diameters ranged from 24 cm to 29 cm. They were made of diverse fabrics. The most common was the grog fabric, F6, although plain Nile clays, like F1 and F2, were also frequent [see *Fig. 3.36*]. The surfaces of vessels were red-slipped and burnished, rarely brown and smoothed. More than one-third was decorated. Plain incised or impressed patterns (DT7, DT14 and DT77) appeared in the upper part of the body. Such patterns co-occurred with combinations of impressions covering the whole belly, for instance, DT12 and DT90, as well as DT58 and DT90.

# Variant 4

The fourth variant [*Fig. 3.34C*] was represented only by two specimens of type PT178. They had rounded, strongly in-curved rims measuring 28.5 cm in diameter. They were made of fabric F6. The surfaces were covered with red, burnished slip in one case, and in the second they were brown and smoothed. One specimen bore incised decoration resembling the shape of a twisted cord or guilloche pattern (DT80).

# Coarse bowls

Coarse bowls were characterized by brown and smoothed surfaces, and only exceptionally they were covered with red slip and burnished. Both open and closed forms were recorded, although the latter were not numerous, amounting to only 6.08% of the set of coarse bowls. An overwhelming majority, 93.92%, were open forms [*Fig. 3.37*]. The most common vessels were those of variant 1, which constituted over 56% of the whole group of coarse bowls. The most frequently recorded bowl type of variant 1, and of all coarse bowls, was trapezoidal type PT74 (n=48; see description below). Vessels of this type can be considered the most characteristic. The majority were used for food preparation (e.g., baking, as they bore traces of burning), while small, hemispherical vessels, like PT66, might have served as lamps. It is also possible that they functioned as covers for cooking pots.

Coarse bowls were made of a variety of fabrics, but the repertoire of fabrics used for open and closed forms was similar, with F2, F4, and F6 predominating. While the group of closed forms was too small to show relative proportions, the large group of open forms permitted to identify the most common fabrics: F6 tempered with grog constituted 34%, followed by F2 with a 22% share, and by F4 with 16%. Notably, wadi fabric F12 was attested in both groups [*Fig. 3.38*]. The preference for fabric F6 may have been connected with vessel function, for instance, cooking/baking activities, as in the case of baking plates (see below). On the other hand, many trapezoidal bowls were made of fabrics without the admixture of grog. The combined share of coarse Nile clay (F2), characterized by a moderate amount of inclusions like sand and organics, and F4 with a large amount of organics is larger than the share of F6. A large proportion of trapezoidal bowls were made of F4, a porous fabric. This feature seems to be a distinctive quality of these bowls. It is also possible that different cooking techniques used with different vessels determined their properties, as the potters may have considered prospective function during manufacture. However, determining the relationship between strategies of food preparation and vessel manufacture requires more in-depth studies.

82



Fig. 3.37. Variants of open and closed forms of coarse bowls (n=148)



Fig. 3.38. Open and closed forms of coarse bowls divided according to fabric (n=148)

# Coarse open bowls

### Variant 1

Coarse open bowls of variant 1 were trapezoidal in shape [*Fig. 3.39A*]. The variant comprised six different types, among which PT74 (n=32) and PT201 (n=28) were the most numerous. A few specimens belonged to types PT37, PT227 and PT253, and only one was assigned to PT205 [*Fig. 3.40*]. The bowls were shaped starting from the bottom by pinching and hollowing and finished by coiling on the top. The preferred materials were fabrics F2 (n=24), F4 (n=24) and F6 (n=26). A few bowls were made of F1, and rare specimens of F9 and F12 [*Fig. 3.41*]. The most frequently occurring type of bowls in this variant, PT74, was mainly made of F6 (n=16), while



Fig. 3.39. Types of coarse open bowls: trapezoidal (A), and hemispherical with circular impressions on the inside (B)

other fabrics, F1 (n=4), F2 (n=6) and F4 (n=5), were less common. Notably, a single specimen of this type was made of the rarely recorded wadi fabric F12. Vessels of type PT201 exhibited a similar set of fabrics, but F4 predominated (n=160), and the other attested fabrics were F2 (n=6), F6 (n=5) and F9 (n=1). Fabrics F2, F4 and F6 were the most common also in the case of types PT227 and PT253. In contrast, type PT37 was exclusively made of fabric F2.

The bowls were brown and smoothed, except for four specimens, which were covered with a red slip and burnished. One bowl bore a potmark (decoration type DT101) executed on the external surface of the base. Most of them had traces of burning on both sides. It seems that the trapezoidal vessels were used for cooking purposes, possibly as baking bowls. On the other hand, some, like PT74, might have also served as lids. Similar bowls were used as covers of jars in the Dakhla Oasis (Henein 1992: 57). What is more, none of the lids found in the Funj settlement (see below) matched jars. Therefore, either jar covers were made of other materials or some coarse



Fig. 3.40. Coarse open bowls of variant 1 divided according to type



Fig. 3.41. Coarse open bowls of variant 1 divided according to fabric

open bowls of trapezoidal shape were used as lids. The latter might be another way to explain the presence of burned areas on these vessels. Bowls similar to PT227 were found at Ed-Diffar, a fortress in the Dongola Reach, in post-medieval occupational contexts (Wiewióra 2005: Fig. 39b).

# Variant 2

Variant 2 comprised coarse open bowls of hemispherical shape with circular impressions on the internal surfaces [Fig. 3.39B]. They were divided into three types, of which PT38 was the most common (n=8), while PT184 and PT287 were represented by single finds. The first type had a rounded rim 25 cm in diameter, and the other two had flanged rims with diameters of around 19 cm and 28 cm, respectively. A complete form was preserved only for PT184. It had a concave base measuring 11 cm in diameter, and its total height was 7.8 cm. Bowls of type PT38 were made mainly of fabric F2 (n=5), but F6 (n=2) and F9 (n=1) were also attested. Vessel PT184 was made of fabric F2 as well, and PT287 of F1. Surfaces of all specimens of this variant were brown and smoothed. Their most distinctive feature was the presence of circular impressions covering the whole internal surface of the vessel. The purpose of these marks seems technological rather than decorative. The impressions, possibly made using a reed or a similar tubular tool, were nonetheless classified as DT23. Some bowls also bore finger impressions on the outer rim (DT5) and irregular incisions on top of the rim (DT210). All the finds were burned on both surfaces, and some of them preserved traces of black residue. There is no doubt that these bowls were used for cooking, and possibly residue analysis will shed more light on this aspect. A bowl analogous to type PT38 was found at the fortress in Abkur and dated to the Funj period (Phillips 2004: Fig. 6D).

# Variant 3

Variant 3 of coarse open bowls comprised small hemispherical bowls [*Fig. 3.42A*] of various types, among which PT66 was the most common, while other types occurred rarely [*Fig. 3.43*]. The vessels had rounded rims, and only bowls of type PT267 had more pointed rims. Their diameters ranged from 13.5 cm to 20 cm. The bases were flat or slightly concave, with diameters between 2.6 cm and 7.2 cm. The heights of complete specimens of PT267 and PT269 equaled 4.6 cm and 7 cm, respectively. Some of the bowls were shaped in the coiling technique, typically from fabric F6. Other fabrics were rare [*Fig. 3.44*]. The surfaces were brown and smoothed except for a few examples covered with red slip and burnished. Only two bowls were decorated with incised crosshatching motifs. Some bore traces of burning and may have served as lamps. However, a number of bowls were blackened from the outside, and thus it is also probable that they were used for heating small portions of food or drink.

The most numerous type in variant 3, PT66, was mainly made of F6, but was also attested in fabrics F1 (n=3) and F12 (n=1). Most of the vessels were brown and smoothed, except two specimens which had red, burnished slip on both surfaces. A single example was decorated with a band of crosshatching on the rim (DT82). Two specimens of this type were burned. Bowls of type PT160 were made of fabrics F2 (n=1) and F6 (n=2). Two were brown and smoothed, and one had red slip applied on the outside. Two PT160 vessels bore traces of burning. Two specimens of type PT162 were made of fabric F2, and their surfaces were brown and smoothed. Type PT234 was represented by a single find. It was made of fabric F1, and its smoothed surfaces were



Е

PT5

Fig. 3.42. Types of coarse open bowls: small and hemispherical (A), cup-like (B), with flange rims (C), conical (D), and basin-like (E)

D18/1/F294/P25

0

10 cm

of brown and black color. Two specimens of PT258 were made of F1 and F6 fabrics. Their surfaces were brown and smoothed; one of them was burnished on the inside and bore traces of burning on the outside. The other example of this type was decorated with an incised composition (DT171) in the upper part. The single specimen of type PT367 was made of fabric F9. It had brown, smoothed surfaces and was burned on the outside.



Fig. 3.43. Coarse open bowls of variant 3 divided according to type



Fig. 3.44. Coarse open bowls of variant 3 divided according to fabric

# Variant 4

Variant 4 of coarse open bowls comprised small, hemispherical, cup-like vessels [*Fig. 3.42B*] representing three types. Their rims were rounded or slightly pointed, and the bases were flat. A rim diameter attested for type PT151 (n=3) was 11.6 cm. All specimens were made of different fabrics: F1, F6 and F9. The pinching-and-hollowing technique was used in their manufacture. Surfaces were covered with red slip and burnished. The most numerous type was PT232 (n=7) with a rim 8.3 cm in diameter, a flattish base measuring 1.4 cm, and a complete height of 5 cm.



Fig. 3.45. Types of coarse open bowls: small and cylindrical (A), and closed bowls of spherical (B), cylindrical (C), and hemispherical (D) shape

These vessels had an uneven shape, especially the rims. Most of them were made of F1 (n=4), but fabric F6 (n=1) was also attested. Two intact specimens were made of Nile clay. The surfaces were brown and smoothed, except one example covered with red slip and burnished. Five bowls bore traces of burning and, thus, may have been used as lamps. Lastly, type PT257 was represented by a single bowl. It had a rim diameter of 10 cm, a base diameter of 3.6 cm, and a complete height of 5.2 cm. This bowl was made of fabric F1 worked in the technique of pinching and hollowing. Its brown and smoothed surfaces were burned indicating its use as a lamp.

## Variant 5

Variant 5 of coarse open bowls comprised vessels of hemispherical shape [*Fig. 3.42C*] characterized by flanged rims and semi-carinated bodies. Larger specimens belonging to type PT152 had a rim diameter of 22 cm, and one of two specimens was free wheel-thrown. They were made of fabrics F2 and F3, and their surfaces were brown and smoothed. The wheel-thrown specimen also bore scratched lines in the lower part. Type PT198 was represented by a single bowl with a rim diameter of 7.2 cm. It was made of fabric F1, and its walls were brown and smoothed.

# Variant 6

Two specimens of two types represented coarse open bowls of conical shape [*Fig. 3.42D*]. Type PT171 had a rounded rim with a diameter of 5.4 cm, a concave base 3.2 cm in diameter, a trapezoidal body, and a complete height of 6.3 cm. It was made of fabric F1, and the surfaces were red and smoothed. The second type, PT220, was a small, conical bowl with a rounded base. Its rounded rim measured 7 cm in diameter, and the complete height amounted to 3.6 cm. It was made in the coiling technique, in fabric F4. Its brown and smoothed surfaces were blackened. It is possible that these vessels were used as lamps.

# Variant 7

Basin-shaped coarse open bowls of type PT5 [*Fig. 3.42E*] were large vessels with rounded rims thickened from the outside, hemispherical bodies and flattish bases. The recorded rim diameter was 40 cm, the base diameter 16.5 cm, and the complete height 32.4 cm. Vessels of variant 7 were made of coils, exclusively in fabric F6. Their surfaces were brown and smoothed. A single specimen was decorated with small impressions (DT2) in the upper part of the body. One bowl was burned, indicating that these vessels could have been used for heat-processing of food. However, the traces of burning might also suggest reuse as a cooking vessel. In Darfur, a similar bowl called *dahlob* was used in the brewing process: fermented *kejana* was strained through a cloth into such a vessel to produce a kind of beer (Arkell 1939: 84, Pl. 11B).

#### Variant 8

Coarse open bowls of cylindrical shape [*Fig. 3.45A*] were represented by seven fragments attributable to type PT112. They had rounded rims of unknown diameter. They were made of different fabrics, including F1 (n=1), F3 (n=1), F6 (n=2) and F9 (n=3). The outer surfaces were covered with red slip and burnished, while the interiors were brown and smoothed. One specimen was decorated with impressions on top of the rim (DT5). One vessel was burned indicating use in the process of heating food.

### Coarse closed bowls

#### Variant 1

Variant 1 comprised spherical bowls [*Figs 3.45B, 3.91:5*] attributable to three types: PT139 (n=1), PT211 (n=2) and PT264 (n=1). The specimen of PT139 had a rounded rim 16 cm in diameter, a concave base with a diameter of 6.8 cm, and a complete height of 14.5 cm. It was made of coils in fabric F4. Its outer surface was brown and smoothed, and the interior was black and burnished. Decoration (DT8) was placed below the rim. Specimens of PT211 had rounded, strongly in-curved rims 14 cm in diameter. They were shaped from coils in fabrics F6 and F9. The surfaces of one were brown and smoothed, while the other was covered with red slip on the outside. Two different decoration types were attested: applied decoration (DT48) below the rim, and an incised pattern (DT50) on the rim. A specimen of the last vessel type, PT264, had a rounded rim 13 cm in diameter. It was made of fabric F2, with the inside black and burnished and a worn outer surface. It seems that vessels of this variant were multipurpose containers, and those of type PT211 were possibly used for cooking.

#### Variant 2

Variant 2 comprising coarse closed bowls of cylindrical shape [*Fig. 3.45C*] was represented in this assemblage only by a single specimen of PT221. This almost complete vessel was uneven, with a rounded rim and a diameter of 8.3 cm. The flattish base measured around 4 cm in diameter, and the complete height was 8.5 cm. It was shaped in the coiling technique. Coils were attached to a base made of one piece of clay. The fabric was F9, and the surfaces were brown and smoothed. They also bore traces of burning; thus, it is possible that this vessel was used for cooking. There were scratched lines on the outer surface of the base. Impressed decoration (DT176) was executed on the outside of the rim.

# Variant 3

Variant 3 consisted of coarse closed bowls of hemispherical shape [*Fig. 3.45D*]. It was represented by two types: PT174 and PT265, with two specimens each. They had flanged rims with diameters 36 cm and 15 cm, respectively. One PT174 bowl was made of slabs; the method of shaping the second type is unknown. The vessels were made of different fabrics: PT174 was of F5 and F6, and PT265 of F4 and F12. One specimen of PT174 was made from a reused jar, the upper part of which was missing. The edge was carefully reworked to create a new rim. Thus, only this example had decoration, as the belly of the jar had been covered with an impressed pattern, DT107. Despite the fact that this bowl was made out of another vessel, it was included in type PT174 due to the shape intentionally given to this bowl. The good state of preservation of the jar permitted to reshape it into any form (open or closed), yet the discussed specimen was given the shape of a closed, hemispherical bowl. The other vessels of variant 3 were brown and smoothed on the outside, and black and burnished on the inside. One PT265 bowl had red, burnished slip on the outside. Two specimens, one of each type, had repairing holes below the rim, and one PT265 bowl was burned. It is possible that these vessels were used in food processing, possibly for heating food. The group of jars comprised 1,676 specimens. They were generally used for storage and cooking, although some of them seem to have served multiple purposes. It is possible to distinguish those used for storage from cooking jars due to traces of burning visible on the latter. Vessels which seem to have been used for cooking constituted roughly 37% of the group, and those that had storage functions made up 63%. The forms of these two categories of jars were similar. Their shapes conformed to a section of a sphere, indicating continuity of indigenous traditions recorded in earlier periods (Adams 1986: 411).

The primary division of jars was made on the basis of the size of vessels due to their likely different function in the houses. For instance, large vessels seem to have been kept for storage purposes only. Small vessels, in turn, might have been used for preparing small portions of food or specific meals. The most numerous group comprised medium-sized jars, which, as mentioned above, had both storage and cooking functions. A similar functional pattern was observed during ethnographic research in Darfur, where necked jars called *duana* were used for both storing water and brewing beer (Arkell 1939: 83). Medium-sized jars can be divided into two subgroups: jars with and without a neck. No further subsets were distinguished among the large and small containers, as they represented predominantly forms with necks (small neckless jars, that is, PT131, are exceptions).

Only 899 diagnostic specimens of the whole group of jars were assigned to particular pottery types. The remaining vessels, preserved as fragments of bases and walls, were described as PT?, and are therefore excluded from the description below. The predominant subgroup of medium-sized jars, with 88% of the total (795 fragments), comprised forms with necks, both short and long, which constituted respectively 74.3% and 1.5% of the subset (n=795). It is worth noting that medium-sized jars amounted to a total of 67.2% of the whole diagnostic jar assemblage



Fig. 3.46. Subgroups of jars (n=899); right-hand diagram shows medium jars

92 Jars (short- and long-necked specimens forming respectively almost 66% and 1.2% of n=899). Neckless vessels constituted 24.2%, among them specimens with out-curved and in-curved rims accounting for respectively 19.7% and 4.5% of n=795. They comprised 21.7% of the total jar assemblage (respectively 17.5% and 4% of n=899). Large jars constituted only 0.3% of the whole class of jars (n=899). The remaining group, which includes small jars and a single example of a type distinguished on the basis of a handle, constituted 11.1% (respectively 11% and 0.1% of n=899) [*Fig. 3.46*]. Statistical analysis clearly shows that jars with short necks and spherical bodies were the most common forms.

# Medium-sized jars

# Jars with short necks

The subgroup of medium-sized jars with short necks [*Figs 3.49, 3.52–53, 3.54A*] was divided into five variants (see below). The most abundant was the first one, constituting almost 80% [*Fig. 3.47*] of the subgroup. These vessels seem to be among the most distinctive pottery types in the Funj-period assemblage. They exhibited the general characteristics of handmade wares produced in Nubia, most notably the shape conforming to a section of a sphere (Adams 1986: 75).

## Variant 1

Variant 1 jars were the most numerous among medium-sized short-necked jars [*Figs 3.49, 3.92:1*, *3.92:3*]. Most of the rims were rounded, rarely slightly pointed (PT34), flanged (PT41), or thickened from the outside (PT21). Rim diameters ranged from 15.5 cm to 25 cm, with an average size between 18 cm and 20 cm. The bases were rounded. A complete vessel of this variant had a height of 29 cm. Nine types represented this variant. The most common was PT21 (see below), with 29% of the subset. Two other frequent types were PT41 with 24%, and PT20 with 22% of the subset [see *Fig. 3.47*]. The large variety of types might suggest a considerable number of different workshops and potters. On the other hand, these vessels prevailed in the group of jars and constituted the most common category of containers in use during the Funj period. They were also made in a variety of techniques. It seems that the most preferable production method in the body-making process was the paddle-and-anvil technique. Some specimens were made by pinching and hollowing, and several vessels were manufactured with the use of a mold (both in and on a mold). Thanks to the large size of the preserved fragments, it was possible to observe that the necks were made of slabs or coils and then added to the already prepared belly.

Vessels of this variant were manufactured in eleven different fabrics, which supports the idea of production by many workshops and potters. The fabric containing limestone particles, F3, was prevalent in this assemblage, with a 38.5% share. Other fabrics, like F1, constituted 25%, and F2 was attested in 17% of these vessels. Notably, only jars of this variant were made mostly of fabrics other than F6. The grog fabric, F6, prevailed in all other variants and subgroups except for this one. Rare fabrics, like F12, F13 and F15, also occurred in this variant, but their share was insignificant [*Fig. 3.48*].

The surfaces of these vessels were brown and smoothed, and only 6% of them had red and burnished slip on the upper part of the body. A third of the vessels assigned to this variant were



Fig. 3.47. Short-necked jars divided according to variants and types

decorated. Several trends were observed in the decoration. Incised or impressed motifs were placed on the upper part of the body (DT2, DT11, DT28 and DT77). In many cases the entire body was covered with impressed designs, like DT13, DT15, DT17 and DT95. The lower parts were covered with an additional layer of clay with finger impressions (DT114). Rare specimens bore incisions on top of the rim (DT10). Sometimes the decoration was limited to impressions on the body and on the base, as in type PT172.

Of the jars assigned to variant 1, 50% bore traces of burning. It seems, therefore, that a large part of them were used as cooking pots. Since these traces were recorded on the bodies, and numerous finds were limited to rims, which rarely preserve traces of burning, the share of vessels used for cooking purposes may have been greater. Jars with no traces of burning might have been used for storage purposes. On the basis of ethnoarchaeological parallels, such jars have also been equated to modern-era burmas, water-carrier containers (Crawford and Addison 1951: 164). In Darfur, a vessel described as a burma was used in the beer-making process to boil the mixture for marisa (Arkell 1939: 83). Specimens similar to PT21 and PT41, decorated with incisions DT11 and impressions DT13, were found at Dar el-Mek in the southern Gezira Plain (Crawford and Addison 1951: Pl. XLVI:B2). According to Osbert Crawford and Frank Addison, they were used for carrying water rather than for storage. Fragments of jars with impressed decoration similar to DT13 were discovered in water "reservoirs" (Crawford and Addison 1951: 162, Fig. 40:7). Overall, jars of this variant were among the most distinctive and common forms in the whole assemblage of Funj-period pottery. Jars akin to PT21 were discovered at other sites in the Dongola Reach, for instance, at Ed-Diffar (Wiewióra 2005: Fig. 39b) and Abkur (Phillips 2004: Fig. 4c). A vessel similar to PT41 came from the Abkur fortress (Phillips 2004: Fig. 4B).



## CHAPTER 3 POTTERY FROM THE 17TH-18TH CENTURY SETTLEMENT

Fig. 3.48. Short-necked jars divided according to fabric

95



Fig. 3.49. Types of short-necked jars of variant 1

The most numerous and characteristic pottery type in variant 1 of short-necked jars was PT20. The number of different fabrics used in its manufacture suggests that these vessels were made in different workshops or by many potters. An observable trend was also the use of fabric F3. It is possible that this technological feature was characteristic for workshops in Old Dongola and its vicinity. On the other hand, it might also be associated with interregional trends in pottery manufacture. Less frequently occurring fabrics might, in turn, be connected with more distant production sites. The small share of fabric F6 could suggest that the desired properties of these jars did not require the use of grog [*Fig. 3.50*], a temper employed most commonly in the manufacture of baking plates analyzed in the Dongolese assemblage (see below). This might suggest that the fabric of jars intended for cooking did not require tempering with grog.

Decoration on PT20 type vessels conforms to the decorative trends in jars of this variant described above. Seven different forms of decoration were distinguished. The most common were impressions on the body (DT12, DT13 and DT15), found on 34% of all decorated PT20 jars [*Fig. 3.51*, impressedB]. Incised designs executed in the upper part of the body (DT11 and DT28) constituted 26% [see *Fig. 3.51*, incisedUB]. It is possible that these two forms of decoration co-occurred on the same vessels, but no jars with incised patterns on the upper body had bellies preserved. Eight jars found with large parts of upper bodies remaining intact bore both incised and impressed patterns [see *Fig. 3.51*, incisedUB impressedUB]. Other decorative motifs were rather infrequent [see *Fig. 3.51*], but their presence enriched the repertoire of decorations and offered insight on the aesthetic tastes of Funj-period pottery makers.

### Variant 2

Short-necked jars of variant 2 had distinctive cylindrical necks [*Figs 3.52A, 3.93:2*]. In types PT32 and PT149, the neck was long and the rim flat or rounded. Vessels of types PT26 and PT240 had shorter necks, and their rims were also flat or rounded. The bellies were mostly hemispherical. The rim diameters ranged from 12.5 cm to 16.5 cm. More than half of the jars attributed to this variant represented type PT32 (n=35), but PT26 and PT149 vessels were also recurrent. Only three jars belonged to type PT240 [see *Fig. 3.47*]. The vessels had bellies made of coils and subsequently pinched and hollowed. The necks, made of coils or slabs, were added on to the bodies, and in some cases the joint between the neck and the belly was clearly visible. The most characteristic fabric for this variant was F6, which constituted 50% of the subset. Fabrics F1 and F2 were also numerous [see *Fig. 3.48*]. One PT240 vessel was made of a very rare fabric, F21, which has been recorded only twice (the other case being a single bowl).

Of variant 2 jars, 21% had a red-slipped upper part. Most of these vessels represented type PT26. Nearly 60% of vessels in this variant were decorated, and almost all of them belonged to type PT26 as well. The most characteristic form of decoration was a composition comprising a circumferential row of impressions (e.g., DT37) at the bottom of the neck, an applied group of three lumps (DT4) beneath, and impressions of a mat or roulette on the whole belly (e.g., DT17). Similar decoration was executed on PT32 jars, except there it included two lumps (DT20) and impressions DT15 and DT21. Incised ornament DT11 and impressed pattern DT15 were also attested. A PT240 jar had a combination of decorative patterns with DT193 applied in the upper part, and DT90 covering the whole body. Traces of burning were found on 37% of the jars, indicating their probable use as cooking pots. A jar akin to form PT26 was discovered at Attiri,


Fig. 3.50. Fabrics of short-necked jars of variant 1, type PT20



Fig. 3.51. Decoration of short-necked jars of variant 1, type PT20, divided according to technique of execution and location

and similar vessels were also reported in the Third Cataract region (Edwards 2018: Pl. 7). Notably, the example from Attiri bore red-burnished slip all over the body, while the Dongolese specimens received this kind of treatment only in the upper part. One may therefore suggest a regionalization of such jars on the basis of their surface treatment.

### Variant 3

Vessels of variant 3 had rounded rims, often thickened on the outside, and spherical bodies [*Fig. 3.52B*]. The average rim diameter in this subset was around 18 cm. The smallest specimens had a rim diameter of 11.5 cm, attested for PT212, and the largest measured 24.5 cm, as in PT48. Types PT89 and PT103 were recorded more frequently than others (n=8 each). Type PT212 was recorded only four times, and PT48 was represented by a single specimen [see *Fig. 3.47*]. The vessels had bodies made in the pinching-and-hollowing technique or were built of slabs. The necks



В

Fig. 3.52. Types of short-necked jars of variants 2 (A) and 3 (B)

were formed by coiling and then added to the bellies. The use of fabric F2 prevailed in this variant [see *Fig. 3.48*]. Almost one-quarter of this variant was made of the grog fabric, F6. There was no clear correlation between the fabric and the shape of the vessels.

As for surface treatment, four jars had red, burnished slip on the upper part, while the remaining vessels were brown and smoothed. The single example of PT48 had a burnished interior. Eight of the specimens were decorated. A specimen of PT89 featured a composition of incised patterns, DT8 and DT11. The PT48 jar was decorated with an incised zigzag (DT27), which separated the slipped zone from the unslipped part of the vessel. The belly was covered with an impressed pattern (DT55), which was clearly visible only in the upper part. Decoration on a PT212 vessel consisted of applied decoration (DT58) and impressed patterns (DT107) beneath. The upper part was covered with slip, which in this case also played the role of decoration. The red slip was applied to form a circumferential band on the rim with triangles beneath it on the upper part of the vessel. The upper part of the interior was also red-slipped. This composition remains unparalleled in the analyzed assemblage of Funj-period pottery. Five of the vessels in this variant were burnt, and thus they may have been used as cooking pots and as storage jars.

### Variant 4

Variant 4 comprised seven types of vessels [*Figs 3.53, 3.92:4*]. The common features distinguishing them from others were rounded rims and S-shaped necks. Diameters of rims ranged from 12 cm to 20.5 cm, but the average was 18–19 cm. The shapes of bellies differed from type to type. Complete forms showed that they could be spherical, like PT2, hemispherical with a stocky, rounded bottom, like PT179, and spherical with a flat base 20.5 cm in diameter, like PT266. Complete heights ranged from 25 cm to 36 cm. Variant 4 jars were made of slabs and coils, and the necks were formed separately and added to the rest of the body. Almost half of the vessels in this variant belonged to type PT145. Other vessels were few in number, and PT90 and PT266 were represented only by single specimens [see *Fig. 3.47*]. The PT145 jars were made in a variety of fabrics, among which F6 was the most common, with a 50% share of the type. However, this large share of fabric F6 was not characteristic for all types in variant 4. In fact, the most common fabric was F2 with a moderate number of inclusions (n=13). Fabrics F6 and F9 were recurrent [see *Fig. 3.48*], but it is worth noting that the former appeared only within type PT145. It seems that among the rest of variant 4 vessels, F2 and F9 were the most characteristic. This fact also distinguishes them from the subgroup of short-necked jars.

Almost a third of the vessels of variant 4 had red, burnished slip on the upper part, while others had brown and smoothed surfaces. Nine specimens were decorated, including all examples of type PT179. Jars of type PT2 had only a simple pattern on the upper part of the belly (DT2 or DT11). The single specimen of PT266 bore decoration composed of three elements: DT36 on the rim, and DT19 with DT11 on the shoulders. PT179 jars followed a similar trend in their ornamentation: an impressed or incised circumferential design like DT2 or DT172 with alternating applied lumps (DT20) just beneath, and mat or roulette impressions (e.g., DT107) on almost the whole body with the exception of the bottom. Notably, incised and applied decoration was executed in the lower part of the slipped zone, ending in the place where the potter covered the body with impressions. This type of surface treatment seems to be one of the characteristic features of the analyzed assemblage of Funj-period pottery. The most common forms, PT145,



Fig. 3.53. Types of short-necked jars of variant 4

were decorated with different motifs, like DT10 on the rim and DT77, DT38 and DT36 on the shoulders. Interestingly, these motifs did not co-occur. Six jars of variant 4 bore traces of burning and, therefore, could have been used as cooking pots. On the other hand, the fact that a complete specimen of PT179 weighed 10 kg puts its portability into question and rather suggests a storage function.

# Variant 5

Variant 5 (n=5) was represented by type PT190 [*Fig. 3.54A*]. An intact vessel of this type had a straight, rounded rim 18 cm in diameter, angled shoulders and an almost cylindrical body ending with a flattish base with a diameter of around 12 cm. It measured 38 cm in height. This specimen preserved in one piece made it possible to observe that this jar was made of slabs around 5 cm in width. The upper part (rim and shoulders) and the lower body were made separately and subsequently joined together. Different fabrics were recorded, but the most frequent was F6 (n=3).

The surfaces of variant 5 vessels were brown and smoothed. Half of the jars bore decoration on the upper part. In most cases it had the form of a very distinctive circumferential coil with large and deep finger impressions (DT122). One specimen was decorated in the same zone of the body but instead it featured a row of stamped impressions (DT94). One vessel had traces of burning, but it seems that these jars were used for storage purposes rather than for cooking. The weight of the complete vessel was 11 kg, which suggests that it was rather not a portable jar and was instead used as an element of furnishings.

## Medium-sized jars with long necks

Medium-sized vessels with long necks [*Fig. 3.54B*] were rather rare in the group of jars, constituting 1.2% (n=11). They had rounded rims (PT137) and flanged rims (PT200) with diameters ranging from 35 cm to 45 cm. Their necks were built of coils, the surfaces were brown and smoothed, and four specimens had red, burnished slip. A variety of fabrics were recorded, but F6 was recurrent with four attestations; the other documented fabrics were F1, F1/F2, F2, F5 and F9. The jars may have been used for storage, as they resemble *zirun*, storage jars utilized in modern-day Sudan. Two of the analyzed examples had blackened surfaces that might suggest reuse as cooking pots. A jar similar to PT200 was found in the Abkur fortress and dated to the Funj period (Phillips 2004: Fig. 3A).

#### Medium-sized neckless jars with out-curved rims

Medium-sized neckless vessels with out-curved rims [*Figs 3.57–59*] were divided into six variants based on the shape of the rim and body (see below). Among these vessels, the largest subset (42%) was assigned to variant 4 comprising jars with rounded or pointed rims and spherical bodies. Jars of variant 6 with straight and thickened rims constituted 21% of the subgroup. Vessels with the same shape of the belly as variant 4 but with rims thickened from the outside, described as variant 5, comprised 16% [*Fig. 3.55*]. Therefore, pottery forms of variant 4 were the most representative for this subgroup.



Fig. 3.54. Types of short-necked jars of variant 5 (A), and jars with elongated necks (B)



Fig. 3.55. Neckless jars with out-curved rims divided according to variant and type

Jars of type PT79 were the most abundant in this subgroup. On the other hand, variant 4 included one of the most abundant types [see *Fig. 3.55*]. Most specimens of PT79 bore traces of burning (20 out of 36), which suggests a cooking function of these vessels. Vessels with no sooting were possibly used for storage purposes. Their frequent occurrence might be connected with their multifunctionality.

Some trends in the production of these vessels are observable. Fabric F6, tempered with grog, was used in 47% of jars of this subgroup, while F2, a fabric with a moderate amount of inclusions, made up 22%, and the fine fabric F1 was used for 10% of the vessels [*Fig. 3.56*]. However, it is difficult to trace any patterns between the presence of the F6 fabric and the possible functions of the vessels. This material seems to have been used in the production of both cooking and storage jars. It is possible that fabric did not play a key role in decisions concerning vessel function. Another explanation is that the primary function intended by the potter was changed by the users, who assigned a secondary function to the vessels according to their needs.

#### Variant 1

Variant 1 of neckless jars with out-curved rims was represented by rather thick-walled forms with rounded rims thickened from the outside. Their bellies were hemispherical [*Fig. 3.57A*]. The smallest rims of PT101 measured 12 cm in diameter; medium-sized rims, like in PT170, were 27 cm in size; and the largest, like examples of PT192, had diameters of 38 cm. The shares of particular types in this variant were balanced, except for the single recorded specimen of PT191.

The prevalent type appears to be PT170 [see *Fig. 3.55*]. Variant 1 jars were made of a large variety of different fabrics, among which F1 and F6 seem to be the most frequent [see *Fig. 3.56*]. Overall, it is difficult to observe any marked trends in their production at this point. Their surfaces were brown and smoothed, and only four examples had red, burnished slip on the upper parts. One specimen of PT192 was decorated with an incised design incorporating the crosshatching pattern (DT41). Notably, only two examples had blackened surfaces suggesting use for cooking purposes. It seems that those vessels were rather kept for storage.

### Variant 2

Variant 2 of this subgroup of jars comprised vessels with rounded or flanged rims and more slender bodies than in the aforementioned variant 1 [*Fig. 3.57B*]. They were represented by two types: PT78 and PT259, albeit the latter was attested by only a single example. Rim diameters of type PT78 vessels equaled around 20 cm. The rim of the PT259 jar measured 24 cm and had incised decoration (DT10). Jars of variant 2 were made in the coiling technique and only the grog fabric, F6, was used. Vessel PT259 bore traces of burning; therefore, it may have served as a cooking pot.

## Variant 3

Variant 3 was represented by small jars with rounded, flanged, or down-turned flanged rims and slender, almost cylindrical bodies [*Fig. 3.57C*]. Their rim diameters ranged from 14 cm to 19 cm. They were represented by only five specimens, and three of them belonged to type PT59. They were coil-formed of different fabrics (F3, F5, F6, and F9); only the grog fabric, F6, occurred twice. All of them had brown, smoothed surfaces. A vessel of type PT228 was decorated with an incised band (DT188) below the rim. Two of the jars were burned and were, therefore, possibly used as cooking pots.

# Variant 4

Jars of variant 4 were characterized by rounded, rarely pointed rims and spherical, bulbous bodies. Some of them had an angled upper part [Figs 3.58A, 3.93:1]. Diameters of rims ranged from 15 cm to 18 cm. The most numerous type was PT79, amounting to over 50% of this variant. The most infrequent was PT85 [see Fig. 3.55]. The jars had bellies formed in the coiling technique (PT79), by pinching and hollowing, or by using a paddle and anvil (PT180). The upper part of PT180 was built of coils, and the joint with the lower part was clearly visible. The most characteristic fabrics for variant 4 jars were F6, the fabric with grog, and fine Nile clays, like F1 and F2 [see Fig. 3.56]. Other fabrics seemed to play a marginal role in their production. Almost 60% of the jars-all specimens of type PT88, and most of type PT79-were decorated. Vessels of type PT68 had incisions on the rim (DT10 and DT35), which sometimes co-occurred with applied lumps (DT48). Other recorded motifs also included applied decoration DT200, as well as pairs of indentations (DT208) on the upper parts of the vessels. One specimen of PT68 was decorated with incisions (DT35) on the rim, a row of stamps (DT37), and applied motifs (DT38) underneath. Jars of type PT79 had lumps (DT34) placed at the vessel's mid-height. Characteristic of PT180 jars were impressions on the body (e.g., DT13). Surfaces were brown and smoothed, and almost half of the finds (n=27) bore traces of burning. It seems that they were multipurpose jars used for both storage and cooking.



Fig. 3.56. Neckless jars with out-curved rims divided according to fabric



Fig. 3.57. Types of neckless jars with out-curved rims of variants 1 (A), 2 (B) and 3 (C)



Fig. 3.58. Types of neckless jars with out-curved rims of variants 4 (A) and 5 (B)



Fig. 3.59. Types of neckless jars with out-curved rims of variant 6 (A), and neckless jars with in-curved rims of variant 1 (B)

#### Variant 5

Variant 5 comprised jars with rims that were rounded, flanged or thickened from the outside, had thick walls, and spherical bodies [*Fig. 3.58B*]. Their rim diameters seemed uniform, oscillating at around 25–26 cm. The shares of particular types were balanced, although the most numerous was PT155 [see *Fig. 3.55*]. While most vessels were made of fabric F6, F2 also had a large share of this subset [see *Fig. 3.56*]. The jars usually had brown and smoothed surfaces, except two specimens with red-slipped upper parts. Most were undecorated. One fragment of a PT24 jar featured an applied lump (DT48), and a specimen of PT155 bore an incised composition consisting of a band and pendant triangles filled with crosshatching (DT170). Variant 5 jars seem to have been used as storage containers, yet four of them had traces of burning indicating a possible cooking function.

## Variant 6

Variant 6 of neckless jars with out-curved rims comprised vessels with rims that were straight, rounded or thickened from the outside, and had spherical bodies [*Figs 3.59A, 3.92:2*]. Rim diameters ranged from 18 cm to 32 cm, but the average size was 25–30 cm. Almost half of the subset were PT102 jars. Other types, like PT63 and PT64, were recurring finds [see *Fig. 3.55*]. The jars were made of the grog fabric, F6, and other materials played a marginal role [see *Fig. 3.56*]. Most of the jars were brown and smoothed, but four specimens had red, burnished slip on the upper parts. Almost half of the jars in this variant were decorated. The most characteristic decorative motifs were lumps (DT34) applied in the upper part. Another distinctive feature were panels filled with incised crosshatching (DT54 and DT206). Only two specimens bore traces of burning, indicating that variant 6 jars were generally used for storage purposes.

## Medium-sized neckless jars with in-curved rims

Medium-sized neckless vessels also had in-curved rims [*Figs 3.59B, 3.62–63*] and spherical bodies, although one exception featured a more trapezoidal upper part [*Fig. 3.63A*]. Four variants of this subgroup were distinguished (see below). In this set (n=36), the most common types were PT16 and PT133 [*Fig. 3.60*]. Specimens of the other types were rather rare. Almost one-quarter of these vessels had the external surface covered with red, burnished slip in the upper part. Less than one-third bore traces of burning, which might suggest their use for cooking purposes. The most frequently used fabric was F6, attested in 50% of the vessels. Fabric F2 was also common, with a 30% share [*Fig. 3.61*]. Other fabrics were rare. It seems, therefore, that fabrics F6 and F2 were typical of the production of neckless jars with in-curved rims. This could be a characteristic feature of vessels of this type or of the workshops in which they were made. A vessel similar to PT133 was found at Gebel Kadamusa in the Third Cataract region (Edwards and Elzein 2011: Fig. 7.30:11).

### Variant 1

The first variant comprised jars with rounded, flat and thickened rims [see *Fig. 3.59B*] classified as vessel types PT133 and PT193. They were represented by ten specimens made mainly of the



Fig. 3.60. Neckless jars with in-curved rims divided according to type



Fig. 3.61. Neckless jars with in-curved rims divided according to fabric

grog fabric, F6 (two examples of PT133 were made of F2 and F5). Surfaces of most of them were brown and smoothed, although four jars were red-slipped and burnished in the upper part. None of them had traces suggesting use for cooking purposes, and thus it seems that they rather functioned as storage vessels. One PT133 vessel had a layer of white plaster on the outside. Parallels to PT254 jars of very large size (see below) might suggest that also this vessel was used as a permanent element of furnishings.

# Variant 2

Variant 2 of this subgroup comprised jars with rounded rims [see *Fig. 3.62*]. Their spherical bodies were rather stocky and had flat bases. They were represented by three specimens belonging to types PT1 and PT117. Their rim diameters ranged from 28.5 to 30.5 cm, and base diameters from 28 cm to 32 cm. The complete heights measured 36.4 cm and 38 cm, respectively. Their bases were shaped in the pinching-and-hollowing technique, and the remaining parts of their



Fig. 3.62. Types of neckless jars with in-curved rims of variant 2

bodies were formed by coiling. Both PT1 and PT117 were made of fabric F2, and one example of PT1 was made of F3. Their brown, smoothed surfaces bore no traces of burning, except for a single specimen of PT1. However, it seems that these vessels were rather used for storage purposes. A vessel similar to PT117 but with a belly covered with impressions of a mat or roulette was found at Banganarti and dated to the Funj/modern period (Phillips 2003: Pl. 110a).

# Variant 3

Variant 3 comprised neckless jars with plain, rounded rims, elongated, trapezoidal upper parts, and concave bases attributable to type PT159 [*Fig. 3.63A*]. Four specimens were found and all of them were made of fabric F6. A complete vessel had the following dimensions: rim diameter 34 cm, base diameter 30 cm, and height 40.5 cm. The jars were made of coils and finished with two slabs. Their surfaces were brown and smoothed; only one had a red-slipped upper part. Three examples were decorated, and the most characteristic pattern was DT172 incorporating the crosshatching motif. A composition including DT11 and impressions DT15 was also recorded.

### Variant 4

Variant 4 of neckless jars with in-curved rims is represented by vessels with plain, rounded and flat rims, thinner walls than specimens described above, and smaller diameters of rims, ranging from 14 cm to 28 cm [*Fig. 3.63B*]. The variant included pottery types PT16, PT68, PT231 and PT243. Jars of type PT16 were the most numerous [see *Fig. 3.60*], and more than half of them bore traces of burning. One specimen indicated that the body of such vessels was made in the "on mold" technique. Necks made of coils were attached to the bellies. Jars of this variant were made mainly of fabrics F2 and F6, less frequently of fabric F1 [*Fig. 3.64*]. Surfaces were brown and smoothed, and four specimens had red-slipped and burnished upper parts. Less than half of these jars were decorated, and the majority of vessels with ornamentation belonged to type PT16. Among the attested motifs were finger impressions on the outside of the rims (DT5) and a row of impressions on the upper part (DT2). One specimen had an applied design (DT39). Bellies frequently bore impressions of mats (DT13, DT15 and DT32).

# Large jars

Large vessels of type PT254 (n=3) [*Figs 3.65, 3.93:3–4*] were characterized by flange rims 36 cm in diameter, long, cylindrical necks, hemispherical bodies, and flat bases 60 cm in diameter. The complete height recorded for these jars was 108 cm. Vessels of type PT254 were made of fabric F6 with a high content of grog. They were poorly baked. Traces of shaping were clearly visible: the bases were made of a pinched and hollowed piece of clay, to which slabs were successively attached until the desired height was reached. The slabs used in the construction of the body were around 14–15 cm wide, and half this width in the case of the neck. The surfaces were brown and smooth, and the exteriors were white-plastered. The lower parts of three PT254 jars were found *in situ* on bench F166 in room U16. The bench probably supported two more vessels, as their negatives were well visible in its plastered surface. One of them seems to have been redeposited in the neighboring room U30 during the latest phase of its use (de Lellis and



Fig. 3.63. Types of neckless jars with in-curved rims of variants 3 (A) and 4 (B)



Fig. 3.64. Neckless jars with in-curved rims, variant 4, divided according to fabric



Fig. 3.65. Large jar of type PT254

Maślak 2021: 165, Fig. 56). According to archaeological data, the vessels standing on bench F166 were covered with white plaster together with the bench and possibly with the walls of room U16. The plaster was composed of thin coats, which suggests that the room and its furnishings were renovated and replastered at least three times. Jars of type PT254 were undoubtedly vessels used for storage purposes, and they constituted the original furnishings of this room. One of the vessels was moved, but this occurred when U16 was probably no longer in use.

# Small jars

The subgroup of small jars was further divided into specimens with necks, PT15, PT80 and PT109 [*Fig. 3.68A*], which are apparently smaller versions of types PT34, PT41 or PT43, and neckless jars represented by type PT131. Rims of the first subgroup were rounded, flat, and pointed; their diameters ranged from 10.5 cm to 14.5 cm. The necks were made of coils and attached to hemispherical bodies made in a different manner, for instance in the paddle-and-anvil



Fig. 3.66. Small jars divided according to type



Fig. 3.67. Small jars divided according to fabric

technique. The most numerous were vessels of type PT15, which constituted 51% of the subgroup, followed by PT109 with 39% [*Fig. 3.66*].

Jars of this subgroup were mainly made of fabrics F1, F2 and F3, which constituted respectively 29%, 31% and 22%. Notably, fabric F6 tempered with grog was rather infrequent, comprising 6% of the subgroup [*Fig. 3.67*]. Surfaces of the jars were brown and smoothed, and a part of them bore traces of burning. Thus, it is possible that at least some of them served as cooking pots. Their small sizes might suggest that they were used to prepare small amounts of food for a specific purpose or to prepare individual meals. Almost 40% of the jars were decorated. The bellies were usually covered with mat or roulette impressions (DT13, DT15 and DT90). Sometimes they occurred together with a row of impressions in the upper part (DT2 or DT28). Rarely, patterns of object impressions were executed on the upper part (DT2 or DT77). Notably, a similar kind of decoration combining a row of impressed or incised designs and texture impressions all over the body, was attested for the larger equivalents of these forms. Interestingly, in Darfur small versions of such pots were called *sukhkhana* and had a special function: women used them for boiling water for their intimate hygiene purposes in the early morning and late at night (Arkell 1939: 84, Pl. 14). Other small, necked jars called *jer umm tumai* were used for serving the *marisa* beer (Arkell 1939: 84, Pl. 11B). Thus, unlike the Dongolese specimens, they bore no traces of burning.

# Unidentified jar

A single unidentified jar represented by a handle was designated as PT111 [*Fig. 3.68C*]. None of the previously analyzed jars were equipped with handles, which makes this example unique. What is more, this handle was attached to the vessel at only one side. The fragment was made of F6, and the surfaces were brown and smoothed. Neither the fabric nor the surface treatment contradicts the notion that the jar was manufactured in the same workshops and area as the other vessels made of F6. It is possible that it was used for a different purpose than the other jars, and its shape might have also been different. On the other hand, the vessel might represent a variation created by the potter and could simply be a result of creativity and innovation.



Fig. 3.68. Types of jars: small necked (A), neckless (B), and unidentified (C); bottles without handles (D), and with handles (E)

118

### Bottles

This class of vessels [*Fig. 3.68D–E*] was composed of containers with short necks and no handles (n=12 of 58), and with long necks equipped with handles (n=46 of 58). Three bottles of types PT161, PT189 and PT251 belong to the first subgroup. They had narrow and short necks made in the coiling technique and ending with rounded rims. Vessels of types PT161 and PT251 had straight rims, while the rim of PT189 was slightly flared [see *Fig. 3.68D*]. Rim diameters ranged from 6 cm to 7.2 cm. Necks were attached to bodies made in different techniques, for instance, by pinching and hollowing, as in the case of PT189. Each bottle was made of a different fabric: PT161 of F1, PT189 of F6, and PT251 of F4. All of the vessels had brown, smoothed surfaces with traces of burning. Thus, it is possible that they were used for cooking purposes, possibly for boiling liquids. In Darfur, a special kind of beer, *asalia*, was served in vessels similar to PT189 and referred to as *dullang* (Arkell 1939: 84, Pl. 14). It is possible that also the bottles from Dongola were used in beer preparation. The pot would have been placed on a fire to boil the beer mixture.

The second subgroup of bottles (types PT18, PT116 and PT282) differed from the ones described above due to the presence of two handles. They had rounded rims, long necks, bulbous and stocky bodies, and solid and flat bases [*Figs 3.68E, 3.94:1–3*]. One of the handles was partly hollow and had a small opening in the top part. It seems that this opening served as a spout for pouring out the contents.

The most numerous bottles were those of type PT282 [see *Fig. 3.94:2*], which amounted to 30 in total. Their narrow mouths measured 3.2 cm in diameter; the bases were much wider than the rims, with 10 cm of diameter; the complete heights were around 25 cm. Among the most characteristic features of this type were the long, narrow neck and the heavy, stocky belly. Angled handles were attached below the rim. The upper part was covered with red, burnished slip, while the belly bore impressed decoration (DT14 and DT90). This vessel type seems to be one of the more characteristic forms in the Funj-period assemblage. The discovered specimens were made of seven different fabrics, although the most numerous were vessels of fabrics F1, F2, and F6 [see *Fig. 3.69*]. This diversity might suggest that they were made in different workshops or by



Fig. 3.69. Fabrics attested for bottle type PT82

different potters. Notably, the similarity in shape and surface treatment may be interpreted as a result of trends in pottery production in 17th–18th century Old Dongola.

Bottle type PT18 [see *Fig. 3.94:1*] was represented by a single almost complete specimen. The rim measured 2.8 cm in diameter, the base had a diameter of 6.4 cm, and the complete height was 17.6 cm. This vessel was probably produced in the coiling technique, and subsequently angled handles were attached to the rim and shoulders. It was made of fabric F2, and the exterior was covered with red slip now almost completely concealed by black residue. Traces of burning suggest that this bottle was used for cooking purposes.

Type PT116 [see Fig. 3.94:3], represented by three specimens, was wheel-made, as one of the very few vessels in this assemblage besides *qawwadis*. The rim measured 3.4 cm in diameter. In contrast to other bottles in this group, PT116 had loop-shaped handles. Two of the vessels were made of fabric F4 and one of F1. Their surfaces were brown and smoothed. Notably, all the specimens had white layers of calcareous residue on the inner surfaces. Residue analyses have yet to be conducted, but it is possible to speculate that these substances come from food products, as in the case of such vessels from Çatalhöyük in Anatolia (Hendy et al. 2018). Handled bottles like PT282 seem to be related to the modern so-called *djabana* vessel type with a globular body, long and narrow neck, and a handle that connects the neck with the shoulder. They are in widespread use as kettles for making coffee in areas of Sudan, Ethiopia and Eritrea. Predecessors of the modern djabana can be found among post-Aksumite pottery. These jars with narrow and elongated necks had a small spout on the shoulder. A broad, angled handle connecting the rim to the shoulder had a large hole, forming another opening (Munro-Hay and Tringali 1999: 278, Nos 49, 49a). This opening in the handle resembles that of the Dongolese specimens. However, the evidence is still scant and so are the parallels with Ethiopian pottery. Nevertheless, it is possible that the handled bottles were used as kettles and that these vessels might be similar in function to the djabana. In other words, such vessels could be predecessors of the djabana regardless of whether they were used in coffee-making or connected with processing other liquids. For instance, in Darfur, a small bottle called *ibrik*, featuring a spout connected to the neck by means of a handle, was used as a water pot for ablution (Arkell 1939: 84, Pl. 14). The specimens from Dongola bore traces of burning, so it is possible that they had a different function.

### Baking plates

Large, thick-walled plates used for cooking purposes are usually identified with *dokat*, vessels for baking flatbread called *kisra* (Anderson et al. 2007: 89–93). According to Adams, shallow examples belonged to Meroitic and Early Christian periods, and deep ones to later Christian periods (1986: 104, Fig. 69). In modern-day Sudan, flat metal trays are used for this purpose (Dirar 1994). However, it seems that shallow ceramic vessels might be associated with this function. More common ones with straight, high walls could have been used for baking other products similar to modern-day *tawa*. The Dongolese assemblage included baking plates of different shapes and sizes, which might reflect the multipurpose baking function of those vessels.

The group of baking plates was divided into three groups according to their size (see description below). The fourth group comprised fragments of walls and bases that could not be ascribed to the distinguished types due to the lack of rims. More detailed information and statistical data have been included in descriptions of the separate subgroups. A comparison between small, medium and large baking plates shows that the first two subgroups were more diverse in terms of the number of different types [*Fig. 3.70*]. The most standardized ones seem to be the large vessels. It is difficult to determine if they were made in workshops that "specialized" in their production, or if this category of vessels was produced by different potters. According to statistical data [see *Fig. 3.70*], the most common forms were baking plates of type PT13. They were among the most characteristic forms in the 17th–18th century pottery assemblage from Old Dongola. Variety in the shapes and sizes of baking plates suggests different purposes and reflects the diverse needs of their users. Only PT213 specimens, six of which have been found, may possibly be related to modern-day *dokat* due to their rather shallow shape. Most of these plates could have been used for baking or frying foods other than flatbread.

Statistical analysis of baking plates revealed that the preferred fabric was the one tempered with grog, labeled as F6 [*Fig. 3.71*]. This feature may have been associated with the purpose of the plates and, thus, with properties desirable in cooking vessels. On the other hand, fabric F6 was used in a large share of Funj-period pottery, so it may have been characteristic of pottery production in general in this period. Fine and dense Nile fabric F1 with its coarser version F2



Fig. 3.70. Baking plates divided according to size and type



Fig. 3.71. Baking plates divided according to fabric

were also in use. The fabrics with large amounts of organics (F4) and sand (F5), and the one tempered with grog and limestone particles (F9) were infrequent. In addition, seven other fabrics were recorded, but their examples were very few [see *Fig. 3.71*]. These rare fabrics featured crushed rocks as inclusions and tempers. One of them, F16, contained abundant flakes of mica. It is possible that such fabrics were used outside Old Dongola and its vicinity, since they contain rocks that are lacking in this area (B. Woronko, personal communication, January 2019). Especially the micaceous fabric F16 might be connected with the area of the Fourth Cataract, but this hypothesis requires confirmation through petrographic and elemental analysis.

Baking plates had a distinctive shape and surface treatment. Their most characteristic feature was a black and carefully burnished interior. The vessels were divided into three groups based on rim diameter: medium vessels, large vessels and small vessels.

## Medium-sized baking plates

Baking plates of this subgroup [*Figs 3.72, 3.94:4*] had rim diameters of 30–40 cm; they were the most numerous finds in the group of baking plates, constituting almost 47% of the assemblage. They seem to be rather shallow. In most cases, the ratio of rim diameter to complete height was 1:4 (e.g., in PT13, see *Fig. 3.72*). Shallower examples, like PT213, had a ratio of dimensions 1:5.

Baking plates in this subgroup differed in the shape of their rims. Specimens with rounded rims represented types PT13, PT33, PT163 [*Fig. 3.72A*] and PT213 [*Fig. 3.72B*]. PT33 had a rim that was thinner than the walls. Rounded and thickened rims were characteristic of type PT219 [*Fig. 3.72C*], semi-flanged rims of type PT208 [*Fig. 3.72D*], and recurved ones of PT82 [*Fig. 3.72E*]. Most of them had a smoothed upper part and a rough lower part on the outside, while the inside had a black, burnished surface. Only a few specimens of types PT108 and PT213 had brown and smoothed interiors.

The most common type was PT13 [*Fig. 3.94:4*], which constituted 78% of this subgroup. Type PT108 comprised 10% of the assemblage, and other forms were rather infrequent [see *Fig. 3.70*]. Similar standardization in this subgroup can be observed in the fabrics. Fabric F6 was recorded in 80% of the cases, which might suggest a trend in the production of medium-sized baking plates. On the other hand, nine other types of fabrics were also recorded, which possibly points to the presence of different ideas or workshops whose products were available on the local market [see *Fig. 3.71*]. For instance, fabrics F8 and F14 with temper of crushed granite and schist seem to represent non-local workshops. However, their small share in the entire pottery assemblage of the 17th–18th centuries might also be a result of chronological differences, which are not yet clearly defined in the ceramic assemblage.

Of the medium-sized baking plates, 58% were decorated. The most common patterns were incisions on top of the rim (DT10), constituting almost 52% of all decorated fragments, and a row of finger impressions on the outside of the rim (DT5), with a share of almost 20%. In addition to these two designs, sixteen other patterns were recorded, especially for type PT13 (see below). The creativity and aesthetics of Funj-period potters indicated by this group of vessels contradict the conclusion that "*dokas* are never decorated except for crude incisions around the rim" (Adams 1986: 104).



Fig. 3.72. Types of medium-sized baking plates

Among the most interesting forms in this subgroup was PT13, one of the most common types of baking plates. Statistical analysis has shown that it was made in a variety of fabrics. On the other hand, the general trend of tempering the clay with grog was apparent. Fabric F6 was used in 85.5% of all baking plates of type PT13 [*Fig. 3.73*].

Type PT13 conformed to the prevalent decorative trends described above [see *Fig. 3.72*]. The most common decoration was incised pattern DT10, which occurred on 51.5% of all decorated PT13 baking plates [*Fig. 3.74*]. The impressed pattern DT5 was also frequent, holding a 22% share. Incisions on the outside of the rim (DT35) constituted 11%. Lastly, decoration type DT48 in the form of a large lump applied on top of the rim comprised 6% of the subset. It is possible that such lumps also appeared in pairs or in fours, as in published examples from the Christian period (Adams 1986: Fig. 69:1). They seem to have imitated handles, but they did not have any practical use due to their small size in comparison to the whole body of the vessel. A group of three PT13 baking plates comprised specimens decorated using a combination of two techniques.



Fig. 3.73. Fabric types in type PT13 of medium-sized baking plates



Fig. 3.74. Number share of the decoration types executed on type PT13 of medium-sized baking plates

The aforementioned lump DT48 was applied where incised decoration DT10, DT94 or DT151 had already been executed. This type of baking plate decorated with pattern DT10 seems to be one of the most characteristic pottery forms of Funj-period Old Dongola.

# Large baking plates

Vessels in this group [*Figs 3.75, 3.79A*] had rim diameters larger than 40 cm, often reaching around 60–70 cm; they formed only 19% of the assemblage of baking plates. Characteristic features of these vessels were thick and high walls. The ratio of rim diameter to complete height was 1:3 (e.g., PT195, see *Fig. 3.75*). Some examples, like PT75, were shallower, with a ratio of rim diameter to height of 1:5, but their walls were almost vertical, making them deep forms.

Baking plates in this group had similarly shaped rims but differed in body shape. Specimens with rims that were rounded or flattish on top and with hemispherical bodies were classified as type PT256 [*Fig. 3.75A*], and those with straight walls as type PT75 [*Fig. 3.75B*]. Vessels with rounded rims, straight walls and rounded bottoms were described as type PT195 [*Fig. 3.75C*]. Type PT81 had rounded rims, straight walls and almost cylindrical bodies [*Figs 3.79A*]. The surfaces were smoothed in the upper part and rough in the lower part on the outside. The internal surfaces were burnished and mainly black. Few examples were brown.

The proportions of different types in this subgroup seem rather balanced compared to others (see below). Most fragments belonged to PT195, which constituted 39% of the large baking plates [see *Fig. 3.70*]. Type PT81 formed 31%, PT75 22%, and the less frequent PT256 had an 8% share of the subgroup [see *Fig. 3.70*]. No prominent trends in the production of the large baking plates were identifiable.

On the other hand, analysis of the fabrics has shown that the most common material was F6, containing grog, with a 70% share of this subgroup. Other fabrics recurring in the assemblage were F2 with 11% and F1 with 7.5 %. The remaining fabrics played a marginal role [see *Fig. 3.71*]. A deep bowl similar to PT81 was discovered at Gebel Kadamusa in the Third Cataract region (Edwards and Elzein 2011: Fig. 7.29:16).

More than half of the large baking plates were decorated, yet the repertoire of motifs was limited to six decoration types. The most common among them was DT10, forming a 50% share of this subgroup. Incisions DT35 constituted 22%, and impressions DT5 20%. Other motifs appeared on very few specimens [*Fig. 3.76*]. Notably, incised zigzag strokes DT11 occurred only in this subgroup of baking plates. They were commonly executed on jars, and the two examples of baking plates with this decoration appear to be exceptions confirming the rule. It seems that the production of large baking plates was more "standardized" than that of other vessels in this group, but this notion requires further investigation.

Large baking plates of type PT195 seem to be the most representative for this subgroup. Most of them were made of the grog fabric, F6, with a small share of plain Nile fabric F1. One specimen was made of F10 [*Fig. 3.77*], the fabric tempered with crushed granite. Granite does not appear be found naturally in the vicinity of Old Dongola (B. Woronko, personal communication, January 2019); thus, it is possible that this specimen was not manufactured in a local workshop.

Decoration executed on PT195 baking plates was limited to only three designs, the majority of which were incised decoration types DT10 and DT35, found on 43 of the 52 decorated fragments. Impressed pattern DT5 was recorded on 9 specimens [*Fig. 3.78*].



А



PT75

D18/1/694/P1957

В



С

Fig. 3.75. Types of large baking plates



Fig. 3.76. Large baking plates divided according to decoration type



Fig. 3.77. Large baking plates of type PT195 divided according to fabric



Fig. 3.78. Decoration types executed on large baking plates of type PT195

### Small baking plates

Small baking plates [*Fig. 3.79B–E*] with rim diameters of 9-26 cm constituted only 14% of the assemblage. They seem to have had the same body proportions as the aforementioned medium-sized vessels, with a ratio of rim diameter to complete height at 1:4 (e.g., PT176, see *Fig. 3.79C*). However, also here one type, PT117, was shallower, with the aforementioned ratio of 1:5.

Baking plates in this group differed in the shape of the rims and walls. Vessels of types PT125 and PT204 had rounded, thin-walled rims and hemispherical bodies [see *Fig. 3.79B*]. They were similar to a larger form, PT33. Types PT176 and PT177 featured rounded rims, thick, straight walls and solid bases [see *Fig. 3.79C*]. Vessels of type PT69 had rounded rims, straight walls thickening toward the bottom, and a relatively thin, flat base [see *Fig. 3.79D*]. The last plate type, PT249, was a miniature form made in the pinching and hollowing technique. Its rim was rounded and slightly in-curved, the walls were hemispherical, and the base was flat [see *Fig. 3.79E*].

The external surfaces of these vessels were brown and smoothed, while the interiors were black and burnished. Several examples lacked the black, burnished internal surfaces and remained brown and smoothed. Of the total of 114 fragments of small baking plates, 45 were decorated. All of the decorated specimens belonged to type PT204, except one example of PT69, which was decorated with pattern DT9. The most common decoration was DT10, that is, incisions on the top of the rim. Decoration type DT5, which occurred more frequently with other subgroups of baking plates, was recorded on only eight fragments.

Vessels with the greatest share in this subgroup belonged to type PT204, while other small baking plates were infrequent, except for ten-odd finds of PT176 [see *Fig. 3.70*]. Most specimens were made of fabric F6, although other fabrics were also recorded [see *Fig. 3.71*]. Generally, the most typical small baking plate was vessel type PT205 made of fabric F6. On the other hand, PT69, PT125, PT177 and PT249 vessels were rather manufactured in other fabrics, like F1 and F2. Type PT176 was made of F6.

### Waterwheel pots/gawwadis

Distinctive vessels with down-turned rims and knobbed bases were made specifically for use in ox-driven water-lifting devices (*saqiya*). They first appeared in Nubia during the Meroitic period (Fage 1975: 257), and since then have been present in the archaeological record. The Arabic term commonly used to refer to these vessels is *qadus* (pl. *qawwadis*), although it is worth noting that in the Dongolawi dialect they were called  $\varkappa o\lambda \varepsilon$  (Tsakos and Hafsaas 2011). Notably, while most of the Funj-period pottery was handmade, *saqiya* pots were still wheel-thrown. In fact, the assemblage of waterwheel pots comprises exclusively wheel-made vessels.

The typology of *qawwadis* is based on shapes of rims and bases rather than complete forms due to the fact that no examples have been found intact during excavations. It is, therefore, possible that one type of rim co-occurred with one or more types of bases, and *vice versa*. The recorded rims represent four different types [*Fig. 3.80A*]. All *qawwadis* had pronounced mouths to facilitate attachment of the vessels to a waterwheel using a cord. Bases had the form of a knob, five different types of which were distinguished [*Fig. 3.80B*]. Almost 60% (n=129) of the whole assemblage of *qawwadis* (n=216) was composed of rims and bases [*Figs 3.81, 3.94:5*]. Fragments



Fig. 3.79. Types of small baking plates

130

of bellies were also recorded as diagnostics due to decoration and potmarks executed on their surfaces.

Vessels with flanged and semi-flanged rims (PT39 and PT54, respectively) seemed to be the most characteristic of this assemblage. Type PT39 was a rather wide-mouthed form, with rims reaching 30 cm in diameter, while PT54 had a narrower mouth with a diameter of around 20 cm. Other types had down-turned flanges: PT158 with a semi-double bead rim and PT236 with a plain flange. Their diameters ranged from 16 cm to 17 cm. The vessels were made of fabrics F1 and F2, both of which held roughly similar shares of the assemblage. Their surfaces were brown and smoothed. Several examples bore yellow or white drips classified as decoration type DT6.

Recorded bases of *qawwadis* represented types with rectangular or quasi-rectangular cross sections and flat (PT6 and PT31), concave (PT87), and more rounded bottoms (PT7). Bases of type PT92 were more rounded with flat bottoms. Base diameters ranged from 4.8 cm to 7.2 cm, the largest type being PT87 and the smallest PT92. Most were made of fabrics F1 and F2, but some specimens were of F3, F4 and F9. Notably, one fragment of an unidentified base was unbaked. Unbaked *qawwadis* had been recorded in previous research at the site, both in Makurian and Funj-period layers (personal observation). Some bases—for instance, type PT87—bore decoration of yellow or white drips (DT6). In addition, most of the recorded potmarks were executed on the bottoms of *qawwadis*, especially in types PT31 and PT87. The latter type included an interesting example that bore two potmarks, DT46 made before baking, and DT187 made after baking. Bases similar to PT6 and PT87 were found at Abkur and Argi in the Dongola Reach (Phillips 2004: Figs 7F, G).

The most characteristic rim types in this group were PT39 and PT54, and others occurred rarely [*Fig. 3.81* left]. Although the share of particular base types is more balanced, the most representative for *qawwadis* in this period seems to be PT87 [*Fig. 3.81* right]. It is possible that *saqiya* pots had more or less standardized rims, while their bases varied in shape, as indicated by the greater diversity of base types.

The presence of *qawwadis* in the residential district of the city seems unconnected with their original function as waterwheel pots. No traces of *saqiya* installations have been uncovered onsite. On the other hand, it is possible that these vessels were used for transporting water directly from the Nile. A large number of *qawwadis*, as well as wooden yokes used as bucket handles, were found during excavation of Funj-period deposits filling church SWN.B.V (personal observation). Such yokes were also discovered at Kulubnarti in contexts belonging to the latest occupational phases of the site (Adams and Adams 1998: Pl. 3.1D). *Saqiya* pots were also reused in stoves abutting benches in the excavated residential district of the city (Obłuski, Dzierzbicka, and Maślak 2021: 238). Almost 16% of finds of all *qawwadis* (*n*=216) had burned interiors, and some of them were coated with black and thick burnt residue. It is possible that such vessels were remains of destroyed heating devices.

Most *qawwadis* were made of fabrics F1 and F2 [*Fig. 3.82*]. Especially common was fabric F2 used in the making of 46% of the *saqiya* pots (n=216). This might suggest a preference for this material and a more organized production, for instance, workshops specializing in the manufacture of waterwheel pots. Specimens made of F3 and F4 could have been made in workshops that also produced other vessels. Unbaked specimens, presumably used for storage purposes, were most likely brought to the site from nearby pottery workshops.



В

Fig. 3.80. Types of waterwheel pots/qawwadis



Fig. 3.81. Types of qawwadis: rims (left) and bases (right)



Fig. 3.82. Qawwadis divided according to fabric

### Lids

The group of lids comprised objects made of reworked potsherds with no handles [*Figs 3.85A*, 3.95:7], and specimens formed out of one piece of clay with either knobs [*Figs 3.85B–E*, 3.86B, 3.95:8] or arched handles [*Figs 3.86A*, 3.95:6]. The lids made of one piece of clay featuring a knob handle were the most numerous. The second largest group consisted of lids made of reused potsherds. Large discs with arched handles that might have been used as covers for large containers were infrequent [*Fig. 3.83*].

Among the fabrics [*Fig. 3.84*] used for making the lids, the most common was F6, the fabric tempered with grog. The shares of fine and dense fabric F1 and coarser F2 were equal and formed the second and third largest groups. The variety of other fabrics might suggest that the lids were made together with other vessels in places where such clays were used. On the other hand, it is possible that the predominance of F1 and F6 was a general technological trend observable in Funj-period pottery technology. The presentation of fabrics used for lids excludes objects made from reworked potsherds [see *Fig. 3.84*].


Fig. 3.83. Lids divided according to subgroups



Fig. 3.84. Lids divided according to fabric

#### Reworked potsherds

Lids reworked from potsherds represented three types: PT107, PT230 and PT241 [see *Figs 3.85A*, *3.95:7*]. They were worked into a rounded shape, and their edges were either carefully smoothed (PT107) or left rough (PT241). Some PT107 lids were made of sherds of handmade jars dated to the Makurian period, and a single specimen of PT230 was made of a base of a Makurian pot stand. A lid of type PT241 was reworked from a sherd of a Funj-period vessel. Diameters of objects in this group ranged from 6.6 cm to 14.6 cm. They were made of different fabrics, but F1 seems to have been the most common. The surfaces were smoothed, and type PT230 bore decoration in the form of incised motifs (DT90).



Fig. 3.85. Types of lids: made of potsherds with no handle (A), and made of one piece of clay with knobbed handles (B–E)

## Lids with knobbed handles

The second group of lids was represented by specimens made of a single piece of clay and featuring a knobbed handle. Five variants were distinguished.

### Variant 1

Variant 1 comprised lids with up-turned edges representing types PT183, PT185 and PT196 [see *Fig. 3.85B*]. They had rounded rims with diameters ranging from 5.2 cm to 11.4 cm. The height of complete specimens was 2.6 cm (PT183) and 4.4 cm (PT185). Lids of this variant were made of fabrics F1, F1/F2, F2, and F6. Their surfaces were brown and smoothed, and only PT183 lids were covered with red, burnished slip. A similar lid was discovered during the survey at the Abkur fortress and dated to the post-medieval period (Phillips 2004: Fig. 7E).

#### Variant 2

Specimens assigned to variant 2 (types PT84, PT115, PT169 and PT216) had down-turned edges and were almost flat, with usually solid knobs as handles [see *Figs 3.85C, 3.95:8*]. Their rounded rims measured from 8.8 cm to 12.2 cm in diameter. Lids of this variant were made of only two fabrics: F2 and F6. Their surfaces were brown and smoothed; only type PT169 was covered with red slip and burnished. These lids were rather not associated with jars. Their small diameters suggest they functioned together with similar-sized containers, but there were hardly any matching ceramic vessels with which they might have been used. It is possible that they served as covers for vessels made of other materials, such as wood (see Chapter 7, this volume).

#### Variant 3

Lids of variant 3 characterized by down-turned edges and concave walls were represented by a single specimen of type PT83 [see *Fig. 3.85D*]. The rim was rounded and measured 16.5 cm in diameter. This lid was made of fabric F4 and had brown, smoothed surfaces.

#### Variant 4

A unique example of variant 4, type PT166, had down-turned edges, concave walls and a conical shape [see *Fig. 3.85E*]. It was discovered intact, *in situ* as a cover for a cup of type PT167 (*Fig. 3.90C*; see de Lellis, Maślak, and Wyżgoł 2021: 91, Fig. 80). This lid was made of Nile clay. It had red, burnished slip on the outside, and a brownish-red, smoothed inner surface. It was covered with carefully executed painted decoration of type DT31 in purple and yellow.

#### Variant 5

A single specimen of PT260 was a large, disc-shaped lid with a flat rim and knobbed handle [see *Fig. 3.86B*]. It measured around 40 cm in diameter. The lid was made of F2 fabric and had brown, smoothed surfaces. It may have been used to cover a large storage container.





Fig. 3.86. Types of lids: made of one piece of clay with arched (A), and knobbed (B) handles

## Lids with arched handles

The third group comprised large (PT226) and small (PT217) disc-shaped lids made of one piece of clay, to which two arched handles were attached [see *Figs 3.86A*, *3.95:6*]. Their rims were rounded, with diameters of 28.4 cm and 13.6 cm, respectively. The fabrics used were F1, F5, and F9. The surfaces of the lids were brown and smoothed, rarely rough. Some specimens were burned in the lower parts. Large specimens, like PT226, may have been used to cover large containers, and those with blackened surfaces also served as lids of cooking vessels.

#### Incense burners

Objects identified with the function of burning incense generally had a hyperbolical shape with a taller upper part, sometimes resembling a beaker, as in the case of PT4 [*Figs 3.87A, 3.95:3*]. Others were stockier, like PT142 and PT255 [*Figs 3.87D, 3.95:5*], or had a tulip-shaped upper part, like PT94 and PT97 [*Fig. 3.87C*]. Specimens of PT277 had a narrower lower part [*Figs 3.87B, 3.95:4*]. Two types, PT187 and PT276, were much smaller than others and were therefore described as miniature forms [*Fig. 3.87E*].

The incense burners varied in size. Beaker-like PT4 specimens had rim diameters of 15 cm, their base diameters reached 7.5 cm, and the recorded height was 14.5 cm. Smaller examples, like PT142, had rims measuring 11 cm in diameter, bases at 6 cm in diameter, and heights at 8.4 cm. The miniature form PT276, in turn, measured 7.6 cm at the rim, 4 cm at the base, and its height was 6.4 cm. Usually the lower parts of incense burners were preserved, being more massive and thick-walled, but the extant upper parts indicate that all rims were rounded. Low- and high-ring bases occurred with types PT142 and PT4. The single specimen of PT187 had a flat, solid base. A specimen of PT98 had a low-ring base 4.8 cm in diameter and very distinctive hollows in the lower part [see *Fig. 3.87D*]. A similar incense burner was found on the surface at the ed-Diffar fortress and was connected with the post-medieval occupation of the site (Phillips 2004: Fig. 7A). Another similar find came from Jebel Kadamusa in the Third Cataract region (Edwards and Elzein 2011: Fig. 7.28:15). An object similar to PT277 was found in the Gergaf region in south-eastern Sudan, in a pottery assemblage dated to the 16th–18th centuries (Perna 2017).

In the assemblage, 76 fragments of incense burners were recorded. Three most common types, PT4, PT94 and PT142, may be considered typical of the 17th–18th century pottery assemblage from Old Dongola [*Fig. 3.88*]. Similarities between types PT4 and PT113 suggest that they were in fact the same ware. If so, then the most common incense burners were the elongated, hyperbolical, beaker-shaped censers with white slip on all surfaces and painted decoration at least in the upper part.

Incense burners were mainly made of three fabrics: F1, F2 and F6 [*Fig. 3.89*]. These were either the most preferable or they represented products of different workshops. On the other hand, the presence of many other fabrics might suggest a lack of specialization in their production. Notably, no relationship was observed between type and fabric.

138



Fig. 3.87. Types of incense burners



Fig. 3.88. Incense burners divided according to type



Fig. 3.89. Incense burners divided according to fabric

## Varia

This group comprises vessel types that have been recorded as single examples and cannot be included in any of the previously described groups.

## Qulla

A single *qulla*, a vessel with a narrow neck and filter placed inside of it, represented type PT164 (*Fig. 3.90A*). The diameter of the neck was 3.2 cm. The filter, placed in the middle of the neck, had 4 holes. This vessel was made of fabric F1, and its outer surface was covered with red, smoothed slip.



#### Сир

The cylindrical cup of type PT167, with a rounded base [*Fig. 3.90B*], was a unique form. It was found intact, and thus it was impossible to describe the fabric. The rounded rim measured 8 cm in diameter, and the complete height was 10 cm. Its thick walls were built in the coiling technique. The cup's black, smoothed surfaces were covered with unique decoration, DT89.

## Spouted bowl

A single specimen of a bowl with the rim formed into a spout was assigned to type PT150 [*Figs 3.90C, 3.95:1*]. The rim, measuring around 4 cm by 10 cm, was pointed, the body was hemispherical, and the base was rounded. It was made of fabric F1 in the pinching-and-hollowing technique. Its brown, smoothed surfaces were burned. It is, therefore, possible that this vessel was used for heating substances. On the other hand, bowls with spouts attached to their bellies discovered in post-Meroitic tumuli were interpreted as liturgical vessels (Mahmoud El-Tayeb 2012: 102; 40c), and those with spouted rims as "feeder cups" (Smith 1998: Fig. 6.30:2718). The latter function might also be assigned to the Dongolese specimen.

## Miniature vessels

The last group in this assemblage comprises miniature vessels. One was a bowl of type PT156 [*Fig. 3.90D*]. It was carelessly made by pinching and hollowing a piece of clay of fabric F1. The rounded rim had a diameter of 3.2 cm, the complete height equaled 3.6 cm, and the base was flattish and around 2.7 cm in diameter. Its surfaces were brown and smooth. Traces of burning were recorded on the internal surface. It is possible, therefore, that this vessel was used as a lamp.

The single miniature *qadus* of type PT186 [*Figs 3.90E, 3.95:2*] had all the typical features of its class including the pronounced rim and knobbed base. The diameter of its rim was 2.2 cm, its base around 0.8 cm, and its complete height 4.2 cm. It was made in the F6 fabric by pinching and hollowing. The smoothed surfaces were brown and black. Such a miniature model of a *qadus* might have been used as a toy. A miniature *qadus* was mentioned by Adams as a form in Ware U5 of Nubian Utility Wares broadly dated to between 550 and 1600 CE (1986: 522, 523, Fig. 76:V5).

#### DISCUSSION

A first attempt at a description of post-Christian pottery was made by Adams in his seminal study of Nubian ceramics based on material from Qasr Ibrim and Kulubnarti (Adams and Adams 1998), the suggested distribution of which covered an area of the First Cataract and Batn el-Hajar. Adams pointed out that later wares were characterized by a significantly smaller number of forms and a total absence of elaborate decoration compared to Christian domestic wares. Moreover, wares occurring in periods prior to 1500 CE seemed to have disappeared. Among them were Late Christian incised H6, painted H7 and H14, and black H8 (Adams 1986: 433). On the other hand, the post-medieval period brought new wares characterized by the presence of a fabric tempered

142

with very coarse ground mica schist and red slip on the upper parts of vessels. They belonged to Group IV and the following wares: schist-tempered Plain Domestic H15, schist-tempered Red Domestic H16, Later Christian Red Domestic H5, and Later Domestic Plain Utility H4. They were represented by forms restricted to large hemispherical and globular bowls, jars and *dokat*, and their appearance was placed after 1550 CE (Adams 1986: 433, 434).

Analysis of the Dongolese assemblage revealed that local products came in various forms and fabrics. The general list of pottery classes comprised those distinguished by Adams (bowls, jars, and baking plates), but also included other forms, like lids, incense burners, bottles, and *qawwadis*. The notion that the number of forms diminished probably stemmed from a comparison with the Makurian tableware repertoire. Indeed, this category of Funj-period pottery seems more restricted. However, a comparison between a Late Christian assemblage of handmade wares from Old Dongola (see Danys 2018) and the later one of the Funj period shows that the two sets of vessels were similar. What is more, the Funj-period pottery repertoire seems more diverse. The large number of types and diversity within groups of vessels (e.g., jars) constitute arguments against the earlier hypothesis concerning the smaller number of forms.

The Funj-period pottery assemblage from Old Dongola also showed a wealth of decorative motifs executed in different techniques, which were often combined (e.g., incorporating incised and impressed patterns). Some specimens also bore elaborate designs that were clearly descendants of earlier traditions and had many parallels in Style D.III of domestic wares (Adams 1986: Figs 84, 121). It must also be kept in mind that Adams's dating of the ceramics was not always accurate as a result of problems inherent in the horizontal method of excavation and the presence of contexts he described as "contaminated" (Adams 1986: 8, 9). This issue has been recently raised in the context of studies on Late Christian pottery and the need to combine it with absolute datings and well-stratified archaeological contexts (Dzierzbicka and Danys 2021). It now seems that wares like incised red H6, red-painted H7, white-painted H14, and black H8 never really disappeared. Dongolese fine closed bowls of type PT77 might be a local equivalent of Lower Nubian H6 ware, and some of them, decorated with painted designs like DT44, might correspond to ware H7. Some of these bowls, burnished and black due to a reduced firing atmosphere, can be matched with ware H8. Lastly, white-slipped incense burners decorated with painted designs like PT4 were counterparts of ware H14. Their presence in layers dated to the 17th-18th centuries indicates that such wares formed part of a long-lived tradition, and it shows that at that time Lower and Upper Nubia shared ideas and trends in pottery production. Similarities in the decoration of vessels, like the commonly used crosshatching pattern, also suggest similar aesthetic tastes of inhabitants of different parts of the Nile Valley. Furthermore, it is not so different from the ceramic production of the medieval period.

General ideas concerning decoration and vessel forms were common for both Lower and Upper Nubia, but they differed in details. The most common fabrics used in manufacture of vessels in the Funj period were based on Nile clay. The differences between products originating from various parts of Nubia lie in the tempers. The most frequently occurring and numerous fabric in the Dongolese assemblage was F6, Nile clay tempered with grog. The temper distinctive for Lower Nubian ceramics was mica schist in the form of small and large particles. Notably, some vessels found at Old Dongola were made of fabric F12, which contained such temper. It is, therefore, possible to match the Dongolese F12 with the Lower Nubian schist fabric. Hence, vessels made in fabric F12 found at Old Dongola may be considered imports from the north. An analogous fabric was also recorded in the Third Cataract region and interpreted in the same way (Edwards and Elzein 2011: 202). Until now, identified imports were limited to ceramics from the Ottoman Empire, the Far East and Europe (Danys, in preparation; Danys and Wyżgoł 2018), due to a lack of chemical analyses and a comparative base for the Funj-period pottery. On the basis of the finds from Old Dongola, an attempt can now be made to "regionalize" the pottery manufacture.

Vessel shapes from Old Dongola were similar to pottery found during a survey in the northern Dongola Reach, which was red and burnished, and even more commonly black and burnished (Welsby Sjöström 2001: 252). Fabrics recorded at Old Dongola also found parallels among the fabrics distinguished during the survey: F20, F21, and F51, tempered with white limestone, grog, and schist, respectively (Welsby Sjöström 2001: 232, 234). The schist fabric F51 was described as one of the most distinctive fabrics of the post-medieval period. Writing at the beginning of the 20th century, Frederick W. Green mentioned in his unpublished diary that pottery tempered with schist was still manufactured in the area of Delgo, where it was called *hamma* (Welsby Sjöström 2001: 253, 254). Although the source of the schist temper remains unknown, a location in the northern part of Nubia is probable. Its abundant presence in the northern Dongola Reach and occasional occurrence at Old Dongola also suggests northern origins.

A brief description of Funj-period pottery from a survey in the Fourth Cataract region was presented by Jacke Phillips (2003). It refers to the material from excavations at Old Dongola, but due to the scattered nature of the pottery no typological development has been proposed. In order to phase out the pottery, the author called for a series of excavations at stratified Islamic sites (Phillips 2004: 67). Otherwise the vessels were as likely to be of the 14th century as of the 19th century. The pottery discovered at Old Dongola permits us to offer a more precise dating of the survey finds. The phasing of the Dongolese material is based on the co-occurrence of specific vessels in well-stratified contexts rather than on remote dating of distinctive fragments, as in the case of decorated Makurian potsherds, which can be easily assigned to one of the decorative styles of Adams's typology. However, limitations of dating Funj-period pottery remain, despite their provenance from well-stratified archaeological contexts. For instance, a single surface find of a PT8 bowl still has no precise dating beyond the broad frame of the Islamic period, as these vessels were also recorded in layers that predated the 17th century. However, the presence of such bowls in a context together with other vessels considered as characteristic of the 17th-18th centuries on the basis of the data from Old Dongola puts them in a chronological framework. In other words, we need to date assemblages and investigate the shares of different pottery types that comprise them. This may again be illustrated by the example of PT8 bowls: their limited presence in layers dated to the 15th-16th centuries contrasts with their abundance among finds from the 17th-18th centuries.

Pottery of the Islamic period found during the survey in the Third Cataract region was described as handmade wares with a large share of vessels with red-slipped and burnished surfaces. Bowls with such surface treatment were also decorated (Edwards and Elzein 2011: 202), as were rare specimens at Old Dongola. Vessels of types PT55 and PT55 bore painted decoration DT67 and DT205. They were interpreted as "northern products" characteristic of pottery manufacture in this region, although their occurrence may have been limited to the Ottoman presence in Nubia (Edwards and Elzein 2011: 204). The specimens from Dongola might be imports from the north as well. Therefore, their distribution seems to have reached at least as far as Old Dongola.

A previous assessment of Funj-period pottery from the Dongola Reach suggested that vessels fired in a reducing atmosphere were prevalent in this group (Phillips 2003: 59). Finds from the houses at Old Dongola showed that they constituted a minority and were represented almost exclusively by bowls. None of the baking plates were fired in a reducing atmosphere, although small fragments of rims with black surfaces and black color of the break might suggest this. Excavation of occupational contexts brought better-preserved fragments that offered a more complete picture. Many specimens from Old Dongola were less well-fired, and large storage jars, like PT254, were poorly baked, confirming earlier observations (Phillips 2003: 432). On the other hand, the suggestion that they were carelessly made and not intended to survive in use for any length of time, as they were cheap and easy to replace (Phillips 2003: 423), seems improbable. Firstly, a number of vessels bore pierced holes indicating repair. Such holes were recorded in the groups of fine bowls and baking plates. It is possible, then, that at least a part of the vessels had long lives and could remain in use even after breaking. For instance, the aforementioned PT8 bowls also served as vessels attached to grinding facilities (e.g., F384), where such a bowl bore evidence of repair (de Lellis and Maślak 2021: 72). Qawwadis and jars, in turn, were reused as stoves and thus received "new lives" as well. Some jars had been severely burned and had lost their bottoms before they were used in such installations. It seems that their owners considered them to be of some value, at least relatively. Such reuse might have also been dictated by the need to use vessels available at hand, and by a "zero-waste" strategy.

The pottery from the heart of the Funj kingdom also had some similar features to the Dongola assemblage, for instance, the appearance of coarse red ware with red slip in the upper part, as well as specimens with a red outer surface and a black interior (Crawford and Addison 1951: 161, 167), clearly resembling bowls such as PT8 or PT10 with the same surface treatment. The vessels from Dar el-Mek were also decorated mainly with crosshatching, sometimes combined with other incised designs, which clearly indicates that the aforementioned sites developed a similar material culture, or, to put it in another way, they had similar traditions in pottery shaping. It is worth noting that these similarities are unlikely to be a result of influences coming from either side. They were rather a result of continuity of shared indigenous traditions recorded in earlier periods (Adams 1986: 411). This common background found reflection in general ideas and trends observable in Funj-period pottery. Such a stance was already taken by Osbert Crawford and Frank Addison, who suggested that counterparts for the Dar el-Mek pottery should be sought in northern Sudan (1951: 169). However, the repertoire of ceramics from Dar el-Mek included a large share of black, burnished wares decorated with sophisticated incised and impressed motifs (Crawford and Addison 1951: 168, Pls LXXXIV, LXXXV), unattested in the Dongola Reach so far. It is possible, therefore, that the general traditions of pottery production were similar in different parts of Nubia but exhibited local variations. Bowls of type PT261 bearing incised decoration filled with white paste were widely distributed at Dar el-Mek and found also in graves of the Funj period at Abu Geili. At Dar el-Mek, they were discovered in the uppermost layers and connected with a late, if not the latest, phase of occupation of the site (Crawford and Addison 1951: 168). The periodization attempts at Abu Geili and Dar el-Mek, despite being based on scattered data, seem to correspond with the results of the recent excavations at Old

Dongola. The few specimens from Dongola that can be considered imports from this area were also found in the latest occupational levels of the site.

The Qawara region, an area on the Ethiopian border that constituted the southeastern fringes of the Funj Sultanate, yielded material that differs little from the Sennar assemblage. The handmade wares comprised coarse bowls, jars, *dokat*, and incense burners. They were embellished with incised decoration, mainly with the crosshatching pattern. On the other hand, the presence of bands of triangles and decorative compositions in general, as well as vessel shapes (González-Ruibar and Falquina 2017: 191, Fig. 19), distinguished them from the pottery found at Old Dongola. The chronology of the Qawara region in the Funj period, as well as the pottery dating itself, were established on the basis of historic events, and the phasing was aided by the presence of smoking pipes, which are an important dating marker (González-Ruibar and Falquina 2017: 195–196).

The Gergaf region in eastern Sudan also had pottery-making traditions similar to other areas of the Funj Sultanate and beyond. The repertoire of vessels consisted of bowls and jars of various shapes, which were used also for cooking purposes. Notably, these vessels were bag-shaped rather than based on the section of a sphere (Perna 2017: 191), as was the case in the Nile Valley. A large share of them had duck-tail handles, which resembled lumps of decoration type DT48. They seem to have had no carrying function, but might have been helpful when handling the vessel. Possibly the characteristics of the Gergaf pottery might have been connected to the specific needs of its users, identified as nomads (Perna 2017: 195–197). Valentina Perna's typology of this pottery (2017) was based on survey material and, thus, its chronology covered a wide range from the 16th to the 18th century. No phasing could be attempted for this material, but general remarks on the assemblage confirmed the notion that it was less homogenous than pottery manufactured in the Nile Valley.

Lastly, assemblages from the vicinity of Khartoum, fortresses occupied in the Funj period, have some characteristics in common with the pottery from Dongola, for instance, the presence of coarse bowls PT38 with circular impressions on internal surfaces (Drzewiecki et al. 2018: Fig. 3).

Thus far, the Funj period in pottery has been portrayed as a time of steady decline in technological and artistic abilities of potters and of a lack of interest or need for maintaining earlier standards (Phillips 2003: 432). The Funj-period assemblages lack fine, painted wares for serving food characteristic of the Christian period. Possibly this was due to a change in dining habits and social norms. Large bowls that might have been used for serving food suggest collective dining, hence there was no longer need for the same tableware sets as in the Makurian times. However, fine bowls in the assemblage from Dongola were carefully manufactured and covered with red slip, and their surfaces were burnished to a glossy finish. At some point they might have become counterparts of earlier tableware.

The variety of decoration embellishing vessels of different purposes weigh against the idea of a decline of pottery manufacture and the lack of a need for maintaining earlier "standards". The large share of decorated vessels in the assemblage, as well as the diversity of motifs, rather suggest a different approach to aesthetics. The presence of decoration even on vessels used for cooking suggests an emphasis on manufacture of aesthetically pleasing domestic wares. On the other hand, the pottery found near Sennar, the capital of the Funj Sultanate, was richly and elaborately decorated (Crawford and Addison 1951: Pls LXXXIV, LXXXV). It was embellished with incised and impressed motifs, whose execution required a skilled and careful hand. Hence, the issue of quality of Funj-period pottery, and especially its decoration, can be discussed without comparing it to Christian vessels or resorting to the approach of Classical archaeology, which divides finds into "fine" and "coarse" according to the standards used for Roman pottery.

#### CONCLUSIONS

Recent excavations at Old Dongola yielded a large and varied pottery assemblage. The advantage of this material was that it came from well-stratified, radiocarbon-dated archaeological contexts. Problems of research on Funj-period pottery raised by many scholars concerned the lack of assemblages from stratified excavation sites (Phillips 2004). Archaeological fieldwork conducted at Old Dongola permitted us to collect more data and record a vast repertoire of forms, which could be phased on the basis of their archaeological contexts. Therefore, it was possible to prepare a typology of pottery dated to the 17th–18th centuries only. This typological assessment revealed diversity in pottery making at Old Dongola and in the vicinity. It also cast doubt on the earlier notions concerning the limited repertoire of vessel shapes in this period and the lack of interest in their aesthetic aspect. Conclusions from the study of the assemblage from Dongola compel one to consider Islamic pottery in the Middle Nile Valley against the backdrop of other vessels of the same chronological period in neighboring territories instead of comparing it to previous ceramic production corresponding to a different cultural, economic and political reality.

The assemblage from Dongola belongs to the broader cultural phenomenon of pottery manufacture in the post-medieval period (i.e., the period after 1500 CE). It shows numerous similarities to vessels from Lower Nubia, as well from the Sennar region. Vessel shapes were based on the section of a sphere, and surface treatment types such as red slip in the upper part, mat impressions on the bellies, and decoration incorporating the crosshatching pattern suggest the same cultural background. On the other hand, differences indicate variation between the individual production areas, which endowed their products with local characteristics. The assemblage from Dongola also shared fewer features with pottery from the fringes of the Funj Sultanate. It is possible that the latter regions drew on different traditions. While Old Dongola, and the Middle Nile Valley in general, participated in the traditions of other medieval Christian kingdoms, the Qawara and Gergaf regions had a different cultural background and more associations with Aksum than, for instance, with Alwa.

The most typical of the Dongola pottery of the 17th–18th centuries were shapes based on the section of a sphere, which continued an earlier tradition of handmade wares. They prevailed in the assemblage, but wheel-made forms were still present. The most characteristic group of vessels comprised fine open forms such as PT8, red outside and black inside, like pottery from the Sennar region. Fine closed bowls like PT67 were also characteristic of this assemblage. They may have been used in the preparation and serving of food. Vessels for storing dry goods or liquids, as well as cooking wares, had the form of short-necked jars, usually with mat impressions on their bellies (PT20, PT21 and PT41). Baking plates like PT13 were also used in cooking activities, as were some coarse open bowls, like PT74 and PT201. In addition, households were equipped with incense burners such as PT4 and with *qawwadis* like PT87. These forms were the most abundant in the excavated contexts and therefore can be considered typical pottery forms of this period.

The pottery assemblage also included finds that seem to occur only in 17th–18th century contexts and might therefore be used as chronological markers. Among these are fine open bowls of types PT206, PT207 and PT208. The black ware PT261, possibly imported from the Sennar region, was connected with late occupational contexts both in Old Dongola and in Dar el-Mek. Coarse bowls of type PT38 with circular impressions on internal surfaces also appeared in layers associated only with the 17th–18th centuries. Lastly, handled bottles, like PT282, possibly used as kettles, did not occur in layers predating the 17th century.

The most common fabrics used in pottery production were fine and dense F1 for bowls, F3 tempered with limestone particles for jars, and the grog fabric F6 for baking plates. Surface treatment with zones red-slipped and brown-smoothed was also a distinctive feature of the Dongola assemblage, derived from an earlier tradition visible in Makurian pottery. As for decoration, the vessels followed the same trends as other ceramic assemblages of the Funj period in Sudan, although some motifs were taken from earlier traditions of handmade wares. The most common were motifs incorporating the crosshatching pattern.

Analysis of the 17th–18th century CE assemblage from Old Dongola and comparison of this material to earlier pottery of the 14th–16th centuries CE permits us to revise the dating of some groups of Terminal Christian pottery. A group of painted vessels included in Ware H7 dated to 1350–1600 CE by Adams should, instead, be attributed mainly to the 15th–16th centuries CE, as indicated by parallels from Old Dongola. Especially the dating of "very large vessels" that "have up to five parallel borders and/or friezes" (Adams 1986: 431) should be revised, as they undoubtedly resemble Terminal Christian examples dated to the 15th century CE at Old Dongola. A new general dating proposed for Ware H7 should span from the 15th to the 18th century CE, and this group should not be associated with Late Christian vessels, at least in the Dongola Reach pottery production.

The finds from Old Dongola also permit us to suggest a revised definition of Ware H6 ("Incised Red Domestic Ware"), which seems to postdate "Late Christian" pottery production. The main period of its manufacture was defined as 1350–1600 CE, which cannot be considered Late Christian given the historical events that occurred at this time, like the conversion of the Throne Hall in Old Dongola to a mosque in 1317 CE (Godlewski 2013: 13). Moreover, the distribution of Ware H6 should be extended upstream to the heart of the Funj Sultanate, as vessels with such decoration were recorded along the Middle Nile Valley (Edwards and Elzein 2011: Fig. 7.29; Phillips 2004: Fig. 1B; Crawford and Addison 1951: Pl. LXXXIII), undermining earlier assumptions as to their manufacture in one place.

To conclude, Group D.IV of domestic wares defined by Adams should comprise the aforementioned Wares H6 and H7, as well as H8 and H14, which represented pottery production postdating the fall of Makuria and Christianity in the Middle Nile Valley. Vessels baked in a reduced atmosphere found in houses of the 17th–18th centuries CE at Old Dongola also indicate that the Late Christian Black Domestic Ware H8 did not disappear in 1300 CE but continued to be manufactured up to the 18th century CE and beyond.

Phasing the pottery from Dongola may permit us to use narrower chronological ranges for ceramics found at other sites in Sudan, or at least in the Dongola Reach. The developmental study of the pottery assemblage is in progress, and with more data from future excavations in the Funj-period settlement at Old Dongola it will hopefully fill the gap in our knowledge of ceramic industries of post-medieval Nubia.









Fig. 3.92. Fragments of jars: PT21 (1) and PT89 (2), almost complete jar PT41 (3), and complete jar PT179 (4)





0\_\_\_\_\_10 cm



**Fig. 3.93.** Fragments of jars: PT79 (1) and PT32 (2), and PT254 standing *in situ* on the *mastaba* F164 (3, 4)



0 10 cm

Fig. 3.94. Bottles: PT18 (1), PT282 (2) and PT116 (3), as well as baking plate PT13 (4), and *qadus* PT87 (5)

D18/1/151/P1324







0 10 cm

Fig. 3.95. Varia: spouted bowl PT150 (1) and miniature *qadus* PT186; incense burners: PT4 (3), PT142 (4) and PT98 (5); lids: PT226 (6), PT107 (7) and PT169 (8)

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154

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#### CHAPTER 4

# SMOKING PIPES

#### Katarzyna DANYS and Maciej WYŻGOŁ

#### INTRODUCTION

Archaeological investigations of the UMMA project at Old Dongola in the 2018–2019 season uncovered a large group of stem-socket smoking pipes comprising 86 complete pipes and their fragments (of the 95 registered pipes, 9 were recovered from old excavation dumps and excluded from this study). Smoking pipes from previous excavations at Old Dongola have already been the object of study (Danys and Wyżgoł 2018), and the considerations presented herein are a continuation of this research. This assemblage significantly enlarges the corpus of smoking pipes from excavations in Sudan (Balfour Paul 1951; Crawford and Addison 1951; Presedo Velo 1965; Kleppe 1981; Elzein 1982; Adams and Adams 1998; Wiewióra 2005: 279, Fig. 30; Alexander and Schlee forthcoming). Fieldwork in the Funj-period dwelling quarter of the city allowed us to place these items in a settlement context and to tie them to the site stratigraphy and chronology supported by radiocarbon dating (Dzierzbicka 2021).

Imported pipes from the Ottoman Empire have a well-established chronology, but a lack of contextual details on the previously studied finds from Dongola prevented broader observations concerning the chronology of pipes produced in the Middle Nile Valley. The objects found in the 2018–2019 season therefore offer relevant new information for studies on smoking pipes occurring in this region. The typology applied is based on the studies of smoking pipes carried out by St John Simpson (1990). The naming system of smoking pipes is derived from a study of Corinthian objects published by Rebecca Robinson (1985). The classification proposed for the finds from Dongola is based primarily on fabrics, while shapes remain a secondary criterion.

The main aim of this paper is to present and analyze the recently discovered smoking pipes from Old Dongola. Newly distinguished types broaden the existing typology and testify to a great variety in occurring pipe forms and materials. Another objective of this study is to contextualize the finds, anchoring them in the stratigraphy and chronological framework of the site. Contextualization should enable a precise dating of the finds, especially the locally produced pipes, contributing new data to the study of smoking and pipe manufacture. An attempt is also made to show smoking pipes in the context of a functioning household.

Tobacco and stem-socket smoking pipes spread to the Middle Nile Valley most likely from Ottoman Egypt (Shaw 1960; Danys and Wyżgoł 2018). This does not mean that pipe production was influenced exclusively by Ottoman workshops. The large number of local pipes in the assemblage from Dongola suggests that the Middle Nile Valley might have been influenced also from other directions, or that local producers developed their own way of manufacturing these objects. Smoking pipes are considered a component of the so-called Funj pack (González-Ruibal and Falquina 2017: 191), and it is indeed likely that many pipes were produced in Sennar. Cultivation of tobacco was recorded in Sennar and Old Dongola by Johann Burckhardt (Burckhardt 1819), and the production of pipes is attested by an unfinished specimen found during excavations at Old Dongola (see below).

Of the stimulants smoked in pipes in Nubia, only tobacco is mentioned in travelers' accounts (Burckhardt 1819; Spaulding 1974). However, according to Chris Duvall (2017), the lack of knowledge of, for instance, cannabis among Europeans in the early modern era, and their subsequent aversion to this drug, may have affected their accounts and resulted in the omission of plants other than tobacco. Also the occurrence of distinctive pipes with holes in the bowls, known as pipes for cannabis (Humphrey 1990: 6), may suggest that tobacco was not the only plant smoked in the Middle Nile Valley.

# TYPOLOGY OF SMOKING PIPES Katarzyna Danys

The most recent classification of pipes from Dongola (Danys and Wyżgoł 2018) was based primarily on fabrics, while the shapes of the pipe bowls remained a secondary criterion used for further subdivisions. Some additional variants were also distinguished for specimens with additional distinctive features. Adopting such an approach meant that the analyzed assemblage could be divided into production groups and correlated with workshops or production areas. It also brought out similarities and differences between pipes made of the same material.

Three main types of material were used to make the pipe bowls: desert clay, alluvial clay, and stone. Based on more detailed observations, a total of ten different fabrics were distinguished (Danys and Wyżgoł 2018: Table 16.1). Analysis of the finds discovered in the 2018–2019 season has revealed new fabrics, like unbaked alluvial clay (Fabric 11), three different types of sandstone (Fabrics 12–14), kaolin fabric (16), and porcelain paste (Fabric 15) [*Table 4.1*]. All the fabrics were observed using a lens with 10× magnification.

Fabric No.	Fabric type and color	Inclusions	Workshop
11	Brown alluvial unbaked clay; medium, dense	Sand, mica, rarely white particles	Nile Valley (Sudan?)
12	White sandstone; very fine with very small grains	_	Nile Valley (Sudan?)
13	Red sandstone (ochre); very fine with very small grains	_	Nile Valley (Sudan?)
14	White and red sandstone ( <i>laminetrol</i> ); very fine with very small grains	_	Nile Valley (Sudan?)
15	White porcelain; fine, very dense	_	Europe
16	Cream kaolin clay; fine, dense	-	Europe

Table 4.1. Classification of the newly distinguished fabrics

The presence of smoking pipes made of unbaked Nile alluvium suggests that they could have been produced locally (see below). The same is indicated by the stone pipes. According to geologist Barbara Woronko, who identified the stone types, the sandstone used came from local deposits in the vicinity of Old Dongola. It was characterized by very fine grains and was very soft and easy to work.

The smoking pipes discovered in the 2018–2019 season included specimens belonging to previously distinguished types (Danys and Wyżgoł 2018), but also to new subtypes absent from the assemblage studied to date. The typological classification presented below supplements the one created for the finds discovered at Old Dongola thus far.

#### Type 1 (kaolin and porcelain fabrics)

The first group of smoking pipes comprised specimens made of desert fabrics distinguished in the previous study (Danys and Wyżgoł 2018: 191). The 2018–2019 season brought finds made of new fabrics that can be incorporated into type 1, like kaolin fabric 16 and porcelain paste fabric 15. All these pipes were mold-made.

- Subtype A3 features a single find, pipe inv. no. 1425 [*Fig. 4.1:4*]. It is a large semi-slender object with a long rim, rounded bowl and a total height of 7.2 cm. It is manufactured of fabric 3, and its surfaces are brownish red and smoothed. The bowl is decorated with rouletting.
- Subtype C1 is represented by a single pipe, inv. no. 1421 [*Fig. 4.1:6*], preserved only in the upper part. It has a rounded and flattened rim, 3 cm in diameter, and massive walls 0.8 cm thick. It is made of fabric 15, a white porcelain paste, extremely hard and homogenous. The surfaces are covered with transparent glaze.
- Subtype D1 is represented by one almost complete pipe, inv. no. 1422 [*Fig. 4.1:7*], the rim and shank of which are missing. The bowl has a disc-like shape, 3.2 cm in diameter, and is triangular in section. It is made of fabric 16, a fine kaolin material with no visible inclusions. The upper part of the bowl is decorated with vertical strokes, and the edge of the disc is adorned with a row of rouletting which also appears along the join between the shank and the bowl. The pipe's most distinctive feature is an opaque light green glaze covering the external surface.



Fig. 4.1. Selection of smoking pipes of type 1: 1 – inv. no. 76; 2 – inv. no. 63; 3 – inv. no. 182; 4 – inv. no. 1425; 5 – inv. no. 1153; 6 – inv. no. 1421; 7 – inv. no. 1422

## Type 2 (alluvial fabrics)

The second group of pipes comprises specimens made of various alluvial fabrics. Subtype A is mold-made, and B–F are handmade. Three subtypes (D, E, and F) have been added to the existing typology.

- Subtype B3 is a new shape [*Fig. 4.2:6*], semi-slender with a thickened and long rim (over 3 cm in length) 3.4 cm in diameter, a plain bowl and a short, plain shank. The total height reaches 8.7 cm. The rim features a circumferential coil at mid-height, but lacks other decoration. Specimen inv. no. 68 is manufactured from fabric 3, and its surfaces are brownish red and burnished.
- Subtype D1 is represented by a stocky form, inv. no. 142 [*Fig. 4.3:4*], with a short and in-curved rim (length less than 1 cm) 2.8 cm in diameter. The bowl is not easily distinguished from the shank. The shank has the same shape as the rim and bowl, and is attached to the rim like in the illustrated item. The total height of this specimen is 4.8 cm. Examples of this subtype are complete and do not allow us to examine the fabrics.
- Subtype E1 has a stocky and massive form in the shape of an arch, best represented by complete specimen inv. no. 79 [*Fig. 4.3:5*]. Its short and plain rim (length less than 1 cm) has a diameter of 3.4 cm. The bowl is triangular in shape, and the shank is plain and short. The total height is 5.5 cm. All the specimens are made of fabric 5, and their surfaces are black and smoothed. Pipes of this subtype are decorated with plain rouletting around the end of the shank. Specimen inv. no. 79 also has a segment of rouletting placed on the shank. It has two holes in the external side of the shank.
- Subtype F1 is represented by a single pipe, inv. no. 936 [*Fig. 4.3:6*], massive and irregular in form. It has a short and plain rim 3.6 cm in diameter. The bowl is flattened on the bottom, and the shank is elongated. The total height of this example is 5.6 cm. It is made of fabric 6, and its surfaces are brownish and smoothed. Voids left by organic inclusions are visible on the surface. The described example is undecorated.



Fig. 4.2. Selection of smoking pipes of type 2: 1 – inv. no. 1442; 2 – inv. no. 1432; 3 – inv. no. 174; 4 – inv. no. 173; 5 – inv. no. 146; 6 – inv. no. 68



Fig. 4.3. Selection of smoking pipes of type 2: 1 – inv. no. 1428; 2 – inv. no. 1423; 3 – inv. no. 111; 4 – inv. no. 142; 5 – inv. no. 79; 6 – inv. no. 936

Type 3 (stone fabrics)

- Subtype C, massive in form [*Fig. 4.4:4, 5*], is represented by specimen inv. no. 66. It has a short rim 3.4 cm in diameter and a rectangular shape, while another example, inv. no. 71, is rounded. The bowl is plain and the shank is long (length over 1 cm). The total height is 4.5–5 cm. Fabrics recorded for this subtype are 12 and 13. The surfaces, cream or red in color, are smoothed and undecorated.
- Subtype D is represented by stocky and massive forms like inv. no. 70 [*Fig. 4.5:1*]. They feature short rims, plain bowls and massive but short shanks (less than 1 cm). The recorded fabrics are 12 and 13. The surfaces are cream or red, smoothed and undecorated, except for inv. no. 70, which has groups of hollows on the back of the rim and on the top and bottom of the shank.
- Subtype E is represented by inv. no. 1414, a form preserved only in the upper part [*Fig. 4.5:2*]. It has an elongated, stepped rim thickened at approximately mid-height. The single example of this subtype is manufactured in fabric 13. Its surfaces are pinkish cream-colored and smoothed.

# Type 4 (wadi fabrics)

This type was distinguished on the basis of a single specimen. The wadi fabric is rarely recorded among Funj-period ceramics discovered in the houses excavated in the 2018–2019 season (see Chapter 3, this volume). This is also the case with smoking pipes. For this reason, pipes made of this type of clay are distinguished as a separate type.

• Subtype A, characterized by a semi-slender form, is represented by a single specimen, inv. no. 82 [*Fig. 4.5:3*]. It has a medium-long rim, rounded bowl and long shank (length more than 1 cm) with a stepped termination (no ring). It is made of fabric 10, its surfaces are red-slipped and burnished, and it lacks decoration.

# Type 5 (unbaked fabrics)

The group of pipes made of unbaked fabrics is represented by different subtypes characterized by massive and stocky forms.

- Subtype A, massive in form, is represented by specimens inv. nos 83 and 143 [*Fig. 4.5:4, 5*]. It features a short, flat rim 3.6 cm in diameter, ending with a plain bowl. The shank is plain and of medium length (over 1 cm). Those pipes are made of fabric 11 and have brownish-grey, smoothed surfaces.
- Subtype B also has a massive form [*Fig. 4.6:1*] and is represented by specimens inv. nos 80 and 1420. The short (length less than 1 cm), plain rim is flattened and measures 3.2 cm in diameter. The plain, triangular bowl ends with a short and plain shank. These pipes are manufactured from fabric 9. Their surfaces are brown and smoothed with no decoration.
- Subtype C is represented by a single pipe, inv. no. 84 [*Fig. 4.6:2*]. This specimen preserves only the bowl and shank. The bowl is relatively small and rounded, while the shank is long

166









Fig. 4.4. Selection of smoking pipes of type 3: 1 – inv. no. 145; 2 – inv. no. 175; 3 – inv. no. 65; 4 – inv. no. 66; 5 – inv. no. 71



Fig. 4.5. Selection of smoking pipes of types 3 (1, 2), 4 (3), and 5 (4, 5): 1 – inv. no. 70; 2 – inv. no. 1414; 3 – inv. no. 82; 4 – inv. no. 143; 5 – inv. no. 83



2 - inv. no. 84; 3 - inv. no. 554

and plain (preserved length over 1 cm). This example is made of fabric 9. Its grey surfaces are smoothed and undecorated. Pieces of grog temper are visible on the surface.

• Subtype D, semi-slender in form, is represented by a single specimen, inv. no. 554 [*Fig. 4.6:3*]. It has a long, rounded rim (length less than 3 cm but more than 1 cm). The bowl is plain and rounded, and the shank seems short. It is made of fabric 11, and its surfaces are grey and smoothed. Unbaked organics are visible on the surface.
#### OLD DONGOLA: FIELDWORK IN 2018-2019. VOL 2. MATERIAL STUDIES

## DESCRIPTION OF THE ASSEMBLAGE Katarzyna Danys

In the assemblage of 86 smoking pipes discovered during archaeological investigation of Funjperiod houses in the 2018–2019 season, the most common type was 2 (n=38), comprising specimens made of alluvial fabric, both mold-made and handmade [*Fig. 4.7*]. The second largest group was type 3 comprising smoking pipes made of stone (n=21 of 86). It is worth noting that the share of items belonging to this group was greater in the assemblage of finds from the 2018– 2019 season than in the material collected during previous excavations in the Funj-period settlement at Old Dongola (n=7 of 65). Specimens of type 1, mainly made of kaolin fabrics, were also frequently reported in the analyzed assemblage from the latest excavation season. Type 4, made of wadi fabric, was represented only by a single example. The group of unbaked smoking pipes of type 5 comprised seven items.

Analysis of the structure of the assemblage showed which pipes of type 1 occurred the most frequently in the material from the 2018–2019 season. Small pipes of subtype 1.A (Danys and Wyżgoł 2018: Fig. 16.2), made in a mold [*Fig. 4.1:1–3*], were the most numerous (n=16 of 86) [see *Fig. 4.7*]. They included examples produced in the Ottoman Empire, most of them small specimens representing the early production of pipes dated to the 17th century. They find parallels in items produced in Egypt, found in Cairo workshops (Pradines 2004: 284) and in a house in Gurna (Bavay 2010: 34). It seems that most of the recorded specimens came from Egyptian workshops, since their fabric is analogous to the one used in the workshops of Cairo.

However, not all imported kaolin pipes were of Egyptian origin. A mold-made pipe of fine fabric decorated with a stamped palmette design (inv. no. 182, *Fig. 4.1:3*) resembles Syrian specimens found at Ramla and dated to the 17th–18th centuries (de Vincenz 2011: 44, Figs 1:1, 3:24, 27). Therefore, this specimen could have been imported from Syria.

In turn, pipes made of yellowish kaolin clay and covered with green glaze similar to inv. no. 1422 were found in well-stratified contexts of the Belgrade fortress from the Ottoman period [*Fig. 4.1:7*]. The earliest such example came from strata dated to the first half of the 17th century (Bikić 2012: 1, Fig. 2:7), the period of their most common occurrence spanned the 18th century, and they were not recorded in later layers (Bikić 2012: 2, 6, Fig. 4:1). The specimen from Dongola differs from these glazed examples in shape but green-glazing finds a parallel among materials from the Belgrade fortress dated to the 18th century (Bikić 2012: Fig. 4:7). Given the large number of pipe-production sites in the Ottoman Empire (Robinson 1985: 153), it is difficult to find direct analogies, but the color of the fabric might offer an indication concerning this pipe's region of origin. Vesna Bikić concludes on the basis of the objects from the Belgrade fortress that the Ottoman pipes were brown and reddish-brown, while those produced in Austria-Hungary were orange-red, white and very pale pink (Bikić 2012: 2–3). It is, therefore, possible to place the provenance of the specimen from Dongola in the territory of the Balkans.

Another noteworthy smoking pipe was a specimen made of porcelain, inv. no. 1421 [*Fig. 4.1:6*]. No analogous objects were found among the published finds from the Ottoman Empire, but similar pipes in other materials, like wood, meerschaum and clay, were reported (Robinson 1985: 152). Such parallels also included items from Africa. Specimens of porcelain pipes can be found in museum collections. Examples are objects from the Science Museum Group Collection Online,



Fig. 4.7. Assemblage of smoking pipes grouped according to type

nos A204812 and A637412, of possible German origin and dated to the 19th century CE (https:// collection.sciencemuseumgroup.org.uk/objects/co157906/porcelain-tobacco-pipe-bowl-and-reservoir-only-w-tobacco-pipes; https://collection.sciencemuseumgroup.org.uk/objects/co158203/ porcelain-tobacco-pipe-with-flexible-stem-and-hand-tobacco-pipes, accessed 9 December 2020).

In sum, finds of type 1 with subtypes 1.A and 1.B made of fine kaolin clay (Danys and Wyżgoł 2018: Fig. 16.2) were imported from the Ottoman Empire, possibly from Egypt, as the parallels from Cairo suggest (Pradines 2004: 284). Some objects of this type might have origins in Syria, like the specimen decorated with a stamped palmette motif. Newly distinguished subtypes 1.C1 and 1.D1 represented a different surface treatment, that is, glazing. Published parallels suggest Europe as their place of origin (Bikić 2012: 2–3). All of these pipes were mold-made, which appears to be an indicator of their provenance from the Ottoman Empire.

Pipes of type 2 (Danys and Wyżgoł 2018: Figs 16.3A–C) were also numerous [see *Fig. 4.7*]. They included both mold-made and handmade forms and were made of alluvial fabrics. The most characteristic subtype was 2.A (n=15 of 86) comprising mold-made pipes likely manufactured in Egypt, as indicated by parallels in the assemblage discovered at Gurna (Bavay 2010: 40, Cat. 19). Subtype 2.B, which was also fairly common (n=10 of 86), comprised handmade forms. Subtype 2.A1 seems to represent imported specimens probably coming from Egypt. A workshop producing similar pipes was reported at Asyut in Middle Egypt (Bavay 2010: 28–29). Subtypes 2.B–F, in turn, might be identified as products of the Middle Nile Valley. They differ in their method of construction and, above all, their shape. Surface treatment, especially the burnish, resembles the techniques characteristic of Funj-period pottery production. In addition, some smoking pipes bear decoration that sets them apart from the Ottoman specimens. Bands of incised crosshatching are analogous to one of the most common decorative patterns recorded on Funj-period pottery from Old Dongola (e.g., type DT8, see Chapter 3, this volume, page 46, *Fig. 3.9*). Notably, a specimen of subtype 2.C1 seems to find a parallel among smoking pipes from Arbaji in Kordofan (Balfour Paul 1951).

A characteristic feature of the analyzed assemblage was the presence of smoking pipes made of stone, classified as type 3 (Danys and Wyżgoł 2018: Fig. 16.4) [see *Fig. 4.7*]. Subtype 3.A was prevalent in this group (n=14 of 86). Pipes of type 3 find parallels among stone pipes found in the Sinai. Such items had long and short rims and were dated to the 18th–20th centuries. They were made by Bedouins, who used them alongside clay pipes acquired through exchange (Saidel 2014: 255, Fig. 3:c,d). Stone smoking pipes of type 3 found at Old Dongola were most probably produced there or in the vicinity, as their material suggests. Notably, one specimen (inv. no. 71) is a semi-finished product, which confirms the identification of these items as local products. In addition, their decoration includes motifs used on local pottery, like decoration types DT170 and DT117 (see Chapter 3, this volume, page 50, *Fig. 3.13* and 53, *Fig. 3.15*). The use of the crosshatching pattern is another indication of local provenance.

The pipe of type 4, made of wadi fabric, was a single find [see *Fig. 4.7*], and it remains without parallel. However, it seems that its place of production was the Middle Nile Valley.

Specimens made of unbaked clay (type 5) were also recorded but did not constitute a significant share in the assemblage. None of the distinguished subtypes stood out as the most common, as was the case with the other pipes described before. These pipes were also manufactured locally; they were made of alluvial mud most probably in the city of Dongola itself.

Given their frequency of occurrence, smoking pipes of subtypes 1.A, 2.A, 2.B, and 3.A may be considered the most characteristic of the whole assemblage collected during the 2018–2019 season. The large variety of materials and production methods attested in the assemblage suggests various origins of these objects. Statistical data indicate [see *Fig. 4.7*] that among the most common smoking pipes were objects of Middle Nile Valley origin, possibly manufactured in Old Dongola. Specimens probably imported from Egypt and dated to both the 17th and 18th centuries were also frequent finds.

SMOKING PIPES IN CONTEXT Maciej Wyżgoł

Of the studied assemblage of smoking pipes [*Table 4.2*], only less than half (n=31 of 86) can be attributed to secure and meaningful contexts. Specimens from surface and subsurface layers, as well as from sandy fills of rooms, can be considered as redeposited items unconnected with the original use of the space, and they are, therefore, excluded from this analysis. However, they might be related to some post-occupational activities taking place in abandoned and possibly ruined houses, like dumping refuse or temporary re-occupation.

The number of pipes taken into consideration may not constitute a sufficient basis for in-depth statistical analysis, but it does allow for some preliminary observations. Firstly, these may concern the preference for certain types of pipes. Spatial analysis can point to the places in which pipes might have been used. Pipes can also be considered in the context of exchange (imported items). We may attempt to address the issue of their content and view them as indicators of social identity and material status of their users. Their dating varied, but most were associated with the second half of the 17th and the 18th centuries [*Table 4.2*].

Pipes were excavated in zones 1.1, 1.2, 1.3 and 1.6. While these arbitrarily distinguished zones designate areas separated by streets and city walls and thus reflect the urban layout, they generally do not follow any social divisions within the city. A significant disproportion in the number of pipes from reliable contexts was observed between zones 1.1 (n=31 of 86) and 1.2 (n=1 of 86). However, the distribution of smoking pipes is biased by the varying volume of occupational layers excavated in the different zones. Residential compounds excavated in zone 1.2 were covered mostly by subsurface and surface layers; therefore, the distribution of pipes does not imply a different approach to smoking in this area.

The most reliable comparison of pipe distribution could, however, be carried out between the sector of wattle-and-daub houses outside the city walls (zone 1.6) and the rest of the excavated area built up with sun-dried-brick houses within the city walls (zones 1.1-1.3). Due to the large number of recorded subtypes, only the basic division into imported and local pipes was taken into account at this point.

Smoking pipes imported from outside the Middle Nile Valley were found both within the city walls (n=7; inv. nos 63, 72, 110, 1150, 1153, 1422, 1459), and outside (n=1; inv. no. 730). Finds from these zones held proportionally similar shares in the whole assemblage of pipes (zones 1.1, 1.2, 1.3: n=35 of 86; zone 1.6: n=5 of 86). Smoking pipes discovered within the city walls were connected with occupational layers associated with the functioning of the identified domestic compounds.

Both finds of local pipes made of unbaked clay came from the quarter of wattle-and-daub houses outside the city walls. Neither of these finds could be attributed to reliable contexts, but their presence in that area may not be accidental. It is plausible that the inhabitants of zone 1.6 were more inclined to use local smoking implements of unbaked alluvial mud. It is very likely that such pipes were not commoditized and thus were not subject to trade, unlike other types of pipes, for instance, Ottoman imported specimens. The presence of unbaked clay pipes might contribute to the discussion on the reason for the use of different construction techniques in houses in zone 1.6, indicating that their residents may have had more modest economic means than the inhabitants of mud-brick houses in zones 1.1–1.3.

The mere existence of locally made smoking pipes and semi-finished products may suggest that tobacco was a rather commonly available and possibly cheap stimulant. The habit of smoking is widely attested in travelers' records from Sudan (Burckhardt 1819; Spaulding 1974). Tobacco does not seem to be a luxury product in 17th- and 18th-century Sudan. Its cultivation was recorded in Sennar and Old Dongola in the 19th century (Burckhardt 1819), which suggests that it was easily accessible for the inhabitants of Sudan. The pipes, however, may have functioned as indicators of wealth and prestige. It is also possible that tobacco was not the only stimulant smoked in pipes. William Browne mentioned that cannabis was smoked in Darfur (1799: 274), and chemical analysis of pipes from Ethiopia (van der Merwe 2011: 77–80) also indicates cannabis smoking in this area, which neighbored on the Funj Sultanate. This issue requires further research including chemical analysis of residues from pipes. Thus far, however, archaeobotanical analysis has failed to identify macro remains of tobacco or cannabis at Old Dongola.

Most pipes found in reliable contexts in the houses excavated at Old Dongola in the 2018–2019 season come from dump deposits or post-abandonment occupational layers. Only six pipes

Inv. no.	Zone	Compound	Building	Unit	Context	Dating of pipe
62			Surface		1	17th c.
63	1.1	U1/16/17/18/30/35	U17	U17	30	2nd h. 17th–18th c.
64	1.1				125	18th c.
65	1.1	U1/16/17/18/30/35	U17	U17	30	18th c.
66	1.1	U1/16/17/18/30/35	U17	U17	30	18th c.
67	1.1	U1/16/17/18/30/35	U17	U17	30	2nd h. 17th c.
68	1.1				122	17th c.
69	1.1				122	18th c.
70	1				91	18th c.
71	1.6		Surface		140	18th c.
72	1.1	U1/17/30/79/80		U80	99	2nd h. 17th c.
73	1.6				160	18th c.
74	1.6				158	18th c.
75	1.6				62	17th c.
76	1.6				52	18th c.
77	1.1	U1/16/17/18/30/35		U18	100	18th c.
78	1.1				8	18th c.
79	1.1	U2/11/12/13/14/33/34/82/83/84/85/86		U86	185	17th c.
80	1.6		U20a/b	U20a	174	Mid-17th c.
81	1.1	U2/11/12/13/14/33/34/82/83/84/85/86	U11/12/13/14/33/34	U33	35	2nd h. 17th c.
82	1.1	U1/16/17/18/30/35		U18	100	18th c.
83	1.1	U1/16/17/18/30/35		U18	100	18th c.
84	1.1	U1/16/17/18/30/35		U18	100	18th c.
85	1.1	U1/16/17/18/30/35		U18	100	18th c.
110	1.1	U2/11/12/13/14/33/34/82/83/84/85/86	U11/12/13/14/33/34	U33	35	2nd h. 17th c.
111	1				34	18th c.
112	1.6	U21a/21b/28a/28b/29/47a/47b/96		U29	695	Mid-17th c.
113	1.6	U21a/21b/28a/28b/29/47a/47b/96		U29	695	Mid-17th c.
114	1				25	18th c.
115	1.1	U74		U74	694	18th c. or later
140	1.1				38	18th c.
141	1.2	U32/38/39/87/88	U32/38/39	U32	282	18th c.
142	1.2	U32/38/39/87/88	U32/38/39	U32	285	2nd h. 17th c.
143	1.6	U21a/21b/28a/28b/29/47a/47b/96		U96	69	18th c.
144	1.1	U1/17/30/79/80	U80	U80	103	2nd h. 17th c.
145	1.1	U1/17/30/79/80		U80	103	18th c.
146	1.6	U21a/21b/28a/28b/29/47a/47b/96		U96	69	18th c.
173	1.6				241	18th c.
174	1.6				241	18th c.
175	1.1	U1/16/17/18/30/35		U16	205	18th c.
176	1				200	18th c.
177	1.6	U15/26a/26b		U15	155	17th c.
178	1				286	17th c.

Table 4.2. Smoking pipes discovered in the 2018–2019 season listed by inventory number

Inv. no.	Zone	Compound	Building	Unit	Context	Dating of pipe
179	1.1				38	18th c.
180	1.1	U2/11/12/13/14/33/34/82/83/84/85		U2	83	17th c.
181	1.1	U2/11/12/13/14/33/34/82/83/84/85	U2	U2	83	2nd h. 17th c.
182	1.6				704	2nd h. 17th c.
549	1.6	U15/26a/26b		U15	155	2nd h. 17th c.
551	1.6	U15/26a/26b	U26a/26b	U26a	239	2nd h. 17th c.
554	1.1				37	18th c.
555	1.6	U9/10/94		U94	71	2nd h. 17th c.
556	1.1			U74	682	18th c.
730	1.6	U15/26a/26b		U15	155	2nd h. 17th c.
936	1		U76, U77	U76, U77	2	18th c.
937	1.5		Surface		274	18th c.
947	1.1	U2/11/12/13/14/33/34/82/83/84/85/86		U86	184	2nd h. 17th c.
950	1				200	18th c.
1051	1.5		U100	U100	324	17th c.
1052	1.1				434	17th c.
1150	1.3				376	17th c.
1153	1.3				376	2nd h. 17th c.
1385	1.3				362	18th c.
1414	1.1		Surface	_	459	18th c.
1415			Surface		1	2nd h. 17th c.
1416			Surface		1	2nd h. 17th c.
1418	1				334	18th c.
1419	1			_	334	2nd h. 17th c.
1420	1				334	18th c.
1421	1.3				375	2nd h. 17th c.
1422	1.3	U43/46/51	U51	U51	F737	2nd h. 17th c.
1423	1		Surface		1	18th c.
1426	1.3				390	2nd h. 17th c.
1427	1.3				365	18th c.
1428	1		Surface		1	18th c.
1429	1.1	U6/8/58a/58b/73	U58a/58b	U58a	439	2nd h. 17th c.
1430	1.5		Subsurface		273	18th c.
1431	1				222	2nd h. 17th c.
1432			Surface		1	2nd h. 17th c.
1433	1.3				362	18th c.
1434	1.5		U97/98/99/101	U99	318	2nd h. 17th c.
1435	1.6	U15/26a/26b	U26a/26b	U26b	262	1st h. 17th c.
1436	1.5		Subsurface		273	18th c.
1437	1				228	2nd h. 17th c.
1438	1				228	18th c.
1442	1		Surface		1	2nd h. 17th c.
1459	1.1	U6/8/58a/58b/73		U73	456	2nd h. 17th c.

were found in occupational layers of functioning compounds. In compound U2/11/12/13/14/33/ 34/82/83/84/85/86, two pipes were found in storage room U33 and two more came from courtyard U86. One pipe was also found in courtyard U73 belonging to compound U6/8/58a/58b/73. Notably, one pipe was discovered on the floor of the main dwelling space, U51, in compound U43/46/51. The occurrence of pipes in the courtyards shows that smoking was an activity performed alongside many others, including food production, and was not constrained to any special space. Thus far, no building discovered at Old Dongola could be identified as a coffee house, an establishment well known from Ottoman Egypt as a place for public smoking (Baram 1999: 139–141).

#### PRELIMINARY CONCLUSIONS

176

Tobacco and possibly other inhaled stimulants seem to have been easily accessible and widespread among residents of Old Dongola. Common use of tobacco, attested by accounts of travelers, is confirmed by the uniform distribution of smoking pipes in the city. Tobacco users had at their disposal a vast array of smoking pipes. Specimens of stone and unbaked clay can be identified with local, Dongolese production. Other pipes, made of alluvial clay, possibly also originated from the Middle Nile Valley. Last but not least, there were imported Ottoman specimens made of kaolin fabrics. This variety may indicate that even if some types of pipes were considered luxury goods, tobacco was not. The presence of early Ottoman pipes suggests an early introduction of smoking in the Middle Nile Valley, while the large number of locally produced pipes indicates its rapid spread in the 17th century. Notably, the local manufacture of pipes might indicate a situation similar to that in the Ottoman Empire, where numerous workshops in each town produced pipes for the local market (Robinson 1985: 153). Pipe-making in Old Dongola can also be considered an attempt at self-sufficiency. Embellishment of such pieces with decorative patterns typical of other Funj-period finds from Old Dongola might have been a way of endowing these pipes with a local character.

The imported pipes seem to predate the occurrence of locally produced specimens. The correlation of the introduction of the smoking habit with the appearance of imported Ottoman pipes has already been indicated (Danys and Wyżgoł 2018), but the evidence of the earliest-dated pipes from the first half of the 17th century was then scant. Excavations at Old Dongola have yielded a large number of smoking pipes produced in the Middle Nile Valley, which dominate in quantity over the imported Ottoman pipes. The local examples follow the model of the stemsocket, multicomponent type of pipe characteristic of the Eastern Mediterranean and the Near East (Simpson 1990: 6). However, southern influence coming from the Funj Sultanate should also be taken into account, especially in the light of the presence of imported pipes from Arbaji in Kordofan.

Smoking in Old Dongola can also be investigated from a social perspective, as a mediator of social relations and a group-forming factor, considering the potential of communal stimulant consumption in the creation of interpersonal ties. Observations on the contexts in which the pipes were used, in correlation with accounts of travelers, lead to a conclusion that, unlike in the Ottoman Empire, pipes in Old Dongola were used in the private sphere, within individual houses.

This indicates that the social meaning of tobacco might have been different in Old Dongola than in the Ottoman Empire: more communal in the latter and more private in the former.

Further research should include chemical analyses of the content of the pipes from Dongola to establish what stimulants were used in the smoking pipes. They might bring important information on whether the inhabitants of Dongola belonged to the tobacco culture or rather to the cannabis culture. Investigation of smoking habits in correlation with studies on other finds, possibly related to coffee drinking, as well as the inclusion of pipes in spatial and social analyses should also be considered as avenues to pursue in further studies.

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## CHAPTER 5

## BASKETRY AND CORDAGE

## Magdalena WAROWNA

## INTRODUCTION

This chapter presents a working typology of basketry and cordage found during excavations conducted on the citadel hill of Old Dongola during the 2018–2019 season. The assemblage is dated to the 16th, 17th and 18th centuries on the basis of archaeological data (Dzierzbicka 2021: 225; see also Appendix at the end of the volume). The objects were found in various states of preservation, but most were in poor condition. The frequently appearing categories, starting from the most common, were cordage, mats, sandals, lids/plates, and baskets. Artifacts that could not be identified or assigned to any of the above groups, but still had some measurable elements and diagnostic traits, were consigned to the category "Other".

According to the registration system used in the UMMA Project, not every fragment or group of fragments was registered and described in the finds inventory. Artifacts were first sorted into two groups, determining the process of their documentation: one group was intended for detailed individual registration, and the other for quantitative data recording. In the individual registration process, artifacts received separate inventory numbers and were described as precisely as possible. Such registration was limited to objects with noteworthy characteristics (diagnostic elements, good state of preservation, technological details) and to specimens appearing in the material for the first time.

Quantitative data recording was used when many fragments of artifacts belonging to different categories and subcategories (mats, baskets, cordage, etc.), but originating from one context, were found together. In such cases, only some pieces selected on the basis of the criteria defined above were registered in the inventory and kept. For others, only quantitative data (type, dimensions, number of fragments) were recorded, and the pieces were subsequently discarded or set aside in single-context groups. Whether artifacts were kept or discarded depended on how informative they were: if many fragments of the same object were found, only the biggest piece was kept, and the rest were quantified and thrown away; if in a particular context there were many pieces with the same characteristics, one was kept and the rest were quantified and discarded. *Table 5.1* presents basketry and cordage finds grouped by context and type. The numbers represent inventoried finds, while the figures in brackets refer to quantified non-inventory items.

A total of 187 objects from 69 contexts were registered and received an individual inventory number [see *Table 5.1*]. Since several fragments of the same object were sometimes registered under one inventory number, the registered fragments numbered over 200 in total. A further 11 pieces were quantified but not inventoried. In addition, a wooden element and three pieces of mud plaster with mat impressions and mat remains were registered, but not included in *Table 5.1*. Three contexts, 45, 341 and 694, stand out due to their large total number of recorded basketry objects—all of them were accumulations of refuse. Occupational contexts (underscored) dating from the 16th and 17th centuries yielded relatively few basketry and cordage finds.

Zone	Compound	Units	Context (date)	Basket	Mat	Lid/plate	Sandal	Cordage	Other	Total
Surfac	e outside excavated area		1			2		1		3
Test ti	rench in square 10Y45		459 (surface)		1		2	1	2	6
Area N	NE of street U62 (18th–19	th c.)	402 (subsurface)			1	1			2
1.1	U6/8/58a/58b/73 west	U6	122 (2nd h. 17th c.)		1		1			2
		U8	128 (2nd h. 17th c.)		1					1
		U58a, U73	434 (surface)		1	1	1	1		4
		U58a	444 (2nd h. 17th c.)			1				1
			<u>449</u> (1st h. 17th c.)		1					1
		U58b	448 (2nd h. 17th c.)					1		1
			<u>451</u> (1st h. 17th c.)			1		2		3
	U73	Courtyard U73	42 (2nd h. 17th c. or later)			1	1			2
			45 (17th c.)		6		2	3		11
			46 (17th c.)				1 (1)			1 (1)
			47 (17th c.)			1				1
			<u>49</u> (16th/17th c.)	1	2					3
			<u>50</u> (1st h. 17th c.)	3	1			3 (3)		7 (3)
			<u>51</u> (16th/17th c.)	2	2					4
			134 (2nd h. 17th c.)		1					1
			<u>442</u> (1st h. 17th c.)		2		1	1		4
			<u>436</u> (2nd h. 17th c.)					1		1
			<u>456</u> (1st h. 17th c.)					1		1
	Latest layers above courty	ard U73	3 (18th c.)		1					1
			6 (17th–18th c.)		1			1		2
			11 (18th c.)				1 (1)	1		2 (1)
			12 (18th c.)		2		2 (3)	3 (1)		7 (4)
			196 (18th c.)					1		1
	Building U74		694 (18th c. or later)	1	14	2	1	4		22
	U7/75	Room U7	209 (18th c.)					1		1
			F3 (18th c.)				1			1
	U76/77		14 (surface)	1	1	1	1	1		5
	U1/17/30/79/80	Corridor U1	4 (2nd h. 17th c. or later)				1			1
		Room U17	30 (18th c.)					1		1
		(phase II)	<u>32</u> (18th c.)					1		1
	U1/16/17/18/30/35	Room U17 (phase III)	33 (17th–18th c.)						1	1
		Room U35	198 (subsurface)			1				1
		Room U2,	81 (2nd h. 17th c.)	1			1	1		3
		early and	<u>84</u> (2nd h. 16th c.)	2	1			2		5
		middle phases	90 (1st h. 16th c.)	1	1			2		4
			92 (1st h. 16th c.)	_	_		1		1	2

# Table 5.1. Basketry and cordage finds grouped by context and type (occupational contexts underscored and in bold)

## CHAPTER 5 BASKETRY AND CORDAGE

## Table 5.1. (cont.)

Zone	Compound	Units	Context (date)	Basket	Mat	Lid/plate	Sandal	Cordage	Other	Total
	U2/11/12/13/14/33/34/8	Courtyard U86	176 (surface)				1			1
	2/83/84/85/86		178 (2nd h. 17th c.)				1			1
			190 (2nd h. 17th c.)					1		1
1.2	U32/38/39/87/88	Room U32	<u>285</u> (2nd h. 17th c.)			1				1
		Room U52	<u>328</u> (18th c.)				1			1
	—	Room U63	301 (18th c.)		1					1
			340 (18th c.)			1		2		3
			341 (2nd h. 17th c.)		5		2	1	1	9
			342 (2nd h. 17th c.)	2			3			5
			343 (2nd h. 17th c.)		1	2	3	1	1	8
			334 (surface)			1				1
1.3	U44/45/48/55/59/60/71	Room U45	370 (17th c.)					1		1
		Rooms U45/50	369 (17th c. or later)		_			3		3
		Room U60	398 (17th–18th c.)			1 (2)				1 (2)
		Courtyard U71	392 (17th–18th c.)					2		2
			470 (subsurface)		_			1		1
		U59/60/71	393 (17th–18th c.)			1 (1)				1 (1)
	Area W of U44/45/48/55/59/60/71		225 (17th–18th c.)					1		1
	U43/46/51	Room U46	366 (17th c. or later)				1	1		2
	U50	Room U50	<u>371</u> (16th/17th c.)	3				1		4
			<u>477</u> (16th/17th c.)	1						1
			<u>480</u> (16th/17th c.)			1				1
1.4	—	Area on SW edge of zone 1.4	230 (18th–19th c.)			2		1		3
			232 (17th-18th c.)				1	1		2
1.5	_	_	321 (surface)					1		1
1.6	U15/37/40	U15; U103	153 (2nd q. 17th c.)			1				1
		Room U20a	171 (3rd q. 17th c.)					2	1	3
	U15/26a/26b	Room U26b	<u>262</u> (2nd h. 16th c.)			1		3		4
			<u>271</u> (2nd h. 16th c.)					1		1
	U9/10/94	Courtyard U94	683 (2nd h. 17th c. or later)					1		1
Total				18 4	i7	24 (3)	32 (5)	59 (4)	7	187 (11)

## RAW MATERIALS

Raw materials used for basketry production in Old Dongola were easy to find along the Nile. The identified plant resources were doum (*Hyphaene thebaica L.*) and date palm (*Phoenix dactylifera*) leaves, halfa grass (*Desmostachya bipinnata*), and fiber from the trunk of the date palm. Archaeobotanical identification of the material for every artifact was carried out by the Sudanese archaeobotanist Mohammed Nasreldein Babiker, who collaborated with the expedition during excavations in the 2018–2019 season. *Fig. 5.1* presents the percentage shares of each plant material among the basketry and cordage finds.



Fig. 5.1. Percentage shares of plant materials used in the production of the basketry and cordage finds (n=187)

#### **TECHNIQUES**

Four techniques and their variants were recognized in the basketry assemblage of Old Dongola uncovered in the 2018–2019 season (in season 2019–2020, two additional techniques were identified: weaving and twining, see Warowna forthcoming). The classification of artifacts from the site was based on publications of Wilhelmina Wendrich (1991; 1999; 2000: 254–267), as the terminology used by this author seemed well suited for describing the objects found in houses of the Funj period on the citadel hill. To facilitate the further presentation of the material, a brief description of the attested techniques is provided below. *Fig. 5.2* presents the percentage shares of particular techniques used in the basketry and cordage found at Old Dongola.

*Coiling* – consists of two systems. One is passive and forms the core of the object—a bundle that is fixed in a coil. The second is active and wraps the core with strands that help to keep the bundle in place (Wendrich 2000: 260).

*Plaiting* – several strands (three or more) are interlaced. All systems in this technique are active (Wendrich 1991: 141).

- Sewn plaits long, plaited strips, usually of the same width, are sewn together to create one fabric (Wendrich 2000: 256).
- *Rolling* two methods of rolling are distinguished on the basis of the direction in which the fibers were spun to form yarns (Wendrich 1999: 298–230). In the "S" method, fibers are spun so that the yarn is twisted diagonally from upper left to lower right, and in the "Z" method from upper right to lower left. The process of plying several spun yarns to form a string is similar and involves twisting in the "s" and "z" directions (Wendrich 1991: 30–31). Usually two or three bundles of material are held between the hands and rolled. Both bundles are active in the process of creating ropes.



Fig. 5.2. Percentage shares of techniques used in the production of the basketry and cordage finds (n=187)

TYPES OF BASKETRY OBJECTS

## Mats

Of the artifacts found at Old Dongola, the group of mats was probably the most diverse. Despite the fact that only one technique—sewn plaits—was used in their production, a great variety of decorative motifs and various types of edging were observed. The most frequently occurring mats were plain ones, yet some differences among them occurred. As mentioned above in the section concerning techniques used in basketry manufacture, mats made using the sewn plaits technique consisted of several long, plaited strips. The width of the strips (see, e.g., inv. no. 1274; *Fig. 5.3*) ranged from 2.0 to 11.5 cm, and the width of the palm leaves varied from one mat to another.

Over 40 fragments of mats were found on the site in almost 20 different contexts. In some cases they were attached to pieces of wood [*Fig. 5.4A*] or mud plaster [*Fig. 5.4B*], or mud plaster was found with impressions of matting [*Fig. 5.4C*]. A large fragment of a mat found *in situ* was



Fig. 5.3. Inv. no. 1274 with the width of the strip marked in red

attached to a mud-brick bench (*mastaba*) [*Fig. 5.5*]. The practice of placing a mat on a bench was very common (Wendrich 1999: 192), but very few fragments were preserved like in *Fig. 5.7*. On the other hand, fragments of mud plaster with mat impressions or remains of a mat seem to have been part of not only benches, but also flat roofs. One example was found in deposit 90, a flat roof collapse with a thick and dense layer of straw and reeds mixed with some mud fragments bearing impressions of organic material (de Lellis and Maślak 2021: 120).

The mats were very fragmentarily preserved and, therefore, the recovered material rather does not offer an overview of the whole array of their patterns and decorations. Most specimens were undecorated. One otherwise plain fragment was distinguished on account of its texture, which may have constituted a form of decoration (inv. no. 1493; *Fig. 5.6*). The width of its strips was uniform, but their plaiting was slightly different. The weave of the middle strip was very tight, while the structure of the side strips was also compact, but looser than in the middle one. It could suggest that two or more differently made types of strips were used for the production of this mat, even though the same type of plant fiber was employed for both.



Fig. 5.4. Matting attached to a piece of wood (A); mat fragments attached to mud plaster (B); and mud plaster with impressions of matting (C)



Fig. 5.5. Fragment of a mat attached to bench F486

Six decorated fragments were found in three different contexts. The decoration can be divided into two types:

- 1) Color pattern (e.g., inv. no. 1523; *Fig. 5.7*): the decorative pattern was made using dyed plaited strips and individual dyed palm leaves (the dye used has yet to be determined). Leaves of natural color were interwoven with dark-colored ones, creating squares with double edges. Immediately next to this intricate decoration, a dyed strip was inserted. These elements seem to have formed a regular pattern. In contemporary production, mat decoration also consists in the use of different colors and creation of various patterns (personal observation).
- 2) Openwork pattern (e.g., inv. no. 1519; *Fig. 5.8*): one mat features a series of small, openwork squares with fibers intersecting at right angles in their centers. The small squares were arranged diagonally to the orientation of the strips of the mat. Each was separated from the next by three palm leaves, and groups of nine small squares formed bigger squares. No modern parallels for openwork patterns combined with the sewn-plaits technique have been found. Possibly the mat was originally complete, but when a loss of some fibers occurred, the owner decided to continue removing palm leaves, creating a pattern.

Very often the only form of mat decoration was the finishing of the edge. Seven fragments of mat edges were found. They belonged to the following types:

- 1) Simple edge (inv. no. 1502; *Fig. 5.9*): no additions; finished with palm leaves bent during the production of the strip.
- 2) Reinforced edge: the edge of the mat was cut and placed between two reinforcement layers made of either one or two narrow strips. Due to the poor state of preservation of the mats it was difficult to determine whether one or two strips were used to make the reinforcement. A single strip would have been folded on its long axis and sewn in place, covering the cut edge (inv. no. 1492; *Fig. 5.10*; and inv. no. 1506; *Fig. 5.11*). If two separate strips were used, they would have been placed on both sides of the mat edge and sewn (inv. no. 1501; *Fig. 5.12*). The width of the strips ranged from 2.0 to 2.5 cm. Two different materials were used for sewing:
  - a) A two-ply cord always forming a decorative zigzag stitch (inv. no. 1496; *Fig. 5.13*). The cord was made of animal hair (species not determined) and the color of the cord was always dark brown.
  - b) Palm leaves. The stitching runs perpendicular to the direction of the connecting strings and parallel to the edge strip (inv. no. 1496; see *Fig. 5.13*).
- 3) Sewn edge: a cord was plaited between the palm leaves along the edge (inv. no. 1523; *Fig. 5.14*). The cord was the same as in type 2a described above.
- 4) Folded edge: the edge of the mat was folded and the two resulting layers were sewn together with a palm leaf (inv. no. 1540; *Fig. 5.15*).

Lastly, a few fragments with perforations were found. The holes were probably the remains of sewing with a textile cord or thin palm leaves.

Fragments of mats were found at Ottoman Qasr Ibrim (Wendrich 1999: 237; Alexander and Adams 2018: 147, Pl. 10a–b) and Kulubnarti (Adams and Adams 1998: Pl. 7.2.C), but only a few examples were comparable to the Old Dongola specimens. The technique used for their production was in most cases the same. Mats with dyed elements from Qasr Ibrim had similar colors and patterns to those found at Old Dongola.

## Examples

Inv. no. 1493

Location U73, context 49

Type Mat, uncolored

Technique Sewn plaits

Material

Date palm leaves

## Parallels

Kulubnarti (Adams and Adams 1998: Pl. 7.2.C)



Fig. 5.6. Mat (inv. no. 1493)

Inv. no. 1523

Location

U73, context 45

Туре

Mat, color pattern

Technique Sewn plaits

Material Doum palm leaves

Parallels Qasr Ibrim (Alexander and Adams 2018: 147, Pl. 10a)



Fig. 5.7. Mat (inv. no. 1523)

Inv. no. 1519 Location U73, context 49 Type Mat, openwork pattern Technique Sewn plaits Material Date palm leaves



Fig. 5.8. Mat (inv. no. 1519)



Fig. 5.9. Mat (inv. no. 1502)







Fig. 5.11. Mat (inv. no. 1506)

Inv.	no.	1501
------	-----	------

Location U63, context 343

Type Mat, reinforced edge

Technique Plaiting, sewn plaits

Material Date palm leaves



Fig. 5.12. Mat (inv. no. 1501)

Inv. no. 1496	a surface for
Location U73, context 45	
Type Mat, color pattern	
Technique Sewn plaits	
Material Doum palm leaves, cord of animal hair	
Parallels Qasr Ibrim (Alexander and Adams 2018: 147, Pl. 10b)	
	0 5 cm

Fig. 5.13. Mat (inv. no. 1496)



Fig. 5.14. Mat (inv. no. 1523)

Inv. no. 1540

Location U74, context 694

Type Mat, folded edge

Technique Sewn plaits

Material Date palm leaves



Fig. 5.15. Mat (inv. no. 1540)

## Baskets

Two types of baskets have been attested thus far at Old Dongola. The most significant difference between them lies in their production technique—coiling and sewn plaits—and in their form, round and rectangular, respectively. However, it is important to stress that in the case of many fragments of coiled objects found on the site it is impossible to determine if the given fragment was originally a basket, a lid or a plate. The maximum preserved height of the baskets did not exceed 27.0 cm. Two baskets uncovered in a very good state of preservation are described in detail below.

One nearly complete specimen was a round, medium-sized coiled basket (inv. no. 1297; *Fig. 5.17*). The rim and body were well preserved, but the bottom was completely destroyed. The basket walls were built of at least 21 bundles (the last one extant is not the last one that originally existed). The preserved height of the basket equaled 8.0 cm, and the diameter ranged from 13.50 cm (preserved bottom) to 26.20 cm (preserved edge). It was plain and undecorated. This basket belonged to a type that occurred most frequently at Old Dongola. The location of this artifact was particularly informative. It was found in U50 [*Fig. 5.16*], a storage room, inside a ceramic storage vessel. It probably functioned as a basket but also as a cover for the storage jar. Another example of a round, medium-sized basket found in the 2018–2019 season was inv. no. 1514 [*Fig. 5.18*]. Despite its fragmentary state of preservation it seems to have been almost exactly like inv. no. 1297 described above.



Fig. 5.16. Group of ceramic vessels and basketry found in U50

Besides medium-sized coiled baskets, also small- and large-sized coiled baskets were found at Old Dongola. The diameter of the illustrated small, round specimen (inv. no. 1479; *Fig. 5.19*) equaled 6.0 cm both for the completely preserved bottom and for the upper part. There are several possible functions of such a small artifact, but it seems likely that it was a container for spices. A few fragments possibly attributable to small baskets were found on the site (e.g., inv. no. 797; *Fig. 5.20*), but all of them lacked diagnostic elements. Coiled baskets, mainly round, open forms in all sizes, constituted sizable groups among artifacts found at Qasr Ibrim and Kulubnarti (Adams and Adams 1998: Pl. 3.2.C; Adams and Adams 2010: 105, Pl. 12d).

Two large, coiled baskets were found in storage room U50 mentioned above [see *Fig. 5.16*]. One was much better preserved than the other. In contrast to small and medium-sized coiled baskets, the large baskets had rectangular bases instead of round ones. The height of the better-preserved basket equaled 23.0 cm, while the sides measured 34.0 and 42.0 cm in length (inv. no. 1483; *Fig. 5.21*). The walls of the body were coiled, but the bottom was partly coiled and partly plaited. The narrow plaited strip placed in the middle of the base could also be considered a decorative element.

The other large, coiled basket (inv. no. 1486; *Fig. 5.22*) was found in a worse state of preservation, but the production technique and the appearance of the object was the same as in the first case. These two rectangular baskets could be unique findings, as there is no mention of baskets in the same shape in published scholarship. At Qasr Ibrim, Kulubnarti and Amarna only round and oval coiled baskets were found. Also nowadays it is easier to find round and oval baskets. No decoration was observed on any of the coiled baskets found in the 2018–2019 season.

The group of baskets made using the sewn-plaits technique is somewhat diversified, but all the variants share a number of traits, namely some structural features and the lack of decoration. In this type of basket, the base is round or oval, and the body flares out upwards, increasing its capacity (e.g., inv. no. 1525; *Fig. 5.23*). This is the most standard form of baskets, even in the modern world. Such baskets, called carrying containers/baskets in previous scholarship (Adams and Adams 2010: 102), were used for transportation and had to be practical. This may explain their plain, utilitarian appearance and lack of decoration.

The most common baskets of sewn plaits were the ones with flaring sides (Ar. *quffa*, pl. *qufaf*). They were medium-sized and large. No such basket was fully preserved, but in some cases most of the base and sides were extant, preserved well enough to study the structure. Most such baskets were executed using strips made of preferably wider palm leaves. The width of the plaited strips was almost the same in each excavated object and measured about 5.0 cm. Just two such baskets were discovered in a relatively good state of preservation, and the rest were mostly fragments of bases (e.g., inv. no. 1505; *Fig. 5.24*; inv. no. 1524; *Fig. 5.25*).

Preserved fragments of baskets feature remains of handles in the form of several twisted cords of halfa grass inserted into the side walls from the bottom up to the rim (e.g., inv. no. 1526; *Fig. 5.26*). Based on Kulubnarti finds, Adams suggested that *qufaf* had two loop handles, attached on opposite sides of the rim after the whole body of the basket was completed. One possible way of finishing the handle was to loop the braided cords around the uppermost strip of the basket and back into the handle itself; then, a third cord was wrapped around the previous two, and a fourth cord was woven somewhat crudely into the side wall of the basket (Adams and Adams 1998: 43). The handles likely looked the same as in specimens produced in modern times.

Examples



Fig. 5.17. Basket (inv. no. 1297)



Fig. 5.18. Basket (inv. no. 1514)

Inv. no. 1479 Field no. 126		
Location U73, context 50		
Type Basket, round	The set of the	THE REAL PROPERTY AND IN THE REAL PROPERTY AND INTERPORT
Technique Coiling		and the second se
Material Date palm leaves	CONSTRUCTION OF THE OWNER	A STATE OF A
Parallels Qasr Ibrim (Adams and Adams 2010: 105, Pl. 12d)		
		0 5 cm

Fig. 5.19. Basket (inv. no. 1479)



Fig. 5.20. Basket (inv. no. 797)

**Inv. no. 1483** Field no. 588

Location U50, context 371

Type Basket, rectangular

Technique Coiling

Material Date palm leaves



Fig. 5.21. Basket (inv. no. 1483)

Inv. no. 1486 Field no. 589 Location U50, context 371 Type Basket, rectangular Technique Coiling Material Date palm leaves



Fig. 5.22. Basket (inv. no. 1486)

Inv. no. 1525	
Location U63, context 342	CALEBRAN TURNER
Type Basket	Mark Soft Soft and all
Technique Sewn plaits	Contraction of the second s
Material	SALLEY TO CALL
Doum palm leaves, halfa grass	A CARACTER CONTRACTOR
Parallels	
Qasr Ibrim (Adams 1996: 122,	
Pl. 22c)	
	States States
	CROWN THE REAL ST

Fig. 5.23. Basket (inv. no. 1525)



Fig. 5.24. Basket (inv. no. 1505)

5 cm



Fig. 5.25. Basket (inv. no. 1524)



Fig. 5.26. Basket (inv. no. 1526)

## Lids/plates

Many fragments of objects belonging to this group were found on the site. However, it was difficult to determine whether the fragment had been part of a lid/plate or a basket, since the same coiling technique was used in the production of both categories of objects. Two types were distinguished in this group of artifacts.

The first type is flat, simple and round, exactly like a contemporary plate (e.g., inv. no. 795; *Fig. 5.27*). The diameter of the objects could not be estimated because of the poor state of preservation of their edges. Decorative elements were simple and limited to using darker palm leaves and different variants of the coiling technique (e.g., inv. no. 799; *Fig. 5.28*). These two types of decoration were the easiest ways to make an object more visually attractive. In the basket illustrated in *Fig. 5.28*, colored winders were used to create a pattern. This object was either not very precisely formed or is just poorly preserved, but it seems less smooth and neatly made than the first example from this category [see *Fig. 5.27*]. Compared to the parallels from Qasr Ibrim or Kulubnarti, the lids/plates from Old Dongola were scarcely decorated.

One of the most interesting artifacts in this category is a surface find: a lid with a fragmentarily preserved piece of leather attached to the surface by means of a thick leather strap passing through the object (inv. no. 1098; *Fig. 5.29*). In another, similar object (inv. no. 1084; *Fig. 5.30*), holes could be the remains of thick leather thongs that helped keep the leather fastened to the basketry. The artifact could have been used as a lid for vessels with hot contents to prevent the temperature inside the pot from dropping.

The second type is almost conical. One example is remarkably well preserved and precisely executed (inv. no. 1306; *Fig. 5.31*). The tip is slightly flattened, and the sides flare out toward the bottom. The object was found *in situ* on a small ceramic bowl, FN594, inv. no. P5048 (Chapter 3, this volume, see *Fig. 3.42B*: PT232), for which it served as a lid.

Examples

Inv. no. 795 Field no. 2	
Location U76/77, context 14	A STATISTICS AND A STAT
Type Lid/plate, flat	
Technique Coiling	
Material Date palm leaves	
Parallels Kulubnarti (Adams and Adams 1998: Pl. 5.5.C), Qasr Ibrim (Adams and Adams 2010: 104, Pl. 12a)	
	0 5 cm

Fig. 5.27. Lid/plate (inv. no. 795)



Fig. 5.28. Lid/plate or base of a small basket (inv. no. 799)

v. no. 1098		
Location	Mar and Mar	Martin
Citadel, context 1		
Туре	All has a start	「「日本日本学校大学
Lid/plate, flat		The Pressession
Technique		
Coiling		
Matarial		
Material		
Date and doum palm leaves,		
leather with fur		
		0

Fig. 5.29. Lid/plate (inv. no. 1098)



Fig. 5.30. Lid/plate (inv. no. 1084)



Fig. 5.31. Lid (inv. no. 1306)

## Sandals

Several different types of sandals were excavated. They were divided into two variants based on their production technique: plaited and leather-reinforced plaited sandals. In addition, the presented footwear was divided into sandals made only of palm leaves, and sandals made of palm leaves and leather (for the latter, see also Chapter 6, this volume). Usually, leather was used for the sole, with a thong for sewing the layers together or attaching other elements placed between the palm fibers in the middle of the open shoe. All sandals were partially preserved, although in a few examples the sole of the object was complete, and some fragments of strands securing the foot in place were extant. In other cases, only pieces of sandals were found—for example, a half of a sole—and in such instances the form of the shoe could not be identified. In all sandals, the shapes of the back and front ends varied depending on the technique. There were four attested shape variants: pointed, rounded, square, and trapezoidal.

The group of plaited sandals is the most numerous and commonly occurring. This type of sandals was probably the easiest to make in terms of workmanship. Some diversity was observed in this group. The differences mainly concern the number of layers and the finishing of the front or back of the shoe. Composite sandals were made of a maximum of three layers of plaited strips, which were tied together with one or more palm leaves or with a thin cord and then cut some millimeters behind the binding (e.g., inv. no. 788; *Fig. 5.32*). One plaited strip was also tied and cut at the end. In this type of shoe, the backside was rounded. As for the front, there was one type of finishing—a pointed toe (e.g., inv. no. 1472; *Fig. 5.33*; and inv. no. 994; *Fig. 5.34*). In contrast, no pointed front ends were observed among the coiled sandals (see below).

The fastenings holding the foot in place were usually the same straps that kept the layers together. In the material investigated thus far, the straps used in the manufacture of sandals were made of rolled palm leaves (inv. no. 790; *Fig. 5.35*). They were placed at the toe and passed

through the middle to the heel of the sandal. In the front part of the sandal, a loop for the toe was created. The plaited shoes were similar to contemporary flip-flops or sandals.

The next large group comprised leather-reinforced plaited sandals, including a variant that had sewn edges. Leather elements (thongs) were used for sewing the edges of the sandals, and thin cords made of plant fiber passed through the layers of sandals lengthwise down the center, which resulted in greater stability of the shoes. The plaited-core part was passive and always made of palm leaves. Leather-reinforced plaited sandals were found in various states of preservation, which can be divided into three classes:

- 1) rows of Z-spun palm-fiber string with running stitches clearly visible (inv. no. 997; Fig. 5.36);
- 2) rows of Z-spun palm-fiber string with running stitches less visible and more worn (inv. no. 995; *Fig. 5.37*);
- 3) just the core left, no palm strands or thongs preserved (the last phase of degradation) (inv. no. 996; *Fig. 5.38*).

Reinforced plaited sandals usually consisted of at least two of three layers: insole, midsole and treadsole (Veldmeijer 2014: 40). It was very often a challenge to identify the top and bottom, and in most cases it was even impossible, unless a preserved leather element or elements provided indication of the existence of a treadsole on one side of the object. The example of inv. no. 793 [*Fig. 5.39*] preserves a fragmentary bottom of a shoe consisting of several elongated pieces of leather, which supported the sole of the footwear (another variant of a leather-reinforced plaited sandal). On the other hand, the treadsole in this case could be just a transitional layer between the middle and the proper treadsole. In leather-reinforced plaited sandals, both the front and the back of the shoe were rounded, squared, or trapezoidal.

At Qasr Ibrim, only during exploration of Ottoman-period deposits the researchers found 66 plaited sandals (Alexander and Adams 2018: 145). Some of them are similar to those found at Old Dongola, both those with and without leather elements.

Inv. no. 788 Location U74, context 694 Type Sandal	
Technique Plaiting Material	
Doum palm leaves	
	0 5 cm

Examples

Fig. 5.32. Sandal (inv. no. 788)


Fig. 5.33. Sandal (inv. no. 1472)

Inv. no. 994	
Location Above courtyard U73, context 12	A CONTRACTOR OF THE OWNER OWNE
Type Sandal	CONTRACTOR AND
Technique Plaiting	
Material Doum palm leaves	0 5 cm

Fig. 5.34. Sandal (inv. no. 994)



Fig. 5.35. Sandal (inv. no. 790)

Inv. no. 997

Location U76/77, context 14

Туре

Sandal

Technique Coiling

Material Date palm leaves, leather



Fig. 5.36. Sandal (inv. no. 997)

Inv. no. 995	
Location U86, context 178	
Type Sandal	CONTRACTOR OF THE OF
<b>Technique</b> Plaiting (sole), rolling (string)	
Material Doum palm leaves, leather	0 5 cm
Parallels Qasr Ibrim (Veldmeijer 2009: 109; Veldmeijer and Rose 2012: 167)	

Fig. 5.37. Sandal (inv. no. 995)

Inv. no. 996	and the second s
Location U73, context 42	
Type Sandal	
Technique Coiling	
Material Date palm leaves	A CAR PARAL PRATE
	0 5 cm

Fig. 5.38. Sandal (inv. no. 996)

Inv. no. 793	A
Location U73, context 45	
Type Sandal	CONCINE AND
Technique Plaiting	COULS DO DE CO
Material Doum palm leaves, leather	STILL STATION OF CAR
Parallels Qasr Ibrim (Veldmeijer 2009: 108, Fig. 4c)	
	05 cm

Fig. 5.39. Sandal (inv. no. 793)

## Cordage

Cords were made of halfa grass, fiber of the date palm trunk, and doum palm leaves. The first two materials are quite similar and sometimes it is difficult to distinguish one from the other. The group of cordage is very diverse, but at the same time the degree of repeatability of the same type of object is fairly high. The diversity mostly concerns the thickness of the cords and the material used. Only two methods of cordage production were recognized. They differ in the direction of twisting the strings.

First, yarns of halfa grass or fiber of the date palm trunk were rolled, and then cords were made of the rolled strings. The maximum number of strings used to roll a cord was three. The thickness of the strings varied depending on the intended use of the cord; the thinnest specimen was 0.1 cm thick (inv. no. 975; *Fig. 5.40*; inv. no. 955; *Fig. 5.41*). Thick ropes were made of prefabricated thinner cords (inv. no. 1530; *Fig. 5.42*; inv. no. 1533; *Fig. 5.43*). The thickest specimen of this kind was 2.7 cm thick (inv. no. 973; *Fig. 5.44*). Ropes could also be made of yarns or several strings wrapped with one thinner cord, forming a cord about 2.0 cm thick (inv. no. 1312; *Fig. 5.45*). However, an example of the latter type appeared in the studied material from Old Dongola just once. According to Wendrich, such fragments could be elements of broken pot stands (Wendrich 1999: 186) or broken bottom parts of pot carriers (Wendrich 1989: 184).

In contrast to cords made of halfa grass and fiber collected from the trunk of the date palm, the artifacts made of palm leaves were less tightly rolled and less cohesive. The particular leaves did not adhere closely to one another (inv. no. 992; *Fig. 5.46*). This was even more evident in a case where two rolled strings were rolled together in order to create a thicker cord (inv. no. 1536; *Fig. 5.47*). Despite the differences in material and workmanship, the strength of both types of cords seems to have been high. Such finds were very common at Qasr Ibrim and

208

Kulubnarti, and generally cords made of plant fiber in the same technique and for the same purposes appear to have been produced along the entire Nile Valley.

Knots and loops (e.g., inv. no. 972; *Fig. 5.48*, and inv. no. 978; *Fig. 5.49*) formed a significant part of the cordage assemblage, but the exact process and method of creating the knots will not be presented in this report. There were many different ways of knotting rope, as in modern times, and they require more in-depth research. Variation in the diameters of the loops likely reflects differences in their intended use.

Examples



Fig. 5.40. Cordage (inv. no. 975)



Fig. 5.41. Cordage (inv. no. 955)

Inv. no. 1530	
Location U20a, context 171	
Type Cordage (basket handle?)	
Technique Rolling	
<b>Material</b> Halfa grass	
Parallels Kulubnarti (Adams and Adams 1998: Pl. 6.3.A)	
	0 5 cm

Fig. 5.42. Cordage (basket handle?) (inv. no. 1530)



Fig. 5.43. Cordage (inv. no. 1533)

Inv. no. 973	
Location U94, context 683	
Type Cordage	
Technique Rolling	
Material Halfa grass	A MA-2
<b>Parallels</b> Kulubnarti (Adams and Adams 1998: Pl. 6.3.A)	
	0 5 cm

Fig. 5.44. Cordage (inv. no. 973)



Fig. 5.45. Cordage (inv. no. 1312)

Inv	-	002	
IIIV.	IIO.	77L	

Location

U74, context 694

Type Cordage

Technique

Rolling, wrapping Material

Doum palm leaves



Fig. 5.46. Cordage (inv. no. 922)

Inv. no. 1536	
Location	
U2, context 84	
Туре	
Cordage	a some of the line
Technique	
Rolling	
Material	Report of the second se
Doum palm leaves	
Parallels	
Kulubnarti (Adams and Adams	0 5 cm
1998: Pl. 6.3.C)	

Fig. 5.47. Cordage (inv. no. 1536)



Fig. 5.48. Cordage: knot (inv. no. 972)



Fig. 5.49. Cordage: knot, loop (inv. no. 978)

# Other

This group of artifacts comprises objects that could not be identified and assigned to any of the groups described above. Suppositions concerning their function and usage are merely conjectural. The set of such objects is not large; there are only seven of them, and they can be grouped into three categories on the basis of their characteristics:

- 1) Three fragmentary objects were made of plant fibers and leather. The objects are not the same, but some similarities have been observed. Thin, plaited and twisted cords are situated on the outer edges, and leather elements—in two cases these are rolled two-ply leather thongs—run transversally between them at equal intervals (inv. no. 1317; *Fig. 5.50*, and inv. no. 1316; *Fig. 5.51*). In another example, fragments of leather tightly attached to plant fibers are placed between the cords (inv. no. 993; *Fig. 5.52*). On inv. no. 1317 [see *Fig. 5.50*], remains of textile are also visible. It could suggest that these unidentified fragments were parts of garments or footwear.
- 2) A unique object was made of a single, long, plaited strip (width 1.5 cm) repeatedly interlaced with itself at right angles, forming a bundle (inv. no. 984; *Fig. 5.53*). One end of the artifact is completely preserved and hangs loosely, and the other emerges from the plaited bundle in a different place and is broken off.
- 3) Three artifacts may have been handles, possibly of pot slings, or parts of larger objects. In two cases (inv. no. 982; *Fig. 5.54*, and inv. no. 1307; *Fig. 5.55*), palm leaves were twisted and knotted, and loops were made (in inv. no. 982, the loop was bigger and in inv. no. 1307 it was very small). The third object (inv. no. 1464; *Fig. 5.56*) was made from rolled and wrapped palm leaves, but it was longer and the loop was smaller than in the specimens mentioned above.

Examples

Inv. no. 1317	
Location U63, context 341	
Type Other	A REAL PROPERTY OF
Technique Rolling	
Material	
Date palm leaves, leather, textile	0 5 cm

Fig. 5.50. Basketry object (inv. no. 1317)



Fig. 5.51. Basketry object (inv. no. 1316)

Inv. no. 993		1	Talas	
Location U20a, context 171	CA A A	AT No.		
Type Other				N NA
Technique Rolling		M.S.	N/S	C. N.C.
Material	a state		~ / 🔻	பலக். என்
Date palm leaves, leather			0	5 cm

Fig. 5.52. Basketry object (inv. no. 993)



Fig. 5.53. Basketry object (inv. no. 984)

Inv. no. 982	
Location U2, context 92	
Type Other	
Technique n/a	
Material Doum palm leaves	
	0 5 cm

Fig. 5.54. Basketry object (inv. no. 982)

214



Fig. 5.55. Basketry object (inv. no. 1317)



Fig. 5.56. Basketry object (inv. no. 1464)

## CONCLUDING REMARKS

The impressively large number of cords, mats, baskets, and other basketry items discovered on the citadel hill during the 2018–2019 season indicates the frequency of their use and their importance in domestic contexts and in everyday life. The functions and intended use of the artifacts were, in most cases, defined by the structure of the object, by the finding place, or by ancient and medieval or modern parallels. The likely functions of the categories of objects presented in this paper are as follows:

*Mats*: used mainly for covering benches and floors; those made of doum palm leaves were tougher and more rigid, and therefore could be placed on surfaces where the pressure on the material and wear of the mat was likely to be greater. Not only floors or benches were covered; the walls may have been covered as well, in which case the mat would have served as a decorative or protective element. This category of objects may have also been used to cover vessels. Furthermore, mats were important structural elements of flat roofs. In such artifacts the plaited strips were wider and made of doum palm leaves (Warowna forthcoming). Lastly, fragments of mats were used in the process of decoration of ceramic vessels. Special mats may have also been used during smoke baths (*dukhan*), as attested by modern parallels. However, the poor state of preservation of the objects collected thus far means that it is not possible to confirm the presence of *dukhan* mats in Old Dongola households of the 16th–18th centuries.

- *Baskets*: the two main functions of baskets were storage and transportation. Several types of baskets could be distinguished. Those without handles—all of them small, medium and large-sized coiled baskets—seem to have served as storage containers. Sewn-plaits baskets with handles may have been used to transport various goods.
- *Lids/plates*: as in the case of baskets, this category had two functions: covering vessels and holding goods. Forms of lids/plates are diverse, from completely flat to conical or round. *Sandals*: worn on the feet.
- *Cordage*: wide range of different functions. Cords, mainly those made of palm leaves, were used as fastenings in sandals. Several twisted cords made of halfa grass were plaited into the fabric on opposite sides of the body of sewn-plaits baskets to serve as handles. Very often cords were used simply to suspend various items or for fixing and binding. Furniture production is another aspect of usage of cordage. Like mats, cords were employed in the process of decorating ceramic vessels (Chapter 3, this volume). They were also used for stringing beads and pendants (Chapter 9, this volume), as well as for the production of fishing nets.

Basketry objects sometimes featured leather elements or cords made of animal hair. Such items may have been more prestigious than those produced using simpler means. As a result of incorporation of such additional materials, the production could take longer than the process of manufacturing plain, ordinary basketry. The processing of leather and animal hair may have also contributed to the increase of the value of such specimens.

Nowadays, basketry manufacturing is still an important traditional handicraft of the Sudanese. The material used in the Nile Valley centuries ago is still available. Local people produce objects that look nearly the same and are made using the same techniques (personal observation). It seems that modern-day production is a continuation of basketry traditions attested in 16th–18th century houses on the site. The scale of production, mainly of mats and baskets, is astounding. In contrast, the manufacture of cordage is no longer common because organic cords have been replaced with plastic items. The production of sandals made of plant fiber has also been completely abandoned in favor of shoes made of synthetic materials and leather.

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## CHAPTER 6

## LEATHERWORK

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## INTRODUCTION

The first season of excavation yielded few leather objects, all of them recovered in the Funj-period residential district within the city walls (zones 1.1 and 1.3). The identifiable items comprise a *rahat* skirt, two *hijbat* amulets, seven sandals, a milk jug, and fragments of sacks.

Most of the findings come from layers consisting of dumped refuse and animal dung excavated within courtyards, which, both during use and after abandonment, functioned as areas of waste disposal and as livestock pens. The discarded objects can only provide indirect information about inhabitants of the neighboring rooms. Contexts 49, 50 and 442 within courtyard U73, and contexts 178 and 179 within courtyard U86 are occupational layers dating from the 17th century (see Appendix at the end of the volume). The other contexts are dumped refuse deposits of the 17th and 18th centuries, and undated surface layers (Dzierzbicka 2021; see *Table 6.1* for leather finds grouped by context and type).

However, the study of these artifacts, and of the ones that will be discovered moving forward with the excavation of the residential quarters, can contribute to an overview of the social, religious and economic changes the Old Dongola community underwent over time. The 2019–2020 season of excavation has already returned several different types of *hijbat*, footwear, sacks and other objects (Cervi, in preparation). Personal belongings, such as the *rahat* skirt and the *hijbat* amulets, can give information about survival and changes of indigenous traditions and beliefs, ethnic and social diversity, interactions between locals and newcomers. Changes in manufacturing technologies, typologies, and decorations of artifacts may reflect different workshops, indigenous or foreign influences, preferences of the society, and changes in trading connections. This is, for example, the case of footwear, which can be compared with the extensive study carried out within the framework of the Ancient Egyptian Footwear Project (AEFP) (Veldmeijer 2019; http://www.leatherandshoes.nl/ancient-egyptian-footwear-project-aefp/).

## LEATHER OBJECTS

In the following catalogue, objects are grouped in categories according to type and function. For each item, a detailed description is provided, including manufacturing techniques and relevant features. Parallels with similar artifacts recovered on other sites are included.

Analysis of the objects is based on macroscopic observation. Microscopic identifications of skin types and tanning methods have not yet been undertaken, as they require specialized laboratories. According to members of the local communities living around Old Dongola, consulted during

Zone	Compound	Unit	Context	Deposit dating and type	Rahat	Amulet case	Foot-wear	Sack	Other	Total
Surfac	e outside excavated a	area	1	Surface					1	1
	116/8/58a/58b/72		122	Dumped deposit, 2nd h. 17th c.				2	1	3
	west	U6	123	Post-abandonment, above city wall, n.d.					1	1
			45	Occupation/post-abandonment, 17th c.			1			1
		Courtward	<u>49</u>	Occupation, 16th/17th c.					1	1
	Courtyard U73	U73	<u>50</u>	Occupation, 1st h. 17th c.	1					1
			Cleaning	_					1	1
			<u>442</u>	Occupation, 1st h. 17th c.			1			1
1.1	U1/17/30/79/80	U1	4	Post-abandonment, 2nd h. 17th c. and later			1			1
	Latest layers above		7	Dumped deposit, 18th c.					1	1
	courtyard U	J73	14	Dumped deposit, 18th c.			1			1
	U5/25/72	U5	121	Occupational/dumped deposit, 2nd h. 17th c.			1			1
	Square 10Y53		94	Surface					1	1
	U2/11/12/13/14 /33/34/82/83/84 /85/86 U86		<u>178</u>	Occupational, 2nd h. 17th c.			1			1
		Courtyard	<u>179</u>	Occupational, 2nd h. 17th c.		1				1
		U86	180	Occupational/dumped deposit, 2nd h. 17th c.		1				1
1.3	U43/46/51	Room U46	366	Dumped deposit, 17th c. or later			1		1	2
					Total	2	7	2	8	20

# Table 6.1. Leather finds grouped by context and type (occupational contexts underscored and in bold)

the Old Dongola Finds Open Day (see above, Chapter 1, this volume), acacia seed pods – garad (from Acacia nilotica – sunt), were used in tanning, making the leather more flexible, durable and waterproof (see also Burckhardt 1819: 296–297). This kind of vegetable tanning using acacia tree pods is still used today in traditional Sudanese tanning industries (see Skinner 2007 for a description of the working process at the open-air tannery in Almyaelik).

All the dimensions are in centimeters. Colors are indicated with general terms. Standardized definitions, such as the ones of the Munsell color system, have not been used. Perception of color and brightness is subjective and can vary depending on working conditions. Moreover, the colors of most objects have been altered by post-depositional processes.

Abbreviations: Dia. = diameter; H. = height; L. = length; Th.= thickness; W. = width.

Measurements of individual details are provided in the descriptions of the objects.

## Rahat

*Rahat* is an Arabic word designating a short tasseled skirt usually made of leather, often decorated with beads and cowry shells. It was the main and often the only garment worn by Nubian girls as a sign of virginity until they got married, when it was replaced by a cotton dress and veil (de Caldavène and de Breuvery 1836: 153–154, 316; Crowfoot 1922: 6).

This garment of pre-Islamic origin remained a tradition among tribes of Nubian heritage well into the 20th century, surviving through the Christian period and into the time when Islam became the widely accepted and acknowledged faith (Crowfoot 1922; 1927; Herzog 1956; Bishai 2017). According to Rolf Herzog, the *rahat* was used in pre-Islamic times by girls and married Arab women during periods of life in which relationships with men were impossible or not allowed, such as before marriage, during menstruation, and during any period of stay in a sanctuary. With the Arab immigration to East Sudan, the skirt reached Africa before the 7th century; its symbolic meaning was retained, but its use was restricted to unmarried women (Herzog 1956: 9). It was mentioned in many accounts of travelers of the 19th and early 20th centuries and sometimes documented with drawings and photographs (Legh 1817: 204–205; Burckhardt 1819: 215; Hoskins 1835: 186–187, Pl. XXXVII; de Caldavène and de Breuvery 1836: 153–154; St. John 1845: 425–426; Budge 1907/I: 213, II: 429; Herzog 1967). According to the accounts of G.A. Hoskins and Edmond de Caldavène, the *rahat* worn by the girls of Dongola was made, respectively, of hippopotamus hide and gazelle hide, decorated by shells and beads.



Fig. 6.1. Fragment of a *rahat* skirt (inv. no. 243)

Tasseled skirt GARMENT-BODYWEAR	Inv. no. 243 Field no. FN130	Fig. 6.1
Material Leather, textile Color Brown, dark brown Dimensions L. 19.5; H. max. 6.7; Th. max. 1.2	Context zone 1.1, courtyard U73, context 50	

Incomplete skirt; 30 fragmentary tassels are preserved. The waistband is made of two S-spun strings of leather (Dia. 0.25); one end preserves the knot, which prevents the tassels from slipping off. The tassels consist of braided leather strips (W. 0.1), folded lengthwise to make a loop around the waistband; a binding made of leather strings interlaced horizontally secures the loop. Five rows of narrow strips alternate with four rows of larger strips (each strand made of two strings of leather). The larger strips are coupled by the binding, and below it, the leather strings are braided around two separate cores forming two cylindrical tassels/pendants (Dia. about 1.2). The cores are made of wrapped textile (cotton fabric?). Toward the end, the strings, S-spun, are wrapped horizontally around the tassels, and from there narrow braided strips seem to hang loosely.

## Comments, parallels

Fragments of leather tasseled skirts were fairly common findings in Ottoman levels at Qasr Ibrim (Adams 1996: 175, Pl. 47a; see also Veldmeijer 2011: 22 for a detailed picture). Though far less abundant, the skirts are documented in Christian layers as well (cf. Adams and Adams 2010: 172, Pl. 29f). Seven fragmentary examples from post-Christian deposits (1600–1800 CE) were registered at Kulubnarti (Adams and Adams 1998: 61–62, Pl. 8.1D–E). *Rahat* skirts are also known from Gebel Adda (Veldmeijer 2011: 51 note 31). However, these parallels are of simpler manufacture than our specimen.

The removal of the *rahat* and its replacement with a woven robe was one of the crucial rites performed during wedding ceremonies—a symbol of matrimony, a moment when the bride put away girlish things. A detailed description of wedding ceremonies practiced by the Danagla people of Dongola is reported by J.W. Crowfoot. The breaking of the *rahat* (*Gata' El Rahat*) was the first public meeting of the bride and bridegroom, during which the bridegroom broke off seven tassels from the skirt, slapped the bride three times with them and threw them away (Crowfoot 1922: 6). The tassels were tossed to girls who had not yet wed, in the same manner as the bridal bouquet is tossed nowadays in Western cultures. This custom was also mentioned by local people interviewed during the Old Dongola Finds Open Day held in the 2020 winter season. A variation of the rite still practiced in Sudan today consists in pulling a few threads from the wedding cloth and disposing of them in the same way as it was done with the *rahat* tassels. Sometimes the tasseled skirt is worn over or underneath the wedding dress (Boddy 1989: 315).

## Hijbat amulets

*Hijbat* are amulets consisting of religious magical-apotropaic texts (phylacteries), usually written on paper, methodically folded in a specific manner, often wrapped in textile, and held in leather cases (Elzein 2004: 104–105; Al Safi 2006: 130–132; Anderson 2016). Suspended on leather thongs or string cords, they are worn as collars or tied to the upper arm or wrist, to clothing or to any object of value. Suspended on a cord around the neck, they were mainly worn by women

222



Fig. 6.2. Hijbat amulets: A - hijab amulet (inv. no. 439); B - hijab case (inv. no. 438)

and children (Hoskins 1835: 183; see Budge 1907/I: 270 for a picture of the wife of the Sheikh of Bagrawiya wearing a collar with several *hijbat*). Men tied the amulets around their arms, above the elbow (Burckhardt 1819: 141–142; Hoskins 1835: 183 and Pls I, III, XXX, XXXVIII, IXL; de Caldavène and de Breuvery 1836: 151). Such amulets were designed on request, to protect the bearer from the "evil eye" and other malicious powers; to protect against injury by weapons and against health problems; to bring luck and success in different fields of life. (Whether *hijbat*, according to their purposes, can be considered amulets or talismans, is open to discussion. According to Ahmad Al Safi, there is no clear distinction, as they are both charms and may be termed amulets, as "whatever brings luck protects, and whatever protects is lucky"; cf. Al Safi 2006: 128. On Islamic talismans and amulets, see also Al-Saleh 2010).

In their accounts of early 19th-century Nubia, Johann Burckhardt, de Caldavène, and Wallis Budge mention amulet leather cases containing papers with verses from the Qur'an, mystical writings and prayers. The Qur'anic verses, as well as the names of God, angels, magical squares and numbers, were selected according to the purpose of the amulet. The texts were written by *fokaralfakirs/fekis*, religious/holy men who were taught the secret of writing amulets and charms for sale at local markets (Burckhardt 1819: 141–142, 226–228; de Caldavène and de Breuvery 1836: 148–149; Budge 1907/I: 217 with picture). A variety of cases for amulets were sold in the bazaar of New Dongola (Hoskins 1835: 183).

Hijab amulet HIJBAT AMULETS	Inv. no. 439	Fig. 6.2A
Material Leather and cotton fabric Color Brown, dark brown Dimensions L. 2.2; W. 2.2; Th. 0.7	Context zone 1.1, courtyard U86, context 179	

Fragmentary *hijab* amulet. The leather case is only partially preserved on one face and along two sides of the amulet. A good-quality cotton fabric (tabby wave, density 20/14–16) is carefully folded to form a square. The textile was not unfolded to analyze the content.

#### Comments, parallels

At Qasr Ibrim, the use of *hijbat* amulets is well attested in both Late Christian and Ottoman layers (Adams 1996: 189–192; Adams and Adams 2010: 199). At Kulubnarti, they are documented in contexts dating from Late Christian to modern times. Nearly two-thirds of the items were found in a relatively modern part of the site (18th–19th centuries), which served as a refuse dump in its latest period of use (Adams and Adams 1998: 84–85, Pl. 10.2.E–F). The authors argued that these *hijbat*, in most cases opened and fragmentary, could have belonged to a single individual, and were discarded after his/her death. The size of the cases ranges from 2.7 cm by 2.9 cm to 4.4 cm by 3.7 cm. One of them contained an Arabic text wrapped in several layers of cotton fabric (Field excavation numbers 85.8.53, 21-S-40/128A/B; cf. Adams and Adams 1998: 84 and 89–90; for a detailed description of the amulet and translation of the text, see Anderson 2016, EA77655). According to the excavators, the workmanship of the Kulubnarti amulets suggests they were made by professionals, probably itinerant *fekis*. In the 19th century, amulets written by "black fakirs" (pilgrims on the *hajj* coming from West Africa) were supposed to be more effective than those written by other pilgrims (Burckhardt 1819: 413–414).

Hijab case	Inv. no. 438 Fig. 6.2B
HIJBAT AMULETS	
Material	Context
Leather	zone 1.1, enclosure U41 in courtyard U86,
Color	context 180
Brown, dark brown	
Dimensions	
L. 1.6; W. 1.5; Th. 0.7	

#### Description

Small, rectangular *hijab* case, fragmentary, in a poor state of preservation. The case is made of a strip of leather folded over along the sides and on top, forming a loop for suspension. No stitching or stitch holes are present (glued?). The front face is broken off, and the case is empty. The strip of leather appears to have been folded several times in the inner part of the case.

#### Comments, parallels

The small size of the case, the lack of stitching, and the multiple folds are unusual. Two amulets found at Kulubnarti contained only folded strips of leather, which, according to the excavators, were placed inside the case to imitate a folded piece of paper. They might have been "pious fakes" purchased in the belief that they contained actual apotropaic texts (Adams and Adams 1998: 85).

#### CHAPTER 6 LEATHERWORK

## Sandals

The sandals presented in this contribution are made of plain leather and of palm leaf combined with leather (Leather-Reinforced Plaited Sandal). For sandals made of plain palm leaf, as well as for the archaeobotanical identification of the plant resources, see Chapter 5, this volume.

The differentiation of types and variants is based on the materials in combination with manufacturing technology. Sandal types and terminology employed in their descriptions mainly follow the ones established by the Ancient Egyptian Footwear Project (AEFP) (Veldmeijer and Rose 2012: 27–29; Veldmeijer 2019: 15–16, 168; 2016: 13–16). Terminology relevant to the plaiting technique follows Wilhelmina Wendrich (1991: 65–66; 1999: 209–212).

According to André Veldmeijer, ordinary leather footwear is made of cow leather due to its thickness (Veldmeijer 2019: 187; see also van Driel-Murray 2000: 302 for the skin employed in the manufacture of Egyptian sandals). This was corroborated by members of the local community to whom our items were shown during the Old Dongola Finds Open Day 2020.



Fig. 6.3. Sandal (inv. no. 1475): dorsal (top) and ventral (bottom) views

Leather-reinforced plaited sandal Variant: leather treadsole (Veldmeijer 2009) GARMENT–FOOTWEAR	<b>Inv. no. 1475</b> Field no. FN434	Fig. 6.3
Material Leather and palm leaf	Context zone 1.1, courtyard U73, context 442	
Color Brown, dark brown Dimensions L. 24; W. max. 6; Th. max. 1.3		

Eight fragments of the same sandal, worn out and in a bad state of preservation. Four joining fragments belong to the insole, of which the complete length and width are preserved. The toe is slightly squared, and the heel is rounded. The pronounced right corner of the toe may indicate that the sandal was made for the left foot. The insole is a layer of plaited palm leaf strands (W. around 0.65) sewn lengthwise with five(?) rows of leather-thong running stitches. The state of preservation and the number of leather stitches prevent us from establishing the original fabric with certainty. The edge of the insole is sewn by means of braided leather thongs (approximate W. 0.3). A leather treadsole (Th. 0.2), only partially preserved, is attached with stitches running irregularly along the perimeter; remnants of the narrow leather thong are still in place in the slits of the treadsole. On the toe of the insole, an additional layer of leather seems to be a subsequent repair or reinforcement, as the leather thong sewing it to the sandal includes the treadsole. The patch is further secured by a leather braid. The braid is folded lengthwise and sewn on itself; its two ends are interwoven with the insole and the leather edge. The hole at the folded extremity of the braid preserves the leather thong fixing both the squared patch (around 4.5 by 4.5; Th. 0.2) and the braid to the sandal by means of a running stitch (visible on both dorsal-facing upwards-and ventral-facing the ground-surfaces). Two holes, approximately 2 cm apart and 5 cm from the front, suggest the attachment of a double strap running between the first/ second and third/fourth toe. Both of these holes preserve remnants of leather strings, which are fastened at the ventral surface of the treadsole by knotting. A string fragment (L. 3.7; Dia. 0.4) made of two S-spun leather elements was probably part of the strap. There are no indications of a back strap because that area of the sandal is worn out and badly damaged. Three joining fragments of the treadsole were found detached from the sandal.

#### Comments, parallels

At Qasr Ibrim, the Leather Treadsole variant of the Leather-Reinforced Plaited Sandal type is well documented, and nearly all of the specimens were found in Ottoman layers (Veldmeijer 2009; Adams and Adams 2010: 178; Veldmeijer and Rose 2012: 64, 68, 70, Fig. 39; see Veldmeijer 2009: 112 on the problematic dating of the material). Three specimens of this variant were found at Gebel Adda and several are known from Kulubnarti. Most of these sandals are equipped with a double front strap, which is considered a Nubian tradition (Adams and Adams 1998: 62–64; Veldmeijer 2016: 45–47, 160–162). The Gebel Adda specimens are dated to the Late Christian–Ottoman period based on parallels with Qasr Ibrim examples.

The leather treadsole of our specimen seems to be a repair rather than an original feature, as it is not included in the rows of leather-thong running stitches sewing the insole (which are clearly reinforcements, and are worn out on the ventral surface). This feature is characteristic of the Qasr Ibrim specimens as well, while in the examples from Gebel Adda the treadsole is included in the leather-thong sewing. A peculiar feature of the Old Dongola specimen is the braiding along the edge of the insole, which is not documented at other known sites (the edges of the insole in all of the specimens from other sites are sewn with a tight whip stitch). Besides its structural function, it may suggest a decorative purpose. The multiple repairs could, instead, suggest a less wealthy wearer, or a higher value of the sandal (long-term use of footwear is generally ascribed to less wealthy people or to difficulty in obtaining new materials; see Veldmeijer and Rose 2012: 166; Veldmeijer 2019: 213).

As mentioned by Burckhardt, Sennar leather sandals were "worn by all the well-dressed men and women throughout Nubia", and they were carefully manufactured. Every place in the country had "a peculiar fashion in the form of the sandals worn by its inhabitants" (Burckhardt 1819: 314).



Fig. 6.4. Sandal fragment (inv. no. 248): ventral (left) and dorsal (right) views

Leather-reinforced plaited sandal Variant: leather treadsole(?) GARMENT-FOOTWEAR	Inv. no. 248	Fig. 6.4
Material	Context	
Leather	zone 1.1, room U5, context 121	
Color		
Brown, dark brown		
Dimensions		
L. 5.7; W. 5.6; Th. 0.4		

Fragment of a squared end (toe/heel) of a treadsole(?). Along the perimeter are four stitch holes; remnants of a leather thong (W. 0.4) sewn lengthwise down the center are still in place. On the dorsal surface, rectangular impressions arranged in a herringbone pattern suggest that a plaited insole was attached. Three small fragments of braided leather thongs, found together with the sole, are probably remnants of the sewing along the edge.

Leather-reinforced plaited sandal	Inv. no. 792 Fig. 6.	5
GARMENT-FOOTWEAR		
Material	Context	
Leather and palm leaf	zone 1.1, context 4	
Color	(post-abandonment layer over U3 and U1)	
Brown, dark brown		
Dimensions		
L. 12.7; W. 6.1; Th. 1.2		

#### Description

Mid-part of a sole; ends are missing. It consists of three layers of palm-leaf plaited fabric, badly preserved (under 2 / over 2 / shift 1 pattern?). Five lengthwise rows of holes with remnants of leather suggest the sole was reinforced with leather-thong running stitches. Smaller holes along the edge, with remnants of leather as well, suggest the three layers were sewn together by a whip stitching.

#### Comments, parallels

Plaited sandals sewn with leather thongs are numerous in Qasr Ibrim's Ottoman contexts (Veldmeijer 2009: 107–108). Whether our specimen was equipped with an additional leather treadsole cannot be established.



Fig. 6.5. Sandal fragment (inv. no. 792)



Fig. 6.6. Sandal (inv. no. 793): lateral (top), dorsal (middle), and ventral (bottom) views

Leather-reinforced plaited sandal Variant: sole sewn (Veldmeijer 2009) GARMENT-FOOTWEAR	Inv. no. 793	Fig. 6.6
Material Leather and down palm leaf	Context zone 1.1. courtward U73. context 45	
Color Brown	Lone III, courtjuid 07,0, context 19	
Dimensions L. 15.5; W. max. 6; Th. max. 1.9		

Nearly complete sole, slightly tapering to the toe, with the heel missing. It consists of a layer of plaited palmleaf strands (W. 0.65–0.70, under 2 / over 2 / shift 1 pattern) folded double and sewn lengthwise with three rows of leather-thong stitching. The thick thong (w. around 1) is folded around the toe and forms a kind of leather treadsole on the ventral surface, since the stitches are short on the dorsal surface and long on the ventral surface. In the front part of the ventral surface, the thong stitches are engaged. Two holes, approximately 2 cm apart and 4 cm from the front, suggest the attachment of a double strap. The holes preserve remnants of leather strings, which are fastened on the ventral surface by knotting. See also Chapter 5, this volume.

#### Comments, parallels

The sandal finds a parallel in an Ottoman specimen from Qasr Ibrim (Veldmeijer 2009: 108, Fig. 4c). The worn-out plaited fabric on the ventral surface could suggest the leather thong was intended as a repair of the sole.

Leather-reinforced plaited sandal Variant: edge sewn (Veldmeijer 2009) GARMENT–FOOTWEAR	Inv. no. 995	Fig. 6.7
Material Leather and doum palm leaf Color Brown, dark brown Dimensions L. 22.5; W. max. 6.7; Th. 2.1	Context zone 1.1, courtyard U86, context 178	

#### Description

Complete sole with rounded ends and a slightly enlarged toe area. The sole consists of a layer of plaited palm leaf folded double and sewn lengthwise down the center by rows of Z-spun grass(?) string running stitches. On the ventral surface, the strings are badly worn out. The edges of the toe are sewn by a leather-thong (w. around 0.6) whip stitching, unevenly spaced and preserved only in places. Remnants of the leather double front strap are *in situ*, approximately 2.5 cm apart and 5 cm from the front, fastened at the ventral surface by knotting. Two additional holes at the back, a short distance from the edge, preserving remnants of leather strings, suggest the attachment of the back straps. See also Chapter 5, this volume.

#### Comments, parallels

String-reinforced plaited sandals, although less common than the ones reinforced by a leather thong, are documented at Qasr Ibrim, mainly from Ottoman layers (Veldmeijer 2009: 109; Veldmeijer and Rose 2012: 167).



Fig. 6.7. Sandal (inv. no. 995): ventral (top), lateral (middle) and dorsal (bottom) views



Fig. 6.8. Sandal (inv. no. 997): ventral (left), lateral (middle) and dorsal (right) views

#### CHAPTER 6 LEATHERWORK

Leather-reinforced plaited sandal Variant: edge sewn (Veldmeijer 2009) GARMENT–FOOTWEAR	Inv. no. 997	Fig. 6.8
Material Leather and date palm leaf Color Brown, dark brown Dimensions L. 10; W. 6.8; Th. 1.1	Context zone 1.1, area above courtyard U73, below U7/75, context 14	

**Description:** mid-part of a sole, with the ends missing. It consists of three layers of plaited palm-leaf strands sewn lengthwise down the center by rows of Z-spun grass(?) string running stitches. The fabric is badly preserved on both surfaces. The edges are sewn with a leather-thong whip stitching. Remnants of leather-thong stitching are preserved a short distance from one side. See also Chapter 5, this volume.

<b>Independent pre-strap</b> , single-layer sole GARMENT–FOOTWEAR	Inv. no. 1068	Fig. 6.9
Material	Context	
Leather	zone 1.3, courtyard U46, context 366	
Color		
Brown, dark brown		
Dimensions		
L. 13.1; H. 8/6.2; Th. max. 0.4		

## Description

Five fragments, most likely from the same sandal, consisting of one sole layer, probably made for the right foot. About three-quarters of the length of the sandal are preserved, including the front. It is slightly deformed and in a bad state of preservation. The sole (Th. 0.2) has a pronounced and rounded big-toe area, decreasing in width toward the back part. Remnants of the double front strap (W. 0.5; Th. 0.2) are preserved *in situ*. An additional, smaller hole toward the front edge was probably the attachment for the strand connecting the front strap to the back strap. This construction detail has been observed on a better-preserved sandal found in the 2019–2020 season (Cervi, in preparation). The pre-strap (W. 2.3; Th. 0.2) is pulled through four lengthwise-oriented slits, slightly inwards from the edge. Two separate terminal ends probably belong to the pre-strap; they are rounded, with three lengthwise-oriented slits, which preserve remnants of the back straps attached by looping. Two more fragments could belong to the sole and to the back strap.

## Comments, parallels

Comparable examples have been uncovered in Qasr Ibrim Ottoman layers; however, the majority of sandals with a double front strap and four pre-strap slits were made of multiple sole layers (Veldmeijer and Rose 2012: 47–64; as noted by the author, single-layer sandals could have originally consisted of more layers secured only by the straps, showing no stitching on the sole; see also Adams and Adams 2010: 173–179 for parallels from Qasr Ibrim). Examples from Gebel Adda, dated to the Late Christian/Ottoman period, all have multilayer soles, with either two or four pre-strap slits, nearly all provided with a double front strap (Veldmeijer 2016: 47–49, 163–171). Rare examples are known from post-Christian levels at Kulubnarti (Adams and Adams 1998: 62–64, Pl. 8.2).



Fig. 6.9. Sandal (inv. no. 1068): dorsal (left) and ventral (right) views



Fig. 6.10. Jug (inv. no. 1386)

#### CHAPTER 6 LEATHERWORK

## Sacks and containers

As mentioned by Burckhardt, leather containers were common household items, and sheep-skins full of butter and some water-skins for travelers were commonly kept in storerooms; they were also used for the transport of different kinds of goods (Burckhardt 1819: 213, 314). Like sandals and amulets, leather containers were sold at local markets (Burckhardt 1819: 296–297). The best manufactories of leather between Darfur and the Red Sea were in Sennar, where the leather was of the best quality and well sewn (Burckhardt 1819: 314).

Jug LEATHER CONTAINER	Inv. no. 1386 Fig. 6.10
Material Leather	<b>Context</b> surface finding, out of context (layer 1)
Color Brown, reddish brown	surface many, out of context (layer 1)
Dimensions H. 14.5; W. 10.2; Th. 4.5	

## Description

Rim, neck and shoulder of a jug. The container seems to be made from one piece of skin (Th. 0.4), folded lengthwise shaping the neck and the shoulder of the jug. The edges are folded and sewn by means of a decorative strip (W. 1.5) made of braided leather thongs. An additional band of leather (W. 4; Th. 0.4) is attached on the shoulder with running stitches, and further secured by the braided strip. On the shoulder are remnants of the attachment of a handle(?). Whip stitching with two leather thongs forms a decorative zigzag motif on the leather band. The rim is adorned with a braided strip running along the perimeter; only remnants of it are preserved.

#### Comments, parallels

A close parallel was found in Ottoman deposits at Qasr Ibrim, and identified as a milk jug by the workers (Alexander and Adams 2018: 133, Pl. 9b). The thick leather and the accuracy of the stitching of our specimen are well suited for a liquid container. The manufacture of the Qasr Ibrim example seems to be more coarse and not as finely decorated as our object. Small water flasks (*mattharah* or *zamzamieh*) made of leather are mentioned in Burckhardt's account among the imports from Sennar sold at Shendy markets (Burckhardt 1819: 315; see also Budge 1907/II: 406).

Pouch?	Inv. no. 938 Fig. 6.11
LEATHER CONTAINER	
Material	Context
Leather	zone 1.1, courtyard U73 and room U6,
Color	context 122
Brown, reddish brown	
Dimensions	
L. 6.7; Dia. 5; Th. 2.4	

#### Description

Bottom of a small, tubular pouch, fragmentary and crushed. It is made from a single piece of thin leather (Th. 0.1) folded over at the bottom and sewn shut with a leather thong (Dia. 0.1).

#### Comments, parallels

Small pouches and purses are documented in post-Christian contexts at Kulubnarti (Adams and Adams 1998: 40). Similar items, with slits for belt attachment, have been recorded in Ottoman contexts at Qasr Ibrim (Adams 1996: 129, Pl. 27a–b).



Fig. 6.11. Pouch (inv. no. 938)



Fig. 6.12. Sack fragments (inv. no. 2634)

Inv. no. 2634	Fig. 6.12
Context	
zone 1.1, courtyard U73, context 122	
	Inv. no. 2634 Context zone 1.1, courtyard U73, context 122

Seven fragments, possibly from a large sack made from a single piece of skin. The thick skin (Th. 0.3) is still covered in places with reddish hair. The biggest fragment (plain) could be from the body of the container, while the other fragments may belong to the extremities of the skin, which were tightly twisted to close up the sack. One of these pieces (L. 11; W. 4.5; Th. 4) is folded lengthwise and shaped into a loop. Only one fragment bears stitching running along the longer edges.

#### Comments, parallels

The skin's thickness and the dimensions of the fragments may suggest the sack was made from cowhide. Large leather sacks made of cowhides were used for the transport of food and water through the desert. Water-sacks (*ghirba*) made from oxhides keep water better than goat skins, and their thickness prevents water from evaporating (Burckhardt 1819: 317–318). The same claim was made by members of the local community interviewed during the Old Dongola Finds Open Day 2020. Several fragments of carrying bags and water-sacks were recovered in Late Christian and post-Christian contexts at Kulubnarti (Adams and Adams 1998: 39–41). The nearly complete examples were made from sheepskin or goatskin, the leg openings tied off to close the containers. The leg skin was also turned into handles, as shown in a bag from Ottoman Qasr Ibrim (Veldmeijer 2011: 23–24, Fig. 10). Leather strips, some of which belong to the animal's leg, twisted and shaped into loops, are documented at Elephantine (Veldmeijer, Arnold, and von Pilgrim 2016: 143), Dra Abu el Naga (Veldmeijer, Polz, and Rummel 2017: 137), and Deir el-Bachit (Veldmeijer 2011: 189). They date from the Coptic to the Ottoman period.

## Unidentified objects

Unidentified	Inv. no. 249 Fig. 6.13
Material	Context
Leather	zone 1.1, square 10Y53, context 94 (surface)
Color	
Brown, dark brown	
Dimensions	
L. 7.7; W. 6.5; Th. 1.1	

**Description:** rectangular-shaped leather object; only one end is preserved. It is made of five layers (Th. 0.2 each) sewn lengthwise by three rows of leather-thong (W. 0.6) running stitches. The uppermost layer has been cut to form triangular decorative motifs.



Fig. 6.13. Leather object (inv. no. 249)

Unidentified	Inv. no. 251	Fig. 6.14
Material	Context	
Leather	zone 1.1, square 10Y52, cleaning	
Color	(area of courtyard U73)	
Brown, dark brown		
Dimensions		
11.4 by 7.2; Th. 2.5		

Lengthwise-coiled strip (Th. 0.4). The leather is still covered in places with reddish hair. The strip could be an offcut from a processed sheet of leather, probably preserved for repairs.



Fig. 6.14. Leather object (inv. no. 251)

#### CHAPTER 6 LEATHERWORK

Unidentified	Inv. no. 254 Fig. 6.15A Field no. FN3
Material Leather Color Brown Dimensions 7.3 by 6.6; Th. 0.5	<b>Context</b> zone 1.1, area of courtyard U73 near U3, context 7

## Description

Circular repair patch (Th. 0.4) with evenly spaced leather-thong (W. 0.4; Th. 0.2) running stitches along the perimeter.

Unidentified	Inv. no. 2633 Fig. 6.15B
Material	Context
Leather	zone 1.1, courtyard U73 and room U6,
Color	context 122
Brown, reddish brown	
Dimensions	
L. 12.5; W. 9.5; Th. 0.7 (bigger fragment)	

## Description

Two shapeless fragments of leather (Th. 0.2), on which circular patches are sewn with evenly spaced leatherthong running stitches. The bigger fragment could belong to a sandal sole.

Unidentified	Inv. no. 250	Fig. 6.15C
Material	Context	
Leather	zone 1.1, context 123	
Color	(after destruction of room U6)	
Brown, dark brown		
Dimensions		
L. 8.8; W. 3.7; Th. 0.5		

## Description

Triangular fragment made of one sheet of leather, twisted and tied up with an uneven leather thong; uneven stitching.

Unidentified	Inv. no. 890	Fig. 6.15D
Material	Context	
Leather	zone 1.1, courtyard U73, layer 49	
Color		
Brown, light brown		
Dimensions		
12 by 12.5; Th. 0.1–0.4		

#### Description

Shapeless fragment of leather of irregular thickness, still covered in places with reddish hair. One edge preserves stitch holes and an impression of a whip stitching; a remnant of the leather thong is still in place.



**Fig. 6.15.** Leather items: A – patch (inv. no. 254), B, C, D – fragments of objects (inv. nos 2633, 250, 890)

Unidentified	Inv. no. 2630	Fig. 6.16
Material	Context	
Leather	zone 1.3, courtyard U46, context 366	
Color		
Brown, light brown		
Dimensions		
12 by 10; Th. 0.2-0.4 (bigger fragment)		

Six shapeless fragments of leather still covered in places with brown hair. Two fragments preserve a portion of one edge, which in both cases is folded over and sewn with leather-thong running stitching. These pieces have yet to be identified, and their interpretations are conjectural. As suggested by local people, the presence of hair may indicate that some of them belonged to garments or a blanket/carpet. Carpets made of pieces of leather sewn together, on which the villagers slept, are mentioned in Burckhardt's account (1819: 213).



Fig. 6.16. Fragments of leather objects (inv. no. 2630)

CONCLUDING REMARKS AND RESEARCH PERSPECTIVES

Although the first season of excavation returned few leather objects, their heterogeneity documents the variety of usage of leather at the site and starts to shed light on the material culture of the Old Dongola community in the 17th and 18th centuries.

Unfortunately, most of these findings are discarded objects, coming from dump accumulation, and for now they cannot be directly linked to the original inhabitants of the excavated houses. However, they have a potential to provide a picture of a diverse and stratified society, opening perspectives for future research.

Personal belongings, such as clothing, footwear, purses and amulets, can provide information about gender, as well as ethnic and social diversity, of the wearers. The way purses and *hijbat* amulets were fashioned, for example, sheds light on the gender of the wearers, as men and women used to wear them in different ways. A more or less accurate workmanship may indicate the material status of the owner, and provenance from different workshops. The reading of the amulet texts, analysis of papers and inks used, as well as analysis of the textiles in which they were wrapped, will help to provide a complete understanding of these findings.

The different types of sandals may indicate preferences of the wearers, peculiarities of different workshops, objects locally manufactured or imported from more distant places. Their details of manufacture and the way they are worn out and repaired provide further information. Multiple repairs and long-term use could suggest wearers with limited means or difficulty in accessing new materials. In the latter case, we can collect data about trade connections of the site.

One may hope that as excavation progresses new findings will help to investigate social diversity across the different areas of the town, offer glimpses on how the Old Dongola community interacted with neighboring communities and newcomers, and show changes it underwent over time.

Laboratory analyses could help identify skin types with certainty and provide information about skin processing. Data retrieved thus far from comparable objects found on other excavated Nubian sites, travelers' accounts, and information provided by the local community during the Finds Open Day, indicate that most of the leather objects were likely from goat/sheep and cow skins.

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# Chapter 7

# WOODWORK

Angela CERVI

#### INTRODUCTION

Most of the identifiable pieces of wood recovered during the 2018–2019 fieldwork season were small household items, primarily vessels, gaming pieces and door-locking devices. Pegs and stakes, as well as two fragments of implements of uncertain purpose, were also found.

Other fragments of wood recovered, such as pieces of unworked trunks, likely belonged to architectural elements. Unworked sticks and palm rachides found alongside mud concretions bearing reed and mat impressions were probably from ceiling or wall collapses (see, e.g., de Lellis, Maślak, and Wyżgoł 2021: 91). Most of these fragments, which are in any case scarce, were found in a poor state of preservation and were therefore not precisely identifiable (in dry conditions, wooden objects tend to retain their original volume and shape, but they become very fragile and friable). The scarcity of such wooden objects is also likely due to the multiple phases of reuse of the excavated structures. Large wooden architectural elements, such as beams and posts, were probably moved after abandonment of the structures and reused for different purposes, refashioned into smaller objects, or burned as fuel.

Although the household items recovered cannot be fully representative of the original set of utensils, they generally reflect a basic and plain material culture. None of the collected fragments could be associated with movable wooden furniture, such as frames of beds, chairs or stools. Even considering that movable furniture was rarely left behind when houses were abandoned, the investigated dwellings seem to have been poorly furnished with wooden items.

Wooden objects are equally underrepresented in other archaeological collections from excavated late medieval/Ottoman sites (i.e., Kulubnarti and Qasr Ibrim), and the available parallels are few. However, useful information can be retrieved from Johann Burckhardt's account of the journey he made in 1813 to Lower Nubia, as he provided detailed ethnographic descriptions of the people and villages he visited. He reported that he rarely saw any furniture in Nubian dwellings, except for a movable sofa or bedstead, mainly used to host strangers. Villagers generally slept on the ground or on mud benches, lying down on mats of vegetal fiber and on leather carpets (Burckhardt 1819: 213–214). Mud benches were also multipurpose stands and work surfaces. The basic household items described by Burckhardt (1819: 141–147) match the evidence provided by our archaeological assemblage.

Microscopic analysis of the wood species has yet to be undertaken. Most of the items recovered are likely made of locally growing acacia, as its hard and fine-grained wood is easy to work and durable, suitable for making implements and furniture. During the Old Dongola Finds Open Day in winter 2020 (see Chapter 1, this volume), modern inhabitants of nearby villages identified most of the wooden objects as made from *haraz* wood (*Faidherbia albida*, syn. *Acacia albida*)

prized for its good workability (on the timber properties of this type of wood and its economic importance, as well as a map of the geographical distribution of the species, see Wickens 1969). At Qasr Ibrim, more than 90% of the wooden objects recovered were identified as made from acacia growing in the region. The local name provided for the acacia species was *sunt* (Adams 1996: 95–96; Adams and Adams 2010: 70). The same situation was documented at Kulubnarti, where utilitarian items were made locally from acacia wood (Adams and Adams 1998: 11). Apparently, the species identification provided by Adams was based on macroscopic analysis (no microscopic analyses are mentioned), and the way the terms *sunt* (*Acacia nilotica*) and *haraz* (*Acacia albida*) were used requires clarification. Both species are widespread and economically important in Sudan, as they have a wide range of uses. *Acacia albida* is reportedly liable to staining and to attack by borers (on the main characteristics of the two species, see briefly Doran et al. 1983: Appendix II; for some interesting observations on their distribution in northern Sudan, see Bond 1919).

Types of wooden objects

#### Vessels

Diagnostic pieces, all of them recovered in domestic contexts within the city walls, comprised nine vessels in total. Only one nearly complete beaker-like container (inv. no. 1389: [*Fig. 7.1*]) was lathe-turned. It was found in a corridor repurposed into a storeroom (U50, zone 1.3; see Deptuła 2021: 152–155) in an occupational layer dated to the turn of the 17th century. All of the other fragments belonged to hand-carved, shallow and hemispherical bowls. They were mainly uncovered in courtyards (U56, U73, U86) and in multifunctional room U5, in layers dating from the second half of the 17th century.

The irregular shapes of the carved bowls sometimes made it impossible to determine precisely the rim diameters and inclinations of the vessel walls. In some instances, only small fragments of the rim or bottom survived, badly weathered and worn out. Four fragments represented small bowls ranging in diameter from around 11 cm to 15 cm [see *Figs 7.2A–B*]. The best-preserved item (inv. no. 188, context 121; *Fig. 7.2A*) belongs to a shallow bowl of about 11 cm in diameter, quite well finished, with a squared-off rim and rounded bottom. The other pieces are fragments of bottoms that are slightly or markedly flattened. Inv. no. 237 (context 12, not illustrated), was another fragment of a bottom similar in shape to inv. no. 185 but slightly larger in diameter.

Larger bowls ranged in diameter from around 26 cm to 30 cm [*Figs 7.3, 7.4*]. Rounded and squared-off rims are documented, belonging to both shallow and hemispherical bowls. Two similar shallow bowls, 17 cm and 25 cm in diameter, with flat bottoms and squared-off rims, were found in late post-Christian contexts (1600–1800 CE) at Kulubnarti (Adams and Adams 1998: 37, Fig. 5.2, Pl. 5.1D). One fragment found on the surface (inv. no. 206; *Fig. 7.3*) belongs to a shallow bowl, 44–46 cm wide and oval in shape.

The inner surfaces of most of the vessels are covered with a black patina, which is likely due to their usage as containers for food or ointments.

Along with calabashes (gourds), of which many small non-diagnostic fragments were recovered, wooden containers were common household items in late medieval Nubia and in the early



Fig. 7.1. Container (inv. no. 1389)



Fig. 7.2. Small bowls (A - inv. no. 188; B - inv. nos 185 and 186)



Fig. 7.3. Bowl (inv. no. 206)



Fig. 7.4. Large bowls (inv. nos 187, 255 and 260)

modern era, as reported in Burckhardt's account (1819: 219–220). Wooden bowls were used as containers for *dhourral dhurra* (sorghum) flour and milk, and they also functioned as common dishes for serving meals. The flour, obtained by grinding sorghum with handstones, was used to prepare thin fermented bread, *kisra*, still a typical meal in the country. The grain, which was continuously kept wet by sprinkling water upon it during grinding, turned into a coarse liquid paste. This paste was left to ferment from 24 to 36 hours, and then baked on iron plates or thin smoothed stones placed over a fire. The thin baked sheets of bread were served in large wooden bowls, with onion sauce, broth or milk poured over them.

Archaeological evidence from Old Dongola matches the above description concerning a more recent past. A shallow stone vessel, possibly used as a baking plate (inv. no. 1060), was found in a storage room (U26b) along with ceramic storage vessels, basketry lids, a quern and several hand-stones. Most bowl fragments come from multifunctional rooms and courtyards connected with food processing, where querns, handstones, sorghum grains and spikelets were found (Wyżgoł 2021b: 187–193).

The beaker-like container, featuring a narrow opening with an inverted rim, could hardly have been used to hold beverages. Moreover, its inner surface is stained black. It could have served as a container for perfumes, cosmetics or ointments. Usage as an ink-pot may also be considered, perhaps in association with the practice of writing amulets, as hijbat were recovered in zone 1.1 (see Chapter 6, this volume). At Kulubnarti, a hard, black substance, contained in two oval-shaped wooden trays, was found along with a small, handmade pottery vessel whose interior showed extensive black staining (Adams and Adams 1998: 82, Pl. 10.1D). According to the authors, the substance would have been mixed with water in the pot to provide ink. Analysis of the material carried out at the British Museum (Anderson 2016: 9-10) showed similarity to the ink used in the *hijab* text found in the same 18th-19th century context. The use of cosmetics, such as kohl and perfumed grease, on the other hand, is mentioned in Burckhardt's account (1819: 215-216), as well as by other 19th-century travelers (Rüppell 1829: 41; de Cadalvène and de Breuvery 1836: 157). The perfumed grease was made of sheep's fat mixed with soap, musk, pulverized sandalwood, senbal, and mahleb. It was used by women and men on special occasions. According to members of the local community consulted during the Old Dongola Finds Open Day (see Chapter 1, this volume), small bowls similar to inv. no. 188 were also used in the recent past and still remain in use as containers for perfumes and cosmetics.

Wooden bowls and plates are still produced in Sudan for household use and commercial purposes in rural areas, where craftwork remains an important source of livelihood (personal observation).

### Gaming pieces (?)

Two conical objects, uncovered in the northern town quarter within the city walls (zone 1.1), are likely pieces for use in a board game [*Fig. 7.5*]. One of them (inv. no. 1261) is crudely carved, 6 cm high, with a slightly squared bottom (3 cm by 2.8 cm), which is cut off straight. It was found in context 449 in a multifunctional room, U58a, in an occupational layer dated to the first half of the 17th century. The other piece (inv. no. 189), 5.4 cm high and 2.8 cm in diameter, is lathe-turned and well finished with a knob-like top. It was recovered in storeroom U35, in a post-abandonment layer dated to the 18th century (context 198).

It is worth mentioning that a clay cubic die was found in courtyard U18 (compound 1/16/17/18/30/35), in a post-abandonment layer dated to the second half of the 17th century. Although not directly related to the wooden pieces, it provides evidence of gaming in the residential quarter. The cubic die became common in the Roman period in Egypt and Sudan (Crist, Dunn-Vaturi, and de Voogt 2016: 11).

The two wooden pieces find close parallels in ebony specimens found in Egypt (Quibell 1909: 114, Pl. LVIII; Petrie 1927: 54, Pl. XLVIII: 119–121) and ivory ones uncovered in the Egyptian and Nubian cemeteries at Kerma (Reisner 1923: 261–262, Pl. 53.3). All of them were related to the Egyptian game of *senet*. A series of cone-shaped pieces dated to the Meroitic period were documented at Shendi (de Voogt 2015). Turned ivory and wooden pieces, conical and dome-shaped, were uncovered in Early to Terminal Christian contexts at Qasr Ibrim (Adams 1996: 198; Adams and Adams 2010: 218, Fig. 55). The excavators compared them to modern chess pawns. Conical wooden specimens with a knob-like top were documented at two post-medieval island sites in the Batn al-Hajar: six examples found together at Saras, and at least seven at Attiri (Edwards 2018: 656, Pl. 12).

The few wooden boards documented in Nubia so far, all of them excavated from burial contexts, were of Egyptian and Roman origin or influence. Notably, the boards were intended for the games of *senet* and *ludus duodecim scriptorum*, also known as *duodecim scripta*. The *senet* gaming practice disappeared from Egypt after the Late Period, and the last evidence in Nubia is from the Kushite royal burials at el-Kurru (Crist, Dunn-Vaturi, and de Voogt 2016: 67–68). No modern counterpart of the game is known. The Roman game, in turn, was adopted by different cultures and survived until the modern era. Its Arab version, known throughout the Islamic world as *nard*, is thought to have replaced the Roman version (Crist, Dunn-Vaturi, and de Voogt 2016: 133, 136; see also Bell 1969: 43).

Remains of *duodecim scripta* boards, together with African blackwood and ivory gaming pieces and dice were uncovered in 1st-century Meroitic graves at Sedeinga. The minimal decoration of the objects may suggest local manufacture and that the game was assimilated by the Meroitic world (de Voogt, Francigny, and Baas 2017; de Voogt 2019). An intact board decorated with ivory inlays was found in a late 4th-century royal tomb at Qustul (Emery and Kirwan 1938: 345, Pl. 87; de Voogt 2019). It was associated with dome-shaped ivory and ebony gaming pieces, ivory cubic dice and a wooden pyrgus (dice tower). In Italy, this three-row *alea* type appears to have been replaced by the two-row type (the board is still in use today) during the 4th century (Schädler 1995). Fragments of ivory inlays and gaming pieces comparable to the Qustul examples were found in an early Makurian (mid-5th–mid-6th century) royal tomb at el-Zuma (Then-Obłuska

248

2017). Considering further analogies to adornments and ornaments found in the Nobadian cemeteries of Qustul and Ballana, Joanna Then-Obłuska argues for the presence of a long-time established mobile workshop in late antique Nubia producing artifacts for the elite. All this evidence may suggest that the *ludus* remained popular (at least among the elite) through the centuries. The turned ivory and wooden pieces found at Qasr Ibrim mentioned above may represent a later evidence of the gaming practice in a residential context (cubic dice were also found in both early and late Christian levels; cf. Adams 1996: 198; Adams and Adams 2010: 217–218).

Other evidence of gaming boards found in Sudan consists of graffiti boards. Examples include the *latrunculi* board on the podium pavement in the Meroitic temple complex of Qasr Ibrim (Rose and Wilson 1996: 110, 160, Pl. 18.5; de Voogt 2015) and the *sija*,  $t\bar{a}b$ , and *mancala*-type boards on rock surfaces in Sai Island (de Voogt 2014). According to Alex de Voogt, the site's historical contexts, board locations and the specificity of graffiti games suggest that the makers of such boards were soldiers, both Roman and Ottoman. The Roman game of *latrunculi* is no longer attested after the 4th century (Crist, Dunn-Vaturi, and de Voogt 2016: 140), and it does not seem to have a modern counterpart. *Mancala* games are played with small counters (usually pebbles or clay balls) on a board with cup-shaped holes, which does not fit the use of wooden pawns. *Sija* and  $t\bar{a}b$  are Arab games, linked to the expansion of Islam, and they are still played today in Egypt and Sudan. The boards feature small depressions or squares mainly outlined in



Fig. 7.5. Gaming pieces (?) (left, inv. no. 189; right, inv. no. 1261)

sand. The game of tab includes the use of throwing sticks or stick dice as randomizers for the moves (Crist, Dunn-Vaturi, and de Voogt 2016: 151–160; see also Depaulis 2001). Their gaming rules were observed by Davies (1925) among Arab tribes in modern Sudan. Gaming pieces consisted of sets of sharpened sticks, pieces of stone and bricks. Baggara tribes played *dâla*, a version of *sija* still popular today in Sudan, on a raised board made of soft mud.

Another board game to consider is chess. It is mentioned in Burckhardt's account (1819: 147 and 356) as a common game in Derr and not quite unknown in Shendi. Unfortunately, the author did not provide details concerning gaming pieces. It seems that chess was introduced into Egypt by Persians or Arabs in the 7th century, and that it spread there under the Arab rule (McNab Dennis and Wilkinson 1968: xv). Several ivory nonrepresentational pawns from Egypt are found in museum collections; some of them are more or less conical with a projecting head (see, e.g., Dalton 1909: 176–179, Pl. CXXV). A peculiar wooden set of pawns from Nigeria, made at the beginning of the 20th century, that came with a soft, leather goatskin board, is housed at the Metropolitan Museum of Art in New York (Accession Number 48.174.102a–p, aa–pp, q, r, s; McNab Dennis and Wilkinson 1968: xxx, Cat. No. 39).

Although it is not possible to associate our pieces with a specific game, it is highly probable that they were used in a board game. Their shapes recall gaming pieces used since ancient times in Nubia and they could be used in more than one board game listed above, whether with dice or not. Which of these games were played in Funj-period Old Dongola and what were the cultural processes of appropriation that brought them there is open to question. It would be interesting to understand if Islam may have influenced the transmission/appropriation of one game rather than another, or modified some aspects of it, such as the nonrepresentational character of chess pawns. Moreover, some dice games are connected with gambling and described as forbidden in much of the classical Arabic literature (see Rosenthal 1975).

#### Locking devices

Two fragmentary keys [*Fig. 7.6*] have been recovered in zone 1.3 of the Funj-period residential quarter within the city walls located between courtyard U56, street U49 and street U62. They were likely used to lock the doors of storerooms, in which supplies and personal possessions were kept.

One key (inv. no. 1375) was recovered in building U59/60, in the main room, to which a narrow storeroom was attached. Its context, 397, is dated to the 17th–18th centuries. The other one (inv. no. 1377) was found inside a basket in a corridor turned into a storeroom (U50), in a context dated to the 16th–17th centuries. Their preserved lengths were 15.5 cm and 10.7 cm respectively, and their shafts were probably straight. Both of them were rectangular in cross section and provided with squared prongs. Inv. no. 1377, of which only a small part was preserved, could have also had more than two prongs. Keys of this kind, designed for use with a sliding door bolt, usually had two or three prongs, only occasionally four (Adams 1996: 157; Adams and Adams 2010: 149).

The door-locking mechanism was characterized by the use of tumblers in the shape of simple squared tablets of wood, which kept the bolt in place. Only with the insertion of the proper key, provided with prongs that matched the tumblers, was it possible to move the tablets from the deadbolt and unlock the door. This pin-tumbler lock is also referred to in the literature as the "Egyptian lock" because of the many findings in Egypt, where this mechanism has been documented in contexts dated from the Roman period onward. Well-preserved wooden locks still in place on doors, as well as wooden keys, were found at Karanis (1st–4th centuries CE; Husselman 1979: 40–44, Pls 53–54) and at other sites (for a collection of locks and keys from different periods, see Petrie 1917: 59–60, Pl. LXXV).



Fig. 7.6. Keys (left, inv. no. 1377; right, inv. no. 1375)



Fig. 7.7. Wooden lock on a door board in the Abandoned Village (the bolt is 47 cm long)

This type of locking device was common in medieval Nubia as well. Documented in both Christian and Ottoman contexts at Qasr Ibrim and Kulubnarti, these locks were smaller but of the same kind as the ones used in the recent past. At both sites, straight and angled keys were found, along with bolts, lock cases and tumblers (Adams 1996: 154–159; Adams and Adams 1998: 55–56; Adams and Adams 2010: 149–154). The scarcity of keys recovered from Ottoman-period levels at Qasr Ibrim (6 specimens), compared to Christian-period levels (over 50 from Early and Classic Christian levels; 37 in Late and Terminal Christian levels), has been ascribed to the declining commerce and the general poverty of material culture (Alexander and Adams 2018: 131). Likewise, Christian-period keys appear to be more carefully worked and decorated with incisions. A wooden lock still in place on a door board, found in the Abandoned Village, offers a good example of the mechanism's mode of operation, and provides a testimony of continuity of use of this device in Old Dongola into the early 20th century [*Fig. 7.7*].



Fig. 7.8. Door bolts (top, inv. no. 444; bottom, inv. no. 447)

Two other objects, inv. nos 444 and 447 [*Fig. 7.8*], can be identified as door bolts. The first, squared in cross section, preserving a total length of 13.6 cm, could be a bolt conceived for a simple lock mechanism having only one or two tumblers. The second, with two knob-like ends, could be a bolt of the simplest kind, just sliding in a staple on the door shutters. Roughly knife-carved, it was about 24 cm long, with an irregular circular cross section of a maximum of 2.2 cm in diameter. Both of them were found in a mud-brick house in the residential quarter outside the city walls (zone 1.6): inv. no. 444 in the main, multifunctional room (U26a), and inv. no. 447 in the storeroom (U26b). A socket for a bolt was identified on a preserved jamb in the doorway leading from room U26a to storeroom U26b. The occupation of the house was dated to the second half of the 16th century (Dzierzbicka 2021: 232).

#### Pegs, stakes and rods

Some pegs and roughly shaped sticks survived, recovered in different types of contexts, from room fills and structure collapses to dumped deposits:

Artifact	Context	
	Zone 1.1	
Inv. no. 259	Layer 141, dumped deposit in courtyard U86	
Inv. no. 257	Layer 84, fill of room U2	
Inv. no. 1560	Layer 487, fill of a bench in room U5	
	Zone 1.3	
Inv. no. 1257	Layer 331, accumulation in courtyard U53	
	Zone 1.6	
Inv. no. 184	Layer 65, structure fill in building U21a/21b, a wattle-and-daub house	
Inv. no. 258	Layer 64, structure collapse of building U21a/21b	
Inv. nos 442, 443, and 446	Layer 262, room fill of house U26a/U26b	

All of the finds were fragmentary. They could have belonged to any kind of objects and served a variety of purposes. Smaller pegs with pointed ends could have functioned as hanging pegs inserted into house walls, or as supports for shelves (holes were found in wall F338 of storeroom U26b). Bigger pegs or simple sharpened sticks could have been used as tent pegs. Such objects may have also been useful for anchoring loom frames to the floor, for staking out or suspending hides and basketry, or simply as wedges. They were roughly knife-carved and had a sharpened extremity [*Fig. 7.9A*]. Fragments of simple rods, round or squared in cross section, could have also been handles of implements [*Fig. 7.9B*].

Some fragments of small rods, round in cross section and somewhat smoothed [*Fig. 7.9C*], could have been shafts of spindle whorls or frames of looms, which were common household items and consisted of simple round sticks fixed in the ground (Burckhardt 1819: 141, 146; see Crowfoot 1921: 30–33 for description and drawing of the pit treadle loom used in Sudan). For inv. no. 442, the length of the four joining fragments was about 20 cm, the rods measuring 1.4–1.6 cm in diameter. In the case of inv. no. 446, the length of the six joining fragments was about 33 cm, the diameter being 1.2–1.5 cm. All of them were found in building U26a/26b (Wyżgoł 2021b: 192). Notably, also spindle whorls were found in storage room U26b, one of them (inv. no. 406) made of wood. It will, however, be analyzed with other spindle whorls from the site (Woźniak forthcoming).

254



Fig. 7.9. Wooden artifacts: A – pegs (inv. nos 258, 259) and stake (inv. no. 1257); B – rods; C – shafts of spindles or loom frames

### Objects with tentative identifications (agricultural implements?)

Two relatively large fragments of wooden objects have yet to be securely identified, and their interpretations are conjectural.

Inv. no. 1269 [*Fig. 7.10*], found in context 451 of storage room U58b (building U58a/58b) of zone 1.1 (Wyżgoł 2021a: 41–50), looks like a shovel or winnowing fan (see, e.g., Petrie 1917: 54; Pl. LXVIII). About 24 cm wide, the preserved edges are rounded and thinned, the two faces slightly concave and convex respectively.



Fig. 7.10. Identification uncertain (inv. no. 1269)

Inv. no. 190 [*Fig. 7.11*], with its barrel shape and two mortises going through the thickness of the object perpendicularly to one another, looks like the screw of a pulling or lifting device, into which two wooden poles could be inserted. It measures about 36 cm in height and 16 cm in diameter. The preserved end is cut off straight, nearly 10 cm in diameter; the other end, fragmentary, is tapering. It resembles the gear of a *saqiya* (ox-driven water wheel), but it is probably too small to be part of such a mechanism. Likewise, the dimensions and positioning of the mortises can be hardly attributable to a leg of a bed. The object comes from collapse layer 284 filling storage room U39 of building U32/38/39 in zone 1.2. The context still needs further clarification, which will probably provide useful data for the identification of this wooden object. The compound had contemporary walking levels at different elevations (de Lellis 2021: 113–114).

256



Fig. 7.11. Identification uncertain (inv. no. 190)

#### CONCLUDING REMARKS AND RESEARCH PERSPECTIVES

258

Given their scarcity and fragmentary nature, the wooden objects recovered so far offer mere glimpses on the usage of wood in Old Dongola. The identifiable pieces are basic and common utilitarian items, which reflect traditions still attested in recent times. The plain objects, lacking decoration or peculiar characteristics, prevent us from proposing any further interpretations at this point.

Gaming equipment is in general a problematic category of objects, above all when the pieces appear in the archaeological record as isolated findings. The items uncovered provide a first evidence of gaming practice in Funj-period Old Dongola. In broad terms, gaming equipment found in a residential context may add new data relevant to the geographical distribution of games and interpretation of related cultural exchanges. In particular, such objects can provide information about the inhabitants of Old Dongola and Funj-period society. Several other items, such as potsherd discs, some of which had been decorated with incised dots, conical or domeshaped clay objects, and small clay balls, were tentatively collected as gaming pieces awaiting detailed analysis. Many of these items are suitable for use in some of the games analyzed; others, such as the clay balls, would work with *mancala*-type games, extending the body of evidence of possible games played in Old Dongola.

Keys and bolts, judging by the contexts in which they were found both within (zones 1.1 and 1.3) and outside (zone 1.6) the city walls, likely served to lock the doors of storerooms, and they also seem to have been used as outdoor locking mechanisms. While a simple bolt can only bar door shutters, a pin-tumbler lock, conceived to work with its proper key, can limit access and secure a place. One may assume that storerooms secured by means of pin-tumbler locks contained valuable supplies and objects, or that access to multifunctional spaces leading to these storerooms was not controlled. However, at the current state of the research, any assumption is premature. Only a single jamb, in the doorway leading from room U26a to storeroom U26b, was preserved high enough to identify the presence of a bolt socket. Material from Funj-period dwellings outside the citadel hill also suggests the presence of wooden doors and bolts to control access from courtyards (Maslak 2015: 220). With the progress of excavation, combining evidence from artifacts and architectural features, it may be possible to better understand how locking devices were used and with what intentions. Understanding the way space and property was controlled and managed can help in the study of social and economic habits and practices.

Another aspect requiring further research is the identification of wood species through microscopic analysis. It could clarify if different kinds of wood were used for different purposes, especially the two different kinds of locally growing acacia, and shed light on the local knowledge about their timber properties.

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## CHAPTER 8

# **GLASS BANGLES**

## Joanna THEN-OBŁUSKA

More than 75 fragments of glass bangles were found at Old Dongola in the 2018–2019 season, and their typology, chronology, and provenance are the subject of this chapter. Lying on the frontier between two Islamic states, the Ottoman Empire in Egypt and the Funj Sultanate in Sudan, the capital city of Dongola remained an active political and trade center until the end of the Funj period. Although decorated glass bangles are not rare finds at medieval sites in Africa, Arabia, and Asia, their dating and provenance are not well established. Bangle fragments excavated in the 16th–18th century layers at Old Dongola bring new evidence relating to studies on their typology and chronology.

# Context

Many of the fragments were found in surface layers (Nos 1, 3, 12, 14, 110, 118, 158, 193, 200, 334, 365, 434, and 454) or out of context. The rest were found in 37 deposits and 2 features (F): 38, 46, 48, 49, 81, 85, 96, 100, 105, 122, 128, 155, 192, 196, 198, 204, 237, 250, 262, 271, 298, 318, 328, 329, 333, 340, 342, 345, 376, 449, 453, 456, 460, 682, 694, F47, and F326.

Bangles were uncovered mainly within the following units (U): in the courtyard forming part of the street grid (U56) and in two zones of the Funj-period residential quarter within the city walls, more precisely, in the northern town quarter along the perimeter wall (zone 1.1: U2, U6, U8, U18, U35, U58a, U73, U74, U80, U86) and in the town quarter south of street U24 and west of courtyard U56 (zone 1.2: U52, U63).

In zone 1.1, the relative sequence of structures in combination with radiocarbon dates indicates that the unearthed compounds were occupied in the 17th and into the 18th century (for the dating of contexts, see Appendix, this volume). Occupation at the end of the 16th and the beginning of the 17th century was recorded in U73 (context 49). The established dates point to the 17th century as the time of the accumulation of the levels of courtyards U73 and U86 in the east and west, as well as of the construction of U58. The compound U1/16/17/18/30/35 may have been constructed in the same period. Occupational layers in U6 and U8 were dated to the second half of the 17th century, which may also have been the time of construction of the largest compound in this zone, U2/11/12/13/14/33/34/82/83/84/85/86, which continued to function in the 18th century (de Lellis, Maślak, and Wyżgoł 2021: 86–101).

Bangle fragments were also found in structures in the central part of the citadel hill (zone 1.5: U99) and in the residential quarter outside the walls (zone 1.6: U15, U26b, U27, U40). With the exception of U26a/26b, which was of a late 16th-century date, the remaining construction phases in zone 1.6 can be attributed to the 17th century. Compound U15/37/40 was built in the

first half of the 17th century. The construction of U27 took place in the mid-17th century. The latest radiocarbon-dated structures in this area seem to date to the late 17th century (Dzierzbicka 2021: 231).

Except for two fragments, no bangles were found in the town quarter between courtyard U56, street U49, and street U62 (zone 1.3) and in the town quarter south of street U49 (zone 1.4). The compounds in zone 1.3 are dated to the 17th century. To provide a better concordance, a guide to the units and contexts in which bangles were excavated in the 2018–2019 season is given in *Table 8.1*.

## Method

This chapter presents a typology of glass bangles based on the technique and color of their decoration and discusses their chronology and provenance. Additionally, questions concerning bangle owners and gendered spaces in Old Dongola are addressed.

Since all the cores of the bangle fragments found during the 2018–2019 season at Old Dongola were made of monochrome glass using the "seamless" technique (see below), the bangle fragments were classified by the technique and color of their decoration. The fragments were illustrated according to the find context and inventory number in *Figs 8.1–8.7* and presented in *Table 8.2*. All context details and measurements of the bangles were given in *Table 8.3* (at the end of the chapter).

Parallels provided from the Near East, Egypt and Arabia date from the following periods distinguished in those regions: Early Islamic (7th–15th centuries) and Ottoman (16th–19th centuries), including Late Ottoman (from the 18th century).

#### MATERIAL

#### Technique of production and decoration

Most Islamic polychrome and monochrome glass bangles were fashioned using the "seamless" technique, which, in contrast to Roman production, did not require the joining together of two ends of a cane. According to Chloë N. Duckworth et al. (2016), a glass blob was pierced and picked up using a tool, and then transferred to a clay cone for further widening. In today's traditional production centers, the clay cone is held at the end of a long rod and constantly rotated, while other tools are used to push the bangle to the wider part of the cone. Flattened interior surfaces with traces of adhering material and horizontal striations in the glass may be indicative of such processes (Duckworth et al. 2016). Carol Meyer (1992: 90) describes a method of producing seamless bangles without the use of a cone-shaped tool "by taking up a bit of hot glass on an iron rod and rotating and hitting the rod with a second one until the glass opens up into a bangle-size loop".

All cores/bodies of the Old Dongola fragments were made of monochrome glass. Some bodies were covered with a blackish patina [e.g., *Fig. 8.2:9*]. Only two of them were not decorated

# CHAPTER 8 GLASS BANGLES

# Table 8.1. A guide to the units and contexts that yielded glass bangle fragments excavated in sector 1 during the 2018–2019 season

Zone	Compound	Units	Contexts	Figures
Surfac	e outside excavated area		1	8.1:1-4
Test ti	ench in 10Y45		453 (surface)	Not illustrated
Perime	eter wall	Tower U66	454 (surface)	Not illustrated
Street	grid	Courtyard U56	298, 333, 345	8.4:7–9; 8.5:3; 8.6:4
			3, 12	8.1:5-7
		U6/U8/U36/73	118 (surface)	8.3:1
		U58a/73	434	8.6:6
		Room U58a	449, 460	8.6:7–9
	U6/8/58a/58b/73	Room U8	128	8.3:3-4
		Room U6	122	8.3:2
		U5/U25/72/74/77	158 (surface)	8.3:6
	U5/25/72/73 east	Courtyard U73	46, 48, 49, 456, F47	<i>8.2:2–5; 8.7:3</i> and not illustrated
	Building U74		682, 694	8.7:1–2
1.1		U76/U77	14 (surface)	8.1:8
	0/6/0//	Room U77	196 (under U77)	Not illustrated
	U1/16/17/18/30/35	Courtyard U18	100, 105	8.2:9–10
	U1/17/30/79/80	Courtyard U80	96	8.2:8
		Room U2 (late)	81	8.2:6
	U1/16/17/18/30/35	Room U35	198	8.3:9
			200 (surface)	8.4:1–2
	LI2/11/12/12/14/22/24/02/02/04/05/04	Courtyard U86	192, F326 (floor)	8.3:7; 8.7:4
	02/11/12/13/14/33/34/82/83/84/83/86		38, 204 (under U86)	8.1:9–10; 8.2:1; 8.4:3
		Room U82	85	8.2:7
	U23/87/88/89	U23/U24	110 (surface)	Not illustrated
1.2		Room U52	328, 329	8.5:1–2 and not illustrated
1.2		U63/65	334 (surface)	8.5:4–9
		Room U63	340, 342	8.6:1-3 and not illustrated
13	11/3//6/51	U43/46/51	365 (surface)	Not illustrated
1.5	043/40/)1	SE of U43/46/51	376	8.6:5
1.5	U97/98/99/101	Room U99	318	8.4:10
		Room U27	193 (surface), 237	8.3:8; 8.4:4
1.6	U15/26a/26b	Room U26b	262, 271	8.4:5-6
1.0	1115/37/40	Room U15	155	8.3:5
	01)1)//40	Courtyard U40	250	Not illustrated



**Fig. 8.1.** Glass bangle fragments from contexts 1, 3, 12, 14, and 38 (U86): 1 - 1-24; 2 - 1-59; 3 - 1-107; 4 - 1-116; 5 - 3-87; 6 - 12-12; 7 - 12-962; 8 - 14-45; 9 - 38-822; 10 - 38-839. Scale 10 mm



**Fig. 8.2.** Glass bangle fragments from contexts 38 (continued), 46 (U73), 48 (U73), 49 (U73), 81 (U2), 85 (U82), 96 (U80), 100 (U18), and 105 (U18): *1* – 38-840; *2* – 46-721; *3* – 48-31; *4* – 49-781; *5* – 49-782; *6* – 81-858; *7* – 85-613; *8* – 96-803; *9* – 100-151; *10* – 105-746. Scale 10 mm



Fig. 8.3. Glass bangle fragments from contexts 118 (U6, U8, U36, U73), 122 (U6), 128 (U8), 155 (U15), 158 (U5/U25/72/74/77), 192 (U86), 193 (U27), and 198 (U35): 1 - 118-94; 2 - 122-4; 3 - 128-20; 4 - 128-32; 5 - 155-883; 6 - 158-171; 7 - 192-619; 8 - 193-614; 9 - 198-147.Scale 10 mm

9







**Fig. 8.4.** Glass bangle fragments from contexts 200 (U86), 204 (U86), 237 (U27), 262 (U26b), 271 (U26b), 298 (U56), and 318 (U99): *1* – 200-615; *2* – 200-682; *3* – 204-699; *4* – 237-616; *5* – 262-1157; *6* – 271-1128; *7* – 298-1218; *8* – 298-1219; *9* – 298-1225; *10* – 318-1130. Scale 10 mm



**Fig. 8.5.** Glass bangle fragments from contexts 328 (U52), 333 (U56), and 334 (U63/U65): *I* – 328-1197; *2* – 328-1198; *3* – 333-1241; *4* – 334-1211; *5* – 334-1212; *6* – 334-1213; *7* – 334-1214; *8* – 334-1328; *9* – 334-1329. Scale 10 mm



**Fig. 8.6.** Glass bangle fragments from contexts 340 (U63), 342 (U63), 345 (U56), 376 (U43/46/51), 434 (U58a/73), 449 (U58a), and 460 (U58a): *1* – 340-1237; *2* – 342-1184; *3* – 342-1185; *4* – 345-1217; *5* – 376-1149; *6* – 434-1117; *7* – 449-1231; *8* – 460-1444; *9* – 460-1445. Scale 10 mm



**Fig. 8.7.** Glass bangle fragments from contexts 682 (U74), 694 (U74), features F47 (U73), F326 (U86), and out of context: *1* – 682-617; *2* – 694-618; *3* – F47-10; *4* – F326-773; *5* – no context-1143. Scale 10 mm

[*Figs 8.4:9; 8.5:3*]. The external surfaces were adorned in different ways with canes and patches (sometimes the body was first covered with a monochrome opaque layer). The canes were coiled along the circumference of the bangle or applied on its top as a protruding element. The patches (slices of canes) were applied vertically and in series.

The canes were monochrome and bichrome. The monochrome canes were opaque orange or green, while the bichrome twisted ones were black/deep purple and white, yellow and translucent green. The striped patches were bichrome (yellow-translucent green-yellow) and polychrome (orange-yellow-translucent green-yellow-orange). In one case, an orange-yellow-translucent green-yellow-orange trail was applied centrally along the circumference of the bangle. In some specimens, a blackish trace of the separator was preserved on the interior, usually straight or slightly concave in section.

	Quinn numer and to arguing	man and man in the man and and and and	for the second of the second s	
A. Bangles with a polychro	me cane applied centrally			
No. Body color		Top cane color	Figures (context dating)	Parallels
A1 Dark blue		Orange–yellow–translucent green–yellow–orange	<i>8.1:8</i> (18th c.)	
B. Bangles with a coiled m	onochrome cane and a protri	uding monochrome cane applied centrally		
No. Body color	Coiled cane color	Top cane color	Figures (context dating)	Parallels
<b>B1</b> Black	Opaque green	Opaque green	8.7:4 (2nd q. of 17th c.)	
C. Bangles with a twisted l	oichrome cane coiled in two	to four turns and a protruding monochrome can	e applied centrally	
No. Body color	Coiled twisted cane color	Top cane color	Figures (context dating)	Parallels
C1 Translucent colorless	Black-white	Orange	8.1:10 (18th c.)	
C2 Translucent colorless	Yellow-translucent green	Orange	8.2:1 (18th c.)	
C3 Translucent colorless	Yellow–orange	Orange	8.2:6 (2nd h. of 17th c.), 8.3:8 (-), 8.4:8 (2nd h. of 17th c.), 8.6:2 (2nd h. of 17th c.), 8.6:5 (17th c. or earlier)	Whitehouse 2014: Cat. No. 1045—13th–20th c.
C4 Translucent amber	Yellow–orange	Orange	<i>8.2:</i> 7 (2nd h. of 17th c.), <i>8.2:9</i> ? (2nd h. of 17th c.)	Duckworth et al. 2016: TSG028?— bangle color uncertain, not earlier than 14th c.
C5 Translucent greenish	Yellow–translucent green	Orange	8.1:1 (-), 8.3:1 (-), 8.3:2 (2nd h. of 17th c.), 8.3:5 (1st q. of 17th c.), 8.5:1 (18th c.), 8.5:6 (-), 8.5:7 (-), 8.5:9 (-)	
C6 Translucent greenish	Yellow-translucent green	Opaque green	8.2:10A (2nd h. of 17th c.), 8.4:4 (3rd q. of 17th c.)	Spaer 1992: 52, Fig. 19 on the right; 2001: No. 476—brownish color of the bangle, exact hue uncertain, Eastern Mediterranean provenance and (Late?) Ottoman period dating; Carboni 1994: The Metropolitan

Table 8.2. Bangle types found during the 2018-2019 season at Old Dongola. Context dating is given in parentheses wherever possible

No. Body color	Coiled twisted cane color	Top cane color	Figures (context dating)	Parallels
				Museum of Art, New York, MET 10.130.1093a—probably 14th– 15th c., attributed to Egypt or Syria; Whitehouse 2014: Cat. No. 1042— 13th–20th c.
C7 Translucent dark green	Yellow-translucent green	Opaque green	8.1:3 ()	Duckworth et al. 2016: TSG009, not earlier than 14th c.
C8 Translucent green	Yellow-translucent green	Orange	8.3.9 (18th c.)	
C9 Translucent dark green	Black-white	Orange	8.3:3 (2nd h. of 17th c.)	
C10 Translucent dark green	Black-white	Opaque green	8.3:∉ (2nd h. of 17th c.)	
C11 Translucent dark green	Yellow-translucent green	Orange	8.1:5 (18th c.), 8.1:6 (18th c.)	
C12 Black	Yellow–orange	Orange	8.3:7 (2nd h. of 17th c.), 8.6:9 (1st h. of 17th c.)	Duckworth et al. 2016: TSG024, not earlier than 14th c.
	Yellow–orange	Orange	8.2:10B (2nd h. of 17th c.)	I
D. Bangles with a series of	vertical striped patches			
No. Body color	Patch color		Figures (context dating)	Parallels
D1 Black	Yellow-translucent green-}	/ellow/white	8.1:2 ()	Spaer 1992: 54, Fig. 14, Table 3:1d; 2001: 203, No. 474—Eastern Mediterranean provenance and (Late?) Ottoman period dating; Carboni 1994: The Metropolitan Museum of Art, New York, MET 10.130.1084a—probably 14th–15th c, attributed to Egypt or Syria; Whitehouse 2014: Cat. No. 1018— 13th–20th c.
D2 Blue	Orange–yellow–translucen	t green-yellow-orange	8.6.4 (18th c.)	

Table 8.2. (cont.)

(cont.)
8.2.
Table

des with a series of 0, 8.5:4—only an or ody color tanslucent colorless/ eenish ue ark blue	vertical striped patches an range fragment of a striped Patch color Orange-yellow- translucent green-yellow-orange translucent green-yellow-orange green-yellow-orange franslucent	l patch preserved) Top twisted cane color Yellow-translucent green Black-white Black-white	Figures (context dating)         8.4:7 (2nd h. of 17th c.),         8.4:10 (2nd h. of 17th c.),         8.7:5 (-)         8.1:9 (18th c.),         8.2:2 (17th c.),         8.4:6 (2nd h. of 16th c.)         8.4:6 (2nd h. of 17th c.),         8.2:4 (turn of 17th c.),         8.2:2 (18th c. or later)	Parallels  Parallels
blue	green-yellow-orange Orange-yellow- translucent green-yellow-orange	Yellow-translucent green	8.2:3 (-), 8.4:1 (-), 8.5:8 (-), 8.6:6 (-), 8.6:8 (1st h. of 17th c.)	Carboni 1994: The Metropolitan Museum of Art, New York, MET 10.130.1099—prob. 14th–15th c.,

	Parallels	Figures (context dating) 8.6:3 (2nd h. of 17th c.), 8.7:1 (1st h. of 18th c. or later)	Top cane color Orange	Patch color Drange-yellow- translucent green-vellow-oran	Yellow-translucent green	. Body color Translucent colorless	FI
	applied centrally	d a protruding monochrome cane	es of striped patches, and	o three turns, a seri	ichrome cane coiled in two t	3angles with a twisted bi	F. F
Whitehouse 2014: -13th-20th c.	Armant, Egypt; Cat. Nos 1024–						

to Egypt or Syria; Spacr 1992: 61, Fig. 25.18—Mamluk and later; UC25329 and UC25330—from

Museum of Art, New York, MET 10.130.1112—triangular section, probably 14th–15th c., attributed

8.4:2? (-), 8.5:4 (-), 8.6:7? (1st h. of 17th c.), 8.7:3 (2nd h. of 17th c.)

Black-white

E5 Opaque green

Orange-yellowtranslucent green-yellow-orange

attributed to Egypt or Syria Carboni 1994: The Metropolitan

No.	Body color	Coiled twisted cane color	Patch color	Top cane color	Figures (context dating)	Parallels
F2	Translucent colorless	Black-white	Orange-yellow- translucent green-yellow-orange	Orange	8.1:6 (18th c.), 8.5:2 (18th c.)	Whitehouse 2014: Cat. No. 1032— 13th–20th c.
F3	Translucent greenish	Yellow-translucent green	Orange-yellow- translucent green-yellow-orange	Orange	8.1:4 ()	
F4	Translucent black	Black-white	Orange-yellow- translucent green-yellow-orange	Orange	8.3:6 (−), 8.4:3 (17th–18th c.), 8.5:5 (−)	
G. B	angles with a monochro	ome layer (surface coating) a	ind a series of striped pa	atches		
No.	Body color	Layer color	Patch color		Figures	Parallels
G1	Translucent greenish	Opaque green	Orange-yellow-black- -yellow-orange	white-black-white-black	<i>8.6:1</i> (18th c.)	Spaer 1992: Fig. 12—Ottoman; Carboni 1994: The Metropolitan Museum of Art, New York, MET 10.130.1092—probably 14th–15th c., attributed to Egypt or Syria; Whitehouse 2014: Cat. No. 1016— 13th–20th c.
H. B	langles with a monochro	ome layer on the outer surfa	ice, a polychrome cane o	coiled in one turn, and a	protruding twisted bichrome	cane applied centrally
No.	Body color	Layer color	Coiled cane color	Top twisted cane color	Figures	Parallels
HI	Translucent greenish	Opaque green	Orange-yellow- translucent green-yellow-orange	Black and white	<i>8.2:5</i> (turn of 17th c.)	Lintz and Coudert 2013: Cat. No. 380—Ottoman period; Whitehouse 2014: Cat. No. 1055— 13th–20th c.

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#### Types and parallels

The bangles found during the 2018–2019 season at Old Dongola have been divided into types on the basis of the design pattern and color, and they formed eight groups, from A to H, with further divisions. Group A features a single bangle with a polychrome cane applied centrally [*Table 8.2A*]. Bangle fragments with a coiled monochrome cane and a protruding monochrome cane applied centrally were defined as Group B [*Table 8.2B*]. Group C comprises fragments with a twisted bichrome cane coiled in two to four turns and a protruding monochrome cane applied centrally on the top [*Table 8.2C*].

Groups D–G include fragments decorated with a series of vertical striped patches and with or without additional decorative elements [*Table 8.2D–G*]. Fragments with a series of vertical striped patches applied on the body make up Group D [*Table 8.2D*]. Fragments in Group E feature a series of vertical striped patches and a protruding twisted bichrome cane applied centrally [*Table 8.2E*]. Group F comprises bangles with a twisted bichrome cane coiled in two to three turns, a series of striped patches, and a protruding monochrome cane applied centrally [*Table 8.2F*]. A fragment with a monochrome layer (surface coating) and a series of striped patches belong to Group G [*Table 8.2G*].

A fragment with a monochrome layer on the outer surface, a polychrome cane coiled in one turn, and a protruding twisted bichrome cane applied centrally on the top has been assigned to Group H [*Table 8.2H*].

Due to the poor state of preservation of some fragments [*Figs 8.2:10B; 8.4:5*], several bangles could not be ascribed to a specific type. Figures are arranged according to the context and inventory number. Scale is 10 mm. Lowercase letters mark different views of the object.

### DISCUSSION

## Provenance and dating

Evidence of glass-bangle production is already found in glassmaking centers in Tyre in the last decade of the 13th century, in Sardis in Asia Minor between the late 10th and 13th centuries, and in Qawd am-Saila in Aden. Other manufacturing centers probably existed in Syria-Palestine and Egypt prior to the Ottoman conquest (Meyer 1992: 91; Spaer 2001: 197; Boulogne and Hardy-Guilbert 2010). In the period from the 16th to the 18th century, Hebron, Egypt, the Lebanese coast, India, and Yemen were most likely the largest producers of glass bangles (Spaer 2001: 198; Boulogne and Hardy-Guilbert 2010; Boulogne 2012). The bangle production of Bohemia and other European centers was, in turn, marginal and of late date (Spaer 1992: 47; 2001: 198). The color analysis of the beads from Old Dongola (Chapter 9, this volume, *Fig. 9.17*) has revealed that only a few orange beads were found at the site. Red hues, in turn, were present in the beads of mostly European and Indian origin. Conversely, in bangle decoration the orange color is frequently used, while red hues are lacking. This would suggest that the bangles were of Eastern Mediterranean (Egyptian or Levantine) provenance.
It seems that the common type of decoration (patches, canes, twisted canes), occurring in the 13th through 18th centuries, is not a sufficient chronological indicator, and more detailed studies, based on well-illustrated examples, are needed. Decorated glass bangles were found in the Red Sea port of Quseir dated to the late Ayyubid and Mamluk periods (mid-13th–14th centuries CE) (Meyer 1992), but none of them constitute exact parallels to the objects from Old Dongola. The whole collection in the Metropolitan Museum of Art, New York (MET), said to have originated in Upper Egypt, was dated to the Mamluk period (Carboni 1994) based on the comparison of the decorative elements (canes, patches) to the Quseir finds. However, some of them rather belong with the Ottoman-period fragments. Some bangle types from Old Dongola [*Figs 8.1:2, D1; 8.6:1, G1*], similar to the finds from the MET collection ascribed to the 14th–15th centuries, were dated by Maud Spaer (1992; 2001) to the Ottoman and (Late?) Ottoman periods.

Yoko Shindo (1996) and Spaer (1991; 2001) based their typologies of glass bangles on shapes and types of decorative patterns. According to Shindo's (1996; 2001) classification of Islamic glass bracelets, bangles with applied protruding decoration belong to Type D (especially D2b: vertical patches and twisted cane) and are attested in the archaeological material from al-Țur, Quseir al-Qadim, 'Aydhab, and Fustat, dated between the 13th and 15th centuries. Shindo's Types A (undecorated), B (spirally twisted), and C (marvered) were ascribed to the same period.

A type of decoration similar to the one applied on the bangles from Old Dongola—that is, a coiled twisted cane, patches, and a protruding monochrome cane—is classified by Spaer (1992) as Type D (multicolored) and dated between around 13th and 16th centuries CE (Spaer 2001: 203, No. 471).

The bangles from Fazzan (southwestern Libya), published by Duckworth et al. (2016) and comparable with the Old Dongola finds, were described simply as being not earlier than the 14th century. Likewise, bangles kept in the Corning Museum were generally dated between the 13th and 19th centuries (Whitehouse 2014).

Studies including chemical composition of the Mamluk to Ottoman-period glass bangles from Jordan and Yemen (Boulogne and Henderson 2009; Boulogne and Hardy-Guilbert 2010; Boulogne 2015) have not provided direct parallels for the Old Dongola finds. However, an example from Yemen was decorated with a twisted bichrome cane ("trip decoration") on "coloured layers" and "green core" (Boulogne and Hardy-Guilbert 2010: Figs 3/, 5/h, 7/e) and is therefore comparable to Old Dongola groups G and H due to the presence of an external opaque glass layer. It was attributed to context 2292 dated generally to the 17th–18th centuries (Boulogne and Hardy-Guilbert 2010: Fig. 7/l). Unfortunately, no more details were given concerning the colors (Boulogne and Hardy-Guilbert 2010: Fig. 3/l).

The archaeological contexts in which the glass bangles were found during the 2018–2019 season of fieldwork at Old Dongola were dated from the second half of the 16th century [*Table 8.2:E2*] through the turn of the 17th century [*Table 8.2:E3, H1*] and into the 18th century (Dzierzbicka 2021). However, it should be mentioned that some bangle types (e.g., E4) were evidenced in layers dated as early as the 14th–15th centuries, excavated during the 2019–2020 season at Old Dongola (Then-Obłuska forthcoming).

#### CHAPTER 8 GLASS BANGLES

#### Bangle owners and gendered spaces

According to Duckworth et al. (2016), the evil eye (*ain*) was particularly dangerous to younger women because of their beauty. The authors indicate that the use of polychrome glass bangles was more common among them to ward off this threat. In recent times, at least, such bangles were predominantly, if not exclusively, worn by women. The authors mention images from 19th- and early 20th-century European accounts of travelers in North Africa (e.g., Lyon 1985) that show women wearing bangles, often multiple ones of different colors and/or materials (Duckworth et al. 2016).

The term "gendered space" refers to the many ways in which space in its different forms material, discursive, metaphorical, emotional, and the like—is produced by and productive of gender norms and relations (e.g., Myrdahl 2019). The inner diameter of the better-preserved fragments of glass bangles at Old Dongola was about 55–60 mm, the width was between 6 m and 10 mm, and thickness, measured as the distance between the inner and outer surface, was between 3.5 mm and 10 mm. The units in which bangle fragments were found at Old Dongola (marked in [*Fig. 8.8*]) would represent the space where women, probably young ones judging by the small inner diameter lived and sometimes broke (and/or disposed of) their jewelry. In most cases, these were courtyards and/or rooms with traces of food processing (fireplace, stoves, benches, querns, pots, and storage bins) (Obłuski and Dzierzbicka 2021).

# Conclusions

Based on parallels from published scholarship, the dating of the Old Dongola 2018–2019 bangle fragments to a period between the 14th and the 18th centuries would correspond with the general dating of their find contexts, that is, the occupation of the compounds from the late 16th and into the 18th centuries. Quantitative analysis of bead colors (Chapter 9, this volume) revealed only a few instances of the orange hue, which, in contrast, was used in the decoration of nearly every bangle fragment. Therefore, the color difference seems to confirm that the bangles were of a different origin: Egyptian or Levantine, as opposed to the mostly European and Indian provenance of the beads. Since, based on their inner diameters and ethnographic data from North Africa offered by Duckworth et al. (2016), the Old Dongola bangles can be associated with female owners, the distribution of bangle fragments at the site could point to gendered spaces occupied by women. Further excavations, as well as typological and chemical composition studies, should bring more data on the chronology and provenance of glass-bangle types and offer new information relevant to studies on gendered spaces.

### Acknowledgments

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Fig. 8.8. Location of finds of bangle fragments marked on a plan of units excavated in Old Dongola in the 2018–2019 season (objects collected from the surface and the first layer not included)

												L				ು
Context dating					18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	17th c. or earlie		16th/17th c.	16th/17th c.	2nd h. of 17th
Found with inv. nos									813–821, 823–842	813–838, 840–842	813–839, 841–842			782	781	851–857, 859–860
Field no. (FN)																
Square					10Z52	10Z52, 10Z53, 10Y53	10Z52, 10Z53, 10Y53	10Z52	11B54	11B54	11B54	10Y52	10Y52	10Y52	10Y52	11A52
Zone	-		-		1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
nit									nder U86	nder U86	nder U86	73	73	73	73	2
ngth U	5	5	4.	.2	5		6.		.0 U	.4 U	.6 U	Ď	.6 U	.2 U	.1 U	-7. U
Th. Lei Em) (c	.7 1	.4 1	.65 3	.8	.65 1	.65	.8		.6 15	.7 1	.4 1		.7 3	.7 2	.6 2	.5 2
7idth 7 cm) (6	1 0	0.7 0	0.75 0	1 0	0.7 0	0.8 0	0.9 0		0.8 0	0	0		0.9 0	0.9 0	0.8 0	0
Pres. W ()				ca. 40												
Diam. (cm)				5.5 inner diam.												
No. of frgs	1	1	1	1	1	1	1	4	-	-	-	1	1	1	1	1
Type	C5	D1	C7	F3	C11	C11	F2	A1	E2	C1	C2	E2	E4	E3	HI	C3
Inv. no.	24	59	107	116	87	12	962	45	822	839	840	721	31	781	782	858
Cxt	1				3	12	12	14	38	38	38	46	48	49	49	81
Fig.	8.1:1	8.1:2	8.1:3	8.1:4	8.1:5	8.1:6	8.1:7	8.1:8	8.1.9	8.1:10	8.2:1	8.2:2	8.2:3	8.2:4	8.2:5	8.2:6

Table 8.3. Bangle fragments listed by context and inventory number

APPENDIX

(cont.)
8.3.
Table

	Cxt	Inv. no.	Type	No. of frg	s Diam. (cm)	Pres. in %	Width (cm)	Th. (cm)	Length (cm)	Unit	Zone	Square	Field no. (FN)	Found with inv. nos	Context dating
	85	613	C4	1				0.7	2.8	U82	1.1	11A52			2nd h. of 17th c.
	96	803		1				0.1	0.6	U80	1.1	10Z53		801–802, 804–805	18th c.
	100	151	C4	1			0.8	0.6	2.4	U18	1.1	10Z53			2nd h. of 17th c.
	105	746	C6	2				0.5	1.9	U18	1.1	10Z53			2nd h. of 17th c.
	105	746	Too fragmentary	-						U18	1.1	10Z53			2nd h. of 17th c.
st.	110	1228								U23/U24 surface	1	11B52			
	118	94	C3	$\mathcal{C}$			0.9	0.65	1.6	U6/U8/U36/73 surface	1.1	10W52			
	122	4	C5	1	ca. 6	ca. 25	0.9	0.65		U6 Phase I	1.1	10W/52			2nd h. of 17th c.
	128	20	ව	1	6		0.8		2.4	U8 Phase I	1.1	10U52	48		2nd h. of 17th c.
	128	32	C10	1			0.9	0.6	3.1	U8 Phase I	1.1	10W/52			2nd h. of 17th c.
	155	883	C5	$\mathcal{O}$			0.7	0.5	1.9	U15	1.6	10Y55		872–882, 884–890	1st q. of 17th c.
	158	171	F4	1	ca. 5.5	ca. 50	0.8	0.9	5.2	U5/U25/72/74/77 surface	1.6	10Y53			
	192	619	C12	1				0.7	3.5	U86	1.1	11B55			2nd h. of 17th c.
	193	614	C3	1				0.5	2.2	U27 surface	1.1	10Y54			
tst.	196	949		1					8.00	Under U77	1.1	10Z53			18th c.
	198	147	C8	2			0.8	0.65	3.1	U35	1.1	10Y-Z54			18th c.
	200	615	E4	1				0.7	2.7	U86 surface	1	11C54			
	200	682	E5?	2				0.7	1.9	U86 surface	1	11C54		677–681	Ι
	204	669	F4	1				0.7	3.3	Under U86	1.1	11B53/54		688–698, 717–720	17th–18th c.
	237	616	C6	3				0.6	3.6	U27	1.6	10Y53-54	283		3rd q. of 17th c.
tst.	250	871		1			0.3	0.1	0.7	U40	1.6	10Y55		861-870	2nd q. of 17th c.

(cont.)
8.3.
Table

ontext dating	nd h. of 16th c.	nd h. of 16th c.	nd h. of 17th c.	nd h. of 17th c.	nd h. of 17th c.	nd h. of 17th c.	8th c.	8th c.	8th c.	nd h. of 17th c.				1			8th c.	nd h. of 17th c.
Found with C inv. nos	1156, 2 1158–1182	1120–1127, 2) 1129	1219–1222 2	1218, 2 1220–1222	1223–1224 2	1131 2	1198-1200 1	1197, 18 199–1200	1	1242 2)	1212-1216 -	1211, – 1213–1216	1211, 1212, – 1214–1216	1211, 1213, - 1215-1216	1329–1330 –	1328, 1330 -	1238 1	1183, 21 1185–1186
Field no. (FN)																		
Square	10W/54	10W/54	11C53	11C53	11C53	10Z49	11D53	11D53	11D53	11D53	11D52	11D52	11D52	11D52	11D52	11D52	11D52	10D52
Zone	1.6	1.6	1	1	1	1.5	1.2	1.2	1.2	1		1	1	1	1	1	1.2	1.2
Jnit	J26b	J26b	J56	J56	J56	<u> </u>	J52	J52	J52	J56	J63/65 surface	J63/65 surface	J63/65 surface	J63/65 surface	J63/65 surface	J63/65 surface	J63	J63
ength ( cm)	J. 8.(	ſ	3.0 L	0.7 L	1.3 L	J 6.0	J 0.8	J 6.1	3.6 L	1.3 L	1.4 L	J <u>(1</u>	ſ	2.9 L	3.7 L	3.7 L	2.8 L	5.5 L
Th. Lo cm) (	.6 (		.7	0.	.5	.7 (	.6	.7	.8	.5	.55	.55		.6	.8	.6	.4	.7 0
idth ( cm) (	).6 (		0.6 (	1 6.0	).8 (		).8 (	).8 (	1.0 (	).6 (	0.75 0	).8 (		0.8 (	1.0 0	0.7 0	0.7 0	0
Pres. W in % (														-				
No. of frgs Diam. (cm)	10	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Type	Too fragmentary	E2	E1	C3	Not decorated	E1	C5	F2	E3	Not decorated	E5	F4	C5	C5	E4	C5	G1	C3
Inv. no.	1157	1128	1218	1219	1225	1130	1197	1198	1356	1241	1211	1212	1213	1214	1328	1329	1237	1184
Cxt	262	271	298	298	298	318	328	328	329	333	334	334	334	334	334	334	340	342
Fig.	8.4:5	8.4:6	8.4:7	8.4:8	8.4:9	8.4:10	8.5:1	8.5:2	Not illust.	8.5:3	8.5:4	8.5:5	8.5:6	8.5:7	8.5:8	8.5:9	8.6:1	8.6:2

	,	]				j			1		;		
Inv. no	ċ	Type	No. of frgs Diam. (cm)	Pres. in %	Width (cm)	Th. (cm)	Length (cm)	Unit	Zone	Square	Field no. Fo (FN) inv	und with v. nos	Context dating
118	2	F1	1			0.6	2.0	U63	1.2	10D52	11	83–1184, 86	2nd h. of 17th c.
133	36		1		0.9	0.7	5.2	U63	1.2	11D52			2nd h. of 17th c.
12]	[]	D2	1		0.8		0.65 -0.5	U56	-	11D54			18th c.
11	45		1		0.7	0.4	1.0	U46/51 surface	1.3	11G53			
11	49	C3	1		0.9	0.6	3.3	SE of U43/46/51	1.3	11G53	11	50-1155	17th c. or earlier
11	17	E4	1			0.7	3.1	U58a/73 surface	1.1	10W/51	11	13-1116	
12	231	E5?	1			0.35	0.9	U58a	1.1	10U51	12	29–1230, 32–1233	1st h. of 17th c.
	340		1					Trench in 10Y45 surface	1	10Y45	13.	37 - 1339, 41 - 1343	
	351		1		0.9	0.7	3.6	U66 surface	1.1	10T51	13.	52-1355	
-	352		1		0.8	0.7	2.4	U66 surface	1.1	10T51	13.	51, 53–1355	
	456		1		0.5	0.4	1.1	U73	1.1	10W51	14	55, 57–1459	1st h. of 17th c.
	444	E4	1		0.9	0.6	2.0	U58a	1.1	10U51	14.	45-1454	1st h. of 17th c.
Ë.	445	C12	1		0.9	0.7	3.4	U58a	1.1	10U51	14	44, 46–1454	1st h. of 17th c.
	517	F1	1					U74	1.1	10W-Y53			1st h. of 18th c. or later
	518	E3	1			0.8	3.6	U74	1.1	10Y53			18th c. or later
	10	E5	1		0.8	0.6	1.8	U73	1.1	10Y52			2nd h. of 17th c.
	773	B1	1			0.5	1.6	U86	1.1	11B55	77.	.4–776	2nd q. of 17th c
1	43	EI	1			0.7	6.5						

Table 8.3. (cont.)

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### CHAPTER 9

# BEADS, PENDANTS, AND CABOCHONS

### Joanna Then-Obłuska

### INTRODUCTION

More than 1,120 beads (centrally perforated objects), pendants (off-centrally perforated objects), and their fragments were excavated at Funj-period Old Dongola in the 2018–2019 season. By 1400 CE, the Nubian population had mostly converted from Christianity to Islam, and new Arab powers arose in eastern Sudan, around Suakin, and in the south, along the White Nile. In the latter area, a group known as the Funj founded the great Funj Dynasty at Sennar, which expanded to incorporate most of the Nilotic and eastern Sudan. The Third Cataract became a frontier between the Ottoman Empire in Egypt and the Funj Sultanate in Sudan from the late 16th century until 1821 (Fisher 2012: 42). The Kingdom of Dongola became the border zone between Ottoman and Funj territories, and its capital remained an important political and trade center until the end of the Funj period (El-Bushra 1971; O'Fahey and Spaulding 1974: 25–26). This can be easily traced through bead studies, which have already identified some short- and long-distance imports, including European ones, in that period (Then-Obłuska 2013). The recent excavations have brought to light more extensive evidence, which is presented in this chapter.

Inside the walls of Old Dongola, Funj-period domestic buildings were built of sun-dried brick, while outside, they were constructed either of sun-dried brick or canes and twigs. Both the extraand intramural compounds excavated in the 2018–2019 season were designated as sector 1. Apart from the specimens found on the surface (see below), the excavated beads were attributed to numbered streets, rooms, courtyards, or buildings defined as units (U) within the street grid, and attributed to six zones located inside and outside the city walls. In the walled area, the beads were excavated in a street and public square (U24, U56) and in three zones of the Funj-period residential quarter within the city walls, that is, in the northern quarter along the perimeter wall (zone 1.1: U2, U6, U8, U18, U35, U41, U58a, U73, U74, U76, U77, U86), in the quarter south of street U24 and west of courtyard U56 (zone 1.2: U32, U38, U39, U52, U63), and in the quarter between courtyard U56, street U49, and street U62 (zone 1.3: U45, U51). No beads were found in the quarter south of street U49 (zone 1.4). Beads were also recorded inside structures in the central part of the citadel (zone 1.5: U99, U100) and in the residential quarter outside the walls (zone 1.6: U9, U15, U20a, U21, U26a, U26b, U37, U40, U47, U93, U94). Descriptions of the excavated units have already been provided (Obłuski and Dzierzbicka 2021). To offer a better concordance, a guide to the units in which the beads were excavated in the 2018-2019 season is presented in Table 9.1.

According to the pottery studies included in this volume (Chapter 3) and <sup>14</sup>C data, the objects were found in contexts dated between the 16th and 18th centuries CE. All dates presented below

Table 9.1. A guide to the units and contexts that yielded beads excavated in sector 1 du	ring
the 2018–2019 season	

Zone	Compound	Units	Contexts	Figures	
Surface	e outside excavated area		1	9.1:1–18	
Test tr	rench in 10Y45		453 (surface)	9.14:11–13	
Perime	eter wall	Tower U66	454 (surface)	Not illustrated	
		Street 1124	274 (surface)	9.10:26	
Street	grid	Street 024	277	9.10:27–28	
		Courtyard U56	298	9.12:26–27	
Street g		U6/8/36/73	118 (surface)	9.4:4-8	
		U58a/73	434 (surface)	9.13:23–26	
		Courtyard U73	45, 134, 442, 456, F47	9.2:17–21, 9.4:18, 9.13:27, 9.14:1–2, 9.14:14–15, 9.14:25	
	U6/8/58a/58b/73	Room U58a	449, 460	9.14:3–10, 9.14:16–24	
		Room U8	128, 131	9.4:14–15, 9.4:17	
		Poom LIG	129	9.4:16	
			122 (phase I)	9.4:9–13	
		U5/25/72/74/77	158 (surface)	9.5:22–24	
	U5/25/72/73 east	Courtyard U73	242	Not illustrated	
	Building U74		F448, 689	<i>9.14:31</i> and not illustrated	
		U76/77	8, 14, 94 (surface)	<i>9.1:19–21</i> and not illustrated	
	Building U76/77	D. LI77	206	9.8:11–14	
1.1		Room U//	196 (under U77)	9.7:11–18	
		Passageway U1	79 (surface)	9.2:32, 9.3:1–3	
	U1/16/17/18/30/35	Courtyard U18	100, 104, 105	<i>9.3:24–37, 9.4:1</i> and not illustrated	
		Room U35	198	9.7:19–26	
	U1/17/30/79/80	Courtyard U80	96	9.3:19–23	
		Room U2 (early and middle phases)	81, 84, 86, 90	<i>9.3:4–18</i> and not illustrated	
		Room U33	35	9.1:25–26	
		Room U34	34 (surface)	9.1:23–24	
		Room U11	F157 (floor)	9.14:26	
			200 (surface)	9.7:27–30	
	U2/11/12/13/14/33/34/82/83/84/ 85/86	Courtyard U86	141, 176, 179 184, 186, F326	9.4:20–21, 9.6:28–43, 9.7:1–9, 9.14:28–30 and not illustrated	
			38, 204 (under U86)	9.1:27–33, 9.2:1–16, 9.7:31–33, 9.8:1–10	
		Enclosed space U41	268	9.10:13	

# CHAPTER 9 BEADS, PENDANTS, AND CABOCHONS

$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Zone	Compound	Units	Contexts	Figures
1.2   U32/38/39/87/88   U32/39   280 (surface)   9.10:29-33     Room U32   282, 285   9.10:34-40, 9.11:1-12   Room U38   295   9.12:1-25 and non illustrated     Room U39   292 (surface)   9.11:13-15   9.13:3-8 and non illustrated   9.13:3-8 and non illustrated     -   U63/65   334 (surface)   9.13:2-10   9.13:1-13     -   U63/65   334 (surface)   9.13:1-13     U44/45/48/55/59/60/71   U44/48/171   214 (surface)   Not illustrated     U44/45/48/55/59/60/71   U44/48/171   214 (surface)   9.13:1-13     U44/45/18   S80   9.13:2-10   not illustrated     U44/45/18   U44/45/1   214 (surface)   Not illustrated     U44/45/18   U44/45/1   380   9.13:2-8     U43/46/51   U44/51   365 (surface)   9.13:17     U43/46/51   U44/51   365 (surface)   9.13:2-8     U43/46/51   U97/98   273 (subsurface)   9.10:2-28     U43/46/51   U97/98   273 (subsurface)   9.10:2-32     Room U20a		U23/87/88/89	U23/24	110 (surface)	9.4:2–3
Room U32   282, 285   9.10:34-40, 9.11:1-12     Room U38   295   9.12:1-25 and not illustrated     -   Room U39   292 (surface)   9.11:13-15     -   Room U52   328, 329   9.13:3-8 and not illustrated     -   U63/65   334 (surface)   9.13:1-13     U44/45/48/55/59/60/71   U44/48/71   214 (surface)   Not illustrated     -   Room U63   340, 342   9.13:1-13     U44/45/48/55/59/60/71   U44/48/71   214 (surface)   Not illustrated     Building U45   380   9.13:12-13   not illustrated     U43/46/51   U45/70   362 (surface)   9.13:17     U43/46/51   SE of building U43/46/51   365 (surface)   9.13:17     U97/98/99/101   U97/98   273 (subsurface)   9.12:28     Quart   U97/98   273 (subsurface)   9.12:29     Church U100   U100   324   9.13:17     -   U20/36/93   160 (surface)   9.525     -   Room U20a   165, 171, 173   9.5226, 9.6'4-27 and not illustrate			U32/39	280 (surface)	9.10:29–33
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			Room U32	282, 285	9.10:34-40, 9.11:1-12
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		U32/38/39/87/88	Room U38	295	<i>9.12:1–25</i> and
$ \begin{array}{ c c c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	1.2				not illustrated
-   Roon U52   328, 329   9.13:3-8 and nor illustrated     -   U63/65   334 (surface)   9.13:3-8 and nor illustrated     -   Room U63   340, 342   9.13:11-13     U44/45/48/55/59/60/71   U44/48/71   214 (surface)   Nor illustrated     U44/45/48/55/59/60/71   U44/48/71   214 (surface)   Nor illustrated     U44/45/48/55/59/60/71   U44/48/71   214 (surface)   9.13:22     U44/45/1   380   9.13:22   0.13:14-15 and not illustrated     U44/45/1   Gourryard U51   F737   Nor illustrated     U43/46/51   365 (surface)   9.13:17   Statistrated     U43/46/51   U99/101   314 (surface)   9.13:18-21     U43/46/51   U99/101   314 (surface)   9.13:22     Church U100   U100   324   9.13:22     Church U100   U100   324   9.13:22     -   Courtyard U2a   160 (surface)   9.5:25     -   Room U2a   165, 171, 173   9.5:26, 0.6:4-27 and not illustrated     -   Room U26	1.2		Room U39	292 (surface)	9.11:13–15
$ \begin{array}{ c c c c c c } \hline & & & & & & & & & & & & & & & & & & $		_	Room U52	328, 329	<i>9.13:3–8</i> and
$ \begin{array}{ c c c c c c c } \hline \label{eq:constraint} & \begin{array}{c c c c c c c c } \hline \label{eq:constraint} & \begin{array}{c c c c c c c c c } \hline \mbox{Constraint} & \begin{array}{c c c c c c c c c c c c c c c c c c c $			11/2//5	224 (	not illustrated
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			Door 11(2	240 242	9.13:9-10
1.3 = 1.3		—	Koom U65	340, 342	9.13:11-13
$1.3 \qquad \qquad$			<u>U44/48//1</u> <u>U45/70</u>	214 (surface)	Not illustrated
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		U44/45/48/55/59/60/71	045//0	362 (surface)	9.13:14–15 and not illustrated
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			Building U45	380	9.13:22
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	1.3		Courtvard U51	F737	Not illustrated
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			U46/51	365 (surface)	9.13:17
$ \begin{array}{ c c c c c c c } & 1 & 1 & 1 & 1 & 1 \\ \hline U43/46/51 & 1 & 1 & 1 & 1 \\ \hline U43/46/51 & 1 & 1 & 1 & 1 \\ \hline U97/98 & 273 (subsurface) & 9.12:28 \\ \hline U97/98/99/101 & 1314 (surface) & 9.12:28 \\ \hline U97/98/99/101 & 1097/98 & 273 (subsurface) & 9.10:23-25 \\ \hline Room U99 & 318 & 9.12:29 \\ \hline Church U100 & U100 & \frac{324}{321} (surface) & 9.12:30, 9.13:1 \\ \hline \\ $		U43/46/51	SE of building	376	9.13:18-21
U99/101   314 (surface)   9.12:28     U97/98/99/101   U97/98   273 (subsurface)   9.10:23-25     Room U99   318   9.12:29     Church U100   U100   324   9.13:2			U43/46/51		
1.5   U97/98/99/101   U97/98   273 (subsurface)   9.10:23-25     Room U99   318   9.12:29     Church U100   U100   324   9.13:2     21 (surface)   9.12:30, 9.13:1   321   9.12:30, 9.13:1     Norm U200   160 (surface)   9.5:25     -   U20/36/93   160 (surface)   9.5:25     -   Room U20a   165, 171, 173   9.5:26, 9.6:4-27 and not illustrated     -   Room U20a   165, 171, 173   9.5:26, 9.6:4-27 and not illustrated     -   Room U20a   165, 171, 173   9.5:26, 9.6:4-27 and not illustrated     -   Room U27   193 (surface)   9.7:10     -   Courtyard U93   170   9.5:27-35, 9.6:1-3     Morn U26a   243, 261   9.8:15, 9.8:32-41     U15/26a/26b   Room U26a   243, 261   9.8:15, 9.8:32-41     I015/26a/26b   Room U26a   262, 271   9.9:1-29, 9.10:1-12, 9.10:1-12, 9.10:14-22     -   U15/37/40/103   150 (surface)   9.4:22     -   Courtyard U40   250   9.8:16-3			U99/101	314 (surface)	9.12:28
1.5   Room U99   318   9.12:29     Church U100   U100   324   9.13:2     321 (surface)   9.12:30, 9.13:1   321 (surface)   9.12:30, 9.13:1     -   U20/36/93   160 (surface)   9.5:25     -   Room U20a   165, 171, 173   9.5:26, 9.6:4-27 and not illustrated     -   Room U27   193 (surface)   9.7:10     -   Courtyard U93   170   9.5:27-35, 9.6:1-3     -   Room U26a   243, 261   9.8:15, 9.8:32-41     U15/26a/26b   Room U26b   262, 271   9.9:1-29, 9.10:1-12, 9.10:1-12, 9.10:14-22     -   U15/37/40/103   150 (surface)   9.4:22     -   U15/37/40/103   150 (surface)   9.4:22     -   U15/37/40/103   150 (surface)   9.4:22     -   U15/37/40   I55   9.4:24-30, 9.5:1-16     F470 (floor)   9.14:32-38   Room U37   154, 156   9.4:23, 9.5:17-21     Courtyard U40   250   9.2:31 and not illustrated   not illustrated   not illustrated     U21a/21		U97/98/99/101	U97/98	273 (subsurface)	9.10:23–25
$\begin{array}{ c c c c c c } \hline \mbox{Church U100} & U100 & \frac{324}{321} & 9.13:2 \\ \hline \mbox{321 (surface)} & 9.12:30, 9.13:1 \\ \hline \mbox{321 (surface)} & 9.5:25 \\ \hline \mbox{9.12:30, 9.13:1} \\ \hline \mbox{9.12:4:20} \\ \hline \mbox{9.13:2} \\ \hline 9.$	1.5		Room U99	318	9.12:29
1.6  U15/37/40  U100  U1000  U10000  U100000  U10000  U10000  U100000  U10000  U10000  U10000  U10000  U10000  U10000  U10000  U10000  U10000  U100000  U10000  U100000  U100000  U10000  U10000  U100000  U10000  U100000  U1000000  U100000  U1000000  U100000  U100000  U1000000  U1000000  U1000000  U1000000  U1000000  U1000000  U10000000  U10000000  U1000000000  U10000000  U1000000000  U100000000  U10000000000		Church U100	L100	324	9.13:2
$ \begin{array}{c c c c c c c } \hline & U20/36/93 & 160 (surface) & 9.5:25 \\ \hline & & & & & & & & & & & & & & & & & &$	1.3		0100	321 (surface)	9.12:30, 9.13:1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			U20/36/93	160 (surface)	9.5:25
$1.6 \begin{array}{ c c c c c c } \hline & \text{not illustrated} \\ \hline & & \text{Room U27} & 193 (surface) & 9.7:10 \\ \hline & & \text{Courtyard U93} & 170 & 9.5:27-35, 9.6:1-3 \\ \hline & \text{Room U26a} & 243, 261 & 9.8:15, 9.8:32-41 \\ \hline & \text{Room U26b} & 262, 271 & 9.9:1-29, 9.10:1-12, \\ & 9.10:14-22 \\ \hline & & U15/37/40/103 & 150 (surface) & 9.4:22 \\ \hline & & U15/37/40/103 & 150 (surface) & 9.4:22 \\ \hline & & U15/37/40 & 155 & 9.4:24-30, 9.5:1-16 \\ \hline & \text{F470 (floor)} & 9.14:32-38 \\ \hline & \text{Room U37} & 154, 156 & 9.4:23, 9.5:17-21 \\ \hline & \text{Courtyard U40} & 250 & 9.8:16-31 \\ \hline & & U21/29 & 53 (surface) & 9.2:25 \\ \hline & \text{U21a/21b/28a/28b/29/47a/47b/96} \\ \hline & \text{Building U21a/21b} & 74, 352 & 9.2:31 \text{ and} \\ & \text{not illustrated} \\ \hline & \text{Building U47a/47b} & F203 & 9.14:27 \\ \hline & \text{Courtyard U96} & \frac{52 (surface)}{58 (ash from hearth} & 9.2:29 \\ \hline & \text{under 52} \\ \hline \end{array}$			Room U20a	165, 171, 173	<i>9.5:26, 9.6:4–27</i> and
$\frac{-}{-} = \frac{1}{1.6} \frac{1}$					not illustrated
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			Room U27	193 (surface)	9.7:10
$1.6 \begin{array}{ c c c c c c c c } & Room U26a & 243, 261 & 9.8:15, 9.8:32-41 \\ \hline Room U26b & 262, 271 & 9.9:1-29, 9.10:1-12, \\ 9.10:14-22 & 9.10:14-22 \\ \hline \\ \hline \\ & & \\ \\ \hline \\ & & \\ \\ \hline \\ & \\ \\ \hline \\ & \\ \\ \hline \\ & \\ \\ \\ \hline \\ & \\ \\ \\ \\$			Courtyard U93	170	9.5:27–35, 9.6:1–3
$1.6 \begin{array}{c ccccccccccccccccccccccccccccccccccc$			Room U26a	243, 261	9.8:15, 9.8:32–41
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		U15/26a/26b	Room U26b	262, 271	9.9:1–29, 9.10:1–12, 9.10:14–22
$1.6 \begin{array}{c} \\ \\ 1.6 \end{array} \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$		—	U15/37/40/103	150 (surface)	9.4:22
$1.6  U15/37/40 = \begin{bmatrix} Room U15 & F470 (floor) & 9.14:32-38 \\ \hline Room U37 & 154, 156 & 9.4:23, 9.5:17-21 \\ \hline Courtyard U40 & 250 & 9.8:16-31 \\ \hline - & U21/29 & 53 (surface) & 9.2:25 \\ \hline U21a/21b/28a/28b/29/47a/47b/96 & Building U21a/21b & 74, 352 & 9.2:31 and not illustrated \\ \hline Building U47a/47b & F203 & 9.14:27 \\ \hline Courtyard U96 & 52 (surface) & 9.2:22-24 \\ \hline S8 (ash from hearth under 52) & 9.2:29 \\ \hline \end{bmatrix}$			D	155	9.4:24–30, 9.5:1–16
Room U37 154, 156 9.4:23, 9.5:17-21   Courtyard U40 250 9.8:16-31   — U21/29 53 (surface) 9.2:25   Building U21a/21b 74, 352 9.2:31 and not illustrated   U21a/21b/28a/28b/29/47a/47b/96 Building U47a/47b F203 9.14:27   Courtyard U96 52 (surface) 9.2:22-24   S8 (ash from hearth under 52) 9.2:29	1.6		Room U15	F470 (floor)	9.14:32–38
Courtyard U40   250   9.8:16–31     —   U21/29   53 (surface)   9.2:25     Building U21a/21b   74, 352   9.2:31 and not illustrated     U21a/21b/28a/28b/29/47a/47b/96   Building U47a/47b   F203   9.14:27     Courtyard U96   52 (surface)   9.2:22–24     S8 (ash from hearth under 52)   9.2:29	1.6	015/3//40	Room U37	154, 156	9.4:23, 9.5:17–21
-   U21/29   53 (surface)   9.2:25     Building U21a/21b   74, 352   9.2:31 and not illustrated     U21a/21b/28a/28b/29/47a/47b/96   Building U47a/47b   F203   9.14:27     Courtyard U96   52 (surface)   9.2:22-24     58 (ash from hearth under 52)   9.2:29			Courtyard U40	250	9.8:16–31
Building U21a/21b   74, 352   9.2:31 and not illustrated     U21a/21b/28a/28b/29/47a/47b/96   Building U47a/47b   F203   9.14:27     Courtyard U96   52 (surface)   9.2:22-24     under 52)   52 (surface)   9.2:29		—	U21/29	53 (surface)	9.2:25
U21a/21b/28a/28b/29/47a/47b/96 Building U47a/47b F203 9.14:27   Courtyard U96 52 (surface) 9.2:22-24   58 (ash from hearth under 52) 9.2:29			Building U21a/21b	74, 352	<i>9.2:31</i> and
$\frac{\text{U21a/21b/28a/28b/29/47a/47b/96}}{\text{Courtyard U96}} \frac{52 \text{ (surface)}}{58 \text{ (ash from hearth}} \frac{9.2:22-24}{9.2:29}$			Building U472/47b	F203	9 14·27
Courtyard U96 58 (ash from hearth 9.2:29 under 52)		U21a/21b/28a/28b/29/47a/47b/96		52 (surface)	0 2.22_24
under 52)			Courtyard U96	58 (ash from hearth	9.2.29
- /				under 52)	) · Lu · Lu /
Room U9 55 9.2:26–28			Room U9	55	9.2:26–28
Courtyard U94 68, 363 9.2:30, 9.13:16		U9/10/94	Courtyard U94	68, 363	9.2:30, 9.13:16

rely on the absolute chronology based on radiocarbon dating sequences (Dzierzbicka 2021). In **zone 1.1**, the relative sequence of structures in combination with radiocarbon dates indicates that the excavated compounds were occupied in the 17th and into the 18th century. The deepest strata in U2 may be as early as the first half of the 16th century. The established dates point to the end of the 16th century and early 17th century as the time of the accumulation of the levels of courtyard U73 in the east (deposit 49) and to the first half of the 17th century for courtyard U86 in the west, as well as for the construction of U58. Compound U1/16/17/18/30/35 may have been built in the same period. Occupational layers in U6 and U8 were dated to the second half of the 17th century, which may also have been the time of the construction of the largest compound in this zone, U2/11/12/13/14/33/34/82/83/84/85/86. One of the latest structures in this zone, U7, probably dates from the turn of the 18th century or somewhat later. This period also seems to have been the time of occupation of compound U1/17/30/79/80, building U76/77, which followed U7/75, as well as building U5/25/72, followed by U74.

In zone 1.3, a date at the turn of the 17th century can be proposed for the occupational layer 371 in U50, the corridor-turned-storeroom. The compounds on the latest occupational level in this zone may be contemporary or slightly later, while the remains of an earlier phase visible southwest of compound U43/46/51 could be of a late 16th-century date.

In zone 1.6, outside the city walls, the earliest deposits in U26b are dated to the second half of the 16th century (contexts 262 and 271), and the respective construction phases apparently date to the 17th century. Phase I, marked by the construction of U21, U28, and U47, seems to fall at the turn of the 17th century. The occupation of these units continued in phase II, in the first half of the 17th century, when the construction of U29, U20, and compound U15/37/40 took place. Phase III, which can be dated to the mid-17th century, saw the construction of U27 and U36, as well as the continued occupation of U29. The latest radiocarbon-dated structures in this area seem to have been built in the late 17th century.

In general, the bead study presented below confirms this dating, although some earlier intrusions and reused objects were also observed. Apart from a few specimens found out of context, the beads, pendants, and materials used in their production were registered in the following deposits and features (F) distinguished within the units in sector 1:

- Surface deposits and features (F) with bead finds: 1, 8, 14, 18, 34, 38, 52, 53, 58, 79, 94, 110, 118, 128, 135, 150, 158, 160, 165, 193, 196, 200, 204, 206, 214, 273, 274, 280, 314, 321, 334, 362, 365, 367, 434, 453, 454, F157, F470.
- Other deposits and features (F) with bead finds: 35, 45, 49, 55, 68, 74, 81, 84, 86, 90, 96, 100, 104, 105, 122, 129, 131, 134, 141, 154–156, 170, 171, 173, 176, 179, 184, 186, 198, 243, 250, 261, 262, 268, 271, 277, 282, 285, 292, 295, 298, 318, 324, 328, 329, 340, 342, 352, 363, 380, 442, 449, 456, 460, 689, F47, F203, F326, F448, F737.

All objects, arranged according to context and inventory number, are listed in *Table 9.2*, and almost all are illustrated in *Figs 9.1–14*. The finds without context are given at the end of *Table 9.2* and at the bottom of *Fig. 9.14*.

An overwhelming majority of the beads were single, that is, not threaded, specimens. Some of them were unearthed together with others, suggesting some association, and the figure numbers for these beads are highlighted in *Table 9.2*. Only in a few cases, the beads were found on string fragments; these are described in the section on the preserved traces of beadwork. An overview of

probable evidence of beadmaking at the site and a more detailed outline of the possible origin of the glass beads, as well as a consideration of the beads' function, owners, and their aesthetic, are provided in the "Discussion" section further on in the chapter.

# Methods

The beads and pendants were made using a variety of materials and techniques. The quantitative data and macroscopic observations presented below are grouped according to material: organic (wood, coral, marine mollusk shell, ostrich eggshell), clay, stone (carnelian, agate, etc.), and human-made (faience, glass). Next, the beads are arranged according to the technique of manufacture, which is described in relevant sections. Descriptions of shape and length follow Horace Beck's (1928) classification. Indication is made of the appearance of beads in early dated contexts, that is, the 16th century. Parallels and provenance are given wherever possible.

Photographs of the beads are arranged in *Figs 9.1–9.14* according to the context and inventory number. Scale is 5 mm. Lowercase letters mark different views of the object.

### MATERIALS AND TECHNIQUES

The assemblage was dominated by glass beads and pendants, their fragments, and semi-finished products (88%). Other materials were less commonly represented: marine mollusk shell (4%), ostrich eggshell (3%), clay (3%), wood, coral, stone, and faience (less than 1% each).

### Wood

Nine beads and five fragments were made of wood. Small beads, around 5 mm in diameter, belonged to the short barrel type [*Figs 9.2:9; 9.5:16*]. Others were large, about 10 mm in diameter, and these were disc truncated bicone [*Fig. 9.2:24*], globular, and oblate beads [*Figs 9.2:27; 9.5:35; 9.6:21; 9.13:22, 25; 9.14:31*].

Wooden beads are not common finds in Nubia. This may, at least in part, be due to preservation factors and excavation bias (D. Dzierzbicka, personal communication). Exceptional specimens have been discovered in post-Meroitic tombs and attributed to desert dwellers called the Blemmyes, as well as in burials in forecourts of royal tombs at Nobadian Qustul (Emery and Kirwan 1938; Then-Obłuska 2016b: 40).

### Coral

Two beads, less than 5 mm in diameter, were likely made of the Mediterranean Sea coral, *Coral-lium rubrum* [*Figs 9.10:2, 6*, from context 262 dated to the second half of the 16th century]. Coral beads are known from beadwork found at medieval and post-medieval Nubian sites (Then-Obłuska 2013; 2016a; 2017) as well as from textual records (see Spaulding 1974 and Edwards 2004: 271 for Theodor Krump's account from 1700–1702, mentioning slave girls of the king in Sennar wearing beads of Venetian glass together with agate and coral around their necks).



**Fig. 9.1.** Beads and pendants from contexts 1, 8 (U76/77), 14 (U76/77), 18 (U14, U16, U35), 34 (U34), 35 (U33), 38 (U86): 1 - 1-25; 2 - 1-36; 3 - 1-46; 4 - 1-49; 5 - 1-50; 6 - 1-51; 7 - 1-52; 8 - 1-53; 9 - 1-54; 10 - 1-55; 11 - 1-56; 12 - 1-60; 13-14 - 1-61; 15 - 1-105; 16 - 1-106; 17 - 1-117; 18 - 1-1349; 19 - 8-18; 20 - 8-19; 21 - 14-48; 22 - 18-96; 23 - 34-99; 24 - 34-1359; 25 - 35-610; 26 - 35-700; 27 - 38-813; 28 - 38-814; 29 - 38-815; 30 - 38-816; 31 - 38-817; 32 - 38-818. Scale 5 mm

CHAPTER 9 BEADS, PENDANTS, AND CABOCHONS



**Fig. 9.2.** Beads and pendants from contexts 38 (continued), 45 (U73), 49 (U73), 52 (U96), 53 (U21, U29), 55 (U9), 58 (U96), 68 (U94), 74 (U21), 79 (U1): *1* – 38-819; *2* – 38-820; *3*–5 – 38-821; *6* – 38-823; *7* – 38-824; *8* – 38-825; *9* – 38-826; *10* – 38-827; *11* – 38-828; *12* – 38-829; *13* – 38-830; *14* – 38-831; *15* – 38-832; *16* – 38-833; *17* – 45-14; *18* – 45-17; *19* – 49-29; *20* – 49-30; *21* – 49-43; *22*–23 – 52-101; *24* – 52-102; *25* – 53-39; *26* – 55-33; *27* – 55-34; *28* – 55-35; *29* – 58-167; *30* – 68-169; *31* – 74-740; *32* – 79-40. Scale 5 mm



**Fig. 9.3.** Beads and pendants from contexts 79 (continued), 81 (U2), 84 (U2), 86 (U2), 90 (U2), 96 (U80), 100 (U18), 104 (U18): *1*–3 – 79-41; *4* – 81-2; *5* – 81-11; *6* – 81-57; *7* – 81-851; *8* – 81-853; *9* – 81-854; *10* – 81-855; *11* – 81-856; *12* – 81-857; *13* – 81-860; *14* – 84-15; *15* – 84-570; *16* – 86-98; *17* – 90-602; *18* – 90-608; *19* – 96-801; *20* – 96-802; *21* – 96-804; *22* – 96-805; *23* – 96-808; *24* – 100-148; *25* – 100-149; *26* – 100-152; *27*–35 – 100-153; *36* – 100-154; *37* – 104-745. Scale 5 mm



**Fig. 9.4.** Beads and pendants from contexts 105 (U18), 110 (U23), 118 (U6, U8, U36, U73), 122 (U6), 128 (U8), 129 (U6), 131 (U8), 134 (U73), 135 (---), 141 (U86), 150 (U15/37/40/103), 154 (U37), 155 (U15): I - 105-607; 2 - 110-172; 3 - 110-777; 4-5 - 118-90; 6 - 118-91; 7 - 118-92; 8 - 118-93; 9 - 122-1; I0 - 122-3; II - 122-5; I2 - 122-9; I3 - 122-26; I4 - 128-21; I5 - 128-97; I6 - 129-28; I7 - 131-27; I8 - 134-42; I9 - 135-726; 20 - 141-157; 2I - 141-158; 22 - 150-22; 23 - 154-159; 24 - 155-595; 25 - 155-596; 26 - 155-597; 27 - 155-728; 28 - 155-729; 29 - 155-732; 30 - 155-733. Scale 5 mm



**Fig. 9.5.** Beads and pendants from contexts 155 (continued), 156 (U37), 158 (U5/25/72, U74, U77), 160 (U20, U36, U93), 165 (U20a), 170 (U93): *1* – 155-734; *2* – 155-735; *3* – 155-736; *4* – 155-737; *5* – 155-739; *6* – 155-872; *7* – 155-873; *8* – 155-874; *9* – 155-875; *10* – 155-876; *11* – 155-877; *12* – 155-878; *13* – 155-879; *14* – 155-880; *15* – 155-881; *16* – 155-882; *17* – 156-806; *18* – 156-807; *19* – 156-809; *20* – 156-811; *21* – 156-810; *22* – 158-626; *23* – 158-643; *24* – 158-644; *25* – 160-603; *26* – 165-623; *27* – 170-160; *28–34* – 170-161; *35* – 170-162. Scale 5 mm

CHAPTER 9 BEADS, PENDANTS, AND CABOCHONS



**Fig. 9.6.** Beads and pendants from contexts 170 (continued), 171 (U20a), 173 (U20a), 176 (U86), 184 (U86): 1-2 - 170-163; 3 - 170-164; 4 - 171-165; 5 - 171-629; 6 - 171-632; 7 - 171-633; 8 - 171-634; 9 - 171-635; 10 - 171-636; 11 - 171-637; 12 - 171-638; 13 - 171-639; 14 - 171-752; 15 - 171-753; 16 - 171-754; 17 - 171-756; 18 - 171-757; 19 - 173-589; 20 - 173-590; 21 - 173-591; 22 - 173-592; 23 - 173-683; 24 - 173-684; 25 - 173-685; 26 - 173-686; 27 - 173-687; 28 - 176-564; 29 - 176-566; 30 - 176-567; 31-33 - 184-758; 34-35 - 184-759; 36 - 184-760; 37-38 - 184-761; 39-41 - 184-762; 42-43 - 184-763. Scale 5 mm



**Fig. 9.7.** Beads and pendants from contexts 184 (continued), 186 (U86), 193 (U27), 196 (U77), 198 (U35), 200 (U86), 204 (U86): *1* – 184-764; *2* – 184-765; *3*–*4* – 184-766; *5* – 184-767; *6* – 184-768; *7* – 184-771; *8* – 186-748; *9* – 186-749; *10* – 193-168; *11–13* – 196-897; *14–15* – 196-941; *16–17* – 196-942; *18* – 196-943; *19* – 198-150; *20* – 198-155; *21* – 198-156; *22–25* – 198-240; *26* – 198-241; *27* – 200-606; *28* – 200-678; *29* – 200-680; *30* – 200-681; *31* – 204-689; *32* – 204-690; *33* – 204-691. Scale 5 mm

CHAPTER 9 BEADS, PENDANTS, AND CABOCHONS



Fig. 9.8. Beads and pendants from contexts 204 (continued), 206 (U77), 243 (U44/48/71), 250 (U40), 261 (U26a): 1 - 204-692; 2 - 204-693; 3 - 204-694; 4 - 204-695; 5 - 204-696; 6 - 204-697; 7 - 204-698; 8 - 204-717; 9 - 204-718; 10 - 204-719; 11 - 206-722; 12 - 206-723; 13 - 206-724; 14 - 206-725; 15 - 243-778; 16 - 250-742; 17 - 250-743; 18 - 250-744; 19-22 - 250-861; 23 - 250-862; 24 - 250-863; 25 - 250-864; 26 - 250-865; 27 - 250-866; 28 - 250-867; 29 - 250-868; 30 - 250-869; 31 - 250-870; 32 - 261-1103; 33 - 261-1104; 34 - 261-1105; 35 - 261-1106; 36 - 261-1107; 37 - 261-1108; 38 - 261-1109; 39 - 261-1110; 40 - 261-1111; 41 - 261-1112. Scale 5 mm



**Fig. 9.9.** Beads and pendants from context 262 (U26b): *1* – 262-1118; *2* – 262-1119; *3* – 262-1156; *4* – 262-1158; *5*–7 – 262-1159; *9* – 262-1160; *9*–10 – 262-1161; *11* – 262-1162; *12*–14 – 262-1163; *15* – 262-1164; *16*–17 – 262-1165; *18* – 262-1166; *19* – 262-1167; *20* – 262-1168; *21* – 262-1169; *22* – 262-1170; *23* – 262-1171; *24*–27 – 262-1172; *28*–29 – 262-1173. Scale 5 mm



**Fig. 9.10.** Beads and pendants from contexts 262 (continued), 268 (U41), 271 (U26b), 273 (U97/98), 274 (U24), 277 (U24), 280 (U32/39), 282 (U32): *1* – 262-1174; *2* – 262-1176; *3* – 262-1177; *4*–5 – 262-1178; *6*–8 – 262-1179; *9* – 262-1180; *10*–*12* – 262-1181; *13* – 268-1138; *14* – 271-1120; *15* – 271-1121; *16* – 271-1122; *17* – 271-1123; *18* – 271-1124; *19* – 271-1125; *20* – 271-1126; *21* – 271-1127; *22* – 271-1141; *23* – 273-1146; *24* – 273-1147; *25* – 273-1148; *26* – 274-624; *27* – 277-627; *28* – 277-628; *29* – 280-620; *30* – 280-621; *31* – 280-640; *32* – 280-641; *33* – 280-642; *34*–*39* – 282-244; *40* – 282-245. Scale 5 mm



**Fig. 9.11.** Beads and pendants from contexts 282 (continued), 285 (U32), 292 (U39): *1* – 282-611 (?); *2* – 285-599; *3* – 285-600; *4* – 285-601; *5* – 285-622; *6*–7 – 285-672; *8*–9 – 285-673; *10* – 285-674; *11* – 285-675; *12* – 285-676; *13* – 292-646; *14* – 292-647; *15* – 292-648. Scale 5 mm



**Fig. 9.12.** Beads and pendants from contexts 295 (U38), 298 (U56), 314 (U99/101), 318 (U99), 321 (U100): 1–3 – 295-650; 4 – 295-651; 5 – 295-652; 6 – 295-653; 7 – 295-654; 8 – 295-655; 9–10 – 295-656; 11 – 295-657; 12 – 295-658; 13–14 – 295-659; 15–16 – 295-660; 17–18 – 295-661; 19 – 295-662; 20 – 295-664; 21 – 295-666; 22 – 295-667; 23 – 295-668; 24 – 295-670; 25 – 295-671; 26 – 298-1221; 27 – 298-1222; 28 – 314-1137; 29 – 318-1131; 30 – 321-1227 (continued in Fig. 9.13). Scale 5 mm



**Fig. 9.13.** Beads and pendants from contexts 321 (continued), 324 (U100), 328 (U52), 329 (U52), 334 (U63, U65), 340 (U63), 342 (U63), 362 (U45, U70), 363 (U94), 365 (U46/51), 376 (—), 380 (U45), 434 (U58a/73), 442 (U73): 1 - 321-1227 (continued); 2 - 324-1142; 3 - 328-1199; 4 - 328-1200; 5 - 328-1327; 6 - 329-1204; 7 - 329-1205; 8 - 329-1206; 9 - 334-1215; 10 - 334-1330; 11 - 340-1208; 12 - 340-1210; 13 - 342-1183; 14 - 362-1132; 15 - 362-1133; 16 - 363-1248; 17 - 365-1207; 18 - 376-1151; 19 - 376-1152; 20 - 376-1154; 21 - 376-1155; 22 - 380-1201; 23 - 434-1113; 24 - 434-1114; 25 - 434-1115; 26 - 434-1116; 27 - 442-1331. Scale 5 mm



Fig. 9.14. Beads, pendants, and a cabochon from contexts 442 (continued), 449 (U58a), 453 (—), 456 (U73), 460 (U58a), F47 (U73), F157 (U11), F203 (U47), F326 (U86), F448 (U74), F470 (U15) and out-of-context finds: 1 - 442-1332; 2 - 442-1333; 3 - 449-1229; 4 - 449-1230; 5 - 449-1233; 6 - 449-1244; 7 - 449-1245; 8 - 449-1246; 9 - 449-1247; 10 - 449-1258 (?) not in inventory; 11 - 453-1337; 12 - 453-1338; 13 - 453-1339; 14 - 456-1456; 15 - 456-1457; 16 - 460-1325; 17 - 460-1446; 18 - 460-1447; 19 - 460-1448; 20 - 460-1449; 21 - 460-1450; 22 - 460-1451; 23 - 460-1452; 24 - 460-1453; 25 - F47-8; 26 - F157-727; 27 - F203-625; 28 - F326-774; 29 - F326-775; 30 - F326-776; 31 - F448-1139; 32 - F470-630; 33 - F470-843; 34 - F470-844; 35 - F470-845; 36 - F470-846; 37 - F470-848; 38 - F470-849; 39 - No context data-13-c; 40 - No context data-605; 41 - No context data-1367; 42 - 1-58. Scale 5 mm

### Marine mollusk shell

All 40 perforated marine mollusk shells are of Red Sea or Indian Ocean origin (*Cypraea moneta*, *Marginella* sp., *Conus taeniatus, Engina mendicaria*).

Thirty-two specimens of *Monetaria (Cypraea) moneta* shells from Old Dongola were perforated by removing their upper, dorsal part, thus producing larger or smaller openings [*Figs 9.1:5, 15, 25; 9.2:26; 9.3:24; 9.4:11, 15, 20; 9.7:10; 9.10:10–11; 9.11:1, 8, 15; 9.12:30; 9.13:10; 9.14:10, 24, 41*]. Only in one case, the shell was simply perforated by making a small cut [*Fig. 9.1:6*].

The bodies of four *Marginella* sp. shells [*Figs 9.11:9; 9.14:5–6*] were probably intentionally perforated, and one *Conus taeniatus* shell had its cone removed, so that they could be suspended as pendants [*Fig. 9.10:12*]. Additionally, one other fragment of a *Conus* sp. shell was recorded [*Fig. 9.10:11*].

Two *Engina mendicaria* shells have been only partially preserved, and it is uncertain whether they were intentionally perforated to be suspended [*Figs 9.3:22; 9.7:3*].

Some *Cypraea* and *Conus* beads were found in context 262, dated to the second half of the 16th century [*Fig. 9.10:10–12*].

Except for *Cypraea moneta*, all species were also used in beadmaking at earlier-dated Nubian sites (e.g., Then-Obłuska 2018b). While *Cypraea annulus* dominated in the marine-shell pendant assemblages from the post-Meroitic period—that is, 4th–6th centuries CE (e.g., Then-Obłuska 2018b)—*Cypraea moneta* is only well evidenced in later times at Old Dongola and at other Nubian sites (Then-Obłuska 2013: Fig. 1:190; 2016a: Fig. 3.1, Sahaba 401/60:1, a small cut perforation). An outstanding example of using cowry beads—in the form of decorated masks—survives on a wall painting depicting a dance scene from the monastery on Kom H at Old Dongola (Martens-Czarnecka 2011: Cat. 109).

# Ostrich eggshell

Thirty beads of ostrich eggshell of diverse shape and size were recorded. Tiny beads, about 3 mm in diameter, were perforated with a tapered drill [*Figs 9.4:23; 9.14:13*]. Small disc cylinders and short cylinders, around 5 mm in diameter, had a cylindrical perforation [*Figs 9.1:20; 9.4:8; 9.9:18; 9.10:5, 19, 23; 9.12:25; 9.13:20*]. A few of them [*Figs 9.9:18; 9.10:19*] were found in contexts 262 and 271, dated as early as the second half of the 16th century.

Large discs, around 10 mm in diameter, could have been perforated with a tapered drill. One disc bead had retouched edges [*Fig. 9.13:12*], while others were irregular and had unworked edges [*Figs 9.4:21; 9.5:27; 9.6:28*]. However, the surfaces of the bead shown in *Fig. 9.4:21*, as well as of six beads from courtyard U93 [*Fig. 9.5:27*], were worn, also in the unworked parts. This would indicate that these irregularly shaped beads were used; thus, they are neither unfinished products nor proofs of production. Some large discs also had cylindrical perforations and smoothed edges [*Figs 9.3:13; 9.11:10; 9.12:28*].

Although ostrich eggshell beads were seldom found in Makurian and post-Makurian contexts at Old Dongola (Then-Obłuska 2013: Fig. 5:39), regularly shaped small-disc and short cylinders with cylindrical perforations are known from other Makurian sites (e.g., Then-Obłuska and Wagner 2018: Fig. 1D, F for Ghazali beads). Large discs with retouched edges were found in Early Makurian tombs (e.g., Then-Obłuska 2016c for beads from El-Zuma; 2018b).

#### Stone

Nine stone beads made of chalcedony and black stone, including one unperforated specimen, have been recorded. Carnelian, a variety of chalcedony, is defined here as orangish or reddish chalcedony with essentially no banding. All other types of chalcedony, with either banding or other patterns and in a variety of colors, are called agate or onyx.

# Carnelian

A long cylinder bead, 16 mm in length, was drilled from both ends producing a double-cylinder shape of perforation [*Fig. 9.14:4*].

A short bicone or oblate bead measured 7 mm in diameter and 5 mm in length [*Fig. 9.7:28*]. It featured some irregular faceting, probably to resemble a short hexagonal bicone.

A large bead, 19 mm in diameter and 14 mm in length, was a short heptagonal bicone with truncated ends and chamfered sides [*Fig. 9.11:14*]. Such beads have already been recorded in Nubia, for instance, in Soba (Shinnie 1961: Fig. 28.23). At Dangeil, they were found in two sizes, 20–25 mm or 10–15 mm wide, in temple tombs ET5, Tomb 2, and Tomb 8, which were AMS-dated to between the late 12th and the early 13th centuries (Anderson, elRasheed, and Bashir 2017: 164, Pls 12–13). At Gabati, located upstream from Dangeil, carnelian beads of this type were found in Tomb 13 (type XVB2bf), dated to the Christian period (Edwards 1998: 117, 233).

A long, hexagonal bicone with truncated ends measured 13 mm in length; it was drilled from both ends and had a double-cylinder shape of perforation [*Fig. 9.7:20*]. Its sides were highly polished. While long, square bicones are attested in post-Meroitic graves, including Early Makurian ones (e.g., Then-Obłuska 2013), hexagonal specimens similar to the one described here have been found in 11th–13th century contexts, including Makurian ones (e.g., Katz, Kahane, and Broshi 1968: Color Pl. on p. 128; personal observation).

# Agate

A red-and-white oblate with one flat end, 11 mm in length and 10 mm in diameter, lacked perforation. It could be a semi-finished product [*Fig. 9.3:6*].

### Onyx

A long, around 11 mm in length, white and brown barrel bead [*Fig. 9.4:14*] was perforated from both ends. It had a perforation in the shape of a double cylinder.

A globular bead with white-and-brown banding measured 12 mm in diameter [Fig. 9.7:26].

# Other stone

A large, 10 mm in diameter, black disc bead with whitish erosion on one side, a truncated conical perforation, and unworked edges [*Fig. 9.7:8*] resembles the ostrich eggshell specimens (compare above). A petrified or burnt ostrich eggshell could have been used in its production.

#### Clay

Twenty-one of the recorded beads were made of clay and measured between 15 mm and 20 mm in diameter. The majority was hand-formed from whitish clay into irregular spherical and oblate shapes with a central perforation [*Figs 9.1:24; 9.2:29; 9.3:17; 9.4:7, 25; 9.6:4, 19; 9.10:22; 9.12:27; 9.13:17, 23–24; 9.14:27*]. Only one had an off-center perforation [*Fig. 9.3:36*]. Formed and perforated, the beads were left to dry or occasionally fired. The others were made of brown clay [*Figs 9.5:22?; 9.8:40?; 9.13:2*]. Reddish slip, now mostly worn off, could be observed on two beads [*Figs 9.1:21, 9.3:15*]. One bead [*Fig. 9.3:17*] was found in a context dated to the first half of the 16th century, and two beads [*Figs 9.3:15; 9.10:22*] came from strata dated to the second half of the 16th century.

Many roughly spherical but also biconical clay beads, absent from the presented assemblage, appeared in Old Dongola in the 11th century, and they continued to be used through the post-Makurian period (Then-Obłuska 2013: Fig. 2:3, 6, 19, 22, 94, 95, 118, 125, 128, 154, 165; Dzierzbicka and Deptuła 2018: Fig. 7.17).

A ceramic disc, 18 mm in diameter, was perforated from both ends with a tapered drill, which resulted in an hourglass shape of perforation [*Fig. 9.14:40*].

A white ceramic cross fragment was a surface find. It was decorated with red lines on one side, with dots at the ends of arms, and in the center on the other side [*Fig. 9.1:18*]. It is uncertain whether it was suspended in some way. It measures 40 mm by 34 mm and is 6 mm to 9 mm thick.

A tabular clay amulet was perforated lengthwise [*Fig. 9.1:17*]. On both sides, the rectangular plaque bears incised representations of a gazelle. The image on one side is horizontally oriented and shows the animal standing right (a). The other side is oriented vertically and shows a gazelle's head in frontal view (b). Both sides also feature vertically running zigzag lines (sacred tree?). The object may have been used as a seal.

# Faience

In this paper, the term faience is used to describe a material with a glazed exterior that differs from its gritty interior (not the glazed earthenware of Faenza, from which the term is derived).

Seven large beads and their fragments, between 12 mm and 18 mm in diameter, were made of faience [*Figs 9.1:3; 9.2:18; 9.3:14; 9.4:13, 17; 9.14:14–15*]. They had irregular, short and standard annular shapes. They were hand-folded, and the body cores were blue-glazed. Their sections could be observed, as some broken pieces had been found. Although no traces of the production of large faience beads have been recorded at Old Dongola so far, they could have been made locally. One bead [*Fig. 9.3:14*] was found in a context dated to the second half of the 16th century.

At Old Dongola, large faience beads (rings and oblates) have appeared so far in contexts dated to the 13th and 14th centuries, and their use intensified in the post-Makurian Islamic period (Then-Obłuska 2013: 715, Fig. 4). In Lower Nubia, such beads were found in a broadly-dated layer at Meinarti, assigned to phases 3–4, 7th–12th centuries (Adams 2002: 114, Object 1471, SNM 17526). Large ring faience beads were found together with *Monetaria moneta* shells in

many Nubian assemblages, for example, at Bab Kalabsha (OIM E42044, E42045, personal observation); one bead at Kulubnarti was dated to the Terminal Christian period (1400–1500) and another to the post-Christian period (1500–1800) (Adams and Adams 1998: 67). Of uncertain date is "a single large bead of green faience, discoidal in shape, mounted on a fine leather thong. Probably, this was a protective amulet against the evil eye" (Adams and Adams 1998: 66). At Serra East (OIM E24655, personal observation), such beads were found together with a faceted bead made of mosaic glass overlying a monochrome core. This type of glass bead is said to be more likely post-10th century (Lankton 2003: 77, Fig. 8.3, upper row), and the context of the Serra finds is late Christian, around the 13th century (B. Williams, personal communication). Many such beads were collected at Sidi Amir el-Sahaba 100/179b (Then-Obłuska 2016a: Fig. 4.6, 22, 23), where 90% of the pottery finds were assigned to a period from after 1200 CE through the 15th century (Gardberg 1970: 36), and in the post-Christian Muslim tombs at Debeira, Fadrus 178/28:6 (Then-Obłuska 2016a: Fig. 2.2; for dating, see Säve-Söderbergh 1970: 238).

Such ring beads have been recorded at Dar el-Arab (British Museum, SF 357, personal observation) and as far south as Abu Geili (Funj-period cemetery) and Dar el-Mek on the Blue Nile (Crawford and Addison 1951: Pl. LXXXVIIA, Nos 20–25, Dar el-Mek, Pl. XLIXA, Nos 1–5, Abu Geili Funj). Except for the Debeira tomb and the Abu Geili Funj cemetery, large faience beads were found in non-burial contexts in Nubia.

# Glass

Glass beads and their fragments, 990 in total, dominated the bead assemblage from the 2018–2019 season. They were made of drawn, wound, as well as rod-pierced and folded glass, and they are described below in that order, with further divisions based on the technique of finishing and decorating.

The overview of finds from 16th–19th century Old Dongola presented below shows that most of the beads (drawn and rounded, wound) were imported from Europe. Numerous specimens (drawn and rounded) came from South Asia. There were also some large wound beads of uncertain, likely Hebron, origin and a few beads probably manufactured in Egypt (earlier rod-pierced and folded mirror-trailed reused items). The datings provided in past and recent studies on imported European bead assemblages in North and South Americas (e.g., Smith 1983; Karklins 1993; Billeck and Luze 2019) and in many regions of Africa (e.g., Robertshaw et al. 2014; Koleini et al. 2019) usually confirm the find contexts' dating at Old Dongola. In general, no beads of drawn and segmented glass were found in the 17th–18th century Old Dongola assemblage (see *Fig. 9.6:26* for a likely exception), although they appear among European glass beads in contemporary collections elsewhere (Blair, Pendleton, and Francis 2009).

In the classification of European glass bead finds proposed by Kenneth Kidd and Martha Kidd (1970) and revised by Karlis Karklins (2002: Fig. 1-4), four classes of drawn glass specimens were distinguished. Classes I (monochrome bodies) and III (multilayered bodies) comprise tubular beads, and Classes II (monochrome bodies) and IV (multilayered bodies) include heat-rounded beads.

In this paper, specimens of drawn glass are divided according to the technique in which the monochrome and compound bodies were finished: drawn and cut glass objects with hot-finished

### 310 OLD DONGOLA: FIELDWORK IN 2018–2019. VOL 2. MATERIAL STUDIES

or unworked ends (further divided according to decoration), and drawn, cut, and heat-rounded glass (also with further divisions).

Wound glass bead imports were classified according to their structure and shape (Kidd and Kidd 1970; Karklins 2002: Fig. 5). The following types were distinguished: WI (monochrome and polychrome single-layered of simple shapes), WII (monochrome and polychrome single-layered of elaborate shapes formed by pressing, pinching, molding, grinding, or some other manipulation), WIII (WI and WII with adventitious decoration as well as multilayered with or without adventitious decoration). In the described assemblage, wound glass beads were predominantly monochrome and of simple shapes; they are presented below according to size. Other specimens had bodies lobed into melons or faceted.

# Drawn and cut cold glass with hot-finished or unworked ends

Drawing a glass tube with an air bubble inside is indicated by linear bubbles in glass matrix striations on the surface. For drawn beads, a punty was used to hold the hollow glass. After cooling, glass tubes were simply cut into sections, the ends of which were hot-rounded or left unworked. Monochrome and compound glass can be distinguished. The majority of the beads were preserved as long tubes.

# Monochrome glass

A section of an opaque orange drawn tube was 3 mm in diameter [*Fig. 9.14:22*]. Long beads of a similar kind of glass have been recorded at Old Dongola (Then-Obłuska 2013) and at other Nubian sites. They were found in the Christian tombs at Debeira, Fadrus (Then-Obłuska 2016a: Fig. 1.4), in the Sahaba, probably Christian period, tomb 401:60 (Then-Obłuska 2016a: Fig. 3.3), and at the sites of Sidi Amir el-Sahaba dated between the 13th and 15th centuries (Then-Obłuska 2016a: Fig. 4.2).

Monochrome glass tubes had between 2 mm and 5 mm in diameter and were translucent dark blue [*Figs 9.3:23; 9.7:21; 9.8:16*], opaque yellow [*Figs 9.5:19; 9.8:15; 9.9:20*], opaque black [*Fig. 9.8:31*], colorless or white-on-colorless [*Fig. 9.9:19*], and translucent black [*Fig. 9.10:4*].

A semi-translucent salmon-colored tube had around 3 mm in diameter [*Fig. 9.6:8*]. The long tubular bead can be paralleled with the one found at Sidi Amir el-Sahaba and dated between the 13th and 15th centuries (Then-Obłuska 2016a: Fig. 4.17). It remains uncertain whether the tube was of the same origin as the possibly Indian salmon-colored oblate [see below, *Fig. 9.14:3*].

# Compound glass

Some tubes had an opaque, dark-red layer over translucent green/colorless glass. All of them measured between 2 mm and 4 mm in diameter [*Figs 9.3:21; 9.5:4; 9.7:5; 9.8:34; 9.9:22*], except one fragment, which had a diameter of 8 mm [*Fig. 9.5:26*].

A translucent colorless tube was decorated with six redwood longitudinal stripes on a white background [*Fig. 9.5:11*]. White and red striped tubes were known as European imports (Karklins 2012: Type Ib; Billeck and Luze 2019: Fig. 7, Ib11, around 1600–1625 CE).

It remains uncertain whether the bead recorded at Old Dongola was of European provenance. It was found in a context dated to the 1st quarter of the 17th century.

A fragment of a three-layered (translucent navy blue on opaque white on black) tube with a square cross section is a broken Nueva Cádiz bead measuring about 4 mm in thickness [*Fig. 9.13:21*]. Nueva Cádiz beads (called after a 16th-century Spanish port on an island off the coast of Venezuela) have three layers and are square-shaped. Some are additionally twisted. The earliest Nueva Cádiz beads were mostly blue, with a deep-blue core, a thin, opaque white layer, and a lighter-blue outer layer. Such beads were discovered in a Muslim grave in Madagascar and appeared at Fustat (Old Cairo, around 5 mm in diameter) as early European trade beads dated to the mid-16th century (Francis 2002b: 26–27, e.g., Fig. 16). Venice is thought to have been the source of most trade glass beads in Egypt because it was allowed to trade with Ottomancontrolled Egypt in the 16th century (Pedani 2006). At Old Dongola it was found in a context dated to the 17th century or earlier.

### Drawn, cut, and rounded glass

Drawn tubes, when cold, were cut into segments, which were rounded by heating on a skewer (a speo) or in a pan (ferrazza). In European glasshouses, from at least the early 17th century to the latter part of the 18th century, globular and oblate drawn glass beads over about 4 mm in diameter were generally rounded using a method called *a speo* by the Italians, who apparently invented it (Karklins 1993). The process involved mounting several tube segments on the tines of a multipronged iron implement, which was then inserted in a furnace and turned until the tubes were rounded to the desired degree. Rounded beads produced using this method have small deformations indicative of the process. These include projected tails, broken projections on one or both ends, blunt broken projections and conchoidal scars on the ends; sometimes, two or more beads are partially fused at their ends (Karklins 1993). A few such misshapen beads have been found at Old Dongola [Figs 9.8:35; 9.10:1, white; 9.2:31; 9.3:4, 10; 9.8:14; 9.14:11, blue; 9.6:25?, black; 9.8:38, dark red-on-green/colorless, also called galet rouge, or green-heart trade beads]. Also, some bead sections were found fused together-white [Fig. 9.10:1] and galet rouge beads [Fig. 9.10:3]-which would indicate that the a speo technique was used in their rounding (compare below, the section on evidence of beadmaking at the site).

Other drawn and rounded beads, measuring about 5 mm and more in diameter, had oblate or ellipsoid shapes. They were opaque white [*Figs 9.1:23; 9.3:12; 9.6:1; 9.8:9, 39*], translucent and semitranslucent blue [*Figs 9.4:29; 9.5:14; 9.8:36; 9.10:27; 9.13:5–6*], black [*Figs 9.1:19; 9.3:25; 9.4:27; 9.14:30*], opaque dark blue [*Fig. 9.5:13*], translucent blue and dark blue [*Figs 9.2:19; 9.3:37; 9.9:4, 12*], translucent dark green [*Fig. 9.12:26*]. Other drawn glass beads were standard to long cylinders and barrels: yellow [*Fig. 9.2:30*], white [*Figs 9.1:11; 9.10:36, 39*], green [*Fig. 9.12:19*], and light blue [*Fig. 9.13:18*].

A gooseberry bead, 5 mm by 3 mm in diameter, was probably rounded using the *a speo* method [*Fig. 9.2:11*]. It was found in a context dated to the 18th century. Gooseberries, so named because of their resemblance to the fruit of that name, are made of clear glass, with a yellowish or greenish tinge and internal white stripes/canes running longitudinally. The bead from Old Dongola was

slightly flattened with deformed ends. The *a speo*-rounded gooseberries with white stripes/canes covered with clear glass were most probably of 17th-century Venetian or Dutch manufacture (Dubin 2009: Timeline No. 54; Dussubieux and Gratuze 2012: Pl. IVC.a, from Paris, the Jardins du Carousel site, 17th–18th centuries, small, monochrome drawn beads from the site were attributed to the late 16th century; Karklins 2012: Type IIb, colorless with 11 to 12 opaque white stripes; Billeck and Luze 2019: Fig. 5, Type IIb18, around 1700–1750 CE, barrel; Fig. 6, Type IIb18, probably 1625–1650 CE, globular; Derry 2019: 43, early 17th century; Smith 1983: 150, olive-shaped specimens are found in early 16th-century contexts in the southeast of the USA, roughly spherical ones in the 17th century, and barrel-shaped ones mainly in the early 18th century).

Some of the beads were sections of striped canes. Three types, based on color, have been distinguished. A blue bead with alternating three white and three red longitudinal stripes [*Fig. 9.2:10*, from a context dated to the 18th century] appears to be a good chronological marker for the period around 1575–1630 in the Southeast USA (Smith 1983: 150, Table 3). The Old Dongola specimen was found together with the gooseberry bead (compare above and *Fig. 9.2:11*). Other beads are opaque green with alternating two white and two white-on-red longitudinal stripes [*Fig. 9.12:15*], and opaque yellow with two green and two red stripes [*Figs 9.11:4*, found in a context dated to the second half of the 17th century, and *9.12:16*]. They are also likely European specimens (K. Karklins, personal communication, 25 May 2020).

Compound beads include *galet rouge* specimens [*Figs 9.4:16; 9.13:7, 7* mm in diameter, and *Fig. 9.13:26*; compare above, *Figs 9.8:38* and *9.10:3*, for malformed ones].

The *ferrazza* heat-rounding method (stirring beads in a heated pan containing some sort of packing material like sand, charcoal, or wood ash) was used in Europe on smaller beads, usually about 3 mm in diameter. It should be noted, however, that heat-rounding sections of drawn glass tubes by stirring them in a heated pan containing animal dung ash was also practiced in bead-making known from India, and such beads have been called Indo-Pacific (Francis 2002a). Khami Indo-Pacific beads found in East and South Africa and dated between around 1430 and 1650 measured 3.5–5.5 mm in diameter and were opaque black, brownish-red, translucent blue-green, green, yellow, dull orange, blue, cobalt blue, and white (Wood 2011: 12; 2019). This series includes the earliest white beads found in the region; these are easily distinguishable from later European-made white beads because they are slightly translucent and not pure white (Robertshaw et al. 2010: 1901; Wood 2019).

Drawn glass beads presented below are usually about 3 mm in diameter, rarely reaching 5 mm, and they were heat-rounded in a pan. They are short to standard oblates, and their origin is suggested to be European or Indo-Pacific. These were opaque white [*Figs 9.1:10, 27; 9.2:12; 9.3:28; 9.6:11; 9.8:3, 12–13; 9.12:21; 9.13:19; 9.14:1*], semitranslucent white [*Figs 9.4:30; 9.5:31; 9.5:34; 9.7:12; 9.9:24*], translucent colorless [*Figs 9.8:20–21; 9.12:8; 9.14:7*], translucent olive [*Fig. 9.6:7*], semitranslucent amber [*Fig. 9.9:27*], opaque yellow [*Fig. 9.14:21, 28*], semitranslucent yellow [*Fig. 9.9:26*], semitranslucent green and dark green [*Figs 9.2:15; 9.12:20*], semitranslucent light blue [*Figs 9.1:12, 28; 9.3:9; 9.9:21*], semitranslucent dark blue [*Figs 9.3:29; 9.4:25; 9.5:23, 32; 9.6:15, 34–35; 9.8:17, 32; 9.9:7; 9.10:28; 9.14:25, 38*], aquamarine blue [*Fig. 9.3:16*], cobalt blue [*Figs 9.5:6; 9.8:11; 9.9:3*], and black [*Fig. 9.5:2, 7, 10*].

European beads are two compound (cored) types, which measure about 3 mm to 4 mm in diameter: opaque dark red-on-translucent green/colorless [*Figs 9.3:27; 9.6:12, 14?; 9.9:6?; 9.12:18*] and colorless-on-white [*Figs 9.7:6; 9.8:4; 9.12:23; 9.14:34*], and thin colorless-on-white-on-colorless beads [*Figs 9.1:30; 9.5:5, 15?; 9.8:19, 22; 9.9:25; 9.14:19*] (Karklins 2012: Type IV; Billeck and Luze 2019: Fig. 6, IVa11-12, around 1625–1650 CE, Fig. 7, around 1600–1625 CE).

A semitranslucent salmon-colored bead [*Fig. 9.14:3*] was possibly of Indo-Pacific origin since such a color has been recorded in the Khami I-P series in South Africa (Wood 2019).

It should be underscored that many drawn and rounded beads were found in Old Dongola contexts dated as early as the first half of the 16th century [*Fig. 9.3:16*] and the second half of the 16th century [layer 81: *Figs 9.3:4, 7–12*; layer 262: *Fig. 9.9; 9.10: 1, 3, 7–9*; layer 271: *Figs 9.10:14–17; 9.14:21*], and the use of drawn and rounded types in Old Dongola continued into the 18th century.

# Wound glass

Wound glass beads were made by winding molten glass around a mandrel (iron rod) into globular or oblate forms. Furnace-winding is the simplest type of rod-winding. In Europe, it was practiced only in the Fichtelgebirge region of Germany, southeastern Bavaria in Upper Austria, and southern Bohemia (Karklins 2012: 68; 2019; Tarcsay and Klimesch 2018). In this technique, glass is picked up using a rod straight from the crucible and twirled around this rod. In gob-winding, hot glass is picked up with a rod, from which it is flown onto another rod, which is continuously rotated (Spaer 2001: 310). While the glass is still malleable, it may be rolled on a smooth surface (marvered) or even paddled or molded into the desired shape. When the glass cools, the bead is pulled from the mandrel. Mandrels are usually tapered, so the perforations of wound beads are generally tapered as well. The surface of wound beads often displays swirl marks perpendicular to the perforation, and bubbles or inclusions are oriented in the same manner. Cane-wound beads were made from pre-manufactured canes. The canes had to be heated, which required the use of an intensive and concentrated flame source, for example, from a lamp with tallow or, at least during the last few hundred years, a gas-fueled torch. This could also be achieved by manipulating and channeling the heat of a furnace (Spaer 2001: 312).

The three abovementioned methods employed in beadmaking are hardly distinguishable in the final products. The wound beads presented below were divided according to their size and quality of glass.

- Translucent dark green beads measure 4 mm to 5 mm in diameter [Fig. 9.14:9].
- A dark-yellow, short oblate bead measures 4 mm in diameter [Fig. 9.14:23].
- Opaque-yellow short barrels, 3 mm to 5 mm in diameter [*Fig. 9.10:34*], opaque-green short and standard barrels [*Fig. 9.10:35*], and opaque-dark red beads, the latter slightly faceted [*Fig. 9.10:37*], were found on a string together with the larger drawn white beads [see above, *Fig. 9.10:26–39*]. They were excavated from a context dated to the second half of the 17th century.
#### OLD DONGOLA: FIELDWORK IN 2018–2019. VOL 2. MATERIAL STUDIES

Large beads, more than 7 mm in diameter, were made of crude wound glass. These are:

- Long tubes and bicones: green [*Figs 9.1:13; 9.2:21; 9.3:19; 9.8:37; 9.9:2, 23; 9.10:31; 9.11: 7, 13*], blue [*Fig. 9.2:20*], and yellow [*Figs 9.4:18; 9.7:19; 9.10:30*]; three of the long, green beads were found in a context dated to the second half of the 16th century [layer 262, *Figs 9.9: 2, 23*] and the first quarter of the 17th century [layer 261, *Fig. 9.8:37*]. One blue, long tube and a green fragment [*Fig. 9.2:20–21*] were found in context 49 dated to the turn of the 17th century. Other ones were excavated in later-dated layers.
- Short to standard oblate and globular beads: opaque and translucent yellow [*Figs 9.1: 1, 16; 9.2:25; 9.3:26; 9.4:2, 22; 9.6:3*], green [*Figs 9.7:16; 9.11:3*], and blue [*Figs 9.1:14; 9.3:5*].
- Short barrels: opaque yellow [Figs 9.1:7; 9.6:20] and green [Figs 9.4:6; 9.7:17].

Some of the large barrel and oblate beads may have been of Hebron origin (Francis 1990). Such beads had already been recorded at Old Dongola in previous studies (Then-Obłuska 2013: Fig. 6). Similar ones were found in Darfur (Arkell 1937). They also appear as far south as Abu Geili on the Blue Nile (Crawford and Addison 1951: 71, Pl. XLVIIIA, Nos 4 blue, 7 opaque dull green), where they were found in the same contexts (e.g., square 5) as chevron beads (Crawford and Addison 1951: 72, Pl. XLVIIIB, Nos 1–3).

A few beads of crude glass were lobed:

- a blue standard conical bead with six lobes [Fig. 9.13:11];
- a standard green bead with four lobes [Fig. 9.14:16].

Large beads of uniform wound glass were:

- short barrels of translucent blue-green [Fig. 9.5:24] and yellow glass [Figs 9.4:1; 9.10:18];
- long barrels/ellipsoids of translucent dark-blue glass [Fig. 9.14:12];
- globular beads of translucent yellow [*Fig. 9.1:8*], black [*Figs 9.4:24; 9.6:22; 9.7:1, 9*], translucent dark-blue [*Fig. 9.7:29*], light-blue [*Figs 9.10:24; 9.12:29*], and dark-amber glass [*Fig. 9.11:2*].

In addition, a remarkable, very large bead, 18 mm in diameter, was made of opaque lightgreen glass [*Fig. 9.8:41*]. A blue bead, 11 mm in diameter, found on the surface, seems to be a modern intrusion [*Fig. 9.1:9*].

### Faceted wound glass

314

Among marvered/paddled beads are translucent yellow tabular ones shaped like corn kernels [*Fig. 9.2:14*], called "corn beads" in North America (Karklins 2012: Type WIIa). They are likely a product of the Bavarian/Bohemian furnace-winding industry (K. Karklins, personal communication, 29 May 2020).

Apart from a long, blue tube with a square section [*Fig. 9.3:18*] from context 90 dated to the first half of the 16th century, some wound beads were made of translucent light yellow/amber glass, now covered with white patina, and paddled into pentagonal beads [*Figs 9.11:11*, from a context dated to the second half of the 17th century, and *Fig. 9.12:14*, from a context dated to the 18th century]. Colorless **pentagonal-faceted beads** (twisted square beads; each has eight or ten pentagonal pressed facets) are often mentioned among European types (Karklins 2012:

Type WIIc; Billeck and Luze 2019: Fig. 5, around 1700–1750; Pfeiffer 1983: Fig. 2, Tell Hessi and Caesarea Muslim graves dated 1500–1800; Robertshaw et al. 2014: 601, Garumele, Niger, late 17th to mid-18th century). They are a standard product of the Bavarian/Bohemian furnace-winding industry (Karklins 2019: 3). Together with other types produced in the Bohemian/ Bavarian forests and environs, they were used to make rosaries for the European market; a considerable number were exported through Nuremberg, Frankfurt, and other distribution centers to foreign lands, especially Africa and North America (Karklins 2019: 3).

#### Trail-decorated wound glass

A large disc biconical bead, 14 mm in diameter, has an opaque-yellow body decorated with a centrally applied orange trail forming a sinusoidal pattern [*Fig. 9.4:10*]. It was found in the same context as the early Islamic mirror-trailed bead [see below, *Fig. 9.4:9*] and may be of the same origin.

## Rod-pierced and folded glass

Islamic mirror-trailed beads were usually formed from discs of concentric trailed patterns or cut from a concentric cane. Such a disc was rod-pierced in the center and folded over the rod into a spherical or elongated shape; most had one dilated perforation (Spaer 2001: 104). A bead with a concentric trailed dark blue-black-white pattern was found on the surface [*Fig. 9.1:2*]. Another, made from a concentric cane, blue, white, and red [*Fig. 9.4:9*], was found together with another bead [see *Fig. 9.4:10*] in a layer dated to the last phase of use of building U6. This phase was associated with the deposition of animal dung and trash, and the beads were most probably redeposited items. Beads decorated with white, bluish, or multicolored stripes had already been found at Old Dongola in earlier excavations (Then-Obłuska 2013: Fig. 7:7, 12, 111, 114).

Another mirror bead is black or dark blue and has a few sets of white trails. It might have been made of trail-decorated sections fused around a rod and dragged outward and inward to form the mirror pattern [*Fig. 9.7:27*]. It was found in courtyard U86, and the most likely dating for the courtyard, according to the excavators, are the 17th and 18th centuries (Dzierzbicka 2021: 225). A similar bead had already been recorded at Old Dongola a few years earlier (Then-Obłuska 2013: Fig. 7:122).

Most mirror-trailed beads appear to be of 10th–12th century date, with a concentrated occurrence in the 11th century. Beads of this kind, dated to the 13th and 14th centuries, are found throughout the medieval world, from the Middle East through different parts of Africa and Europe (L'vova 1997: Pl. 13, from southern Russia, 11th–12th centuries; Spaer 2001: 104; Dziedzic-Dzierzbicka 2007: 233, from Cemetery A at Naqlun, Egypt, second half of the 11th through late 14th centuries; Panini 2008; Robertshaw et al. 2010: Fig. 2, Zimbabwe, second half of the 13th century, yellow, black, and white; Liu 2012).

#### Other techniques

A short barrel, most probably made of glass, has a dark porous core and traces of red glaze with white trails preserved at the edges [*Fig. 9.1:22*]. It measures 10 mm in diameter. The applied decoration may imitate the colors of Venetian or Dutch chevron beads (e.g., Then-Obłuska 2013:

Fig. 5.131, 17th-century chevron bead from Old Dongola; Crawford and Addison 1951: Pl. XLVIIIB, Nos 1–3 and Pl. LXXXVIIB, Nos 4–5, chevron beads from the Blue Nile region at Abu Geili and Dar el-Mek).

A large, black ring bead was ribbed [*Fig. 9.2:16*]. It measured around 10 mm in diameter and 3 mm in length.

#### Cabochons

A small, oval lenticular cabochon was made of translucent dark-green glass; it measured 7 mm in width, 5 mm in thickness, and 10 mm in length [*Fig. 9.14:42*]. Similar glass cabochons are known from the Early Makurian tumulus tomb T.4 at El-Zuma, where they were associated with elite silver jewelry (Then-Obłuska 2017). An oval metal setting was discovered with small fragments of green dull glass on it and crumbled fragments of lead [*Fig. 9.10:40*]. It was found together with a large set of glass beads [*Figs 9.10:34–39; 9.15*].

#### DISCUSSION

#### Evidence of beadmaking at Old Dongola

Some unperforated specimens of *Cypraea moneta* [see *Figs 9.4:15A; 9.7:4; 9.10:11* for illustrated examples] and four leftovers in the form of removed dorsum parts of *Monetaria (Cypraea) moneta* shells have been recorded [*Fig. 9.4:2*]. The latter finds indicate that this marine mollusk shell was worked at the site. Also, grinding stones and querns found at Old Dongola could have been used to perforate the mollusk shells and burnish the holes. For example, the thick occupational layers in U26b yielded perforated and unperforated marine mollusk shells [*Fig. 9.10:10–12*] as well as stone querns or grinders (Wyżgoł 2021: 187–192).

A fragment of nacre (mother-of-pearl), measuring around 5 cm by 6 cm, of a large oyster shell of most probably *Pinctada margaritifera* was found [*Fig. 9.13:1*]. Although no beads or pendants of nacre have been recorded at Old Dongola, it may have been used in the manufacture of ornaments.

At least one fragment of ostrich eggshell [*Fig. 9.4:19*] was preserved at the site. However, considering that it is a traditional Nubian bead material, it is probable that ostrich eggshell beads were produced locally. Ostriches were still being hunted in the environs of Old Dongola in the 19th century (Żurawski 2001: 124). One bead [*Fig. 9.6:28*] could be an unfinished specimen, as its sides and edges are not worn. The function of the unperforated disc [*Fig. 9.12:24*] is unknown, but it is similar to the objects from the Abu Geili Funj cemetery described as ornaments made from *Aspatharia* shell (Crawford and Addison 1951: Pl. LIV.B, Nos 26–32).

Apart from the ten stone beads, only one small carnelian chip [Fig. 9.12:10] and one unperforated agate barrel [Fig. 9.3:6] have been recorded so far.

Although no direct evidence has been found, it is very probable that perforated and unperforated clay balls (not discussed in this paper), as well as large faience rings, were locally produced.

Many long tubes, some with truncated ends [*Figs 9.3:21, 23; 9.5:4, 19, 26; 9.6: 8; 9.7:5, 21?; 9.8:15, 16, 31, 34; 9.9:20, 22; 9.10:4*], and malformed drawn beads—that is, ones which

got fused while being rounded [*Fig. 9.10:1–2*]—were found at Old Dongola in domestic complexes both inside (U19, U86, U31) and outside the city walls (U15, U20a, U26a, U26b, U37, U40). In Europe, small workshops, likely set up in beadmakers' houses, could utilize canes obtained from their producers (Karklins and Bonneau 2019: 7). However, in North America and elsewhere, imported European glass tubes were used as beads and not as production tubes in beadmaking (K. Karklins, personal communication, 20 May 2020). Thus, glass tubes and some malforms found at Old Dongola should not be seen as proof of glass beadmaking at the site.

### Provenance of glass beads

A few beads found in the 17th–18th century contexts at Old Dongola are earlier intrusions or redeposited items. The early Islamic glass bead varieties with trail decoration appeared between the 9th and 14th centuries. They are found in Egypt, other African countries, and the Near East, and are thought to have been manufactured in some of these regions (e.g., Kröger 1995: Nos 288–299; Spaer 2001: 32).

It is uncertain whether the characteristic large, short-barrel and oblate beads of crude wound glass found at Old Dongola can be compared to the ones associated with Hebron production, as illustrated in A.J. Arkell (1937) and Peter Francis (1990). From as early as the 18th century, Hebron (El Khalil) was a major player in African trade. From the 1800s, trading routes opened up along the Nile, connecting Egypt with Sudan and Ethiopia (Francis 1990: 25). At Shendi, such beads outnumbered the Venetian ones (Burckhardt 1819: 302). They were highly valued in Sudan as waist beads until the 1930s. In Darfur, they were called *mongour* or *harish* in local Arabic (Francis 1990: 25). At the beginning of the 17th century, trade flourished between the Islamic state in Darfur and Egypt via the Darb el-Arba'in and across the savannah of central Sudan to West Africa, following the pilgrimage route to Mecca (Elzein 2004: 240).

Ninety percent of the beads in the assemblage were made of glass, and drawn glass beads constituted an overwhelming majority. While the monochrome, striped, and compound production tubes and beads rounded with the *a speo* method were of European, most likely Venetian or Dutch, origin, the tiny monochrome oblates rounded by stirring in a heated pan could have been made either in South Asia or Europe. Marilee Wood (2019), writing about glass beads reaching East and South Africa between the 13th and 17th centuries, concludes that from the mid-15th to the late 17th century, beads brought to the African east coast were of Indian origin (so-called Khami I-P series). However, in about 1600, European beads appeared in East Africa, and by the end of that century they replaced the ones from South Asia (Wood 2019). The literature mentions two Indian ports where beads for trade were procured: Cambay on the northwest coast and Nagapattinam on the southeast coast (Wood 2019). In Northeast Africa, Suakin was the Red Sea coast port for which trade contacts (Arabia, Egypt, Ethiopia, India, Malaka, Pegu, China, "the East") and trade items were traced in the archaeological record and mentioned in European accounts between the 16th and mid-19th centuries (Mallinson et al. 2009: Table 24.1; Smith et al. 2012).

An overview of glass producers active in Europe between the 17th and 19th centuries, and of the bead types they made, has been provided in a revised classification of glass beads imported to America by Karlis Karklins (2012; 2019). Additionally, recent papers bring information on

production workshops in Europe (e.g., Karklins and Bonneau 2019). Drawn glass beads were manufactured, among others, in Venice and its factory island, Murano, Amsterdam, Middelburg, Haarlem, and Rotterdam in Holland, Jablonec nad Nisou (Gablonz in German) in Bohemia, the town of Lauscha in Germany (beginning in the mid-18th century), Paris, Rouen, and elsewhere in France, as well as the Hammersmith Embankment outside London in England. Some beads could have been produced in Spain, St. Petersburg, and, less likely, in Irkutsk (Siberian Russia). Furnace-wound beads were produced in Europe in the Fichtelgebirge region of northern Bavaria (beginning in the 15th century), as well as in the forests and environs of eastern Bavaria, southern Bohemia, and Upper Austria.

Theodor Krump's account from 1700–1702 mentioned slave girls of the king in Sennar wearing beads of Venetian glass together with agate and coral around their necks (Spaulding 1974; Edwards 2004: 271). In the 19th century, Genoese and Venetian beads were traded in New Dongola (Hoskins 1835: 184, 187) and elsewhere in Sudan (Burckhardt 1819: 32, 273, 301–303; Hoskins 1835: 61, 88; Taylor 1854: 386–388; Moorehead 1961: 157–160). While Venetian or Dutch and Bavarian/Bohemian beads have been found at Old Dongola and at other Sudanese sites (e.g., Then-Obłuska 2013; Crawford and Addison 1951 for chevron beads in Sudan), it remains unknown whether any of the other abovementioned European productions made it to Sudan.

No Chinese beads have been identified in this macroscopic study. Although information about the types of glass beads exported from 15th–18th century China is limited, it seems that most, if not all, were wound, with the use of either a lamp or a furnace (Francis 2002a: 83; Wood 2019).

All provenance identifications of glass beads given in this paper should be complemented with future chemical composition studies. Identification of European beads is possible based on their chemical properties (see, e.g., Karklins 2012: 81 for an introduction to the subject; Dussubieux and Gratuze 2012; Koleini et al. 2019; Costa et al. 2020; Koleini, Colomban, and Pikirayi 2020). On this basis, a more detailed picture of the chronology and provenance of glass-bead imports (drawn and wound ones) in Old Dongola between the 14th and 18th centuries will be possible.

### Traces of beadwork and function of beads

An overwhelming majority of the beads were picked up as single specimens. Only in two instances, the beads were found still threaded on string fragments [*Figs 9.7:11–13, 22–25; 9.10:34–39*] and partially in their original arrangement. In the latter case, they were all on top of a bench in a layer that had sealed room U32 after the collapse of its walls [*Fig. 9.15:1*]. About 224 white, green, yellow and dark-red glass beads [*Fig. 9.15:2–3*] were found together with a few fragments of likely metal setting, about 14 mm in length, and eroded green glass, possibly a cabochon [*Figs 9.10:39; 9.15:4*]. Unfortunately, the state of preservation does not allow for the estimation of strings quantity or for reconstruction of bead color compositions. Still, there are discernible large, green beads, covered with whitish patina, on a string fragment [*Fig. 9.15:2*], and smaller yellow ones attached to one another [*Fig. 9.15:3*].

In one case, a cowry was found together with leather fragments [*Fig. 9.14:10*, inv. nos 1259 and 1262]. However, it is uncertain whether the perforated and broken shell was originally attached to the leather.



Fig. 9.15. Field photos of beads found in situ, FN102, context 282 (inv. no. 244)

Since the beads were not found in archaeologically diagnostic contexts at Old Dongola (e.g., sewn onto clothing or leather, positioned at the head, neck, arm, ankle, or waist of a deceased individual, or strung on a rosary), it is in most cases impossible to assign them to a specific bead-work type or function.

Beads found at Old Dongola may have served diverse functions, but there is no direct evidence for any of them. Although large clay pendants (objects with off-central perforation) were used as loom weights in the Meroitic period (Yvanez and Wozniak 2019: Fig. 6b), most of the examples from Old Dongola are centrally perforated. The beads from Old Dongola made of clay and other materials may have functioned as prayer beads. Such use, based on a parallel observation of the Coptic tradition in Egypt, has been suggested for finds from Soba East (Allason-Jones 1991; 1998). The large ceramic disc [*Fig. 9.14:40*] may have been a spindle-whorl, like the one from Melik el-Nasir (Yvanez and Wozniak 2019: Fig. 17), which, however, has a cylindrical perforation. The possibility that the beads from Old Dongola were used as reckoning counters also cannot be excluded (Then-Obłuska 2013).

#### Bead owners

Beads and pendants could have adorned both humans and animals, since they were probably often considered amulets or talismans in Funj-period Old Dongola. They could have also had other functions.

In the case of the glass bangles (see Chapter 8, this volume), their inner diameters and ethnographic parallels suggest that they were worn by women; therefore, the spaces where these bangles were lost or discarded might have been used by females. However, the units where beads were found at Old Dongola cannot be associated with a particular gender, although a map of the bead finds partially overlapped with the map showing the findspots of the bangle fragments [*Fig. 9.16*]. Hopefully, further excavations will bring more data on the subject.

## Bead colors of Old Dongola

Although the owners of the Old Dongola beads cannot be identified, by assigning each bead to a generic color group and performing quantity analyses, it is possible to determine how the 17th–18th century inhabitants of the city perceived and used color [*Fig. 9.17*]. The majority of the beads were yellow (24%); white, including colorless and white or cream (glass, mollusk shell, ostrich eggshell), made up 20%; green (glass) and black (glass) constituted 18% each; blue (glass and faience) about 10%, dark red or dark red-on-green/colorless (glass) 5%, and whitish (clay) 2%. The remaining 3% included a few salmon-colored and orange glass beads, coral, as well as beads of reddish clay, red carnelian, and brown wood and clay. In contrast, the color orange was used in the decoration of almost every glass bangle, while no red ornamentation was observed. These color differences would confirm the different origins of beads (European and Indian) and bangles (Near Eastern) from Old Dongola (compare Chapter 8, this volume).



Fig. 9.16. Location of finds of beads (marked in green) and bangle fragments (marked in red) on a plan of units excavated in Old Dongola in the 2018–2019 season (objects collected from the surface not included)



Yellow Brown Reddish Red Dark red Orange Blue Green White Whitish Black

Fig. 9.17. Shares of bead colors found at Old Dongola in the 2018–2019 season, *n*=1015 (complete and illustrated finds only)

### Conclusions

The excavation of layers dating from the 16th to the 18th century at Old Dongola in the 2018-2019 season provided data on a wide array of materials used for making beads and pendants, as well as their manufacturing techniques. Only a few objects were found on string fragments. Whereas no types of beadwork or owners of the beads could be indicated, the proportions of colors used can help us identify the color preferences of the inhabitants of 16th-18th century Old Dongola. Yellow, green, white, and black beads each make up about 20% of the assemblage, blue hues about 10% and red-brown about 5%. Beads were made of organic materials, including ostrich eggshell, which reflects a long-lasting tradition of using this locally available material in Nubian beadwork, in spite of cultural and religious changes. Also, the use of marine mollusk shells of Red Sea and Indian Ocean species (Cypraea moneta, Marginella sp., Conus taeniatus, Engina mendicaria) is proof of a well-established connection with the coastal regions of Sudan. The Cypraed moneta (Monetaria moneta) species dominated the mollusk shell assemblages in Funj-period Old Dongola and elsewhere in Nubia. Wooden beads are not well represented, so they must have been rare. Only a few beads made of stone (agate, carnelian) have been preserved, which may indicate their high value. Their Indian origin is uncertain. Large faience and clay beads, recorded already in the Late Makurian period, continued to be used, and the former were a common type in Nubia. Likely Corallium rubrum, of which a few beads were made, were of Mediterranean origin and traveled together with Venetian glass beads. Their use in Nubian beadwork is confirmed in a textual account from the very beginning of the 18th century (Spaulding 1974).

Almost 90% of the beads in the assemblage were made of glass. Apart from modern and early Islamic (9th-14th centuries) intrusions or fancy reused items, and large, crude wound beads, some possibly of Hebron origin, the assemblage is dominated by specimens made of drawn glass. They appeared at Old Dongola in contexts excavated in the 2018-2019 season and dated to the late 16th century, and their presence continued into the 18th century. Tiny drawn glass beads, around 3 mm in diameter, rounded by the stirring method, were usually of European (monochrome, striped monochrome, compound) and some of South Asian production. They make up about 47% of the whole bead assemblage and 53% (around 528 beads and their fragments) of the glass beads. Additionally, larger European drawn beads, more than 4 mm in diameter, were rounded using the a speo method. Many distinctive European monochrome, striped, and compound tubes and beads (colorless-on-white, a Nueva Cádiz bead, red-on-green/colorless beads, a gooseberry, a redwood-striped white tube, other striped beads, etc.) can be attributed to late 16thand 17th-century Venetian or Dutch production. A few beads made using furnace-wound glass were identified as being of likely 18th-century Bohemian or Bavarian origin (a corn bead, pentagonal faceted beads). Chemical composition studies should be carried out to verify the glass beads' provenance suggested above.

#### Acknowledgments

I wish to thank Marilee Wood and Karlis Karklins for reading a draft of this paper and sharing with me their invaluable knowledge and literature on European and South Asian glass specimens. All mistakes are my own.

Context dating													1	1			1		18th c.	18th c.	18th c.
Field no. (FN)																					
Found with inv. nos																					
Square																			10Z52	10Z52	10Z52
Zone	1	1		-	1		1	1	1	1	1	1		1				1	1.1	1.1	1.1
Unit	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface	Surface find, near church U100	Surface	U76/77	U76/77	U76/77
Diam. hole (cm)			0.7				0.2	0.2	0.3										0.1	0.15	
Th. (cm)					0.5; 0.6	0.8									0.6; 0.5		1.1	0.9– 0.6			
Width (cm)					1.2; 1	1.1							0.7	0.5	1.6; 1.1		2.7	3.4			
Length (cm)	0.6	1.7	0.6	0.7	1.8; 1.6	1.7	0.5	0.7	0.8	0.2	0.6	0.7	2	0.65	2.1; 1.5	0.7	3.2	4.0	0.65	0.1	1.7
Diam. (cm)	0.9	1.1	1.7	0.9			0.9	1	1.1	0.4	0.5	0.75				0.75			0.6	0.6	1.7
Quantity	1 (half)	1	1	1	2	1	1	1	1	2	1	1 (half)	1 (half)	1 (half)	2	1	1	1	1	1	1
Length and shape	Oblate	Long bicone	Ring	Standard barrel			Short barrel	Oblate	Globular	Short oblate	Standard barrel	Oblate	Long bicone	Oblate		Globular	Tabular	Cross	Globular	Disc	Globular
Technique	Wound	Rod-pierced and folded	Hand-formed	Hand-formed			Wound	Wound?	Wound	Drawn	Drawn	Drawn	Mound	Drawn		Mound	Hand-formed	Hand-formed	Drawn	Carved	Hand-formed, smoothed
Color and diaphaneity*	Yellow (o)	Blue-white-black	Turquoise	Black (o)	White	White	Yellow (o)	Yellow (t)	Blue	White (o)	White (o)	Turquoise	Green	Blue	White	Yellow (o)	Dark brown	White, red stripes	Black	White	Reddish
Material	Glass	Glass	Faience	Glass?	Marine mollusc shell, <i>Cypraea moneta</i>	Marine mollusc shell, <i>Cypraea moneta</i>	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Marine mollusc shell, <i>Cypraea moneta</i>	Glass	Clay?	Clay	Glass	Ostrich eggshell	Clay
Inv. no.	25	36	46	49	50	51	52	53	54	55	56	60	61	61	105	106	117	1349	18	19	48
Cxt	1	1	1	1	1	-	1	1	1	1	1	1	1	1		1			8	8	14
Fig. no.	9.1:1	9.1:2	9.1:3	9.1:4	9.1:5	9.1.6	9.1:7	9.1:8	9.1.9	9.1:10	9.1:11	9.1:12	9.1:13	9.1:14	9.1:15	9.1:16	71:17	9.1:18	9.1:19	9.1:20	9.1.21

Table 9.2. Beads, pendants, cabochons, and materials used in their production, listed by context and inventory number

APPENDIX

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				2nd h. of 17th c., 18th c.	2nd h. of 17th c., 18th c.	8th c.	.8th c.	8th c.	l8th c.	l8th c.	(8th c.	(8th c.	(8th c.	l8th c.	l8th c.	8th c.	8th c.	.8th c.	8th c.
	~	1	266 -																
					610	814-842	813, 815–842	813–814, 816–842	813–815, 817–842	813–816, 818–842	813–817, 819–842	813–818, 820–842	813–819, 821–842	813–820, 822–842	813–820, 822–842	813–820, 822–842	813–822, 824–842	813–823, 825–842	813–824, 826–842
	10Z54	11B54	11B54	11A54/55	11A54/55	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54
		1		1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	U14, U16, U35 surface	U34 surface	U34 surface	U33	U33	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86
			< 0.1		0.2	0.1	0.1	0.1	0.1	0.1	0.1	< 0.1	0.1	0.2- < 0.1	0.2-0.1	0.2-0.1		0.2	0.1
	6.0	0.5	0.7- 0.6		1.8	0.4	0.1	0.1	0.2	0.3-0.2	0.2	0.3	0.2	0.3-0.2	0.3- 0.2	0.3-0.2	0.2	0.2	0.2
(cont.	-	0.65	0.7– 0.6		1.0	0.4	0.3	0.3	0.3	0.4-0.3	0.3	0.3	0.3	0.4- 0.2	0.4-0.2	0.4-0.2	0.3	0.4	0.3
Table 9.2.	1	1 (half)	30		1	1	1	3	1	3	2	1	1	1	1	1	1	1	2
	Standard barrel	Oblate	Globular		Long cylinder	Globular	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate
		Drawn	Hand-formed		Wound	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn
	Blackish-red-white	White	Grey	White	Green	White	Blue	Black	Colorless-on-white- on-colorless	Black	Yellow	Yellow	Yellow	Light blue (st)	Light blue (st)	Light blue (st)	Yellow (o)	Yellow (o)	Green (st)
	Glass	Jass	Clay	Marine mollusc shell, <i>Sypraea moneta</i>	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass
	96 0	9 66	359 C	610 N	700? 0	813 C	814 C	815 C	816 C	817 0	818 C	819 0	820 6	821 C	821 C	821 C	823 C	824 C	825 0
	18	34	34 1	35	35	38	38	38	38	38	38	38	38	38	38	38	38	38	38
	9.1:22	9.1:23	9.1:24	9.1:25	9.1:26	9.1:27	9.1:28	9.1:29	9.1:30	9.1:31	9.1:32	9.2:1	9.2:2	9.2:3	9.2:4	9.2:5	9.2:6	9.2:7	9.2:8

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	Context dating	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	2nd h. of 17th c. or later	17th c.	17th c.	16th/17th c.	16th/17th c.	16th/17th c.				1	2nd h. of 17th c. or later
	Field no. (FN)												124	124					132	134
	Found with inv. nos	813–825, 827–842	813–826, 828–842	813–827, 829–842	813–828, 830–842	813–829, 831–842	813–830, 832–842	813–831, 833–842	813–832, 834–842				30	29					38	34, 35
	Square	11B54	11B54	11B54	11B54	11B54	11B54	11B54	11B54	10Y52	10Y52	10Y52	10Y52	10Y53	10Y52	11A56	11A56	11A56	10Z55	11A56
	Zone	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6	1.6	1.6	1.6	1.6
	Unit	under U86	under U86	under U86	under U86	under U86	under U86	under U86	under U86	U73	U73	U73	U73	U73	U73	U96 surface	U96 surface	U96 surface	U21/U29 surface	0D
	Diam. hole (cm)	0.1	0.1	0.1	0.1 or less	0.1		0.1	0.4		0.15			0.3-0.1				0.3	0.25	
	Th. (cm)						0.4					0.5								0.5; 0.8
	Width (cm)									4.2	1.6	1.3	0.8		1					0.9; 1.4
	Length (cm)	0.3	0.2	0.3	0.1	0.1	0.8	0.2	0.3	5.1		1.2		2	0.8	0.25	0.25	0.55	1	1.3; 2
(cont.)	Diam. (cm)	0.6	0.4		0.3	0.2	0.8	0.3	0.8		1.8		0.7	1.1		0.3	0.3	1.2	1	
Table 9.2.	Quantity	1	1	1	3	1	1	1	1	1	1	1 (frag.)	1	1	1 (frag.)	2	2	1	1 (half)	1 (2 on photo)
	Length and shape	Short barrel	Oblate	Flattened globular	Oblate	Oblate	Tapered tabular	Oblate	Lobed ring		Globular	Ring	Globular	Long cylinder	Long	Oblate	Oblate	Short barrel	Oblate	
	Technique		Drawn	Drawn	Drawn	Drawn	Wound	Drawn			Hand-formed	Hand-formed	Drawn	Wound	Wound	Drawn	Drawn		Wound	
	Color and diaphaneity*	Brown	Blue with alternated white and red stripes	Colorless with white stripes; gooseberry	White	Green	Yellow (t)	Dark green (st)	Black		Reddish	Turquoise	Dark blue	Turquoise	Dark green (st)	Black	Green	Brown	Yellow (st)	White
	Material	PooM	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Textile, leather, paper	Clay	Faience	Glass	Glass	Glass	Glass	Glass	Wood	Glass	Marine mollusc shell, <i>Cypraea moneta</i>
	nv. no.	826	827	828	829	830	831	832	833	242	14	17	29	30	43	101	101	102	39	33
	Cxt	38	38	38	38	38	38	38	38	42	45	45	49	49	49	52	52	52	53	55
	Fig. no.	9.2:9	9.2:10	9.2:11	9.2:12	9.2:13	9.2:14	9.2:15	9.2:16	Not illustrated	9.2:17	9.2:18	9.2:19	9.2:20	9.2:21	9.2:22	9.2:23	9.2:24	9.2:25	9.2:26

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	2nd h. of 17th c. or later	2nd h. of 17th c. or later	17th/18th c.		1st h. of 17th c.	-	1	-		1st h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 16th c.	2nd h. of 16th c.			
	134	134		141	151																
	33, 35	33, 34											852-860	851–852, 854–860	851–853, 855–860	851–854, 856–860	851–855, 857–860	851–856, 858–860	851-859		
	11A56	11A56	10Z55	10Z55	10Z55/56	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52	11A52
	1.6	1.6	1.6	1.6	1.6	1	1	1	1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	6N	6N	Ash from hearth under layer 52 in U96	096	U21	U1 surface	U1 surface	U1 surface	U1 surface	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2	U2
	0.25				0.1	0.2				0.1			almost 0.2	0.1 or less		0.1	0.1	0.1	0.2	0.7	0.3-0.4
	6.0	0.2	1.9	1	0.7	0.3	0.3	0.2	0.2	0.7	0.8		0.2	0.1	0.2	0.7	0.2- 0.1	0.8	< 0.1	1-0.7	1.7
. (cont.	1.1	0.4	2.2	0.85	0.6	0.6	0.2	0.3	0.45	0.65	0.9		0.4	0.3	0.3	0.8	0.4- 0.3	0.4	1.0	1.8	1.5
Table 9.2	1	1	1	1	1	1	1	1	1	1	1 (half)	1	1	4 (1 frag.)	1	1	2	1	2	1	1
	Globular	Oblate	Globular, irregular	Standard cylinder	Globular	Oblate	Long cylinder	Oblate	Oblate	Globular	Oblate	Barrel	Oblate	Oblate	Oblate	Globular	Oblate	Ellipsoid	Disc	Ring	Globular
			Hand-formed	Drawn	Drawn	Drawn	Drawn	Drawn	Wound	Drawn	Wound	Not perforated	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn		Hand-formed	Hand-formed
	Brown	White	Whitish	Yellow	Blue (st)	Yellow	Green	Green	Green	Blue (st)	Light blue	Red-white	Yellow	Yellow	Dark blue	Light blue	Black	White	White	Turquoise	Reddish
	Mood	Ostrich eggshell	Clay	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Agate	Glass	Glass	Glass	Glass	Glass	Glass	Ostrich eggshell	Faience	Clay
	34	35	167	169	740	40	41	41	41	2	11	57	851	853	854	855	856	857	860	15	570
	55	55	58	68	74	79	79	79	79	81	81	81	81	81	81	81	81	81	81	84	84
	9.2:27	9.2:28	9.2:29	9.2:30	9.2:31	9.2:32	9.3:1	9.3:2	9.3:3	9.3:4	9.3:5	9.3:6	9.3:7	9.3:8	9.3:9	9.3:10	9.3:11	9.3:12	9.3:13	9.3:14	9.3:15

Table 9.2. (cont.)

w. no.	Material	Color and diaphaneity*	Technique	Length and shape	Quantity	Diam. (cm)	Length (cm)	Width (cm)	Th.	Diam. hole (cm)	Unit	Zone 3	square ]	Found with I inv. nos	Field no. (FN)	Context dating
Glass		Blue	Drawn	Oblate	1	0.7	0.55	Ì	Ĵ	0.1	U2	1.1	11A52		Î	1st h. of 16th c.
Clay		Gray with some reddish		Globular	1	1.4	1.6			0.3	U2	1.1	11A52			1st h. of 16th c.
Glass		Blue	Mound	Square long cylinder	1	0.5	1.3			0.2	U2	1.1	11A52 6	609		1st h. of 16th c.
Clay			Hand-formed	Oblate	1	6.0	6.0			0.1	U2	1.1	11A52 6	608		lst h. of 16th c.
Glass		Light blue			1	0.3	0.2			0.1	U77/76 surface		10Z53		123	1
Glass		Yellow	Drawn	Oblate	1	0.3	0.1			0.1	U80	1.1	10Z53 8	802-805		18th c.
Glass		Yellow	Drawn	Oblate	1	0.3	0.2			0.1	U80	1.1	10Z53 8	801, 803–805		18th c.
Glass		Dark red-on-colorless	Drawn	Long cylinder	1	0.3	1.1			0.1	U80	1.1	10Z53 8	801–803, 805		18th c.
Marine moll Engina mend	usc shell, <i>icaria</i>				1						U80	1.1	10Z53 8	801-804		18th c.
Glass		Dark blue	Drawn	Long cylinder	1	0.2	1.1				U80	1.1	10Z53 8	806, 807, 809–812		18th c.
Marine moll <i>Cypraea mon</i>	usc shell, eta				1		1.7	1.2	0.6		U18	1.1	10Z53			2nd h. of 17th c
Glass		Black	Drawn	Globular	1 (half)	0.6	0.7				U18	1.1	10Z53			2nd h. of 17th c
Glass		Yellow	Wound	Globular	1	1	0.9			.35/0.25	U18	1.1	10Z53			2nd h. of 17th c
Glass		Dark red-on-green/ colorless, white, yellow, black, blue	Drawn	Oblate	16	0.4 <del>-</del> 0.25	0.2 - 0.15				U18	1.1	10Z53			2nd h. of 17th c
Clay			Hand-formed	Tear-drop with globular base	1	1.8	1.5				U18	1.1	10Z53			2nd h. of 17th c
Glass		Blue	Drawn	Globular	1	0.6	0.5			0.2	U18	1.1	10Z53			2nd h. of 17th c
Glass		Yellow	Wound	Short barrel	1	0.7	0.5			0.2	U18	1.1	10Z53			2nd h. of 17th c
Glass					3	2	9.0				U18	1.1	10Z53			2nd h. of 17th c
Glass		Yellow	Wound	Irregular globular	1	0.85	0.8			0.3-0.2	U23/24 surface	1	11B52			

		1				2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	1st h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.		3rd q. of 17th c.	1st q. of 17th c.
											49		55	93					54		
11B52	10W52	10W52	10W52	10W52	10W52	10W52	10W52	10W52	10W52	10W52	10U52	10W52	10W52	10U52	10W52	10W52	11A55	11A55	10Y55	10Y55	10Y55
1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.6	1.6	1.6
U23/24 surface	U6/8/36/73 surface	U6/8/36/73 surface	U6/8/36/73 surface	U6/8/36/73 surface	U6/8/36/73 surface	U6phase I	U6—phase I	U6—phase I	U6—phase I	U6—phase I	U8—phase I	U8—phase I	U6	U8	U73		U86	U86	U15/37/40/103 surface	U37	U15
0.1			0.15			0.25-0.35	0.4				0.1			0.7					0.15		0.2
								0.5		0.6		a: 0.5; b: 0.6					0.6				
												a: 1.1; b: 1					1.2				
0.2			0.6	-	0.1	1.95	0.45	1.3	0.15	0.9	1.1	a: 1.45; b: 1.1	0.65	1	1.1	0.2	1.7	0.2	0.7	0.2	0.4
0.3	0.3	0.3	1	1.3	0.6	1.15	1.4		0.3	2	0.7		0.6	1.2	0.9	3.7		0.9	0.8	0.5	0.7
1	1	1	1 (half)	1	1	1	1	1	1	1 (half)	1	2	1 (half)	1 (half)	1 (frag.)	1 (frag.)	1	1	1 (half)	1	1
Oblate	Oblate	Oblate	Oblate	Globular	Disc		Short bicone		Oblate	Ring	Long barrel		Globular	Ring				Disc	Globular	Disc	Globular
	Drawn	Drawn	Wound	Hand-formed		Rod-pierced and folded	Wound		Drawn?	Hand-folded			Drawn	Hand-folded	Wound				Mound		
Yellow	Yellow	Green	Green			Blue, white, red	Yelow, orange		Yellow	Blue			Dark red-on-green/ colorless	Blue	Yellow				Yellow		Dark blue
Glass	Glass	Glass	Glass	Clay	Ostrich eggshell	Glass	Glass	Marine mollusc shell, Cypraea moneta	Glass	Faience	Agate	Marine mollusc shell, Cypraea moneta	Glass	Faience	Glass	Ostrich eggshell	Marine mollusc shell, Cypraea moneta	Ostrich eggshell	Glass	Ostrich eggshell	Glass
777	90	90	91	92	93	-	3	Ś	6	26	21	97	28	27	42	726	157	158	22	159	595
110	118	118	118	118	118	122	122	122	122	122	128	128	129	131	134	135	141	141	150	154	155
9.4:3	0.4:4	.4:5	0.4:6	0.4:7	0.4:8	6.4.9	0.4:10	0.4:11	0.4:12	0.4:13	).4:14	0.4:15	0.4:16	0.4:17	0.4:18	0.4:19	9.4:20	0.4:21	0.4:22	0.4:23	9.4:24

Table 9.2. (cont.)

Table 9.2. (cont.)

Context dating	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.				
Field no. (FN)																		
Found with inv. nos			729–739	728, 730–739	728–731, 733–739	728–732, 734–739	728–733, 735–739	728–734, 736–739	728–735, 737–739	728–736, 738–739	728-738	873-890	872, 874–890	872–873, 875–890	872–874, 876–890	872–873, 875–890	872–876, 878–890	872–877, 879–890
Square	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55
Init Zone	J15 1.6	J15 1.6	)15 1.6	)15 1.6	)15 1.6	J15 1.6	)15 1.6	)15 1.6	115 1.6	115 1.6	115 1.6	115 1.6	115 1.6	115 1.6	115 1.6	115 1.6	)15 1.6	115 1.6
Diam. U hole (cm)		0.1 L		0.2 L	ſ	0.1 L	0.1 L			0.1 U		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U or less	0.1 L	< 0.1 L
Th.																		·
Width (cm)																		
Length (cm)	0.1	0.2	0.4							1.3	0.1	0.2	0.2	0.1	0.2	0.2	1.3	0.1
Diam. (cm)	0.2	0.3	0.5			0.3	0.3	0.2		0.2	0.2	0.4	0.3	0.3	0.4	0.3	0.3	0.3 - 0.2
Quantity		_		_		2	_	~			_	_		_				0
Length and shape	Oblate	Globular	Ellipsoid	Globular	Oblate	Oblate	Oblate	Oblate	Oblate	Long cylinder	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Long cylinder	Oblate
Technique			Drawn	Wound		Drawn	Drawn			Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn
Color and diaphaneity*	Blue	Whitish	Black	Yellow	Blue	Colorless on white on colorless	Yellow	Dark blue/black?	Blue	Dark red-on-colorless	Colorless-on-white- on-colorless	Ultramarine	Black?	Yellow	Yellow	Black	White and red stripes over colorless	Yellow
Material	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass
Inv. no.	596	597	728	729	732	733	734	735	736	737	739	872	873	874	875	876	877	878
Cxt	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155	155
Fig. no.	9.4:25	9.4:26	9.4:27	9.4:28	9.4:29	9.4:30	9.5:1	9.5:2	9.5:3	9.5:4	9.5:5	9.5:6	9.5:7	9.5:8	9.5:9	9.5:1	9.5:11	9.5:12

(cont.)	
Table 9.2.	

lst q. of 17th c.	lst q. of 17th c.	lst q. of 17th c.	lst q. of 17th c.	3rd q. of 17th c.	8rd q. of 17th c.	8rd q. of 17th c.	8rd q. of 17th c.	srd q. of 17th c.					8rd q. of 17th c.	2nd/3rd q. of 17th c.	2nd/3rd q. of 17th c.	2nd/3rd q. of 17th c.	2nd/3rd q. of 17th c.
872–878, 880–890	872–879, 881–890	872–880, 882–890	872–881, 883–890	807-812	806, 808–812	806–808, 810–812	806–809, 811–812	806–810, 812		644-645	643, 645						
10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y53	10Y53	10Y53	10W53	10W53	10W53	10W53	10W53	10W53
1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
U15	U15	U15	U15	U37	U37	U37	U37	U37	U5/25/72/74/77 surface	U5/25/72/74/77 surface	U5/25/72/74/77 surface	U20/36/93 surface	U20a—phase II	U93	U93	U93	U93
0.1	0.2	< 0.1		0.2		0.2		0.1	0.2		0.2	0.2	0.3			0.2	
0.4	0.6	0.1 or less		0.1	0.3	1.3	0.4	0.2	1.8	0.3	0.4	1.0	0.8	0.2	0.2-0.15	0.9	0.65
0.5	0.6	0.2		0.3	0.1	0.2	0.2	0.3	1.5	0.4	0.6	1.3	0.5	-9.0 0.6	0.35-0.25	1	0.6
1	1	2	4 (frag.)	1	1 (frag.)	1	1 (frag.)	1	1	1	1	1	1	9	15	1	1 (half)
Ellipsoid	Globular	Oblate	Barrel	Oblate		Long cylinder		Oblate	Oblate	Globular	Oblate	Globular	Long cylinder	Disc	Oblate	Globular	Globular
Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn		Drawn		Drawn	Mound		Drawn		Drawn		Drawn
Drak blue	Blue	Colorless-on-white- on-colorless	Brown	Green	Yellow	Yellow	Blue	Yelow		Dark blue	Blue-green		Dark red-on-green/ colorless		Yellow, green, black, white, dark red, blue	Brown	White
Glass	Glass	Glass	Mood	Glass	Glass	Glass	Glass	Glass	Clay	Glass	Glass	Clay	Glass	Ostrich eggshell	Glass	Mood	Glass
879	880	881	882	806	807	809	810	811	626	643	644	603	623	160	161	162	163
155	155	155	155	156	156	156	156	156	158	158	158	160	165	170	170	170	170
9.5:13	9.5:14	9.5:15	9.5:16	9.5:17	9.5:18	9.5:19	9.5:2	9.5:21	9.5:22	9.5:23	9.5:24	9.5:25	9.5:26	9.5:27	9.5:28-34	9.5:35	9.6:1

Table 9.2. (cont.)

Fig. no.	Cxt	Inv. no.	Material	Color and diaphaneity*	Technique	Length and shape	Quantity	Diam. (cm)	Length (cm)	Width (cm)	Th. hc hc	Diam. 1 ole (cm)	Jnit	Zone	Square	Found with 1 inv. nos	Field no. C	Context dating
9.6:2	170	163	Glass	Black	Drawn	Globular	1 (half)	0.7	0.7			_	J93	1.6	10W53		1	.nd/3rd q. of 7th c.
9.6:3	170	164	Glass	Yellow	Mound	Globular	1 (half)	0.9	0.8				J93	1.6	10W53		1	.nd/3rd q. of 7th c.
9.6:4	171	165	Clay		Hand-formed	Globular	1	1.2	1.2				U20a	1.6	10W53		3	ird q. of 17th c.
9.6:5	171	629	Glass	Yellow	Drawn	Oblate	1	0.3	0.1			0.1	U20a	1.6	10W53		3	ird q. of 17th c.
9:6:6	171	632	Glass	Green	Drawn	Oblate	10	0.3	0.1			0.1	U20a	1.6	10W53	633-639	3	ird q. of 17th c.
9.6:7	171	633	Glass	Olive, transparent	Drawn	Oblate	1	0.4	0.2			0.1	J20a	1.6	10W53	632, 634–639	3	rd q. of 17th c.
9.6:8	171	634	Glass	Salmon	Drawn	Long cylinder	1	0.3	0.8			_	J20a	1.6	10W53	631–633, 635–639	3	rd q. of 17th c.
9.6:9	171	635	Glass	Yellow	Drawn	Oblate	2	0.3	0.2			0.1	U20a	1.6	10W53	631–634, 636–639	<u></u>	ird q. of 17th c.
9.6:10	171	636	Glass	Cobalt blue	Drawn	Oblate	2	0.3	0.2			0.1	J20a	1.6	10W53	631–635, 637–639		ird q. of 17th c.
9.6:11	171	637	Glass	White	Drawn	Oblate		0.3	0.1			0.1	J20a	1.6	10W53	631–636, 638–639	<u></u>	ird q. of 17th c.
9.6:12	171	638	Glass	Dark red-on-green/ colorless	Drawn	Oblate	1	0.3	0.2			0.1	J20a	1.6	10W53	631–637, 639	3	ird q. of 17th c.
9.6:13	171	639	Glass	Black?	Drawn	Oblate	10	0.3	0.1			0.1	U20a	1.6	10W53	631-638	3	ird q. of 17th c.
9.6:14	171	752	Glass	Dark red	Drawn	Oblate	_	0.4	0.2			0.1	J20a	1.6	10W53	750–751, 753–757, 800	<u></u>	ird q. of 17th c.
9.6:15	171	753	Glass	Dark blue	Drawn	Oblate	_	0.4	0.2			0.1	J20a	1.6	10W53	750, 751–752, 754–757, 800	<u></u>	ırd q. of 17th c.
9.6:16	171	754	Glass	Black	Drawn	Oblate		0.3	0.2			0.1	J20a	1.6	10W53	750–753, 755–757, 800		ird q. of 17th c.
Not illustrated	171	755	Glass			Oblate	_	0.3	0.1			0.1	J20a	1.6	10W53	750–754, 756–757, 800	<u>~</u>	ird q. of 17th c.

(cont.)
9.2.
able

	3rd q. of 17th c.	3rd q. of 17th c.	2nd/3rd q. of 17th c.				2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.								
	750–755, 757, 800	750–756, 800					684–687	683, 685–687	683–684, 686–687	683–685, 687	683–686					759–772	758, 760–772	758–759, 761–772	758–760, 762–772
	10W53	10W53	10W53	10W53	10W53	10W53	10W53	10W53	10W53	10W53	10W53	11B55	11B55	11B55	11B55	11B55	11B55	11B55	11B55
	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1	1	1	1.1	1.1	1.1	1.1	1.1
	U20a	U20a	U20a	U20a	U20a	U20a	U20a	U20a	U20a	U20a	U20a	U86 surface	U86 surface	U86 surface	U86	U86	U86	U86	U86
	0.1	0.1		0.3	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2		0.1		0.1	0.1		0.1
															0.7				
															2.2				
-	0.2	0.1	1.3	0.5	0.8	0.5	0.1	0.2	0.5	0.5	0.1	0.2	0.3	0.2	2.2	0.2 - 0.1	0.2		0.4– 0.2
(cont.)	0.3	0.3	1.4	0.8	1.0	0.6	0.3	0.3	0.7	0.6	0.2	1.1	0.4	0.3		0.4 - 0.2	0.4		0.4- 0.3
Table 9.2.	1	1	1	1	1	1	1	1	1	1	1	1	1	1		11	2	8	4 (1 frag.)
	Globular	Oblate	Globular	Short barrel	Globular	Globular	Oblate	Oblate	Ellipsoid	Globular	Oblate	Disc	Globular	Oblate		Oblate	Oblate	Oblate	Oblate
	Drawn	Drawn		Wound		Wound	Drawn	Drawn	Drawn	Drawn	Drawn		Drawn	Drawn		Drawn	Drawn	Drawn	Drawn
	Yellow	Green		Yellow		Black	Green	Black	Black	Dark purple	Yellow		Light blue	Dark blue		Red, yellow	Blue	Green	Red
	Glass	Glass	Clay	Glass	Mood	Glass	Glass	Glass	Glass	Glass	Glass	Ostrich eggshell	Glass	Glass		Glass	Glass	Glass	Glass
	756	757	589 (	590 (	591	592 (	683 (	684 (	685 (	686 (	687 (	564 (	566 (	567 (	439	758 (	759 (	760 (	761
	171	171	173	173	173	173	173	173	173	173	173	176	176	176	179	184	184	184	184
	9.6:17	9.6:18	9.6:19	9.6:20	9.6:21	9.6:22	9.6:23	9.6:24	9.6:25	9.6:26	9.6:27	9.6:28	9.6:29	9.6:30	Not illustrated	9.6:31–33	9.6:34-35	9.6:36	9.6:37–38

Table 9.2. (cont.)

Context dating	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.		18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.			
Field no. (FN)																		
Found with inv. nos	758–761, 763–772	758–762, 764–772	758–763, 765–772	758–764, 766–772	758–765, 767–772	758–766, 768–772	758–767, 769–772	758–770, 772	747-749	747-748								
Square	11B55	11B55	11B55	11B55	11B55	11B55	11B55	11B55	11B55	11B55	10Y54		10Z53	10Z53	10Z53	10Y/Z54	10Y/Z54	10Y/Z54
Zone	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Unit	U86	U86	U86	U86	U86	U86	U86	U86	U86	U86	U27 surface	Under U77	Under U77	Under U77	Under U77	U35	U35	U35
Diam. hole (cm)		0.2-0.1				0.1	0.1							0.2	< 0.1			
Th. (cm)					0.7	0.4					0.5							
Width (cm)											1							
Length (cm)		0.3-	0.7		1.7		0.2 - 0.1		0.1		1.3		0.2	0.5	0.2	1.9	1.3	1.2
Diam. (cm)		0.5-0.2	0.6	1.0– 0.5		1.5	0.4– 0.3		1.0	0.5			0.3- 0.2	0.9	0.3	1.25	0.9	0.3
Quantity	13	16	1	4	4	2	œ	1	1	1	1		8	4 (3 frag.)	2	1	1	1
Length and shape	Oblate	Oblate	Globular			Long cylinder	Oblate	Oblate	Disc	Globular		Oblate	Oblate	Globular, short barrel	Oblate	Long cylinder	Hexagonal long bicone	Long cylinder
Technique	Drawn	Drawn	Mound			Drawn	Drawn	Drawn		Wound		Drawn	Drawn	Mound	Drawn	Wound	Lapidary technique	Drawn
Color and diaphaneity*	Blue, green, black	Blue, black	Black			Dark red-on-colorless	Colorless-on-white- on-colorless and white	Yellow	Black	Black		Black, white, yellow	Yellow	Green	Black	Yellow	Red	Dark blue
Material	Glass	Glass	Glass	Marine mollusc shell, <i>Cypraea moneta</i>	Marine mollusc shell, <i>Engina mendicaria</i> , <i>Cypraea moneta</i>	Glass	Glass	Glass	۰.	Glass	Marine mollusc shell, <i>Cypraea moneta</i>	Glass	Glass	Glass	Glass	Glass	Carnelian	Glass
Inv. no.	762	763	764	765	766	767	768	771	748	749	168	897	941	942	943	150	155	156
Cxt	184	184	184	184	184	184	184	184	186	186	193	196	196	196	196	198	198	198
Fig. no.	9.6:39-41	9.6:42-43	0.7:1	9.7:2	9.7:3-4	9.7:5	9.7:6	9.7:7	9.7.8	9.7.9	01:2:0	9.7:11–13	9.7:14–15	9.7:16–17	9.7:18	9.7:19	9.7:20	9.7:21

(cont.)
9.2.
Table

9.7:22–25	198	240	Glass	Yellow, dark red, green, black	Drawn	Oblate	23 (20 on photo)	0.4				U35	1.1 1	0Y/Z54	239, 241	18th c.
9.7:26	198	241	Agate	Brown-white		Globular	1	1.2				U35	1.1	0Y/Z54	239, 240	18th c.
9.7:27	200	606	Glass	Black and white	Rod-pierced	Oblate	1			6.0		Surface of courtyard U86	1.1 1	1C54		
9.7:28	200	678	Carnelian	Red-orange		Faceted short bicone	1	0.7	0.5		0.1	Surface of U86	1.1 1	1C54	677, 679–682	
9.7:29	200	680	Glass	Dark blue	Mound	Globular	1	0.8	0.6		0.2	Surface of U86	1.1 1	1C54	677–679, 682	
9.7:30	200	681	Glass	Green	Drawn	Oblate	1	0.3	0.2		0.1	Surface of U86	1.1 1	1C54	677–680, 682	
9.7:31	204	689	Glass	Green	Drawn	Oblate	1	0.3	0.2		0.1	Under U86	1.1 1	.1B53/54	688, 690–699, 717–720	17th–18th c.
9.7:32	204	690	Glass	Green	Drawn	Oblate	_	0.3	0.2		0.1	Under U86	1.1	.1B53/54	688–689, 691–699, 717–720	17th–18th c.
9.7:33	204	691	Glass	Yellow	Drawn	Oblate		0.3	0.2		0.1	Under U86	1.1	.1B53/54	688–689, 692–699, 717–720	17th–18th c.
9.8:1	204	692	Glass	White	Drawn	Oblate						Under U86	1.1 1	.1B53/54	688–691, 693–699, 717–720	17th–18th c.
9.8:2	204	693	Glass	Black	Drawn	Oblate	4 (only 2 on photo)	0.3	0.2		0.1	Under U86	1.1 1	.1B53/54	688–692, 694–699, 717–720	17th–18th c.
9.8:3	204	694	Glass	White	Drawn	Oblate	-	0.3	0.2		0.1	Under U86	1.1 1	.1B53/54	688–693, 695–699, 717–720	17th–18th c.
9.8:4	204	695	Glass	Colorless-on-white	Drawn	Standard cylinder		0.4	0.3		0.1	Under U86	1.1 1	.1B53/54	688–694, 696–699, 717–720	17th–18th c.
9.8:5	204	696	Glass	Light yellow		Oblate			0.2			Under U86	1.1	1B53/54	688–695, 697–699, 717–720	17th–18th c.

# Table 9.2. (cont.)

Context dating	17th–18th c.	17th–18th c.	17th–18th c.	17th–18th c.	17th–18th c.	18th c.	18th c.	18th c.	18th c.	I			1st q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.
Field no. (FN)																
Found with inv. nos	688–696, 698–699, 717–720	688–697, 699, 717–720	688–699, 718–720	688–699, 717, 719–720	688–699, 717–718, 720	723-725	722, 724–725	722–723, 725	722-724	1382-1384	1381, 1383–1384	1381–1382, 1384	779-800	741, 743–744	741, 743–744	741-743
Square	11B53/54	11B53/54	11B53/54	11B53/54	11B53/54	10Y/Z53	10Y/Z53	10Y/Z53	10Y/Z53	11F54	11F54	11F54	10W/Y54	10Y55	10Y55	10Y55
Zone	1:1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1		-	1	1.6	1.6	1.6	1.6
Unit	Under U86	Under U86	Under U86	Under U86	Under U86	U77	U77	U77	U77	U44/48/71 surface	U44/48/71 surface	U44/48/71 surface	U26a	U40	U40	U40
Diam. hole (cm)	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1		0.2				0.1	
Th. (cm)				0.5					0.6			0.4				
Width (cm)																
Length (cm)	0.2	0.2	0.2	0.6	0.1	0.3	0.1	0.2		0.8	0.15	1.5	1.4	1.1	0.1	
Diam. (cm)	0.3	0.3	0.3		0.2	0.4	0.3	0.2	0.8		0.7	0.9	0.6	0.5	0.2	
Quantity	_	_	1	_	_	1	1	1	1	1 (half)	1	1	1	1 (half)	1	1
Length and shape	Globular	Oblate	Oblate	Ellipsoid	Oblate	Oblate	Oblate	Oblate	Oblate		Disc	Long cylinder	Long cylinder	Long cylinder	Oblate	Oblate
Technique	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn				Drawn	Drawn	Drawn	Drawn
Color and diaphaneity*	Yellow	Yellow	Yellow	White	Green	Cobalt blue	White	White	Light blue	Yellow		White and black	Yellow	Blue	Dark blue	Black
Material	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Ostrich eggshell	Glass	Glass	Glass	Glass	Glass
nv. no.	697	698	717	718	719	722	723	724	725	1381	1382	1383	778	742	743	744
Cxt	204	204	204	204	204	206	206	206	206	214	214	214	243	250	250	250
Fig. no.	9.8:6	9.8:7	9.8:8	9.8:9	9.8:10	9.8:11	9.8:12	9.8:13	9.8:14	Not illustrated	Not illustrated	Not illustrated	9.8:15	9.8:16	9.8:17	9.8:18

Table 9.2. (cont.)

2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	lst q. of 17th c.
871	871	862, 871	863, 871	864, 871	865, 871	866, 871	862, 871	868, 871	869,	-1112	,-1112	-1104, 1112	-1105, 1112	-1106, 1112	-1107, 1112	-1108, 1112	-1109, -1112
862-	861, 863–	861– 864–	861-865-	861-866-	861-867-	861-868-	861– 864–	861– 870–	861-871	1104	1103	1103-1106	1103	1103-1108	1103-1109	1103-1110	11103-
10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10Y55	10W/54	10W54	10W54	10W54	10W54	10W54	10W54	10W54
1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
U40	U40	U40	U40	U40	U40	U40	U40	U40	U40	U26a	U26a	U26a	U26a	U26a	U26a	U26a	U26a
0.1 or less	0.1	0.1	< 0.1	0.1 or less	0.1 or less	0.1	< 0.1	0.1	0.1		0.2	0.1	< 0.1	0.1		0.3	< 0.1
		1															
0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	2.0	0.3	0.3	0.2	0.8	0.5	1.8	0.6	
0.4	0.3	0.4	0.2	0.2	0.4	0.3	0.4	0.5	0.4	0.6	0.5	0.4		0.6	1.1	0.7	0.5
4	1	e	1	2	4	4	1	1	1	1	1	1	1	1	7 (1 on photo)	1	1
Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	Long cylinder	Oblate	Oblate	Long cylinder	Globular	Globular	Long cylinder	Globular	Ellipsoid
Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Drawn			Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	Mound	Drawn	Drawn
Colorless-on-white- on-colorless, white, colorless	Green	Yellow	Yellow	Green	Yellow	Black	Light green	Light blue	Black	Dark blue	Yellow	Dark red-on-green/ colorless	Whitish	Blue	Light yellow-green	Dark red-on-green/ colorless	Whitish
Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass
861	862	863	864	865	866	867	868	698	870	1103 (	1104	1105	1106	1107	1108	1109	1110
250	250	250	250	250	250	250	250	250	250	261	261	261	261	261	261	261	261
9.8:19-22	9.8:23	9.8:24	9.8:25	9.8:26	9.8:27	9.8:28	9.8:29	9.8:30	9.8:31	9.8:32	9.8:33	9.8:34	9.8:35	9.8:36	9.8:37	9.8:38	9.8:39

Table 9.2. (cont.)

Cia ao		Inv. no	Matorial	Color and	Tachniana	anoth and shane	Outitor	Diam	I anoth	W7:4+b	٩. ۲	Diam		Zono C	0.000	Equal with D:	old no. 1	Contourt dating
· · · · · · · · · · · · · · · · · · ·			171 (171)	diaphaneity*		centern and mape	Zuminy	(cm)	(cm)	(cm)	(cm)	nole (cm)			duare	inv. nos	(FN)	guinen neuro
9.8:40	261	1111	Clay?			Globular	1	1.4	1.4			0.2	U26a	1.6 1	0W54	1103–1110, 1112		st q. of 17th c.
9.8:41	261	1112	Glass?	Light green		Globular	1	1.8	1.5				U26a	1.6 1	0W54	1103-1111		st q. of 17th c.
1:6.6	262	1118	Glass	Yellow	Drawn	Oblate	1	0.3	0.2			0.1	U26b	1.6 1	0W54	1119		the state of the s
9.9:2	262	1119	Glass	Green	Wound	Long cylinder	1	1.7	1.1			0.4	U26b	1.6 1	0W54	1118		the state of the s
9.9:3	262	1156	Glass	Cobalt blue	Drawn	Oblate	3	0.25- 0.2	0.1			0.1 or less	U26b	1.6 1	0W54	1157–1182		end h. of 16th c.
9.9.4	262	1158	Glass	Cobalt blue	Drawn	Globular	3	0.6	0.6-			0.1	U26b	1.6 1	0W54	1156–1157, 1159–1182		end h. of 16th c.
9.9:5-7	262	1159	Glass	Black, dark red, blue	Drawn	Oblate, globular	53	0.4- 0.2	0.3-0.1			0.1 or less	U26b	1.6 1	0W54	1156–1158, 1160–1182		hd h. of 16th c.
9.9.8	262	1160	Glass	Green	Drawn	Oblate, globular	2	0.3	0.2			0.1	U26b	1.6 1	0W54	1156–1159, 1161–1182		end h. of 16th c.
0.9:9-10	262	1161	Glass	Yellow	Drawn	Oblate, globular	28	0.4- 0.2	0.3- 0.1			0.1 or less	U26b	1.6 1	0W54	1156–1160, 1162–1182		end h. of 16th c.
11:6.6	262	1162	Glass	Blue	Drawn	Globular	1	0.5	0.4		v	: 0.1	U26b	1.6 1	0W54	1156–1161, 1163–1182		end h. of 16th c.
9.9:12-14	262	1163	Glass	Blue, dark blue, black	Drawn	Globular, ellipsoidal	9	0.65- 0.4	0.7- 3.5			0.1 or less	U26b	1.6 1	0W/54	1156–1162, 1164–1182		end h. of 16th c.
9.9:15	262	1164	Glass	Yellow	Drawn	Standard cylinder	1	0.5	0.5			0.1	U26b	1.6 1	0W54	1156–1163, 1165–1182		end h. of 16th c.
9.9:16–17	262	1165	Glass	Black	Drawn	Oblate	18	0.4– 0.2	0.2- 0.1			0.1 or less	U26b	1.6 1	0W54	1156–1164, 1166–1182		hd h. of 16th c.
9.9:18	262	1166	Ostrich eggshell			Disc	5	0.5- 0.4	0.2- 0.1			0.2 - 0.1	U26b	1.6 1	0W54	1156–1165, 1167–1182		end h. of 16th c.
91:6.6	262	1167	Glass	White(?)-on-color- less	Drawn	Long cylinder	2	0.2	9.0		v	: 0.1	U26b	1.6 1	0W54	1156–1166, 1168–1182		end h. of 16th c.
9.9:20	262	1168	Glass	Yellow	Drawn	Long cylinder	2	0.3	1.85			0.1	U26b	1.6 1	0W54	1156–1167, 1169–1182		end h. of 16th c.
9.9:21	262	1169	Glass	Light blue	Drawn	Long oblate	1	0.4	0.5			0.1	U26b	1.6 1	0W54	1156–1168, 1170–1182		end h. of 16th c.
9.9:22	262	1170	Glass	Dark red-on-green/ colorless	Drawn	Long cylinder	3 (frag.)	0.3– 0.5				0.2 - 0.1	U26b	1.6 1	0W54	1156–1169, 1171–1182		and h. of 16th c.

Table 9.2. (cont.)

2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	ater than 17th c.	2nd h. of 16th c.			
82	82	82	82	74, 82	82	82	82	82	82	82		I	29 2	29	29	22, 29
1156–11	1156-11	1156-11	1156–11	1156-11	1156-11	1156-11	1156-11	1156-11	1156-11	1156-11			1121-11	1120, 1122–11	1120–113	1120-11
10W54	10W54	10W54	10W54	10W54	10W54	10W54	10W54	10W54	10W54	10W54	10W54	11B55	10W/54	10W54	10W54	10W54
1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.1	1.6	1.6	1.6	1.6
U26b	U26b	U26b	U26b	U26b	U26b	U26b	U26b	U26b	U26b	U26b	U26b	U41	U26b	U26b	U26b	U26b
0.5; 0.3	0.1 or less		0.1 or less	0.1		0.1	0.1	0.1	0.2– 0.1	< 0.1		0.1	0.1	0.1	0.1	0.1
1.4	0.2- 0.1		0.60.4	0.3	0.4-0.2	1.9- 0.5	0.2	0.3	0.4– 0.3	0.2		0.1	0.1	0.2-0.1	0.2	0.3
1.1	0.3– 0.2	0.6– 0.5	0.5- 0.4	0.4	0.3-	0.2	0.35	0.4	0.5-0.4	0.2		0.3	0.2	0.3-	0.4	0.3
	54	(halves)			~	~			[3 (fragments)							
Long cylinder	Oblate, globular 0	Globular	Globular, ellipsoidal, double-segment	Oblate	Oblate, double-segment	Long cylinder	Short cylinder	Short barrel	Globular, oblate	Oblate		Oblate	Oblate	Oblate	Oblate	Globular
PunoM	Drawn	Drawn	Drawn		Drawn	Drawn			Drawn	Drawn			Drawn	Drawn	Drawn	Drawn
Green	White, colorless, yellow, amber	White, yellow	White	Salmon	Dark red-on-green/ colorless	Black			Blue	Green		White	Light blue	Black	Light blue	Dark red
Glass	Glass	Glass	Glass	Coral?	Glass	Glass	Ostrich eggshell	Coral?	Glass	Glass	Marine mollusc shell, <i>Cypraea moneta</i> , <i>Conus taeniatus</i>	Glass?	Glass	Glass	Glass	Glass
1171	1172	1173	1174	1175	1176	1177	1178	1178	1179	1180	1181	1138	1120	1121	1122	1123
262	262	262	262	262	262	262	262	262	262	262	262	268	271	271	271	271
9.9:23	9.9:24-27	9.9:28–29	9.10:1	9.10:2	9.10:3	9.10:4	9.10:5	9.10:6	9.10:7–8	9.10:9	9.10:10-12	9.10:13	9.10:14	9.10:15	9.10:16	9.10:17

Table 9.2. (cont.)

Found with Field no. Context dating inv. nos (FN)	.4 1120-1123, 2nd h. of 16th c.   1125-1129 1125-1129 1125-1129	id 1120–1124, 2nd h. of 16th c. 1126–1129	i4 1120-1125, 2nd h. of 16th c.   1127-1129 1127-1129 1127-1129	1127–1129	<ul><li>1120–1126, 2nd h. of 16th c.</li><li>1128–1129</li></ul>	4 2nd h. of 16th c.	8   1147, 1148	8   1146, 1148	8   1146, 1147		2nd h. of 17th c.	2 2nd h. of 17th c.	3 621 — —	3 620 — —	3 641, 642 — —	3 640, 642 —	3 640–641 —	3 245 102 2nd h. of 17th c.	3 2nd h. of 17th c.		3 2nd h. of 17th c.
	10W/54	10W/54	10W54		10W54	10W/54	10Z48	10Z48	10Z48	11B52	11B52	11B52	11C53	11C53	11C53	11C53	11C53	11C53	11C53	C2011	11(1)
	1.6	1.6	1.6		1.6	1.6	1.5	1.5	1.5	1.5	1	1	1	1	1	1	1	1.2	1.2		1.2
Unit	U26b	U26b	U26b	7	U26b	U26b	U97/98 subsurface	U97/98 subsurface	U97/98 subsurface	Street U24 surface	U24	U24	U32/39 surface	U32	U32		U32				
Diam. hole (cm)		0.2				0.2	0.2	0.2	0.1	0.2	0.1				0.4	0.1	0.1				
Th. (cm)																					
Width (cm)																					
Length (cm)	0.7	0.1	0.2		0.3- 0.2	1.2	0.2	0.7	0.2	0.3	9.0			1.2	1.5	0.2	0.2				
Diam. (cm)		0.5	0.4			1.8	0.6	0.7	0.3	0.6	0.6	0.2	0.3		0.7	0.4	0.5				
Quantity	2 (frag.)	1	2		3 (frag.)	1	1	1	1	1	1	1	1	1 (frag.)	1	1	1	ca. 224	3 (frag.)		
Length and shape	Oblate	Disc	Oblate			Globular	Disc	Globular	Oblate	Oblate	Globular	Oblate	Oblate		Long cylinder	Oblate	Oblate	Short and standard barrells	Oval bezel		
Technique							Carved	Wound	Drawn	Drawn	Drawn	Drawn	Drawn	Wound	Wound	Drawn	Drawn	Wound, drawn			
Color and diaphaneity*	Yellow (t)		Black	;	Blue			Light blue	Green	Yellow	Blue	Dark blue	Green	Yellow	Yellow-green	Light blue	Blue	Green, yellow, white, dark red	Green		
Material	Glass	Ostrich eggshell	Glass?	į	Glass	Clay	Ostrich eggshell	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Metal, glass		Marine mollusc shell, <i>Cypraea moneta</i>
Inv. no.	1124	1125	1126		1127	1141	1146	1147	1148	624	627	628	620	621	640	641	642	244	245		611
Cxt	271	271	271	į	271	271	273	273	273	274	277	277	280	280	280	280	280	282	282		282
Fig. no.	9.10:18	9.10:19	9.10:20		9.10:21	9.10:22	9.10:23	9.10:24	9.10:25	9.10:26	9.10:27	9.10:28	9.10:29	9.10:30	9.10:31	9.10:32	9.10:33	9.10:34–39; 9.15:1–4	9.10:40; 9.15:1–4		9.11:1

Table 9.2. (cont.)

2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.
		9	9	9	3,	4,	5	8	∞	7	1	0, 1	1, 1	1 2,	3,	4, 1	5,
		673-671	672, 674–67i	672, 674–67i	672–67; 675–67;	672–67. 676	672-67	647, 64	646, 64	646, 64	649, 651–67	649–651 652–67	649–65 653–67	649–653 654–67	649–653 655–67	649–65 <sup>,</sup> 656–67	649-65
11C53	11C53	11C53	11C53	11C53	11C53	11C53	11C53	11C53	11C53	11C53	11C52	11C52	11C52	11C52	11C52	11C52	11C52
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
U32	U32	U32	U32	U32	U32	U32	U32	U39	U39	U39	U38	U38	U38	U38	U38	U38	U38
0.1	0.2	0.4			0.2	0.3	0.5	0.3	0.2	0.8	0.2	0.1	0.2	0.1	0.1	0.1	0.2
			0.8	0.8													
0.5	0.4	2.0	0.8	0.8			1.0	1.8	1.4	1.8	0.4	0.2	0.4	0.2	0.2	0.2	0.4
0.7	0.6	0.9	t t		0.9	0.8	1.0	0.9	1.9	0.6	0.6	0.4	0.6	0.4	0.3	0.3	0.3
1	1	5	2 perforated or of 8 complete	1	4	3	1	1	1	1	23.5	3	4	5	4	6	2
Oblate	Oblate	Long bicones and cylinders			Disc	Pentagonal	Globular	Long bicone	Short heptagonal bicone		Oblate	Oblate	Oblate	Oblate	Oblate	Oblate	
Drawn	Drawn	Wound				Wound		Wound			Drawn	Drawn	Drawn	Drawn	Drawn	Drawn	
Yellow, green and red stripes	Black	Green				Light yellow/amber	Amber (t)	Green	Red-white		Black	Blue	Black	Yellow	Yellow	Colorless	
Glass	Glass	Glass	Marine mollusc shell, <i>Cypraea moneta</i>	Marine mollusc shell, <i>Marginella</i> sp.	Ostrich eggshell	Glass	Glass	Glass	Carnelian	Marine mollusc shell, Cypraea moneta	Glass	Glass	Glass	Glass	Glass	Glass	Glass, carnelian chip
601	622	672	673	673	674	675	676	646	647	648	650	651	652	653	654	655	656
285	285	285	285	285	285	285	285	292	292	292	295	295	295	295	295	295	295
9.11:4	9.11:5	9.11:6-7	9.11:8	9.11.9	9.11:10	9.11:11	9.11:12	9.11:13	9.11:14	9.11:15	9.12:1–3	9.12:4	9.12:5	9.12:6	9.12:7	9.12:8	9.12:9–10

(cont.)
9.2.
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	Context dating	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	18th c.	2nd h. of 17th c.	2nd h. of 17th c.	
	Field no. (FN)																	
	Found with inv. nos	649–656, 658–671	649–657, 659–671	649–658, 660–671	649–659, 661–671	649–659, 661–671	649–660, 662–671	649–651, 663–671	649–662, 664–671	649–663, 665–671	649–665, 667–671	649–666, 668–671	649–667, 669–671	649–670	649–669, 671	1218–1220, 1222	1218-1221	
	e Square	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C52	11C53	11C53	10Z49
	Zon	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2		1	ace 1
	Unit	U38	U38	U38	U38	U38	U38	U38	U38	U38	U38	U38	U38	U38	U38	U56	U56	U99/101 surfa
	Diam. hole (cm)	0.2	0.1		0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.3			irregular	0.2
	Th. (cm)																	
	Width (cm)																	
	Length (cm)	0.3		0.8	0.6	0.6	0.2	0.6	0.2	0.2	0.1	0.7	0.4	0.1	0.1	0.6	1.7	< 0.1
(cont.)	Diam. (cm)	0.5	0.8		0.6	0.6	0.4	0.6	0.3	0.3	0.4	0.6	0.5	1.0	0.6		1.6	0.8
Table 9.2.	Quantity	n	1	3 (halves)	1	1	4	1	1	1	1	1	1	1	1	1 (half)	1	1
	Length and shape	Oblate	Standard barrel	Pentagonal, oblate	Standard barrel	Standard barrel	Oblate	Standard barrel	Oblate	Oblate	Oblate	Standard cylinder	Oblate	Disc	Disc	Ellipsoid	Globular	Disc
	Technique	Drawn		Wound	Drawn	Drawn	Drawn	Drawn		Drawn	Drawn		Drawn	Not perforated		Drawn		Carved
	Color and diaphaneity*	Green	White	Blue (t) and amber	Green with yellow and red stripes	Yellow with green and red stripes	Blue, dark red-on-green/ colorless	Green	Green	Green	White	Black	Colorless-on-white			Emerald green		
	Material	Glass	Glass?	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Ostrich eggshell	Ostrich eggshell	Glass	Clay	Ostrich eggshell
	Inv. no.	657	658	659	660	660	661	662	663	664	666	667	668	671	670	1221	1222	1137
	Cxt	295	295	295	295	295	295	295	295	295	295	295	295	295	295	298	298	314
	Fig. no.	9.12:11	9.12:12	9.12:13–14	9.12:15	9.12:16	9.12:17–18	9.12:19	Not illustrated	9.12:20	9.12:21	9.12:22	9.12:23	9.12:24	9.12:25	9.12:26	9.12:27	9.12:28

(cont.)
9.2.
Table

d h. of 17th c.			d h. of 17th c.	th c.	th c.	th c.	th c.	th c.	th c.	th c.	th c.			th c.	th c.	d h. of 17th c.	d h. of 17th c. d later			
2n			2n	18	18	18	18	18	18	18	18			18	18	2n	2n an			
1130				1197–1198, 1200	1197-1199		1205-1206	1204, 1206	1204–1205	1346, 1348	1346–1347	1211–1214, 1216	1328-1329	1209-1210	1208-1209	1184-1186		1133-1143	1132-1134	1132–1133
10Z49	10Y49	10Y49	10Y49	11D53	11D53	11D52	11D53	11D53	11D53	11D53	11D53	11D52	11D52	11D52	11D52	11D52	10Z55	10Z55	10Z55	10Z55
1.5	1		1.5	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1		1.2	1.2	1.2	1.6	1.3	1.3	1.3
66N	U100 surface	U100 surface	U100	U52	U52	U52	U52	U52	U52	U52	U52	U63/65 surface	U63/65 surface	U63	U63	U63	U21	U45/70 surface	U45/70 surface	U45/70 surface
				0.1	0.1	0.1	0.2		0.3, 0.2	< 0.1	0.1			0.2	0.2	0.1	0.1	0.1	< 0.1	< 0.1
													0.5							
											0.4		0.9							
0.6				0.2	0.4	0.5	0.5		0.5	0.4	9.0	0.3	1.2	0.4	0.2	0.3		0.2	0.2	0.3
0.8			1.5	0.4	0.4	0.6	0.6		1.1	0.4	0.4	0.5		0.55	0.9	0.4		0.3	0.3	0.25
(half)																				
alate 1			obular 1	olate 1	obular 1	obular 1	obular 1	olate 1	olate 1	obular 1	1 1	olate 1	1	c-lobed cone 1	sc 1	obular 1	olate 1	olate 1	olate 1	1
10			d, d,	Ö	Ū	ß	ß	Ö	Ö	5	C	Ö		Six	Di	Ū	Ö	10	Ō	
Mound			Hand-forme smoothed	Drawn	Drawn	Drawn	Drawn	Drawn	Mound			Drawn		Wound	Carved	Drawn		Drawn	Drawn	
Blue, covered with wihitish patina				Yellow	Dark blue	Blue	Blue	Dark red-on-green/ colorless	Yellow	Light blue	Dark blue	Light yellow		Blue		Dark red		Dark yellow	Yellow	
Glass	Marine mollusc shell, Cypraea moneta	Marine mollusc shell, Pteria macroptera	Clay	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Glass	Marine mollusc shell,	Glass	Ostrich eggshell	Glass	Glass	Glass	Glass	Glass
1131	1227	1227	1142	1199	1200	1327	1204	1205	1206	1347	1348	1215	1330	1208	1210	1183	1144	1132	1133	1134
318	321	321	324	328	328	328	329	329	329	329	329	334	334	340	340	342	352	362	362	362
9.12:29	9.12:30	9.13:1	9.13:2	9.13:3	9.13:4	9.13:5	9.13:6	9.13:7	9.13:8	Not illustrated	Not illustrated	9.13:9	9.13:10	9.13:11	9.13:12	9.13:13	Not illustrated	9.13:14	9.13:15	Not illustrated

Table 9.2. (cont.)

Fig no	Cvt V	Inv no	Materia	Color and	Technique	anorth and share	Quantity	Diam	I enoth	4+Pi/M	٩Ľ	Diam	Init	S one	011010	Found with E	ield no (	ontext dating
0				diaphaneity*				(cm)	(cm)	(cm)	(cm) he	ole (cm)	<u> </u>			inv. nos	(FN)	٥
9.13:16	363	1248	Glass	Yellow	Drawn	Oblate	1	0.3	0.2			0.1	J94	1.6 1	0Z55	1249		lst h. of 17th c.
9.13:17	365	1207	Clay			Globular	3	1.2	1.3			0.2	J46/51 surface	1.3 1	1G53		259 -	_
9.13:18	376	1151	Glass	Light blue	Drawn	Standard barrel	1	0.7	0.5			0.2 1	ayer SE of J43/46/51	1.3 1	1G53	1149–1150, 1152–1155	<u> </u>	17th c. or earlier
9.13:19	376	1152	Glass	White	Drawn	Globular	1	0.3	0.25			0.1 1	ayer SE of J43/46/51	1.3 1	1G53	1149–1151, 1153–1155		17th c. or earlier
9.13:20	376	1154	Glass	Green	Drawn	Oblate	1	0.3	0.2		V	0.1 1	ayer SE of J43/46/51	1.3 1	1G53	1149–1153, 1155		17th c. or earlier
9.13:21	376	1155	Glass	Blue-on-white-on- black	Drawn	Square long sylinder	1	0.35	0.5			0.2 1	ayer SE of J43/46/51	1.3 1	1G53	1149–1154		l7th c. or earlier
9.13:22	380	1201	Mood			Globular	1	0.9	0.8			0.3 1	145	1.3 1	1G55; 1F55			l7th c.
9.13:23	434	1113	Clay			Globular	1	1.5	1.1			0.4- 1	J58a/73 surface	1.1 1	0W51	1114–1117	1	
9.13:24	434	1114	Clay			Globular	1	1.4	1.5			0.2- 1	J58a/73 surface	1.1 1	0W51	1113, 1115–1117	1	
9.13:25	434	1115	Mood			Oblate	1	1.1	0.8			0.3	J58a/73 surface	1.1 1	0W51	1113–1114, 1116–1117	1	
9.13:26	434	1116	Glass	Dark red-on-green/ colorless	Drawn	Oblate	1	0.4	0.2			0.1 1	J58a/73 surface	1.1 1	0W51	1113–1115, 1117		
9.13:27	442	1331	Glass	Yellow	Drawn	Oblate	1	0.35	0.2			0.1 1	J73	1.1	0U51	1332–1335		lst h. of 17th c.
9.14:1	442	1332	Glass	White	Drawn	Oblate	1	0.6	0.4			0.1	J73	1.1 1	0U51	1331, 1333–1335		lst h. of 17th c.
9.14:2	442	1333	Glass	White	Drawn	Globular	1	0.6	9.0			0.1 1	J73	1.1 1	0U51	1331–1332, 1334–1335		lst h. of 17th c.
9.14:3	449	1229	Glass	Salmon	Drawn	Globular	1	0.5	0.5			0.2	J58a	1.1 1	0U51	1230–1233		lst h. of 17th c.
9.14:4	449	1230	Carnelian			Long cylinder	1	0.5	1.6			2	J58a	1.1 1	0U51	1229, 1231–1233		lst h. of 17th c.
9.14:5	449	1233	Marine mollusc shell, <i>Marginella</i> sp.			-	1 perforated out of 5 complete					1	J58a	1.1 1	0U51	1229–1232	[	lst h. of 17th c.
9.14:6	449	1244	Marine mollusc shell, <i>Marginella</i> sp.				2 perforated out of 11 complete		1.4-0.7	0	0.7-		J58a	1.1 1	0U51	1245–1247		lst h. of 17th c.

(cont.)
9.2.
[able]

	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.							1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.
	1244, 1246–1247	1244–1245, 1247	1244–1246		1338–1343	1337, 1339–1343	1337–1338, 1340–1343	1351–1352, 1354–1355	1351–1353, 1355	1351–1354	1455, 1457–1459	1455–1456, 1458–1459	1324	1444–1445, 1447–1454	1444—1446, 1448—1454	1444—1447, 1449—1454	1444–1448, 1450–1454	1444–1449, 1451–1454
	10U51	10U51	10U51	10U51	10Y45	10Y45	10Y45	10T51	10T51	10T51	10W/51	10W/51	10U51	10U51	10U51	10U51	10U51	10U51
	1.1	1.1	1.1	1.1	1	1	1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
	U58a	U58a	U58a	U58a	Trench in 10Y45 surface	Trench in 10Y45 surface	Trench in 10Y45 surface	U66 surface	U66 surface	U66 surface	U73	U73	U58a	U58a	U58a	U58a	U58a	U58a
	0.1	< 0.1	0.1		0.1	0.1		alomst 0.2	0.1	0.2		0.7	0.2		< 0.1	0.1	0.2	0.1
											0.4	6.0						
											0.5	1.6						
	0.3	0.2	0.4- 0.35		0.6	0.8	0.1	0.2	0.5	0.7	1.1	1.8	0.5		0.2	0.2	0.1	0.2
. (cont.)	0.4	0.3	0.5– 0.4		0.7	0.7	0.4	0.35	0.5				0.6		0.3	0.4	0.5	0.3
Table 9.2	1	2	2		1	1	1	1	1	1	1 (frag.)	1	1	1	1	1	1	1
	Oblate	Oblate	Oblate		Globular	Globular	Disc	Oblate		Conical?	Ring	Ring	Standard four-lobed	Oblate	Oblate	Oblate	Disc	Oblate
	Drawn	Drawn	Wound		Drawn	Drawn							Wound	Drawn	Drawn	Drawn		Drawn
	Colorless	Light blue	Green		Light blue	Dark blue	Ostrich	Yellow	White dull	Red, white?	Blue	Blue	Green	Dark green	Light blue	Colorless-on-white	Black color on the shell	Dark yellow
	Glass	Glass	Glass	Marine mollusc shell, <i>Cypraea moneta</i>	Glass	Glass	Ostrich eggshell	Glass	Glass	Glass	Faience	Faience	Glass	Glass	Glass	Glass	Ostrich eggshell	Glass
	1245	1246	1247	1258	1337	1338	1339	1353	1354	1355	1456	1457	1325	1446	1447	1448	1449	1450
	449	449	449	449	453	453	453	454	454	454	456	456	460	460	460	460	460	460
	9.14:7	9.14:8	9.14:9	9.14:10	9.14:11	9.14:12	9.14:13	Not illustrated	Not illustrated	Not illustrated	9.14:14	9.14:15	9.14:16	9.14:17	9.14:18	9.14:19	9.14:20	9.14:21

Table 9.2. (cont.)

Eia. no.	Cxt	Inv. no.	Material	Color and	Technique	enoth and shane	Ouantity	Diam.	Lenoth	Width	, hTh	Diam.	Unit	Zone S	anare	Found with Fie	ld no.	ontext dating
0				diaphaneity*	-	-		(cm)	و (cm)	(cm)	(cm)	hole (cm)				inv. nos	(FN)	Q
9.14:22	460	1451	Glass	Orange	Drawn	Short cylinder	1						U58a	1.1 1	0U51 1 1	(444–1450, (452–1454	1	st h. of 17th c.
9.14:23	460	1452	Glass	Yellow dull		Oblate	2						U58a	1.1 1	0U51 1	(444–1451, (453–1454	1	st h. of 17th c.
9.14:24	460	1453	Marine mollusc shell, <i>Cypraea moneta</i>				2						U58a	1.1 1	0U51 1	(444–1452, (454	1	st h. of 17th c.
Not illustrated	689	1140	PooM				1		2.1	2.4		0.2	U74	1.1 1	0Y53		238 1	8th c. or later
9.14:25	F047	8	Glass	Light blue dull	Drawn	Globular	1	0.45	0.4			0.1	U73	1.1 1	0Y52		2	nd h. of 17th c.
9.14:26	F157	727	Glass	Orange	Drawn	Short barrel	1	0.4	0.2			0.1	U11 floor	1.1 1	1A54		1	nd h. of 7th c., 18th c.
9.14:27	F203	625	Clay	Clay		Globular	1	2.2				0.2	U47	1	0255		1	st h. of 17th c.
9.14:28	F326	774	Glass	Dark yellow	Drawn	Globular	1	0.2	0.2		-	< 0.1	U86	1.1 1	1B55 7	73, 75–776	2	nd q. of 17th c.
9.14:29	F326	775	Glass	Yellow	Drawn	Oblate	1	0.4	0.2			0.1	U86	1.1 1	1B55 7	73–774, 776	2	nd q. of 17th c.
9.14:30	F326	776	Glass	Dark blue-black	Drawn	Ellipsoid	1	0.6	0.7				U86	1.1 1	1B55 7	73-775	2	nd q. of 17th c.
9.14:31	F448	1139	PooM	Dark brown		Oblate	1	0.8	0.7			0.3	U74	1.1 1	0Y53		100	st h. of 18th c. r later
9.14:32	F470	630	Glass	Dark yellow	Drawn	Oblate	1	0.3	0.1			0.2	U15 floor	1.6 1	0W/Y54		2	nd q. of 17th c.
9.14:33	F470	843	Glass	Dark blue	Wound (	Oblate	1		0.5				U15 floor	1.6 1	0W/Y54 8	342–850	2	nd q. of 17th c.
9.14:34	F470	844	Glass	Colorless and white	Drawn	Oblate	1	0.4	0.4			0.1	U15 floor	1.6 1	0W/Y54 8	343, 345–850	2	nd q. of 17th c.
9.14:35	F470	845	Glass	Black	Drawn	Oblate	1	0.4	0.2			0.2	U15 floor	1.6 1	0W/Y54 8	343–844, 346–850	2	nd q. of 17th c.
9.14:36	F470	846	Glass	Dark red	Drawn	Oblate	1	0.4	0.2			0.2	U15 floor	1.6 1	0W/Y54 8	343–845, 347–850	2	nd q. of 17th c.
9.14:37	F470	848	Glass	Light blue			1 (frag.)						U15 floor	1.6 1	0W/Y54 8	343–847, 349–850	2	nd q. of 17th c.
9.14:38	F470	849	Glass	Blue-gray		Oblate	1	0.3	0.2			0.1	U15 floor	1.6 1	0W/Y54 8	343–848, 350	2	nd q. of 17th c.
Not illustrated	F737	1203	Glass	Light blue dull		Oblate	1	0.7	0.6			0.2	U51	1.3 1	1G53/54		1	7th c.

	0.6				— 11G54		0.1 — 11G54		< 0.1 11G54/		11G54/		0.2 11G54/		0.3- 11G54/	0.2	0.1 11G54/		- 11G54/	
	10						~		<u> </u>						~		~		7 1.3 0.7-	
	0.5 1.5				0.7 0.0		0.4 0.3		almost 0.4	0.5	0.7		0.75 0.7		3.1 0.9		0.5 0.3		1.7	
	1				1		1		1		1		2		5 (4 frag.)		1		1	
	Disc cylinder				Oblate		Ellipsoid		Oblate		Oblate				Long cylinder		Oblate			
Purple					Dark blue		Light yellow		Blue dull		Dark red-on-green/	colorless?	Dark blue dull		Green-yellow and	azure	Light blue, dull	1		
Jass?	Jay				rlass		rlass		rlass		Jass		rlass		rlass		rlass		farine mollusc shell,	utraed moneta
13-c G	605 C		783		1135 G		1136 G		1362 G		1363 G		1364 G		1365 G		1366 G		1367 N	
	No	context	No	context	Cleaning		Cleaning		No	context	No	context	No	context	No	context	No	context	No	CONTANT
9.14:39	9.14:40		Not	illustrated	Not	illustrated	Not	illustrated	Not	illustrated	Not	illustrated	Not	illustrated	Not	illustrated	Not	illustrated	9.14:41	

# Table 9.2. (cont.)

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## CHAPTER 10

## CONCLUSIONS

## Artur OBŁUSKI and Dorota DZIERZBICKA

Finds from the first season of excavations of the UMMA project at Old Dongola can be dated mostly to the 17th and 18th centuries, a period which is not the main chronological focus of our research. However, the study of late Funj-period households is crucial for understanding the earlier transformations in the city and, in general, for tracing change in Old Dongola's material culture over time. The analyses presented in this volume are of a preliminary nature and are largely aimed at building a framework for future studies on Funj-period material culture, which is also an objective of the UMMA project. Nonetheless, the published contributions also give us a glimpse of the miscellany of objects in use in the excavated domestic compounds. Investigation of production techniques and materials leads to first observations on change and continuity in local technology and craftsmanship. Imports, in turn, permit preliminary considerations on patterns of exchange of goods and ideas. Household assemblages featuring an array of pottery, basketry, wooden objects and leather items begin to take shape. We also start to see recurring personal items—elements of dress, footwear, and personal adornment.

## CONTINUITY AND CHANGE IN TECHNOLOGY

A vast number of miscellaneous objects identified as local products provide some indication of the technologies, materials and modes of production used in Old Dongola and its vicinity. These artifacts can often be compared to modern items, as many traditional works of craftsmanship clearly find antecedents in Funj-period material. At the same time, locally made objects can be viewed against the backdrop of older traditions.

Several trends observable in pottery manufacture in this period can be considered from a broader diachronic perspective. Funj-period pottery production has been viewed as a continuous decline of technological and artistic abilities of potters resulting from a lack of interest or need for maintaining earlier standards (Phillips 2003: 432). Funj-period assemblages lacked fine painted wares for serving food, which were characteristic of the Christian period. On the other hand, in the Dongolese assemblage bowls described as "fine" were carefully manufactured and covered with red slip. Their surfaces were glossy thanks to well-executed burnish. Thus, at some point such vessels might have become counterparts of earlier tableware.

According to William Adams, the Funj period was characterized by a smaller number of forms. Wares of the period prior to 1500 CE all but disappeared (Adams 1986). In 2018, Katarzyna Danys suggested an affinity between Late Christian handmade forms and Funj-period wares at Old Dongola and pointed to a greater diversity of forms in the latter group (Danys 2018). The 17th- and 18th-century material shows a clear break with the Makurian tradition of making pottery on the wheel. The majority of the Funj-period pottery is handmade (98%), while wheelmade vessels are infrequent (2%)—a ratio that confirms the observations put forward by Adams (1986: 49). In addition, almost 40% of the uncovered wheel-made fragments were imported (Chapter 3, this volume, see page 37). For reasons obscure to us, the only locally manufactured vessel that remained wheel-made was the *qadus*, or water-wheel pot. The most typical shapes were based on the section of a sphere.

Adams (1986) also pointed to a total absence of elaborate decoration of Funj-period vessels. Decoration of finds from the 2018–2019 season was indeed simpler and less varied than in earlier periods, but it did not vanish. There was, instead, a shift from painted ornamentation to other techniques, mostly incised and impressed, and often combinations of both. Statistical analysis of the decorated pottery shows that impressed patterns (about 47%) were the most common forms of ornamentation, followed by incised (about 31%) and applied decoration (about 10%), while painted vessels comprised around 8% of the entire assemblage (Chapter 3, this volume, see page 40). The latter were almost exclusively incense burners garnished with red, black and yellow geometric decoration.

Performance characteristics of materials seem to be an important factor in the production of ceramic vessels. Even though a variety of different fabrics have been identified in the pottery assemblage, and archaeometric studies are still needed to distinguish workshops, some general trends have already been observed (Chapter 3, this volume, see pages 37–40). Danys's analysis of fabrics has indicated that an overwhelming majority (about 90%) of the pottery was made of Nile alluvium, while a small share was of *wadi* clay. A trait characteristic of Funj-period pottery is the frequent use of grog as a temper in both alluvial and *wadi* clay fabrics (Chapter 3, this volume, see page 148). This trend was especially pronounced in the manufacture of *dokat*, ceramic plates used for *kisra* pancake bread. The use of this distinctive fabric for *dokat* was apparently a long-lived practice, as it has been noted in the pottery of both the late Makurian Terminal period (Danys 2018) and the modern era (Dirar 1993: 173). The grog fabric was likely chosen for its performance characteristics, as grog temper together with the morphological traits of the *doka* enhance thermal shock resistance (Schiffer and Skibo 1987; Skibo and Schiffer 1995; 2001).

In addition to ceramic *dokat*, very rare *dokat-hajar* are also known from Sudan (Dirar 1993: 173). Hamid Dirar describes them as vessels carved from a slab of granite, but David Edwards mentions a similar cooking pot/bowl from Attiri that was made of steatite (Edwards 2018: 655). One such large, shallow stone vessel with two handles was found in the 2018–2019 season in room U26b, in an occupational layer dated to the second half of the 16th century (Wyżgoł 2021: 188). This vessel, a unique find carved most likely from lamprophyre (B. Woronko, personal communication, 5 May 2021), is similar in shape to Islamic-period steatite vessels made in southern Egypt's Eastern Desert (Harrell and Brown 2008: 53). The stone vessel industry, which emerged on steatite quarry sites in Rod el-Baram, Wadi Kamoyib and Wadi Mubarak in the Early Islamic period—that is, it functioned from the 7th century onward (Harrell and Brown 2008)—developed in parallel to the ceramic *dokat*, which first occurred in approximately 600 CE (Adams 1986: 104). Dykes of lamprophyre, an igneous rock, have been identified in the vicinity of Wadi Mubarak (Zoheir et al. 2020: 328). However, since this stone can occur in various places, the vessel's Eastern Desert origin cannot be ascertained.

#### CHAPTER 10 CONCLUSIONS

Awareness of the performance characteristics of certain materials was not limited to pottery. In other categories of finds, the studied objects also show consistent use of the same material for certain purposes, indicating good practical knowledge of the properties of available raw materials. For example, stone pipes of likely local manufacture were made of soft, easily carved and drilled sandstone (Chapter 4, this volume, page 161), while hard, ferruginous sandstone was regularly used for querns. Magdalena Warowna's study of basketry and cordage finds provided data on the plant species used in their production. Date palm leaves (Phoenix dactylifera) were used for 44% of the items the assemblage, doum palm (Hyphaene thebaica L.) for 35%, while halfa grass (Desmostachya bipinnata) was attested for 21%. Tougher, more rigid doum palm fiber was used for sandals and some mats, presumably those placed on floors, while the more delicate and flexible date palm leaves and halfa grass were consistently selected for softer mats and baskets (Chapter 5, this volume, see page 184). Thus far, the following techniques have been identified in the basketry and cordage finds at Old Dongola: rolling used to make cords (34%), sewn plaits for making mats and baskets (28%), coiling employed in the production of sandals, baskets and lids/plates (24%), and plaiting used in mats and sandals (14%) (Chapter 5, this volume, see page 185). The materials and techniques applied in Funj-period basketry production find parallels in modern times. Baskets, lids, plates and mats are still manufactured using traditional techniques, indicating continuity in local knowledge and transmission of skills.

Local crafts also must have included woodwork and leatherwork. Wood species used in craftsmanship were most likely of local origin and the majority of objects seem to be made of acacia (Chapter 7, this volume, see pages 243–244). The objects were simple and utilitarian, and it is evident from the ad-hoc nature of most of them that they were products of local or even household manufacture. Leatherwork may also be viewed as a local craft, although in the case of more complex items import cannot be excluded. Amulet cases were likely of local make, given that in later times owners of *hijabs* customarily entrusted the task to "a local saddler" (El-Tayib 1955: 147; Osman el-Tom 1987: 226).

As studies progress, the picture of local crafts, materials and technologies will hopefully grow more complete and fine-grained. Other items certainly manufactured on the site and in its vicinity must have included stone implements, utility textiles and gourd vessels, all of which still require further research. More data is also needed on the details of production of amulets, as well as smoking pipes and beads.

## HOUSEHOLD ASSEMBLAGES AND DAILY LIFE

The houses excavated at Old Dongola in the 2018–2019 season yielded material that was surprisingly uniform and repetitive. Despite the scarcity of finds *in situ* in meaningful contexts, some remarks can be made on the contents of household assemblages and the function of the uncovered objects within the domestic space. In addition, personal items found in the excavated contexts, like clothing (a *rahat* skirt) and footwear of plant fiber and leather, amulets, beads and bracelets, and smoking pipes, may be used to derive information on the everyday apparel of the city's dwellers and their habits. The urban landscape of Funj-period Old Dongola under study in the 2018–2019 season (Obłuski and Dzierzbicka 2021) can start to be filled with inhabitants and their possessions. The dominant element of household assemblages was undoubtedly pottery. The recovered vessels were used for food production, storage and serving/consumption of meals. Their more detailed functional interpretation still requires further work, since most sherds came from secondary deposits, like refuse dumps and collapsed structures, while assemblages from meaningful contexts were scarce. With the progress of excavations and the emergence of a greater number of pottery vessels *in situ*, this material will be presented in its household context.

The assemblages of pottery used on a daily basis do not suggest much social differentiation in terms of wealth among the inhabitants. Despite the differences in the size of the dwellings, in the quality of their architecture and in the type of building materials used, the pottery set recovered from the houses was practically the same (Wyżgoł and Deptuła 2020). As research continues, the distribution of imported vessels may lead us to some conclusions regarding social differentiation and stratification. However, we have yet to carry out computational archaeology analyses, such as artifacts distribution or agent-based modeling, and more material from secure contexts is needed before such studies can be undertaken.

The change in the pottery forms associated with the coming of the Funj period may point to a shift in dining habits. Such a conclusion can be drawn from the disappearance of the Makurian tableware sets coupled with the popularity of large bowls that may have been used for communal meals [*Fig. 10.1*]. A striking feature of the assemblage of household objects is the sheer number of bowls. Large and small bowls form the largest class in the category of pottery (Chapter 3, this volume, see pages 63–92). Over a thousand of them are the multifunctional red-and-black PT8



Fig. 10.1. Selection of objects forming part of a standard household set in Funj-period Old Dongola

bowls, but the remaining types show great variety and appear in large numbers as well. In addition to pottery, more bowls in different sizes were made of wood (Chapter 7, this volume, see pages 244–247). The same form, though suitable only for keeping dry goods, appeared among basketry, where hemispherical baskets were common finds (Chapter 5, this volume, see pages 194–201). Gourd vessels, only fragments of which have been found thus far on the site, may have also been bowls, although other shapes are possible.

This seemingly insatiable need for bowls in a variety of materials might, at least in part, be related to the processing of sorghum, which was omnipresent and predominant in the archaeobotanical material from the site (el-Dorry and Nasreldein, unpublished field report). In addition, a number of querns and handstones used for grinding grain were found throughout the excavated area. Where preserved *in situ*, these facilities corresponded to the description of stone mills used for grain processing in modern Sudan (Dirar 1993: 72), West Africa (Muller 1970) and sub-Saharan Africa (Burgess 1962). The traditional milling process is reported as a daily activity beginning with sifting, washing and drying, followed by dry milling to produce meal or flour (Dirar 1993: 74–76). For some traditional dishes, the meal is mixed with water, fermented overnight and further subjected to two turns of wet milling with more water added in the process. The result is dough (*ajin*) used to make a variety of foods (Dirar 1993: 100, Table 2.2, and 102, Table 2.3). If, as it seems, the repertoire of foods prepared in the Funj-period city was akin to traditional Sudanese cuisine, then the processes involved must have required the use of multiple open and closed bowls. This, in turn, appears to find reflection in the Old Dongola material.

Wooden objects were numerous during the first season of UMMA excavations. Unfortunately, in the majority of cases their state of preservation did not allow us to determine their function. However, the assemblage of identifiable objects made of wood included bowls and beakers as well game pieces and locking devices. As rightly pointed out by Angela Cervi, spatial analysis suggests that domestic space was not organized in a way to house wooden furnishings (Chapter 7, this volume, see page 244). Storage rooms were too narrow to allow for anything more than a row of pots and possibly shelves. In the bigger rooms, benches made of bricks and covered with mud plaster served as beds, while niches and containers were used for keeping food and personal belongings. This picture conforms to Johann Burckhardt's account regarding the furnishing of houses in Berber at the beginning of the 19th century (Burckhardt 1819). The scarcity of wood resources and wood species suitable for making furniture must have influenced the production of wooden furniture as well. A broader chronological perspective shows that in the medieval period we can observe a limited number if not a lack of wooden artifacts.

The study of basketry is not an easy task since Nubiology lacks a dedicated monograph on the topic. This category of artifacts from Sudan has not yet received proper scholarly attention. However, ethnography offers a set of useful tools for the study of this material, since basketry production in Sudan is still a living tradition. Warowna (Chapter 5, this volume) provides a preliminary typology and basic information regarding the intended use of the basketry objects. The assemblage comprised cordage, mats, lids/plates, baskets and sandals. It seems that the finds had exclusively everyday domestic purposes. The use of color was very limited and only a handful of objects featured painted or dyed fibers.

Assemblages of household items found *in situ* indicate that certain categories of objects served various purposes, as either multifunctional or reused items. Bowls of type PT8, already mentioned

above, are a good example. Besides their usual function in food preparation and serving, they were used as collector vessels built into quern emplacements, as well as fire-pots inserted into the floors of rooms. In addition to their main function, ceramic bowls were also utilized as lids for jars (e.g. Deptuła 2021: room U50). Purpose-made ceramic lids were relatively few, but it seems that their scarcity can be explained by the use of both bowls and refashioned sherds as covers (Chapter 3, this volume, see pages 133–138). Basketry lids and round plant-fiber baskets made in the coiling technique also served this purpose. Many artifacts made of leather were excavated. Like the wooden objects, their identification was largely impeded by their state of preservation, but Angela Cervi was able to distinguish a milk jug, bags and sacks (Chapter 6, this volume, see pages 233–235). Thus, the studied pottery, basketry, leather and wooden vessels (as well as gourds and stone utensils that have yet to be investigated) formed sets of household items closely linked to one another in function.

The excavated contexts have also yielded personal items, including elements of dress, ornaments and other artifacts that begin to offer information on the inhabitants of Old Dongola, their appearance, customs and material status. With the textiles from the site still under study, the only recurring element of dress studied thus far is footwear in the form of sandals of plant fiber, leather, or both (Chapter 6, this volume, see pages 225–233; Chapter 5, this volume, see pages 204– 208). An interesting find is the so-called *rahat* skirt—a short, tasseled skirt usually made of leather (Chapter 6, this volume, see page 221). It was worn by Nubian girls as a sign of virginity until they got married, at which point it was replaced by a cotton dress and veil. This element of clothing, deemed to be of Arab origin, predates the Funj period in Nubia (Herzog 1956: 9). A *rahat* skirt from the same period as in Old Dongola was also found at Kulubnarti (Adams and Adams 1998). It continued to be worn into the 20th century, as indicated by travelers' accounts and photographic documentation (e.g., de Guerville 1906: 288; Library of Congress collection https://www.loc.gov/pictures/resource/cph.3b29537/).

Objects of personal adornment studied in the first excavation season of the UMMA project were bangles, beads, pendants and a single cabochon. Beads in a variety of materials have been found on the site in large quantities, but the exact manner in which they were worn cannot be determined (Chapter 9, this volume, see page 320). Another frequent category of decorative objects were bangles of colorful glass (Chapter 8, this volume). Joanna Then-Obłuska suggests on the basis of ethnographic parallels that bangles were exclusively worn by women (Chapter 8, this volume, see page 279). Together with other artifacts associated with a female presence, like the *rahat* mentioned above, they will contribute to the gender analysis of households of Old Dongola in the Funj period.

A category of personal objects crucial for the delivery of results of the UMMA project are amulets (Ar. *hijbat*, sing. حجاب). They contain religious magical texts written on paper wrapped in textile and enclosed in leather cases. These items were worn as pendants, tied to the upper arm, around the neck, wrist or ankle (Anderson 2016). The tradition of making amulets in this particular form dates back to the times when Christianity was still the religion of the Middle Nile Valley (6th–14th centuries) as suggested by finds from et-Tereif (Carpio and Guillen 2005; Anderson 2016). The Funj-period *hijbat* contain suras from the Quran, as well as magical squares and numeric cryptograms. The presence of Islamic *hijbat* in house inventories is a very good marker of widespread conversion to Islam and an indicator of the fact that religion has become embedded in the society. Analyses of the ink as well as paper used for the Old Dongola amulets uncovered this season are still pending (cf. Godlewski, Zerek, and Nowicka 2018). In the coming seasons we hope to find *hijbat* in earlier archaeological layers dated to the transitional period. Such finds will be of major significance for tracing the shift between the two monotheistic religions on the site and for understanding the dynamics of this change.

## INTERREGIONAL CONNECTIONS

The study of objects produced outside Old Dongola gives us an opportunity to place the site in the broader context of interregional exchange and communication networks. Other finds, like beads, bangles or glazed pottery, seem to reflect contemporary trends on the global markets. Some of these items (e.g., smoking pipes from well-known and dated manufacturing centers) also aid in establishing the chronology of Dongolese contexts.

One category that comprised exclusively imported items was bangles. The cores of bangles were manufactured of monochrome glass using the "seamless" technique and usually decorated on the external surface with canes and patches (Chapter 8, this volume). The canes were opaque orange or green, and sometimes bichrome with two or more colors (black and white, yellow and translucent blue/green) plaited together to form a braid. The striped patches were bichrome (yellow-translucent blue/green-yellow) or polychrome (orange-yellow-translucent blue/greenyellow-orange). The origin of the bangles has yet to be determined. Archaeometric analysis results obtained for samples submitted to the Elemental Analysis Facility at the Field Museum, Chicago, will be included in the final publication of the project. There are several known glass-production centers that manufactured bangles in the Ottoman period, including Hebron, Egypt, the Lebanese coast, India, and Yemen (Spaer 2001; Boulogne and Hardy-Guilbert 2010; Boulogne 2012). European centers, in turn, were rather less likely sources of bangles found in Sudan (Chapter 8, this volume, see page 279). Importantly, Then-Obłuska points out that while research carried out on bangles housed in museum collections has not been able to offer dating spans more precise than a period between the 14th and 18th centuries, well-stratified Old Dongola finds might shed new light on their chronology (Chapter 8, this volume, see page 279).

The assemblage of beads is fairly substantial, consisting of around 1,100 objects. The items are made of a plethora of materials: wood, Mediterranean coral, shells from the Red Sea or Indian Ocean, clay, faience, ostrich eggshell, and stone (chalcedony and onyx, agate). However, 90% of the beads (i.e., 990) were made of drawn, wound, as well as rod-pierced and folded glass. Then-Obłuska's macroscopic study suggests several exporters of beads to Old Dongola: Europe (Venice, the Netherlands, Bohemia, and Bavaria), where the majority of beads were produced, as well as Hebron, Egypt and South Asia (Chapter 9, this volume, see pages 317–318). Chemical composition studies should be carried out to confirm the glass beads' suggested provenance. Some information about beads can also be gauged from the narratives of travelers to Nubia. Theodor Krump reports that coral beads were worn by women in Treira and by slave girls of the king of Sennar (Spaulding 1974 respectively). In the latter case, the girls also put on Venetian glass and agate beads. It is quite intriguing how the Franciscan Krump was able to recognize Venetian beads on almost naked women from some distance. Parallels are also provided by archaeology, as in the case of large faience beads from Old Dongola (Then-Obłuska 2013: Fig. 4), which seem to appear simultaneously with Arab tribes in the 14th century (Chapter 9, this volume, see page 308). Beads of this

kind were also recorded at Kulubnarti (Adams and Adams 1998), Debeira and Fadrus 178/28:6 (Then-Obłuska 2016: Fig. 2.2), Abu Geili and Dar el Mek on the Blue Nile (Crawford and Addison 1951: Pl. XLIXA, Nos 1–5, Pl. LXXXVIIA, Nos 20–25, respectively). Importantly, not all beads were imported—some unperforated shells (*Cypraea moneta*) and four leftovers in the form of removed dorsum parts of the same species indicate that this marine mollusk shell was worked at the site.

While the publication of imported ceramics from the site is in preparation (Danys, in preparation), important indications for the study of interregional connections and influences can be derived from studies on local pottery. Both Lower (Ottoman) and Upper Nubia and the heart of the Funj kingdom seem to share the same aesthetics and techniques of pottery production (Chapter 3, this volume, see page 147). Characteristic of the latter two regions is coarse red ware with a black topping of slip, as well as vessels fired red outside and black inside (Crawford and Addison 1951: 161, 167). Some Dongolese specimens are endowed with distinctive features of surface treatment, like the presence of red-slipped and brown-smoothed zones (Chapter 3, this volume, see page 148).

The fairly large assemblage of smoking pipes uncovered in the 2018–2019 season constitutes an important contribution to the studies on this material conducted to date (Danys and Wyżgoł 2018; Chapter 4, this volume). It not only enriches the set of attested types and fabrics, but also brings us closer to understanding the process of introduction and diffusion of the smoking habit in the Middle Nile Valley. The dated contexts of the pipes indicate their presence on the site since the 17th century, which coincides with the early stage of diffusion of tobacco smoking. An important discovery of the 2018–2019 season is the frequent occurrence of local pipes of clay and stone, which seem to be associated with production in the Middle Nile Valley and in Old Dongola itself. Katarzyna Danys and Maciej Wyżgoł indicate that while the Ottoman Empire is the most likely region from which the smoking habit spread to Sudan, a southern, Funj influence on pipe production should also be taken into account (Chapter 4, this volume, see page 177). This is important for considering the degree of influence of the Funj Sultanate and the Ottoman Empire on the inhabitants of Old Dongola, on their customs and identity, in the 17th century. The Ottoman Empire has been viewed as the main center from which northern goods and ideas spread to the Middle Nile Valley (Edwards 2018). The Dongola Reach, a frontier region par excellence, may have been subject to a slightly different, more complex interplay of forces than the area between the First and Third Nile Cataracts. Cultural influences from the south must have played a role in shaping the local identity.

Lastly, a connection between Old Dongola and steatite quarries of the Eastern Desert, indicated by the stone vessel mentioned above, is intriguing. James Harrell and Max Brown (2008: 90–93) point to the Ababdah as the group who established and maintained this industry in Egypt. The discovered quarries are in the tribal territory of the Ababdah, who are known, from ethnographic evidence, to have manufactured steatite cooking vessels for at least the last 200 years (Wilkinson 1847: 406; Schweinfurth 1897: 272–274, Figs 1–3). The industry was certainly well developed by the beginning of the 15th century, when Maqrizi mentions *baram* (steatite vessels) among Egypt's stone exports (El-Maqrizi 1998: 93). The Ababdah, who were attested as camel breeders and caravan leaders (Burckhardt 1819: 156), could have spread steatite vessels as far as Old Dongola along with other goods traveling along caravan routes. According to Burckhardt, prior to the 19th century the Ababdah were also settled in Old Dongola, "where they had acquired great wealth and influence" (Burckhardt 1819: 67).

## CONCLUDING REMARKS

The material culture of the Funj period was long considered inferior to the Makurian. The lack of sacral buildings lavishly decorated with wall paintings, or wheel-made, painted pottery contributed to this biased picture. Juxtaposition of the Funj material culture with the quickly developing civilization of the Western world and the Near East at that time also worked to the disadvantage of Sudan. However, such conclusions were drawn with virtually no excavations of Funj-period remains. The change in the material culture between Makuria and the Funj period is significant, but the entire process, the reasons and the outcome have yet to be properly understood.

Comparative analysis of the Makurian and Funj-period material cultures is biased by the fact that in most cases excavations of Makurian sites have focused on elite buildings, such as churches and palaces. This is particularly striking at Old Dongola. A palace, elite villas, several churches and two monasteries were the focus of the excavations, but no non-elite structures were targeted. On the other hand, the geophysical survey and results of the excavations suggest that what the UMMA project has uncovered are houses of an egalitarian community that inhabited Old Dongola in the Funj period. No elite buildings, whether religious or secular in character, are clearly identifiable in the magnetic and GPR maps (Obłuski, Herbich, and Ryndziewicz 2021). Thus, the material culture recovered by the UMMA project should be viewed against the backdrop of assemblages recovered during large-scale excavations carried out at Kulubnarti (Adams and Adams 1998), Meinarti (Adams 2000; 2001; 2002), Arminna (Weeks 1967) or Debeira (Shinnie and Shinnie 1978) rather than of Makurian Old Dongola.

The first season of excavations of the Funj-period remains at Old Dongola delivered a large amount of artifacts for comparative analysis. Their study is a gradual process with much still to be done, and the final results will be presented at the end of the project. Although the project is still at an early stage, some general questions may be highlighted. The decline of wheel-made pottery production is clear, but the reasons behind it are not. Was wheel-made pottery production centralized, meaning that the collapse of the state caused the change? Did the eating habits change to communal meals? Did religious transition contribute to the abandonment of richly decorated pottery with a lot of Christian symbolism? Probably all these factors played a part in the process, but we need more studies to answer these questions with certainty. The decline of the wheel-made technology was not rapid. In the so-called Terminal Christian period (1400-1500 CE) the vessels become bigger and less fancy. Subsequently, these large forms of handmade, less lavishly decorated pottery dominate in the Funj period. The provenance of imported pottery changes. As a result of the emergence of new trends and powers on the global pottery market, glazed and porcelain vessels originating from the Ottoman Empire and China arrive in Old Dongola. The transformation in basketry, leather and woodwork does not seem to be as significant, if it occurred at all. There were no major civilizational breakthroughs in the time span under consideration, and everyday life seems not to have changed significantly. In fact, it is the enduring of Funj-period traditions into the modern era that continues to strike one as the most consistent characteristic trait of the studied material culture. This continuity is also instrumental for the importance of this period for Sudanese heritage.

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362

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Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
1	1		Surface outside the excavated area			
2	1		Surface			
$\mathcal{C}$	1.1		Dumped deposit	Latest layers above U73, under U75 and to W		18th c.
4	1.1	U1	Accumulation/dumped deposit	U1 corridor	U1/17/30/79/80	2nd h. of 17th c. and later
Ś	1.1	U1	Structure collapsed	U1 corridor	U1/17/30/79/80	2nd h. of 17th c. and later
9	1.1		Dumped deposit	Latest layers above U73, between U7 and U3		17th–18th c.
7	1.1		Dumped deposit	Latest layers above U73, SW of U3		18th c.
8	1.1		Dumped deposit	Latest layers above U73, under U76, U77		18th c.
6	1.1		Dumped deposit	Latest layers above U73, under U76, U77		18th c.
10	1.1		Dumped deposit	Latest layers above U73, SW of U7		18th c.
11	1.1		Accumulation/occupational layer	Latest layers above U73, under U75, U77		18th c.
12	1.1		Dumped deposit	Latest layers above U73, under U7, U75, U77		18th c.
13	1.1		Accumulation	Latest layers above U73, under U77		17th–18th c.
14	1.1		Dumped deposit	Latest layers above U73, under U7, U75, U77		18th c.
15	1.1	U7	Occupational layer	U7/75	U7/75	18th c.
16			Surface			

# (A. Deptuła, D. Dzierzbicka, L. de Lellis, M. Wyżgoł)

one Unit Type Bui	Type Bui	Bui	lding	Compound 117/11/12/12/12/22/22/02/02/06/206	Dating (c. century; h. half; q. quarter
1.1     U13     Structure collapsed/     U       accumulation     accumulation <td>Structure collapsed/ U accumulation</td> <td>D</td> <td>11/12/13/14/33/34</td> <td>U2/11/12/13/14/33/34/82/83/84/85/86</td> <td>18th c.</td>	Structure collapsed/ U accumulation	D	11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c.
1 — Surface —	Surface —				
1.1     U12     Structure collapsed     U11       (post-abandonment)     (post-abandonment)     (post-abandonment)     (post-abandonment)	Structure collapsed U11 (post-abandonment)	UII	(/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c.
1.1     U11, U33     Structure collapsed     U1       (post-abandonment)     (post-abandonment)     [post-abandonment]     [post-abandonment]	Structure collapsed U1 (post-abandonment)	UI	1/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c.
1.1     U12     Accumulation     U1       (post-abandonment)     (post-abandonment)     [post-abandonment]     [post-abandonment]	Accumulation U1 (post-abandonment)	UI	1/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c.
1.1 U11 Structure collapsed U1	Structure collapsed U1	U1	1/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c. or later
1.1 U17 Occupational layer U17   (manure) (manure) U17	Occupational layer U17 (manure)	U17	130/79	U1/17/30/79/80	18th c.
1.1 U14 Collapse U11   (post-abandonment) (post-abandonment) D11	Collapse U11 (post-abandonment)	U11	/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c.
1 — Dumped deposit On t	Dumped deposit On t	On t of U	op of wall NE 14		17th–18th c.
1 — Structure fill On to of U1	Structure fill On to of U1	On to of U]	op of wall NE 14		17th–18th c.
1.1 U16 Accumulation U16/	Accumulation U16/	U16/	30/35	U1/16/17/18/30/35	18th c.
1.1     U16     Structure collapsed     U16/       (post-abandonment)     (post-abandonment)     (post-abandonment)     (post-abandonment)	Structure collapsed U16/ (post-abandonment)	U16/	30/35	U1/16/17/18/30/35	18th–19th c.
1.1 U16 Room fill U16/	Room fill U16/	U16/	30/35	U1/16/17/18/30/35	17th-18th c.
1.1 U17 Dumped deposit U17/3	Dumped deposit U17/3	U17/3	6//2	U1/17/30/79/80	18th c.
1.1 U17 Occupational layer U17/3	Occupational layer U17/3	U17/3	80/79	U1/17/30/79/80	18th c.
1.1 U17 Structure collapsed U17 e	Structure collapsed U17 e	U17 e	arly phase		17th-18th c.
1 — Surface —	Surface —				
1.1     U33     Occupational layer     U11	Occupational layer U11	U11	/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
1.1     U33     Occupational layer     U11	Occupational layer U1	UI	1/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.

18th c. or later	18th c.	17th-18th c.			2nd h. of 17th c. or later	2nd h. of 17th c. or later	17th c.	17th c.	17th c.	17th c.	17th c.		16th/17th c.	1st h. of 17th c.	16th/17th c.			2nd h. of 17th c. or later			
U1/17/30/79/80	Under courtyard U86	Under courtyard U86			U5/25/72/73	U5/25/72/73	U5/25/72/73	U5/25/72/73	U5/25/72/73	U5/25/72/73	U5/25/72/73	1	U5/25/72/73	U5/25/72/73	U5/25/72/73			U9/10/94	U9/10/94	U9/10/94	U9/10/94
U17/30/79 (post-abandonment?)					U73	U73	U73	U73	U73	U73	U73	U73	U73	U73	U73			U9/10	U9/10	U9/10	U9/10
Structure collapsed	Dumped deposit	Dumped deposit	CANCELLED	Surface	Occupational layer/dumped deposit	Occupational layer/dumped deposit	Occupational layer	Hearth/oven fill	Occupational layer/dumped deposit	Occupational layer/dumped deposit	Occupational layer/dumped deposit	Accumulation/subsurface sand	Occupational layer	Occupational layer	Occupational layer	Surface	Surface	Occupational layer	Occupational layer	Hearth/oven fill	Hearth/oven fill
U30					U73	U73	U73	U73	U73	U73	U73	U73	U73	U73	U73			U10	U9	U9	U10
7 1.1	8 1.1	8 1.1	- 6	0 1.1	1.1	2 1.1	3 1.1	4 1.1	5 1.1	6 1.1	7 1.1	8 1.1	9 1.1	0 1.1	1 1.1	2 1.6	3 1.6	4 1.6	5 1.6	6 1.6	7 1.6

Unit		Type	Building	Compound	Dating (c. century; h. half; q. quarter)
U96 Post-al- oven fi	Post-al oven fi	oandonment hearth/ ll			17th/18th c.
U96 Post-al	Post-al- accum	oandonment ulation			17th/18th c.
U96 Post-al- oven fi	Post-ab oven fi	andonment hearth/ ll			17th/18th c.
U96 Post-al- accum	Post-ah accumu	andonment ılation of ash			17th/18th c.
	Surface				
— Accum	Accum	ulation of ash			17th/18th c.
U21 Structu (post-a	Structı (post-a	ıre collapsed bandonment)	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
U21 Occup	Occup	ational layer	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
U47 Occup	Occup	ational layer	U47a/47b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
U47 Structu (post-a	Structi (post-a	ure collapsed bandonment)	U47a/47b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
U96 Accum sand	Accum sand	ulation of aeolian	96N	U21a/21b/28a/28b/29/47a/47b/96	
U96 Occup (post-a	Occup (post-a	ational layer bandonment)	D96	U21a/21b/28a/28b/29/47a/47b/96	17th/18th c.
U21 Accum collaps (post-a	Accum collaps (post-a	uulation; structure ed bandonment)	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
U96 Subsur accum	Subsuración	rface layer; ulation			
U96 Hearth	Heart	ı/oven fill	U96	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
U21 Occu	Occu	pational layer	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
U21 Roon	Roon	llif r	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
U21 Struct (post-:	Struct (post-a	ure collapsed abandonment)	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c. or later

9	1.6	D96	Accumulation	Subsurface		17th/18th. c.
	1.6	U21	Structure collapsed (post-abandonment)	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of $17$ th c. or later
	1.6	D96	Occupational layer	D96	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
	1		Surface			
	1.1	UI	Accumulation (post-abandonment)	UI	U1/16/17/18/30/35	2nd h. of 17th c.
	1.1	U2	Dumped deposit	U2	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
	1	UI	Accumulation (post-abandonment)	UI	U1/16/17/18/30/35	2nd h. of 17th c.
	1.1	U2	Occupational layer	U2	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
	1.1	U2	Room fill; occupational layer	U2	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 16th c.
	1.1	U82	Room fill; occupational layer	U82	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
	1.1	U2	Occupational layer	U2	U2/11/12/13/14/33/34/82/83/84/85	1st h. of 16th c.
	1.1	U2	Structure collapsed	U2	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 16th c.
	1.1	U2	Dumped deposit	U2	U2/11/12/13/14/33/34/82/83/84/85	1st h. of 16th c.
	1.1	U2	Structure collapsed	U2	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 16th c.
	1.1	U2	Roof collapse	U2	U2/11/12/13/14/33/34/82/83/84/85	1st h. of 16th c.
	1		Surface			
	1.1	U2	Dumped deposit	U2	U2/11/12/13/14/33/34/82/83/84/85	1st h. of 16th c.
	1.1	U79	Pot fill	U79	U1/17/30/79/80	18th c.
	1		Surface		U1/17/30/79/80	
	1	67U	Accumulation (post-abandonment)	U79	U1/17/30/79/80	18th c.
	1.1	U80	Occupational layer	U80	U1/17/30/79/80	18th c.
	1.1	U79	Structure collapsed	U79	U1/17/30/79/80	2nd h. of 17th c.
	1.1	U79	Occupational layer	U79	U1/17/30/79/80	2nd h. of 17th c.
	1.1	U80	Occupational layer	U80	U1/17/30/79/80	2nd h. of 17th c.
	1.1	U18	Room fill (post-abandonment)	U18	U1/16/17/18/30/35	2nd h. of 17th c.
-			-			

Dating (c. century; h. half; q. quarter)	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.		2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h of 17th c	2nd h. of 17th c.	2nd h. of 17th c.				2nd h. of 17th c.		2nd h. of 17th c.
Compound	U1/17/30/79/80	U1/17/30/79/80	U1/17/30/79/80	U1/17/30/79/80	U1/16/17/18/30/35	U1/16/17/18/30/35	U1/17/30/79/80	U1/17/30/79/80	U1/16/17/18/30/35	-	U1/17/30/79/80	Street U24	Street U24	Street U24	1173/87/88/80	Street U24	U23/87/88/89				U5/25/72/73	U6/8/58a/58b/73	
Building	U80	U80	U80	U79	U18	U18	U80	U79	U18		U79	U24	U24	U24	1180	U24	U23	Surface	Above U8	Above U6	U5	U6, U73	
Type	Occupational layer	Structure collapsed	Structure collapsed	Occupational layer	Room fill; temporary abandonment	Pit fill	Structure collapsed	Occupational layer	Occupational layer	Surface	Occupational layer	Structure collapsed	Structure collapsed	Accumulation	Structure collansed	Structure collapsed	Occupational layer	Accumulation	Accumulation	Room fill	Occupational layer/dumped deposit	Dumped deposit	
Unit	U80	U80	U80	U79	U18	U18	U80	U79	U18		079	U24	U24	U24	0811	U24	U23				U5	U6, U73	
Zone	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1	1.1		-	1	1 2	1	1.2	1.1	1.1	1.1	1.1	1.1	
Cxt	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	

1	1.1	U6. U73	Dumped deposit	Above U6		2nd h. of 17th c.
1U6Hearthoven fillU6U6(8)58,358/732ad h, of 17 h, c.1U8AccumulationU8U6(8)58,358/732ad h, of 17 h, c.1U6AccumulationU6U6(8)58,358/732ad h, of 17 h, c.1U6AccumulationU6U6(8)58,358/7318 h, of 17 h, c.1U6Nature collapsedU8U6(8)58,358/732ad h, of 17 h, c.1U6Nature collapsedU8U6(8)58,358/732ad h, of 17 h, c.1U6Nature fillU6U6(8)58,358/732ad h, of 17 h, c.1U73AccumulationU73U6(8)58,358/732ad h, of 17 h, c.1U6Nature fillU6U6(8)58,358/7318 h, of 17 h, c.1U73AccumulationU73U6(8)58,358/732ad h, of 17 h, c.1U6Hearthoven fillU6U6(8)58,358/732ad h, of 17 h			Structure collapsed	Above F79		
1 $0$		U6	Hearth/oven fill	U6	U6/8/58a/58b/73	2nd h. of 17th c.
1 $06$ Accumulation (post-shandonment) $06$ $068/8s_4/8b/73$ $1sth, of 17th, c.$ 1 $06$ $0cost-shandonment)068/8s_4/8b/731sth, of 17th, c.106Structure collapsed08068/8s_4/8b/732adh, of 17th, c.106Structure collapsed08068/8s_4/8b/732adh, of 17th, c.106Structure fill06068/8s_4/8b/732adh, of 17th, c.106Structure fill068/8s_4/8b/732adh, of 17th, c.106Hearh/oven fill068/8s_4/8b/732adh, of 17th, c.106Hearh/oven fill068/8s_4/8b/732adh, of 17th, c.106Hearh/oven fill068/8s_4/8b/732adh, of 17th, c.106Accumulation068/8s_4/8b/732adh, of 17th, c.106Accumulation068/8s_4/8b/732adh, of 17th, c.106Accumulation068/8s_4/8b/732adh, of 17th, c.106Accumulation068/8s_4/8b/732adh, of 17th, c.106Accumulation068/8s_4/8b/731sth, of 17th, c.106Accumulation068/8s_4/8b/731sth, of 17th, c.106Accumulation068/8s_4/8b/731sth, of 17th, c.1106Accumulation068/8s_4/8b/731sth, of 17th, c.1106Accumulation1068/8s_4/8b/731060/8t/8t/8b/73$	-	U8	Accumulation (post-abandonment)	U8	U6/8/58a/58b/73	2nd h. of 17th c.
1     10(c)     Occupational layer     10(c)		U6	Accumulation (post-abandonment)	U6	U6/8/58a/58b/73	1st h. of 17th c.
1     08     Structure collapsed     08     06/85/85/85/73     2nd h. of 17 h.c.       1     106     Structure fill     106     106     Structure fill     106     Structure fill     106     Structure fill     106     106/85/84/58/73     Before 17 h.c.       1     107     Structure fill     106     106/85/84/58/73     118 h. of 17 h.c.       1     1073     Accumulation     1073     106/85/84/58/73     2nd h. of 17 h.c.       1     107     Accumulation     106     168/58/58/73     2nd h. of 17 h.c.       1     108     Occupational layer     108     106/85/84/58/73     2nd h. of 17 h.c.       1     106     Hearth/oven fill     106     106/85/84/58/73     2nd h. of 17 h.c.       1     106     Accumulation     106     106/85/84/58/73     2nd h. of 17 h.c.       1     106     Accumulation     106     106/85/84/58/73     2nd h. of 17 h.c.       1     106     Accumulation     106     106/85/84/58/73     2nd h. of 17 h.c.       1     106     Hearth/o		U6	Occupational layer	U6	U6/8/58a/58b/73	1st h. of 17th c.
1 $(6)$ $\operatorname{structure fill}$ $(6)$ $(6$		U8	Structure collapsed	U8	U6/8/58a/58b/73	2nd h. of 17th c.
1U6Structure fill (posr-abandomment)U6U6/8/58/58/53Ist h. of 17th c.1U73AccumulationU73U6/8/58/58/53Znd h. of 17th c.1U6Harth/oven fillU6U6/8/58/58/53Znd h. of 17th c.1U8Occupational layerU8U6/8/58/58/53Znd h. of 17th c.1U6Harth/oven fillU6U6/8/58/58/53Znd h. of 17th c.1U6Harth/oven fillU6U6/8/58/58/53Znd h. of 17th c.1U6AccumulationU6U6/8/58/58/53Znd h. of 17th c.1U6AccumulationU6U6/8/58/58/53Znd h. of 17th c.1U6AccumulationU6U6/8/58/58/53Znd h. of 17th c.1U6AccumulationU6U6/8/58/58/53Znd h. of 17th c.1U8Dunped depositU8U6/8/58/58/53Znd h. of 17th c.1U8Dunped depositU8U8Dunped1U8Dunped depositU8U8Dunped1U8Dunped depositU8U8Dunped2AccumulationU8U8U8Dunped2Harth/oven fillU8U8U8Dunped2Harth/oven fillU8U8U8U82Harth/oven fillU8U8U8Dunped2Harth/oven fillU8U8U8U82Harth/oven fillU8U8U8 <td></td> <td>U6</td> <td>Structure fill</td> <td>D(6</td> <td>U6/8/58a/58b/73</td> <td>Before 17th c.</td>		U6	Structure fill	D(6	U6/8/58a/58b/73	Before 17th c.
1     U73     Accumulation     U73     Accumulation     U73     Accumulation     U73     Ded h of 17h c.       1     U6     Hearth/oven fill     U6     U68/S8a/S8h/3     Dad h of 17h c.       1     U8     Occupational layer     U8     U68/S8a/S8h/3     Dad h of 17h c.       1     U6     Hearth/oven fill     U6     U68/S8a/S8h/3     Dad h of 17h c.       1     U6     Accumulation     U66     U68/S8a/S8h/3     Dad h of 17h c.       1     U6     Accumulation     U68/S8a/S8h/3     Dad h of 17h c.     Dad h of 17h c.       1     U6     Accumulation     U66     U68/S8a/S8h/3     Dad h of 17h c.       1     U6     Accumulation     U66     U68/S8a/S8h/3     Dad h of 17h c.       1     U6     Accumulation     Dad h of 17h c.     Dad h of 17h c.       1     U86     U86/S8a/S8h/3     Dad h of 17h c.     Dad h of 17h c.       1     U86     U86/S8a/S8h/3     Dad h of 17h c.     Dad h of 17h c.       1     U86     U86     U86	.1	U6	Structure fill (post-abandonment)	U6	U6/8/58a/58b/73	1st h. of 17th c.
1     U6     Hearth/oven fill     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U8     Occupational layer     U8     U6/8/58a/58b/73     1st h, of 17h c.       1     U6     Hearth/oven fill     U6     U6/8/58a/58b/73     1st h, of 17h c.       1     U6     Hearth/oven fill     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U6     Accumulation     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U6     Accumulation     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U6     Accumulation     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U6     Accumulation     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U6     Accumulation     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U6     Accumulation     U6     U6/8/58a/58b/73     2nd h, of 17h c.       1     U86     Dunped deposit     U86     U6/8/58a/58b/73     2nd h, of 17h c.       1     U86     Dunped deposit     U86		U73	Accumulation	U73	U6/8/58a/58b/73	2nd h. of 17th c.
I     U8     Occupational layer     U8     U6/8/Sad/Sb/73     Ist., of 17th.c.       I     U6     Hærth/oven fill     U6     U6/8/Sad/Sb/73     Zad h. of 17th c.       I     U6     Accumulation     U6     U6/8/Sad/Sb/73     Zad h. of 17th c.       I     U6     Hærth/oven fill     U6     U6/8/Sad/Sb/73     Zad h. of 17th c.       I     U6     Hærth/oven fill     U6     U6/8/Sad/Sb/73     Ist. h. of 17th c.       I     U6     Hærth/oven fill     U6     U6/8/Sad/Sb/73     Ist. h. of 17th c.       I     U6     Hærth/oven fill     U6     U6/8/Sad/Sb/73     Ist. h. of 17th c.       I     U6     Hærth/oven fill     U6     U6/8/Sad/Sb/73     Ist. h. of 17th c.       I     U86     U7     U6/8/Sad/Sb/73     Ist. h. of 17th c.     Ist. h. of 17th c.       I     U86     U6     U6/8/Sad/Sb/73     Ist. h. of 17th c.     Ist. h. of 17th c.       I     U6     U86     U86     U6/8/Sad/Sb/73     Ist. h. of 17th c.       I     Hearth/ven fill     U86	.1	U6	Hearth/oven fill	U6	U6/8/58a/58b/73	2nd h. of 17th c.
1U6Hearth/oven fillU6U6/85/83/58b/732nd h. of 17th c.1U6AccumulationU6U6/85/83/58b/731st h. of 17th c.1U6Hearth/oven fillU6U6/85/83/58b/731st h. of 17th c.6Hearth/oven fillU6U6/85/83/58b/731st h. of 17th c.6Hearth/oven fillU6U6/85/83/58b/731st h. of 17th c.1U86Hearth/oven fillU86Hearth/oven fill2nd h. of 17th c.1U86U86U86U862nd h. of 17th c.6Hearth/oven fillU86U862nd h. of 17th c.6Hearth/oven fillU86U862nd h. of 17th c.6Hearth/oven fillNorfaceU8617th/18th c. or later6Hearth/oven fillNorth of F109Hearth/Oven fill17th/18th c. or later6Hearth/oven fillNorth of F109U9/10/9418th c. or later6Hearth/oven fillNorth of F109U9/10/942nd h. of 17th c. or later6Hearth/oven fillU9/10U9/10/942nd h. of 17th c.6Hearth/oven fillNorth of F109U9/10/942nd h. of 17th c.6Hearth/oven fillU15U15/37/40Docu fiater7Hearth/oven fillU9/10/94U9/10/94U17th c.		U8	Occupational layer	U8	U6/8/58a/58b/73	1st h. of 17th c.
1 $16$ Accumulation $16$	.1	U6	Hearth/oven fill	U6	U6/8/58a/58b/73	2nd h. of 17th c.
1U6Harth/oven fillU6U6/8/58a/58b/73Ist h. of 17th c.6 $$ AccumulationSurface $$ $$ $$ 1U86Dumped depositU86 $$ $$ $$ 1U86Dumped depositU86 $$	.1	U6	Accumulation	U6	U6/8/58a/58b/73	1st h. of 17th c.
6 $$ $Accumulation$ $Surface$ $   1$ $086$ $Dumped deposit0860862ndh. of 17th c.1086Hearth/oven fill0862ndh. of 17th c.6Hearth/oven fill0862ndh. of 17th c.6Hearth/oven fill0862ndh. of 17th c.6Hearth/oven fill0866Hearth/oven fill6Hearth/oven fillNorth of F1096Hearth/oven fillNorth of F1096Hearth/oven fillNorth of F10917th/18th c. or later6AccumulationNorth of F10917th/18th c. or later6AccumulationNorth of F10919/10/946North of F10919/10/942ndh. of 17th c. or later6AccumulationNorth of F10910710/946North of P109North of P10910710/946Northole P109Northole P1096Northole P109Northole P1096Northole P1096Northole P1096Northole P1096$	.1	U6	Hearth/oven fill	U6	U6/8/58a/58b/73	1st h. of 17th c.
1U86Dumped depositU86Dudh. of 17th c.1U86Hearth/oven fillU86Sad h. of 17th c.6Hearth/oven fillU86U86Pandh. of 17th c.6Hearth/oven fillSurfaceHearth/oven fillPandh. of 17th c.6Hearth/oven fillSurfaceHearth/oven fillPandh. of 17th c.6Hearth/oven fillNorth of F109Hearth/oven fillPandh. of F1096Hearth/oven fillNorth of F109PandmentPandh. of F1097AccumalayerU9/10/94Pandh. of F109/4Pandh. of F106/48U10Occupational layerU9/10/94Pandh. of F106/49HeartholePandhaiterPandhaiter10North of F109PandhaiterPandh of F106/410Occupational layerU15/37/40Pandh of F104/610Occupational layerU15/37/40Pandh of F104/6	9.		Accumulation	Surface		I
1U86Hearth/oven fillU86U86Dath. of 17th c.6 $$ Hearth/oven fillSurface $  -$ 6 $$ Hearth (post-abandonment) $   -$ 6 $$ Hearth (post-abandonment) $   -$ 6 $$ Hearth (post-abandonment) $   -$ 6 $$ Hearth (post-abandonment) $   -$ 6 $$ Hearth (post-abandonment)North of F109 $  -$ 7AccumulationNorth of F109 $   -$ 6 $$ Accumulation $   -$ 7Accumulation $    -$ 6 $$ Accumulation $   -$ 7Accumulation $    -$ 8 $-$ Accumulation $   -$ 9 $-$ Accumulation $   -$ 9 $-$		U86	Dumped deposit	U86	U86	2nd h. of 17th c.
61Hearth/oven fillSurface161Hearth (post-abandonment)117th/18th c. or later61Hearth (post-abandonment)117th/18th c. or later61Hearth (post-abandonment)117th/18th c. or later61Hearth/oven fillNorth of F109118th c. or later61AccumulationNorth of F10919th of 100418th c. or later610Occupational layerU9/100U9/10/942nd h. of 17th c. or later61AccumulationSurface1105/37/40105/37/406105Occupational layerU15/37/40105/37/402nd q. of 17th c.	.1	U86	Hearth/oven fill	U86	U86	2nd h. of 17th c.
6Hearth (post-abandonment)	9.		Hearth/oven fill	Surface		
6—Hearth (post-abandonmet)——17th/18th c. or later6—Hearth/oven fillNorth of F10918th c. or later18th c. or later6—AccumulationNorth of F109U9/10/9418th c. or later6U10Occupational layerU9/10U9/10/942nd h. of 17th c. or later6—AccumulationSurface—10/10/942nd h. of 17th c. or later6U15Occupational layerU15/37/40U15/37/402nd q. of 17th c.	9.		Hearth (post-abandonment)			17th/18th c. or later
6Hearth/oven fillNorth of F10918th c. or later.6AccumulationNorth of F10918th c. or later.6U10Occupational layerU9/100U9/10/942nd h. of 17th c. or later.6AccumulationSurface2nd h. of 17th c. or later.6U15Occupational layerU15/37/40U15/37/402nd q. of 17th c.	.6		Hearth (post-abandonment)			17th/18th c. or later
6     —     Accumulation     North of F109     18th c. or later       6     U10     Occupational layer     U9/10     U9/10/94     2nd h. of 17th c. or later       6     —     Accumulation     Surface     —     —       6     U15     Occupational layer     U15/37/40     2nd q. of 17th c. or later	9.		Hearth/oven fill	North of F109		18th c. or later
6     U10     Occupational layer     U9/10     U9/10/94     2nd h. of 17th c. or later       .6     —     Accumulation     Surface     —     —     —       .6     U15     Occupational layer     U15/37/40     2nd q. of 17th c. or later	9.		Accumulation	North of F109		18th c. or later
.6     —     Accumulation     Surface     —     —     —     —       .6     U15     Occupational layer     U15/37/40     L15/37/40     2nd q. of 17th c.	9.	U10	Occupational layer	U9/10	U9/10/94	2nd h. of 17th c. or later
.6     U15     Occupational layer     U15     U15/37/40     2nd q. of 17th c.	9.		Accumulation	Surface		
	9.	U15	Occupational layer	U15	U15/37/40	2nd q. of 17th c.

Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
152	1.6	U15	Hearth/oven fill	U15	U15/37/40	2nd q. of 17th c.
153	1.6	U15, U103	Accumulation	U15, U103	U15/37/40	2nd q. of 17th c.
154	1.6	U37	Accumulation; dumped deposit	U37	U15/37/40	3rd q. of 17th c.
155	1.6	U15	Post-abandonment room fill	U15	U15/26a/26b	1st q. of 17th c.
156	1.6	U37	Accumulation; dumped deposit	U37	U15/37/40	3rd q. of 17th c.
157	1.1	_	Surface			
158	1.6	—	Surface			
159	1.1	U74	Fill of secondary pit			
160	1.6		Accumulation	Surface		
161	1.6	—	Hearth/oven fill	Above wall F126		
162	1.6	U20b	Accumulation (post-abandonment)	U20a/20b	U20a/20b	3rd q. of 17th c.
163	1.6	U20b	Hearth/oven fill	U20a/20b	U20a/20b	3rd q. of 17th c.
164	1.6	U20a, U93	Structure collapsed	U20a/20b, U93	U20a/20b, U93	
165	1.6	U20a	Hearth/oven fill	U20a/20b	U20a/20b	3rd q. of 17th c.
166	1.6	U93	Accumulation; occupational layer	U93	U93	3rd q. of 17th c.
167	1.6	U20a	Accumulation; occupational layer	U20a/20b	U20a/20b	3rd q. of 17th c.
168	1.6	C193	Hearth/oven fill	U93	U93	2nd q./3rd q. of 17th c.
169	1.6	U93	Hearth/oven fill	U93	U93	2nd q./3rd q. of 17th c.
170	1.6	U93	Accumulation; occupational layer	U93	U93	2nd q./3rd q. of 17th c.
171	1.6	U20a	Dumped deposit	U20a/20b	U20a/20b	3rd q. of 17th c.
172	1.6	U20a	Structure collapsed	U20a/20b	U20a/20b	3rd q. of 17th c.

9.	U20a	Structure fill	U20a/20b	U20a/20b	2nd q./3rd q. of 17th c.
U20a		Room fill (post-abandonment)	U20a/20b	U20a/20b	2nd q./3rd q. of 17th c.
U93		Structure collapsed	U93	U93	3rd q. of 17th c.
		Accumulation	Surface		
U86		Hearth/oven fill	U86	U86	2nd h. of 17th c.
U86		Accumulation	U86	U86	2nd h. of 17th c.
U8(		Accumulation	U86	U86	2nd h. of 17th c.
U41		Room fill	U41	U86	2nd h. of 17th c.
U41		Hearth/oven fill	U41	U86	2nd h. of 17th c.
U41		Hearth/oven fill	U41	U86	2nd h. of 17th c.
U41		Hearth/oven fill	U41	U86	2nd h. of 17th c.
U8(	2	Accumulation	U86	U86	2nd h. of 17th c.
U8(	10	Accumulation	U86	U86	2nd h. of 17th c.
U8(	,	Hearth/oven fill	U86	U86	2nd h. of 17th c.
U8(	ý.	Accumulation	U86	U86	2nd h. of 17th c.
U8(	10	Structure fill	U86	U86	2nd h. of 17th c.
U8(	5	Structure fill	U86	U86	2nd h. of 17th c.
U8(	ý.	Structure fill	U86	U86	2nd h. of 17th c.
U8(	ý.	Structure fill	U86	U86	2nd h. of 17th c.
U8(	2	Structure fill	U86	U86	2nd h. of 17th c.
		Accumulation	Surface		I
U27	7	Structure collapsed	U27	U27	3rd q. of 17th c.
U4:	1	Occupational layer	U41	U86	2nd h. of 17th c.
		Dumped deposit	Latest layers above U73, under U76, U77	1	18th c.
U3(	(	Accumulation	U17/30/79	U1/17/30/79/80	18th c.
U3	10	Accumulation; subsurface (post-abandonment)	U16/30/35	U1/16/17/18/30/35	18th c.

io	e Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
U .	9	Structure collapsed in doorway (post-abandonment)	U16/30/35	U1/16/17/18/30/35	17th–18th c.
		Surface	-		Ι
U3	0	Accumulation	U17/30/79	U1/17/30/79/80	18th c.
U3	0	Accumulation	U17/30/79 (post-abandonment?)	U1/17/30/79/80	18th c. or later
U3	0	Structure collapsed	U17/30/79	U1/17/30/79/80	18th c.
		Accumulation		Under courtyard U86	17th–18th c.
Ū.	.6	Collapse (post-abandonment)	U16/30/35	U1/16/17/18/30/35	17th–18th c.
U7	7	Dumped deposit	U76/77	U76/77	18th c.
U7	.6	Not excavated	U76/77	U76/77	Indeterminate
U7	7	Dumped deposit	U76/77	U76/77	18th c.
U7		Dumped deposit	U7/75	U7/75	18th c.
UI	2	Hearth/oven fill	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c.
UI	1	Hearth/oven fill	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	18th c. or later (14C)
		Structure collapse	On top of wall NE of U35	—	17–18th c.
		Structure collapse	On top of wall NE of U35		17–18th c.
		Surface			
D,	)4	Vessel fill		U21a/21b/28a/28b/47a/47b/94	1st h. of 17th c.
U2	1	Vessel fill	U21a/21b	U21a/21b/28a/28b/47a/47b/94	1st h. of 17th c.
U2	25	Hearth/oven fill?	U5/25/72	U5/25/72/73	2nd h. of 17th c.
Ú.	14	Structure collapsed (post-abandonment)	U44/48/55	U44/45/48/55/59/60/71	17th–18th c.

17th–18th c.	17th–18th c.	17th–18th c.		17th–18th c.	17th–18th c.	17th–18th c.	17th–18th c.	17th–18th c.	1		18th–19th c.	17th–18th c.	17th-18th c.	I	17th–18th c.	2nd h. of 17th c.	2nd h. of 17th c.	3rd q. of 17th c.	3rd q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.
U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71		Area W of U44/45/48/55/59/60/71	Area W of U44/45/48/55/59/60/71	Area W of U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	Area W of U44/45/48/55/59/60/71			SW edge of zone 1.4	SW edge of zone 1.4	SW edge of zone 1.4		U44/45/48/55/59/60/71	U86	U86	U27	U27	U15/26a/26b	U15/26a/26b
U44/48/55	U44/48/55	U44/48/55					U71 courtyard								U44/48/55	U41	U41	U27	U27	U26a/26b	U26a/26b
Accumulation (post-abandonment)	Structure collapsed; accumulation (post-abandonment)	Pit fill (post-abandonment)	Surface	Accumulation (post-abandonment)	Dumped deposit (post-abandonment?)	Dumped deposit (post-abandonment?)	Accumulation (post-abandonment?)	Dumped deposit	Surface	Surface	Dumped deposit	Dumped deposit	Dumped deposit	Surface	Structure collapsed (post-abandonment)	Room fill	Structure collapsed	Accumulation	Hearth/oven fill	Accumulation	Accumulation
U44	U48	U44, U48					U71								U55	U41	U41	U27	U27	U26a	U26a, U26b
1.3	1.3	1.3	1	1.3	1.3	1.3	1.3	1.3	1	1	1.4	1.4	1.4	1	1.3	1.1	1.1	1.6	1.6	1.6	1.6
219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240

Dating (c. century; h. half; q. quarter)		3rd q. of 17th c.	1st q. of 17th c.	3rd q. of 17th c.	3rd q. of 17th c.	17th c.	3rd q. of 17th c.	3rd q. of 17th c.	2nd q. of 17th c.	2nd q. of 17th c.	2nd h. of 16th c.	2nd q. of 17th c.	3rd q. of 17th c.	1st q. of 17th c.	2nd q./3rd q. of 17th c.	1st q. of 17th c.	2nd h. of 16th c.	3rd q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	1st q. of 17th c.	2nd h. of 16th c.
Compound		U15/37/40	U15/26a/26b	U103	U36	U103	U36	U36	U15/37/40	U15/37/40	U15/26a/26b	U15/37/40	U103	U15/26a/26b	U20a/20b		U15/26a/26b	U36	U15/26a/26b	U15/26a/26b	U15/26a/26b	U15/26a/26b
Building	Surface	U37	U26a/26b	U103	U36	U103	U36	U36	U37	U40	U15	U40	U103	U15	U20a/20b	Below U40	U15	U36	U26a/26b	U26a/26b	U26a/26b	U26a/26b
Type	Accumulation	Structure collapsed	Structure collapsed	Structure collapsed	Accumulation (post-abandonment)	Accumulation; occupational layer	Accumulation (post-abandonment)	Hearth/oven fill	Structure collapsed	Accumulation; occupational layer	Hearth/oven fill	Structure collapsed	Accumulation	Structure fill	Hearth/oven fill	Accumulation	Accumulation; occupational layer	Structure fill	Structure collapsed	Dumped deposit	Structure collapsed	Occupational layer
Unit		U37	U26a	U103	U36	U103	U36	U36	U37	U40	U15	U40	U103	U15	U20a		U15	U36	U26b	U26a	U26a	U26a, U26b
Zone	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Cxt	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262

lst q. of 17th c.	1st q. of 17th c.	2nd h. of 16th c.	2nd h. of 16th c.	2nd h. of 16th c.	Later than 17th c.	Later than 17th c.		2nd h. of 16th c.	16th c.	I		2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.		2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.
U15/26a/26b	U15/26a/26b	U15/26a/26b	U15/26a/26b	U15/26a/26b	U86	U86		U15/26a/26b	U15/26a/26b			U23/87/88/89	Room U81 and the space to the south	Street U24	Street U24	Street U24		U2/11/12/13/14/33/34/82/83/84/85/86	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88
U26a/26b	U26a/26b	U26a/26b	U26a/26b	U26a/26b	U41	U41	Surface	U26a/26b	U26a/26b	Subsurface	Surface	U89	U81	U24	U24	U24		U85	U32	U32	U39	U32
Structure fill (post-abandonment)	Structure fill (post-abandonment)	Hearth/oven fill	Occupational layer	Hearth/oven fill	Structure fill (post-abandonment)	Structure fill (post-abandonment)	Accumulation	Occupational layer	Accumulation	Accumulation	Surface	Occupational layer	Structure collapsed	Structure collapsed	Structure collapsed	Structure collapsed	Surface	Room fill (post-abandonment?)	Structure collapsed	Room fill (post-abandonment)	Structure collapsed	Occupational layer
U26b	U26b	U26a	U26a	U26a	U41	U41		U26b	U26b			U89	U81	U24	U24	U24		U85	U32	U32	U39	U32
1.6	1.6	1.6	1.6	1.6	1.1	1.1	1.5	1.6	1.6	1.5	1.5	1.2	1.1	-	1	1	1	1.1	1.2	1.2	1.2	1.2
263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285

Dating (c. century; h. half; q. quarter)		2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	18th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	18th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	17th c.	2nd h. of 17th c.	18th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.
Compound		U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	U32/38/39/87/88	Courtyard U56	U2/11/12/13/14/33/34/82/83/84/85	Street U62	U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90
Building		U32	U32	U32	U38	U39	U39	U39	U39	U38	U39	U38	U56	U2	U62	U63	U63	06U	U90	U65
Type	Surface	Occupational layer	Structure fill; occupational layer	Structure fill; occupational layer	Structure collapsed	Occupational layer	Room fill (post-abandonment)	Room fill (post-abandonment)	Occupational layer	Room fill (post-abandonment)	Pit fill	Occupational layer	Occupational layer	Structure fill	Structure collapsed	Structure collapsed	Accumulation (post-abandonment)	Dumped deposit	Accumulation (post-abandonment)	Room fill (post-abandonment)
Unit		U32	U32	U32	U38	U39	U39	U39	U39	U38	U39	U38	U56	U2	U62	U63	U63	U90	06N	U65
Zone	-	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2		1.1		1.2	1.2	1.2	1.2	1.2
Cxt	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305

id h. of 17th c.	id h. of 17th c.	id h. of 17th c.		7th–18th c.		id h. of 17th c.	ith c.	ith c.	id h. of 17th c.	id h. of 17th c.	id h. of 17th c.		id h. of 17th c.	id h. of 17th c.	id h. of 17th c.	id h. of 17th c.		ith c.	ith c.	id h. of 17th c.	id h. of 17th c.
2n	2n	2n		17		2n	18	18	2n	2n	2n		2n	2n	2n	2n		18	18	2n	2n
U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90		U1/16/17/18/30/35		U97/98/99/101	U97/98/99/101	U97/98/99/101	U97/98/99/101	U97/98/99/101	U97/98/99/101		Building U100	Building U100	Building U100	Building U100		U32, U38, U52, U63, U65, U90	U32, U38, U52, U63, U65, U90	U53/54/64/67/68/69/92	U53/54/64/67/68/69/92
U63	U65	U65		U18				099	66N	099	66N		U100	U100	U100	U100		U52	U52	U53	U53
Occupational layer	Pit fill	Occupational layer	le 2018–2019 season	Fill of pot FN90	Surface	Occupational layer	Accumulation (post-abandonment)	Occupational layer	Accumulation (post-abandonment)	Structure collapsed	Accumulation (post-abandonment)	Surface	Accumulation (post-abandonment)	Dumped deposit	Accumulation (post-abandonment)	Structure collapsed	Surface	Occupational layer	Accumulation (post-abandonment)	Occupational layer	Accumulation (post-abandonment)
U63	U65	U65	excavated in th	U18				66N	66N	099	060		U100	U100	U100	U100		U52	U52	U53	U53
1.2	1.2	1.2	12 not e	1.1	1	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5	1.5	1.5	1	1.2	1.2	1.3	1.3
306	307	308	309-3	313	314	315	316	317	318	319	320	321	322	323	324	325	327	328	329	330	331

Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
332	1.3	U54	Accumulation (post-abandonment)	U54	U53/54/64/67/68/69/92	2nd h. of 17th c.
333	1	U56	Accumulation (post-abandonment)	U56	Courtyard U56	2nd h. of 17th c.
334	1		Surface			
335	1.3	U53	Pit fill	U53	U53/54/64/67/68/69/92	2nd h. of 17th c.
336	1.3	U53	Occupational layer	U53	U53/54/64/67/68/69/92	2nd h. of 17th c.
337	1.2	U52	Dumped deposit	U52	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
338	1.2	U52	Accumulation (post-abandonment)	U52	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
339	1.2	06U	Accumulation (post-abandonment)	D90	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
340	1.2	U63	Dumped deposit	U63	U32, U38, U52, U63, U65, U90	18th c.
341	1.2	U63	Room fill (post-abandonment)	U63	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
342	1.2	U63	Room fill (post-abandonment)	U63	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
343	1.2	U63	Room fill (post-abandonment)	U63	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
344	1	U56	Dumped deposit	U56	Courtyard U56	2nd h. of 17th c.
345	1	U56	Dumped deposit	U56	Courtyard U56	18th c.
346	1	U56	Accumulation (post-abandonment)	U56	Courtyard U56	2nd h. of 17th c.
347	1		Surface			
348	1		Surface			
349		U56	Accumulation (post-abandonment)	U56	Courtyard U56	2nd h. of 17th c.
350	1	U62	Structure collapsed	U62	Street U62	2nd h. of 17th c.

2nd h. of 17th c.	2nd h. of 17th c. and later	1st h. of 17th c.	1st h. 17th c.	16th/17th c.	16th/17th c.	16th/17th c.	16th/17th c.	16th/17th c.		16th/17th c.		1st h. of 17th c.		17th c. or later	17th. c.	16th/17th c.	17th c. or later	17th. c.	16th/17th c.	17th c.	17th c.	2nd h. of 17th c. or later		17th c. or earlier
U32, U38, U52, U63, U65, U90	U21a/21b/28a/28b/29/47a/47b/96		U21a/21b/28a/28b/29/47a/47b/96		U21a/21b/28a/28b/29/47a/47b/96		U43/46/51	U43/46/51	U21a/21b/28a/28b/29/47a/47b/96	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U50	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U21a/21b/28a/28b/29/47a/47b/96									
U63	U28a/28b	U21a/21b	U29	U28a/28b	U28a/28b	U28a/28b	U28a/28b	U28a/28b		U28a/28b		U94		U46	U43	U28a/28b	U45	U45	U50	U45	U45	U94		
Room fill (post-abandonment)	Fill of secondary pit	Occupational layer	Hearth/oven fill	Occupational layer	Dumped ash	Hearth/oven fill	Hearth/oven fill	Hearth/oven fill	Surface	Structure fill	Surface	Occupational layer	Surface	Dumped deposit (post-abandonment)	Occupational layer	Occupational layer	Accumulation (post-abandonment)	Bench fill	Room fill	Vessel fill	Vessel fill	Subsurface sand	Surface	Occupational layer
U63	U28	U28	U29	U28	U28	U28	U28	U28		U28		U94		U46	U43/51	U28	U45/50	U45	U50	U45	U45	U94		
51 1.2	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.3	1.6	1.3	1.6	1.3	1.3	1.3	1.6	1.3	1.3	1.3	1.3	1.3	1.6	1.3	1.3

Dating (c. century; h. half; q. quarter)	17th c. or later	17th c.	17th c.	17th c.	17th c.	17th c.	17th c. or earlier	17th c. or earlier	17th c. or earlier	17th c.	17th c.	17th c.	17th c.		17th-18th c.	17th–18th c.	17th-18th c.	17th–18th c.	18th c.	17th-18th c.	17th-18th c.	17th-18th c.		17th-18th c.	17th-18th c.
Compound		U43/46/51	U57/U70	U44/45/48/55/59/60/71	U43/46/51	U57/70				U57/70	Street U49	U57/70	U43/46/51		U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U53/54/64/67/68/69/91/92	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71		U44/45/48/55/59/60/71	U44/45/48/55/59/60/71
Building		U46	U70	U45	U46	U57					U49	U57	U43		U44/48/55	U44/48/55, U71 court- yard	U59/60, U71 courtyard	U64	U59/60	U59/60	U59/60	U59/60		U59/60	U59/60
Type	Subsurface sand	Room fill	Accumulation	Room fill	Structure collapsed	Room fill	Structure collapsed	Occupational layer	Structure collapsed	Occupational layer	Space fill	Occupational layer	Occupational layer	Surface	Accumulation	Structure collapsed; dumped deposit	Accumulation	Structure collapsed (post-abandonment?)	Dumped deposit	Dumped depsoit	Conflagration debris	Dumped deposit	Surface	Dumped deposit	Occupational layer
Unit		U46	U70	U45	U46	U57					U49	U57	U43		U55	U55, U71	U60, U71	U64	U59	U60	U59	U60		U59	U59
Zone	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.4	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1	1.3	1.3
Cxt	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401

18th–19th c.			Later than 17th c.	Later than 17th c.	Later than 17th c.			2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	1st h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	2nd h. of 17th c.	Later than 17th c.	2nd h. of 17th c.	1st h. of 17th c.	Later than 17th c.
Sq. 11D55, NE of street U62			U97/98/99/101	U97/98/99/101	097/98/99/101			U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U78	U6/8/58a/58b/73	U6/8/58a/58b/73	U78
		Surface -				Surface -	Surface -	U73	U73	U73 [1	U58a/58b	U58a/58b	U58a/58b	U73	U73  1	U58a/58b	U58a/58b	U58a/58b	N78	U58a/58b	U58a/58b	U78
Dumped deposit—only surface excavated	e 2018–2019 season	Accumulation	Structure collapsed	Structure collapsed	Structure collapsed	Accumulation	Accumulation	Accumulation; occupational layer	Accumulation; occupational layer	Structure fill	Hearth/oven fill	Accumulation (post-abandonment)	Accumulation (post-abandonment)	Accumulation; occupational layer	Structure collapsed	Accumulation (post-abandonment)	Structure collapsed	Structure collapsed	Accumulation	Dumped deposit	Occupational layer	Pit fill
	excavated in the		U98	U97, U98	C97			U73	U73	U73	U58a	U58a	U58a	U73	U73	U58a	U58a	U58a	U78	U58b	U58a	U78
402 1	403-429 not	430 1.5	431 1.5	432 1.5	433 1.5	434 1.1	435 1.1	436 1.1	437 1.1	438 1.1	439 1.1	440 1.1	441 1.1	442 1.1	443 1.1	444 1.1	445 1.1	446 1.1	447 1.1	448 1.1	449 1.1	450 1.1

+	Tone	IInit	Time	Building	Commund	Dating
			Type	Summa	Componin	c. century; h. half; q. quarter)
	1.1	U58b	Occupational layer	U58a/58b	U6/8/58a/58b/73	1st h. of 17th c.
	1.1	U73	Structure fill	U73	U6/8/58a/58b/73	2nd h. of 17th c.
	1		Accumulation	Surface, test trench in sq. 10Y45		
<u>_</u>	1.1		Accumulation	Surface		
10	1.1	U66	Dumped deposit	U66	U66	2nd h. of 17th c.
5	1.1	U73	Occupational layer	U73	U6/8/58a/58b/84	1st h. of 17th c.
	1.1	U58a	Hearth/oven fill	U58a/58b	U6/8/58a/58b/85	1st h. of 17th c.
~	1.1	U58b	Hearth/oven fill	U58a/58b	U6/8/58a/58b/86	1st h. of 17th c.
0	1.1		Accumulation	Surface	Magnetic anomaly test trench in sq. 10Y45	-
0	1.1	U58a	Occupational layer	U58a/58b	U6/8/58a/58b/86	1st h. of 17th c.
	1.1	U58a	Hearth/oven fill	U58a/58b	U6/8/58a/58b/87	1st h. of 17th c.
~	1.1	U58b	Occupational layer; dumped deposit	U58a/58b	U6/8/58a/58b/88	1st h. of 17th c.
~	1.1	U58a	Structure fill (post-abandonment)	U58a/58b	U6/8/58a/58b/89	2nd h. of 17th c.
	1		Dumped deposit	I	Magnetic anomaly test trench in sq. 10Y45	Indet.
5-4(	59 not 6	excavated in th	e 2018–2019 season			
	1.3	U71	Subsurface sand	U71	U44/45/48/55/59/60/71	17th c. or later
	1.6	U47	Occupational layer	U47a/47b	U21a/21b/28a/28b/29/47a/47b/96	16th/17th c.
~	1.3	U71	Accumulation of ash	U71	U44/45/48/55/59/60/71	17th c.
~	1.3	U71	Hearth/oven fill?	U71	U44/45/48/55/59/60/71	17th c.
<u>`</u> _	1.6		Subsurface sand		U9/10/94	2nd h. of 17th c. or later
10	1.6		Structure collapsed		U9/10/94	2nd h. of 17th c. or later
	1.6	U10	Vessel fill	U9/10	U9/10/94	2nd h. of 17th c. or later

477	1.3	U50	Vessel fill	U50	U50	16th/17th c.
478	1.1	U72	Vessel fill	U72	U5/25/72/73	2nd h. of 17th c.
479	1.3	U50	Fill of basket	U50	U50	16th/17th c.
480	1.3	U50	Fill of basket	U50	U50	16th/17th c.
481	1.3	U50	Vessel fill	U50	U50	16th/17th c.
482	1.3	U50	Vessel fill	U50	U50	16th/17th c.
483	1.4	U57	Occupational layer	U57	U57/70	17th c.
484	1.6	096	Hearth/oven fill	D96	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
485	1.6	D96	Hearth/oven fill	D96	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
486–6	78 not	excavated in th	ne 2018–2019 season			
679	1.6	U21	Structure collapsed (post-abandonment)	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
680	1.6	U28	Structure collapsed	U28a/28b	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
681	1.6	U28	Dumped deposit (post-abandonment)	U28a/28b		2nd h. of 17th c.
682	1.1	U74	Dumped deposit	U74	U74	1st h. of 18th c. or later
683	1.6	U94	Accumulation	U94	U9/10/94	2nd h. of 17th c. or later
684	1.1	U5	Occupational layer	U5/25	U5/25/72/73	2nd h. of 17th c.
685	1.1	U5	Vessel fill	U5/25	U5/25/72/73	2nd h. of 17th c.
686	1.1	U5	Occupational layer	U5/25	U5/25/72/73	2nd h. of 17th c.
687	1.1	U25	Occupational layer	U5/25	U5/25/72/73	2nd h. of 17th c.
688	1.1	U72	Dumped deposit (post-abandonment)	U72	U5/25/72/73	2nd h. of 17th c. or later
689	1.1	U74	Dumped deposit	U74	U74	18th c. or later
690	1.1	U72	Hearth/oven fill (post-abandonment)	U72	U5/25/72/73	2nd h. of 17th c. or later
691	1.1	U72	Hearth/oven fill (post-abandonment)	U72	U5/25/72/73	2nd h. of 17th c. or later
692	1.1	U74	Dumped ash	U74	U74	18th c. or later
Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
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693	1.1	096	Pot fill	U96	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
694	1.1	U74	Dumped deposit	U74	U74	18th c. or later
695	1.6	U29	Room fill	U29	U21a/21b/28a/28b/29/47a/47b/96	Middle of 17th c.
969	1.6	096U	Room fill	U96 courtyard	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
697	1.6	096U	Hearth/oven fill	U96 courtyard	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
698	1.6	096U	Hearth/oven fill	U96 courtyard	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
669	1.6	096U	Structure collapsed	U96 courtyard	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
700	1.6	U28	Structure collapsed	U28	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
701	1.6	U74	Secondary pit fill	U74	U74	18th c. or later
702	1.6	U28	Structure collapsed	U28	U21a/21b/28a/28b/29/47a/47b/96	2nd h. of 17th c.
703	1.6	U94	Accumulation	U94 courtyard	U9/10/94	2nd h. of 17th c. or later
704	1.6		Dumped deposit	Above city wall next to tower U42		2nd h. of 17th c. or later
705	1.6	U94	Hearth/oven fill	U94 courtyard	U9/10/94	2nd h. of 17th c. or later
706	1.6	U94	Hearth/oven fill	U94 courtyard	U9/10/94	2nd h. of 17th c. or later
707	1.6	U94	Hearth/oven fill	U94 courtyard	U9/10/94	2nd h. of 17th c. or later
708	1.6	U94	Accumulation	U94 courtyard	U9/10/94	2nd h. of 17th c. or later
709	1.6	U42	Room fill	U42	U42	2nd h. of 17th c. or later
710	1.6	U10	Pot fill	U9/10	U9/10/94	2nd h. of 17th c. or later
711	1.1	U74	Oven fill	U74	U74	1st h. of 17th c.
712	1.1	U5	Accumulation of ash	U5/25/72	U5/25/72/73	2nd h. of 17th c.
713	1.1	U5	Pot fill	U5/25/72	U5/25/72/73	2nd h. of 17th c.
714	1.1	U5	Pot fill	U5/25/72	U5/25/72/73	2nd h. of 17th c.
715	1.1	U25	Occupational layer	U5/25/72	U5/25/72/73	2nd h. of 17th c.
716	1.1	U72	Occupational layer	U5/25/72	U5/25/72/73	2nd h. of 17th c.
717	1.1	U72	Occupational layer	U5/25/72	U5/25/72/73	2nd h. of 17th c.

18th c.	18th c.	17th–18th c.	17th–18th c.	18th c.	2nd h. of 17th c. and later	2nd h. of 17th c. or later	2nd h. of 17th c. or later	2nd h. of 17th c. or later	2nd h. of 17th c.	2nd h. of 17th c.	1st h. of 17th c.	1st h. of 17th c.	2nd h. of 17th c. or later	2nd h. of 17th c. or later	2nd h. of 17th c. or later	1st h. of 17th c.	lst h. of 17th c.	1 1st h. of 17th c.	33/34/82/83/84/85 2nd h. of 17th c.	33/34/82/83/84/85 2nd h. of 17th c.	/33/34/82/83/84/85 2nd h. of 17th c.	/33/34/82/83/84/85 2nd h. of 17th c.	(33/34/82/83/84/85 17th c.		(33/34/82/83/84/85 17th c.
75 U7/75		st layers above U/3,	st layers above U73, — e SW of U3	75 U7/75	corridor U1/17/30/79/80	25/72 U5/25/72/73	25/72 U5/25/72/73	U5/25/72/73	25/72 U5/25/72/73	U5/25/72/73	25/72 U5/25/72/73	U73	10 U9/10/94	10 U9/10/94	10 U9/10/94	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	U2/11/12/13/14/33/3	U2/11/12/13/14/33/3	U2/11/12/13/14/33/3	U2/11/12/13/14/33/3	U2/11/12/13/14/33/3	U2/11/12/13/14/33/3	
Wall U7/7	Floor U7/7	Floor Late space	Floor Late space	Floor U7/7	Floor U1 d	Wall U5/2	Wall U5//	Floor U73	Floor U5//	Floor U73	Floor U5//	Floor U73	Floor U9/	Floor U9/	Floor U9/	Floor U73	Floor U8	Floor U6	Floor U84	Floor U2	Floor U2	Floor U2	Floor U2	Floor U2	CI I
	U75			U7	U1	i U5	U5, U25	U73	U5	U73	U73	U73	5 U94	6U 3	5 U10	U73	U8	N6	U84	U2	U2	U2	U2	U2	
F003 1.1	F005 1.1	F011 1.1	F013 1.1	F017 1.1	F019 1.1	F041 1.1	F043 1.1	F045 1.1	F046 1.1	F047 1.1	F050 1.1	F054 1.1	F060 1.6	F062 1.6	F067 1.6	F088 1.1	F106 1.1	F107 1.1	F132 1.1	F133 1.1	F134 1.1	F140 1.1	F141 1.1	F142 1.1	· · ·

## APPENDIX: LIST OF DATED CONTEXTS EXCAVATED IN THE 2018–2019 SEASON 387

Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
F146	1.1	U2	Floor	U2	U2/11/12/13/14/33/34/82/83/84/85	1st h. of 16th c.
F157	1.1	U11	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F160	1.1	U12	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F173	1.1	U17	Floor	U17/30/79	U1/17/30/79/80	18th c.
F174	1.1	U17	Unknown structure	U17/30/79	U1/17/30/79/80	18th c.
F183	1.1	U17	Floor	U17/30/79	U1/17/30/79/80	18th c.
F184	1.1		Floor	Latest layers above U73 space SW of U3		17th–18th c.
F191	1.1	U17	Floor	U17/30/79	U1/17/30/79/80	18th c.
F192	1.1	U33	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F193	1.1	U33	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F194	1.1		Floor		Under courtyard U86	17th–18th c.
F196	1.6	U21a	Floor	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F203	1.6	U47	Wall	U47a/47b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F205	1.6	U21b	Wall	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F206	1.6	U21b	Wall	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F210	1.6	U21b	Floor	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F211	1.6	U29	Floor	U29	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F213	1.6	C05	Floor	U95		1st h. of 17th c.
F217	1.6	U21	Wall	U21a/21b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F224	1.1	U5	Floor	U5/25/72	U5/25/72/73	2nd h. of 17th c.
F236	1.1	U85	Floor	U85	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
F237	1.1	U85	Floor	U85	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
F238	1.1	U85	Floor	U85	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
F239	1.1	U85	Floor	U85	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
F247	1.1	079	Floor	U79	U1/17/30/79/80	2nd h. of 17th c.

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F248	1.1	079	Floor	079	U1/17/30/79/80	2nd h. of $1/th$ c.
F251	1.1	U80	Floor	U80	U1/17/30/79/80	2nd h. of 17th c.
F253	1.1	U18	Floor	U18	U1/16/17/18/30/35	2nd h. of 17th c.
F254	1.1	U18	Floor	U18	U1/16/17/18/30/35	2nd h. of 17th c.
F262		U24	Floor	U24	Street U24	17th c.
F264	1.2	U23	Floor	U23	U23/87/88/89	2nd h. of 17th c.
F265	1.2	U23	Floor	U23	U23/87/88/89	2nd h. of 17th c.
F273	1.1	U85	Floor	U85	U2/11/12/13/14/33/34/82/83/84/85	2nd h. of 17th c.
F290	1.6	U37	Floor	U37	U15/37/40	2nd q. of 17th c.
F304	1.6	U20b	Floor	U20a/20b	U20a/20b	2nd q./3rd q. of 17th c.
F306	1.6	U20a	Floor	U20a/20b	U20a/20b	2nd q./3rd q. of 17th c.
F320	1.6		Stove in bench	Above U27		4th q. of 17th c.
F326	1.1	U86	Floor	U86	U86	2nd q. of 17th c.
F327	1.1	U41	Vessel	U86	U86	17th c.
F328	1.1	U41	Vessel	U86	U86	17th c.
F339	1.6	U15	Wall	U15	U15/37/40	2nd q. of 17th c.
F347	1.6	U27	Floor	U27	U27	3rd q. of 17th c.
F353	1.1	U16	Floor	U16/30/35	U1/16/17/18/30/35	2nd h. of 17th c., 18th c.
F362	1.1	U77	Floor/bench?	U76/77	U76/77	18th c.
F389	1.1	U34	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F394	1.2	U23	Floor	U23	U23/87/88/89	2nd h. of 17th c.
F395	1.2	U89	Floor	U89	U23/87/88/89	2nd h. of 17th c.
F396	1.2	U88	Floor	U88	U32/38/39/87/88	2nd h. of 17th c.
F397	1	U24	Floor	U24	Street U24	17th c.
F412	1.2	U88	Floor	U88	U32/38/39/87/88	17th c.
F424	1.2	U38	Floor	U38	U32/38/39/87/88	2nd h. of 17th c.
F427	1.2	U32	Floor	U32	U32/38/39/87/88	2nd h. of 17th c.
F428	1.2	U32	Floor	U32	U32/38/39/87/88	17th c.

## APPENDIX: LIST OF DATED CONTEXTS EXCAVATED IN THE 2018–2019 SEASON 389

Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
F429	1.2	U39	Floor	U39	U32/38/39/87/88	17th c.
F433	1.6	U47b	Floor	U47a/47b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F436	1.6	U29	Floor	U29	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F437	1.6	U29	Floor	U29	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F440	1.6	096U	Floor	D96	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F448	1.1	U74	Floor	U74	U74	1st h. of 18th c. or later
F459	1.6	U28	Floor	U28a/28b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F462	1.6	U28	Floor	U28a/28b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F465	1.1	U25	Floor	U5/25/72	U5/25/72/73	2nd h. of 17th c.
F466	1.6	U29	Floor	U29	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F470	1.6	U15	Floor	U15	U15/37/40	2nd q. of 17th c.
F473	1.6	U37	Floor	U37	U15/37/40	2nd q. of 17th c.
F474	1.6	U37	Floor	U37	U15/37/40	2nd q. of 17th c.
F487	1.6	U36	Bin	U36	U36	3rd q. of 17th c.
F488	1.6	U36	Floor	U36	U36	3rd q. of 17th c.
F493	1.1	U8	Vessel	U8	U6/8/58a/58b/73	1st h. of 17th c.
F519	1.1	U7	Floor	U7/75	U7/75	18th c.
F526	1.1	U14	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F527	1.1	U13	Floor	U11/12/13/14/33/34	U2/11/12/13/14/33/34/82/83/84/85/86	2nd h. of 17th c., 18th c.
F538	1.3	U48	Floor	U44/48/55	U44/45/48/55/59/60/71	17th c.
F547	1.1	UI	Floor	UI	U1/16/17/18/30/35	2nd h. of 17th c.
F557	1.2	U32/39	Floor	U32/39	U32/38/39/87/88	2nd h. of 17th c.
F565	1	U62	Floor	U62	Street U62	2nd h. of 17th c.
F566	1	U62	Floor	U62	Street U62	2nd h. of 17th c.
F567	1	U62	Floor	U62	Street U62	2nd h. of 17th c.
F568	-	U62	Floor	U62	Street U62	2nd h. of 17th c.

F569	1	U56	Floor	U56	Courtyard U56	2nd h. of 17th c.
F570	1	U62	Floor	U62	Street U62	2nd h. of 17th c.
F571	1.2	06U	Floor	060	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
F572	1.2	06U	Floor	060	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
F573	1.2	U65	Floor	U65	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
F581	1.2	U65	Floor	U65	U32, U38, U52, U63, U65, U90	2nd h. of 17th c.
F592	1.6	U28	Floor	U28a/28b	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
F605	1.3	U45	Floor	U45	U44/45/48/55/59/60/71	17th c.
F611	1.3	U43	Floor	U43	U43/46/51	17th c.
F612	1.3	U43	Floor	U43	U43/46/51	17th c.
F614	1.3	U45	Floor	U45	U44/45/48/55/59/60/71	17th c.
F630	1.6	U36	Floor	U36	U36	3rd q. of 17th c.
F632	1.6	U26b	Vessel	U26a/26b	U15/26a/26b	2nd h. of 16th c.
F633	1.6	U26b	Vessel	U26a/26b	U15/26a/26b	2nd h. of 16th c.
F636	1.6	U26a	Floor	U26a/26b	U15/26a/26b	16th c.
F694	1.3	U53	Floor	U53	U53/54/64/67/68/69/92	2nd h. of 17th c.
F696	1	U56	Floor	U56	Courtyard U56	2nd h. of 17th c.
F697	1.3	U44	Floor	U44/48/55	U44/45/48/55/59/60/71	17th c.
F706	1.4		Floor abutting wall F705 in NE		SW edge of zone 1.4	17th c.
F708	1.4		Floor		SW edge of zone 1.4	17th c.
F712	1.4		Floor S of threshold F711		SW edge of zone 1.4	17th c.
F715	1.4		Floor S of wall F713		SW edge of zone 1.4	17th c.
F716	1.4		Floor below floor F715		SW edge of zone 1.4	17th c.
F719	1.4		Floor abutting walls F717 and F718		SW edge of zone 1.4	17th c.
F723	1.3	U71	Floor matching late threshold to U55	U71 courtyard	U44/45/48/55/59/60/71	17th c.

APPENDIX: LIST OF DATED CONTEXTS EXCAVATED IN THE 2018–2019 SEASON 391

Cxt	Zone	Unit	Type	Building	Compound	Dating (c. century; h. half; q. quarter)
25	1.3	U71	Floor matching early threshold to U55	U71 courtyard	U44/45/48/55/59/60/71	17th c.
26	1.3	U71	Floor matching early threshold to U55	U71 courtyard	U44/45/48/55/59/60/71	17th c.
30	1.3	U55	Floor	U44/48/55	U44/45/48/55/59/60/71	17th c.
34	1.3	U55	Floor	U44/48/55	U44/45/48/55/59/60/71	17th c.
37	1.3	U51	Floor	U51	U43/46/51	17th c.
38	1.3	U51	Floor	U51	U43/46/51	17th c.
39	1.3	U46	Floor (?)	U46	U43/46/51	17th c.
43	1.6	096	Floor	U94	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
44	1.6	096	Floor	U94	U21a/21b/28a/28b/29/47a/47b/96	1st h. of 17th c.
52	1.4	U102	Floor	U102	U102	17th c.
58	1.4	U57	Floor	U57	U57/70	17th c.
61	1.4		Floor		U57/70	17th c.
62	1.4	U70	Floor	U70	U57/70	17th c.
.66	1.4	U70	Floor	U70	U57/70	17th c.
81	1.3	U59	Floor	U59/60	U44/45/48/55/59/60/71	17th c.
82	1.3	U59	Floor	U59/60	U44/45/48/55/59/60/71	17th c.
783	1.3	U60	Floor	U59/60	U44/45/48/55/59/60/71	17th c.
784	1.3	U59	Floor	U59/60	U44/45/48/55/59/60/71	17th c.
789	1.3	U64	Floor	U64	U53/54/64/67/68/69/91/92	17th c.
794	1.3	U91	Floor at entrance to U64	U91 courtyard	U53/54/64/67/68/69/91/92	17th c.
798	1.3	U64	Vessel in bench F788	U64	U53/54/64/67/68/69/91/92	17th c.
311	1.1	U58a, U58b	Floor	U58a/58b	U6/8/58a/58b/73	1st h. of 17th c.
314	1.1	U78	Floor	U78	U78	1st h. of 17th c.
315	1.1	U73	Vessel	U73	U73	1st h. of 17th c.

17th c. or earlier	1st h. of 17th c.	2nd h. of 17th c. or later	17th c.	17th c.	17th c.	17th c.	17th c.	17th c.	1st h. of 17th c.	17th c.	17th c.	17th c.	17th c.	17th c.	17th c.	2nd h. of 17th c.					
U6/8/58a/58b/73	U66	U66	U6/8/58a/58b/73	U6/8/58a/58b/73	U6/8/58a/58b/73	Between U9/10 and U42	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U43/46/51	U57/70	U57/70	U21a/21b/28a/28b/29/47a/47b/96	U44/45/48/55/59/60/71	U43/46/51	U53/54/64/67/68/69/91/92	U44/45/48/55/59/60/71	U44/45/48/55/59/60/71	U53/54/64/67/68/69/91/92	U32, U38, U52, U63, U65, U90	
U58a/58b	U66	N66	U73	U73	U58a/58b		U71	U71	U71	U46	U70	U57	U47a/47b	U71	U43	U91 courtyard	U71 courtyard	U71 courtyard	U53/54/67/68?	U63	
Vessel	Floor	Floor	Vessel	Floor	Floor	Floor	Floor	Floor	Floor	Floor	Floor	Floor	Floor	Floor	Floor	Floor at entrance to U64	Floor outside U55	Floor outside U55	Floor	Floor	
U58a	U66	U66	U73	U73	U58a		U71	U71	U71	U46	U70	U57	U47	U71	U43	U91	U71	U71	U67	U63	
1.1	1.1	1.1	1.1	1.1	1.1	1.6	1.3	1.3	1.3	1.3	1.4	1.4	1.6	1.3	1.3	1.3	1.3	1.3	1.3	1.2	
F821	F831	F832	F836	F840	F848	F863	F864	F865	F867	F871	F873	F876	F878	F884	F886	F889	F890	F891	F897	F925	

## LIST OF TABLES AND FIGURES

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LIST OF TABLES

- Table 1.1. Finds collection policy at Old Dongola (most common items); FN = field number; IN = inventory number
- Table 1.2. Finds registered in the 2018–2019 season, grouped by category and object type
- Table 3.1. Structure of the typology of forms
- Table 4.1. Classification of the newly distinguished fabrics
- Table 4.2. Smoking pipes discovered in the 2018–2019 season listed by inventory number
- Table 5.1. Basketry and cordage finds grouped by context and type (occupational contexts underscored and in bold)
- Table 6.1. Leather finds grouped by context and type (occupational contexts underscored and in bold)
- Table 8.1. A guide to the units and contexts that yielded glass bangle fragments excavated in sector 1 during the 2018–2019 season
- Table 8.2.
   Bangle types found during the 2018–2019 season at Old Dongola. Context dating in parentheses wherever possible
- Table 8.3. Bangle fragments listed by context and inventory number
- Table 9.1. A guide to the units and contexts that yielded beads excavated in sector 1 during the 2018–2019 season
- Table 9.2. Beads, pendants, cabochons, and materials used in their production, listed by context and inventory number

LIST OF FIGURES

#### Chapter 1. Introduction

- Fig. 1.1. Area excavated in the 2018–2019 season, with indicated zones and unit numbers (Drawing and processing A. Chlebowski, J. Wyżgoł, A. Wujec, D. Dzierzbicka)
- Fig. 1.2. Structure of the assemblage of registered finds (n=1816) (D. Dzierzbicka)
- Fig. 1.3. The wanasa at the Old Dongola dighouse, winter 2020 (Photo M. Rekłajtis)

#### Chapter 2. Methodology of pottery processing

- Fig. 2.1. Old Dongola pottery bag form (A. Wodzińska)
- Fig. 2.2. Pottery recording form (A. Wodzińska)
- Fig. 2.3. Old Dongola fabric recording form (A. Wodzińska)
- Fig. 2.4. Old Dongola type recording form (A. Wodzińska)
- Fig. 2.5. Old Dongola decoration recording form (A. Wodzińska)
- Fig. 2.6. Example of a pencil drawing (K. Danys)

### Chapter 3. Pottery from the 17th-18th century settlement: A typological study

- Fig. 3.1. Diagnostic, non-diagnostic, and redeposited sherds in the assemblage (K. Danys)
- Fig. 3.2. Shares of different groups of diagnostic wheel-made fragments (K. Danys)
- Fig. 3.3. Percentage shares of groups of fabrics in the assemblage of diagnostic fragments (K. Danys)

- Fig. 3.4. Percentage shares of Nile fabrics according to type (*n*=5140) (K. Danys)
- Fig. 3.5. Decoration techniques in the assemblage of diagnostic fragments (n=2970) (K. Danys)
- Fig. 3.6. Impressed decoration types: texture impressions (K. Danys)
- Fig. 3.7. Impressed decoration types: patterns of finger impressions (K. Danys)
- Fig. 3.8. Impressed decoration types: object impressions (K. Danys)
- Fig. 3.9. Incised decoration types: simple patterns (K. Danys)
- Fig. 3.10. Incised decoration types: simple patterns (K. Danys)
- Fig. 3.11. Incised decoration types: simple patterns (K. Danys)
- Fig. 3.12. Incised decoration types: complex patterns (K. Danys)
- Fig. 3.13. Incised decoration types: complex patterns (K. Danys)
- Fig. 3.14. Applied decoration types (K. Danys)
- Fig. 3.15. Painted decoration types (K. Danys)
- Fig. 3.16. Decoration types composed of patterns in combined techniques (K. Danys)
- Fig. 3.17. Potmarks (K. Danys)
- Fig. 3.18. Percentage shares of different groups of diagnostic vessel fragments (n=5093) (K. Danys)
- Fig. 3.19. Fine open bowls divided according to variant (K. Danys)
- Fig. 3.20. Fine open bowls divided according to fabric (K. Danys)
- Fig. 3.21. Types of fine open bowls (K. Danys)
- Fig. 3.22. Fine open bowls of variant 1 divided according to type (K. Danys)
- Fig. 3.23. Fine open bowls of variant 1 divided according to fabric (K. Danys)
- Fig. 3.24. Fine open bowls of variant 2 divided according to type (K. Danys)
- Fig. 3.25. Fine open bowls of variant 2 divided according to fabric (K. Danys)
- Fig. 3.26. Fine open bowls of variant 2 excluding PT8 bowls divided according to fabric (K. Danys)
- Fig. 3.27. Fine open bowls of variant 2, type PT8, divided according to fabric (K. Danys)
- Fig. 3.28. Fine open bowls of variant 3 divided according to type (K. Danys)
- Fig. 3.29. Fine open bowls of variant 3 divided according to fabric (K. Danys)
- Fig. 3.30. Types of fine open bowls (A-B), and small and medium fine closed bowls (C-E) (K. Danys)
- Fig. 3.31. Fine closed bowls of small and medium size divided according to variant (K. Danys)
- Fig. 3.32. Fine closed bowls of small and medium size divided according to fabric (n=332) (K. Danys)
- Fig. 3.33. Types of small and medium closed bowls of fine wares (A–C), and large closed bowls of fine wares (D) (K. Danys)
- Fig. 3.34. Types of large closed bowls of fine wares (K. Danys)
- Fig. 3.35. Variants and types of fine closed bowls of large size (n=203) (K. Danys)
- Fig. 3.36. Fine closed bowls of large size divided according to fabric (K. Danys)
- Fig. 3.37. Variants of open and closed forms of coarse bowls (n=148) (K. Danys)
- Fig. 3.38. Open and closed forms of coarse bowls divided according to fabric (n=148) (K. Danys)
- Fig. 3.39. Types of coarse open bowls: trapezoidal (A), and hemispherical with circular impressions on the inside (B) (K. Danys)
- Fig. 3.40. Coarse open bowls of variant 1 divided according to type (K. Danys)
- Fig. 3.41. Coarse open bowls of variant 1 divided according to fabric (K. Danys)
- Fig. 3.42. Types of coarse open bowls: small and hemispherical (A), cup-like (B), with flange rims (C), conical (D), and basin-like (E) (K. Danys)
- Fig. 3.43. Coarse open bowls of variant 3 divided according to type (K. Danys)
- Fig. 3.44. Coarse open bowls of variant 3 divided according to fabric (K. Danys)
- Fig. 3.45. Types of coarse open bowls: small and cylindrical (A), and closed bowls of spherical (B), cylindrical (C), and hemispherical (D) shape (K. Danys)
- Fig. 3.46. Subgroups of jars (n=899); right-hand diagram shows medium jars (K. Danys)
- Fig. 3.47. Short-necked jars divided according to variants and types (K. Danys)
- Fig. 3.48. Short-necked jars divided according to fabric (K. Danys)
- Fig. 3.49. Types of short-necked jars of variant 1 (K. Danys)
- Fig. 3.50. Fabrics of short-necked jars of variant 1, type PT20 (K. Danys)
- Fig. 3.51. Decoration of short-necked jars of variant 1, type PT20, divided according to technique of execution and location (K. Danys)
- Fig. 3.52. Types of short-necked jars of variants 2 (A) and 3 (B) (K. Danys)

- Fig. 3.53. Types of short-necked jars of variant 4 (K. Danys)
- Fig. 3.54. Types of short-necked jars of variant 5 (A), and jars with elongated necks (B) (K. Danys)
- Fig. 3.55. Neckless jars with out-curved rims divided according to variant and type (K. Danys)
- Fig. 3.56. Neckless jars with out-curved rims divided according to fabric (K. Danys)
- Fig. 3.57. Types of neckless jars with out-curved rims of variants 1 (A), 2 (B) and 3 (C) (K. Danys)
- Fig. 3.58. Types of neckless jars with out-curved rims of variants 4 (A) and 5 (B) (K. Danys)
- Fig. 3.59. Types of neckless jars with out-curved rims of variant 6 (A), and neckless jars with in-curved rims of variant 1 (B) (K. Danys)
- Fig. 3.60. Neckless jars with in-curved rims divided according to type (K. Danys)
- Fig. 3.61. Neckless jars with in-curved rims divided according to fabric (K. Danys)
- Fig. 3.62. Types of neckless jars with in-curved rims of variant 2 (K. Danys)
- Fig. 3.63. Types of neckless jars with in-curved rims of variants 3 (A) and 4 (B) (K. Danys)
- Fig. 3.64. Neckless jars with in-curved rims, variant 4, divided according to fabric (K. Danys)
- Fig. 3.65. Large jars of type PT254 (K. Danys)
- Fig. 3.66. Small jars divided according to type (K. Danys)
- Fig. 3.67. Small jars divided according to fabric (K. Danys)
- Fig. 3.68. Types of jars: small necked (A), neckless (B), and unidentified (C); bottles without handles (D), and with handles (E) (K. Danys)
- Fig. 3.69. Fabrics attested for bottle type PT82 (K. Danys)
- Fig. 3.70. Baking plates divided according to size and type (K. Danys)
- Fig. 3.71. Baking plates divided according to fabric (K. Danys)
- Fig. 3.72. Types of medium-sized baking plates (K. Danys)
- Fig. 3.73. Fabric types in type PT13 of medium-sized baking plates (K. Danys)
- Fig. 3.74. Number share of the decoration types executed on type PT13 of medium-sized baking plates (K. Danys)
- Fig. 3.75. Types of large baking plates (K. Danys)
- Fig. 3.76. Large baking plates divided according to decoration type (K. Danys)
- Fig. 3.77. Large baking plates of type PT195 divided according to fabric (K. Danys)
- Fig. 3.78. Decoration types executed on large baking plates of type PT195 (K. Danys)
- Fig. 3.79. Types of small baking plates (K. Danys)
- Fig. 3.80. Types of waterwheel pots/gawwadis (K. Danys)
- Fig. 3.81. Types of *qawwadis*: rims (left) and bases (right) (K. Danys)
- Fig. 3.82. *Qawwadis* divided according to fabric (K. Danys)
- Fig. 3.83. Lids divided according to subgroups (K. Danys)
- Fig. 3.84. Lids divided according to fabric (K. Danys)
- Fig. 3.85. Types of lids: made of potsherds with no handle (A), and made of one piece of clay with knobbed handles (B-E) (K. Danys)
- Fig. 3.86. Types of lids: made of one piece of clay with arched (A), and knobbed (B) handles (K. Danys)
- Fig. 3.87. Types of incense burners (K. Danys)
- Fig. 3.88. Incense burners divided according to type (K. Danys)
- Fig. 3.89. Incense burners divided according to fabric (K. Danys)
- Fig. 3.90. Varia: *qulla* (A), cup (B), bowl with a spouted rim (C), and miniature vessels: bowl (D) and *qadus* (E) (K. Danys)
- Fig. 3.91. Complete bowl PT8 (1), complete bowl PT8 found in the quern emplacement F384 (2), rims of bowls: PT77 (3), PT55 (4), PT211 (5), PT261 (6), and PT208 (7) (Photo M. Rekłajtis)
- Fig. 3.92. Fragments of jars: PT21 (1) and PT89 (2), almost complete jar PT41 (3), and complete jar PT179 (4) (Photo M. Rekłajtis)
- Fig. 3.93. Fragments of jars: PT79 (1) and PT32 (2), and PT254 standing *in situ* on the *mastaba* F164 (3, 4) (Photo M. Rekłajtis)
- Fig. 3.94. Bottles: PT18 (1), PT282 (2) and PT116 (3), as well as baking plate PT13 (4), and *qadus* PT87 (5) (Photo M. Rekłajtis)
- Fig. 3.95. Varia: spouted bowl PT150 (1) and miniature *qadus* PT186; incense burners: PT4 (3), PT142 (4) and PT98 (5); lids: PT226 (6), PT107 (7) and PT169 (8) (Photo M. Rekłajtis)

#### Chapter 4. Smoking pipes

- Fig. 4.1. Selection of smoking pipes of type 1: 1 inv. no. 76; 2 inv. no. 63; 3 inv. no. 182; 4 – inv. no. 1425; 5 – inv. no. 1153; 6 – inv. no. 1421; 7 – inv. no. 1422 (Drawings K. Danys; photos M. Rekłajtis; processing and plate design M. Wyżgoł)
- Fig. 4.2. Selection of smoking pipes of type 2: 1 inv. no. 1442; 2 inv. no. 1432; 3 inv. no. 174; 4 – inv. no. 173; 5 – inv. no. 146; 6 – inv. no. 68 (Drawings K. Danys; photos M. Rekłajtis; processing and plate design M. Wyżgoł)
- Fig. 4.3. Selection of smoking pipes of type 2: 1 inv. no. 1428; 2 inv. no. 1423; 3 inv. no. 111; 4 – inv. no. 142; 5 – inv. no. 79; 6 – inv. no. 936 (Drawings K. Danys; photos M. Rekłajtis; processing and plate design M. Wyżgoł)
- Fig. 4.4. Selection of smoking pipes of type 3: 1 inv. no. 145; 2 inv. no. 175; 3 inv. no. 65; 4 inv. no. 66; 5 inv. no. 71 (Drawings K. Danys; photos M. Rekłajtis; processing and plate design M. Wyżgoł)
- Fig. 4.5. Selection of smoking pipes of types 3 (1, 2), 4 (3), and 5 (4, 5): 1 inv. no. 70; 2 inv. no. 1414; 3 inv. no. 82; 4 inv. no. 143; 5 inv. no. 83 (Drawings K. Danys; photos M. Rekłajtis; processing and plate design M. Wyżgoł)
- Fig. 4.6. Selection of smoking pipes of type 5: 1 inv. no. 80; 2 inv. no. 84; 3 inv. no. 554 (Drawings K. Danys; photos M. Rekłajtis; processing and plate design M. Wyżgoł)
- Fig. 4.7. Assemblage of smoking pipes grouped according to type (K. Danys)

#### Chapter 5. Basketry and cordage

- Fig. 5.1. Percentage shares of plant materials used in the production of the basketry and cordage finds (*n*=187) (M. Warowna)
- Fig. 5.2. Percentage shares of techniques used in the production of the basketry and cordage finds (n=187) (M. Warowna)
- Fig. 5.3. Inv. no. 1274 with the width of the strip marked in red (Photo M. Rekłajtis)
- Fig. 5.4. Matting attached to a piece of wood (A); mat fragments attached to mud plaster (B); and mud plaster with impressions of matting (C) (Photo M. Rekłajtis)
- Fig. 5.5. Fragment of a mat attached to bench F486 (Photo M. Wyżgoł)
- Fig. 5.6. Mat (inv. no. 1493) (Photo M. Warowna)
- Fig. 5.7. Mat (inv. no. 1523) (Photo M. Warowna)
- Fig. 5.8. Mat (inv. no. 1519) (Photo M. Warowna)
- Fig. 5.9. Mat (inv. no. 1502) (Photo M. Rekłajtis)
- Fig. 5.10. Mat (inv. no. 1492) (Photo M. Warowna)
- Fig. 5.11. Mat (inv. no. 1506) (Photo M. Warowna)
- Fig. 5.12. Mat (inv. no. 1501) (Photo M. Rekłajtis)
- Fig. 5.13. Mat (inv. no. 1496) (Photo M. Warowna)
- Fig. 5.14. Mat (inv. no. 1523) (Photo M. Warowna)
- Fig. 5.15. Mat (inv. no. 1540) (Photo M. Rekłajtis)
- Fig. 5.16. Group of ceramic vessels and basketry found in U50 (Photo A. Deptuła)
- Fig. 5.17. Basket (inv. no. 1297) (Photo M. Warowna)
- Fig. 5.18. Basket (inv. no. 1514) (Photo M. Rekłajtis)
- Fig. 5.19. Basket (inv. no. 1479) (Photo M. Rekłajtis)
- Fig. 5.20. Basket (inv. no. 797) (Photo M. Rekłajtis)
- Fig. 5.21. Basket (inv. no. 1483) (Photo M. Warowna)
- Fig. 5.22. Basket (inv. no. 1486) (Photo M. Warowna)
- Fig. 5.23. Basket (inv. no. 1525) (Photo M. Warowna)
- Fig. 5.24. Basket (inv. no. 1505 (Photo M. Warowna)
- Fig. 5.25. Basket (inv. no. 1524) (Photo M. Warowna)
- Fig. 5.26. Basket (inv. no. 1526) (Photo M. Warowna)
- Fig. 5.27. Lid/plate (inv. no. 795) (Photo M. Rekłajtis)
- Fig. 5.28. Lid/plate or base of a small basket (inv. no. 799) (Photo M. Rekłajtis)
- Fig. 5.29. Lid/plate (inv. no. 1098) (Photo M. Warowna)

- Fig. 5.30. Lid/plate (inv. no. 1084) (Photo M. Warowna)
- Fig. 5.31. Lid (inv. no. 1306) (Photo M. Rekłajtis)
- Fig. 5.32. Sandal (inv. no. 788) (Photo M. Rekłajtis)
- Fig. 5.33. Sandal (inv. no. 1472) (Photo M. Rekłajtis)
- Fig. 5.34. Sandal (inv. no. 994) (Photo M. Rekłajtis)
- Fig. 5.35. Sandal (inv. no. 790) (Photo M. Rekłajtis)
- Fig. 5.36. Sandal (inv. no. 997) (Photo M. Rekłajtis)
- Fig. 5.37. Sandal (inv. no. 995) (Photo M. Rekłajtis)
- Fig. 5.38. Sandal (inv. no. 996) (Photo M. Rekłajtis)
- Fig. 5.39. Sandal (inv. no. 793) (Photo M. Rekłajtis)
- Fig. 5.40. Cordage (inv. no. 975) (Photo M. Rekłajtis)
- Fig. 5.41. Cordage (inv. no. 955) (Photo M. Rekłajtis)
- Fig. 5.42. Cordage (basket handle?) (inv. no. 1530) (Photo M. Rekłajtis)
- Fig. 5.43. Cordage (inv. no. 1533) (Photo M. Rekłajtis)
- Fig. 5.44. Cordage (inv. no. 973) (Photo M. Rekłajtis)
- Fig. 5.45. Cordage (inv. no. 1312) (Photo M. Rekłajtis)
- Fig. 5.46. Cordage (inv. no. 922) (Photo M. Rekłajtis)
- Fig. 5.47. Cordage (inv. no. 1536) (Photo M. Rekłajtis)
- Fig. 5.48. Cordage: knot (inv. no. 972) (Photo M. Rekłajtis)
- Fig. 5.49. Cordage: knot, loop (inv. no. 978) (Photo M. Rekłajtis)
- Fig. 5.50. Basketry object (inv. no. 1317) (Photo M. Rekłajtis)
- Fig. 5.51. Basketry object (inv. no. 1316) (Photo M. Rekłajtis)
- Fig. 5.52. Basketry object (inv. no. 993) (Photo M. Rekłajtis)
- Fig. 5.53. Basketry object (inv. no. 984) (Photo M. Warowna)
- Fig. 5.54. Basketry object (inv. no. 982) (Photo M. Rekłajtis)
- Fig. 5.55. Basketry object (inv. no. 1317) (Photo M. Rekłajtis)
- Fig. 5.56. Basketry object (inv. no. 1464) (Photo M. Rekłajtis)

#### Chapter 6. Leatherwork

- Fig. 6.1. Fragment of a *rahat* skirt (inv. no. 243) (Photo M. Rekłajtis)
- Fig. 6.2. *Hijbat* amulets: A *hijab* amulet (inv. no. 439); B *hijab* case (inv. no. 438) (Photos M. Rekłajtis)
- Fig. 6.3. Sandal (inv. no. 1475): dorsal (top) and ventral (bottom) views (Photo M. Rekłajtis)
- Fig. 6.4. Sandal fragment (inv. no. 248): ventral (left) and dorsal (right) views (Photo M. Rekłajtis)
- Fig. 6.5. Sandal fragment (inv. no. 792) (Photo M. Rekłajtis)
- Fig. 6.6. Sandal (inv. no. 793): lateral (top), dorsal (middle), and ventral (bottom) views (Photo M. Rekłajtis)
- Fig. 6.7. Sandal (inv. no. 995): ventral (top), lateral (middle) and dorsal (bottom) views (Photo M. Rekłajtis)
- Fig. 6.8. Sandal (inv. no. 997): ventral (left), lateral (middle) and dorsal (right) views (Photo M. Rekłajtis)
- Fig. 6.9. Sandal (inv. no. 1068): dorsal (left) and ventral (right) views (Photo M. Rekłajtis)
- Fig. 6.10. Jug (inv. no. 1386) (Photo M. Rekłajtis)
- Fig. 6.11. Pouch (inv. no. 938) (Photo M. Rekłajtis)
- Fig. 6.12. Sack fragments (inv. no. 2634) (Photo M. Rekłajtis)
- Fig. 6.13. Leather object (inv. no. 249) (Photo M. Rekłajtis)
- Fig. 6.14. Leather object (inv. no. 251) (Photo M. Rekłajtis)
- Fig. 6.15. Leather items: A patch (inv. no. 254); B, C, D fragments of objects (inv. nos 2633, 250, 890) (Photo M. Rekłajtis)
- Fig. 6.16. Fragments of leather objects (inv. no. 2630) (Photo M. Rekłajtis)

#### Chapter 7. Woodwork

- Fig. 7.1. Container (inv. no. 1389) (Photos M. Rekłajtis; drawing A. Cervi)
- Fig. 7.2. Small bowls (A inv. no. 188; B inv. nos 185 and 186) (Photo M. Rekłajtis; drawings A. Cervi)
- Fig. 7.3. Bowl (inv. no. 206) (Photo M. Rekłajtis; drawing A. Cervi)

- Fig. 7.4. Large bowls (inv. nos 187, 255 and 260) (Drawing A. Cervi)
- Fig. 7.5. Gaming pieces (?) (left, inv. no. 189; right, inv. no. 1261) (Photos M. Rekłajtis; drawing A. Cervi)
- Fig. 7.6. Keys (left, inv. no. 1377; right, inv. no. 1375) (Photos M. Rekłajtis; drawing A. Cervi)
- Fig. 7.7. Wooden lock on a door board in the Abandoned Village (the bolt is 47 cm long) (Photo A. Cervi)
- Fig. 7.8. Door bolts (top, inv. no. 444; bottom, inv. no. 447) (Photos M. Rekłajtis; drawing A. Cervi)
- Fig. 7.9. Wooden artifacts: A pegs (inv. nos 258, 259) and stake (inv. no. 1257); B rods; C shafts of spindles or loom frames (Photos M. Rekłajtis)
- Fig. 7.10. Identification uncertain (inv. no. 1269) (Photo M. Rekłajtis; drawing A. Cervi)
- Fig. 7.11. Identification uncertain (inv. no. 190) (Photo M. Rekłajtis)

#### Chapter 8. Glass bangles

- Fig. 8.1. Glass bangle fragments from contexts 1, 3, 12, 14, and 38 (U86): *1* 1-24; *2* 1-59; *3* 1-107; *4* – 1-116; 5 – 3-87; 6 – 12-12; 7 – 12-962; 8 – 14-45; 9 – 38-822; *10* – 38-839. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.2. Glass bangle fragments from contexts 38 (continued), 46 (U73), 48 (U73), 49 (U73), 81 (U2), 85 (U82), 96 (U80), 100 (U18), and 105 (U18): 1 38-840; 2 46-721; 3 48-31; 4 49-781; 5 49-782; 6 81-858; 7 85-613; 8 96-803; 9 100-151; 10 105-746. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.3. Glass bangle fragments from contexts 118 (U6, U8, U36, U73), 122 (U6), 128 (U8), 155 (U15), 158 (U5/U25/72/74/77), 192 (U86), 193 (U27), and 198 (U35): 1 118-94; 2 122-4; 3 128-20; 4 128-32; 5 155-883; 6 158-171; 7 192-619; 8 193-614; 9 198-147. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.4. Glass bangle fragments from contexts 200 (U86), 204 (U86), 237 (U27), 262 (U26b), 271 (U26b), 298 (U56), and 318 (U99): 1 200-615; 2 200-682; 3 204-699; 4 237-616; 5 262-1157; 6 271-1128; 7 298-1218; 8 298-1219; 9 298-1225; 10 318-1130. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.5. Glass bangle fragments from contexts 328 (U52), 333 (U56), and 334 (U63/U65): 1 328-1197;
  2 328-1198; 3 333-1241; 4 334-1211; 5 334-1212; 6 334-1213; 7 334-1214;
  8 334-1328; 9 334-1329. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.6. Glass bangle fragments from contexts 340 (U63), 342 (U63), 345 (U56), 376 (U43/46/51), 434 (U58a/73), 449 (U58a), and 460 (U58a): 1 340-1237; 2 342-1184; 3 342-1185; 4 345-1217; 5 376-1149; 6 434-1117; 7 449-1231; 8 460-1444; 9 460-1445. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.7. Glass bangle fragments from contexts 682 (U74), 694 (U74), features F47 (U73), F326 (U86), and out of context: *1* 682-617; *2* 694-618; *3* F47-10; *4* F326-773; *5* no context-1143. Scale 10 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 8.8. Location of finds of bangle fragments marked on a plan of units excavated in Old Dongola in the 2018–2019 season (objects collected from the surface and the first layer not included) (Drawing A. Chlebowski; data J. Then-Obłuska)

#### Chapter 9. Beads, pendants, and cabochons

- Fig. 9.1. Beads and pendants from contexts 1, 8 (U76/77), 14 (U76/77), 18 (U14, U16, U35), 34 (U34), 35 (U33), 38 (U86): 1 1-25; 2 1-36; 3 1-46; 4 1-49; 5 1-50; 6 1-51; 7 1-52; 8 1-53; 9 1-54; 10 1-55; 11 1-56; 12 1-60; 13–14 1-61; 15 1-105; 16 1-106; 17 1-117; 18 1-1349; 19 8-18; 20 8-19; 21 14-48; 22 18-96; 23 34-99; 24 34-1359; 25 35-610; 26 35-700; 27 38-813; 28 38-814; 29 38-815; 30 38-816; 31 38-817; 32 38-818. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.2. Beads and pendants from contexts 38 (continued), 45 (U73), 49 (U73), 52 (U96), 53 (U21, U29), 55 (U9), 58 (U96), 68 (U94), 74 (U21), 79 (U1): 1 38-819; 2 38-820; 3–5 38-821; 6 38-823; 7 38-824; 8 38-825; 9 38-826; 10 38-827; 11 38-828; 12 38-829;

13 – 38-830; 14 – 38-831; 15 – 38-832; 16 – 38-833; 17 – 45-14; 18 – 45-17; 19 – 49-29; 20 – 49-30; 21 – 49-43; 22–23 – 52-101; 24 – 52-102; 25 – 53-39; 26 – 55-33; 27 – 55-34; 28 – 55-35; 29 – 58-167; 30 – 68-169; 31 – 74-740; 32 – 79-40. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)

- Fig. 9.3. Beads and pendants from contexts 79 (continued), 81 (U2), 84 (U2), 86 (U2), 90 (U2), 96 (U80), 100 (U18), 104 (U18): 1-3-79-41; 4-81-2; 5-81-11; 6-81-57; 7-81-851; 8-81-853; 9-81-854; 10-81-855; 11-81-856; 12-81-857; 13-81-860; 14-84-15; 15-84-570; 16-86-98; 17-90-602; 18-90-608; 19-96-801; 20-96-802; 21-96-804; 22-96-805; 23-96-808; 24-100-148; 25-100-149; 26-100-152; 27-35-100-153; 36-100-154; 37-104-745. Scale 5 mm (Photos M. Rekłajtis; processing and plate design I. Then-Obłuska)
- Fig. 9.4. Beads and pendants from contexts 105 (U18), 110 (U23), 118 (U6, U8, U36, U73), 122 (U6), 128 (U8), 129 (U6), 131 (U8), 134 (U73), 135 (—), 141 (U86), 150 (U15/37/40/103), 154 (U37), 155 (U15): *I* 105-607; *2* 110-172; *3* 110-777; *4*–5 118-90; *6* 118-91; 7 118-92; 8 118-93; 9 122-1; *10* 122-3; *11* 122-5; *12* 122-9; *13* 122-26; *14* 128-21; *15* 128-97; *16* 129-28; *17* 131-27; *18* 134-42; *19* 135-726; *20* 141-157; *21* 141-158; *22* 150-22; *23* 154-159; *24* 155-595; *25* 155-596; *26* 155-597; *27* 155-728; *28* 155-729; *29* 155-732; *30* 155-733. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.5. Beads and pendants from contexts 155 (continued), 156 (U37), 158 (U5/25/72, U74, U77), 160 (U20, U36, U93), 165 (U20a), 170 (U93): I 155-734; 2 155-735; 3 155-736; 4 155-737; 5 155-739; 6 155-872; 7 155-873; 8 155-874; 9 155-875; 10 155-876; 11 155-877; 12 155-878; 13 155-879; 14 155-880; 15 155-881; 16 155-882; 17 156-806; 18 156-807; 19 156-809; 20 156-811; 21 156-810; 22 158-626; 23 158-643; 24 158-644; 25 160-603; 26 165-623; 27 170-160; 28–34 170-161; 35 170-162. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.6. Beads and pendants from contexts 170 (continued), 171 (U20a), 173 (U20a), 176 (U86), 184 (U86): 1-2 170-163; 3 170-164; 4 171-165; 5 171-629; 6 171-632; 7 171-633; 8 171-634; 9 171-635; 10 171-636; 11 171-637; 12 171-638; 13 171-639; 14 171-752; 15 171-753; 16 171-754; 17 171-756; 18 171-757; 19 173-589; 20 173-590; 21 173-591; 22 173-592; 23 173-683; 24 173-684; 25 173-685; 26 173-686; 27 173-687; 28 176-564; 29 176-566; 30 176-567; 31-33 184-758; 34-35 184-759; 36 184-760; 37-38 184-761; 39-41 184-762; 42-43 184-763. Scale 5 mm (Photo M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.7. Beads and pendants from contexts 184 (continued), 186 (U86), 193 (U27), 196 (U77), 198 (U35), 200 (U86), 204 (U86): 1 184-764; 2 184-765; 3–4 184-766; 5 184-767; 6 184-768; 7 184-771; 8 186-748; 9 186-749; 10 193-168; 11–13 196-897; 14–15 196-941; 16–17 196-942; 18 196-943; 19 198-150; 20 198-155; 21 198-156; 22–25 198-240; 26 198-241; 27 200-606; 28 200-678; 29 200-680; 30 200-681; 31 204-689; 32 204-690; 33 204-691. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.8. Beads and pendants from contexts 204 (continued), 206 (U77), 243 (U44/48/71), 250 (U40), 261 (U26a): 1 204-692; 2 204-693; 3 204-694; 4 204-695; 5 204-696; 6 204-697; 7 204-698; 8 204-717; 9 204-718; 10 204-719; 11 206-722; 12 206-723; 13 206-724; 14 206-725; 15 243-778; 16 250-742; 17 250-743; 18 250-744; 19–22 250-861; 23 250-862; 24 250-863; 25 250-864; 26 250-865; 27 250-866; 28 250-867; 29 250-868; 30 250-869; 31 250-870; 32 261-1103; 33 261-1104; 34 261-1105; 35 261-1106; 36 261-1107; 37 261-1108; 38 261-1109; 39 261-1110; 40 261-1111; 41 261-1112. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.9. Beads and pendants from context 262 (U26b): 1 262-1118; 2 262-1119; 3 262-1156; 4 – 262-1158; 5–7 – 262-1159; 8 – 262-1160; 9–10 – 262-1161; 11 – 262-1162; 12–14 – 262-1163; 15 – 262-1164; 16–17 – 262-1165; 18 – 262-1166; 19 – 262-1167; 20 – 262-1168; 21 – 262-1169; 22 – 262-1170; 23 – 262-1171; 24–27 – 262-1172; 28–29 – 262-1173. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)

- Fig. 9.10. Beads and pendants from contexts 262 (continued), 268 (U41), 271 (U26b), 273 (U97/98), 274 (U24), 277 (U24), 280 (U32/39), 282 (U32): 1 262-1174; 2 262-1176; 3 262-1177; 4–5 262-1178; 6–8 262-1179; 9 262-1180; 10–12 262-1181; 13 268-1138; 14 271-1120; 15 271-1121; 16 271-1122; 17 271-1123; 18 271-1124; 19 271-1125; 20 271-1126; 21 271-1127; 22 271-1141; 23 273-1146; 24 273-1147; 25 273-1148; 26 274-624; 27 277-627; 28 277-628; 29 280-620; 30 280-621; 31 280-640; 32 280-641; 33 280-642; 34–39 282-244; 40 282-245. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.11. Beads and pendants from contexts 282 (continued), 285 (U32), 292 (U39): 1 282-611 (?); 2 – 285-599; 3 – 285-600; 4 – 285-601; 5 – 285-622; 6–7 – 285-672; 8–9 – 285-673; 10 – 285-674; 11 – 285-675; 12 – 285-676; 13 – 292-646; 14 – 292-647; 15 – 292-648. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.12. Beads and pendants from contexts 295 (U38), 298 (U56), 314 (U99/101), 318 (U99), 321 (U100): 1-3 295-650; 4 295-651; 5 295-652; 6 295-653; 7 295-654; 8 295-655; 9-10 295-656; 11 295-657; 12 295-658; 13-14 295-659; 15-16 295-660; 17-18 295-661; 19 295-662; 20 295-664; 21 295-666; 22 295-667; 23 295-668; 24 295-670; 25 295-671; 26 298-1221; 27 298-1222; 28 314-1137; 29 318-1131; 30 321-1227 (continued in Fig. 9.13). Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.13. Beads and pendants from contexts 321 (continued), 324 (U100), 328 (U52), 329 (U52), 334 (U63, U65), 340 (U63), 342 (U63), 362 (U45, U70), 363 (U94), 365 (U46/51), 376 (—), 380 (U45), 434 (U58a/73), 442 (U73): 1 321-1227 (continued); 2 324-1142; 3 328-1199; 4 328-1200; 5 328-1327; 6 329-1204; 7 329-1205; 8 329-1206; 9 334-1215; 10 334-1330; 11 340-1208; 12 340-1210; 13 342-1183; 14 362-1132; 15 362-1133; 16 363-1248; 17 365-1207; 18 376-1151; 19 376-1152; 20 376-1154; 21 376-1155; 22 380-1201; 23 434-1113; 24 434-1114; 25 434-1115; 26 434-1116; 27 442-1331. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.14. Beads, pendants, and a cabochon from contexts 442 (continued), 449 (U58a), 453 (—), 456 (U73), 460 (U58a), F47 (U73), F157 (U11), F203 (U47), F326 (U86), F448 (U74), F470 (U15) and out-of-context finds: 1 442-1332; 2 442-1333; 3 449-1229; 4 449-1230; 5 449-1233; 6 449-1244; 7 449-1245; 8 449-1246; 9 449-1247; 10 449-1258 (?) not in inventory; 11 453-1337; 12 453-1338; 13 453-1339; 14 456-1456; 15 456-1457; 16 460-1325; 17 460-1446; 18 460-1447; 19 460-1448; 20 460-1449; 21 460-1450; 22 460-1451; 23 460-1452; 24 460-1453; 25 F47-8; 26 F157-727; 27 F203-625; 28 F326-774; 29 F326-775; 30 F326-776; 31 F448-1139; 32 F470-630; 33 F470-843; 34 F470-844; 35 F470-845; 36 F470-846; 37 F470-848; 38 F470-849; 39 No context data-13-c; 40 No context data-605; 41 No context data-1367; 42 1-58. Scale 5 mm (Photos M. Rekłajtis; processing and plate design J. Then-Obłuska)
- Fig. 9.15. Field photos of beads found *in situ*, FN102, context 282 (inv. no. 244) (Photo D. Dzierzbicka)
- Fig. 9.16. Location of finds of beads (marked in green) and bangle fragments (marked in red) on a plan of units excavated in Old Dongola in the 2018–2019 season (objects collected from the surface not included) (Drawing A. Chlebowski; data J. Then-Obłuska)
- Fig. 9.17. Shares of bead colors found at Old Dongola in the 2018–2019 season, *n*=1015 (complete and illustrated finds only) (Processing J. Then-Obłuska)

#### Chapter 10. Conclusions

Fig. 10.1. Selection of objects forming part of a standard household set in Funj-period Old Dongola (Photo M. Rekłajtis; processing K. Danys, D. Dzierzbicka)

# ERRATUM

Page no.	Figure no.	Is	Should be
395			Photos on the cover and chapter dividers by M. Reklajtis.
396	3.6	K. Danys	Drawings K. Danys, B. Franczyk, A. Wodzińska
396	3.7	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.8	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.9	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.10	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.11	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.12	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.13	K. Danys	Drawings K. Danys, K. Szymańska, A. Wodzińska
396	3.14	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.15	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.16	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.17	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.21	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.30	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
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396	3.34	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.39	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
396	3.42	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.45	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.49	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
396	3.52	K. Danys	Drawings K. Danys, K. Szymańska, A. Wodzińska
397	3.53	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
397	3.54	K. Danys	Drawings K. Danys, K. Szymańska, A. Wodzińska
397	3.57	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
397	3.58	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska, A. Wodzińska
397	3.59	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
397	3.63	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
397	3.68	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
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397	3.75	K. Danys	Drawings K. Danys, B. Franczyk, K. Szymańska
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