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SOBA THE HEART OF ALWA

VOLUME 1

edited by

Mariusz DRZEWIECKI



PEETERS

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Cover illustration:
Early morning in Soba. Where fields and houses do not cover the land, settlement mounds are visible. Mound A, the highest in Soba, can be seen on the left, between the fields. Mound B, the largest in Soba, is in the background, next to the tarmac road (photo by Mariusz Drzewiecki)

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PREFACE

Derek A. WELSBY

It is great to see that the medieval site at Soba East is once again a focus of archaeological activities. The first serious work on the site was that undertaken by Peter Shinnie (Commissioner for Archaeology) in 1950–1952, followed by a gap of almost 30 years, before on the initiative of Sir Laurence Kirwan, at that time president of the British Institute in Eastern Africa, work recommenced. As a result of a chance meeting between Kirwan and Charles Daniels (senior lecturer at the University of Newcastle upon Tyne) at a conference in Benghazi in 1970, the BIEA later approached Charles to direct a season of survey and trial trenching at Soba in the winter of 1981–1982. Charles was well experienced in working in arid conditions, having directed pioneering work in the Fezzan in Libya in the 1960s and 1970s.

It was as a member of Charles' team that I first arrived in Sudan in January 1982 and, on the decision to augment the survey season with large-scale excavations, became the field director of those activities. Following the end of the four-season campaign in 1986, and the completion of the detailed report in 1988, another campaign of excavations was launched in 1989, another four seasons, which was completed in 1992. Throughout, the team was greatly assisted by the local inhabitants and benefitted much from their hospitality, as also from that of one of the local landowners, the el-Kurdi family.

Since the beginning of the 20th century the threat to the archaeological remains at Soba had been a matter of concern, a threat principally from the extension of irrigated agriculture from the Nile bank. Other than that, the 2.75km^2 of the site was at that time largely undisturbed apart from the presence of a few modern buildings and the vehicle tracks that ran through it. Vehicles occasionally caused damage, such as when a lorry broke through the vault of a hitherto unknown red-brick vaulted tomb.

In the late 1980s, the planned new road along the right bank of the Blue Nile had, through the efforts of the NCAM, been diverted to the east of the site – on our arrival in the winter of 1989 the projected road line was a cleared strip of land. As a result, our activities were entirely of a research nature. Later however, the road was built on a new line right through the site with only very limited archaeological intervention being possible. The new road set in motion the immense destruction the site has suffered over the last three decades; significantly, areas being overbuilt alongside, and to the northeast of, the road and with farming springing up across the site. During the excavations of the BIEA it was a drive of half an hour from the end of the tarmac road at Hillat Kuku along rough dirt tracks across open savannah to the site; now Soba is a part of the Khartoum conurbation.

The project reported upon in this volume seeks to highlight the importance of the site once again in the hope of arresting the modern encroachment over it. Soba East is one of the largest archaeological sites in Sudan. Owing to the limited excavation and the lack of preservation of upstanding monuments the site has long been overshadowed by the much better-known capitals of the medieval kingdoms of Nobatia at Faras and of Makuria at Old Dongola. However, several medieval sources, and the results of the BIEA's excavations, confirm that the capital of the Kingdom of Alwa at Soba was indeed on a par with those of the northern kingdoms, and indeed may have surpassed them in importance and in the wealth and power of the kingdom of which it was the capital. The archaeological remains at Soba have fared so badly partly as a result of the abundant seasonal rains, which are so destructive to mudbrick structures that have not been maintained. This was graphically illustrated by the damage to the excavated remains of the large mudbrick building on Mound B. It is much to be regretted that the grant allocated by the BIEA to preserve the remains of that building could not be accessed owing to administrative issues. Another major agent of destruction resulted from the proximity of Soba to Khartoum, which developed as the capital of Sudan from its founding in the 1820s. Red bricks from the site's major buildings were extensively quarried for use in the new metropolis.

The recent project seeks to build on the results of the earlier work. It is greatly aided by techniques not available during the earlier campaigns. The nature of the site, which is relatively flat and unencumbered with vegetation, and its size, make it ideal for investigation by

remote sensing applications and these have been put to good use. So far these have been followed by limited excavations – it is to be hoped that in future considerably larger areas will be investigated to allow a much greater understanding of the features observed. Alongside the archaeological work, in line with current trends, there is a focus on community archaeology, inviting the local people to share their views on the medieval site and what importance and relevance it may have to them. A greater interaction with the people who live on and around the site is crucial in any attempts to protect what is left from permanent destruction.

INTRODUCTION

Mariusz DRZEWIECKI

Soba was the capital of the kingdom of Alwa (5th/6th century AD–15th/16th century AD). During the millennium of its existence, the city was the seat of royal houses and religious centres, home to numerous peoples, and a trade and production hub. Currently, stories of Soba play several important roles in Sudan. It is included in general narrations concerning the spread of Islam in this part of Africa. Moreover, legends and artefacts associated with Soba are strongly enrooted in oral histories and folklore. The final days of the metropolis are presented in the history textbooks of Sudanese primary and secondary schools. Various references to the old capital, its people and objects associated with the city can also be found as far away as South Sudan, Ethiopia and Eritrea.

Despite its importance, the remains of the medieval city have been overbuilt by the modern suburb of Khartoum or were levelled and used for farming (**Figure i**). This process has intensified in the last three decades. A part of the old metropolis, which at the beginning of our fieldwork in 2019 remained 'intact' (*c*. 50ha), was an open space where numerous low mounds covered with fragments of archaeological materials could be seen (**Figure ii**). The remains visible on the surface did not provide much help in visualising the original appearance of the Alwan capital. However, just a few centimetres under the surface a different world began, with layers abundant in small finds, various organic materials and architectural remains.

The fame of the city and its history, which still holds numerous gaps, as well as the possibility of collecting and studying its material remains, has attracted enthusiasts and researchers to Soba. Visitors in the 19th century suggested that the city had two phases: ancient and Christian. In the first decades of the 20th century, this idea was frequently repeated while excavations were focused on the Church with Stone Columns (Budge 1907; Somers Clarke 1912, 34–38). In the 1930s, Soba was visited by Ugo Monneret de Villard (1935, I: 269–271; II: Tav. XCIX, C). He made the first plan of the area. It shows the magnitude of the site; however, it provides limited information about the spatial organisation of the city.

It was Peter Shinnie (1961) who suggested the medieval origins of the city. During his fieldwork in 1951–1952 under the auspices of the National Corporation for Antiquities and Museums (NCAM) (then the Sudan Antiquities Service (SAS)), in addition to excavations in the Church with Stone Columns – Church C (**Figure iii**), trenches were also opened on Mound A (the highest mound on the site) and Mound B (the largest on the site). Exploration of various parts of Soba continued in following projects (Zarroug 1991; Welsby and Daniels 1991; Welsby 1998). In particular, the large-scale excavations by the British Institute in East Africa (BIEA) team yielded evidence for stone, timber, mud brick and red brick architecture dated to the medieval period. Uncovered amongst other things were the remains of two large churches and an ecclesiastical complex of considerable size. High-quality local products, the so-called Soba Ware pottery, were recorded in various parts of the city and dated to the early phase of the metropolis (*c*. 6th–9th century). Derek Welsby suggested the presence of metal workshops on the northwestern outskirts of the city (Welsby 1998, 21). A kiln was also recorded on Mound B (Welsby and Daniels 1991, 105–106). No other production areas were identified.

The BIEA team discovered a Greek stela recording a hitherto unknown king named David (Welsby 2004, 228–237). To date, the names of six kings of Alwa are attested in written sources. Neither their burials nor their palaces have been identified and only small cemeteries were recognised near the churches. One such burial ground was discovered before the construction of the el-Gereif East-Eilafoun road and partially excavated by the BIEA and NCAM teams. A cluster of Christian graves was recorded, including two with vaulted chambers (Abdel Rahman 2000, 27; Welsby 1998, 56–59). Currently, the locations of large burial grounds used by the common people from the metropolis have not yet been established.

In 2012, before the construction of the bridge across the Blue Nile, one mound was excavated by NCAM uncovering the remains of a complex mud-brick structure. The results of the fieldwork have not yet been published, but the bridge construction site was shifted upriver to avoid further disturbing antiquities (Abdelhai Abdelsawy, pers. comm.).

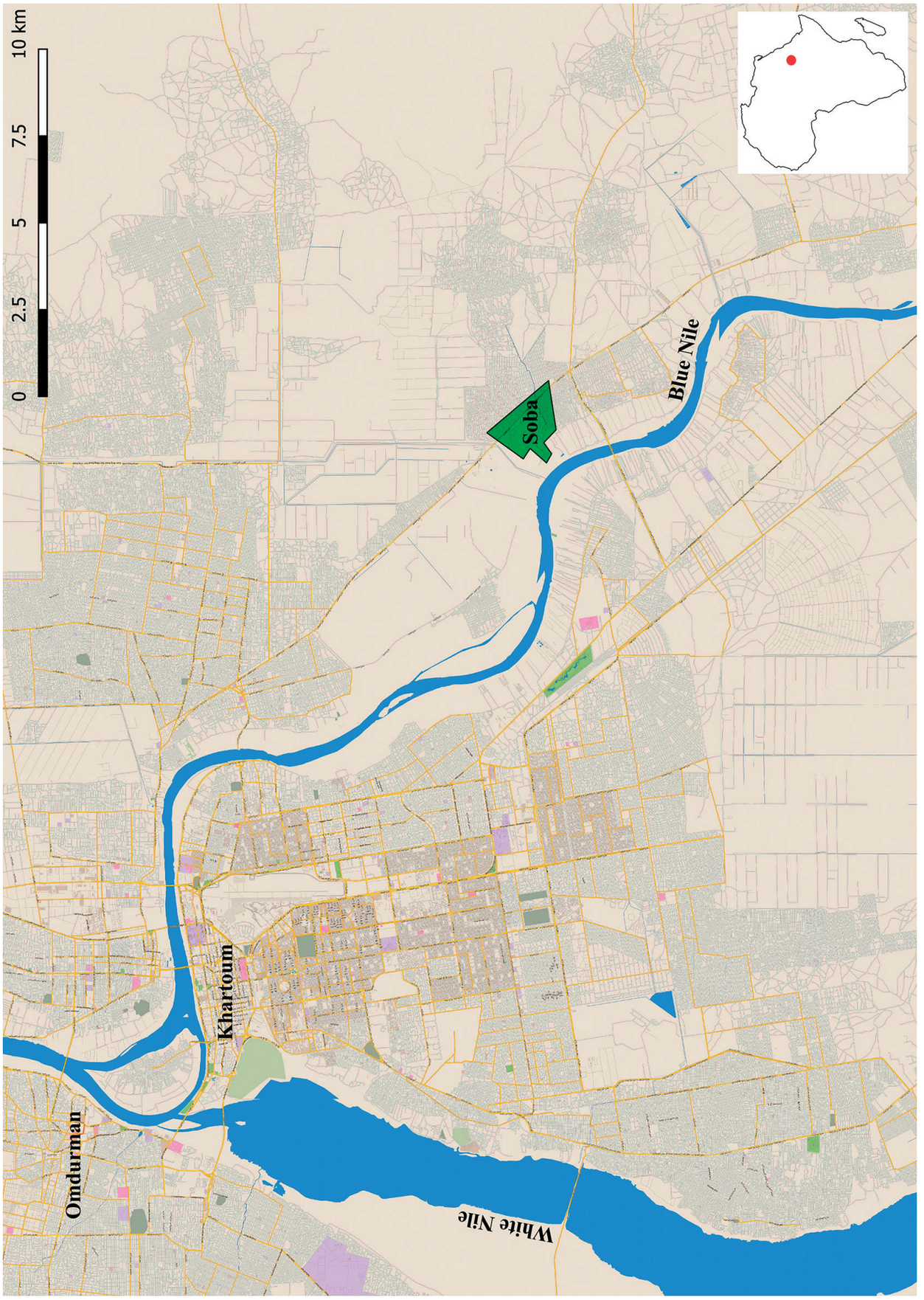

Figure i. Map of the region in 2020. The polygon marks the archaeological site at Soba (prepared by Mariusz Drzewiecki, background Wikimedia open street map).



Figure ii. Aerial photo of the central part of the archaeological site of Soba viewed from northwest. Photo taken in 2019. Large mounds, including Mound A, can be seen on the left. Undulating Area HN is on the right. In the background modern district of Gana'ab and far in the back and on the right – a section of the Blue Nile can be seen (photo Mariusz Drzewiecki).

Throughout the 20th and 21st centuries, in total, four red brick mounds were extensively excavated. A few gravel mounds were also tested, revealing that they cover the remains of medieval mudbrick and timber architecture. In addition, during the 1980s, surface cleaning was conducted by C. M. Daniels to expose the top of architectural remains in numerous parts of the site (Welsby and Daniels 1991, 12–25). From the beginning of research in Soba, despite the several seasons of the aforementioned intensive fieldwork conducted there, approximately 1% of the site had been studied in detail (Welsby 1998, 21). Research carried out in the 21st century by the Sudanese authorities, while very important, did not increase this statistic to any significant extent.

In spite of the many ground-breaking discoveries made, the city still holds numerous mysteries including one which is fundamental to its understanding. We do not know the city's layout and character. The structure of the metropolis and its spatial organisation, as well as the changes it underwent throughout its long history, are far from being understood.

This is apparent when we look at the borders of the archaeological site of Soba as first established in the 1950s by Peter Shinnie. He suggested that the site originally measured *c*. 240ha of land and was covered with low mounds (Shinnie 1961, folded map at the end of the publication). The edges of the site were drawn as straight lines with a noteworthy reduction visible on the riverside (see **Figure i**). It seems that the 1950s land division was reflected here.

The studies of Mohi el-Din Abdalla Zarroug in the 1970s indicated that the archaeological site delimited by Shinnie only marked part of the centre of a much larger city. Zarroug suggested that medieval Soba constituted a continuous strip of settlement along *c*. 24km on the east bank of the Blue Nile (Zarroug 1991, 11). He obtained this information during interviews with the residents of Soba. It corresponds well with the narration of Ibn Selim al-Aswani, who visited the city in its heyday in the 10th century (Vantini 1975, 613).

The issue of the size of old Soba was raised again by Derek Welsby in the 1980s and 1990s. He suggested that the archaeological site of Soba was *c*. 275ha in size (Welsby 1998, 20). Moreover, during fieldwork, Welsby uncovered early medieval architectural remains on Mound Z, in the southeast corner of the archaeological site, extending beyond Shinnie's borders (Welsby



Figure iii. Location of archaeological trenches in Soba
(prepared by Mariusz Drzewiecki; background image Bing Aerial from 2023).

1998, fig. 2). In addition, Daniels mapped mounds and areas with architectural debris that also reached beyond the borders established by Shinnie (**Figure iv**). The conclusion was that the site boundaries established in the 1950s did not include the entire old city, leaving the issues of its original shape and size open for further studies and consideration.

A single line marked on a map cannot reflect the complexities of the city's urban development and change. In the current publication, when the entire medieval city of Soba is intended, the terms 'Soba', 'old Soba' or 'medieval Soba' are used. When mounds and areas identified by previous researchers are mentioned, the term 'archaeological site of Soba' is adopted. The 'archaeological zone of Soba' will be the smallest area referenced, which in 2019 was still relatively intact and available for archaeological research (**Figure v**).

The project launched in 2019 entitled '*Soba – the heart of the kingdom of Alwa. The spatial organisation of the medieval capital city on the Blue Nile*' was designed to address the subject of the layout of medieval Soba and its urban dynamic by providing new data through extensive fieldwork. The research combined invasive and non-invasive methods and techniques. Two seasons of fieldwork were conducted in Soba. The first started in November 2019 and was completed in February 2020. The second season ran from November 2021 to February 2022. Methodologies developed in archaeology, geophysics and cultural anthropology were implemented in the studies.

The specialists working in Soba and on the materials obtained during the fieldwork brought numerous new insights into the spatiality of the old metropolis. Moreover, they pushed the boundaries of our knowledge of the city and its peoples in various other directions as well. This is the reason the publication of this work has been divided into two volumes. The chapters in this first volume are authored by specialists. They provide information on unpublished materials and new lab analyses that are presented systematically, describing in detail methods, analysis and results. The first volume constitutes a corpus of new data obtained through fieldwork in Soba and subsequent detailed studies of collected materials. The forthcoming second volume will differ and will focus solely on the spatiality and dynamics of the city.

This volume opens with the results of ethnological studies presenting the site, its modern residents, and various agendas for the future of the Alwan remains, together with studies of the complex modern understandings of the tangible and intangible heritage of Soba (Chapters 1 and 2). It is an approach that has not been previously undertaken in the research of the medieval metropoles in the region; however, it reflects our way of working in Soba. It is characterised by inclusiveness in the attempt to understand various points of view and in the search for sustainability through networking between specialists and residents.

The ethnological studies covered the largest area, the entire concession granted by NCAM; that is, the archaeological site and nearby modern residential districts. It provides a much-needed context, and also explains why archaeological research had to be limited to the archaeological zone of Soba.

The archaeological zone became a field for large-scale geophysical survey between 2019–2022 (Chapter 3), conducted hand in hand with archaeological excavations aiming to verify various types of magnetic anomalies or radar readings, as well as to understand settlement phases and their chronology based mainly on stratigraphy and radiocarbon dating (Chapters 4–7, Appendices 1–2).

During the geophysical survey and excavations, unknown districts of the city, a network of streets, cemeteries and traces of a garden within the city were identified. Small finds (pottery – Chapter 9, inscribed pottery – Chapter 10, stone tools – Chapter 11, mud stoppers – Chapter 12, glass objects – Chapter 13, metal objects and other finds – Chapter 14), human remains (Chapter 8), faunal materials (Chapter 15) and other organic samples obtained during excavations (Chapters 16 and 17) provided unique data and open paths of scientific enquiry reaching beyond the main topic of the project, which was spatial organisation of the metropolis. The results contribute new information in the fields of long-distance trade, production techniques, religion, writing, food production and economy just to list a few.

The second volume focuses on the main research questions and turns to the spatiality of the medieval metropolis. It collects relevant information from historical sources, archival and published materials as well as the previous research in Soba. Such data, merged through Geographical Information Systems (GIS) with the results of research conducted in 2019–2022 forms the base for scientific narration, presenting the beginnings of Soba and its development into a centralised urban hub – the titular heart of the kingdom. This volume will conclude with an archaeological perspective on the last centuries of the metropolis.



Figure iv. Red polygon marks Shinnie's archaeological site of Soba; white polygons mark mounds and areas with architectural debris mapped during BIEA fieldwork in the 1980s; alphabet letters are labels set by Welsby and Daniels (prepared by Mariusz Drzewiecki; background image is Bing Aerial from 2023).



Figure v. Red polygon marks Shinnie's archaeological site of Soba; yellow polygons mark archaeological zone of Soba that was available for archaeological research in 2019 (prepared by Mariusz Drzewiecki; background image is Bing Aerial from 2023).

Our team was the first in almost three decades to come to Soba to conduct systematic studies. A few salvage excavation actions were undertaken in Soba in the first decades of the 21st century, however, they were of short duration and none of the participating researchers published the data nor pursued long-term studies related to the history or archaeology of Soba. When we started our work, the site was considered problematic (for details see Chapters 1–2) and no Sudanese researchers were specialising in the archaeology of the medieval period of the region. Moreover, due to the political turmoil in Sudan following the overthrow of Omar Al-Bashir and the covid-19 pandemic, these were turbulent times. Those were not easy moments to establish scientific cooperation.

However, when it was safe to do so we were organising field-schools for students and graduates from Sudanese universities as well as workshops for experienced researchers. This convinced a few participants to write short texts, which were included in the project's preliminary reports and/or scientific articles. This cooperation was most intensive during our fieldwork. In between seasons, contacts were less frequent and new joint texts were not produced. This is an issue that I would like to see change in future so that Sudanese researchers would more frequently be authors of papers on Soba, authors of chapters in future monographs and ultimately authors or editors of entire volumes.

While I write these words, the situation in Sudan is even worse than during our fieldwork. Two warring parties are fighting. Soba as part of Khartoum's suburbs has become a battlefield. Residents have left their homes and I am terrified seeing what is happening. I hope the conflict will be resolved soon, and that the Sudanese will unite to bring peace to their country, and will want us to return to Soba with new networking and capacity-building research projects in future.

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I would like to thank the residents of Soba who welcomed us with both open hearts and curiosity. Special thanks go to Yassin Abdelmajid Bashir Suliman who helped us with so many everyday challenges.

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The excavations proceeded because El-Geili Mustafa Atiq Ullah, the NCAM guard of the archaeological zone of Soba, organised and managed the workers. Moreover, he was always so protective of the team members, and for that, I am truly grateful.

During our fieldwork, we visited primary schools in Soba. I would like to thank the headmistresses and headmasters as well as the teachers for their interest and openness to our visits. I hope that we will be able to develop cooperation with schools in the future and that the kids in Soba will always be so curious.

The project would not have started and continued without the constant support from the National Corporation for Antiquities and Museums of Sudan. I would like to thank the late Dr Ibrahim Musa (Director General of NCAM), Dr Ghalia Gar Elnabi Abdelrahman (Acting Director General of NCAM and the Director of the National Museum in Khartoum), Dr Abdelrahman Ali Mohamed (former Director General of NCAM and the former Director of the National Museum in Khartoum), Dr Abdelhai Abdelsawy (Director of Fieldwork at NCAM) and Dr ElHassan Ahmed Mohamed (former Director of Fieldwork at NCAM) as well as NCAM inspectors Nagla Abdeen Mohammed and Elmontaser Dafaalla Mohamed Elamin Elmoubark and all the other NCAM employees who were always kind and supportive.

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Isabella Welsby Sjöström, who herself worked at Soba during four seasons in the 1980s and 1990s, was always interested in reading and commenting on our manuscripts, including the text of this book. Your suggestions were always thought-provoking. Thank you very much.

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Archival data and finds

The entire documentation from the fieldwork is kept in the Documentation Archiving Department of the Polish Centre of Mediterranean Archaeology (University of Warsaw). A digital copy of the documentation is stored at the National Corporation for Antiquities and Museums of Sudan. Preliminary reports from fieldwork have been published and are available open access (Drzewiecki *et al*. 2021; Drzewiecki *et al*. 2022). All finds obtained during the fieldwork are kept in Soba, in a magazine built with the mission funds within the archaeological zone of Soba and next to the police station. The facility is available by arrangement with PCMA and NCAM.

CHAPTER 1

PERSPECTIVES ON THE REMAINS OF OLD SOBA

Maciej KURCZ

Soba is a city that has retained its ancient name. The Sudanese still call it Soba today, as if time froze and people had lived there continuously since antiquity. However, this rather proves that the citizens of Sudan have never let this site out of their sight. The city was abandoned, but not forgotten. It did not have to wait for its 'discoverers' or re-discovery like, for example, ancient Meroe. The archaeological site of Soba also differs from other significant Sudanese ruins in another respect. The remains of historical Soba today cover some dozens of hectares, flat, undulating at best, in which tufts of xerophytic grass or savannah trees try to reconquer the area. It is futile to look even for the remains of the simplest architecture here. Some eroded walls can be spotted in old archaeological trenches. The most famous are stone columns and capitals – these are the remains of a church (known in the literature as Church C (Shinnie 1961, 25–27) (**Figure 1.1**).

On the surface there are innumerable pieces of pottery, but also numerous piles of all sorts of waste and dirt. If not for them, it might seem that the ruins of Soba were not in the middle of a city, but somewhere very far away from it. This, however, does not change the general impression that we are in a place that constitutes a surprising gap in the city tissue and, according to many residents, is deprived of any special charm. Its landscape is empty. One might rhetorically ask: should this proverbial pile of stones with no particularly recognisable shapes, be classified as a ruin at all? Hence, Soba is very different and removed from other Sudanese 'romantic ruins': e.g., Jebel Barkal, Naga, or Old Dongola, the remains of which are visible traces of former grandeur and, together with the landscape, form a charming and striking whole. Soba is different. It escapes the classical vision of ruins and the methods of their representation (Wait and Altschul 2014). This seemingly trivial fact is of considerable importance for the conceptualisation of the site and the prospects for its protection.

As for the term 'Soba' itself, according to one version I recorded in the field, the name Soba is supposed to refer to a Moroccan alcoholic drink produced from rice. This is all the more interesting because the Arab traveller Ibn Selim al-Aswani mentions that in the Kingdom of Alwa, the most popular cereal was white millet, resembling rice, and it was used to make bread and beer (Welsby and Daniels 1991, 8). Another attempt to reconstruct the name comes from the Old Nubian language. In the Nubian languages of the Mahas and Kenz, the word 'sobe' was supposed to mean 'walls'. On this basis, O. G. S. Crawford (1951, 26) interpreted the name Soba as 'old walls' or 'ruins'. M. A. Zarroug



Figure 1.1. The remains of Church C in 2021 (photo Maciej Kurcz).

(1991, 19) is, in turn, of the opinion that this name (also on the basis of language analysis), should be understood as 'a pile of mud', which brings instead its present condition to mind. It is worth noting here that according to oral tradition, the name Soba does not only refer to the remains of the Nubian capital, but to a larger area from the village of Kuku in the north, to Eilafoun, which is 24km south of the ruins on the east bank of the Blue Nile (Zarroug 1991, 13). I was able to confirm this during conversations with the inhabitants of Eilafoun, who also considered themselves to be the heirs of Soba and said that their town once functioned as a garden.

For the Sudanese, the notion of Soba basically has two meanings today. The first is as the former capital of the medieval Nubian kingdom – Alwa ('old Soba'). The other is a vibrantly developing suburban zone of the Khartoum agglomeration ('modern Soba'). 'Old Soba' and 'modern Soba' (further without inverted commas) are two interwoven time-spaces whose relations are of a very complex type. Old Soba and modern Soba are two totally different cities which, at first glance, do not have anything in common. Yet, old Soba is becoming a part of modern Soba's identity (understood as ways through which an entity or a community differs from others). Not to anticipate the content of the next paragraphs too much, let us only say that old Soba today is already a source of pride, it shapes the 'spirit' of the place – a city known and admired all over the country due to its former power, but also for its role in the history of Sudan. It is taught in school. It is the subject of folk oaths, native rituals, and the toponym brings to mind a story popular all over Sudan. In the historiography of Sudan, the fall of Soba resembles the story of the end of Plato's Atlantis, the abrupt 'sinking' of a world that had existed for centuries (Crawford 1951, 28). In oral folklore, on the other hand, the event brings the biblical flood to mind – a disaster provoked by humans that proved to be the beginning of a new world or is an allegory of total annihilation – 'to be destroyed like Soba' (Crawford 1951, 152). Finally, some residents considered themselves to be its children 'abna al-asar' (أبناء الآثار) or 'the sons of antiquity'. For the older generation whose childhood was in the 1950s and 1960s and who played in the ruins, the ruins give rise to nostalgia. Identity is here connected with the place – a phenomenon psychologically motivated, when someone pays so much attention and gives great importance to a specific place that it makes up a sense of oneself (Peng *et al*. 2020). This is mediated by a sense of attachment to a place, i.e., a strong emotional bond with it, which represents the entire group. Such 'imagined places' refer to the concept of 'imagined communities' as described by Benedict Anderson (1983) and which may become the base of a group identity. In the case of modern Soba, the fact that many of its inhabitants have been there for a relatively short period of time is not insignificant. Certainly, at least for now, a large proportion of its inhabitants do not feel they belong to the community. Identity formation is a process, an ongoing activity, and this, to use the words of Kirsten Hastrup (2018, 144) 'is never simply a phenomenon of the "present", but also part of a predicted movement flowing towards the future'. The old Soba is already, in a sense, its 'other' identity: related, yet also emotionally distant, even ominous in some places (associated with death and old beliefs). The old Soba, it was said, was a city of infidels, impure, full of secrets, ruins, and ghosts. Modern Soba had to be reborn as its opposite – a place of spacious and well-kept houses, far from the hustle and bustle of the big city, with numerous minarets, vast arable lands – inhabited by diverse yet hospitable, virtuous, and good people who, it was often emphasised, get along well with each other. Arjun Appadurai (2012, 640) writes that 'a community is not only a living, breathing and interacting social force; it is also an abstraction, in the sense that it must exist in the minds of its members as something with social power, moral force and, indeed, some sort of sacred significance'. Even the morphology of Soba was by some considered as exceptionally friendly. The streets filled with greenery often created a regular grid of spacious and perpendicular lines without 'oriental backstreets' or entangled streets. The land was considered remarkably fertile. Therefore, for the vast majority of respondents, Soba was a decidedly happy place (tayyiba sa'yyida طيبة سعيدة), as indeed was one of its oldest parts (Sigeila), bearing the name 'Soba at Tayyiba' – which in Arabic means: good, virtuous, pure. The name of this oldest part of the city actually comes from a legendary figure, 'omda' (traditional leader) At-Talib Hamid Abdel Salam, who supposedly was the pioneer of settlement within the area; he established a community in 1885. Many of my respondents understood this as a metaphor.

The archaeological site at Soba is an area saturated with archaeological monuments and stories. Looking at it more metaphorically, it is a sort of *wampum* on which we can string stories like beads. Thanks to the kindness of the residents, I was told many stories, among them

anecdotes, short impressions, recollections, or drawings, in which themes of migration, natural disasters, imperial theft, archaeological exploration, tyrannical treatment of women, dynastic and ethnic histories or the world of spirits and supernatural phenomena appeared. Intimate stories of ordinary people and epic stories of great families or heroes from the past meet here. The site itself is also a story, which directs a beam of light on the relationships of man with the space and objects. Modern Soba and old Soba have been two qualitatively different, separated, yet also intertwined spaces, especially from the time that archaeologists appeared there. Transformation at the site has been caused by archaeologists, but also by urbanisation, climate crisis and political turmoil. For these reasons, the ethnographic material that I have been able to collect says not so much about the past, but about the future: what certain things should be like, including who should have rights to the land; should it be in private or public hands, and if so, what does that mean? Hope (in a sense of a desirable social category associated with modernity, progress, and welfare) emanated from many conversations. In my opinion, Soba may play an important role in the implementation of these desires.

This chapter constitutes an ethnographic account of the changing interpretations of the archaeological site at Soba, especially since archaeologists re-appeared at the site. This chapter – devised as one of two parts presenting the results of the ethnographic research – presents various manifestations of the 'liminality' (border-like quality) of the site's space, which are more nuanced (not only associated with taboo or exclusion, but also carrying certain possibilities) and better match the reality of the contemporary Sudanese city.

1.1. Ethnographic approach and methods

To tell the story of Soba, I did not carry out excavations, only ethnographic research. The use of the ethnographic method in archaeology – known under various names: 'ethnographic archaeology', 'archaeological ethnography' and others (Castaneda 2008; Bradshaw 2017, 29) – has gained considerable recognition over the past two decades, also with relation to Sudan. Here Rebecca Bradshaw (2017) and her research in Begrawiyah are worth mentioning. The use of interviews or participant observations may lead to new interpretations of the archaeological material – helping to look at Soba in a much broader light. Expanding archaeological exploration to include the ethnographic context is all the more justified at Soba, because the archaeological site has become part of a rural-urban development, located only a few kilometres from the Khartoum metropolis.

During the research, I was interested in how relationships are formed between people and archaeological remains, and whether, and to what extent, ancient Soba is part of the local history. In addition, the issues of creating a social space and thus the reproduction of a group, including its historical memory, as well as the ways of being rooted and assigning a meaning to a place were considered.

I began my research in November 2019, and focused on the region of Gana'ab (قنيعاب) closest to, and partly overlapping, the archaeological site. Thanks to this pilot season, I was able to select key respondents and focus groups (generally adapting the framework set out by Hopkins and Mehanna (2011): the 'nets and anchor'). During the periods of November–December 2021 and January–February 2022, I continued the research, but I expanded the geographical area of my actions to other parts of Soba: Salama (سلامة), Tuwerab (تويراب), and Sigeila (سقيلة). I also started fieldwork in the nearby town of Eilafoun – this being an important centre of Sufi worship associated with the activities of the legendary Sheikh Idris Wad al-Arbab, considered to be the 'apostle' of Islam within the area after the fall of the kingdom of Alwa (cf. Jackson 1919). In turn, to learn more about the 'Soba bricks' – a specific urban legend – I extended my explorations to the Khartoum agglomeration (Khalifa House, The Republican Palace Museum) and the town of Gereif East, which is now famous for firing excellent quality bricks and is located a few kilometres north of Soba. I literally followed people, objects, metaphors, stories, life histories or ideas for which medieval Soba was the common denominator. My work often had the characteristics of multi-sited ethnography, i.e., tracing connections and presumed relationships within different communities and circles of power (Marcus 1995, 106). In doing this, I relied on interviews and careful observation. The information collection techniques included in-depth and unstructured interviews, biographical interviews, focus groups and storytelling. The ethnographic material collected this way includes more than 60 interviews conducted – the vast majority of them – with Soba residents: farmers, teachers, businessmen, traditional leaders, officials, police officers, 'vagabonds' or just ordinary residents. All were Muslims. Men were usually the key interviewees. However, I managed to conduct many



Figure 1.2. A man from Gana'ab presenting his find (photo Maciej Kurcz).

spontaneous conversations with women who own market cafés and eateries and whom I was able to meet when visiting ordinary households in the mornings. Basically, I took every opportunity to talk regardless of gender or age. Thus, the results of my research may not meet statistical requirements, but for me, they were of great value for a qualitative analysis. As regards observation, I followed what Clifford Geertz (2005) used to call 'deep hanging out'. Not only did I hang out with people in market coffee shops (which, by the way, turned out to be excellent places both for interviews and observation), in ordinary everyday situations or take part in collective religious ceremonies, but I also interacted with the impersonal space of the archaeological site. The daily 'walks' – or if you prefer 'walking fieldwork' (Andrew Irving) – taught me a lot about what the archaeological site means to the Soba inhabitant. This kind of participation – physical contact with the site – constituted a reliable research procedure. Strolling was an opportunity for talks and engagements with people whose lives, to varying degrees, were intertwined every day with this place: shepherds, farmers, policemen, playing children, 'men of the road' or simply strollers like me, as well as 'non-participant observation' of all forms of activity within this space, which, in turn, gave me much food for thought about the contemporary, post-modern concept of the ruins. This way of conducting research even contributed to discoveries of an archaeological nature (**Figure 1.2**). I do not just mean here the material from the surface layer, but archaeological finds that had been made by local residents. In the text, I sometimes use the so-called 'ethnographic present'. I do this deliberately in order to 'preserve the reality of anthropological knowledge' (Hastrup 2008, 26).

Students from Al-Neelain University and trainees of the National Corporation for Antiquities and Museums (NCAM) – above all Rajaa Alamein Adam and Ahmed Hamdan Farah, participated in the research as partners and translators.Yasin Abdelmajid Bashir, a law student and resident of Soba, and Elmontaser Dafaalla Mohamed Elamin Elmoubark, an NCAM employee and PhD student at Adam Mickiewicz University in Poznań, were also involved in the work.

The information provided by the interviewees cannot be traced back to them in accordance with the Ethical Guidelines for Good Research Practice issued by the Association of Social Anthropologists (https://www.theasa.org/downloads/ethics/Ethical_guidelines.pdf accessed 19.08.2021).

1.2. Modern Soba – history, migrations, transformations

The settlement development in the area after the fall of Soba (1504 AD) until the beginning of the 20th century is hardly traceable. It can be recreated only partially on the basis of written sources (MacMichael 1922). The great majority of the information concerning the origins of contemporary Soba that I was able to obtain, thanks to the kindness of the elders of the Mugharba community, belongs to oral tradition; that is, a type of knowledge concerning the most important events or figures in the life of the community that had been passed down from generation to generation through oral communication. In the 16th century, the presence of the nomadic camel-owning herders of Mugharba is confirmed in the region by the biography of ʾAbdulla Wad Ḥasoba al Mughrabi who was a prominent Sufi master and who was buried at Soba (MacMichael 1922, I, 318). The tomb of Sheikh Hasob bin [son of] Al-Said Abdallah is in Tuwerab and is surrounded by an extensive necropolis – including the



Figure 1.3. Making a promise in the holy shrine (photo Maciej Kurcz).

burials of his family members, who are also venerated (**Figures 1.3** and **1.4**). Above the entrance to the tomb, renewed in 2006, the mystic's date of death was put as 1461 AD; nevertheless oral tradition, as well as written sources, attribute his life to the period after the fall of Soba, i.e., to the 16th century (MacMichael 1922, 318). At the turn of the 17th and 18th centuries, the vicinity of Soba was a place of activity for at least one more mystic, Wad Tarraf (Sobani). According to Tabaqat Wad Dayfallaha Abd al Rahman, Ibn Tarraf was a Mesallamia Arab from el Sukna upon the Atbara River. He was a student of Sheikh Idris wad el Arbaba of Eilafoun (Shinnie 1961, 15). His grave, built in a 'traditional style' in a dome-like form (*qubba*), is located at the northern end of Soba, just after the large irrigation channel (**Figure 1.5**). As in Tuwerab, these are somewhat neglected graves with numerous examples of the re-use of 'red brick' and beautiful grave stelae carved in sandstone. In the tomb of the Sufi master, there are two other, less impressive graves belonging to his sons: Abdel Rahim abd Wahab and Ibrahim al Hadu. This tomb is still visited by the faithful. In the 16th and 17th centuries, the region of ancient Soba, devoid of permanent residents, was, above all, a land of those who had God in their blood. It should be



Figure 1.4. A shrine and a cemetery in Soba Tuwerab (photo Maciej Kurcz).



Figure 1.5. A *gubba* of a sheikh, Wad Tarraf (photo Maciej Kurcz).

remarked, however, that while some found ideal conditions here to have contact with God through asceticism and a life of solitude, other holy men also found favourable conditions here for farming and developing a political career. Such a person was Sheikh Idriss wad Mohamed al Arbab of Eilafoun, known throughout the entire Sudan (1607–1651 AD) (Shinnie 1961, 15). His tomb is still a popular pilgrimage site and nearby is a Quranic school (*halwa*) for boys, which belongs to the Morghania brotherhood. Sheikh Idriss became the main 'Doctor of Islam' to the ruler of Sennar, Nayil (1533/4–1550/1 AD), who granted him extensive lands in Eilafoun for his service (according to legend, he healed the queen mother). I was able to record this and other information thanks to a conversation with one of the legendary mystic's relatives. This information agrees to a large extent with what may be found in the written literature (Jackson 1919).

According to oral tradition, in the second half of the 19th century, Mugharba nomads gradually started to settle in Soba. Periodically they accessed the Blue Nile, and over time, after one exceptional drought, they began to live a sedentary lifestyle. This process appears to be confirmed by other written sources. A French traveller, Frédéric Cailliaud, a member of Ismail Pasha's expedition, confirms their presence at Soba in the 1820s (MacMichael 1922, I, 317). According to oral tradition, one of the first here was Sheikh Abd Salam, who settled permanently at Soba in 1885 with his family and established the modern districts of Salama and Sigeil. His son at-Tayib Abd Salam supported the Mahdi and belonged to his court. During British rule he was formally promoted to 'omda'. Based on interviews with residents, the first dwellings were reportedly simple structures made of sticks and rushes, which were followed over time by fully-fledged houses made of clay (so-called *surega*). The centre of settlement was by this stage no longer the existing Quranic school. Over time, Arabs also started migrating here: Batahin, Ja'alin, Shaigiya, and above all, Hanassiya. Settlement points such as Salama and Soba al Tayyiba (today's Sigeila) appear on British maps (1910–1975). According to the family tradition, Mohamed Ahmed Gana'ab's family settled in the area in 1946, giving rise to the Gana'ab district. As before, drought and the prospect of farming were the driving force for migration. The house of Mohamed Ahmed Abu Kerry, and the Quranic school with a well located nearby, are recognised as the oldest structures of modern Soba. All were half-timbered structures, and basically no traces are left of them today. On the site of the school and the well today is a small square and a room used for weddings, and funeral receptions or *dhikrs* (**Figure 1.6**). One could venture to say that just like in the past, today it is still a symbolic centre. Nearby there was a tiny *zawya*, on which the present mosque was built in the 1950s (**Figure 1.7**). Initially, a total of seven or eight families were supposed to live there. In the 1970s, new settlers appeared, and houses made from clay (*jalud*) became fired brick. An important, yet tragic event, was the 1946 flood, which destroyed a considerable part of modern Soba. The real growth of the settlement took place in the 1990s. At that time, a large part of the previously uninhabited area was covered by a housing development – especially after the construction of a tarmac road (al-Gereif East – Eilafoun), which became the axis of the settlement. On both sides of the road, a marketplace (open seven days a week) was established together with several public offices. A petrol station is the central point. In 2012, a bridge was built across the Blue Nile, thanks to which the region became directly connected with Khartoum. Contemporary Soba is a suburb of the Khartoum agglomeration whose existence is the result,



Figure 1.6. A small open square in Gana'ab used for weddings, funeral receptions, or *dhikrs* – site of former Quranic school and a well (photo Maciej Kurcz).



Figure 1.7. A mosque in Gana'ab built in the 1950s (photo Maciej Kurcz).

on the one hand, of the uncontrolled settlement development in colonial times on the outskirts of the Khartoum agglomeration – the so-called *duyum* (suburbs) – and on the other hand from the policies of the modern authorities trying to relocate Khartoum citizens to new plots, which are more spacious and equipped with the necessary infrastructure. Today, apart from the aforementioned regions belonging to tribal communities of Gana'ab, Salama, Tuwerab, and Sigeila, there are also modern, planned municipal regions: Marabiyya as Sharif, Nahda, Aszusz, Mustafa Fadwi Sambra. For example, in the areas of Luluwa, Murabba (Blocks 1–4) – south of 'Kubri', the road leading to the bridge over the Nile – in 2022 there were plots of 400m² available for purchase and full ownership. Their price was about US$24 per square metre, and they had electricity and running water.

It is worth noting that, in the second half of the 20th century, the conversion of this area (closest to the river) into farmland continued, and that, especially in the early 21st century, several farmers managed to come into possession of new plots cutting into the area of the archaeological site itself from various sides. A farm owned by Muzamil al-Kurdi, established by his father Sayed Hasan al-Kurdi in 1944, was both among the oldest and largest. The latter is nearly a legendary figure

in Soba. He founded a mosque and a school – but above all he is believed to have lifted people out of poverty by promoting modern agriculture (new crops and diesel irrigation pumps). The soil at the archaeological site (the so-called *maroq*) was considered particularly fertile and was once used as fertiliser (Welsby and Daniels 1991, 1).

Over the last hundred years, Soba has been the object of ongoing migrations. Initially, the majority of migrants were nomads and camel keepers. Over time, other groups joined this process. Today, Soba attracts people from the peripheries and from nearby Khartoum alike. Both are people driven out from various parts of Sudan, and even from outside its borders, by poverty, internal instability, or disease, as well as relatively wealthy groups, residents of the Khartoum metropolitan area. The factors attracting migrants include housing prospects (relatively cheap and accessible land) and income (both in trade and agriculture) and – of particular importance – as emphasised by many interviewees – are also harmonious social relations and security.

1.3. The archaeological site

'Alwa', 'Asar' or 'Kusha' are the names most frequently used to refer to the archaeological site. People engaged in agriculture and breeding call the site Masra al-Kurdi ('Kurdi's farm'). All names are beautiful examples of metonymy and express a certain specific attitude to the old Soba. For the locals, this is above all a place that was once the capital of the medieval kingdom – (*mamlaka*) Alwa. For many, it is also a place where antiquities exist (*asar*); it has the status of a protected area, has defined boundaries, and is guarded by the police. The area's central point, commonly identified by the people as such, is Church C, explored by archaeologists in the first half of the last century and characterised by stone columns protruding out of the sand. The site has been of interest to tourists and amateur archaeologists since the beginning of the 20th century – a guest house was erected for them in 1903/1904 – the so-called 'rest house' (Shinnie 1961, 8). The location of this now nonexistent building is, however, unknown. Based on photographs, it can be guessed that it was somewhere near the river. These were two 'traditional' huts connected with a canopy roof. This is also a deserted space, full of rubbish, literally and symbolically impure. For this very reason, the area is associated with all sorts of pathologies (such as thefts or secret trysts of youth), all liminal in some way. Finally, for a large number of the interviewees, it is still a mysterious and uncanny place. It is part of religious folklore deeply rooted in the rural community of the inhabitants of Soba.

As early as the beginning of the 20th century, Soba featured on colonial maps as a historical ruin (1916 Sudan Survey Department map 55-B, 1:250000). Due to its location, only 23km from the centre of Khartoum, Soba became a trendy destination for weekend excursions, where people rode camels or hunted. The first attempts to map the site were made by Ugo Monneret de Villard in the 1930s and Peter Lewis Shinnie in the 1950s. On the initiative of the latter, several border posts were erected, of which possiblyonly one near 'Church C', remains today. During the colonial period, this loosely defined area acquired the status of an archaeological site (the Archaeological Site of Soba East) under the jurisdiction of the Sudan Antiquities Service (now the National Corporation for Antiquities and Museums (NCAM)). The visitors were recorded, and the site received its official guard (*gafir*). According to one of the respondents he had his lodge on Mound B (called '*wurfa*'). The first guard was the legendary Atigala Mohamed, then his son Mustafa Atigala, and now the position is held by Geili Mustafa Atigala. So, the position has been invariably held by representatives of one and the same family. In the 1990s, for some time there was also a second guard, Omar Jousif.

In the second half of the 20th century, the size of the site, as stated by archaeologists Peter Shinnie and Derek A. Welsby, was estimated at some 240–275ha; now, the area outside of development or cultivation is only 50ha. This archaeological zone begins at the main road. A cast-iron fence runs along this part of the border. It creates a barrier for windblown rubbish, mainly plastic packaging. From the south, from the side of the urban development, the cast-iron fence extends only for a few dozen metres beforethe border becomes irregular (**Figure 1.8**). Formally, it is delineated by the meandering course of a periodic river (*wadi*). Further on, brick walls appear in places, and then again, the cast-iron fence reappears, which separates the site from the arable lands and pastures. From the west (the Nile side), the zone is also adjacent to arable lands. In this area, however, the boundary is symbolised by a dense row of concrete posts. This new element appeared in 2021 and is supposed to protect the site not so much against the presence of people, but against the expansion of local farmers who, using the *fait accompli* method, take



Figure 1.8. Soba from a bird's eye view (photo Mariusz Drzewiecki).

over more and more new parts of the protected area for cultivation. First, a makeshift fence of branches is formed separating the space to be cultivated, and the area that the farmer is 'forced' to water intensively (we are thus dealing with the use of different boundary structures by different 'actors'). If fruit trees are grown, the field can also be used for pasture (**Figure 1.9**). This is beneficial to the farmer, who invites local breeders to fertilise his land and thus legitimise his right to the land so that, if necessary, they can support him in his conflict with the authorities. Returning to the concrete posts, these caused a big commotion among the local population, especially the local farmers. One farmer filed a complaint with the police against the NCAM inspector for trespassing on his land. The farmers were concerned about the lack of communication between the farms and the green areas along the Nile. The open character of the zone is of great importance to the locals, and this will probably affect further attempts to protect the remains. To the north, the boundary ceases to be a straight line; irregular cultivated fields cut into the site, forming nine areas, separate in terms of ownership. The largest belongs to Muzamil al-Kurdi and is about 50ha.



Figure 1.9. Boys herding on the archaeological site (photo Maciej Kurcz).

In 2021, solar lamps were erected by the authorities of Khartoum State. This was a significant change. The site changed from being an unlit space, some sort of a gap in the urban development, into a lit space, and became therefore safer and more accessible. Unlike the fence, this does not arouse special emotions among the locals. In 2017 a police station was built of brick on the site where there had formerly been a tent for the uniformed guards. Next to it, an archaeological storage building was erected in 2021–2022. The warehouse



Figure 1.10. Construction of the archaeological store building next to the police station (photo Mariusz Drzewiecki).

was built by archaeologists working on the site in collaboration with NCAM (**Figure 1.10**). Since 2004, 72 plots have been laid out within the actual archaeological site, which, I was assured, had been legally purchased by local residents or granted by the city as compensation. They were only informed that the land would have to be examined first. Since, however, this did not happen, some of the owners decided to build on their plots. Temporary houses of agricultural workers also periodically appear in the fields.

According to residents, the flood in 2021 was moderate and caused no major damage. The rains begin in June and last until the end of August. The most dangerous month is August, when the peak wave of the flood from the periodic streams in the desert reaches Soba. Then the *khor* fills with water and threatens Gana'ab and Marabiyya. A particularly severe flood hit Soba in 2013, when the tarmac road had to be broken to let the waters pass through. This, however, resulted in flooding in Gana'ab. According to residents, the flooding of the Blue Nile is not a risk for settlement. At most, the water floods the coastal farmlands, which is something farmers look forward to. The devastating floods of 1946, 1988, and 2013 are part of the archive of collective memory. These are important turning points in intimate, kinship stories, full of painful recollections, but heroism as well.

1.4. Space, folklore, and liminality

Landscape or material culture can be used in mnemonics, particularly those concerning the dead, in many different ways (Holtorf and Williams 2003, 6). In the structure of memory, old Soba has a clearly ambivalent status. It is a source of fascination or pride, but also of fear or even idiosyncrasy. In African folk culture, experiencing the landscape as something distant from neutrality or inertia was not uncommon. It was not composed only of villages, fields, rivers etc. On the basis of ethnographic parallels from different parts of Africa, the landscape belonged to a more complex reality (see Howard and Shain 2005; Masquelier 2002). It was rooted in people's relations with supernatural beings or other people. It was by linking the landscape – for example wide-spreading trees, monumental rocks, or ancient ruins – with the sacred world that local identity and mnemonics became spatialised (Masquelier 2002, 839). Sudanese mnemonic is based on such spatialisation of memory. During my fieldwork research in various parts of Sudan, I was able to witness this many times by observing all sorts of practices and customs in the ruins of Old Dongola, in Abkur, or in the countless cemeteries where Muslim holy men had been buried (Kurcz 2007). These spaces play an important role in cultivating the memory of deceased ancestors or historical heroes. Ruins, even among societies that do not consider themselves directly related to their creators (non-descendant communities), would still hold some meaning, and be represented within local culture as places 'delineated by the outcome of interrelations and the existence of multiplicity, continually transformed and under construction' (Bradshaw 2017, 12).

When, at the end of the 19th century, permanent residents re-appeared at Soba, the medieval ruins underwent folklorisation with the use of mechanisms commonly known in northern Sudan. My interlocutors often described the archaeological site at Soba through a series of binary, myth-making oppositions: *haram-halal*, spiritual-human, Christian-Islamic, hot-cold, empty-developed, uninhabited-occupied, and so on. In Sudan's mystical geography, empty and abandoned places, open spaces or various types of ruins belong to this liminal border world (Bradshaw 2017, 174). These are, above all, spaces of religious experiences of an ecstatic and mystical nature. In the context of Sudan, there is a large amount of literature on this subject (Osman 1992; Kurcz 2007; Bradshaw 2017). The plane of belief connected with the archaeological site was the belief in a corpus of supernatural creatures and forces of nature, part of which can be derived from animistic or totemic traditions or concerning the veneration of the dead existing once in the areas of Sudan (see Evans-Pritchard 1956, Lienhardt 1961, and Seligman and Seligman 1965 for more about beliefs in Sudan and South Sudan). For the archaeological site at Soba, the connotations with death seem particularly important since the archaeological site was defined by many interviewees primarily as a place of death. It was one large cemetery, which, because of that, has remained uninhabited for centuries, as it belonged to a different world. Numerous accidental discoveries of human remains strengthened this perception and the stories associated with them, especially in the areas of Gana'ab and Marabiyya. What is more, many respondents were convinced that the cemeteries of medieval Soba were located in Gana'ab. The physical overlapping of archaeological sites and modern cemeteries is a fairly common phenomenon in Sudan and has also been observed at sites such as Old Dongola, Jebel Barkal and Meroe. In Sudan, ancient ruins were particularly favoured by people under the banner of Sufism, both when it came to places of activity and to burial (Osman 1992; Kurcz 2007; Bradshaw 2017, 181).

Michel de Certeau (1988, 108) wrote 'here is no place that is not haunted by many different spirits hidden there in silence, spirits one can "invoke" or not. Haunted places are the only one people can live in'. By ghosts and haunting, I mean those places with all kinds of memory folds, unfinished pasts, accumulations of times or pasts that do not want to be deciphered. I would like to use these metaphors to describe quite literal and, for some, real phantasmal experiences associated with the archaeological site. There were interlocutors who referenced these stories to the world of fantasy and folk superstitions, but there were also those for whom they constituted a genuine part of reality. In fact, many people at Soba personally experienced the workings of supernatural powers. All of the interlocutors had heard stories where magical powers were immanently linked to the stories of old and modern Soba. In this sense, ghosts and apparitions still haunted the archaeological site and impacted on it; the supernatural world had influence over it. The residents revived the legend of Ajoba and converted this folk figure into a symbol of an unyielding woman. With our research, a myth of gold has also been revived – treasures hidden among the ruins and our(?) actions making their discovery possible.

Thus, for many, the ruins of Soba are a realm of activity for all sorts of supernatural forces. Students at the nearby Quranic school referred to the site explicitly as the 'Valley of the Jinn' (Wadi al-Jinn) or the 'Kingdom of Ajoba' and classified it as impure. For that reason, the construction of a stop for travellers, the so-called *istiraha* together with a place for prayers, was met with great enthusiasm on their part.[1] This structure can also be regarded as a local example of the spatialisation of social arrangements. It was founded and is maintained by a local landowner. It is a kind of gift to the local community. Returning to the archaeological site itself, the common denominator of supernatural phenomena identified with this site is the space-time of the night – the boundary times: dusk, midnight, or the time just before dawn. Belief in a phenomenon called *ablemba*, that is, 'light', or 'lamp' (*Ab-lamba*) is common. It is a point in the darkness, leading people astray from homes and off the beaten track. One informant claimed that this was a jinn, knocked down from the sky by God who came to earth as a falling star. This is why it imitates lamp light in the night. Although usually this phenomenon is encountered in desert areas, it is commonly associated with the space of old Soba. For the informants, it was not clear why this was happening. Perhaps it is due to the ethnic character of Soba, where inhabitants of nomadic origins are the primary population. Equally frequently, various kinds of apparitions were mentioned, taking on either human form (a naked black man, sometimes on horseback; or

[1] The culture of Muslim Sudan maintains the institution of hospitality without a host (*masida* or *istiraha*), i.e., a guesthouse, an inn for people on a journey where they can rest or pray.

a young, beautiful woman, dressed in white) or animal form (a donkey, dog, turkey, or snake). It is interesting, that the apparitions most frequently appear in places where excavations were carried out (e.g., Mound B or Church C). This way, the ruins speak. Each time the archaeologists work, people's ideas about supernatural forces arise, and they remind themselves that this is an unusual place, connected to the past. Suddenly people begin to remember that they had personal contact with such jinns. One interviewee linked this to discoveries by the archaeologists of human remains, which according to him were under the protection of spirits. Residents suggested that wild trees with a wide canopy, which cannot be found in other parts of modern Soba, are also disturbing in this respect. Such species include *tundub* (*capparis decidua pax*), which has such a sinister reputation that supposedly no one takes refuge in its shade. Trees that are particularly favoured by evil spirits also include *aradeb* (*tamarindus indica l.*) and *laloba* (*balanites aegyptiaca*).

1.5. Gold as a motif and local beliefs connected with the archaeological site

At Soba mythical motifs concerning gold and hidden treasures still appear. Based on interviews with the residents, it is possible to say that any archaeological work on site ultimately became part of these stories about gold, always constructed according to the following scenario: foreigners – explorations – mystery – taking the treasure away. Gold is culturally important in Sudan. The genesis of this phenomenon is complex and requires a few words of explanation. Gold is a customary gift given to a girl and her family during a wedding. In this sense, Sudan does not differ from other Muslim countries where formalised bride prices are still in force. The myth of Sudan as a gold-bearing country also reinforces the semantics of gold. This fact is also supposed to be indicated by the etymology of the word Nubia, according to Ali Osman (1992, 34), from the word *nob nab*, which, in Nubian, was supposed to mean 'that metal'. The scale of contemporary gold mining in Sudan also supports this notion. Sudan contributes roughly 90 tonnes of gold to the global market annually, making it the tenth largest gold producer in the world, the second largest in Africa. Most of this gold is mined in the Hassai Gold Mine in the Red Sea State, but gold can also be found in North and South Kordofan, Darfur, Northern and River Nile states, and other places along the Nile River and Blue Nile River.[2] The myth of gold, however, refers especially to the times of Pharaonic Egypt and the ancient kingdoms of Kush or Meroe. It is believed that in these past epochs huge amounts of gold were mined; hence in Sudan this precious metal is commonly associated with antiquities. A popular proverb says: 'Old is gold', while archaeological remains in popular opinion symbolise gold – primarily dating from the Kushite and Meroitic periods (Osman 1992, 33). This may be the origin of the conviction that a legendary treasure is hidden in all ruins, guarded by supernatural beings: devils, snakes, dogs, cats, sinister mirages, or other second-rate ghosts. In the winter season of 2022, following the discovery of a well in Area 2/GN, an allegedly old story was repeated about a 'well full of gold' that was supposedly located within the ruins and guarded by a one-eyed jinn (*al-auar jinn*). The jinn sometimes took the form of a snake that quenched its thirst in the Nile at night; however, it never turned around to avoid losing sight of where the treasure was hidden. This treasure was in the king's palace, and the palace itself may have been the treasure, as it was believed to be decorated with gilded doors and shutters. 'If there is a jinn, there must be gold, too', as one of my interviewees claimed. You only have to persuade him (the jinn) to show the hidden treasure and allow you to take it away. Therefore, within the ruins there are also jinns that may become useful to people. However, black magic must be used for this, the so-called *amal*. Using specific quotes from the Quran, a spirit is summoned, however, this is not a job for everyone. This is dealt with by sheikhs specifically specialised to undertake this task. In order for a regular person to find gold, he must be marked with 'impurity', i.e., have come into contact with something ritually defiling. In this case, it is also not permitted to recite the Quran or even to mention the name of God. The spirits do not like it. Only then can the jinn fulfill any wish, including pointing out the place where the mythical treasure is hidden, however, it is important to remember that something must be promised in return. There is something the spirits desire in particular, supposedly mercury, the so-called *zeibab* (according to legends used in ancient times for embalming corpses). It is believed that if it is obtained from an ancient tomb, preferably directly from the mouth of

[2] See further https://www.nytimes.com/2022/06/05/world/africa/wagner-russia-sudan-gold-putin.html, access 10.08.2022 [accessed 10.08.2022].

the deceased, a person will be able to convince the spirit to reveal its secret and allow the gold to be taken. Spirits, it has been argued, need this substance to rejuvenate themselves. Similarly,when someone loses gold jewellery, all belongings must be removed from the house or room and the place should remain empty for several days. Only a mat should be placed on the floor. After several days, the lost item will be found on the mat. This is the story of one informant. Another way is to draw a little of one's own blood into a vessel. The vessel must then be left in a desolate place, preferably within the ruins, and the jinn will make gold appear in it.

People also believe in a magical entrance located by one of the mounds covered with brick debris. The exact place is unspecified, but through it you can enter a different world. However, those who found the passage either never returned or found themselves in a different place and lost their wits. The belief in ghosts and places haunted by them is also connected with a phenomenon called *zaar* (*dasatiir*). It is both a cult, and rituals, associated with possessive spirits. Female *zaar* followers believe that with gifts and rituals, it is possible to establish a special relationship with the spirits and communicate with them to solve various (usually female) problems (Boddy 1988, 4–27). Respondents, primarily women, believe that due to the location of modern settlements, the *zaar* spirits or the 'red smell' (*al-rih al-ahmar* الريح الاحمر) remain particularly active in this place. There is at least one woman in the Marabiyya area, engaged in their worship and in performing rituals to drive them out.

1.6. Negotiating with tradition and religion

The residents of Soba are aware of changes to their society over time. These were brought about by migrations, urbanisation processes, modern infrastructure – in a single word, modernisation. The changes caused by developing settlement and urbanisation have caused a crisis, but also have given rise to attempts to overcome it. In my opinion, at Soba this is well illustrated by, for example, stories about the 'haunted house' (*beit maskun* بيت مسكون). I was told about a house in the region of Kubri (not far from the Soba Bridge). It was old and uninhabited for a long time because various paranormal phenomena occurred in it, including the sound of a child's scream, which, under the influence of the recitation of the Quran, turns into singing. A story of the haunted house of Gana'ab also caught my attention. The scenario was very similar. The house was uninhabited for a long time. All the local neighbours confirmed its ominous character. They associated it with paranormal phenomena: a feeling of proximity of some invisible creature, disturbing sounds, a child crying, levitating objects, and various slithery creatures unfriendly to humans. It was said that a large tree, old and partially withered, once stood on the site of the house. The owner chopped it down and built a house in its place. However, he did not enjoy it for long. After several days he left it, never to return. Allegedly it was uninhabitable, and his family was affected by a series of unfortunate events. The next owner died shortly after. Another haunted house is located in Salama. In this case, the reason for the presence of an evil spirit was the chopping down of an old tree when the owner was absent. To make matters worse, the snake that lived there was also killed. In his case, a jinn named Tahun made the household members' life a misery for a long time (e.g., by beating them), and could only be exorcised with the help of the Quran by one of the sheikhs. I am convinced that there are more such houses.

Cutting a tree or killing a snake is particularly dangerous because of their close connections to supernatural forces. As I have already mentioned, trees are often inhabited by spirits. A jinn can take the form of a snake – if this is suspected, then it should be asked three times: 'are you a person or a snake? If you are a person, leave in peace'. Belief in such phenomena is nothing exceptional in Sudan. Motifs such as an old tree being the home of a mischievous spirit or snake – a cobra, in particular – can be found in folklore throughout Sudan in pre-modern times. In the latter case, we deal with a specific totemic taboo. I was told a story of a man who had a snake on his farm, whom he fed, and the snake took care of his field. Once, in a period of special drought, the reptile brought him gold, thanks to which this man did not die of hunger. On the other hand, when another man killed a snake, the earth parted beneath him and he stood before a court composed of jinns. His crimes were forgiven, but he changed into an older man.

Some of my interviewees said directly that due to the location of the buildings amongst the ruins of Soba, the entire village is haunted by 'Satan' or 'evil spirits'. Knocking on doors can often be heard, and strange sounds or mysterious figures appear from nowhere. It is said that even in broad daylight a beautiful white girl can be met, who dissolves into thin air upon attempting

to get closer. Construction works are often accompanied by strange events, and are interpreted as the interference of supernatural forces. Likewise, all extraordinary or tragic events are usually linked to the activity of local evil spirits. In the case of Soba, the category of evil spirits includes 'Christian spirits' – in contrast to Muslim spirits, they are exceptionally harmful and, what is worse, immune to the power of the Quran.

Stories of this kind can play various roles. Not long ago, the area where these phenomena occured (Gana'ab, Marabiyya) was uninhabited and still an integral part of the archaeological site. The area was therefore customarily forbidden and associated with the metaphysical world. Local tradition says it is prohibited to disturb the peace of such places. Nothing should be taken from there or built there. In terms of their status, such lands resemble cemeteries. They are memorial places of ancestors and their culture and sacred grounds. In the case of Soba, however, the demographic pressure turns out to be stronger. New migrants decided to build within the areas of former ruins, seizing increasingly larger areas of the site, despite the disapproval of the inhabitants of longer standing, who paradoxically once did exactly the same. In this case, the stories of hostile, supernatural forces can be a kind of mediation, or more precisely the price for violating the established taboo. The price, however, does not seem to be too excessive. After all, supernatural punishment affects only a few – the mythical scapegoats who have broken a taboo (cut down a tree or killed an animal – a local guardian spirit). The majority of interviewees convinced me that, when properly treated, the spirits of the place do not need to be harmful, as in the case of a haunted house in the district of Salama. When the sheikh and the power of the Quran failed to expel the mischievous spirit, the household members learned to live with it, and more specifically not to provoke it (e.g., by imitating loud sounds). Such stories can sustain custom and religion, constituting a form of negotiation with the spiritual world. The demonic value of space was revealed by Adeline Masquelier (2002, 829–856) collecting stories connected with asphalt roads in the region of Mawri in Niger. There, the belief in certain demonic beings was associated with transformations in the landscape during the colonial period – specifically, when French builders cut down the local trees, moved villages and destroyed many local shrines. After this the spirits of those places – as if in an act of revenge for their homelessness ('placeless powers') – became vengeful and malignant to humans. I believe that this is exactly the situation we may be dealing with at Soba.

1.7. In-Betweenness

Nowadays ruins are looked at from many different perspectives: palimpsest, non-place, heterotopia, anomaly, archaeological archetype of space, cultural landscape element, boundary, or the aforementioned liminal space. All these terms express the diversity of meaning ascribed to ruins in the times of late modernity. I have already written that ruins, according to tradition and custom, were treated as a particular type of space. However, today the status and understanding of this place is gradually changing. This is, for the most part, the result of urbanisation processes. For this reason, for many contemporary inhabitants, an archaeological site is less a 'magical' and 'forbidden' space, but more a kind of 'disruption', 'anomaly' or 'thing left behind', which is inevitably doomed to oblivion and destruction. Today, Soba is part of a highly urbanising centre in which 'traditional values' have ceased to play an important role or simply receded into the background. But how should we conceptualise Soba in this new urban setting? Useful in this respect is a work entitled *In-Betweenness in Greater Khartoum: Spaces, Temporalities, and Identities*, edited by Alice Franck, Barbara Casciarri and Idris Salim el-Hassan (2021). In the Khartoum conurbation there is an almost infinite number of spaces, which are hard to classify or define, with one of the fundamental features being their ongoing reconfiguration. These spaces constitute specific breaches in the row of dense urban development: empty, but clearly demarcated: unfinished construction sites, cemeteries, rubbish dumps, seasonal water courses, cultivated fields, riverbanks, etc. Areas at the interface between mythological and physical boundaries. Something in between what is built up and developed and what is still in the process of being created. They express basic tensions within Khartoum society like uncertainty, temporariness, alienation, and mismatch. These spaces have their inhabitants, outsiders of all sorts, who cannot find their place or full acceptance in the city, such as street children, tramps, beggars, youths, migrants from the peripheries, etc.

Is the archaeological site at Soba such a space too? Undoubtedly, this dialectic may be a useful tool to analyse different dimensions of liminality and the ambiguity of ruins in a contemporary Sudanese city. For me, the archaeological site at Soba is such a place: ambivalent, mismatched, temporary, liminal, whose space is, however, a kind of bridge between the city's inhabitants who have a relatively stable status and those who do



Figure 1.11. A house built on archaeological remains (photo Maciej Kurcz).

not – the 'people in-between'. This is a space of *refugium* to which all 'misfits' or groups who, due to various reasons, need their own places and areas to retreat to. The 'wild settlements' phenomenon within the site illustrates it well (**Figure 1.11**). These are the dozen or so houses that have sprung up near a seasonal water course in or on the edge of the formally protected area since the early 2000s. All belonged to poor migrants from Darfur or Kordofan. They were pushed here by war, disease, and lack of prospects. These were simple structures made of mud bricks and more reminiscent of a village than a town. They belong to a dozen or so families. Their members, they assured me themselves, had no place to go; only here had they managed to find a piece of 'vacant' living space, despite the objections of the guardian of the site and the Mugharba Arab community. They stayed on as temporary settlers, as in the case of the family of a migrant from Kordofan. The man, now nearly 80, came to Khartoum in 2013, seeking help for his daughter who suffers from epilepsy. He was looking for temporary accommodation, and since he did not have money, he decided to settle as far away as Soba, within the site, in the seasonal water course. He never got permission from the community to build a house. In a way, the flood of 2013, which destroyed many of the houses in Gana'ab, turned out to be a stroke of luck for him. Just like many other Gana'ab residents, he became a flood survivor. He rebuilt the house in the upper part of khor, where he is living today, undisturbed by anyone. Over time, a part of his family joined him. Others, however, were not so lucky. After that tragic flood, many of the 'wild tenants' left this ecologically inconvenient place. The men of this area of Gana'ab engage in everyday work as mechanics or drivers, the women in small-scale trade of agricultural produce obtained in return for contract work on nearby farms. A small herd of goats and sheep could be found in each house.

The archaeological site is a *refugium* not only for humans, but also for nature (**Figure 1.12**). It is a place where wildlife can return and colonise the deserted urban landscape. It is an area quite densely covered with greenery, particularly on the other side of the periodic stream (**Figure 1.13**). In the rainy season, the area is additionally covered with low-growing grass, whose yellowed remains can still be seen in the dry season. The site is a habitat for more than a dozen wild tree and shrub species typical of the desert and savannah zones, with a low rainfall. In different parts of the site the following trees can be spotted: *tundub* (*capparis decidua*), *samr* (*acacia tortilis*), *sellam* (*acacia flava*), *aradeb* (*tamarindus indica*), *siddir* (*ziziphus spina-christi*), *neem* (*azadirachta indica*), *gudiem* (*grewia temax*), *sunt* (*acacia arabica*), *tale* (*acacia seyal*), *seyal* (*acacia raddiana*), *arak* (*salvadora persica*) and *usher* (*calotropis procera*). These are existing species that I have managed to record with the help of a local gardener. People use these plants as a source of food, fuel, material for the production of tools, traditional medicines and shade. They are rather unknown to the residents, as they cannot



Figure 1.12. Site landscape (photo Maciej Kurcz).

be found in the typical urban greenery. In this paradise for birds, hares, voles, rats, mice, snakes and monkeys can be found as well – the latter are bred on a nearby farm. This is, however, above all, a land of semi-wild dogs; they comb through heaps of rubbish in search of food or lounge in the shade of some trees. This is, among others, the reason why the area is not often visited at night. Here and there, one cansee cultivated fruit trees – mangoes (*mangifera indica*), limes (*citrus aurantifolia*), date palms (*phoenix dactylifera*) or fast-growing trees for wood – which are permanent elements of the local natural environment. On nearby farms, cows, goats, sheep, and chickens are kept. Additionally, every day the residents of local Gana'ab graze their animals here. This is a place where two worlds meet – the woody savannah and the intensively cultivated Nile valley. An area of undeniable beauty that contrasts with the typical urban development and gives the place a somewhat rural character. Ecological conditions make this area attractive for the nearby town – particularly for its youngest inhabitants.

For children and young people, the site offers all kinds of opportunities. It has been and still is a children's playground (**Figure 1.14**). Children comb the surroundings in search of something interesting to re-use. It often happens that their curiosity is caught by artefacts lying on the surface. Thus, children collect round grinding stones (called *doha*) and use them to play *mungal*, also known as *billy* (the game involves throwing round stones and bouncing them over other stones – the winner is the one who bounces the largest number of stones in one throw). Ceramic sherds, in turn, are used to build ornaments or toys (called *zenana*) or thrown in a way reminiscent of playing ducks and drakes. Boys have fun shooting a slingshot (*nibla*) or a bow (*naszab*) at a target hanging from a tree or at birds, which they then barbecue themselves (**Figure 1.15**). At night, on the other hand, children play by throwing bones (a lot of which are spread on the surface and belong to dead animals), then take turns looking for them by chasing each other – the so-called *shilela* شليل (Cf. Tayib 1956, 61). Finally, the area is perfect for ball games (especially during weekend afternoons). In the eastern part, even a football pitch with two fixed goals was created on the sand.

For the youth, it is above all a place to meet or 'walk aimlessly'. Especially in the green areas close to the



Figure 1.13. The archaeological site is a *refugium* for flora and fauna (photo Maciej Kurcz).



Figure 1.14. Children playing football (photo Maciej Kurcz).



Figure 1.15. A boy shooting at a target hanging from a tree (photo Maciej Kurcz).

Nile, young people have picnics, for which animals are slaughtered and consumed, and couples flirt. Particularly during the flooding of the Nile, when the brick makers near the river do not work, the area becomes almost totally deserted and it is possible to find a lot of privacy there. A broad, undeveloped strip of land, together with the proximity of the river, make the site an important local transport route. Particularly in the morning you can see a lot of traffic towards the river – shepherds drive their herds, others go out to fetch fodder for the animals orcollect firewood (especially twigs of the *usher* bush, ideal for starting a fire if well-dried). After several hours, traffic moves the other way; farm workers transport the harvested fruit to the market, women the firewood. There is also vehicle traffic, mainly related to the activities of the brickworks on the Nile.

Trash collectors, beggars or simply 'vagabonds' regularly appear here (**Figure 1.16**). They probably look for 'treasures' as much as privacy and rest from the hustle and bustle of the city. Undisturbed by anyone, they enjoy the shade of one of the spreading trees or make a meal for themselves. An important point on their itinerary is the nearby *istiraha* (a rest house). According to the residents, the 'strangers' commit petty thefts or robberies. Periodically, Roma (Halab) also appear, using Soba as a convenient base for exploring the Khartoum suburbs. In November 2021, they got permission to set up a camp in an unfinished building (a common practice for such structures – mutually benefiting since the owner gets protection, migrants a 'roof over their heads') right next to the seasonal water course.



Figure 1.16. A stranger gathering trash (photo Maciej Kurcz).

1.8. Conclusions

The ethnographic method has proved valuable during this project, not so much as a complement to archaeological sources, but as a completely separate perspective in examining the traces of the past, directing a beam of light on historicalmatters and events.

For the local residents, the site is not a historical source, but more a place of memory, or a heterogeneous symbol referring to the most important events in the life of local communities. Although the inhabitants of modern Soba do not directly identify themselves with the heritage of the medieval town, the place itself is an important reference point in the historical processes of production, dissemination and modification of group identity. The ethnographic material indicates that the local communities do not fit such normative categories as a 'non descendent community' or 'descendent community', and their attitude to archaeological remains is ambivalent.

For years, the ruins have been a magical space from which people kept a distance or indulged in various transgressive and not entirely socially acceptable practices. Today, the status and understanding of this place is gradually changing. This is again the effect of the urbanisation processes that have been taking place at Soba in recent decades. For this reason, for many contemporary residents the archaeological site is a kind of 'disturbance' or 'anomaly'. Nevertheless, it is not difficult to notice that it still acts as an in-between or liminal space. New transgressive phenomena include, for example, piles of garbage, but also scavengers looking for products that can be re-used (this is a practice well known within the area of the Khartoum agglomeration associated with the poorest social groups). The youth who, at night, take this space over for their purposes, is another instance. An archaeological site as a sort of 'no man's land' has become an economically attractive area, both in housing and business terms. In this respect, an archaeological site can be interpreted as an 'internal frontier' (in the meaning of Igor Kopytoff, cf. Kopytoff 1987); theoretically an empty zone, located on the outskirts of settlements and attractive to various types of visitors. In the case of Soba, these are migrants to the city from the Sudanese peripheries in the first place, with no chance of finding accommodation in more convenient locations at the moment. However, this also includes landowners or businessmen who, within this relatively vast and still undeveloped area on the outskirts of the capital, see a huge potential for starting agricultural businesses.

CHAPTER 2

MEMORY, IDENTITY AND 'DIFFICULT HERITAGE'

Maciej KURCZ

The ethnographic research at Soba brought attention to important cultural issues attached to archaeological sites, including memory, identity, and material heritage.

The site of Soba is examined in a discursive manner in this and previous studies, with the research techniques and strategies carried out in this recent project discussed in Chapter 1. However, the modern cultural meaning of the site is also important to consider. Ruins are material remnants of the past, but they also embody a past which 'haunts' the present, giving rise to ethical dilemmas stemming from how we commemorate this history. In a post-colonial context, ruins can often become 'problematic heritage'; that is, a past that has meaning, but is at the same time questioned and too uncomfortable to be officially recognised and commemorated; these sites can also be problematic since they disrupt the present, causing, for example, social divisions and conflict through the disturbing visions of the future that they evoke (Sharon Macdonald 2009, 1).

The modern history of Soba is tied to issues around urbanisation. For some local residents, the archaeological site is a source of legal restrictions, ecological problems (e.g., floods, droughts, and sandstorms), and a lack of security. In addition, archaeological sites are vast empty spaces that disrupt the experience of the city as a 'homogenous whole' (Munn 2013). Soba is located in a place where every piece of land is valued.

Soba is not particularly present in the modern Sudanese mindset, unlike other important heritage sites. Meroe – despite Sudan's problems with the conceptualisation of its pre-Islamic past (cf. Bradshaw 2017, 136) – is recognised as a site of national and even global importance (Meroe, like the remains at Jebel Barkal, have been added to the UNESCO World Heritage List). Old Dongola, in turn, is the medieval capital of former Makuria – not as significant from a national perspective, but particularly important from a regional perspective, located in an area inhabited by people who view themselves as Nubian (Dongalawi in particular). Old Soba is in contrast not particularly present in Sudanese culture, neither in a regional nor national perspective. In this sense, the site belongs to nobody – it is not linked directly to the local Arab tribes or to the Nubians, but rather is associated more broadly with the mythical Anaj people, African culture and Christianity. Its link with Christianity separates it from modern Sudan, governed for almost three decades by a hardline Islamist government. As such, local interpretations of the heritage of old Soba have a different context from archaeological sites in Northern Sudan. The interpretations around heritage sites in Sudan are informed by issues around urbanisation, gentrification, Islamism, Arabism and cultural unitarism among others. Soba is part of the 'authorised heritage discourse', but is also controversial at a local level, where the nubio-centric orientation of Sudan's historiography is not fully understood. The heritage of old Soba is not seriously questioned by the local population. The memory of the former city is built upon legends and historical transmission, instead of the ruins and other material remains. Despite its contentious heritage, Soba is useful to allow us to understand how identities can be associated with a particular place. Since old Soba is not associated with a shared past, and does not belonging to any group inhabiting the surrounding area, it can provide a plane of identification for its contemporary residents – in particular the oldest settlers, the Mugharba Arabs. For the members of this group, the ruins of Soba are evidence of special multi-generational continuity and of the status of the place they inhabit. These, in turn, are attributes of a people with a long lineage, whose memory is deeply rooted and who have a robust sense of their history. Soba then can be seen as an important space for the interaction between between institutional politics of memory and grassroots claims on the past, that can work in synergy or, conversely, in conflict with each other. At the same time, the ruined materials and imaginaries are capable of being transformed into 'building materials' for a future, collective *res publica*.

2.1. The bricks of Soba and the heritage of colonialism

As I referenced in Chapter 1, the archaeological site of Soba is sometimes referred to as 'kusha'. This term has at least two meanings; a place where rubbish is

deposited, but also more broadly a rubble heap, a place covered with the remains of old buildings, which in the past were often a source of building material. Both archaeological and ethnographic sources indicate that houses were reused for farming purposes and waste was deposited in them after abandonment across ancient Nubia. Before any new structures were built, these 'abandoned' spaces also usually became a source of materials for new house construction (Bradley 1992, 58–63; Kurcz 2007; Wyżgoł 2021, 48).

Over the centuries since it fell into disuse, old Soba played a similar function, with the characteristic large-sized red-bricks – called *tub* – obtained here for new construction projects. In the Christian period, these were used to construct certain buildings and for critical parts of structures: for example, the upper sections of buildings to support ceilings, or external parts of buildings for rain protection (Shinnie 1961). Soba and Khartoum are strongly interrelated cities, due to the bricks sourced from Soba and, as legend has it, used to construct many of colonial Khartoum's public buildings. The First Palace of the Governor General Ali Khursid Pasha (today known as the People's Palace in Khartoum) in 1832 is a particularly famous example. When Karl Richard Lepsius visited Soba in the 1840s, he noted that large quantities of bricks from nearby ruins were being loaded onto ships to be transported to Khartoum (or even further afield) as building materials:

> 'The following day we landed on the eastern bank, where a great heap of red-bricks, destined for exportation, proclaimed the vicinity of the ruins of Soba. At the present day, unburnt bricks alone are made throughout the country, therefore all the ruins of bunt stone must have belonged to an earlier period. This building material is transported in a great quantity from Soba as far as Khartoum and beyond it' (Lepsius 1853, 162).

The re-use of materials from Soba to build the governor's palace is strongly rooted in the memory of the local population, and was mentioned by nearly all our interviewees. According to one interviewee, a bill issued by the *omda* of the Mugharba Arabs, who permitted the transport of bricks to Khartoum, is kept in one of the state archives. This was confirmed by a contemporary leader of the Mugharba, Abdel Salama. Bricks from Soba were also probably used for the construction of the residence of Khalifa Abdallahi ibn Muhammad in 1888 (now known as the Khalifa House). These bricks are still found in the pavement of one of the complex's courtyards today (**Figure 2.1**).



Figure 2.1. A man showing bricks from Soba in the Khalifa House in Omdurman (photo Maciej Kurcz).

Indeed the inhabitants of Soba stressed, with undisguised pride, that the medieval bricks were used to build the most important public buildings in Khartoum, including the Anglican Basilica (today the Republican Palace Museum), Gordon Memorial College (today the University of Khartoum), a railway station in Khartoum North, El-Oyoun Hospital, the Turco-Egyptian Hospital (later The River Hospital and today the seat of the Ministry of Health) and tombstones in the (King?) Farouk Cemetery. Bricks of Soba in fact appear in the context of nearly all historical buildings in Khartoum and even Omdurman. As such, we should treat them as crucial elements of the legendary origin of the modern capital, which is connected to crucial moments in the modern history of Sudan (e.g., the Turkish occupation, the Mahdist Revolt, the British-Egyptian reconquest etc.). For many residents of Soba this is a source of pride. Since most important historical buildings of the capital were constructed from the building material of Soba, Khartoum is, in a sense, considered as Soba's child.

If, for some, these stories are associated with pride and classified as glorious, for others, they instead speak of the imperial theft that Soba has experienced since colonial times. To this group, both the colonisers (representatives of Turkish-Egyptian and Anglo-Egyptian Sudan) and later the authorities of an already independent Sudan are considered 'plunderers'. The interviewees from this group also included the archaeologists that working at the site since the beginning of the 20th century in their category of 'plunderers'. It is worth adding here that aside from official fieldwork projects, amateur excavations had also been undertaken in the area since the beginning of the 19th century

(Welsby and Daniels 1991, 1), and so Soba monuments quickly became common decorations in many colonial residences belonging to notables and foreigners. Karl Richard Lepsius (1853, 163), for example, mentions that a stone lion was excavated from the city, and then deposited in the palace of Harshid Pasha in Egypt. The same author further reports that a German's house contained a statue of a seated Osiris, also from Soba (Lepsius 1853, 164). Peter Shinnie (1961, 16) noted a particularly famous stone ram that had been removed from the ruins. Frédéric Cailliaud was the first to mention this statue, after his visit to Soba in 1821. Later, it was also mentioned by Pierre Tremaux in 1848 and Guillaume Marie Lejean in 1860/1861; Johannes Dümichen reported that he excavated this statue in 1863 near the 'church'. Later John Ward (1905) saw it at the Governor's Palace, where it was supposed to have been placed on Gordon's instructions. It remained there until 1909 when it was moved to the War Office, and became an ornament in the garden of the Anglican Cathedral in 1933. There, next to the statue, in the open air, were two stone capitals from Soba in addition (Shinnie 1961, 16–17). Both the ram and the capitals are now in the National Museum in Khartoum (**Figure 2.2**). Paradoxically, early interest in Soba focused on Pharaonic-influenced monuments – with others left unreported or ignored. This was not accidental. At the beginning of the 19th century, when Sudan became the object of interest to European scholars and travellers, most were fascinated with Egyptology and belonged to a broad group of Orientalists and Near East specialists (e.g., Petrie, Junker, Breasted, Arkell, Reisner, Crowfoot, and Griffith among others). The purpose of their search was typically artefacts or sites that could be connected either with Egypt or the classical world. For such explorers, the history of Sudan was strictly connected with the history of Egypt.

There is no denying that the ghosts of European imperialism and colonialism still haunt Soba. As such, for some residents, the ruins of Soba are a part of cultural heritage that is subjected to frequent plundering. My interviewees often raised this issue, emphasising that this was a systemic action; cyclical and based on endlessly repeated patterns.

At the beginning of the 20th century, Soba became a prime destination for a variety of excursions for foreigners from nearby Khartoum; and over time, the ruins became an exclusive area, under the jurisdiction of the Antiquities Service. The local population was obliged to protect it and at the same time, in a sense, stigmatised as a threat to this heritage with their business or construction activities. Thus Soba represents an early example of a space management policy, typical of European imperialism in Africa (Adams 2003; Daly and Hogan 2005). Through conversations with the local community, it became clear that, while economically attractive, previous excavation campaigns were perceived as a continuation of colonial practices now carried out for scientific purposes, especially among older members of society. 19th-century archaeology was strongly associated with European imperialism, and often created an exaggerated valourisation of Europe and its heritage at the expense of the colonised 'other' (Bradshaw 2017). Colonial archaeology, like contemporaneous Victorian anthropology, served to set hierarchies and classify non-European cultures (Meskell 1999). In this context, science was merely a camouflaged form of the 'divide and rule' policy. European scholars believed for a very long time that the only Sudanese heritage worthy of interest were monuments



Figure 2.2. Stone ram from Soba in the garden of the National Museum in Khartoum (photo Maciej Kurcz).



Figure 2.3. Red bricks from the cemetery of Eilafoun (photo Maciej Kurcz).

associated with pharaonic Egypt. The ruins of Meroe or Jebel Barkal were explored from the 19th century and were unanimously presented as the greatest civilization achievements of this part of Africa. At the same time, they constituted a category classifying the works of the local culture. From this perspective, its presence (and its Islamic/African heritage) was a source of disillusionment, and evidence of the transience of large civilisations: *sic transit gloria mundi*.

However, let us return to the bricks of Soba. To some extent they are 'foreign' objects to the local residents, symbolising the kingdom of Alwa and old Soba rather than modern communities. These bricks are considered high quality by local residents, and also evidence of the splendour and wealth of old Soba, with the bricks linked to the myth of Anaj.This popular valourisation of the past is common in stories around modern Soba and is perhaps linked to a contemporary economic crisis in Sudan. According to interviewees, people used to live a more prosperous life: they were rich (they used beautiful objects, often made of gold), they built magnificent buildings of solid materials (stone and redbrick) and were well fed (they ate a lot of meat – so they were very tall and even obese). Social memory has over time converted Soba into a myth, into an 'empty vessel' that individuals can fill with whatever suits them. This myth around the greatness of Soba has, under the influence of recent political and economic crises, value, becoming a paradox in contemporary Sudan.

The use of medieval bricks to construct tombstones, for example, can be considered as a sign of respect for these ancient materials. Examples of this type of reuse can be found in the local cemeteries, such as in Eilafoun, located about 10km from Soba (**Figure 2.3**). This phenomenon seems restricted to the oldest cemeteries in the area (e.g., Tuwerab, Wad Taraf) and no longer occurs today, when only modern materials (e.g., concrete blocks, iron bars, and modern bricks) are used in tombstone architecture. We also heard during our interviews that bricks from Christian buildings were also used to construct residential buildings in the past, although there is no surviving evidence of this today



Figure 2.4. Brickmaking in el-Gereif East (photo Maciej Kurcz).

and modern bricks are now part of the architecture. In the Gana'ab area, for example, the oldest houses only date back to the 1950s. The decline in reuse of medieval bricks may also relate to less availability. It is also possible that the local population no longer needed or wished to use them. The majority of interviewees were of the opinion that the first settlers – nomads in the late 19th and beginning of the 20th century who adopted a sedentary lifestyle, built modest farms using wood, earth or mud-brick, with the oldest buildings makeshift huts near the Nile. In the 1950s, houses of mud-brick appeared, before being replaced with modern red-brick in the 1970s. Additionally, it was forbidden to use old bricks by this time, as the site was by this stage a protected area with local security – the famous gafir Mustafa Atigala still enjoys special esteem in the area.

Interestingly, in the 1940s and 1950s an enterprise named the Soba Ceramic Company operated in the area. It was involved in the production of bricks. According to my interviewees, at one time this was one of the oldest mechanized brickworks in the country. In nearby el-Gereif East, there is now an entire brick-making centre, manufacturing bricks from local clay using 'traditional' methods (**Figure 2.4**).

2.2. Soba and the folk culture of central Sudan

The memory of Soba was never eradicated, and was particularly well preserved in the oral traditions and customs of the communities living in the region. This area was once the southern periphery of the kingdom of Sennar, and is still sometimes known today as 'southern Funj'. Chataway (1930, 256) indicated that in this region the very name 'Soba' was a popular toponym: there was a Soba was located in Mazmum, and two others near Roseires (Chataway 1930, 248). Moreover, the same author also quotes a customary oath featuring the city:

> 'I swear by Soba, the home of my grandfathers and grandmothers, which can make the stone float and the cotton ball sink' (Chataway 1930, 256).

According to a local tradition, Soba was the origin of the pre-colonial kingdom of Fazughli, located on the Blue Nile on the border with Ethiopia. This kingdom was said to have been founded by refugees from Christian Alwa, so, Soba (Spaulding 1974, 21; Vantini 1975, 788). At Jebel Guli, on the south-eastern edge of modern Sudan, the memory of Soba was alive among the local population, and the mythical figure of the 'great-grandmother Soba' or 'royal ancestress' was referred to in multiple beliefs and customs (Evans-Pritchard 1932, 7–8; Seligman and Seligman 1965, 428; Trimingham 1965, 178). Both the Seligmans and Evans-Pritchard also mentioned the cult of stones or boulders associated with Soba, which played an essential ritual role in local custom. According to Trimingham (1965, 178) one of these 'stones' at Jebel Guli was the setting of an enthronement ceremony for a chief, and it was identified with the 'throne' of Queen Soba. Delmet (1980, 128–129) confirms that some of these beliefs were still circulating in the second half of the 20th century; he mentions a mythical 'great-grandmother Soba' and a stone sanctuary dedicated to her. Additionally, he points out the existence of certain customs in local rituals that had parallels to ancient Nubian practices: the apotropaic *jirtig*, a ceremonial decoration of the skin with henna and antimony (*kohl*), and the ritual of 'skirt stripping' at nuptials. The author noted that the 'stone of Soba' was important on occasions associated with rites of passage, and that women particularly attended to its cult.

2.3. The legend of Ajoba

The references to the traditions above are now absent in contemporary Soba, but old Soba is still an important motif in local folklore. The kingdom of Alwa and its fall is still present in the oral traditions of the oldest inhabitants of Soba – especially the Mugharba Arabs – as well as the historiography of Sudan. In such narrative, the fall of Soba and the rise of the 'Black Sultanate' mark the beginning of a new era – the birth of a Muslim and Arab Sudan (Hasan 1967). In this context, the legend of Ajoba is perhaps a contemporary manifestation of the memory of the kingdom of Alwa.

In cultural memory, every end (of a civilisation, dynasty or epoch) is usually associated with an extraordinary story. Often this takes a form of a legend woven around the character(s) who directly led the 'old world' to destruction, thus assuming the role of a mythical scapegoat. Similar stories includethe ancient story of Troy with Helen and Paris, but also, more recently, the 17th century Polish *liberum* veto with the Polish nobleman Sicinski. Typically, the cause for the fall of kingdoms or civilisations is identified in moral regression or the decadence of elites, as in Herodotus' story of the fall of the Assyrian Empire, Plato's story of the mythical Atlantis or the biblical story of the destruction of Sodom. We should not consider these stories in terms of their truth or falsity. The characters brought to life are deliberately fantastic and are used to dramatise the entire story, and usually have no historical significance. Rather, the purpose of these stories is to explain the difficult and unexplained in an easy and categorical way. The function of a story, myth or fairy tale is to protect us against the complexity of the world and from its randomness. Myths give a certain order to the chaos of human perception andexistence; they provide causality and narrative to the world. But these events have to be simplified and understandable, with their topics close and topical. As such, stories of this type are continually evolving, changing and adapting to the current context, and continually updating, with their most important content to be read between the lines. The context and interpretative possibilities of such stories are important, rather thantheir relationship to historical facts (Propp 1976; Goody 2012, 192; Pobłocki 2021). In this context, we hear that the fall of the medieval Nubian kingdom of Alwa was dramatic, and was connected to one person – a woman named Ajoba. We do not know when this story first appeared. The interviewees stressed unanimously that it was very old, and that they knew it from the stories of their elders or holy men. In the respondents' opinion, the latter were the source of the most important information concerning the past, with their stories, sayings or aphorisms used long after their death. An example of one of these holy men was the 17th century Sufi master of Sennar, Sheikh Farah Wad-Taktuk, today still well-known and revered in the Soba area. Another reason for the popularity of the legend of Ajoba is the contemporary school curriculum and popular culture, which have almost made Ajoba a historical figure, using her story when discussing the beginnings of Islam in Sudan as well as a famous allegory. Archaeological (as well as ethnographic) research has indirectly 'revived' the legend of Ajoba. This character has become synonymous with the ruins of medieval Soba. Old Soba is 'Ajoba's kingdom' (مملكة عجوبة) and the finding of Ajoba's castle (قصر) or a tomb (قبر عجوبة), in the residents' opinion, should be the main objective of archaeological research. Also interesting are the attempts to reinterpret the story in the context of protests following the November (2021) coup, which will be discussed in more detail later.

There are numerous different versions of this story, due to its oral transmission. There is no single dominant genealogy or version; there is no one true story, and each is original (Pobłocki 2021, 823; Goody 2012, 24) and distinct depending on whether it is told by men, women, or children, Depending on the storyteller, Ajoba was the queen of Soba, a witch, the king's sister or an ordinary woman. All, however, agree that she had a daughter named Tayiba. She was an exceptionally beautiful girl (بنت جميلة). Four ministers (وزير) of the king were seeking the hand of Ajoba's daughter. Some claimed that they were noblemen. Her mother, however, was greedy and treacherous. She told everyone the same answer, wanting to become rich. She demanded heaps of gold from every suitor, but also that each new admirer should kill the previous one. Many men, supporters of each of the wooers, were killed in this way, and chaos prevailed in the country. Finally, however, someone revealed the queen's secret, and the sword of the last living royal minister caught up with her. In some stories, he then married the beautiful girl. According to other versions, the woman and her daughter fled the town and continued this trade in other parts of the country. The defeat of Ajoba did not, however, save Soba, and its troubles were fully exploited by surrounding Muslim 'tribes', led by the Funj and Abdallab, who united, attacked, and destroyed Soba.

2.3.1. *Soba and the historical truth*

What does this short story tell us? Although the character of Ajoba is not based on historical facts, the story contains some historical elements. Soba was the capital of the kingdom of Alwa. According to the 10th century traveller-diplomat Ibn-Selim Al-Aswani, it was the most powerful of the Nubian kingdoms, and in its capital, there were many richly furnished churches and monasteries; and the city itself was divided into districts with beautiful houses and gardens (Vantini 1975). The names Funj and Abdallab, on the other hand,

are the ethnonyms of groups who are present in Sudan at the turn of the 15th and 16th centuries and were involved in the fall of Christian Nubia. This coalition, according to the 'Funj Chronicle' (Holt 1999) and the oral tradition of the Abdallab Arabs (Penn 1934), written in the 19th and 20th centuries, lasted until 1504. Soba never recovered from this destruction, and remained a deserted area until the 19th. Moreover, the character of Ajoba, as an influential woman, may be a reflection of the truth. In ancient Nubia, women played a prominent role in power hierarchies, although how this worked in practice is still poorly understood. In the terminology of the Kushite court, for example, we know of the title 'mother of the successor to the throne'. In the Meroitic tradition, 'queen mother' can also be equated with the king's sister and the mother of the next ruler (Ashby 2021). Into the medieval period, power could be transferred along the female line to a male descendant of the king's sister (Welsby 1996; Breidlid 2014, 32; Lohwasser 2001, 61–76). Some scholars link this tradition to the matrilineal succession that was still visible during colonial times (Fluehr-Lobban 2004, 5), something noted by Lepsius I the 19th century. In the area of Sennar, he met the royal family of the former Funj state – including a king's sister, who bore the title of 'sultan's queen' and came directly from the royal family (Lepsius 1853, 177–178). Perhaps, then, in the legend we have a reference to old customs in Sudan. Queen mothers also play an important role among the communities inhabiting the modern borders of South Sudan and Uganda. Queen Ikang of Tirangole, who was the longest-reigning ruler of the Lotuko people, should be mentioned here. She ascended the throne in 1886 and only abdicated due to old age in 1936 (Breidlid 2014, 96).

2.3.2. *Interpretation*

In the folk culture of Muslim Sudan, usually men are the storytellers – lute players, telling their tales while playing a five-stringed lyre, or village storytellers, whose tales, full of fantastic events, can still be heard in the provinces during men's gatherings in market tea shops. Women once also belonged to this group of folk storytellers or artists. Historically, enslaved women performed lyrical songs about love – the so-called *haqiba* or pieces intended for dancing (with a tambourine or drum called *daluka*). Women were also wedding and/or funeral musicians, and encouraged men to fight (Sikainga 2011, 150). Finally, stories are still told by women to children at village evening gatherings. This can be the same story – told every night, but each time a bit differently. The night is the *sine qua non* condition for this type of story, andaccording to tradition, there is the danger of a supernatural threat for violating it. This female storytelling, which can take various forms from verbal riddles to fables, is called *hujja*, or wisdom (Tayib 1956, 65). This narrative form – a separate branch within oral folklore – still plays a fundamental role in the process of enculturation and socialisation, particularly in multigenerational families where the upbringing of the youngest rests on the shoulders of the oldest in the family.

On the narrative plane, the women's stories are presented differently from those performed by men. They are not heroic, epic narratives, but tales of daily matters, with strategies for coping with everyday life's problems. The characters in the women's stories solve problems differently – not with weapons or audacity, but through sublime diplomacy: coquetry, informal arrangements or by 'Cupid's arrow'. The legend of Ajoba includes this important literary element.

Why did Soba fall? This is, without any doubt, the most important part of the whole story. Soba fell through the medium of a greedy woman. This woman, in turn, violated 'reason and moderation' – qualities extremely important from the point of view of the local normative model. This is a simple allegory directly from Sudanese folklore – akin to fairy tales, i.e., stories intended as a warning for children. A Sudanese fairy tale has an invariably educational character, reflecting, as in a distorting mirror, the good and bad qualities of a human being. Modesty, truthfulness, a good nature, and respect for elders are the most frequently encountered moral references in Sudanese 'children's tales' (Tayib 1956, 56–69; Tayyib 2016). If we consider, as the inhabitants of Soba are unanimously convinced, that the story of Ajoba is historical and ancient, it is highly probable that it has evolved and, over time, has acquired a new, more universal meaning, emphasising the destructive nature of a woman, a feature particularly clear in the contemporary television and theatrical adaptation of the story (by Khalid Abu al-Rous, see: https://youtu.be/aqVK5YnODws accessed on the 31st March, 2023). There, Ajoba is a treacherous old woman (and a witch) who, under the pretext of revenge for the death of her husband, wreaks havoc (i.e., causes the fall of the city) and aims to have the ruler killed. In doing so, she uses weapons supposedly typical of her gender – the 'Cupid's arrow'. This context is very

readable for a modern Sudanese man who perceives his culture in terms of extreme patriarchalism, much it alluding to popular Islamic conceptualisations of women and their sexuality (Mernissi 1987, 41–45).

That is why the phrase 'Ajoba destroyed Soba' (عجوبة خربت سوب) is used when someone (especially if it is a woman) does something utterly destructive. Some interviewees also believed that it could be used as a warning against losing sight of something important. This may lead to misfortune; just like while the inhabitants of the kingdom were 'killing themselves' for a beautiful woman, a deadly danger appeared on their doorstep. Another phrase is 'We should get rid of Ajoba – before she destroys Soba'. In this case, attention is drawn to someone with a quarrelsome and scheming character. In the story, a woman is the cause of the fall of an entire kingdom. She may be secretive and treacherous; her beauty and charm are her weapons. She is beautiful and attractive, but at the same time, she causes chaos. She can become evil, even demonic.

This motif, in turn, links the story to many similar stories popular over the centuries in the Middle East and North-East Africa (e.g., Gudit and the fall of Aksum, St Judith and Holofernes, Herodias and the death of John the Baptist, or the Georgian legend of Tamar).

2.3.3. *Revolution*

The story of Ajoba is also a commentary on the expansion of Arabs and Muslims in Sudan through marriage, and the conversion from a matrilineal to patrilineal system. This story may contain also a hidden motive as to why Arabs conquered Soba. Yusuf Fadl Hasan (1967, 132–133), relying on oral and written sources, mentions that the Arabs united under the leadership of Abdallab to oppose the tyranny of 'the kings of Anaj'. This tyranny was framed as foreign jurisdiction and, most importantly, Christian power, but also typical prerogatives such as taxation. This hypothesis is supported by a symbolic layer of the story, again strongly rooted in folklore. Ajoba, like many other fairy-tale female characters, belongs to an archaic world, from before the final victory of Islam. This world stands in opposition to the present and civilisation. It tells about 'the times when women had a say in who would be king'. The same motif is represented in south Sudanese folklore by a figure of an 'ungodly' or 'Christian girl'. It also links to a hypothesis, historically very popular in the Islamic world, by Ibn Khaldun, an Arab historian of the 14th century, of the decline and rise of civilisation. He believed that a sense of group solidarity, known as *asabiya* in Arabic (after the Arab nomads), was behind the successful creation of states – and that its absence, by analogy, was one of the reasons for the collapse of entire political organisations (Bielawski 2000). Such thinking was followed by many medieval writers and philosophers, for whom history did not make any arranged pattern, and civilisations inevitably developed and fell (Gray 2020, 39–40). Ajoba's activities led to an internal crisis in Soba, which paved the way for the victory of a better-organised coalition, composed largely of pastoral nomads. Ajoba is then a figure symbolic of ancient, archaic times, often referred to by Muslims as Jahiliyyah – 'the age of ignorance'. The killing of Ajoba and the conquering of Soba can be read as a kind of "end of wilderness". The popularity of Ajoba in today's Sudan should be considered with this background. Paradoxically, the story of the 'Nubian woman' became a part of attempts within Sudan to build a concept of a nation based on Arabism and Islam, which significantly accelerated in the 1980s. In terms of the state's cultural policy, this meant a clear separation from 'small traditions' and 'local histories' in favour of one national narrative, the origins of which are related to the triumph of Islam in this corner of Africa (cf. Abdullahi Osman El-Tom 1998). The story thus also takes the form of an origin myth. Interestingly, Guillaume Lejean (1865, 107) recorded a similar story near Berber in the Fifth Cataract region.[1] He wrote that a 'literate Arab' had told him of a local tradition that the ruins of Dangeil were originally a church built by a queen called 'Barbara the Christian'. She was said to be very warlike and cruel.

For the inhabitants of contemporary Soba, the story of Ajoba then is a form of cultural memory, creatively used in society, and connected with the identity of the area. When discussing the legend, one of the female interviewees mentioned that Ajoba was to blame for city's loss of importance, which subsequently ceased to be a capital. However, modern Soba is rising from its ruins and developing dynamically. History once again comes full circle. Perhaps Soba will one day become more powerful than nearby Khartoum. The woman warned, however, that a kind of anathema, the 'curse of Ajoba' (لعنة عجوبة) is still hanging over the town, and

[1] Personal communication by Gabriel Gerhards.

that Soba may fall again as a result of the evil woman's scheming. According to the interviewee, this was the fatalistic future of the city, as seen by a local 'golden biddy', reading the cowrie shells. Charles Baudelaire (2022) compared our memory to a palimpsest, a parchment from which an old text can be erased and replaced by a new one. That is why a legend or a fairy-tale retains its relevance in the modern world.

It is worth noting one more element of the panoramic picture of Ajoba, one which only developed in Soba recently. On the wave of the 2019 revolution, Ajoba was transformed in pop culture at least among the young generation into the figure of a *kandake* – a leader, formed during the political protests at the end of Omar al Bashir's rule. As Solange Ashly (2021) notes, the 'Nubian Queen' became not only a symbol of social protests, but also of the return of the Sudanese to 'Africanness' after years of domination by Islam and Arab culture (#Sudaxit). Women, especially young and educated women, played an important role in the protests, the symbol of which was Alaa Salah, a student and MANSAM activist, but more commonly known as the 'Woman in White', 'Lady Liberty' or simply 'Kandake'. Ana Kandaka (انا كنداكة) is a key slogan of the Sudanese protests, meaning a woman who has her views and is not afraid to articulate them loudly. Thus, the re-birth of the myth of 'kandake' – the Sudanese female leader – came full circle. This was of course a royal title in ancient Kush, reserved for the mother of the heirs to the throne, who, as in Christian Nubia, had an important influence on politics. Traditionally, one such queen was said to have stopped the invasion of Alexander of Macedon himself (Lohwasser 2001, 61–76). The kandake myth has now influenced ideas around the legendary Ajoba. According to one interlocutor, Ajoba was in fact the real queen of Soba ('kandake of Soba'), whose rule led to the collapse of the town, not due to her greed but her steadfastness. She was a ruler who refused to surrender the city to the invaders and is a symbol of the will to fight, but also of the uniqueness of the local culture, the roots of which go deep into the African continent. In another conversation, a woman compared Ajoba to the legendary Sudanese poet and warrior Mihera Bint Abboud, who had also encouraged her people to fight the invading Turco-Egyptian army in the 19th century. Mihera, like the kandake, was also evoked during the protests against the rule of Omar al Bashir. To some extent, the children's drawings collected at the Gana'ab school reference this. In these pictures, Ajoba is represented



Figure 2.5. Ajoba-kandake from a schoolgirl's drawing (photo Maciej Kurcz).

in a traditional *tob* with scarification on her cheeks (**Figure 2.5**). She symbolises a Sudanese woman ('Haboba Sudaniya'). Her costume, however, sometimes also have national emblems. According to a teacher at the school, this clearly references current events and protests initiated by women. Storytelling, as Hanna Arendt (2010) and Michael Jackson (2013) have pointed out, sometimes becomes a political strategy allowing people to contest the social order. This is a universal practice that can help those who feel oppression or violence establish a moral basis or agenda. Undoubtedly, there are many such people living in Soba and participating in resistance against the military rule. The Ajoba story, then, is nowadays is no longer the great national origin story, but a narrative of attempts to change the status quo and an entirely new account of the past – and perhaps of the future. This change of interpretation has a significant impact on the legacy of old Soba.

Old Soba is an important heritage for contemporary Soba, in which at least some of the inhabitants refer to their past in a search for new roots. Since old Soba is not associated with the shared past, and does not belong to any modern group, it can provide a blank canvas of identification for the contemporary residents. This issue is even more interesting as the memory of the city's past among the contemporary residents is reconstructed and maintained by means of, *inter alia*, the legend of Ajoba. Due to the lack of 'authentic' memories, this form of narration is relied upon, and familiar and readily understandable threads have been woven into it. The fall of the city happened in the absence of the modern residents' ancestors. In this case Ajoba plays a role

of a 'figure of memory', recalling the history of establishing the rule of Islam. It is, in a sense, a story about the primeval beginning not only of the local community, but of the entire nation.

2.4. *When an object inspires people to speak*

Material objects are the subject of research of archaeologists, historians, museologists and art historians, as well as anthropologists or sociologists. Recently, the study of objects has broadened to understand materiality as no longer just an element supplementing the image of humankind, but also an important, independent theme of scientific reflection (Barański 2007). This change, referred to in science as the 'turn towards things' or 'thinking through things', was initiated in the 1980s by scholars such as Arjun Appadurai and Igor Kopytoff (1986; 1987). They observe that we can explore the 'cultural biographies of things' (i.e., what character or meaning particular stages of material goods hold). Furthermore, some categories of objects are more symbolic than others (i.e., they are 'rhetorical' or 'social' goods). This particular kind of anthropological perspective allows us to cast some light on the semantic relationship between humans and the material remains from the past. What is people's attitude to monuments, what can they be used for, and what criteria must they satisfy to speak to people again? In the case of people living on the Nile, the archaeological material comes from a qualitatively different reality. On one hand, this is pre-Muslim, burdened with the flaw of impurity (Osman 1992). On the other hand, it is part of a cultural heritage belonging to ancestors and objects that play a mnemonic role. These are objects of memory – and strongly associated with cultural memory. The large role of material culture in such studies is related to the lifestyle of individual societies and particularly to the production and distribution of goods. This sphere of culture sometimes refers to important events or group identity (Bradshaw 2017; Mire 2007). The objects express or co-create a person's identity and form part of the experience of 'being in the world' or negotiating their place within it (Bradshaw 2017, 163). In Sudan, this fact is well illustrated by the costumes and ceremonial instrumentation associated with Sufi masters. A tablet to learn the Quran (*loh*), a ceremonial staff (*asaja*), and a scarf (*abaja*) are all materialised symbols of the status and religious authority of those people.

What is the attitude of Soba residents to the archaeological remains? In the context of building new houses, they were a problem that had to be discretely resolved. Brick rubble or ceramic material was dumped into the nearby riverbed or into informal landfills. In fact, nobody really paid attention to them. The land, as I have mentioned, is full of this type of material. The situation was similar with bones, with the difference that human remains were sometimes exhumed and thrown into a nearby *khor* or directly into the river – as several interviewees informed me. Then a local holy man was invited to drive out all evil forces from the house with the power of the Quran. For religious reasons, I was not provided with more detailed information on this subject. In Islamic tradition, a burial place falls under the *haram* category, and it is forbidden to violate the integrity of cemeteries. In Soba, the situation is more complex since houses were intentionally or not built on the remains of the medieval site. Exhumed human remains were located in the Marabiyya area by our team. They had been unceremoniously split with a hoe and dumped in a backyard landfill. We did not get permission from the owner or the authorities to conduct detailed archaeological research, beyond collecting what had already been thrown into the landfill, and there are probably other graves on the premises, which the owner decided not to disturb for the time being. In this case, we can speak of these remains from Soba as waste. Perhaps the practice of treating monuments as rubbish should also be read as meaningful – in many cultures, graves are a meaningful sign, certifying the ownership of a given territory. Therefore, their removal or profanation can be considered as an act symbolising a final change in ownership.

'Nothing is left of the old Soba' or 'there is nothing here anymore' – these are words often repeated in my field notes, which may demonstrate attempts to ignore or avoid thinking about the material heritage of the city. Some of my interviewees seemed to be already aware of the concept of ruins as a physical, preferably monumental structure (cf. Macdonald 2009, 26). For them, this heritage had a physical dimension. Likewise, in the event of its absence, this land should be given back to the people.

During our research we established that the status of the archaeological site and its monuments was unclear. Old Soba belongs more to the past than to the future, and has no bearing on current affairs within the community. The surprisingly alien character of the city's past is partly the result of the pace of urbanisation processes, and modernising changes (e.g., the replacement of handicrafts with industrial products of plastic and



Figure 2.6. A man presenting his grinding stone (photo Maciej Kurcz).

aluminium). Some objects, mainly due to their similarity to the equipment still in use in the province, were brought back to life. At one point, interviewees noted that anything people needed was taken from the ruins. This included kitchen utensils, pieces of wood, cowrie shells and any other useful material. This particularly applied to stone tools of various sizes – such as a stone *murhaka* (مرحاكة), a large concave stone in the form of a trough used for grinding grain into thick flour, mostly sorghum (**Figure 2.6**). In the recent past, these were still a basic kitchen utensil, but today they also are a thing of the past and have been destroyed, given away, or sold. Such 'new ways' of everyday life mark the end of the 'old' world. However, this it is not a complete process, and for many rural-based residents or those newly settled in Soba, such artefacts are still familiar. A good illustration of this can be seen in the different reactions to the artefacts excavated from the ground. For some, they are still evidence of the familiarity of people who used to live there, and also evoke nostalgic memories of their own family home, rural life or the times before migration to Soba. For others, objects from the past are simply nice or intriguing, and therefore worth preserving. One of the Gana'ab residents – an artisan potter – decided not to throw away 'historic rubble' and proudly presented it during my visits. These were fragments of bricks, sherds of pottery and stone grinders. In other houses in Gana'ab, I recorded at least seven large stone querns for making flour. In neither case were the items put to any practical use. Instead, they were presented as curiosities, striking design elements of the household courtyard. The same was true of individual pieces of massive red-bricks. If the bricks were found intact and were large in size, they were usually left. According to the proud owners, these objects were integrally connected to the site. Another 'antiquity discoverer' decided to keep a few, in his opinion, nice stones from a tomb. He kept them with other curiosities: old coins, shells or animal bones. None of the owners was able to clearly specify why they kept the items in their homes. The natural affordances of these objects mean they likely caught the attention of residents, such as their unusual shape, shiny colours, or the solidity of the workmanship. It was also probably important that the objects came from the past, from a qualitatively different world.

In particular, older interviewees – women in the majority of cases, claimed that the objects reminded them of their family home from before they moved to Soba. One man, originally from Kordofan and the Messariya Arab group, stated that the inhabitants of Soba had lived like his own people. That is why he decided to keep an old grinder for making flour at home – it reminded him of his ancestral home. He also stated that food made with such equipment simply tasted better (*laziz sameh* لذيذ سمح). It is not, therefore, the original use of the objects that matters, but rather their mnemonic role, or what they symbolise. Painted ceramics and large fired-bricks are examples of heterogeneous symbols, silent evidence of the past that appeals to people. Archaeological work has dynamised this process even more. It makes people realise that the land they live on is still full of objects from the past, that, not so long ago, were still used by their ancestors, and this triggers a sense of memory. Ceramic objects excavated by archaeologists, for example, are often recognised almost instantly by modern communities according to their shape or size as: *gula* (قلة), *zir* (زير), *doka* (دوكه), *sahan* (صحن), *gadus* (كدوس), *dabanga* (دبنقا), *gadah* (قدح) or *guseba* (قوسيبا). As such, these ancient relics can provoke reflection and discussion about the life of one's ancestors and the objects they used. During one of the interviews, a conversation about the monuments turned into a story about

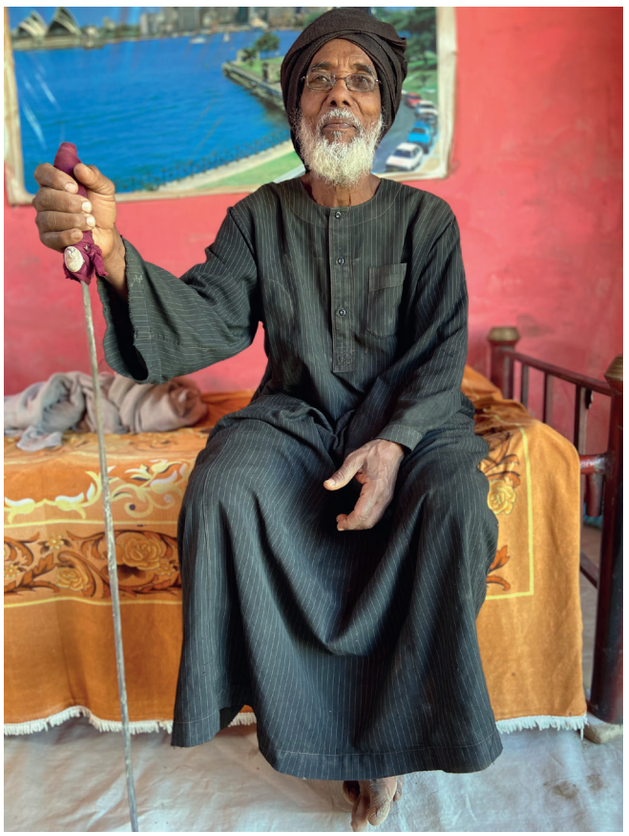

Figure 2.7. A man and his father's sword (photo Maciej Kurcz).

the person's late father, who used his favourite jug, the so-called *ibrik* (ابريق) made of clay, not a modern plastic variety. This nostalgic tale turned the conversation spontaneously to the aforementioned legendary Sheikh Farah Wad-Taktuk and his ablution vessel. When talking about objects hidden in the ground, the majority of the interviewees talked about sentimentally important souvenirs. In the case of men, these were usually antique swords, saddles or decorative walking sticks, and in the case of women, mortars, kitchen sets or wedding ornaments (**Figure 2.7**). All were the objects of male or female pride. Wooden beds or stools, extremely important and characteristic objects for Sudanese 'traditional culture', were also mentioned with pleasure on this occasion. Another time, the discovery of a large vessel provoked a discussion about food storage in the countryside. Interviewees mentioned that these vessels were called *dabanga* and can still be found in the villages, used to store grain. Moreover, they have a status character, with these vessels a symbol of wealth, often found near the house of the chief or a Quranic school. An identical vessel can still be seen near the Quranic school and cemetery in Eilafun.

A large group of interviewees demonstrated a lack of clear boundaries within the material culture and modern lifestyle. Often they argued that 'people used to live at Soba like our ancestors'. Similar conclusions stem from the analysis of artworks from one of the girls' primary schools in Gana'ab. The works dealt with legends and history of Soba. Interestingly, most of the female pupils depicted the archaeological monuments together with objects of traditional culture. A large part of the drawings included kitchen utensils (particularly large storage water jars, but also bowls, coffee pots, and mortars) and cosmetic items related to marriage, or colourful trays woven from leaves – all still used in rural areas and important for women. Here, however, they were being used to symbolise ancient times. The boundary between the past and present is subtly drawn. The figure of the legendary Ajoba also appears in some of these drawings. She is presented as an elderly woman wearing a traditional *tob*, with scarification on her face, as can still be seen at Soba on many older women. Perhaps this proves the existence of a certain collective conception of the past, in which specific objects constitute metaphors of the past, but are also evidence of a 'casual-temporal continuity' between particular eras (Munn 1992, 112).

This does not prevent the residents from treating the past as discontinuous and distant. Emphasis on the Christian character of old Soba was used to build a distance from these ancient, and often considered 'impure' times. For many interviewees, Soba was above all Christian, full of richly furnished churches, decorated with images of saints and other Christian symbols, and inhabited by the clergy. Some interviewees also seamlessly moved from discussing the 'Christian' to the 'African' heritage of old Soba. This way of treating the past is symbolized by the semi-mythical Anaj people (عنج), who supposedly inhabited the area before the arrival of the present inhabitants' ancestors. Characteristically, they are universally identified in Sudan with the past, both the more distant Kush and the nearer Christian period (Bradshaw 2017, 163). There is no consensus among scholars as to their historical nature. Some see in them a somewhat pejorative name for non-Arabs, while others a specific ethnic group living in the Gezira, or perhaps a social group (Trimingham 1965). The term has even entered archaeology, where 'Anaj's strongholds' or 'Anaj's graves' are mentioned. In oral tradition, their physical features are emphasised, characteristing them by their above-average height (Maliński 2012). At Soba, they were

categorised as a black 'race' and part of African culture. They were Christians, but also believed in native African religions. Graves in which supposedly gargantuan skeletons were apparently found were cited as evidence for this, as were the large size of the Soba bricks, indicating they were needed for giant houses.

Returning to the material culture, it is clear that see that for a large part of the modern Soba community, archaeological finds are 'objects of memory' that refer to the past and activate memory. They are not the evidence of a specific epoch, but a set of things that have past. We should, therefore, treat them both as archaeological as well as anthropological traces – since tangible, ethnographic stories have been condensed in them. Archaeological work has provoked a range of discursive practices among both archaeologists and the local population. They now transition from the purely utilitarian side of objects to their intangible meaning. This offers enormous potential for engagement with source communities and draws the attention of the residents to the research conducted in their neighbourhood. Excavations are associated with cultural change, and by using more poetic language, archaeological works can engage with this memory. This is an opportunity that should be taken advantage of, as the Sudanese mnemonic is based on space as well as material culture. This inspired the idea of creating a 'museum in the sand' after discussions with the local community and exhibiting both objects from the excavations and those showcasing the 'traditional' culture of the Mugharba Arabs. Both heritage and history would then be recreated with objects.

Historical archaeological campaigns do occupy an honourable place within the structure of this memory. These are many stories about foreigners: daily contacts, including the friendships, fair employment and benefits connected with them (e.g., purchase of consumer goods). On behalf of the Sudan Antiquities Service, extensive work was carried out between 1950 and 1952 under the direction of Peter L. Shinnie. Between 1981 and 1991, surface reconnaissance and excavations were headed by Derek A. Welsby. The local population remembers this later campaign most vividly, as many men took part in it as workers. Interviewees recalled the work organisation, wages, social gatherings and research sites. Today, shorts are still called 'derek' in the area – after the name of the excavation director. One of the workers, when dismissed, earned the nickname 'Finish'.

Archaeological work also gives rise to discussions in which local ways of thinking about material traces of the past and knowledge of the site ('local knowledge', 'knowledge of proximity' cf. Mickel 2021) reverberate. According to the residents, archaeologists have their own ways of dealing with the ghosts protecting the ruins. For this, they do not use spells or 'priests', but specialised technology, including geophysical survey, delineation of the excavation, careful and gradual exploration, and finally documentation of the finds. In their opinion the archaeologists, like everyone else, look for treasure (with gold first and foremost) and then take it out of Soba in secret. In local memory, this is what all the archaeological missions have been doing. When something interesting was found, the interviewees argued, the local workers were moved away so that no one knew what was being unearthed and what happened to it later.

The material heritage of old Soba was not generally understood, but most had experience with it. The specific experience of closeness with the site was an important aspect of local knowledge. Today's residents have made attempts to read the monuments, inspired by the archaeological approach. One of female interviewees advised that the former inhabitants of Soba left 'signs' on the surface that made it possible to guess what function particular parts of the site had in the past. Stones used for grinding flour meant that in that place there had been houses – brick rubble, on the other hand, meant that a church had been there. Graves, as today, were marked with stones, but with a different orientation (east-west). They were also sprinkled with small white stones (still a common practice in northern Sudan) or delimited with red-bricks. Others speculated on the specific way of burying the dead in old Soba, where its inhabitants were buried within their households and furnished with gifts.

2.5. Conclusions

The archaeological and ethnographic research at Soba brought many different challenges. The most fundamental from the point of view of continuing the research long-term is the 'problematic' aspect of the old Soba heritage. It is pointless asking if the Soba archaeological site is a troublesome heritage. One should rather ask: what does this mean for the local communities living in close to the site, and what are the dynamics of this process? My studies established that the status of Old Soba is unclear. For many contemporary residents in modern Soba – an energetically urbanising and gentrifying centre on the outskirts of Khartoum – the heritage

of the past is not just a ‘thing left behind’. These are the material remains and imaginaries used as foundations for collective actions or for building a collective identity in the future. For many residents of contemporary Soba, the site itself is an important point of reference in their family genealogy. At the same time, the heritage of the site is important in the settlement of migrants into the city. It is not difficult to notice that old Soba has become the germ of contemporary Soba, in which at least some of the inhabitants try to refer to this heritage in a search for roots in their new place of residence. Since old Soba is not associated with the shared past, it does not belong to any particular local group and so can constitute a plane of identification for the contemporary residents, particularly the oldest settlers, the Mogharba Arabs. For the members of this group, the ruins of Soba are evidence of a special multi-generational continuity. This, in turn, is the attribute of people with a long lineage, whose memory is deeply rooted and associated with widely known historical events. This issue is even more interesting as the memory of the city’s past among the contemporary residents has been reconstructed and maintained via the legend of Ajoba. Due to the lack of ‘authentic’ memories, this form of narration has been used with familiar and understandable threads woven into it. The fall of the city happened in the absence of the contemporary residents’ ancestors. In this case Ajoba plays a role of the ‘figure of memory’, recalling the history of the establishment of the rule of Islam. This is, in a sense, a story about the primeval beginning not only of the local community, but of the entire nation. This phenomenon may become even more dynamic and positively affect the perception of future archaeological work. It will be worth checking how this history changes under the influence of current affairs, and examining it from the perspective of the various groups inhabiting the city. For the local people the site is less a historical source or evidence of a specific epoch, than a place of memory, a reservoir of the past. This fact is of the utmost importance for any efforts aiming to develop local concepts around protecting the site in the future.

CHAPTER 3

ARCHAEOGEOPHYSICAL SURVEY OF THE REMAINS OF SOBA

Robert RYNDZIEWICZ

Medieval Soba was a sprawling city that spanned over 2km² on the banks of the Blue Nile. As the capital of Alwa, it played a significant role as an administrative and religious centre in the Nile Valley region. Over its several centuries of existence, this kingdom remained distinct from the neighbouring kingdoms of Makuria and Nobadia to the north, and Axum to the southeast.

Archaeological work carried out throughout the 20th century (Shinnie 1961; Welsby and Daniels 1991; Welsby 1998; Abdel Rahman 2000) yielded numerous findings and valuable information about buried monumental structures, including churches and an ecclesiastical complex of considerable size. The first plan of Soba was published by Ugo Monneret de Villard (1935: II, Tav. XCIX), who visited the site in the 1930s. From a modern perspective, this map shows the vastness of the site but provides very limited information about its spatial organisation. Monneret de Villard was the first to name the largest mounds (A to D), and an adapted version of this nomenclature is still in use today. A map later published by Shinnie (1961) provided data on the topography of the site and the location of the most characteristic mounds. The detailed survey and trial trenching carried out in the early 1980s (Welsby and Daniels 1991) resulted in much more informative maps, which formed the basis for the first conclusions about the spatial organisation of Soba and the zoning of the site into zones designated by letters (Welsby and Daniels 1991, 27). By the end of the 20th century, only about 1% of the site had been studied in detail (Welsby 1998), and as early as the 1990s, the authors drew attention to the damage to the site caused by robber trenches and vehicular traffic on its surface.

Recent decades have brought a number of additional significant threats to the remains of Soba's archaeological heritage. Concomitantly, conventional methods of archaeological exploration do not offer an easy solution to the approach of such large-scale and complex archaeological urban spaces as Soba. To deal with this, we developed a programme of large-scale investigation of the former metropolis using non-invasive methods. This chapter will discuss the results of the geophysical survey carried out within the strategic framework of '*Soba – the Heart of the Kingdom of Alwa. The Spatial Organisation of Medieval Capital City at the Blue Nile*'.[1]

The geophysical survey was carried out over three research trips over two seasons (2019–2020 and 2021–2022) through the efforts of the research team:

- Łukasz Banaszek, PhD (Historic Environment Scotland), topographer, member of the Soba team in the 2019–2020 season.
- Mariusz Drzewiecki, PhD (Polish Centre of Mediterranean Archaeology of the University of Warsaw), archaeologist, topographer, director of the '*Soba – the Heart of the Kingdom of Alwa*' project.
- Tomasz Herbich (Institute of Archaeology and Ethnology, Polish Academy of Sciences), archaeogeophysicist, member of the Soba team in 2020.
- Krzysztof Kiersnowski (Norwegian University of Science and Technology), archaeogeophysicist, member of the Soba team in 2020.
- Maksym Mackiewicz (Archeolodzy.org Foundation), archaeogeophysicist, member of the Soba team in 2022.
- Melania Ostaszewska (Department of Archaeology, University of Warsaw), topographer and archaeogeophysicist, member of the Soba team in 2022.
- Robert Ryndziewicz (Institute of Archaeology and Ethnology, Polish Academy of Sciences), coordinator of the non-invasive programme, deputy director of the project.

Our work would have been impossible without the welcoming community of modern Soba, for which we are truly grateful. The author is also very grateful to Jarosław Majewski (gpr.software) for enabling the use of the Wave software.

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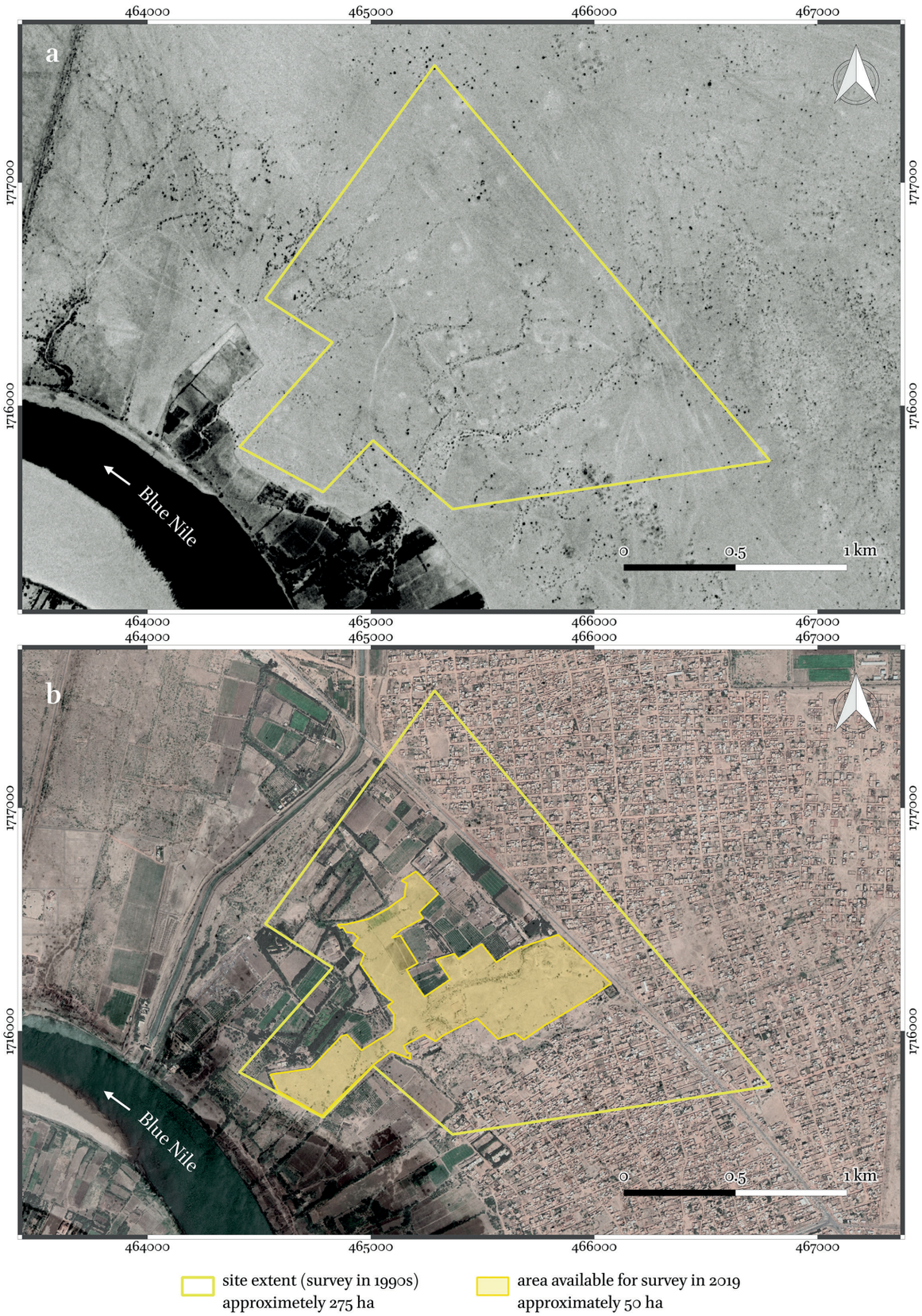

Figure 3.1. Soba archaeological zone. Background satellite images showing the changes of the landscape over the last five decades: a – 1970 Corona image, b – 2019 Google Earth (prepared by Robert Ryndziewicz).

3.1. Geology and landscape of the study area

The remains of the medieval city of Soba are located in the central part of Sudan, on the right bank of the Blue Nile, *c*. 20km from the confluence of the White and Blue Niles. This part of the Blue Nile valley is formed on Cretaceous Nubian sandstone formations (Barbour 1961; G.M.R.D 1981). The fine-grained alluvial soils forming the valley were derived from the erosional highlands of Ethiopia, formed by Cenozoic volcanic rocks (Woodward *et al*. 2022). During the summer rainy season, the Blue Nile transports large volumes of sediment-laden water. In the annual flow regime of the whole Nile, the Blue Nile tributary accounts for as much as 60±4% of the transportation of the suspended sediments, and 57% of mean water discharge (Woodward *et al*. 2022, fig. 14.12b). Under these conditions, a flat, extensive alluvial plain has formed in the lower reaches of the Blue Nile. The surface of Soba is slightly undulating, interspersed in some places by shallow seasonal watercourses (arabic: *khor*) and is located at an altitude (on average) of 385m above sea level. On the aerial photographs published by Shinnie (1961), the Soba landscape is essentially undeveloped, and in some places covered with sparse vegetation, characteristic of the semi-arid areas of the Sahel. A Corona satellite photograph from 1970 (**Figure 3.1a**) additionally shows a narrow strip of cultivated fields along the bank of the Blue Nile. In the ensuing five decades, however, the landscape of Soba has changed dramatically. Its short distance from the centre of Khartoum – the rapidly growing capital of modern Sudan – has meant that the surroundings of Soba are now a densely populated suburb of the city (**Figure 3.1b**). Of the 275ha archaeological zone, only about 50ha were available for research in 2019, and the farmland area has increased in size several times. In many places, the landscape has undergone significant alterations, including land levelling and ploughing, the establishment of new tree plantations, and the creation of orchards. Immediately to the northwest of the archaeological zone, an irrigation canal was excavated to deliver water to the large farms further inland. The archaeological zone has been intersected by a heavily trafficked tarmac road, connected to a bridge located approximately 1.5km southeast of its boundaries. The areas to the north of the road have been densely developed with residential buildings, as well as the entire south-eastern area of the archaeological zone. Along the banks of the Blue Nile, brick factories have been built. This has led to the heavy traffic of trucks and heavy equipment associated with the brickworks, which passes the archaeological remains, causing damage. Moreover, human settlements in the vicinity have led to issues of rubbish dumping at the site. In addition, it appears that even more parts of the site are gradually being incorporated for agriculture or urban development. Comparing the survey from the 1980s with the geophysical prospection (**Figure 3.2**), it is clear that many of the mounds and areas between them have been destroyed by urban expansion.

It is clear that Soba's archaeological heritage needs to be protected and managed, to mitigate the risk of further destruction. However, apart from the stone columns of Church C, the deteriorating remains of medieval mud-brick walls exposed during previous excavation campaigns and a few mounds covered with rubble of medieval bricks, the archaeological landscape of Soba does not attest to its medieval past, meaning its importance is unclear for non-specialists. The architectural remains are below ground – often just below the surface. A non-invasive geophysical prospection, covering as large an area as possible and allowing for the characterisation of the archaeological remains, seemed to be a primary step towards developing a strategy for the preservation of this unique archaeological site.

3.2. Methodology of geophysical surveys

Archaeological features can be investigated non-invasively using geophysical survey procedures. The potential of non-invasive techniques is increasingly becoming widely recognised as an element of many archaeological scientific programmes, broadening research perspectives and allowing for a better understanding of past spaces. The selection of appropriate methodology and measuring instrumentation – according to the character of the structures sought and the survey conditions found – offers a powerful and time-efficient way to map archaeological remains and their spatial organisation, and thus to study the human past. For the Soba prospection, we developed a non-invasive survey protocol, aimed to obtain high-resolution proxy data that can be used to characterise archaeological remains invisible on the surface, evaluate their state of preservation, and map structures such as the remains of individual buildings, streets, districts and the spaces between them. We performed a large-scale magnetic survey using a fluxgate gradiometer, supplemented by an electromagnetic survey utilising the Ground-Penetrating Radar (GPR).

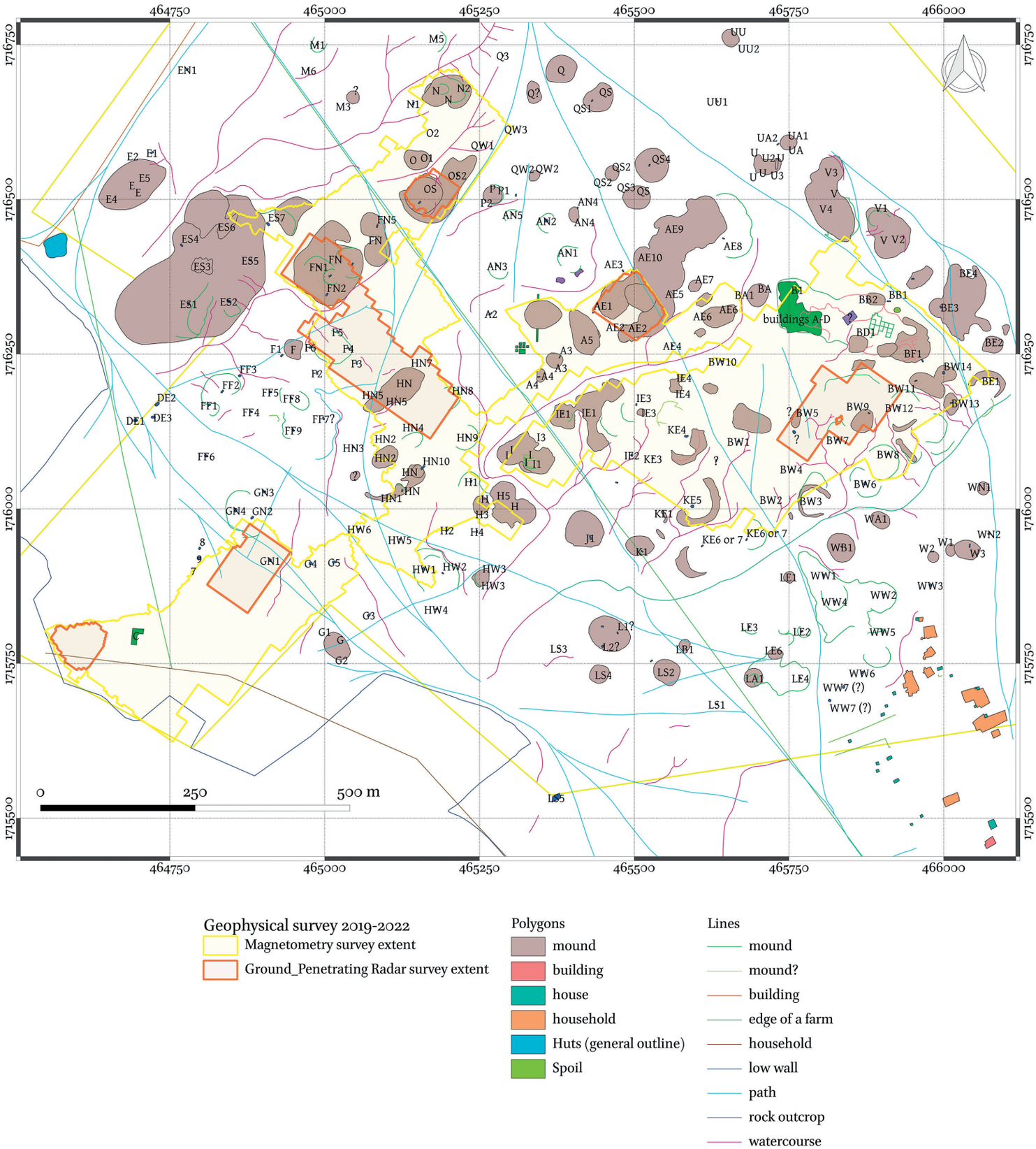

Figure 3.2. Plan of Soba made in the 1980s (after the SARS Archive in the British Museum, digitalised and vectorised by Mariusz Drzewiecki) with the 2019–2022 geophysical survey overlaid (prepared by Robert Ryndziewicz).

3.2.1. *Magnetometry*

Magnetometry can detect and identify a wide variety of features derived from past human activity (Schmidt *et al*. 2015, 59–67). This method involves registering local changes in the intensity of the Earth's magnetic field, which are caused by changes in the magnetic properties of the subsurface. Almost all soils in the world contain magnetic minerals, such as maghemite and magnetite (Le Borgne 1955). Variations in the magnetisation of different materials and layers can be measured using equipment with sufficiently high sensitivity. The extent and intensity of the variations (called anomalies) depend on the contrast between the different magnetic susceptibilities of the objects or layers and their surroundings. There are two primary types of magnetisation of the subsurface: induced and remanent. While induced magnetisation is determined by a number of factors related to soil processes (Fassbinder 2017), the predominant source of remanent magnetisation is the heating of a material above its Curie temperature. As a result of the high temperature (on average above 600 degrees Celsius), the magnetised particles align themselves with the Earth's external magnetic field. During cooling, the magnetic polarity of the material is retained. Due to this phenomenon, it is possible to identify objects such as furnaces, hearths, accumulations of burning and ash, concentrations of pottery sherds, fired red-brick and other burnt materials (Schmidt 2009). Materials with negligible magnetic susceptibility, such as limestone and sandstone, can be located if they are in an environment with higher magnetic susceptibility, and are recorded as negative anomalies (Fassbinder 2017). The high magnetic susceptibility of Nile silt and dried mud-bricks was first observed by Albert Hesse (1967; 1970) during his pioneering geophysical research in the Nile Valley at Mirgissa at the Second Cataract. The geoarchaeological studies carried out in the area of the Sixth Cataract proved a high variability in the magnetic susceptibility of the different sediment fractions, indicating a significant increase in soil magnetic properties caused by the high magnetic susceptibility of the finest sediment (Lisa *et al*. 2012). The strongly magnetic volcanic rock sediment load that is transported by the Blue Nile from the erosional highlands of Ethiopia has a significant effect on the high magnetic susceptibility of all alluvial soils in the Nile Valley.

The effectiveness of magnetometry in investigating archaeological landscapes in the Nile Valley has been confirmed at numerous sites in Sudan and Egypt (e.g., Mohamed Ali *et al*. 2012; Spencer 2012; Herbich 2019; Herbich and Ryndziewicz 2019a; Herbich and Ryndziewicz 2019b; Obłuski *et al*. 2022; Herbich 2023). Magnetometry seemed an obvious choice for surveying Soba, due to the materials used to construct the buildings – mud-brick and fired-brick, the presence of which has been confirmed by previous excavations (e.g., Welsby and Daniels 1991). In January 2018, we performed the test of the magnetic method, using the Geoscan Research FM256 fluxgate gradiometer within a small area (40 × 80m) in the BW region, proving the high suitability of this method for the Soba survey (Drzewiecki and Ryndziewicz 2019).

During the main part of the survey, we collected the magnetic data using the Bartington Grad 601-2 instrument (two instruments of this type were used simultaneously during fieldwork in 2022). This type of device is equipped with a dual system of two fluxgate sensors placed vertically 1m apart (Bartington and Chapman 2004). The data acquisition was performed along parallel profiles separated by 0.5m with a 0.25m sampling interval along the line. The surveyed area covered approximately 46.5ha with an irregular shape determined by site accessibility (**Figure 3.3**). The magnetic data was processed using Geoplot 4 software (Geoscan Research 2018). Processing workflow involved the application of the zero-mean traverse, interpolation to a 0.125 by 0.125m grid and low pass filtering with a Gaussian weighing within a radius of two on both axes (Aspinall *et al*. 2008).

3.2.2. *Ground-Penetrating Radar*

Ground-Penetrating Radar (GPR) is an electromagnetic method with great potential for archaeological applications. It is based on the emission of high-frequency electromagnetic waves interacting (reflection, refraction or dispersion) with subsurface features with different dielectric properties. Recording of the returning signals allows three-dimensional mapping of the ground and obtaining data on the characteristics of subsurface structures and layers. Wave propagation in the subsurface is essentially determined by the three main parameters: water saturation of the ground, clay mineral content and soil salinity (Conyers 2013). The usefulness of GPR data in archaeological investigations depends on the specific properties of the underlying objects and the contrast in dielectric constant between them and the surrounding substrate. GPR records both the two-way travel time and the amplitudes of the

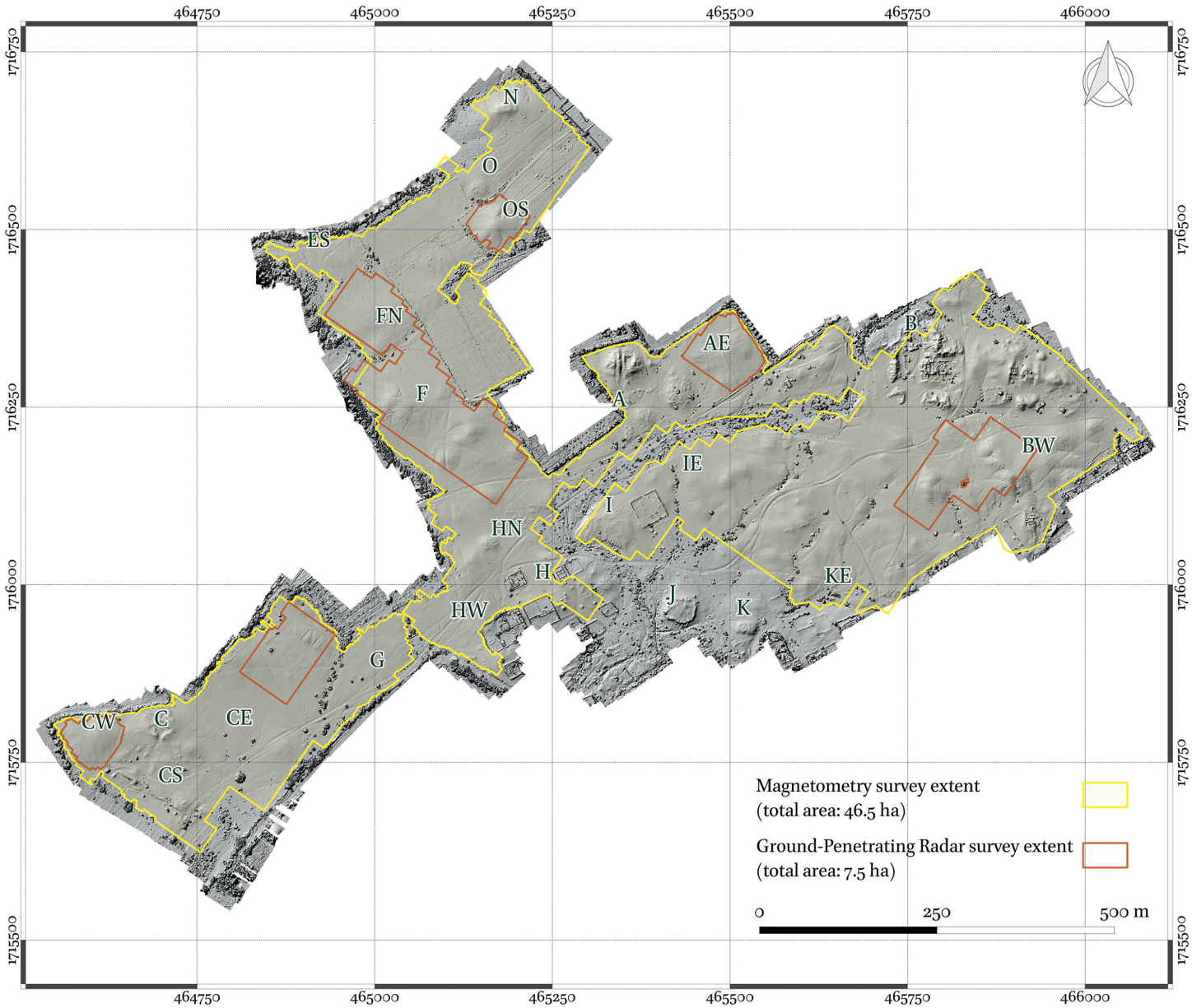

Figure 3.3. Overview map of the extent of the geophysical survey in 2019–2022 overlaid on Digital Terrain Model (DTM); survey areas marked in capital letters (prepared by Robert Ryndziewicz).

Area name	Time window	Estimated RDP	Profile spacing	Number of profiles	Area surveyed
AE	65.04ns	4.5	0.5m	393	0.74ha
BW	65.04ns	4.5	0.5m	896	1.58ha
CW	65.04ns	4.4	0.5m	206	0.46ha
F & FN	98.24ns	4.8	0.5m	1988	3.45ha
GN	98.24ns	5.0	0.5m	499	0.94ha
OS	65.04ns	4.5	0.25m	505	0.40ha
			Total:	**4487**	**7.57ha**

Table 3.1. Parameters of the GPR measurements made in Soba with the Malå GX system with the HDR 450MHz antenna in Soba in 2019–2022 (in-line sampling of each profile: 2.5cm) (prepared by Robert Ryndziewicz).

electromagnetic waves, allowing us to obtain information on the location, depth and specific properties of buried objects and layers.

The results of high-resolution GPR surveys carried out as part of the work of the German Archaeological Institute (DAI) at Hamadab near Meroe (Ullrich and Wolf 2015) and the work of the Polish Centre for Mediterranean Archaeology (PCMA) at Old Dongola, carried out with the author's contribution (Obłuski *et al*. 2022), revealed the great potential of GPR in resolving far-ranging archaeological questions about the spatial arrangement and building structures of the past cityscapes in Nubia.

The GPR data at Soba were collected with an Malå HDR 450 MHz shielded antenna using a Ground Explorer single-channel system. The surveyed area covered slightly over 7.5ha, within six survey polygons in Areas AE, BW, CW, F and FN (perceived as a single polygon), GN and OS (Figure 3.3). We selected the areas where the magnetic data indicated a significant density of architectural remains. However, we avoided areas with large amounts of burnt brick debris on the surface, to ensure optimal coupling of the GPR antenna to the ground. The readings were recorded at intervals of 2.5cm within parallel profiles separated 50cm from each other (except Area OS, where the distance between profiles was thickened to 25cm).

Wave by gpr.software was used to elaborate the data. The processing sequence comprised several steps for enhancing data legibility and obtaining maps of use for archaeological interpretation. The start time was moved by 7.9ns on each profile. Subsequently, the signal amplification was applied, and unwanted frequencies were filtered out with a bandpass filter, and background noise was removed. To identify the relative dielectric permittivity (RDP) the shape of several reflection hyperbolas was examined (separately on each of the surveyed polygons). Data was migrated using an F-K migration procedure. Finally, the measured profiles were transformed into the horizontal amplitude maps (Goodman *et al*. 1995), generated utilising a kriging routine, preceded by a spline envelope algorithm applied to each profile. The basic measurement parameters of each area are summarised in **Table 3.1**.

3.2.3. *Positioning, visualisation, and integration of the data*

To ensure accurate data positioning, we used two RTK GNSS instruments (Topcon Hiper SR) in base-rover mode. Both magnetic and GPR surveys were carried out in the mutual 20 × 20m grid system. The coordinate system used for the topographic work at Soba was WGS 84 / UTM zone 36N (EPSG:32636), in which the geophysical data were georeferenced and presented. All the data was integrated into a GIS database (with an open-source QGIS software) and combined with other data sets, such as orthomosaics, DTMs, archival cartographic documentation, plans and satellite imagery. This facilitated ongoing evaluation of the outputs and the data management at subsequent stages of the project. The GIS was also our main tool for data interpretation as well as displaying the results as maps.

The magnetic map demonstrated the distribution of spatial changes in the vertical component of the magnetic field. Data is presented as a grayscale plot in which extremely high values correspond to the black, and extremely low to white (**Figure 3.4**). To increase visual clarity, the data was subjected to bilinear interpolation. The illustrations presenting particular extracts of the magnetic map (see below section 3.4, Results

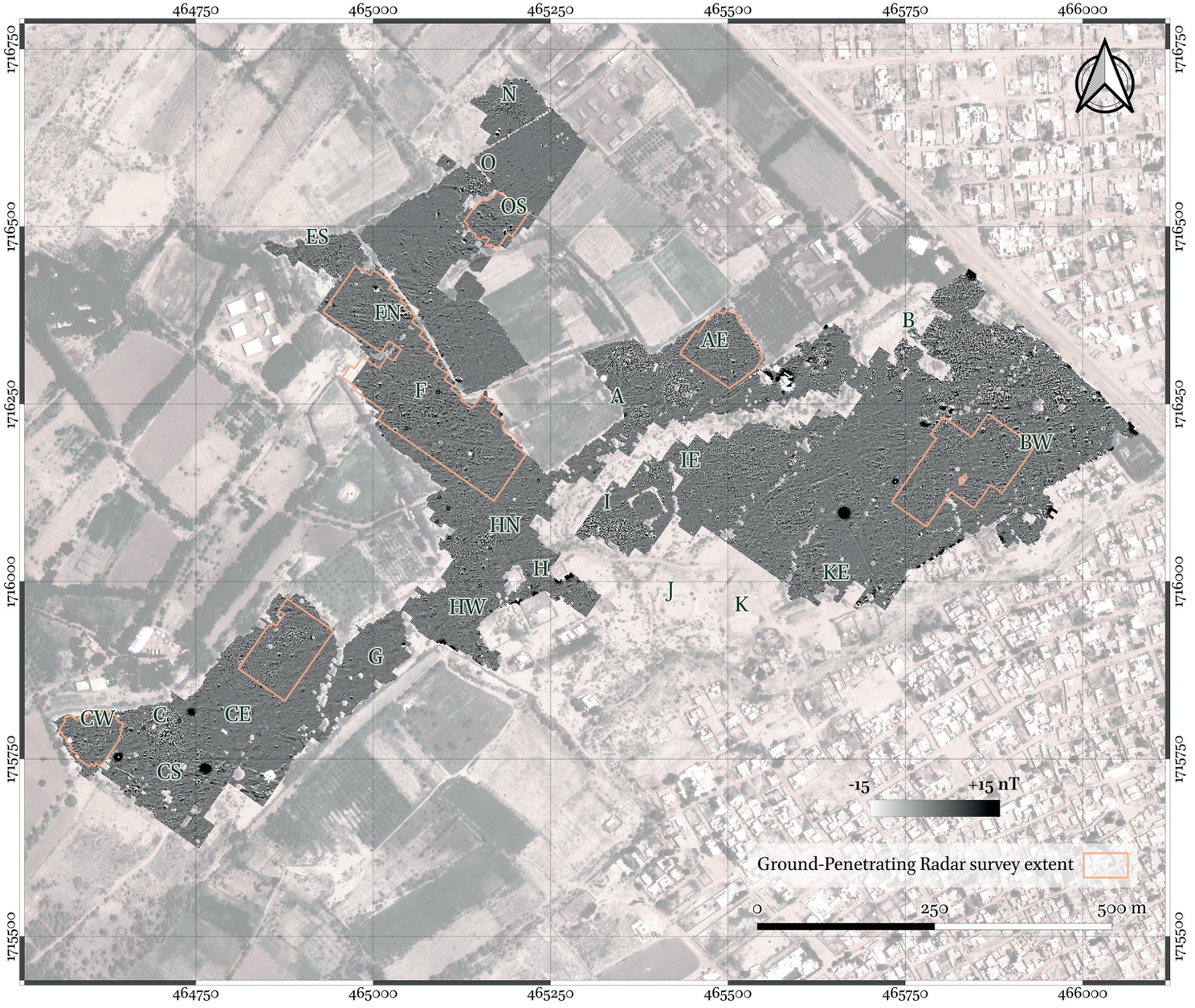

Figure 3.4. Magnetic data grayscale plot with GPR surveys extent and archaeological site areas (capital letters) (prepared by Robert Ryndziewicz; background image: Google Earth).

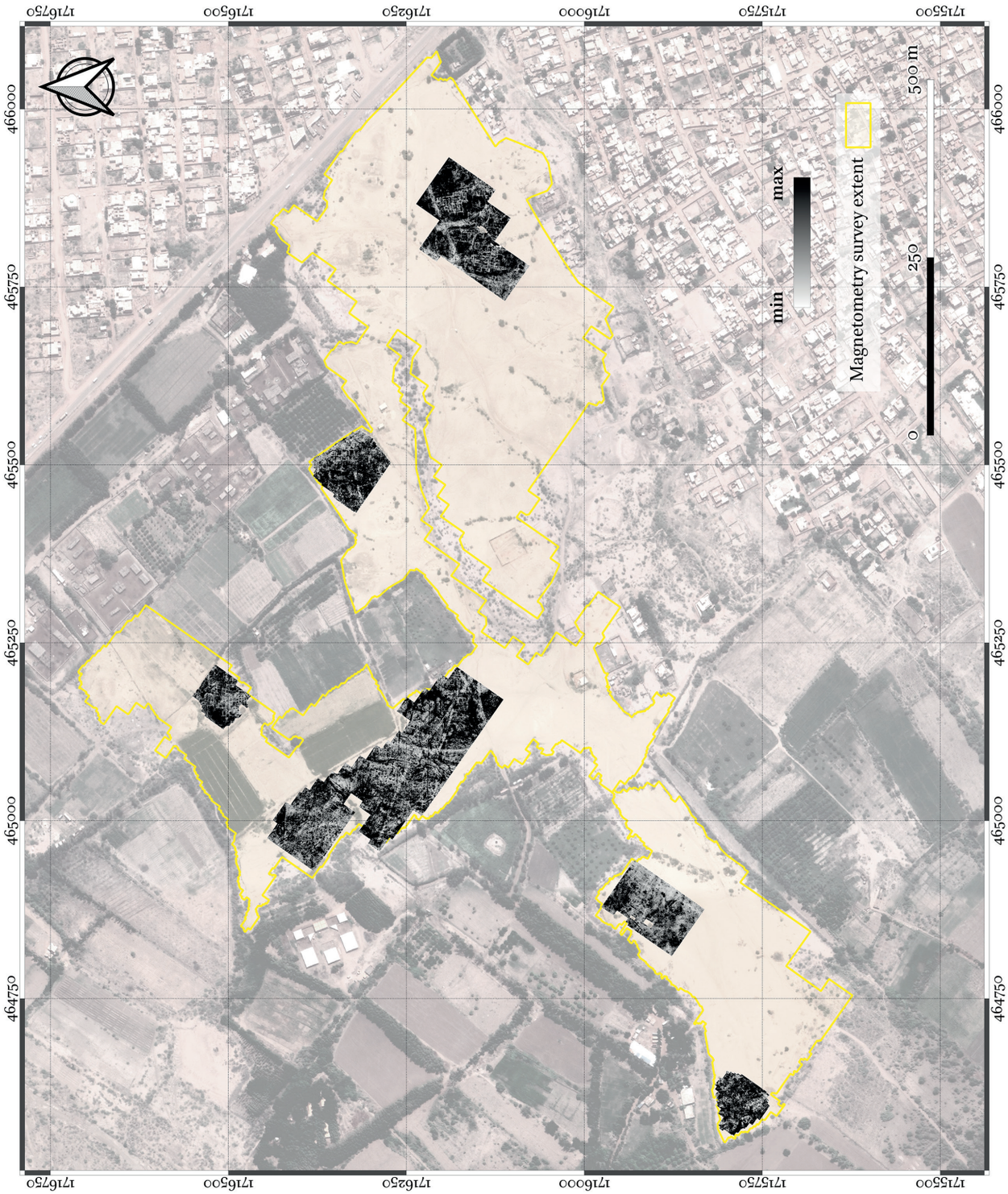

Figure 3.5. Mosaic of the results of the Ground-Penetrating Radar (GPR) surveys (grayscale plot) against the magnetometry survey extent (prepared by Robert Ryndziewicz; background image: Google Earth).

and Discussion) show the data in different value ranges; -15/+15nT, -10/+10nT, -8/+8nT and -6/+6nT, to provide the best contrast for highlighting the geophysical features described in the text.

Horizontal depth slices derived from the GPR data demonstrate the spatial distribution of electromagnetic wave reflections in the ground (**Figure 3.5**). Data is presented as grayscale plots, in which high-reflective areas correspond to dark tones and areas absorbing the electromagnetic wave correspond to bright tones. For this chapter, a set of visualisations has been selected from the depth slices generated in the ranges where the geophysical features attributed to the archaeological objects manifest themselves most clearly (see below section 3.4, Results and Discussion).

3.3. Geophysical data and its archaeological interpretation

Archaeogeophysical data can be considered an amalgamation of geological, environmental and anthropogenic factors. While the application of two geophysical methods allowed us to access comprehensive information from the site, the existing measurement conditions affected the results obtained by each method. Although the equipment and methodology were chosen to collect high-quality data, and post-processing the data was subjected to filtering procedures to minimise noise, there are unwanted components in the geophysical record that hinder final interpretation of the results (Schmidt *et al*. 2020). To correctly understand and interpret the data therefore it is necessary to take into account the complexity of factors that affects its quality.

Firstly, diurnal temperature variations in Sudan may have affected the drift of the fluxgate gradiometer. To minimise this effect, the instrument was adjusted at the control point several times during the measurement day. To minimise the staggering errors, the magnetometer was moved along the measurement profile in parallel mode, except for a small area between the HN and A zones, where it was arbitrarily decided to measure in zigzag mode. The most significant source of noise in the magnetic data was a large amount of burnt brick debris on the surface (or just below the surface), significantly limiting the range of other archaeologically useful information. The red-brick noise was particularly intense within Mounds A and B and in the surroundings of Church C, but in fact, only a few parts of the study area were free from the influence of this type of disturbance. Intense modern anthropogenic pressure resulted in numerous disturbances caused by metal objects (barbed wire and solid metal fences, electric transmission poles, elements of modern structures, and rubbish). In some places, the surface was flattened by heavy equipment. Heavy truck traffic caused deep ruts recorded in the magnetic data. Field cultivation in Area N and the northern part of Area F enhanced soil noise observed in magnetic data. Within the shallow seasonal water courses crossing the study area, land erosion and the presence of numerous thorny acacia trees caused these areas to be excluded from the prospecting. Finally, the alluvial soil at Soba, which is the matrix in which the archaeological objects are embedded, is characterised by a high magnetic susceptibility, hence the magnetic contrast between soil and sun-dried mud-brick walls (made of the same material) is relatively small.

With GPR data, as with magnetometry, the detectability of buried structures is related to soil properties. The clay sediments forming the alluvial soil matrix are characterised by high electrical conductivity, which enhanced the attenuation of the electromagnetic wave (Conyers 2012, 96–107). In practice, archaeologically useful data was registered up to a maximum of 20–28ns (approximately 1.4–2m). Microtopography and brick fragments covered the surface, making it difficult for the proper antenna coupling to the ground, degrading data quality (Conyers 2012, 86–89).

When interpreting geophysical data to obtain information relevant to studying the human past, it is important to remember that interpretation is a cognitive process. Therefore, it is necessary to understand that the choice of methodology and each step of the data processing result from arbitrary decisions that ultimately affect the outcome. The effectiveness of data analysis is thus related to the knowledge of the interpreter and his/her understanding of the principles and limitations of the methods. It is therefore a subjective process, which means that the interpretations made by different interpreters will differ. Although geophysical data offers advanced possibilities for subsurface characterisation, it is not possible to fully describe the studied subsurface (Manataki *et al*. 2021). It is important to remember that geophysical data is proxy data and thus its visualisation does not reflect a direct image of the archaeological features, but only the values measured by the sensors (Rączkowski 2020). It is often not possible to obtain unambiguous information about buried features, as different types of objects may have similar

geophysical signatures, and sometimes even simple structures can result in diverse and complex patterns in the data.

The classification of magnetic data typically involves distinguishing this on the basis of intensity, polarity, dimensions, and shapes, to develop an archaeological interpretation. The dataset from Soba was analysed qualitatively, assuming that different types of objects produce distinct types of magnetic anomalies. In the case of GPR data, information represented by the amplitude of the reflected electromagnetic wave, the shapes of the reflections, along with their spatial relationships, was visualised on horizontal amplitude maps. The qualitative analysis relied on the assumption that different types of material-forming structures and layers result in different types of electromagnetic wave reflection.

To increase the reliability of the archaeological interpretation of the data and provide more holistic images, it is imperative to integrate auxiliary sources of information into the interpretation process. Therefore, when analysing the geophysical information from Soba, we took into account the following supplementary information:

– The results of the recent archaeological excavations undertaken as part of the ongoing project – the locations of the excavations (except 1/OS, 1/SH, and 2/SH) were based on the outcomes of the geophysical surveys. These were to allow a better understanding the relationship between archaeological features and geophysical data;
– Published information on archaeological excavations from previous campaigns to determine the nature of buried archaeological features;
– High-resolution orthophotomosaics taken from a low altitude using a UAV, showing the surface structure and the location of disturbance-causing objects;
– Digital terrain models (DTMs) taken from a low altitude using a UAV, demonstrating the surface relief and microtopography, as well as facilitating the location of areas recently transformed, and allowing the correlation of topography and the distribution of geophysical anomalies;[2]
– Digitised plan of Soba from the 1980s, showing the extent of archaeological remains recorded at the time, the location of mounds and archaeological excavations;[3]
– Archival Corona satellite photos and GoogleEarth imagery for multitemporal landscape changes analysis, showing the development of modern infrastructure in Soba;
– Environmental and geological data as well as the results of geophysical surveys from other archaeological sites in Sudan where architectural remains were recorded.

3.4. Results and discussion

Evaluation of the geophysical data is based on the spatial delineation of the archaeological site proposed by Welsby and Daniels (1991, 12–25). This description is in alphabetical order, omitting areas that were not available for prospecting. The individual geophysical anomalies discussed in the text are indicated by consecutive numbers in square brackets. The presented interpretation should be regarded as a basis for further research, while bearing in mind that it does not exhaust all the potential information contained in the raw survey data.

3.4.1. *Area A*

The area available for the survey was bound by surrounding agricultural fields (**Figure 3.6a**). The dominant feature of this area is Mound A **[1]**, with a relative height of *c*. 2.5m and an ellipsoidal shape of *c*. 65 × 45m. This was recorded by Monneret de Villard (1935) and excavated by Shinnie (1961). It is accompanied by lower mounds **[2]**, **[3]** and **[4]**. The magnetic data (**Figure 3.6b**) is dominated by noise in the average of -20/+35nT range, caused by the significant amount of red-brick scattered on the surface and in the volume of the mounds. Based on the geophysical data, it is difficult to distinguish regular anomalies indicating the presence of building remains. Only in the area between [1] and [2], among the anomalies caused by the brick debris, is it possible to distinguish a set of several linear anomalies indicating the probable presence of poorly preserved red-brick walls. Within the cluster of noise [3] it is possible to also distinguish a linear anomaly forming a right angle, which may be the remains of a

[2] Orthophotomosaics and digital terrain models (DTMs) presented in this chapter were made by Mariusz Drzewiecki using a series of UAV's aerial photos and ground control points collected throughout the two seasons of fieldwork.

[3] The plan was obtained from the SARS Archive in the British Museum by Mariusz Drzewiecki, who also digitised and vectorised the plan's sheets.

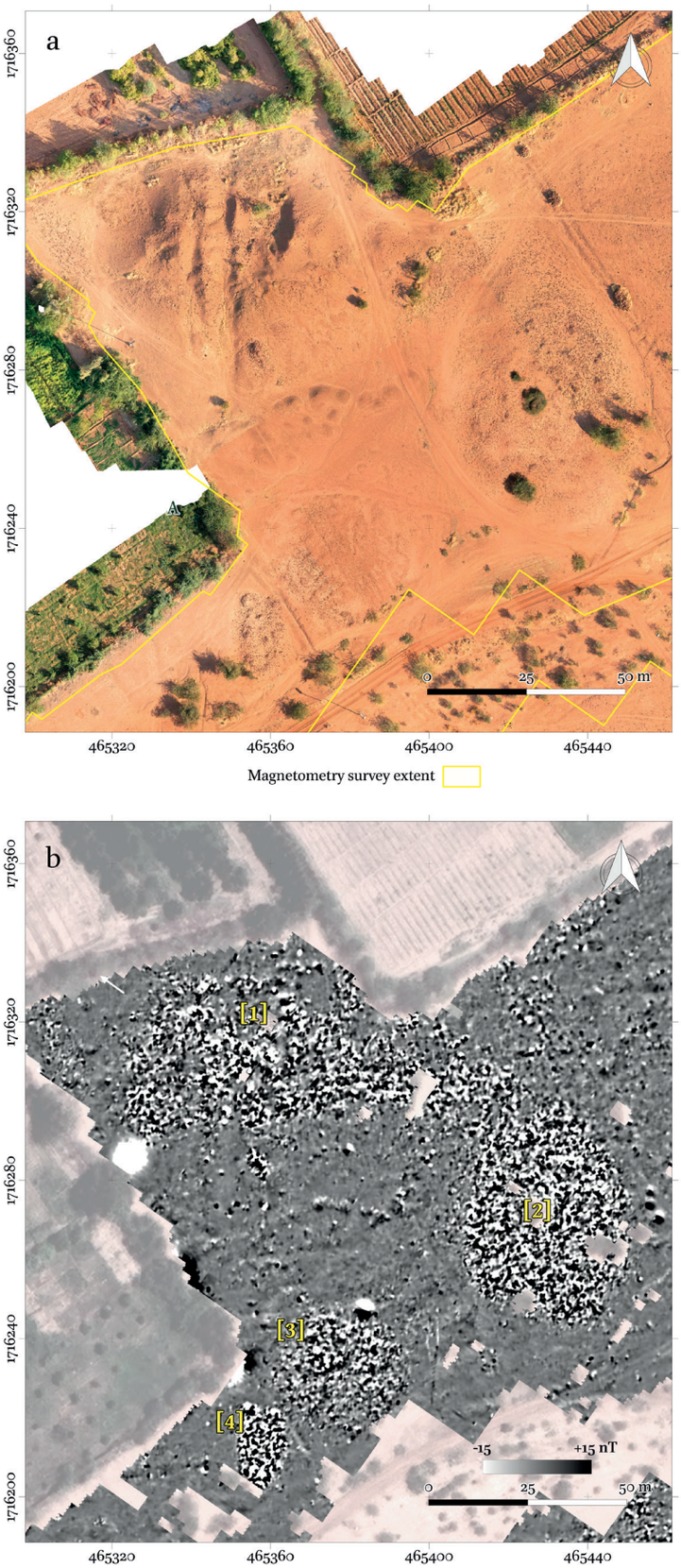

Figure 3.6. Area A; a – orthomosaic photograph, b – magnetic data plot (dynamics -15/+15nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

red-brick wall. In other areas of intense noise, it is not possible to distinguish anomalies that may indicate the remains of a mud-brick wall. In the area devoid of noise, immediately to the northwest of [3], a set of several low-intensity linear anomalies (-3/+5nT) oriented along the E–W direction are visible, which may indicate the remains of mud-brick walls. *Circa* 5m to the east of the edge of [2], three dot-shaped anomalies are visible, with an intensity in the range of -30/+45nT and polarity consistent with the magnetic north direction. This indicates an origin associated with thermoremanent magnetisation and may suggest the presence of a furnace complex. A similar anomaly, but with values reaching -70/+90nT and with a larger extent, is found at the northern edge of the mound [3]. The anomaly complex marked as [4] corresponds to a slightly elevated mound with a vast concentration of red-brick. It has a roughly rectangular shape, *c*. 11 × 20m, aligned with its longer side along an N–S direction. It can be assumed to represent the remains of a separate red-brick building. The prominent western edge of this anomaly may indicate a preserved external wall.

3.4.2. *Area AE*

Only a small part of Area AE described by Welsby and Daniels (1991, 12–13) was available for the survey (**Figure 3.7a**), since its northern part is currently used as an arable field and orchard. The central part of the area bears clear marks of levelling with heavy equipment (**Figure 3.7b**), and it is crossed in the south-eastern part by an intensively used road, creating deep ruts. On the other side of the road is a brick and reinforced concrete police station, to the east of which runs a shallow dry valley. Despite a noticeable noise component caused by the presence of red-brick debris in the magnetic data (**Figure 3.7c**), it is possible to distinguish a large number of linear anomalies of low intensity (on average not exceeding -5/+6nT), which can be associated with the presence of mud-brick walls in an orthogonal arrangement and orientation close to the cardinal directions. The group labelled **[5]** covers an area of over 2,000m² and can be interpreted as an extensive complex of buildings. Approximately 35m to the south, a distinct anomalous complex is distinguishable, suggesting the presence of a separate building **[6]** with dimensions *c*. 18 × 12m, its long side oriented along the WNW–ESE direction. In between, measurements recorded a single anomaly with values reaching -30/+70nT, probably caused by a furnace. The GPR survey provided more detailed information on the building plans. In a visualisation corresponding to a depth range of 20–70cm below the ground surface (**Figure 3.7d**) the mud-brick walls are visible as anomalies absorbing electromagnetic waves. GPR data indicate the presence of a wall **[7]** recorded over a distance of almost 30m, running in an NW–SE direction and invisible via magnetic data. It can be assumed that it represents the enclosure of another complex, possibly related to the anomaly complex [2] in Area A (Figure 3.6b).

3.4.3. *Area B*

This area, located on the northern periphery of the surveyed land, is identified as the 'central' part of Soba and the 'acropolis' of the medieval city (Welsby and Daniels 1991, 13). Excavations carried out in the area have provided information on three churches and an extensive complex of monumental buildings interpreted as an 'ecclesiastical complex' (ibid., 33–135, figs 1 and 2). The dominant feature is the extensive Mound B, in the western part of which the excavated remains of buildings are still visible (**Figure 3.8a**). The surface is densely covered with red-brick debris and is cut across by heavy truck traffic. To the northeast, the site is enclosed by a solid iron fence, beyond which is a tarmac road and modern buildings. The magnetic data (**Figure 3.8b**) is dominated by noise caused by large quantities of red-brick. In a small, noise-free area **[8]**, a set of linear anomalies indicating mud-brick walls can be identified, undoubtedly associated with the building complex discovered during the previous excavations. The complex itself continues eastwards. Another zone absent of red-brick extends as far as the excavations carried out by Shinnie (1961, 23–25). His published plan (ibid., fig. 8) shows numerous walls uncovered on two levels. It can be presumed that linear magnetic anomalies of low intensity **[9]** correspond to the walls found on level 1. Approximately 40m to the west, within a cluster of red-brick-induced noise **[10]**, it is possible to distinguish linear anomalies of high intensity (-20/+30nT), the orthogonal arrangement and orientation roughly in line with the cardinal directions, which can be interpreted as fragments of massive red-brick walls. The unhomogeneous alignment of the anomalies and the accompanying intense noise caused by the red-brick debris makes it impossible to determine the dimensions of the structure and its precise plan. These anomalies can be associated with the rectangular structure formed by brick rubble in the BF area,

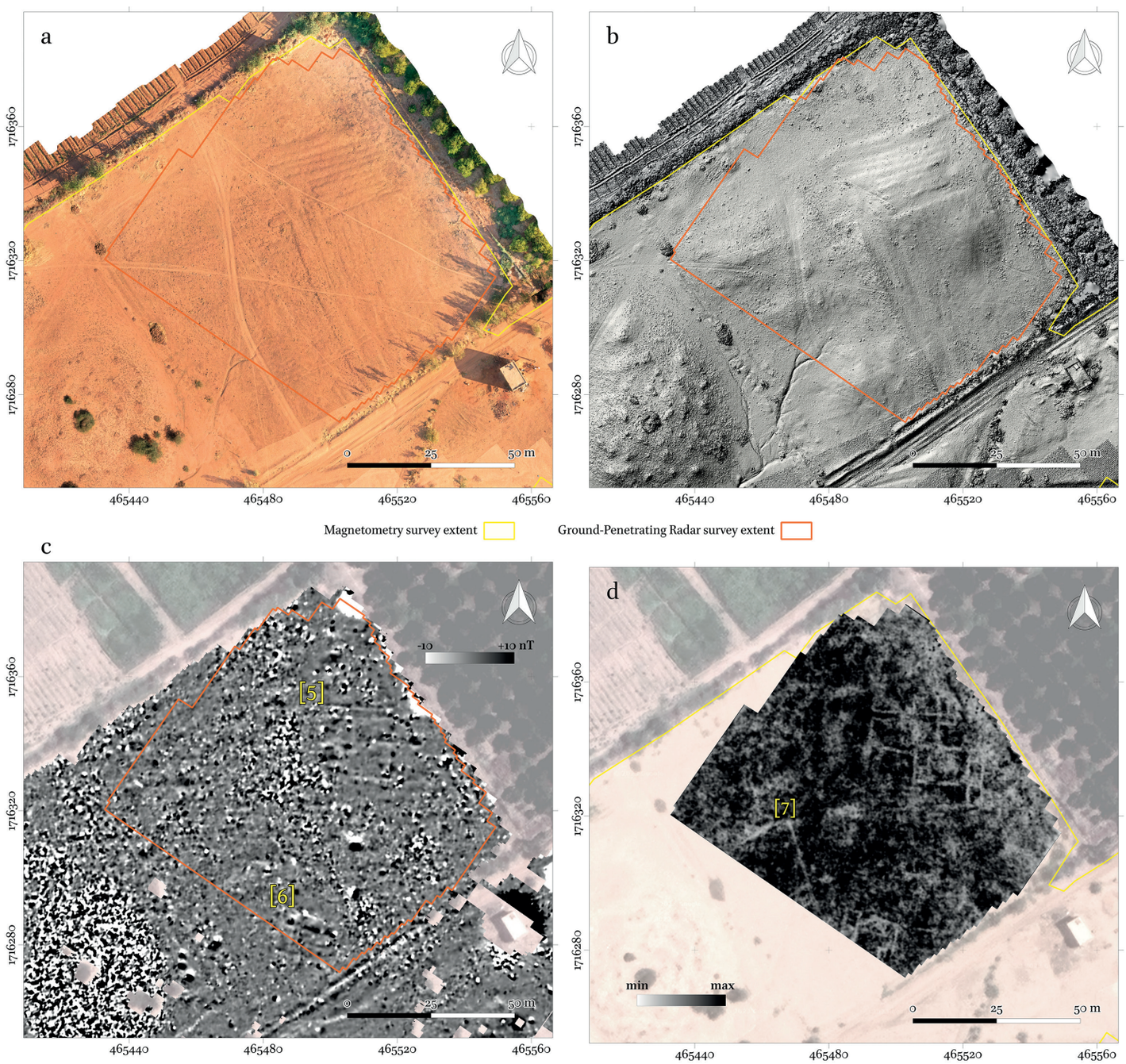

Figure 3.7. Area AE; a – orthomosaic photograph, b – Digital Terrain Model, c – magnetic data plot (dynamics -10/+10nT), d – extract from GPR data from between *c*. 20 to 70cm below the surface (prepared by Robert Ryndziewicz; c and d background image: Google Earth).

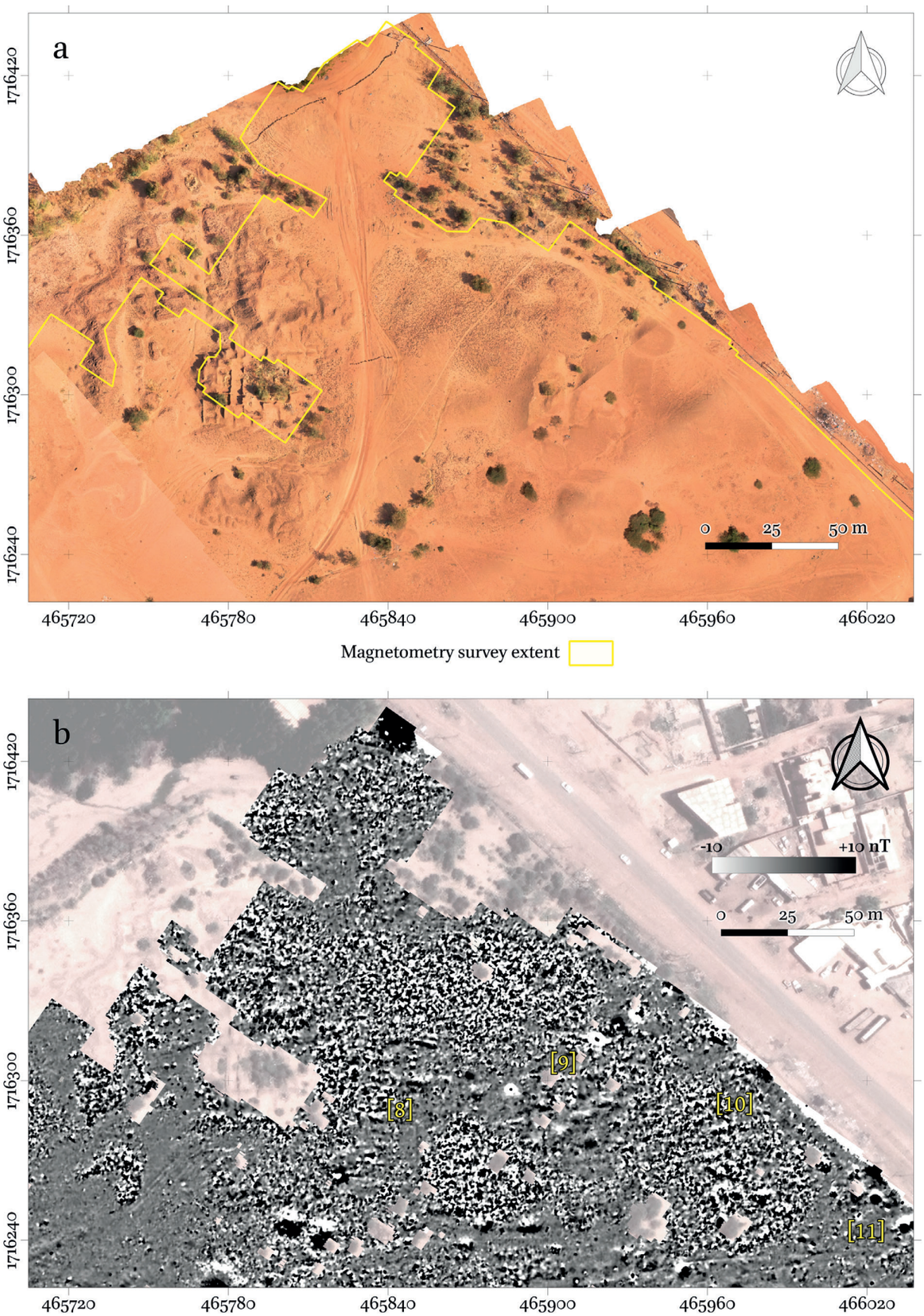

Figure 3.8. Area B; a – orthomosaic photograph, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

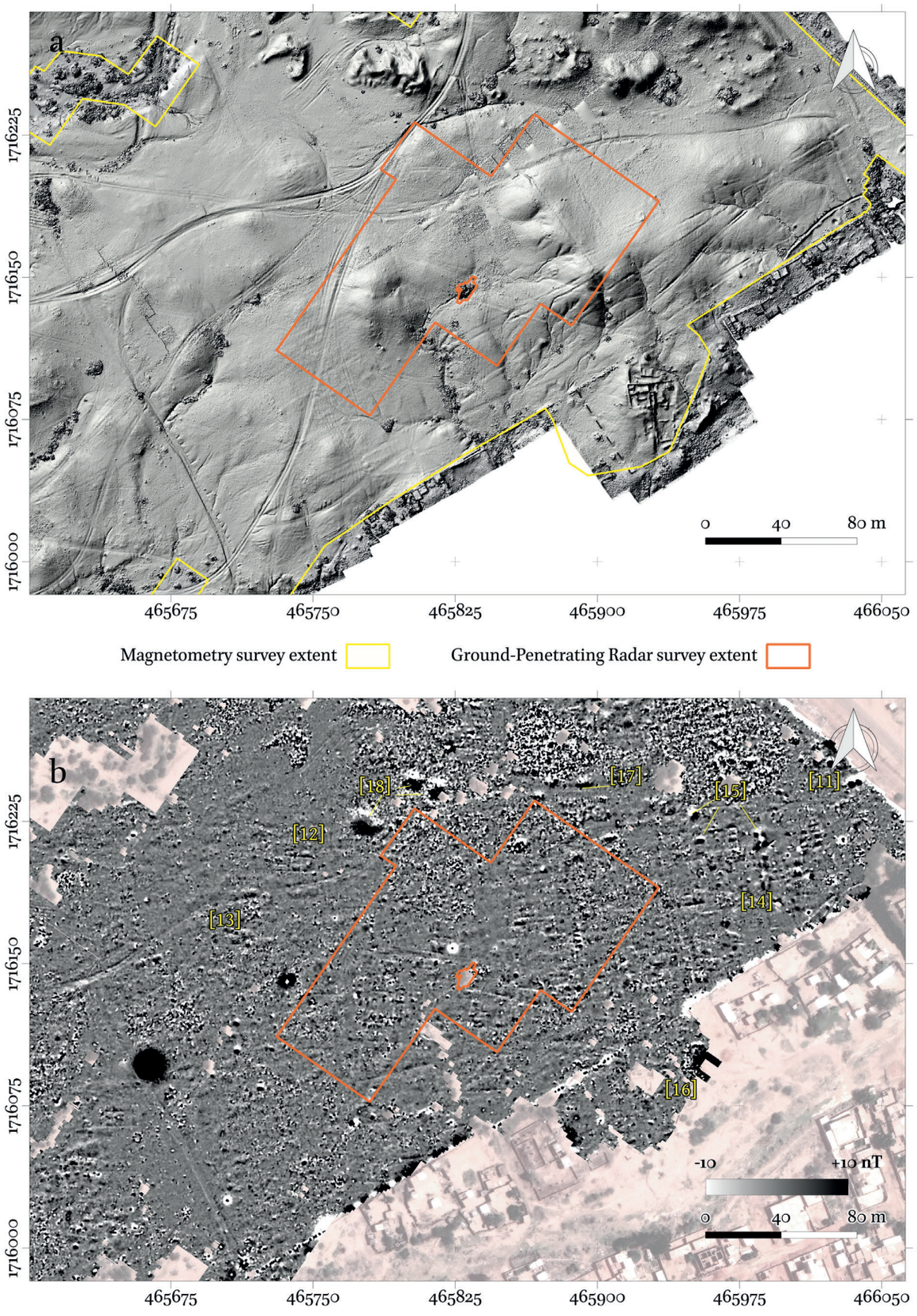

Figure 3.9. Area BW; a – Digital Terrain Model, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

described by Welsby and Daniels (1991, 14). Nowadays this is no longer visible on the ground surface. Below the western slope of Mound B, a cluster of three dot-shaped anomalies **[11]** of very high intensity (-30/over +100nT) with polarisation consistent with magnetic north was registered. These can be interpreted as a group of kilns.

3.4.4. *Area BW*

This is an extensive, relatively flat area located south of Mound B, bounded to the east and west by shallow dry valleys (**Figure 3.9a**). It has a low elevation terrain and a gently undulating surface, relatively free of brick rubble. The extent of the magnetic prospection was delimited by a deteriorating metal fence on the south-east side, behind which there was intensive development of modern buildings. The magnetic data (**Figure 3.9b**) is relatively free of any noise caused by the presence of the red-brick. At first glance, it was possible to distinguish vast linear anomalies of low intensity and of an orthogonal arrangement, generally oriented to the cardinal directions. These indicate the existence of several clusters of mud-brick buildings, spread over a considerable area. In the north-western part of the study area, a set of distinct linear anomalies with intensity reaching -8/+8nT can be distinguished, interpreted as an individual building **[12]** with dimensions of at least 27 × 8m, oriented with its longer side along an E–W axis. Based on the magnetic data, it is possible to determine the plan of the structure and indicate its internal divisions. *c*. 45m to the southwest, a concentration of anomalies **[13]** dominated by noise caused by the red-brick, suggests the presence of a rectangular, poorly preserved building measuring *c*. 30 × 25m and oriented WNW-ESE along the long side. On its northern side, several anomalies with values reaching -25/+25nT, indicate the presence of ash layers and perhaps a small hearth. In the eastern part, the magnetic data provides the basis for the identification of an extensive assemblage of compact buildings with various layouts and dimensions, arranged uniformly, in line with the cardinal points, with a slight tilt towards the WSW–ENE **[14]**. Linear anomalies with ranges of values (on average) -4/+4nT correspond to mud-brick structures. Numerous chambers with average dimensions of 4.5 × 3.5m can be recognised. Inside some of these, anomalies with predominantly positive values (-5/+15nT) suggest the presence of layers of ash or other heavily burnt material. Measurements also indicate the presence of several much stronger anomalies with a small diameter **[15]**, interpreted as furnaces. The area excavated by NCAM in 2010 was also subjected to magnetic prospecting,[4] where partially exposed walls are visible on the surface. Both their orientation and the linear magnetic anomalies **[16]** coincide with the linear anomalies in the zone [14]. It can be assumed that these are remains of a large district with a uniform organisation of buildings, possibly bounded by the eastern *khor*. In the zone delimiting Mound B from the BW area, a linear area **[17]** *c*. 4m wide, E–W, only minimal fluctuations in magnetic field intensity were recorded, surrounded to the south and north by much stronger magnetic anomalies. This can be interpreted as a pathway or street. *Circa* 50m to the west of [17], two strong (-30/+70nT) anomalies of 8m in diameter each **[18]** were present, accompanied by a slightly weaker (-20/+45nT) oval-shaped anomaly with dimensions 12 × 17m. These can be interpreted as thick layers of ash or slag invisible on the surface.

A closer look at the magnetic data from the central part of the BW section (**Figure 3.10a**) reveals a comprehensive and complex set of magnetic anomalies arranged in an orthogonal pattern. Easily distinguishable linear anomalies of low intensity, visible over almost the entire dataset extract, suggest the presence of mud-brick structures organised into at least two distinct complexes. Numerous clusters of fuzzy noise, indicate the presence of red-brick debris, which, however, was observed in very small quantities on the surface of the BW area. A rectangular complex of anomalies **[19]** measuring 18.5 × 18m, oriented uniformly along the cardinal directions, with a slight tilt towards the WNW–ESE, suggests the presence of a building, composed of both mud-brick and red-brick walls. The anomalous layout on its eastern side suggests a 3 × 8m annexe, whose shorter walls (north and south) were built of red-brick. On their western extension, inside the main structure, two rows of small, regularly spaced (at intervals of *c*. 4–4.5m) dot-shaped anomalies with values not exceeding -20/+20nT were registered, which can be interpreted as small red-brick features inside the structure. In the northwest corner of the described structure, a relatively strong dot-shaped anomaly was recorded, with a slight predominance of negative values (-50/+40nT), whose polarisation does not follow the direction of

[4] The results of the excavations have not been published, all information kindly was provided by Dr Abdelhay Abdelsawi.

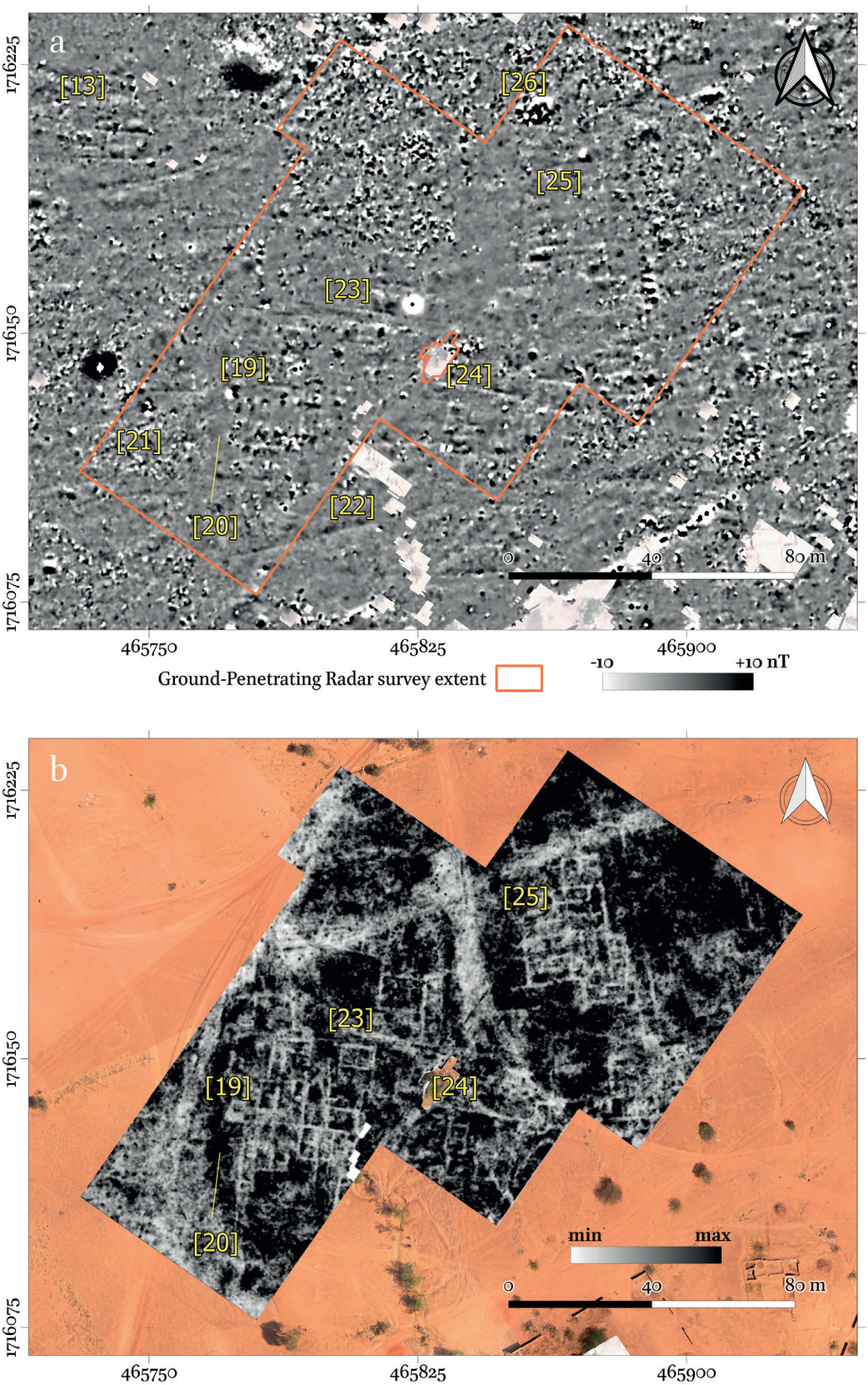

Figure 3.10. Area BW. Extract from geophysical survey data; a – magnetic data plot (dynamics -10/+10nT), b – GPR data horizontal depth slice at from *c*. 30 to 70cm below the surface overlaid on orthomosaic photograph (prepared by Robert Ryndziewicz).

magnetic north. Structure [19] is accompanied to the north and south by numerous orthogonal linear anomalies with the same orientation, suggesting a compact development complex. On the west side, it is accompanied by a linear zone **[20]** *c*. 5m wide, with an NS orientation, which, analogous to [17], can be interpreted as a street or thoroughfare. On the western side of this structure, an anomaly forming a 9m diameter circle **[21]** was recorded 25m from the western edge of the structure [19], suggesting the existence of a circular red-brick structure. To the south of [19], a distinct linear anomaly over 60m long was recorded, **[22]**, running WSW–ENE and cut by water erosion on the ground surface. It appears to be caused by the presence of a mud-brick wall, which, however, is difficult to relate unambiguously to the [19] complex due to its significantly different orientation. To the north of [19], a set of linear anomalies, **[23]**, can be interpreted as a transition between buildings. At 30m east of the edge of [19], a linear anomaly complex, **[24]**, was recorded in an orthogonal pattern and orientation identical to [19]. In the eastern part of the magnetic dataset fragment presented, numerous linear anomalies of low intensity and orthogonal alignment, **[25]**, oriented fairly uniformly in line with the main cardinal directions, with a slight tilt towards the WSW–ENE, suggesting the existence of a compact mud-brick development, analogous to [14] and probably together forming one extensive quarter. Numerous small anomalies of high intensity, disrupting the clarity of the data, indicate red-brick debris. A circular cluster of anomalies, **[26]**, with high intensity (-30/+60nT) and a diameter of 6m, indicates concentrations of heavily burnt material or furnace remains of considerable size.

Visualisation of GPR data from a depth of 30–70cm (**Figure 3.10b**) provided further comprehensive information about the features detected by magnetometry, and supplied numerous details of the plans of two compact building complexes [19] and [24], slightly differing in orientation. It also made it possible to precisely determine the course of the passage [23] between the buildings.

The layout of the recorded anomalies [19] shows in my opinion similarities with the plan of Building B on Mound B interpreted as a central church (Welsby and Daniels 1991, 70–81). On its eastern side, a circular structure 4m in diameter, interpreted as a tomb superstructure, was excavated on its main axis (Welsby and Daniels 1991, 90–91). A magnetic survey at Selib (Northern State), revealed a circular anomaly 9m diameter in the vicinity of a mound covered with red-brick debris (Żurawski 2011, fig. 8). The complex was enclosed by a brick wall, clearly visible on the magnetic data. Excavations have confirmed the existence of a church under the mound and accompanying *saqia*, recorded as a circular magnetic anomaly (Żurawski 2016) located, however – similar to the circular structure accompanying Building B of Soba – on the eastern side of the church. At the present stage of research, it seems impossible to conclusively determine the character of the structures causing the anomalies [19] and [21] and possibly relate them to [22].

3.4.5. *Area around Church C*

This is located in the southern part of Soba, *c*. 400m from the bank of the Blue Nile, surrounded to the north and southwest by farms, which limited the extent of the geophysical prospection. At the position indicated by the white arrow (**Figure 3.11a**), the remains of three massive stone columns and two column capitals were visible, unambiguously identified as the remains of Church C. The area within a 30-metre radius around the columns on the magnetic data (**Figure 3.11b**) is highly disturbed by readings caused by red-brick debris **[27]**. The inverted L-shaped area with less disturbance corresponds to the location of the Shinnie excavation trench (1961, 25–27). There are no clues in the magnetic data to determine the plan or size of Church C. In the eastern part of the disturbed area [27] it is possible to distinguish a few linear anomalies with predominantly positive values. These may be related to the brick *mastabas* whose presence was noted by Shinnie during excavations (1961, fig. 9), but the magnetic image is far from clear. A very strong dot-shaped anomaly with values exceeding -100/+100nT was recorded near the eastern edge [27]. An anomaly of this type can be produced by a furnace operating at high temperatures but could also represent an anomaly caused by an iron bar of a considerable mass driven vertically into the ground. The cluster of anomalies **[28]** caused by the remains of a red-brick structure suggests building remains, but the data does not allow us to obtain more precise information about the buildings. Test pit 1/CS established in the area (see Chapter 5) did not provide evidence of buildings. The extensive linear anomaly **[29]**, 7m wide and more than 120m long, running along the WNW–ESE direction, is probably of natural origin and related to the accumulation of alluvial sedimentary deposits or changes in the Blue Nile riverbed; however, an anthropogenic

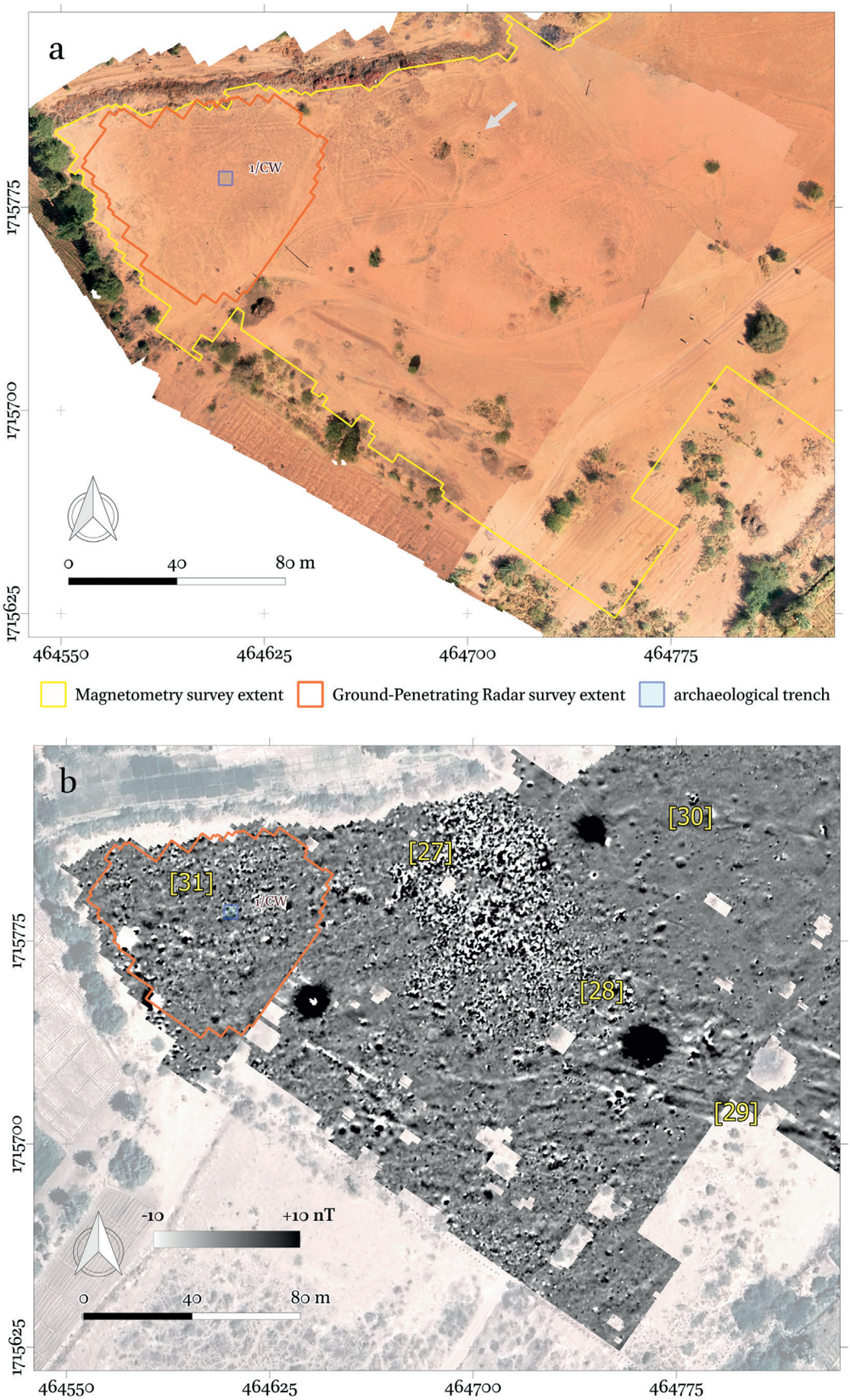

Figure 3.11. Area C; a – geophysical surveys extent and location of Trench 1/CW against orthomosaic photograph. White arrow indicates the location of Church C, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

origin cannot be ruled out. East of [27], in the CE area, the magnetic data is free of red-brick-induced noise. Measurements recorded numerous irregularly distributed circular anomalies with predominantly positive values and a range of values of maximum -5/+15nT **[30]**. Their diameter varies from 1.5 to 3.5m. They may be caused by the presence of pits, but their possible relationship to the medieval settlement remains unclear. In the CW area, magnetic data provides only limited clues to the existence of buildings **[31]**. The large proportion of noise caused by red-brick suggests a significant degree of deterioration of the architectural remains. Only infrequent anomalies can be linked to the presence of several walls with different orientations. The data provided by ground-penetrating radar at a depth of 40–90cm (**Figure 3.12a**) gives a slightly more accurate image of the architectural remains, making it possible to distinguish the phases of development with a non-uniform organisation at different depth levels. In contrast, the data collected from depths ranging from 80–130cm (as seen in **Figure 3.12b**) was not very useful due to unfavourable measurement conditions and the electromagnetic wave being heavily attenuated in the ground. Excavations shed some light on the issue of multi-phase development. In archaeological Trench 1/CW (see Chapter 5), two particular levels of development, with different wall orientations, were identified.

3.4.6. *Area ES*

This area represents one of the drastic examples of the progressive destruction of Soba. On the DTM (**Figure 3.13a**), there are traces of mound levelling using heavy equipment. Within **[32]** it is possible to distinguish magnetic anomalies, indicating the remains of buildings that have been heavily destroyed. (**Figure 3.13b**).

3.4.7. *Areas F, FN, and western part of HN*

This extensive area in the central part of the archaeological zone was bounded to the southwest by farmland and to the northeast by arable fields. No architectural remains are visible on the surface (**Figure 3.14a**), and the area is almost free of red-brick debris on the surface. The terrain is slightly undulating (elevation changes do not exceed 1.5m), and it is possible to distinguish several mounds (**Figure 3.14b**). The magnetic data (**Figure 3.14c**) provides detailed information allowing us to identify a dense urban quarter covering approximately 4ha. Magnetic anomalies indicate that the dominant building material of the area was mud-brick. Linear anomalies with intensities averaging -5/+5nT, forming a complex pattern, indicate an orthogonal arrangement of the buildings, with a dominant WNW-ESE orientation. Many of the recorded linear anomalies show a predominance of negative values, indicating that the material from which the bricks were made has a lower magnetic susceptibility than the surrounding alluvial matrix. Architectural remains over the areas of FN **[33]**, F **[34]** and also the western section of part of HN **[35]** can be considered as a single, vast and still well-preserved district of the city. Although it is possible to identify the walls, in many cases, it proved impossible to distinguish the plans of individual buildings, since they are closely adjacent to one another. Some gaps between buildings can be interpreted as passageways or paths **[36]**, and in addition the area of dense development within the FN appears to have been bounded by a wall at least 70m long, perhaps with a road along the outside **[37]**. In the cultivated field, the magnetic data suggests the presence of mud-brick buildings **[38]**, but the magnetic image is more unclear than in the non-cultivated part, which may indicate the destruction of architectural remains. This probably represents levelling of the surface and regular ploughing. In the western part of HN, some of the linear anomalies have orientations consistent with the cardinal directions, and a weak noise appears in the magnetic data, indicating the presence of red-brick rubble **[39]**. This may be indicative of a different type or phase of development. The magnetic record also contains anomalies of high intensity in this area. Two dot-shaped anomalies **[40]** and **[41]** with values reaching -100/+60nT may indicate furnaces, but it cannot be ruled out that they were caused by iron rods driven vertically into the ground. Strong anomalies with polarisation in line with the magnetic north direction – e.g., **[42]**, **[43]** and cluster **[44]** – are more likely to be confirmed furnaces.

The GPR data (**Figure 3.15**) supplemented the interpretation of the structures identified in the magnetic surveys. The outlines of the structures are already visible in the data corresponding to the near-surface ground layers (**Figure 3.15a** – from 0 to approximately 30cm below the surface). A detailed image of the numerous linear structures absorbing the electromagnetic wave is provided by horizontal depth slices from approximately 30–60cm and 60–90cm depth ranges (**Figures 3.15b** and **3.15c**, respectively). Despite the unfavourable measuring conditions, the recorded features

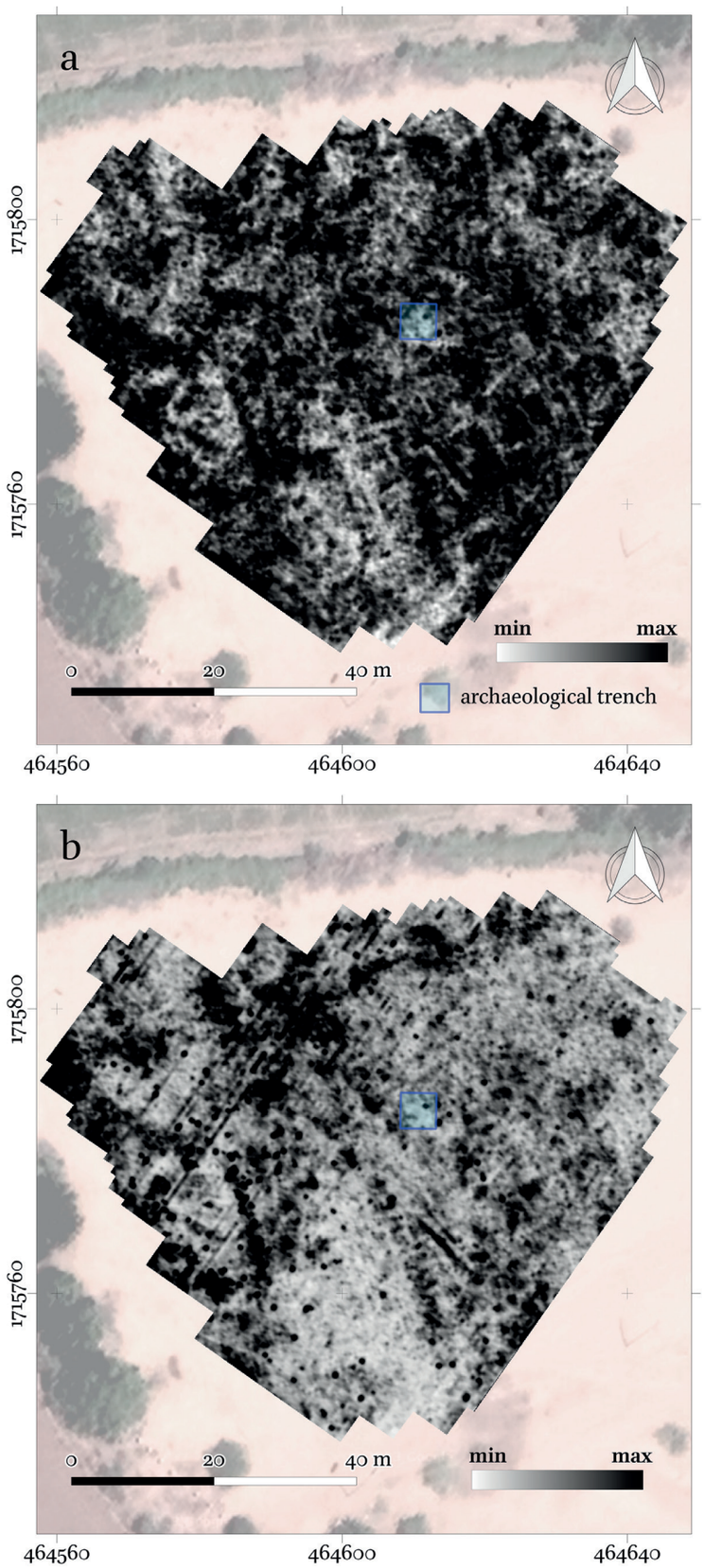

Figure 3.12. Area CW. Extract from GPR data overlaid on Google Earth satellite map; a – horizontal depth slice from *c*. 40 to 90cm below the surface, b – horizontal depth slice from *c*. 80 to 130cm below the surface (prepared by Robert Ryndziewicz).

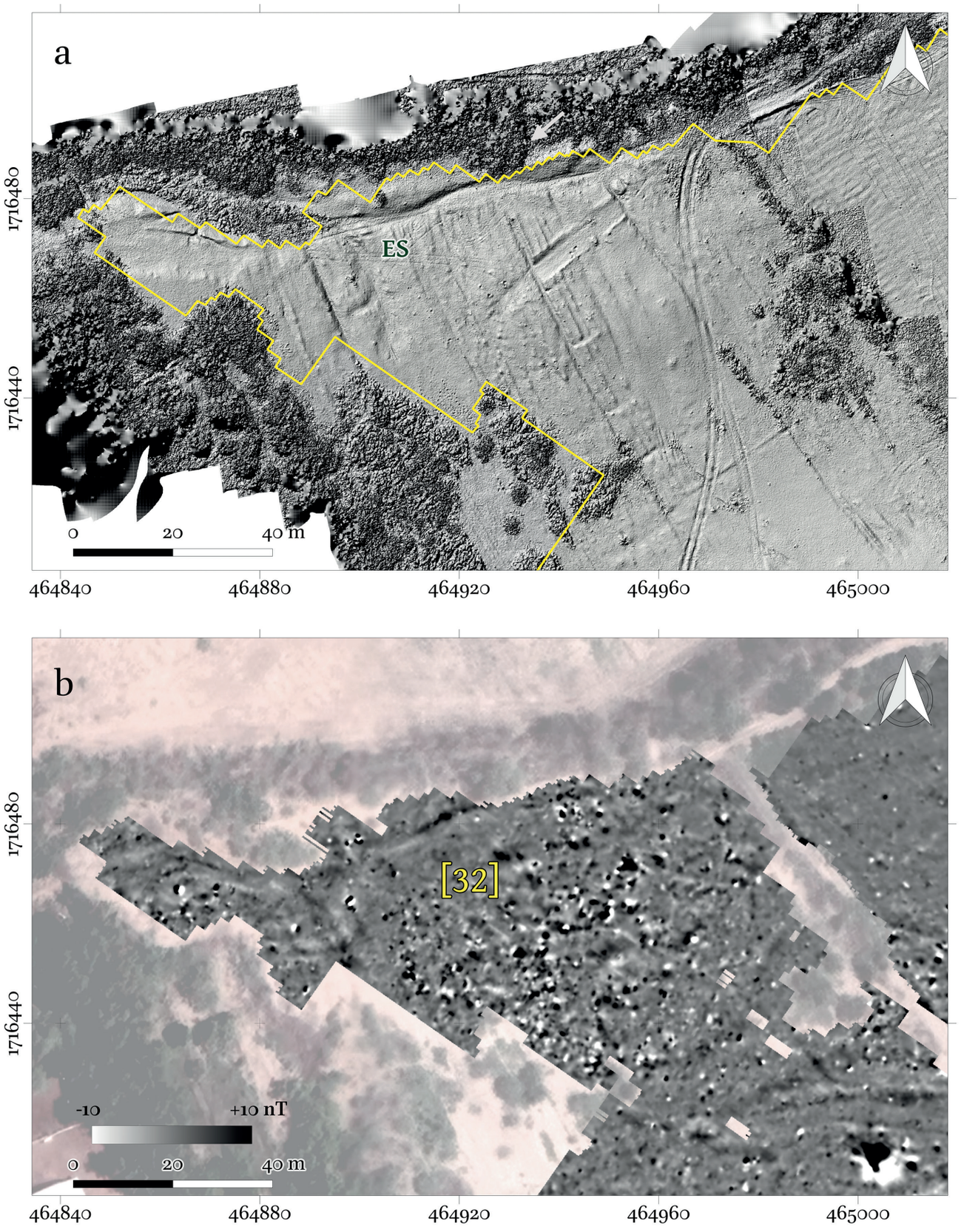

Figure 3.13. Area ES; a – Digital Terrain Model, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

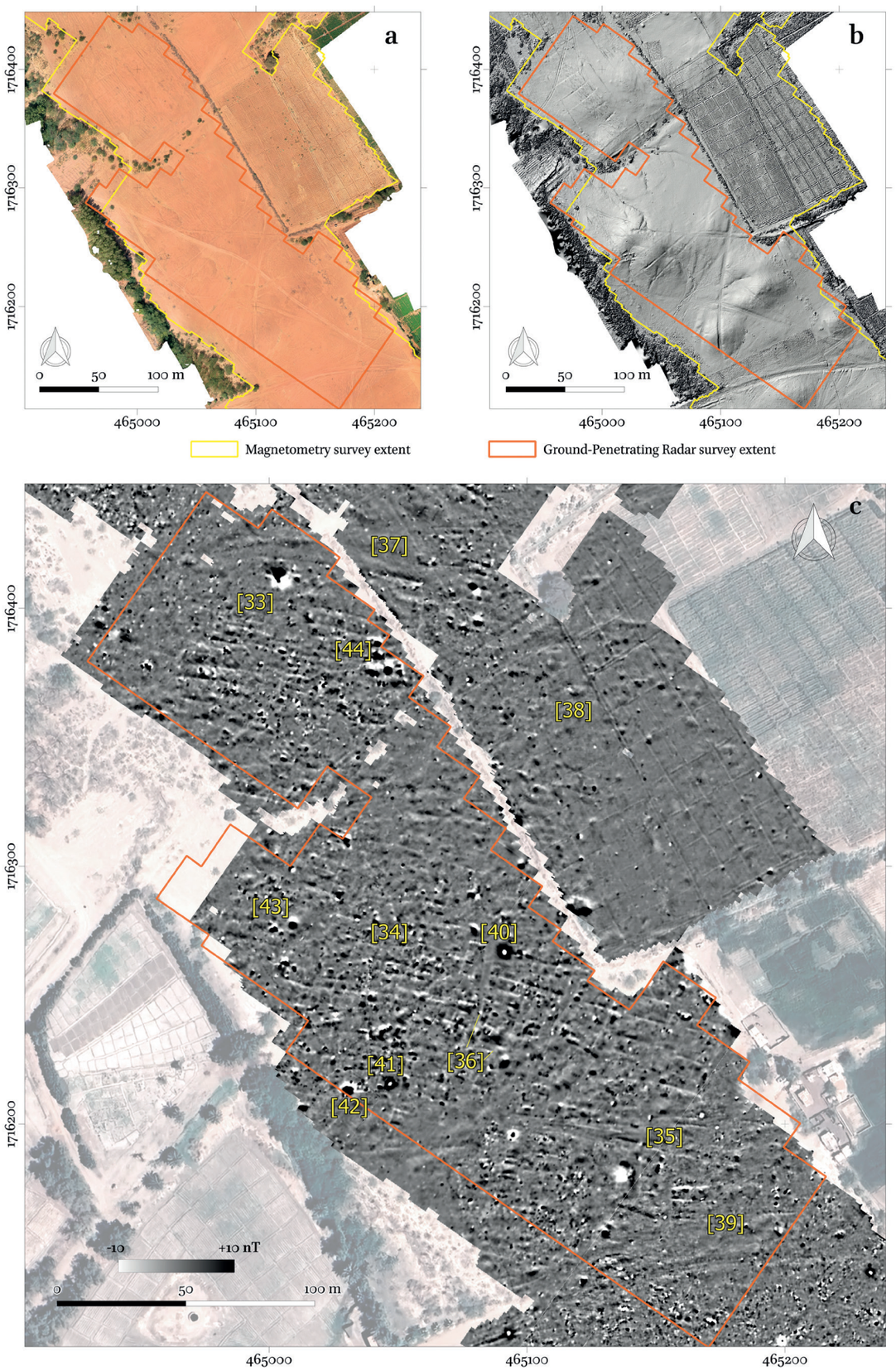

Figure 3.14. Area FN, F and the western part of HN; a – orthomosaic photograph, b – Digital Terrain Model, c – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

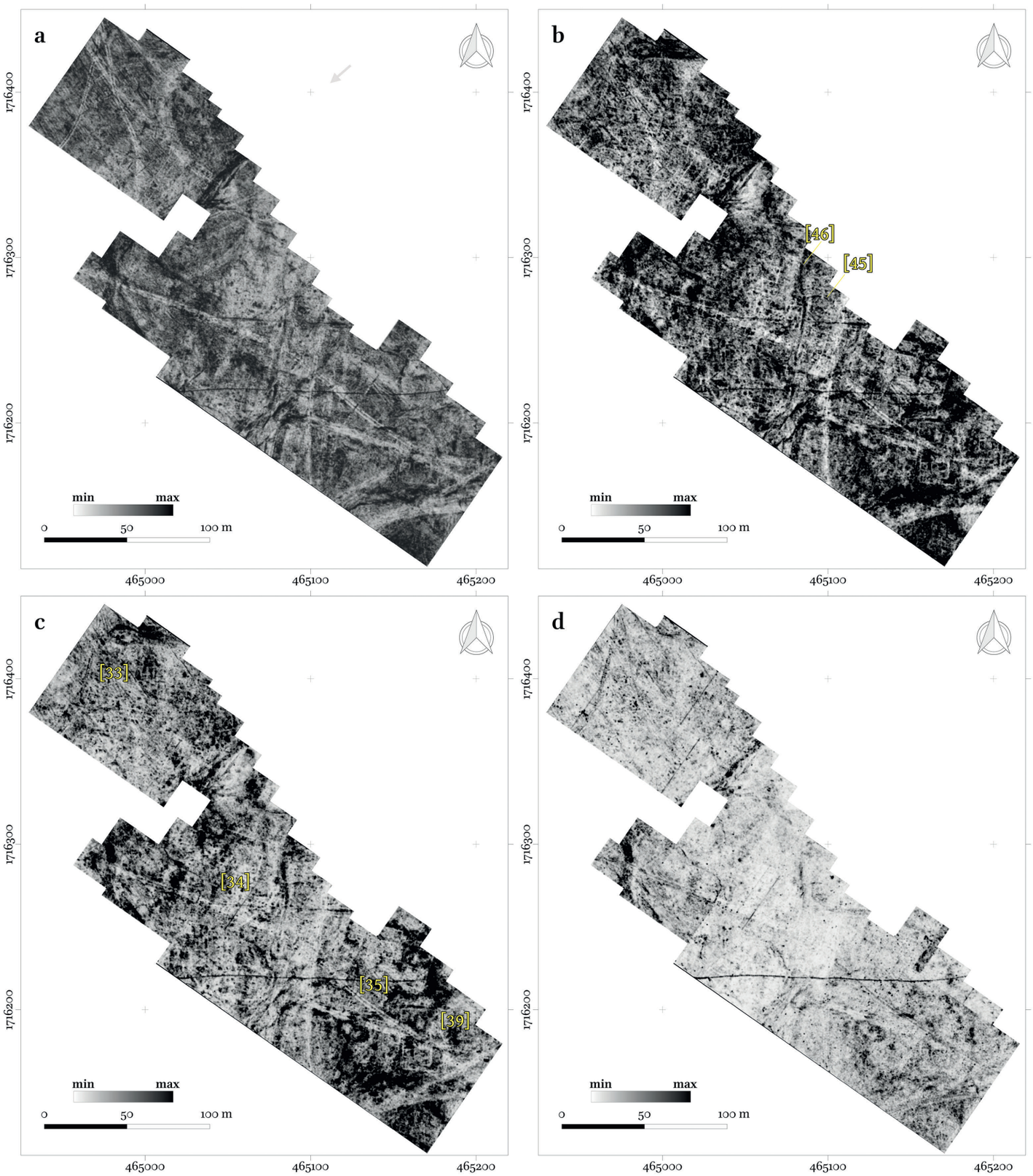

Figure 3.15. Area FN, F, and the western part of HN; GPR horizontal depth slices; a – from *c*. 0 to 30cm below the surface, b – from *c*. 30 to 60cm below the surface, c – from *c*. 60 to 90cm below the surface, d – from *c*. 90 to 120cm below the surface (prepared by Robert Ryndziewicz).

can be identified with numerous mud-brick walls. In Area F, attention is drawn to a set of anomalies **[45]** forming a rectangle of approximately 11 × 15m, clearly distinguishable, with its longer side almost exactly along the SW–NE axis. It did not manifest itself clearly in the magnetic data and was concealed by another anomaly [40]. Immediately to the west of the feature [45], a linear anomaly **[46]** with an N–S orientation is visible in the data, coinciding with another magnetic anomaly, [36]. A similar pattern of anomalies within the citadel at Old Dongola have been excavated and confirmed as a street (Obłuski *et al*. 2022, 269). In the western part of HN, the GPR survey provided information on additional buildings [39] not identifiable in the magnetic data. The GPR data does not provide archaeological information below the 90cm depth level (**Figure 3.15d**), due to the attenuation and dispersion of the electromagnetic wave in the ground.

3.4.8. *Area G*

This area is located between Church C and Area H, and is bound by farms to the northwest as well as to the southeast (**Figure 3.16a**). In the magnetic data (**Figure 3.16b**), an extensive concentration of anomalies indicative of red-brick debris is located in the northern part of the survey area. A complex accumulation of high intensity anomalies **[47]** (values exceeding -50/+70nT) forming a 22 × 20m rectangular shape was initially interpreted as a well-preserved red-brick building. Archaeological excavation in Trench 1/GN, located in the north-eastern area of the complex, later revealed the remains of a mud-brick building with traces of fire, extensive layers of burnt material and numerous richly decorated ceramic vessels (see Chapters 6 and 9). A set of anomalies [48] forming a 7 × 33m rectangle, oriented with the longer side along the SSW–NNE axis and intensity not exceeding -20/+50nT, has also been interpreted as the remains of the building – perhaps forming an extensive complex with [47]. Archaeological excavation (Trench 2/GN) in the northern part of **[48]** revealed the presence of a well and a system of irrigation channels, small walls and pits, interpreted by the authors as the remains of the foundations of a garden (see Chapter 6). The identification of single linear anomalies interpreted as walls is also possible to the west **[49]** and east **[50]** of the described complex. It can be assumed that the geophysical data set does not provide complete information about Area G. It probably continues northwards, but in this part a private orchard has been developed and so it was not available for survey. Outside the area described above, the magnetic data from Area G is relatively 'clean'; not only is there no noise component, caused by the red-brick, but there is also a lack of low-intensity linear anomalies, identified as the magnetic signature of the mud-brick walls. There are also irregularly scattered anomalies analogous to [30] (see area around Church C), some of which are more than 5m in diameter **[51]**.

GPR surveys carried out in a rectangular area of 120 × 80m (**Figure 3.17a**), provided supplementary information on the spatial organisation of the GN area. In the data between 30 and 80cm below the surface, attention is drawn to a linear, slightly curved anomaly **[52]** about 60m long, perhaps bounding the complex [47] and [48] to the west (**Figure 3.17b**).

3.4.9. *Area H*

Located in the central part of the surveyed area, between Areas F and G. The extent of the survey is delimited to the west by a farm. To the northeast, the survey limit is defined by a bend of the central *khor*, overgrown with small trees. To the southwest, the extent of the survey is bound by several modern houses (**Figure 3.18a**). The slightly undulating surface is cut by an intensively used road running along a SW–NE line. In the northern part, the magnetic anomalies (**Figure 3.18b**) are a continuation of the nearby [39], have similar characteristics (see Figure 3.14c), and indicate the remains of several small red-brick buildings **[53]**. This hypothesis is reinforced by the presence of loosely scattered-brick material on the surface. A small mound **[54]** measuring approximately 25 × 18m, its long side oriented E–W and no more than 60–70cm in height relative to the surrounding ground, is densely covered with red-brick debris, which manifested as a strong noise in the magnetic data, among which it is difficult to distinguish linear anomalies suggesting the course of the walls. A few metres southwest, a linear anomaly (about -4/+10nT) refracting at right angles is legible. This is oriented according to the cardinal directions, and its form suggests a fragment of enclosure wall surrounding the structure inside the mound [54]. *Circa* 10m east of the mound [54] on the same axis, a dot-shaped anomaly, approximately 3.5m in diameter, suggests the presence of a small red-brick structure. Several strong dot-shaped anomalies here, **[55]** and **[56]**, can be interpreted as furnaces, but, as with anomalies [40] and [41] (see Figure 3.14c), it cannot be ruled out

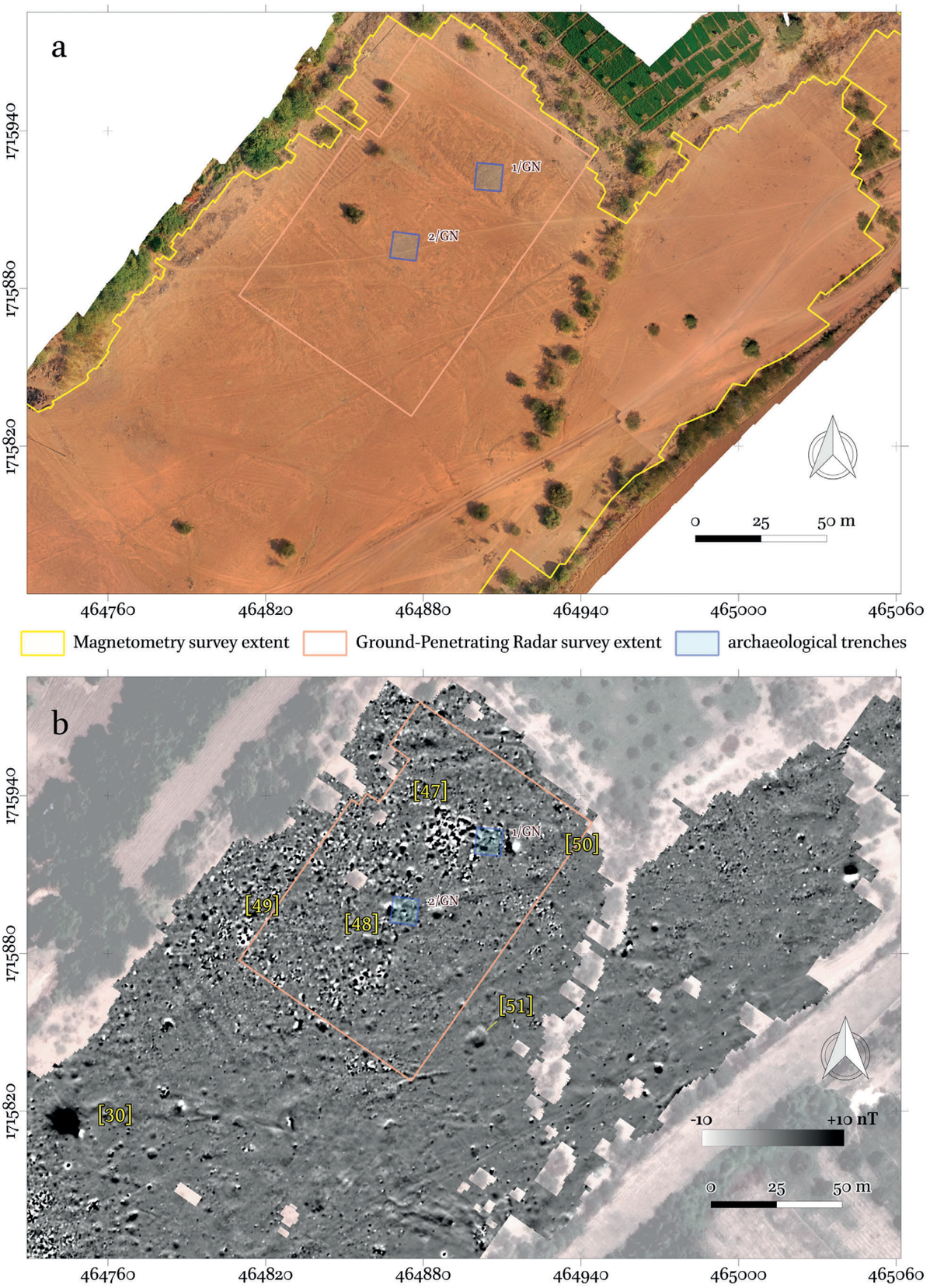

Figure 3.16. Area G; a – geophysical surveys extent and location of 1/GN and 2/GN trenches against orthomosaic photograph, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

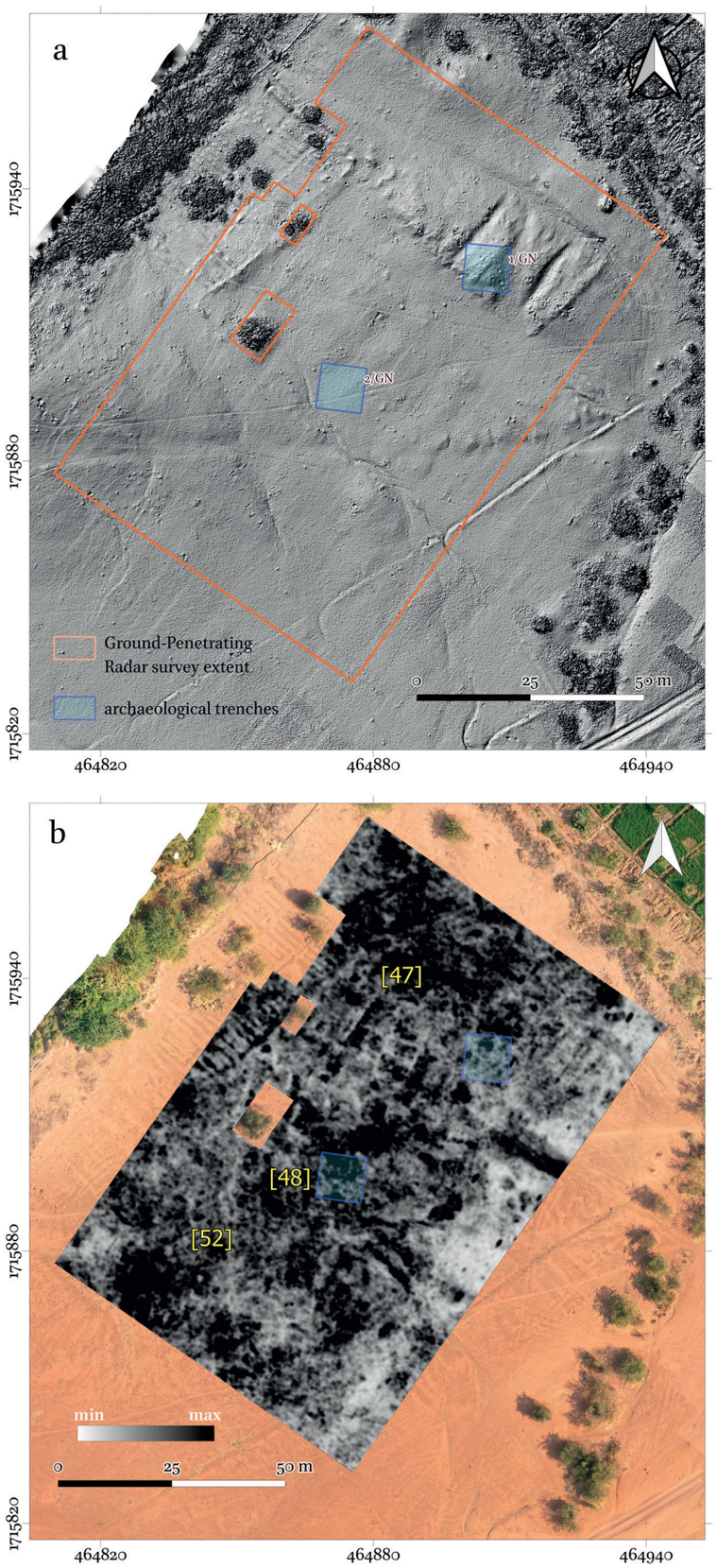

Figure 3.17. Area GN; a – geophysical surveys extent and location of 1/GN and 2/GN trenches against the DTM, b – extract from GPR data from between *c*. 30 to 80cm below the surface overlaid on orthomosaic photograph (prepared by Robert Ryndziewicz).

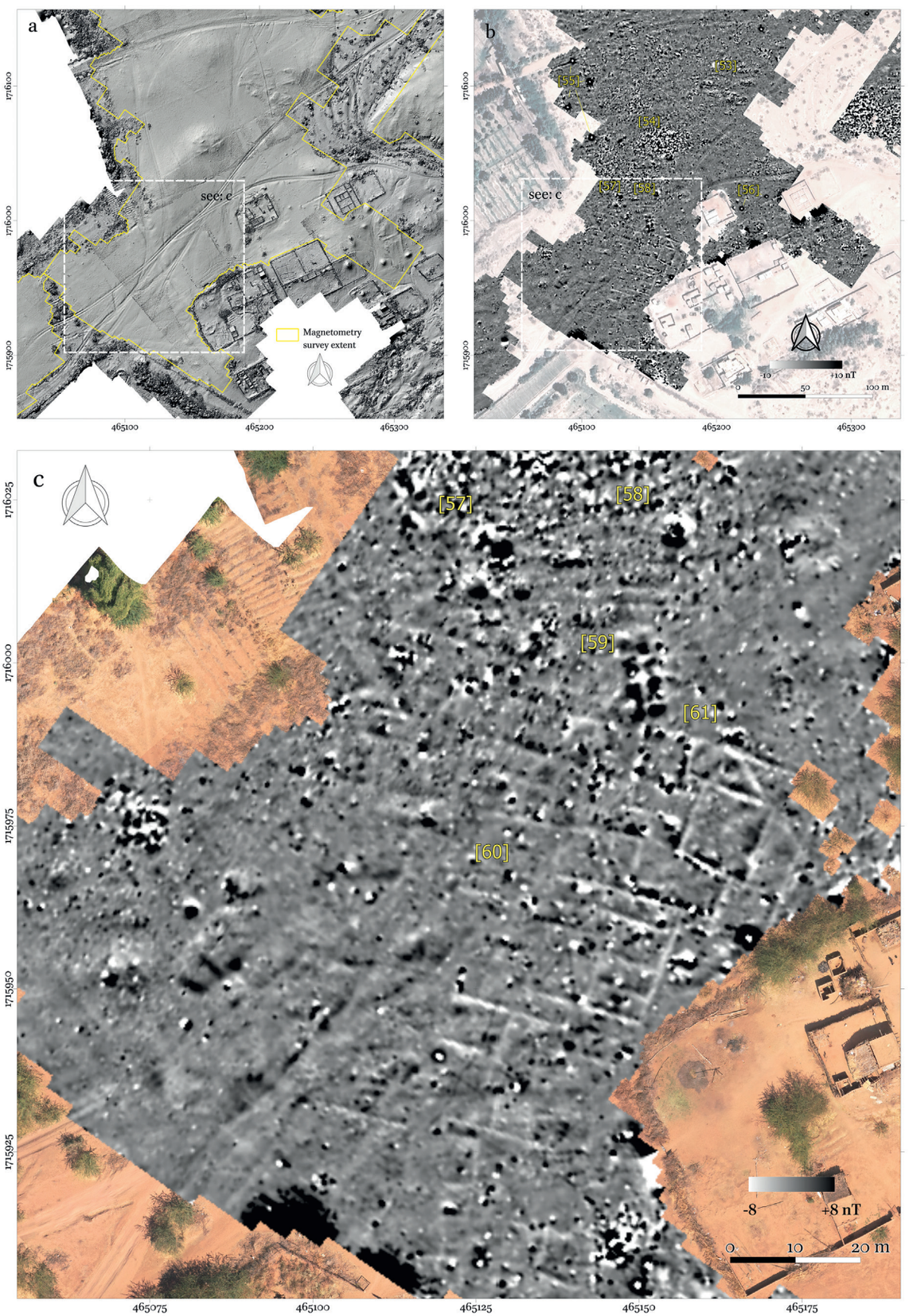

Figure 3.18. Area H; a – Digital Terrain Model, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map, c – extract (Area HW) from magnetic data (dynamics -8/+8 nT) overlaid on orthomosaic photograph (prepared by Robert Ryndziewicz).

that they are caused by contemporary heavy iron rods driven vertically into the ground. Anomalies caused by the kilns can be more definitively identified in the central part of the following extract of the magnetic dataset. A complex set of strong anomalies **[57]** with predominantly positive values (-20/+50nT) suggests the existence of an intensely burned-out circular structure, *c*. 5m in diameter (**Figure 3.18c**). The central (dot-shaped) anomaly, suggesting an internal hearth, is surrounded concentrically by three anomalies, presumably caused by the enclosure of a substantial furnace. There is another strong anomaly (values in the -35/+75nT range) 25m east of [57], suggesting the presence of a large-scale furnace **[58]**. A rectangular anomaly assemblage **[59]** measuring 13.5 × 6m, its long side oriented NNW-SSE, suggests the remains of a structure containing eight chambers filled with a large volume of ash or other intensely burnt material. The material forming the fills of the rooms produced predominantly positive anomalies (up to -20/+60nT), while the walls are visible as weak negative anomalies. Located slightly further south, a complex **[60]** of linear orthogonal anomalies indicates a densely built-up area. The low intensity and predominance of negative values (-6/+3nT on average) of the recorded anomalies are characteristic of the magnetic signatures of mud-brick masonry. Only in the case of one chamber **[61]**, measuring approximately 7.2 × 7.2m, can we speak of the use of red-brick in the wall construction. The homogeneous orientation and anomalous characteristics of the group [60], allow us to assume the presence of an ordered, distinct city district. We were unable to confirm its hypothetical continuation towards the east due to modern development.

3.4.10. *Areas I, J, and K*

Area I is located to the east of Area H, on the opposite bank of the *khor*, inside its bend (**Figure 3.19a**). The small Mound I, covered by the red-brick debris, shows traces of erosion on its western and southern sides, caused by periodic-flowing water in the *khor*. The magnetic data (**Figure 19b**) indicates significant amounts of red-brick rubble **[62]**, but the recorded anomalies include rectilinear anomalies indicating fragmentary preserved red-brick walls. At the northern edge of the mound, several anomalies suggesting mud-brick masonry were recorded **[63]**. The magnetic image of the north-eastern part of Area I is strongly disturbed by the presence of modern, unfinished construction (probably a household enclosure wall). Mound J **[64]** bears traces of recent levelling with heavy equipment. Like the neighbouring small Mound K **[65]**, along with its immediate surroundings, this was not covered by magnetic prospection. A large amount of modern trash covers the area and as a result, intense noise in the magnetic data makes identification of subsurface structures impossible.

Extending slightly to the northeast, the KE area is covered by moderate amounts of brick debris and interspersed with small *khor* tributaries. Magnetic data indicates numerous remnants of buildings from both mud and red-bricks. While it is possible to identify anomalies caused by mud-brick walls, the high-intensity noise caused by red-brick is distributed in clusters, suggesting the presence of rubble and collapsed or demolished walls. Despite the numerous disturbances, it is possible to distinguish an extensive (approximately 50 × 30m) building complex **[66]**, with a partially legible room layout with a general orientation arranged according to the cardinal directions. Another building complex **[67]** is visible *c*. 110m to the southeast. A single, easily distinguishable structure **[68]** of mud-brick measuring 20 × 11m is visible at the eastern edge of an area heavily disturbed with red-brick rubble. A round-shaped anomaly **[69]**, *c*. 5m in diameter and with an intensity of no more than -20/+20nT, suggests the presence of a circular red-brick structure. The anomalous assemblage, labelled **[70]**, may define the magnetic signatures of two overlapping building plans. The first, measuring *c*. 24 × 19m and with its long side oriented along the WSW–ENE axis, is represented by linear, negative anomalies of low intensity (approximately -2/+2nT) and fuzzy edges. The second, measuring 23 × 7m with a slightly trapezoidal shape and an E–W orientation of the long side, is represented by anomalies of slightly higher intensity (approximately -6/+6nT) and clearer contours. One can surmise that the development of the KE area was similar to that of the BW area, and perhaps constituted, together with it, a single, extensive neighbourhood.

3.4.11. *Area N*

The northernmost area available for geophysical prospection, Area N was bounded to the west and east by arable fields and to the north by a farm. Mound N is located in its north-western part, with a height of no more than 1.5m above to the surrounding ground. This is covered with red-brick debris. The eastern part of the area has been levelled in preparation for cultivation

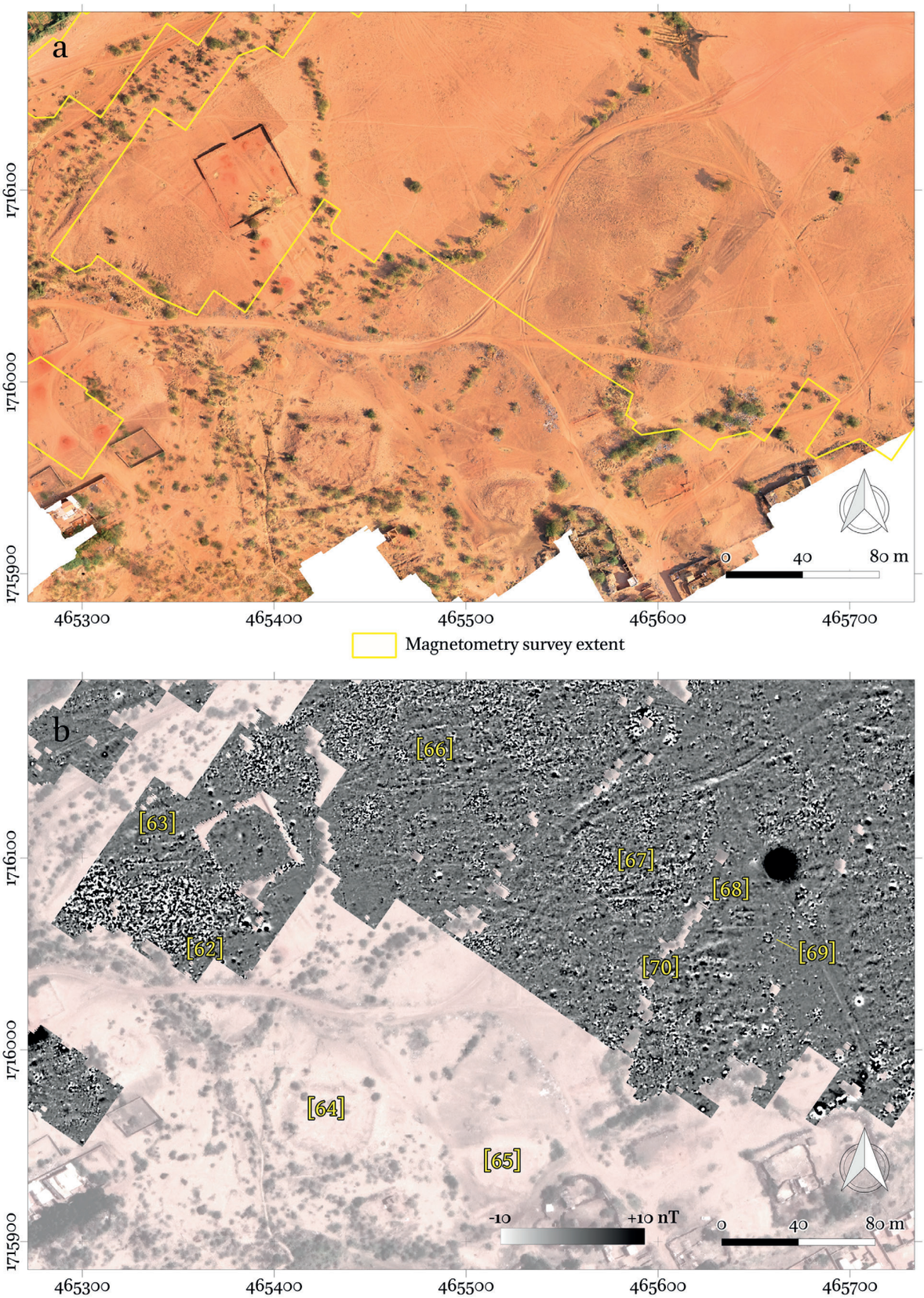

Figure 3.19. Areas I, IE, J, K and KE; a – Digital Terrain Model, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map
(prepared by Robert Ryndziewicz).

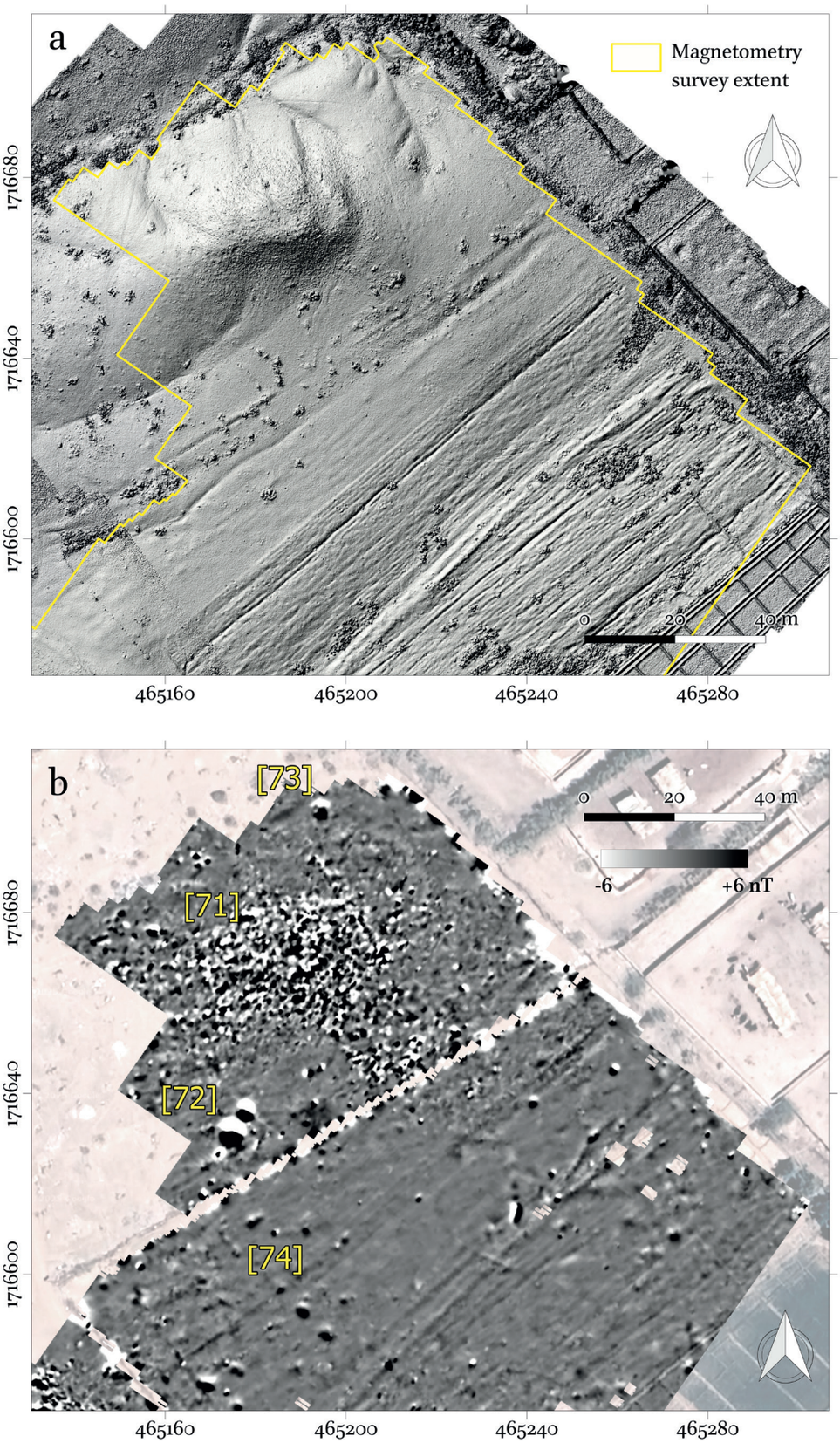

Figure 3.20. Area N; a – Digital Terrain Model,
b – magnetic data plot (dynamics -6/+6nT) overlaid on Google Earth satellite map
(prepared by Robert Ryndziewicz).

(**Figure 3.20a**). In the magnetic data (**Figure 3.20b**), Mound N appears as an area of intense magnetic noise **[71]** caused by red-brick debris, covering an area of *c*. 40 × 26m. Although a few linear anomalies can be identified within it, the data provides no basis for determining the size or plan of the structure. Magnetic data in the vicinity of the mound also does not provide any indication of the existence of other architectural remains. Two anomalies **[72]** with values in the range of -60/+90nT and with a polarisation consistent with magnetic north may indicate the existence of kilns. A similar but weaker anomaly, **[73]**, on the northern side of Mound N may indicate a kiln or concentration of burnt material. A cluster of anomalies labelled **[74]** in the southern part of the current area may reflect heavily plough-damaged remains of mud-brick architecture, similar to [38] (see Figure 3.14c).

3.4.12. *Areas O and OS*

This comprises two adjacent mounds, O and OS together with their surroundings (**Figure 3.21a**). Mound O, measuring *c*. 28 × 21m and *c*. 1.3m high above the surrounding ground, is densely covered with red-brick debris. Mound OS is located immediately southeast of O, on the other side of a small dry valley (*khor*). It rises *c*. 2m above the surrounding surface and its slopes bear traces of water erosion. The diameter of the mound, from the foot of the slopes, is *c*. 60m, and there is a lack of red-brick debris on the surface. The area surrounding the mounds has been heavily transformed by land preparation for cultivation.

The magnetic data (**Figure 3.21b**) from Mound O is dominated by noise caused by the presence of red-brick **[75]** corresponding to the large amount of this on the surface. Archaeological trench 1/O (see Chapter 4) revealed a significant amount of brick debris in the vicinity of Mound O, and the remains of a red-brick floor below. Based on the magnetic data, it is impossible to hypothesise the size and plan of the structures at Mound O. The data within Mound OS provided a clear image of a complex arrangement of linear anomalies in an orthogonal pattern, which is consistent with the cardinal directions, covering an area of at least 2,500m² **[76]**. Dot-shaped high-intensity anomalies detected on the western **[77]** and eastern **[78]** slopes of the mound may correspond to kilns or heavily burnt features. Two archaeological trial trenches at Mound OS (**Figure 3.22a**) contributed to a more precise interpretation of the geophysical data. Trench 1/OS revealed mud-brick walls, with an order exactly matching the magnetic anomalies. Trench 2/OS was established at the location of the dot-shaped anomaly with -15/+25nT intensity. It confirmed the presence of heavily burnt reddish layers, traces of burning and lime deposition, which was interpreted as the remains of a lime kiln (see Chapter 4). Across both of these trenches, a total of 23 burials were excavated just below the surface, indicating the presence of a cemetery established after the cessation of the use of the mud-brick architecture below (see Chapter 8). These graves proved to be undetectable in the magnetic data (**Figure 3.22b**), due to the lack of contrast between the material filling the burial pits and the surrounding soil, as well as due to the presence of stronger anomalies caused by the walls below. After backfilling the 1/OS and 2/OS trenches, Mound OS was subjected to GPR prospection. The measurements were carried out with a profile spacing of 0.25m, with the hope of obtaining data to identify burial pits and determine the spatial extent of the cemetery. The horizontal depth slice (corresponding to the level of burials), 0–40cm deep (**Figure 3.22c**), does not allow for the identification of burial pits. It is noteworthy, however, that due to the greater density of the survey profiles (in other areas the profile spacing was 0.5m), the GPR data (from a depth of 30–70cm below the surface) provides very detailed information on the architectural remains, allowing the thickness of the walls to be determined (*c*. 50–70cm) and individual rooms to be identified, as well as the northern annexe **[79]** of the structure, located beyond the Mound OS culmination.

3.5. Conclusions and outlook

The geophysical survey at Soba has provided a significant contribution to our understanding of its medieval spatial organisation, giving us valuable new information over a large area in a non-invasive and time-efficient manner. The geophysical datasets obtained furthermore can prove helpful in determining future research directions. Use of the two methods simultaneously provided complementary data, which significantly increased the reliability of the archaeological interpretation. Based on the magnetic data collected from an area of approximately 46.5ha and the GPR data collected over a total area of 7.5ha, the following conclusions can be drawn:

– Archaeological interpretation of the geophysical data is roughly coherent with the extent of architectural

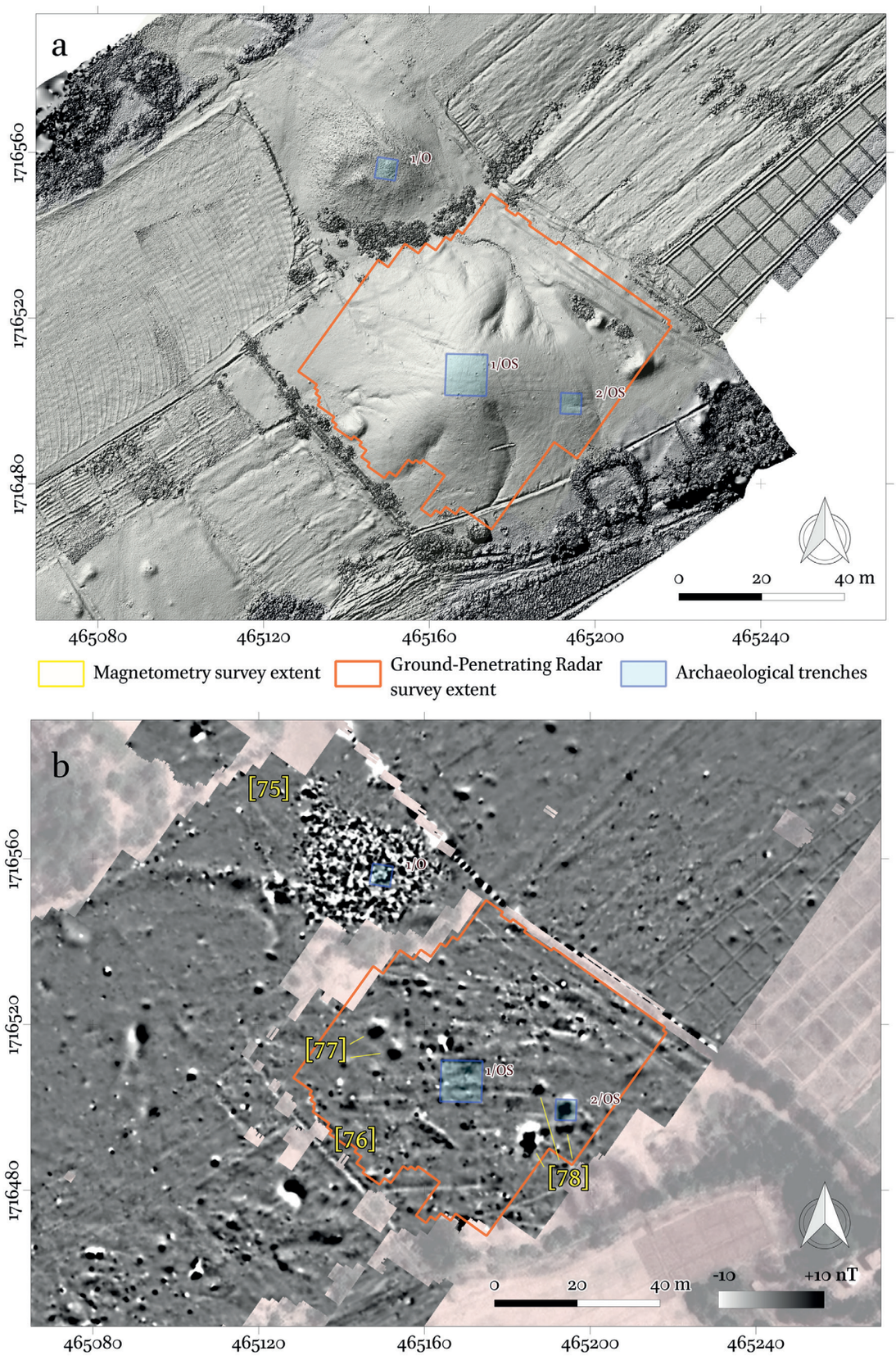

Figure 3.21. Areas O and OS; a – geophysical survey's extent and location of 1/O, 1/OS, and 2/OS trenches against the DTM, b – magnetic data plot (dynamics -10/+10nT) overlaid on Google Earth satellite map (prepared by Robert Ryndziewicz).

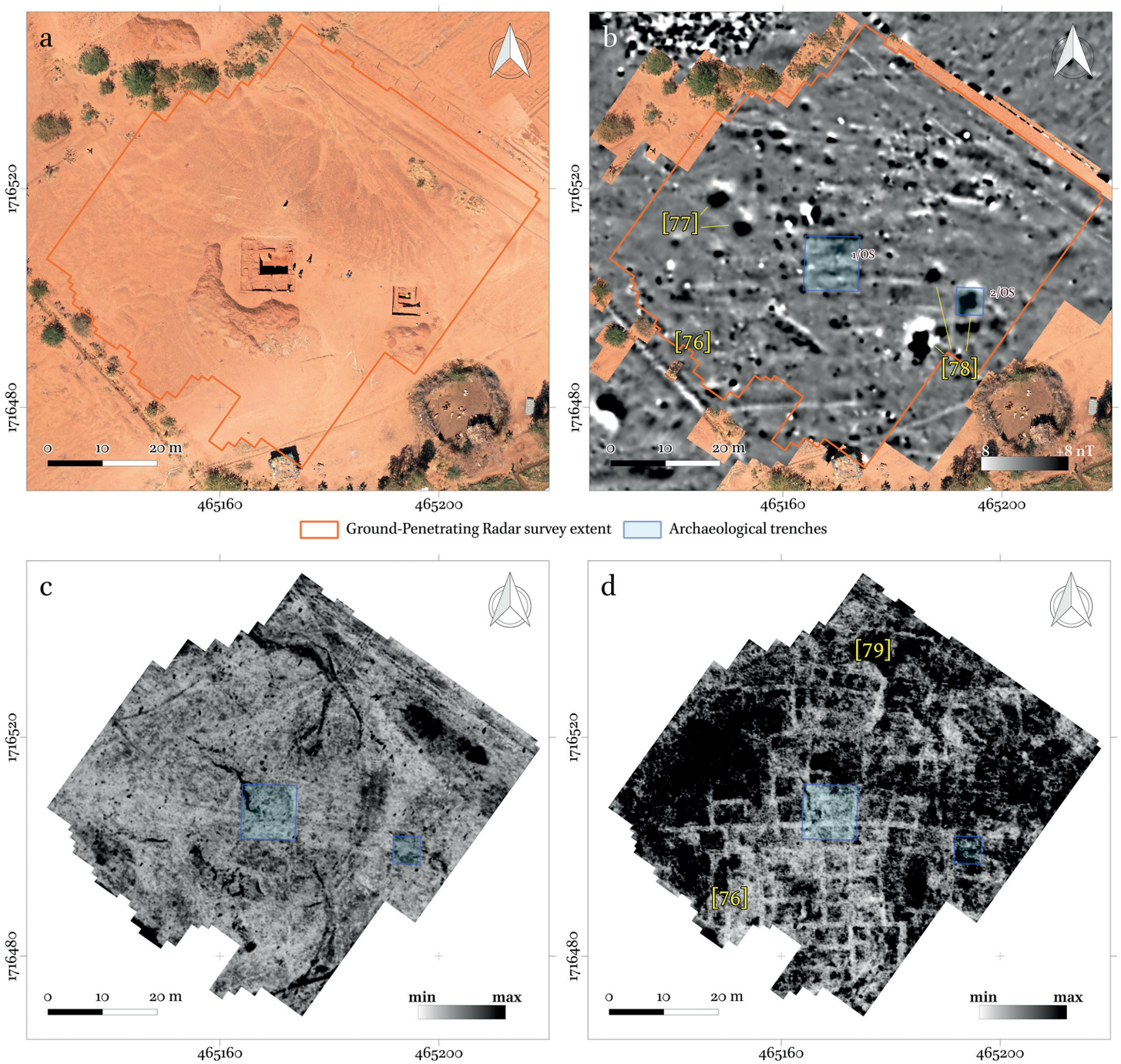

Figure 3.22. Area OS; a – orthomosaic photograph made in 2019/2020 season. Trenches 1/OS and 2/OS during excavations are visible, b – extract from magnetic data plot (dynamics -8/+8nT) overlaid on orthomosaic photograph, c – GPR data horizontal depth slice from *c*. 0 to 40cm below the surface, d – GPR data horizontal depth slice from *c*. 30 to 70cm below the surface (prepared by Robert Ryndziewicz).

remains identified by Welsby and Daniels (1991, fig. 7), especially for the BW and KE areas, perceived as a single large district. Important increments apply to the FN, F and western HN areas, where the geophysical data indicates an extensive area of dense urban development. A similar complex, not recorded by Welsby and Daniels, is located in the GN area. The geophysical data indicates numerous wall remains within CW. Due to the limited area available for the survey, only a fragment of architectural remains in the AE area was captured.

– An equally important contribution offered by the non-invasive geophysical survey is the possibility to locate individual buildings, determine their spatial relationships, and in many cases even reconstruct their plans and identify hypothetical streets and passages between buildings, as well as kilns, furnaces and layers of ash or other heavily burnt materials across Soba.
– The predominant and best-preserved structures are mud-brick buildings with orthogonal wall layouts, varying in layout and size. It is possible to distinguish several extensive clusters of buildings of this type, and they can be regarded as individual districts of the medieval town. Of these, the aforementioned cluster located in areas FN, F and the western part of HN stands out. Dense mud-brick development was also recorded in the HW area. A large complex of buildings was further identified within Mound OS and its immediate surroundings.
– Remains of red-brick buildings in Soba are generally in a poor state of preservation. Although identifying the locations of red-brick buildings is not difficult, due to the presence of characteristic noise, reconstructing their plan is a much more difficult task. A non-invasive investigation of the red-brick buildings within Mounds B, N and O and also the identification of the plan of Church C based on magnetic data was not possible due to the large amount of red-brick debris, not only scattered over the surface but also forming the mounds themselves. This is in line with the excavation results of Derek Welsby, who noted negative foundations within the red-brick mounds and a significant degree of structural destruction (Welsby and Daniels 1991, 34–35). The geophysical data, however, suggests that well-preserved red-brick features can be identified within [4] (Area A, see Figure 3.6b), [10] (Area B, see Figure 3.8b), [54] (Area H, see Figure 3.18b), [62] (Area I, see Figure 3.19b). In the case of Mound A [1] and the area between [1] and [2] (see Figure 3.6b), it can be assumed that at least some of the structures still remain undisturbed.
– Over the extensive area (perceived as a single whole) of BW, KE and IE, the magnetic data indicated hybrid development, with both mud-brick and red-brick material. It is worth noting that red-brick magnetic signatures have a wide range of spatial specifications, ranging from large areas of noise caused by red bricks and debris to distinct high-intensity linear anomalies. In some cases, it is therefore possible to indicate the location of building remains based on the shapes of anomalies caused by red brick. As a rule of thumb, however, high-intensity noise of this kind complicates the interpretation, especially in areas where mud-brick buildings are present, characterised in the magnetic data by anomalies of significantly lower intensity.
– Geophysical data indicate that in the extensive areas where the remains of buildings were recorded, they usually had a fairly uniform orientation. With a few exceptions, the buildings were oriented along the cardinal directions (i.e., N–S and E–W) with variations not exceeding 10–15 degrees (i.e., from NNW–SSE to NNE–SSW).
– Identification of cemeteries using geophysical data remains problematic. The lack of sufficient geophysical contrast with the shallow grave pit and the presence of factors that interfere with the readability of the data make these impossible to locate using current methods. Graves excavated within Mound OS proved to be undetectable using both magnetometry and GPR. It is theoretically possible to locate graves with preserved superstructures; however, none have so far been identified in Soba.
– One issue that requires further research is the areas where the magnetic data has minimal variability – e.g., Area CE (see Figure 3.11b) and the area southwest of Mound N (see Figure 3.20b). It is possible that these areas were developed in a way that did not leave magnetic signatures (e.g., timber or wattle light constructions). However, the question of empty areas in medieval urban landscapes is increasingly becoming an object of thought in theoretical reflections, opening up new interpretative possibilities (Jervis *et al.* 2021).
– Given that it is not possible to determine the exact depth range of the magnetic prospecting (which measures only several dozen centimetres at Soba), as well as the limited depth of the GPR prospecting, it

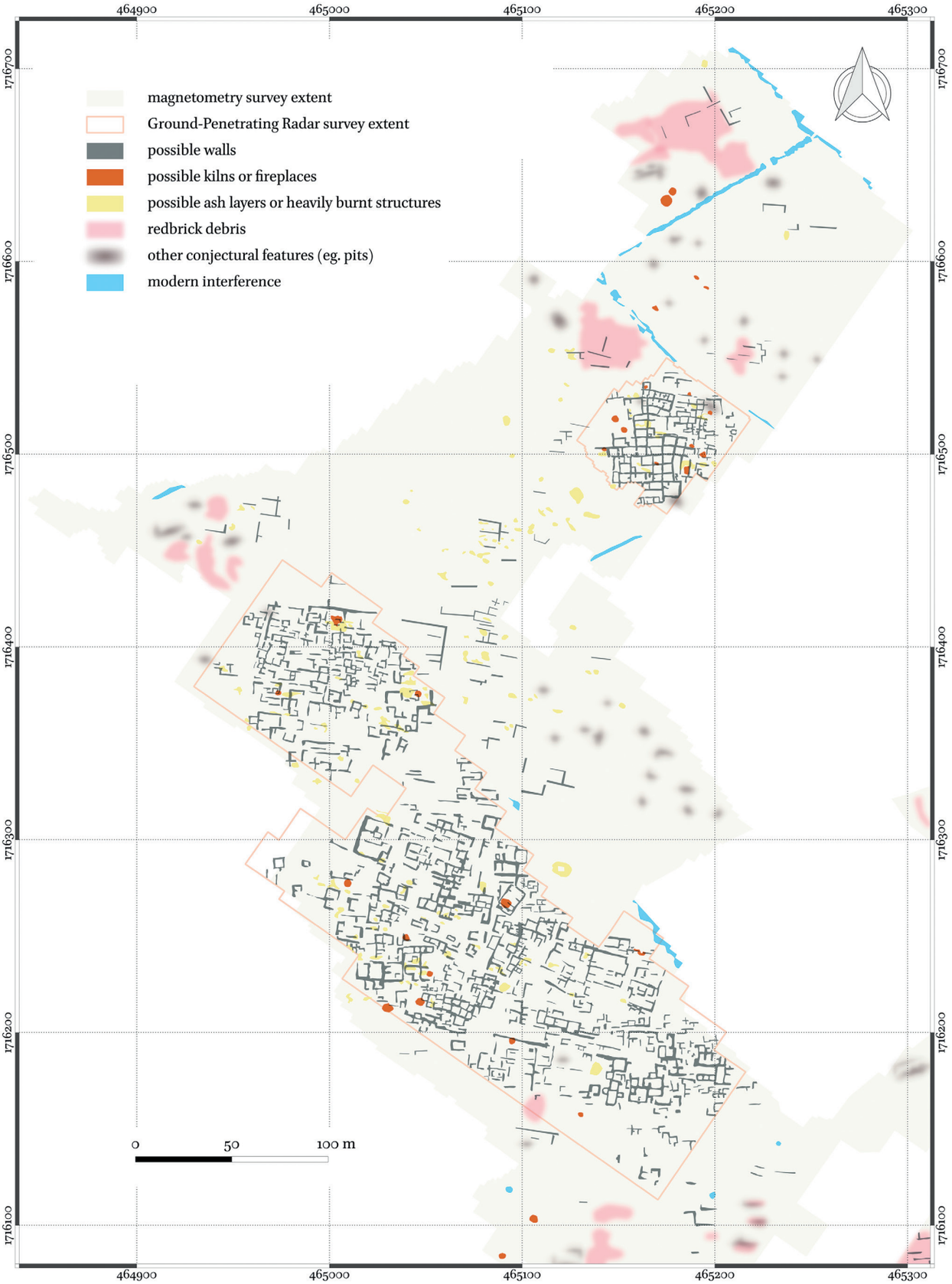

Figure 3.23. Archaeological interpretation of geophysical data. North-western part: areas ES, F, FN, N, O, and OS (prepared by Robert Ryndziewicz).

is not possible currently to identify different settlement phases within the city. In the CW area, the GPR data and the magnetic data from the KE area within the anomaly complex [70], does, however, suggest the existence of several overlapping phases of development, clearly varying in the orientation of the features.

– The geophysical survey has confirmed the direct impact of anthropogenic pressure on Soba's archaeological heritage, which can be considered one of the most important outputs of this study, providing the basis for the development of a protection strategy. The impact of ploughing on the architectural remains is particularly clear in the northern areas of Area F, while unregulated traffic of trucks and heavy equipment across the surface increases the risk of damage to the subsurface archaeological structures by causing soil erosion and compaction of the layers.
– Implementation of two integrated geophysical methods has confirmed the efficacy of this approach in characterizing the Soba subsurface, enabling spatial organization studies and precise mapping of buildings and other archaeological features. While demonstrating the advantages of using this approach in the specific lithological conditions of the Blue Nile Valley, we need to be careful in data interpretation due to the encountered limitations of both methods. In the case of magnetometry, the low contrast between the magnetic susceptibility of mud-brick foundations and their surroundings poses a significant challenge. Compared to other archaeological sites downstream of the Nile where magnetometry has effectively revealed mud-brick walls in a matrix of lower magnetic susceptibility, the overall perception and evaluation of the quality of the Soba magnetic data may appear to be low. Moreover, the red-brick debris caused increased noise in the data and hindered obtaining relevant information on structures buried below the surface. In ground-penetrating radar (GPR) surveys, soil properties that leads to strong attenuation of electromagnetic waves have also presented limitations. Considering the complex stratigraphy and the substantial depth of the excavated mounds, it is evident that the geophysical data represent only the upper phase of the settlement. It is noteworthy that, similar to the case of Old Dongola (Obłuski *et al.* 2022) and recently published results of GPR prospection in Kawa (Kay and Hay 2023, 410), GPR has recorded mud-brick walls as low-amplitude features amid more reflective surroundings.

While geophysical data cannot provide direct information on the functions of the located structures, we can hypothesise the purpose of some of the structures. From the analysis of the [19] arrangement (see Figure 3.10, Area BW) it seems likely that these are the remains of a church, incorporated into a larger building complex. Furthermore, the brick mound [54] in Area H (see Figure 3.18b) can likely be interpreted as the remains of a church surrounded by an enclosure wall. Lastly, feature [45], visible in the GPR data (see Figure 3.15, Area F), stands out among the surrounding buildings, suggesting this may have had a special function. It is aligned with its long side roughly along a SW–NE axis, which corresponds to the *qibla* direction used by Muslims in religious contexts as the direction of prayer and to determine the orientation of mosques. This brings to mind the religious function of the [45] feature. Verification of the above hypotheses will require more detailed research in the future.

An archaeological interpretation of the geophysical data is summarised in **Figure 3.23**, covering the north-western part of the site (Areas N, O, OS, ES, FN, F, and the western part of HN); while in **Figure 3.24**, the north-eastern part of the prospected area is shown (Areas A, AE, B, BW, I, IE, KE). **Figure 3.25** covers the southern part of the prospected area (Areas HN, H, HW, G, GN, C, CE, CS, and CW). The interpretation maps show the possible remains of the walls in solid grey. The possible location of kilns, or other types of hearths, are marked in red. Potential ash layers or layers of heavily burnt material are marked in yellow. Pale pink marks concentrations of red-brick debris. Light grey marks other possible archaeological features, such as pits or heavily eroded walls. The light blue colour indicates the impact of modern installations such as contemporary buildings, iron fences and electricity poles. Due to the hypothetical – and in several cases, requiring further research – course of the streets and alleyways, these have not been marked on the interpretative maps presented. To increase the visual legibility of the maps, the highlighting of anomalies caused by natural factors (such as geomorphology) has been dropped. The interpretations presented in this chapter should be viewed as an open invitation to engage in further discussion, rather than as definitive conclusions. Recognition of the uncertainty of the interpretations, and the fact that archaeogeophysical research leaves some questions unanswered, prompts a clearer delineation of the areas in which geophysics adds significant value to archaeological research, and a definition of the

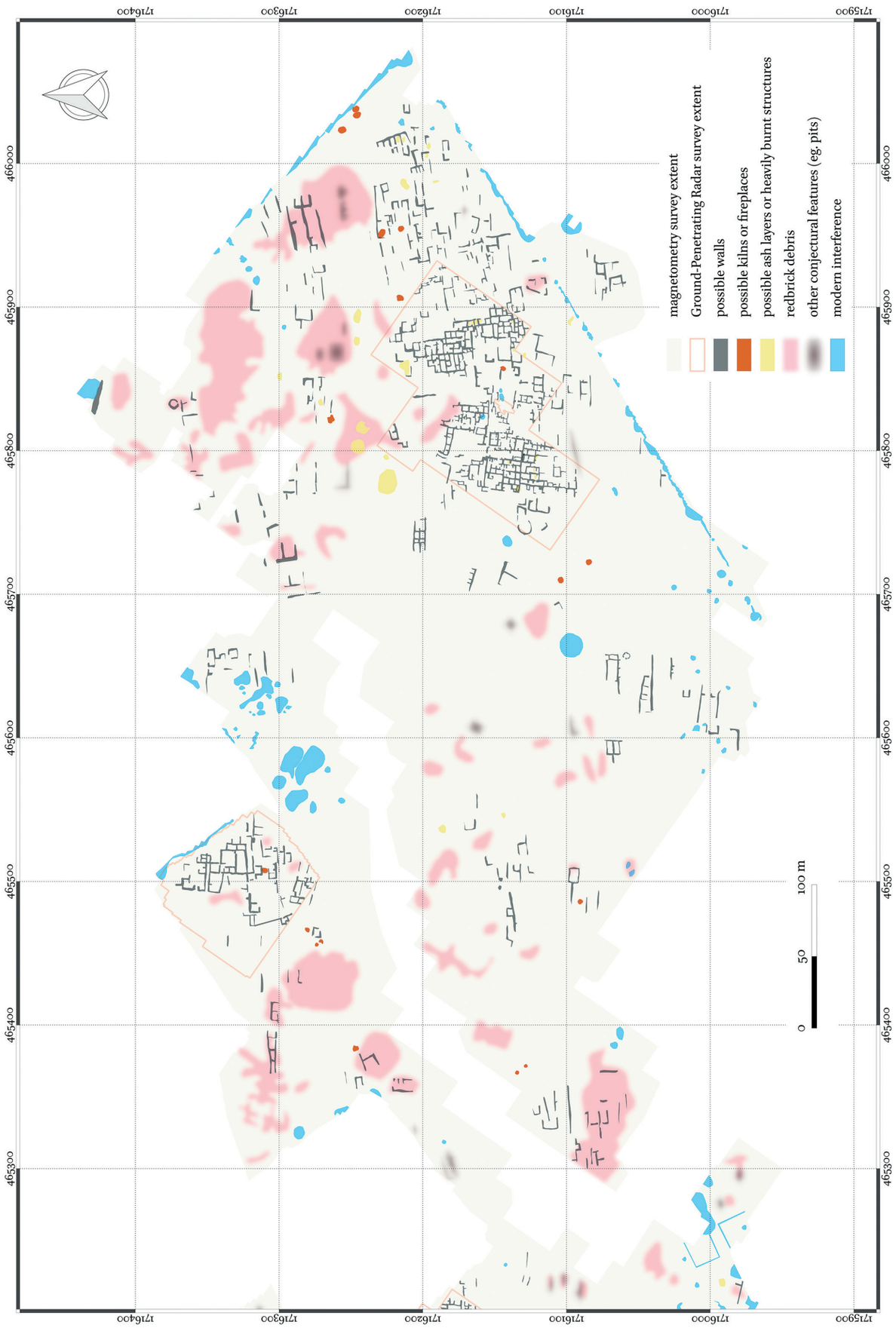

Figure 3.24. Archaeological interpretation of geophysical data. Eastern part: areas A, AE, B, BW, I, IE, and KE (prepared by Robert Ryndziewicz).

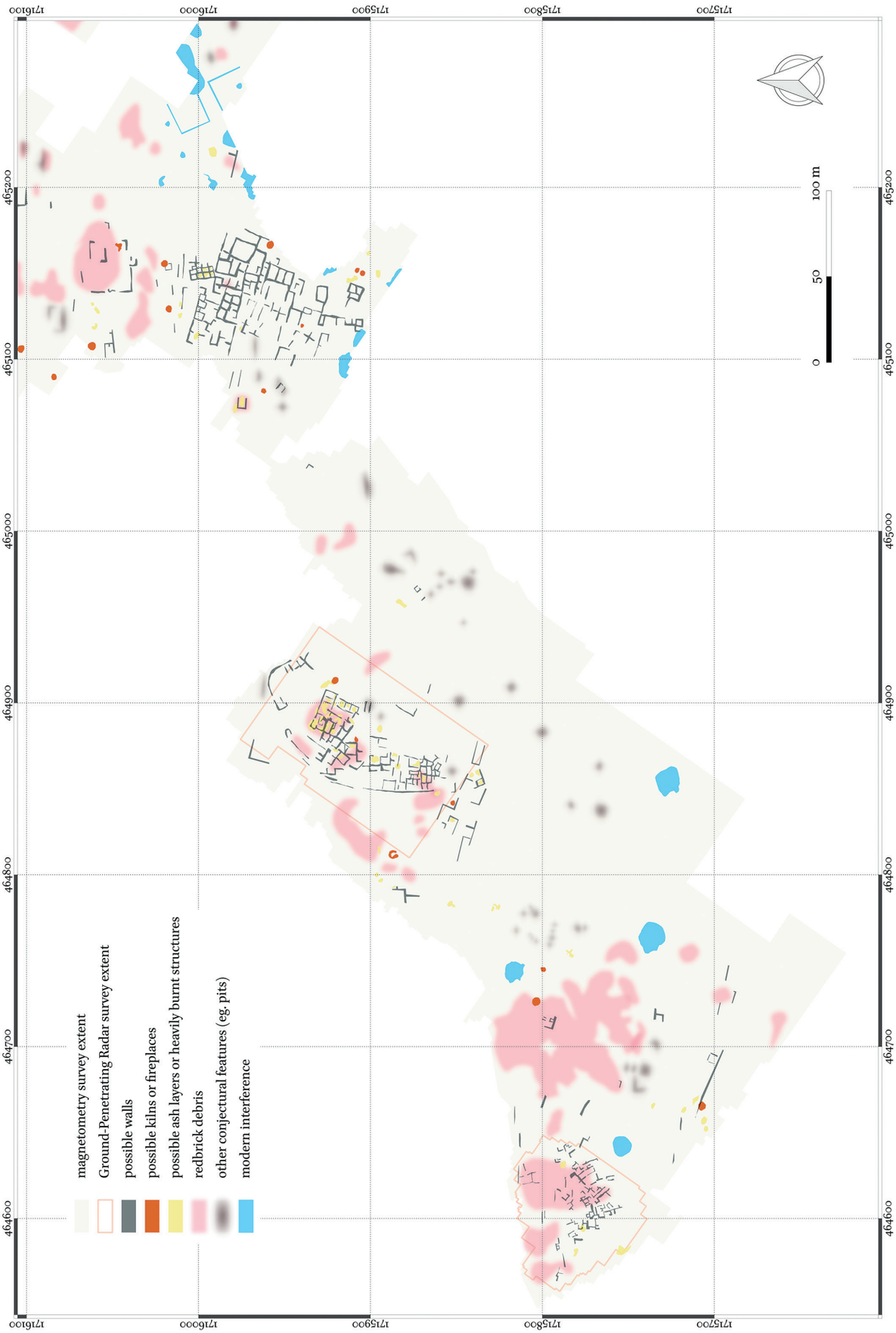

Figure 3.25. Archaeological interpretation of geophysical data. South-western part: areas C, CW, CE, CS, G, GN, H, HW, and HN (prepared by Robert Ryndziewicz).

strengths and weaknesses of the methods used in archaeogeophysics (Verdonck *et al*. 2019). It is our hope, that future developments in research around Soba will contribute significantly to adding further aspects to this presented interpretation.

In attempting to chart the direction of future geophysical prospection,[5] it is worth taking into account the results of GPR surveys to date, which support the potential of this method in understanding urban complexes across sub-Saharan Africa, opening up significant possibilities for a precise understanding of the layout of buildings. A major challenge for GPR are areas densely covered with red-brick debris, which hinder a proper data acquisition procedure. The relatively accessible BF area, where magnetic anomalies and previous descriptions suggest the existence of an extensive red-brick structure measuring *c*. 60 × 48m (Welsby and Daniels 1991, 14), may in future become an area for GPR testing under extremely challenging conditions.

The example of Mound OS, where dense sampling was used (profiles at 0.25m instead of 0.50m in the other areas) showed the immersive interpretative potential of ultra-high resolution data. Archaeogeophysics as a discipline is developing rapidly and multi-channel devices are becoming the new standard, allowing for data acquisition with even denser sampling intervals. Applying this methodology to the entire area available for investigation would be another milestone in Soba research.

It would also be worth considering conducting a fluxgate gradiometer survey on other available arable fields. The example of the northern part of Area F shows that, despite soil noise disturbing data clarity, it is possible to locate archaeological remains and evaluate their state of preservation.

To enhance and complement non-invasive geophysical surveys, direct minimally-invasive investigation through systematic coring can provide valuable geophysical data evaluation, more precise interpretation, and wider contextualisation. It may enable more accurate studies of stratigraphy and allow for laboratory analysis of collected samples to determine the geochemical and physical properties of soil and material within geophysical anomalies. By incorporating a geoarchaeological perspective, future research programmes can help answer questions about past environmental conditions. One of the issues is the presence of several branches of a *khor* cutting through the site, and whether these existed during the medieval Soba period. This raises the question of how the inhabitants of Soba dealt with rainwater drainage. Although Soba lies on the banks of the Blue Nile, the relationship between the town and the river has barely been addressed in previous research. Future investigations can shed light on this aspect of the past and provide a better understanding of the history of Soba.

[5] Although I drafted this chapter before April 15, 2023, I remain hopeful that it will be possible to continue the field research in Soba in the future [author's note].

CHAPTER 4

RESULTS OF THE ARCHAEOLOGICAL EXCAVATIONS IN AREAS O AND OS

Tomasz MICHALIK

Mounds OS and O are located in the northern part of the Soba site (cf. Welsby and Daniels 1991, 27–28). During recent fieldwork, three test trenches were established in the area – two on Mound OS (1/OS, 2/OS) and one on Mound O (1/O) (**Figure 4.1**). No large-scale archaeological research has previously been carried out in this area. This chapter presents new information about the development of the medieval settlement in Mounds OS and O, according to the individual trenches. The description of the trenches presents the history of the research in each specific area, as well as information about the artefacts discovered, the identification of occupation phases, and the chronology of discovered remains, as well as a summary.

4.1. Trench 1/OS

4.1.1. *Introduction*

Trench 1/OS was opened at the top of Mound OS. A field survey under C. M. Daniels explored this mound during previous work at the site, consisting of shallow test trenches and surface prospection (Welsby and Daniels 1991, 11–12). This resulted in the discovery of mud-brick structures (Trenches OS1, OS2) *c*. 0.15m below ground surface, which Daniels and Welsby interpreted as wall or floor fragments (Welsby and Daniels 1991, 21). Although the data recovered points to the presence of mud-brick architecture at the Mound OS, it was not sufficient to establish its nature, extent or chronology. No broader insights were provided by the analysis of surface material, which included, among other things, pottery fragments and a Type II archer's ring, according to Hayes (Welsby and Daniels 1991, 163).[1]

Since the 1980s (the period of Daniels and Welsby's research), the degree of preservation of Mound OS has not changed significantly. At its highest point (i.e., the west side), according to measurements taken in 2019, Mound OS was 2.15m high (Daniels and Welsby reported the height of the mound at approximately 2m) (1991, 21). In the most eroded part (i.e., the eastern side), the mound was about 1.5m high. Traces of wheeled transport as well as depressions related to heavy rainfall were recorded on the surface. These changes, however, were not indicative of deep interference with the structures within the mound.

The main objective of the 2019–2020 research on Mound OS was to identify its spatial layout and function, as well as to establish the chronology of the buildings located in this area. Initially, Trench 1/OS measured 10 × 10m. However, following the discovery of mud-brick architecture (approximately 0.15m below ground surface), it was narrowed to 4 × 5m, i.e., part of the interior of the largest of the discovered room (Feature 17, see **Figure 4.2**). The excavation was continued to the level of natural soil, the trench reaching a depth of approximately 2.3m. Discovered remains confirmed previous findings, indicating the presence of occupational mud-brick architecture at Mound OS. Within the area a cemetery was also discovered (see Chapter 8). Based on radiocarbon dating of charcoal samples and analysis of artefacts, it was confirmed that the area was occupied between the 6th/7th and 11th centuries AD.

4.1.2. *Research methodology and background data*

Work on Mound OS was carried out in November and December 2019. Prior to excavation, a three-dimensional surface model of the mound was made and – once the trench was marked out – all visible material, i.e., 734 fragments of pottery (including 5 inscribed), was collected from its surface. The area was explored focusing on the 33 identifiable cultural layers (see Table 19.1 in Appendix 2). The features unearthed in the course of this work included pits, graves, and mud-brick architecture. The following artefacts and ecofacts were registered during the excavations: fragments of

[1] This ring type is generally dated to the Meroitic period (120 BCE–180 AD) (Hayes 1973, 117 and 121). It should be noted, however, that the presence of Meroitic artefacts at Soba is not sufficient evidence for the existence of Meroitic settlement in the area. Some of the artefacts originally considered Meroitic may have originated from the Christian period (Sakamoto 2016a, 125), while others may have been brought from outside Soba (Welsby 1998, 20 and 272; Rondot 2006, 40–41).



Figure 4.1. Location of Trenches 1/OS, 2/OS and 1/O within Mounds OS and O (prepared by Tomasz Michalik, background image Bing Maps).



Figure 4.2. Trench 1/OS following the completion of excavations. Following the discovery of Feature 17 (marked with a solid line), exploration in the trench focussed on its interior (photo Mariusz Drzewiecki).

pottery (4,132), fragments of glass (10), fragments of mud stoppers for storage vessels (19), fragments of an incense burner (2), a ceramic fragment of a large cross, stone tools (31), beads (646), a fragment of a spinning wheel, a seal, a ring, a bracelet, a fragment of an iron object (spearhead?), a stone fragment with a pivot hole, shells, animal bones, human bones and heavily eroded fragments of textiles and rope. Within the scope of the research, samples of charcoal, plaster, and human and animal bones were collected and transported to Poland for laboratory analysis with permission from the Sudanese authorities. Documentation of this research can be found in the Documentation Archiving Department of the Polish Centre of Mediterranean Archaeology University of Warsaw.

4.1.3. *Settlement phases and chronology*

The finds discovered in Trench 1/OS indicate that the excavated part of the mound was used for residential purposes. Inside the mud-brick walls, traces of food preparation and consumption were periodically recorded. In the final phase, a cemetery was established on Mound OS. Based on the analyses of the finds and the stratigraphy, five settlement phases were identified:

Phase 1: The beginning of occupation (area use prior to mud-brick architecture).
Phase 2: The first occurrence of mud-brick architecture and the use of the area around it.
Phase 3: The establishment and occupation of Feature 17.
Phase 4: Occasional usage and abandonment of Feature 17.
Phase 5: The establishment of a cemetery.

Based on the dating of the charcoal samples taken from Trench 1/OS (see **Table 4.1**; Appendix 1), it can be concluded that the area was in use at least between the 6th/7th and 11th centuries AD. The dating of a sample taken from Deposit 31_1OS, traceable to the first settlement phase (before the occurrence of mud-brick architecture), indicates that Mound OS may have

Phase	Dating	Characteristics
Phase 1	6th (?) –7th century AD	One activity level, no mud brick architecture
Phase 2	7th–mid-10th century AD	Open area, one activity level, bounded to the east by a mud brick wall (wall E)
Phase 3	1st half of the 10th–2nd half of the 10th century AD	Development of mud brick architecture (establishment of Feature 17), one activity level
Phase 4	late 10th to early 11th century AD	Backfill and rubble deposits, pits
Phase 5	11th century AD (?) – ?	Cemetery

Table 4.1. Dating and characteristics of settlement phases in Trench 1/OS (prepared by Tomasz Michalik).

been in use as early as the 6th–7th centuries AD (561–651 AD (95%); item 1, Table 4.1; Appendix 1). After this period (probably in the 7th century AD), the first building(s) appeared in the area, represented by the Eastern Wall of Feature 17 (Phase 2). For approximately 300 years, the area to the west of the Eastern Wall (the later interior of Feature 17) was probably an outdoor area showing evidence of food preparation and consumption. In the next phase (3), the Northern and Southern Walls were added to the Eastern Wall,[2] forming a rectangular room measuring approximately 7.5 × 4m (Feature 17). Radiocarbon dating of samples taken from the deposit beneath the Southern Wall at Feature 17 (Deposit 27_1OS) and Deposit 24_1OS, associated with the origins of the structure, suggest that this wall (and possibly the entire room) may have been constructed in the 10th century AD (940–1021 AD (75%); 857–986 AD (83%); items 2 and 3 of Table 4.1, Appendix 1). Feature 17 was not in use for long, probably only until the second half of the 10th century AD. After its abandonment (Phase 4), a cemetery was established on Mound OS (Phase 5). Dating of charcoal samples taken from Graves 15 and 16 indicate that burials occurred after the 8th/9th and 10th/early 11th centuries AD (944–1025 AD (84%), 765–895 AD (88%); items 4 and 5, Table 4.1; Appendix 1) (*terminus post quem*). Considering the other dated samples from Trench 1/OS (i.e., the establishment of Feature 17 in the 10th century AD), and assuming the displacement of charcoals from earlier deposits into the grave backfill, the cemetery may have been founded to around 11th century AD. Analysis of finds from the topsoil indicates this was also in use during the early modern period (see Chapter 13) (for Harris matrix, see **Figure 4.3**).

4.1.4. *Sequencing of activity at Trench 1/OS – settlement phases*

Phase 1

The first settlement phase in the central part of Mound OS was represented by three occupation layers (33_1OS, 32_1OS, 31_1OS), located above the natural soil (Deposit 34_1OS). In this early stage, settlement in the studied part of the Mound OS does not appear to have been intensive. In Deposit 33_1OS, only a few artefacts were found (i.e., six pottery fragments, animal bones, and a stone tool). No traces of architecture were recorded at this level.

In addition to the aforementioned finds, a set of 572 clay beads was found in the western part of the trench (**Figure 4.4**). These beads (mostly spherical in shape and 150–200mm in diameter) were deposited together, suggesting that they may have been placed in an organic container that had not survived. The beads appeared in three colour variations: brown (285 pieces), black (156) and red (131), reflecting their varying degrees of firing (for more detailed information see Chapter 13).[3] Given that a partially preserved layer of an earthen floor (Deposit 32_1OS) was located close to the beads, one hypothesis is that they may have been left as an offering.

The excavated area may also have been used for food preparation purposes as evidenced by the ashes, charcoal and pottery fragments (some bearing signs of

[2] As it was necessary to preserve the section cutting through Feature 17, the region near the Western Wall was not excavated. The relationship of the Western wall to the Northern and Southern walls therefore remains open. Given the construction of the NW corner of Feature 17 observed at the level of Layer 2_1OS (crown of the walls), it is apparent that there is a gap between the Northern and Western walls (a large crack indicated a lack of bounding between the walls), and thus they are potentially different in terms of their time of origin.

[3] This type of bead has been found at Soba before, but not in such a great quantity (Allason-Jones 1991, 151; 1998, 74).

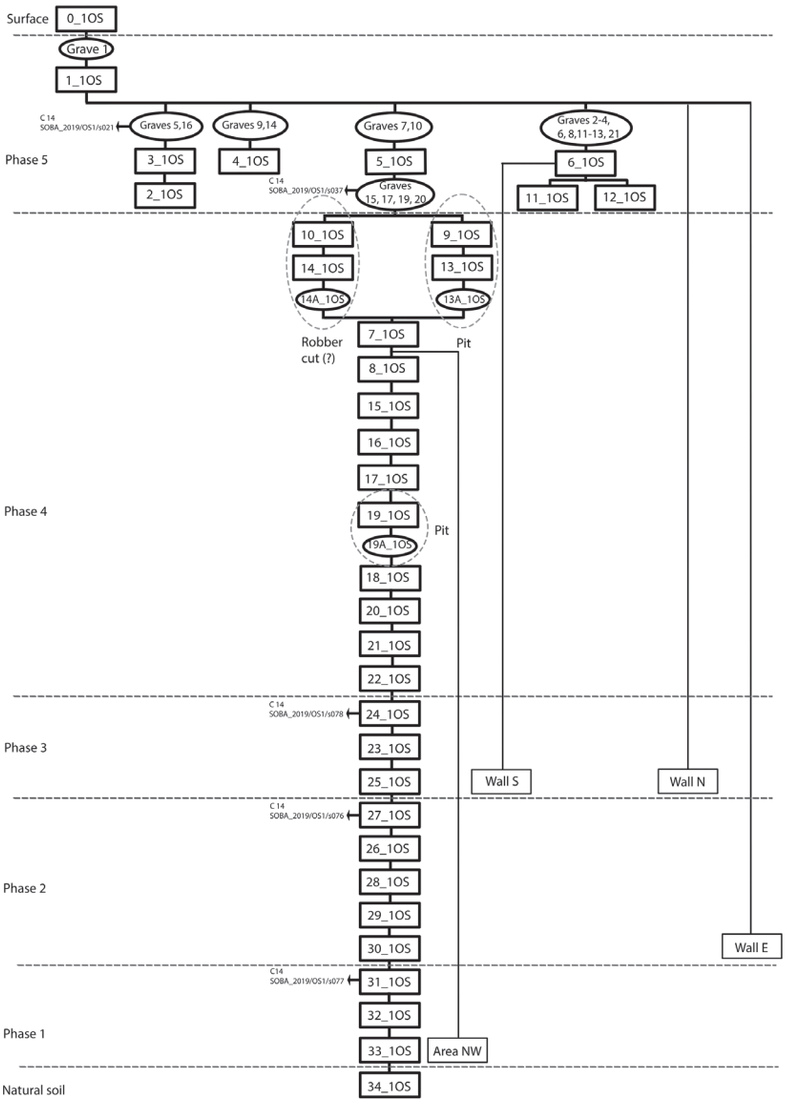

Figure 4.3. Stratigraphy of deposits discovered in Trench 1/OS – Harris matrix (prepared by Tomasz Michalik).



Figure 4.4. Set of clay beads (*in situ*) discovered in Deposit 33_1OS (photo Tomasz Michalik).

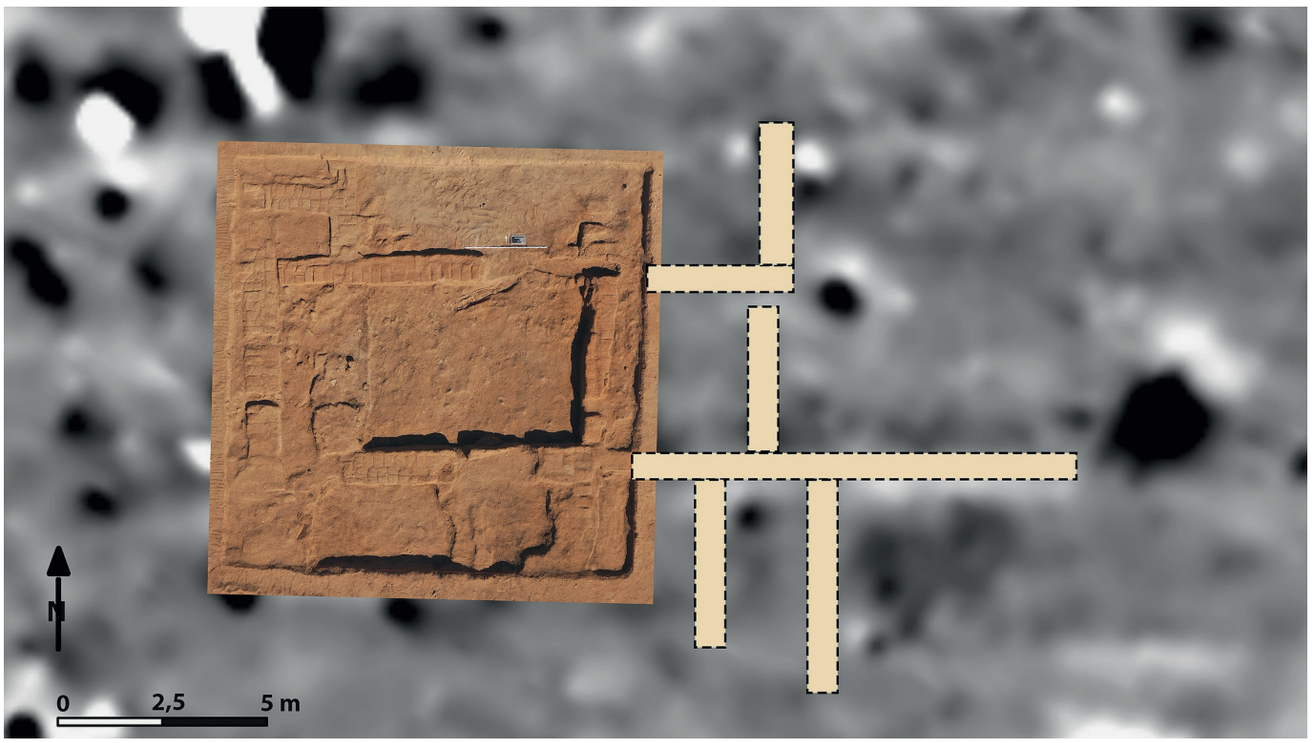

Figure 4.5. Walls adjacent to east wall of Feature 17 – excavation and results of geomagnetic survey. The magnetic data suggest the existence of a building extending east of Wall E (prepared by Tomasz Michalik and Robert Ryndziewicz).

burning) recorded above the earthen floor, which represented the activity level of Phase 1 (Deposit 31_1OS). The result of radiocarbon dating of charcoal from Deposit 31_1OS indicates that discovered remains accumulated during the period 561–651 AD (95%). This directly preceded the construction phase of the east wall of Feature 17.

Phase 2

The earliest evidence of mud-brick architecture in Trench 1/OS was the Eastern Wall of Feature 17, dating to around the 7th century AD. In its construction, this wall resembled earlier similar finds at Soba (Welsby and Daniels 1991, 26). It measured between 0.7m and 0.5m wide (one and a half bricks thick) and bore traces of erosion, but was disturbed by later grave cuts. Despite the partial upper damage, the Eastern Wall was well-preserved (up to a height of *c.* 1.9m). The wall was made of alternating rows of stretchers and headers (cf. style 4 as identified by Welsby and Daniels 1991, 40). The bricks used in the construction were approximately 32 × 19 × 7cm and 44 × 20 × 7cm. This size of brick was a common building material at Soba (Welsby and Daniels 1991, 26). Between the rows of bricks was a gap filled with sand and the remains of mud mortar. The gaps contained no ceramic fragments, sometimes used in Nubia to strengthen such structures. No foundation footing was observed at the wall's base. The top of the Eastern Wall, unearthed in the excavation, was approximately 9m long. The solid construction of the wall indicates that it may have functioned as a load-bearing wall, possibly the outer wall of a building. However, at the same time, due to the poor construction of the foundation and its placement on top of earlier cultural layers, it is unlikely that the building was multi-storey, and could have been a single storey or possibly had a light second storey (i.e., a preserved ground floor level and an unpreserved first floor or usable rooftop terrace). In the SE part of Trench 1/OS, a fragment of a wall of similar construction to the Eastern Wall was discovered, running towards the east (also visible in geomagnetic imaging – see Chapter 3). This wall may have formed a corner with the eastern Wall (**Figure 4.5**).

Within the second settlement phase, five cultural layers were identified (30-26_1OS). During this phase, the studied area may have been an open domestic space,

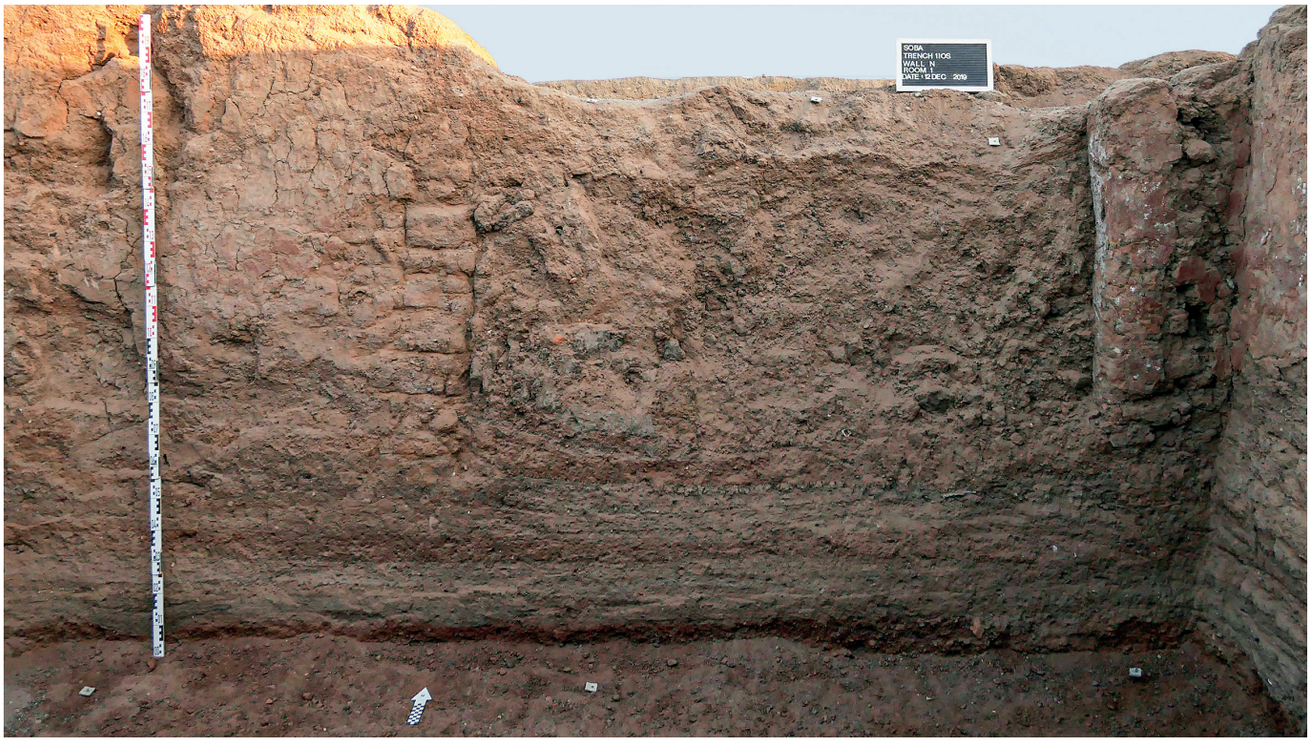

Figure 4.6. Entrance to Feature 17
(photo Tomasz Michalik).

which would explain the accumulation of gravel and sand deposits (30-28_1OS). Remains found in the deposits (including handmade kitchen pottery fragments, some of which displayed signs of burning, as well as wheelmade, ornamented and painted pottery fragments, vessel plugs, stone tools and animal bones (sheep/goat and cattle) suggest the use of the area for food storage and preparation as well as a place to dump waste. After hardening the earthen floor (Deposit 26_1OS), the function of area remained unaltered. The deposit situated above the hardened floor (27_1OS) contained a comparable set of artefacts to Deposits 30-28_1OS, as well as revealing traces of hearths. Dating of the charcoal sample taken from Deposit 27_1OS indicates that it was formed between 940–1021 AD (75%).

Phase 3

Around the second half of the 10th century AD, this area underwent a significant transformation. The Northern and Southern Walls were built abutting the Eastern Wall to form a rectangular room measuring *c*. 7.5 × 4m (interior), so-called Feature 17. The walls forming the room varied in their method of construction. The Western Wall was *c*. 0.8m wide (one and a half bricks thick), and partially resembled the Eastern wall in terms of its construction. The bricks used to build the wall were *c*. 42 × 20 × 7–8cm in size. The Northern Wall was 60–65cm wide (one and a half bricks thick), and its bricks measured 38–42 × 18–20 × 7cm. The Southern Wall was two bricks thick and 0.85m wide, and its bricks measured 38–44 × 18–20 × 7–8cm. The Northern and Southern Walls were preserved to a height of 1.6m. An entrance to the room (2m wide) was recorded on the north side (**Figure 4.6**). The construction was probably roofed with beams and mats (negatives of beams and mat fragments were preserved near the entrance).

The walls of the room at the time of occupation were plastered and painted red-orange. Red-orange plaster was found not only inside Feature 17, but also in the upper section of the southern face of the Southern Wall. It is possible a wider complex of buildings that contained Feature 17 may have been painted that particular colour. The finds in Mound OS (as well as in Area GN, see Chapter 6) are the first example of coloured plaster used with mud-brick buildings found at Soba (Welsby and Daniels 1991, 29). Moreover, the Eastern Wall bore traces of a striped pattern, applied by dipping fingers in a white pigment (lime?) (**Figure 4.7**).



Figure 4.7. Traces of red-orange plaster and traces of later repainting with white pigment (lime [?]) in Wall E and in the entrance of Feature 17 (photo Tomasz Michalik).

The described building was solid and of considerable size. The thickness of the walls indicates that it may have had an upper storey or roof terrace. A higher number of storeys appears less likely because the foundations were placed on cultural layers and the walls did not have the cracks typically observed with heavily loaded walls built on a loose base. The Southern and Western Walls, due to their thickness, may have acted as load-bearing walls.

Within Phase 3, three cultural deposits were identified (25–23_1OS). Deposit 25_1OS was made of mud and served as the floor of Feature 17. Considering the structure of the deposits located above the earthen floor (24_1OS and 23_1OS), it can be assumed that the room was used for food preparation and consumption. Deposit 23_1OS located in the western part of the room consisted of traces of a large hearth, containing animal bones, stone tools and vessel fragments (including one fragment inscribed with a monogram of the Archangel Michael). Deposits filling the remaining part of the room (24_1OS) contained numerous fragments of ceramic vessels (mostly cooking pots, some of which were burnt), animal bones, stone tools and a reused vessel fragment. Interestingly, in contrast to the previous phase, cattle bones were dominant instead of sheep/goat (see Chapter 15). Radiocarbon dating of the sample from Deposit 24_1OS indicates that it was formed between 857–986 AD (83%). Given the results of dating from under the Southern Wall (940–1021 AD; 75%; Deposit 27_1OS), it can be assumed that the room saw its formation and heyday in the second half of the 10th century AD.

Phase 4

The use of Feature 17 changed over time. Deposits 22–20_1OS and 18_1OS, located above Deposits 24_1OS and 23_1OS, were sandy, a possible indication of only occasional use of the room. These deposits contained fragments of pottery (some of them parts of storage vessels), animal bones and an ostrich eggshell bead. Unlike during the previous period, which saw intensive use of Feature 17 (Deposits 23–24_1OS), only one stone tool was found in Deposits 22–18_1OS. There were also – to a lesser extent – traces of ash. During this period, Feature 17 may have been more of a food storage and consumption area than a frequent food preparation area.

In the subsequent stage, additional indications of changes in the usage of the area became apparent. In the western part of Trench a large oval pit (cross-section *c*. 2.4m) contained cooking waste (ashes and vessel fragments), as well as two fragments of glass vessels and a fragment of a bracelet (Deposit 19_1OS). Above the pit were the remains of a partially preserved mud layer (possibly a hardened earthen floor), Deposit 17_1OS. In the following stage two more large pits were found within Feature 17. The pit (or possibly a robber cut) in the south-eastern corner was *c*. 1.8m in diameter and contained numerous fragments of pottery, a storage vessel mud stopper (decorated with engraved lines), a spindle whorl, a reused pottery fragment and animal bones (Deposits 14_1OS and 10_1OS). The second pit (only partially exposed), located in the western part of Trench 1/OS, measured 2m across and contained the remains of a hearth (Deposits 13_1OS and 9_1OS) (**Figure 4.8**). Surrounding the pits were deposits that, in addition to artefacts linked mostly to food consumption (16_OS), also contained remnants of building materials in the form of mud-bricks and water-dissolved mud (15_1OS, 8_1OS). These materials may indicate an increased level of erosion of the nearby buildings at this time.

Traces of destruction continued in the upper layers (Deposits 7_1OS and 5_1OS). In Deposit 7_1OS, alongside rubble, a fragment of a ceramic pipe was discovered, among other material. Additionally, in Deposits 5_1OS and 7_1OS, large amounts of pottery fragments (some inscribed with ABA, as well as a fragment of an incense burner), fragments of storage vessel lids, animal bones and stone tools were found, which – together with a large amount of ash – can be interpreted as traces of food preparation and consumption. The uppermost surviving



Figure 4.8. Trench 1/OS at the level of Layer 4. On the surface there is a pit (part W) and a possible robber cut (SE corner) visible (marked with solid line) as well as a destruction deposit with remains of building materials (8_1OS) (photo Mariusz Drzewiecki).

courses of the walls of Feature 17 were covered by a deposit of sand containing artefacts related to food processing (Deposit 1_1OS).

Phase 5

Following the abandonment of Feature 17, a cemetery was established on Mound OS.[4] Nineteen burials were discovered in the surveyed section of the Mound, cutting Deposits 1–7_1OS. Some of the graves also encroached upon the walls (E, S and probably N) (**Figure 4.9**). Most of the burials had a layout typical of Christian burials – an E–W orientation. Two exceptions to this rule were Graves 13 and 14, which were oriented N–S. At the same time, it is worth noting that the bodies of the deceased were laid out in a variety of ways (including on their backs and on their sides). The unearthed graves were pit-like and did not contain any architectural structures. The fill of the graves was a mix of occupation materials from the previous phases. A sample taken from Grave 15 (located in Deposit 7_1OS) dates to 944–1025 AD (84%). The dating of charcoal sample from Grave 16 (located in Deposit 3_1OS) indicates a date after 765–895 AD (88%). Both dates should be considered as *terminus post quem*. Bearing in mind the other dating samples from Trench 1/OS, it is assumed



Figure 4.9. Grave cutting Wall E of Feature 17 (photo Tomasz Michalik).

[4] In addition to Trench 1/OS, burials were also found in Trench 2/OS located in the eastern part of the mound.

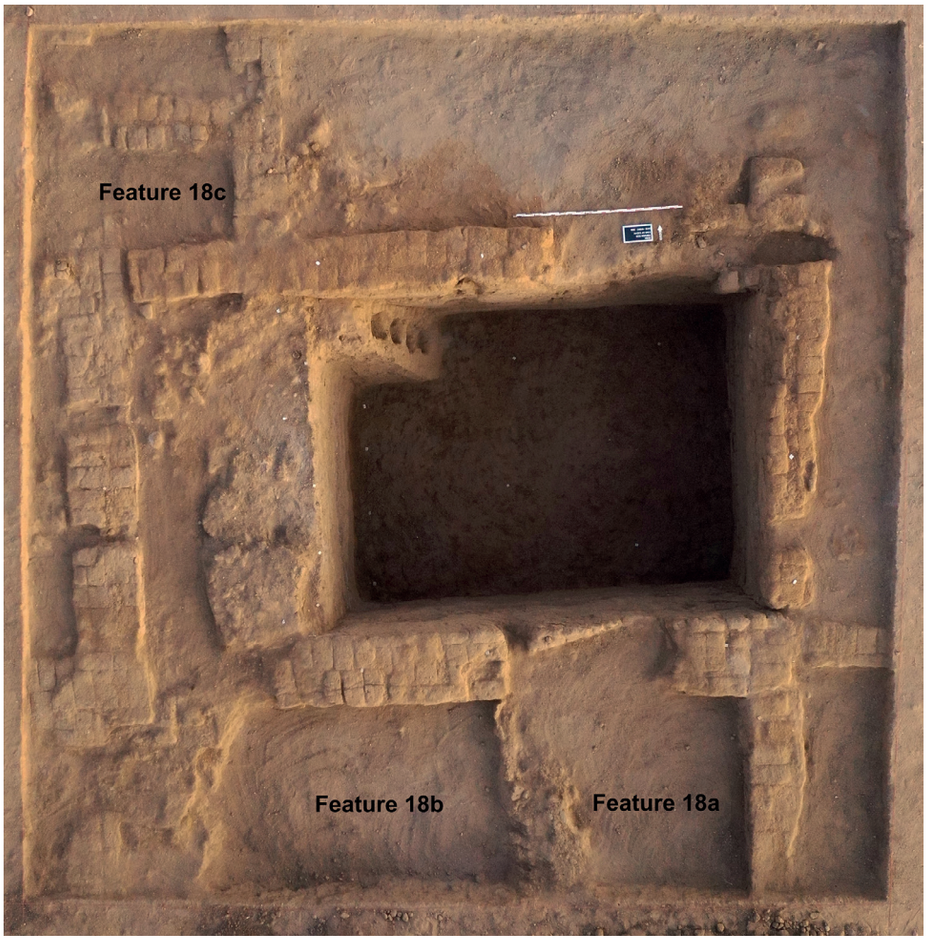

Figure 4.10. Trench 1/OS rooms discovered outside Feature 17 (photo Mariusz Drzewiecki).

that the cemetery may have been established as early as the 11th century AD. A detailed description of the cemetery is given in Chapter 8.

Area around Feature 17

Investigations in Trench 1/OS included the exploration of areas north and south of Feature 17. Due to time constraints, exploration of the areas in question was restricted to 20cm in depth in the northern area and 40 cm in depth in the southern area (**Figure 4.10**).

In the northern area just below the surface (Deposit 1_1OS), Deposits 2_1OS, 3_1OS and 4_1OS were discovered. Deposit 2_2OS was organic in nature, probably zoonotic, and contained pottery fragments and animal bones. Deposits 3_1OS and 4_1OS were highly ashy, with charcoal fragments. In these contexts, artefacts exhibited similar characteristics to the upper fill deposits of Feature 17 (5_1OS). Exploration of the deposit in the NW trench corner revealed the outline of a small rectangular room, 1m wide (Feature 18c).[5] In the NE corner, however, a continuation of the Eastern Wall of Feature 17 was discovered.

In the southern section under Deposit 1_OS, a burial as well as an additional deposit (6_1OS) containing fragments of ceramic vessels, animal bones, shells and a ceramic stamp (?)[6] were recorded. Upon exploration to the south, the outline of two rooms were identified. The room in the SE corner (Feature 18a) was 2m wide. The room discovered in the western part (Feature 18b) was *c*. 3m wide.[7]

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[5] Due to time constraints on the excavations, the dimensions of the room were only partially uncovered. However, given the course of the Western Wall of Feature 17, this room may be 1 × 1m in size.

[6] Inv. no. SOBA_2019/OS1/sf042. For details see Chapter 14 and Figure 14.8.

[7] Due to time constraints on the excavations, these enclosures were only partially exposed and their length is unknown.

In the upper deposit of Feature 18a (Deposit 12_1OS), a few pottery fragments, a fragment of glass and some animal bone were found. Pottery fragments and a stone tool were also discovered in the upper layer of Feature 18b (Deposit 11_1OS). Considering the construction of the Southern Wall (Feature 17), it should be noted that these rooms were not directly linked to Feature 17. At the same time, the uncovered fragments indicate that Feature 18b, like Feature 17, was decorated with red-orange plaster.

4.1.5. *Summary*

The central part of Mound OS was in use as early as the 6th/7th century AD. For a long time, it was then used for residential purposes (probably until the end of the 10th century AD). Later, (probably in the 11th century AD) the function of the area changed, as a cemetery was established on the mound.

Research carried out at the top of Mound OS indicates that the room at the centre of Trench 1/OS (Feature 17) was constructed as part of a larger complex. The stratigraphic arrangements and radiocarbon dating indicate that part of this complex was built around the 7th century AD (e.g., the eastern Wall of Feature 17). During this period, the area to the west of the wall (discovered within Trench 1/OS) was used for food preparation and consumption, but these activities were not accompanied by architectural structures. It is not impossible that such structures may have been located nearby, but due to the small size of the excavation they have not yet been discovered. The situation changed around the middle of the 10th century AD, when the northern and southern Walls were added to the eastern Wall to form a rectangular room (Feature 17). Numerous fragments of kitchen and storage vessels, stone tools, and animal bones, combined with traces of ash and hearths, suggest that this was a food storage and preparation area. Radiocarbon dating indicates that Feature 17 was not in use for long (until the second half of the 10th century AD). Due to the limited archaeological data, the relationship of Feature 17 to the other rooms discovered in Trench 1/OS is also unclear. It seems that Feature 17 was not directly connected to the rooms on the south, east and west sides. The size of the room (Feature 18c) in the NW corner of Trench 1/OS suggests that it may have operated as a septic tank for a toilet located on the first floor. The function of the rooms located to the south of Feature 17 (18a, 18b) could not be identified.

Use of Feature 17 as a food storage and food preparation area gradually declined. The recorded rubbish pits may indicate a change in the function of this space, while rubble layers may indicate the destruction of the surrounding buildings and thus the abandonment of this mound as an occupation site. The identity of the inhabitants of this area is difficult to ascertain, but it is noteworthy that some of the objects found in the rubble layers suggest a possible connection to the clergy (e.g., pottery with an ABA inscription and a fragment of an incense burner, possibly for the production of crosses). The decline in residential activity may have been one of the reasons for establishing a cemetery at the site. Following its abandonment, no evidence of continued occupation of the area (such as buildings) was found on Mound OS. The cemetery, as a sacred site, may have made it off-limits to everyday activity.

4.2. Trench 2/OS

4.2.1. *Introduction*

In addition to Trench 1/OS, a second trench, numbered 2/OS and measuring 5 × 5m, was laid out in the eastern part of Mound OS (see Figure 4.1). Its location was selected due to an intense magnetic anomaly recorded during non-invasive surveys (see Chapter 3). The main objective of the research carried out in Trench 2/OS was to identify the spatial layout and function of the structural anomaly and to establish its chronology. The extent of the trench was limited to 2.3 × 1.2m in order to reach natural soil without disturbing discovered remains. The test trench extended to a depth of 1.5m from the ground surface.

This research identified the source of the anomaly – it was the remains of a limestone burning zone. Based on the radiocarbon dating of samples taken, it was concluded that the zone was most likely in use in the 11th century AD. The remains of mud-brick architecture were also recorded within the trench, as well as burials (as was the case in the Trench 1/OS), and traces of later activity in the form of pits of undetermined function (**Figure 4.11**).

4.2.2. *Research methodology and background data*

Excavations in Trench 2/OS were carried out in tandem with those in Trench 1/OS, in November and December 2019. Prior to the excavation, a three-dimensional model of the investigated area was made and archaeological material was collected from the surface, which included 65 fragments of pottery. Exploration focused on the cultural layers, of which a total of 20 were



Figure 4.11. Trench 2/OS at the level of Layer 7. On the surface the outline of the lime kiln as well as remains of mudbrick architecture are visible (photo Mariusz Drzewiecki).

identified (see Table 19.2 in Appendix 2). Features identified during the research were: a limestone burning zone, mud-brick walls, pits, and graves. The following artefacts and ecofacts were recorded during excavations: fragments of pottery (1578), beads (64), stone tools (4), a fragment of a glass vessel, a fragment of an iron ring (2), traces of textiles, and animal and human bones. Within the scope of the research, samples of charcoal, plaster, and human and animal bones were collected and transported to Poland for laboratory analysis with permission from the Sudanese authorities. Documentation of the research can be found in the Documentation Archiving Department of the PCMA UW.

4.2.3. *Settlement phases and chronology*

The finds uncovered within Trench 2/OS indicate that, following the period of initial settlement, production activity related to the limestone burning developed. Once this ceased, the area was used for food preparation and consumption and, subsequently, a cemetery was established on the site. After the cemetery ceased to operate, traces of activity in the eastern part of Mound OS were recorded in the form of pits of undetermined function. Based on the analysis of the finds and the stratigraphy, five settlement phases were identified:

Phase 1: The beginnings of settlement (area use prior to the establishment of the limestone burning zone).
Phase 2: The creation and use of the limestone burning zone, and the first occurrence of mud-brick architecture.
Phase 3: Use of the area for food preparation and consumption after the end of lime production.
Phase 4: The establishment and use of a cemetery.
Phase 5: Occasional use of area and looting (?).

The first settlement phase, represented by a deposit containing pottery fragments, is dated to the pre-9th/11th century AD (Phase 1) (*terminus ante quem*).

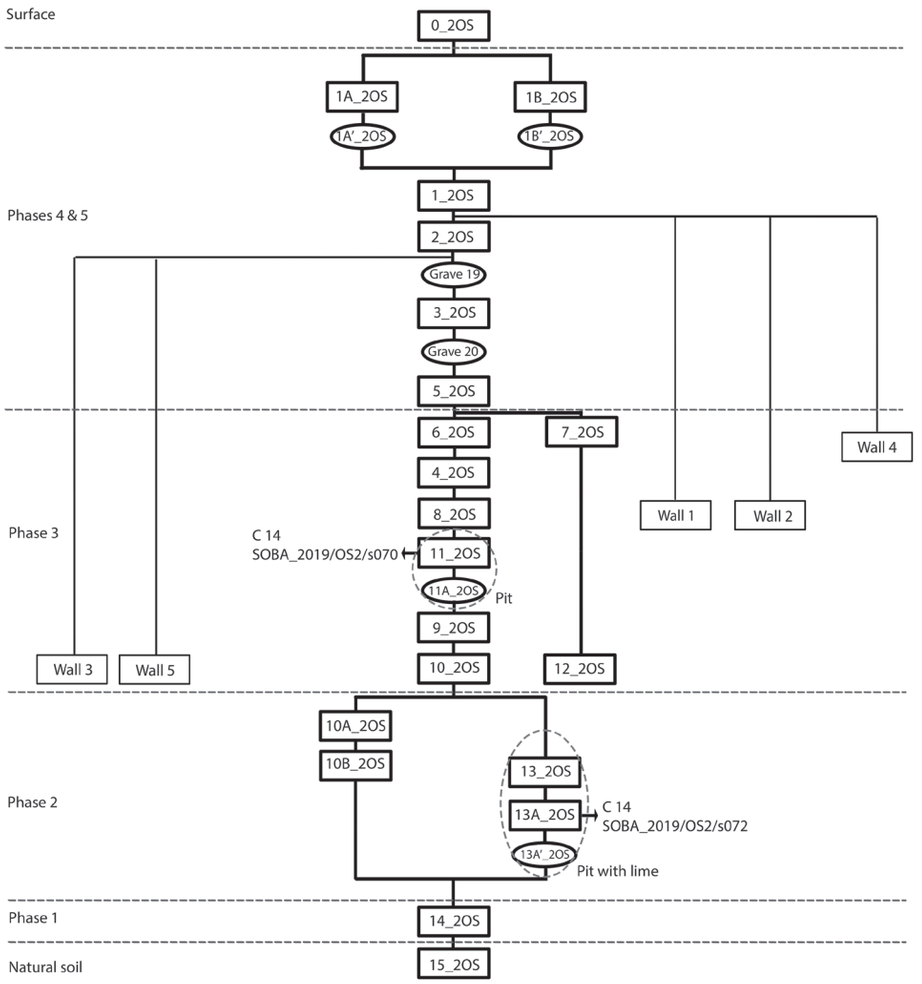

Figure 4.12. Stratigraphy of deposits discovered in Trench 2/OS – Harris matrix (prepared by Tomasz Michalik).

Subsequently, a limestone burning zone was established in the area. Radiocarbon dating of a sample from the layer above the lime deposit (11_2OS) suggests that it was formed between the 9th/11th century AD and potentially marks the *terminus ante quem* of the construction of the kiln.[8] Radiocarbon dating of a charcoal sample taken from the lime deposit filling the interior of the kiln (Deposit 13A_2OS) indicated it had its origins in the 11th/12th century AD (item 1, **Table 4.2**, Appendix 1) (Phase 2). It is likely that this sample is associated with wood used as fuel for lime burning, which potentially dates back to the last firing carried out in the kiln. After the cessation of lime production, the studied area was used for food preparation, storage and consumption (Phase 3). Subsequently, a cemetery was established on the site (Phase 4). The dating of charcoal samples from graves located at the top of the Mound OS indicates that a cemetery may have been in operation on the site as early as the 11th century AD. The graves found in Trench 2/OS (Phase 4) may have been established at a similar or later period. After the cemetery ceased to function, there was further activity represented by the pits (Phase 5) (for Harris matrix, see **Figure 4.12**).

[8] It should be noted that this particular sample (no. Poz-122454) was dated to a period (879–1013 AD, 95%; Appendix 1) earlier than a sample from the stratigraphically older Deposit 13_2OS (no. Poz-122456; 1025–1165 AD, 95%; Appendix 1). One explanation for this may be that this sample came from wood that was a structural element of the kiln or surrounding buildings (older than the wood used for lime firing). After the kiln was no longer in use, the material in question may have become dislocated above the lime layer. Therefore, the charcoal sample taken from the stratigraphically older layer received a later dating than the charcoal sample from the stratigraphically younger layer. It could potentially determine the time of construction of the kiln, the surrounding buildings, or indicate the reuse of wood from an earlier period.

Phase	Dating	Characteristics
Phase 1	before the 9th/11th century AD	Settlement layer
Phase 2	9/11th–11th/12th century AD (?)	Limestone burning zone, mud brick architecture
Phase 3	?	Activity and backfill deposits
Phase 4	11th century AD (?) – ?	Cemetery
Phase 5	?	Pits

Table 4.2. Dating and characteristics of settlement phases in Trench 2/OS (prepared by Tomasz Michalik).

4.2.4. *Sequencing of activities at Trench 2/OS – settlement phases*

Phase 1

The first settlement phase in the eastern part of Mound OS was represented by a single cultural layer (14_2OS) located directly above the natural soil (15_2OS). This layer, in contrast to the sterile layer, bore traces of burning due to being directly beneath the lime burning site, and also contained fragments of handmade ceramic vessels. The area in which Deposit 14_2OS was discovered was relatively small (2.85m²), and therefore any conclusions that can be reached regarding the first period of settlement of the eastern part of Mound OS are very limited. Nevertheless, it is worth noting that Deposit 14_2OS resembled in structure the first settlement deposit discovered in the central part of Mound OS (33_1OS). It contained ceramic material (6 fragments of vessels, including one with decoration), but contained no traces of architecture. The discovered fragments were mostly kitchenware vessels, which could be evidence of food consumption or the remains of discarded waste. It is also possible these are from nearby buildings, not yet discovered due to the small size of the trench.

Phase 2

The second settlement phase in the eastern part of Mound OS was related to lime production. The excavated area contained a fragment of a limestone burning zone, probably oval in shape (the uncovered part measured 1.8m × 1.2m), as well as the remains of mud-brick walls. Four deposits (13_2OS, 13A_2OS, 10A_2OS, 10B_2OS) were associated with the operation of this limestone burning zone (**Figure 4.13**). The first of these, a lime layer approximately 5cm thick (13_2OS), filled a pit formed in Deposit 14_2OS, which bore traces of firing. Between the lime deposit and the deposit bearing traces of firing in Deposit 14_2OS, charcoal was found, possibly associated with the lime firing process (13A_2OS not visible in Figure 4.13). Radiocarbon dating

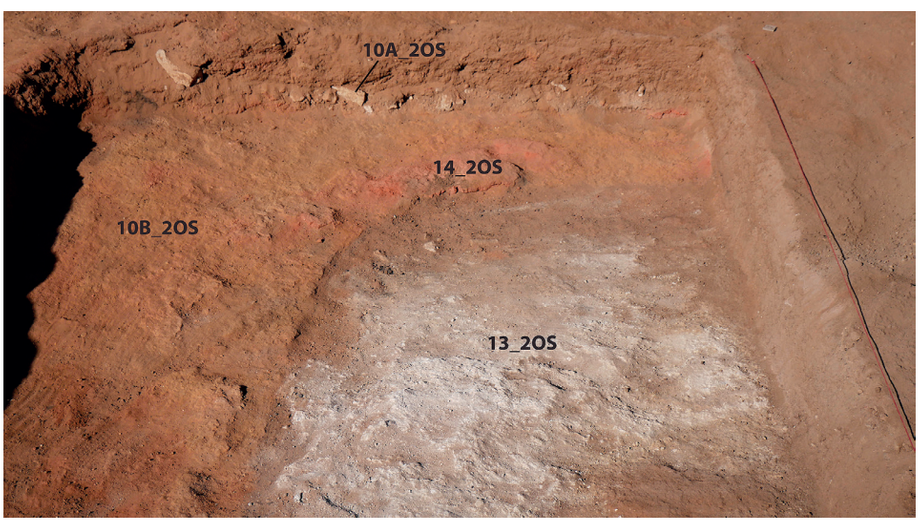

Figure 4.13. Deposits related to lime kiln (photo Tomasz Michalik).



Figure 4.14. Arrangement of walls discovered in Trench 2/OS (photo Mariusz Drzewiecki).

indicated that these dated to the period 1025–1165 AD (95%) (item 1, Table 4.2, Appendix 1). Outside the lime pit and above a deposit of compacted sand (10B_2OS) was a deposit of cylindrical rock fragments, which are probably the remains of raw limestone material (10A_2OS). Their arrangement suggests that they may have acted to strengthen the circumference of the hearth; alternatively, their arrangement may have been related to the manufacturing process (Figure 4.13).

No brick structures known from similar kilns observed across northern Nubia were found in the immediate vicinity of the hearth (Żurawski 2007, 304–307). It is possible that firing was carried out using a different technology to that known from Banganarti, or earlier finds of this type from the Meroitic period (Pluskota 2005a, 130–132). It is also possible that the kiln wall structures have deteriorated (with the exception of Deposit 14_2OS in the lime deposition area, no heavily fired artefacts were found). This limestone burning zone may not have been the only example located in this part of the mound. Geomagnetic surveys indicate similar anomalies located *c*. 5m west and 12m southwest of Trench 2/OS. These may be associated with the remains of other lime production sites (see Chapter 3).

In addition to the limestone burning zone, five walls made of mud-bricks were also discovered in the trench, within which items related to food preparation and traces of food consumption were recorded in later phases (**Figure 4.14**). Due to the limited size of the trench, it is difficult to identify the relationship between these, or the function and size of the complex these walls belonged to. Moreover, due to time constraints, the foundation level of Walls 1 and 3–5 has not been identified; however, they were probably founded slightly above natural soil. Initially, at least one of the walls (2) may have been associated with a limestone burning zone – providing a form of wind shelter for the firing area, which was dug deeper than the foundation of that wall.

Compared to the walls discovered at the top of the Mound OS (Trench 1/OS), those found in Trench 2/OS were of less robust build, and upper sections of some of the walls were heavily damaged. Wall 1, located to the east of the limestone burning zone (entering section N) was uncovered to a height of 0.7m and for a length of

2.6m. Its width was *c*. 0.4m (one brick). The bricks used in its construction measured 40 × 20 × 7cm. Wall 2, located in the southern part of the excavation (entering Section E) was exposed for a length of 3.28m and a height of 0.7m. Its thickness was approximately 0.5–0.6m. The bricks used in its construction measured 42–44 × 20–23 × 7cm. This may have been a two-phase wall (the upper part, made of one row of bricks, was significantly structurally different from the lower part made of two rows of bricks). Wall 2 was abutted to Wall 3, running in the southern direction. In the SE corner of the trench, its crown was uncovered, from which it can be concluded that it was 0.28–0.3m wide in the upper part. The bricks used in its construction measured 27 × 14 × 6cm. In the northern part of Trench 2/OS, a section of wall running parallel to Wall 1 was discovered just outside Wall 1. This wall was approximately 0.5m wide and was uncovered to a height of 0.5m (Wall 4). Another wall (5) was discovered in the western part of the trench, running along its entire length and was made by an alternating pattern of stretchers and headers. Their dimensions were 40 × 18 × 7cm. Due to its location in the section, its thickness and extent are unknown.

Phase 3

After the limestone burning zone ceased to be used, the area was only occasionally occupied. Within Walls 1 and 2, three deposits (9_2OS, 10_2OS and 11_2OS) were recorded directly above the lime. These filled a pit that may have originally been associated with the lime burning zone. In Deposits 11_2OS and 10_2OS, fragments of ceramic vessels (mostly kitchenware, handmade) were found. Deposit 9_2OS did not contain any artefacts (only ashes). A charcoal sample taken from Deposit 11_2OS indicated that it contained material formed during the period 879–1013 AD (95%;) (item 2, Table 4.2, Appendix 1). However, this dating is not fully consistent with the dating results obtained for Layer 13A_2OS (see subsection 4.2.3), so I would hypothesise that the charcoal fragment studied may have originated from earlier structural elements.

As discussed previously, during this phase, the excavated area was most likely used as a place for food preparation and consumption, as well as a site for waste disposal. Traces of such activity (in the form of ashes and pottery fragments, including some bearing evidence of burning, and animal bones) were discovered in Deposits 12_2OS, 8–6_2OS and 4_2OS. Deposit 4_2OS also contained a fragment of glass.

In the upper deposits (1 – 3_2OS, 5_2OS), a similar set of artefacts to those found in the previous layers was discovered. The difference, however, was that these layers did not contain any ash, but did contained stone tools, that indicate a slight change in the food processing repertoire here. Deposit 5_2OS also contained an iron ring while in Deposit 3_2OS, 64 (mainly glass) beads were found. The reason for these beads accumulating in this layer is unclear, but this may be connected to funerary practices here (see Phase 4).

Phase 4

Similarly to the situation in Trench 1/OS, a cemetery was established at the site following the cessation of occupation. In Trench 2/OS, two adult burials were discovered, located at the levels of Deposits 3_2OS and 5_2OS (**Figure 4.15**). These burials had an arrangement known from Christian graves (W-E orientation), although it should be noted that in Grave 20 the head of the deceased was pointing east. The uncovered burials did not contain furnishings; only clothing/textiles were found with the deceased. An eroded fragment of cord was also discovered in Grave 19 and a heavily eroded small fragment of cloth in Grave 20 (see Chapter 8).

Phase 5

The outlines of the burial pits were unclear in the previous phase, and thus it is impossible to know exactly from which of the top levels of the stratigraphy they were cut. However, analysis of the stratigraphy suggest that the area may have been subject to further human activity after the end of the use of the area as a cemetery. In the northern section of the trench, two pits (1.4m and 1m in diameter) of indeterminate function were discovered just below the ground surface. Their fills resembled Deposit 1_2OS. These pits may have been the remains of looting activity and may have been made relatively recently.

4.2.5. *Summary*

The eastern part of Mound OS was an area used for industrial and occupational activities (such as food consumption). Excavations uncovered a limestone burning zone, remains of mud-brick walls, and a cemetery. The first settlement phase in the eastern part of Mound OS resembled the settlement levels discovered in its central part (Trench 1/OS). This was represented by pottery fragments, which were not accompanied by any trace



Figure 4.15. Grave no. 20 discovered in Trench 2/OS (photo Mariusz Drzewiecki).

of architecture. In the next phase (2), the activity carried out in the investigated part of the Mound OS differed from that seen in the central area. The remains of a limestone burning site were discovered here. It is not impossible that there are further places of this kind in the eastern part of Mound OS, as suggested by the results of the geomagnetic survey (see Chapter 3). At some stage, therefore, this area may have been a production zone. In addition to the limestone burning site, remnants of mud-brick architecture were discovered in Trench 2/OS, which may have been partly associated with the lime burning process and subsequently with food storage, production and consumption. In contrast to the architecture discovered in Trench 1/OS, the remains of the buildings were less robustly constructed (and probably also lower in height), and did not contain a clear division into rooms. Following the end of this occasional use of the area, the site was used as a cemetery. The characteristics of the burials resemble those discovered in the central part of the mound. In contrast to the finds from Trench 1/OS, after the cemetery went out of use, traces of later activity were found in the eastern part of the mound in the form of pits. Their occurrence just below the surface indicates that they may have been made relatively recently.

4.3. Trench 1/O

4.3.1. *Introduction*

In addition to Mound OS, archaeological research in the northern part of the site was also undertaken on Mound O. Trench 1/O was laid out in the eastern part of Mound O, located approximately 50m north of Mound OS (see Figure 4.1). Based on the results of previous research in the area (Welsby and Daniels 1991, 11–12 and 21), it was expected that the described mound may contain the remains of red-brick architecture. Field prospection undertaken between 1981 and 1983 under the direction of C. M. Daniels revealed fragments of fired-bricks, as well as the remains of mortar on the surface of Mound O. Traces of brick architecture were also discovered in two test trenches carried out on the mound (O1, O2). In Trench O1,

located near the top of the mound, fragments of red-bricks were found as well as part of a ceramic bowl (Welsby and Daniels 1991, 21, 193 and 204). In the second trench (O2), approximately 0.6m below ground level, C. M. Daniels uncovered a fragment of a floor made of reused fired-brick fragments laid in mortar. This floor was cut by trenches of unspecified function (robber pits?). In addition, a fragment of a late Christian vessel was found in Trench O2 (Welsby and Daniels 1991, 21, 210 and 246). Previous discoveries made on Mound O suggested that the area may have been of particular importance to the local community. Architectural remains uncovered during this previous archaeological research indicate that fired-bricks were used, among other things, for the construction of churches – e.g., Buildings A, B, C, E; some tombs – e.g., Mounds B and UA; as well as non-residential buildings of unknown function (Buildings F and G) (Welsby and Daniels 1991, 29; Welsby 1998, 207–208). What role the building on Mound O had, however, remains uncertain.

After abandonment in the medieval period, Mound O was subject to numerous transformations. During the 2019 survey, fragments of fired-bricks and mortar residues were recorded on the surface. In addition to looting, the state of preservation of this area may also be affected by modern human activity. A road is located at the northern and eastern edges of the Mound, and behind it there is a site used for livestock and agricultural purposes. Animal bones were recorded on the surface of the Mound, suggesting occasional use of the area as a dumping site for animal waste. The height of the mound was 0.9m.

The main aim of the 2019–2020 survey carried out on Mound O was to identify its function and establish the chronology of the buildings located in the area. Given the possibility of a church on the site, the eastern part of the Mound, which could potentially have contained an apse, was chosen as the research area. Trench 1/O measured 5 × 5m and was excavated to a depth of 1.05m. The excavation confirmed previous findings that indicated the presence of fired-brick architecture on Mound O, and uncovered a section of a red-brick floor. Radiocarbon dating of charcoal samples taken from layers below and above the floor indicate that the floor was in use between the 8th/10th and 13th centuries AD (**Figure 4.16**).



Figure 4.16. Trench 1/O following the completion of excavations.
On the surface the remains of the brick floor are visible (photo Mariusz Drzewiecki).

Phase	Dating	Characteristics
Phase 1	before the 8th/10th century AD	Deposits with traces of occasional occupation
Phase 2	8th/10th–13th century AD	Two activity deposits
Phase 3	13th century AD – ?	Backfill deposits
Phase 4	?	Destruction of stratification – looting

Table 4.3. Dating and characteristics of settlement phases in Trench 1/O (prepared by Tomasz Michalik).

4.3.2. *Research methodology and background data*

Research on Mound O was undertaken in December 2019. Prior to the excavation, a three-dimensional model of the surface of the mound was made and material was collected from the surface, including 54 fragments of pottery (handmade and wheel-made). The survey focused on the cultural layers, of which a total of 11 were identified (see Table 19.3 in Appendix 2). Among the features identified during the survey, a fired-brick floor was particularly notable. During the excavation the following artefacts and ecofacts were discovered: pottery fragments (416), a spinning wheel, fragments of a ceramic pipe, two stone tools, shells, fragments of construction materials, and fragments of animal bones. Samples of charcoal and plaster were collected and transported to Poland for laboratory analysis with permission from the Sudanese authorities. Documentation of this research can be found in the Documentation Archiving Department of the PCMA UW.

4.3.3. *Settlement phases and chronology*

Due to the high level of destruction of Mound O from robbing activity, inference about its development is limited. However, the discoveries made within Trench 1/O allow us to conclude that after a period of initial settlement, red-brick architecture developed at the site. The surveys carried out indicate that at least four settlement phases existed in the studied area of the mound:

Phase 1: The beginning of settlement on Mound O (occasional use of area).
Phase 2: The emergence and development of red-brick buildings.
Phase 3: The use of the area after the red-brick buildings were abandoned.
Phase 4: Robbing (brick extraction).

Based on radiocarbon dating, it can be concluded that Mound O was in use from before the end of the 8th/the beginning of the 10th century AD (*terminus ante quem*). The dating also indicates that the only feature discovered (a red-brick floor) was in use between the 8th/10th and 13th centuries AD (773–906 AD (72%), 1210–1281 AD (95%); items 1 and 2, **Table 4.3**, Appendix 1). Due to the intermixing of deposits resulting from robbing activity, it is difficult to determine the timeline of the other phases.

The beginnings of activity on Mound O are attested by sparse finds of pottery fragments in layers resembling natural, sterile deposits, unaccompanied by any traces of buildings or structures (Phase 1). In the next phase, remains pointing to the presence of buildings were recorded on Mound O. A fragment of an earthen floor was recorded in the western part of the trench. In the eastern part, a deposit possibly dating to the construction phase of the red-brick building (perhaps a church) was discovered. The range of radiocarbon dates from deposits below and above the brick floor indicates that it was in use for approximately 300 years (Phase 2) (items 1 and 2, Table 4.3, Appendix 1). Due to the intermixing of the deposits above the floor, it is difficult to track the further development of the area. However, characteristics of the artefacts from the upper deposits indicate that the eastern part of Mound O may have been used as a food preparation/consumption space (Phase 3). Robbing occurred within the final phase of activity recorded on Mound O, resulting in the destruction of part of the floor and the sub-floor layer, as well as the intermixing of the deposits above the floor. This activity may have occurred during the period of brick extraction for the expansion of Khartoum in the nineteenth century (phase 4) (for Harris matrix, see **Figure 4.17**).

4.3.4. *Sequencing of activity at Trench 1/O – settlement phases*

Phase 1

The first settlement phase registered in Trench 1/O was represented by three deposits (8_1O, 7_1O and 6_1O) located above the natural soil (8A_1O). At this

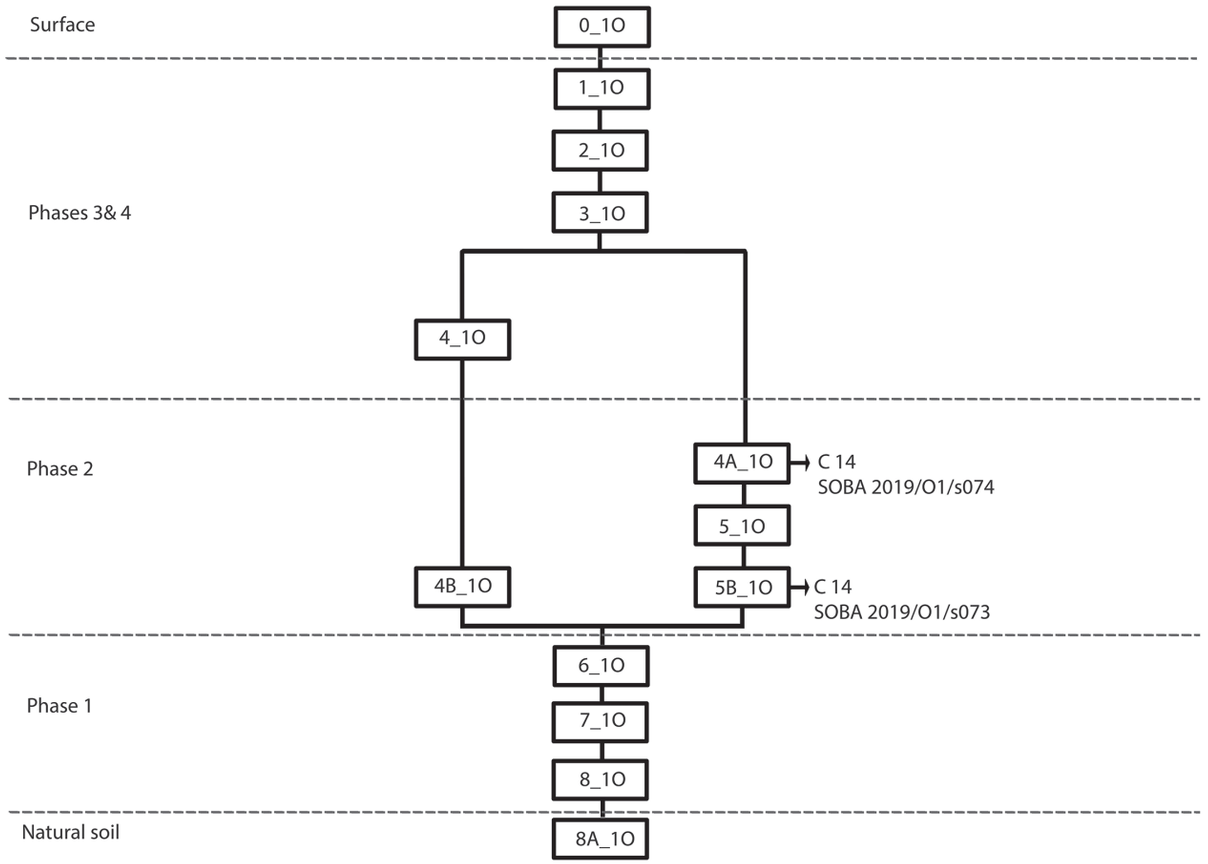

Figure 4.17. Stratigraphy of deposits discovered in Trench 1/O – Harris matrix (prepared by Tomasz Michalik).

early stage, settlement in the eastern part of Mound O does not seem to have been intensive. A total of 27 pottery fragments were found from deposits belonging to this phase. In addition, a shell and animal bone fragments were found in Deposits 8_1O, 7_1O and 6_1O respectively. Among the pottery fragments found, kitchen pottery predominated, but fragments of thin-walled vessels were also discovered. No traces of building activity were found in the investigated part of the mound. The uncovered artefacts may indicate that the area was used occasionally as a place for food consumption or the dumping of post-consumption waste. In terms of finds and composition, the described deposits resembled those discovered on Mound OS (33_1O, 14_2OS).

Phase 2

The next phase contained remains associated with the first occurrence of structures in the studied area. A section of an earthen floor (4B_1O) was recorded above Deposit 6_1O in the western part of the trench. Due to the area being extensively robbed, it is unclear whether this earthen floor is associated with the structure to which the red-brick floor belonged, or whether it represented the remains of an earlier building (**Figure 4.18**).

In the eastern part of the trench and above the earthen floor, a hardened layer containing sand, gravel and fragments of fired-brick was recorded (5B_1O). Above this was mortar and bricks forming the floor (5_1O). Deposit 5B_1O resembled in structure the deposits (M14)119 and (M14)111 discovered in Church E on *kom* M12 (room 3/4 and 2), which were interpreted by Derek Welsby as the foundation for a church (Welsby 1998, 33). A similar layer containing gravel, sand and brick rubble was found in the same church in Room 1, where it formed the surface on which the red-brick floor was laid ([M14]28) (Welsby 1998, 33). The compacted deposits containing gravel and sand in the churches on Mounds B and M14 were also interpreted as floors (Welsby 1998, 29–34; Welsby and Daniels 1991, 33–125). In Deposit 5B_1O recorded in the Trench 1/O, fragments of kitchen pottery and animal bone were found. Like the deposits in Rooms 2 and 3/4 of Church E, this may have acted as a foundation, and



Figure 4.18. Remains of earthen floor discovered in Trench 1/O (photo Mariusz Drzewiecki).

the pottery and animal bones found in it may be related to the construction period of the building. Dating of the charcoal sample from Deposit 5B_1O indicates that it accumulated between 773–906 AD (72%). Hypothetically, the construction of the structure to which the floor belonged can also be dated to that period. Deposit 5_1O contained mortar made from mud and red-bricks. Rather than whole bricks fragments of bricks were used for the floor, varying in length and width from a few to several centimetres. Their thickness varied around 7–8cm. The uncovered floor fragment had a surface area of approximately 4.1m². The floor recorded in Trench 1/O resembled that discovered during Daniels and Welsby's survey of Mound O (Welsby and Daniels 1991, 21). Similar types of floors made from brick fragments were also discovered in churches on Mounds B and M12, respectively (Welsby 1998, 29–34; Welsby and Daniels 1991, 33–125) (**Figure 4.19**).

The deposits above the floor in most of the trench have been intermixed through robbing. Despite this destruction, an intact deposit of sand, containing ash and charcoal (4A_1O) was recorded above the floor itself. The dating of a charcoal sample taken from this deposit indicates that it accumulated between 1210–1281 AD (95%) (item 1, Table 4.3, Appendix 1). Considering that this deposit was located directly above the floor, and that it did not contain any traces of debris that could link to the destruction of the building, it can be assumed that the structure to which the floor belonged was still functioning in the 13th century AD.

Phase 3

Later activities in the studied area are not easy to trace due to the intermixing of deposits. The deposits above the floor (Deposits 4_1O-1_1O) contained pottery fragments, a spindle whorl (?), animal bones, shells, two stone tools and red-brick fragments, as well as fragments of a ceramic pipe. The pottery fragments mostly belonged to kitchen and storage vessels. A few were from thin-walled black or painted vessels. Two fragments were inscribed 'AX'. The character of the finds may indicate that the site was used as a space for food preparation or for discarding refuse. At the same time, some of the

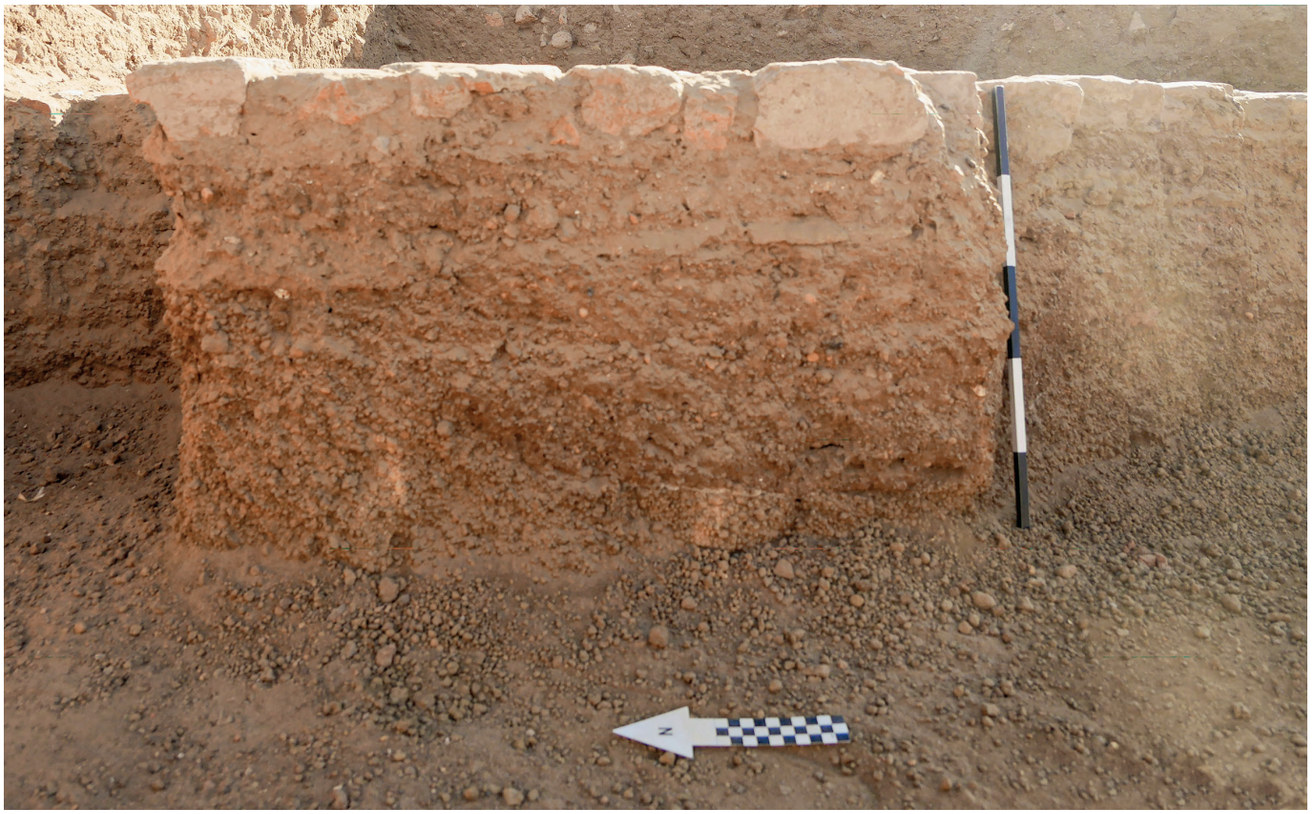

Figure 4.19. Stratigraphy of deposits within the red brick floor discovered in Trench 1/O (photo Tomasz Michalik).

finds, such as the bricks, and the ceramic pipe are indicative of the medieval period more generally.

Phase 4

It is not clear when the robbing activity occurred on Mound O. Given that the intermixed deposits were observed on the very surface of the site, it seems that it may have occurred when bricks were looted for the construction of Khartoum in the 19th century.

4.3.5. *Summary*

Previous research undertaken on Mound O unearthed the remains of a red-brick building. As was the case with other structures of this kind found at Soba, the building on Mound O was to a large extent destroyed by brick-robbing activities. Despite the many uncertainties regarding the uncovered remains, excavation work carried out during the 2019–2020 season indicated that the floor recorded in Trench 1/O was in use between the 8th/10th and 13th centuries AD. The uncovered floor fragment does not allow a clear determination of the function of the researched area. The discovery of its significance is also hampered by the lack of information about the plan of the building that the floor belonged to, and the absence of a wider context of the floor deposits (and its developmental phases). One hypothesis that can be considered in relation to the uncovered remains is that there was a church on the site. The rationale for this could be the parallels between the deposits discovered on Mound O and those recorded in churches on Mounds B and M12. Another clue may be the cemetery located on Mound OS, which may have been associated with a church on Mound O. At the same time, no fragments of coloured plasterwork, often found in churches, or fragments of artefacts associated with church furnishings were found in the investigated section of the Mound. Thus, the function of the features excavated remains uncertain.

CHAPTER 5

RESULTS OF THE ARCHAEOLOGICAL EXCAVATIONS IN AREAS CW AND CS

Tomasz MICHALIK

Areas CW and CS are located in the south-western part of the Soba site (cf. Welsby and Daniels 1991, 28) close to the Nile river. During excavations, two test trenches were established in this part of the city – one in Area CW (1/CW) and one in Area CS (1/CS) (**Figure 5.1**). Both trenches were located in proximity to Church C – the oldest known church in Soba (the so-called Church with Stone Columns) and within one of the oldest known settlement centres of the medieval city (Drzewiecki and Michalik 2021). This chapter presents new information about the development of the early medieval settlement in Areas CW and CS. In the case of each trench, detailed information about the archaeological remains, as well as sequencing of occupation phases and its chronology are presented.

5.1. Trench 1/CW

5.1.1. *Introduction*

Trench 1/CW was established following the geophysical survey conducted in Area CW. The survey revealed the presence of a variety of mud-brick structures (mostly mud-brick walls) within the discussed area (see Chapter 3). Some of these were oriented to roughly coincide with the cardinal points. However, the survey also revealed wall fragments that deviated to a larger extent from the north-south or east-west axes. Interpretations of the magnetic anomalies suggested that the area in question may contain buildings from two settlement phases. One of the goals of the research conducted in Trench 1/CW was to verify this hypothesis.

No archaeological excavation had previously been carried out in Area CW. Nevertheless, its importance could be indirectly inferred from the results of archaeological surveys conducted in neighbouring areas (C, CE and CS). The surface survey carried out as part of the mission led by D. Welsby showed that the terrain adjacent to Area CW may have been settled as early as the first stages of the development of medieval Soba. Site prospection by C. M. Daniels in Areas C, CE and CS recovered fragments of Soba Ware, characteristic of the early period of the city's development (Welsby and Daniels 1991, 29–30). It was also established that mud-brick structures were present in the vicinity of Area CW with (sporadically occurring) evidence of red-brick buildings (Welsby and Daniels 1991, 14–16). Furthermore, it is noteworthy that Trench 1/CW was located *c.* 90m from what is considered to be the oldest church currently known in Soba, dating back to the 7th/8th century AD, the so-called Church with Stone Columns (Welsby 1996b, 180; Welsby and Daniels 1991, 321–322).

Area CW rises to *c.* 0.8m above ground level, its surface covered with sand mixed with gravel, on which small fragments of fired-bricks are visible in places. The field prospecti carried out prior to excavation did not identify any traces of modern disturbance, although it should be noted that the area lies in close proximity to agricultural land.

Trench 1/CW measured 5 × 5m, and reached a depth of *c.* 1.6m below the present-day ground surface. The excavation revealed structures of mud-brick and the remains of wooden structures. Although the exploration did not reach natural soil, radiocarbon dating indicated that the first phase of mud-brick architecture probably dated to the 6th century AD, while the area itself was inhabited until at least the 10th/11th century (**Figure 5.2**). This would confirm the role of the investigated area in the early development of the city. Moreover, the work has demonstrated that despite the low degree of preservation of Mound CW (suggesting erosion of the archaeological structures located within the mound), this area nevertheless contained well-preserved architectural remains located below the base of the mound itself. Thus, structures may yet be discovered in surrounding flat areas of the site.

5.1.2. *Research methodology and background data*

Excavations in Trench 1/CW were carried out in January and February 2020. Before opening the trench, all surface material was collected from the surface, and the following materials were gathered: 340 fragments of pottery, seven beads, seven stone tools and a fragment



Figure 5.1. Location of Trenches 1/CW and 1/CS in relation to the Church with Stone Columns (background image Bing Maps).



Figure 5.2. Trench 1/CW following the completion of excavations. In the photograph two phases of mudbrick architecture are visible – the older oriented NE–SW and the younger oriented N–S (walls 29 and 31) (photo Mariusz Drzewiecki).

of metal. The excavation was conducted with consideration given to the cultural layers, of which a total of 41 were identified (see Table 19.4 Appendix 2). Among the features identified during the research were: mud-brick walls, remains of wooden structures, a pit (possible robber cut) and a single burial. During excavation, the following artefacts and ecofacts were collected: fragments of ceramic vessels (4,242), mud-stoppers (21), stone tools (35), beads (51), glass fragments, two ceramic figurines, ceramic tokens, clay objects of unspecified function, a fragment of a bone ferrule, a fragment of a nail, a spindle whorl, shells, human and animal bones. With the permission of the Sudanese authorities, the samples of charcoal, human and animal bones and slag were collected and transported to Poland for laboratory analysis. Documentation of the research can be found in the Documentation Archiving Department of the Polish Centre of Mediterranean Archaeology University of Warsaw.

5.1.3. *Timeline and phases of settlement*

Exploration of Trench 1/CW showed that the area was inhabited at least between the 6th/7th and 10th/11th centuries AD. The unearthed structures featured two phases of mud-brick buildings separated by a phase of timber construction, as well as traces of robbing in the form of a cut. In addition, traces of later occasional occupation (without permanent buildings) and funerary activity (probably in modern times) were recorded. Analysis of artefacts indicates that the buildings discovered in Trench 1/CW may have had residential and storage functions, and were perhaps spaces for the preparation and consumption of food. On the basis of stratigraphic analysis, four settlement phases have been identified:

Phase 1: The construction and use of mud-brick architecture oriented along a NE–SW axis.
Phase 2: The use of wooden architecture.

Phase	Dating	Characteristics
Phase 1	6th/7th century AD – ?	Mud brick architecture oriented along the NW-SE axis
Phase 2	? – 9th/11th century AD	Post-holes, 6 activity levels
Phase 3	9th/11th century AD – ?	Mud brick architecture oriented on N-S axis, continuation of timber architecture
Phase 4	?	robber cut, backfill layers containing archaeological material, burial

Table 5.1. Dating and characteristics of settlement phases in Trench 1/CW (prepared by Tomasz Michalik).

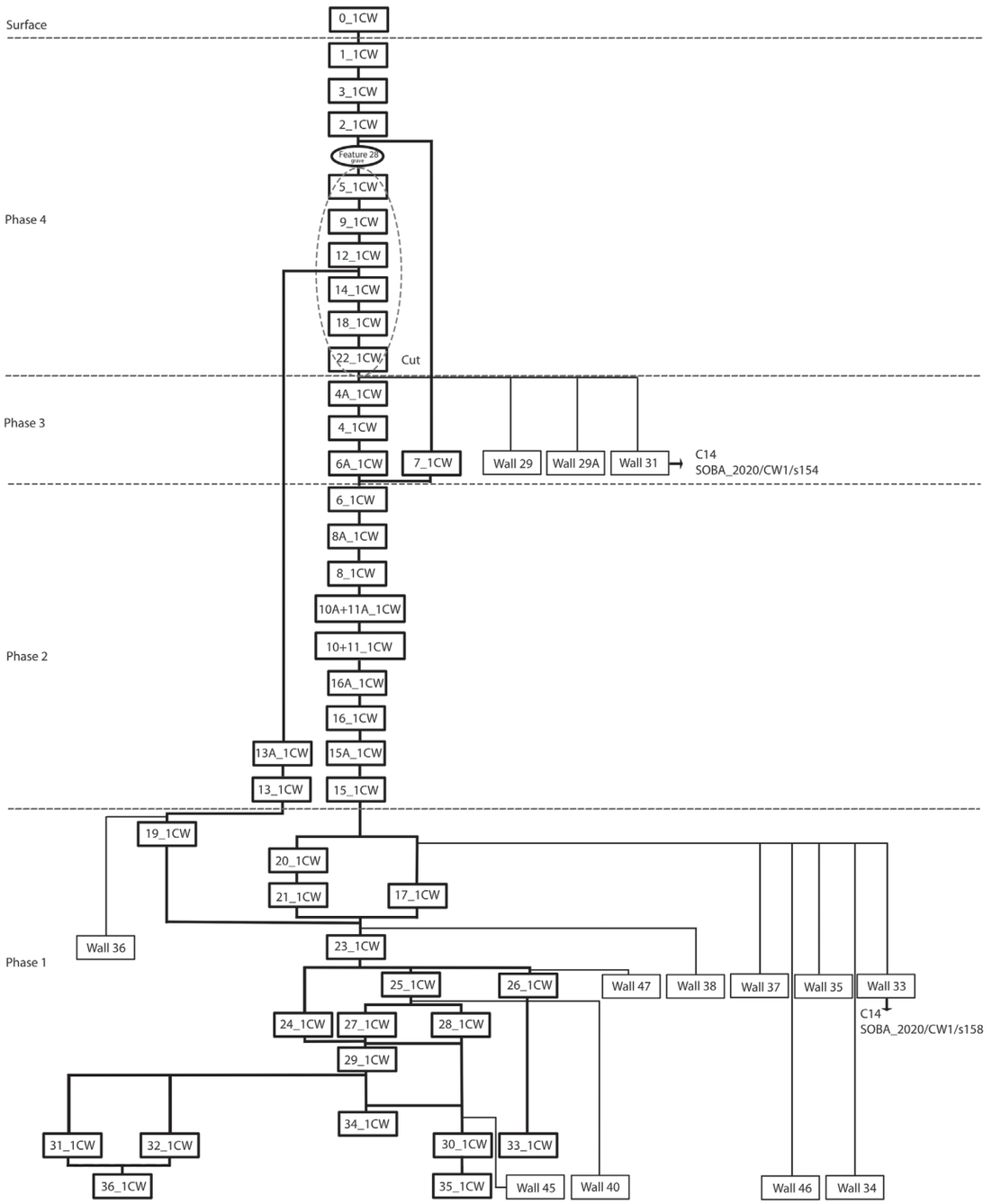

Figure 5.3. Stratigraphy of deposits discovered in Trench 1/CW – Harris matrix (prepared by Tomasz Michalik).

Phase 3: The construction and use of mud-brick architecture oriented along the N–E axis, coexisting with timber structures.

Phase 4: Robbing, occasional occupation and funerary activities.

The first of the phases identified in the researched area was associated with mud-brick architecture oriented along the NW–SE axis. The dating of a sample of charcoal from under Wall 33, forming part of this phase, suggests that the wall was built after 527–615 AD (69%) (cf. **Table 5.1**, Appendix 1). With this dating cross-referenced with the chronology of Soba, with its origins in the 5th/6th century AD (Welsby and Daniels 1991, 7–10), these remains should be considered as evidence of the early period of Soba. Above the deposits associated with this phase, the remains of timber structures (Phase 2) were registered, with traces of post-holes found throughout the six activity levels (all earthen floors). At a later stage, in conjunction with the timber architecture, the remains of mud-brick architecture appeared at the site, this time oriented along the N–S axis (Phase 3). Radiocarbon dating of a sample taken from under Wall 31 indicated that these mud-brick structures were erected after 890–1013 AD (95%). It is unclear when exactly these structures were in use, but after their abandonment, the heavily eroded remains of walls were further damaged by robbing. This activity forms the fourth phase. The cut related to this phase was about 1m deep and destroyed a considerable part of the architectural structures from Phases 1, 2 and 3. The resulting pit was eventually filled with deposits containing mixed archaeological material, but not including bricks. In addition, a child's burial was found within these deposits, probably from modern times (see Chapter 8) (for Harris matrix, see **Figure 5.3**).

5.1.4. *Sequencing of activity at Trench 1/CW – settlement phases*

Phase 1

The oldest recorded settlement phase in Trench 1/CW was represented by ten mud-brick walls oriented along a NW–SE axis. These walls were relatively thin (they were between 35 and 40 cm thick – one brick thick) and erected in a stretcher-header formation. They most likely served as internal partitions, dividing a larger building into smaller spaces. The bricks used in their construction measured 40 × 20 × 5cm and 35 × 18 × 5cm, in which they resembled mud-bricks found in other parts of Soba (Welsby and Daniels 1991, 26). Four of the walls (33, 34, 35, and 37) formed a narrow L-shaped enclosure 3m long by 0.7m wide in the NE section and 1.2m in the NW section. The recorded walls were characterised by different foundation levels, while the unearthed structures bore traces of secondary phases in the form of blocking (between Walls 37 and 46) and wall additions (33 and 37). Radiocarbon dating of a charcoal sample taken from under Wall 33, which was part of the L-shaped room, indicated that it was built after 527–615 AD (69%) (**Figure 5.4**).

Given that not all wall foundations have been found (the foundation of Walls 34, 40, 45, 46 were not uncovered), as well as the visible alterations to the rooms, it can be assumed that the structure in question

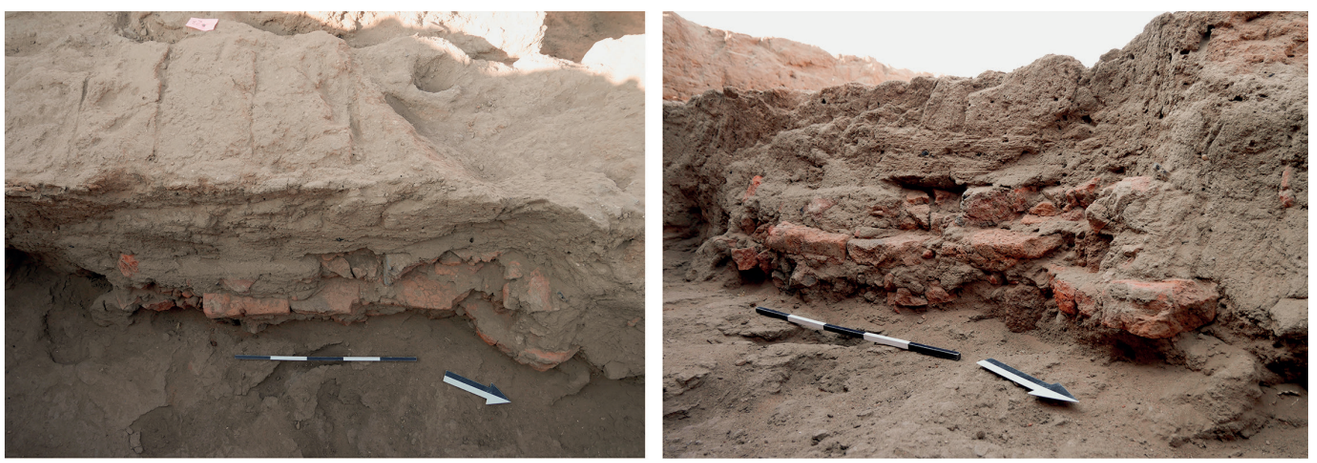

Figure 5.4. Wall 40 made of re-used red bricks found under Wall 37 (photos Tomasz Michalik).



Figure 5.5. First occupational phase within Trench 1/CW – divided into zones (prepared by Tomasz Michalik, background image Mariusz Drzewiecki).

may have operated even earlier than indicated by radiocarbon dating. As natural soil was not reached, the question of whether any structures existed prior to the mud-brick architecture is uncertain. One clue in this context may be Wall 40, which contains reused red-bricks, discovered beneath Wall 37 (**Figure 5.5**), possibly indicating the earlier presence of architecture made of red-bricks or structures created from combined materials, i.e. fired-bricks and mud-bricks.

Within the first settlement phase, 18 cultural layers were identified (36_1CW-23_1CW, 21_1CW-20_1CW,19_1CW and 17_1CW). The original stratigraphic pattern had remained undisturbed in the lowest ten deposits (up to Deposit 23_1CW). Layers above Deposit 23_1CW were disturbed by a robber pit, associated with the fourth settlement phase. Due to the small size of the trench, the full extent of the rooms was not identified. Nevertheless, for analytical purposes, four zones were distinguished, which probably corresponded to independent rooms, at different stages of development (Figure 5.5). Zone 1 was delineated between Walls 37/40, 38 and 45 and was located in the north-eastern part of Trench 1/CW. Zone 2 comprised a narrow room located behind Wall 34 in the southern part of the trench, while Zone 3 comprised an L-shaped room formed by Walls 33, 34, 35, and 37. The last of the zones, Zone 4, was located in the central and north-western part of the trench and included an area located beneath the mud-bricks architecture of Phase 3.

The lowest recorded deposit, and earthen floor, within Zone 1 (35_1CW) marked the first floor in the trench. At later stages, three additional floors were recorded in Zone 1 (29_1CW, 25_1CW, 23_1CW). Between in the floors in Zone 1, we found deposits containing stone tools, pottery fragments (mostly thick kitchenware and Soba Ware), animal bones, shell, beads, and fragments of glass (34_1CW, 30_1CW, 28_1CW, 21_1CW, 20_1CW), suggesting that this area was primarily utilised for activities related to food processing.

In Zone 2, the earliest recorded deposits (33_1CW, 26_1CW) were found to be devoid of artefacts. At the same level of Deposit 26_1CW in the eastern part of

the zone, a blocking wall was recorded. The blocking was made of fragments of mud-bricks bonded with mortar and sealed the doorway/opening between Walls 40 and 46. This structure enclosed a passage between the rooms *c.* 1m wide. Its thickness, approximately 0.4m, was similar to that of the neighbouring walls. Stratigraphically the blocking was built from the same level as the foundation of Wall 47, thus this wall could be a remnant of the reorganisation of the space to the south of Zone 2 as well as in Zone 3 (with the creation of the L-shaped room). The presence of blocking suggests a phase of constructional alterations within the buildings. Accompanying these changes were a floor (23_1CW) that spans the entire trench, along with Deposit 17_1CW (this contained relatively abundant finds, which may be evidence of residential activity in this part of the building).

Similar to other zones within Zone 3, sets of floors (29_1CW, 25_1CW, 23_1CW), as well as other activity layers were recorded (36_1CW, 32_1CW, 27_1CW, 24_1CW, 17_1CW).[1] Artefacts found within the activity layers of Zone 3 (32_1CW, 27_1CW, 24_1CW, 17_1CW) indicate activities related to food processing. However, within this context, Deposit 24_1CW stood out. In this deposit (filling the L-shaped room and constructed at the same level as Deposit 25_1CW), fragments of ceramic vessels (e.g., Soba Ware), stone tools, animal bones, a camel figurine and a second figurine of an unidentified animal were discovered. Thus, in addition to artefacts related to food processing, this layer also contained items of personal use.

In the last identified zone (Zone 4), the earliest recorded deposit took the form of sand admixed with ash. However, due to time constraints, we were unable to fully explore this (36_1CW, cf. Zone 3). Above this we found fragments of pottery (mostly kitchenware and occasional painted pottery, including Soba Ware), animal bones, stone tools and a ceramic token were discovered (31_1CW). Subsequent deposits were analogous to those described within Zone 3 (29_1CW-25_1CW and 23_1CW). Late settlement activity here (after the construction of the L-shaped room) is difficult to recognise due to the disturbance caused by the robber pit in Phase 4. However, in the intact Deposit 19_1CW, located next to the western side of the trench, fragments of pottery (mostly kitchenware, some burnt) and beads were discovered, which suggest continuous activities related to food processing. In addition, as part of Phase 1, the lower and middle section of a larger storage vessel was recorded *in situ* in the south-west corner of the trench (in the small space between the trench's corner and Wall 35). As a complete exploration would have required a widening of the excavation, only part of this vessel was exposed. It is therefore unclear whether there is a single storage vessel in that location (south-west of Wall 35) or whether there are more, in which case the area may have been used for wider storage purposes (**Figure 5.6**).



Figure 5.6. Storage vessel found in the SW corner of Trench 1/CW (photo Tomasz Michalik).

An analysis of the collected data shows that, regardless of the zone studied, in the lower deposits the number of artefacts was relatively low. This changed in the later stages (subsequent to the construction of the L-shaped room and the blocking of the doorway). The artefacts found were mostly related to food processing and consumption. Due to the limited extent of the excavation, as well as the lack of diversity of the material, functions of individual rooms could not be identified. It is noteworthy, however, that among the zones analysed, Zone 3 (the L-shaped enclosure) stands out with the ceramic figurines occurring here (24_1CW) and where a deposit related to occupation of that room was recorded (17_1CW). These special characteristics indicate that this place may have had both a residential and storage function.

Phase 2

In the second phase, wooden structures were constructed in the area of the mud-brick architecture

[1] Some of the deposits have already been identified in other zones, indicating that the discussed areas were well-connected and may be part of a larger space with a unified function.



Figure 5.7. Remains of timber construction visible at the level of Layer 4 (photo Mariusz Drzewiecki).

(**Figure 5.7**). This was evidenced by the numerous post-holes remains discovered (mostly with a diameter of *c*. 10cm), attested in the six earthen floors (Deposits 16A_1CW, 15A_1CW, 13A_1CW, 11A_1CW, 10A_1CW and 8A_1CW). Due to the small area of exploration (5 × 5m) and the partial destruction of the deposits by robbing (in Phase 4), it is difficult to identify the specific outline of these wooden structures or to specify their function. Their role, however, may be guessed from the characteristics of the finds. The artefacts discovered between the earthen floors (16_1CW, 15_1CW, 13_1CW, 11_1CW, 10_1CW, 8_1CW, 6_1CW) were dominated by fragments of handmade ceramic vessels, some of which were burnt, along with wheelmade and thin-walled vessels. Painted pottery (e.g. Soba Ware) also appeared in the higher deposits (11_1CW, 8_1CW, 6_1CW). Fragments of animal bone (mostly cattle and sheep/goat – see Chapter 15), shells, a fragment of glass, a spindle whorl and clay and bone beads were also found in the deposits between the earthen floors. The space could therefore have been used as a food processing area and contain food waste. It is worth noting that the wooden structures themselves are known from earlier research at Soba. As Welsby and Daniels pointed out, this type of architecture was common in the early settlement strata and took the form of circular and rectangular structures. Similar linear sequences of post-holes were interpreted as enclosures adjacent to brick buildings (Welsby 2004, 228).

Phase 3

In the later period (Phase 3), mud-brick structures reappeared in the study area alongside timber constructions. Due to robbing (the Phase 4 cut), as well as the shallow subsurface, this architecture was only minimally preserved. Within the described phase, three walls (29, 29A, and 33) were discovered, preserved to a height of one brick (**Figure 5.8**). The walls had the following widths: Wall 33 – 0.4m, Wall 29 – 0.6m, Wall 29A – 0.6m. The bricks used for the walls were of the standard size found in Soba for this type of

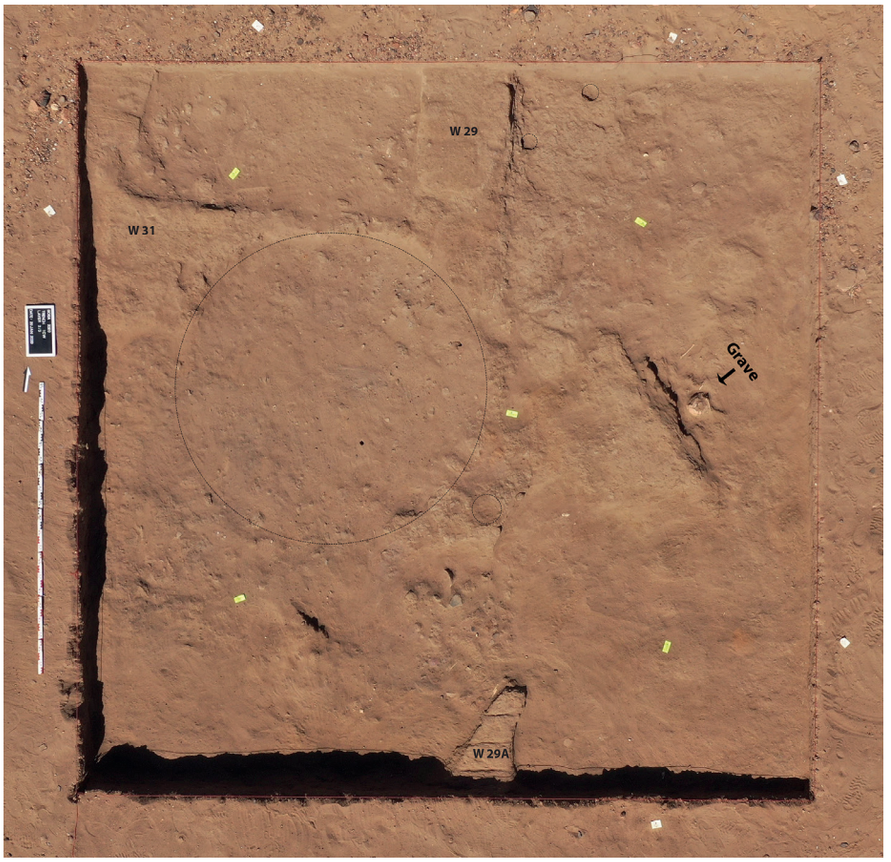

Figure 5.8. Mudbrick walls and timber structures discovered in the N part of Trench 1/CW (Phase 3) as well as traces of a robber and modern (?) grave cut (Phase 4) (photo Mariusz Drzewiecki).

construction, i.e., approximately 40 × 20 × 5cm, although it should be noted that the bricks were thinner than normal due to erosion processes. The building in question was probably constructed after the 9th/11th century AD, as indicated by the results of radiocarbon analysis. The dating of a sample from under Wall 33 showed that it was built shortly after 890–1013 AD (95%). In contrast to the finds from the first phase, the Phase 3 walls were oriented along a N–S axis. One cultural layer (7_1CW) was recorded between the walls. It contained fragments of animal bone and of kitchen pottery (some bearing traces of burning). In addition to the mud-brick structure discussed above, timber architecture was recorded in the north-eastern part of the trench (Deposits 6A_1CW and 4A_1CW), probably associated with the mud-brick building. No building activity was observed in later stages. However, it should be noted that the walls from Phase 3 were located just below the surface and were very heavily eroded, thus the presence of such architecture should not be excluded.

Phase 4

The fourth phase of activity was associated with the digging of a large pit that partially destroyed the structures from Phases one, two and three. In this pit, material similar – albeit heavily mixed – to that recorded in the undisturbed deposits was found. In addition to ceramic remains (mostly fragments of cooking vessels as well as a few thin-walled and inscribed fragments) and animal bones, 21 clay mud stoppers for storage vessels were recorded, which – in combination with the finding of a storage vessel discovered in a corner of the trench at Phase 1 (see Figure 5.6) – could point to a storage function for at least some of the rooms recorded. In addition to these artefacts, the finds in the pit fill also included beads, shell fragments, and stone tools. The fill of the cut contained traces of charcoal and ash, which may indicate that it cut through deposits related to food preparation and consumption, or waste. The cut, as recorded at the level of Deposit 2_1CW, had a diameter of *c*. 2.2m and was probably made at a time when

the archaeological remains were preserved much as they are now (see Figure 5.8).

Deposits alongside the pit (3_1CW, 2_1CW, 1_CW) beside artefacts related to food processing also bore evidence of destruction. The composition of Deposit 2_1CW resembled the filling of a robber cut. Deposits 3_1CW and 1_CW contained fragments of fired-bricks, suggesting the potential destruction of nearby buildings constructed totally or partially with this material. Moreover, in the upper level of Deposit 1_1CW, a child's burial was also found (see Figure 5.8). No artefacts were found with this, and its arrangement is inconsistent with Christian burial rites (N–S orientation with the head facing S), so this may be an indication that it was made after the medieval period – potentially in modern times.

5.1.5. *Summary*

The work carried out in Trench 1/CW provided information on the development of the hitherto unexplored settlement in archaeological Area CW. The results confirmed the assumption, based on the data collected during the archaeological survey of the neighbouring areas (C, CE, and CS), that this area was inhabited in the early stages of the development of medieval Soba. Significantly, the excavations indicated the presence of mud-brick architecture at an early stage of the city's development, which had not been widely attested on the site previously. Given the architectural analogies with other sites in northern Nubia, it can be surmised that the buildings discovered in the first phase likely had a residential purpose (Anderson 1996, 199–202; Welsby 2002, 123–127, 167). The described building had been rebuilt at least once, and as part of its remodelling, smaller rooms (Zone 3) were separated. In addition, analysis of the artefacts (e.g., mud stoppers and fragments of storage vessels) indicates that some of the rooms may also have had a storage function.

In addition to the buildings from Phase 1, the development of settlement in the later period also provides interesting insights. After the early period of the city's history, wooden structures were constructed in the studied area, pointing to a functional shift of the study site. Hypothetically, the transformations observed in Area CW could have been related to the development of buildings on Mound B and a change in layout of the entire agglomeration (e.g., the establishment of a new city centre on Mound B). The significance and development of the buildings from Phase 3 remains an open question, as the vestigial nature of their survival makes it impossible to discern their function. The existence of red-brick buildings or structures created from mud-brick and fired-bricks is also open. So far, no such structures have been discovered, but fragments of fired-bricks found in upper deposits and on the surface could be evidence of their existence.

5.2. Trench 1/CS

5.2.1. *Introduction*

Trench 1/CS was established in Area CS, approximately 150m east of Trench 1/CW (see Figure 5.1). Previous archaeological work in Area CS indicated that this area was in use during the early Soba period and that it served a variety of functions. Prospection carried out by C. M. Daniels here unearthed the remains of mud-brick and red-brick architecture and constructions made of a combination of red-bricks and stones. Further prospection uncovered graves, a pit with a storage vessel and considerable quantities of pottery (mainly cooking wares), as well as Soba Ware, characteristic of the Soba's early period (Welsby and Daniels 1991, 16). Despite the numerous finds provided by C. M. Daniels' prospecting efforts, so far, no larger complex of buildings has been uncovered and we have been unable to develop an understanding of a longer sequence of stratigraphic relationships for this development. The acquisition of such information was one of the motivations for the establishment of Trench 1/CS.

Although surface exploration indicated intensive use of Area CS in the Middle Ages, Daniel's excavation also noted that the area in question bore traces of post-medieval settlement. As part of a surface survey, C. M. Daniels noted the presence of numerous traces of wheeled vehicles passing through the area, as well as the presence of building rubble. Furthermore, the area was adjacent to agricultural areas (Welsby and Daniels 1991, 16). A similar picture of Area CS was found during our fieldwork in 2020. Numerous fragments of fired-bricks were noted on the surface, which could indicate that the site had been robbed (potentially during the search for bricks during the expansion of Khartoum in the 19th century). There was a modern road *c*. 40m from the excavation and some fields within 100–150m.

Despite the presence of red-brick rubble on the surface, suggesting the destruction of some of the structures



Figure 5.9. Trench 1/CS at the level of Layer 8. On the photograph are visible remains of mudbrick architecture (W corner), a row of red bricks (along the NE edge of the trench) as well as traces of a large cut with construction debris (inside the trench) (photo Mariusz Drzewiecki).

located in the area, during the field prospection carried out in 2020, a row of fired-bricks (arranged from reused pieces) was also recorded on the surface, which could indicate that the remains of red-brick structures were preserved in the discussed area (**Figure 5.9**). Furthermore, magnetometry revealed linear anomalies that could possibly indicate the preservation of mud-brick architecture in this area.

With this in mind, a 5 × 7m trench was excavated along the exposed brick row to identify structures in the vicinity of the recorded brick arrangement. During the excavation, it became apparent that the bricks visible on the surface did not continue in depth, so the exploration was reduced to an area measuring 3.5 × 5m (Figure 5.9). Despite the partial destruction of the strata discovered in Trench 1/CS (a pit containing construction debris), the excavations uncovered fragments of mud-brick architecture and activity carried out around them, as well as a charcoal deposit, which facilitated the dating of some of the uncovered remains.

5.2.2. *Research methodology and background data*

Excavations in Trench 1/CS were carried out in January and February 2020. Prior to the excavation, photographs of the surface of the area were taken and – once the trench had been marked out – all visible material, i.e., 69 fragments of pottery, was collected from its surface. The research was carried out with consideration given to the cultural layers, of which a total of 13 were identified (see **Table 19.5** Appendix 2). Among the features identified in the excavation were a red-brick arrangement, a pit containing construction debris, and part of a mud-brick wall. The following artefacts were recovered during the excavations: fragments of ceramic vessels (3,749), stone tools (12), beads (14), shells, an ostrich eggshell fragment, a fragment of a metal item and animal bones. With the permission of the Sudanese authorities, samples of charcoal, animal bones, plaster and wood were collected and transported to Poland for laboratory analysis. Documentation of the

Phase	Dating	Characteristics
Phase 1	? – 1st half of the 8th century AD	Backfill layer without traces of buildings
Phase 2	after 1st half of the 8th century AD – end of the 8th century AD and later	Mud brick architecture, 2 activity levels, pit
Phase 3	?	Cut filled with brick rubble and waste
Phase 4	?	Mixed deposits with construction debris and traces of food preparation and consumption

Table 5.2. Dating and characteristics of settlement phases in Trench 1/CS (prepared by Tomasz Michalik).

research can be found in the Documentation Archiving Department of the PCMA UW.

5.2.3. *Settlement phases and timeline*

The artefacts uncovered in Trench 1/CS indicate that a mud-brick structure existed on the site and that there was probably also a red-brick structure. Due to the significant transformation of the area as a result of various pits, the original stratigraphic layout of the studied area has changed, making it difficult to interpret the settlement phases. An additional difficulty in establishing a full chronology of the area is the fact that the level of natural soil could not be reached, with excavations stopped at a depth of 1.2m. Despite these limitations, the following settlement phases were identified based on the collected data:

Phase 1: Early occupation of the area prior to the development of mud-brick architecture.
Phase 2: The establishment and use of mud-brick buildings.
Phase3: The mud-brick buildings are abandoned and a pit cuts through the settlement layers.
Phase 4: Further occupation of the site with the potential use of the red-brick structures.

Based on the dating of charcoal samples taken from Trench 1/CS (see **Table 5.2**, Appendix 1), it can be confirmed that the area was in use from the second half of the 8th century AD. Radiocarbon dating of a sample taken from Deposit 12_1CS, which forms part of the first of the identified settlement phases, suggests that this deposit may have been accumulated during the period 766–899 AD (89%). Traces of past activity within the described phase included the remains of ceramic vessels and animal bone fragments. No architectural remains were recorded within this phase. Fragments of a mud-brick wall were recorded in the next stage (Phase 2). It is impossible to determine the full period of the functioning of the building due to the disturbance of the stratigraphy caused by later cuts, but the dating of the deposit above the floor associated with the exposed fragments of mud-brick architecture (8_1CS) indicates that the architectural remains were probably in use during the second half of the 8th century AD (676–779 AD, 75%). As suggested by the depositional pattern, settlement continued after this period according to the evidence provided by the poorly preserved second level of use above Deposit 8_1CS, an earthen floor (5_1CS). Further transformation was caused by a large pit, which partially destroyed the earlier structures. The pit contained rubbish and building rubble consisting largely of fired-bricks (Phase 3). This may be associated with the destruction of a red-brick building close to the investigated area. At a later stage (Phase 4), no traces of buildings were observed, although it should be noted that the layers associated with this phase contained fragments of fired-bricks, indicating that such buildings may have existed, but were destroyed by looting (?). The artefacts found indicate that activity related to food preparation and consumption was carried out during this period (for Harris matrix, see **Figure 5.10**).

5.2.4. *Sequencing of activity at Trench 1/CS – settlement phases*

Phase 1

The first settlement phase recorded during the excavations carried out in Trench 1/CS was represented by two cultural layers (12_1CS and 13_1CS). These deposits contained fragments of pottery (mostly handmade) and animal bones. However, no features were recorded. The artefacts found indicate that the site may have served as a space for food processing as well as a

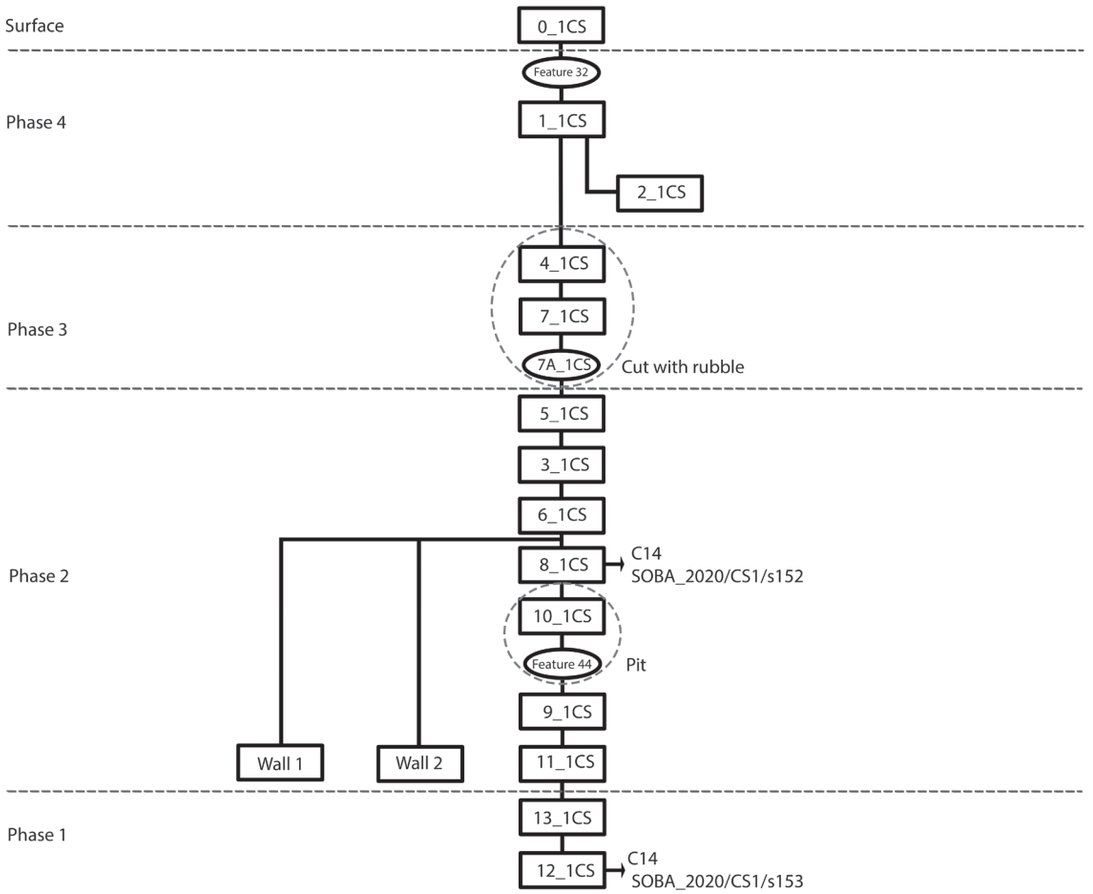

Figure 5.10. Stratigraphy of deposits recorded in Trench 1/CS – Harris matrix (prepared by Tomasz Michalik).

waste dump site. Radiocarbon dating of the charcoal sample associated with Deposit 12_1CS indicated that it was formed during the period 766–899 AD (89%). Since natural soil could not be reached, it is possible that there may have been earlier settlement or structures in the area.

Phase 2

Probably in the 8th century AD, mud-brick architecture began to appear in the area. Traces of this include a wall corner fragment made of mud-brick, uncovered in the south-western section of the trench, as well as a partially preserved earthen floor associated with the described construction (Deposit 11_1CS). The surviving wall fragment measured 50–55cm in thickness and stood to a height of *c*. 25cm. The walls (1 and 2) forming the corner ran in a north-easterly and south-easterly direction respectively, reminiscent of the orientation of the Phase 1 mud-brick architecture discovered in Trench 1/CW. Given the thickness of the walls, the room associated with this corner may have been part of a single-storey building or an internal section of a wider architectural complex. The immediate surroundings of the walls, as well as part of the walls themselves, were destroyed by a later cut. However, the deposits located in the south-eastern part of the trench allow for a partial reconstruction of the settlement activity. Above the earthen floor associated with the corner walls (11_1CS), deposits (9_1CS, 8_1CS) were discovered, comprising fragments of ceramic vessels – mostly handmade cooking vessels, but also a fragment of Soba Ware, along with stone tools and animal bones. Radiocarbon dating of a sample from Deposit 8_1CS indicates that it was formed in the period 676–779 AD (75%). At a later stage, an elongated pit (Feature 44) was cut in the area (**Figure 5.11**). Another indication of ongoing transformations in the settlement of this area was a fragmentarily preserved earthen floor (5_1SC). Throughout the entire period (despite this transformation), the function



Figure 5.11. Mudbrick architecture (Walls 1 and 2) and Feature 44 (pit) discovered within Phase 2 (photo Mariusz Drzewiecki).

of the area remained unchanged, and a continuous use for food processing is indicated Deposits 3_1CW and 6_1CS

Phase 3

Following the formation of Deposit 5_1CS and the accumulation of Deposit 3_1CS, the area was heavily disturbed. This was evidenced by a large oval-shaped cut (*c*. 5m in length) recorded in the northern part of Trench 1/CS, which contained waste material and considerable quantities of brick rubble (see Figure 5.9). This cut damaged the mud-brick architecture below. Remains of ash and charcoal were recorded at the bottom of the pit (Deposit 7_1CS), among which fragments of ceramic vessels, clay beads, animal bones, stone tools and a fragment of ostrich eggshell were found. Above Deposit 7_1CS, a deposit of construction debris was noted measuring *c*. 70cm thick, largely consisting of broken fired-bricks, with particles of white plaster appearing in places (4_1CS).

Phase 4

Deposits 2_1CS and 1_1CS belong to the last of the four phases and contained remains indicative of food processing activities (e.g., numerous fragments of ceramic vessels, mostly kitchen pots (some with traces of burning), animal bones, shells, stone tools, traces of ash and charcoal) as well as remains suggesting the possible existence of redbrick architecture i.e., fragmented fired-bricks (probably destroyed by looting). Beside fragmented bricks, a row of fired-bricks on the surface (Feature 32_2020) was also found, which was created from reused fragments (often halves of different sizes, e.g., 20 × 15 × 5cm or 18 × 10 × 5cm). Excavation revealed that this structure only existed on the surface of the mound. Its function is unclear; nevertheless, its state of preservation is similar to the Phase 3 mud-brick walls in Trench 1/CW.

5.2.5. *Summary*

The work carried out in Trench 1/CS has established that mud-brick architecture was present in the studied area and that red-brick architecture may also have been present. Although virgin soil was not reached and so it is difficult to fully understand the settlement pattern it appears that relatively early mud-brick architecture developed in Area CS, as it did in Area CW. One indicator of this is the fragment of Soba Ware discovered in Deposit 9_1CS (this type of pottery was also found during the Welsby and Daniels survey), as well as the orientation of the surviving corner of the mud-brick structure discovered in Trench 1/CS, which was consistent with the structure discovered in Trench 1/CW.

The artefacts recovered indicate that the area was used for residential purposes, possibly as a place for food storage, preparation and consumption. This was also the case for remains discovered within Trench 1/CW. Cattle bones dominated the assemblage in Trench 1/CS, which may suggest a similar type of consumption behaviour. Furthermore, the data indicates that mud-brick architecture may have co-existed with red-brick buildings. A relatively large cut was found containing brick rubble, which may have originated from a fired-brick building close to the study area. This building was probably white plastered and, in common with other similar buildings in Soba, could serve a public function. The red-brick buildings may also have existed at a later date. This interpretation is supported by the numerous red-brick fragments recorded in Deposit 1_1CS, which may have been part of robbed-out red-brick walls/buildings.

CHAPTER 6

RESULTS OF THE ARCHAEOLOGICAL EXCAVATIONS IN AREAS G AND GN

Tomasz MICHALIK and Joanna A. CIESIELSKA

Areas G and GN are located in the south-western part of the Soba site, *c*. 250–300m NE from the remains of Church C (the so-called Church with Stone Columns) located in Area C (cf. Chapter 5). During the campaign, three test trenches were laid out – one in Area G (1/G) and two in Area GN (1/GN, 2/GN) (**Figure 6.1**). The excavations have provided new information about the architectural development and agricultural activities here, as well as the function of this part of medieval Soba. This chapter contains information about the discovered artefacts and features and identification of occupation phases, as well as their chronology within each of the trenches.

6.1. Trench 1/G

6.1.1. *Introduction*

Trench 1/G was excavated in February 2020 in the accessible part of Area G, *c*. 260m to the NE of Trench 1/CS and *c*. 80m to the SE of Trench 1/GN (Figure 6.1). The choice of this location was related to the results of the magnetic survey, which indicated the possibility of a cemetery here (cf. Chapter 3). The archaeological work completed so far at Area G has not yet fully clarified the function of this space in the medieval period. Data collected in the 1980s suggested that a rubbish dump may have been established in Area G during Soba's occupation. According to Welsby and Daniels (1991, 18), the surface of the area in question was covered with numerous pottery fragments. Furthermore, test trenches excavated in Area G (G1–G5) unearthed fragments of pebbles and grindstones mixed with fragments of pottery (Welsby and Daniels 1991, 18). Excavations within Trench G2 resulted in the discovery of pits lined with pieces of reused red-bricks, of unknown function. The ceramic material contained fragments of food storage vessels and tableware (e.g., bowls, plates) (Welsby and Daniels 1991, 18). Unlike many other parts of Area G, no traces of architecture were recorded here.

No artefacts were recorded on the surface of Trench 1/G during our excavation, in contrast to the earlier findings of Welsby and Daniels. The excavated area was covered with sand mixed with fine gravel in places. The surface bore no signs of contemporary interference with the archaeological strata, although it should be noted that there is a modern unpaved road close to the trench.

The main objective of the excavations carried out in Trench 1/G was to verify circular and longitudinal magnetic anomalies, the arrangement of which suggested that a cemetery could potentially be located in the area (cf. Chapter 3). In order to test this hypothesis, a trench measuring 3 × 3m was laid out. Due to time constraints, the described area was explored to a depth of approximately 30cm. The excavations unearthed two small-sized oval pits (**Figure 6.2**) and fragments of pottery vessels. As the excavation failed to reach natural soil, it is impossible to determine whether there are graves in the area. It is noteworthy, however, that the remains uncovered during the survey do not suggest the presence of sepulchral features.

6.1.2. *Research methodology and background data*

Prior to excavation, photographs were taken of the surveyed area and the trench was marked out. The excavation focused on the cultural layers, of which a total of five were identified (see **Table 19.6** Appendix 2). The exploration progressed very slowly due to the heavily compacted deposits. The work was carried out with a pickaxe (this is the only one of the trenches explored in 2019–2022 in which the stratifications were so compacted). Among features identified during the survey, two pits were noted. Additionally, 299 fragments of ceramic vessels (including one inscribed) were discovered. The research documentation can be found in the Documentation Archiving Department of the Polish Centre of Mediterranean Archaeology University of Warsaw (PCMA UW).

6.1.3. *Settlement phases and chronology*

Due to the small size of the trench and the shallow depth reached, it is hard to learn much about the



Figure 6.1. Location of Trenches 1/G, 1/GN and 2/GN within areas G and GN (background photograph Bing Maps).



Figure 6.2. Trench 1/G following the completion of excavations. In the photograph two oval pits (41_2022 and 42_2020) are visible (photo Mariusz Drzewiecki).

settlement phases in this area. However, stratigraphic analysis of the deposits uncovered in Trench 1/G suggest at least three settlement phases within the studied area (**Figure 6.3**):

Phase 1: Occasional activity (without traces of architecture).
Phase 2: Digging of the pits (Features 41_2020, 42_2020).
Phase 3: Occasional activity (without traces of architecture).

No organic material was found within Trench 1/G to enable dating with complete certainty. However, analysis of ceramic vessel fragments discovered in the cultural layers indicates that the area may have been in use approximately between 6th/7th–12th century AD (according to dating of pottery from previous research conducted in Soba as well as other archaeological sites; see Chapter 9). Early use of this area is confirmed, among other things, by finds of Soba Ware. The upper range is less well-defined, but most of the dateable pottery fragments point to the classical period of Soba development (**Table 6.1**).

Phase	Dating	Characteristics
Phase 1	6th/7th–12th AD (?)	Alluvial deposit with ceramic material
Phase 2	6th/7th–12th AD (?)	Pits
Phase 3	6th/7th–12th AD (?)	Alluvial and sandy deposit with ceramic material

Table 6.1. Dating and characteristics of settlement phases in Trench 1/G (prepared by Tomasz Michalik).

6.1.4. *Sequencing of activity in Trench 1/G – settlement phases*

Phase 1

The first of the settlement phases identified in Trench 1/G was represented by a single alluvial deposit (3_1G) 5cm thick. That particular deposit contained mostly fragments of cooking vessels, some of which bore traces of burning. Additionally, some fragments were decorated. No traces of structures were recorded within the described phase.

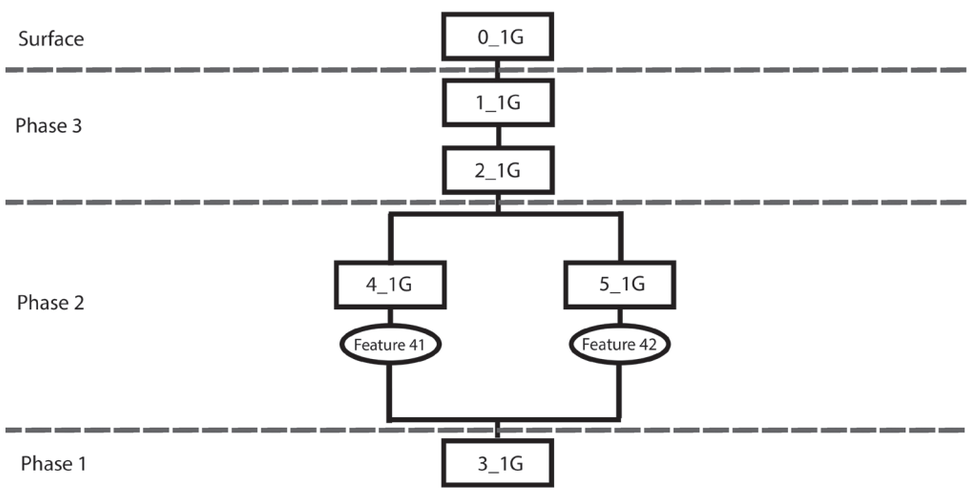

Figure 6.3. Stratigraphy of deposits discovered in Trench 1/G – Harris matrix (prepared by Tomasz Michalik).

Phase 2

In the second phase, traces of two oval-shaped pits were recorded (Features 41_2020, 42_2020). These pits measured *c*. 50cm along their long axes. Their fills (dark grey sand; 4_1G, 5_1G) differed considerably in their degree of compaction from the surroundings (hard alluvial sediment – 3_1G) and may have been the remains of organic material present in the pits. Due to time constraints, the pits were not explored, thus their exact function remains unknown (see Figure 6.2).

Phase 3

The period following the formation of the pits saw a compacted sand and silt deposit accumulating in the area in question, *c*. 10cm thick (2_1G) and containing pottery fragments. The fragments discovered resembled those discovered in Deposit 3_1G (although it should be noted that the percentage of wheelmade pottery was bigger than in Deposit 3_1GN). No traces of structures were found within this deposit, although it should be mentioned that the upper surface of the deposit resembled the mud walking level found in some houses in medieval Soba.

The remains of pottery continued in the upper deposit (1_G), accumulated probably through the increasingly rare use of the area, as well as being a result of post-depositional processes. Beside coarse pottery, the deposit included thin-walled vessels as well as one inscribed example (cf. Chapter 10).

6.1.5. *Summary*

No traces of permanent architecture were discovered in Trench 1/G, as predicted by the prospection and the test trenches carried out in the area by C. M. Daniels. Remnants of human activity were attested in the form of fragments of ceramic vessels, as well as two small pits. Interestingly, there were no remains of animal bones or stone tools found in this part of Area G. The archaeological material found in the area has characteristics indicating that it may have been a dumping ground. Besides the artefacts, note should also be taken of the nature of the deposits. Apart from the first cultural layer and the pit fills recorded, the discovered deposits were compact and may have been formed by the action of water (alluvial deposits). It is interesting to note that such compacted deposits were not recorded in Trenches 1/CW and 1/CS, which are closer to the Nile bank. Area C, however, is located slightly higher than the Area G, so the latter may have been prone to flooding (during river floods or very intense rainfall).

Due to the limited nature of the research, the relationship between the anomalies recorded by the magnetic survey and the features that may have caused them remains an open question. The archaeological research has so far failed to confirm the hypothesis as to the presence of a cemetery in the area.

6.2. Trench 1/GN

6.2.1. *Introduction*

In addition to Trench 1/G, two further trenches were established in the SW part of the site, 1/GN and 2/GN. The first of these trenches (1/GN) was located *c*. 80m NW of Trench 1/G (see Figure 6.1). In common with Trench 1/G, the location of Trench 1/GN was decided upon following the results of the magnetic survey, which suggested the presence of mud/fired-brick architecture in the area (cf. Chapter 3). To date, the Area GN has not been extensively explored archaeologically. The 1980s survey carried out by Welsby and Daniels (1991, 18) recorded fragments of ceramic vessels and ash on the surface of Area GN. GN1, GN2, GN3 and GN4 test trenches also revealed traces of settlement in the form of various types of hardened surfaces (earthen floors), as well as the probable remains of two kilns and a rubbish pit. Among the artefacts uncovered in the test trenches, a fragment of a sub-oval ivory armlet was recorded in addition to the usual finds of ceramic vessels (Welsby and Daniels 1991, 18, 163). As indicated by Welsby and Daniels, the traces of medieval activity discovered in Area GN may have been an extension of the residential zone recorded at Areas CE and FF, which contained mud-brick architecture, among other things (Welsby and Daniels 1991, 16, 18). In contrast to the finds from Areas CE and FF, however, no traces of brick architecture were recorded in the survey of Area GN. In that context, it was particularly interesting that non-invasive research indicated the possibility of such architecture at Area GN.

The area covered by Trench 1/GN had not been significantly transformed since the time of the Welsby and Daniels survey (1991, 18). The nearest trace of new activity was a paved road located *c*. 30m SE of Trench 1/GN. The surface was covered with gravel and partially overgrown with grass. Among the artefacts recorded on the surface, fragments of red-bricks and numerous fragments of ceramic vessels were visible.



Figure 6.4. Trench 1/GN after the end of excavation. The excavation area shows a mudbrick building with a kitchen and storage function (Feature 1_2021_3), the remains of a kiln (NE corner of building) and traces of timber architecture (photo Mariusz Drzewiecki).

The main objective of the research at Trench 1/GN was to verify the magnetic anomalies found in the survey, suggesting that a substantial complex of mud-brick buildings (the largest measuring *c*. 25 × 11.5m) may exist at the investigated area, as well as anomalies pointing to the presence of red-brick buildings (see Chapter 3). In order to identify the largest of the aforementioned buildings, Trench 1/GN was excavated in its NE section. Initially, Trench 1/GN measured 10 × 10m. However, following the discovery of mud-brick architecture (*c*. 0.2m below ground surface), it was narrowed down to *c*. 7.5 × 3.5m, i.e., the size of the room that had been discovered (Feature 1_2021_3, cf. **Figure 6.4**). Natural soil was reached at a depth of *c*. 0.85m. These excavations confirmed previous findings suggesting the presence of mud-brick architecture (the function of the unearthed space can be described as a storage room/kitchen) and a red-brick installation (oven, Feature 5_2021_3). Additionally, the area contained remnants of timber architecture (in the form of post-holes). The radiocarbon dating of samples and historical material date the occupation of the excavated area to between the 7th/8th and 9th centuries AD.

6.2.2. *Research methodology and background data*

Excavations within Trench 1/GN were carried out in November and December 2021. Prior to excavations, a three-dimensional model of the surface was made, the trench marked out, and all visible material (572 fragments of pottery) collected from the surface. The excavation focused on the cultural layers, of which a total of 15 were identified (see **Table 19.7** Appendix 2). The features identified during the excavation included mud-brick architecture, remains of timber constructions (post-holes), and a red-brick oven. The survey unearthed

Phase	Dating	Characteristics
Phase 1	before 7th/8th – 7th/8th century AD	Post holes, mud brick structures
Phase 2	7th/8th century – 2nd half of the 8th century AD	Mud brick architecture (Feature 1_2021_3), red brick structures (Feature 5_2021_3), one activity level, building fire
Phase 3	late 8th century – early 9th century AD (?)	Timber-framed architecture, mud brick architecture, one activity level
Phase 4	late 8th century – early 9th century AD (?)	Looting
Phase 5	1st half of the 9th century AD – ?	Backfill layers; pit

Table 6.2. Dating and characteristics of settlement phases in Trench 1/GN (prepared by Tomasz Michalik).

the following artefacts and ecofacts: fragments of ceramic vessels (5,614), one fully-preserved glass vessel and two small fragments of glass, stone tools (49), shells, beads (23), fragments of iron objects (three), fragments of animal bones and a fragment of rope. Samples of charcoal, wooden beams, plaster, lime, and animal bones were collected and transported to Poland for laboratory analysis with the permission of the Sudanese authorities. The documentation of the research can be found in the Documentation Archiving Department of the PCMA UW.

6.2.3. *Settlement phases and chronology*

The finds discovered in Trench 1/GN indicate that the investigated part of the area saw activity related to food storage and food preparation, which were periodically associated with mud-brick architecture (a room with a kitchen/storage function) and timber architecture. Analysis of the finds and stratigraphy identified five settlement phases:

Phase 1:
- Sub-phase 1a: Beginnings of settlement in the studied area: occurrence of timber architecture (represented by post-holes in Deposit 14_A_1GN).
- Sub-phase 1b: Coexistence of timber and mud-brick architecture (represented by Wall 7).

Phase 2: The creation, use and destruction of Feature 1_2021_3 (storage/kitchen) and the oven located in its NE corner (Feature 5_2021_3), as well as rooms south and west of Feature 1_2021_2 (Walls 8–10).

Phase 3: Occurrence of timber and mud-brick architecture, following the abandonment of Feature 1_2021_3 (represented by the post-holes discovered in Deposit 5_1GN and Walls 1 and 2).

Phase 4: Robbing (represented by a trench destroying the Wall 6 of Feature 1_2021_3).

Phase 5: Occasional occupational activity, represented by the upper sandy deposits (1_1GN – 4_1GN).

The results of the radiocarbon dating of the charcoal samples taken from Trench 1/GN (see **Table 6.2**, Appendix 1) indicate that the area was in use at least between the 7th/8th and 9th centuries AD. The radiocarbon dating of charcoal samples from Deposit 13_1GN, belonging to the first settlement phase, indicates that the medieval settlement in the area (represented by timber architecture) began before 674–779 AD (62%). During the next phase (Phase 2), a room with a storage/kitchen function was built in the area covered by Trench 1/GN (Feature 1_2021_3). The radiocarbon dating of a charcoal sample from a beam most likely forming part of the roof of the room (and potentially marking the period of its construction) indicates that Feature 1_2021_3 may have been constructed between 677–750 AD (46%). It should be noted that the dating of the sample is, however, not conclusive (i.e., the probabilities for the different time intervals are low). The second most probable date for the beam indicates that it may have originated between 785–878 AD (42%). This result is consistent with the results obtained for the samples dating the building fire (see below). Thus, it seems, the kitchen/storage room did not have a long period of use. Dating obtained from two samples from burnt wood fragments from the deposit related to the period of the fire indicates that the destruction of Feature 1_2021_3 may have occurred in the second half of the 8th century (771–886 AD; 73% and 771–899 AD; 87%). After Feature 1_2021_3 (Phase 3) fell into disuse, both timber and mud-brick architecture continued to develop in the studied area. Its heyday probably ended at the close of the 8th/early 9th century, as indicated by the radiocarbon dating of a charcoal sample from Deposit 3_1GN, which covers the traces of the wooden buildings. The results of the charcoal sample indicate that Deposit 3_1GN may have formed in the period of 671–779 AD (68%).

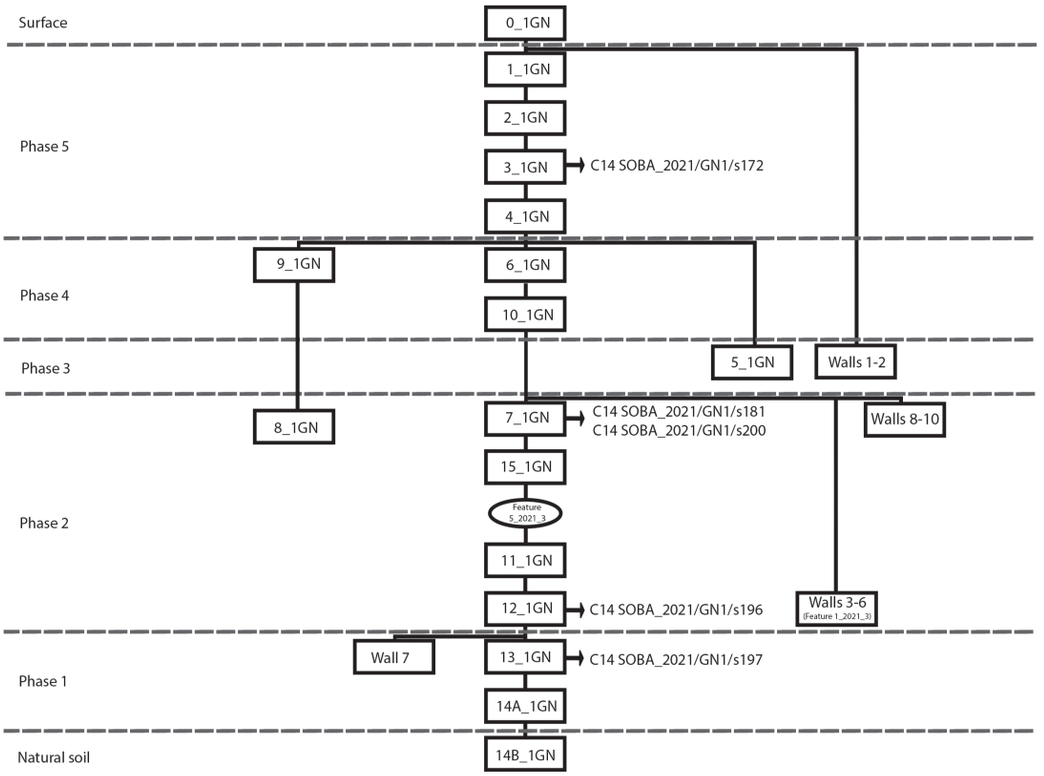

Figure 6.5. Stratigraphy of deposits discovered in Trench 1/GN – Harris matrix (prepared by Tomasz Michalik).

At the same time, bearing in mind the dating obtained for the other samples from Trench 1/GN, the second most probable date obtained for the sample from Deposit 3_1GN is also noteworthy, indicating that this deposit may have been formed in the period of 786–834 AD (22%). After the abandonment of the timber and mud-brick architecture, robbing of the studied area followed, in the form of the digging of a pit that destroyed Wall 6 (N) of the kitchen/storage room (Phase 4). Subsequently, there was occasional food preparation and consumption in the studied area, as demonstrated by the structure of the upper sandy deposits (Phase 5). The dating of the charcoal sample from Deposit 3_1GN indicates that this kind of activity may have been carried on as late as the 9th century (after 786–834 AD; 22%) (for Harris matrix, see **Figure 6.5**).

6.2.4. *Sequencing of activity at Trench 1/GN – settlement phases*

Phase 1

The first settlement phase recorded for Trench 1/GN was represented by two layers (14A_1GN, 13_1GN) located above virgin soil, in the form of a compact alluvial deposit (14B_1GN). From the very beginning, settlement in the area covered by Trench 1/GN was associated with timber architecture. In addition to the cultural layers, traces of this kind of architecture (in the form of post-holes 10–15cm and 20–25cm in diameter) were also recorded on the earliest exposed surface (14B_1GN).[1] The artefacts found in the initial cultural layers (14A_1GN and 13_1GN) indicate that activities related to food preparation and consumption took place here from the early stages of settlement. With the development of settlement (sub-phase 1b), mud-brick buildings, in addition to wooden structures, emerged, as confirmed by the discovery of Wall 7 in the eastern section of Feature 1_2021_3. This wall (fragmentarily preserved) was about 3.5m long and *c*. 25cm high. The bricks it was made up of measured approximately 40 × 20 × 12cm. Some of the bricks showed traces of relatively large post-holes (20–25cm diameter), probably

[1] Given the absence of features and artefacts in Deposit 14B_1GN, it was assumed that the post-holes belonged to structures erected in Phase 1a.

originating from later wooden constructions. Wall 7 was oriented along a NE–SW axis, which is consistent with the orientation of early mud-brick buildings attested in Trench 1/CW cf. Chapter 5). Due to the fragmentary discovery of the wall and its poor preservation, the function of the building it belonged to is difficult to identify. Radiocarbon dating of a sample from Deposit 13_1GN (which was representative of the activities probably carried out outside the building) shows that the deposit was formed between 674–779 AD (62%). Thus, given this date (and the subsequent radiocarbon dating obtained for the Trench 1/GN), the earliest settlement within the trench can be dated to before the end of the 7th or beginning of the 8th century AD (**Figure 6.6**).

Phase 2

During the next stage of settlement within the area covered by the Trench 1/GN, a mud-brick room with a kitchen and storage function was constructed (Feature 1_2021_3). This room measured approximately 7.5 × 3.5m. The walls of Feature 1_2021_3 were *c*. 75–80cm thick (two bricks wide) and preserved to a height of 40cm (except for the N wall, destroyed through robbing). There were two wall designs: (1) two rows of headers separated by a gap; and (2) three rows of bricks, the outer and inner faces of stretchers and a row of headers between (cf. style 3 classified by Welsby and Daniels 1991, 40). The bricks used for the walls were *c*. 35 × 18 × 10cm in size. In addition to whole bricks, fragments of bricks were also used to construct the walls. The kitchen/storage building, like Wall 7 (see Phase 1), was oriented along a NE–SW line. Fragments of thick, orange-coloured plaster were recorded on Wall 5, Wall 4 and Wall 3 of Feature 1_2021_3, similar to that used in the room discovered on Mound OS (cf. Chapter 4). It should be noted that previously coloured plaster associated with mud-brick construction was unknown at Soba. Some of the plasterwork bore signs of burning from the fire that destroyed the building. In addition, fragments of thin, white lime plaster were discovered on the outside of Wall 3 of the kitchen/storage room (**Figure 6.7**).

The floor of the room was made of silt (Deposit 12_1GN) and bore traces of post-holes, some of which may have belonged to structures on which food/kitchenware was stored. The holes measured 10–15cm, as well as 20–25cm. Through the results of the magnetic survey, we know that the room was part of a wider architectural complex extending towards the west. The room may have been located at the end of the complex, as evidenced by the location of the entrance to Feature 1_2021_3, located in the south part of Wall 5 (*c*. 1.3m wide). The dating of a beam that may have been used to construct the roof of the building indicates that the building may have been constructed around 677–750 AD (46%). In contrast, the second most probable date obtained for the sample of 785–878 AD (42%) coincides with the results obtained from the samples associated with the room fire (see below).

Considering the finds as well as the features discovered in Feature 1_2021_3, we can say that the room had a kitchen/storage room function. This is demonstrated by a poorly preserved red-brick oven discovered in the NE part of the room, probably used for the preparation of food. The oven was semi-circular, and its rear wall touched Wall 6 of Feature 1_2021_3 (**Figure 6.8**). Its bottom was partially lined with silt. The kiln was made of bricks measuring 40 × 20 × 10cm. The rear part of the oven ran along the wall of Feature 1_2021_3 and was made up of two rows of bricks with facing stretchers; it was about 2.5 metres long. The oven extended approximately 1.4 metres into the room. Fragments of charcoal and ash, as well as a few fragments of ceramic cooking vessels and beads were found in the fill of the oven (Deposit 15_1GN). To date, this type of oven has rarely been found at Soba. It should be noted, however, that as part of a survey carried out at Area GN (Trench GN2), Welsby and Daniels (1991, 18) discovered fragmentary surviving structures made of red-bricks, which they interpreted as possible kilns. One of the activities carried out within Area GN may thus have been the production of food for more than a domestic use.

In addition to the oven, Feature 1_2021_3 contained numerous ceramic vessels and fragments of vessels, some of which were richly decorated, as well as stone tools, fragments of animal bones and shells, as well as fragments of iron objects (Deposits 11_1GN and 7_1GN). The vessels were in many cases preserved *in situ*, allowing for a partial reconstruction of the arrangement of the features in the room. The south section of the room contained storage vessels (cf. Chapter 9), as well as stone tools used for grain processing (cf. Chapter 11). In addition to the south section, clusters of vessels and smaller kitchen utensils were also located along Wall 3 of the room. Individual cooking vessels and small groupings were also found in the central part of the room. The large number of storage and cooking



Figure 6.6. Traces of mudbrick architecture (Wall 7) discovered under the NW part of Feature 1_2022_3 – first settlement phase (photo Tomasz Michalik).

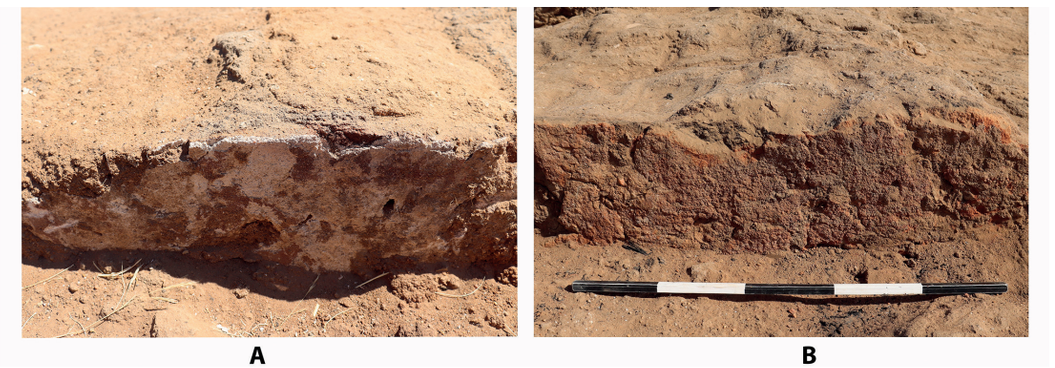

Figure 6.7. Plaster fragments discovered on Walls 3 (A) and 5 (B) of Feature 1_2021_3 (photos Tomasz Michalik).

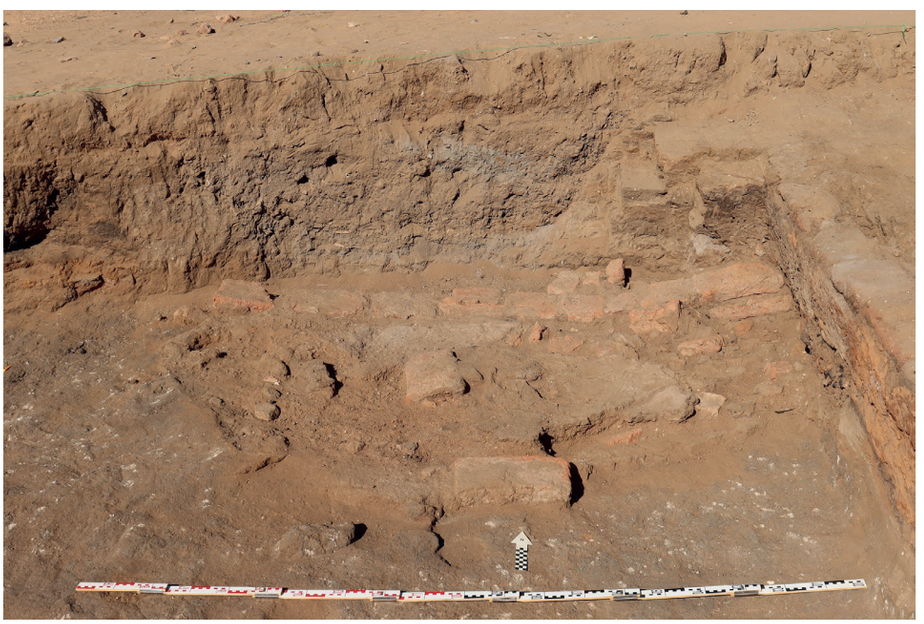

Figure 6.8. Partially preserved kiln found in the NE part of Feature 1_2021_3 (photo Tomasz Michalik).

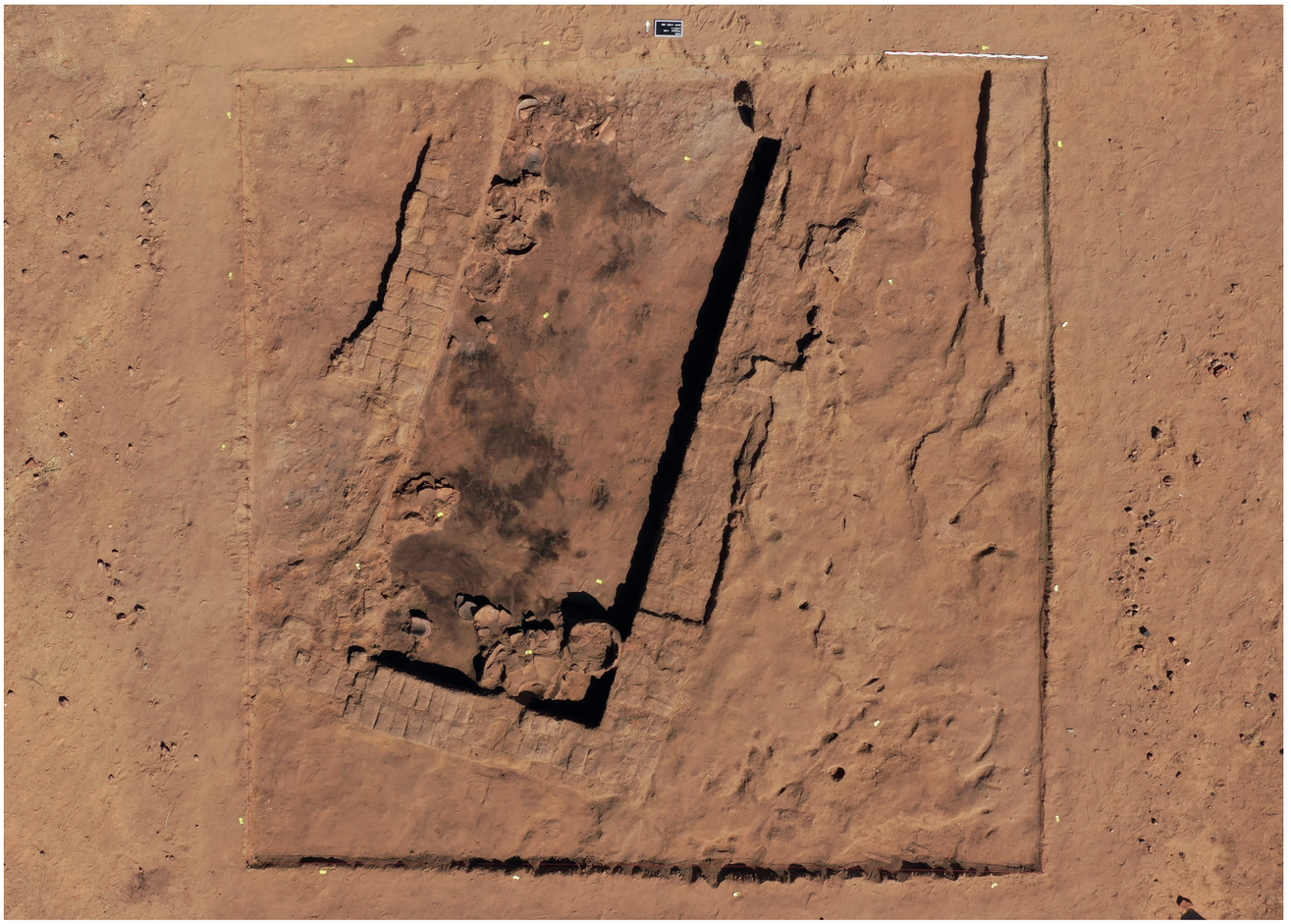

Figure 6.9. Arrangements of vessels and stone tools discovered inside Feature 1_2021_3 (photo Mariusz Drzewiecki).

utensils, as well as the presence of animal bones and shells, indicate that food was stored and prepared in this area (**Figure 6.9**). In addition to kitchen vessels, richly decorated vessels and fragments of inscribed vessels were discovered in the NW and central parts of the room. These included pot-stands (?) with a cross motif (cf. Chapter 9), as well as vessels that may have served as tableware, fragments of oil lamps, most probably used to illuminate the room, and so-called 'pilgrim' bottles.

Feature 1_2021_3 was destroyed by fire, as indicated by the nature of Deposit 7_1GN. In addition to numerous features, this deposit contained significant amounts of burnt timber components. Given the *in situ* finds, it can be assumed that the room was not rebuilt after the fire. Radiocarbon dating of charcoal samples from the floor of the room (Deposit 12_1GN) as well as from the backfill of the collapsed building (7_1GN), when fitted into the sequence of all radiocarbon dates from the trench, indicates that the fire may have occurred in the second half of the 8th century AD.

In addition to Features 1_2021_3 and 5_2021_3, south-west of the kitchen/storage room, the uppermost surviving courses of mud-brick Walls 8–10 were discovered. These walls probably formed rooms adjacent to Feature 1_2021_3. In comparison to Feature 1_2021_3, the thickness of the walls was less (Wall 8 *c*. 55cm, one and half bricks, Wall 9, Wall 10 *c*. 40cm, one brick); thus, they could have been partition walls of a building located south of the kitchen/storage room. Due to time constraints, these rooms were not explored, and their function remains unknown.

Phase 3

When Feature 1_2021_3 fell into disuse, timber and mud-brick buildings continued to be built in the area. This is evidenced by an earthen floor (5_1GN) discovered



Figure 6.10. Remains of cuts that damaged Walls 6 (W6) and 3 (W3) of Feature 1_2021_3 (photo Mariusz Drzewiecki).

to the east and south of the storage room/kitchen, cut by numerous post-holes (10–15cm in diameter). Due to the large number of post-holes, it is difficult to determine their original layout, but it appears that some of the post-holes were the remains of circular structures. In addition to the post-holes, pits *c*. 30cm in diameter were also found in Deposit 5_1GN, filled with organic material, which may have been the remains of beams forming part of larger timber structures. Few artefacts were found in Deposit 5_1GN, a glass bottle being the most noteworthy find. In addition to wooden structures, there were also two poorly preserved mud-brick walls (Wall 1, Wall 2). Wall 1 (height *c*. 12cm, width 60cm – one and a half bricks) was partially exposed at the E section of Trench 1/GN. It was made up of a row of stretchers and a row of headers (cf. style 4 as distinguished by Welsby and Daniels 1991, 40). The bricks used in its construction were approximately 40 × 18 × 10cm in size. In contrast to other mud-brick structures, this wall was oriented N–S. It may therefore mark the second phase of mud-brick settlement in the area. Due to the poor preservation of the wall, the function of the building it was a part of is difficult to determine. Like Wall 1, the second wall (2) was also preserved in residual form. Wall 2 was *c*. 50cm wide and formed the corner of a building oriented along a NE–SW line. Its upper part was covered by an earthen floor (5_1GN), indicating that it was built earlier than the timber architecture and Wall 1. Due to the fragmentary preservation and partial exposure of the wall, the function of the building that it was part of is hard to identify (see Figure 6.1).

Phase 4

During the next phase, the construction of timber and mud-brick architecture ceased. The surveyed area was looted and then occasionally occupied. Evidence of

looting included a cut recorded in the northern part of Trench 1/GN, which destroyed Wall 6 of Feature 1_2021_3 and the oven (Feature 5_2021_3) (**Figure 6.10**). This cut contained numerous fragments of pottery, animal bones and shells, as well as charcoal and ash (Deposits 6_1GN, 10_1GN). Given the fill of the cut, it is possible that it contained some of the material associated with the oven discovered in the NE part of the kitchen/storage room. Besides the cut that damaged Wall 6 of Feature 1_2021_3, a second cut was recorded in Phase 4, damaging the upper part of Wall 3 of Feature 1_2021_3. The fill of this cut, Deposit 9_1GN, clearly contained ash, but due to time constraints, this deposit was not excavated.

Phase 5

During the last phase, there was occasional occupation related to food preparation and consumption, as evidenced by the upper level sandy deposits discovered in Trench 1/GN. In these deposits (1_1GN, 3_1GN, 4_1GN), fragments of ceramics (cooking vessels as well as inscribed pieces), animal bones, shells, beads, glass and stone tools were found. Furthermore, the deposits contained fragments of red-bricks, indicating the potential destruction of nearby red-brick structures. Radiocarbon dating of the charcoal sample from Deposit 3_1GN indicates that this deposit may have been formed between 671–779 AD (68%). Considering the dating of the other samples from the trench, the second most probable date obtained for the sample from Deposit 3_1GN, i.e., 786–834 AD (22%),[2] is also noteworthy. It can thus be said that the area was still operating after the end of the 8th/first half of the 9th century AD. In addition to these deposits, a pit fill containing fragments of ceramic vessels and shells, as well as a spindle whorl, was recorded in the NE section of the trench (2_1GN). Due to time constraints, however, this deposit was not fully excavated.

Deposits outside Feature 1_2021_3

In addition to the deposits associated with Feature 1_2021_3, a deposit associated with a room located to the west of the feature was also partly excavated. The deposit in question (8_1GN) showed signs of disturbance, while also containing sand, fragments of bricks and building materials, as well as ash and charcoal. Among the artefacts found here, fragments of ceramic vessels and stone tools were recorded. Due to time constraints, the deposit was not fully explored. The character of the deposit raises the possibility of a fire in the room.

6.2.5. *Summary*

The excavation of Trench 1/GN established that medieval settlement in the studied part of Area GN began prior to the 7th/8th century AD and probably continued until the 9th century AD. In addition to the survey work carried out by Welsby and Daniels (1991, 18), the current work has made it possible to unquestionably confirm the presence of architectural remains in the area. The earliest traces of medieval activity were associated first with timber and then with mud-brick architecture. A particularly interesting find was Feature 1_2021_3, a room used for kitchen/storage. It is notable that this room contained not only a large number of cooking and storage vessels and an oven, but also sets of vessels with rich decoration (cf. Chapter 9). So far, finds of this kind have been rare in Soba. Given the intact nature of the deposits of Feature 1_2021_3, future research should focus to the complex to the west of the room. In this context, the traces of lime plaster on the outside of Wall 3 of Feature 1_2021_3 are especially interesting. This is a type of plaster most commonly found on red-brick buildings, although isolated finds of it have also been attested on fragments of mud-bricks (Welsby and Daniels 1991, 29). At this stage, it is possible to confirm the food related function of the complex, but considering the presence of pot-stands (?) with crosses and other richly decorated vessels, as well as the plastering of the walls, it is not impossible that the discovered complex had a more varied role.

6.3. Trench 2/GN

6.3.1. *Introduction*

Based on the information from the geophysical survey conducted by Robert Ryndziewicz in the first season, Trench 2/GN was established to the south-west of Trench 1/GN during the second season of fieldwork

[2] It should be mentioned that the most likely dating obtained for the described sample indicates that Deposit 3_1GN may have accumulated as early 671–779 AD (68%). However, considering the dating of the other samples collected from Trench 1/GN, greater weight was given to the second most probable dating, i.e., 786–834 AD; 22%. Another explanation to such an early date of the sample from Deposit 3_1GN is intrusion into this layer of wood from earlier deposits (related to kitchen/storage).



Figure 6.11. Trench 2/GN after exploration (photo Mariusz Drzewiecki).

(see Figure 6.1). The results of the survey with fluxgate gradiometer and ground penetrating radar showed a row of square and rectangular rooms, the northernmost of which were selected for exploration (see Chapter 3). Considering the poor understanding of any architectural remains in Area GN in the 1980s (Welsby and Daniels 1991, 18), checking the results of the geophysical survey was considered particularly important. Therefore, the main objective of the present research was to confirm the spatial layout and to identify the function and timeline of the building/s identified in the survey data.

In comparison to the 1980s, the degree of preservation of the part of Area GN selected for excavation has not changed significantly. The surface of Trench 2/GN (Deposit 0_2GN) was covered with gravel and sand and patchily overgrown with grass. Among the recovered surface artefacts were pottery fragments, stone tools, and red-brick fragments. The surface showed no signs of disturbance, although it should be noted that on the flat surface of Trench 2/GN traces of wheeled transport were visible.

Initially, Trench 2/GN encompassed an area of 10 × 10m. The excavation was carried out in three stages. In the first stage (after removing the topsoil) the area between Walls 1 and 2 (a potential building) was excavated. With the appearance of new features (belonging to the plant cultivation system), the area of research was expanded to the whole trench. After discovering the outline of a well in the western section of the trench, exploration was extended by about 2m to the west (an extension measuring 2 × 3.5m). The well was excavated to a depth of 2m below the modern walking level. During the excavations in the trench, natural soil was reached in two locations. The research partially confirmed the data provided by the geophysical survey. Apart from the remains of mud-brick walls, a plant cultivation system, numerous post-holes (remains of timber structures), and a well (constructed of stone and red-bricks) were found (**Figure 6.11**). The findings suggest that the area was used for agricultural and food processing purposes. Based on the date of the finds and radiocarbon dating, activity in the area dates to before the 9th and till the 12th centuries AD.

6.3.2. *Research methodology and background*

The excavation of Trench 2/GN was carried out between November 2021 and January 2022. Aerial photographic documentation and ground measurements were followed by the collection of pottery fragments and stone tools from the surface. A total of 27 cultural deposits were identified (see **Table 19.8** Appendix 2). The features unearthed in the course of the work included: mud-brick walls, a stone-and-brick built well with an adjoining mud-brick *mastaba* (probably an element of the water management installations), an example of a probable olive press (?), and timber structures, as well as a plant irrigation system, consisting of canals and circular pits. The finds recovered included pottery, animal bones, stone tools, beads, shell, fragments of metal artefacts, a fragment of a decorated stone block, and some glass fragments. As part of the excavations, samples of charcoal, mud-bricks, organics, lime, production slag (?), and wood, as well as animal bones, were collected and transported to Poland for laboratory analysis, with permission of the Sudanese authorities. Detailed documentation of the research can be found in the Documentation Archiving Department of the PCMA UW.

6.3.3. *Chronology and phases of settlement*

Finds unearthed in Trench 2/GN indicate that the investigated part of Area GN was intensely inhabited and used *inter alia* for plant cultivation, with which mud-brick, wood, stone and red-brick architecture were periodically associated. Based on the analysis of the finds and the stratigraphy (**Figure 6.12**), seven settlement phases were identified:

Phase 1: Establishment of the first walking level as well as wooden (Feature 13) and mud-brick architecture (Wall 3).
Phase 2: Installation of a well (Feature 6), and commencement of plant cultivation, as well as further development of wooden and mud-brick architecture (i.e., Walls 1 and 4).
Phase 3: Second stage of wooden architecture (Feature 7) and the installation of an olive press (?) (Feature 5).
Phase 4: Second stage of mud-brick architecture (Wall 2).
Phase 4a/5: Cessation of activity within the extent of uncovered architecture (refilling of the well [Feature 6]).
Phase 6: Occasional activity: excavation of Feature 4 (a pit), and accumulation of sand layers with traces of food preparation and consumption.
Phase 7: Disintegration of architectural structures and occasional human activity at the site (traces of food preparation and consumption as well as impact of rainwater).

Based on the dating of the charcoal samples taken from Trench 2/GN (see **Table 6.3**, Appendix 1), it can be concluded that the area was in use before the 9th and at least until the 12th century AD. The beginnings of settlement were associated with wooden architecture represented by postholes (Feature 13) and a silt walking level, as well as mud-brick architecture (Wall 3) (Phase 1). The remains did not provide samples suitable for radiocarbon dating. However, dates from the deposits belonging to Phase 2 (Deposit 27_2GN 827–990 AD (90%); deposit under Wall 4, 771–900 AD (83%); deposit under Feature 5, 890–997 AD (91%)) suggest that buildings belonging to Phase 1 most likely date to before the beginning of the 9th century AD. In the next stage of development (Phase 2), wooden and mud-brick architecture, as well as the well and plant cultivation system, were installed. During this phase, the most intense agricultural activity and occupation occurred. Radiocarbon data from the deposits belonging to this phase (see above) show that Phase 2 structures emerged sometime within 9th–10th century. In the next stage (Phase 3), a new type of wooden architecture (Feature 7) as well as a structure possibly to be interpreted as an olive press, were created (Feature 5). Following the linear design of the wooden constructions, one can surmise that the architecture changed to a sub-rectangular arrangement instead of the previously preferred circular plans. Radiocarbon data from a deposit directly underneath the possible press shows that this structure was constructed after 890–997 AD (91%). A second period of mud-brick structures followed, accompanied by postholes (Phase 4). Detailed analysis of the stratigraphic sequence suggests that this phase can be dated to the 11th century AD. Occupational activity within the buildings ceased between the 11th–12th century AD (Phase 4a/5). Radiocarbon dates from the backfill of the well indicate that the well might have been out of use by the 12th–13th century AD. Two charcoal samples collected from the shaft yielded dates from between 1027–1166 AD (95%) and 1150–1261 AD (84%). Taking into consideration the distribution of samples (the younger sample came from the lower part of the fill

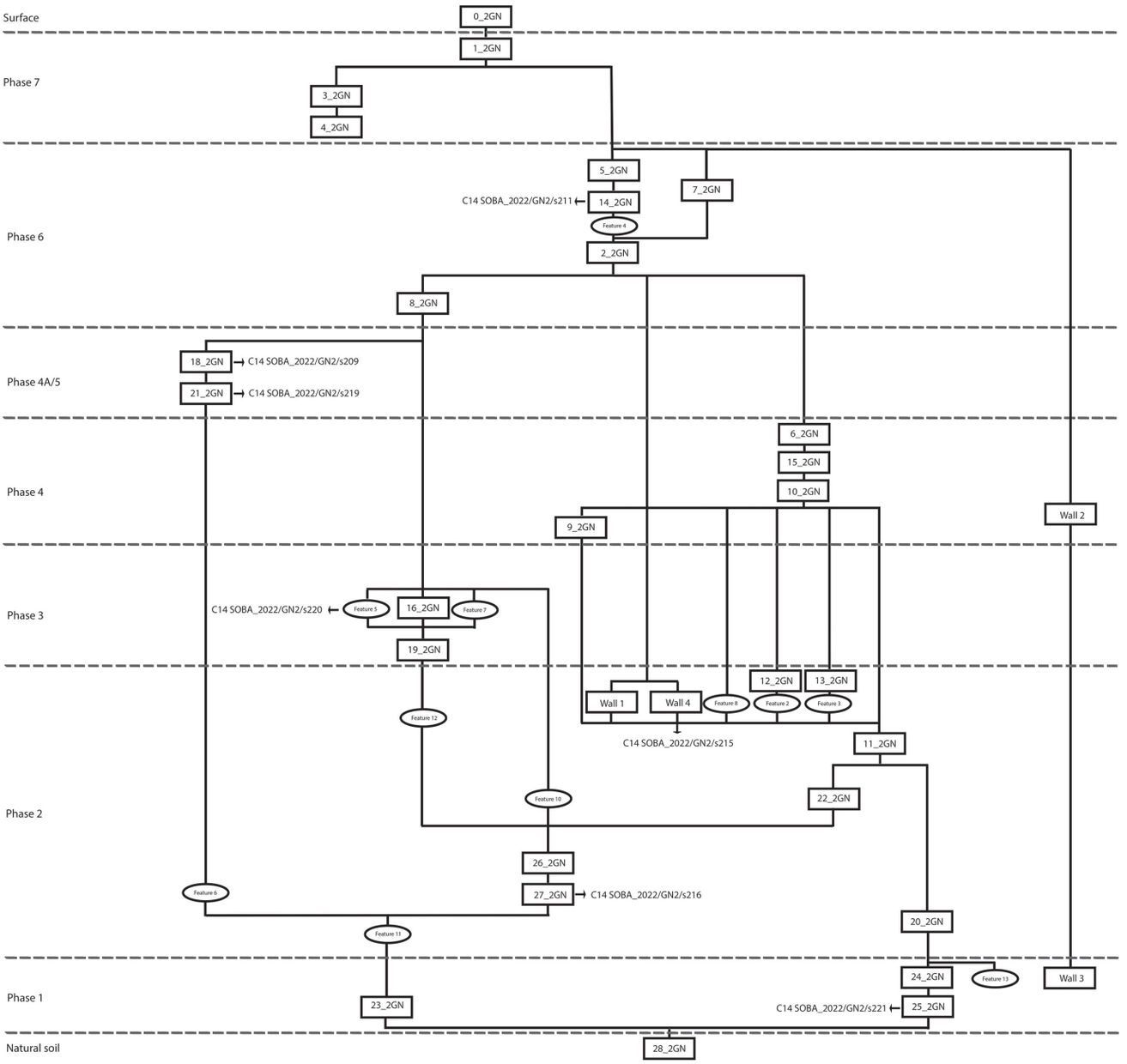

Figure 6.12. Stratigraphy of deposits discovered in Trench 2/GN – Harris matrix (prepared by Tomasz Michalik and Joanna Ciesielska).

Phase	**Dating**	**Characteristics**
Phase 1	Before 9th c. AD	Walking level, wooden architecture (postholes)
Phase 2	9th–10th c. AD	Well, wooden architecture, mud-brick architecture and constructions, plant cultivation system, activity level
Phase 3	*c.* 10th c. AD	Activity level, wooden architecture, mud-brick structure
Phase 4	*c.* 11th c. AD	Activity level, mud brick architecture (wall 2), wooden architecture
Phase 4A/5	11th–12th c. AD	Backfill layers
Phase 6	after 12th c. AD	Backfill layers, pits
Phase 7	post medieval (?)	Backfill layers, traces of disintegration

Table 6.3. Dating and characteristics of settlement phases in Trench 2/GN (prepared by Joanna Ciesielska).



Figure 6.13. Numeration of walls and location of test trenches reaching natural soil (photo Mariusz Drzewiecki).

and the older one in the upper part) and attributing this to a reverse stratigraphy phenomenon, a possible date for the refilling of the shaft is soon after the 12th–13th centuries AD. After this, no more structures appear, although traces of medieval activity were noted. In Phase 6, apart from the deposits containing traces of food preparation and consumption, a large pit was recorded. Radiocarbon dates from the fill of the pit, (Feature 4), 656–775 AD (95%), suggest it contained elements from earlier deposits. Based on the stratigraphy, it can be concluded that this activity took place after the filling of the well, thus sometime after the 12th century. Finally, in Phase 7, traces of occasional occupation were recorded, as well as traces of destruction, occurring at the end of the medieval period and later.

6.3.4. *Sequencing of activity at Trench 2/GN*

Phase 1

The earliest phase of activity at the site is represented by Deposit 23_2GN, composed of a very compacted alluvial mud formed on top of natural soil (discovered in two test trenches; see **Figure 6.13**; Deposit 28_2GN); the surface was probably formed by prolonged trampling and subsequently architecture constructed of perishable materials was added. The southern section of the trench provides a glimpse into the sequence of repeated flooding events that afflicted the area of the site closest to the river (25_2GN). First discovered between Walls 1 and 4, the surface extended into the north-western corner of the trench and towards the north-east. A set of post-holes (Feature 13) between the two walls attests to the presence of at least one impermanent, probably wooden construction. Judging from the size of the post-holes (*c.* 10cm), it must have been a relatively light structure, possibly a light shed adjoining to and contemporary with mud-brick Wall 3. The remnants of this wall are perpendicular to the southern extremity of Wall 1 (see Phase 3). However, the two are separated by a narrow gap (*c.* 30–40cm) and by a difference in levels. Due to the fact that Wall 3 was located lower than Wall 1, Wall 3 might have constituted the foundation of an earlier structure.[3]

[3] Wall 3 was located underneath Wall 2, thus its construction method is still to be investigated.



Figure 6.14. Feature 6, a water well, built of red-brick, mud-brick and stone, view from the west (photo Joanna Ciesielska).

Phase 2

The next phase of activity was marked by the construction of a red-brick-and-stone well (Feature 6, **Figure 6.14**) from the level of Deposit 23_2GN, the first walking level at the site. A sub-circular pit was cut through the walking level, forming the construction shaft (Feature 11), which was much wider than the well (*c*. 3m in diameter). Due to the instability of the sides, the well was not excavated down to its bottom, but only to roughly 2m below the modern walking level. The well was lined with stone slabs lower down the shaft, as well as fragments of red-brick. Adjacent to the walls, the fill of the construction shaft was composed of smashed red-bricks mixed in with brownish soil (Deposit 27_2GN). The upper part of the well shaft was constructed out of impermeable fired red-brick. Three to five upper courses of red-brick (*c*. 13cm in width, and 7–8cm thick) were arranged in a step sequence, with the lower courses narrowing downwards to form the neck of the well of *c*. 1.10m N–S, *c*. 95cm E–W. The profile of the well was tear-shaped on top, with its tip pointing north-west, and oval below, with the main axis running N–S (diam. 2.30m, both N–S and E–W) (Figure 6.14).

At the top the well was provided with an opening on its north-western side, possibly to facilitate pulling up buckets of water. At least three spurs were fashioned out of single red-bricks, evenly spaced around the western side of the well. The upper finishing of the well suggests that the entire or almost the entire structure of the well is preserved. This is probably what the well originally looked like. The construction shaft outside the well (Feature 11) was filled with refuse (Deposit 27_2GN) during the construction of the well, indicative of post-consumption debris. A piece of charcoal retrieved from the fill yielded a radiocarbon date from 827–990 AD (90%), placing the construction of the well in the 9th–10th century AD. After the re-filling of the construction pit of the well, a portion of the surface to the north of the well was haphazardly patched up (Deposit 26_2GN).

The well wasn't the only feature built in this phase; it was accompanied by wooden and brick structures, some of which were related to the plant cultivation system. In close proximity to the well a wooden structure (Feature 12, **Figure 6.15**) was discovered, attested by a number of post-holes, each *c*. 10–12cm in diameter. The distribution of post-holes recorded within both portions of the walking level indicate that wooden architecture of a roughly circular shape was installed. The structure might have been far more complex, indicated by a number of other post-holes (of varying sizes) scattered in close proximity to Feature 12, although no clear patterning was identified.

Roughly at the same time, based on a radiocarbon dating of a sample of charcoal retrieved from underneath Wall 4 (771–973 AD 96%), a new mud-brick wall was built in the central part of the trench. Wall 4



Figure 6.15. A set of post-holes (Feature 12) forming a circular arrangement within Deposit 23_2GN (photo Joanna Ciesielska).

(l = 4.80m, w = 65cm) running E–W, met at right angles with Wall 1 (N–S; l = 3.65m; w = 65/70cm), both being founded on top of Deposit 11_2GN (cf. Figure 6.13). Due to the partial destruction of Wall 4, its construction is not fully clear, but the surviving fragments suggest that it was built with two rows of bricks – one that included square bricks (possibly half of regular bricks, *c*. 20 × 20 × 8cm) and one including rectangular bricks (*c*. 37 × 19 × 8cm). Wall 1 had a different structure. Its construction consisted of two rows of rectangular bricks (a row of stretchers and a row of headers). According to the Welsby and Daniels (1991, 26, 40), this type of wall was popular in Soba and found in both mud-brick and red-brick architecture.

The remnants of a possible water conduit cutting across Wall 1 at its northern extremity were also recorded. On top of Deposit 11_2GN, a number of broken red-brick fragments were identified, scattered in close proximity to the water conduit on the western side of Wall 1. A large piece of conglomerate (a clastic sedimentary rock) was found next to the bricks, in line with the reconstructed course of the channel. The distribution of red-brick fragments around the piece of conglomerate suggests they might have lined a circular depression, possibly a small water reservoir between the *mastaba* (Feature 10) adjoining the well (Feature 6) and Wall 1. Red-fired stretchers lining the water conduit were positioned perpendicularly to the main axis of the wall, forming a narrow passage from a circular reservoir on its western side to a shallow pond or a plant pit (Feature 2) on the east. The latter might have been connected to another feature uncovered next to the well, a large mud-brick *mastaba* (Feature 10) extending eastwards from the well, partly compromised due to its foundation on top of the fill of Feature 11, as it showed traces of cracking mid-way. The structure measured 2.20m in length (along its E–W axis), *c*. 1.20m in width (measured in its midpoint, although it widened towards the well and slightly narrowed at its eastern end), and *c*. 25cm in height. At its eastern limit the structure ended with two large fired-bricks placed in a N-S line, as if forming a blocking. The bricks marked the border of a small, sub-rounded depression (*c*. 1.20m in diameter), possibly a basin (?), between Feature 10 and a mud-brick *mastaba*, provided to support the red-brick channel running across Wall 1. Feature 10 appears to have supported the flow of water down a slight inclination from the level of the top of the well, across Wall 1 and into Feature 2, with the overflow collected in the circular reservoir on the western side of the wall. Additionally, post-holes of unclear configuration were also identified in a portion of Deposit 11_2GN, between Walls 1 and 4 (Feature 8), which might have been connected to the water management system and associated with Feature 12 in the north-western corner of the trench.

Two circular features were uncovered on the eastern side of the wall (Feature 2_2021_3 and Feature 3_2021_3).



Figure 6.16. Feature 7 in the north-western part of Trench 2/GN, view from the north (photo Joanna Ciesielska).

Excavation of the fill of Feature 2_2021_3 (Deposit 12_2GN) was quickly concluded upon reaching the bottom at *c*. 10 cm below walking level. The entire bottom was lined with plaster, the continuation of Deposit 11_2GN. The pit was also provided with two small channels – one leading NE, another NW – possibly connecting it with other pits. In the middle of the fill of Feature 2_2021_3, some organic remains were found, suggesting the presence of a plant (see Chapter 17). The pit might have also been used to distribute water from the channel to the adjacent pits. Feature 3_2021_3 was excavated down to 40cm below walking level, without reaching the bottom. No trace of plaster lining was identified on the inner surface of the pit below the rim. The upper part of the fill (Deposit 13_2GN) contained large amounts of animal bones, especially cattle and sheep/goat (see Chapter 15). The eastern section of the trench showed that the pit was filled with waste material after it went out of use. In the lower part of the fill, the sand was much cleaner, but still yielded small amounts of pottery and bones.

Phase 3

In the third phase of activity at the site, a new walking level (Deposit 19_2GN) was formed on top of the earlier Deposit 23_2GN in the northern and western parts of the trench. Along with a new walking level, wooden architecture of different design than the previous one, evidenced by a number of post-holes (Feature 7, see **Figure 6.16**) arranged in linear patterns along an E–W axis, was erected in the north-west corner of the trench. Two rows of post-holes were recorded running E–W, with a northern row of three each measuring *c*. 15cm in diameter, and another one to the south composed of four, *c*. 8–10cm in diameter. A sub-rectangular structure (Feature 5, see **Figure 6.17**) was erected on the new walking level, composed of three mud-brick walls joining at right angles, diverging slightly from the N-S orientation towards the west. Feature 5 measured *c*. 2.75m (N–S) by 2.25m (E–W), *c*. 30cm in height (measured from the level of its foundation on top of Deposit 23_2GN). The northern and southern walls are not perfectly parallel, slanting slightly towards each other on the eastern side. The N–S wall was covered with a thick layer of plaster with the admixture of lime and red-brick fragments (the largest of these measuring *c*. 20 × 22cm, *c*. 7–8cm in thickness), which seems to have extended both outside and inside the structure. At least two levels of red gravel priming can also be seen in the section of the fill on its eastern side. Two large pits (post-holes?) were located on the northern and southern sides, and a small post-hole next to the western wall. On the N side a row of red-bricks runs at a right angle to the structure and disappears into the N section of the trench. On the outside (to the west), a priming layer composed of medium-sized gravel was built under the layer of plaster. The plaster covering



Figure 6.17. Feature 5 in the north-western part of Trench 2/GN, view from the west (photo Joanna Ciesielska).

Feature 5 appears to be the same as Deposit 19_2GN, indicating that its construction was contemporary with the walking level. A piece of charcoal retrieved from under Feature 5 indicates that the structure was built sometime between 890–1017 AD (96%).

The plan of Feature 5, with plastering of the elevated platform flanked by two large pits, possibly furnished for mounting of large wooden pillars, appears reminiscent of the pressing installation depicted in a Greco-Roman relief in the Egyptian tomb of Petosiris at Tuna el-Gebel (Dzierzbicka 2018, fig. 4). However, wine-pressing facilities were usually composed of a treading floor and a vat where the must was collected (Dzierzbicka 2018, 182–183). Large rectangular basins forming sequences connected by spouts have been recorded at a number of sites in Lower Nubia (Adams 1966), though their identification as wine presses is contested (Bishop-Wright 2019). No trace of such a reservoir accompanying Feature 5 was found in Area 2/GN. Ancient Egyptian reliefs also show a different type of press, with a bag or a sack stretched between two pillars or within a fixed wooden frame and a variety of torsion methods used to press the oil out of fruits (usually olives) (Alba Gomez 2016; 2017). The yield would be quite low with this method, but using this method, the resulting oil is then captured into a basin placed directly under the sack.

Phase 4

Another phase of architectural development took place in the eastern part of the trench, with Wall 3 being overbuilt by Wall 2 (l = 2.9m, w = 0.65m). Wall 2 was of a similar construction to Wall 1 (cf. Figure 6.13). The bricks used in its construction measured *c*. 36–37 × 18–19 × 8cm. A 2m-long portion of a mud-brick wall has an indentation consistent with a threshold, possibly an entrance into a building towards the south. There are no installations characteristic of a doorway, i.e., bricks with pivot holes or any elements for closing the entrance, but the deposits to the north and to the south of the wall are clearly different in hue and composition, which indirectly suggests different usage of the respective spaces. However, no trace of adjoining walls was recorded in association with Wall 2. It is not clear whether Walls 1 and 2 were ever connected, as the two are separated by a narrow passage. Furthermore, Wall 2 was clearly built *c*. 15cm above an earlier mud-brick structure (Wall 3), running along the same axis, the top of which is at the same level as Deposit 11_2GN.

Further transformations took the form of a denser sequence of superimposed walking levels uncovered in the north-eastern corner of the trench. Among the discovered deposits were Deposit 15_2GN and Deposit 11_2GN, separated by fill deposits 9_1GN and 10_1GN, along

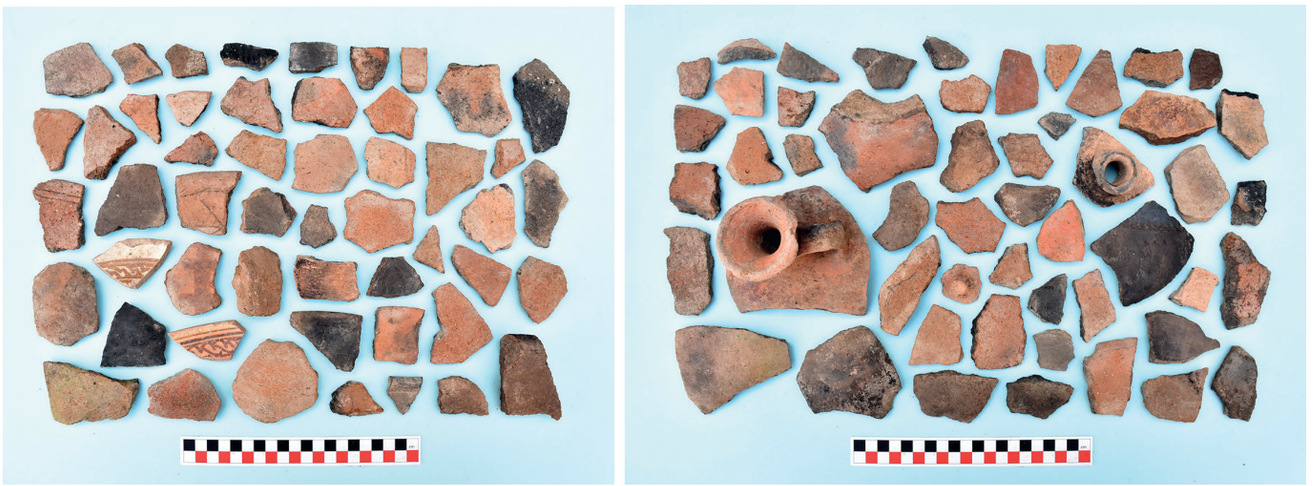

Figure 6.18. A selection of pottery from Deposit 21, Feature 6 (photos Joanna Ciesielska).

with another walking surface, Deposit 6_2GN. All were divided by thin layers of fine gravel priming.

Phase 4a/5

Either soon after or at the same time as the activity outlined in Phase 4, occupational activity on the western side of Wall 1 ceased. Feature 6 (the well) was re-filled with refuse. Two layers of the fill were identified inside the well, Deposit 21_2GN in its lower part and Deposit 18_2GN in the uppermost, overflowing onto the surrounding area. Deposit 18_2GN, the upper portion of the well's fill, was a dark grey soil with a large admixture of charcoal and ash, as well as animal bones and pottery fragments. In the lower fill, the soil was more compact with large amount of ash, but less pottery and animal bones (Deposit 21_2GN, **Figure 6.18**). A sample of charcoal retrieved from the bottom of the excavation within the well attests to the cessation of its use in the 12th–13th century (1150–1261 AD; 84%). A date obtained from the upper portions of the fill date it to 1027–1166 AD (96%).

Phase 6

At a later stage, the western limit of Deposits 15_2GN and 6_2GN in the north-west corner of the trench was truncated by the cut of the later pit in the middle of the northern half of Trench 2/SH (Feature 4). Initially thought to be another tree pit, Feature 4 turned out to be much larger than Features 2 and 3, with an irregular outline and bottoming out at Deposit 23_2GN. The fill



Figure 6.19. Limestone relief fragment (SOBA_2022/GN2/sf224) found in Deposit 5, the upper part of the fill of Feature 4 (photo Joanna Ciesielska).

in the pit (14_2GN, 5_2GN) contained post-consumption debris, as well as artefacts related to food processing. The assemblage included a rare find of a limestone relief fragment (SOBA_2022/GN2/sf224, **Figure 6.19**) This fragment is possibly a pre-Christian *spolium*, the exact provenence of which cannot be established at present. A single sample from the fill of Feature 4 yielded a date of 656–775 AD (95%), suggesting a residual intrusion into Deposit 14_2GN. Next to Feature 4 a thin layer of organic soil without archaeological material was detected (Deposit 7_GN).



Figure 6.20. A re-used fragment of pottery (SOBA_2021/GN2/sf160) from Deposit 2_2GN (photos Joanna Ciesielska).

Phase 7

The last phase saw the accumulation of deposits following the cessation of occupation at the site. Deposit 4_2GN in the south-western part of Trench 2/GN proved to be a thick, very compacted mass of rubble, probably from the adjacent Walls 1 and 4 (bearing traces of precipitation), while Deposit 3_2GN, with a large amount of animal bones and some pottery fragments, could represent an intrusion of organic matter associated with later agricultural exploitation in the area. Deposits above (2_2GN, 1_2GN) contained artefacts mostly related to food preparation waste (including re-used fragments of table ware, see **Figure 6.20**). Moreover, broken red-bricks were discovered on top, indicating the destruction of fired red-brick buildings that functioned nearby.

6.3.5. *Summary*

The excavation of Trench 2/GN has established that occupation of this part of Area GN began before the 9th century AD and probably continued after the 12th century AD. The development of this particular area therefore falls in the classical and terminal periods of Soba's existence. As was the case with Trench 1/GN, wooden architecture and mud-brick architecture as well as red-brick features were also discovered in Trench 2/GN.[4]

Apart from confirming the results of previous research, the discoveries from the trench also yielded unique data on the development of Area GN. In Trench 2/GN, the first features related to plant cultivation known at Soba were discovered. Among these finds a well and a plant cultivation system (consisting of channels and pits) appear particularly significant.

Trench 2/GN is situated at some remove from the Nile riverbank. Agricultural land along the Nile was probably reserved for food crops, as it represented the best arable land in the region. With the introduction of the *shaduf* (counterpoise lift) and then the *saqia* (water-wheel), more land outside of the alluvial floodplain could be put to use for cultivation, possibly in some cases moving human settlements further from the river (?). In such case, sourcing water from boreholes reaching local aquifers might have proven more efficacious to sustain the households and possibly any associated facilities. Drawing water from ground-water sources is a common practice at the sites located in semi-desertic regions away from the riverbanks, such as in the Bayuda desert to the north (Karberg and Lohwasser 2018). However, in the more isolated savannah areas to the south, artificial water reservoirs (so-called *hafirs*) were often used to collect seasonal precipitation for later use, especially among the pastoralist communities of Shendi and the Butana (Hinkel 1991, 2015; Weschenfelder 2012; Brass 2015).

Further interesting finds (but requiring further analysis) are the remnants of a possible olive press (?) and the plant remains. These structures may be related to the gardens described by 10th century AD writings of the Egyptian traveller-diplomat Ibn Salim al-Aswani, who

[4] Similar to Trench 1/GN, findings from Trench 2/GN complement the previous research, confirming the presence of mud-brick architecture in Area GN, which was so far only indirectly attested (Welsby and Daniels 1991, 18).

wrote that the city of Soba featured large monasteries, churches and gardens, as well as sturdily constructed houses (Vantini 1975, 615). The records from such historical sources suggest that the range and nature of the traces of cultivation should be investigated in future research. Findings from Trench 2/GN also show the dynamics of settlement in Area GN. The main phase of activity in Trench 2/GN is contemporary with the period following the destruction by fire of the storage/kitchen discovered in Trench 1/GN. This suggests that after the fire there was a change in function of the area, from domestic to a more direct association with cultivation.

CHAPTER 7

RESULTS OF THE ARCHAEOLOGICAL EXCAVATIONS IN AREA AE

Tomasz MICHALIK and Mariusz DRZEWIECKI

Area AE is located in the north-eastern part of the Soba site (cf. Welsby and Daniels 1991, 28), close to Mounds A, A1 and B – where domestic and monumental architecture from the Classic Christian period were discovered (Shinnie 1961, 18–23; Welsby and Daniels 1991, 33–125). During the current excavation campaign, two trenches, as a part of a salvage programme, were laid out – Trenches 1/SH and 2/SH (**Figure 7.1**). This chapter presents new information about the development of the medieval settlement in Area AE in relation to the well-recognised settlements in Mounds A, A1 and B. In the case of each trench, detailed information about discovered archaeological remains, as well as sequencing of occupation phases, are presented.

7.1. Trench 1/SH

7.1.1. *Introduction*

Trench 1/SH was set up in the south-eastern part of Area AE, on a location designated for the construction of a storage building for the archaeological finds. The area selected for the excavation was *c*. 180m south-west of Mound B, measuring from the location where the remains of three churches were found (Welsby and Daniels 1991, 33–125), 230m south-east of Mound A and 260m from Mound A1, where Peter Shinnie (1961, 18–23) discovered the remains of residential buildings (see Figure 7.1). Despite its close proximity to relatively well-researched archaeological areas (Mounds A, A1 and B), Area AE itself had not yet been extensively studied. Welsby and Daniels (1991, 12–13) carried out a field prospection at the site, which included 10 test trenches within Area AE. Inside these trenches were the remains of pits, fragments of mud-brick walls, traces of timber structures (in the form of post-holes), fragments of earthen floors, and the remains of poorly preserved red-brick walls, among other material. These finds suggested that Area AE was extensively inhabited in the Middle Ages. In addition to the above features, the survey also found numerous artefacts, including fragments of ceramic vessels, as well as stone tools and bones (Welsby and Daniels 1991, 12–13). The ceramic material unearthed at Area AE contained no fragments of Soba Ware (Welsby and Daniels 1991, 28), which – combined with the results of ^{14}C dating of samples collected from nearby Mound B (Welsby and Daniels 1991, 350) – suggests that Area AE, just as Mound B, may have developed primarily after the end of the early period of the city (after the 5th to 6th centuries AD).

The Area AE explored in this season did not feature any superficial signs of present-day ground intervention, although roads and vehicular tracks were noted nearby. Additionally, there is a police station a short distance from the excavated area, while the land slightly further away to the north is used for agriculture. The surface of the studied area was covered with gravel sand with no fragments of fired bricks.[1]

The main objective of the 2019–2020 excavations at Area AE was for salvage and to identify the spatial layout and function of the area, as well as to establish the chronology of the medieval buildings located within the area. The location of the excavation was related to the planned construction of a storage building for archaeological artefacts from the project. This location was dictated by proximity to the police station and the fact that the area would not be flooded during the rainy season. Trench 1/SH measured 5 × 10m. Exploration continued to natural soil, and the trench reached *c*. 0.8m at its maximum depth. The excavations confirmed previous findings pointing to the presence of medieval settlement in the studied area, with traces such as mud-brick architecture and timber structures found (**Figure 7.2**). In addition, a grave – probably dating to the Early Holocene period – was discovered beneath deposits associated with medieval Soba (see Chapter 8). Radiocarbon dating of samples from the medieval deposits made it possible to date the use of the area to between the 9th/11th and 10th/11th centuries AD.

[1] In contrast to the current research, the work of Welsby and Daniels (1991, 12–13) focused largely on the NE and SW parts of Area AE, i.e., areas where fragments of fired bricks still occur on the surface today.



Figure 7.1. Location of Trenches 1/SH and 2/SH in relation to Mounds A, A1 and B (background image Bing Maps).



Figure 7.2. Trench 1/SH at the level of the 3rd layer. Remains of mud-brick and timber architecture are visible in the excavation area (photo Mariusz Drzewiecki).

7.1.2. *Research methodology and background data*

Excavations in Area AE were carried out in January 2020. Prior to the excavation works, all visible archaeological material – 82 fragments of pottery (hand and wheel-made) – was collected from the surface of Trench 1/SH. The exploration was carried out with a focus on the cultural layers, of which a total of 13 were identified (see Table 19.9 Appendix 2). The features identified included the remains of mud-brick architecture, timber structures and a grave. The following range of artefacts and ecofacts was unearthed: fragments of ceramic vessels (1,636), fragments of glass (10), tools and fragments of stone tools (13), beads (5), shells, structural elements of buildings (one fragment of plaster), and animal and human bones. As part of the research, samples of charcoal and ashes, fragments of wooden piles or stakes, animal bones, and soil were collected and transported to Poland for laboratory analyses with permission from the Sudanese authorities. Documentation of the research can be found in Documentation Archiving Department of the Polish Centre of Mediterranean Archaeology University of Warsaw.

7.1.3. *Settlement phases and chronology*

Finds uncovered within Trench 1/SH indicate residential activity in the investigated part of Area AE during the medieval period, with associated timber and mud-brick structures. This occupation was preceded by prehistoric activity. Stratigraphic analyses have identified 4 settlement phases as follows:

Phase 1: Traces of prehistoric activity – Early Holocene cemetery (?) (Feature 39_2020).
Phase 2: The earliest traces of medieval settlement with possible coexistence of timber architecture.
Phase 3: Development of timber architecture and advent of mud-brick architecture (Features 26_202 and 27_2020).
Phase 4: Occasional occupation (another phase of timber architecture).

Based on the dating of charcoal samples collected from Trench 1/SH (see **Table 7.1** and Appendix 1), stratigraphic analyses and artefacts, it can be concluded that the area was probably used as early as the Early Holocene period and then in the medieval period, at least between the 9th/10th and 10th/11th centuries AD.

The first traces of human activity discovered in Trench 1/SH were associated with burial practices, probably from the Neolithic period, as evidenced by a grave dug into the natural layer discovered in the SE section of the trench (see Chapter 8) (Phase 1). A further natural layer was recorded immediately above the

Phase	Dating	Characteristic
Phase 1	Early Holocene?	Grave
Phase 2	from the 9th/11th century AD – ?	Backfill layers, timber architecture (?)
Phase 3	? – before 10th/11th century AD	Traces of timber and mud-brick structures, three activity levels
Phase 4	10th/11th century AD – ?	Traces of timber architecture, one activity level, backfill layer

Table 7.1. Dating and characteristics of settlement phases in Trench 1/SH (prepared by Tomasz Michalik).

grave, pointing to the existence of a considerably long hiatus in the settlement pattern of the studied area. Subsequently, medieval settlement developed in the area covered by Trench 1/SH. Its first trace was in Deposit 10_1SH, which contained artefacts related to food preparation and consumption (Phase 2). Radiocarbon dating of a charcoal sample from this deposit gives a date between 892–1014 AD (95%). Above, traces of timber structures were found in the form of post-holes accompanied by remains of mud-brick architecture (Phase 3). Later the area was only sporadically occupied (Phase 4). Radiocarbon dating of a sample from Deposit 4_1SH, preceding the activity levels identified within Phase 4, suggests that timber architecture continued to be present in the investigated area following the period of 986–1052 AD (64%). In later stages the area may have been used as a place for food preparation and consumption (for Harris matrix, see **Figure 7.3**).

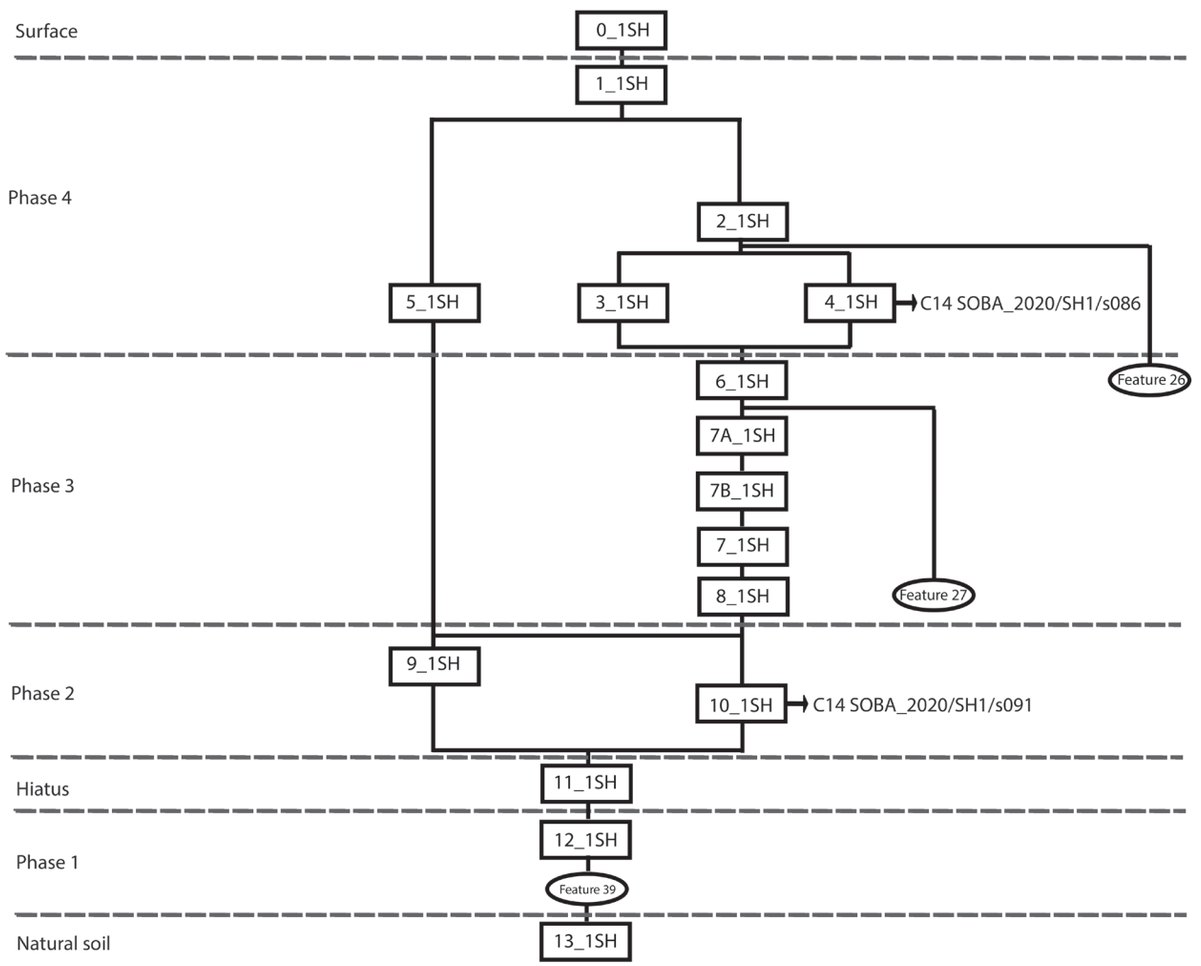

Figure 7.3. Stratigraphy of deposits discovered in Trench 1/SH – Harris matrix (prepared by Tomasz Michalik).

7.1.4. *Sequencing of activity at Trench 1/SH – settlement phases*

Phase 1

The first settlement phase identified in Trench 1/SH was associated with a grave unearthed in the SE part of the trench (Feature 39_2020). The grave pit was dug partially into the limestone bedrock (13_1SH) and had an oval shape. The grave measured 1m along its long axis and 0.6m in width, and was filled with compacted, gravelly sand (12_1SH). The body of the deceased lay in a foetal position on its right side (oriented approximately W-E) (**Figure 7.4**) and was not accompanied by artefacts (see Chapter 8). Despite the absence of grave furnishings, it was possible to conclude – based on the shape of the grave and the manner in which the body was laid out, as well as similarities to other Neolithic cemeteries from the Soba area (for example, Kadero and Khor Shambat, see Krzyżaniak 2011, 57–197; Jórdeczka 2020) – that the described grave dates to the Neolithic period. A deposit of gravel sand *c*. 20cm thick was recorded above the burial (11_1SH). No evidence of a grave cut was noted in the deposit. It seems likely that the activity level at the time of the grave's creation was higher up, but that the deposits associated with it had eroded over time. Subsequently, accumulation processes occurred in the studied area, resulting in the natural gravel layer recorded during the excavation (11_1SH).



Figure 7.4. Neolithic burial discovered in Trench 1/SH (photo Joanna Ciesielska).

Phase 2

Given the nature of Deposit 11_1SH, it was taken as evidence of a hiatus in the settlement pattern that occurred after prehistoric activity at the site.[2] The first deposits associated with the medieval settlement (10_1SH, 9_1SH) suggest that from the very beginning, the excavated area was used for day-to-day activities related to food processing, as indicated by the finds of fragments of kitchenware pottery, stone tools, and animal bones. The radiocarbon dating of samples from Deposit 10_1SH indicate that it was formed between 892–1014 AD (95%). The origins of the medieval settlement in this part of Area AE can also be attributed to that period. Due to the small area of the excavation, it cannot be ruled out that structures, especially of timber, may have existed in this phase. Remains of a wooden beam were found in Deposit 9_1SH, measuring *c*. 2m in length and 15cm in width (**Figure 7.5**). The presence of a collapsed beam is suggestive of timber architecture in a nearby area.

Phase 3

More distinct traces of timber structures were found in Deposit 8_1SH. This deposit, which was an earthen floor, contained numerous traces of post-holes. These holes ranged between 7–25cm in diameter. The layout of some suggested that circular and rectangular wooden structures had been created in the area. It appears that some of the circular structures may have been relatively small (*c*. 0.5m in diameter), while others may have been up to 2–2.5m in diameter. In addition to the post-holes, a fragmentary surviving timber structure (Feature 27_2020) was also found in the deposit (**Figure 7.6**).

[2] Deposit 11_1SH contained no archaeological material. Traces of post-holes were recorded in the upper part of the deposit, but it should be noted that these were from structures created in later stages of Soba's development.



Figure 7.5. Traces of a beam found in the upper part of Deposit 9_1SH (photo Tomasz Michalik).



Figure 7.6. Feature 27_2020 at level of the 3rd layer. The arrangements of timber posts suggest the presence of a rectangular structure. Additionally, later mud-brick architecture is visible in the background (photo Tomasz Michalik).

The recorded posts were approximately 7–8cm thick. They were placed in an L-shaped arrangement, suggesting that they may have formed a rectangular structure in the past. The line formed by the posts was 1.2m long and 1m wide. The presence of timber structures has been attested in a number of areas in Soba. Timber structures were particularly characteristic of the early stages of development in the Alwan capital, but also appeared in later periods of the city's development. Welsby pointed out that timber structures may have been utilised as fences, animal pens, or residential structures (Welsby 2004, 228). The structures discovered in the Trench 1/SH may have served a similar purpose.

The discovery of timber architecture was not the only trace of permanent buildings found in Trench 1/SH. Above the earthen floor 8_1SH, in the northern part of the trench, two additional fragmentary walking levels

were recorded (Deposits 7B_1SH and 6_1SH), preceded by layers of gravel bedding (Deposits 7_1SH and 7A_1SH). One of these (6_1SH) was associated with a mud-brick building (Feature 26_2020), oriented along a north-south axis.

The walls of the building were *c*. 50–60cm thick (i.e., one and a half bricks) and had a stretcher-header formation (cf. style four as described by Welsby and Daniels 1991, 40). The bricks used for construction of the walls measured *c*. 40 × 20 × 8cm. The wall running in the Eastern direction was exposed over a length of *c*. 1.8m, while the wall running in the Northern direction was exposed over a length of *c*. 2m. Since the building had very shallow foundations, it was heavily eroded. It survives to a height of 10–15cm (see **Figures 7.2** and **7.6**).

Given that only a fragment of the building was found within the Trench 1/SH, its function is difficult to identify. It is noteworthy, however, that fragments of ceramic vessels, fragments of animal bones, a bead, a fragment of glass, and a fragment of a stone tool were found in the layer filling the room, suggesting that the room may have served as a place of regular daily activities related to food processing.

Phase 4

After the introduction of mud-brick structures outside the building, an accumulation of deposits was found to contain numerous artefacts related to food processing (5_1SH, 3_1SH). Traces of a dumping site for food waste (4_1SH) were also found. Radiocarbon dating of a charcoal sample from Deposit 4_1SH indicated that this layer may have been formed between 986–1052 AD (64%). Despite the absence of traces of timber architecture in Deposits 5-3_1SH (which may indicate a partial shift in the function of the area, with mud-brick buildings now being favoured), timber structures appeared at a later stage of urban development. Above Deposit 4_1SH in the Northern part of the trench there was a partially preserved earthen floor (2_1SH) with traces of post-holes 8–10cm in diameter. As the floor was poorly preserved, it was impossible to distinguish any specific wooden structures. Radiocarbon dating of Deposit 4_1SH showed that the timber architecture found in Trench 1/SH was still in use after the 10th/11th century AD. The discovered remains of timber and mud-brick architecture lie at a shallow depth below the present-day ground surface (*c*. 10cm). The remains were covered by a deposit that contained numerous artefacts related to food processing (1_SH). This suggests that, similar to earlier phases, the area may have been utilised for residential purposes.

7.1.5. *Summary*

Research carried out in Trench 1/SH has shown that the south-eastern part of Area AE developed during the classical period of Soba (i.e., 9th/10th/11th century AD). It is thus possible to conclude that the site co-existed with the ecclesiastical complex discovered in Mound B (Welsby and Daniels 1991, 33). The settlement discovered in Trench 1/SH was residential in nature. Although the nature of the settlement shifted over time (from no architectural structures to timber constructions, then to mud-brick buildings and finally back to timber constructions), the artefacts indicate a similar type of activity was carried out in the area throughout. The occurrence of fragments of ceramic vessels (mainly kitchen wares), animal bones and stone tools indicates activity related to food preparation and consumption. In addition to the medieval finds, it is noteworthy that the studied area was a site of human activity as early as the prehistoric period, as evidenced by the Neolithic burial. Considering the structure of Neolithic cemeteries at sites such as Kadero and Khor Shambat, more burials of this type can be expected in the south-eastern part of the Area AE.

7.2. Trench 2/SH

7.2.1. *Introduction*

This trench is located in the eastern part of Area AE (**Figure 7.7**), *c*. 35m southeast of the Police Station and *c*. 20m south of the Store Building (Trench 1/SH). It was set on the bank of the seasonal stream, on a gentle slope (ground level drops *c*. 60cm from Trenches 1/SH to 2/SH). The progress of research was the same as for Trench 1/SH presented above. The investigation in Trench 2/SH was a rescue excavation, since the area had been selected for the construction of toilet facilities for people working on the site (the police and members of the research team), and also in future for visitors to the site. From a research perspective, locating the trench in this place provided an archaeological context to the features discovered in Trench 1/SH and can provide information on the water flow at the site and its impact on the current condition of the archaeological remains.



Figure 7.7. Area AE in 2022: the plastered building is the store building. Trench 2/SH is visible at the edge of the seasonal stream (photo Mariusz Drzewiecki).

7.2.2. *Research methodology and background data*

The Trench 2/SH measured 7 × 5m. Excavations reached natural soil (semi-compacted gravel) at a depth of *c*. 30cm (**Figure 7.8**). Exploration was made according to set standards. Two layers, each *c*. 15cm thick, were explored and documented (see **Table 19.10** Appendix 2).

7.2.3. *Settlement phases and chronology*

There were neither traces of architectural remains nor any other unmovable archaeological objects here. The walking levels and post-holes, recorded in the southern part of Trench 1/SH, did not have any analogy or continuation with Trench 2/SH. Only small and



Figure 7.8. Trench 2/SH at the end of excavations. Semi-compacted gravel is the natural soil in this part of the site (photo Mariusz Drzewiecki).

eroded pottery sherds, fragmented animal bones, and small stone tools were found. All finds were mixed with gravel and sand without any visible stratigraphic layout. In addition, pockets of yellow sand, which were probably the result of animal activities, were noted. These have mixed the materials even more. No organic samples from distinct contexts could be collected, resulting in a lack of suitable archaeological materials for radiocarbon dating. It seems that all the finds were not *in situ* but were moved from elsewhere, probably by flowing water during the rainy seasons.

7.2.4. *Post depositional processes – water erosion*

Annual water erosion and accumulation in Soba have already been noted by the modern residents living on the bank of the *khor*, as evidenced in the interviews conducted by Maciej Kurcz. If this is the case for this particular area, then the finds are a mix of artefacts brought by rainwater from land eroded by the upper reaches of the seasonal stream (mainly the western part of Mound B) and from the eroded bank of Area AE. This dried out bed of the seasonal river, meandering between the mounds, was already marked on the 1930s map of Soba made by Ugo Monneret de Villard (1935, Tav. C). It is also clearly visible in the 1970 Corona satellite photo. That means the seasonal stream has been operating for at least a century.

7.2.5. *Summary*

Erosion and accumulation had a deep impact on the spatial distribution of the finds, especially on small movable objects and on the less durable remains of immovable features. It affected all layers, down to the natural soil, making it difficult to assess if any buildings or other structures had been standing in the area in medieval times. This also poses a question to the researchers as to how rainwater flows were managed during the life span of Alwa itself.

CHAPTER 8

FUNERARY FEATURES

Joanna A. CIESIELSKA

During two seasons of archaeological fieldwork at Soba (2019/2020 and 2021/2022), a number of graves and scattered human remains were recorded in various parts of the site. In total, 24 graves were uncovered, containing the remains of at least 25 individuals (MNI = 25), plus an assemblage of comingled human remains retrieved from a debris pile in Area UU. The majority of burials were uncovered in Area OS, in the northern part of the site (**Figure 8.1**).

In the first instance, a concentration of graves was detected in the subsurface layers of Area OS (**Figure 8.2**), where the first test trenches were established at the beginning of the work conducted by the team in the autumn of 2019. The majority of burials (19 out of 22)[1] were located in Trench 1 (1/OS). Fragments of human skeletal remains were also scattered within Contexts 2, 4, 5, 6, and 7 in the same trench. The sheer number of interments, along with a roughly uniform manner of burial and no grave cutting another, suggests that the site must have been intentionally chosen as a burial location. Three graves recorded within Trench 2/OS can probably be considered part of the same burial ground, extending down to the foot of the mound. Based on the archaeological stratigraphy and radiocarbon dating of samples retrieved from the graves, the establishment of the cemetery can probably be dated to the turn of the 10th/11th century AD. If the beads collected during the fieldwork were indeed associated with the funerary contexts, some burials would possibly date as late as the 13th and 14th centuries (see Chapter 13).

Additionally, two burials were found during excavations in Areas CW in the western and AE areas (Trench 1/SH) in the central part of the site. The former, the burial of a child of no more than 1.5 years at death, probably belongs to the latest activity at the site, possibly even post-dating the abandonment of the city.

The interment in Area AE was located underneath all archaeological deposits and a layer of natural soil, probably significantly preceding the construction of the first medieval structures at the site. Additionally, the layout of the burial and positioning of the deceased suggest possibly an Early Holocene dating for the interment.

Finally, in the second part of the 2021/2022 excavation season an assemblage of human remains was collected from Area UU, which is currently in an overbuilt area called Marabiya al-Sherif on the eastern side of the tarmac road. The burials of at least four individuals (MNI = 4) were uncovered during construction work in one of the plots. During an interview conducted by Maciej Kurcz, our cultural anthropologist, the man inhabiting the plot recounted that some human remains were encountered and agreed to their retrieval by the team. According to the discoverer, all individuals were buried in single graves, in an extended position, either supine or on their side. No less than 8–9 graves were allegedly detected by the local inhabitants, but most of them were left untouched. Unfortunately, the owner of the plot did not agree to further archaeological investigation of the site.

8.1. Cemetery on Mound OS

8.1.1. *Context of burial*

All burials were interred in shallow oval pits, with no accompanying funerary structures. The cuts were barely recognisable within the surrounding soil. As described in detail in Chapter 4, some of the graves were cut into the earlier buildings and cultural deposits here.

While no elaborate grave monuments were erected, large fragments of a globular cooking pot were employed to protect the head and pelvis of an adult woman buried in Grave 16 in the northern part of Trench 1/OS. The practice of protecting the head of the deceased was widespread in medieval Nubia (Welsby 2002, 49). However, such head protection was usually provided in the form of two or three bricks placed around the head. Such protective measures were

[1] The MNI = 23 for cemetery OS was established taking into account a single humerus belonging to a sub-adult (SOBA_2019/OS1/B002) buried underneath the body of SOBA_2019/OS1/B001. As no additional skeletal elements were recovered, the unit is no longer considered a 'burial' per se; the number of burials identified at Mound OS is 22.

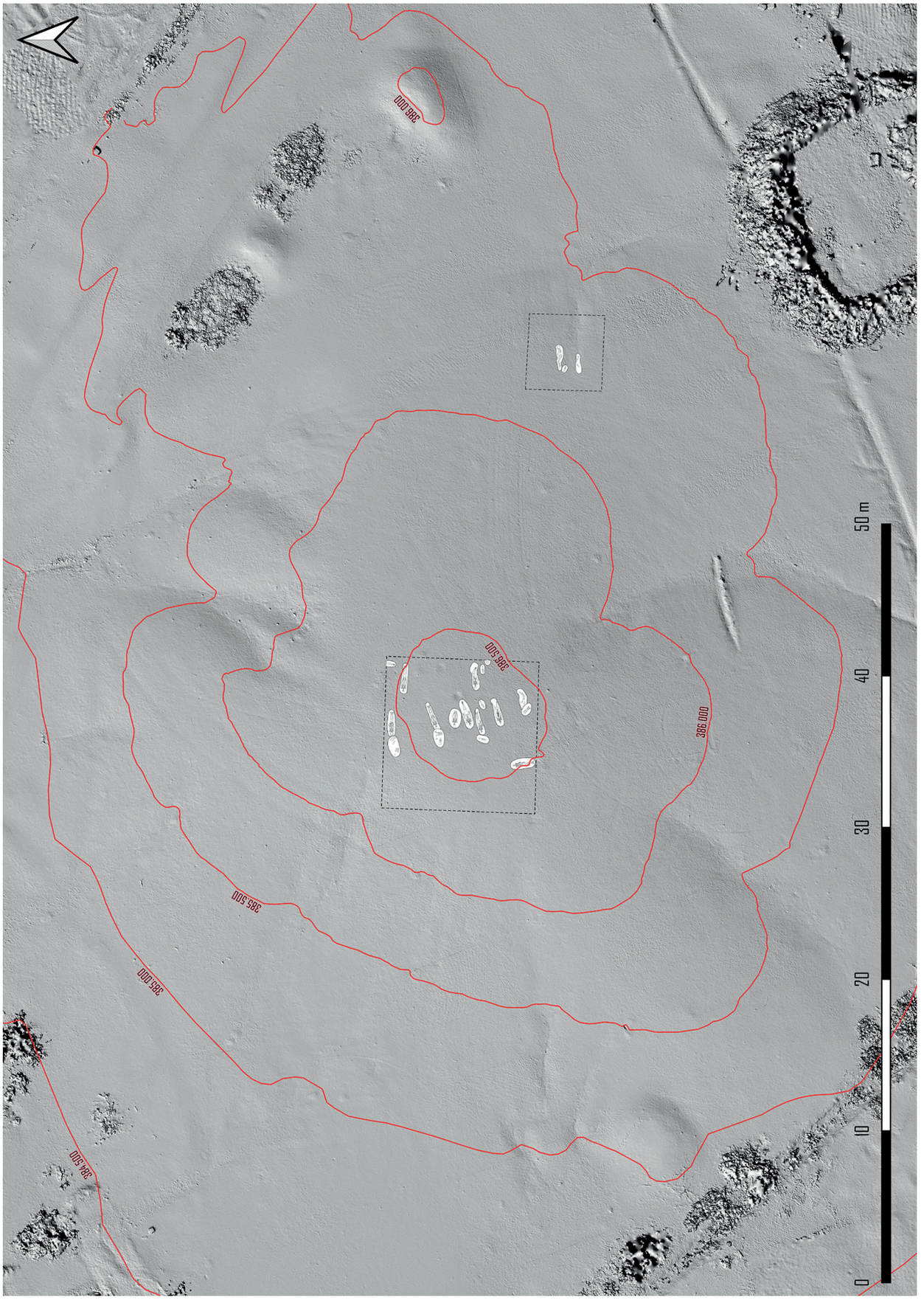

Figure 8.1. Location of Trench 1/OS on top of Mound OS and Trench 2/OS on the eastern slope of the mound (prepared by Mariusz Drzewiecki).

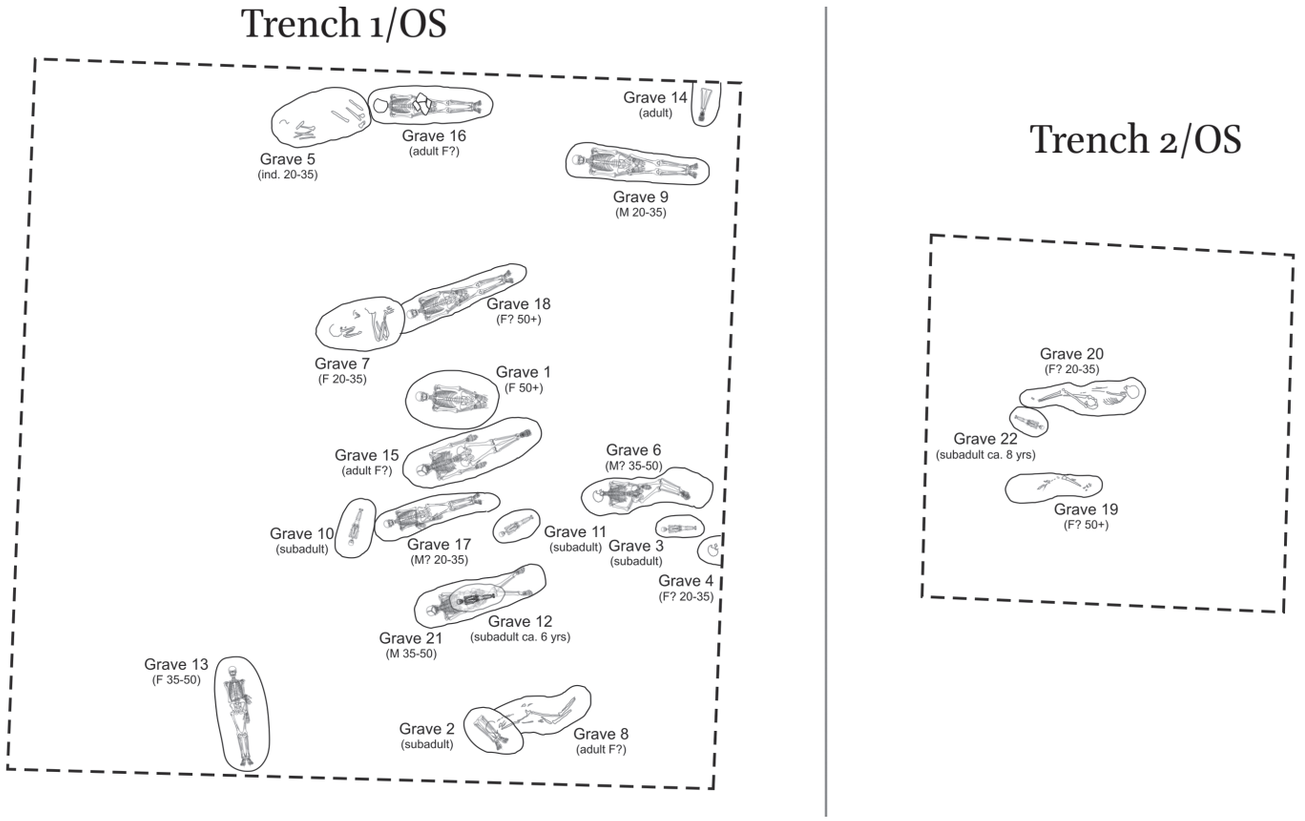

Figure 8.2. Distribution of burials within Trench 1/OS (left) and Trench 2/OS (right) (prepared by Joanna Ciesielska).

recorded at other parts of the site (Shinnie 1961, 26; Welsby and Daniels 1991, 122; Welsby 1998, 51, 54–55), but not in any of the burials on Mound OS. The use of pottery sherds for that purpose is relatively rare, but not unprecedented (Ciesielska *et al*. 2018, 264). Some of the deceased must have originally been wrapped in shrouds or buried in clothing, as tiny pieces of dark brown, coarsely woven fabric were recorded next to the remains of SOBA_2019/OS1/B010 and SOBA_2019/OS1/B016. Organics were, however, very poorly preserved and presently further analysis is impossible.

Only one find was clearly associated with one of the burials – a metal ring, SOBA_2019/OS1/sf006 (see Chapter 14), was found on one of the fingers of the adult individual (SOBA_2019/OS1/B006) buried in Grave 5. Some beads were also recovered from the fills of Graves 8, 10, and 15. However, as the burial pits were not provided with any lining and no clear boundaries of the pits could be recorded, the association between the beads and the burials could not be established beyond reasonable doubt; the beads may constitute an intrusion from the surrounding layers.

8.1.2. *Body arrangement*

According to common Christian practice (Welsby 2002, 48–61), most of the deceased were aligned along an E-W axis with the head pointing west. According to Durandus, bishop of Mende (in his treatise *Rationale divinorum officiorum*), the dead were to be buried with their heads towards the west and feet to the east so that all, regardless of station, were pointing in the right direction at the Last Judgement (as the Christ is supposed to arrive from the east) (Binski 1996, 56). This position coincides well with the location of the apse on the eastern end of Christian churches. However, it is not uncommon to find the deceased placed obverse with head pointing east; such examples are known from Soba East (Welsby 1998, 51), but also el-Hobagi (Lenoble *et al*. 1994), Jebel Makbor (Lenoble 1987), Gabati (Edwards 1998, 208), and el-Geili (Caneva 1988, 206). Occasionally, ventral or side burials are also recorded (Adams 1998, 28; 1999; Welsby 2002, 49), e.g., Soba East (Welsby 1998, 58), Kulubnarti (Adams 1999), and Ghazali (Ciesielska *et al*. 2018). While some remains at the cemetery on Mound OS were

clearly placed extended and supine, others rest either on their right or left side, or even facing down. At least two burials (Graves 13 and 14) follow the N–S orientation instead of E–W.

In 15 cases out of 23, burials were aligned E–W with the heads pointing west; only an adult female, SOBA_2019/OS1/B021, was arranged in the opposite direction. The orientation could not be reconstructed for SOBA_2019/OS1/B011, SOBA_2019/OS1/B012, and SOBA_2019/OS1/B013, whose burials were disturbed, but in each case human remains belonging to one individual only were found, closely clustered. The alignment is also doubtful for SOBA_2019/OS2/B020 in Trench 2 (2/OS), with the spine running E–W, the sacrum orientated N–S and the cranium displaced to an upside-down position to the west of the spine. One individual, an adult female, SOBA_2019/OS1/B014, was clearly aligned N–S with the head to the north. The facing of the deceased seems to have been independent of body positioning. Individuals interred supine in an extended position were facing up or towards the east, while the ones placed on the right side are usually facing south, with the exception of individual SOBA_2019/OS1/B021 (with head towards east, the face is turned to the north). All three individuals buried in Trench 2 (2/OS) seem to have been placed on their side instead of supine positioning. Additionally, at least three ventral burials were recorded in Trench 1 (1/OS). The hands of the deceased were usually placed on the pelvis or along the sides. Only in two cases (SOBA_2019/OS1/B006 and SOBA_2019/OS1/B008) were both hands folded in front of the face of the deceased, laid on their side.

8.1.3. *Interpretation of the burials on Mound OS*

Despite the fact that radiocarbon dating of two graves (nos 15 and 16) at the cemetery on Mound OS yielded dates from the 9th and 10th centuries AD,[2] well within the period of the dominance of the Christian faith in the region, the heterogeneity of burial manner raises some doubts as to the deceased's cultural and religious affinity. However, such variability in funerary provisions is not entirely unexpected. Previously conducted fieldwork at the site showed a wide range of possible architectural solutions employed both to protect the bodies of the deceased inhabitants of Soba and to possibly assert their social standing.

In the 1950s, the largest mounds on the site (A and B) were investigated by a team from the Sudan Antiquities Service headed by Peter Shinnie (1961). Subsequently, two projects were undertaken by the Archaeological Mission of the British Institute in Eastern Africa in the 1980s and early 1990s, a survey under the direction of C. M. Daniels and excavations headed by D. A. Welsby (Welsby and Daniels 1991; Welsby 1998). Apart from the remnants of stone-and-red-brick churches and structures constructed of mud-brick and timber, a few small cemeteries were uncovered in various parts of the site. Simple interments in rectangular pits were attributed to Christian and to both earlier and later periods by the excavators (Welsby and Daniels 1991, 26). Furthermore, a number of graves with accompanying red-/mud-brick structures (both funerary monuments and underground protective furnishings) were found in the areas of Mounds UA, Z, and B (Welsby 1998, 45–59). The latter also contained burials deposited in crypts connected with the churches. The interments adjacent to Building G on Mound Z in the south-eastern part of the site were radiocarbon dated to the period between the 6th and 8th centuries AD (Sample nos BM-2884, BM-2885, BM-2982, see Ambers 1998, 279). These were also characterised by the greatest diversity in terms of body arrangement and orientation of the funerary features (Welsby 1998, 45–50).

Following the British excavations (Welsby 1998, 56), only two small rescue projects were undertaken by the National Corporation for Antiquities and Museums of Sudan (NCAM). During research conducted in the north-eastern part of the site in 1992, prior to the construction of the el-Gereif East–Eilafoun road, excavations exposed a red-brick vaulted tomb containing 16 skeletons of adult individuals along with one identified as an unborn baby (Abdel Rahman 2000). A number of other burials were recorded in close vicinity to the vaulted tomb, interred in simple pits and presumed to be later than the red-brick construction.

The largest concentrations of graves at Soba were found in close proximity to the churches (Welsby 1998, 45–59). Medieval Makuria saw the widespread occurrence of the phenomenon known as *ad sanctos* burials (Żurawski 1997). Stemming from the doctrine of intercession, members of Christian communities strove to locate their tombs as close as possible to the *sancta sanctorum*. A resting place in the vicinity of a religious establishment was more prestigious, but it also meant

[2] Grave 15 was dated to 1055.30 BP, *c*. 944–1025 AD (83.9%), and Grave 16 to 1200.30 BP, *c*. 765–895 AD (87.8%); for details, see Appendix 1.

that the souls of the deceased were included in the daily prayers of the community (Daniell 1997). A place inside a church or within the monastic grounds for the burial of a wealthy individual or a family was especially advantageous, with burial plots located further from the place of central focus being allocated to people from the lower echelons of society. In Christian sociology, the location of the graves thus became an important criterion for differentiating the deceased (Delahaye 1998, 716–717).

Across medieval Nubia, most prestigious burials are found next to the churches and in subterranean crypts (e.g., Qasr Ibrim, see Plumley 1966; Adams 1996; Łajtar and van der Vliet 2010, 53ff), containing multiple inhumations belonging to men, women and even children. At Faras and Qasr Ibrim the burials of bishops or other high-ranking dignitaries and their kin were located in close proximity to the cathedrals, while commoners were buried in large burial grounds outside the city limits (Monneret de Villard 1931, 8–10; Mills 1982, 3, pl. 111; Adams 1996, 82–83; Godlewski 2007, 139–150). The remains of adult individuals of both sexes, as well as children, were found in the crypts underneath the Church of Granite Columns and the Cruciform Church in Old Dongola (Millet 1967, 59; Promińska 1978, 243–246; Godlewski 1990, 515–518).

The remnants of a late church (radiocarbon dating indicates that the building was still in use as late as the 13th century AD)[3] were possibly identified at Mound O, *c*. 60 metres north-west from the cemetery on Mound OS, suggesting the possibility that, similar to other cemeteries at the site, the burial ground might have been intentionally placed next to the religious institution. Early Christianity promoted a move towards the larger family of believers, *familia Dei*, towards the Community, thus bridging the gap between the private and public spheres of religious belief (Volp 2002, 244). Thus, while the clustering of burials in close proximity to a church may reflect piety, the manner of burial itself was largely dependent on the underlying traditions of the region and the personal choices of those performing the deed; and so may partly correspond to the social standing and cultural affiliation of the deceased.

8.1.4. *Final remarks*

Soba developed from the 6th century onwards. Soon after, the seat of power adopted Christianity, gradually incorporating other sections of Alwan society. Nevertheless, the population must have originally been ‘pagan’, and the change from one set of traditional beliefs and cultural practices to another was surely a prolonged process, lasting several decades. The change in the mode of burial has often been considered one of the initial markers of transition from ‘pagan’ to Christian way of life in Nubia at the turn of the 5th and 6th centuries AD. The conversion to Christianity marks a gradual retreat from the competitive grandeur in the funerary sphere during the post-Meroitic period (El-Tayeb 2012) and a turn towards homogeneity, corresponding to the postulated equalisation of fellow believers. However, as more and more archaeological material comes to light, it becomes clear that, while new influences appear on the stage, a continuity of certain practices and the gradual transformation of others can be observed. The types of funerary monuments that preceded the Christian kingdoms on the Nile were used far into the Christian period (Welsby 2002, 54). Post-Meroitic tumuli with clearly Christian interments were recorded at a number of sites (Lenoble *et al*. 1994). Indeed, some burials of ostensibly post-Meroitic composition in the Alwan dominion span far into the Christian period (El-Hassan 2006).

Continuity of preceding traditions despite changing religious profession attests to the absence of clear regulations on burial in early Christian times. Thus, while adhering to the new prescriptions, new converts do not seem to entirely turn away from long-lasting customs. This was a consequence of the apostles of early Christianity failing to equip the new religion with precise prescriptions concerning the approach to death. It seems that early converts initially followed local customs, gradually turning towards developing new, distinctively Christian practices or modifications thereof (Volp 2002, 269).

As previously mentioned, a number of isolated burials and burial clusters were recorded all over the site. Larger cemeteries identified during previous fieldwork by the British and Sudanese teams seem to be predominantly located in proximity to churches and other large (possibly public?) buildings in the eastern part of the site, which is now covered by modern occupation. Recently identified burials in Area UA suggest that these cemeteries were much larger than previously expected. It is thus hypothesised that, along with long-standing Nubian practices, upon the emergence of the city and the almost concurrent adoption of Christian

[3] See Appendix 1.

faith, large-scale cemeteries might have been established in the eastern part of the site, outside the agricultural area of the alluvial plain.

On the other hand, the location of the cemetery on Mound OS combined with such pronounced heterogeneities in burial style may provide some indication of a growing cultural differentiation among the population of Soba. Written sources report that Soba was a truly cosmopolitan city, with envoys from major political powers finding their way across the inhospitable deserts of northern Sudan to visit the kings of Alwa. Situated at the confluence of the White and Blue Niles, at a crossroads of major routes connecting Ethiopia and the Red Sea, Kordofan and Darfur, Eastern Desert peoples, and the entire extent of the Nile valley, the city was probably a mosaic of cultures and ethnicities, especially due to its engagement in trade networks. Furthermore, the last few centuries of its existence were marked by a gradual influx of Arab culture and Islam, adding to the diversity of the local population. According to Ibn Selim al-Aswani, in the 10th century there was an entire district inhabited by the followers of the Prophet (Vantini 1975, 613).

Nubian kingdoms withstood the Arab invasion until the 14th century AD, being subjected only to minor and often involuntary influxes of new religious and cultural trends (Vantini 1975, 144–145; 474ff). However, some Arab presence can be attested by isolated finds of burials and funerary steles, as well as historical accounts of Arab travellers visiting the upper Nile valley. Based on the pre-Islamic commercial ties, Arabs established the two Red Sea ports of Badi' and 'Aydhab (Power 2016, 94, 97), and on the eve of the Islamic conquests probably gained possession of Dahlak (Munro-Hay 1982, 121) and Adulis (Peacock and Blue 2007, 11–12, 37, 56–64; Munro-Hay 1982, 117), all of which might have constituted important inlets for the new cultural and religious trends penetrating the African continent. Furthermore, long before overthrowing the Christian kings in Makuria, Islam starts to appear in archaeological contexts connected to common folk northern Sudan, attested by Islamic tombstones (Monneret de Villard 1938, 118; Holthoer *et al*. 1964; Säve-Söderbergh 1981, 53–55) and Christian stele dated to the Hijri era (Ochała 2009). The earliest known incidence of Beja conversion to Islam is recorded by Ibn Hawqal (1938, 1, 50–51, trans. Vantini 1975, 152), who states that on his way to conquering Aswan 'Abdalla ibn Abi Sarh professed the new faith to the nomadic tribes inhabiting the Eastern Desert, but their belief remained superficial and many retained their pre-Islamic practices while adopting new Islamic precepts (Ibn Hawqal 1938, 1, 50–51, trans. Vantini 1975, 153).

While the burials at the cemetery on Mound OS do not exactly correspond to the Muslim manner of burial, in the formative period of Islam, even Muslim thinkers struggled with the notion of what should be considered as a proper way of burying the dead (Halevi 2007, 2). Similarly to Christianity, Islam preaches complete equality in death. Basic regulations recommend interment of the deceased on his right side facing *qibla* – the direction of Mecca, the most sacred place of Muslim worship. The pit should be shallow enough for the deceased to hear the muezzin calling for prayer and deep enough to sit up at the time of interrogation by the angels. Above ground the grave may be marked by a single stone, in this case called *shahid*, i.e., 'the witness' (Insoll 1999, 169). However, depending on the legal school followed, much greater variability can be attested (Dickie 1978, 44–46; Simpson 1995, 241–242, 244–245).

The heterogeneity in burial manner of neighbouring interments may attest to the cultural and religious diversity of the inhabitants of Soba. In the Mediterranean, at least until the 4th century AD, Christians and pagans were still being buried together, within the same burial grounds (Rebillard 2009, 34). No clear regulations against mixing heathens and believers were recorded as of yet; in fact, labelling Late Antique cemeteries as either Christian or pagan seems to be a misconception (Rebillard 2013, 229–232). Similarly in Nubia, new tombs, constructed according to the new ideology, were being placed next to earlier, Meroitic and post-Meroitic burials. Multiple instances of Christian tombs situated in earlier burial grounds are found all over Lower Nubia (e.g., Reisner 1910, 345; Rilly and Francigny 2011), in the Fourth Cataract region (Welsby 2005, 5), and even in the vicinity of Meroe (Lenoble 1987). The same practice can be observed in Nubia upon the introduction of Islam (Vila 1977, 61–62, fig. 24; Säve-Söderbergh 1981, 133–136; Żurawski *et al*. 2003, 368–369; Huber and Edwards 2012). While the size of the city, and by proxy, of its population, clearly suggest that large-scale cemeteries must have existed and are yet to be found, the presence of culturally diverse interments in various locations across the site may attest to the dynamics of a local multi-ethnic society, with the re-use of sites that had fallen out of use with little consideration for religious persuasion or cultural affinity.

8.2. Bioarchaeological analysis of human skeletal remains

8.2.1. *Preservation of human remains*

Most skeletons were completely preserved, with one individual (SOBA_2019/OS1/B003) preserved only partially (only lower legs present). SOBA_2019/OS1/B002 was represented only by a single humerus uncovered under the remains of SOBA_2019/OS1/B001 in Grave 1. While only the cranium of individual no. 5 (SOBA_2019/OS1/B005) was recovered, with the remaining part of the body embedded in the eastern section of Trench 1 (1/OS), it is assumed that the full set of human remains was present. A similar situation was encountered in the NE corner of Trench 1 (1/OS), where the lower legs of an adult individual, SOBA_2019/OS1/B015, were found, with the remainder of the body probably located beyond the northern limit of the excavation area. All of the remains display a brittle appearance, with some severely damaged by trampling and the weight of the overlying soil. This is especially true for the uppermost burials, i.e., the ones located right beneath the modern ground surface. The condition of the human remains clearly improves as we move towards deeper deposits. Some of the burials in the northern part of Trench 1 (especially SOBA_2019/OS1/B001) show traces of pink staining. This discolouration might have been caused by soil staining (House 2008) or post-mortem fungal activity (Cole and Waldron 2016).

8.2.2. *Methods*

Standard osteological techniques were applied for the estimation of age and sex. Macroscopic estimation of sex from human skeletal remains as the primary approach relies on observation of perceptible morphological differences between males and females. Sex estimations of adult individuals disinterred at Soba were established based on the pelvic morphology of the greater sciatic notch, preauricular sulcus, ischiopubic ramus, ventral arc and subpubic concavity, as well as cranial morphology. The variation in shape of five features that exhibit sexual dimorphic variation were utilised: glabella, forming the brow ridge; mastoid process, a bony protrusion behind the ear; nuchal crest, a point of muscle attachment on the occipital; supraorbital margin, being the bony edge of the superior portion of the eye socket; and mental eminence, being the anterior portion of the chin (Phenice 1969; Buikstra and Ubelaker 1994; Nikita 2017).

Age estimation from skeletal remains can be established through macroscopic observation of age-related skeletal changes. Such age-related changes entail both the alteration of skeletal morphology (e.g., pubic symphysis appearance) and the timing of skeletal development events (e.g., cranial suture closure, epiphyses fusion rates), the latter being particularly important when establishing age estimates for subadult individuals. For ageing adult individuals at Soba, the morphological appearance of the pubic symphysis and auricular surfaces in conjunction with cranial suture closure were observed (Todd 1920; Lovejoy *et al*. 1985; Meindl and Lovejoy 1985; Brooks and Suchey 1990). In the case of subadults, dental development, epiphyseal fusion and long bone lengths were utilised (Ubelaker 1987; Al-Qahtani 2008; Shaefer *et al*. 2009, and sources cited therein).

Dental health recording included a detailed dental inventory and morphological description, along with the macroscopic observation of pathological conditions and assessment of the degree and patterns in dental attrition (Brothwell 1981; Hillson 1996).

The identification of pathological conditions from human skeletal remains has been developed for over a century, and relies on both medical and clinical literature as well as bioarchaeology-specific, previously documented palaeopathological cases (Roberts and Manchester 2005; Waldron 2009). The preliminary assessment of all observed pathological conditions was conducted based on the macroscopic observation of lesions (Ortner 2003).

Whenever possible, skeletal tissue samples were collected for further laboratory investigation of diet and mobility. Ongoing research within the framework of the project *Ethno-cultural landscape of the medieval kingdom of Alwa (Sudan): introduction into the isotopic investigation of the population of Soba metropolis* (granted by the National Science Centre of Poland, Grant No. 2022/06/X/HS3/00341) is currently being prepared for publication. Fragments of bone and dental enamel will be subjected to the analysis of carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotope ratios for the estimation of diet. Stable carbon isotope ratios enable a distinction between various plant types, while nitrogen reflects the contribution of animal protein sources. A combination of oxygen ($\delta^{18}O$) and strontium ($^{87}Sr/^{86}Sr$) isotope analyses will be used to investigate migration patterns. Both oxygen and strontium are incorporated into dental enamel, which is formed once in an individual's lifetime and is not subject to renewal, essentially providing

a chemical composition snapshot of the environment within which enamel formation occurred. Bioavailable reference data will be derived from animal dental samples obtained during archaeological research conducted at the site.

8.2.3. *Demographic profile*

Precise estimates of chronological age are not usually available in archaeological populations and instead broad age categories are adopted. The inaccuracies in age recording are all the more problematic in datasets where the preservation of human remains is poor, such as in the case of the Soba assemblage. The individuals were generally sorted into age-specific cohorts with more specific age assessments performed for some of the sub-adult individuals. The age distribution of the group buried in the cemetery on Mound OS is typical for a growing population, with a significant portion of the community reaching young (20–35 years) and middle adulthood (35–50 years), but rarely surviving into their senescence. Among the 23 identified individuals, 15 sets of human remains belonged to adults, and one (SOBA_2019/OS1/B015) was probably an adult, while the remaining seven were sub-adults (aged below 20 years). Two among the adult individuals were identified as males and nine as females or probable females. Sex could not be established for the remaining four. Six adult individuals were between 20 and 35 years at death, three were 35–50, while three females (or probable females) were over 50; age could not be estimated for the remaining adult individuals. As for sub-adults, due to the poor preservation of remains, the age could only be estimated for three individuals: SOBA_2019/OS1/B013, who died at about 6 years; SOBA_2019/OS1/B004 at 5 years; and SOBA_2019/OS1/B023, at *c*. 8 years.

8.2.4. *Health conditions of the deceased*

Detailed pathological analysis of human remains was somewhat hindered by the preservation of skeletal tissue. Overall, the skeletal remains appear generally healthy, with arthritic changes in the vertebral column, mostly connected with age, being the most consistently present pathological condition.

A few cases of trauma were recorded. The adult female individual designated as SOBA_2019/OS1/B014 sustained a fracture to the right proximal femur. Risk of proximal femur fractures increases with age (Melton and Cooper 2001; Kanis *et al*. 2004), especially in females, who even more than males experience age-related decrease in bone mineral density (BMD) (Looker *et al*. 1997; Nagaraja *et al*. 2007). Lifetime risk of an osteoporotic fracture of any kind varies between populations, but falls within the range of 40–50% among females (Johnell and Kanis 2005). A number of studies record cases of proximal femur fractures in populations inhabiting the Nile valley, including a recently published study on the prevalence of such injuries among the medieval monastic community of Ghazali in northern Nubia by the present author (Ciesielska and Stark 2020). Proximal femur fractures are often classified as insufficiency fractures, a type of stress fractures which result from abnormal bone (i.e., of compromised structure) being subjected to completely normal amounts of stress. Stress fractures can often be associated with other conditions, including malnutrition, gait impairment and mechanical overuse (Brunner *et al*. 2003). Nevertheless, the injury observed on the femur of SOBA_2019/OS1/B014 shows complete healing and possibly a return to normal functionality over time, which indicates a significant degree of care and assistance in daily needs on the part of co-habitants (Tilley 2015).

Additionally, the adult female SOBA_2019/OS1/B017 had an isolated healed fracture of the right eleventh rib, which might have either ensued from an everyday accident or an inter-personal altercation. Meanwhile, male individual SOBA_2019/OS1/B010 suffered a fracture at the shaft of the left clavicle, as well as a sharp force trauma to the anterior portion of the vertebral body of L3. The former injury must have been sustained some time before individual's death as the callus formed during fusion of the two pieces of the bone was almost completely absorbed, while the latter showed no signs of healing, indicating that the injury was probably inflicted *peri mortem* and might have been connected to the individual's death.

8.3. Catalogue of burials

8.3.1. *Burials on Mound OS*

Grave 1 (SOBA_2019/OS1/B001-2) (**Figure 8.3**)
Location: Mound OS, Trench 1

Grave 1 was located in the central part of Trench 1 on Mound OS, dug into the first, sub-surface layer (directly beneath the modern ground surface). A shallow, oval pit (1.30 × 0.80m) arranged along an E–W axis contained the remains of at least two individuals



Figure 8.3. Burial of an adult female buried in Grave 1 at Mound OS (photo Tomasz Michalik).



Figure 8.4. Burial of a subadult in Grave 2 at Mound OS (photo Tomasz Michalik).

(MNI = 2), a single humerus belonging to a subadult deposited underneath the skeleton of an adult female (it is not clear whether the placement of the bone was intentional, or if it represents a transfer from another burial that the female's interment intruded upon). No lining nor a clear cut could be discerned. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded either. The burial was partially destroyed due to later activity at the site, with the lower appendices completely missing. The remains of an adult female, over 50 years of age at death, was placed supine, in an extended position on a E–W axis (head towards W, facing up), with left hand along the side and right hand placed between the femurs, along the inner side of the right thigh. The skeletal tissue was only moderately well preserved, possibly due to trampling resulting from the shallow interment. There was moderate osteophytosis on the lower lumbar vertebrae (L3–L5).

Grave 2 (SOBA_2019/OS1/B003) (**Figure 8.4**)
Location: Mound OS, Trench 1

Grave 2 was located in the southern part of Trench 1 on Mound OS, dug into the first sub-surface layer (directly beneath the modern groundlevel). Only half of the burial deposited in an oval pit (*c*. 0.90 × 0.60m) was preserved *in situ*. The interment was arranged along a WNW–ESE axis. No lining or other funerary installations were identified. The deceased was not provided with any kind of installation to protect the body from overlying deposits. No burial goods were recorded. The burial was placed supine, in an extended position. Human remains belonged to a subadult of unknown age at death. The skeletal tissue was poorly preserved, possibly due to trampling and weathering, resulting from the shallow interment. No pathological changes were observed within the skeletal remains.

Grave 3 (SOBA_2019/OS1/B004) (**Figure 8.5**)
Location: Mound OS, Trench 1

Grave 3 was located in the eastern part of Trench 1 on Mound OS, deposited in an oval pit (*c*. 0.70 × 0.30m), a few centimetres under the modern groundlevel. The burial belonged to a subadult, based on dental eruption



Figure 8.5. Burial of a subadult (Grave 3) located directly adjacent to a cranium of an adult individual (possibly a female) protruding from the eastern wall of Trench 1/OS at Mound OS (photo Joanna Ciesielska).

c. 5 years at death. The body was extended supine along the N–S axis. No lining or other funerary installations were identified. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The skeletal tissue was moderately well preserved. No pathological changes were observed within the skeletal remains.

Grave 4 (SOBA_2019/OS1/B005) (Figure 8.5)
Location: Mound OS, Trench 1

Grave 4 was located in the eastern part of Trench 1 on Mound OS, in close vicinity to Burial no 3. The head of an adult individual was found protruding from the eastern section of the trench, suggestive of a W–E alignment of the remains, with the head pointing west and the face turned to the north. The entire grave was not excavated. The recorded (minimum) width of the burial pit was *c*. 40cm. Based on the morphological features of the cranium, the human remains seem to have belonged to an adult woman of undetermined age. No funerary provisions were identified, nor burial goods recovered. The skeletal remains were moderately well preserved. A single osteoma (*c*. 13mm in diameter) was recorded on the right occipital.

Grave 5 (SOBA_2019/OS1/B006) (**Figure 8.6**)
Location: Mound OS, Trench 1

Grave 5 was located in the northern part of Trench 1 on Mound OS, in Layer 3, *c*. 25cm below the modern ground level). The outline of an oval pit (*c*. 1.40 × 0.70m) arranged WSW–ENE was barely noticeable within the surrounding soil, provided with no lining nor other funerary installations. No burial provisions were employed to protect the body from overlying deposits. The human remains, interred flexed on the right side (with the head pointing WSW) with the lower legs tightly tucked up under the pelvis and the hands placed in front of the face, belonged to an adult of undetermined sex, *c*. 20–35 years at death. A simple metal ring was found on one of the individuals' fingers. Skeletal tissue was only moderately well preserved, possibly due to trampling resulting from the shallow interment. No pathological changes were observed within the skeletal remains.

Grave 6 (SOBA_2019/OS1/B007) (**Figure 8.7**)
Location: Mound OS, Trench 1

Grave 6 was located in the eastern part of Trench 1 on Mound OS, excavated *c*. 5cm below the modern ground level. The pit, of an irregular outline (*c*. 1.85 × 0.50m) was cut W–E into an earlier mud-brick wall running N–S along the eastern section of the trench. No burial provisions were employed to protect the body from overlying deposits. The human remains were found lying partially ventral (the upper half of the body), with the legs only slightly turned to the left. The body might have initially been interred on the left side and shifted under the weight of overlying soil. The deceased was facing north, while the hands were placed along the body or in the pelvic area (the hand arrangement could not be determined with certainty due to the influence of post-depositional factors). The remains belonged to an adult individual, most probably a male of 35–50 years at death. Skeletal tissue was relatively well preserved. No pathological changes were observed within the skeletal remains.



Figure 8.6. Burial of an adult in Grave 5 in Trench 1 at Mound OS (photo Joanna Ciesielska).



Figure 8.7. Burial of an adult male (?) in Grave 6 in Trench 1 at Mound OS (photo Joanna Ciesielska).



Figure 8.8. Burial of an adult female (?) in Grave 7 in Trench 1 at Mound OS (photo Joanna Ciesielska).



Figure 8.9. Burial of an adult female in Grave 8 in Trench 1 at Mound OS (photo Joanna Ciesielska).

Grave 7 (SOBA_2019/OS1/B008) (**Figure 8.8**)
Location: Mound OS, Trench 1

Grave 7 was located in the central part of Trench 1 on Mound OS, *c*. 10cm below the modern groundlevel). The outline of an oval pit (*c*. 1.25 × 0.75m), arranged WSW–ENE, was barely noticeable within the surrounding soil, provided with no lining or other funerary installations. No burial provisions were employed to protect the body from overlying deposits. No artefacts were recovered. The human remains, tightly contracted on the right side (with the head pointing WSW), with the lower legs tightly tucked up under the pelvis and hands placed in front of the face, belonged to an adult female, *c*. 20–35 years at death. Skeletal tissue was moderately well preserved, possibly due to trampling, resulting from the shallow interment. No pathological changes were observed within the skeletal remains.

Grave 8 (SOBA_2019/OS1/B009) (**Figure 8.9**)
Location: Mound OS, Trench 1

Grave 8 was located in the south-eastern corner of Trench 1 on Mound OS, excavated *c*. 10cm below the modern groundlevel, partially (in its western part) overlapped by Burial no 2. The pit, of an irregular outline (*c*. 1.70 × 0.60m), was arranged along a WSW–ENE axis. No burial provisions were employed to protect the body from overlying deposits. The human remains were interred on the right side, with the head pointing WSW and facing SSE. The right hand was placed on the thigh (originally probably along the side), while the left was between the thighs. The remains belonged to an adult female of undetermined age. Skeletal tissue was relatively well preserved. No pathological changes were observed within the skeletal remains. One yellow bead (SOBA_2019/OS1/sf012), was found next to the body, however the object might have belonged to the overlying layers.

Grave 9 (SOBA_2019/OS1/B010) (**Figure 8.10**)
Location: Mound OS, Trench 1

Grave 9 was located in the north-eastern corner of Trench 1 on Mound OS, excavated *c*. 25cm below the modern groundlevel. A roughly oval pit (*c*. 1.95 × 0.50m) was arranged along a W–E axis. No burial provisions were employed to protect the body from overlying deposits. The human remains were interred extended supine with the head of the deceased pointing west. Both hands were placed on the pelvis, with the left hand on the right wrist. Tiny fragments of a dark, coarsely woven fabric were found on and around the



Figure 8.10. Burial of an adult male in Grave 9 in Trench 1 at Mound OS (photo Joanna Ciesielska).

body, suggestive of the body being wrapped in a shroud or interred in garments. The remains belonged to an adult male of *c*. 20–35 years. Skeletal tissue was relatively well preserved. The deceased suffered a fracture at mid-shaft of the left clavicle, healed *ante mortem*, as well as a sharp force trauma on the anterior surface of L3 with no signs of healing, indicating a *peri mortem* nature of the lesion. The latter might have been the result of stabbing with the blade penetrating deep into the abdominal cavity, reaching the vertebral column.

Grave 10 (SOBA_2019/OS1/B011)
Location: Mound OS, Trench 1

Grave 10 was located in the central part of Trench 1 on Mound OS, *c*. 25–30 cm below the modern groundlevel. A small oval pit (*c*. 0.85 × 0.50 m) contained the poorly preserved remains of a subadult of undetermined age. The burial was probably arranged N–S with the head of the deceased pointing south. No lining or other funerary installations were identified. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The skeletal tissue was moderately well preserved. No pathological changes were observed on the skeletal remains.

Grave 11 (SOBA_2019/OS1/B012)
Location: Mound OS, Trench 1

Grave 11 was located in the central part of Trench 1 on Mound OS, between Graves nos 17 and 21, *c*. 25–30cm below the modern groundlevel. A small oval pit (*c*. 0.70 × 0.4m) contained the poorly preserved remains of a subadult of undetermined age. The burial was arranged SW–NE with the head of the deceased pointing south-west. No lining or other funerary installations were identified. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The skeletal tissue was moderately well preserved. No pathological changes were observed on the skeletal remains.

Grave 12 (SOBA_2019/OS1/B013)
Location: Mound OS, Trench 1

Grave 12 was located in the central part of Trench 1 on Mound OS, directly above Grave 21, *c*. 20–25cm below the modern groundlevel. A small oval pit (*c*. 0.80 × 0.35m) contained the poorly preserved remains of a subadult, based on dental eruption *c*. 6 years of age at death. The burial was arranged WSW–ENE with the head of the deceased pointing WSW. No lining or other funerary installations were identified. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The skeletal tissue was moderately well preserved. No pathological changes were observed on the skeletal remains.

Grave 13 (SOBA_2019/OS1/B014) (**Figure 8.11**)
Location: Mound OS, Trench 1

Grave 13 was located in the south-western part of Trench 1 on Mound OS, *c*. 5–10cm below the modern groundlevel. The pit, of an irregular outline (*c*. 1.25 × 0.70m) arranged NNW–SSE had no funerary installations whatsoever; no burial provisions were employed to protect the body from overlying deposits. The human remains of an adult female *c*. 35–50 years of age were extended supine with the left hand along the body and the left arm bent at right angles across the abdomen area and the right palm on the left elbow. The interment was severely damaged, with only the axial skeleton and upper limbs preserved; the cranium was almost completely crushed and the lower limbs below mid-femurs completely missing. The skeletal tissue was poorly preserved, possibly due to the shallow interment which subjected the remains to trampling and weathering. The deceased suffered a fracture to the neck of the right proximal femur, almost completely healed *ante mortem*.



Figure 8.11. Burial of an adult female in Grave 13 in Trench 1 at Mound OS (photo Joanna Ciesielska).

Grave 14 (SOBA_2019/OS1/B015)
Location: Mound OS, Trench 1

Grave 14 was located in the north-eastern corner of Trench 1 on Mound OS, protruding from the north side of the trench. The lower legs of an adult individual were arranged N–S, positioned at an angle (*c*. 45°), indicating that the deceased must have been interred ventrally with legs bent posteriorly (upwards). The entire grave was not excavated. The recorded width of the burial pit was *c*. 40cm. Based on the recorded elements of the skeleton, little can be said on the biological profile of the deceased. Skeletal remains were poorly preserved, severely weathered and brittle.

Grave 15 (SOBA_2019/OS1/B016) (**Figure 8.12**)
Location: Mound OS, Trench 1

Grave 15 was located in the central part of Trench 1 on Mound OS, *c*. 15–25cm below the modern groundlevel. The pit, of an oval outline (*c*. 2 × 0.65m) was arranged WSW–ENE with the head of the deceased pointing WSW. No lining or a clear cut could be discerned. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The human remains of an adult female of undetermined age were extended ventrally, with both arms extended and hands placed under the pelvis. The skeletal tissue was relatively well preserved. No pathological lesions were recorded.



Figure 8.12. Burial of an adult female in Grave 15 in Trench 1 at Mound OS (photo Joanna Ciesielska).

Grave 16 (SOBA_2019/OS1/B017) (**Figure 8.13a–b**)
Location: Mound OS, Trench 1

Grave 16 was situated along the north side of Trench 1 on Mound OS, *c*. 40cm below the modern groundlevel. The pit, of an oval outline (*c*. 1.75 × 0.55m) was arranged W–E. No lining nor a clear cut could be discerned. The body of the deceased, extended supine with the head pointing west, was provided with a head cover made out of half of a large, globular cooking jar covered with soot (**Figure 8.13a**). Both hands were placed on the pelvis, which was then covered with several pieces of a ceramic vessel, different to the one covering woman's head (**Figure 8.13b**). The human remains belonged to an adult female of undetermined age. The skeletal

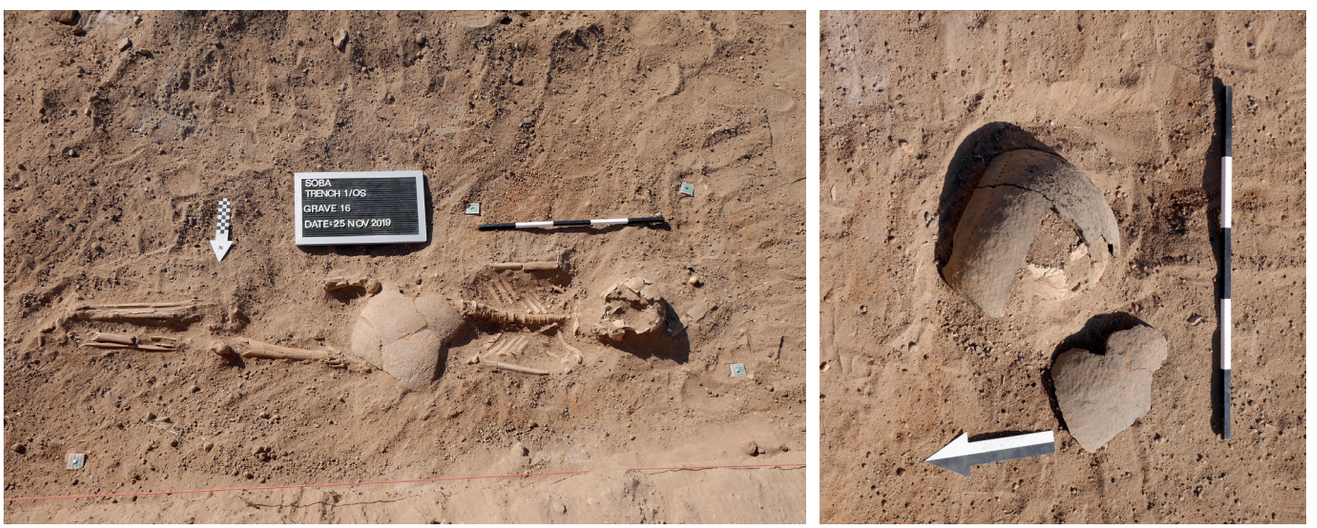

Figure 8.13a and b. Burial of an adult female in Grave 16 in Trench 1 at Mound OS with head and pelvis covered with fragments of pottery jars (photos Joanna Ciesielska).

tissue was relatively well preserved. The deceased suffered a fracture mid-shaft of the right eleventh rib, almost completely healed *ante mortem*.

Grave 17 (SOBA_2019/OS1/B018) (**Figure 8.14**)
Location: Mound OS, Trench 1

Grave 17 was located in the central part of Trench 1 on Mound OS, *c*. 45cm below the modern groundlevel. The pit, of an oval outline (*c*. 1.80 × 0.40m) was arranged WSW–ENE, with the head of the deceased pointing WSW. No lining or clear cut could be discerned. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The human remains of an adult male(?) *c*. 20–35 of age were extended supine with the right arm along the side and the left bent across the chest. Skeletal tissue was relatively well preserved, with the exception of the cranium, crushed due to the weight of the overlying soil. No pathological lesions were recorded.

Grave 18 (SOBA_2019/OS1/B019)
Location: Mound OS, Trench 1

Grave 18 was located in the central part of Trench 1 on Mound OS, *c*. 30–35cm below the modern ground level, partially underneath Grave no 7. The pit, an elongated oval outline (*c*. 2.10 × 0.40m) was arranged WSW–ENE with the head of the deceased pointing WSW. No lining could be discerned. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The human remains of an adult female (?), over 50 years of age at death, were squeezed into a very narrow pit, extended supine with the left hand placed on the pelvis and the right along the side. The skeletal tissue was relatively well preserved, with the exception of the cranium, which was severely damaged. No pathological lesions were recorded.

Grave 19 (SOBA_2019/OS2/B020)
Location: Mound OS, Trench 2

Grave 19 was located in the south-western quarter of Trench 2 on Mound OS, *c*. 0.35–0.40m below the modern groundlevel. The pit, of an irregular outline (*c*. 1.30 × 0.40m), was roughly arranged E–W. The burial has been partially disturbed, shedding doubt on the arrangement of the body. While the vertebral column followed a W–E axis, the sacrum was placed N–S and the cranium was detached and inverted, located to the west of the spine. The interment was placed along the northern edge of the foundation of a poorly preserved mud-brick wall; however no provisions seem to have been intentionally provided for the burial. No burial goods were recorded. The human remains of an adult female(?) over 50 years of age at death were probably placed on the left side with slightly flexed knees. The skeletal tissue was poorly preserved, weathered and brittle. No pathological lesions were recorded.

Grave 20 (SOBA_2019/OS2/B021) (**Figure 8.15**)
Location: Mound OS, Trench 2

Grave 20 was located in the central part of Trench 2 on Mound OS, *c*. 50cm below modern groundlevel. The pit, of an irregular outline (*c*. 1.75 × 0.50m), was arranged W–E with the head of the deceased pointing east, face turned to the north. The deceased was not



Figure 8.14. Burial of an adult female in Grave 17 in Trench 1 at Mound OS (photo Joanna Ciesielska).



Figure 8.15. Burial of an adult female (?) in Grave 20 in Trench 2 at Mound OS (photo Joanna Ciesielska).

provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The human remains of an adult female(?) between 20–35 years of age at death were placed on her right side with the right leg slightly bent at the knee. Skeletal tissue was poorly preserved, weathered and brittle. No pathological lesions were recorded.

Grave 21 (SOBA_2019/OS1/B022) (**Figure 8.16**)
Location: Mound OS, Trench 1

Grave 21 was located in the south-eastern quarter of Trench 1 on Mound OS, excavated *c*. 25–30cm below modern groundlevel. The pit, of an oval outline (*c*. 1.90 × 0.55m),was cut WSW–ENE into an earlier mud-brick wall running E–W in the southern part of the trench, forming the southern boundary of Room 17. No burial provisions were employed to protect the body from overlying deposits. The human remains were pronated with legs crossed at the femurs and the hands placed under the pelvis. The deceased was facing down. The remains belonged to an adult individual, most probably a male of 35–50 years at death. The skeletal tissue was relatively well preserved. No pathological changes were observed within the skeletal remains.



Figure 8.16. Burial of an adult individual in Grave 21 in Trench 1 at Mound OS (photo Joanna Ciesielska).

Grave 22 (SOBA_2019/OS1/B023)
Location: Mound OS, Trench 1

Grave 22 was located in the central part of Trench 1 at the foot of Mound OS, excavated *c*. 5cm below the modern groundlevel. The pit, of an oval outline (*c*. 0.50 × 0.35m), was excavated along a WNW–ESE axis. No lining or clear cut could be discerned. The deceased was not provided with any kind of burial provisions, such as a coffin or other installations to protect the body from overlying deposits. No burial goods were recorded. The human remains were extended on the left side with the head towards the west, facing north. The remains belonged to a sub-adult individual of *c*. 8 years. The skeletal tissue was poorly preserved, very weathered and brittle. No pathological changes were observed within the skeletal remains.

8.3.2. *Isolated graves*

Grave 23 (SOBA_2019/CW1/B024)
Location: Mound CW, Trench 1

Grave 23 was located in the eastern half of the trench in area CW (Trench 1/CW), excavated *c*. 5cm below the modern groundlevel. The pit, of an oval outline (*c*. 0.60 × 0.30m), excavated along an E–W axis, could hardly be distinguished in the surrounding soil. No burial provisions were employed to protect the body from overlying deposits. The remains of a child of *c*. 1.5 years were slightly flexed on the right side with the head towards the south, facing east. The skeletal tissue was moderately preserved, with many elements missing. No pathological changes were observed within the skeletal remains.

The context of interment, right underneath the modern ground surface, in tandem with extended preceding activity at the site (spanning at least from the 6th to 11th centuries AD, as evidenced by both ceramic materials, see Chapter 9; and radiocarbon dating of samples collected from underneath the walls from Phase 1, see Chapter 5) suggest a late dating for the burial. According to local stories, in the present this part of the site is considered *terra morta*, which is why up until a few centuries ago it was used for the disposal of the bodies of prematurely deceased children, especially stillborn infants (Maciej Kurcz, personal communication). The sub-adult interred in SOBA_2019/CW1/B024 may thus belong to the last phase of occupation of the medieval city or represent a modern, haphazard disposal of an individual who died in dubious circumstances.

INV. NO	AREA	FEATURE	AGE	SEX
SOBA_2019/OS1/B001	OS1	grave 1	adult (50+ yrs)	F
SOBA_2019/OS1/B002	OS1	grave 1	subadult	–
SOBA_2019/OS1/B003	OS1	grave 2	subadult	–
SOBA_2019/OS1/B004	OS1	grave 3	subadult	–
SOBA_2019/OS1/B005	OS1	grave 4	adult (20–35 yrs)	F (?)
SOBA_2019/OS1/B006	OS1	grave 5	adult (20–35 yrs)	?
SOBA_2019/OS1/B007	OS1	grave 6	adult (35–50 yrs)	M (?)
SOBA_2019/OS1/B008	OS1	grave 7	adult (20–35 yrs)	F
SOBA_2019/OS1/B009	OS1	grave 8	adult	F (?)
SOBA_2019/OS1/B010	OS1	grave 9	adult (20–35 yrs)	M
SOBA_2019/OS1/B011	OS1	grave 10	subadult	–
SOBA_2019/OS1/B012	OS1	grave 11	subadult	–
SOBA_2019/OS1/B013	OS1	grave 12	subadult (*c*. 6 yrs)	–
SOBA_2019/OS1/B014	OS1	grave 13	adult (35–50 yrs)	F
SOBA_2019/OS1/B015	OS1	grave 14	–	–
SOBA_2019/OS1/B016	OS1	grave 15	adult	F (?)
SOBA_2019/OS1/B017	OS1	grave 16	adult	F (?)
SOBA_2019/OS1/B018	OS1	grave 17	adult (20–35)	M (?)
SOBA_2019/OS1/B019	OS1	grave 18	adult (50+)	F (?)
SOBA_2019/OS2/B020	OS2	grave 19	adult (50+)	F (?)
SOBA_2019/OS2/B021	OS2	grave 20	adult (20–35)	F (?)
SOBA_2019/OS1/B022	OS1	grave 21	adult (35–50)	M
SOBA_2019/OS1/B023	OS2	grave 22	subadult (*c*. 8 yrs)	–
SOBA_2020/CW1/B024	CW1	grave 1	subadult (*c*. 1.5 yrs)	–
SOBA_2020/SH1/B025	SH1	grave 1	adult (35–30?)	M
SOBA_2022/UU/B026	UU	–	MNI = 4: 2 adults (M?, 50+; M?, 35–50), 1 sub-adult (*c*. 16–20 yrs), 1 infant (*c*. 6mo – 1yr)	

Table 8.1. Tabulation of all burials excavated during the 2019/2020 fieldwork at Soba (prepared by Joanna Ciesielska).

Grave 24 (SOBA_2020/SH1/B025) (**Figure 8.17**)
Location: Area SH, Trench 1

Grave 24 was uncovered during the excavation in Area AE, where the storage unit for artefacts excavated during the project was to be constructed. The excavation of foundation trenches for the building uncovered the remains of an adult individual located in the southern corner of the trench, *c*. 65cm below the modern groundlevel. The pit, of an oval outline (*c*. 1.35 × 0.75m), was hewn directly into the limestone bedrock E–W and covered with a thick layer (*c*. 30cm) of compacted reddish gravel, which yielded no anthropogenic artefacts. No burial provisions were employed to protect the body from overlying deposits. The remains of a male individual of 35–50 years were tightly contracted on the right side with the head towards the east, facing north. The skeletal tissue was relatively well preserved. No pathological changes were observed within the skeletal remains.



Figure 8.17. Burial of an adult individual in Grave 24, Area SH (photo Joanna Ciesielska).

CHAPTER 9

POTTERY FROM THE EXCAVATIONS

Ewa CZYŻEWSKA-ZALEWSKA

The period between the 8th and 13th centuries, within which the main activities of the studied areas in Soba took place, was a time of many changes in the Middle Nile Region. After the post-Meroitic transition (*c*. 600 AD), three kingdoms arose, shortly after converting to Christianity, which survived until around 1400 AD (Edwards 2004, 212–215): Nobadia in the north, located between the First and Third Nile Cataracts, Makuria in the centre, from the Third to probably Fifth Nile Cataract, and Alwa in the south, ranging from the Fifth Nile Cataract but with its southern border unclear (Adams 1991, 257).

Politically, we can observe many changes over this time. In the eighth century, Nobadia was absorbed by the larger neighbouring state of Makuria. Later in 1323, Arab and Mamluk pressure succeeded in establishing a Muslim ruler on the throne of Makuria, and not long afterwards, the kingdom broke up into warring principalities. In the north, between the First and Second Cataracts, the kingdom of Dotawo remained under the control of Christian rulers until at least 1484, but this kingdom had disappeared by the beginning of the sixteenth century (Adams *et al*. 1979, 728–729).

Excavated sites and archaeological surveys in the Dongola Reach have recorded extensive medieval settlement in the Letti Basin, Kerma Basin, Argo Island, and on the right bank of the southern Dongola Reach. Medieval settlement also seems widespread between the Fourth Cataract and Mograt Island.The settlements of Nobadia are much better known, with many modern sites in Lower Nubia able to be traced back to the medieval period, and some post-Meroitic settlements also seem to demonstrate continued occupation into the medieval period (Edwards 2004, 225–229).

The relationship between the Makurian and Alodian royal families remains uncertain (Edwards 2004, 236–237). The first excavations conducted by Shinnie in the 1950s were focused on the excavations on Mounds A and B and Church (Shinnie 1961, 9–28). After more than 30 years, research in the area was undertaken by the British Institute in Eastern Africa in the 1980s and 1990s carried out by Welsby and Daniels, where archaeological works focused on Mounds B, MN3, M12, Z, in the Area MN8, MN11, MN12 and in the cemetery close to buildings A, B, G (Welsby and Daniels 1991; Welsby 1998).

Tracing how material culture changed and developed through the medieval period can be attempted in very general terms, due the absence of many systematic publications of 'small finds' or pottery assemblages from excavations. Medieval centres for ceramic production have been discovered in Lower Nubia and the Makurian area (Edwards 2004, 234–236). During this time, painted decoration and religious motifs appeared on pottery, and new types of vessels began to be produced. For nearly the next 1,000 years, such 'Christian' pottery remains our most distinctive cultural marker. In the north, there seem likely to have been several centres producing pottery, while further south, Old Dongola was perhaps the main production centre (Edwards 2004, 234–236).

In Lower Nubia, the transition to 'Early Christian' pottery largely continued existing traditions. The bulk of pottery in circulation comprised a range of plain red wares with limited decoration, clearly derived from late Romano-Egyptian styles. In the Makurian area, however, the revival of wheelmade pottery manufacturing marks more of an innovation (Edwards 2004, 234–236).

In the ninth century, pottery production was transformed with new styles of 'Classic Christian' wares, white slipped and often very elaborately decorated. Examples of these wares were recovered from the pottery kilns at Faras (Edwards 2004, 234–236). Production at this centre ended in the late tenth or eleventh centuries, when the site was abandoned. In its aftermath, the demand for pottery in Lower Nubia seems to have been met increasingly by imports from Egypt. 'Classic Christian' wares were also produced at Old Dongola and perhaps Ghazali in the Dongola Reach (Edwards 2004, 234–236).

In the eleventh century, a range of new 'post-Classic' wares appeared. Some or all of these may have been made at Old Dongola, which may have become the main producer of later decorated wares (Edwards 2004, 234–236). A greater variety of wares in the late medieval period ('Terminal Christian') suggests that new local production centres may have emerged during this phase. Close to the end of the medieval period, wheelmade

production disappeared, replaced by a small range of handmade wares (Edwards 2004, 234–236).

The material culture of medieval Alwa differs from the north Kingdoms and seems to have developed out of earlier traditions. Handmade pottery production continued to thrive, and burnished black and red wares were quite common, in contrast to the new wheelmade industries that dominated in the northern kingdoms. Wheelmade pottery does occur in Alwa however, and indeed the most distinctive ceramic product of Alwa was the so-called 'Soba Ware', a wheelmade fineware with painted decoration on a black/brown or white background, the production of which was limited to a variety of bowl forms and larger basins; very different to the contemporaneous medieval wares made in Makuria. This pottery shows a number of distinct characteristics that have no parallel in the north. 'Soba ware' is abundant in Soba but rare elsewhere in Nubia, which may suggest it was a local pottery tradition, but equally was not a typical Alwan cultural assemblage (Welsby 1987, 282).

Pottery from the northern kingdoms and Egypt was found in minimal quantities at Soba (Edwards 2004, 224). It is possible that Alwan trade did not need to be conducted through the Kingdom of Makuria, but instead used access through the Red Sea (Welsby 1987, 282–283).

In the ninth century AD, locally painted pottery in Alwa was replaced by imports from northern workshops in Makuria, and that pottery became dominant amongst the fineware repertoire. Classic and Late Christian vessels from Makuria and glazed pottery appeared in Soba, but the Terminal wares are absent (Danys and Zielińska 2017, 177).

This chapter will present the pottery assemblage from Soba in a general archaeological context and in comparison with the previous archaeological excavations, conducted by Welsby and Daniels (Welsby and Daniels 1991; Welsby 1998), and Shinnie (1961). This chapter does not introduce a new typology of the vessels and is based on the existing typology by Welsby (1998). However, detailed studies including petrographic and decorative analyses are being prepared by the author as a separate volume (Czyżewska-Zalewska in preparation). The pottery discussed here represents vessels from following areas excavated during the project: 1/O, 1/OS, 2/OS, 1/CW, 1/GN, 1/SH, 1/CS, 1/G, and 1/SH.[1]

[1] A general discussion of the ceramics from each excavated area will be presented toward the end of this chapter. The location of each trench is presented there, see **Figure 9.21**.

9.1. Methodology of work

During the excavations, exploration was conducted according to archaeological deposits, as depicted in Harris Matrices.[2] Pottery, as well as other small finds, was collected separately from each deposit. The pottery was classified in terms of morphology. All sherds were counted and statistically processed. The pottery assemblage was divided into two main categories, handmade and wheelmade, and then into diagnostic and non-diagnostic fragments. Diagnostic fragments included: bases, rims, handles, inscribed sherds, and pieces of imported pottery. The collection of diagnostic elements was the basis for further analysis. The non-diagnostic sherds were quantitatively documented by vessel type and fabric. The large amount of pottery on the archaeological site and the numerous non-diagnostic pieces made some detailed analyses impossible. In particular, the fragmentary nature and quantity of the sherds do not allow for the determination of the number of vessels in the studied material. Therefore, the statistical study only includes:

- The entire pottery deposit – both diagnostic and non-diagnostic elements – however, the latter were only subjected to quantitative analysis.
- The ratio of handmade to wheelmade vessels.
- The proportion of diagnostic to non-diagnostic sherds.
- The number of vessel types in the deposits.
- Estimating the minimum vessel number.

Non-diagnostic sherds that bore some noteworthy features, e.g., decoration, technological traces, traces of use, and re-use, were selected for further analysis. In addition, non-diagnostic pieces indicating the presence of vessels only rarely found on the site were also chosen for further research. An essential element of the work was the documentation of fabrics (macroscopic fabric groups) in the context of pottery-type analysis. More information on pottery fabrics is presented in Section 9.2.4. A detailed fabric analysis will be presented in a separate volume (Czyżewska-Zalewska in preparation).

The next step was analysing the production technology of the vessels (handmade and wheelmade). Due to the highly fragmentary nature of many of the specimens, this was not always possible. The determination of the production techniques is presented according to

[2] The detailed discussion of the relationships of ceramics and other finds based on Harris matrices is presented in the second part of this chapter. For the visual representation of Harris Matrix for each trench, see **Figures 9.23**, **9.25**, **9.27**, **9.29**, **9.31**, **9.33**, **9.35**, and **9.37**.

the types and general characteristics of the vessels or groups of vessels.

The selected pottery was photographed, described in a database and drawn.

9.2. Pottery classification and manufacturing technology

As mentioned above, the pottery has been classified in terms of vessel shape. Other details, such as production technology, surface treatment, and decoration, have been used to distinguish types and variants. The main morphological classes have been distinguished: closed forms, such as jars, pots, amphorae (two-handled containers), bottles (containers with a narrow neck without handles), and potstands; and open forms, such as bowls.

9.2.1. *Production techniques*

Manufacturing techniques can be recognised on the vessel surface or broken fragments, which, in the case of handmade pottery, break at the point where the bands or coils were joined together. Technological marks based on the traces left on vessel surfaces are not always straightforward, and were often removed by surface finishing processes such as smoothing, slipping, polishing or burnishing. The colours of the surfaces, slip and decoration are described with reference to *The Munsell Soil Colour Book 2013*.

9.2.2. *Surface treatment*

In the pottery assemblage from Soba, the author distinguished the following kinds of surface treatment:

1. Application of a solution on the surface:
   – Plain surface, where the surface of the vessel was not coated with any additional layer such as slip, wash or glaze (**Figure 9.1a**).
   – Slipped surface, where the vessel surface was coated with a thin layer of slip (a fluid suspension of fine clay and water used to cover a body before firing), fired from red to black (**Figure 9.1b, e**).

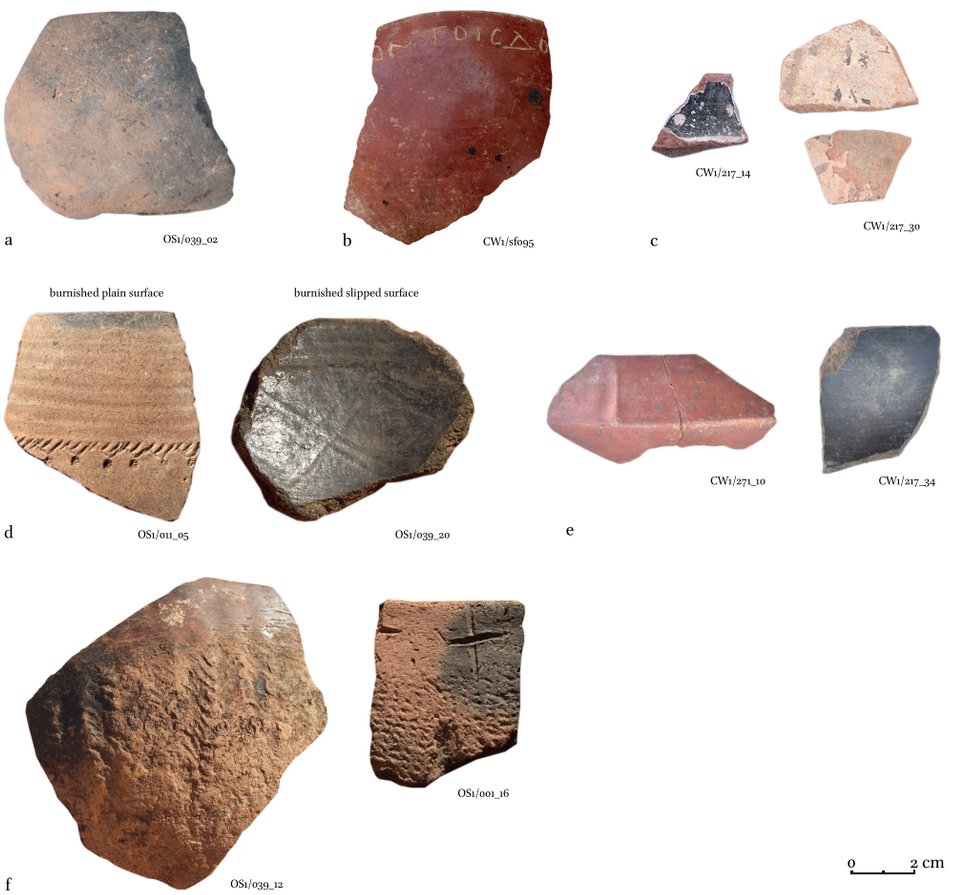

Figure 9.1. Examples of surface treatment (figure prepared by Ewa Czyżewska-Zalewska; photos: CW1/sf095 Joanna Ciesielska; OS1/001_16, OS1/039_02, OS1/039_12, OS1/039_20, CW1/217_14, CW1/217_30, CW1/217_34, CW1/271_10 Ewa Czyżewska-Zalewska; OS1/011_05 Ania Weźranowska).



Figure 9.2. Examples of different types of decoration (figure prepared by Ewa Czyżewska-Zalewska; photos: CW1/217_06, OS1/130_01 Ania Weźranowska; GN1/sf182, SC1/sf124 Joanna Ciesielska; OS1/069_15, OS1/001_11, OS1/099_01, CW1/239_42, CW1/285_01, CS1/198_25 Ewa Czyżewska-Zalewska).

- Washed surface, where the vessel surface was coated with a thin layer of 'paint' after firing (**Figure 9.1c**).

2. Techniques used in surface treatment:
   - Untreated surface, where the surface of the vessel was not modified with any tools (Figure 9.1a).
   - Burnished surface, where the vessel surface was rubbed with a hard, smooth tool/object to produce a lustrous surface, mainly executed on slipped surfaces (**Figure 9.1d**).
   - Polished surface, where the vessel surface was rubbed with a soft tool to makea glossy lustre surface, executed on plain or slipped surfaces (**Figure 9.1e**)
   - Mat-impressed surface, where a mat or a textile was pressed against the surface when the clay was still wet (**Figure 9.1f**) creating a textured surface that made vessels easier to grip; the subject of mat-impressed vessels has been broadly discussed by Jacke Phillips (2010).

9.2.3. *Types of decoration*

In the present assemblage, the following kinds of decoration have been identified:

- Painted decoration, which could have been executed before and/or after firing (**Figure 9.2a**).
- Punctated and incised decoration, where the decoration was executed on wet clay before the vessels were fired, using a tool such as a piece of straw, wood, or shell (**Figure 9.2b–c**).
- Grooved decoration, where grooves were executed in the wet clay before firing (**Figure 9.2c**).

– Slip as decoration (where it can be interpreted as decoration), sometimes occurring together with other types of ornamentation (**Figure 9.2d**).
– Mat-impressed decoration (where the mat-impressed patterns can be read as embellishment), in many cases mat-impressed pattern occurs together with smoothing or burnishing (**Figure 9.2d**).
  – Applied decoration, mainly small bosses or lugs added onto the external surfaces of the vessels (**Figure 9.2e**).
  – Scratched decoration executed post-firing (**Figure 9.2f**).

9.2.4. *Macroscopic fabric group descriptions*

Macroscopic fabric group descriptions are based on general visual analysis and estimations of the size and quantity of specific organic and mineral inclusions using a hand lens (10× magnification). Photographs were taken through an Optika SZO-2[3] microscope. Each macroscopic fabric group has been given the prefix SF (Soba Fabric), followed by a sequential number (1, 2, 3, etc.). The fabric groups are published here together with the pottery presentation. This volume does not include laboratory examination details and the pottery fabrics' chemical composition, as these will be published in a separate volume (Czyżewska-Zalewska in preparation).

In this chapter, the author presents ten identified main groups of fabrics (**Figure 9.3**).

Fabric Group 1 – SF1, abundant in quartz and organic inclusions with a small quantity of white particles.
Abundant in fine and medium quartz, small quantity of large quartz; a small quantity of fine to medium white particles; medium quantity of fine organic inclusions and small quantity of medium organic inclusions.
Porous and poorly sorted.
Fabric typical for handmade pots (**Figure 9.7**), large handmade bowls, *doka* (**Figure 9.9**), burnished large and medium-sized bowls (**Figure 9.10**), large and medium-sized bowls with mat-impressed patterns (**Figure 9.11**).

Fabric Group 2 – SF2, abundant in quartz with a small quantity of white particles and organic inclusions.
Abundant in fine and medium quartz; a small quantity of fine to medium white particles; a small quantity of fine organic inclusions.
Medium-dense and poorly sorted.
Fabric typical for large handmade bowls, *dokat* (**Figure 9.9**), burnished large and medium-sized bowls (**Figure 9.10**), large and medium-sized bowls with mat-impressed patterns (**Figure 9.11**), slipped bowls (**Figure 9.12**) and lamps (**Figure 9.19**).

Fabric Group 3 – SF3, abundant in quartz with a small quantity of white particles.
Abundant in small quartz with a small quantity of medium quartz; a small quantity of fine to medium white particles; rare fine organic inclusions.
Dense and moderately sorted.
Fabric typical for burnished large and medium-sized bowls (**Figure 9.10**), large and medium-sized bowls with mat-impressed patterns (**Figure 9.11**), slipped bowls (**Figure 9.12**) and lamps (**Figure 9.19**).

Fabric Group 4 – SF4, abundant in organic inclusions with a small quantity of white particles and quartz.
A small quantity of fine quartz; a large quantity of fine to medium organic inclusions; a moderate quantity of fine to medium white particles.
Porous and poorly sorted.
Fabric typical for handmade globular jars with outflaring rims (**Figure 9.4**), handmade globular jars/bottles (**Figure 9.5**) and *qawadis* (**Figure 9.17**).

Fabric Group 5 – SF5, abundant in organic inclusions and a small quantity of white particles.
Moderate quantity of fine quartz and a small quantity of medium quartz; medium to large quantity of fine to medium organic inclusions; a small quantity of large organic inclusions; a small quantity of fine to medium white particles; a small amount of fine mica.
Medium-dense and moderately sorted.
Fabric typical for 'pilgrim' bottles (**Figure 9.16**) and *qawadis* (**Figure 9.17**).

Fabric Group 6 – SF6, abundant in organic inclusions with a small quantity of white particles.
Moderate quantity of fine to medium quartz; medium to large quantity of fine to medium organic inclusions; a small quantity of fine white particles, a small amount of fine mica. Medium-dense and moderately sorted.
Fabric typical for handmade lamps (**Figure 9.19**) and bowls with mat-impressed patterns (**Figure 9.11**).

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[3] All photographs in this chapter were taken using an Optika SZO-2 (Camera DFK 23UP031) microscope with Nikon NIS-Elements software at the Polish Centre of Mediterranean Archaeology, University of Warsaw.

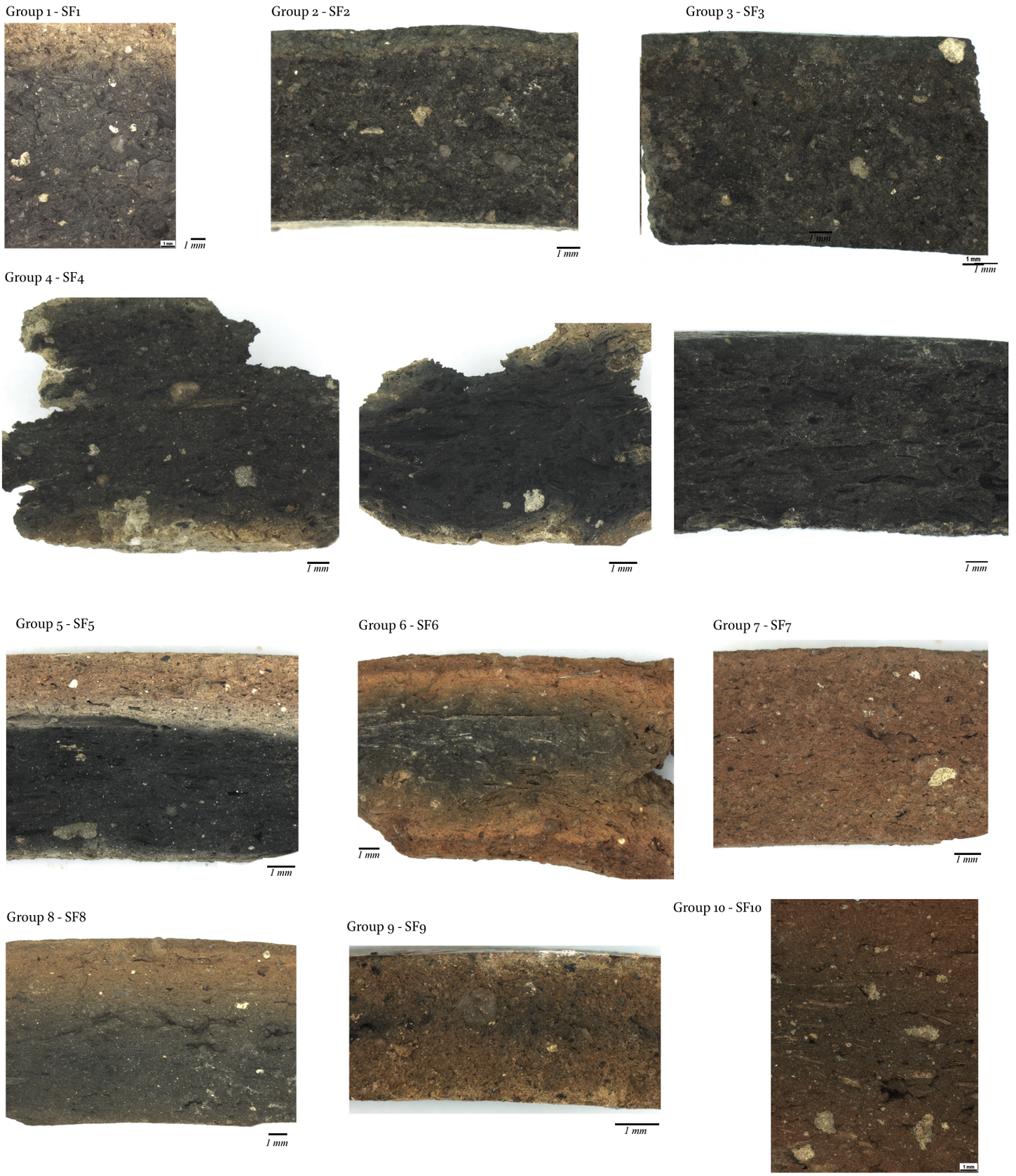

Figure 9.3. Examples of Macroscopic Fabric Group
(figure prepared by Ewa Czyżewska-Zalewska; photos of fabrics Malwina Piorun).

Fabric Group 7 – SF7, abundant in quartz with a small quantity of white particles and organic inclusions.
Large quantity of fine quartz, a small quantity of medium quartz; a small quantity of fine to medium white particles; a small quantity of fine organic inclusions; a small quantity of fine mica.
Dense and well-sorted.
Fabric typical for potstands (**Figure 9.18**).

Fabric Group 8 – SF8, abundant in quartz with a small quantity of white particles and organic inclusions.
Medium quantity of fine quartz, with sporadic medium quartz; a small quantity of fine white particles; a small quantity of fine organic inclusions; a small amount of mica.
Dense and moderately sorted.
Fabric occurs in handmade polished bowls (**Figure 9.12**), wheelmade slipped and painted bowls (**Figure 9.13**), *qawadis* (**Figure 9.17**) and lamps (**Figure 9.19**).

Fabric Group 9 – SF9, abundant in quartz with a small quantity of white particles.
Abundant fine quartz, with sporadic medium quartz; a small quantity of fine white particles. Similar to SF3 but finer.
Dense and moderately sorted.
Fabric occurs in handmade polished bowls (**Figure 9.12**).

Fabric Group 10 – SF10, abundant with organic inclusions and a large quantity of white particles.
A small quantity of fine to medium quartz; a large quantity of fine to large organic inclusions; a large quantity of fine to large white particles; a small quantity of fine mica.
Porous and poorly sorted.
Fabric typical for large handmade jars and storage containers (**Figure 9.6**).

9.3. Pottery description

The preliminary typology used in this chapter continues the typology presented by Welsby and Daniels, based on material from the excavations of the British Institute in Eastern Africa 1981–1992 (Welsby and Daniels 1991; Welsby 1998). Preliminary information about pottery assemblages excavated from the different areas during the project *Soba – the heart of Alwa. Spatial organisation of the capital city on the Blue Nile* was initially published in various articles (Drzewiecki, Ryndziewicz, Ciesielska, Czyżewska-Zalewska *et al*. 2020, 44–46; Drzewiecki, Ryndziewicz, Ciesielska, Michalik *et al*. 2020, 239–240; Drzewiecki *et al*. 2021, 612–619; 2022, 218).

This chapter describes the most distinctive pottery types found in the archaeological site of Soba. Typological descriptions are based on the morphological features of the vessels. The pottery is divided into functional groups, such as jars, bowls, pots, etc., subdivided into individual types and variants. Each form has been illustrated with a drawing and photo. Attributions to the macroscopic fabric groups are presented here for all vessel types. In the pottery collection presented below, the author refers to the typology created by Welsby and Daniels.

9.3.1. *Storage vessels*

9.3.1.1. Handmade production – globular jars with outflaring rims

Characterised by a broad and outflaring rim gradually developing into a narrow neck and globular body. Rim diameter ranged from 11–30cm (**Figure 9.4a**). The vessel surface was mostly untreated; sometimes the rim and neck of the vessel were burnished or slipped and burnished (**Figure 9.4b**).

The most common decoration consisted of incised geometrical patterns, such as zigzags, wavy lines, and herringbone lines, presented mainly on the flaring rim on the inner surface. When the neck was shorter and broader, and the rim was less flared, the decoration was also executed on the external surface (**Figure 9.4c**, also **a–b**). Jars occured in macroscopic Fabric Group 4 (**Figure 9.3**, SF4). Such vessels correspond to Class A vessels excavated on Mound B (Welsby and Daniels 1991, 165–166, figs 82–83). According to Welsby and Daniels, such bottles were probably used for liquids (Welsby and Daniels 1991, 13; Welsby 1998, 92–93, fig. 35). One sherd was analysed for food residues and the result suggests it was used for liquid during the fermentation process. The jars of Class A were used together with mud bungs, of which over 1000 examples were found on Mound B (Welsby 1998, 13). Similar mud bungs were also found during the latest excavations (see also Chapter 12). Bottles and jars were also discovered on Mound A and B during the excavations in 1950–1952 and corresponded to Class 5 (Shinnie 1961, 28; 33, fig. 14:XXIV; 45, fig. 21; 46).

Parallels

Similar bottles dated to the 10th century were discovered in Sunnarti Church in Lower Nubia

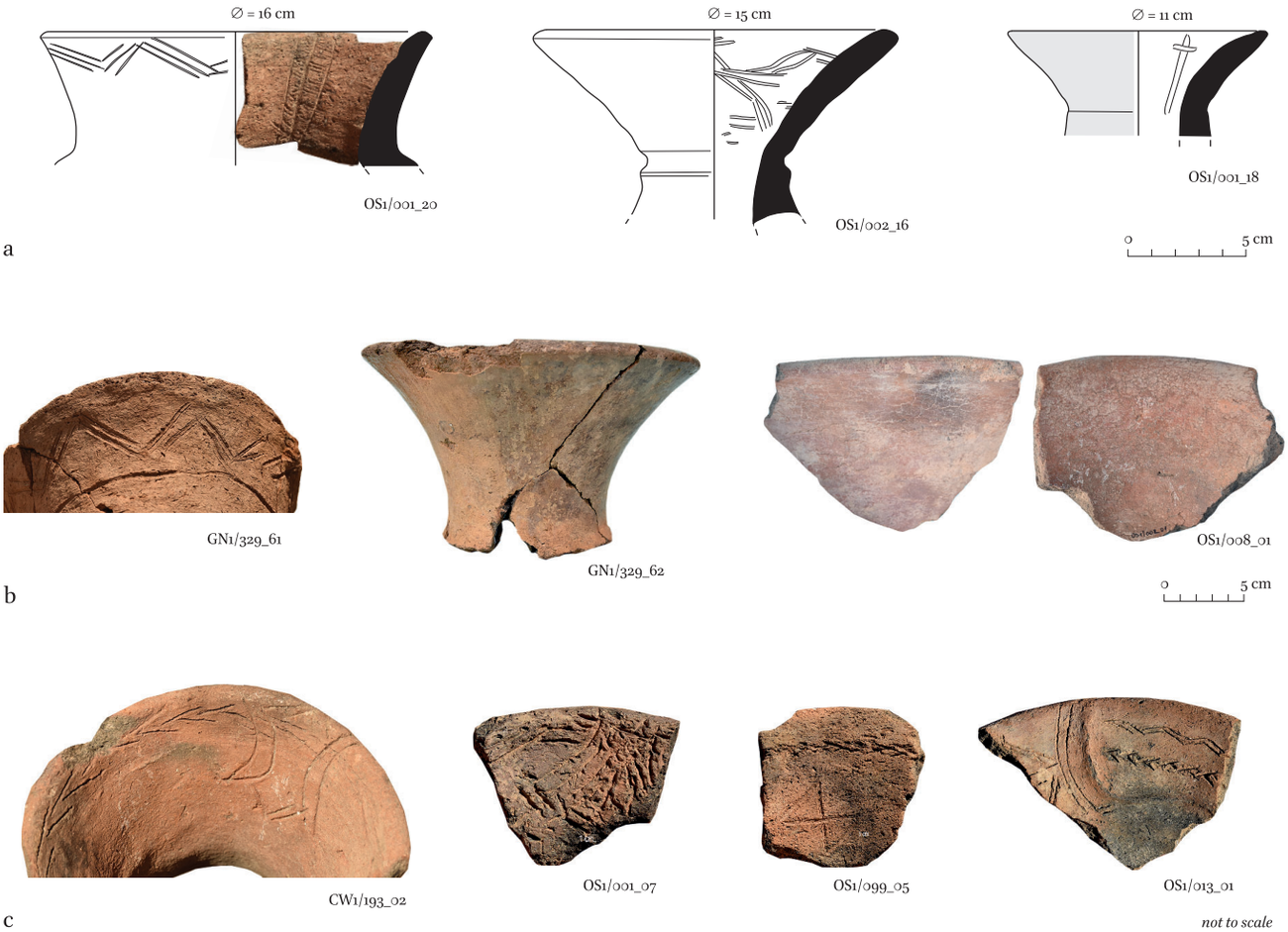

Figure 9.4. Examples of globular jars with outflaring rims (figure prepared by Ewa Czyżewska-Zalewska; a: drawn and digitised by Ewa Czyżewska-Zalewska, Karolina Warecka; photos b–c: GN1/329_61-62 Joanna Ciesielska; OS1/008_01, CW1/193_02, OS1/001_07, OS1/099_05, OS1/013_01 Ewa Czyżewska-Zalewska).

(Rodziewicz 1988, 79, 92, pl. 9:101). Jars have also been found in large numbers across Makuria, for example, at Banganarti, wherewere used for storing beverages and occur less frequently from the Classic Christian period onwards (Cedro 2021, 200, 204). Other parallels are known from Old Dongola, where vessels with a mat-impressed pattern on the exterior surfaces and burnished necks and rims were recorded in Unit B.I.41, dated to the 6th–7th century (Danys 2016, 769, 771).

9.3.1.2. Handmade production – globular bottles/jars

Bottles/jars, with straight rims and narrow necks, which were often fired red, slipped and burnished. The neck gradually develops into a globular body with a rounded base. The rim diameter ranges from 5–10cm. Below the rim and neck, the surface is plain or has a mat-impressed pattern. In examples with a mat-impressed body, the shoulder, neck and rim areas were smoothed or burnished and sometimes bore incised decoration. The items used to make impressed patterns may have been mats, basketry, bags or cloth (Phillips 2010, 227). This technique is still in use in modern pottery workshops, and have functional and decorative meaning (Czyżewska-Zalewska and Kowarska 2020, 574–578). Bottles with black slipped external surfaces occur sporadically (**Figure 9.5**).

The difference between a jar and a bottle is slight. Jars are characterised by a broad neck, gradually developing into a spherical body, while bottles also have a spherical body, but the neck is more slender, with straight or slightly concave walls. These differences have been discussed in relation to the pottery assemblage from the post-Meroitic tumuli at El-Zuma (Czyżewska-Zalewska 2016, 730–732).

Jars and bottles are associated with macroscopic Fabric Group 4 (**Figure 9.3**, SF4). In the case of the undiagnostic sherds, it is not easy to distinguish whether they derive from bottles or globular jars with out-flared rims, because the same fabric characterises both types. Such vessels correspond to Class B vessels excavated on Mound B (Welsby and Daniels 1991, 166, 169; Welsby 1998, 92–93) and Class 5 excavated on Mound A and B (Shinnie 1961, 28; 33, fig. 14:XXIV; 45, fig. 21; 46).

Parallels

These jars are often referred to in the literature as 'beer' jars or 'beer' bottles. In Adam's typology, such vessels correspond to jars of Class W (Adams 1986, 105; 168, fig. 79:16, 18; 170, fig. 81:31). Such vessels are known from the Meroitic and post-Meroitic periods. They occurred in different variants with plain uncoated external surfaces, uncoated with mat-impressed patterns on the outer surface, and red or black slipped and burnished exterior surfaces. Jars slipped and burnished on the exterioror with a mat-impressed pattern are known from the Meroitic and post-Meroitc periods, mainly from Upper Nubia. Similar jars have been found at: Gebel Gaddar, dated to the 4th–6th centuries (El-Tayeb 1994, 71–73); Usli, dated to the late Meroitic to Early post-Meroitic period (300–550 AD) (Phillips and El-Tayeb 2003, 403–407, fig. 29a); Tanqasi, dated to the Meroitic and post-Meroitic periods (Czyżewska-Zalewska 2018, 292–294); Kassinger site HP45, dated to 350–540 AD (Daszkiewicz and Goedicke 2007; El-Tayeb and Kołosowska 2007, 40); El-Sadda, in post-Meroitic graves (Osypiński 2007, 350–353); Gabati, dated to the post-Meroitic period (Edwards and Rose 1998, I:110, pls 85 and 94); and at El-Hobagi cemeteries III and IV, dated to the 4th century (Lenoble 2018, 58–83, 183–191). Jars with mat-impressed decoration on the body were found at the North Cemetery at Musawwarat es-Sufra, dated to the post-Meroitic period (350 AD) (Joachim 2014, 201–203, fig. 17); in Sabaloka in a post-Meroitic grave (Varadzin, Havelková and Suková 2015); and a similar vessel was found at the cemetery in Gereif dated to the late Meroitic period (Sakamoto 2016b, 87, fig. 6). Vessels were also popular in the Early Christian period: in Upper Nubia they were found in Banganarti (Cedro 2021, 204) and Selib 3 (Cedro 2017, 320–321). In Old Dongola in Building I on Kom A, 'beer' jars with slipped necks and mat-impressed patterns were quite common in the deposits and were dated to sixth-seventh century (Danys-Lasek 2012, 315, 323–324). Similar examples were found in the fort of Umm Marrrahi, dated to the second part of the 6th century and the beginnings of the 7th century (Drzewiecki and Cedro 2022, 15, 79, 81 fig. 4.6).



Figure 9.5. Examples of globular bottles with straight rims (figure prepared by Ewa Czyżewska-Zalewska; drawn by Ania Weźranowska, digitised by Marta Momot; photos CW1/236_40, CW1/239_42 Ewa Czyżewska-Zalewska; OS2/088_03 Ania Weźranowska).

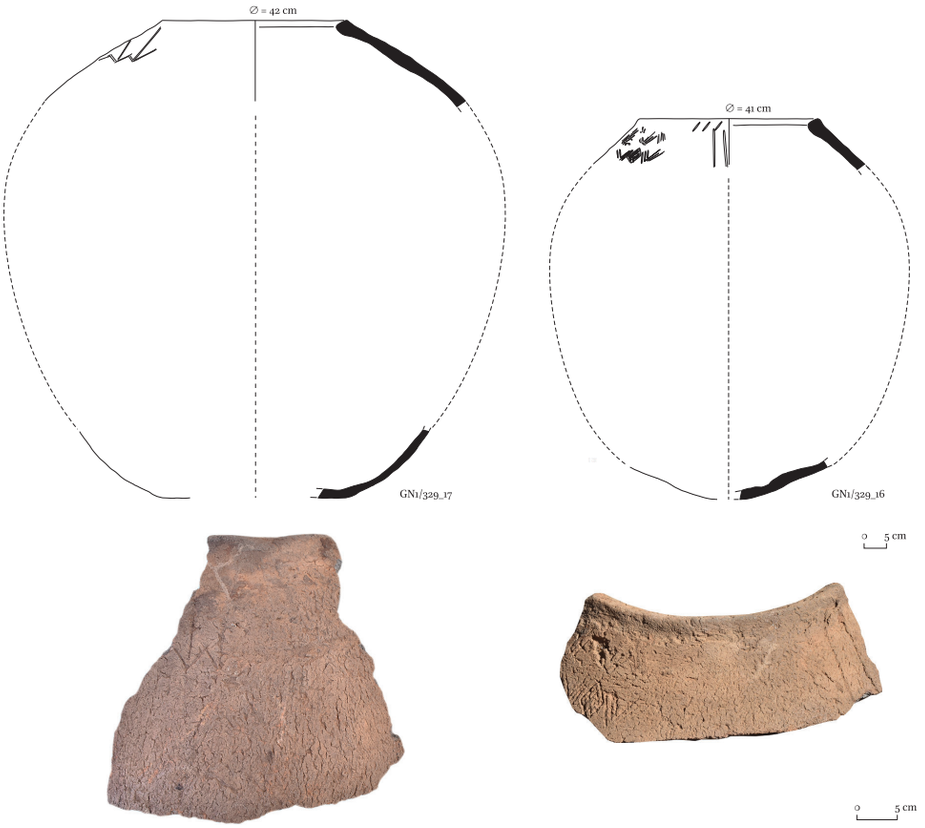

Figure 9.6. Examples of storage jars (figure prepared by Ewa Czyżewska-Zalewska; drawn and digitised by Ania Weźranowska; photos by Ewa Czyżewska-Zalewska).

9.3.1.3. Handmade production – storage jars, large[4]

Large storage containers with inturned rim, ovoid in shape and with a rounded or slightly pointed base. The rim diameter ranges between 22–40cm, but smaller examples with a rim diameter of 17cm were also recorded. The decoration was executed in wet clay on the external surface below the rim. The vessels have thick and very crumbly walls. They measure about 80–100cm in height (**Figure 9.6**). Such vessels are made from fabrics belonging to Fabric Group 10 (Figure 9.3, SF10). Large storage jars correspond to Class I vessels (Welsby and Daniels 1991, 179–182; Welsby 1998, 90–92, 95 fig. 37). Such storage vessels were discovered *in situ* in good condition on Mound A (Shinnie 1961, plate IV:a).

Parallels

Similar storage containers were found at Umm Marrahi and dated to the post-Meroitic period (Drzewiecki and Cedro 2022, 79, 81). In Suegi Fortress, similar storage vessels were dated to the Early Christian Period, 6th–7th century AD (Pluskota 2005, 128–129, fig. 7 h, i). In Umm Muri, similar examples were dated to the 6th–9th century (Thomas 2008, 69, fig. 4.8)

9.3.2. *Food processing*

9.3.2.1. Handmade production – pots

The author has distinguished two main shapes commonly represented on the sites in all excavated areas: pots with slightly out-turned rims, globular bodies, rounded bases and vessels with in-turned rims, globular bodies, and rounded bases.

Pots with slightly out-turned rims, globular bodies, and rounded bases are the most common cooking pots at Soba. The rim diameter is generally between 13–23cm. The decoration was frequently executed below the rim and mid-height (**Figure 9.7a–c**).

Three types of surface treatment were identified:

– Smoothed (**Figure 9.7a**).
– Burnished on the external surface on the upper part, and sometimes also burnished inside (**Figure 9.7b**).

[4] A more detailed description of vessels size will be discussed in a separate volume (Czyżewska-Zalewska in preparation).

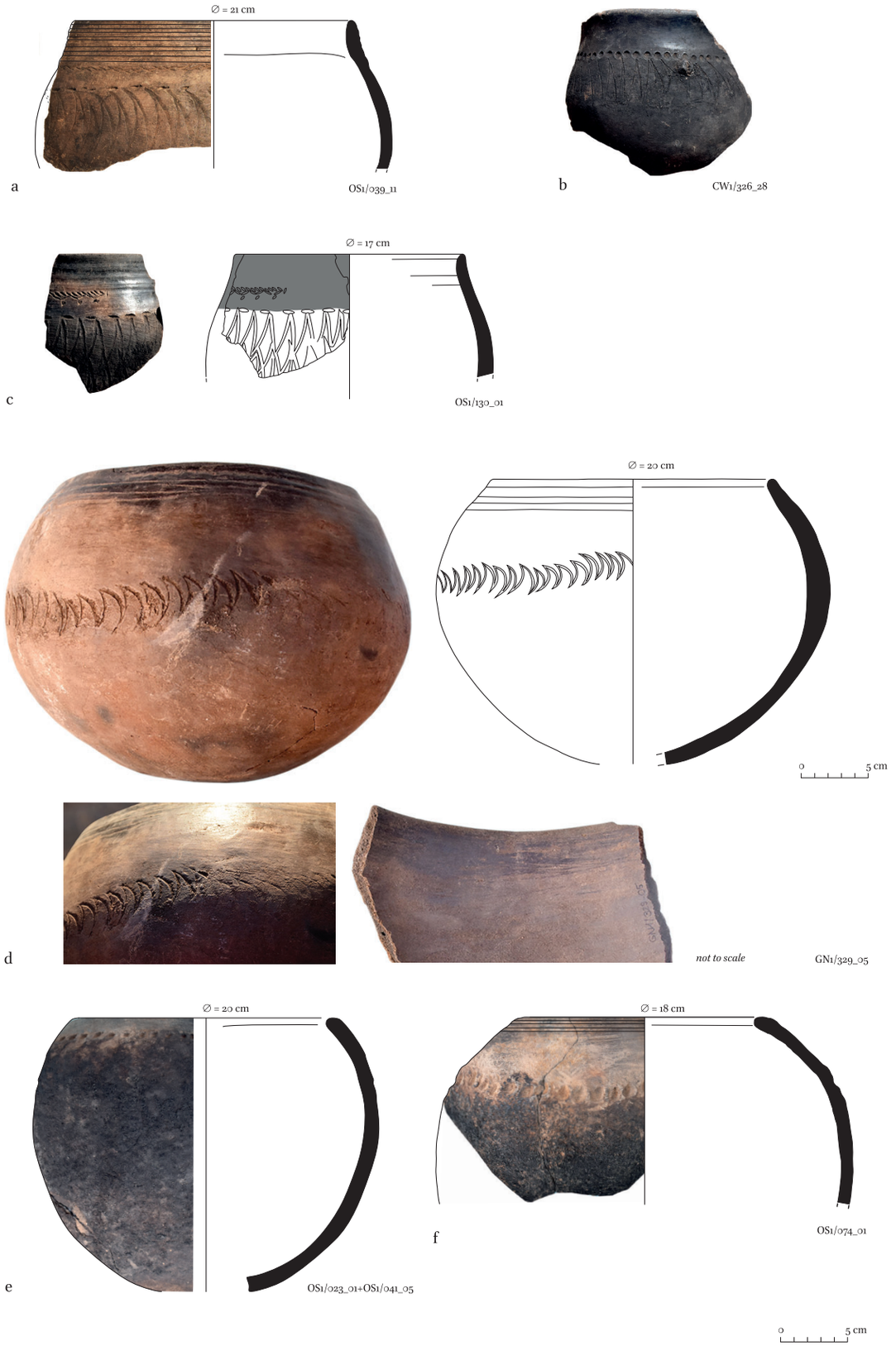

Figure 9.7. Examples of pots (figure prepared by Ewa Czyżewska-Zalewska; a: drawn by Ewa Czyżewska-Zalewska, digitised by Karolina Warecka, photo Ania Weźranowska; b: photo Ewa Czyżewska-Zalewska; c: drawn by Ania Weźranowska, digitised by Ania Weźranowska, Marta Momot, photo Ania Weźranowska; d: drawn and digitised by Ania Weźranowska, photo Joanna Ciesielska; e: drawn and digitised by Ewa Czyżewska-Zalewska, photo Ewa Czyżewska-Zalewska; f: drawn by Ewa Czyżewska-Zalewska, digitised by Karolina Warecka, photo Ewa Czyżewska-Zalewska).



Figure 9.8. Examples of decorations on the pots (figure prepared by Ewa Czyżewska-Zalewska; OS1/130_01 photo Ania Weźranowska; OS1/039_11, CW1/190_01, CS1/295_01, OS1/001_05, SH1/179_03, CS1/220_62, CS1/269_17, OS1/008_13, OS1/008_15, CS1/259_03, OS1/269_10, OS1/069_15, OS1/087_06, OS1/125_06 photos Ewa Czyżewska-Zalewska).

– Slipped and burnished in the upper part of the vessel on the external surface (**Figure 9.7c**).

Pots with in-turned rims, globular bodies, and rounded bases are the second most prevalent shapes. The rim diameter is mainly between 15–21cm. The decoration was often executed below the rim and in mid-height (**Figure 9.7d–f**).

Two variations in surface treatment were recorded:

– Burnished on the external surface in the upper part, sometimes also burnished inside (**Figure 9.7d**).
– Burnished on the outer surface below the rim, the unburnished zone has traces of mat-impression (**Figure 9.7e–f**).

In both types of pots, the decoration could be very diverse (**Figure 9.8**). Grooved motifs, sometimes together with incised patterns, often occurred on the external surface below the rim, while incised, punctuated or applied decoration was placed below the rim/neck and mid-body.

Vessels were made mainly with macroscopic Fabric Groups 1 and 2 (**Figure 9.3**, Groups 1–2). Traces of soot on the outer surface suggest cooking over a fire.

Vessels correspond to Class L, types 37, 39, 43, 69, and 77 (Welsby and Daniels 1991, 179, 185–191, figs 98, 100; Welsby 1998, 101–103, figs 43–45). Vessels were also discovered on Mound A and B during the campaign in 1950–1952 and correspond to Class 4 (Shinnie 1961, 28; 30, fig. 11; 31, fig. 12; 42; 43, fig. 20; 44; plates XV–XVI).

Parallels

Cooking pots with in-turned rims and globular bodies were also discovered in Old Dongola in the Monastery on Kom H in Courtyard A, where occupation began in the 11th century before the main phase took place during the 13th–14th centuries (Danys-Lasek 2018, 103, 106; Dzierzbicka and Danys 2021, 455–456). Fragments of similar pots were found at Burri, near Khartoum, where Christian pottery was noted (Addison 1930, 236, fig. 3.7–8). In Adam's typology, this form type corresponds to pots of Class U (Adams 1986, 104–105; 161, fig. 72:3).

9.3.2.2. Handmade production – bowls

Dokat, large bowls

A *doka (*sing.*)* is a vessel used for baking *kisra* (flat bread made from sorghum). These are large, shallow and heavy bowls with thick walls and rounded rims. The differ in size, with a rim diameter of 25–85cm. The interior is usually burnished or smoothed, while the external surface is uneven with traces of soot (**Figure 9.9**).

Dokat mainly belong to the macroscopic Fabric Group 1 (**Figure 9.3**, Groups 1–2). Such vessels correspond to Class K on Mound B (Welsby and Daniels 1991, 175–178, figs 89–90; Welsby 1998, 100–101, figs 42–43; 112) and Class 7 on Mounds A and B, where they were discovered in all excavated levels (Shinnie 1961, 49). Pottery kilns discovered in the western part of Mound B were associated with the production of *qawadis* (see below) and *dokat* (Welsby and Daniels 1991, 12).

Parallels

The *doka* is first noted during the Meroitic period, occurring in all Late Meroitic phases at Umm Muri, dating from the 2nd–3rd centuries AD to the Early Christian period (Thomas 2008, 65–66, 68–70, figs 3.1, 3.7–8). Vessels were also recorded on other sites in Makuria: at Selib 3 they were dated to the 6th–early 7th century AD (Cedro 2017, 318–319); at Banganarti *dokat* were produced from the Early Christian period to the beginning of the Classic Christian period, dated from the 6th/7th to the 10th century (Cedro 2021, 211, 214). Vessels were also discovered in cemeteries, in Tomb TNQ87 in Tanqasi, dated to 250–390 AD (Klimaszewska-Drabot 2010a, 220–221, figs 3 and 4); and at the Merowe Sheriq cemetery and fort, dated to the Transitional/Early Christian period (Klimaszewska-Drabot 2008, 481–483, fig. 9). Several examples were also discovered at Suegi fortress and dated to the Transitional/Early Christian period, 6th–7th century AD (Pluskota 2005, 128–129) and at Es-Sadda 1 in post-Meroitic burials (Osypiński 2010, 437). In Old Dongola, *dokat* were found in unit B.I.41 dated to 6th–7th century (Danys 2016, 769–770), and in Courtyard A, at the Monastery on Kom H, which is dated to the 11th–15th centuries, although the main occupation took place between the 13th–14th century (Danys-Lasek 2018, 103, 106; Dzierzbicka and Danys 2021, 455–456). Examples discovered in the monastery at Ghazali were dated to 10th–12th century (Obłuski and Korzeniowska 2018, 607–611). In the Umm Marrahi fort, the discovered *dokat* were dated to the post-Meroitic period (Drzewiecki and Cedro 2022, 79–80), while examples in the Christian remains in El-Kurru-dokat were dated to 7th–13th century (Skuldbøl *et al.* 2016, 40, 42–43, fig. 7.6). In Adam's typology these



Figure 9.9. Examples of *dokat* bowls (figure prepared by Ewa Czyżewska-Zalewska; OS1/011_13, OS1/011_01 drawn by Ania Weźranowska, digitised by Marta Momot, photos Ania Weźranowska).

correspond to vessels of Class S (Adams 1986, 104; 158, fig. 69:2).

Burnished large and medium bowls

Black/brown slipped medium to large bowls with rounded rims, burnished and slipped surfaces were fairly common on the site. Examples showed a wide variety of size, with shallow to deep vessels occuring with a rim diameter between 16–35cm (**Figure 9.10**).

A few different variations of surface treatmentwere recorded:

– Burnished and slipped on both surfaces (this is the most common surface treatment) (**Figure 9.10a**).
– Sometimes the whole interior was burnished and slipped, but the exterior only partially or not at all (**Figure 9.10b**).

Vessels were decorated on the internal surface with incised geometric patterns, such as horizontal grooves and crossed or straight lines. Sometimes the decoration was more sophisticated (**Figure 9.10c–f**) with with the letters *alpha* and *omega* and with crosses found on a few bowls. According to Adam Łajtar, such letters do not represent words and should be treated only as decoration. The same decoration was also found on Mound B and was interpreted as *alpha-omega* combined to form a monogram with additional letters (Welsby and Daniels 1991, 201–204, fig. 121: 337; 347, fig. 122: 348, 370, 373).

Bowls of this type occur mainly in macroscopic Fabric Groups 1–3 (**Figure 9.3**, Groups 1–3). They correspond to Class N (Welsby and Daniels 1991, 197–201; Welsby 1998, 106, figs 48–50; 112–113) and Class 4 (Shinnie 1961, 28; 30, fig. 11; 31, fig. 12; 42; 43, fig. 20; 44; Plate XIV).

Parallels

Similar black slipped bowls were discovered in Meinarti and dated to the Late Christian Period, the 12th–15th century (Adams 2002, 4, 61, pl. 15b, c). At Dongola, similar bowls were discovered in Building I,

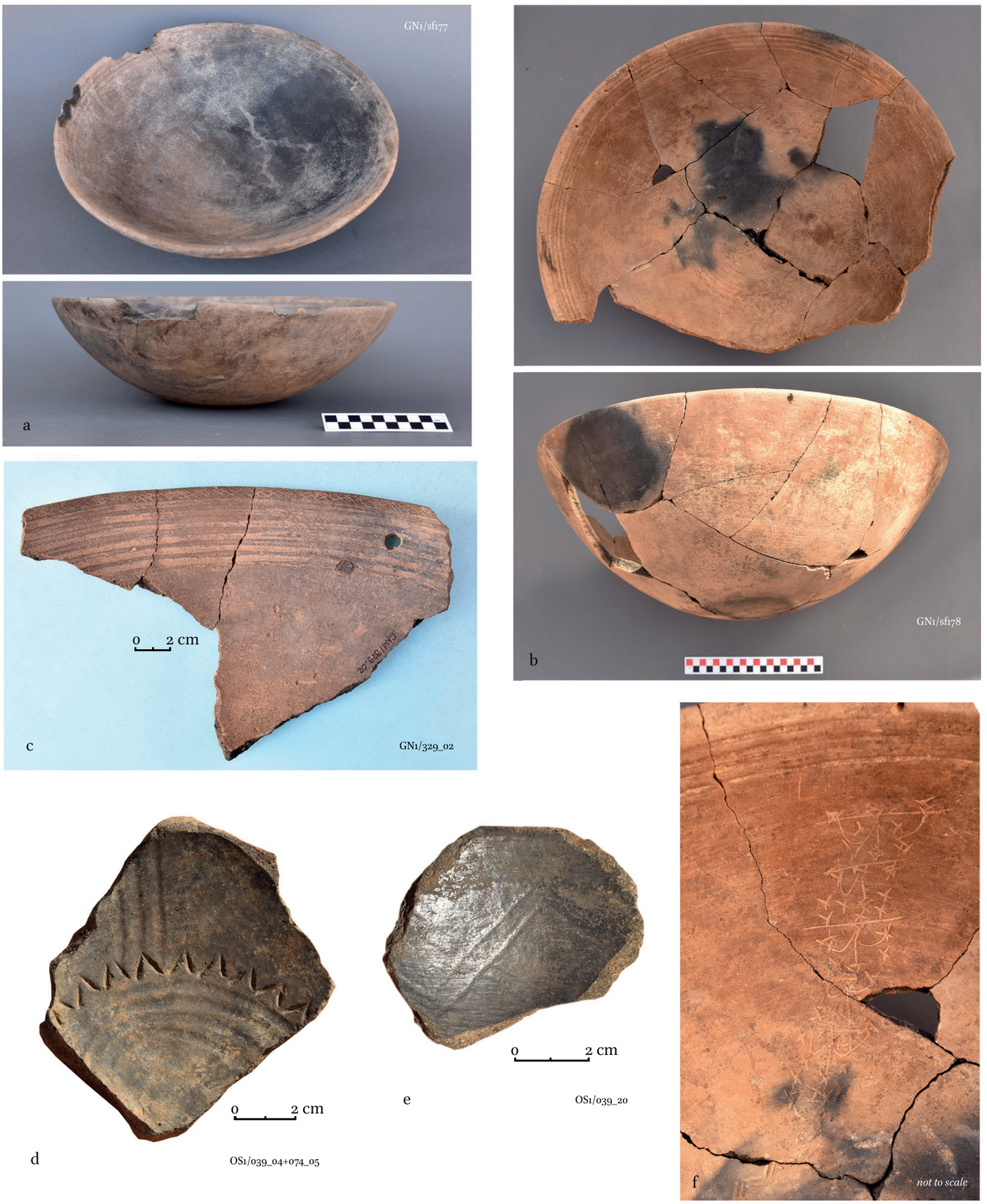

Figure 9.10. Examples of large and medium bowls with different patterns of decoration
(figure prepared by Ewa Czyżewska-Zalewska; a–c, f: photos Joanna Ciesielska; d–e: photos Ewa Czyżewska-Zalewska).

and dated to the sixth–seventh century (Danys-Lasek 2012, 318–319). In Adam's typology, these are similar to bowls of Class C (Adams 1986, 101; 116, fig. 26:6; 117, fig. 27:17, 19–20).

Large and medium-sized bowls with mat-impressed patterns

Large and medium bowls with rounded rims and a mat-impressed pattern on the external surface. The rim diameter is generally between 15–30cm. Two main shapes were recorded: bowls with straight rims (**Figure 9.11a–b**), and vessels with in-turned rims, and a slight carination below the rim (**Figure 9.11c**).

Some variants of surface finish were recorded:

– On the external surface, a mat-impression pattern occurs on the lower part of the vessel, while the upper part is sometimes burnished; the internal surface is burnished (**Figure 9.11a**).
– On the external surface, a mat-impression pattern occurs on the lower part of the vessel, while the upper part was burnished and slipped, and the internal surface was also slipped and burnished (**Figure 9.11b–c**).

The surface was usually fired black/brown or red. The black exterior is the most common, and the red vessels are in the minority (**Figure 9.11**).

Instead of the mat-impressed pattern, which could be seen as decoration, vessels were decorated with grooves on the external or internal surface.

Vessels occur in macroscopic Fabric Groups 1–3 (**Figure 9.3**, Groups 1–3).

Parallels

These bowls probably represent a Napatan tradition, with similar examples discovered at: Usli 1 Temple, dated to the Napatan period (900–300 BC) (Phillips and El-Tayeb 2003, 399–401, fig. 19 d); as well as being excavated in Meroitic and post-Meroitic sites such as

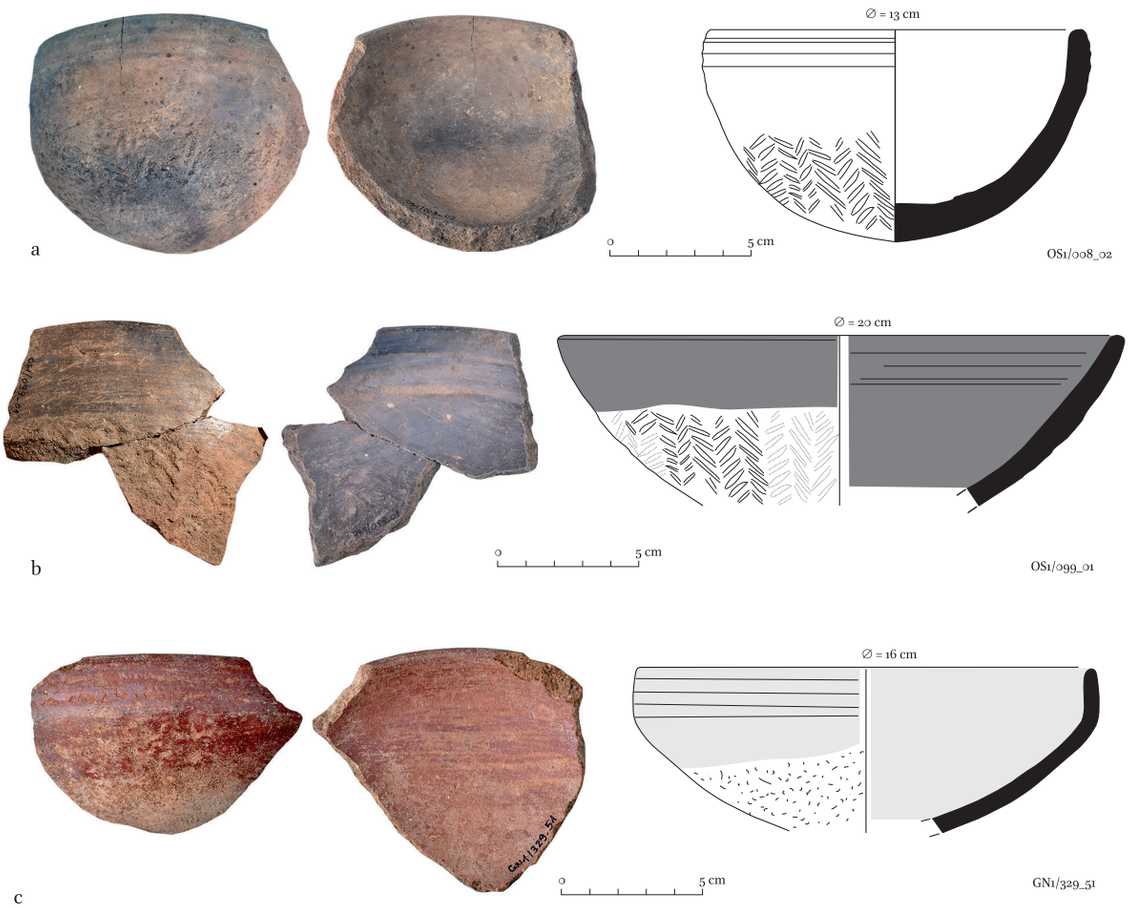

Figure 9.11. Examples of bowls with mat-impressed pattern (figure prepared by Ewa Czyżewska-Zalewska; a–c: photos Ewa Czyżewska-Zalewska; a–b: drawn by Ewa Czyżewska-Zalewska, digitised by Karolina Warecka; c: drawn and digitised by Ania Weźranowska).

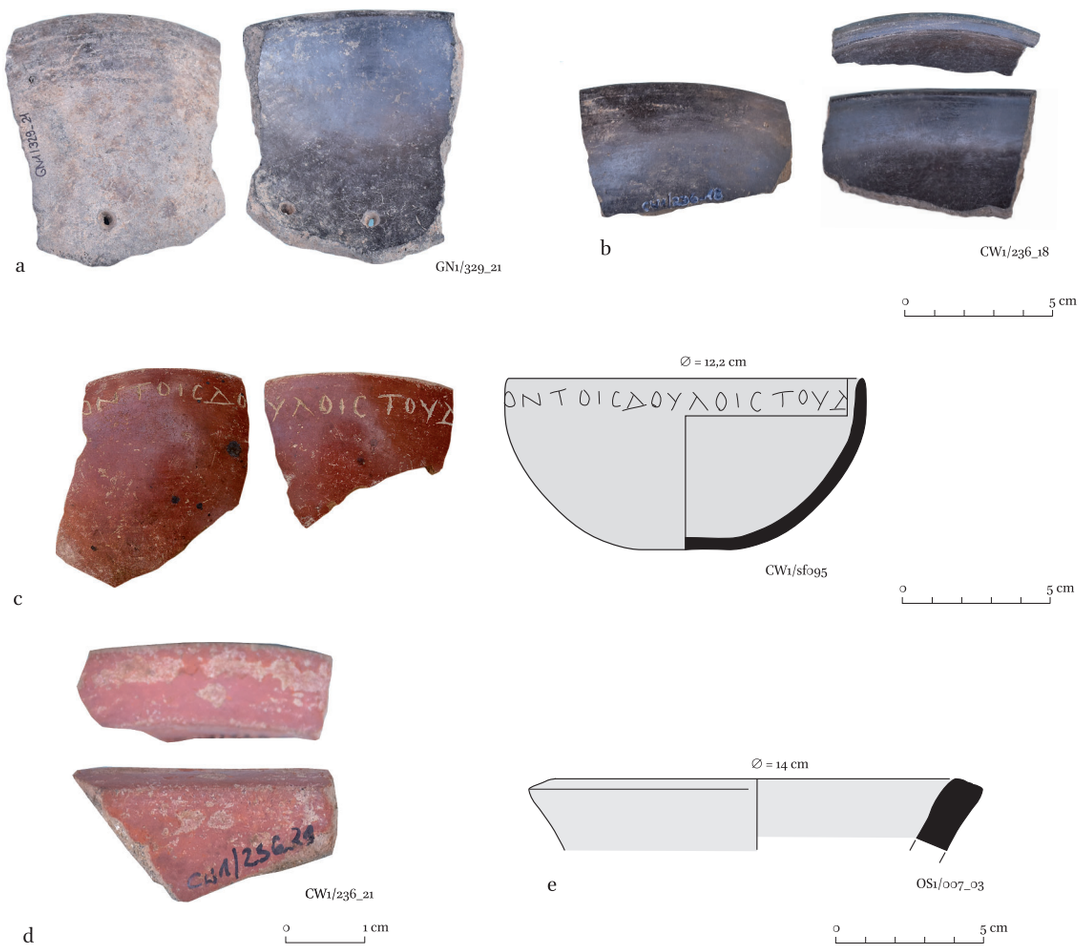

Figure 9.12. Examples of bowls with slipped and polished surfaces (figure prepared by Ewa Czyżewska-Zalewska; a–b, d–e: photos Ewa Czyżewska-Zalewska; c: photo Joanna Ciesielska; c: drawn by Ania Weźranowska, digitised by Marta Momot; e: drawn by Ewa Czyżewska-Zalewska, digitised by Karolina Warecka).

Abu Erteila, dated to the late Meroitic period, 1st–3rd century AD (Malykh 2017, 139, 159, fig. 3h); Es-Sadda 1, in post-Meroitic burials (Osypiński 2010, 437); at Kassinger Bahri HP 402/2, dated to the post-Meroitic period (Paner, Pudło and Borcowski 2010, 72–72, fig. 13), and at Tanqasi in Tomb TNQ87, dated to 250–390 AD (Klimaszewska-Drabot 2010a, 220–221, Figs 3, 4). They are also found in the Early Makurian period in El-Zuma cemetery (Klimaszewska-Drabot 2010b). In Banganarti, bowls with mat-impressed and red-slipped surfaces were recorded in the Early Christian period (Cedro 2021, 212, 214).

9.3.3. *Serving food*

9.3.3.1. Handmade production – small polished bowls

Small plain bowls with a 10–15cm rim diameter, black (**Figure 9.12a–b**) or red slipped (**Figure 9.12c–e**). Two main variants were noted, one with a rounded rim (**Figure 9.12a, c**) and the other with a flat rim (**Figure 9.12b, d–e**). Vessels with a flat rim are often red slipped, then black-slipped. The vessels were polished to a high gloss on both surfaces. Such bowls are not common on the site and mainly occur as the black slipped variant. Vessels are made from macroscopic Fabric Groups 8–9 (**Figure 9.3**, Groups 8–9).

Parallels

Red slipped bowls were discovered in Selib 3 and dated to the 6th–7th century (Cedro 2016, 384–385). Black slipped bowls were found in the Umm Marrahi fort and dated to the post-Meroitic period (Drzewiecki and Cedro 2022, 73, 75–77); at Burri, black slipped bowls were dated to the Christian Period (Addison 1930, 236, fig. 1, 3–4).

9.3.3.2. Wheelmade production – bowls, so-called ‘Soba Ware’

Bowls in the so-called ‘Soba Ware’ category owe their name to the archaeological site, because a large number of such bowls were discovered at Soba. The term ‘Soba Ware’ is used for bowls and other vessels with distinctive painted decoration, but the most common types in the studied material are bowls. They occur in three shapes: carinated bowls (**Figure 9.13a**); rounded, slightly outflared bowls (**Figure 9.13b–c**); and more globular shapes with an inturned rim (**Figure 9.13d**). The vessels are thin-walled, with rim diameters between 8–16cm. The decoration occurs in two variants:

– Light decoration on dark background (**Figure 9.14a**).
– Dark decoration on light background (**Figure 9.14b–c**).

The decorative motifs are very rich in geometrical patterns, net patterns (**Figure 9.14a**), and crosses (**Figure 9.14b**), as well as anthropomorphic depictions (**Figure 9.14c**).

We can distinguish 3 different methods of surface treatment:

– The background and decoration were painted pre-firing (**Figure 9.15a**).
– The background was painted pre-firing and decoration post-firing (**Figure 9.15b**).
– The background and decoration were painted post-firing (**Figure 9.15c**).

If the decoration was made before firing, it is clearly visible and well preserved (**Figure 9.15a**). In vessels with background executed pre-firing and decoration executed post-firing,or with both background and decoration executed post-firing, the decoration is sometimes rubbed out and poorly preserved (**Figure 9.15b, e**); however, many vessels with decoration made post-firing still retain well-executed and well-preserved decoration and background (**Figure 9.15d**).



Figure 9.13. Examples of ‘Soba Ware’ bowls
(figure prepared by Ewa Czyżewska-Zalewska; photos and drawings Ania Weźranowska).



Figure 9.14. 'Soba Ware' bowls, examples of decoration (figure prepared by Ewa Czyżewska-Zalewska; CW1/189_01, CW1/190_25, CW1/207_14, CW1/207_16, CW1/207_18, CS1/294_02 photos Ewa Czyżewska-Zalewska; CW1/226_01, CW1/226_08, CW1/234_03, CW1/236_01, CW1/236_15, CW1/239_03, CS1/281_02, OS1/070_03 photos Ania Weźranowska).



Figure 9.15. 'Soba Ware' bowls, different types of surface treatment (figure prepared by Ewa Czyżewska-Zalewska; CW1/211_03, CW1/217_02 photos Ania Weźranowska; CW1/271_01, CW1/207_18, CW1/236_06 photos Ewa Czyżewska-Zalewska).

Bowls discovered during the 2019–2022 excavations belong to macroscopic Fabric Group 8 (**Figure 9.3**, Group 8).

Vessels correspond to Class N and types 223–244 (Welsby and Daniels 1991, 193, 204, figs 114:223–244) Class 2 (Shinnie 1961, 28; 37–38; plate XIII).

Dobrochna Zielińska and Katarzyna de Lellis-Danys have carried out a fascinating analysis of Soba Ware decoration styles, showing the similarities and influences to both Egypt and Ethiopian wall paintings (Danys and Zielińska 2017, 179–182).

The function of Soba Ware as serving dishes is not entirely certain. Between 80–90% of the bowls collected consist of vessels with decoration and background applied after firing, which can easily be rubbed or washed off, and many examples were poorly finished. They are not made for utilitarian, everyday use. Perhaps they were used from time to time on special occasions? Their great abundance however, especially from the previous research, may suggest domestic use (Welsby and Daniels 1991, 90). In shape and form, they are similar to the bowls found, for example, in Dongola, Banganarti or Selib (Danys-Lasek 2012, 318; Cedro 2016, 370–371).

Parallels

Examples of such bowls were discovered in Umm Marrahi and dated to the Early Christian period; almost identical examples as OS1/070_03 were found (Drzewiecki and Cedro 2022, 86, 88). At Burri, near Khartoum, examples of painted pottery – probably Soba Ware – were also noticed and dated to the Christian Period (Addison 1930, 236, fig. 3.3–5).

9.3.4. *Transport*

9.3.4.1. Wheelmade production – bottles, so-called 'Pilgrim bottles'

The term 'pilgrim bottles' was given to wheelmade vessels with a round body, asymmetrical carinated profile, and a short and narrow neck with two attached loop handles. The external surface often had an orange slip or was left untreated (**Figure 9.16**).



Figure 9.16. Examples of so-called 'pilgrim bottles' (photos Joanna Ciesielska).

This vessel type may have been a water container carried by travellers. Similar pilgrimage objects were connected with the movement of people and goods during the sixth and seventh centuries when 'pilgrimage tourism' was practised (Katsioti and Mastrochristos 2018, 83). Pilgrim bottles made in a mould were manufactured in Egypt, where two production centres (with kilns) of the pre-Christian era have been discovered at Memphis and the Fayyum. From the 5th century AD, flasks with the image of St. Menas were produced at Abu Mina that might have contained water collected from the saint's shrine. Menas flasks have been found at sites around the Mediterranean,with variant forms and decorations discovered in Greece, Italy, Palestine, North Africa and Turkey. Vessels were widely produced around the eastern Mediterranean before, during and after late antiquity. The variety of forms, fabrics and iconography indicate different regions and phases of production. Moreover, 'pilgrim bottles' were not the product of a single religious movement, although they may have been associated with particular sects and cults (Anderson 2004, 81–82). A few sherds from the excavated Mound B area were tested by residue analysis. Results indicated that these could have been used to transport an alcoholic beverage, but were not indicative of a grain-based beer (Welsby 1998, 13).

Bottles discovered in our excavations belong to macroscopic group 5 (**Figure 9.3**, Group 5).

Vessels correspond to Class E (Welsby and Daniels 1991, 172–175) and Class 6 (Shinnie 1961, 49).

Parallels

In Lower Nubia, at Meinarti, such bottles were dated to the Classic and Late Christian periods, eleventh–fifteenth century (Adams 2001, 3, 85, 88, pl. 28d; 2002, 4, 58, pl. 12 d, e, f); in Debeira West, dated to the 9th–12th century (Shinnie and Shinnie 1978, 56, 67, pl. XXXVIc). 'Pilgrim bottles' with painted decoration representing fish were found at Hambukol and date to the Late Christian period (Phillips 1991, 26). Orange-slipped 'pilgrim bottles' with a connected 'leaf' ring frieze around the edge of the main body were found in Selib 1 and dated to the Classic Christian period (Cedro 2016, 373, 375, 383–384). They were also found in Building B.I.37 at Old Dongola, red- or dark grey-slipped, some with painted decoration, and dated to the 6th–7th century, which represents the earliest phase of the Dongolan pottery production (Danys-Lasek 2012, 315–316, 319–320). Similar discoveries were made in Unit B.I.41, dated to the same period (Danys 2016, 762, 768–769). In Courtyard A of the Monastery on Kom H, where occupation dates to between the

11th–15th centuries, 'pilgrim bottles' were also discovered (Danys-Lasek 2018, 105–106). Other examples were found during Shinnie's excavations at Ghazali Monastery, with orange or red slip and painted decoration on the surface (Shinnie and Chittick 1961, 34–35, 47) and dated to the 10th–12th century (Obłuski 2018, 164). In Adam's typology, these correspond to Class K (Adams 1986, 103, 145; fig. 56:2).

9.3.5. *Other specialised vessels*

9.3.5.1. Wheelmade production – *qawadis* (sing. *qadus*)

A *qadus* is a wheelmade jar used to draw water in conjunction with a waterwheel (*saqiya*).

These vessels have rounded rims, a ledge below the rim, and a knob-ended base (**Figure 9.17**). The bottom half of the *qadus* was broader than the top. In the excavated trenches, such vessels are represented mainly by undiagnostic sherds and the base knobs, while the rims are rarely found. Some vessels have pot marks on the knob (**Figure 9.17a**). Such marks were also discovered on pottery from Mound B (Welsby and Daniels 1991, 178, fig. 90). The fabric used for the *qawadis* belongs to macroscopic groups 4, 5 and 8 (**Figure 9.3**, Groups 4–5 and 8). Such vessels correspond to pottery Class G (Welsby and Daniels 1991, 175–179).

Parallels

The *saqiya* was invented in Egypt and was probably introduced into ancient Nubia from Egypt in the late Meroitic period. In the 4th and 5th centuries AD, many *qawadis* occurred in post-Meroitic contexts in Lower and Upper Nubia (Edwards 2004, 153, 203–204). As mentioned above, the pottery kilns discovered in the western part of Mound B at Soba East were associated with the production of *qawadis* and *dokat*. The *qawadis* occur throughout the Christian period in Soba (Welsby and Daniels 1991, 12).

In Adam's typology, they correspond to Type V vessels (Adams 1986, 105; 165, fig. 76). Vessels of this type have been discovered in Lower and Upper Nubia. Starting from the north, *qawadis* were found at Ballana and Qustul (Emery 1938, 390) and belonged to the

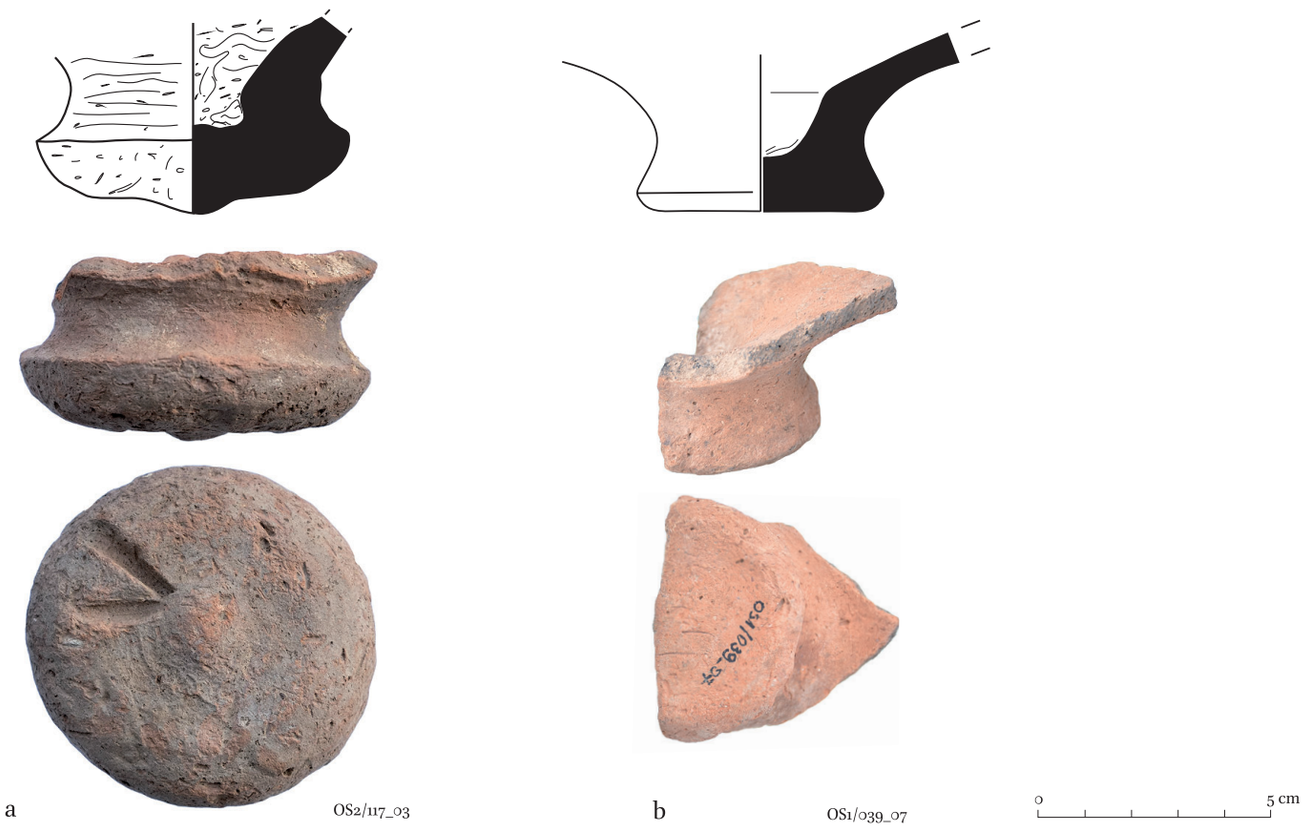

Figure 9.17. Examples of *qawadis* (figure prepared by Ewa Czyżewska-Zalewska; OS1/011_02 photo and drawn by Ania Weźranowska; OS1/039_07 photo Ewa Czyżewska-Zalewska, drawn by Ewa Czyżewska-Zalewska digitised by Karolina Warecka; OS2/117_03 photo Ewa Czyżewska-Zalewska drawn by Ania Weźranowska).



Figure 9.18. Examples of potstands
(photos Joanna Ciesielska).

X-Group period. At Serra West *qawadis* were recovered from Middle Nobadian X-Group contexts dated to the 5th century AD (Fuscaldo 2011, 211, 108, 109; fig. 16). In Sunnarti Church, they have been dated to the 7th–11th century (Rodziewicz 1988, 80–81, 93 pl. 10, 111–112). In Debeira West *qawadis* were dated to the 7th century (Shinnie and Shinnie 1978, 56, 59, pl. XXXVa). In Meinarti, the vessels are dated to the Early Christian and Late Christian periods, between the 7th–15th century (Adams 2001, 29, 35, 84, pl. 28a; 2002, 4, 60, pl. 14b). At Argi 3, vessels are dated to the early Early Dongola through to early Classic Dongola period (600–850 AD) (Żurawski 2003, 179, 181); Selib 3, dated to the 6th–early 7th century AD (Cedro 2017, 322–323); at Merowe Sheriq cemetery and fort, dated to the transitional/Early Christian period (Klimaszewska-Drabot 2008, 479–481, fig. 6,10–613); Suegi fortress, dated to the Transitional/Early Christian period, 6th–7th centuries AD (Pluskota 2005a, 128–129). A *saqiya* complex, connected with the church, was discovered in Selib 1 (Żurawski *et al*. 2013, 284–285). *Qawadis* were also found in Old Dongola in Kiln R 2 and were dated to the 12th–13th century AD (Pluskota 1994, 363, 377, cat. no. 43), in the Monastery on Kom H in Courtyard A, where the greater part of the occupation was associated with domestic activity principally during the 13th–14th centuries (Danys-Lasek 2018, 102–103, 106) and also at Building VI, dated to the same period (Danys-Lasek 2014, 311–312). *Qawadis* were also discovered in the monastery at Ghazali and dated to the 10th–12th century (Obłuski and Korzeniowska 2018, 607–611). In Suegi Fortress *qawadis* were dated to the Early Christian Period (6th–7th century AD) (Pluskota 2005a, 128–129). Among the Christian remains at El Kurru *qawadis* were broadly dated to 7th–13th century (Skuldbøl *et al*. 2016, 40, 42–43 fig. 7.5). On Umm Muri Island they were dated from the Meroitic period to the Transitional/Early Christian period and dated to the 6th–9th century (Thomas 2008, 66).

9.3.5.2. Wheelmade production – potstands

Tubular in shape with slightly outflared, rounded rims. The surface is either plain or decorated. In pottery assemblages from Soba, potstands were recorded in small sizes with rim diameters between 8–11cm and heights between 17–26cm (**Figure 9.18,** top), with larger examples with rim diameters between 10–13cm and heights between 26–31cm (**Figure 9.18**, bottom). A few examples were found with cut-out crosses.

The vessels had painted decoration (before firing):

– A white band in the upper part of the potstand.
– Geometrical decoration over the entire external surface.

Potstands belonging to the macroscopic Fabric Group 7 (**Figure 9.3**, Group 7).

There are no parallels for this type featuring crosses with a rounded outline. A similar-shaped vessel with crosses with a rounded outline wasfound in Old Dongola at the Monastery on Kom H. This was a double potstand made up of two cylinders joined in the middle with a bird-shaped vessel. The surface was yellow-slipped and painted red (Jakobielski 2003, 214–215). We should also mention a terracotta tabernacle found in Dongola with crosses with a rounded outline on the surface. The vessel is 42cm high, with an upper rim diameter of 23.5cm and a lower rim diameter of 29cm (Kołodziejczyk 1971). The tabernacle is bigger, and its shape is more tubular compared to the potstands from Soba, which are slender and smaller. The tabernacle was found in the church and dated to the 9th century AD, while the potstands come from a room with a storage/kitchen function (Phase 2) dated to the 7th–8th century (Figure 9.27). Similar symbolism on the potstands' surface may suggest that the vessels were related to the church space, but this needs more detailed research.

9.3.5.3. Wheelmade and handmade production – lamps

A few variants of lamp were recorded, both handmade (**Figure 9.19a**) and wheelmade (**Figure 9.19b**).

The handmade forms vary from shallow lamps with rounded outflared rims and diameters between 7–24cm, to deeper vessels with rim diameters between 7–11cm. In most cases, the surfaces were plain without any coating, but one example had a slipped and burnished interior (**Figure 9.19a**).

Wheelmade lamps were characterised by rounded, outflared or modelled rims with diameters between 7–11cm; like the handmade variant, they occur both as shallow or deep forms (**Figure 9.19a**). The surface is untreated.

Lamps feature in macroscopic Fabric Groups 2–3, 6 and 8 (**Figure 9.3**, Groups 2–3, 6 and 8).

Lamps correspond to Class N Type 1 (Welsby and Daniels 1991, 206).



Figure 9.19. Examples of handmade and wheel-made lamps (photos Joanna Ciesielska).

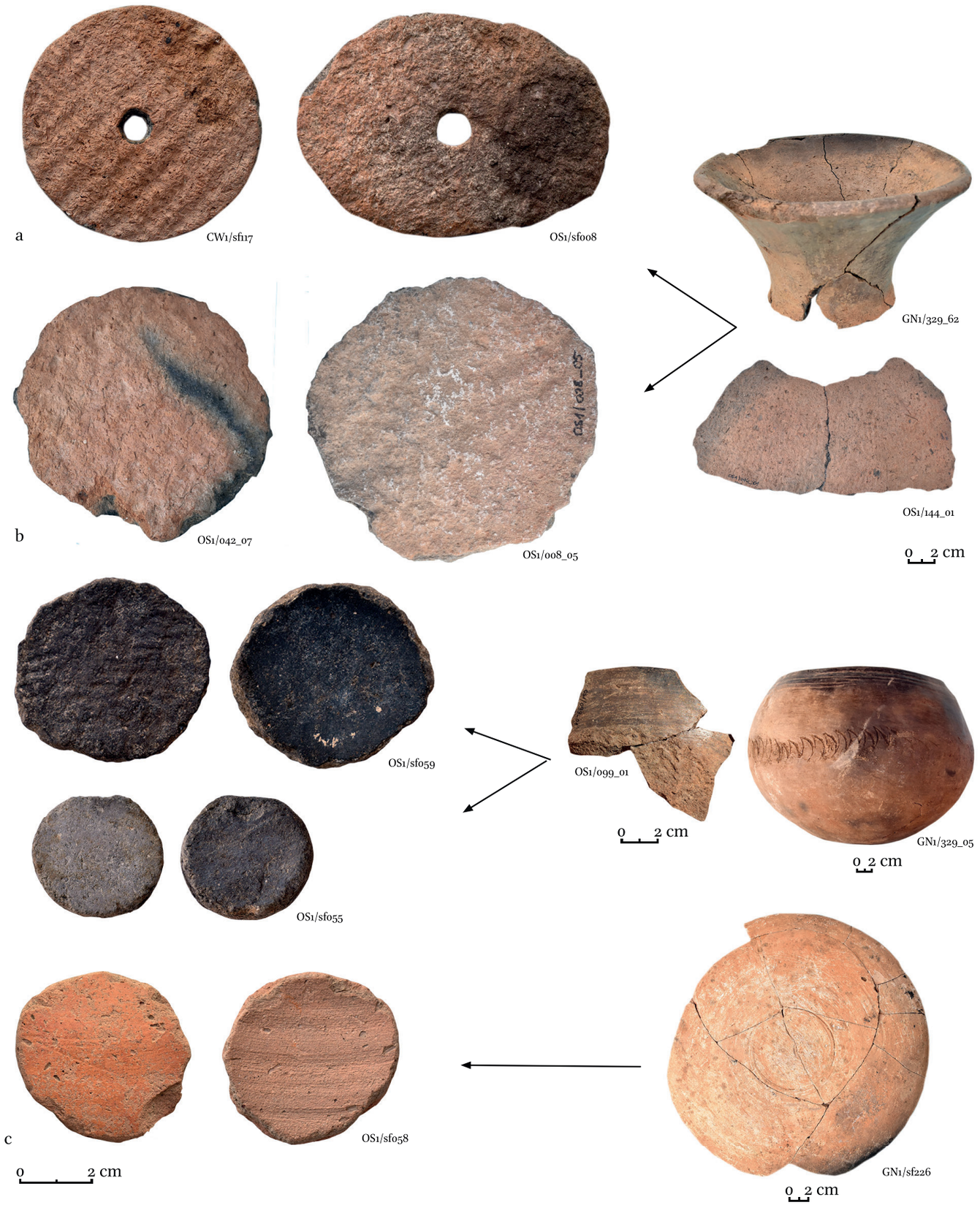

Figure 9.20. Re-used pottery as lids, spindle whorls and counters (figure prepared by Ewa Czyżewska-Zalewska; CW1/sf117, OS1/sf008, OS1/sf059, OS1/sf055, OS1/sf058, GN1/329_05, GN1/sf226, GN1/329_62 photos Joanna Ciesielska; OS1/042_07, OS1/008_05, OS1/144_01, OS1/099_01 photos Ewa Czyżewska-Zalewska).

Parallels

Such lamps were common in Lower Nubia (Adams 1986, fig. 43). Adam's typology corresponds to Class P (Adams 1986, 104; 153 fig 64: 25–29, 33). In Meinarti, similar examples were found mainly in Phases 4 and 5, dated to the Classic and Late Christian periods, approximately the 11th–15th century AD (Adams 2001, 3, 34, 86, 88, pl. 29b; 2002, 4, 61, pl. 15a). Wheelmade lamps were found in Building B.I in Dongola and dated to the 14th–15th century (Godlewski 2010, 319–320). Lamps similar to OS1/sf015 were found in Selib 1 and were dated to the late 12th century (Cedro 2015, 401).

9.3.6. *Re-used pottery*

An important aspect that should not be overlooked is the re-use of vessels or vessel fragments. In these cases, it is important to analyse both the original vessels that had been re-used and the 'new' function of the object.

In the pottery assemblage from Soba, we can distinguish a few categories of objects made from different kinds of vessels: spindle whorls (with a perforation in the middle) (**Figure 9.20a**), lids (**Figure 9.20b**), and counters (**Figure 9.20c**). Objects were made from handmade and wheelmade pottery, such as globular jars, bowls, cooking pots, and pilgrim bottles. Spindle whorls, counters, and gaming pieces are presented in Chapter 14. Among the excavations on Mound MN, B or Z, storage vessels and amphorae were found to have been re-used as ceramic pipes or latrines (Welsby and Daniels 1991, 90).

Parallels

Re-usage of pottery is quite common on settlement sites. At Debeira West, similar pottery re-use was recorded in spindle whorls (Shinnie and Shinnie 1978, pl. XLIIa). Pottery re-used as tokens or gaming pieces was recorded in Dongola (Danys-Lasek 2018, 96, 97 fig. 7.17).

9.4. The pottery assemblages in their archaeological context

The areas excavated were selected based on the geophysical results, which indicated the presence of various archaeological and architectural remains (Figure 9.21). In each trench, between four and six phases of occupation were distinguished. Radiocarbon analysis has provided the timeframe of activities within each trench. In general terms, the occupation lasted between the 7th/8th century and the 13th century AD.

To gain an understanding of the organisation of daily life by analysing the pottery, we need to investigate the function or multifunction of specific types of pottery, long-term usage, and re-use of the vessels, as well as analyse domestic and imported pottery and pottery production centres. We must pay attention to the distribution of individual types of vessels in the excavated deposits, their context, and other artefacts that coexist in the same space.

The characteristics of the excavated areas where the various categories of vessels were found are presented below. For all discussed areas, pottery sherds that are badly fragmented and often weathered, making identification difficult, are categorised under the 'HM and WM undefined' category, especially in the upper layers located close to the topsoil. The 'WM undefined' group includes fragments of potstands, ceramic pipes, *qawadis* or wheelmade storage jars, which are very small and difficult to identify and occur in the same macroscopic fabric group. The 'other' category contains vessels that occur in small quantities. As discussed above, the 're-used' category includes lids, spindle whorls, and counters (**Figure 9.20**). Globular jars with outflared rim and globular bottles/jars are presented together. In the case of the undiagnostic fragments, it is difficult to say if such sherds are derived from bottles or jars, as both types are made from the same fabric, and the surface treatment is often the same. Numbers written in red in the tables indicate that the total number of pottery fragments is uncertain, and neither is it definite that the sherds assigned to this group belong to a particular type of vessel.

9.4.1. *Pottery distribution*

1/CW (**Figure 9.22**; **Figure 9.23**; **Table 9.1**)

This is a complex area in terms of the phases of occupation (for more details, see Chapter 5); numerous pottery assemblages (totalling 4,582 pottery fragments) were recorded. The first traces of intensive activity occurred in the 6th/7th century (Phase 1). Occupation continued uninterrupted through all later phases, dated to the 10th/11th century and probably later.

In all deposits, storage and food preparation vessels dominated. A large quantity of globular jars with outflaring rims, globular bottles/jars, large storage jars, cooking pots, burnished bowls and bowls with mat-impressed

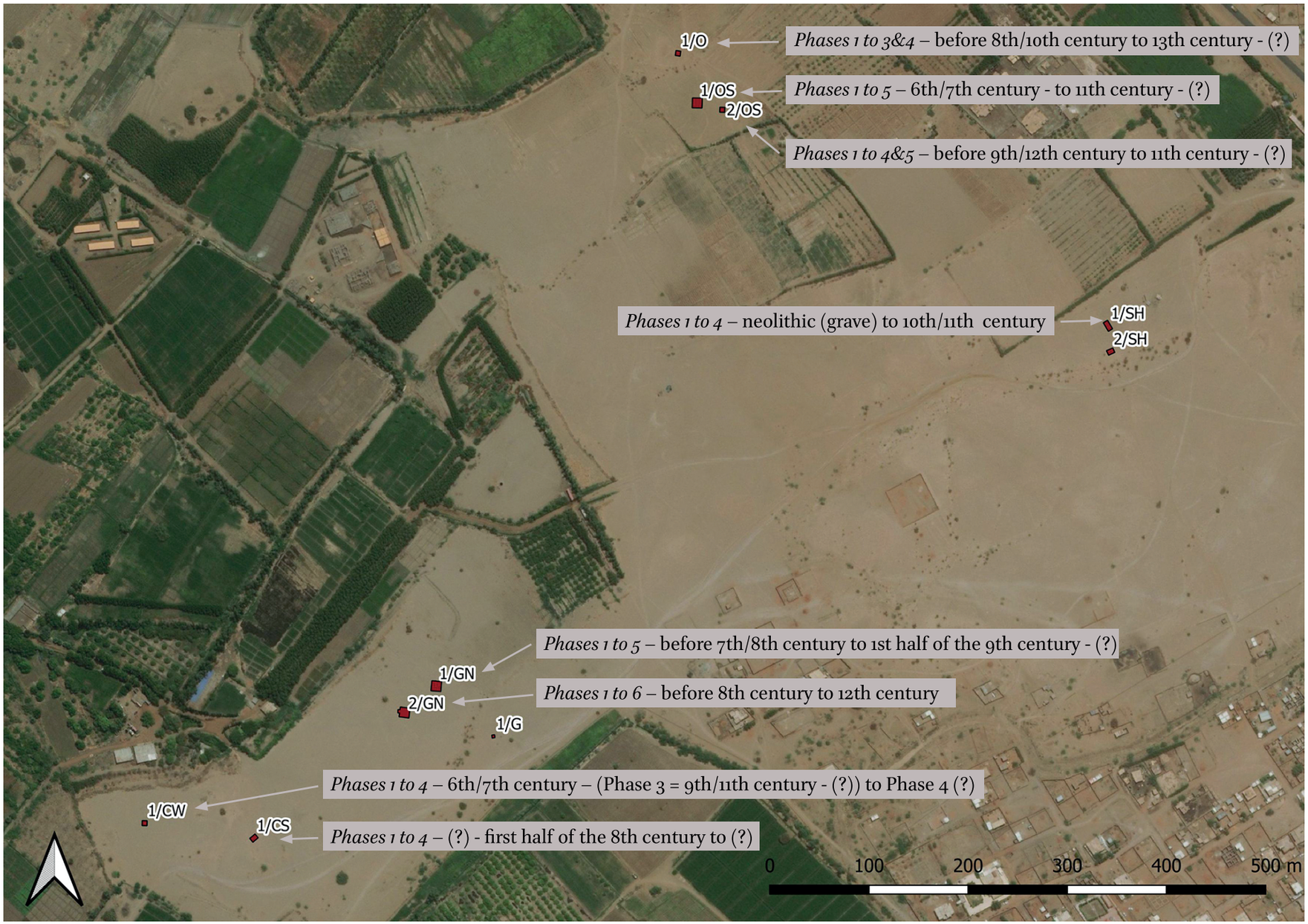

Figure 9.21. Plan of the archaeological site with excavated areas marked, phases of occupation and ^{14}C dates (prepared by Mariusz Drzewiecki, background image Bing Aerial).

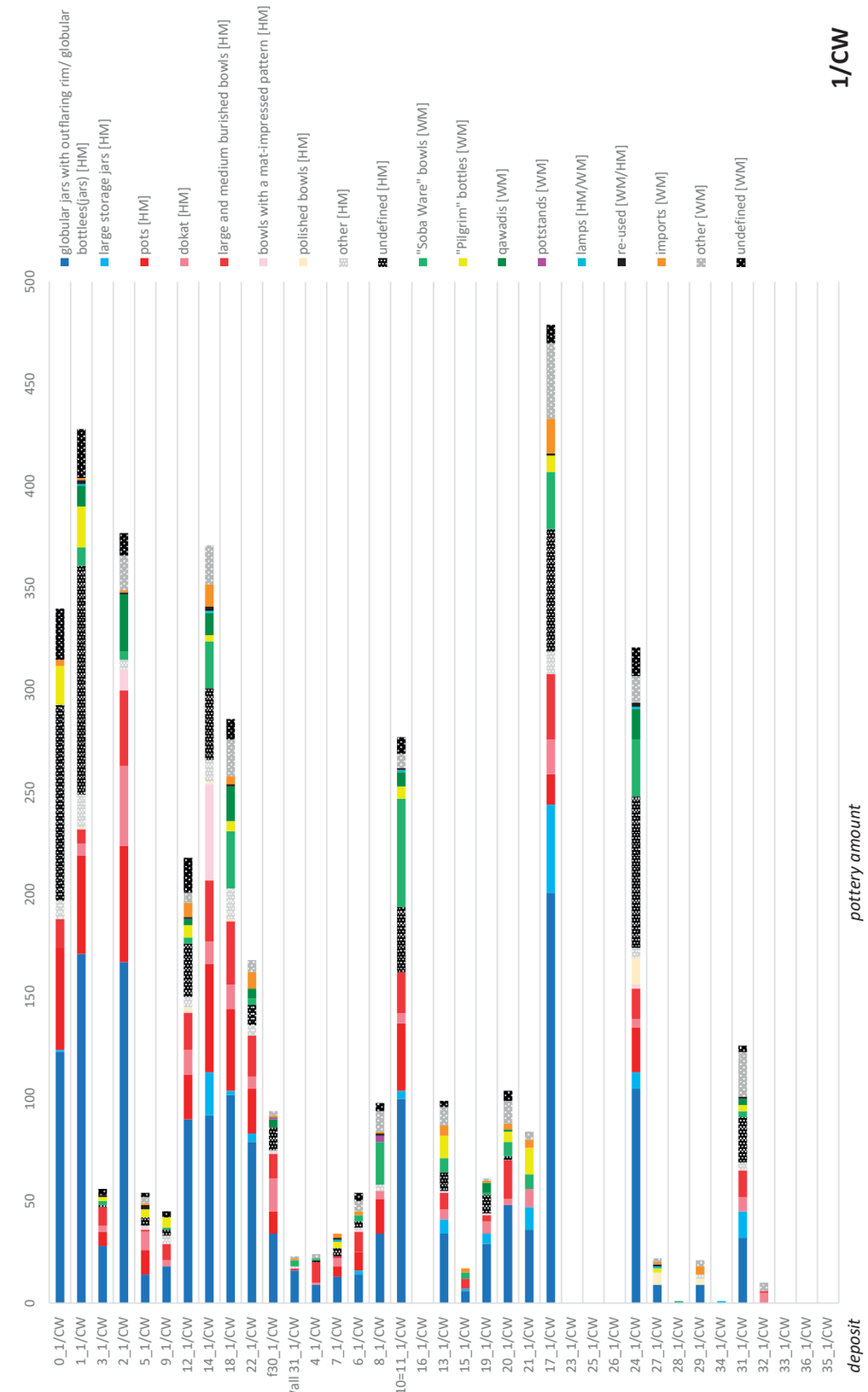

Figure 9.22. Trench 1/CW distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

date and phases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokar* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed pattern [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
	0_1/CW	123	1	50	0	14	0	0	9	96	0	19	0	0	0	0	3	0	25
phase 4 - (?)	1_1/CW	171	0	48	6	7	0	1	16	112	9	20	10	0	1	2	1	0	24
	3_1/CW	28	0	7	3	9	0	0	0	1	2	2	0	0	0	1	0	0	3
	2_1/CW	167	0	57	39	37	10	0	5	0	4	0	28	0	0	1	1	17	11
	5_1/CW	14	0	12	9	1	1	0	1	4	0	4	0	0	0	2	1	3	2
	9_1/CW	18	0	0	3	8	0	0	4	3	1	5	0	0	0	0	0	0	3
	12_1/CW	90	0	22	12	18	1	2	5	26	3	6	3	0	0	1	7	5	17
	14_1/CW	92	21	53	11	30	47	1	11	35	23	3	11	0	1	2	11	19	0
	18_1/CW	102	2	40	12	31	0	1	15	0	28	5	17	0	0	1	4	18	10
	22_1/CW	79	4	22	6	20	0	0	5	10	3	0	5	0	0	0	8	6	0
	f30_1/CW	34	0	11	16	12	1	0	1	11	0	0	4	1	0	0	1	2	0
phase 3 - 9th/11th century – (?)	Wall 31_1/CW	16	0	0	0	1	0	0	1	0	3	0	0	0	0	0	1	1	0
	4_1/CW	9	0	0	1	10	0	0	0	1	1	0	0	0	0	0	0	2	0
	7_1/W	13	0	5	4	1	0	0	0	4	0	3	0	0	1	1	2	0	0
phase 2 - (?) – 9th/11th century	6_1/CW	14	2	9	0	10	1	0	1	3	3	0	0	0	0	0	2	5	4
	8_1/CW	34	0	17	4	0	0	0	3	0	21	0	0	3	0	1	1	10	4
	10=11_1/CW	100	4	33	5	20	0	0	0	32	53	6	7	0	1	1	0	7	8
	16_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13_1/CW	34	7	0	5	8	0	0	1	9	7	11	0	0	0	0	5	9	3
	15_1/CW	6	1	0	0	5	0	0	0	0	3	0	0	0	0	0	2	0	0
phase 1 - 6th/7th century – (?)	19_1/CW	29	5	0	6	3	0	0	1	9	1	0	5	0	0	0	1	1	0
	20_1/CW	48	0	0	3	19	0	0	0	2	7	5	1	0	0	0	3	11	5
	21_1/CW	36	11	0	9	0	0	0	0	0	7	13	0	0	0	0	4	4	0
	17_1/CW	201	43	15	17	32	0	0	11	60	28	8	0	0	0	1	17	37	9
	23_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	25_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	26_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24_1/CW	105	8	22	4	15	2	13	5	74	28	0	15	0	1	2	0	13	14

27_1/CW	9	0	0	0	0	0	6	0	0	0	2	0	0	1	1	1	2	0
28_1/CW	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
29_1/CW	9	0	0	0	0	0	3	2	0	0	0	0	0	0	0	4	3	0
34_1/CW	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31_1/CW	32	13	0	7	13	0	0	4	22	3	3	3	0	0	1	0	22	3
32_1/CW	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	4	0
33_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35_1/CW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9.1. Trench 1/CW, a quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

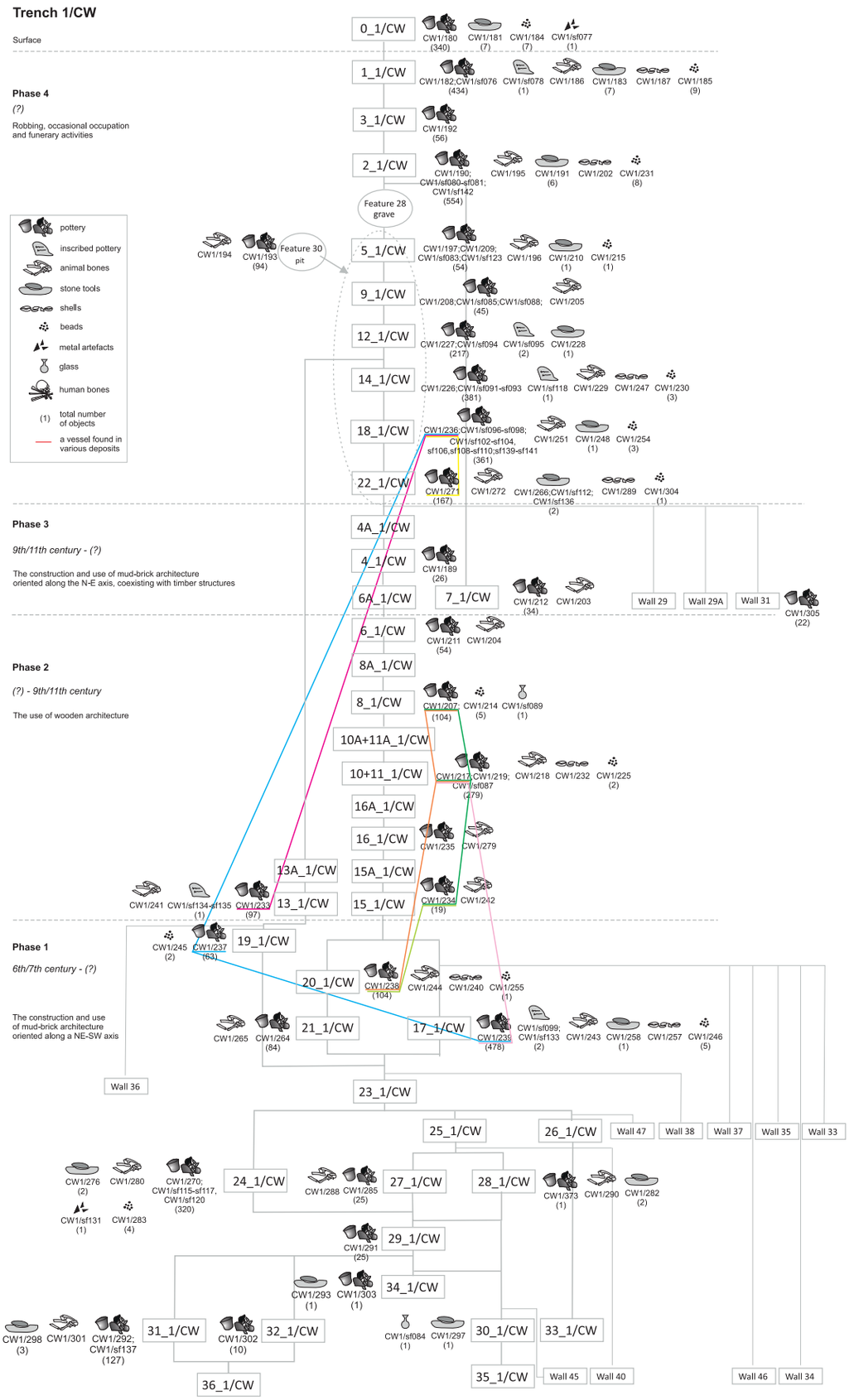

Figure 9.23. Trench 1/CW distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

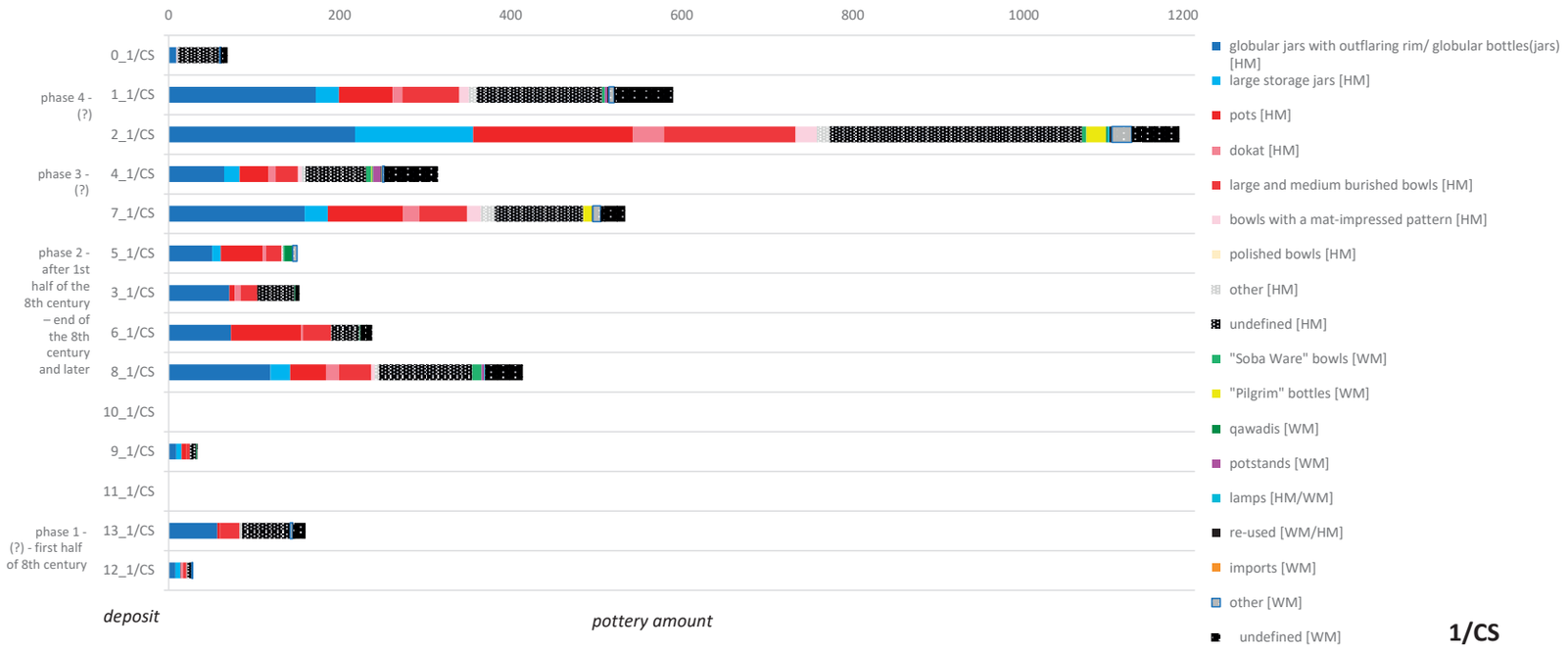

Figure 9.24. Trench 1/CS distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

patterns. Serving food vessels like polished bowls occur in more significant numbers than in other excavated areas, mainly in the earlier Phase 1, dated to the sixth/seventh century. Soba Ware bowls are broadly presented in all phases of occupation. Other types of pottery, such as 'pilgrim' bottles and *qawadis*, are also represented associated with all stages of activity. Potstands, lamps and re-used pottery are less frequent. In comparison to the other excavated areas, many imported pottery fragments were recorded here.

Pottery was found in all deposits and phases together with other artefacts, such as grinding, pulverising, smoothing, and polishing tools (see Chapter 11), animal bones, shells and beads (see Chapter 13). Among the animal bones, more than half of the remains were from cattle, with a slightly smaller group of sheep and goats. Occasional remains represented other species, such as pigs and donkeys (see Chapter 15).

In some cases, the pottery was mixed between deposits (Figure 9.23; for more information, see Chapter 5). In this area, the diversity in the ceramic collection is greater. With storage and food preparation vessels, there are more specialised vessels such as 'pilgrim' bottles or *qawadis*.

The analysis of all artefacts indicates that the constructions discovered in Trench 1/CW may have had residential and storage functions (see Chapter 5).

1/CS (Figure 9.24; Figure 9.25; Table 9.2)

This excavated area yielded 3,818 sherds. The first identified traces of human activity here occurred in the first half of the eighth century. A significant increase in occupation was observed in the subsequent phase, dated to the later eighth century, which lasted until Phases 3 and 4 reached their apogee. All deposits are dominated by storage and food preparation vessels, globular jars with outflaring rims, globular bottles/jars, large storage jars, cooking pots, burnished bowls and bowls with mat-impressed patterns. Compared to other excavated areas, *dokat* are present in relatively large quantities (mainly in the latest Phases 3 and 4). Serving dishes are represented by only a few fragments of Soba Ware. 'Pilgrim' bottles, *qawadis* and potstands were also recorded in small numbers. Imported pottery is almost absent here. In Phase 1, pottery was found only with animal bones; small finds were absent. Fragmented cattle bones dominated, with the second most common group from sheep and goats (half as many) (see Chapter 15). In Phase 2, single stone tools appeared, and only in Phases 3 and 4 were other objects such as beads, shells, metal objects, and grinding and pulverising tools found (see Chapters 11, 13, and 14).

Analysis of all archaeological materials suggests that this area may have had residential and storage functions,

date and phases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokar* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed pattern [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
	0_1/CS	9	0	0	0	0	1	0	1	48	0	0	0	0	0	1	0	1	8
phase 4 - (?)	1_1/CS	172	27	63	11	67	11	0	9	147	3	0	0	3	0	1	1	6	69
	2_1/CS	218	138	187	36	154	25	0	15	295	5	23	2	0	2	3	0	23	56
phase 3 - (?)	4_1/CS	65	18	34	8	26	5	0	4	71	6	1	1	9	0	1	1	2	63
	7_1/CS	159	27	88	19	56	16	0	16	104	0	10	0	0	0	1	0	9	29
phase 2 - after 1st half of the 8th century – end of the 8th century and later	5_1/CS	51	10	49	4	18	1	0	1	0	2	0	9	0	0	0	0	5	0
	3_1/CS	71	0	6	7	20	0	0	0	43	1	0	0	0	0	0	0	0	5
	6_1/CS	73	0	82	2	33	0	0	0	33	1	0	0	0	0	0	0	0	14
	8_1/CS	119	23	42	15	38	4	0	5	109	11	0	0	3	1	0	0	0	44
	10_1/CS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9_1/CS	9	6	6	0	4	0	0	0	7	1	0	0	0	0	0	0	0	1
	11_1/CS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 1 - (?) – 1st half of the 8th century	13_1/CS	57	0	3	0	23	0	0	3	56	0	0	0	0	0	0	0	3	15
	12_1/CS	8	6	1	2	4	0	0	1	5	0	0	0	0	0	0	0	1	0

Table 9.2. Trench 1/CS quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

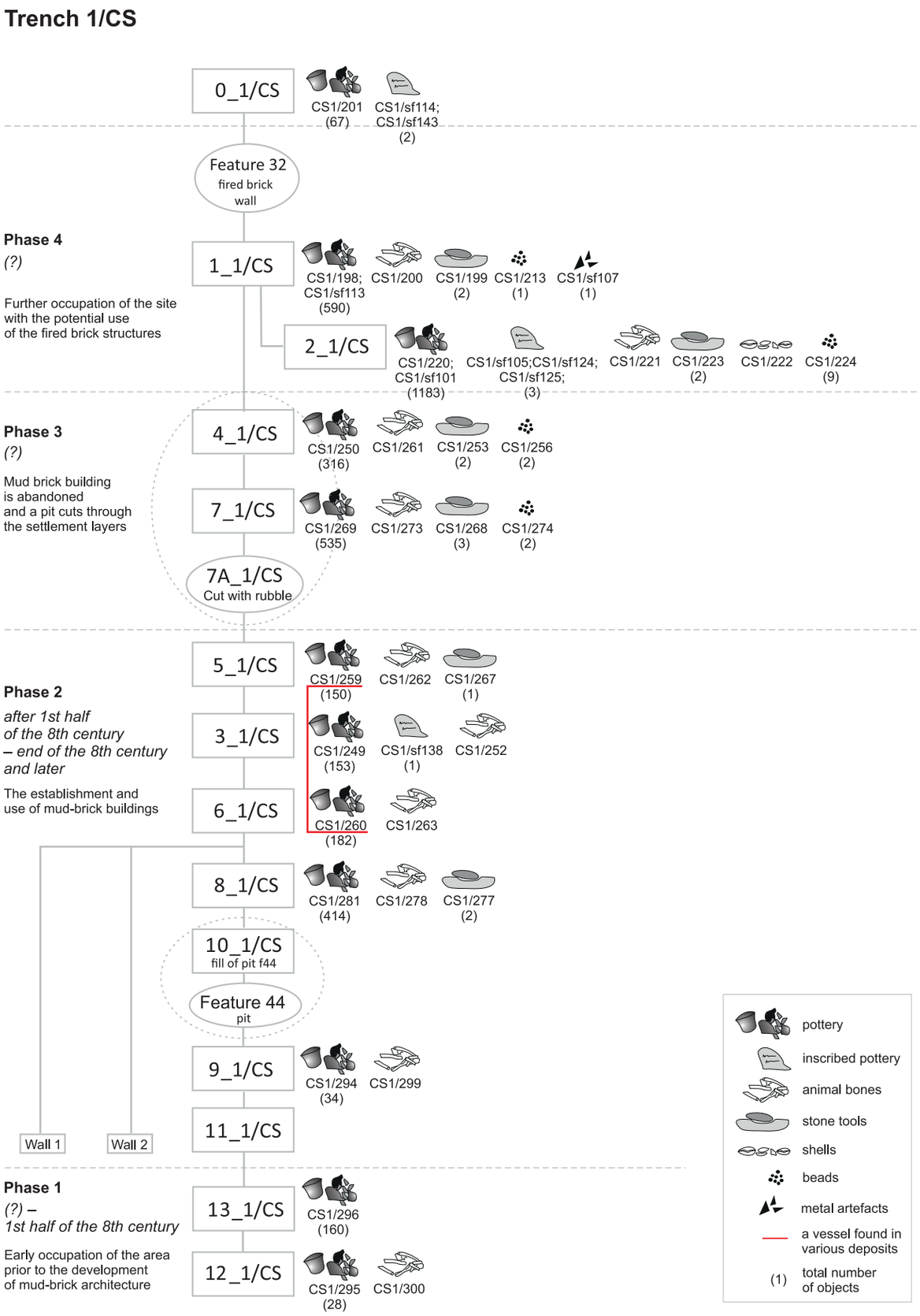

Figure 9.25. Trench 1/CS distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

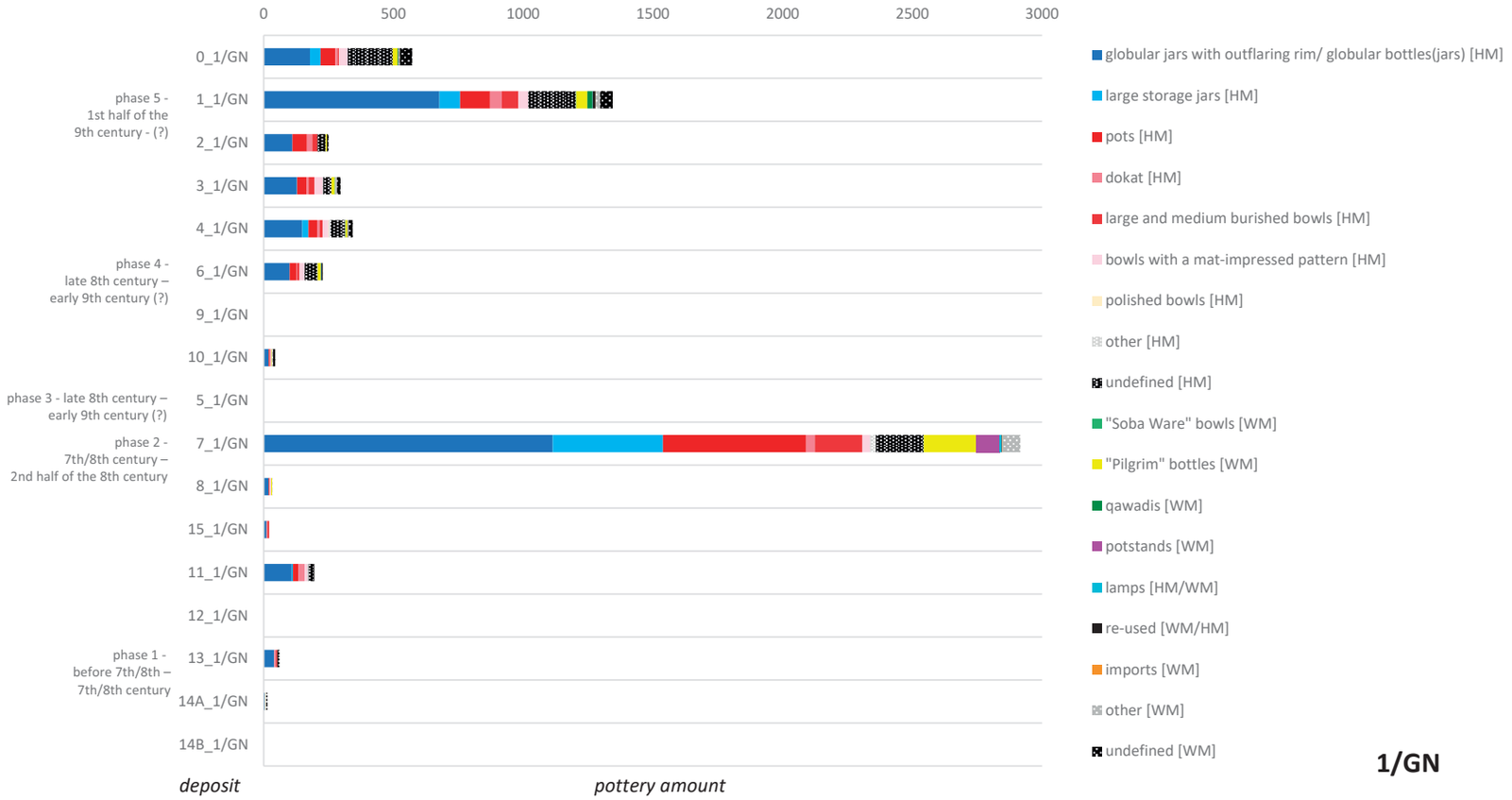

Figure 9.26. Trench 1/GN distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

with spaces for the preparation and consumption of food (see Chapter 5).

1/GN (**Figure 9.26**; **Figure 9.27**; **Table 9.3**)

This area was the richest in pottery. Altogether, 6,186 sherds were found in this trench. The main period of occupation was in Phase 2, dated to the end of the seventh/eighth century and the second half of the eighth century. This phase was also rich in other artefacts. Along with pottery and animal bones, stone tools such as as grinding, pulverising, smoothing and polishing tools, beads and metal artefacts were also found (see chapters 11, 13, and 14). The most abundant collection of animal remains was recorded in the topsoil layers. Cattle bones dominated here. A distinctly smaller assemblage consisted of sheep and goat remains (see Chapter 15).

Archaeological work showed that in Phase 2, a room with a storage/kitchen function was built – Feature 1_2021_3 – which was probably constructed between 677–750 AD. It appears that the kitchen/storage room was only used for a short time (see Chapter 6). The most interesting aspect of Phase 2 was Deposit 7 (connected with Feature 1_2021_3), which was the richest in ceramics. More than 2,700 sherds were recorded, with many complete or nearly complete vessels discovered here. In the later Phases 3–5, dated to the late eighth century and later, activity is still evident, but no longer to the same extent as in Phase 2.

The ceramic assemblage recorded in Trench 1/GN resembles the other excavated areas. All deposits are dominated by storage vessels such as globular jars with outflaring rims and globular bottles/jars. In addition, large storage jars are represented here. Cooking pots, large and medium burnished bowls, and *dokat* are also typical utensils among food preparation vessels. ‘Pilgrim’ bottles and potstands are also relatively well represented. Lamps were found in significant numbers, mainly in the richest Deposit 7. Re-used pottery as spindle whorls and tokens are present in small quantities, while only a few sherds from food serving vessels, such as Soba Ware bowls and imported pottery, were found.

date and phases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokat* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed pattern [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
	0_1/GN	178	41	57	9	6	34	0	0	172	0	19	3	0	0	2	0	4	47
phase 5 - first half of the 9th century – (?)	1_1/GN	677	80	115	46	64	37	0	1	183	2	42	20	0	1	11	1	17	48
	2_1/GN	111	0	56	20	21	0	0	0	31	0	5	0	0	0	1	0	0	5
	3_1/GN	128	1	37	7	22	32	0	3	31	0	13	0	0	1	1	0	7	13
	4_1/GN	149	24	33	9	13	22	2	6	55	2	8	0	0	0	1	0	4	15
phase 4 - late 8th century – early 9th century (?)	6_1/GN	100	0	26	3	9	19	0	1	50	0	12	0	0	2	5	0	3	0
	9_1/GN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10_1/GN	19	0	5	4	0	2	0	0	0	0	2	0	0	0	0	0	4	8
phase 3 - late 8th century – early 9th century (?)	5_1/GN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 2 - 7th/8th century – second half of the 8th century	7_1/GN	1114	425	552	33	183	30	0	22	184	1	201	0	90	9	2	2	68	0
	8_1/GN	19	0	4	1	0	5	0	0	0	0	4	0	0	0	0	0	1	0
	15_1/GN	11	0	2	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0
	11_1/GN	108	5	21	23	0	12	0	5	19	0	0	0	0	0	2	0	1	0
	12_1/GN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 1 - before 7th/8th – 7th/8th century	13_1/GN	40	0	0	7	6	0	0	0	8	0	0	0	0	0	0	0	0	0
	14A_1/GN	5	0	0	0	0	0	3	2	5	0	0	0	0	0	0	0	0	0
	14B_1/GN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9.3. Trench 1/GN quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

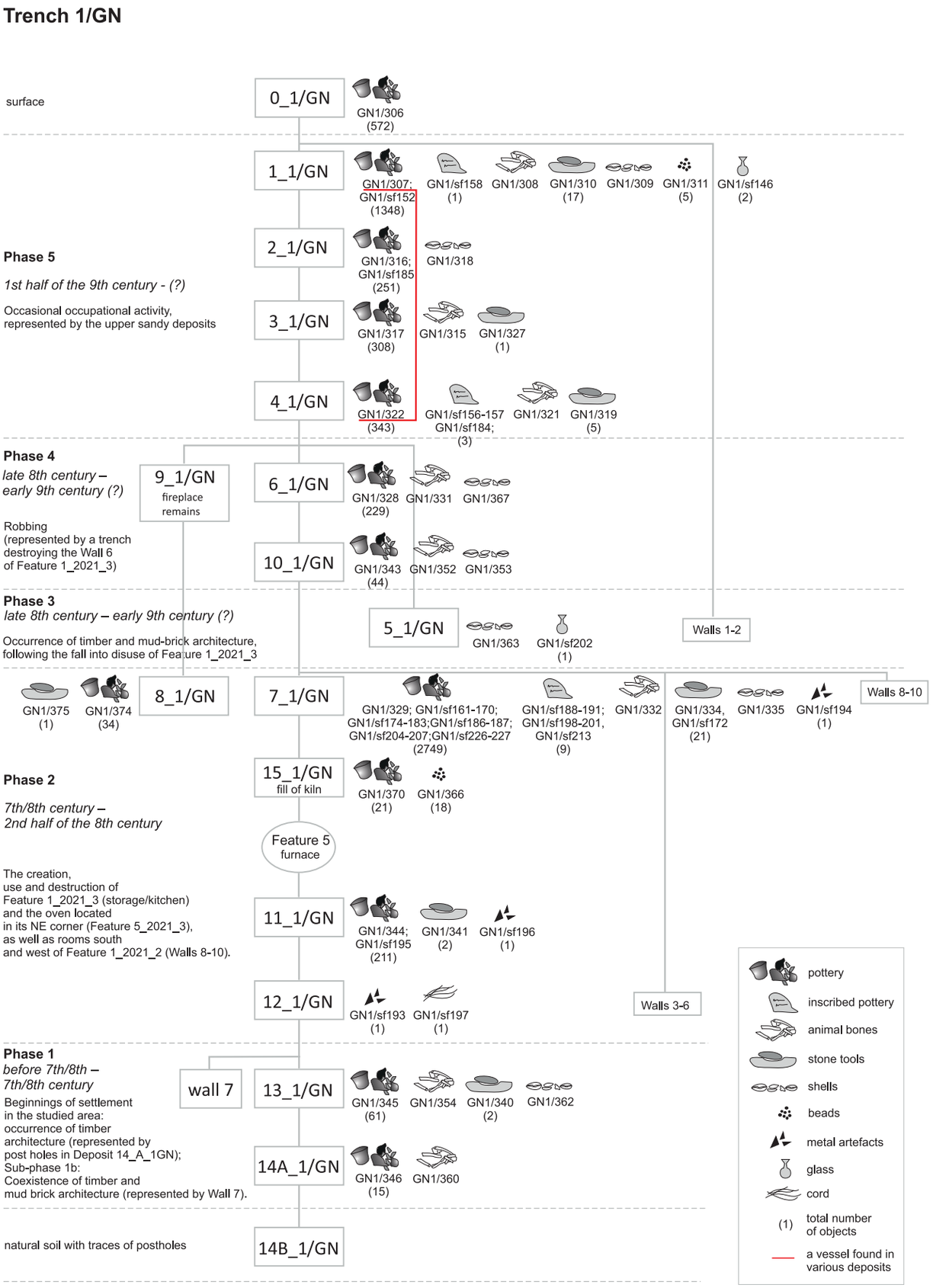

Figure 9.27. Trench 1/GN distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

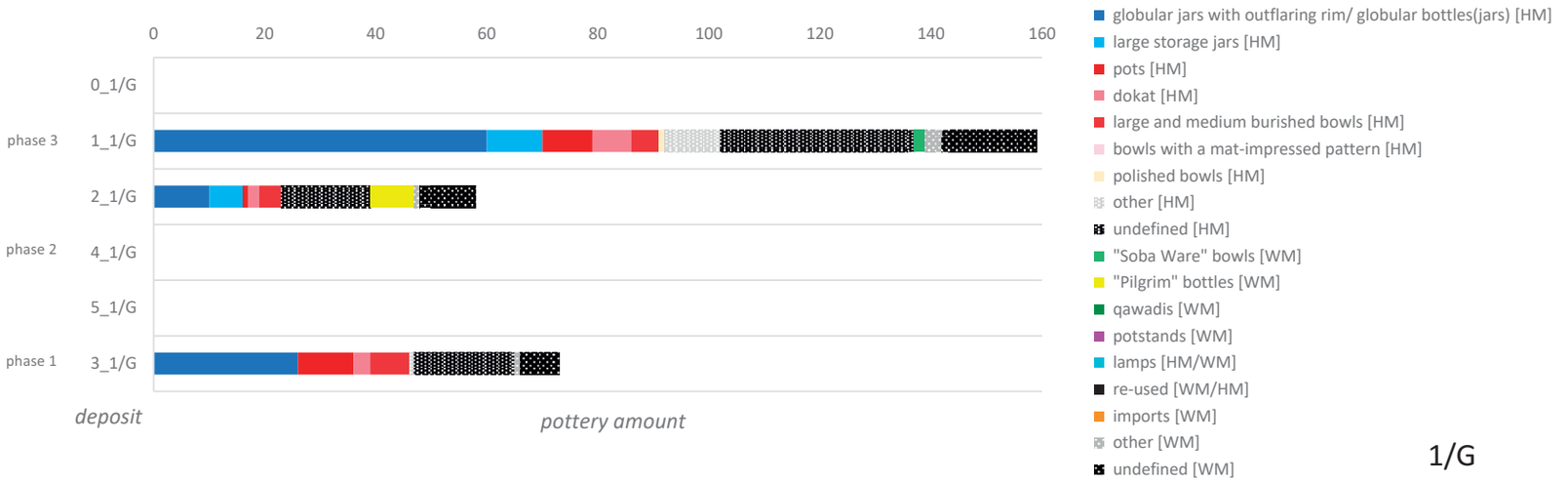

Figure 9.28. Trench 1/G distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

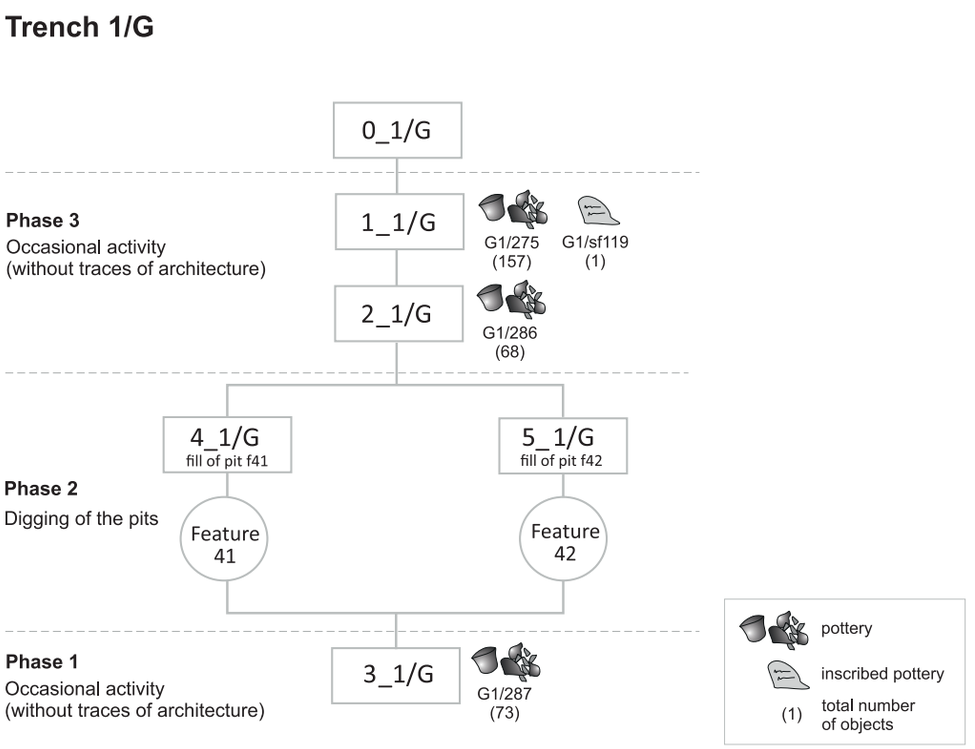

Figure 9.29. Trench 1/G distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

The finds discovered in Trench 1/GN indicate that this complex was related to food preparation and storage (see Chapter 6).

1/G (**Figure 9.28**; **Figure 9.29**; **Table 9.4**)

This is the smallest of the trenches; only 299 pottery fragments were recorded here. Material was found in Phases 1 and 3, of which Phase 3, the youngest, was richest in pottery – no other artefacts were recorded. Globular jars with outflaring rims, globular bottles/jars, large storage jars, cooking pots, *dokat* and burnished bowls dominate this assemblage. A few fragments of 'pilgrim' bottles and single pieces of serving dishes (polished bowls and Soba Ware bowls) were also

date and pgases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokar* [HM]	large and medium burished bowls [HM]	bowls with a matimpressed pattern [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
	0_1/G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 3	1_1/G	60	10	9	7	5	0	1	10	35	2	0	0	0	0	0	0	3	17
	2_1/G	10	6	1	2	4	0	0	0	16	0	8	0	0	0	0	0	1	10
phase 2	4_1/G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5_1/G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 1	6_1/G	26	0	10	3	7	0	0	1	18	0	0	0	0	0	0	0	1	7

Table 9.4. Trench 1/G quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

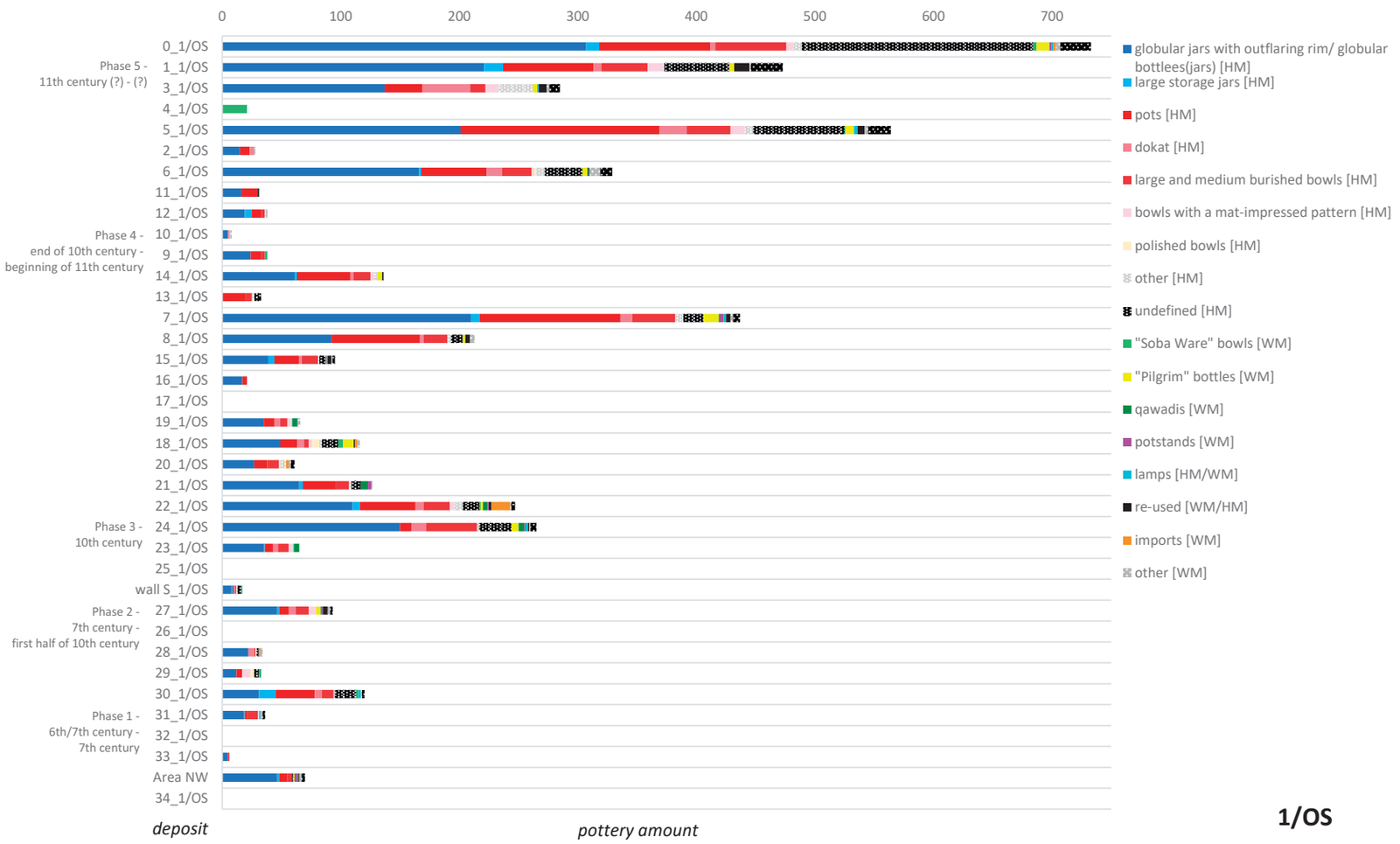

Figure 9.30. Trench 1/OS distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

recorded. Imports and re-used pottery were not found in this trench. In general, the pottery assemblage in this area is connected with food processing and storage. The area was probably in use between the 6th/7th–12th centuries AD and may have been a dumping ground (see Chapter 6).

1/OS (**Figure 9.30**; **Figure 9.31**; **Table 9.5**)

This entire area was rich in pottery. In total 4,866 sherds were found here. Only 322 pottery fragments were found in Phases 1 and 2, dated to the 6th/7th–10th centuries. A significant increase occurs in Phase 3, which lasts until the end of Phase 5. The entire excavated area was in use between the 6th/7th and 11th centuries AD (see Chapter 4).

This particularly intensive occupation occurred in the 10th–11th century and probably a little later. As in other trenches, storage and pots for food preparation were dominant. The predominant types of vessels found in each deposit were globular jars with outflaring rims and globular bottles/jars; and a smaller number of large storage jars. Cooking pots, burnished bowls, and *dokat* were represented in a large number. Polished and Soba Ware bowls are less numerous. Not many 'pilgrim' bottles, *qawadis*, or potstands were found. Imports are almost absent, except for a dozen fragments found in the tenth century Deposit 22.

The human activities in this area are quite complex. In Phases 1 and 2, pottery was found mainly together with animal bones. Animal bones of ovicaprids predominated here, and remains of cattle and fish were also recorded (see Chapter 15) along with a few fragments of querns (see Chapter 15). In Phases 3–5, the variety of artefacts accompanying the pottery increases. The area was used for residential purposes probably until the end of the 10th century AD. Later,

date and phases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokat* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed pattern [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
Surface	0_1/OS	307	11	94	4	60	6	0	7	195	3	11	0	2	1	0	2	4	26
Phase 5 - 11th century (?) – (?)	1_1/OS	221	16	76	7	39	13	0	1	55	0	4	0	0	0	13	0	1	27
	3_1/OS	137	0	32	40	13	11	0	29	0	0	4	0	0	1	7	0	2	9
	4_1/OS	0	0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0
	5_1/OS	201	0	168	23	37	12	0	7	77	1	7	0	0	3	6	0	3	19
	2_1/OS	15	0	8	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	6_1/OS	166	2	55	13	25	2	2	7	32	0	4	1	0	0	1	0	9	10
	11_1/OS	16	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	12_1/OS	19	6	8	0	3	0	0	1	0	0	0	0	0	0	0	0	1	0
	10_1/OS	5	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0
	9_1/OS	24	0	9	0	3	0	0	0	0	2	0	0	0	0	0	0	0	0
	14_1/OS	61	2	45	3	14	3	0	3	0	0	4	0	0	0	1	0	0	0
	13_1/OS	0	0	20	0	5	0	0	2	3	0	0	0	0	0	0	0	0	3
	7_1/OS	210	7	119	10	36	0	0	7	17	0	13	1	3	2	4	0	2	6
	8_1/OS	92	0	75	3	20	0	0	3	10	0	2	0	0	0	4	0	4	0
	15_1/OS	39	5	21	2	14	0	0	1	5	1	0	0	1	0	3	0	1	2
	16_1/OS	17	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17_1/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19_1/OS	35	0	9	5	6	3	0	1	0	0	0	4	0	1	0	0	2	0
	18_1/OS	49	0	14	6	4	3	6	2	14	4	9	0	0	0	1	2	2	0
	20_1/OS	27	0	11	0	10	0	1	5	0	0	0	0	0	0	0	2	2	3
	21_1/OS	65	3	28	0	11	0	0	2	8	0	0	6	3	0	0	0	1	0
	22_1/OS	110	6	47	7	22	4	0	7	14	1	2	4	1	0	2	16	1	3

Phase 3 - 10th century	24_1/OS	150	0	10	12	43	0	0	2	27	0	6	5	1	2	1	0	1	5
	23_1/OS	35	1	7	4	9	3	0	1	0	1	0	4	0	0	0	0	0	0
	25_1/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	wall S_1/OS (Phases 5-3)	8	1	1	1	1	0	0	1	3	1	0	0	0	0	0	0	0	0
Phase 2 - 7th century – first half of 10th century	27_1/OS	46	2	8	6	11	6	0	0	0	0	4	1	1	0	4	0	2	2
	26_1/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	28_1/OS	22	0	0	5	1	1	0	0	1	0	0	0	0	0	1	1	2	0
	29_1/OS	12	0	5	0	0	7	3	0	4	2	0	0	0	0	0	0	0	0
	30_1/OS	31	14	33	6	10	1	0	0	18	2	0	0	0	2	0	0	1	2
Phase 1 - 6th/7th century – 7th century	31_1/OS	18	1	2	0	9	1	0	0	0	0	0	0	0	1	0	0	2	2
	32_1/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	33_1/OS	5	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Area NW (phases 1-4)	46	2	7	0	4	0	0	0	1	0	1	0	2	1	1	0	2	3
Natural soil	34_1/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9.5. Trench 1/OS quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

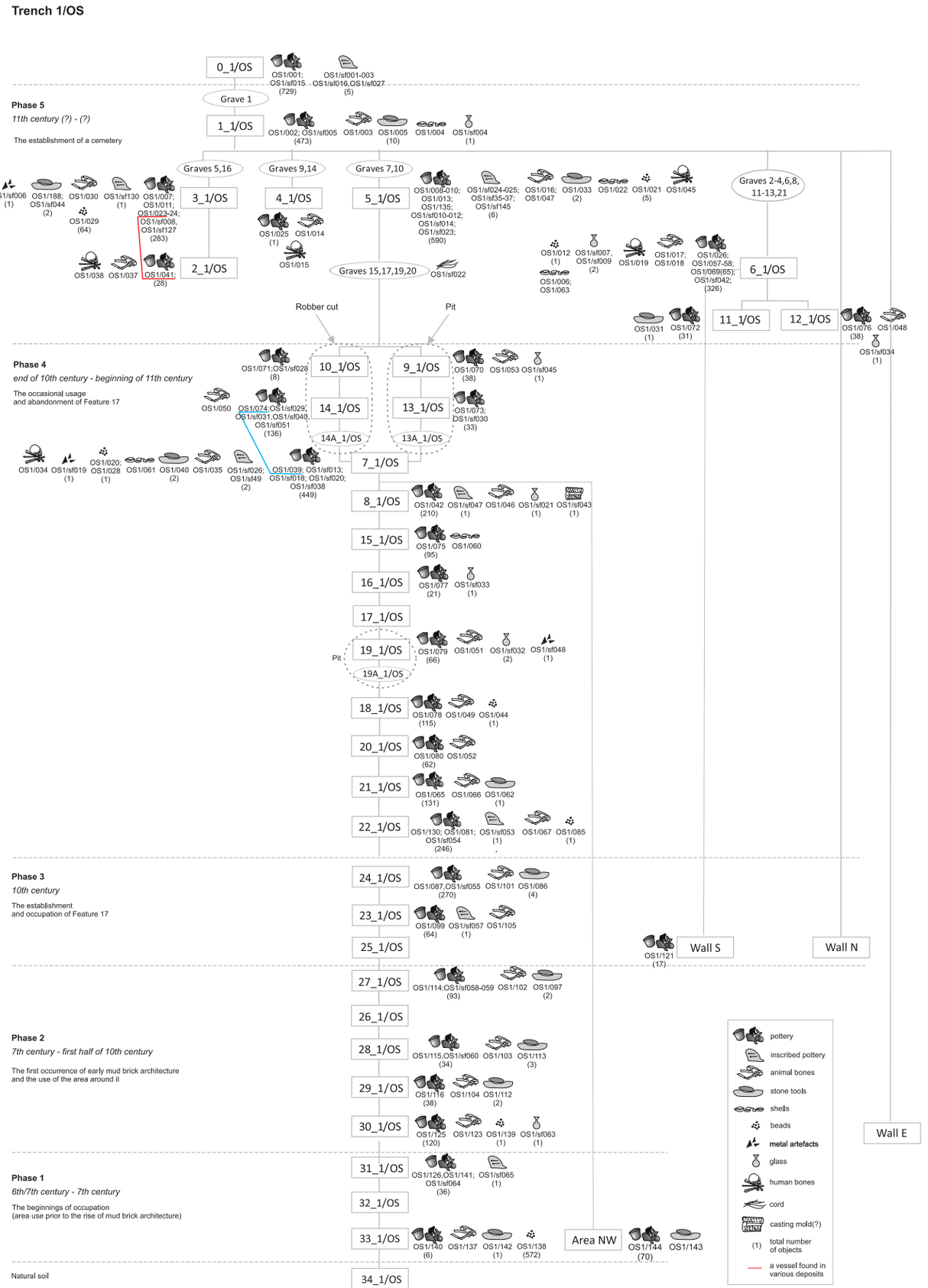

Figure 9.31. Trench 1/OS distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

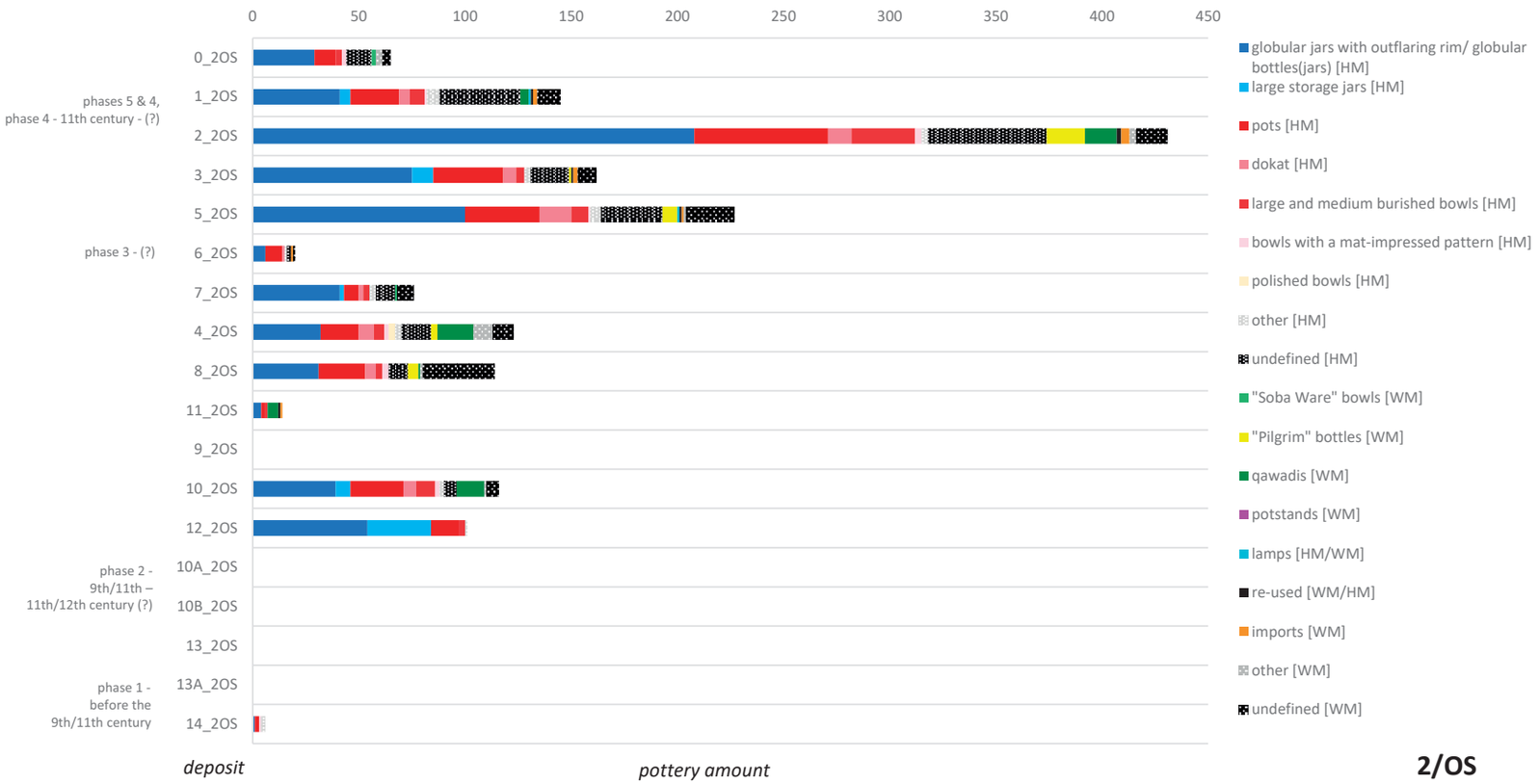

Figure 9.32. Trench 2/OS distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

the function of the area changed and it became a cemetery (see Chapter 4).

2/OS (**Figure 9.32**; **Figure 9.33**; **Table 9.6**)

A total of 1,643 pottery fragments were found in Trench 2/OS. In Phase 1, only six pottery fragments were discovered, while in Phase 2, there were none at all. Human activity in this area is first evidenced in Phase 3 and continued uninterrupted until the end of Phase 5. This period dates to the eleventh century and probably later. The apogee of occupation of the site was in Phase 5. Like in the other trenches, storage vessels, cooking pots, and *dokat* were dominant. In comparison to other areas, a much smaller number of burnished bowls were recorded here. Serving dishes are practically absent. A small number of pilgrim bottles and many *qawadis* were recorded. As in most of the examined areas, pottery was found together with animal bones and stone tools (see Chapters 11 and 15).

The archaeological works indicate that activity was developed to the lime kiln during the ninth/eleventh century AD. Later, in Phase 3, the area was used for food preparation and consumption, but in Phase 4, the area became a cemetery (see Chapter 4).

1/O (**Figure 9.34**; **Figure 9.35**; **Table 9.7**)

A small amount of pottery characterises Area 1/O. Only 470 vessel fragments came from the entire trench. There was little activity in Phase 1, dated to the 8th/10th century, and only a dozen sherds and a small number of animal bones came from these deposits. In Phase 2, dated to the 8th/10th–13th century, there were no small finds apart from a few sherds and animal bones in Deposit 5. Only in Phases 3 and 4, dated to the thirteenth century and later, did the number of finds increase.

As in the other areas, storage vessels and food preparation vessels – globular jars with outflaring rims and globular bottles/jars, cooking pots and burnished bowls – dominated in each deposit, but *dokat* were not present. Tableware pottery such as Soba Ware or polished bowls was also absent. ‘Pilgrim’ bottles and *qawadis* featured among the wheelmade pottery. Although this area does not have many recorded pottery sherds, it is

date and phases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokan* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed patter [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
	0_2/OS	29	0	10	0	3	2	0	0	12	2	0	0	0	0	0	0	3	4
phases 5 & 4, phase 4 - 11th century – (?)	1_2/OS	41	5	23	5	7	1	0	6	38	0	0	4	0	1	1	2	0	11
	2_2/OS	208	0	63	11	30	3	0	3	56	0	18	15	0	0	2	4	3	15
	3_2/OS	75	10	33	6	4	0	0	3	18	0	1	0	0	0	1	2	0	9
	5_2/OS	100	0	35	15	8	1	0	5	29	0	7	0	0	1	1	1	1	23
phase 3 - (?)	6_2/OS	6	0	8	1	0	0	0	1	2	0	0	0	0	0	0	1	0	1
	7_2/OS	41	2	7	2	3	0	0	3	9	1	0	0	0	0	0	0	0	8
	4_2/OS	32	0	18	7	5	2	3	3	14	0	3	17	0	0	0	0	9	10
	8_2/OS	31	0	22	5	3	3	0	0	9	0	5	1	0	0	0	0	1	34
	11_2/OS	4	0	2	0	1	0	0	0	0	0	0	5	0	0	1	1	0	0
	9_2/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10_2/OS	39	7	25	6	9	2	0	2	6	0	0	13	0	0	0	0	1	6
	12_2/OS	54	30	13	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0
phase 2 - 9th/11th– 11th/12th century (?)	10A_2/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10B_2/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13_2/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13A_2/OS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 1 - before the 9th/11th century	14_2/OS	1	0	2	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0

Table 9.6. Trench 2/OS quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

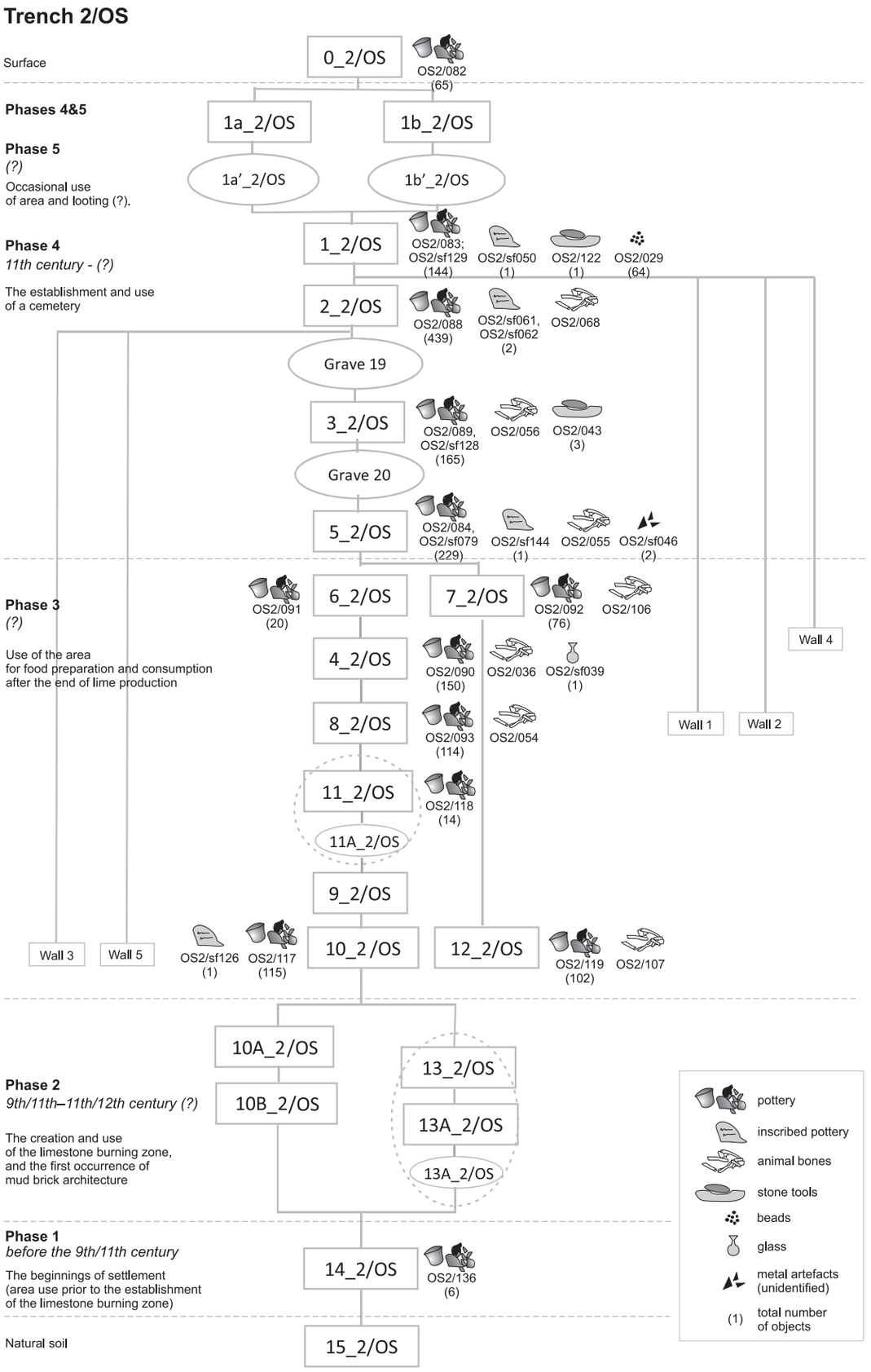

Figure 9.33. Trench 2/OS distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

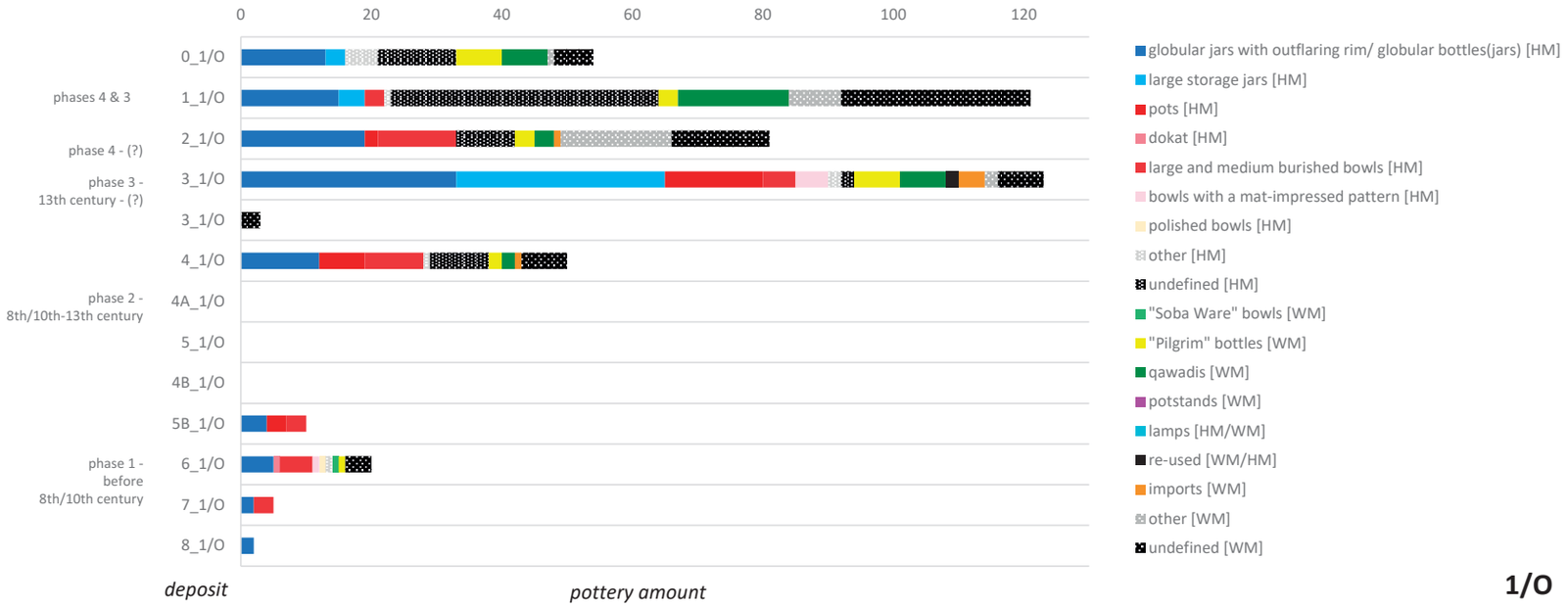

Figure 9.34. Trench 1/O distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

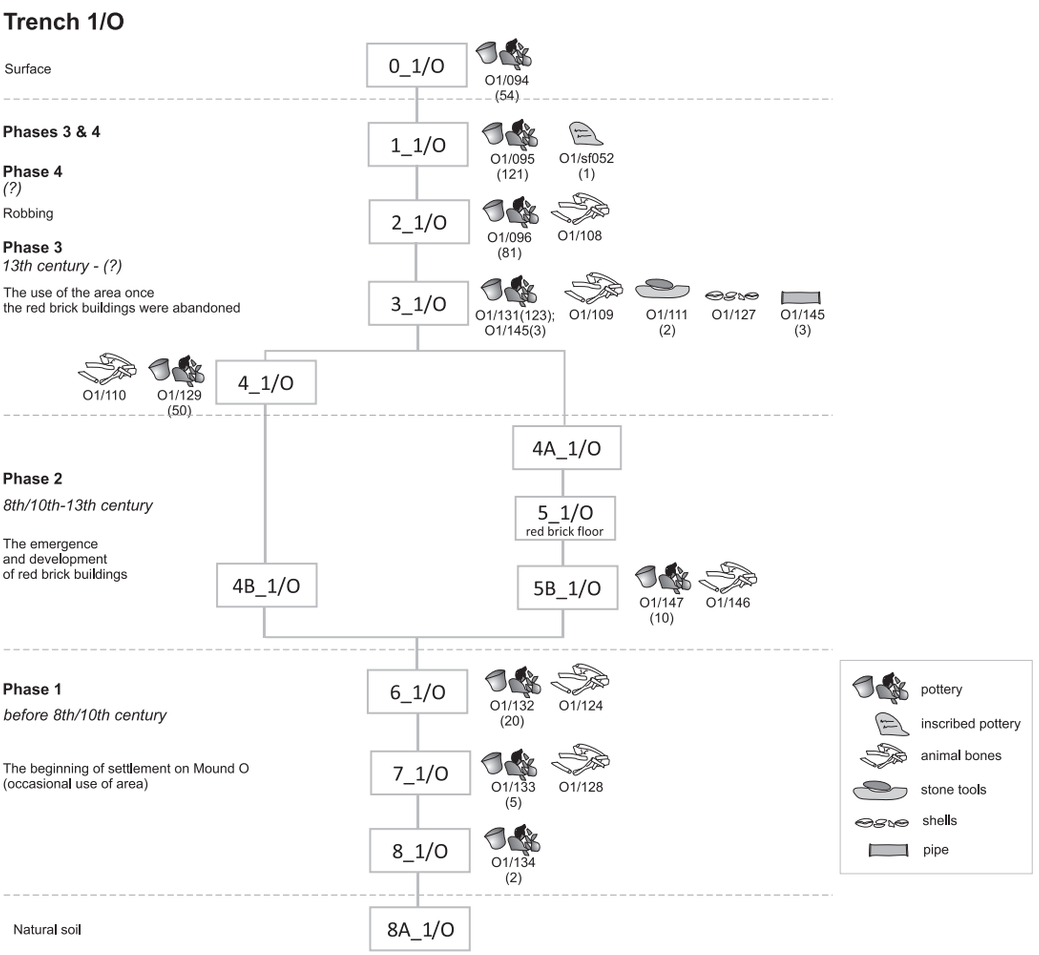

Figure 9.35. Trench 1/O distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

date and phases		deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokai* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed patter [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
phases 3&4: phase 4 - (?), phase 3 - 13th century – (?)		0_1/O	13	3	0	0	0	0	0	5	12	0	7	7	0	0	0	0	1	6
		1_1/O	15	4	0	0	3	0	0	1	41	0	3	17	0	0	0	0	8	29
		2_1/O	19	0	2	0	12	0	0	0	9	0	3	3	0	0	0	1	17	15
		3_1/O	33	32	15	0	5	5	0	2	2	0	7	7	0	0	2	4	2	7
		3_1/O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
		4_1/O	12	0	7	0	9	0	0	1	9	0	2	2	0	0	0	1	0	7
phase 2 - 8th/10th century – 13th century		4A_1/O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5_1/O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		4B_1/O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		5B_1/O	4	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 1 - 8th/10th century		6_1/O	5	0	0	1	5	1	1	1	0	1	1	0	0	0	0	0	0	4
		7_1/O	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
		8_1/O	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9.7. Trench 1/O quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

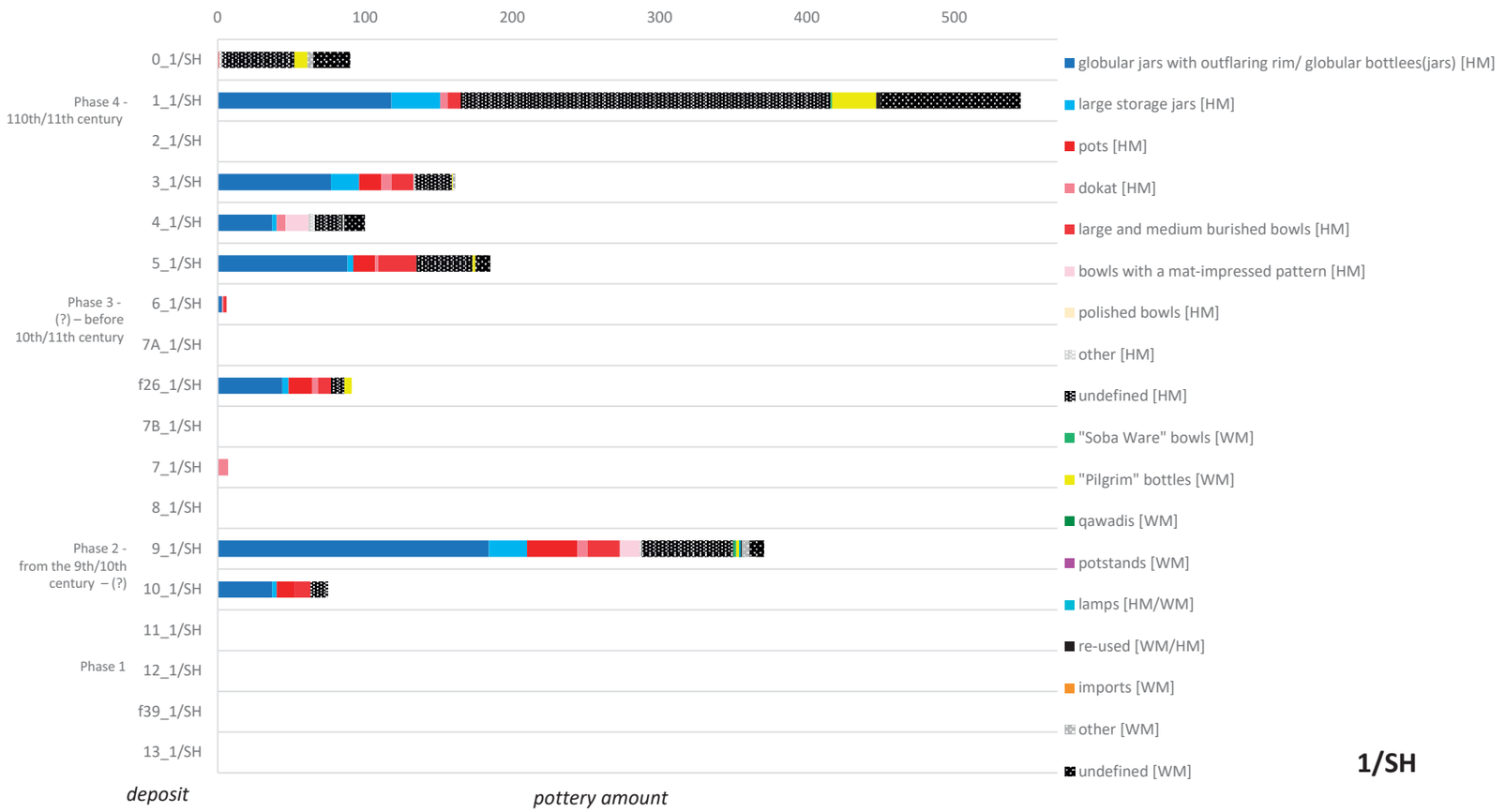

Figure 9.36. Trench 1/SH distribution of the vessel types in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

interesting to notice the relatively large proportion of wheelmade pottery to handmade pottery. There are also many unidentified fragments in the upper deposits, because they are close to the topsoil, sotheir material is poorly preserved andsometimes mixed with modern pottery sherds. Vessel fragments were found together with animal bones, in particular in Phases 1 and 2. In the later Phases 3 and 4, a small number of beads, ceramic pipe fragments and one grinder and one pounder tool were recorded (see Chapters 11 and 13).Thus, the function of the features excavated is still unknown (see Chapter 4).

1/SH (**Figure 9.36**; **Figure 9.37**; **Table 9.8**)

More than 1,600 pottery fragments were recorded in this area. The pottery first occured in Phase 2, dated to the 9th/10th century, followed by discontinuity in Phase 3, when occupation took place some time before the 10th/11th century with the most extensive activities in Phase 4, dated to the 10th/11th century. In the later phase, a large percentage of unidentified pottery was recorded in the upper deposits. As in the other excavated areas, the pottery was fragmented and weathered.

Storage vessels like globular jars with outflaring rims, globular bottles/jars, large storage jars, and containers for food preparation such as cooking pots, *dokat* and burnished bowls dominated these deposits. Like Soba Ware bowls, tableware pottery was recorded in only a few fragments in the earliest deposits. ‘Pilgrim’ bottles also appear, especially in the latest phase. As in Trench 1/G, pottery in this area was connected with food processing and storage. In all occupation deposits, pottery was found with other artefacts, such as grinding and pounding tools, glass artefacts, beads and animal bones. In the small collection of animal remains, sheep and goat bones predominated, while fewer cattle skeletal elements were recorded (see Chapters 11, 13, and 15).

Finds uncovered within Trench 1/SH indicated residential activity. This area was probably used as early as in the Early Holocene, and then much later in the Middle Ages, between the 9th/10th and 10th/11th centuries AD (see Chapter 7).

date and phases	deposit	globular jars with outflaring rim/ globular bottles(jars) [HM]	large storage jars [HM]	pots [HM]	*dokat* [HM]	large and medium burished bowls [HM]	bowls with a mat-impressed pattern [HM]	polished bowls [HM]	other [HM]	undefined [HM]	"Soba Ware" bowls [WM]	"Pilgrim" bottles [WM]	*qawadis* [WM]	potstands [WM]	lamps [HM/WM]	re-used [WM/HM]	imports [WM]	other [WM]	undefined [WM]
	0_1/SH	0	0	1	0	0	0	0	2	49	0	9	0	0	0	0	0	4	25
phase 4 - 10th/11th century	1_1/SH	118	33	0	5	9	0	0	0	251	1	30	0	0	0	3	0	0	95
	2_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3_1/SH	77	19	15	7	15	0	0	1	25	0	1	0	0	0	0	0	1	0
	4_1/SH	37	3	0	6	0	16	0	4	18	0	0	0	0	0	1	0	1	14
	5_1/SH	88	4	15	2	26	0	0	0	38	0	2	0	0	0	0	0	0	10
phase 3 - (?) – before 10th/11th century	6_1/SH	3	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0
	7A_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	f26_1/SH	44	4	16	4	9	0	0	0	9	0	5	0	0	0	0	0	0	0
	7B_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7_1/SH	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 2 - from the 9th/10th century	9_1/SH	184	26	34	7	22	14	0	1	62	2	2	0	0	1	1	0	5	10
	10_1/SH	37	3	12	0	11	0	0	0	12	0	0	0	0	0	0	0	0	0
Hiatus	11_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
phase 1 - neolithic?	12_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	f39_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13_1/SH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9.8. Trench 1/SH quantitative list of the vessel types recorded in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

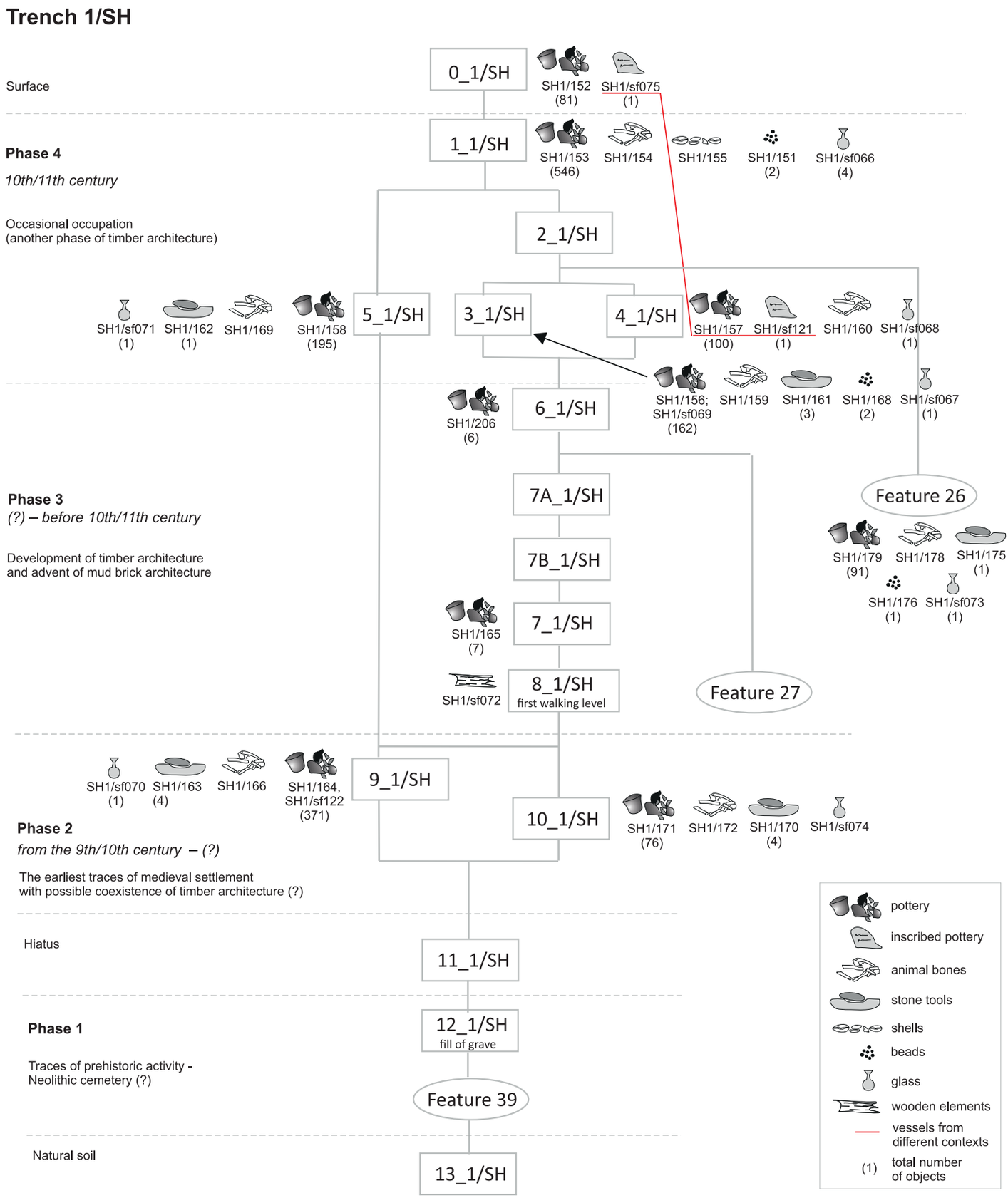

Figure 9.37. Trench 1/SH distribution of all artefacts excavated in all archaeological deposits (prepared by Ewa Czyżewska-Zalewska).

9.4.2. *Summary*

Most of the pottery excavated during this project has a domestic character, which fits with previous studies; even with deposits associated with the church, Building E (Welsby 1998, 90). Pottery is similar to assemblages excavated on Mounds A and B during the campaign in 1950–1952 carried out by Shinnie (Shinnie 1961, 28–50). The types of vessels and time of usage are similar to those presented in this work. Pottery from excavated areas MN8, MN2, and Mound Z were dated to the 6th–9th century AD, M12 to the 6th–12th century AD, and Mound B and Area UA3 to the 6th–13th century AD (Welsby 1998, 21).

Storage vessels such as globular jars with outflaring rims and globular bottles/jars were used throughout occupation in all areas and phases between the 6th/7th century and the 13th century and dominate every assemblage. The use of globular jars with outflaring rims coincides with the excavated vessels on Mound B, while the globular bottles/jars were dated to 1150–1500 AD (Welsby and Daniels 1991, 166), but examples discovered in Areas MN8, M12, M14 and M11 were considered as typical post-Meroitic examples (Welsby 1998, 92). Large storage jars occurred between the 7th/8th century and 13th century, but it seems that these jars were not used in the earliest phase of occupation, the 6th/7th centuries.

Food processing vessels such as cooking pots, burnished bowls and bowls with mat-impressed patterns were also in use as storage vessels from the 6th/7th century to the 13th century, while *dokat* bowls seem to be in use from the 6th/7th century to the 11th century. *Dokat* found in Mound B, which was dated to the 6th–13th century, were produced together with *qawadis* in the kilns discovered south of Building D (Welsby and Daniels 1991, 179; Welsby 1998, 22). The kiln discovered probably had a long period of use; it was found in Phase Ia deposits of Building B and after that remained in use until Phase VI (Welsby and Daniels 1991, 245).

Tableware vessels such as polished bowls and Soba Ware bowls were found in deposits ranging between the 6th/7th and the 11th century. Interestingly, previous excavations show that Soba Ware was found in Period I, at the western end of Mound B, and these examples were presumably of early 6th–7th century date. As such the forms found in the Period I deposits were probably manufactured before the Southern church was built (Welsby and Daniels 1991, 90; Welsby 1998, 240–242; 324–334). The archaeological finds at Soba in the Early Christian Period suggest little contact between the Kingdom of Alwa and its Nubian neighbours. The large amount of Soba Ware and the absence of Early Christian wares from the north thus indicate that Soba Ware was of Early Christian date (Welsby and Daniels 1991, 34).

As such this type of vessel was a local production, but its exact source is still unknown. The only pottery kiln discovered so far (during the previous excavations) was located in the western part of Mound B and might be associated with the production of *qawadis*, *dokat* and jars, as indicated by the large quantities of these types of vessels recorded in the vicinity (Welsby and Daniels 1991, 12). The latest excavations show that Soba Ware was in use until the 11th century AD. According to Derek Welsby, the end of the Soba Ware industry marked the end of local production of fine wares, and for the rest of the Christian period, the number of fine wares decreased (Welsby 1998, 11–12). It is hard to estimate to what extent the production of Soba Ware decreased; we should keep in mind that the latest excavations took place in different parts of the site and covered small areas.

Wheelmade 'pilgrim' bottles and *qawadis* were used between the 6th/7th century and the 13th century. In the case of two 'pilgrim' bottles, their fills were analysed, and the contents included fruits and grain: grapes (*Vitis vinifera* L), millet (*Panicium milliaceum* L), flax (*Linum usitatissimum* L), barley (*Hordeum* sp) and grass (*Cerastium* cf) (for more information see Chapter 16). 'Pilgrim' bottles were common in Nubia in the Classic to Late Christian period, and in earlier periods, they were encountered less frequently (Adams 1986, 103). At Soba, such bottles were discovered in phase from the Early Christian (mainly in CW1 and GN1) to Late Christian periods. Vessels were also abundant on Mound B (Welsby and Daniels 1991, 172, 175). *Qawadis* in particular were abundant on mound B, where some of these vessels were produced in the kilns excavated south of Building D, and dated to between the post-Meroitic to Early Christian period (Welsby and Daniels 1991, 175, 178–179). Large quantities of 'pilgrim bottles and mud bungs, used for sealing large 'beer jars', were discarded around the palatial buildings near its cathedrals. These would seem to relate to the transport of goods within the kingdom. The 'pilgrim' bottles may have been made in more northerly regions, indicating inter-regional movements (Edwards 2004, 247–250).

Potstands were in use from the 7th century to the 11th century. Handmade and wheelmade lamps were discovered in the 7th–11th century deposits. Open bowl

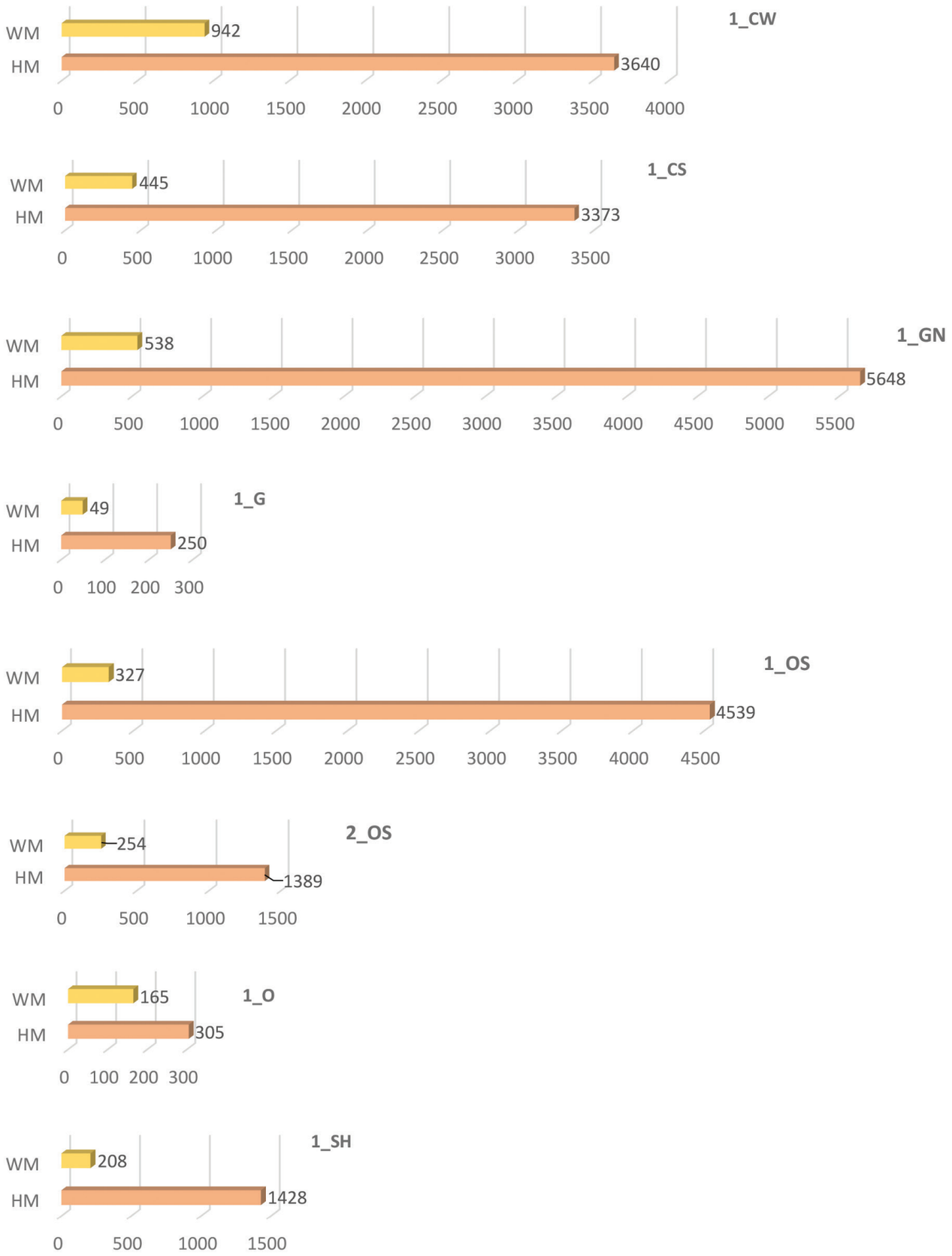

Figure 9.38. Quantitative list of handmade and wheel-made pottery in excavated areas (prepared by Ewa Czyżewska-Zalewska).

lamps were predominant in the Christian Period (Adams 1986, 104).

Imported pottery was scarce and was represented mainly by body sherds or sherds re-used for other functions such as counters or lids. In the 1989–1992 excavated areas, the quantity of imported pottery was small (Welsby and Daniels 1991, 172; Welsby 1998, 91–92).

Some vessels had inscriptions scratched or incised on the surface. More than 30 examples of inscribed pottery are presented in Chapter 10, but their character is similar to those recorded between 1989–1992, which were found in large quantities (Welsby 1998, 185–209).

Most of the pottery assemblage consists of handmade vessels, while wheelmade pottery is in the minority (**Figure 9.38**). Notably, in Trench 1/O, there is a much higher number of wheelmade vessels than handmade ones in Phase 3 and 4 deposits. The repertoire of vessels, however, does not differ from that in the other excavated areas.

Despite this, the pottery from the different trenches is relatively homogeneous. The pottery assemblage has a domestic character across all excavated areas. The presence of animal bones, a by-product of food preparation (see Chapter 15), as well as grinding tools and pounders, also used in food preparation (see Chapter 11), and the archaeological excavation (see Chapters 4–7) support this interpretation.

Except for 'Soba Ware' and a small collection of imported pottery, the Soba assemblage seems to have developed out of Meroitic and post-Meroitic traditions with the dominance of handmade production. In the Soba pottery collection, some types of vessels originated from earlier traditions, like globular bottles/jars, large storage jars, *dokat*, bowls or *qawadis*, that all have Meroitic and post-Meroitic ancestors, some of them as bowls with the mat-impressed pattern, and even Napatan traditions (see Section 9.3: Parallels, above). Lamps also have a long tradition. Meroitic lamps were Nubian-made, while Nubian wheelmade wares and imported mould-wares were post-Meroitic and Early Christian. They were abundant from the post-Meroitic period and throughout the Christian Period (Adams 1986, 104).

The difference between North and South is noticeable. As Edwards (Edwards 2001) and Adams (Adams 2000a) have noted, Christianisation was not accompanied by the same transformation of ceramic production in the south. In the northern kingdoms of Makuria and Nobatia, a new range of highly distinctive 'Christian' pottery wares developed and persisted through the medieval period (Edwards 2001, 92). For example, across the Makuria Region, wheelmade pottery production is significant in ceramic collections. Wheelmade pottery prevails in the pottery assemblage at Banganarti (Cedro 2021) and Dongola (Danys personal communication [(Danys-Lasek 2018)]). Pottery imported from Egypt and the Mediterranean and regional imitations of Egyptian pottery was more common in the north than in the contemporary settlements in Alwa (Pluskota 2001, 360–365). In Dongola, for example, a large number of amphorae were discovered; most of these were locally produced from the 6th century onwards, in imitation of Egyptian containers (Danys-Lasek 2015, 117–121). In addition, imported amphorae from Egypt and beyond were discovered. The Dongola finds prove that in this early period of Makurian statehood, the capital was integrated into the long-distance trade networks that spanned the Mediterranean world (Danys-Lasek 2015, 121–126). In the 6th and early 7th century, the Nobadian kingdom also had close contact with Egypt. Following the Arab conquest of Egypt, trading clearly continued, with Arab merchants penetrating at least as far south as the Second Cataract. The materials coming to Lower Nubia included pottery, glass and textiles (Edwards 2004, 247–248).

In the south, medieval trade is more difficult to understand. Most of the information comes from Soba, where imported pottery is only marginally present. As Welsby noted, Soba in the early Christian Period suggests relatively little contact between the Kingdom of Alwa and its Nubian neighbours (Welsby and Daniels 1991, 34). We must remember that the places selected for archaeological research were chosen over different areas of the archaeological site, where geophysics showed interesting structures (see Chapter 3). This does not give a complete picture of the entire site. Perhaps further research will provide us with more information about the community of the city.

CHAPTER 10

GRAFFITI ON POTTERY VESSELS

Ewa CZYŻEWSKA-ZALEWSKA and Adam ŁAJTAR

This chapter presents the graffiti on pottery vessels found during the archaeological work carried out between 2019 and 2022 by the Polish-Sudanese Expedition to Soba, the capital of the medieval Christian Kingdom of Alwa. We were interested only in textual graffiti scratched on the surface of the vessels at the time of their use, deliberately leaving aside geometric and figural graffiti as well as potters' marks; the two latter categories will be presented separately in due time. This chapter consists of two parts. Part one contains the catalogue of objects, with basic data about the inscribed vessels and a full discussion of inscriptions. Part two offers a general study of the material seen as a whole. The following information is presented: places of discovery of the inscribed pots, vessel types, location of inscriptions on the vessels, technique of execution of the inscriptions, the language of the inscriptions, the form of the inscriptions and their contents, dating of the objects, and the cultural assessment of the epigraphical material. For greater clarity, a table summarising the data is presented in this part (**Table 10.1**). In preparing the chapter, Ewa Czyżewska-Zalewska was responsible for the ceramological side of the work and Adam Łajtar for the epigraphical material.

10.1. Catalogue of objects

1. CW1/sf078 (Figure 10.1)

TRENCH: 1/CW.

DEPOSIT: 1, backfill layer.

PHASE: Phase 4, robber activity, occasional occupation (see also Harris Matrix, Chapter 9, **Figure 9.23**).

PHASE DATING: (?).

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and red slipped surfaces (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface, below the rim. Deep carving.

See **Table 10.1**: no 1.

[- - -] $\overline{\ldots}$ [- - -]



Figure 10.1. Bowl with inscription on the internal surface – Inv. No. CW1/sf078 (photo Joanna Ciesielska).

The interpretation of the inscription is uncertain. A horizontal dash above the letters on the right suggests we are dealing with a *nomen sacrum*. If so, the only possibility is to read ι̣γ̣̄ [- - -], i.e., Ἰ̣(ησο)ῦ̣, assuming that a horizontal stroke across the mid-height of the two letters is accidental. The letter preceding Ἰ(ησο)ῦ might be a clumsily executed ϵ of κ̄]ϵ̣, i.e., κ(ύρι)]ε̣. Providing these observations hold true, the inscription can be reconstructed in the following way: [- - - κ(ύρι)]ε̣ Ἰ̣(ησο)ῦ̣ [Χ(ριστ)ὲ - - -], '[- - -] O Lord Jesus Christ [- - -]'. The invocation of Jesus Christ might have been followed by a request, e.g., φύλαξον, 'guard'.

2. GN1/sf213 (Figure 10.2)

TRENCH: 1/GN.

DEPOSIT: 7, destruction layer with traces of burning.

PHASE: Phase 2, kitchen/storage (?) construction (see also Harris Matrix, Chapter 9, Figure 9.27).

PHASE DATING: 7th/8th century – second half of 8th century.

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

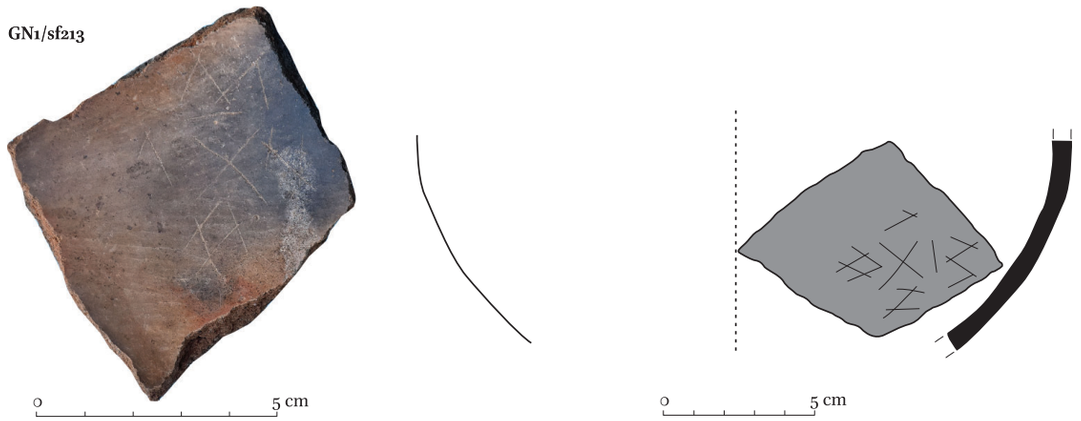

Figure 10.2. Bowl with inscription on the internal surface – Inv. No. GN1/sf213 (photo Joanna Ciesielska; drawn by Ania Weźranowska; digititised by Karolina Warecka, Ewa Czyżewska-Zalewska).

INSCRIPTION: On the interior surface. Delicate carving.

Upright majuscules. *Alpha* with broken bar.

See Table 10.1: no 2.

ⲙ
ⲗⲭ̄ⲏ
ⲁ

The inscription contains the name of the Archangel Michael written so that the letters of the name form a cross. The vowel /i/ was recorded in accordance with the Old Nubian scribal tradition as a dash over the following consonant (ⲭ̄). The position of the letters ⲏ and ⲗ is inverted with regard to the logic of the writing: ⲏ should be placed on the left-hand side and ⲗ on the right-hand one. Note that ⲏ looks more like ⲛ. A similar cross-like recording of the name of Michael is attested many times in Christian Nubia, with the letters ⲏ and ⲗ occurring in both the 'regular' order (ⲏ on the left-hand side and ⲗ on the right-hand one) and the reversed one (ⲗ on the left-hand side and ⲏ on the right-hand one). As examples of the 'regular' recording, one can cite four graffiti on the east side of the passage between Rooms 3 and 4 of the Northwest Annexe of the monastery in Kom H in Dongola (cf. Łajtar and van der Vliet 2017, 46, no XXVII, 47, no XXIX, 48, nos XXXI and XXXIII). Another attestation is yielded by an inscription on an architectonic element, also from Dongola (cf. Łajtar 2003, no 27). The same 'regular' recording is found in graffiti on pottery discovered during the excavations carried out by an expedition of the British Institute of Eastern Africa at Soba East (cf. Jakobielski 1991, 282, fig. 159, nos 4, 7, and 8). To them, one can add 25 in the present collection. The reverse recording, as in the present inscription, seems to have been a Soba peculiarity. It is attested in 3 and 27 in the present collection and also in graffiti on pottery found by the British Mission (cf. Jakobielski 1991, 282, fig. 159, nos 1, 2, and 3).

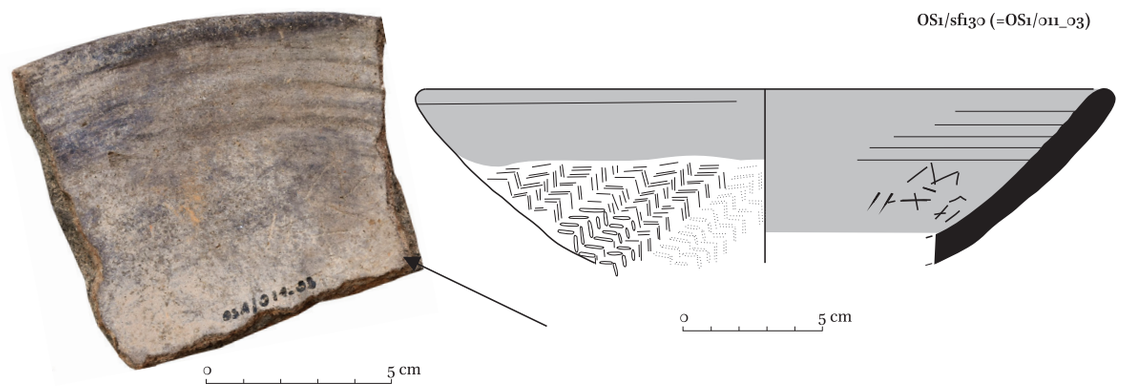

Figure 10.3. Bowl with inscription on the internal surface – Inv. No. OS1/sf130 (= OS1/011_03) (photo Joanna Ciesielska; drawn and digitised by Ania Weźranowska).

3. OS1/sf130 (= OS1/011_03) (Figure 10.3)

TRENCH: 1/OS.

DEPOSIT: 3, backfill layer with remains of occupation material, cut by graves.

PHASE: Phase 5, cemetery (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: 11th century (?) – (?).

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface. Delicate carving. Upright majuscules.

See **Table 10.1**, no 3.

м
ʌ̣χ̄ḥ
ạ̇

For a commentary, see the previous entry.

4. CS1/sf114 (Figure 10.4)

TRENCH: 1/CS.

DEPOSIT: 0, surface.

PHASE: – (see also Harris Matrix, Chapter 9, **Figure 9.25**).

PHASE DATING: Modern.

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface, close to the bottom part. Delicate carving.

See **Table 10.1**, no 5.

ϕ



Figure 10.4. Bowl with inscription on the internal surface – Inv. No. CS1/sf114 (photo Joanna Ciesielska).

It is uncertain whether the inscription is complete or not. Providing yes, it is probably an acronym of a name or a word, e.g., φ(ῶς), 'light'.

5. GN1/sf200 (Figure 10.5)

TRENCH: 1/GN.

DEPOSIT: 7, destruction layer with traces of burning.

PHASE: Phase 2, kitchen/storage (?) construction (see also Harris Matrix, Chapter 9, **Figure 9.27**).

PHASE DATING: 7th/8th century – second half of 8th century.

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

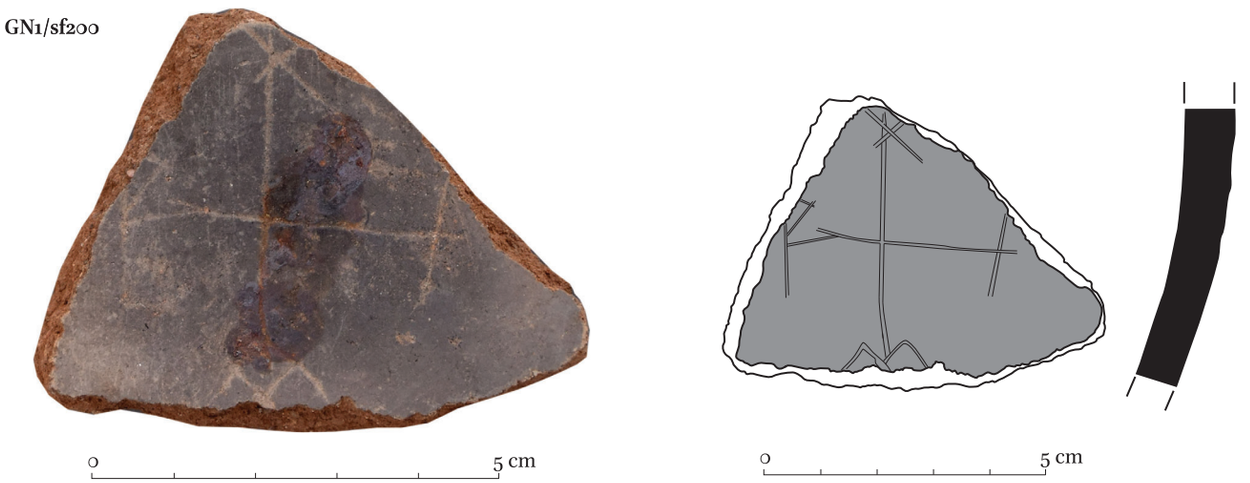

Figure 10.5. Bowl with inscription on the internal surface – Inv. No. GN1/sf200 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

INSCRIPTION: On the interior surface. Delicate carving. See Table 10.1, no 4.

This is obviously a monogram, in which the letters of a word (a name?) are arranged around the central cross. The fragmentary state of preservation of the monogram makes its reading impossible. One can only identify the letter ⲁ at the bottom and ⲣ on the left-hand side. The letter on the right-hand side had one vertical stroke, like ⲣ or ⲧ.

6. OS1/sf036 (Figure 10.6)

TRENCH: 1/OS.

DEPOSIT: 5, backfill layer with traces of occupation, cut by graves.

PHASE: Phase 5, cemetery (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: 11th century (?) – (?).

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface. It is written from right to left and with mirrored letters. Deep carving. Upright majuscules. Note the form of *alpha*: a slightly oblique stroke with a triangle attached to it.

See **Table 10.1**: no 6.

ⲘⲒⲬⲀⲎ[ⲗ]

Writing from right to left and with mirrored letters is attested in Christian Nubia without being frequent. For a collection of attestations and a discussion, see Łajtar 2020, 18 and commentary to no. 493. It may be interpreted as an amusement, possibly having at the same time a 'magical' function.

7. OS2/sf144 (Figure 10.7)

TRENCH: 2/OS.

DEPOSIT: 5, backfill layer.

PHASE: Phases 4 and 5, occasional use of space with traces of later interference (graves, pits) (see also Harris Matrix, Chapter 9, **Figure 9.33**).

PHASE DATING: 11th century – (?),

VESSEL DESCRIPTION: Bowl, mat-impressed pattern on the exterior surface, and black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface. Delicate carving. Upright majuscules.

See **Table 10.1**: no 7.

ⲩ. ⲭⲩ

It is possible that the inscription continued to the left.

The interpretation of the inscription is uncertain. We cautiously take into consideration the possibility that it contained the *nomina sacra* ⲓⲩⲭⲩ, i.e., Ἰ(ησο)ῦ Χ(ριστο)ῦ, separated by something, which may be a strange ligature of ⲁ and ⲱ. Assuming this possibility holds true, the reading should be: [Ἰ(ησο)]ῦ Ἀ.Ω Χ(ριστο)ῦ, 'Jesus, Alpha – Omega, Christ'. Against this possibility is that the *nomina sacra* would not have been marked as such.

8. CS1/sf138 (Figure 10.8)

TRENCH: 1/CS.

DEPOSIT: 3, backfill layer.

PHASE: Phase 2, mud-brick construction (see also Harris Matrix, Chapter 9, **Figure 9.25**).

PHASE DATING: After the first half of the 8th century – end of the 8th century and later.

VESSEL DESCRIPTION: Bowl, red slipped surface.

INSCRIPTION: On the exterior surface, below the rim. Delicate carving. Inclined majuscules. The letters ⲱⲛ in line 1 are in ligature.

See **Table 10.1**: no 10.

[- - -]ⲩⲗⲱⲛ *vac.* . [- - -]
. ⲥⲥ .

We do not know how to read and interpret this inscription. ⲩⲗⲱⲛ in line 1 looks like the ending of a noun in the genitive plural in Greek, e.g., [δο]ύλων, 'of the servants'.

9. OS1/sf035 (Figure 10.9)

TRENCH: 1/OS.

DEPOSIT: 5, backfill layer with traces of consumption cut by graves.

PHASE: Phase 5, cemetery (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: 11th century (?) – (?).

VESSEL DESCRIPTION: Bowl, red slipped surfaces.

INSCRIPTION: Inscription on the interior surface. Delicate carving. Upright majuscules. *Alpha* with broken bar.

See **Table 10.1**: no 9.

[- - -]ⲁ .

The reading of the inscription depends on the interpretation of the second letter, which may be both ⲗ and ⲭ. If it is a ⲗ, we are probably dealing with a version of the name of the Archangel Michael, thus [ⲘⲒⲬ]ⲁⲗ̣ (as in 10). If it is a ⲭ, the reading might be [ⲍ]ⲁⲭ̣, i.e., [Z]ⲁ̣χ̣(αρίας) or [Z]ⲁ̣χ̣(αρίου) (as in 31).

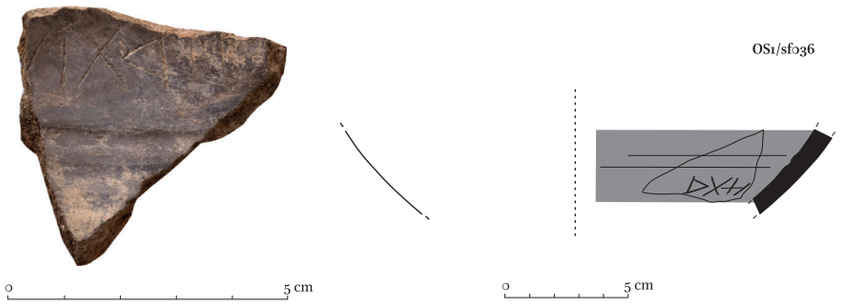

Figure 10.6. Bowl with inscription on the internal surface – Inv. No. OS1/sf036 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ewa Czyżewska-Zalewska).

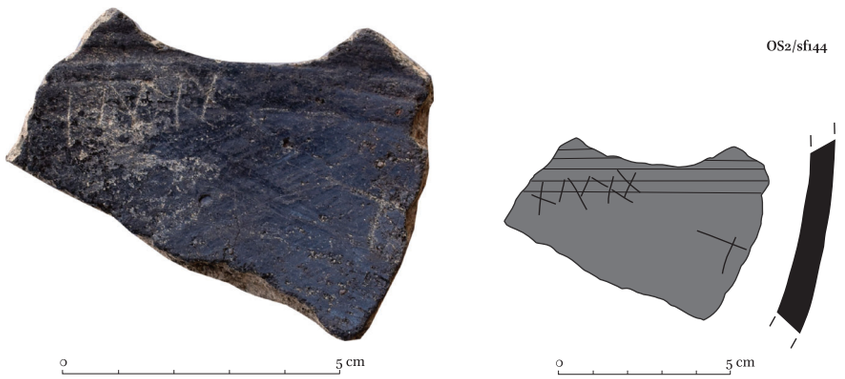

Figure 10.7. Bowl with inscription on the internal surface – Inv. No. OS2/sf144 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot).

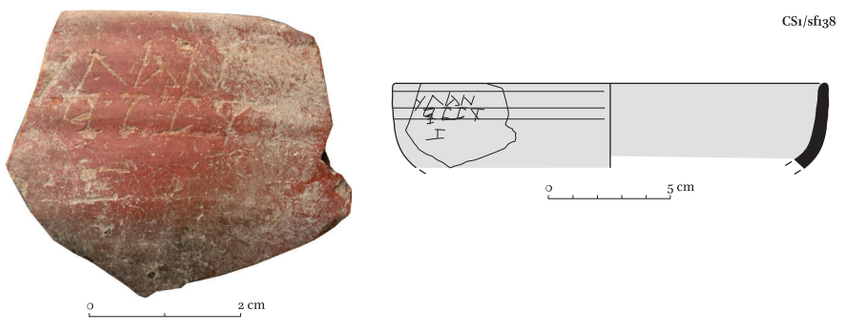

Figure 10.8. Bowl with inscription on the external surface – Inv. No. CS1/sf138 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot).

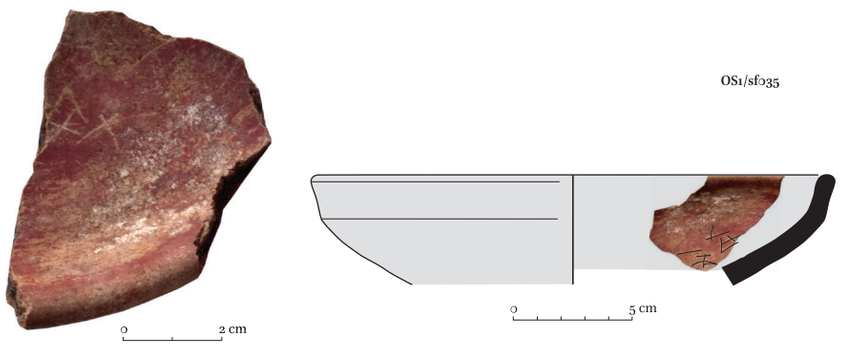

Figure 10.9. Bowl with inscription on the internal surface – Inv. No. OS1/sf035 (photo Joanna Ciesielska; drawn and digitised by Ania Weźranowska).

10. OS1/sf057 (Figure 10.10)

TRENCH: 1/OS.

DEPOSIT: 23, hearth and occupation layer.

PHASE: Phase 3, construction and intensive use of the central feature (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: 10th century.

VESSEL DESCRIPTION: Bowl, red slipped surface.

INSCRIPTION: On the interior surface. Delicate carving. Upright majuscules. *Alpha* with an oblique stroke in the middle running from bottom right to top left.

See **Table 10.1**: no 8.

[- - -]ϫⲁⲗ

This is likely a variant spelling or a mistake for the name of Archangel Michael. In the first case, one should read [ⲙⲓ]ϫⲁⲗ, in the second one [ⲙⲓ]ϫⲁ<ⲏ>ⲗ.

11. CW1/sf095 (Figure 10.11)

TRENCH: 1/CW.

DEPOSIT: 12, destruction layer/ backfill of cut (?).

PHASE: Phase 4, robber activity, occasional occupation (see also Harris Matrix, Chapter 9, **Figure 9.23**).

PHASE DATING: (?).

VESSEL DESCRIPTION: Bowl, red slipped surfaces (see also Chapter 9.3.3.1, in this volume).

INSCRIPTION: On the exterior surface, below the rim. Deep carving. Round upright majuscules.

See **Table 10.1**: no 11.

[- - -]ον τοῖς δούλοις τοῦ δ[- - -]

[- - -]to the servants of [- - -].

Inscription 16, reading [- - -]ον τοῖς δούλο[ις - - -], might have contained the same text. It is even possible that the two inscriptions were executed by the same hand. The nature of the text contained in the inscription is uncertain given its fragmentary state of preservation. Cautiously, we suggest that it was a prayer for people designated as 'servants' (οἱ δοῦλοι). In accordance with this suggestion,]ον on the left-hand side should be the ending of the aorist imperative of a verb expressing a request, e.g., βοήθησ]ον, 'help'. This should be preceded by invocation of the Divinity, e.g., κ(ύρι)ε Ἰ(ησο)ῦ Χ(ριστ)έ, 'Lord Jesus Christ'. It is uncertain how to supplement the word in δ- on the right-hand side, obviously functioning as an indirect object for τοῖς δούλοις. The inscription as reconstructed above finds a parallel in a 5th/6th century inscription on a balustrade of the nave of the so-called 'temple-church' in Aphrodisias in Asia Minor (Roueché 2004, no 92): [- - -]ι̣ήλ, βοήθησον τοῖς δούλοις σου Θεοδωρήτῳ κ(αὶ) Κυριακῷ, '[- - -]iel (perhaps Gabriel), help your servants Theodoretus and Cyriacus'. The reconstructed text seems to be long enough to go around the entire perimeter of the bowl or a large part of it.

12. GN1/sf198 (Figure 10.12)

TRENCH: 1/GN.

DEPOSIT: 7, destruction layer with traces of burning.

PHASE: Phase 2, kitchen/storage (?) construction (see also Harris Matrix, Chapter 9, **Figure 9.27**).

PHASE DATING: 7th/8th century – second half of 8th century.

VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface. Deep carving. Upright majuscules.

See **Table 10.1**: no 12.

[- - -] ⲙⲓϫⲁⲏ[ⲗ - - -]

It is possible that the inscription contained nothing except for the name of the Archangel Michael.

13. GN1/sf157 (Figure 10.13)

TRENCH: 1/GN.

DEPOSIT: 4, destruction layer with traces of burning?

PHASE: Phase 5, occasional occupation (see also Harris Matrix, Chapter 9, **Figure 9.27**).

PHASE DATING: First half of the 9th century.

VESSEL DESCRIPTION: Bowl, black slipped surfaces (see also Chapter 9.3.2.2, in this volume).

INSCRIPTION: On the interior surface. Deep carving. *Epsilon* square.

See **Table 10.1**: no 20.

We are dealing with the middle part of the right-hand side of a monogram, whose letters were arranged around a central cross. The letter ⲉ is preserved, attached to the right-hand ending of the horizontal bar of the cross and part of a letter, probably ⲡ, attached to the bottom ending of the vertical bar. Faint traces of a letter, possibly ⲧ, are also visible at the top ending of the vertical bar. This suggests that the monogram contained the name of Peter in either nominative (Πέτρος) or, more probably, genitive (Πέτρου). The expected ⲣ was probably attached to the left-hand ending of the horizontal bar of the cross, and the diphthong ⲟⲩ was written as a ligature above the dash of ⲧ. The inscription referred to an individual (an owner of the vessel) rather than to the Apostle Peter. It is possible that no. 17 contained the same or a similar monogram.

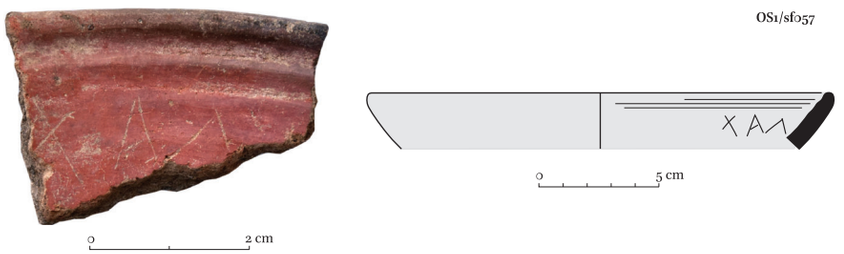

Figure 10.10. Bowl with inscription on the internal surface – Inv. No. OS1/sf057
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ewa Czyżewska-Zalewska).



Figure 10.11. Bowl with inscription on the external surface – Inv. No. CW1/sf095
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot).

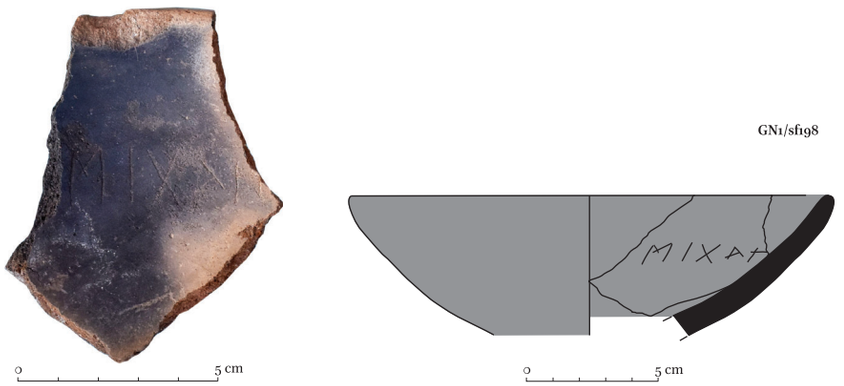

Figure 10.12. Bowl with inscription on the internal surface – Inv. No. GN1/sf198
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

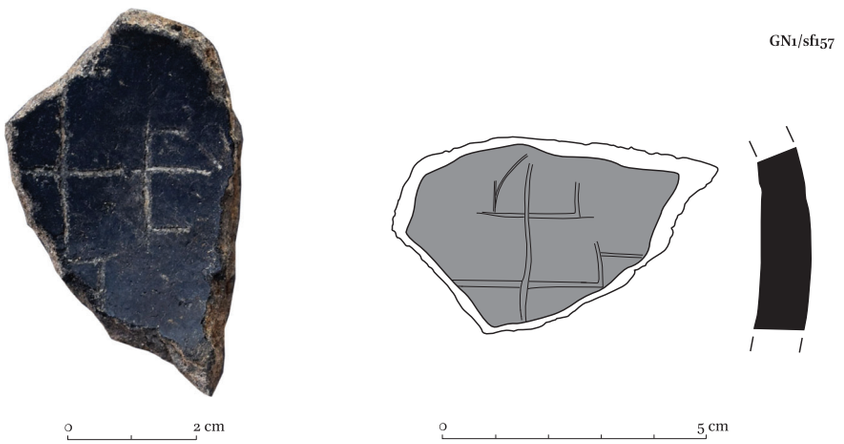

Figure 10.13. Bowl with inscription on the internal surface – Inv. No. GN1/sf157
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

14. GN1/sf158 (Figure 10.14)
TRENCH: 1/GN.
DEPOSIT: 1, topsoil.
PHASE: Phase 5, occasional occupation (see also Harris Matrix, Chapter 9, **Figure 9.27**).
PHASE DATING: First half of the 9th century.
VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.2.2, in this volume).
INSCRIPTION: On the interior surface. Delicate carving. Upright majuscules. Letters separated by large free spaces.
See **Table 10.1**: no 21.

[- - -]ⲡ ⲁ [- - -]

Large spaces separating letters suggest that the letters do not form a word but stand alone, perhaps as acronyms. We do not know how to interpret these acronyms.

15. CW1/sf118 (Figure 10.15)
TRENCH: 1/CW.
DEPOSIT: 18, destruction layer/ fill of cut (?).
PHASE: Phase 4, robber activity, occasional occupation (see also Harris Matrix, Chapter 9, **Figure 9.23**).
PHASE DATING: (?).
VESSEL DESCRIPTION: Bowl, black slipped surfaces (see also Chapter 9.3.3.1, in this volume).
INSCRIPTION: On the exterior surface. Delicate carving. Round upright majuscules. One notes a large free space between the letters ϕ and ω.
See **Table 10.1**: no 17.

φῶς

Light.

Two graffiti reading φῶς, 'light', are attested on the walls of the upper church at Banganarti (Łajtar 2020, nos 79 and 81). Another wall inscription with the same reading is known from the Northwest Annexe of the monastery on Kom H in Dongola (unpublished). φῶς, 'light', should probably be interpreted as a kind of acclamation, perhaps an abbreviated version of the more common φῶς – ζωή, 'light – life' (for which, see Leclercq 1939; Horsley 1981, 98–99, no 59; Tsakos 2012). The acclamation φῶς – ζωή goes back to Jn. 1.4 and 8.12, and transmits the belief that a true life can only be in and through God understood as light.

16. G1/sf119 (Figure 10.16)
TRENCH: 1/G.
DEPOSIT: 1, backfill layer.
PHASE: Phase 3, occasional occupation? (without architectural interference) (see also Harris Matrix, Chapter 9, **Figure 9.29**).
PHASE DATING: No data
VESSEL DESCRIPTION: Bowl, black slipped surfaces (see also Chapter 9.3.3.1, in this volume).
INSCRIPTION: On the exterior surface, below the rim. Deep carving. Round upright majuscules. *Delta* turned by 45 grades to the left, the right-hand stroke of *lambda* prolonged to the bottom.
See **Table 10.1**: no 16.

[- - -]ον τοῖς δούλο[ις - - -]

The inscription may be identical as that of no. 11 (see commentary there).

17. GN1/sf189 (Figure 10.17)
TRENCH: 1/GN.
DEPOSIT: 7, destruction layer with traces of burning.
PHASE: Phase 2, kitchen/storage (?) construction (see also Harris Matrix, Chapter 9, **Figure 9.27**).
PHASE DATING: 7th/8th century – second half of 8th century.
VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.3.1, in this volume).
INSCRIPTION: On the interior surface. Delicate carving. The inscription is clumsily executed.
See **Table 10.1**: no 18.

The inscription contained a clumsily executed monogram, whose letters were probably arranged around the central cross. One can identify an ϵ on the right and the diphthong ογ at the top. This resembles no. 13 (perhaps the same monogram and the same person).

18. GN1/sf199 (Figure 10.18)
TRENCH: 1/GN.
DEPOSIT: 7, destruction layer with traces of burning.
PHASE: Phase 2, kitchen/storage (?) construction (see also HarrisMatrix, Chapter 9, **Figure 9.27**).
PHASE DATING: 7th/8th century – second half of 8th century.
VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.2.2, in this volume).
INSCRIPTION: On the interior surface. Upright majuscules. Delicate carving. Note that the dash of *pi* was made by multiple movements of the tool. Upright majuscules.
See **Table 10.1**: no 13.

$\overline{\text{χ}}\,\overline{\text{π}}$[$\overline{\text{ϑ}}$[

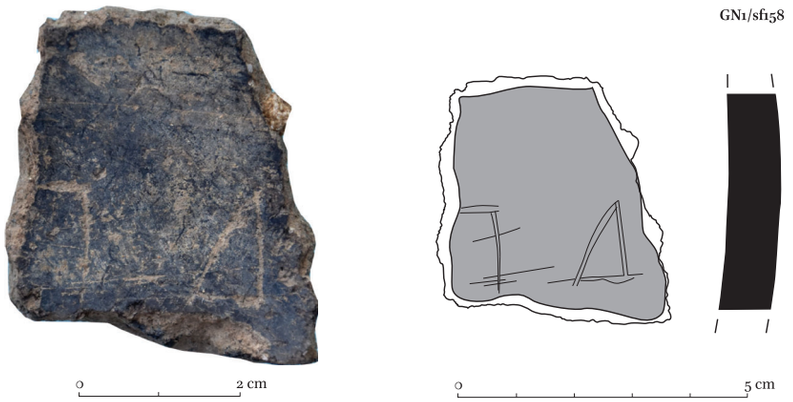

Figure 10.14. Bowl with inscription on the internal surface – Inv. No. GN1/sf158
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).



Figure 10.15. Bowl with inscription on the external surface – Inv. No. CW1/sf118
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

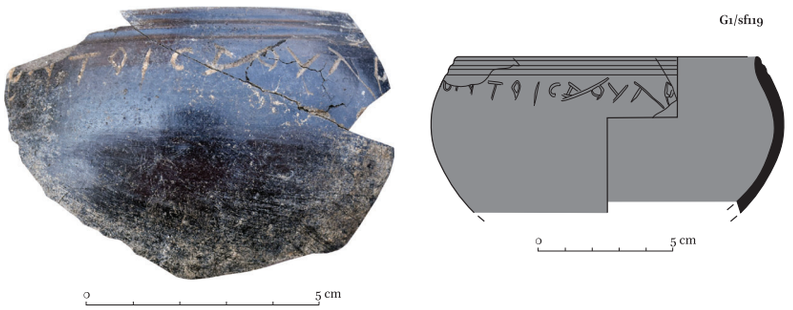

Figure 10.16. Bowl with inscription on the external surface – Inv. No. G1/sf119
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot, Ewa Czyżewska-Zalewska).

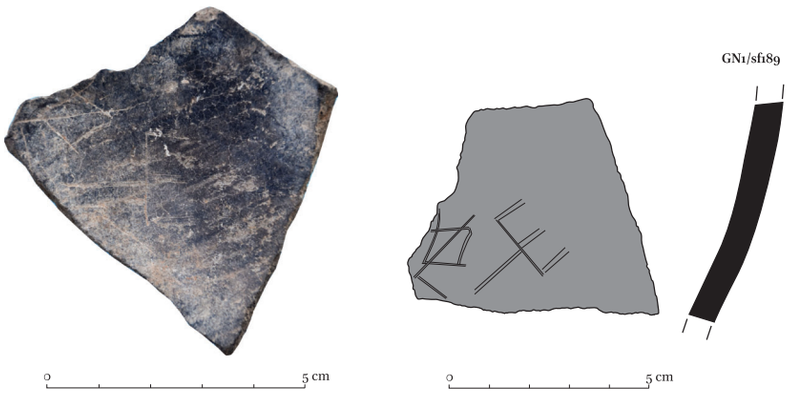

Figure 10.17. Bowl with inscription on the internal surface – Inv. No. GN1/sf189
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

This is the well-known numerical cryptogram of the name of the Archangel Michael: ⲙ (= 40) + ⲓ (= 10) + ⲭ (= 600) + ⲁ (= 1) + ⲏ (= 8) + ⲗ (= 30) = ⲭⲡⲑ (= 689). Michael cryptogram was extremely popular in Christian Nubia. It is attested, among other examples, on an ostracon and in graffiti on pottery vessels discovered by the British Mission in Soba (for the ostracon, see Jakobielski 1991, 279, no 4, with fig. 158; for the graffiti, see Jakobielski 1991, 288, fig. 165, nos 190, 191, 192 (?), 193 (?); Anderson 1998, 191, fig. 116, nos 123 and 124 [note that the cryptogram is written from right to left in this case]).

19. OS1/sf025 (Figure 10.19)

TRENCH: 1/OS.
DEPOSIT: 5, backfill layer with traces of consumption cut by graves.
PHASE: Phase 5, cemetery (see also Harris Matrix, Chapter 9, **Figure 9.31**).
PHASE DATING: 11th century (?) – (?).
VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.2.2, in this volume).
INSCRIPTION: On the exterior surface. Deep carving. Angular upright majuscules.
See **Table 10.1**: no 14.

ⲁⲃⲣ̣[- - -]

The fourth letter has a vertical stroke on the left. Considering that this letter must be a vowel, only ⲏ and ⲓ, less probably ⲩ, can be taken into account. This excludes the reading ⲁⲃⲣⲁ[ⲙ]. ⲁⲃⲣ̣ [- - -] is either one word (name) or the word ⲁⲃ(ⲃⲁ), 'father', followed by a name in ⲣ̣ [- - -]. As names in ⲁⲃⲣⲏ- / ⲁⲃⲣⲓ- are not attested in Christian Nubia, the second possibility is more likely.

20. OS1/sf037 (Figure 10.20)

TRENCH: 1/OS.
DEPOSIT: 5, fill layer with traces of occupation, cut by graves.
PHASE: Phase 5, cemetery (see also Harris Matrix, Chapter 9, **Figure 9.31**).
PHASE DATING: 11th century (?) – (?).
VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.2.2, in this volume).
INSCRIPTION: On the exterior surface, below the rim. Deep carving. Upright majuscules, apparently tall and slender.
See **Table 10.1**: no 15.

[- - -]ⲏ̣ⲣ̣[- - -]

The identification of the letters is uncertain. The second letter may also be a ⲃ. The horizontal bar in ⲏ is placed very high.

21. OS1/sf065 (Figure 10.21)

TRENCH: 1/OS.
DEPOSIT: 31, occupational layer.
PHASE: Phase 1, occupation before building construction (see also Harris Matrix, Chapter 9, **Figure 9.31**).
PHASE DATING: 6th/7th century – 7th century.
VESSEL DESCRIPTION: Bowl, black slipped surface (see also Chapter 9.3.2.2, in this volume).
INSCRIPTION: On the interior surface. Delicate carving. Upright, angular majuscule.
See **Table 10.1**: no 19.

[- - -]ϖ̄[- - -]

The dash over the letters suggests that we are dealing with a symbol or an abbreviation, or, less likely, with an element of a numeral. It is also possible to read it as [- - - ⲁ̄]ϖ̄[- - -] (the symbol Alpha – Omega) or [- - - ⲓ̈]ϖ̄[ⲩ - - -] (abbreviation for the name Ἰωάννου).

22. CW1/sf099 (probably the same vessel as the next one) (Figure 10.22)

TRENCH: 1/CW.
DEPOSIT: 17, activity layer/cooking debris.
PHASE: Phase 1, mud-brick architecture (see also Harris Matrix, Chapter 9, **Figure 9.23**).
PHASE DATING: 6th/7th century – (?).
VESSEL DESCRIPTION: Bowl, with painted surfaces, so-called 'Soba Ware' (see also Chapter 9.3.3.2, in this volume), perhaps the same as in 23.
INSCRIPTION: On the exterior surface, below the rim. Deep carving. Upright majuscules. *Alpha* in form of an oblique stroke with a triangle attached to it on the left.
See **Table 10.1**: no 22.

[- - -]ⲥ̣ⲁⲡⲟⲡⲁ[- - -]

One is tempted to read [- - -]ς ἀπὸ πα[ντὸς - - -], '[- - -] from every [- - -]'. If so, this was likely a text with literary overtones, a prayer or a quotation from Christian literature. The conditions provided by the inscriptions are fulfilled, e.g., by Jb. 1.1. (ὁ ἄνθρωπος ἐκεῖνος ἀληθινός, ἄμεμπτος, δίκαιος, θεοσεβής, ἀπεχόμενος ἀπὸ παντὸς πονηροῦ πράγματος; similarly

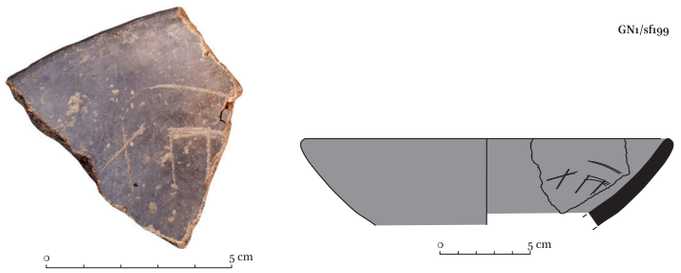

Figure 10.18. Bowl with inscription on the internal surface – Inv. No. GN1/sf199
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

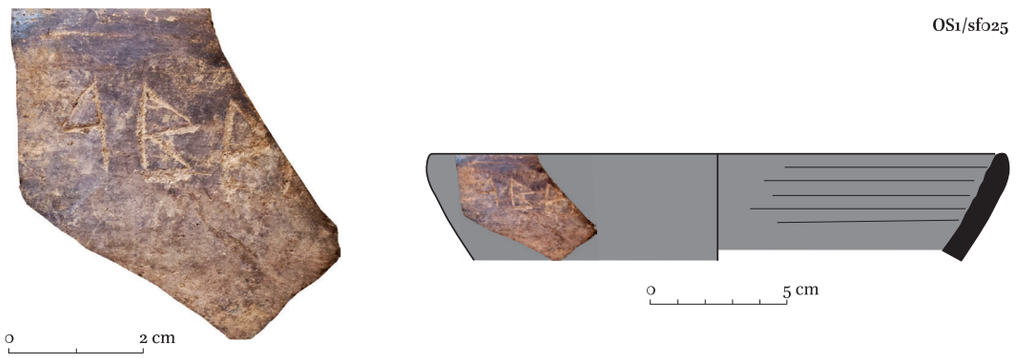

Figure 10.19. Bowl with inscription on the external surface – Inv. No. OS1/sf025
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ewa Czyżewska-Zalewska).

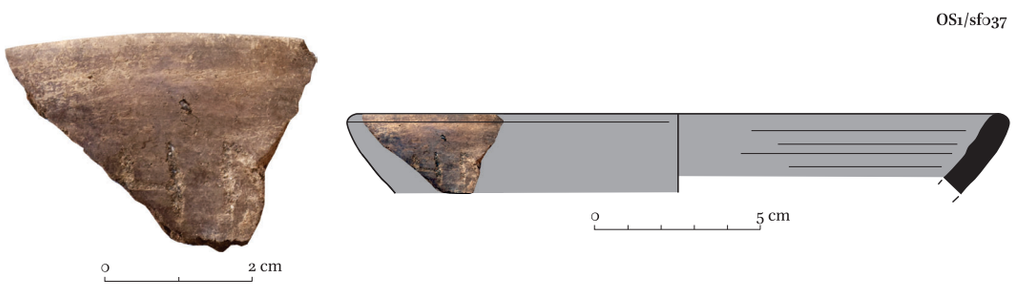

Figure 10.20. Bowl with inscription on the external surface – Inv. No. OS1/sf037
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ewa Czyżewska-Zalewska).

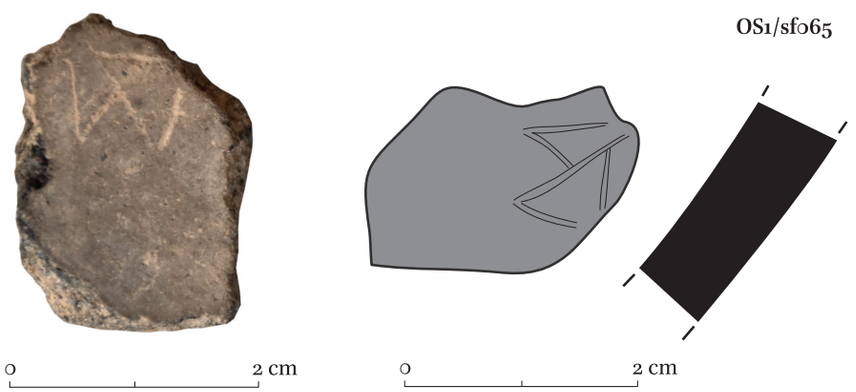

Figure 10.21. Bowl with inscription on the internal surface – Inv. No. OS1/sf065
(photo Joanna Ciesielska; drawn and digitised by Ania Weźranowska).

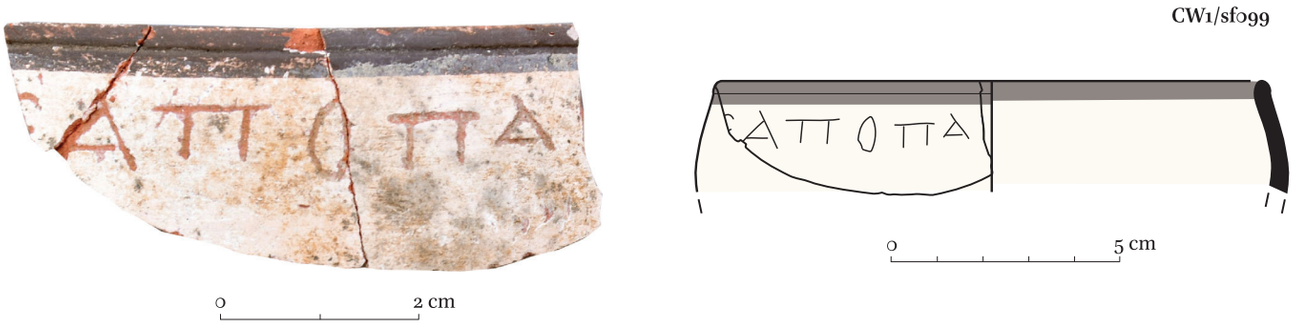

Figure 10.22. Bowl with inscription on the external surface – Inv. No. CW1/sf099 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot).

1.8; cf. also Jb. 2.3: ἀπεχόμενος ἀπὸ παντὸς κακοῦ), Act. 2.5 (ἦσαν δὲ εἰς Ἰηρουσαλὴμ κατοικοῦντες Ἰουδαῖοι, ἄνδρες εὐλαβεῖς ἀπὸ παντὸς ἔθνους τῶν ὑπὸ τὸν οὐρανόν), or 2 Cor. 7.1 (καθαρίσωμεν ἑαυτοὺς ἀπὸ παντός μολυσμοῦ σαρκὸς καὶ πνεύματος). Given the fragmentary state of preservation of the inscription, the above remarks should be taken with much caution.

23. CW1/sf135 (probably the same vessel as the preceding one) (Figure 10.23)

TRENCH: 1/CW.

DEPOSIT: 13, walking level.

PHASE: Phase 2, post-holes and wooden architecture (see also Harris Matrix, Chapter 9, **Figure 9.23**).

PHASE DATING: (?) – 9th/11th century.

VESSEL DESCRIPTION: Bowl, with painted surfaces, so-called 'Soba Ware' (see also Chapter 9.3.3.2, in this volume), perhaps the same as in 22.



Figure 10.23. Bowl with inscription on the external surface – Inv. No. CW1/sf135 (photo Joanna Ciesielska).

INSCRIPTION: On the exterior surface, below the rim. Deep carving. Epigraphic majuscule slightly inclined to the left.

See **Table 10.1**: no 23.

[- - -]ⲙ[- - -]

Even if 22 and 23 were probably written on the sherds of the same vessel, they were two separate inscriptions, as suggested by the height of letters and the dynamic of the script.

24. CW1/sf134 (Figure 10.24)

TRENCH: 1/CW.

DEPOSIT: 13, walking level.

PHASE: Phase 2, postholes and wooden architecture (see also Harris Matrix, Chapter 9, **Figure 9.23**).

PHASE DATING: (?) – 9th/11th century.

VESSEL DESCRIPTION: Bowl, with painted surfaces, so-called 'Soba Ware' (see also Chapter 9.3.3.2, in this volume).

INSCRIPTION: On the exterior surface, below the rim. Deep carving. Upright majuscules. *Alpha* with a broken bar.

† ⲁⲛ̀ [- - -]

The letter shifted to mark the abbreviation had one vertical stroke, which suggests a ⲣ or a ⲧ. If it is a ⲣ, one may think about the word ἄνγ̣(ελος) or, more probably, a compound name like Ἀνγ(ελο)[φόρος] recorded phonetically instead of ἄγγ(ελος)/Ἀγγ(ελο)[φόρος]. If it is a ⲧ, the reading might be Ἀντ̣(ώνιος). The inscription was probably the signature of the owner of the vessel.

25. GN/sf151 (Figure 10.25)

Area: GN.

DEPOSIT: Surface.

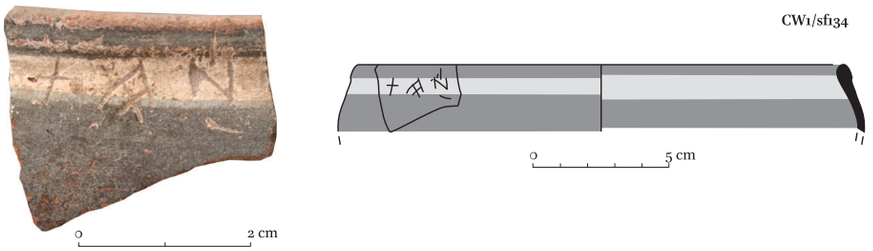

Figure 10.24. Bowl with inscription on the external surface – Inv. No. CW1/sf134 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot).

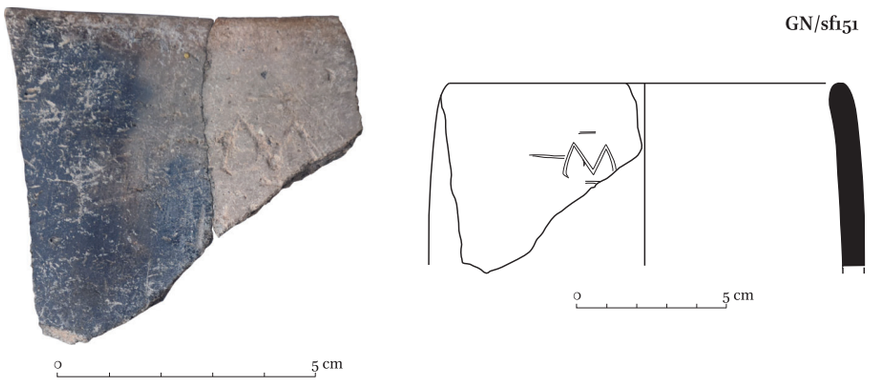

Figure 10.25. Pot with inscription on the external surface – Inv. No. GN/sf151 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Karolina Warecka, Ewa Czyżewska-Zalewska).

PHASE: Mixed top soil (see also Harris Matrix, Chapter 9, **Figure 9.27**).
Date of the phase: No data.
VESSEL DESCRIPTION: Pot, burnished surfaces.
INSCRIPTION: On the exterior surface. Deep carving. Upright majuscules.
See **Table 10.1**: no 25.

ⲙ
ⲏ$\bar{\text{ⲭ}}$[ⲗ]
[ⲁ]

In spite of the fragmentary state of preservation of the inscription, one can easily recognise the same contents as in 2, 3, 27, and 37: i.e., the name of the Archangel Michael written so that the letters form a cross. In contrast to 2, 3, and 27, this inscription displays the 'regular' sequence of the letters ⲏ and ⲗ, with ⲏ on the left and ⲗ on the right.

26. OS2/089_12 (Figure 10.26)
TRENCH: 2/OS.
DEPOSIT: 3, fill layer.
PHASE: Phases 4 and 5, occasional use of space with traces of later interference (graves, pits) (see also Harris Matrix, Chapter 9, **Figure 9.33**).
PHASE DATING: 11th century – (?).
VESSEL DESCRIPTION: Pot, burnished exterior surface.
INSCRIPTION: On the exterior surface. Delicate carving. Letters incompletely preserved. The inscription runs obliquely with relation to technological lines.
See **Table 10.1**: no 26.

ⲩⲭ

Perhaps this should read Ἰ(ησο)ῦ Χ(ριστο)ῦ, but there are no traces of either ⲓ on the left or ⲩ on the right.

27. GN2/sf214 (Figure 10.27)
TRENCH: 2/GN.
DEPOSIT: 5, hearth.
PHASE: Phase 6, cessation of activity, refilling of Features 3 and 6, plus deposition of upper layers (see also Harris Matrix, Chapter 6, **Figure 6.12**).
PHASE DATING: After 12th century.

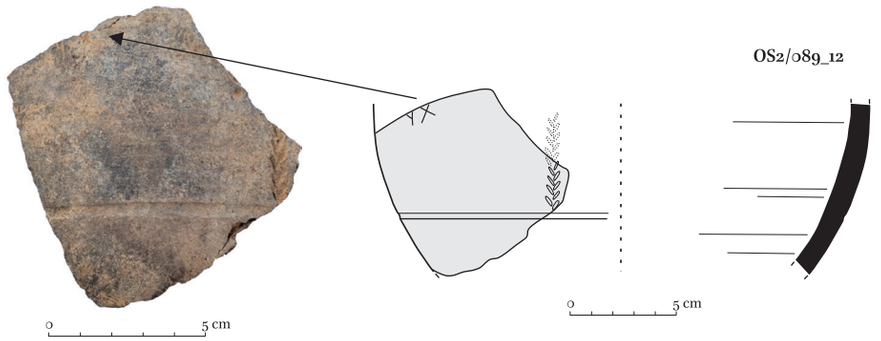

Figure 10.26. Pot with inscription on the external surface – Inv. No. OS2/089_12 (photo Ania Weźranowska; drawn and digitised by Ania Weźranowska).

VESSEL DESCRIPTION: Pot, slipped and burnished exterior surface (see also Chapter 9.3.2.1, in this volume).

INSCRIPTION: On the exterior surface, below the rim. Deep carving. Upright majuscules. The bottom of *alpha* assumes a strange form resembling a bow, *lambda* is provided with an additional oblique stroke on the left.

See **Table 10.1**: no 28.

ⲙ
ⲗⲭⲏ
ⲁ

The inscription is identical to 2 and 3 except for the lack of the horizontal dash for /i/ over ⲭ. The dash for /i/ was frequently omitted in Old Nubian literacy.



Figure 10.27. Pot with inscription on the external surface – Inv. No. GN2/sf214 (photo Joanna Ciesielska).

28. OS1/sf053 (Figure 10.28)

TRENCH: 1/OS.

DEPOSIT: 22, fill layer?

PHASE: Phase 4, occasional use of the central feature (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: End of 10th century – beginning of 11th century.

VESSEL DESCRIPTION: Pot, slipped and burnished exterior surface (see also Chapter 9.3.2.1, in this volume).

INSCRIPTION: On the exterior surface. Epigraphic majuscules. Crude graffito, made by multiple movements of the tool. Irregular letters. *Alpha* assumes two forms: an oblique stroke with a triangle attached to it on the left (the first occurrence of the letter) and *alpha* with a broken bar (the second occurrence of the letter).

See **Table 10.1**: no 30.

[- - - ⲙ]ⲁⲣⲓⲁⲛ̣[- - -]

We are most probably dealing with a proper name reading [- - - M]αριαν̣[ός - - -], [- - - M]αριαν̣[οῦ - - -], [- - - ⲙ]ⲁⲣⲓⲁⲛ̣[ⲕⲟⲩⲁⲁ - - -], [- - - ⲙ]ⲁⲣⲓⲁⲛ̣[ⲧⲁ - - -], or similar, and referring to the owner of the vessel. It is possible that the inscription contained nothing except for the name.

29. OS2/sf062 (Figure 10.29)

TRENCH: 2/OS.

DEPOSIT: 2, fill layer.

PHASE: Phases 4 and 5, occasional use of space with traces of later interference (graves, pits) (see also Harris Matrix, Chapter 9, **Figure 9.33**).

PHASE DATING: 11th century – (?).

VESSEL DESCRIPTION: Pot, slipped and burnished exterior surface (see also Chapter 9.3.2.1, in this volume).

INSCRIPTION: On the exterior surface, below the rim. Delicate carving. Upright majuscules.

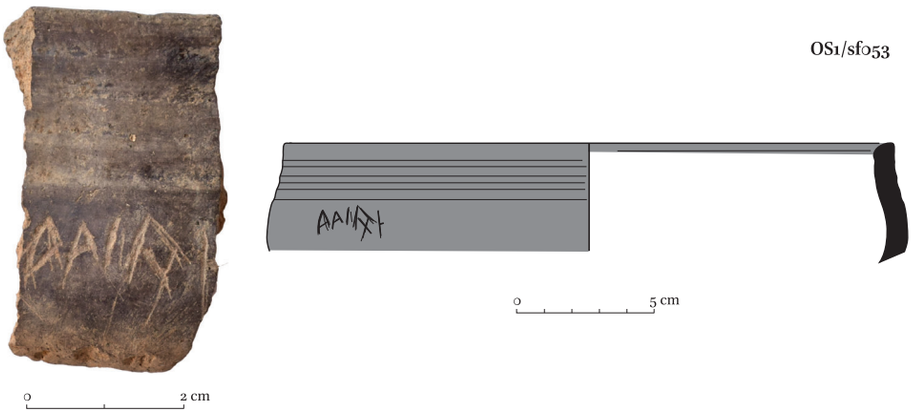

Figure 10.28. Pot with inscription on the external surface – Inv. No. OS1/sf053
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ewa Czyżewska-Zalewska).

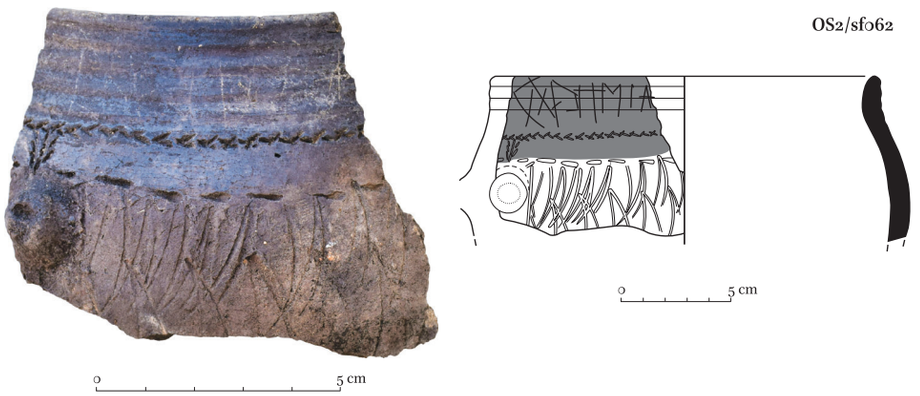

Figure 10.29. Pot with inscription on the external surface – Inv. No. OS2/sf062
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Marta Momot).

See Table **10.1**: no 29.

[- - -]ⲁ̣ⲣ̣`ⲭ̣´ ...ⲏⲙⲓⲁ[- - -]

The transcription of the inscription is tentative and its reading is uncertain. ⲁ̣ⲣ̣`ⲭ̣´, i.e., ἀ̣ρχ̣(ι-), if correctly identified, must be the beginning of a title of a person, perhaps ἀ̣ρχ̣(ιμανδρίτης); see commentary to 35. What follows may be the name of the monastery, in which the person commemorated by the inscription was an archimandrite. One can tentatively read ⲓ̣ⲉ̣ⲣⲏⲙⲓⲁ, '(monastery) of Jeremiah', however, this violates the so-called Youtie's law, which enjoins one not to assume a scribal mistake in the vicinity of the lacuna (the correct reading should be ⲓⲉⲣⲉⲙⲓⲁ). ⲁ̣ⲣ̣`ⲭ̣´ should have been preceded by the name of the person commemorated by the inscription, perhaps supplemented by other elements of his personal presentation. The entire inscription can be interpreted as the signature of the vessel's owner.

30. KomN/sf041 (Figure 10.30)

Area: Mound N.

Deposit: Surface.

Phase dating: –

Vessel description: Globular jar with outflaring rim, plain surface (see also Chapter 9.3.1.1, in this volume).

Inscription: On the exterior surface, below the rim, upside down to the vessel position. Deep carving. Round upright majuscules. Letters widely spaced.

See **Table 10.1**: no 31.

[- - -]ⲉⲗⲡⲓⲍⲉ[- - -]

The inscription contains a form of the verb ἐλπίζω, 'to hope', or a compound thereof. The text may or may not be complete. If it is complete, it has the second person singular present imperative ἔλπιζε, 'have hope'. If it is incomplete, it may comprise such forms as ἐλπίζε[ιν], [ἀν]ελπίζε[ιν], ἐλπίζε[τε], ἐλπίζε[ται], etc. It is further possible that the verb ἐλπίζω, whatever its form,



Figure 10.30. Jar with inscription on the external surface – Inv. No. KomN/sf041 (photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ewa Czyżewska-Zalewska).

was only an element of a longer inscription as, for example, ἔλπιζε [ἐπὶ/εἰς τὸν θεόν/κύριον], 'have hope in God/Lord'. This could have been preceded by the mention of the addressee of this exhortation. The inscription reconstructed as such may be a quotation from a literary or paraliterary composition. There is a possibility that the inscription was executed not on a complete vessel but only on a sherd, in other words, that it is an ostracon. If so, the text probably only read ἔλπιζε. Such an ostracon could be a by-product of educational activity.

31. OS1/sf026 (Figure 10.31)

TRENCH: 1/OS.

DEPOSIT: 7, fill layer with traces of collapsed walls and ashes.

PHASE: Phase 4, occasional use of the central feature (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: End of 10th century – beginning of 11th century

VESSEL DESCRIPTION: Globular jar with outflaring rim, plain surface (see also Chapter 9.3.1.1, in this volume).

INSCRIPTION: On the interior surface. Deep carving. Upright majuscules. *Alpha* with a broken bar.

See **Table 10.1**: no 32.

[- - -] . ⲁⲭ

Perhaps one should transcribe [- - -] ⳟⲁⲭ, and interpret this as an abbreviated notation of the name Zacharias, thus [- - -] Ⳟαχ(αρίας) or [- - -] Ⳟαχ(αρίου). The name Zacharias was common in Christian Nubia. It was borne, among others, by several kings of Makuria between the 8th and the 11th century. Zacharias as mentioned in this inscription was probably the owner of the vessel. It is possible that the inscription contained nothing else except for the name of the owner. Inscription 9 might also have contained the name of Zacharias.

32. OS2/sf050 (Figure 10.32)

TRENCH: 2/OS.

DEPOSIT: 1, fill layer below topsoil.

PHASE: Phases 4 and 5, occasional use of space with traces of later interference (graves, pits) (see also Harris Matrix, Chapter 9, **Figure 9.33**).

PHASE DATING: 11th century – (?).

VESSEL DESCRIPTION: Globular jar with outflaring rim, plain surfaces, see also Chapter 9.3.1.1, in this volume.

INSCRIPTION: On the interior surface. Deep carving. Upright epigraphic majuscules.

See **Table 10.1**: no 34.

[- - -]ⲗ

This is likely a word (a name) written in an abbreviated form.

33. OS1/074_07 (Figure 10.33)

TRENCH: 1/OS.

DEPOSIT: 14, robber cut.

PHASE: Phase 4, occasional use of the central feature (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: End of 10th century – beginning of 11th century.

VESSEL DESCRIPTION: Not possible to determine.

INSCRIPTION: On the exterior surface. Delicate carving. The inscription is too badly preserved to evaluate the script.

See **Table 10.1**: no 35.

ⳟ[.]ⲁ . . . .

No plausible reading can be offered for this inscription.

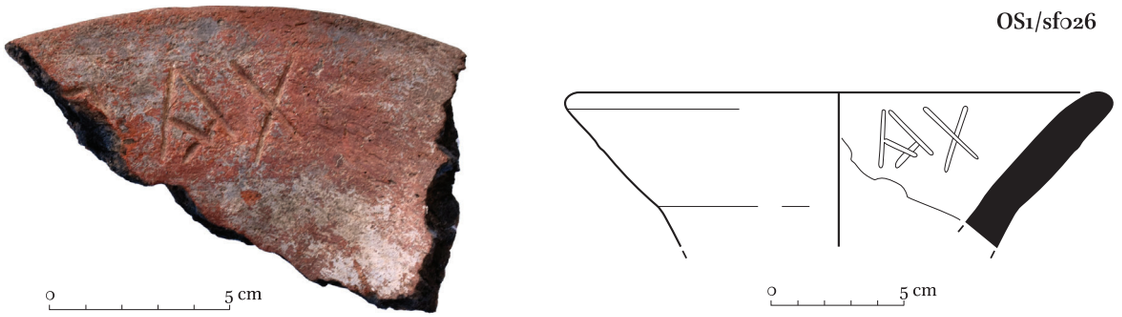

Figure 10.31. Jar with inscription on the internal surface – Inv. No. OS1/sf026
(photo Joanna Ciesielska; drawing Ania Weźranowska; digitised by Ania Weźranowska, Marta Momot).

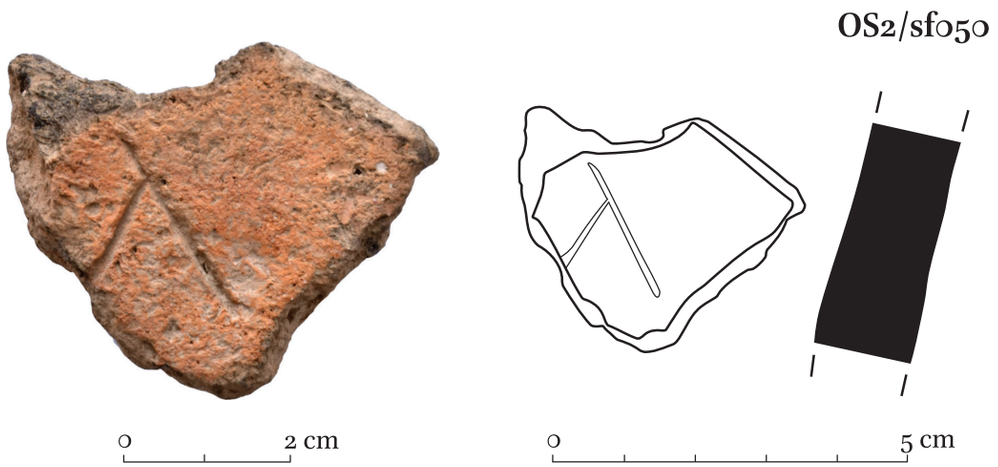

Figure 10.32. Jar with inscription on the internal surface – Inv. No. OS2/sf050
(photo Joanna Ciesielska; drawing Ania Weźranowska, digitised by Ania Weźranowska, Marta Momot).

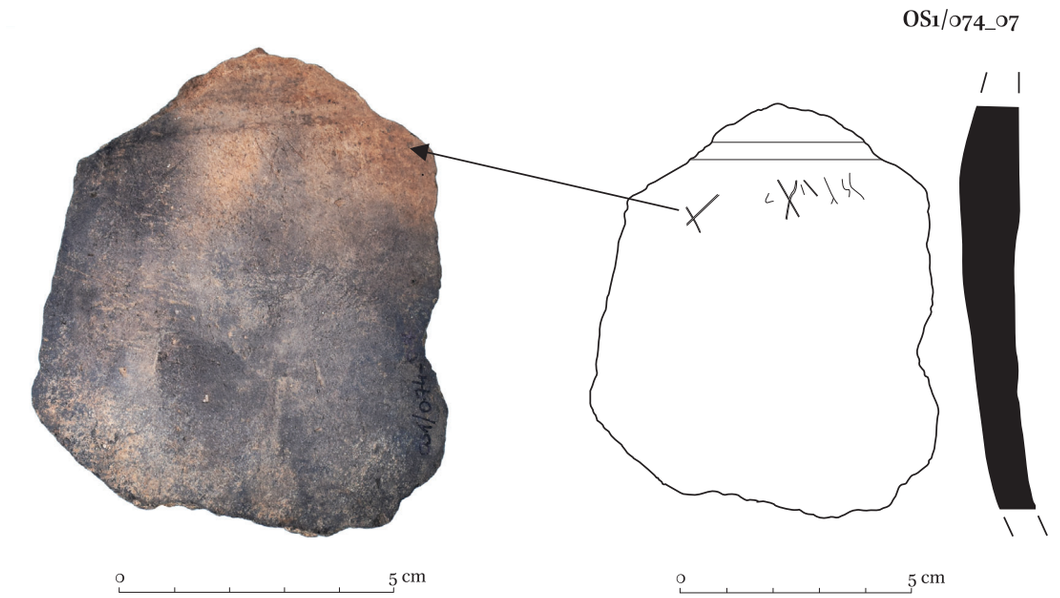

Figure 10.33. Undetermined vessel with inscription on the internal surface – Inv. No. OS1/074_07
(photo Joanna Ciesielska; drawn and digitised by Ewa Czyżewska-Zalewska).

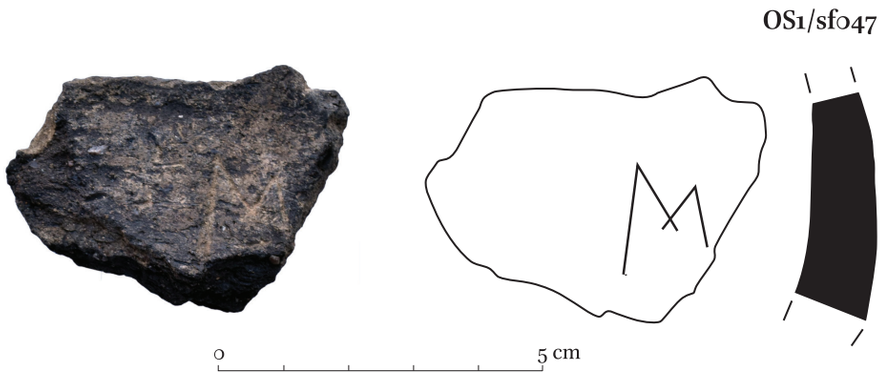

Figure 10.34. Undetermined vessel with inscription on the internal surface – Inv. No. OS1/sf047 (photo Joanna Ciesielska; drawn and digitised by Ania Weźranowska).

34. OS1/sf047 (Figure 10.34)

TRENCH: 1/OS.

DEPOSIT: 8, dissolved mud from walls with partially preserved mud bricks.

PHASE: Phase 4, occasional use of the central feature (see also Harris Matrix, Chapter 9, **Figure 9.31**).

PHASE DATING: End of 10th century – beginning of 11th century.

VESSEL DESCRIPTION: Not possible to determine.

INSCRIPTION: On the interior surface. Delicate carving. Upright majuscule.

See **Table 10.1**: no 36.

ⲙ[- - -]

35. SH1/sf075 + SH1/sf121 + SH1/157_01 (Figure 10.35)

TRENCH: 1/SH.

DEPOSIT: 0, surface and 4, fire debris.

PHASE: Mixed contexts, surface and Phase 4 (see also Harris Matrix, Chapter 9, **Figure 9.37**).

PHASE DATING: 10th/11th century.

VESSEL DESCRIPTION: Not possible to determine.

INSCRIPTION: On the exterior surface. Deep carving. Upright majuscules. *Alpha* in form of a bow attached to an oblique stroke. Note that *alpha* was apparently corrected.

See **Table 10.1**: no 37.

[- - -]ⲙⲁⲣ̀ⲭ́[- - -]

The preserved fragment of the inscription contains the *siglum* for πρ(εσβύτερος), 'priest', and the prefix ἀρχ(ι-). The identical sequence of elements is attested several times in Christian Nubia in the presentation of individuals in epitaphs and graffiti on the walls of cult places and pottery vessels; for a collection of evidence and a discussion, see Ochała 2022, commentary to no 27. According to Ochała, these two words do not form a single title ἀρχ(ι)πρ(εσβύτερος), 'archpriest', in which the sequence of elements is reversed, but are two different titles listed asyndetically, and the second title should be understood as ἀρχ(ιμανδρίτης), 'archimandrite'. Following Ochała's reasoning, in our case one has to read ⲁⲣ̀ⲭ́[ⲙⲁⲛ̀ⲇ́], i.e., ἀρχ(ι)[μανδ(ρίτης)]. At the beginning of the inscription, one expects the name of this individual. The entire inscription should be understood as follows: 'So-and-so, priest (and) archimandrite'.

36. GN1/329_14 (Figure 10.36)

TRENCH: 1/GN.

DEPOSIT: 7, destruction layer with traces of burning.

PHASE: Phase 2, kitchen/storage (?) construction (see also Harris Matrix, Chapter 9, **Figure 9.27**).

PHASE DATING: 7th/8th century – second half of 8th century.

VESSEL DESCRIPTION: Pot, burnished exterior surface (see also Chapter 9.3.2.1, in this volume).

INSCRIPTION: On the exterior surface. Delicate carving. The lower part of the inscription is greatly damaged by the erosion of the surface.

See **Table 10.1**: no 27.

The reading of the inscription is uncertain due to the clumsiness of execution and an imperfect state of preservation. It is likely that we are dealing with two monograms, located one above the other. The monogram at the top might have contained the letters ⲁ and ⲱ surmounted by a cross. The monogram at the bottom was arranged around the central cross. One can recognize ⲕ on the left, ⲃ on the right, and a triangular letter at the bottom, probably ⲁ, perhaps forming an ⲱ together with ⲕ. The letter at the top looks like ⲟ, but this

SH1/sf075+SH1/sf121+SH1/157_01

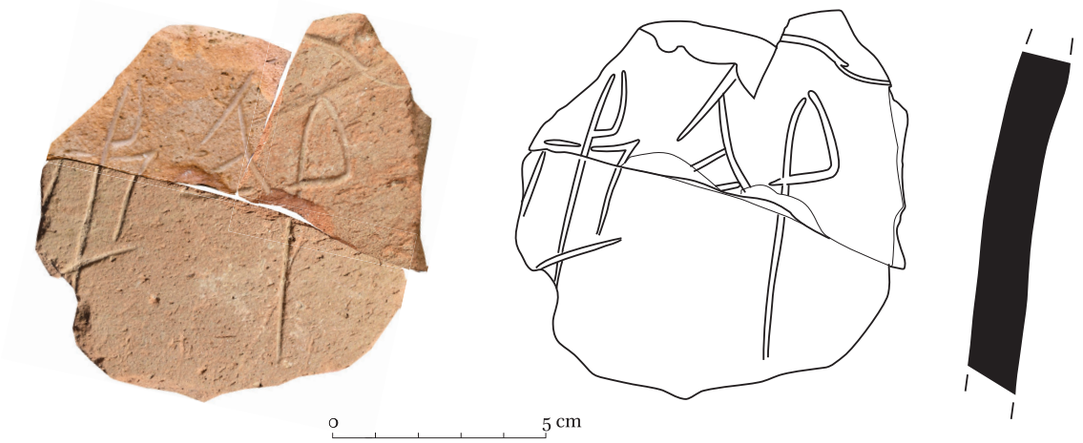

Figure 10.35. Undetermined vessel with inscription on the external surface – Inv. Nos. SH1/sf075 + SH1/sf121 + SH1/157_01 (SH1/sf075, SH1/sf121 photos Joanna Ciesielska; SH1/157_01 photo Ewa Czyżewska-Zalewska; drawing Ania Weźranowska, Ewa Czyżewska-Zalewska, digitised by Marta Momot, Ewa Czyżewska-Zalewska).

GN1/359_14

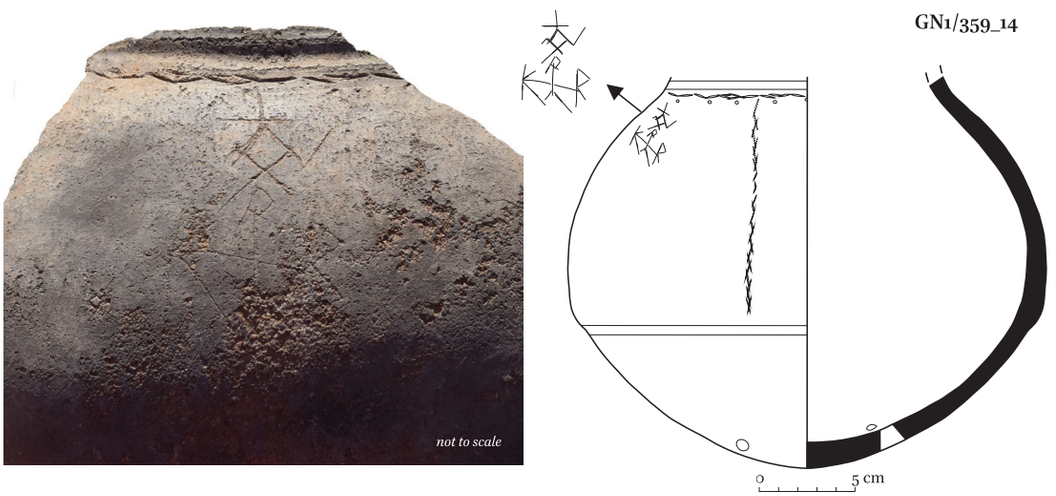

Figure 10.36. Pot with inscription on the external surface – Inv. No. GN1/329_14 (photo Joanna Ciesielska, drawn and digitised by Ania Weźranowska).

could instead be a clumsily executed or unfinished ligature for ⲟⲩ. The monogram can tentatively be read ⲓⲁⲕⲱⲃⲟⲩ, 'Of Jacob', and interpreted as the signature of the owner.

37. GN1/329_36 (Figure 10.37)

TRENCH: 1/GN.

DEPOSIT: 7, destruction layer with traces of burning.

PHASE: Phase 2, kitchen/storage (?) construction (see also Harris Matrix, Chapter 9, **Figure 9.27**).

PHASE DATING: 7th/8th century – second half of 8th century.

VESSEL DESCRIPTION: Globular jar, red slipped on both surfaces in the upper part (see also Chapter 9.3.1.1, in this volume).

INSCRIPTION: On the exterior side, below the rim. Delicate carving. Upright majuscules.

See **Table 10.1**: no 33.

ⲙ
[ⲗ]ⲭ[ⲏ]
ⲁ̣

In spite of the fragmentary state of preservation of the inscription, one can easily recognise the same contents

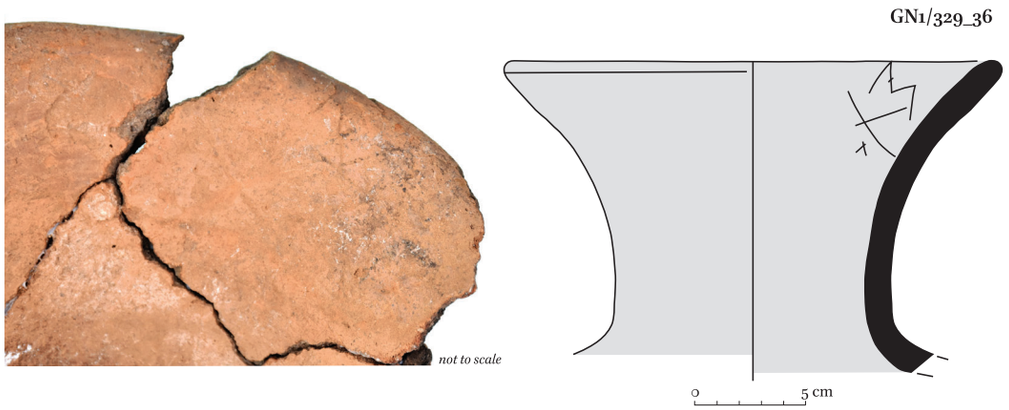

Figure 10.37. Jar with inscription on the internal surface – Inv. No. GN1/329_36 (photo Joanna Ciesielska; drawn and digitised by Ania Weźranowska).

as in 2, 3, 25, and 27: the name of the Archangel Michael written so that the letters form a cross. The sequence of the letters н and л was reconstructed on the basis of 2 and 3.

10.2. General study of the material

10.2.1. *Vessel types*

It looks as if all inscriptions were executed on complete vessels. It is possible that no 30 might have been written on a sherd of an already broken pot, meaning it is an ostracon. However, since ostraca are rather uncommon in Soba, we consider this object is also likely to be an inscribed vessel.

Different types of vessels were used as carriers of inscriptions. Generally, the graffiti were incised on handmade pots, and only a few instances of wheelmade pottery were recorded (**Table 10.1**).

The most numerous (14 examples) are slipped and burnished bowls. In most cases, the slip was added on both the interior and exterior, but in a few examples it is present only on the interior. The most common colour of the slip was black/brown, but four vessels were fired to a red colour. Among the diagnostic fragments, we noted shallow bowls with flared walls and a rim diameter between 19–22cm (**Table 10.1**: 8–9, 13–15) or smaller, deeper bowls, with a rim diameter between 11–18cm, with very thin, straight or incurved walls (**Table 10.1**: 10–11, 16–17). A few inscriptions survived only on undiagnostic sherds, and the exact type of bowl is impossible to determine (**Table 10.1**: 18–21).

Less numerous (seven examples) are bowls with a mat-impressed pattern on the exterior surface, with a slipped and burnished rim and interior (**Table 10.1**: 1–7). These vessels are quite large and shallow, with flared walls and a rim diameter between 18–27cm. The group includes only one red slipped bowl (**Table 10.1**: 1), the rest have brown/black slipped surfaces.

Only three wheelmade bowls of the so-called 'Soba Ware' were recorded with inscriptions. These are thin-walled vessels with incurved walls and a rim diameter between 12–18cm. The exterior and interior surfaces are painted (**Table 10.1**: 22–24).

Another group of inscribed vessels are restricted, handmade pots, globular in shape, with straight or slightly incurved upper walls (**Table 10.1**: 25–30). The group includes six vessels, of which five are diagnostic. Two vessels have straight walls, one with burnished surfaces (**Table 10.1**: 25), another with burnished and slipped exterior (**Table 10.1**: 28). Three examples come from pots with a slightly out-turned rim. Two of them are burnished and slipped in the upper exterior surface (**Table 10.1**: 29–30), while one vessel is only burnished on the exterior (**Table 10.1**: 27).

Inscriptions are also present on closed forms, such as handmade globular jars with a narrow neck and wide, out-flaring rims (**Table 10.1**: 31–34). In three examples the surfaces are untreated, without any slip or burnish (**Table 10.1**: 31–32, 34), and only one vessel is burnished, as well as being red slipped on the rim and neck (**Table 10.1**: 33).

The last group presented here consists of undiagnostic sherds, where it was not possible to determine the vessel type. They probably came from closed forms such as large storage jars with untreated surfaces (**Table 10.1**: 35–37). Two sherds are handmade (**Table 10.1**: 35–36), and one is wheelmade (**Table 10.1**: 37).

10.2.2. *Location of inscriptions*

The location of the inscription depends on the form of the vessel (either open or closed). In shallow bowls with flared walls, the inscriptions were executed mainly on the interior surface (**Table 10.1**: 1–9, 12–13, 18–21), and in deep bowls with incurved walls on the exterior surface (**Table 10.1**: 10–11, 16–17, 22–24). However, two exceptions were recorded when the inscription was executed on the outside of the shallow bowls (**Table 10.1**: 14–15).

The inscriptions were placed on the outer surface in closed forms, such as pots, and also on undiagnostic fragments (**Table 10.1**: 25–30, 35–37). A different situation can be observed on globular jars with out-flaring rims, which could have been inscribed on both surfaces of the flared part of the rim (**Table 10.1**: 31–34).

10.2.3. *Technique of execution of the inscriptions*

Two different techniques of execution were recorded: scratching and incising. Scratched inscriptions were executed post firing on the hard surface of the vessels, probably by their owners or users, or by persons commissioned by them. Incised inscriptions were executed before firing, either by the potter or another person (the future owner of the vessel or someone commissioned by them).

In the overwhelming majority of cases, the objects presented here (34 out of 37 examples) have scratched inscriptions, with all bowls treated in this way, and all pots. We also have two examples of incised inscriptions on globular jars (**Table 10.1**: 31–34), and one example on an undiagnostic sherd (**Table 10.1**: 35–37).

10.2.4. *Language of the inscriptions*

All inscriptions discussed in this chapter are alphabetical inscriptions. Only the letters of the Greek alphabet occur. There are no attestations of letters specific to Coptic and/or Old Nubian, the two other languages of the Christian Nubian literacy.[1] The only testimony to the existence of literacy in languages other than Greek is the writing of the vowel /i/ in the name Michael as a dash over ⲭ (ⲙⲭ̄ⲁⲏⲗ), obviously following the Old Nubian practice of recording this sound (see commentary to 2). Most of the inscriptions are indifferent linguistically because of either their character (single letters or single names) or state of preservation. Only seven inscriptions, namely 11, 15, 16, 22, 29, 30 and 35, display elements that allow us to recognise the language, and this is always Greek. To this group one can also tentatively include 8. The exclusivity of Greek observable in the material under consideration is striking. For a possible explanation of this phenomenon, see below, section 10.2.6.

10.2.5. *Form and contents of the inscriptions*

An assessment of the form and contents of the inscriptions is difficult or even impossible in many cases, due to the fragmentary state of preservation of the objects. This concerns, firstly, the following catalogue entries: 1, 7, 8, 9, 14, 20, 21, 23, 26, 32, 33, and 34. The inscriptions whose state of preservation is good enough to draw some conclusions about their contents can be divided into five categories:

1) single letters, perhaps acronyms of names or other words: 4;
2) single words: 15;
3) names of living individuals, sometimes supplemented with other elements of personal presentation: 5, 13, 17, 19, 24, 28, 29, 31, 35 and 36;
4) names of saints: 2 (Michael), 3 (Michael), 6 (Michael), 10 (Michael), 12 (Michael), 18 (Michael), 25 (Michael), 27 (Michael), 37 (Michael);
5) longer inscriptions, perhaps of literary or paraliterary character, such as prayers, quotations from the Bible and Christian literature: 11, 16, 22 and 30.

The above shows that the material under consideration is dominated by two categories: names of living persons and names of saints (in reality, only one saint, the Archangel Michael).

Inscriptions of the first category should probably be interpreted as the signatures of the vessels' owners or users. Inscriptions of this category can assume a threefold graphical form: name recorded in an abbreviated form (24, 31), name written continuously in full (19, 28),[2] and name recorded in the form of a monogram (5, 13, 17, 36). A variant of this category are inscriptions containing a more developed presentation of an individual,

[1] Generally for Christian Nubian literacy, see Łajtar and Ochała 2020.

[2] In neither of these two inscriptions is the name preserved in full, which means that it could also have been recorded in an abbreviated form.

with his name and title(s) (29, 35).[3] A relatively significant proportion of monograms among the inscriptions of this category is worth emphasising. All attested monograms are cross monograms: letters of a name are arranged around the central cross with the diphthong ⲟⲩ[4] placed at the top.

Inscriptions of the second category probably played the role of holy invocations or apotropaia. Significantly, all inscriptions of this category contain the name of the Archangel Michael, written either continuously (6, 10, 12), in the form of a cross (2, 3, 25, 27, 37), or as a numerical cryptogram (18). The frequent occurrence of the name of the Archangel Michael in this material confirms his well-known popularity as a beloved figure in Nubian piety. His name, written in either of all three forms attested in the material under consideration, occurs many times in pottery graffiti from British excavations in Soba[5] and from other centres of Christian Nubian civilisation such as Dongola (Łajtar and Pluskota 2001), Banganarti (Deptuła and Cedro 2022), and Ghazali.

An observation should be made regarding longer inscriptions with literary or paraliterary content (category [5]). Inscriptions of this kind are rather uncommon in graffiti on pottery vessels from Christian Nubia. Interestingly, this category is represented by a find made by the British mission to Soba. It is a bowl that carries an incised inscription with Psalm 50.1 placed on the exterior, under the rim.[6]

10.2.6. *Cultural assessment of the inscriptions*

All inscriptions discussed in this chapter were executed on pots produced locally. This means that they were executed in Soba or its immediate neighbourhood and represent the literacy of the capital of Alwa in the period between the 6th and 11th century.

The inscriptions under consideration show no substantial differences from the analogous material originating from Makurian sites, best represented by the finds from Dongola and Ghazali.[7] The only peculiarity worth noticing is the location of the letters ⲏ and ⲗ in the monogram-like notation of the name of Michael: in Soba, ⲗ tends to occur on the left-hand side and ⲏ on the right-hand one, whereas in Dongola, their position is normally inverted. The close resemblance of the pottery graffiti from Soba on the one hand and those from Dongola and Ghazali on the other seem to suggest that the literary culture of Makuria and Alwa were very similar, if not identical with one another before the end of the first millennium. The veracity of this observation is diminished by the modesty of the epigraphical evidence from Soba in comparison to that of Dongola and Ghazali.

In Section 10.2.5, we observed that the language of inscriptions, when identifiable, is always Greek. The dominance of Greek in the material under consideration is probably connected with its relatively early date. In this context, it is worth observing the notation of /i/ in the name Michael as a dash over ⲭ (ⲙⲭ̄ⲁⲏⲗ). This notation, obviously brought in from literacy in Old Nubian, testifies to the existence of the written Old Nubian in Soba at this early date.

An interesting phenomenon observable in the pottery graffiti from Soba is the relatively frequent use of monograms to denote proper names.[8] The use of monograms is intrinsically connected with literacy in Greek and is yet another sign of the early date of the material under consideration.

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[3] In neither of these two inscriptions has the name been preserved, but it probably was present originally.

[4] This ⲟⲩ indicates that the names occur in the genitive case. An open question is whether this genitive should be understood as the Greek genitive of belonging ('[vessel] of so-and-so') or a 'Nubianized' form of the names in question. It is known that Nubians frequently adopted Greek and Hellenised names in their genitive form and not the nominative one; for this phenomenon, see Łajtar and van der Vliet 2017, 226–227.

[5] Jakobielski 1991, 282–296, nos 1–45, 47, 52, 164, 171–186, 188–193, 201, 206; Anderson 1998, 187–192, nos 8–124. Even if the identification of the contents of some these graffiti remains uncertain, the popularity of the name of Michael in this kind of texts is obvious.

[6] Published by Jakobielski (1991, 293, no 157, with drawing on p. 287), who considered it to be a dedication formula. Recognised as Ps. 50.1 in Łajtar 1992, 140–141.

[7] Pottery graffiti from archaeological excavations carried out by the mission of the University of Warsaw Polish Centre of Mediterranean Archaeology in Dongola largely remain unpublished. Only inscribed pots from a refuse dump found in Room 21 of the Northwest Annexe of the monastery on Kom H have been presented to the scholarly world (Łajtar and Pluskota 2001); however, they are of a much later date than the Soba material studied in this paper. Pottery graffiti obtained during archaeological work of the Sudan Antiquities Service in Ghazali in the 1950s were published in Shinnie and Chittick 1961, 95–111. Inscribed pottery from excavations by the Polish-Sudanese mission in the 2010s are being studied by Grzegorz Ochała and Agata Deptuła.

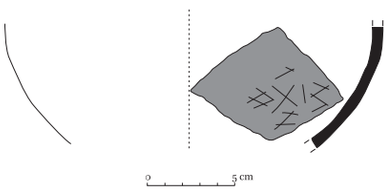
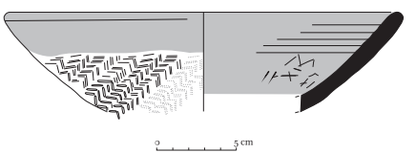
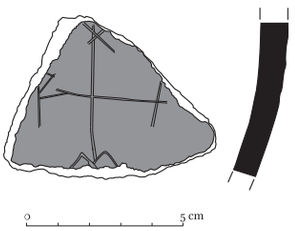
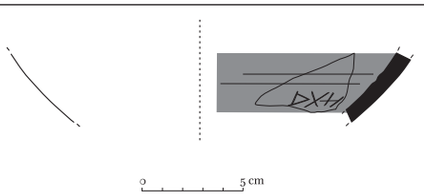
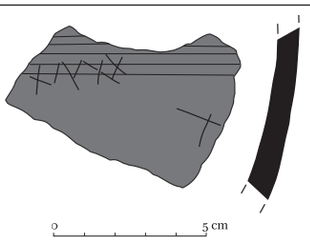
[8] Monograms are very common in the pottery graffiti from the British excavations at Soba and the excavations at Ghazali carried out by by both the mission of the Sudan Antiquities Service in 1950s and the Polish-Sudanese mission in the 2010s.

10.2.7. *Dating of inscribed vessels*

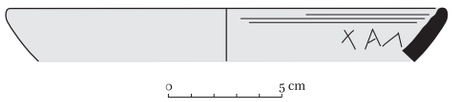
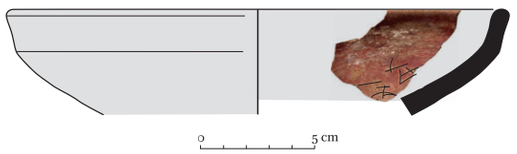
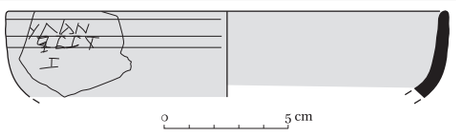
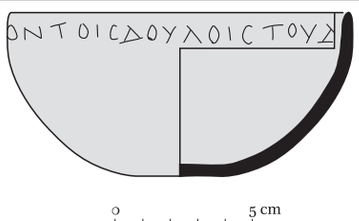
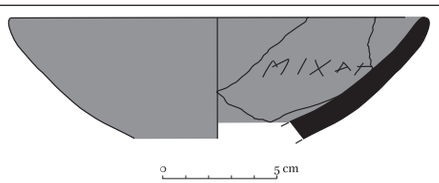
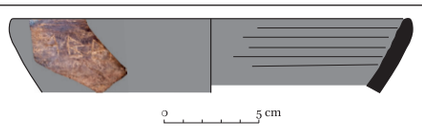
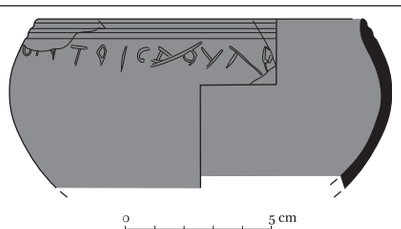
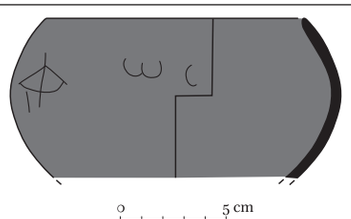
Only ten inscribed vessels were recorded from the earliest occupation, dated to the 6th–7th/8th century AD. Most were found in trenches located in the southern part of the concession area: seven in Trench 1/GN, in the complex, which was probably related to food preparation and storage, dated to the end of the 7th and beginning of the 8th century (see Chapter 6); one in Trench 1/CS, in residential and storage area, dated to the 8th century; and one in Trench 1/CW, also in an area with residental and storage function, dated to 6th/7th–10th/11th century AD (see Chapter 5). Only one example was discovered in the northern part of the site in Trench 1/OS, dated to the 6th/7th–11th centuries AD, in an area which, until 10th century, probably had a residential function, and in the 11th century became the location of the cemetery. The group includes bowls with mat-impressed patterns, red and black slipped and burnished bowls, and 'Soba Ware' bowls. Three vessels of the group were inscribed with the name of the Archangel Michael, one with the name of Peter, one has the incomplete text 'of the servants', and five bear inscriptions with uncertain meaning.

Most of the inscribed fragments presented here are dated to the 9th–11th century (18 vessels). They were found mainly in the north part of the site: ten examples in 1/OS in the residential area and in the cemetery; four examples in Trench 2/OS, in the area connected with lime kiln and food preparation activity, dated to 9th–11th century AD (see Chapter 4). Two inscribed fragments were discovered in the southern part of the site: one in Trench 1/CW; one in Trench 1/GN, connected with food preparation and consumption, dated to the 7th/8th–9th century AD (see Chapter 6). Only one inscribed example came to light in 1/SH located in the central part of the site; this trench probably had a residential function and was perhaps used in the Neolithic period and later between the 9th/10th and 10th/11th centuries AD (see Chapter 7). The group includes bowls with mat-impressed patterns, red and black slipped and burnished bowls, 'Soba Ware' bowls, pots, globular jars, and unidentified vessels. Five vessels were inscribed with the name of the Archangel Michael, one bears an inscription with the name of Jesus Christ and the letters Alpha–Omega, and six have inscriptions that can be identified as signatures of the owners or users.

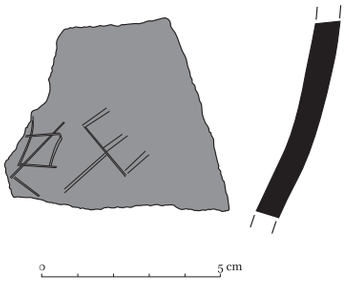
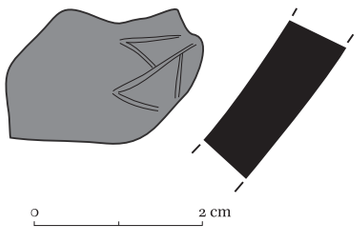
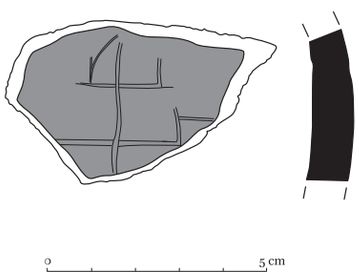
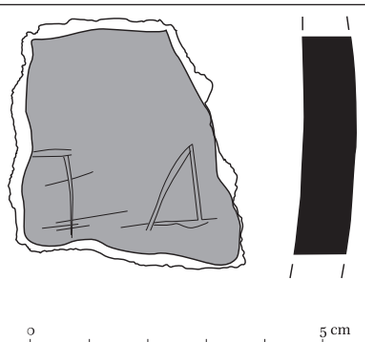
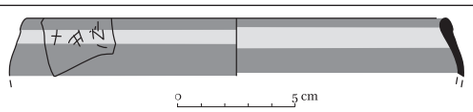
The date of the eight inscribed fragments discovered in the topsoil layers of the presented trenches or on the surface is impossible to determine (see catalogue above).

vessel description			no	photo	inv. no	techn.	rim diam. (cm)	
bowls	with mat-impression pattern on the external surface and slipped surfaces	*red slipped*	**1**		**CW1/sf078**	HM	–	
		brown/black slipped	**2**		**GN1/sf213**	HM	–	
			3		**OS1/sf130 (=OS1/011_03)**	HM	25	
			4		**GN1/sf200**	HM	–	
			5		**CS1/sf114**	HM	–	
			6		**OS1/sf036**	HM	–	
			7		**OS2/sf144**	HM	–	

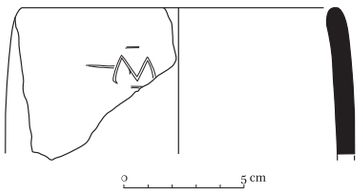
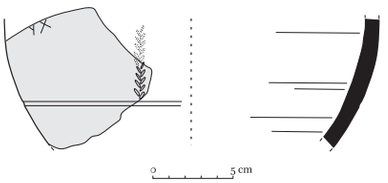
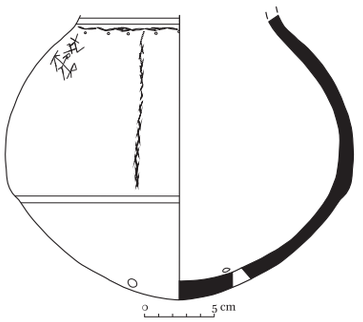
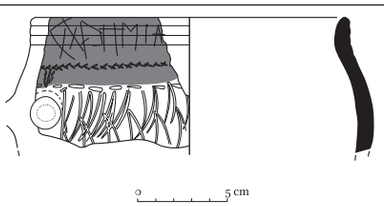
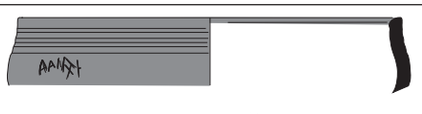
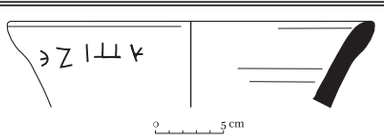
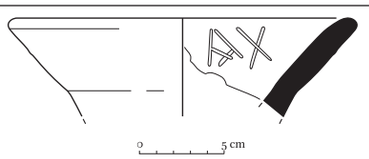
	surface treatment		inscription			
	external	*internal*	*place*	*technique*	*text/meaning*	*catalogue & figure number*
	matt-impression pattern, red slipped and burnished rim	red slipped and burnished	internal surface (below the rim)	scratched	inscription uncertain	Cat. no 1; Fig. 10.1
	mat-impression pattern, brown slipped and burnished	brown slipped and burnished	internal surface	scratched	Archangel Michael	Cat. no 2; Fig. 10.2
	mat-impression pattern, brown slipped and burnished rim	brown slipped and burnished	internal surface	scratched	Archangel Michael	Cat. no 3; Fig. 10.3
	mat-impression pattern	black slipped and burnished	internal surface	scratched	personal name recorded in the form of a monogram	Cat. no 5; Fig. 10.5
	with matt-impression pattern, black slipped and burnished rim	black slipped	internal surface (close to the bottom part)	scratched	inscription uncertain, probably acronym of a name or a word, e.g. φ(ῶς), 'light'.	Cat. no 4; Fig. 10.4
	mat-impression pattern, black slipped and burnished	black slipped and burnished	internal surface	scratched	Archangel Michael	Cat. no 6; Fig. 10.6
	mat-impression pattern, black slipped and burnished	black slipped and burnished	internal surface	scratched	inscription contains *nomina sacra*, Jesus, Alpha – Omega, Christ	Cat. no 7; Fig. 10.7

vessel description			no	photo	inv. no	techn.	rim diam. (cm)	
bowls	with slipped surfaces	*red slipped*	**8**		**OS1/sf057**	HM	19	
			9		**OS1/sf035**	HM	22	
			10		**CS1/sf138**	HM	18	
			11		**CW1/sf095**	HM	12,2	
		brown/black slipped	**12**		**GN1/sf198**	HM	18	
			13		**GN1/sf199**	HM	20	
			14		**OS1/sf025**	HM	21	
			15		**OS1/sf037**	HM	20	
			16		**G1/sf119**	HM	11	
			17		**CW1/sf118**	HM	12	

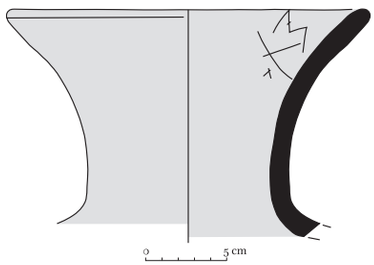
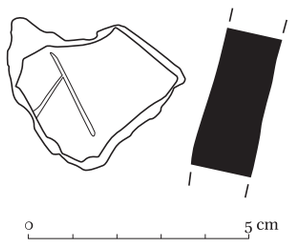
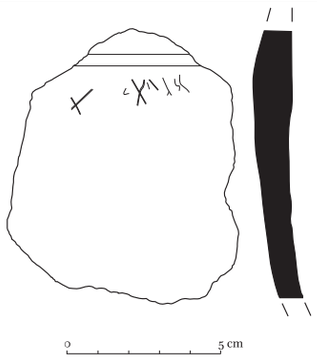
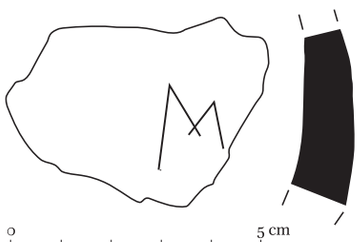
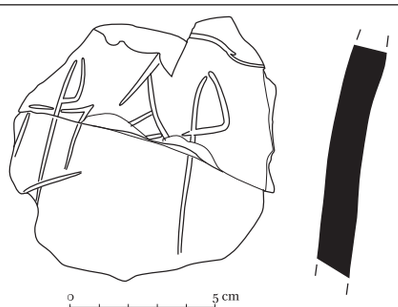
	surface treatment		inscription			
	external	*internal*	*place*	*technique*	*text/meaning*	*catalogue & figure number*
	red slipped and burnished	red slipped and burnished	internal surface	scratched	Archangel Michael	Cat. no 10; Fig. 10.10
	red slipped and burnished	red slipped and burnished	internal surface	scratched	Archangel Michael	Cat. no 9; Fig. 10.9
	red slipped and burnished	red slipped and burnished	external surface (below the rim)	scratched	'of the servants'	Cat. no 8; Fig. 10.8
	red slipped, burnished and polished	red slipped, burnished and polished	external surface (below the rim)	scratched	'to the servants of'	Cat. no 11; Fig. 10.11
	brown slipped and burnished	brown slipped and burnished	internal surface	scratched	Archangel Michael	Cat. no 12; Fig. 10.12
	black slipped and burnished	black slipped and burnished	internal surface	scratched	numerical cryptogram of the name of Archangel Michael	Cat. no 18; Fig. 10.18
	black slipped and burnished	black slipped and burnished	external surface	scratched	inscription uncertain	Cat. no 19; Fig. 10.19
	black slipped and burnished	black slipped and burnished	external surface (below the rim)	scratched	inscription uncertain	Cat. no 20; Fig. 10.20
	black slipped and polished	black slipped and polished	external surface (below the rim)	scratched	'to the servants'	Cat. no 16; Fig. 10.16
	black slipped, burnished and polished	black slipped, burnished and polished	external surface	scratched	'Light'	Cat. no 15; Fig. 10.15

vessel description			no	photo	inv. no	techn.	rim diam. (cm)	
bowls	with slipped surfaces	*brown/black slipped*	**18**		**GN1/sf189**	HM	–	
			19		**OS1/sf065**	HM	–	
			20		**GN1/sf157**	HM	–	
			21		**GN1/sf158**	HM	–	
	with painted surfaces	*so-called Soba Ware*	**22**		**CW1/sf099 (probably the same vessel as 23)**	WM	12	
			23		**CW1/sf135 (probably the same vessel as 22)**	WM	12	
			24		**CW1/sf134**	WM	18	

	surface treatment		inscription			
	external	*internal*	*place*	*technique*	*text/meaning*	*catalogue & figure number*
	black slipped, polished and burnished	black slipped, polished and burnished	internal surface	scratched	personal name recorded in the form of a monogram	Cat. no 17; Fig. 10.17
	black slipped and burnished	black slipped and burnished	internal surface	scratched	inscription uncertain	Cat. no 21; Fig. 10.21
	untreated	black slipped, burnished and polished	internal surface	scratched	inscription contained the name of the Peter (owner?)	Cat. no 13; Fig. 10.13
	untreated	black slipped and burnished	internal surface	scratched	inscription uncertain	Cat. no 14; Fig. 10.14
	white painted (before firing), painted decoration on the rim	white painted (before firing)	external surface	scratched	inscription uncertain	Cat. no 22; Fig. 10.22
	white painted (before firing), painted decoration on the rim	white painted (before firing)	external surface	scratched	inscription uncertain	Cat. no 23; Fig. 10.23
	dark painted (before firing), painted decoration	dark painted (before firing)	external surface	scratched	signature of the owner, Ἀντ(ώνιος)	Cat. no 24; Fig. 10.24

vessel description			no	photo	inv. no	techn.	rim diam. (cm)	
pots	with burnished surfaces		**25**		**GN/sf151**	HM	13	
			26		**OS2/089_12**	HM	–	
			27		**GN1/329_14**	HM	25	
	with slipped and burnished surfaces		**28**		**GN2/sf214**	HM	–	
			29		**OS2/sf062**	HM	18	
			30		**OS1/sf053**	HM	20-24	
globular jars			**31**		**KomN/sf041**	HM	27	
			32		**OS1/sf026**	HM	20,5	

	surface treatment		inscription			
	external	*internal*	*place*	*technique*	*text/meaning*	*catalogue & figure number*
	burnished	burnished	external surface	scratched	Archangel Michael	Cat. no 25; Fig. 10.25
	burnished	untreated	external surface	scratched	inscription uncertain	Cat. no 26; Fig. 10.26
	burnished	untreated	external surface	scratched	monogram, 'Of Jacob', and interpreted as the signature of the owner	Cat. no 36; Fig. 10.36
	brown slipped and burnished	untreated	external surface (below the rim)	scratched	Archangel Michael	Cat. no 27; Fig. 10.27
	black slipped and burnished rim, untreated surface below the rim	untreated		scratched	signature of the owner	Cat. no 29; Fig. 10.29
	black slipped and burnished	untreated	external surface	scratched	signature of the owner	Cat. no 28; Fig. 10.28
	untreated	untreated	external surface (below the rim, upside down to the vessel position)	scratched	'[- - -] have hope in God/Lord [- - -]'	Cat. no 30; Fig. 10.30
	untreated	untreated	internal surface	incised	signature of the owner, the name Zacharias	Cat. no 31; Fig. 10.31

vessel description			no	photo	inv. no	techn.	rim diam. (cm)	
globular jars			**33**		**GN1/329_36**	HM	22	
			34		**OS2/sf050**	HM	–	
undetermined	hand-made		**35**		**OS1/074_07**	HM	–	
			36		**OS1/sf047**	HM	–	
	wheelmade		**37**		**SH1/sf075+ SH1/sf121+ SH1/157_01**	WM	–	

Legend:

HM - handmade
WM - wheel made
untreated - the surface without additional layer of slip or paint

Table 10.1. Presentation of the inscribed sherds according to vessel type
(prepared by Ewa Czyżewska-Zalewska, photos and drawings by authors mentioned in the captions of **Figures 10.1–37**).

	surface treatment		inscription			
	external	*internal*	*place*	*technique*	*text/meaning*	*catalogue & figure number*
	slipped	slipped	internal surface	scratched	Archangel Michael	Cat. no 37; Fig. 10.37
	untreated	untreated	internal surface	incised	inscription uncertain	Cat. no 32; Fig. 10.32
	burnished	untreated	external surface	scratched	inscription uncertain	Cat. no 33; Fig. 10.33
	untreated	untreated	internal surface	scratched	inscription uncertain	Cat. no 34; Fig. 10.34
	untreated	untreated	external surface	incised	'So-and-so, priest (and) archimandrite'	Cat. no 35; Fig. 10.35

Table 10.1. Presentation of the inscribed sherds according to vessel type
(prepared by Ewa Czyżewska-Zalewska, photos and drawings by authors mentioned in the captions of **Figures 10.1–37**).

CHAPTER 11

FUNCTIONAL STUDIES OF GROUND STONE TOOLS FROM SOBA

Agnieszka RYŚ-JARMUŻEK

The following chapter focuses on a group of artefacts called ground stone tools. This term refers to any stone item that was manufactured through the mechanisms of abrasion, polishing, or impaction (Adams 2002, 1). This group includes: processing tools such as grinders and querns used to reduce intermediate substances such as food, but also pigments or clays, to a finer texture, and manufacturing tools such as abraders, polishers, hammerstones and pounders, that are used to shape other items. The assemblage discovered during the 2019–2022 seasons at Soba comprises 236 objects and, apart from pottery, it is the second most numerous group of small finds recorded on the site. They provide an important source of information about daily life within the settlement, as well as a better understanding of technological processes associated with ground stone tool production.

The main aim of this chapter is to present the classification of ground stone tools, based not only on their form, but also on their technological aspects, which allow for the reconstruction of their function. In recent years the archaeological interest in ground stone tools has shifted from description and typology to more thorough analyses of their design process, use and life cycle. Applying ethnoarchaeological analogies, experiments, use-wear analyses and classification techniques, it is possible to develop a foundation for technological analysis of these artefacts (for more detail see Adams 2002; Adams *et al*. 2009; Adams 2014; Dubreuil and Savage 2014).

In Sudanese archaeology, there are no general studies of ground stone materials, and publications only present a single-site or single-project oriented approach (for other settlements dated to the Christian period see: Adams 1998, 16; 2000, 95; 2001, 102; 2002, 81; 2010, 127). Ground stone tools from Soba were published by Lindsay Allason-Jones in catalogue form in the publications resulting from the British Institute's excavations directed by Derek Welsby (Allason-Jones 1991, 147; 1998, 74–79). In the following chapter, references will be made to the published material for the sake of consistency.

11.1. Description of methods

The examination of the ground stone tools from Soba has been based on the same approach to the technological analysis as that used by Adams (2002; 2014) and consisted of the following steps:

11.1.1. *Identification of raw material*

For a better understanding of wear traces as well as the decision-making process behind the production of tools, recognition of raw material is essential. So far, for the Soba assemblage, only a preliminary identification has been made. During the 2022 season, descriptions of the granularity and texture of each of the tools were compiled. Additionally, seven samples were analysed by Michalina Dzwoniarek-Konieczna to identify the geological material.

11.1.2. *Determining the tools' function*

The basis for distinguishing the individual types was the tools' form. However, keeping in mind that forms do not always define the function, other elements have also been taken into account, such as use-wear and the configuration of wear facets. Use-wear analysis was conducted on a macroscopic level to recognise traces resulting from use of the tool. Wear is the progressive transformation of a surface as a result of the motion between two surfaces (Adams *et al*. 2009, 46). Three main mechanisms can be distinguished: abrasive wear, fatigue and tribochemical. Each of them is responsible for the formation of specific damage: abrasive wear for striation, scratches, levelling and grain edge rounding; fatigue for fractures, cracks and pits; and tribochemical for polishing or sheening traces. They can appear separately or together, depending on which way the tool was used. The use-wear analysis allows for the recognised role of the intermediate substances involved in wear formation. However, in some cases, ground material became embedded on the surface or in the pores of the rock, which sometimes allows the identification of

	Total	Total %	Trench 1/CS	Trench 1/CW	Trench 1/GN	Trench 1/OS	Trench 1/SH	Trench 2/GN	Trench 2/OS	Trench 2/SH	Wadi Soba (surface finds)
Grinding tools											
Grinders G1	**41**	17%	2	6	7	6	4	14	1	1	
Grinders G2	**23**	10%		3	1	4	3	10		2	
Grinders G3	**46**	19%	1	13	6	4	2	17	2	1	
Grinders G4	**11**	5%	4		3	1	2	1			
Grinders G5	**7**	3%		1	4	1					1
Querns Q1	**19**	8%	2	6	7	2	1				1
Querns Q2	**4**	2%			2						2
Non-classified	**37**	16%	4	7	8	4	3	10		1	
Percussion tools											
Pounders P1	**8**	3%	2		1	2		3			
Pounders P2	**3**	1%		1	1		1				
Non-classified	**2**	1%				1		1			
Abrading, smoothing and polishing tools											
Abraders	**27**	11%	1	3	6	3		12	2		
Non-classified	**3**	1%		1	1			2			
Unidentified	**6**	3%					1	5			
	236		**16**	**41**	**48**	**28**	**17**	**75**	**4**	**5**	**4**

Table 11.1. Frequency within the individual categories and types (prepared by Agnieszka Ryś-Jarmużek).

a particular substance. In the majority of cases, it was only possible to indicate the general groups of substances that could have been processed. The configuration of wear facets, in turn, is essential to understanding the way the tool was used. This is particularly important in the case of grinding tools, where querns and grinders are not functional without a companion tool. As such, this factor is also included in the following analysis. Based on the method described by Adams (2002, 103–118) and Dubreuil (2001, 74), the configuration of working surfaces can be shaped through three kinds of strokes – circular, reciprocal, and back-and-forth, or a combination of these. They can be identified by analysing the type of wear visible on the surfaces of two tools. Circular rocking strokes leave wear facets of their ends and edges and multidirectional striations, while reciprocal strokes leave wear facets only on their edges and linear striations leave them perpendicular to their edges. Wear facets will be visible on all ends and edges when both strokes are used, and surface striations will be linear or multidirectional.

11.1.3. *Comparison with ethnographic sources*

Ethnographic sources have provided a great deal of information about tool function as well as social and cultural aspects around them (González-Urquijo *et al.* 2015). Investigations from Sudan and other African countries allow for an understanding of technological processes used in the procurement and then production techniques, as well as information about tasks performed with tools and hence better identification of wear traces. Additionally, according to the ethnographic investigation by Maciej Kurcz in Soba East, it is possible to recognise a relationship between modern inhabitants and old stones.

11.2. Material and analysis

The classification strategy is based on functional groups that sort items into three main categories: grinding, percussion, and abrading tools (**Table 11.1**). Each category is divided into types that have been separated based on tool morphology and use-wear visible on the surface. Classifying a specific tool into only one type is often very difficult or even impossible in many cases. This can be a result of their multifunctionality or changes in function during its use. In such cases, in the quantitative analysis I tried to determine the primary function of the tool and on this basis assign each to a specific category. There is also a group of tools that could be assigned to any individual type due to their state of preservation or damage. In the instances when it was impossible to classify them into one of the three main categories, they are described as non-classified. When even this was not possible, they were included in the group 'unidentified'. The listed dimensions of length, width and thickness include only complete objects.

11.3. Grinding tools[1]

The function of grinding is to reduce intermediate substances to a product of appropriate texture by working them between two stones (Adams 2014, 135). They can be divided into two main categories – querns (passive tools) and grinders (active tools). Below, tools are classified according to this overall plan, but also the configuration of their grinding surfaces, which allows for determining which types of active and passive tools were used as a set.

11.3.1. *Grinders*

Type G1

Type G1 grinders are relatively small objects, spherical or cubical, with one or more working surfaces, which can be flat or concave (**Figures 11.1** and

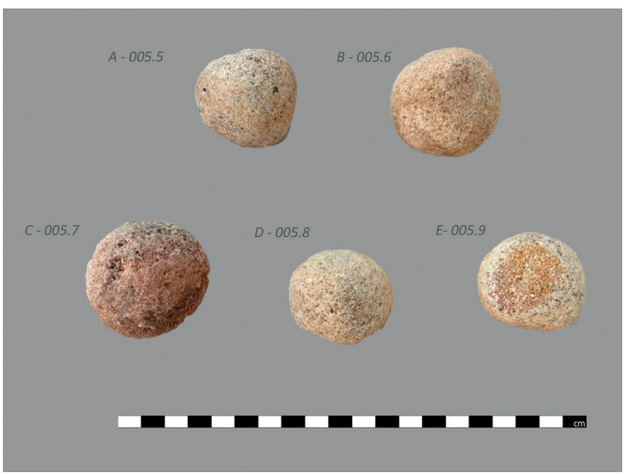


Figure 11.1. Grinders of G1 type with inventory numbers (photo Joanna Ciesielska).

[1] Allason-Jones described this category of tools as 'stone rubbing bases', 'saddle querns', 'stone rubbers' and 'stone balls' (1991, 149; 1998, 78–79).

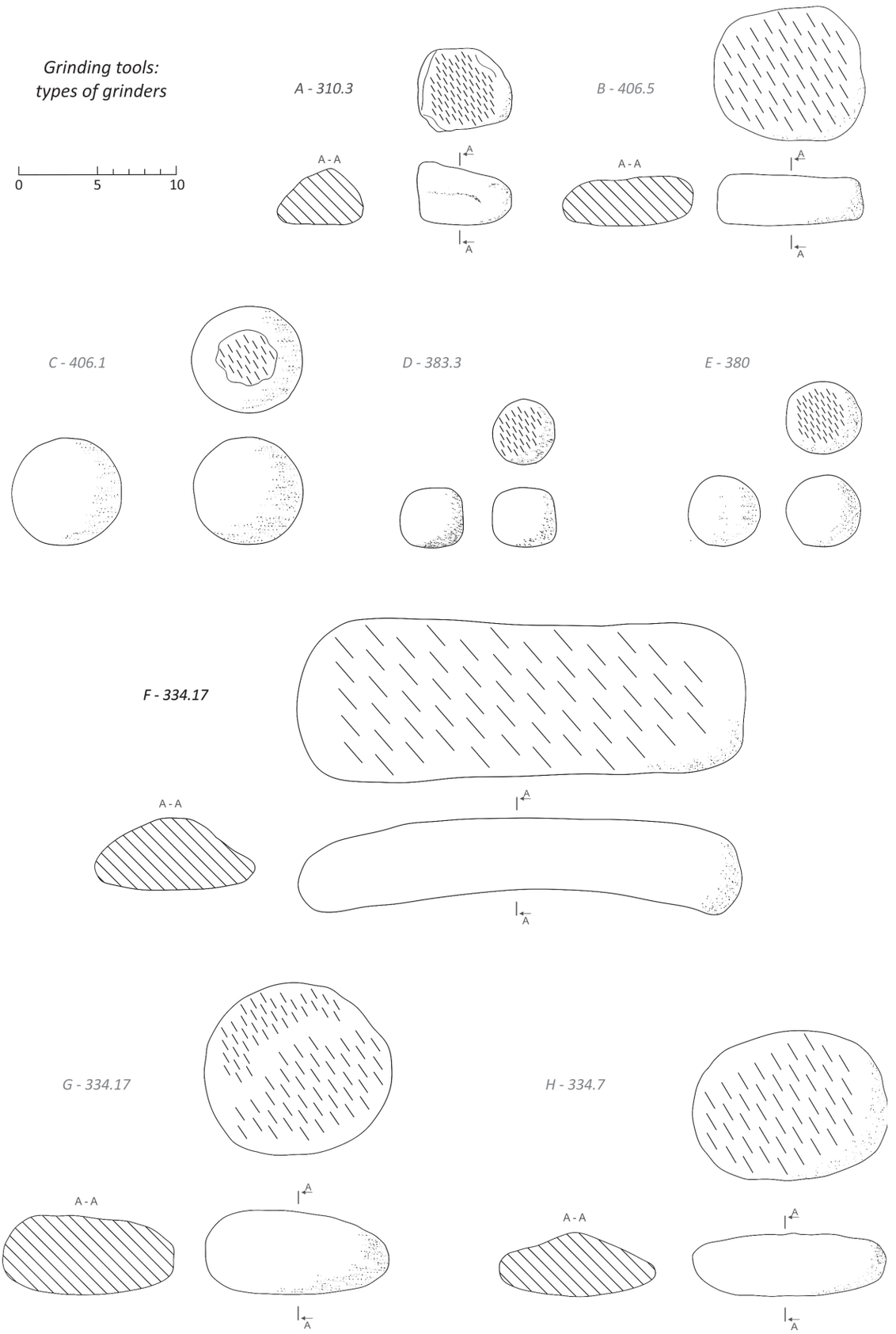


Figure 11.2. Different types of grinding tools (drawing Agnieszka Ryś-Jarmużek).

11.2c, d, e).[2] Their length varies between 3.8 and 7cm, width between 3 and 6.8cm, and thickness between 2.5 and 6cm. Usually, for an individual object, length and width have similar values, while differences between thicknesses and the other dimensions are probably the result of tool wear. Surfaces can be also covered by pounding marks, which means that in a situation where no traces of smoothing were identified on the surface, the tool could be classified as a pounder of P1 type. Wear facets are usually visible on all sides, indicating that circular and reciprocal strokes were used together.

Type G2

Grinders in Type G2 are ovoid or oval, characterised by one convex working surface (**Figure 11.2a**). Their length varies between 5.4 and 9.7cm, width between 5.1 and 8.5cm, and thickness between 2.5 and 5.3cm. Wear facets are noted on all sides, which suggests that the tool was used in circular and/or reciprocal strokes.

Type G3

This type of grinders are disc-shaped tools, with flat or slightly convex working surfaces (**Figure 11.2g, h**) They vary in length between 5.4 and 13.8cm, 5.7 and 11.3cm in width, and 1.8 and 5.6cm in thickness. They are not very homogenous in terms of dimensions, but like previous types, their use-wear is the most important distinguishing feature. In most cases, wear facets are visible on the edges, which suggests that they were used in reciprocal rocking strokes. In some cases, there is a central pecked area visible on one of the sides.

Type G4

These grinders have one flat or slightly convex surface (**Figure 11.2b**). They are not a very homogenous group when it comes to shape – they can be rectangular or oval. There are only three complete preserved examples in this group. Their length is between 6 and 18.2cm, width between 7.5 and 10.5cm, and thickness between 2.7 and 6.6cm. This group is characterised by their use-wear – working surfaces are well smoothed with sheen traces.

Type G5

Grinders of this type are oblong, with the width twice the length, indicating that the tools could be used with two hands (**Figure 11.2f**). The dimensions of three complete preserved objects are 6.6 to 7.7cm in length, 11.6 to 15.6cm in width and 3.6 to 4.7cm in thickness. Facets become worn mainly on the proximal and distal edges, suggesting that tools were used in back-and-forth strokes.

11.3.2. *Querns*

Type Q1

Grinders of the Q1 type have a flat edge-to-edge working surface and flat or rounded bottom (**Figures 11.3** and **11.4**). Their length is between 7.2 and 28.3cm, width 5.6 and 17.5cm, and thickness 2.3 and 7.4cm. Working surfaces are usually rough, with pecking traces. The morphology of the working parts suggests that this type



Figure 11.3. Querns of Q1 type (photo Joanna Ciesielska).

[2] This group can be considered as the same as 'stone balls' by Allason-Jones (1991, 149; 1998, 78). However, 'stone balls' also included tools used as pounders, while in the following classification spherical tools with pounding marks are described as P1 types (see below).

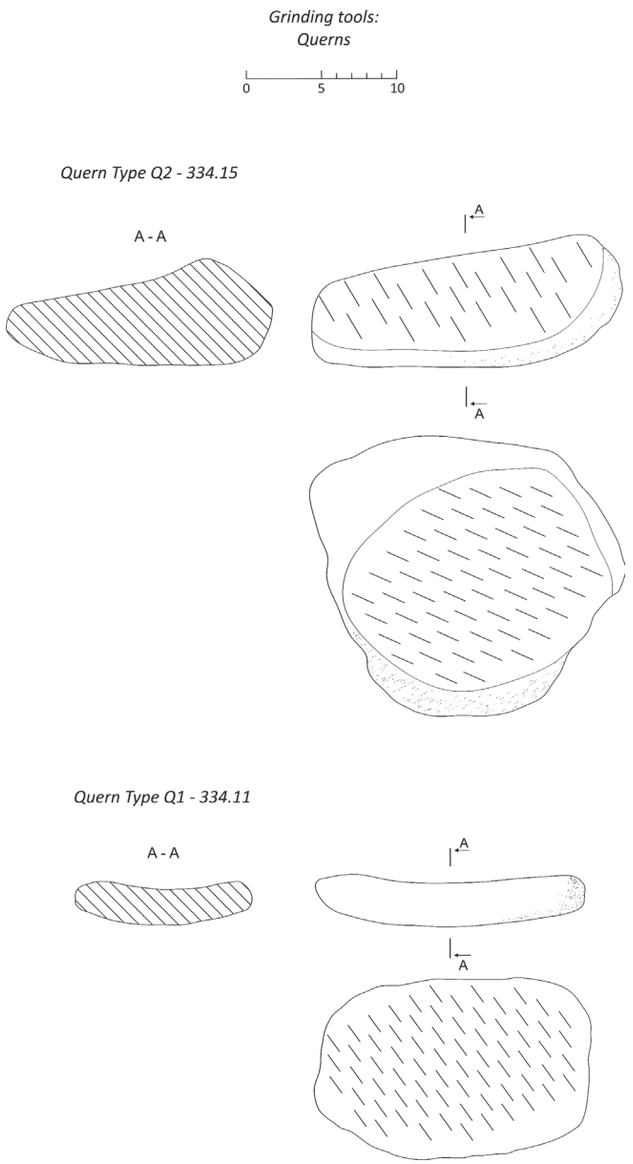


Figure 11.4. Querns of Q1 and Q2 types (drawing Agnieszka Ryś-Jarmużek).



Figure 11.5. Querns of Q2 type (photo Joanna Ciesielska).

of quern was used with a grinder with the same or shorter length than quern width; however, extensive use can wear a concave shape.

Type Q2

Querns in the Q2 type are circular or elliptical with a concave and well-smoothed working surface (**Figures 11.4** and **11.5**). They can be classified as basin types. Their length varies between 30 and 33cm, width *c*. 24cm, and thickness between 10.8 and 12.7cm. There are often circular or multidirectional striations visible on the working surface, which indicates circular or a combination of circular and/or back-and-forth strokes.

11.4. Percussion tools

Tools in this category were involved in various activities related to the use of forceful pressure – impacting, smashing, crashing, and battering. The purpose of percussion tools is to chip or smash away the unwanted parts of other items (Adams 2002, 156). They are divided into the following types:

11.4.1. *Pounders*

Pounders are handstones used in light-duty percussion activities. They were used in forceful strokes that create impact fractures. Based on shape and surface configuration, objects from this group were divided into the following types:

Type P1

Pounders of this type are similar in shape to grinders G1. They are spherical or cubical, but their surfaces are covered by impact fractures (**Figures 11.6** and **11.7b**). Often the boundary between grinders G1 and pounders P1 is fuzzy, which could be the result of their multifunctionality or the reuse of grinders in percussion activities. Their length varies between 6.4 and 7.4cm, width between 5.6 and 5.8cm, and thickness between 3 and 3.9cm.

Type P2

This type includes circular or semi-circular tools, with flat sides and a working surface on one of the edges (**Figure 11.7a**). P2 type pounders have a length between 6.4 and 11.4cm, width between 5.6 and 11cm, and thickness between 2.8 and 5cm. Their shape is similar to Type G2 grinders and the fact that part of them have smoothed sides suggests that some may be grinders reused as pounders. Impact fractures are visible only on the bottom edges, allowing the tool to be easily held by the wider upper part.

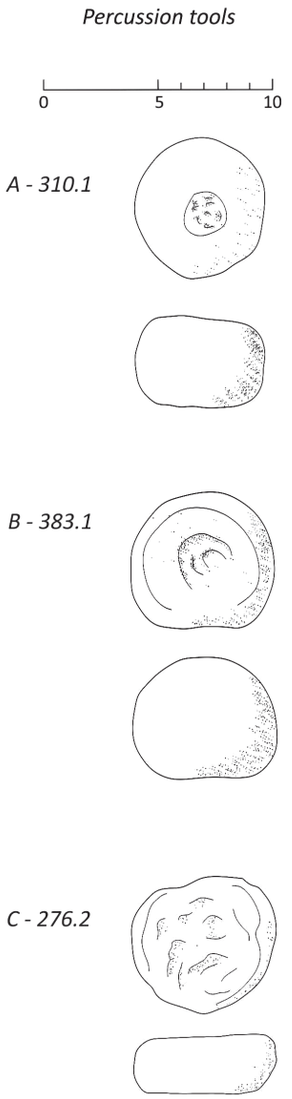


Figure 11.6. Pounders of P1 type (drawing Agnieszka Ryś-Jarmużek).

11.5. Abrading tools

Tools in this category are involved in all activities linked to removing material from the contact surface through adhesive and abrasive mechanisms (Adams 2002, 81). In Adams's functional classification, this group also includes smoothing and polishing tools; however, none were found among the assemblages under discussion.

In the present assemblage, this category consisted of handstones that have one or more rough surfaces (**Figure 11.8**).[3] Usually, they have a flat working surface, but their general shape is not homogenous. Their length varies between 3.8 and 11.6cm, width between 3.8 and 9.1cm, and thickness between 1.6 and 6.7cm.

[3] The abrading tools described by Allason-Jones as 'whetstones' are made of fine-grained ironstone, and hence form a distinct category (Allason-Jones 1998, 78).

11.6. Raw material and manufacturing process

The choice of raw material and manufacturing process depends on many factors, such as the physical properties (e.g., granularity, texture) of the rock and its availability, as well as design decisions that reflect technical choices learned by members of the community. To better understand this process, a petrographic description of the rock is required. The following preliminary classification is based on the petrographic analysis of the group of samples of stone from Soba, undertaken by Michalina Dzwoniarek-Konieczna from the Faculty of Oceanography and Geography, University of Gdańsk (**Table 11.2**). The examination was intended only to identify the raw material in general.



Figure 11.7. Pounders of P1 and P2 types
(photo Joanna Ciesielska).



Figure 11.8. Abraders
(photo Joanna Ciesielska).

	Sandstone	Quartzite	Granite	Granodiorite	Amphibolites	Unidentified
Grinding tools						
Grinders G1	31	3	3	1		3
Grinders G2	20	2				1
Grinders G3	40	1			1	4
Grinders G4	10					1
Grinders G5	3		1	2		1
Querns Q1	19					
Querns Q2	4					
Non-classified	21	1	4	4		7
Percussion tools						
Pounders P1	8					
Pounders P2	3					
Non-classified	1		1			
Abrading, smoothing and polishing tools						
Abraders	26					
Non-classified	4					
Unidentified	6					

Table 11.2. Raw materials attested in Soba and their frequency within the individual categories (prepared by Agnieszka Ryś-Jarmużek).

The detailed identification of the provenance of raw material requires surveys and petrological and/or geochemical analyses which have yet to be carried out. Additionally, during the 2022 season, I described the granularity and texture of the raw material used for the production of each of the tools. I adopted the following standardised parameters for grain size:[4] grains of less than 1mm were considered fine, 1–2mm are medium, 2–4mm are coarse and larger than 4mm are conglomerate. Texture is divided into smooth or rough. These two factors, together with the durability of the stone, are also important for use-wear analysis, and a better understanding of the stone's ability in contact with another substance or surface.

11.6.1. *Sandstone (silicified sandstone)*

The rock appeared in yellow and brown variants (**Figure 11.9a, b, c, d**). In all, the matrix included coarse and fine grains of quartz (abundant), and fewer feldspar and lithic fragments. The material is hard and compact. The texture varied, from fine-grained to conglomerate variants. This material can be assigned to the 'Nubian Sandstone formation', which covers a large part of Sudan. According to the geological map of Sudan (GRAS), Soba is located in the Khartoum Basin, which suggests that the material could have been sourced locally.

11.6.2. *Quartzite*

The matrix included coarse crystals of quartz (**Figure 11.9e**). The cement is made up of fine crystals of quartz or microcrystalline chalcedony. The rock is very compact and hard. Within the present assemblage it occurred mostly as fine-grained variants. The nearest outcrops for quartzites are located in the Butana region (Whiteman 1966, 139).

11.6.3. *Granite, amphibolites and granodiorite/granitic gneiss*

Identification of this group is incomplete. Only two samples were investigated – granodiorite and amphibolites. The material is very compact and hard. Amphibolite is characterised by the phanerocrystalline structure of amphibolites and plagioclases (**Figure 11.9f**). Granodiorite/granitic gneiss, in turn, has a medium

[4] This is the suggested standardisation according to Adams 2002, Appendix A.

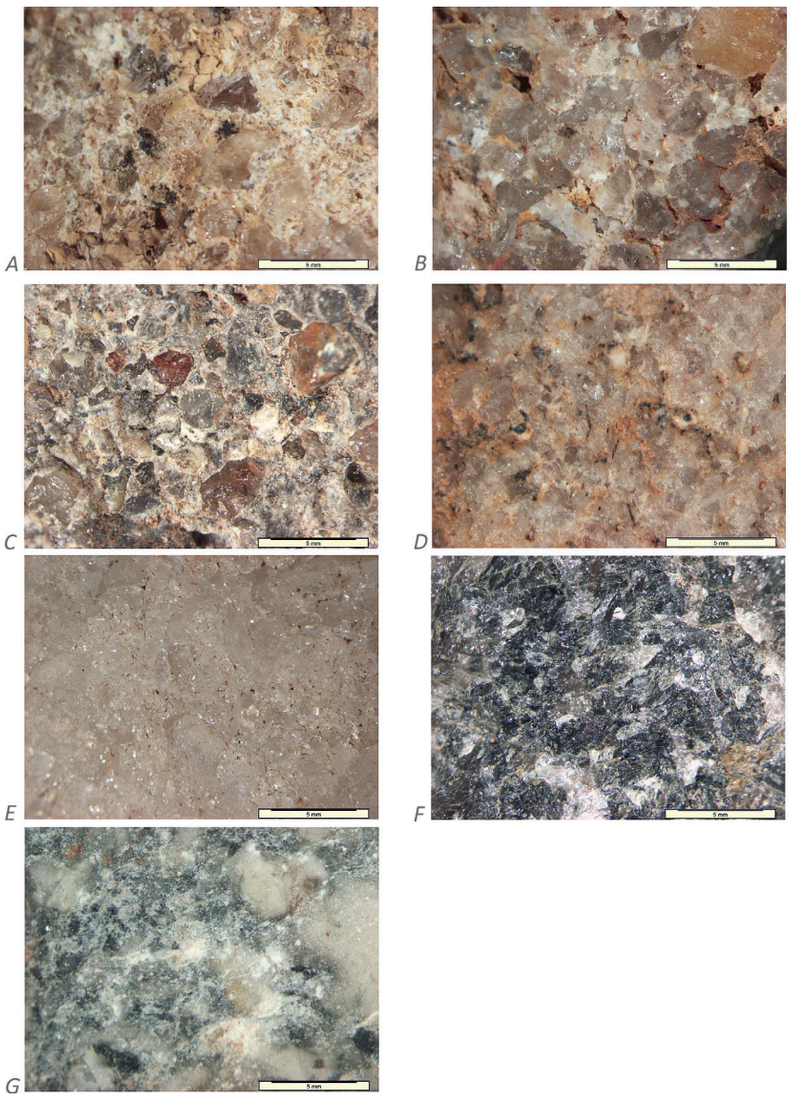


Figure 11.9. Microscopic photos (magnification × 6.25) of samples: A – SOBA_2020/CW1/228, B – SOBA_2020_CW1_183, C – SOBA_2020/CS1/253, D – SOBA_2021/CW1/181, E – SOBA_2021/GN2/326, F – SOBA_2020/CW1/282, G – SOBA_2020/CS1/267 (photos Michalina Dzwoniarek-Konieczna).

phanerocrystalline structure and directional texture of quartz, feldspars, amphibolites and biotites (**Figure 11.9g**). The nearest outcrops for these rocks belong to the basement complex and are located in the Sabaloka Complex area (Whiteman 1966, 140–141) or in the Butana region (Whiteman 1966, 139).

Material attributes for grinding and percussive tools are hardness and durability, which enable long use. Abrading tools, in turn, required a rougher surface that can more easily remove material from the contact surface. It seems that in the majority of cases, ground stone tools were made from locally available raw materials. However, at this stage of the research it is difficult to state precisely which outcrops were chosen by the inhabitants of medieval Soba. Locating the sources of the materials used is also hampered by the fact that Soba and its surroundings are now surrounded by modern Soba and Khartoum's suburbs, which makes it difficult to reconstruct the past landscape. However, based on ethnographic evidence, individuals involved in ground stone tool production generally choose particular outcrops usually located in the direct vicinity or within a few hours' travel time (for example, for Darfur see Haaland 2017, 8; for the Omo Valley in Ethiopia see Robitaille 2016, 432; for northern Ethiopia see Nixon-Darcus and Meresa 2020, 6); or sometimes

	Levelling	Polish and sheen	Pits and grain extraction	Striation and scratches	Fractures and cracks
Grinding tools					
Grinders G1	×	×	×		
Grinders G2	×	×	×		
Grinders G3	×		×		×
Grinders G4	×	×		×	
Grinders G5	×	×			
Querns Q1	×		×	×	
Querns Q2	×	×			
Percussion tools					
Pounders P1			×		×
Pounders P2			×		×
Abrading, smoothing and polishing tools					
Abraders	×	×			

Table 11.3. Use-wear traces visible on individual types of ground stone tools (prepared by Agnieszka Ryś-Jarmużek).

within a few days walk (for example, for the Gamo region in Ethiopia see Arthur 2014, 136; for the Kerio Valley in Kenya see Shoemaker *et al*. 2017, 426). The selection of a procurement site depends on the quality of the raw material, but also on the amount of energy that would be needed to transport the finished product. In most cases, tools are only roughly shaped at the quarry site to make them small enough to carry to the village. The distance between the place of procurement and the place of manufacture is also restricted by the transport options. In the case of the assemblage from Soba, it can be assumed that sandstone and quartzite were extracted somewhere locally. However, the third group of rocks required a long journey, to the region of the Sixth Cataract, which suggests that it might be a more specialised production. It is also possible, that some stone, especially granite, was obtained from reused architectural elements.

11.7. Use-wear and function

Wear is the progressive transformation of a surface as a result of the relative motion between it and another contact surface (Adams *et al*. 2009, 46). Most identified characteristics relate to the type of alteration that affected the stone grains. Therefore, observation and systematic description of use-wear were conducted. This allowed for the identification of traces associated with different tool use, as well as defining the nature of the tool contact surfaces. This study looked at the macroscopic and microscopic analysis of the active surfaces of the tools and the morphological changes related to their use.

Five different types of use-wear can be identified within the assemblage from Soba (**Table 11.3**):

11.7.1. Levelling – this process is the result of a reduction of the grains and minerals, resulting in what appears as flatter areas on the surface topography (**Figure 11.10a**). This use-wear pattern is very characteristic for abraders, polishers and grinding implements (Adams *et al*. 2009, 52–53).

11.7.2. Polish and sheen – these are a result of tribochemical mechanisms, and are usually described as a shiny surface (**Figure 11.9b, d**). This use-wear is usually linked to levelling and is related to flatter surfaces with the potential for high light reflectivity (Adams *et al*. 2009, 52). It is characteristic of abraders, polishers but also of grinding tools. They can be connected with craft activities: for example, abraders for smoothed wood, bone or stone (Adams 2002, 80), or polishers for burnishing the surface(s) of pottery, or polishing wood or bone items (Adams 2002, 91).

11.7.3. Pits and grain extraction – the formation of pits and grain extraction are linked to the quality of the rock, and mainly concern poorly cemented rocks with large grains (**Figure 11.10c**). Pits can also be formed through fatigue wear, which make grains or minerals

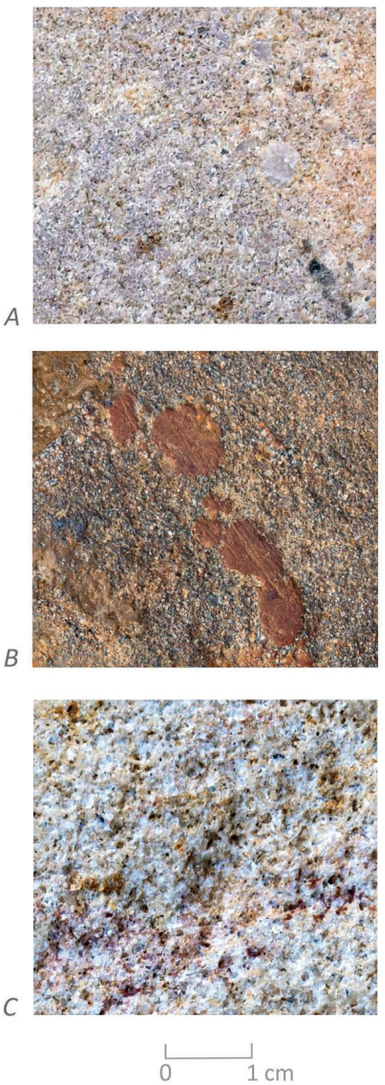


Figure 11.10. Macroscopic photos of use-wear traces – A – levelling traces visible on quern 293, B – scratches visible on grinder 396.5, C – pits and grain extraction visible on pounder 142 (photos Joanna Ciesielska).

break under pressure (Adams *et al*. 2009, 53). This use-wear is linked to grinding and percussion tools.

11.7.4. Striation and scratches – linear traces, such as striation and scratches. are associated with the processing of abrasive or hard material (Adams *et al*. 2009, 49) (**Figure 11.10b**). They are connected with grinding tools.

11.7.5. Fractures and cracks – these can be observed on the tools' surfaces across all areas of individual grains and minerals, including scars, step fractures, flake removal and the crushing of the grains or minerals. This use-wear pattern is linked to percussive tools, but also visible on the grinding surface as a result of pecking.

Every trace is the result of specific use-wear mechanisms and hence the specific modes of the tools' use. Levelling, sheen, and scratches are linked to milling activities. Ethnographic analogies from Sudan and Ethiopia have shown that two types of grain milling leave different wear patterns that can be distinguished. Dirar (1993, 74) points out that in Sudan each household needs to have two different querns for processing sorghum – one for dry milling, and the second for wet with the addition of water. Their surfaces differ from each other – dry grinding needs a much rougher surface, which is systematically maintained by pecking, while wet grinding renders the surfaces much smoother and even polished. On the other hand, a study of grinding tools from Ethiopia by Robitaille (2016, 450) demonstrated differences between the milling of dry, fresh, or roasted cereal. In this case, the grinding of grilled wheat caused the surface to look glossy and polished, while in the case of dry or fresh sorghum, no polish was observed. In the Soba assemblage similar divisions of rough and smoothed, polished surfaces can be noticed. Changes to the initial morphology of the tool are strongly correlated with the way the tool was used (Dubreuil *et al*. 2015, 132). Observations of these morphological changes are crucial, especially for investigating the development of the grinding system. As was mentioned above, grinders and querns are companion tools and are not separately functional. Using the analysis of surface configurations, it was possible to match corresponding tools. Querns of Type Q3 and grinders G1, G2 and G3 can be classified as tools used with circular or reciprocal strokes, probably often employed in percussion-grinding mode, held by one hand only. Quern types Q1 and Q2 were used with a back-and-forth motion, held by one or two hands, depending on the size of some grinders, such as the larger G4 and G5 types.

However, during the tools' life cycle, use-wear patterns might overlap with each other, making their interpretation more complex. Ethnographic observations confirm that the function of the tool may change depending on the tool's wear or damage. This has also been noticed in the Soba assemblage, where, for instance, broken querns were reused as grinders.

11.8. Social and cultural aspects of ground stone tools

In addition to the functional aspects, some ground stone tools also played an important symbolic role in this region of Sudan. This kind of object had a long

lifecycle and even when they were no longer in use in their primary function, were used in other ways. This applies mainly to spherical stones, which are called 'Soba stones' (Seligman and Seligman 1965, 428–429, 437–438) in the area to the south of Khartoum, between Sennar and Jebel Gule. These stones were regarded as sacred, believed to have been the throne of Queen Soba, and were commonly used by people who considered themselves descendants of the Kingdom of Alwa (Seligman and Seligman 1965, 429). Stones have traditionally been used in this region for a variety of rituals, including ceremonies of divination or rain-making (González-Ruibal 2017, 185). Spherical stones are similar to the G1 grinders in the Soba assemblage – is it possible that they were reused and became a symbolic reflection of history to local tribes? The Seligmans (1965, 428 and 437) described 'Soba stones' as 'water-worn stones of brownish colour,' which are about 10–18 inches (*c*. 30–45cm) in diameter. Although their shape could be linked to G1 type grinders, their dimensions are much larger than these (see above), which contradicts this hypothesis. It rather seems they might instead be large river pebbles, without any connection with the Soba assemblage.

Ethnographic observations provide an interesting insight into the associations between gender and grinding tools. As referenced above, the production of grinding tools can be linked to both genders, depending on what part of Africa under discussion. In western Sudan, Tanzania (Haaland 1997, 379), and Kenya (Shoemaker *et al*. 2017, 426), women make grinding tools alone (Haaland 1997, 379). However, in Ethiopia, they are made by men (Nixon-Darcus and Meresa 2020, 6), on the order of a woman. In general however, the use of grinding tools, especially for food preparation, is closely associated with female identity (Haaland 1997). This symbolic relation between femininity and grinding can be additionally emphasised by the fact that grinders were seen as male and querns as female; the act of grinding was metaphorically associated with sexual intercourse (Haaland 2017, 6). However, this close symbolic association does not imply that grinding tools can be used in activities dominated by men, such as iron production or tobacco grinding (Haaland 1997).

Thanks to the ethnographic research of Maciej Kurcz, carried out amongst the contemporary inhabitants of Soba, we have some idea of contemporary attitudes to historical objects. Kurcz discovered that some objects have a sentimental value for modern communities and so are sometimes brought back to life (see above, Chapter 2). This is the case with pottery, or stone building blocks, but also grinders (*murhaga*), ancient examples of which are often brought to modern houses, even though they are no longer in use today. Spherical Type G1 grinders are also often used by children to play with.

11.9. Conclusion

The main aim of this chapter was to establish the typo-functional classification of ground stone tools from Soba, based on technological analysis. As a result, the following categories of objects were distinguished – grinding tools, percussive tools, and abrading tools. Each category was divided into types depending on forms, use-wear and facet configurations. The most numerous group is grinding tools, which were divided into two types – grinders (active tools) and querns (passive tools). Amongst them, grinders of Types G1 and



Figure 11.11. Examples from the set of ground stone tools found in context 1/GN (photo Joanna Ciesielska).

G3 were the most common, similar to the assemblage described by Allason-Jones. The main characteristic that differentiations these two types is how tools were used – in Type G1 this was circular and reciprocal strokes and in G3 (as well as Types G4 and G5), back-and-forth and circular. In all types, the most common use-wear traces were the levelling of grains, but also polish and sheen traces (G1, G2, G4 and G5) and in the case of Types G1, G2 and G3, pits and grain extraction. This likely means that Types G1, G2 and G3 were used for milling but also for crushing smaller substances. In the case of Types G1 and G2 this was probably small-scale processing based on their relatively small working surfaces, so these could be used for the processing of food products such as spices, or non-food such as pigments or ceramics. In the case of Types G4 and G5, the main activity in which they were used was milling, probably for cereal grains, which required bigger working surfaces. Based on ethnographic analogies and tool sets found in Trench 1/GN, we know that G3 grinders were paired with basin-like querns in Q2 (**Figure 11.11**). According to their use-wear traces (levelled grains and polished surfaces), it can be assumed that those tools were used in wet milling. Type Q1, in turn, which is characterised by a rough surface, was probably also used for dry milling, with companion tools such as Type G4 or G5 grinders. Traces of pecking are notable on the surfaces of this type of quern. Pecking is a type of surface maintenance to keep these appropriately rough, of a similar use-wear to abrasive grinding tools. However, these are characterised by a rough surface, which allows for the removal of material from the contact surface. They can be used in multiple craft activities including wood and bone working as well as stone object making. In the case of percussion tools, these are often reused grinding tools (mainly grinders of Types G1 or G3). These can be easily distinguished by impact fractures and scars on the surfaces or edges.

The symbolic and cultural aspects of ground stone tools can be also appreciated. In southern Sudan, there are beliefs or rituals where stone objects similar to those in the assemblage presented are used in rain-making ceremonies for example. There is also ethnographic evidence for the use of worn querns in this type of ritual (see Morton, http://southernsudan.prm.ox.ac.uk/details/1967.26.170/ accessed on 18th of April 2023). From a social point of view, grinding tools in particular are connected with femininity; other types of tools linked to crafts belong to the male world. For the contemporary inhabitants of Soba, ground stone tools from the site reflect the past and have sentimental value.

CHAPTER 12

MUD STOPPERS

Joanna A. CIESIELSKA

Among the numerous artefacts collected during fieldwork during the 2019–2020 and 2021–2022 excavation seasons, 30 items can be identified as mud-stoppers (or mud-stopper fragments), i.e., the remains of clay or mud used for sealing ceramic vessels in order to protect the commodities that they contained from contamination or spillage. The assemblage described herein is comprised of mud-stoppers found in two concentrations: in Trench 1 on Mound OS (see Chapter 4) and Trench 1 in Area CW (see Chapter 5), as well as a single find from Trench 2 in Area GN (see Chapter 6).

In Trench 1/OS, the fragments were found in two concentrations, belonging to Phase 4 of activity in the trench: representing secondary use of the area as a dumping ground for occupational debris (see Chapter 4). Layers 13 and 14 belong to the fill of two pits cutting into the backfill of Room 17 – one in its south-eastern corner, the other in its western part. The pits were subsequently covered with more debris, designated as Layers 5 and 7. Based on the archaeological stratigraphy and radiocarbon dating of samples retrieved during excavation, Phase 4 can be dated to the end of the 10th–beginning of the 11th century AD.

While a few stoppers were collected from the subsurface Layers 2 and 5, most of the items found in Trench 1/CW belong to occupational waste disposed of into a large pit dug into the earlier deposits (Layers 9, 14, 18, and 22). Based on the stratigraphy and radiocarbon dating, the pit must have been dug after the 10th century AD, when the area went out of use.

The recovered pieces belong to two types, which differ in shape and fabric. All of the stoppers recovered from Trench 1/OS were flat in shape – a handful of mud slapped over the rim of a vessel, evened out and roughly smoothed. Most were made of fine-grained Nile clay, with few organic inclusions. Only the rims of the vessels seem to have been covered, although many pieces are only fragmentarily preserved. Due to this poor preservation, the reconstruction of the size of this particular type of stopper proved difficult, requiring further study before being able to render their attribution to any specific kind of vessel.

In contrast, all of the stoppers recovered from Area CW (21 in total) were conical or hemispherical in shape (also called ‘mushroom-type’, see Davoli 2005, fig. 2), differentiated into two types based on their size – either large, of almost 20cm in diameter or distinctly smaller, half that size (*c*. 10cm). The stoppers recovered from Area CW were also formed of Nile clay, but with a large admixture of hardening additives, thus displaying much better preservation.

In general, inclusions help control theplasticity of clay, preventing cracking upon shrinkage (Denecker and Vandorpe 2007, 116). Lime-based fabrics could have been made waterproof by the addition of ash, powdered ceramics or certain clay minerals (Franzini *et al*. 1999; Elsen 2006). Mud-stoppers were often formed in moulds, but in Greco-Roman times almost all mud-stoppers were handmade (Denecker and Vandorpe 2007), while liquid plaster was often poured into the neck instead of being pre-formed (Sundelin 1996, 288–289; Denecker and Vandorpe 2007, 116). Clay was popular in local trade, while plaster, due to its increased durability, was used in long-distance, even international trade (Montet 1946, 109; Denecker and Vandorpe 2007, 119). In Egypt plaster sealings largely supplanted clay sealings from Roman times onwards (Sundelin 1996, 288; Denecker and Vandorpe 2007, 116).

Stoppers generally originated from the vicinity of the localities where the vessels were filled with stored commodities (Denecker and Vandorpe 2007, 116). Amphorae, or other vessels provided with stoppers, could be sourced from far away localities, but due to their transitory nature, it is unlikely that stoppers were manufactured by potters. The fabric used for the production of the two types of mud-stopper recorded in Soba, which translates to the disparity of preservation in archaeological record, may thus be indicative of their different association with ceramic vessels, sealed commodities and long-distance vs. local trade, or even simply temporary storage (see below).

12.1. Stoppers vs. plugs

Some of the stoppers collected during fieldwork at Soba bear the imprints of pottery fragments or circular mats on the bottom (**Figure 12.1**), indicative of a



Figure 12.1. Bottom surface of a conical stopper SOBA_2020/CW1/sf091 with a circular mat imprint (photo Joanna Ciesielska).



Figure 12.2. A conical stopper SOBA_2020/CW1/sf102 with the imprint of a pottery sherd and/or folded piece of fabric on its bottom surface (photo Joanna Ciesielska).

preliminary closure of the vessels. Two levels of vessel sealing can be distinguished: plugs (also called 'bungs'), i.e., a preliminary back-stop, made for example from vine/palm leaves or broken pottery and preventing wet mud from falling inside and contaminating the contents; and stoppers – formed out of mud on top of the plugs, smoothened and left out to dry (Dzierzbicka 2015, 153). Two-stage closing of amphorae might have allowed for hermetical storage. Bungs might have consisted of a series of small, circular mats laid upon each other (Denecker and Vandorpe 2007, 115); circular pottery sherds precisely cut to fit the neck opening (Hope 1978, 14; 1993, 94; Murray and Boulton 2000, 594) or larger fragments of random shapes laid on the rim, or even pieces of unfired clay stuck into the neck. Various types of such plugs were found in Roman contexts at Berenike on the Red Sea coast (Bos and Helms 2000, figs 12–13; Bos 2007, 260, fig. 14-4) and at Mons Claudianus (Thomas and Tomber 2006, 248–249), particularly used with wine amphorae. Most stoppers from the 4th–7th century deposits at Egyptian Antinoopolis bear traces of either palm fibre, fabric or pottery fragments being used as preliminary plugs (O'Connell 2014). Imprints of roughly square-shaped sherds or folded pieces of fabric were also recorded at Soba (**Figure 12.2**). Additionally, many of the re-used pottery fragments collected in Soba might have served as plugs, although it is often difficult to identify their function, as not all of these were round cut to fit perfectly into the light of the neck (see Chapter 9).

Ceramic tabs and textiles might have also been implemented as devices to remove the stoppers when the vessel was opened, so-called 'pop-top devices' (Bos and Helms 2000, figs 12–14). Strings running under the seal to remove it were the most common pop-top device (Egloff 1977, 180; Johnson 1979, 233–234; Sundelin 1996, 298–299; Dieleman 1998, 265; Cashman 1999, 289; Bos and Helms 2000, 278–279, 302; Davoli 2000, 144; Davoli 2005, 104), though often combined with pottery fragments.

Additionally, small ceramic lids might have occasionally been used to temporarily close amphorae (Peacock and Williams 1986, 51; Mayerson 2001, 217). Among the Greco-Roman stoppers recorded in the Eastern Desert and at Myos Hormos, Thomas (2011, 18) lists small, wheelmade discs with a nipple or a handle lowered into the neck of an amphora before sealing (1st–2nd century AD), which seem to have been very popular in the Roman Mediterranean (Koehler 1986, 54; Bajtler 2016b, 294). One tiny ceramic lid with a nipple-like handle (SOBA_2020/CW1/sf116) was found in Trench 1/CW in Deposit 24, which also yielded numerous fragments of other pottery vessels, including storage and transport amphorae. This particular item seems to have been handmade, bearing finger marks on the disc, a relatively rare feature (Bajtler 2016a, fig. 2). While

lids were usually not intended to receive a permanent sealing, pottery fragments re-used in a similar manner are much harder to distinguish from the primary plugs mentioned above. Some researchers believe that round-cut pottery fragments with central holes might have been used as lids (with a cord threaded through) (van Damme 2019, 94, 97). However, such pierced fragments might have also been employed in tandem with fermentation holes in mud-stoppers.

12.2. Mud-stoppers and wine

One of the stoppers recovered from Trench 1/CW had a small hole pierced through it (SOBA_2020/CW1/sf080, **Figure 12.3**). In general, many stoppers were pierced through after application. Some researchers believe those openings to be fermentation holes, temporarily stopped with a straw to allow for the exit of gases without letting air in and permanently sealed off after fermentation was complete. Obviously, this solution would only have been implemented for young wines, poured into the vessels before fermentation was complete (Lerstrup 1992, 66–75). While fermentation holes might not have been necessary, as many types were not provided with them (Lerstrup 1992, 73–74; Hope 1978, 7), their presence may a key marker distinguishing between young and fully fermented wines.

It has also been hypothesised that the holes might have been pierced when the vessels were opened (Mayerson 2001, 219–220; Denecker and Vandorpe 2007, 116). However, the evidence of holes being sealed with fresh mud and their association with other removal devices (such as cords and pottery fragments), as well as the presence of pitch (though rarely preserved) rather suggests their connection with the wine fermentation process (Thomas 2011, 14). Indeed, the presence of a pitch sealant combined with fermentation holes is considered by some to be the identifying feature of wine amphorae. Egyptians often covered the inside of the vessels used for liquids with a sealant, preventing leakage, absorption and extending its storage life. The association of the sealant with wine transport is additionally strengthened by the fact that olive oil amphorae were not sealed with pitch as it ruined the oil's flavour (Heron and Pollard 1988, 444). An assemblage of over a dozen mud-stoppers found at the site of Antinoopolis in Egypt and dated to between the 4th and 7th centuries AD belong to both the conical and flat, disc-shaped types of stoppers. The authors state that the same vessels were often used to transport olive oil or fish sauce, but since most of the stoppers bear traces of a black, resinous sealant, those particular vessels were probably used to transport wine. No trace of resinous sealants being used to coat the interior of vessels in Soba was recorded in either Trench 1/CW or 1/OS; however, considering that the substance is organic in nature, it is only rarely preserved (Heron and Pollard 1988, 429). At Bakhias, Davoli noted that only seals of the convex-with-cavity type had fermentation holes, which, according to the author, meant that it might have been the only type used for wine amphorae (Davoli 2005, 102).



Figure 12.3. Large conical stopper with a (fermentation?) hole pierced through SOBA_2020/CW1/sf080 (photo Joanna Ciesielska).

Wine consumption was widespread in Nubia throughout much of its history (Vercoutter 1959, 127; Adams 1962, 281), mostly due to trade with Egypt. Meroitic attempts at growing vines seems to have been a failure (Adams 1966, 277–278) and the dry Nubian climate might not have been suitable for vine cultivation (Vercoutter 1959, 127). In Meroitic times wine was almost exclusively imported in Aswan amphorae (Adams 1962), i.e., a hard, pink ware, as well as large, brown-ware amphorae with elongated necks and cylindrical bases. The former also dominate assemblages in the post-Meroitic period (Adams 1966, 279–280). In the Fourth Cataract the import of wine from abroad in the Meroitic and post-Meroitic periods seems to have been limited to the regional elite (Thomas 2014).

The heyday of the Nubian-Egyptian wine trade was between the middle of the 6th and the middle of the 8th centuries AD (Adams 1964, 243–244). Two new Egyptian vintages appear in the post-Meroitic archaeological

record: the so-called 'Saqqara vintage' – widespread in Lower and Middle Egypt as well as Palestine in the 5th–6th century AD, the vessels are also very common later, in the Christian period (Danys-Lasek 2015, 123–124) and were probably also used to carry oil; and 'the Theban vintage', i.e., heavy, brown vessels manufactured from Nile silt. Local production only emerged after the 8th century AD when shipments from Egypt ceased; before then, wine travelled from Egypt up the Nile to the Makurian capital (Adams 1962, 1964; Danys-Lasek 2015).

The custom of drinking wine seems to have spread across Nubia after Christianisation, both for liturgical purposes and by elite individuals who could afford such a treat (Adams 1966; Dzierzbicka 2015, 167). From the 8th century onwards, local wineries and vineyards were established and amphorae were successfully manufactured (Adams 1966). The Makurian industry never produced amphorae to commercial standards, as the large vessels were far too porous to hold the liquid (Adams 1962, 137). Mass production of amphorae was observed at the Faras and Serra pottery kilns (Adams 1962, 280–281), but both centres shut down after no more than one or two centuries. Nubian amphorae were heavier and more bulbous than Egyptian ones, but also often resinated. Imitations of Egyptian amphorae manufactured in Aswan were found in a Dongolese milieu (Pluskota 2001, 229–230; Danys 2015, 126), and as far south as the Ghazali monastery on the northern fringes of the Bayuda desert (Shinnie and Chittick 1961, fig. 19.P1). Large numbers of mud-stoppers were found in 7th–8th century dump layers and latrine deposits in the area of Palace SWN.BI in Old Dongola (Dzierzbicka 2015), and close to another latrine deposit (Jaklewicz 2003); both also yielded multiple remains of amphorae, both local and imported from the Egyptian Nile Valley and the Levant (Danys-Lasek 2012). The Dongolese production was most probably used regionally, with imports from Egypt making their way to the court and elite households only (Danys 2015). Amphorae sherds attributable to workshops in Old Dongola were found in abundance in the settlement contexts of nearby Banganarti, with rare 7th–8th century fragments originating in Aswan (Cedro 2021, 218–219). The excavation of local fortifications also yielded over 40 amphorae stoppers, although the assemblage cannot be directly associated with pottery deposits (Jaklewicz 2004).

The import of Egyptian wine and vessels resumed in the mid-11th century, but on a small scale. Evidence of Nubian viticulture appears again only in the Late Christian period (Adams 1964, 225–231) in the form of globular, thin-walled vessels with small necks and mouths. Christian sites in the Fourth Cataract region rarely have amphorae sherds accounting for more than 1–2% of the assemblage (Thomas 2014), corresponding to the reduction in both long-distance and regional trade in the Classic and Late Christian periods and the unsuitability of Late Christian amphorae for transport (Pluskota 2005b).

Not much is known about wine production and consumption in medieval Alwa; however, the sheer amount of stoppers collected by the previous excavators attests to its popularity among the inhabitants of the kingdom's capital (Allason-Jones 1991, 151–155). The fertile soils of the Gezira plain might have rendered the area particularly suitable for viticulture, with the Blue Nile waters draining Cenozoic volcanic rocks of the Ethiopian Highlands responsible for the formation of the Gezira alluvial fan (Pik *et al.* 1999). On the other hand, precipitation in Sudan is a seasonal phenomenon, sometimes scarce, but at other times completely devastating. Coupled with the high temperatures characteristic of southern portions of Central Sudan, this may have made it impossible to maintain a regular wine production, which could have been limited to supplying local markets (see below).

12.3. Stopper markings

Stoppers were often marked with inscriptions, monograms, crosses, geometrical patterns, figural and zoomorphic or floral representations. Markings on mud-stoppers identify wine producers or the place of origin rather than the recipient or the kind of commodity and its amount, as already noted at Soba (Allason-Jones 1991, 151–155). Visual identification was crucial in trade networks where commodities were handled through agents (Vandorpe 2014, 147). Lack of markings may then be indicative of sealed vessels being intended for temporary domestic storage rather than long-distance transport (van Damme 2019, 99).

Markings were often stamped (Dzierzbicka 2017), especially for the purpose of long-distance travel where identifying symbols must have been easily recognised by people not familiar with local producers. In close-knit networks, however, the stoppers might have been covered with rudimentary geometric symbols, the connotations of which were probably known regionally. While the items collected during the current excavations at Soba bear no trace of stamping, most of them were marked with hand-drawn linear patterns (**Figure 12.4**). A wide variety of such patterns were previously recorded



Figure 12.4. Geometrical-pattern markings on various types of mud-stoppers: a) a fragment of a flat stopper with a partially preserved zigzag pattern drawn in wet mud starting in a little pit (SOBA_2019/OS1/sf014); b) a fragment of a flat (?) stopper painted red and decorated with several lines intersecting radially (SOBA_2019/OS1/sf023); c) conical stopper painted red and marked with two lines intersecting at the top and a producer's mark in one of the quarters (SOBA_2020/CW1/sf083); d) a fragment of a flat stopper decorated with several intersecting lines (SOBA_2019/OS1/sf013); e) a fragment of a stopper with a pattern of intersecting lines forming a hexagram-like shape (SOBA_2019/OS1/sf030); f) a fragment of a flat stopper decorated with geometrical patterns (SOBA_2019/OS1/sf040) (photos Joanna Ciesielska).

at Soba (Allason-Jones 1991, 152–153), providing a basic typology of such finds from this particular site.[1]

Fragments of flat mud-stoppers collected from Trench 1/OS show various configurations of intersecting lines. In most cases, their fragmentary preservation does not allow for a full reconstruction of the original pattern. However, at least two pieces (SOBA_2019-OS1-sf030 and SOBA_2019-OS1-sf031, see **Figure 12.5**) had preserved patterns that can be identified as fragments of an eight-pointed star formed by two overlapping squares (somewhat similar to Allason-Jones 1991, figs 74.6–7) or similar rectangular patterns with accompanying lines crossing over (such as SOBA_2019-OS1-sf013). Some of the barely recognisable lines of unidentified patterning might have represented letters, such as the zigzag symbol SOBA_2019/OS1/sf014 (**Figure 12.4a**), while others are more reminiscent of free-form drawing (Allason-Jones 1991, figs 76–77).

The conical-shaped stoppers from Trench 1/CW displayed a set of much simpler patterns, if any at all. As previously mentioned, the conical-shaped stoppers can be differentiated into two types: smaller, of no more than 10cm in diameter, and larger, of *c*. 16–20cm. Not one from among the smaller items bears any trace of distinguishing marks on its upper surface. Of the larger ones, three pieces had two incised lines crossing at right angles at the top: one with no additional drawings (SOBA_2020/CW1/sf091), the most common type of decoration listed by Lindsay Allason-Jones (1991, fig. 74.1); one with a kind of trident formation (SOBA_ 2020/CW1/sf080, like the type illustrated in Allason-Jones 1991, fig. 75.1); and one reminiscent of the pattern presented in Allason-Jones 1991, figs 74.8–9, with an additional symbol in one of the quadrants (SOBA_2020/CW1/sf083), but of a type previously not recorded at Soba (**Figure 12.4c**).

A few examples of both flat and conical stoppers in the Soba assemblage were painted red (SOBA_2019-1/OS-sf023, SOBA_2019-1/OS-sf038, SOBA_2020-1/CW-sf090, see **Figure 12.4b**). Paint of different colours might have been used to mark certain kinds of commodities. Stamps were often dipped in red or white paint (Rutschowscaya 1986, 72–77). A number of red-painted stamps were found in Myos Hormos, where Ross Thomas has suggested that red paint might have signified wine (2011, 23).



Figure 12.5. A pattern of an eight-pointed star formed by two overlapping squares drawn with a straw or a wooden stick on the surface of a flat sun-dried stopper (SOBA_2019/OS1/sf031) (photo Joanna Ciesielska).

In Roman times not only wine, but also oil and fish products were often traded long-distance, evidence of which was found in the Red Sea ports (Lepiksaar 1995; Van Neer *et al*. 2004; Van Neer and Parker 2008; Thomas 2011). While some researchers claim there is no clear association between the type of stopper and particular type of amphora (Hope 1978, 26–27), others record a link between stopper forms, commodities stored and amphora forms. The latter may be true for the Soba assemblage, as not only two distinct types of stoppers were recorded at two separate excavation sites, i.e., flat stoppers in Trench 1/OS and large, conical stoppers in Area CW, but also the conical (or 'mushroom') type occurred in two sizes, being either very large (*c*. 20cm in diameter) or relatively small (*c*. 10cm), indicating use for two very different kinds of vessels. The markings on the stoppers, which were clearly comprehensible to contemporary users, might have provided additional information on their origin/destination or the vessels' contents, but due to their symbolic nature are illegible to us now. Geometric, straw-drawn patterns recorded during the latest fieldwork are congruent with the assemblage of decoration published by Allason-Jones (1991, figs 76–77), but provide no further indication as to their meaning.

While an in-depth analysis of the correspondence between stopper forms, vessel types and stored commodities is still pending, the spatial differentiation of the different types of stoppers may speak to the disparity

[1] Although mislabelling them as 'bungs', a term which applies to the preliminary closing devices applied underneath the stopper proper.

in intended application. As mentioned above, lime-tempered stoppers, i.e., the conical items found in Area CW, were much harder, more durable and suitable to long-distance travel. One could speculate that structures in Area CW might have received imported items that reached Soba via overland or riverine trade routes. It is noteworthy that almost all items recovered from Area CW belonged to the fill of a refuse pit. Due to its relative proximity to the church on Mound C, it can also be surmised that nearby facilities catered to the church's needs, and that deposits recorded in Trench 1/CW constitute waste from its activities. Meanwhile, structures uncovered within Trench 1/OS might have been designed for temporary storage of commodities, either once opened and not consumed in full, or produced locally and never hauled anywhere far.

12.4. Catalogue of finds

12.4.1. *Area OS*

SOBA_2020/OS1/sf013
CONTEXT: Trench 1/OS, Deposit 7.
DESCRIPTION: Two fragments of flat mud-stoppers; upper surface decorated with several intersecting lines drawn in wet mud, forming geometric patterns; the imprint of a rim preserved on the larger fragment (*c*. 2.2cm in height) plus an impression of a pottery fragment (*c*. 9.3 × 8.2cm) on the bottom.
MATERIAL: Greyish brown clay, unfired (sun-dried).
DIMENSIONS:
a) 13.9 by 12.8cm, th. 3cm
b) 6.7 × 5.8 × 3.1cm
DATING: Late 10th to early 11th century AD.

SOBA_2020/OS1/sf014
CONTEXT: Trench 1/OS, Deposit 5.
DESCRIPTION: A fragment of a flat mud-stopper; marked with a partially preserved zigzag pattern drawn in wet mud starting in a little pit, probably made with a small stick or a piece of reed.
MATERIAL: Greyish brown clay, unfired (sun-dried).
DIMENSIONS: 6.3 × 6.1 × 2.9cm.
DATING: 11th century AD – ?

SOBA_2020-OS1-sf023
CONTEXT: Trench 1/OS, Deposit 5.
DESCRIPTION: A fragment of a flat mud-stopper, slightly convex in cross-section; upper surface painted red and decorated with several lines intersecting radially, drawn in wet mud; fragmentary imprint of a vessel's rim (h: 1.4cm) preserved on the lower surface, along with the impression of a pottery fragment (max. dim. 5.4cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, unfired (sun-dried).
DIMENSIONS: 7.9 × 4.6cm, th: 2.2cm.
DATING: 11th century AD – ?

SOBA_2020/OS1/sf029
CONTEXT: Trench 1/OS, Deposit 14.
DESCRIPTION: Four fragments of flat mud-stoppers; one of the fragments (b) was decorated with several intersecting lines drawn in wet mud, forming geometric patterns and preserving the partial imprint of a vessel rim on the lower surface (*c*. 1cm in thickness).
MATERIAL: Greyish brown clay with traces of white lime visible on the surface, but not in the fabric, unfired (sun-dried).
DIMENSIONS:
a) 7.6 × 4.7 × 3.3cm
b) 4.7 × 3.4 × 1.4cm
c) 4.4 × 3.7 × 2.2cm
d) 3.8 × 3.6 × 2.5cm
DATING: Late 10th to early 11th century AD.

SOBA_2020-OS1-sf030
CONTEXT: Trench 1/OS, Deposit 13.
DESCRIPTION: Three fragments of flat mud-stoppers, one with a rim imprint on the bottom surface (1.1cm), the other with an imprint of a rim along the border of the piece; all fragments marked with lines of various patterns drawn in wet mud, possibly by different hands, as the markings show some stylistic differences, as well as a different depth of lines (i.e., pressure applied during application); one fragment of the edge of a mud-stopper shows a pattern of intersecting lines forming a hexagram-like shape.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, unfired (sun-dried).
DIMENSIONS:
a) diam. 7cm
b) 6.45 × 4.9 × 2.1cm
DATING: Late 10th to early 11th century AD.

SOBA_2020-OS1-sf031
CONTEXT: Trench 1/OS, Deposit 14.
DESCRIPTION: Three fragments of flat mud-stoppers, decorated with lines drawn in wet mud, one of the fragments shows a pattern of lines intersecting to form a hexagram-like shape.

MATERIAL: Greyish brown clay with small admixture of fine lime particles, unfired (sun-dried).
DIMENSIONS:
a) 12.3 × 12.1 × 3.8cm
b) 8.5 × 3.8 × 3.2cm
c) 8 × 4.5 × 3.7cm
DATING: Late 10th to early 11th century AD.

SOBA_2020-OS1-sf038
CONTEXT: Trench 1/OS, Deposit 7
DESCRIPTION: A fragment of a flat mud-stopper; upper surface painted red and decorated with several intersecting lines drawn in wet mud.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, unfired (sun-dried).
DIMENSIONS: 8.6 × 7.4 × 3cm.
DATING: Late 10th to early 11th century AD.

SOBA_2020-OS1-sf040
CONTEXT: Trench 1/OS, Deposit 14.
DESCRIPTION: Three fragments of flat mud-stoppers, one fragment with traces of white staining (either painted or accidental); all fragments decorated with lines drawn in wet mud.
MATERIAL: Greyish brown clay, unbaked.
DIMENSIONS:
a) 5.8 × 6.4 × 3.9cm
b) 3.8 × 3 × 2.8cm
c) 5.8 × 5.3 × 4.4cm
DATING: Late 10th to early 11th century AD.

12.4.2. *Area CW*

SOBA_2020-CW1-sf080
CONTEXT: Trench 1/CW, Deposit 2.
DESCRIPTION: Fully preserved, large conical mud-stopper; top surface marked with two lines intersecting and forking into three at the ends, close to the perimeter; imprint of a vessel's rim (long-necked with rim flaring out) visible on the bottom surface; fermentation hole pierced through one of the sides into the middle of the bottom surface (diam. 2.3cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 18.5cm, inner diam. 13cm, h: 13.6cm, max. rim h: 6.3cm.
DATING: ?

SOBA_2020-CW1-sf083
CONTEXT: Trench 1/CW, Deposit 5.
DESCRIPTION: Almost fully preserved (upper surface slightly weathered), large conical mud-stopper; top surface painted red and marked with two lines intersecting at the top, plus a symbol reminiscent of a three-legged π in one of the quadrants (a producer's mark? place of origin designation? destination? designation of contents?); an imprint of a rim is preserved on the bottom surface (the rim clearly flaring outward, rim h: *c*. 3.2cm), along with the impression of a pottery fragment (7.7 × 4.2cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 17.3cm, inner diam. 10.7cm, h: 10.6cm.
DATING: ?

SOBA_2020-CW1-sf085
CONTEXT: Trench 1/CW, Deposit 9.
DESCRIPTION: Almost fully preserved (upper surface badly weathered), small conical mud-stopper; no markings.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Diam. 16.9cm, h: 9.9cm, max rim h: 2.5cm.
DATING: ?

SOBA_2020-CW1-sf088
CONTEXT: Trench 1/CW, Deposit 9.
DESCRIPTION: Fully preserved small conical/hemispherical mud-stopper; no markings; an imprint of a rim (h: 1.3cm) and of a pottery fragment (5.7 × 6.4cm) preserved on the bottom surface.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 10.4cm, inner diam. 7.9cm, h: 5.7cm.
DATING: ?

SOBA_2020-CW1-sf091
CONTEXT: Trench 1/CW, Deposit 14.
DESCRIPTION: Fully preserved, large conical mud-stopper; top surface marked with two lines intersecting at the top, with traces of red paint; an imprint of a rim (h: *c*. 2.8cm) preserved on the bottom surface, plus the impression of a circular piece of basketwork with a concentric weave.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 17.8–18cm, inner diam. 13cm, h: 10cm.
DATING: ?

SOBA_2020-CW1-sf092
CONTEXT: Trench 1/CW, Deposit 14.
DESCRIPTION: Almost fully preserved, large conical mud-stopper with truncated to; imprint of a vessel rim (long-necked with rim flaring out) visible on the bottom surface.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 17.5–18cm, inner diam. 15cm, h: 11cm.
DATING: ?

SOBA_2020-CW1-sf093
CONTEXT: Trench 1/CW, Deposit 14.
DESCRIPTION: Fully preserved small conical/hemispherical mud-stopper; an imprint of a rim (min. h: *c*. 1.9cm) preserved on the bottom surface along with the impression of a pottery fragment (5.5 × 8.6cm), probably applied together with a folded piece of fabric.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 12.9cm, h: 9.5cm.
DATING: ?

SOBA_2020-CW1-sf096
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Fully preserved small conical/hemispherical mud-stopper; no markings on the upper surface; fragmentary imprint of a rim (h: *c*. 2.5cm) preserved on the lower surface
MATERIAL: Greyish brown clay with small admixture of fine lime particles, partly fired (possibly due to the fire that was recorded in the fill of the buildings in the Area CW).
DIMENSIONS: Outer diam. 10.4cm, inner diam. 6.6cm, h = 5.6cm.
DATING: ?

SOBA_2020-CW1-sf097
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Fully preserved small conical/hemispherical mud-stopper; greyish brown clay with small admixture of fine lime particles, partly fired (possibly due to the fire that was recorded in the fill of the buildings in the Area CW); no markings on the upper surface; fragmentary imprint of a rim (min. h: *c*. 1.8cm) preserved on the lower surface.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, partly fired (possibly have been due to the fire that was recorded in the fill of the buildings in the Area CW).
DIMENSIONS: Outer diam. 10.9cm, inner diam. 7.1cm, h: 7.1cm.
DATING: ?

SOBA_2020-CW1-sf098
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Fully preserved small conical/hemispherical mud-stopper; no markings on the upper surface; fragmentary imprint of a rim (min. h: *c*. 2.1cm) on the lower surface along with an impression of a pottery fragment (8.8 × 6.9cm), probably applied together with a folded piece of fabric.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: outer diam. 12cm, inner diam. 9.6cm, h: 9.2cm.
DATING: ?

SOBA_2020-CW1-sf102
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Almost fully preserved large conical/hemispherical mud-stopper, slightly damaged at the top; an imprint of a vessel's rim (h: 2.5–3cm) preserved on the bottom surface plus an impression of a pottery fragment.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 17.5cm, inner diam. 13.3cm, h: 8.6cm.
DATING: ?

SOBA_2020-CW1-sf103
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Almost fully preserved large conical/hemispherical mud-stopper, upper surface badly weathered; an imprint of a vessel's rim (h: 3cm) preserved on the bottom surface, plus the impression of a pottery fragment (8.6 × 8.9cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: outer diam. 15.5cm, inner diam. 11.7cm, h: 10cm.
DATING: ?

SOBA_2020-CW1-sf104
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Almost fully preserved large conical/hemispherical mud-stopper, upper surface badly weathered; an imprint of a vessel's rim preserved on the bottom surface, plus the impression of a pottery fragment (7.3 × 8.2cm).

MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 15.7cm, inner diam. 10.1cm, h: 10.1cm.
DATING: ?

SOBA_2020-CW1-sf106
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Almost fully preserved small conical/hemispherical mud-stopper, upper surface badly weathered; an imprint of a vessel's rim (min. rim h: 2cm) preserved on the bottom surface plus an impression of a pottery fragment with an irregular outline (*c*. 6.2 × 5.8cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 10.6cm, inner diam. 8.3cm, h: 5.6cm.
DATING: ?

SOBA_2020-CW1-sf109
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Partially preserved conical mud-stopper (top broken off); an imprint of a vessel's rim preserved on the lower surface.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 18.4cm, h: 7.6cm.
DATING: ?

SOBA_2020-CW1-sf110
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Partially preserved conical mud-stopper; an imprint of a rim (min. rim h: 5.2cm) preserved on the bottom surface plus an impression of a pottery fragment (*c*. 5.2 × 4.1cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, partly fired.
DIMENSIONS: Badly eroded, preserved outer diam. 13.8cm, h: 9.7cm.
DATING: ?

SOBA_2020-CW1-sf112
CONTEXT: Trench 1/CW, Deposit 22.
DESCRIPTION: Almost fully preserved small conical/hemispherical mud-stopper, bottom surface badly weathered; no visible markings.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 9.9cm, h: 4.8cm.
DATING: ?

SOBA_2020-CW1-sf139
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Partially preserved large conical/hemispherical mud-stopper, badly eroded; no visible markings.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 17.6cm, h: 10.5cm.
DATING: ?

SOBA_2020-CW1-sf140
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Partially preserved small conical/hemispherical mud-stopper, badly eroded; no visible markings.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 12.6cm, h: 9.7cm.
DATING: ?

SOBA_2020-CW1-sf141
CONTEXT: Trench 1/CW, Deposit 18.
DESCRIPTION: Partially preserved small conical/hemispherical mud-stopper; an imprint of a vessel's rim preserved on the bottom surface plus an impression of a pottery fragment (10.2 × 7.45cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Outer diam. 12.6–13.2cm, inner diam. 11.4cm, h: 8.1cm, badly eroded.
DATING: ?

SOBA_2020-CW1-sf142
CONTEXT: Trench 1/CW, Deposit 2.
DESCRIPTION: Bottom fragment of a mud-stopper of a long-necked vessel (rim diam. *c*. 7.5cm).
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: h: 4.45cm.
DATING: ?

12.4.3. *Area GN*

SOBA_2022-GN2-sf212
CONTEXT: Trench 2/GN, Deposit 22.
DESCRIPTION: Almost fully preserved flat mud-stopper of a long-necked vessel with a flaring rim (h: 4.5cm); top surface marked with intersecting lines, an imprint of a pottery fragment preserved on the bottom.
MATERIAL: Greyish brown clay with small admixture of fine lime particles, sun-dried.
DIMENSIONS: Max. outer diam. 13.6cm, inner diam. 7.3cm, h: 6.8cm.
DATING: 9th–10th century AD.

CHAPTER 13

BEADS AND GLASS

Joanna THEN-OBŁUSKA and Laure DUSSUBIEUX

In the 2019–2022 seasons during the interdisciplinary project *Soba – the heart of Alwa*, more than 730 beads were excavated in five trenches (1/OS, 2/OS, 1/CS, 1/CW, 1/SH), in both burial and non-burial contexts. Additionally, excavations in six trenches (1/OS, 2/OS, 1/CW, 1/SH, 1/GN, 2/GN) provided thirty-two glass vessel fragments, as well as a fully-preserved glass toilet bottle.

This chapter presents the results of a macroscopic study of the beads (centrally perforated objects) and the glass bottle. Additionally, results of chemical compositional analysis of selected glass beads and majority of the glass fragments from residual and burial deposits are reported in brief.

No traces of beadwork have been recorded, the beads being individual (i.e., loose specimens). However, many were found clustered, suggesting the specimens may have actually been linked. An assemblage of over 570 clay/ceramic beads, found piled in Deposit 33 in Trench 1/OS, is the most numerous assemblage of beads found at Soba. With regard to glass objects other than beads, they all were small fragments of vessels or window-panes. The glass toilet bottle from Deposit 5 in trench 1/GN was the only complete glass specimen excavated at Soba.

Details referring to find contexts and dating of all beads, the glass bottle and the glass fragments are listed according to the trench and their inventory numbers (**Tables 13.1–13.2**). All specimens are illustrated in **Figures 13.1–13.9**.

13.1. Beads – materials, techniques and origin

The beads, produced with the use of various techniques, were made of ostrich eggshell (19), faience (3), ceramic (623), glass (91), and other materials (1). The presentation below follows this order, stipulating the beads' method of execution for each material, their shape and size, and comparanda.

Discussion of the specimens' length and shape (e.g., spherical, oblate, barrel, cylinder) follows the classification introduced by Horace Beck (Beck 1928). The length ratio indicates the relation between bead length and diameter. Depending on their length, beads, as found at Soba, can be classified into four categories: discs (less than one third of the diameter), short (more than one-third and less than nine-tenths of the diameter), standard (equal or almost equal to the diameter), and long (more than one and one-tenth of the diameter and less than twice the diameter). Thus, e.g., a 'disc cylinder' is a cylinder, the length of which is less than one-third of its diameter. Several measurements (diameter, thickness, width, length, hole opening diameter) are given for some bead types. Length is measured along the perforation.

Parallels for both bead and glass types are quoted from Northeast Africa, mainly from Nubia.

All beads are presented in Table 13.1 according to trench and inventory number. They are also illustrated in **Figures 13.1–14** according to the material and the number.

13.1.1. *Ostrich eggshell*

Nineteen ostrich eggshell beads, both disc beads as well as square ones, were found in Trenches 1/OS (Deposit 22), 2/OS (Deposit 3), 1/CW (surface, Deposits 1, 5, 8, 11, 17, 20, and 24), 1/SH (Deposit 1, Feature 26). They are illustrated in Figure 13.1. The disc beads feature a wide range of diameters measuring from 3 to 10mm (**Figures 13.1.1–5, 7–8, 10–15, 17–18**). Some small beads have larger hole openings that make them look like rings (**Figures 13.1.7, 17**). The square beads have rounded corners and measure from 4–6mm in width (**Figures 13.1.6, 9, 16**).

Previous excavations at Soba mentioned the discovery of 178 ostrich eggshell disc beads as well as barrel beads (2–11mm in diameter), rectangular and square in shape (*c*. 4mm in width) (Allason-Jones 1991, 143, cats 221–224; 1998, 68), in addition to evidence for bead manufacture in form of what looks like possible semi-finished products, i.e., a rectangular piece with a hole (Allason-Jones 1991, 143).

13.1.2. *Clay/Ceramic*

A pile of 575 black, red, and brown globular beads from Trench 1/OS constitutes the largest assemblage of

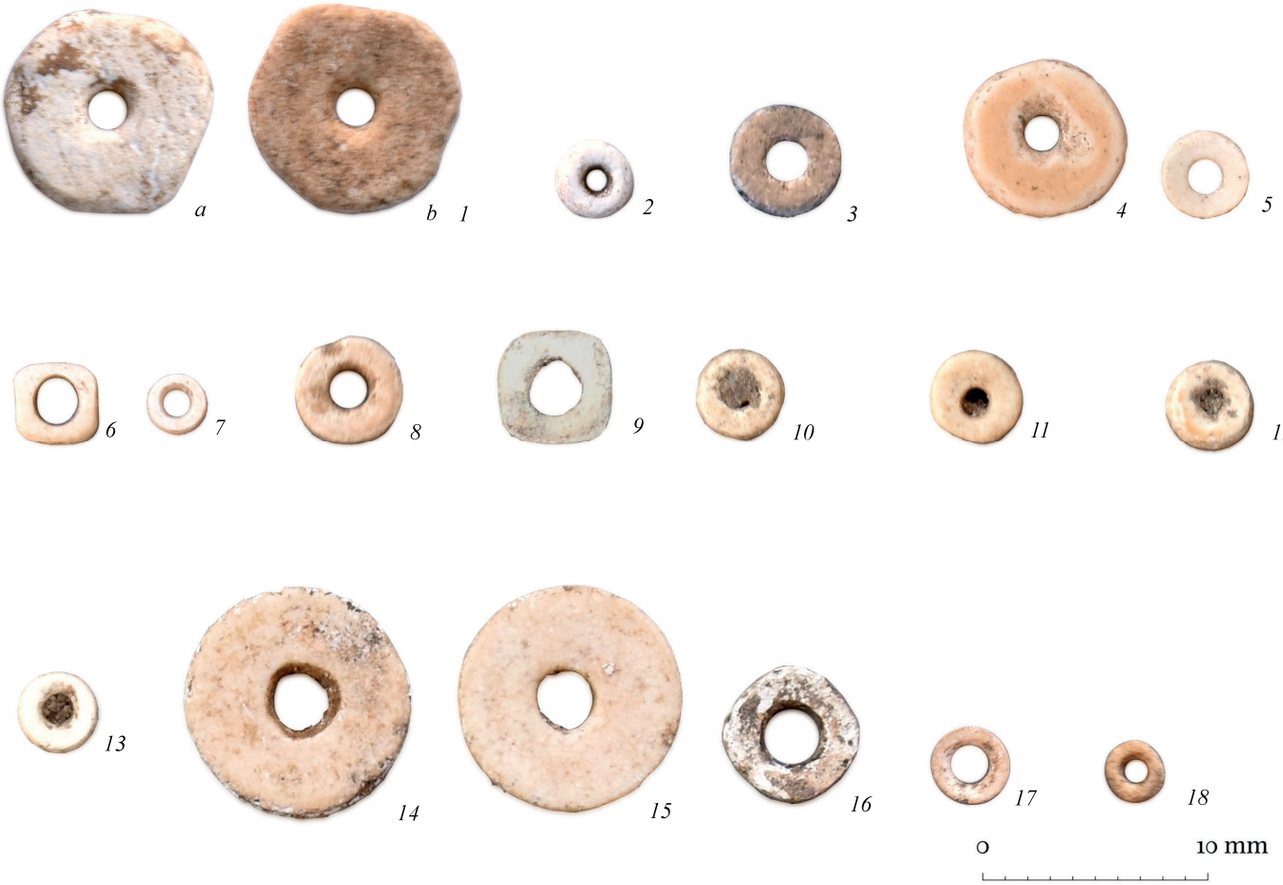


Figure 13.1. Ostrich eggshell beads from OS1, OS2, CW1, SH1 (photos Joanna Ciesielska, photo processing and figure Joanna Then-Obłuska): 1. SOBA_2019/OS1/085; 2. SOBA_2019/OS1/139; 3. SOBA_2019/OS2/029; 4–5. SOBA_2020/CW1/184; 6–7. SOBA_2020/CW1/214; 8. SOBA_2020/CW1/215; 9. SOBA_2020/CW1/225; 10–12. SOBA_2020/CW1/246; 13. SOBA_2020/CW1/255; 14–16. SOBA_2020/CW1/283; 17. SOBA_2020/SH1/151; 18. SOBA_2020/SH1/176.

beads found between 2019–2022. They were found in Deposit 33, dated between the 6th(?)–7th century AD. The beads were arranged by colour: brown on the bottom, red above, and black on the top. They may have originally been in a container, possibly a textile bag of about 20cm in diameter, that itself did not survive, but helped keep the beads in a tightly packed concentration (see Chapter 4, Figure 4.4). Additionally, two ceramic beads were found in the same trench, but in Deposits 7 and 18. Fourteen other ceramic beads were found in Trench 1/CS (deposits 1, 2, 4, and 7) and 29 in Trench 1/CW (surface and Deposits 2, 8, 11, 14, 18, 19, and 24). Two beads are recorded from Trench 1/SH (Deposits 1 and 3). In addition, one bead was recorded as a surface find. All clay/ceramic beads are presented in Figures 13.2–4.

The overwhelming majority of ceramic beads in the assemblage are globular in shape, usually 15–20mm in diameter, only a few being elongated: four tapered (**Figures 13.4.3–4, 22**) and five biconial (**Figures 13.4.5, 8, 14, 19, 24**). It is probable that a tiny oblate bead (**Figure 13.4.20**) was also made of clay.

More than 350 pottery beads were discovered in the earlier campaigns directed by D. A. Welsby (Welsby and Daniels 1991; Welsby 1998) at Soba, and their employment for a specific purpose such as a rosary has been suggested (Welsby 2004, 233, cat. 204; Allason-Jones 1991, 151; 1998, 74). The first of these campaigns reported 127 clay or pottery beads with no trace of paint (Allason-Jones 1991, 151). Most of them were globular (94), some ovoid (9) and disc (3), and others barrel shaped (12), biconical (7), or cylindrical (2) (Allason-Jones 1991, 151). The second campaign reported 229 clay beads, including 69 ovoid and 160 globular (Allason-Jones 1998, 74).

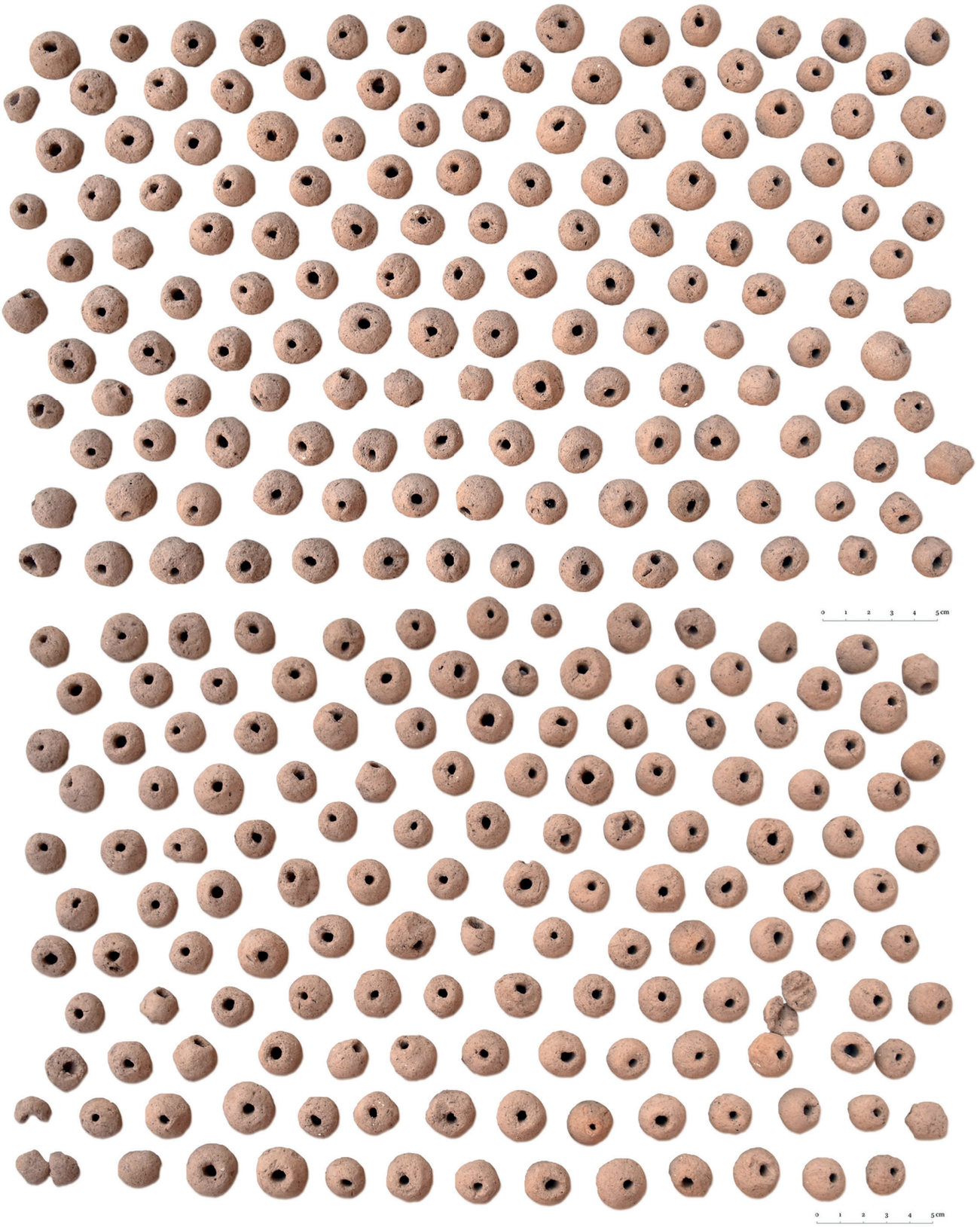
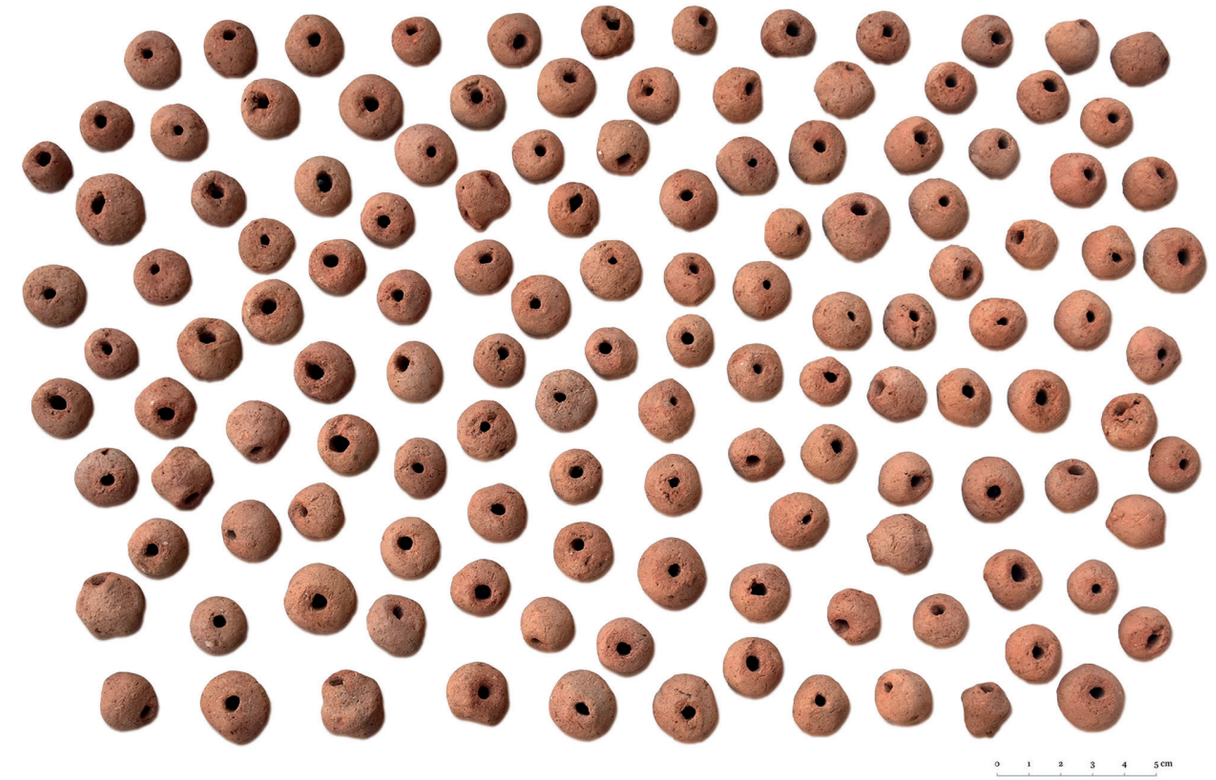


Figure 13.2. Ceramic beads from SOBA_2019/OS1/138
(photos Joanna Ciesielska, photo processing and figure Joanna Then-Obłuska).



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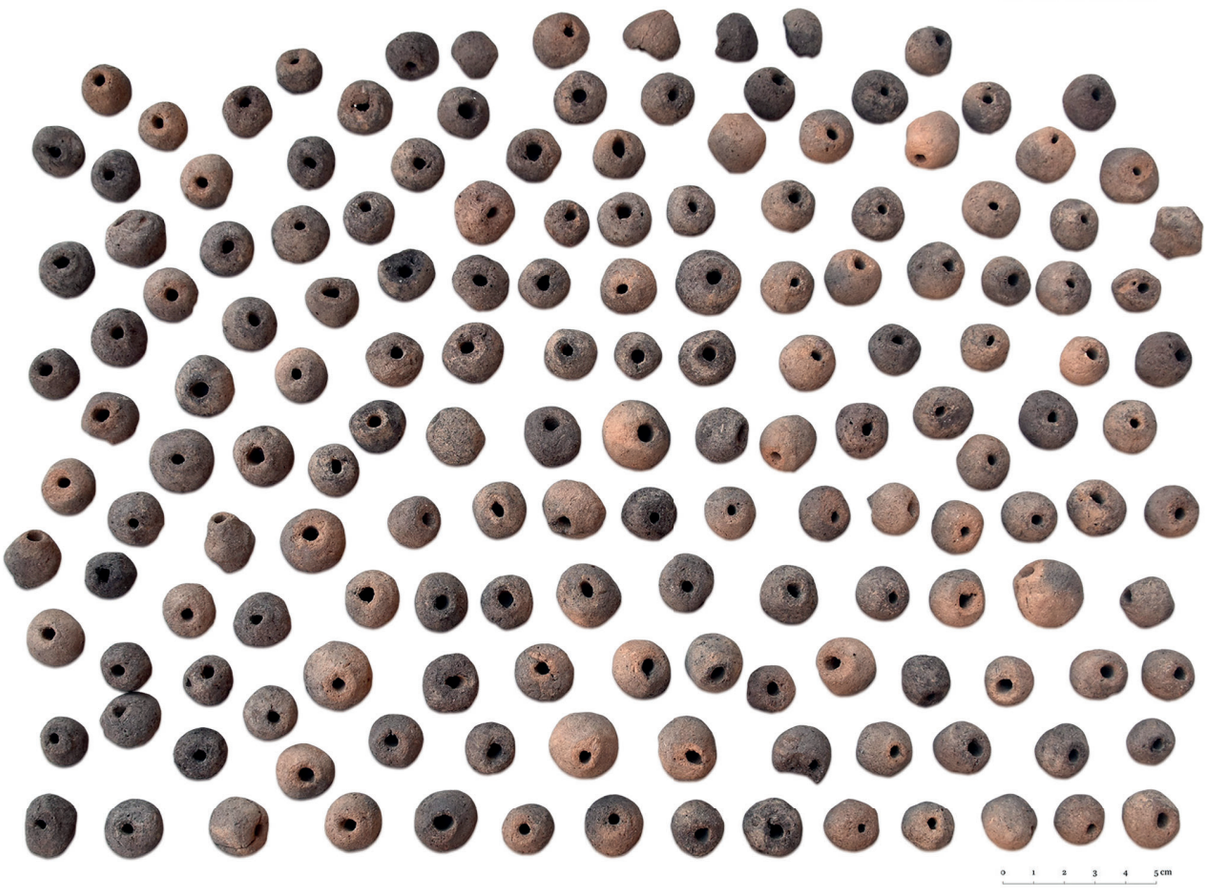

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Figure 13.3. Ceramic beads from SOBA_2019/OS1/138
(photos Joanna Ciesielska, photo processing and figure Joanna Then-Obłuska).

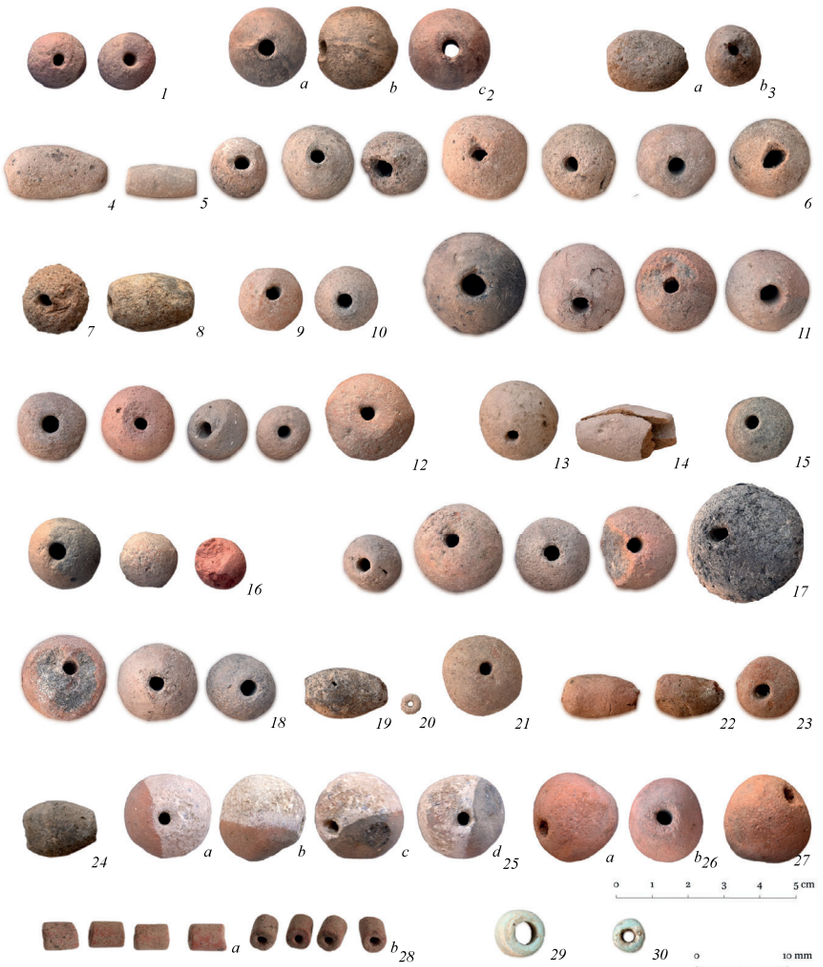

Figure 13.4. Ceramic beads from 1/OS, 2/OS, 1/CS, 1/CW, 1/SH and faience beads from 2/OS and 1/CW (photos Joanna Ciesielska, photo processing and figure Joanna Then-Obłuska): 1. SOBA_2019/OS1/020; 2. SOBA_2019/OS1/044; 3. SOBA_2020/CS1/213; 4–6. SOBA_2020/CS1/224; 7–8. SOBA_2020/CS1/256; 9–10. SOBA_2020/CS1/274; 11–12. SOBA_2020/CW1/184; 13–14. SOBA_2020/CW1/214; 15. SOBA_2020/CW1/225; 16. SOBA_2020/CW1/230; 17–18. SOBA_2020/CW1/231; 19–20. SOBA_2020/CW1/245; 21. SOBA_2020/CW1/246; 22–23. SOBA_2020/CW1/254; 24. SOBA_2020/CW1/283; 25. SOBA_2020/SH1/151; 26. SOBA_2020/SH1/168; 27. SOBA_2020/xxx/177; 28. SOBA_2019/OS2/029; 29. SOBA_2020/CW1/184; 30. SOBA_2020/CW1/246.

Nubian beads, made of clay and other materials, may have functioned as prayer beads, which is deemed to resemble the Coptic tradition in Egypt (Allason-Jones 1991; 1998). This, nevertheless, does not exclude another possibility, namely that the beads may as well have been used as abacus beads (Then-Obłuska 2013; Then-Obłuska and Dussubieux 2023d).

13.1.3. *Glazed ceramic*

Four tiny, *c*. 3mm in diameter, long cylinder beads were found in Trench 2/OS (Deposit 3). Unlike the faience beads known from Nubia that usually have a quartzite core, the four beads from Soba most probably have a clay core that was covered with red glaze (**Figure 13.4.28**).

13.1.4. *Faience*

Three faience beads were found in Trench 1/CW, one a surface find and the others in Deposits 1 and 17. The former context was dated to a period before the 9th to the 11th century AD, while the latter was dated no later than the 9th century AD. They are illustrated in **Figure 13.4**. They come in two shapes – a standard cylinder (**Figure 13.4.29**) and a small oblate (**Figure 13.4.30**) – which are in fact very common in Nubian material culture, so that any closer dating is hard to provide.



Figure 13.5. Glass beads from 1/OS and 2/OS (photos, photo processing, and figure Joanna Then-Obłuska): 1. SOBA_2019/OS1/012; 2–3. SOBA_2019/OS1/021; 4–9. SOBA_2019/OS1/028; 10–12. SOBA_2019/OS2/029.

While faience beads, of various shapes and sizes, have been reported from medieval Soba (Allason-Jones 1991, 141; 1998, 68–69), no comparable types could be identified in the present study.

13.1.5. *Glass*

Thirty glass beads were found in Trench 1/OS, in three of the graves (Grave 8/Deposit 6, Grave 10/Deposit 5, Grave 15/Deposit 7), while 59 come from Trench 2/OS (Deposit 3). Additionally, four beads, three from Trench 1/CW (Deposit 1 and 22) and another one from 1/SH (Deposit 3) might also have been made of glass. Almost all glass beads are illustrated in **Figures 13.5** and **13.6**.

All but one glass bead was made from drawn glass tubes. The tubes were cut up into sections which were then heat-rounded in a pot. Beads of this type are usually short to long oblate specimens and measure between 2.5–5mm in diameter. They are made of translucent and semitranslucent yellow (**Figures 13.5.1–3, 13.5.10**), green (**Figures 13.5.8, 13.6.3**), green-blue (**Figure 13.5.9**), light blue (**Figures 13.5.6–7, 13.6.4**), white (**Figure 13.5.12**), opaque red (**Figure 13.6.1**) and black glass (**Figure 13.6.2**). One yellow bead (**Figure 13.5.11**) has sharp ends left unfinished. In general, drawn and rounded glass beads have been associated with a bead-making technique still in use in India (e.g., Francis 2002; Kanungo 2016) and indeed beads of this type found in Roman Red Sea port sites and in Late Antique Nubia proved to have been made of South Indian/Sri Lankan glass (e.g., Then-Obłuska and Dussubieux 2016; 2021; Then-Obłuska and Wagner 2019a, b). However, in medieval Nubia the drawn and rounded beads appeared to be made from Middle Eastern



Figure 13.6. Glass beads from 2/OS (continued), 1/CW, and 1/SH (photos, photo processing, and figure Joanna Then-Obłuska): 1–4. SOBA_2019/OS2/029 (continued); 5. SOBA_2020/CW1/185; 6. SOBA_2020/CW1/304; 7. SOBA_2020/SH1/168.

('Mesopotamian') and Eastern Mediterranean glass (e.g., Then-Obłuska *et al*. 2021).

One bead, dark blue (**Figure 13.5.4**), was made of drawn and segmented glass and one large, 7.4mm in diameter, blue glass bead (**Figure 13.5.5**) was rod-formed. Drawn and segmented glass beads are well known from the Meroitic and post-Meroitic periods in Nubia i.e., 1st–6th centuries AD (e.g., Then-Obłuska and Wagner 2019a, b) and they continued to be used well into medieval times (e.g., Then-Obłuska *et al*. 2021).

One bead was made of wound glass with a white trail applied spirally in five turns at each end and possibly dragged up and down in the central part (**Figure 13.6.5**). A comparable bead type like this, wound glass with a white trail applied spirally and dragged/combed up and down into a feather/zigzag pattern in the central part, dates to the 9th–14th centuries (Spaer 2001, 103) or the 11th–12th centuries (Dubin 2009, Timeline no 537). Although the origin of the Soba bead can currently not be more specifically determined, recent analysis of a similar object from Banganarti suggests a Levantine origin (Then-Obłuska and Dussubieux 2023a).

Many both tiny or large, usually blue and green, monochrome glass beads as well as some decorated specimens, (i.e., additionally shaped or of polychrome glass), were reported from previous excavations of medieval Soba (Allason-Jones 1991, 143–145, 163; 1998, 66–68), but no comparable bead types could be identified in the present study. Despite the presence of two amorphous, unworked blue glass lumps, suggesting that glass objects could have been manufactured on site, no glass-working industry at Soba has been evidenced so far (Ward 1998, 83–84; Anderson and Welsby 2004, 235, cat. 207). However, this raw material

may have been part of a hypothetical bead workshop that manufactured blue glass beads (Anderson and Welsby 2004, 235, cat. 207).

13.2. Bead glass chemistry

A sample selected from the Soba 2019–2022 glass bead assemblage, macroscopically identified, has been analysed by Dr Laure Dussubieux at the Field Museum of Natural History in Chicago, USA, using laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) to determine their chemical composition and trace the provenance and chronology of the materials. While a detailed discussion of the compositions has been presented separately (Then-Obłuska and Dussubieux 2023b), the results are summarised here.

Compositional analysis has identified glass belonging to a number of broad compositional groups: three samples were made of soda-lime low-alumina glass (v-Na-Ca, m/v-Na-Ca), whereas the remaining beads were made of two types of mineral-soda high-alumina glass (m-Na-Al).

Beads found in three Soba graves (nos 8, 10, 15) in Trench 1/OS, and in Deposit 3 in Trench 2/OS were made of Eastern Mediterranean (Egypt), Middle Eastern (Iran) and Indian glasses. So, one blue bead from grave no 15 is made of Roman period Egyptian glass (m/v-Na-Ca) that must have been reused, or was simply an intrusion, in the medieval context. Two samples from Soba graves (nos 8 and 10) were made of Middle Eastern glass (v-Na-Ca 'Mesopotamian' Type 1/Iranian), which has also been identified in other Upper Nubian sites (Banganarti, Ghazali) dated to before the 12th century (Then-Obłuska and Wagner 2018; Then-Obłuska *et al.* 2021; Then-Obłuska and Dussubieux 2023c).

The identification of North Indian glass (m-Na-Al 6) dated to between the 9th and 13th centuries at Soba on the Blue Nile provides the first evidence for this type in Northeast Africa so far.

The remaining samples from Soba feature beads of North Indian origin (m-Na-Al 2), dated to between the 14th and 17th centuries. Beads from that time, made of the m-Na-Al 2 glass, have already been identified in Lower Nubia (Qustul) and Upper Nubia (Dongola) (Then-Obłuska and Dussubieux 2023d).

Co-occurrence of the Middle Eastern glass (v-Na-Ca), and/or two types of the Indian glass (m-Na-Al 2 and 6), dated to different times but in the same contexts in Soba (Graves 10 and 15, Deposit 3) may be attributed to developments in glass production. The Indian beads (m-Na-Al 2) with a later date may, however, have been intrusions from deposits situated just below the surface (Then-Obłuska and Dussubieux 2023b).

13.3. Glass fragments and a toilet bottle – origin

Only one complete glass vessel – a toilet bottle – was discovered in the recent excavations in Soba. Additionally, the excavations yielded 32 glass vessel and window pane fragments. They all are presented in Table 13.2, arranged according to trench and inventory numbers. They are also illustrated in **Figures 13.7–9** according to trench and inventory number.

The toilet bottle, made of green glass, was excavated in Trench 1/GN in Deposit 5 (**Figure 13.9.1**). It has a globular base, *c*. 5cm in diameter, and horizontal ribs on the neck with a looped-in rim. Despite its good preservation, parallels are hard to find, the closest being bottle no. 21 from Debeira West, from a locus of a 10th–11th century date, with some 7th–8th century material mixed in. The Debeira West specimen has a looped-in rim and not much of a bulge at the neck (Harden 1978, 85). The Soba bottle may also be considered as similar to a much more common and very widely distributed type with horizontal ribs on the neck, for example no 27 from Debeira West. The overwhelming majority of the ribbed-neck bottles are dated to the 9th–10th centuries, with only few examples of an earlier, 8th century, date (Harden 1978, 85). This leaves a margin for dating the Soba bottle to between the 9th and 11th centuries (Carol Meyer – personal communication).

The remaining glass specimens comprise ten glass fragments recorded in Trench 1/OS (Deposits 1, 6, 8, 9, 12, 19, and 30) (**Figures 13.7.1–10**), one fragment from Trench 2/OS (Deposit 4) and two fragments from 1/CW (Feature 30, Deposit 8) (**Figures 13.7.11** and **13.8.1–2** respectively). Additionally, 11 fragments have been recorded from Trench 1/SH (Feature 26, Deposits 1, 3, 4, 5, 9, 10) (**Figures 13.8.4–14**). Trench 1/GN (Deposit 1) yielded two fragments and Trench 2/GN (Deposits 5 and 20) three fragments (**Figures 13.9.1–3** and **13.9.4, 6–7** respectively). Three further fragments were surface finds (**Figures 13.7.12, 13.8.3, 13.9.5**).

Good-quality table and toilet vessels and their fragments, as well as fragments of window panes and lamps were reported from the previous excavations at medieval Soba, dating to between the 5th and 14th century AD (Harden 1961; Morrison 1991; Ward 1998). Glass found at Soba in previous excavations came from Iran, Iraq, and Egypt, although the Egyptian and Iranian products are hard to differentiate (Morrison 1991, 258; Pinder-Wilson and Scanlon 1987, 60).

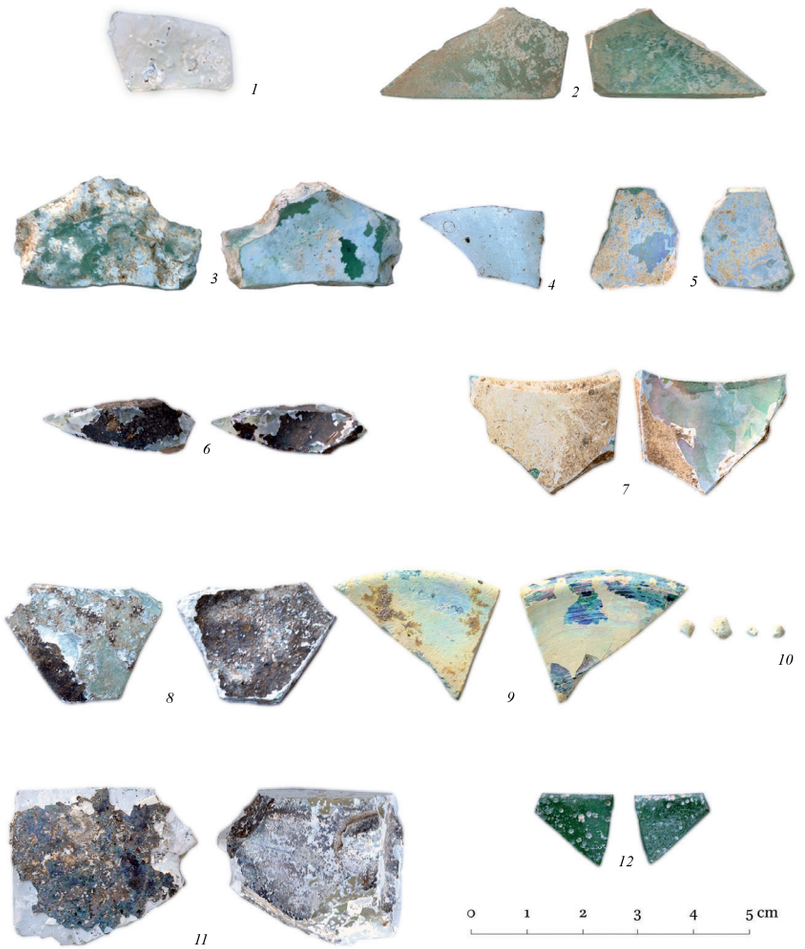

Figure 13.7. Glass fragments from 1/OS and 2/OS
(photos JoannaCiesielska, photo processing and figures Joanna Then-Obłuska): 1. SOBA_2019/OS1/sf004; 2. SOBA_2019-OS1-sf007-; 3. SOBA_2019-OS1-sf009-; 4. SOBA_2019-OS1-sf021-; 5. SOBA_2019-OS1-sf032.1-; 6. SOBA_2019-OS1-sf032.2-; 7. SOBA_2019-OS1-sf033-; 8. SOBA_2019-OS1-sf034-; 9. SOBA_2019-OS1-sf045-; 10. SOBA_2019-OS1-sf063; 11. SOBA_2019-OS2-sf039-; 12. SOBA_2019-xxx-sf017-.

The issue of identifying the origins of the Soba glass finds has been solved with the use of the chemical composition study, results of which are presented below.

13.4. Shard glass chemistry

Compositional analyses of 30 glass fragments have identified glass belonging to a number of broad compositional groups. While a detailed discussion of the compositions has been presented separately (Then-Obłuska and Dussubieux 2023c), the results are summarised here.

Seven fragments, identified in three trenches (1/OS (**Figures 13.7.2** – Deposit 6; **13.7.5** – Deposit 19; **13.7.7** – Deposit 16), 1/CW (**Figure 13.8.2** – Deposit 8), and 1/SH (**Figure 13.14a, b** – Deposit 9; **13.8.14** – Deposit 10), were made of mineral-soda-lime glass produced in Egypt in the 9th century.

Another 20 fragments were made of plant ash-soda-lime low-alumina glass, produced in the Middle East (Iran, North Syria) between the 9th and 11th century, and in the East Mediterranean (Egypt and Levant) between the mid-10th and mid-12th century. The Middle Eastern glass was identified in Trenches 1/OS (**Figures 13.7.1** – Deposit 3; **13.7.4** – Deposit 8; **13.7.6** – Deposit 19), 1/CW (**Figure 13.8.1** – Feature 30), 1/SH (**Figures 13.8.5–7** – Deposit 1), 1/GN (**Figure 13.9.2** – Deposit 1), and 2/GN (**Figure 13.9.7** – Deposit 20). One shard, found in Trench 2/OS (**Figure 13.7.11** – Deposit 4), was made of glass produced in the 9th century in Iran or Iraq.

The Eastern Mediterranean glass was identified in Trenches 1/OS (**Figures 13.7.3** – Deposit 6; **13.7.8** – Deposit 12), 1/SH (**Figures 13.8.4** – Deposit 1; **13.8.8** – Deposit 3; **13.8.9** – Deposit 4), 1/GN (**Figure 13.9.3** –

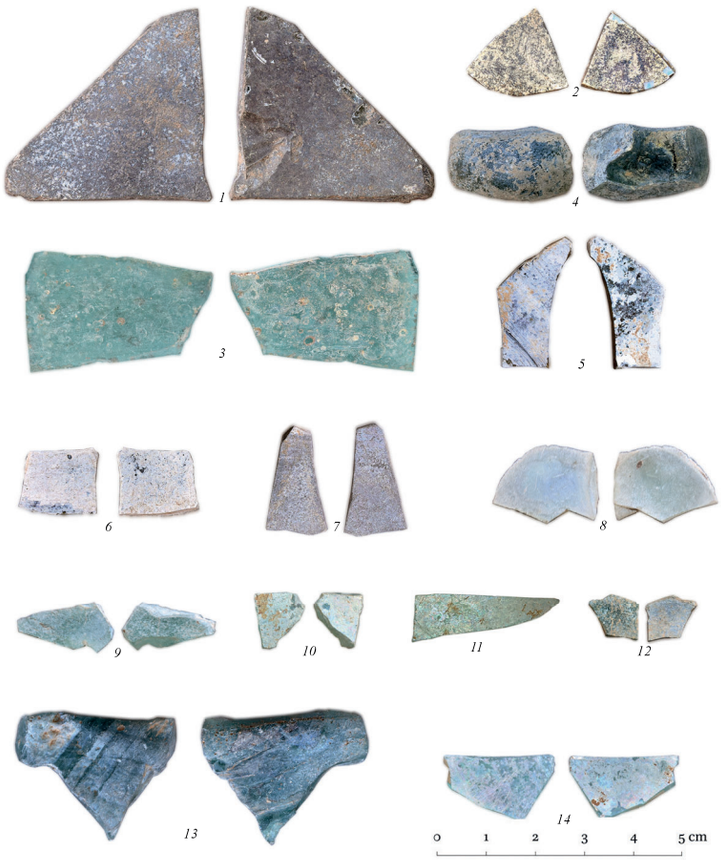

Figure 13.8. Glass fragments from 1/CW and 1/SH (photos Joanna Ciesielska, photo processing and figures Joanna Then-Obłuska): 1. SOBA_2020-CW1-sf084-; 2. SOBA_2020-CW1-sf089-; 3. SOBA_2021-CW-sf229; 4. SOBA_2020-SH1-sf066.1-; 5. SOBA_2020-SH1-sf066.2-; 6. SOBA_2020-SH1-sf066.3-; 7. SOBA_2020-SH1-sf066.4-; 8. SOBA_2020-SH1-sf067-; 9. SOBA_2020-SH1-sf068-; 10. SOBA_2020-SH1-sf070.1-; 11. SOBA_2020-SH1-sf070.1.2; 12. SOBA_2020-SH1-sf071-; 13. SOBA_2020-SH1-sf073-; 14. SOBA_2020-SH1-sf074-.

Deposit 1), and 2/GN (**Figures 13.9.4** – Deposit 5; **13.9.6** – Deposit 20).

The origin – whether the Middle East or Eastern Mediterranean – of two plant ash-soda lime glass specimens found in Trench 1/SH (**Figure 13.8.13** – Feature 26) and on the surface of the Area GN (**Figure 13.9.5**) is still uncertain.

Finally, three samples were made of glass with a high lead content. Two were identified as emerald glass known in other areas from the Fatimid period in Aqaba (Meyer and Dussubieux 2022). They were found in Trench 1/SH (**Figure 13.8.12** – Deposit 5) and on the surface (F**igure 13.7.12**). The third lead-silica glass fragment was found in Trench 1/OS (**Figure 13.7.9** – Deposit 9).

It is worth noting that in a few cases fragments made of different glass type/dating/origin were found together in the same Soba context. Trench 1/OS, Deposit 6 in Grave 8 contains several glass sherds, representing two glass types of Egyptian origin, that were dated to the 9th century, and to the mid-10th to mid-12th centuries. Deposit 6 also yielded a yellow bead of plant ash-soda glass of Middle Eastern origin (Iran, North Syria), dated to between the 8th and 10th century (Then-Obłuska and Dussubieux 2023b, and compare above).

Deposit 19 in Trench 1/OS comprises mineral-soda lime glass of Egyptian origin, and plant ash-soda glass of Middle Eastern origin. Some deposits comprise plant-ash soda glass sherds produced in Eastern Mediterranean and Middle Eastern regions (Deposit 1 in Trench 1/SH, Deposit 1 in Trench 1/GN, and Deposit 20 in 2/GN).

13.5. Conclusions

More than 700 beads and a few dozen glass sherds in addition to a complete glass toilet bottle were found

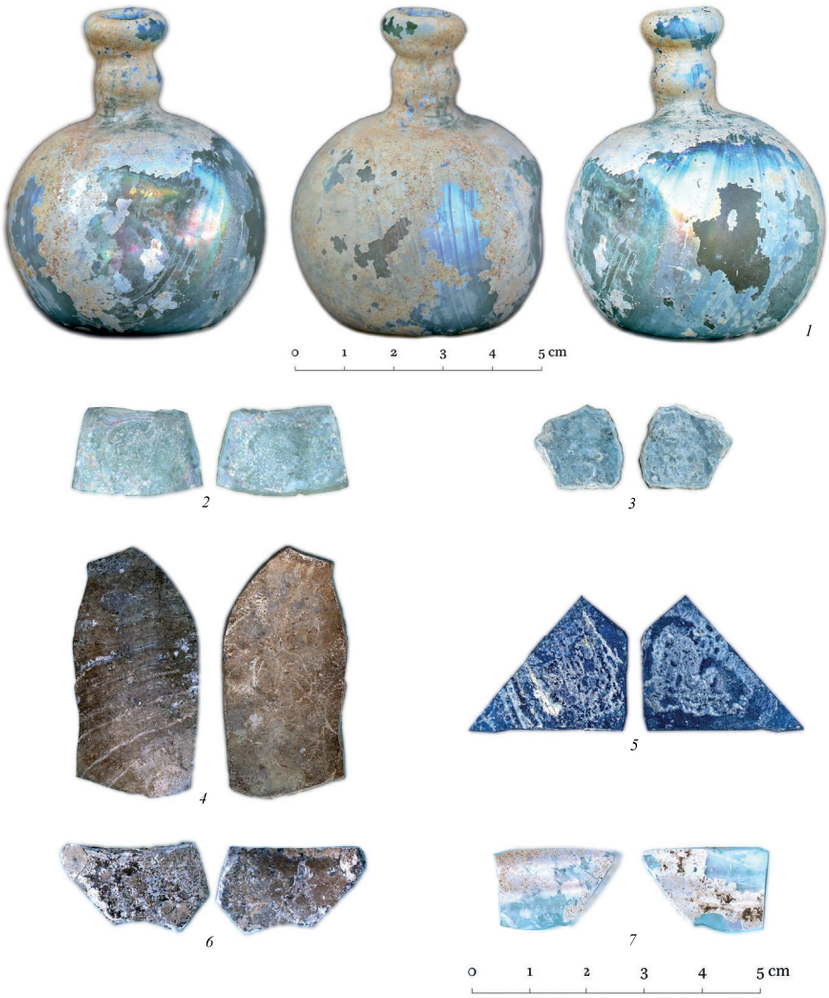

Figure 13.9. Glass bottle and fragments from 1/GN and 2/GN (photos Joanna Ciesielska, photo processing and figures Joanna Then-Obłuska): 1. SOBA_2021-GN1-sf202; 2. SOBA_2021-GN1-sf146.1; 3. SOBA_2021-GN1-sf146.2; 4. SOBA_2021-GN2-sf208-; 5. SOBA_2021-GN-sf154-; 6. SOBA_2022-GN2-sf211.1; 7. SOBA_2022-GN2-sf211.2.

in Soba between 2019 and 2022, in seven trenches. The beads and glass fragments alike come from both burial and residual contexts.

Beads from the assemblage, although dominated by ceramic specimens, are made of a wide selection of materials: ostrich eggshell, clay, faience, and glass beads, all common in medieval Nubia. An interdisciplinary study of the beads confirms that local (ostrich eggshell, ceramic, possibly faience) and imported (glass) materials have been equally used in their production, while the results of the compositional analysis indicate a North Indian origin of the majority of the glass beads, dated between the 9th and 17th century.

Apart from the beads, the Soba assemblage also features one toilet bottle, and more than thirty small glass fragments. As verified by the chemical compositional study, the glass sherds were made of Eastern Mediterranean (Egypt, Levant) and Middle Eastern (Iran, Iraq) glass, dated to between the 9th and the mid-12th century. Occasionally, glass sherds of a different type/origin were found together in the same context.

The results of the interdisciplinary analysis of beads suggest Soba was a capital city whose dwellers used traditional, locally available materials for their crafts. At the same time, the origins of the glass beads and vessels imported to Soba, prove its rich – direct or indirect – long-distance, often overseas, trading contacts.

13.6. Acknowledgements

For her great help in the identification of the toilet bottle, many thanks go to Dr Carol Meyer.

Figure no	Material	Color	Amount	Diameter (mm)	Length (mm)	Hole diameter (mm)	Area	Feature	Deposit	Context dating	Inv. no
13.5.1	glass	Yellow	1	4	2,5	1,5	1/OS	grave 8	6	11th century AD – ?	SOBA_2019/OS1/012
13.4.1	ceramic		1				1/OS	S part	7	11th century AD – ?	SOBA_2019/OS1/020
13.5.2–3	glass	Yellow	2	4.8; 4.1	3.3; 3.0	1.9; 1.5	1/OS	grave 10	5	11th century AD – ?	SOBA_2019/OS1/021
13.5.4	glass	Blue (covered with whitish patina)	1	5	4,3	1,3	1/OS				
13.5.5	glass	Blue large	26	7,4	6,2	1,8	1/OS	grave 15	7	11th century AD – ?	SOBA_2019/OS1/028
13.5.6		Blue		3.3–4.0	2.4–3.2	2					
13.5.7		Blue		*c.* 5	2.7–4.3	2					
13.5.8		Green		3	2,1	1,4					
13.5.9		Blue-green		2.5–3.0	1.6–2.6	0,9					
13.4.2	ceramic		1				1/OS		18	end of the 10th – beginning of the 11th century AD	SOBA_2019/OS1/044
13.1.1	ostrich eggshell		1				1/OS		22	end of the 10th – beginning of the 11th century AD	SOBA_2019/OS1/085
13.3.1	ceramic	Red	131				1/OS		33	6th/7th–8th century AD	SOBA_2019/OS1/138
13.3.2		Black	156								
13.2		Brown	285								
13.1.2	ostrich eggshell		1				1/OS		30	7th – first half of the 10th century AD	SOBA_2019/OS1/139
13.1.3	ostrich eggshell		1				2/OS		3	11th century AD – ?	SOBA_2019/OS2/029
13.4.28	glazed ceramic	Red	4	2,9	3,7	1					
13.5.1	glass	Yellow	59	2.8–3.5	1.6–3	0,8					
13.5.11		Yellow		2,8	2,5	1					
13.5.12		White		2,5	2,3	1,1					
13.6.1		Red		3–3.5	3–4.4	1,3					
13.6.3		Green		3,1	2,1	0,6					
13.6.2		Black		3,1	2,3	1,3					
13.6.4		Blue									
13.4.3	ceramic		1				1/CS		1	?	SOBA_2020/CS1/213
13.4.4–6	ceramic		9				1/CS		2	?	SOBA_2020/CS1/224
13.4.7–8	ceramic		2				1/CS		4	?	SOBA_2020/CS1/256
13.4.9–10	ceramic		2				1/CS		7	?	SOBA_2020/CS1/274
13.1.4–5	ostrich eggshell		2				1/CW	surface		?	SOBA_2020/CW1/184
13.4.11–12	ceramic		9								

13.4.29	faience		1					
not illustrated	ostrich eggshell		1	1/CW		1	?	SOBA_2020/CW1/185
not illustrated	faience		1					
not illustrated	glass	Green	1					
13.6.5	glass	Red?, white trailed	1					
13.1.6–7	ostrich eggshell		2	1/CW		8	? (not earlier than 6th/7th century AD) – 9th/11th century AD	SOBA_2020/CW1/214
13.4.13–14	ceramic		2					
13.1.8	ostrich eggshell		1	1/CW		5	?	SOBA_2020/CW1/215
13.1.9	ostrich eggshell		1	1/CW		11		SOBA_2020/CW1/225
13.4.15	ceramic		1				? (not earlier than 6th/7th century AD) – 9th/11th century AD	
13.4.16	ceramic		3	1/CW		14	?	SOBA_2020/CW1/230
13.4.17–18	ceramic		8	1/CW		2		SOBA_2020/CW1/231
13.4.19–20	ceramic		2	1/CW		19	? (not earlier than 6th/7th century AD) – 9th/11th century AD	SOBA_2020/CW1/245
13.1.10–12	ostrich eggshell		3	1/CW		17	6/7 century AD – ? (not later than 9th/11th century AD)	SOBA_2020/CW1/246
13.4.3	faience		1					
13.4.22–23	ceramic		3	1/CW		18	?	SOBA_2020/CW1/254
13.1.13	ostrich eggshell?		1	1/CW		20	6/7 century AD – ? (not later than 9th/11th century AD)	SOBA_2020/CW1/255
13.1.14–16	ostrich eggshell		3	1/CW		24	6/7 century AD – ? (not later than 9th/11th century AD)	SOBA_2020/CW1/283
13.4.24	ceramic		1					
13.6.6	glass?		1	1/CW		22	?	SOBA_2020/CW1/304
13.1.17	ostrich eggshell		1	1/SH		1	?	SOBA_2020/SH1/151
13.4.25	ceramic		1					
13.6.7	glass?	White	1	1/SH		3	?	SOBA_2020/SH1/168
13.4.26	ceramic		1					
13.1.18	ostrich eggshell?		1	1/SH	26		? (not earlier than 9th/10th century AD) – after 10th/11th century AD	SOBA_2020/SH1/176
13.4.27	ceramic		1	police station	surface		?	SOBA_2020/xxx/177

Table 13.1. Beads (prepared by Joanna Then-Obłuska and Laure Dussubieux).

Figure no	Inv. no	Color, diaphaneity	Thickness (mm)	Description	Area	Feature	Deposit	Context dating	Season
13.7.1	SOBA_2019/OS1/sf004	colorless (t)	1,2	fragment of glass vessel	1/OS		1	11th century AD – ?	2019-I
13.7.2	SOBA_2019/OS1/sf007	greenish (t)	3,2	fragment of glass vessel	1/OS		6	11th century AD – ?	2019-I
13.7.3	SOBA_2019/OS1/sf009	greenish (t)	4,9	fragment of glass vessel	1/OS	Grave 8	6	11th century AD – ?	2019-I
13.7.4	SOBA_2019/OS1/sf021	greenish (t)	1,5	fragment of glass	1/OS		8	end of the 10th – beginning of the 11th century AD	2019-I
13.7.5	SOBA_2019/OS1/sf032	greenish (t)	2,2	fragment of glass	1/OS		19	end of the 10th – beginning of the 11th century AD	2019-I
13.7.6	SOBA_2019/OS1/sf032	colorless (t)	3,4	fragment of glass	1/OS		19	end of the 10th – beginning of the 11th century AD	2019-I
13.7.7	SOBA_2019/OS1/sf033	greenish (t)	3,1	fragment of glass	1/OS		16	end of the 10th – beginning of the 11th century AD	2019-I
13.7.8	SOBA_2019/OS1/sf034	greenish (t)	3,4	fragment of glass	1/OS		12	11th century AD – ?	2019-I
13.7.9	SOBA_2019/OS1/sf045	green (t)	4,8	fragment of glass rim	1/OS		9	end of the 10th – beginning of the 11th century AD	2019-I
13.7.1	SOBA_2019-OS1-sf063			fragment of glass	1/OS		30	7th – first half of the 10th century AD	2019-I
13.7.11	SOBA_2019/OS2/sf039	colorless (t)	9,4	fragment of glass	2/OS		4	?	2019-I
13.7.12	SOBA_2019/xxx/sf017	green (t)	1,9	fragment of glass		surface		?	2019-I
13.8.1	SOBA_2020/CW1/sf084	yellow (t)	6,2	fragment of glass	1/CW	30		9th/11th century AD – ?	2020-II
13.8.2	SOBA_2020/CW1/sf089	colorless (t)	2,7	fragment of glass	1/CW		8	? (not earlier than 6th/7th century AD) – 9th/11th century AD	2020-II
13.8.3	SOBA_2022-CW-sf229			fragment of glass			surface, Church C	?	2022
13.8.4	SOBA_2020/SH1/sf066	green (t)	7,8	fragment of glass rim	1/SH		1	?	2020-II
13.8.5	SOBA_2020/SH1/sf066	yellow (t)	2,1	fragment of glass	1/SH		1	?	2020-II
13.8.6	SOBA_2020/SH1/sf066	colorless (t)	2	fragment of glass	1/SH		1	?	2020-II
13.8.7	SOBA_2020/SH1/sf066	yellow (t)	1,8	fragment of glass	1/SH		1	?	2020-II
13.8.8	SOBA_2020/SH1/sf067	colorless (t)	2,7	fragment of glass	1/SH		3	?	2020-II
13.8.9	SOBA_2020/SH1/sf068	greenish (t)	3,8	fragment of glass	1/SH		4	?	2020-II
13.8.1	SOBA_2020/SH1/sf070	greenish (t)	3,9	fragment of glass	1/SH		9	9th/10th century AD – ? (not later that 10th/11th century AD)	2020-II
13.8.11	SOBA_2020/SH1/sf070	greenish (t)	1,9	fragment of glass	1/SH		9	9th/10th century AD – ? (not later that 10th/11th century AD)	2020-II
13.8.12	SOBA_2020/SH1/sf071	green (t)	1,7	fragment of glass	1/SH		5	?	2020-II
13.8.13	SOBA_2020/SH1/sf073	aqua blue (t)	7,3	fragment of glass	1/SH	26		? (not earlier than 9th/10th century AD) – after 10th/11th century AD	2020-II
13.8.14	SOBA_2020/SH1/sf074	greenish (t)	2,3	fragment of glass	1/SH		10	from the 9th/10th century AD – ?	2020-II
13.9.2	SOBA_2021-GN1-sf146	greenish (t)	2,6	fragment of glass	1/GN		1	Deposit directly under the surface – occasional occupation, the end of 8th century AD or younger	

13.9.3	SOBA_2021-GN1-sf146	greenish (t)	1,8	fragment of glass	1/GN		1	Deposit directly under the surface – occasional occupation, the end of 8th century AD or younger
13.9.1	SOBA_2021-GN1-sf202			bottle	1/GN		5	8th century AD (?)
13.9.4	SOBA_2022-GN2-sf208	colorless (t)	1,6	fragment of glass	2/GN	4	5	after the 12th century AD
13.9.5	SOBA_2021/GN/sf154	blue (t)	3	fragment of glass	GN	surface		?
13.9.6	SOBA_2022-GN2-sf211	colorless (t)	1,5	fragment of glass	2/GN		20	9th–10th century AD
13.9.7	SOBA_2022-GN2-sf211	colorless (t)	1,8	fragment of glass	2/GN		20	9th–10th century AD

Table 13.2. Glass (prepared by Joanna Then-Obłuska and Laure Dussubieux).

CHAPTER 14

OTHER SMALL FINDS

Joanna A. CIESIELSKA

A number of finds in addition to pottery fragments and mass artefacts, such as beads, mud-stoppers and glass shards, were collected from the trenches excavated over the 2019/2020 and 2021/2022 excavation seasons. Among those, two clay figurines, probably children's toys, found in the earliest contexts of Area CW and radiocarbon dated to the 6th/7th century AD, clearly stand out. In addition, a number of singular finds, mostly listed in the 'Miscellaneous' section, pose more complex interpretative issues in terms of their overall functional attribution and their role in the context of the excavated features.

14.1. Figurines

Two small figurines were found during the latest excavations at Soba (Figure 14.1). These can probably be identified as representing two quadrupeds (SOBA_2020-CW1-sf115 and SOBA_2020-CW1-sf120). Both were found in the same context of the 6th/7th century mud-brick architecture (Deposit 24) in Trench 1/CW, located west of the remnants of Church C (7th–8th century) (Welsby and Daniels 1991, 321–322; Welsby 1998, 18).

Animal figurines are commonly found in settlement contexts all over the Nile valley. Multiple examples have been found on Lower Nubian sites, dated from the second half of the 3rd millennium BC onwards (Firth 1915, pl. 37d). An assemblage of almost a thousand zoomorphic figurines was recorded at the Wellcome excavations of Jebel Moya (Addison 1949, 146–149; Vella Gregory 2021). Various fabrics were employed for their manufacture, from fine-grained white marl to brownish, medium-textured clay and rough, dark Nile silt. Some of these objects were kiln-baked, while others were only sun-dried. Based on the pattern of breakage among the hundreds of items recovered from Meroitic contexts in Muweis, the researchers concluded that animal figurines were often formed in pieces and put together later (David 2018, 547). Clay figurines are notoriously hard to date, especially the handmade ones, which bear no identifying features as to the time of their manufacture (Török 1993, 51; Teeter 2010, 110).

Animal figurines are often identified as toys (Schulman 1957; Török 1993, 53; 1995, 171; Jacquet, 2001, 63; Graefe 2003, 67). However, if an animal can be associated with a specific deity, they are also sometimes interpreted as related to religious cults (Kákosy 1984; Malaise 1991, 24–25; Myśliwiec and Szymańska 1992, 126; Nachtergael 1995, 267; Török 1995, 173). Occasionally, such representations might have been associated with ancestor cults (Parker Pearson 1999, 163–164).

The two figurines recovered from settlement contexts in Area CW were identified as quadrupeds, however, the precise identification of the species poses some difficulties. A finely-made figurine of an animal with a hump on its back (SOBA_2020-CW1-sf115) might have represented a camel or a species of humped cattle.

Camels were not widespread in the Nile valley before the Meroitic (for Nubia)/Ptolemaic (for Egypt) period. They were well-established in Egypt in the Greco-Roman period (Brewer *et al*. 1994; Houlihan 2002, 107; Teeter 2010, 129). However, their presence may be attested much earlier in Nubia, where the earliest camel remains were identified at Qasr Ibrim, *c*. 740 BC (Houlihan 1996, 38). Camels are well represented among clay figurines (Allen 1985, 565–566; Nachtergael 1995). They might have been valued for the exotic nature of the animal (Teeter 2010, 130). Late Antique camel figurines were found, among others, at the Upper Egyptian site of Medinet Habu (Teeter 2010, 130–132).

Handmade clay figurines of bovids are known from Amarna (Stevens 2006, 98–99), and from the Pharaonic period at Faras (Pinch 1993, 162–163, pl. 8), as well as other parts of Nubia during the Middle Kingdom (Wegner 1995, 156) and New Kingdom Sesebi (Peterson 1967, 12). Hundreds of figurines of cattle, as well as caprines and ovines, were recovered from at Gism el-Arba in the Third Cataract region, in contexts contemporary with Kerma occupation (Gratien 1999; Chaix and Queyrat 2004). They become widespread on archaeological sites throughout Nubia during the Meroitic and post-Meroitic periods, but their occurrence continued into themedieval period, as far south

as Bahr el-Ghazal (David 1982; Robertshaw 1987). A large assemblage of both human and animal figurines (cattle, sheep, goats, and occasional equids) was collected from habitation and production sites at Muweis in close vicinity to Meroe and dated to the 2nd–4th century AD (David 2018). Similar dating has recently been provided (Brass and Schwenninger 2013) for the collection found at Jebel Moya further south, along the Blue Nile (Addison 1949 vol. 1, 147ff; vol. 2, pl. LXI). According to Addison, cow figurines usually have udders (formed separately and applied onto the body), as well as pieces of cord modelled around their necks. A fragment of a cow figurine with possible udders (?) was found at Soba by Peter Shinnie (1961, 58). However, the latest re-examination of the assemblage by Isabelle Vella Gregory delivers a much more extensive differentiation of bovines, including the humped ox (2021, 205, fig. 8). Figurines of animals with humps from the site of Abu Geili in the vicinity of Sennar were also interpreted as humped cattle rather than camels (Addison 1951, pl. LV). In the case of SOBA_2020-CW1-sf115, the hump is located further back on the animal's body, not over its shoulders, as is the case with humped cattle, suggestive of it being a camel.

Due to the body proportions, the other figurine from Area CW (SOBA_2020-CW1-sf120) was identified as a representation of a horse. Horse figurines, mostly handmade, were very popular in the Egyptian Nile valley (Allen 1985, 137–138; Teeter 2010, 111), especially from the Ptolemaic period onwards (Bayer-Niemeier 1985; Török 1995, 171). Late Antique examples were found at Amarna (Stevens 2006, 105). Hand-modelled horses were also recovered from the monastery of Baouit near Tell el-Amarna (Clédat 1999, 240, no 237). Some equids are known from the site of Muweis in central Sudan (David 2018, 547) and also probably among the objects found in the Gash Delta in the southern Butana, but of much earlier date (Fattovich 1989).

Most animal figurines, both in Egypt and Nubia, were found in settlement contexts, which makes most researchers more inclined to interpret them as toys rather than votive objects (Haaland and Haaland 2017), especially considering the paramount importance of the pastoral economy among the subsistence strategies employed in the Nubian Nile valley. Examples of cattle figurines made of clay by and/or for children to play with are known among the contemporary Nuer (Evans-Pritchard 1937, 283; 1940) and Baggara tribes (Haaland and Haaland 2017).



Figure 14.1. Partially damaged figurine of a humped cattle or a camel (?) SOBA_2020/CW1/sf115 made of fired clay (photo Joanna Ciesielska).

SOBA_2020/CW1/sf115

Animal figurine – a camel or humped bovine (?) (**Figure 14.1**).

CONTEXT: Trench 1/CW, Deposit 24.

DESCRIPTION: This is a hand-modelled camel figurine with a long, stout body, thick, short legs, and a single hump. The head was broken off at the neck. The left anterior leg is not preserved, and the left posterior leg is partially damaged. The hump was formed by pinching the clay on the back of the animal's body and pulling it upwards. The dark, reddish brown core of the piece may be reflective of a relatively short firing at a high temperature in the oxidising environment of an open kiln fuelled with animal dung, widely used in Sudan up until the present day (Cedro and Żurawski 2019). After firing, the surface was covered with white pigment. The form of the animal is quite similar to a figurine excavated from Late Antique contexts at Medinet Habu (Teeter 2010, 130, no 168). In terms of modelling and fabric, the piece bears a striking resemblance to a figurine of a bovine found in post-Meroitic/Early Christian contexts at the fortress of Umm Marrahi (Drzewiecki *et al*. 2018; Drzewiecki and Cedro 2022, 79–82).

MATERIAL: Fired clay, fine grained with admixture of tiny particles of lime.

MUNSELL: Surface – 5YR/4/4 – 2.5YR/4/6, core – 2.5YR/4/2.

DIMENSIONS: L: 6.1cm, w: 2.7–2.8cm, h: 4.3cm, core diam: 2.8cm.

DATING: Phase 1 – remains of a settlement with mud-brick architecture (6th/7th century AD – ?).



Figure 14.2. Partially preserved figurine of a horse (?) SOBA_2020/CW1/sf120 formed by hand of Nile clay and sun-dried, with head and legs completely broken off (photo Joanna Ciesielska).

SOBA_2020/CW1/sf120

Animal figurine – a horse (?) (**Figure 14.2**).

CONTEXT: Trench 1/CW, Deposit 24.

DESCRIPTION: This is a hand-formed figurine of an animal, possibly a horse, with a long, stout body. Neither the legs nor the head were preserved, except a fragment of the neck protruding from the anterior portion of the body. The positioning of the legs suggests the animal was standing, with its legs wide apart. The surface was covered with white pigment. Similar animal figurines of unfired mud, interpreted as children's toys, were found in medieval and post-Christian Kulubnarti (Adams and Adams 1998, 84) and Late Christian Meinarti (Adams 2002, pl. 18f).

MATERIAL: Unbaked clay with large admixture of coarsely grained sand (Munsell: 2.5Y/6/2).

DIMENSIONS: L:12.4cm, core diam: 4.1cm.

DATING: Phase 1 – remains of a settlement with mud-brick architecture (6th/7th century AD – ?).

14.2. Metal objects

A small number of metal objects (or fragments) were recovered during excavations in Areas 1/OS, 2/OS, 1/CW, 1/CS, and 1/GN, some too fragmentary to determine their function. The processing of metal ore and the subsequent manufacture of metal artefacts is a highly specialised, knowledge-demanding, and experience-based area of craftsmanship. It is also highly dependent on the distribution of natural resources, labour and fuel availability (continued accessibility to charcoal is a key factor in metalworking). Studies of Central African metallurgy suggest that while styles may change, sources of metal remained relatively constant for extended periods of time (Goucher 1993, 201). Technology is an important component of cultural systems and certain practices. Once established, it shows clear continuities (Childs 1991). Metallurgists, including smelters, blacksmiths, casters, and other associated specialists, have always been appreciated for their accumulative knowledge and skills. In the slavery-era Caribbean, African blacksmiths were regarded so highly as to hold positions of leadership and were instrumental in the exercise of ritual continuities (Goucher 1993, 204).

Evidence of metal processing, of either ferrous or non-ferrous metals, is limited in Soba so far. Metallurgy is poorly attested in Nubian settlements in general, which may be partially justified by the amount of labour and resources required to manufacture these valuable goods, especially considering that smelting and smithing calls for significant know-how (Humphris 2014). However, the re-working of ingots and the manufacture of objects is conceivably a part of the process which could have been and probably was conducted in a metropolis the size of the capital of Alwa. While ore mining and processing is a dirty business (furnaces produce a lot of waste) and requires significant installations, forges, smithies, and urban workshops could have been located somewhere within or just outside the city limits, similar to the brickworks now lining the river Nile in Soba, just outside modern Khartoum. Based on both archaeological fieldwork and physicochemical analysis of fragments of crucibles and moulds, as well as metal-working debris, British researchers working previously in Soba found evidence of precious metals (such as silver and gold) being manufactured around Building F and Area Z in the south-western part of the city, while Area MN on the north-western edge of the site was suggested as a site of working copper alloys (Freestone and Stapleton 1998, 83; Welsby 1998, 21).

The objects collected during the recent investigation at Soba were made either of iron or copper/copper alloys. Due to their non-specificity in terms of style and execution, dating can only be attempted based on archaeological stratigraphy and radiocarbon dating of associated deposits.

14.2.1. *Copper and its alloys*

In the past, both copper and various copper alloys, including brass (an alloy of copper and zinc), bronze

(tin and copper alloy), and leaded copper (Drici 2016) were in use in both the Egyptian and Nubian Nile Valley. A number of copper mining sites were located in Egypt, especially in the Eastern Desert and within the Sinai peninsula (El-Sayed El-Gayar and Jones 1989, 32, 38; Scheel 1989, 14; Chartier-Raymond *et al*. 1994, 31–77; Castel and Pouit 1997, 101–112; Abd el-Raziq *et al*. 2006, 3–6; Tallet 2006, 10–31; Zieliński and Zalewska-Czyżewska 2020, 69), although the ore was also imported from the Levant and the Peloponnese penninsula (Rehren and Psuch 2012, 219–220), as well as Cyprus (Gundlach 1980, 881–882; Garenne-Marot 1984, 104–105; Chartier-Raymond *et al*. 1994, 65). Egyptian copper was relatively hard due to its arsenic content (Zieliński and Zalewska-Czyżewska 2020). In Nubia, production sites have been identified in the vicinity of Tombos (Reisner 1923, 16, 176–178; Bonnet 1986, 19) and Buhen (El-Sayed El-Gayar and Jones 1989, 31–40). Extracting metal from ore usually takes place at the mining site or in dedicated workshops (Drici 2016, 14), but thermal processing of ores could be conducted elsewhere, as extracted ore in the form of ingots is easily transportable (Ogden 2000, 156).

Copper is very malleable and can be welded by hammering in tandem with annealing (in order to avoid breakage, see Ogden 2000, 157). Annealing involves heating, but below the metal's melting point. Thermochemical treatment of copper alloys may be reversible, allowing for the reintegration of casting failures and rendering objects recyclable. The proportions of the various alloys are dependent on the intended use of the object. Bronze is harder than copper and more easily melted, with excellent resistance to corrosion. Copper has insufficient mechanical strength properties to be employed for the production of tools and weapons, hence the use of various alloys, but it proves perfectly adequate for the manufacture of jewellery and other ornaments. Larger amounts of tin result in greater fragility of the objects and a change in the colouration towards yellow, as the addition of other metals to copper affects also the colouration of the resulting alloy.

14.2.2. *Catalogue of copper alloy finds*

SOBA_2019/OS1/sf006

A bronze ring (**Figure 14.3a**).

CONTEXT: Found on one of the fingers of an adult individual buried in Grave no 5 on Mound OS (Trench 1/OS, Deposit 3).

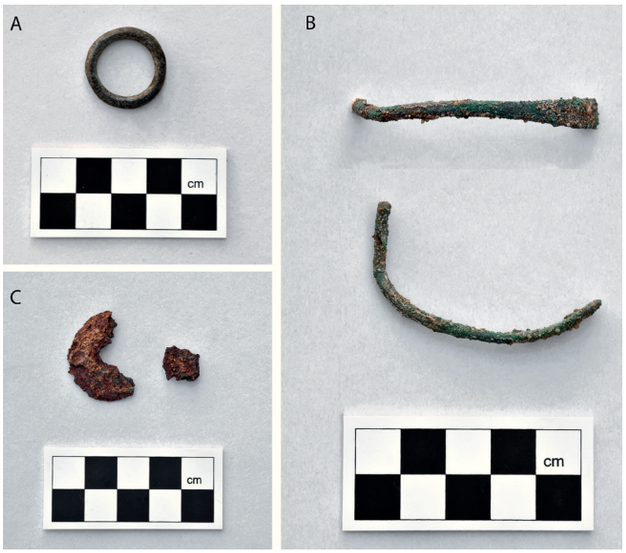

Figure 14.3. Metal objects found in Area OS: a) bronze ring from Grave 5 in Trench 1/OS (SOBA_2019/OS1/sf006); b) a fragment of a copper-alloy bracelet from Trench 1/OS (SOBA_2019/OS1/sf048); c) two fragments of a very corroded circular iron washer from Trench 2/OS (SOBA_2019/OS1/sf046) (photos Joanna Ciesielska).

DESCRIPTION: Torus-shaped, originally polished, no additional ornamentation.

DIMENSIONS: 23.5mm outer diameter, tube cross-section 3.5mm.

DATING: Radiocarbon dating of a charcoal sample collected from the fill of the grave yielded a date between 765–895 AD (87.8%; sample no SOBA_2019/OS1/s021), however, based on the site's stratigraphy, the burial itself appears to be much later, possibly dating to the 11th century or later.

SOBA_2019/OS1/sf048

A fragment of a copper alloy bracelet (**Figure 14.3b**).

CONTEXT: Trench 1/OS, Deposit 19.

DESCRIPTION: A fragment of an open-ended bracelet made of copper-alloy wire (possibly bronze?), circular in cross-section in its middle portion, flattened at the ends.

DIMENSIONS: L: 52.5mm, th: 2.5–3mm, w at the ends *c*. 6mm.

DATING: Late 10th to early 11th century AD.

14.2.3. *Iron*

In early periods, meteoric iron was used by the Nile valley populations (Ogden 2000; Rehren *et al*. 2013; Comelli *et al*. 2016). Later, iron ore and ingots were imported from the Peloponnese penninsula, the Near

East, and Cyprus. From the 6th century BC magnetite deposits in the Eastern Desert and Nile Delta were exploited to source iron ore. In Nubia, iron production may have begun as early as the 8th century BC (Humphris and Schreibner 2017, 399). Iron became more widespread in the post-Meroitic period (Zieliński and Czyżewska-Zalewska 2020, 135). Workshops were identified at Meroe and Hamadab (Scheel 1989, 17; Humphris and Schreibner 2017, 378, 396), as well as at nearby Muweis (Baud 2008, 60), while an iron-working centre for processing imported ore was found at the post-Meroitic (4th–6th century AD) Hosh el-Kafir, near El-Hobagi (Abdelrahman 2011, 394). Smelting of iron on an almost an industrial scale was conducted at medieval Ghazali on the northern fringes of the Bayuda Desert (Obłuski 2018). Production in Meroe and Hamadab continued into the early medieval period. Hamadab in particular is close enough to Soba that ingots or manufactured goods could have been sourced from there. However, if one was to rely on the dating of archaeological deposits, the items listed here belong rather to the later phases of occupation, after the smelting sites at Hamadab went out of use.

14.2.4. *Catalogue of iron finds*

SOBA_2019/OS1/sf019
An iron arrowhead (?) / a piercer (?) / a fragment of a pair of tweezers (?).
CONTEXT: Trench 1/OS, Deposit 7.
DESCRIPTION: A fragmentary iron object in the shape of an elongated lozenge, pointed at both ends, widening in the middle.
DIMENSIONS: L: 73.5mm, w: 7mm, th: 3mm
DATING: Late 10th to early 11th century AD.

SOBA_2019/CW1/sf077
A fragment of an iron buckle frame (?) / belt fitting.
Similar iron buckles were found at the Western Cemetery of Meroe, dated to the 1st century AD (Dunham 1963, 227, fig. 158) and at the post-Meroitic cemeteries of Qustul and Ballana (Williams 1991, 127–128, pl. 73c) and Zuma (Zieliński and Czyżewska-Zalewska 2020, 103–105). However, this item was found on the surface (i.e., modern ground level) and thus cannot be clearly dated.
CONTEXT: Area CW, surface.
DESCRIPTION: L-shaped, made out of a bent iron wire.
DIMENSIONS: 24 × 22mm, th: 3mm.
DATING: ?

SOBA_2019/OS2/sf046
Circular washer / applique (?) (**Figure 14.3c**).
The piece might have constituted an element of a furniture fitting, possibly on a box or a chest. Made out of thin metal sheets, such fittings were originally very delicate, hence its poor preservation. Alternately, the item might have been used as a washer, as a similar one was interpreted as such by Allason-Jones (1991, 132, fig. 61.66).
CONTEXT: Trench 2/OS, Deposit 5.
DESCRIPTION: Two fragments of a flat, circular washer made of iron sheet, with a hole pierced through the centre.
DIMENSIONS: L: outer diam. 28mm, central opening diam. 6.5mm, th: 1.5mm; 2: 10 × 11.5mm, th: 2mm.
DATING: After the first half of the 11th century AD.

SOBA_2019/CS1/sf107
Iron nail fragment.
CONTEXT: Trench 1/CS, Deposit 3.
DESCRIPTION: The shaft of an iron nail, head missing, tapering towards the sharp point at one end, originally square in cross-section.
DIMENSIONS: L: 40mm, th: 3.5mm.
DATING: Phase 2 – remains of settlement with mud brick architecture (after first half of the 8th century AD – end of the 8th century AD and later).

SOBA_2019/CW1/sf131
Two fragments of iron nails.
CONTEXT: Trench 1/CW, Deposit 24.
DESCRIPTION: Two fragments of shafts.
DIMENSIONS: L: 53mm, th: 5mm; 2: L: 33.5mm, th: 6.5mm.
DATING: Phase 1 – remains of settlement with mud brick architecture (6th/7th century AD – ?).

SOBA_2021/GN1/sf193
Iron nail fragments (**Figure 14.4**).
CONTEXT: Trench 1/GN, Deposit 12.
DESCRIPTION: Fragments of wrought iron nails or rivets, thick, originally square in cross-section, severely corroded and delaminated; one fragment with the factory head or buck-tail preserved (the level of deterioration inhibits distinguishing between the two).
DIMENSIONS: L: 1.9–4.7cm, w: 0.7–1.8cm, head/buck tail w: 2.6mm.
DATING: 7th/8th century – second half of the 8th century AD.



Figure 14.4. A selection of nail fragments collected during excavation of Trench 1/GN (SOBA_2021/GN1/sf193 and SOBA_2021/GN1/sf194) (photos Joanna Ciesielska).

SOBA_2021/GN1/sf194
Iron nail fragments (**Figure 14.4**).
CONTEXT: Trench 1/GN, Deposit 7.
DESCRIPTION: Multiple fragments of wrought iron fasteners, either straight or bent (the latter possibly through usage). Two fragments, despite extensive damage, can easily be identified as nails, tapering towards the sharp points; heavily corroded and covered with white patina; originally most fragments were probably squarish in cross-section, though at present severely corroded, with multiple cracks.
DIMENSIONS: L: 2.3–8.1cm, w: 0.3–1.3cm, head w: 1.9cm.
DATING: 7th/8th century – 2nd half of the 8th century AD.

SOBA_2021/GN1/sf196
Iron nail fragment.
CONTEXT: Trench 1/GN, Deposit 11.
DESCRIPTION: A single fragment of a wrought iron fastener, probably a square-shaped rivet with the head or the buck-tail partially preserved, corroded and cracked.
DIMENSIONS: W: 1.6cm, l: 3.8cm.
DATING: 7th/8th century – second half of the 8th century AD.

In the funerary contexts of post-Meroitic tumuli at Zuma, nails and other metal fittings were associated with wooden biers/beds or boxes (Zieliński and Czyżewska-Zalewska 2020, 114–130; Mills 1982, pls LV 32.1, LXI 121.12), though much better preserved and often retaining wooden fragments. Due to their poor preservation and various applications, nails recovered from archaeological contexts in Nubia come in all shapes and sizes, from short and thick ones to attach metal fittings to longer and slimmer ones used to join wooden elements.

14.3. Miscellaneous

A few miscellaneous finds were recovered during the excavations in Areas 1/OS, 1/CW and 1/CS. The identification of some of their functions is uncertain, as they are only fragmentarily preserved and/or do not directly correspond to commonly known finds from the Nile valley or the adjacent regions.

SOBA_2020/CW1/sf111
A fragment of a square bone plaque with incised decoration (**Figure 14.5**).
CONTEXT: Trench 1/CW, Deposit 17.
DESCRIPTION: A fragment of a square plaque cut from bone (possibly one of the flat bones of a large mammal), decorated with a small hole circumscribed by three concentric circles (diam. 8.5, 14.5, and 22.5mm), likely executed using a compass of some kind.
DIMENSIONS: 2.7 × 1.9 × 0.5cm.
DATING: Phase 1 – remains of settlement with mud brick architecture (6th/7th century AD – ?).



Figure 14.5. A fragment of a square bone plaque with incised decoration (SOBA_2020/CW1/sf111) from Trench 1/CW in Area CW (photo Joanna Ciesielska).

Considering its square shape, the fragment may represent part of a gaming dice. SOBA_2020/CW1/sf111 appears somewhat analogous to object Z4/108 from Zuma (Then-Obłuska 2020, 711, fig. 13, bottom), a fragment of a dice with the number '5' composed of five small holes. Ivory gaming equipment with similar decoration was recorded at the late medieval contexts in Qasr Ibrim (Adams 1996, 198, pl. 60c, e). Although the British mission working at Soba recovered fragments of a cuboid dice marked with similar punctuations indicating numbers (no. 226, Allason-Jones 1991, 143–144), this recent fragment is relatively large and bears no trace of joining to similar elements in order to form a dice. However, the same decoration was observed on ivory containers, along with multiple fragments of decorated and undecorated fragments of bone and ivory intarsia (Then-Obłuska 2020, fig. 7.1, 7.2). Such decoration, both on dice and other ivory objects, is abundant in Ptolemaic and Roman Alexandria (Rodziewicz 2007, cat. 546–558 and 146, 83, respectively). A similarly decorated miniature ivory box was found at Qasr Ibrim (Adams 1996, 121, pl. 19d). SOBA_2020/CW1/sf111 might have thus constituted a fragment of a decorative inlay adorned with popular motifs widespread along the entire Nile valley at least since Late Antiquity.

SOBA_2021/GN1/sf173

Two wooden gaming pieces (**Figure 14.6**).

CONTEXT: Trench 1/GN, Deposit 7.

DESCRIPTION: Two wooden gaming pieces in the form of regular-based pyramids; one piece is marked with a horizontal line (*c*. 1mm in width) carved on one of its sides, *c*. 5mm above the base.

DIMENSIONS:

1) H: 36mm, base: 13 × 16mm;
2) H: 33mm, base: 16 × 14mm.

DATING: 7th/8th century – second half of the 8th century AD.

The identification of these two items as gaming pieces is unquestionable. However, their appearance in a Nubian context is relatively unusual. A conical ivory item found at Qasr Ibrim was tentatively identified as a gaming piece (Adams 1996, 198, pl. 60c, e), although as it has a convex base it couldn't have been set upright. Similarly shaped ivory pieces (with flat bases) were also found in post-Meroitic Zuma (Then-Obłuska 2020, fig. 7.4). Joanna Then-Obłuska claims that bone/ivory game pieces and accompanying dice found at Zuma belong to the southernmost finds of a Roman game called *duodecim scripta* (Then-Obłuska 2017, 711–712). Pieces used for that particular game did not have to take on a conical shape, and flat pucks would suffice,



Figure 14.6. Two wooden game pieces SOBA_2021/GN1/sf173 from Trench 1/GN in Area GN (photo Joanna Ciesielska).



Figure 14.7. A globular weight (?) SOBA_2019/OS1/sf028 from Trench 1/OS on Mound OS (photo Joanna Ciesielska).

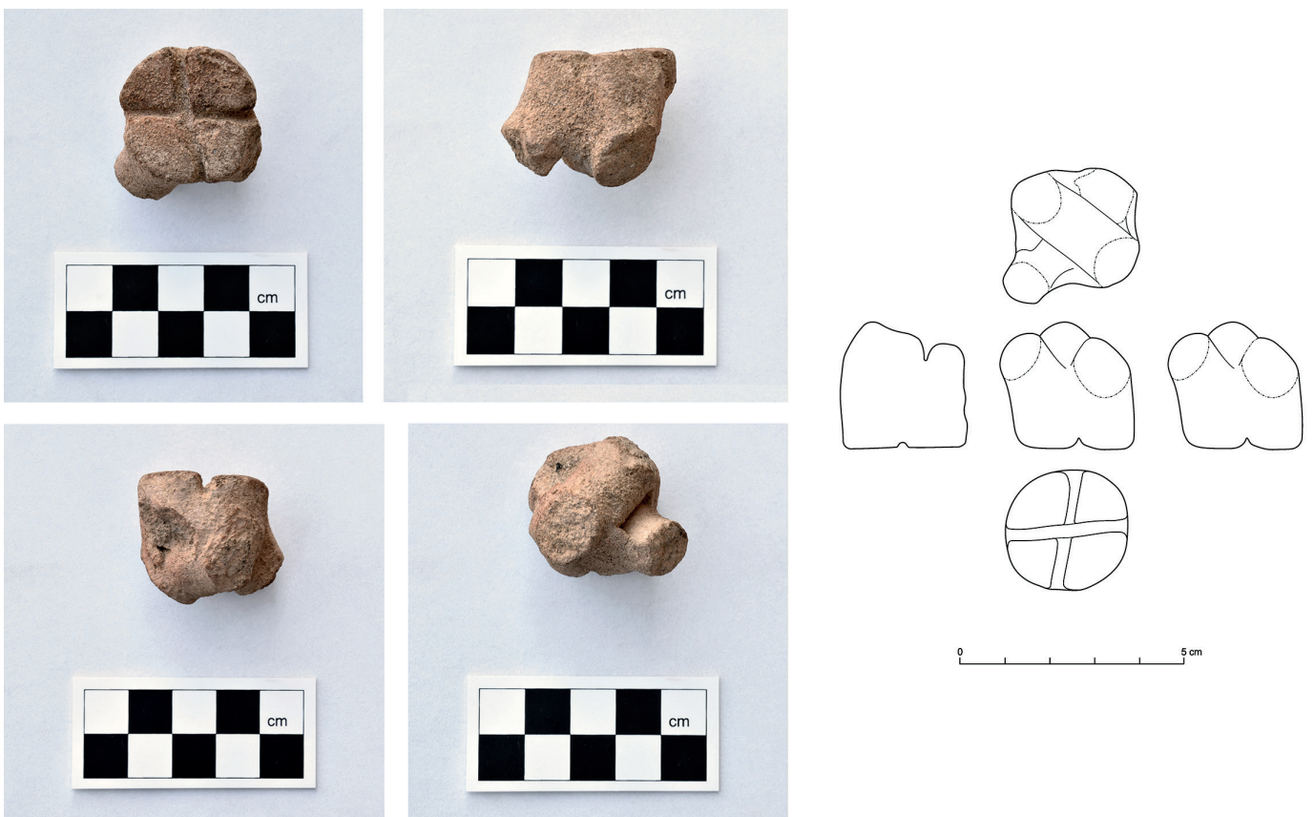

Figure 14.8. A ceramic stamp (?) SOBA_2019/OS1/sf042 from Trench 1/OS on Mound OS (photos Joanna Ciesielska, drawings Ania Weźranowska, Marta Momot).

thus the items found in Soba could have been used for a different game altogether.

SOBA_2019/OS1/sf028

A hollow(?) globular weight (?) (**Figure 14.7**).

CONTEXT: Trench 1/OS, Deposit 10.

DESCRIPTION: One half of a globular weight made of unfired, sun-dried clay, with radially crossing string imprints marking the outer surface and two grooves running at a right angle across the inside, with strings originally coming out of four holes.

DIMENSIONS: Diam. *c*. 39mm.

DATING: Phase 4 – occasional use of Feature 17 (late 10th to early 11th century AD). String imprints on both the inner and outer surface of the object suggest it being used as a weight, however, considering the small size of the piece and its relatively small weight, its exact purpose remains unclear.

SOBA_2019/OS1/sf042

A ceramic stamp (?) (**Figure 14.8**).

CONTEXT: Trench 1/OS, Deposit 6.

DESCRIPTION: An unidentified object made of three rolls of fired clay twisted and combined together, upon which a formed 'bundle' was flattened at one end and marked with two crossing lines cut into the wet clay.

DIMENSIONS: Base diam. 29–30mm, h: 28mm.

DATING: Phase 5 – cemetery (11th century AD – ?).

Allason-Jones recorded some ceramic stamps at Soba, one notably with a cross pattern on the bottom (1991, 149, no 365). However, the identification of this item as a stamp remains uncertain.

SOBA_2020/OS1/sf043

A ceramic casting mould (?) (**Figure 14.9**).

CONTEXT: Trench 1/OS, Deposit 8.

DESCRIPTION: A rectangular ceramic object, broken off at both ends. The item is flat on one side, while there is a narrow groove running along the central axis of its other side, closing before reaching the preserved end of the object. Two rows of small holes run along both sides of the central groove. Similar holes were also present across the shorter side, at the end of the central groove; only the lowest part of the holes is currently preserved. A flat, but wide, opening is also present at the bottom of the object, running along its length behind the central groove and the holes.



Figure 14.9. A fragment of a casting mould (?) SOBA_2019/OS1/sf043 from Trench 1/OS on Mound OS (photo Joanna Ciesielska, drawings Ania Weźranowska, Marta Momot).

DIMENSIONS: l: 91mm, w: 59–64mm, h: 27mm; groove width: 10.5mm, groove depth: 12mm; pits diam. *c*. 4mm.

DATING: Phase 4 – occasional use of Feature 17 (late 10th to early 11th century AD). The object could have been a casting mould with the central channel used to pour metal into this space. In this case, the holes flanking the central groove might have been used to connect two halves of the mould, with the other part being provided with small rods corresponding to the holes in the preserved artefact. The flat opening in the back might have been used as a socket for a mount of some kind. A roughly similar object was found among the 7th century pottery assemblage from the medieval site of Selib in the Southern Dongola Reach, interpreted as a fragment of an arm of a cross (Żurawski 2016, pl. 9). In this case, the longitudinal groove and the flanking holes would constitute an embellishment of the cross, while the flat opening on its back side could have been used to mount the cross on a flat staff, possibly as a processional cross.

SOBA_2020/CW1/sf076

A token/gaming piece (?) (**Figure 14.10**).

CONTEXT: Trench 1/CW, Deposit 1.

DESCRIPTION: A small ceramic plaque, rectangular with rounded corners. The entire surface was smoothened, all corners and edges additionally worn out due to extended use.



Figure 14.10. A token/gaming piece (?) SOBA_2020/CW1/sf076 from Trench 1/CW in Area CW (photo Joanna Ciesielska).

MATERIAL: Nile silt mixed with inorganic temper, possibly fine-grained sand and tiny particles of lime; reddish orange.

DIMENSIONS: 38 × 23 × 10mm.

DATING: ?

Tokens of various shapes and sizes have been found on archaeological sites all over Nubia. Often made of re-used fragments of pottery sherds (see Chapter 9), their form was not usually standardised. This particular item might have been used as a game piece rather than a counter.

SOBA_2020/CW1/sf081

A miniature mud dish (?) (**Figure 14.11**).

CONTEXT: Trench 1/CW, Deposit 2.

DESCRIPTION: A small, hemispherical object handmade of sun-dried or poorly fired Nile clay with a central circular depression. One of the sides partially broken off.

MATERIAL: Nile silt mixed with organic temper, sun-dried; greyish brown.

DIMENSIONS: Diam. 26–27mm, h: 20mm.

DATING: Phase 4 – robber activity at the site, dating uncertain. A similar item found in Late Christian contexts at Qasr Ibrim was identified as a children's plaything, a toy dish (Adams 1996, 200, p. 61c).

SOBA_2020/CW1/sf086

A clay sealing (?) (**Figure 14.12**).

CONTEXT: Trench 1/CW, Deposit 8.

DESCRIPTION: A small discoid piece of clay with several roughly parallel (slightly curved) grooves of varying depths, but similar widths (*c*. 1mm).

MATERIAL: Nile silt mixed with small admixture of fine sand and fine lime particles.

DIMENSIONS: Diam. 34mm, th: 18mm.

DATING: Phase 2 – wooden architecture, ? – 9th/11th century AD.

Roughly similar to SOBA_2019/OS1/sf028; however, due to its light weight, it can hardly have functioned as a weight. SOBA_2020/CW1/sf086 might have been used as a temporary sealing, binding a bundle of straw or fine strings, the imprints of which were preserved on one side of the item.

SOBA_2020/CS/sf100

A ceramic pipe shank (?) (**Figure 14.13**).

CONTEXT: Area CW, surface.

DESCRIPTION: A tubular fragment of a ceramic pipe, narrowing towards one end, with a small hole pierced through it, and broken at the other end.

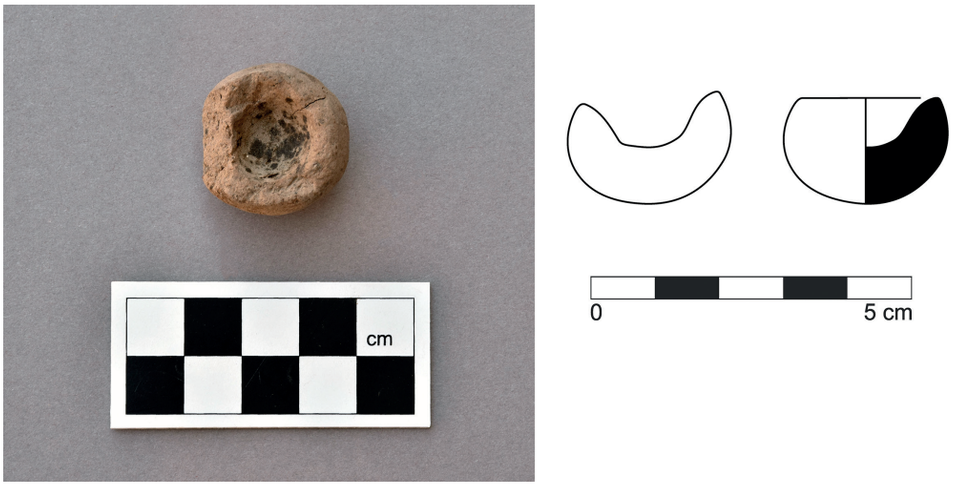

Figure 14.11. A miniature clay dish (?) SOBA_2020/CW1/sf081 from Trench 1/CW in Area CW (photo Joanna Ciesielska).



Figure 14.12. A clay sealing (?) SOBA_2020/CW1/sf086 from Trench 1/CW in Area CW (photo Joanna Ciesielska).



Figure 14.13. A ceramic pipe fragment SOBA_2020/CS/sf100 from the surface in Area CS (photo Joanna Ciesielska).

MATERIAL: Nile silt mixed with inorganic temper, probably fine-grained sand; reddish pink surface light grey core.

DIMENSIONS: L: 49mm, diam. 22mm, hole diam. 9mm.

DATING: Surface find – dating uncertain; no earlier than the Funj period, post-second half of 17th century AD. Pipes popular in the eastern Mediterranean were usually composed of a clay bowl with a shank, a separate stem made of wood or a reed, and a mouthpiece (Humphrey 1990, 2). Each element could have been extensively decorated, while mouthpieces were often made of amber or, more rarely, of precious stones (Robinson 1985, 186); stems, due to being manufactured of organic, perishable materials, are rarely preserved in the archaeological record. The ceramic shank SOBA_2020/CS/sf100 probably belonged to a hand-held pipe of a type with very elongated shank positioned at a straight or even obtuse angle in relation to the bowl. The bowl itself was entirely broken off, rendering its shape, the most diagnostic element of a pipe, impossible to reconstruct.

The custom of tobacco smoking was probably introduced to the Middle Nile Valley in the second half of the 17th century, either from West Africa or Ottoman Egypt (Shaw 1960, 294; Philips 1983, 318–319). The absence of any decoration or even a surface treatment suggests a local origin for the piece. The use of Nile alluvial clay is suggested as one of the determinants of local manufacture for the assemblage of Funj pipes from Old Dongola (Danys and Wyżgoł 2018). Ottoman pipes were also usually stockier in appearance, retaining a more acute angle between the bowl and the stem-socket (Hayes 1980). Pipes shaped similarly to the shank found at Soba were recorded in Western Africa and associated with European travellers (Shaw 1960). According to Dunhill, until the 19th century, typical European pipes usually had stems adjoining at an obtuse rather than acute angle (Dunhill 1924, 204–224), possibly pointing to a source of inspiration for SOBA_2020/CS/sf100.

During Funj times, both tobacco and pipes were produced in Sennar and the former were even exported to Yemen (Crawford 1951, 97; English 1822, 51). Finds of pipes are known from the capital of the Funj kingdom (Elzein 1982) and at Abu Geili (Crawford and Addison 1951), though these were significantly more elaborate (both in terms of manufacture and design). Balfour Paul dates the pipes found at Arbagi to the 17th century, mainly based on Abu Geili analogies and Bruce's account of local popularity of tobacco (Balfour Paul 1951).

SOBA_2020/SH1/sf122

A fragment of a mould (?) or a mancala-type gaming board (?) (**Figure 14.14**).

CONTEXT: Trench 1/SH, Deposit 9.

DESCRIPTION: A small fragment of a corner of a flat ceramic plaque with small holes drilled side by side in its upper surface.

MATERIAL: Dull orange clay with a dark grey/brown patina on the surface.

DIMENSIONS: 31 × 24 × 6–7mm

DATING: From the 9th/10th century AD – ?

As suggested by an earlier report on the small finds from Soba (Freestone and Stapleton 1998), such objects could have been used for receiving hot metal, to form small ingots or metal blanks (and afterwards re-worked into other objects) (Freestone and Stapleton 1998, 83, pl. 35). Other fragments of similar moulds were found by the British expedition in Areas MN and Z. Alternatively, the piece could represent a fragment of a mancala-type gaming board with rows of cup-shaped holes originally corresponding to a proportionate number of identical playing counters – commonly seeds, shells or stones (de Voogt 1997). This type of board game was incredibly popular in Roman Mediterranean in the first centuries AD (de Voogt 2010, 1056–1057). Games are known to follow trade routes (de Voogt 1999) and game pieces probably representing another type of a Roman board game were also found in Soba (see above). Square arrangements of small holes carved in sandstone blocks interpreted as possible gaming boards were identified in the vicinity of a Meroitic *hafir* (an artificial water reservoir associated with a *wadi*) at Jebel Shaqadud (Varadzin *et al*. 2019, 113–114).



Figure 14.14. A metal casting mould (?) SOBA_2020/SH1/sf122 of unidentified function, found in Trench 1/SH in Area SH (photo Joanna Ciesielska).



Figure 14.15. A ceramic token/game piece (?) SOBA_2020/CS1/sf217 from Trench 1/CS in Area CS (photos Joanna Ciesielska).

SOBA_2020/CS1/sf217

A ceramic token/gaming piece (?) (**Figure 14.15**).

CONTEXT: Trench 1/CS, Deposit 2.

DESCRIPTION: A small oval object made out of a re-used fragment of pottery, convex on one side and slightly concave (almost flat) on the other.

MATERIAL: Dark grey clay.

DIMENSIONS: L: 33mm, w: 23mm, th: 15mm.

DATING: Uncertain, later than 8th century AD (?).

Similarly to SOBA_2020/CW1/sf076, this piece was probably used either as a token or a game piece.

SOBA_2020/GN2/sf209

A stone token (?) (**Figure 14.16**).

CONTEXT: Trench 2/GN, Deposit 18.

DESCRIPTION: Flat oval stone object, with a portion of white, hard substance (probably lime?) sticking to its surface.

MATERIAL: Grey stone.

DIMENSIONS: L: 26mm, w: 21mm, th:2mm.

DATING: Phase 5 – re-filling of the well, probably in the 11th–12th century AD. This is possibly a token or a gaming piece; however, the presence of lime paste suggests that this item might have been employed in plaster application or in shaping the plaster (?) into more elaborate shapes, such as architectural features.



Figure 14.16. A stone token (?) or a plaster working tool SOBA_2022/GN2/sf209 from Trench 2/GN in Area GN (photo Joanna Ciesielska).

CHAPTER 15

ANIMALS IN THE ECONOMY OF MEDIEVAL SOBA. ARCHAEOZOOLOGICAL DATA

Marta OSYPIŃSKA

The animal remains discovered in the context of Nubian archaeological sites represent one of the most important sources of knowledge of the environment, economy and, above all, patterns of animal exploitation by medieval communities. Nowadays, archaeozoological data is widely used in studies exploring the characteristics and variability of animal management patterns, and the animal husbandry and consumption traditions practiced by past communities. The results of bioarchaeological analyses are also used for studying migration processes, the extent and directions of trade in livestock, and raw materials derived from animals. They are in addition an important source of knowledge in terms of the ecology of functioning of settlement units, hunting strategies and environmental exploration.

Interpretations of the data from archaeozoological surveys must, however, follow the obvious conundrum that faunal collections discovered during excavations are the result of multiple taphonomic factors. In the most stereotypical and simplistic perspective, the archaeozoological data illustrates to some extent the dietary preferences and meat consumption patterns adopted by a given community. For obvious reasons (cultural factors as well as social, environmental and political conditions etc.), the results of the analyses cannot be directly translated into the identification of livestock farming patterns or herd structures used by past communities. It should be emphasised, however, that the ever-expanding methodological scope available to researchers also allows studies to be undertaken that go beyond the simple statistical recording of the proportion of meat consumed in the past.

Pioneering research on animal remains from Soba was undertaken by Louis Chaix (Chaix 1998), who developed a large osteological collection, obtained during the first archaeological surveys conducted at the site under the direction of Derek Welsby in 1989–1992. Nearly 46,000 animal remains were analysed at the time. The results of this analysis provided the first data on meat consumption and animal husbandry patterns in the capital of the third of the medieval Nubian kingdoms, Alwa. Since the publication of this archaeozoological data from Soba, the state of knowledge of livestock in Makuria, a state in the Southern Dongola Reach, has been greatly improved (Osypińska 2003a; 2003b; 2008; 2014; 2015a; 2015b; 2016a; 2018; 2019; 2020; 2022). However, while the knowledge of Makuria is both topographically and chronologically diverse, data from Soba has so far only concerned the early years of the capital of Alwa (Chaix 1998).

The results of archaeozoological research presented here shed light on the issues of animal husbandry and meat consumption but also on economic characteristics and the environmental context of the inhabitants of Soba during different time periods. When publishing data from his research, Chaix did not have access to references from other medieval centres and their archaeozoological data. Nowadays, it is possible to undertake research by adopting a more honest cognitive perspective. In recent decades, there has been a significant development in the sciences supporting archaeology in the field of archaeological research, and this also applies to archaeozoology.

Therefore, this study aims to identify the characteristics of Soba in terms of livestock farming and hunting and fishing patterns, as well as meat consumption. This will be an attempt to answer the following questions: were particular species of animals preferred in the medieval capital of Alwa? Was animal exploitation throughout medieval Nubia similar to the earlier model of Kushite Meroe? Furthermore, the author also wishes to consider the broader context of livestock farming patterns – particularly the impact of the environment on this use model and the importance of animals to the Soba community.

15.1. Faunal material

The faunal remains included in the present study were much less numerous compared to the collections compiled by Chaix. A total of 7,961 animal bone and tooth fragments were included in archaeozoological



Figure 15.1. Preservation status of animal remains discovered in Soba (photo by Marta Osypińska).

analysis (**Figure 15.1**). However, these fragments came from much more diverse archaeological contexts, both in terms of the chronology and topography of the city. Animal remains from the 2019–2022 surveys came from contexts dating across the medieval period: from the 6th century to the 11th century, and later.

As Chaix emphasised in his research, the state of preservation of the animal remains from Soba is poor. Chaix compared the percentage of bones identified taxonomically with Mesolithic and Neolithic sites (Chaix 1998, after Peteres 1986; Gautier 1986). The percentage of remains identified by Chaix in Soba was 20.4%, and now it is 38.8% (**Table 15.1**). In contrast, the standard percentages of remains identified on medieval sites from Makuria range from 65 to 91% (e.g., Osypińska 2018; 2022).

It appears that taphonomic factors, especially at the diagenetic stage, have a fundamental impact on this situation. The taphonomic factors are the conditions in which the animal remains were deposited. The bones discovered in Soba have an extremely high fragility, significant loss of organic compounds (collagen) and loss of diagnostic features. As climatic conditions, mainly temperatures, are comparable to those recorded in the Southern Dongola Reach, it appears that geomorphological factors and the effects of water are crucial to the state of preservation of organic materials in Soba. It is a region with a slightly higher rainfall level than Upper Nubia: 150–200mm (Whiteman 1971). Due to its location, it may also have been an area temporarily affected by the flooding of the nearby Nile River. Water penetrating into layers of soil has a very destructive impact on the state of preservation of osteological materials. The damage to animal remains discovered in Soba appears to be typical of the strong, destructive effect of water. The poor condition of the collections leads to further damage and loss of diagnostic features in subsequent stages of exploration, storage or transport of such collections.

	N	%
Identified remains	3 085	38.8
Unidentified remains	4 875	61.2
TOTAL	**7 960**	**100**

Table 15.1. Animal remains from the archaeological research conducted in Soba in 2019–2022 (prepared by Marta Osypińska).

The shape of the bone fragments indicated that factors acting at the biostratonomic stage, i.e., human (consumer) activities, had less impact on the state of preservation of the faunal collections. However, it should be noted that the vast majority of the animal remains provided for study are consumption waste from final stages of carcass division. Therefore, they are marked by relatively high fragmentation as a consequence of the preparation of the meat for consumption.

15.2. Methods

Studies concerning the economic role of animals in Soba involved the full spectrum of research methods used in archaeozoology. The most fundamental stage for each analytical process is, naturally, comprehensive identification and recording of the characteristics of the osteological materials concerned. The first stage was the taxonomic identification of the remains, which included – according to the preserved diagnostic features – identification at different levels of systematics. Recent zoological nomenclature was used, which was unified for domesticated animals (Corbet 1978; Mason 1996; Lasota-Moskalewska 2005; Cichocki *et al*. 2015) and wild animals (Walker 1985; Stuart and Stuart 2006; Kingdon *et al*. 2013; Cichocki *et al*. 2015).

Precise species identification was particularly sought for mammalian remains (e.g., Grigson 1974; 1975; 1976; 1978; 1980). Only with regards to domesticated small ruminants, due to the high morphological similarity of sheep and goat skeletons, were remains without diagnostic features that allow precise species identification grouped into a single sheep/goat group. Where possible, species were determined in detail based on the morphological features of bones and teeth (Schramm 1967; Halstead *et al*. 2002; Zeder and Lapham 2010; Zeder

and Pilaar 2010). This is a practice that is commonly used in archaeozoological analysis.

The distribution of animal remains by species was analysed in terms of numerical frequency of the bones of each species, and their percentages in groups with different chronologies and topographical sites. The percentages of identified (NISP) and unidentified remains were also analysed separately in each group, indirectly providing additional data on differences in terms of the state of preservation of subsequent collections. Separate statistical summaries were also drawn up to assess, in individual separated materials, the proportion of wild animal remains to domesticated animal remains, and the proportion of cattle remains to small ruminant remains, as well as to assess the variation in the percentages of remains of the three most economically important species.

During archaeozoological analysis, the materials were analysed with respect to the varying archaeological context and dating. Based on distributions by species and anatomical distributions of the remains of the four main livestock species, an analysis of the meat consumption pattern in Soba was conducted.

Currently, the considerable resource of archaeozoological data from medieval sites made it possible to undertake in-depth comparative analysis, using various statistical methods, e.g., the numerical cipher method. Percentages of the distributions by the most economically important livestock species were used for this purpose. The conducted analysis aimed to answer the following question: was there one or various models of animal use across medieval Nubia, in Alwa and Makuria? The analysis used values for the percentages of cattle, sheep/goat, and a third category including percentages of the remains of other livestock/pigs. This was because pig farming did not play a significant role in Alwa, whereas pigs were popular animals in Makuria. The numerical cipher method is used successfully, for example, in research on large early medieval (Osypińska 2013) and medieval (Gręzak 2007) centres in Poland. This method is also widely used in zoological and veterinary research (Skibniewski *et al*. 2007). In the analysis for the research on the diversification of the economic model in Nubia, a three-stage cipher was adopted, which informed whether the percentage of remains of a given species was large {3}, medium {2} or small {1} in a given statistical group. In order to obtain this division, the divergence (minimum – maximum) in percentages from all collections of a given species conventionally was divided into three groups with identical class ranges.

Anatomical identification consisted of identifying individual skeletal elements. Based on this, anatomical distributions were made for the remains of further species whose collections were statistically significant. The remains of the main species consumed were divided into seven groups, taking into account the technological division of the carcass:

– Head (H) – cranium, maxilla, cornual process, teeth and mandible;
– Thorax (T) – vertebrae, sacrum, sternum and costae;
– Proximal Part of Anterior Limb (PPAL) – scapula, humerus, radius, ulna;
– Distal Part of Anterior Limb (DPAL) – carpal bones, metacarpal bones;
– Proximal Part of Posterior Limb (PPPL) – pelvis, femur, patella, tibia, fibula;
– Distal Part of Posterior Limb (DPPL) – tarsal bones, metatarsal bones;
– Phalanges (Ph) – phalanges I, phalanges II, phalanges III.

The main criterion for this division was the location of a bone in the skeleton. Based on this, the percentages of remains derived from each part of the carcass were calculated for the consumed species. The data obtained in this way was compared with the percentages achieved by the bones in a given part of the carcass, which are calculated based on values derived from a model skeleton adequate for an animal group (Lasota-Moskalewska 2008). The differences between the obtained values provided information regarding possible surpluses or deficiencies of bone elements in a given part of the carcass. Studies concerning the anatomical distributions of the remains were also conducted, taking into account the chronological and functional diversity of individual contexts from which the remains came.

When analysing the anatomical distributions, particular attention was paid to the presence of phalanges and the statistical balance between bones from the thoracic limb and pelvic limb. The aim was to capture data concerning the possible distribution of meat. The imbalance is defined as the difference between the percentages of limb remains that is equal to or exceeds 10% (Lasota-Moskalewska 2008). When discussing anatomical distributions, the terms such as ‘attractive/unattractive part of the carcass’ were used. The criterion for applying such a division was the meat occupancy volume of a given part of the carcass, and its calorific

value. In the archaeozoological literature, the following parts of the carcass are considered typically attractive (e.g., Lasota-Moskalewska 2008): trunk and proximal parts of the limbs (PPAL and PPPL). On the other hand, parts such as the Head, distal parts of the limbs and phalanges are considered to be unattractive for consumption due to poor or negligible meat occupancy volume.

The assessment of the age of death of animals was determined by the degree of ontogenetic development of teeth and bones (Kolda 1936; Silver 1970; Chaplin 1971; Schmid 1972; Amorosi 1989; Reitz 2008). By following the distinctive traits found in individual groups of animals, observations were also made to determine the sex of animals and possible breeding selection in this aspect. Sex was determined, according to a species, based on features of sexual dimorphism seen in the skeleton (Całkin 1960; Schmid 1972; Armitage and Clutton-Brock 1976; Grant 1982; Bartosiewicz 1984; Wiig 1985; Grigson 1989; Ruscillo 2003; Sykes and Symmons 2007; Lasota-Moskalewska 2008). Information regarding sex in individual species helped to shed light on both the breeding strategies used and the trends in terms of the lifetime use of animals (Lasota-Moskalewska 2008).

A study concerning the morphology of livestock species is one of the elements of an archaeozoological analysis, which provides the most scientifically valuable data. Observations in this direction were mainly based on standardised osteometric data. These observations were standardised for all livestock species by von den Driesch (1976). Based on the length of bones, height at the withers was calculated using species-specific factors: horse (Kiesewalter 1888, after Driesch and Boessneck 1984), cattle (Fock 1966; Matolcsi 1970, after Driesch and Boessneck 1974), sheep (Teichert 1966/69 after Driesch and Boessneck 1984), goat (Schramm 1967), pig (Teichert 1966/69, after Driesch and Boessneck 1974) and dog (Koudelka 1885 after Driesch and Boessneck 1984). The metric data was used in statistical analysis (Pöllath and Peters 2005).

Both information on the morphological traits that are present in a population and osteometric data make it possible to identify and describe a unique set of information on the possible differentiation of types or varieties of livestock animals. It also provides a basis for further consideration of use (Bartosiewicz *et al*. 1997; Meadow 1999), migration, range, trade or exchange of animals, or characteristics preferred by given communities in livestock animals.

15.3. Results of the archaeozoological analysis

15.3.1. *Species*

A total of 3,020 remains from domesticated animals were obtained from all the archaeological contexts excavated in Soba. They represented 97.8% of all archaeozoologically identified bones (**Table 15.2**). The group of livestock remains was dominated by cattle with a total of 1,758 bone fragments found. Skeletal fragments of cattle represented more than half (58.06%) of all taxonomically identified animal bones. The second most frequent category was sheep and goat bones. A total of 1,101 bone fragments were identified, representing 35.6% of the NISP. Due to the poor state of preservation of most of the skeletal elements discovered in Soba, it was not possible to accurately identify the species. In the few cases where identification was possible, these were mainly sheep bones.

TAXONS	*N*	*%*
DOMESTIC		
Cattle *(Bos primigenius* f. *taurus)*	1 758	56.9
Sheep / goat *(Ovis aries*/*Capra hircus)*	1 101	35.6
Dog *(Canis familiaris)*	81	2.6
Donky *(Equus asinus f. domestica)*	28	0.9
Dromedary *(Camelus dromedarius)*	38	1.2
Cat *(Felis silvestris)*	1	0.03
Pig *(Sus scrofa f. domestica)*	13	0.4
TOTAL DOMESTIC	3 020	97.8
WILD		
Dorcas gazelle *(Gazella dorcas)*	7	0.2
African bush elephant *(Loxodonta africana)*	1	0.03
Rodents *(Rodentia sp.)*	20	0.6
Common ostrich *(Strutio Camelus)*	1	0.03
Bird *(Aves* sp.*)*	3	0,09
Fish *(Pisca* sp.*)*	17	0.05
Ostreidae sp.	8	0.2
Bivalvia sp.	9	0.3
TOTAL WILD	**66**	**2.2**
NISP	3 086	100 / 38.7
Unidentified	4 875	61.3
TOTAL	**7 961**	**100**

Table 15.2. General distribution of animal remains by species from the surveys conducted in Soba (prepared by Marta Osypińska).

Other species were represented in osteological materials from Soba in much lower percentages. In terms of livestock, donkey was the most common. Twenty-eight skeletal remains of this animal (0.9%) were found. The frequency of dromedary bones was similar (38 bone fragments, 1.2%). There was a relatively high proportion of canine bones (81 bone fragments, 2.6%). The analysis also reported 10 pig bone fragments. This species was not reported in previous surveys and excavations and pig remains represented 0.4% of the NISP. The least common domesticated animal reported was the cat, with only one bone of this animal (0.03%) identified.

The list of wild species represented in osteological materials included mainly skeletal elements of the dorcas gazelle (three skeletal fragments, 0.2%). Twenty skeletal fragments of small rodents and 17 fish vertebrae, mainly of the genus Siluriformes were found in addition. Other species were represented by individual bones. These included an ivory fragment, an ostrich egg fragment, and bird bone fragment. The collections also included invertebrate remains – shells of bivalves living in the Nile River (**Table 15.2**).

Species – Trench 1/OS

By using absolute dating, it was possible to collate taxonomic data according to successive phases of settlement at the excavated sites in Soba. A total of 653 animal bones were found at 1/OS (**Table 15.3**), of which 241 bone fragments were identified – 36.9%. It should be stipulated that individual chronological collections consisted of relatively small groups of bones. Therefore, statistical data can only be an indication in this case. Nevertheless, this data is important cognitive information on how the proportions of animal remains were represented in the excavated area.

The earliest collection of animal remains, dating to the 6th–7th century, was small and so badly preserved that no element was identified. All bone fragments were from mammals.

By far the more abundant material from 1/OS was dated to the 7th to 10th century. Out of 302 bone fragments from this context, 93 (30.8%) were identified. The skeletal elements of ovicaprids dominanted the assemblage, with forty-nine (49) bone fragments reported (52.7%). In addition, cattle remains were a significant component of the collection dating to the 7th–10th century – 34.4% (32 bone fragments). Finally, three fragments of dromedary bones, one canine bone, and nine fish vertebrae, were identified.

TAXONS	*N*	*%*
	6th–7th c.	
Unidentified	25	100
	8th–10th c.	
Cattle	32	34.4
Sheep/goat	49	52.7
Dromedary	3	3.2
Dog	1	1.1
Fish	8	8.6
NISP	**93**	**100/30.8**
Unidentified	209	69.2
TOTAL	**302**	**100**
	10th & 10th–11th c.	
Cattle	53	52.5
Sheep/goat	47	46.5
Pig	1	1.0
NISP	**101**	**100/53.1**
Unidentified	89	46.9
TOTAL	**190**	**100**
	>11th c.	
Cattle	135	56.0
Sheep/goat	96	36.8
Dog	10	4.2
NISP	**241**	**100/36.9**
Unidentified	412	63.1
TOTAL	**653**	**100**

Table 15.3. Chronological distribution of animal remains from 1/OS by species (prepared by Marta Osypińska).

In another chronological group, the proportions of species were slightly different. These were animal bones from contexts dating to the 10th and late 10th to early 11th century. A total of 190 animal remains were found, of which 101 bone fragments could be identified (**Table 15.3**). This group was dominated by skeletal fragments of cattle (52.5%), with 53 fragments. In addition, 47 fragments of sheep and goat bones (46.5) and a pig bone (one bone fragment) were identified.

The latest faunal collection from 1/OS was dated to the post-11th century. This was the most abundant material from this trench. It consisted of a total of 653 bone fragments, of which 241 (36.9%) were identified. In this collection, the numerical dominance of cattle remains was clear, with a total of 135 bone fragments of this species found – 56%. The second most numerous remains are sheep and goat remains (96 bone fragments, 36.8%). The same assemblage included 10 fragments of dog bones (4.2%) (**Table 15.3**).

TAXONS	*N*	%
8th c.		
Cattle	77	36.1
Sheep/ goat	126	59.1
Dog	4	1.8
Donkey	4	1.8
Dorcas	2	0.9
NISP	**213**	**100/15.8**
Unidentified	1 128	84.2
TOTAL	**1 341**	**100**
Remains without chronology		
Cattle	213	
Sheep/goat	106	
Donkey	3	
Dog	4	
Dorcas	2	
Unidentified	927	
TOTAL	**1 255**	

Table 15.4. Chronological distribution of animal remains from 1/CS by species (prepared by Marta Osypińska).

Species – Trench 1/CS

The animal remains from 1/CS came exclusively from contexts dating to the 8th century. These remains included a total of 1,341 animal bone fragments. However, they were preserved poorly, as evidenced by the relatively low percentage of identified remains (NISP=213 bone fragments; 15.8%). The faunal collection from CS1 was dominated by bone elements of sheep/goat. These elements represented as much as 59.1% (126 bone fragments). The second most frequent group of remains – cattle remains – was almost half as numerous (77 bone fragments, 36.1%). In addition to the domesticated ruminants dominating the material from CS1, the following bone fragments were found: 4 fragments of a dog bone and 2 fragments of a dorcas gazelle skeleton (**Table 15.4**).

Species – Trench 1/CW

In addition, materials from 1/CW were subjected to archaeozoological analysis. This was one of the most abundant materials from the current excavations at Soba. It consisted of 2,097 animal remains, including NISP=507 bone fragments (40.8%). This indicates a relatively good state of preservation in the Soba conditions. The taxonomic list of animal bones from 1/CW included 11 items, both vertebrates and invertebrates. A total of 1,011 animal remains were recorded in

TAXONS	*N*	%
6th–7th c.		
Cattle	215	53.8
Sheep/goat	179	44.8
Dromedary	1	0.2
Ivory	1	0.2
Bird	1	0.2
Fish	1	0.2
Eggsell	1	0.2
NISP	**399**	**100/39.4**
Unidentified	612	60.6
TOTAL	**1 011**	**100**
9th–11th c.		
Cattle	87	80.5
Sheep/goat	17	15.7
Dromedary	3	2.7
Fish	1	0.9
NISP	**108**	**100/46.7**
Unidentified	123	53.2
TOTAL	**231**	**100**
***NISP** from dated contexts*	**507**	**40.8**
unidentified from dated contexts	**735**	**59.2**
TOGETHER	**1 242**	**100**
Remains without chronology		
Cattle	186	
Sheep/goat	173	
Donkey	12	
Pig	5	
Dromedary	3	
Fish	2	
Mollusc	1	
Unidentified	473	
TOTAL	**855**	

Table 15.5. Chronological distribution of animal remains from 1/CW by species (prepared by Marta Osypińska).

archaeological contexts dating back to the 6th–7th centuries. Bovine bone fragments dominated the assemblage (215 fragments; 53.8%). Slightly fewer ovicaprids remains were identified (179 fragments; 44.8%). The remaining species were represented by single skeletal elements or eggshells. These were: a dromedary, an ivory fragment, a chicken bone, a fish vertebra and an ostrich eggshell. The collection of animal bones dating back to the 9th–11th century consisted of 231 fragments. It was dominated by cattle skeletal elements (87 fragments; 80.5%). Significantly fewer remains of ovicaprids were identified (17 fragments; 15.7%). Three dromedary bones (2.7%) and a fish bone (0.9%) were identified in addition. As well as animal bones from

dated contexts, there were layers difficult to date in Trench 1/CW, due to its mixed character, with 855 bone fragments in these contexts in total. They mainly came from cattle (186 fragments) and sheep/goats (173 fragments). In addition, we identified bone fragments from a donkey (12 fragments), a pig (5 fragments), a dromedary (3 fragments), a fish (2 fragments) and a fragment of a mussel shell (1 fragment) (**Table 15.5**).

Species – Trench 1/SH

In contrast, the collection of animal remains was quite small in Trench from 1/SH in terms of a species list, but relatively abundant in quantity (**Table 15.6**). All animal remains were dated to the 10th–11th century. The poor state of preservation of osteological materials from this site is evidenced by the high percentage of unidentified elements (78%). In terms of remains with a defined taxonomic origin, sheep and goat bones dominated (55.2%). There were slightly fewer cattle skeletal elements (26 skeletal fragments, 44.8%) (Table 15.6).

Species – Trench 2/SH

The collection of animal bones from 2/SH was very small, with 104 animal remains, of which 73 bone fragments could be identified. Most of the identified elements came from cattle (28 bone fragments). In addition, there were single fragments of sheep/goat bones, cat bones and freshwater bivalve shells (**Table 15.7**).

Species – Trench 1/GN

In general, faunal materials from Trench 1/GN were dated to the 8th century and the second half of the 8th century (**Table 15.8**). In the 8th century collection, half (50.7%) of the animal remains were cattle bones (**Table 15.8**). Skeletal fragments of small ruminants (32.8%) were less numerous. Other animal species were represented by very few groups of remains. These included a single pig bone, three fragments of a donkey bone, nine dromedary remains, a single dog fragment, fish osteological fragments, and nine bivalve shell fragments (Table 15.8). Twenty skeletal fragments of a small rodent were found in archaeological contexts dating to the second half of the 8th century (**Table 15.8**).

The most abundant collection of remains was found in the topsoil layers of 1/GN. Given the distribution by species, it can be assumed that they are associated with the medieval settlement in Soba. Skeletal elements of cattle were dominant (31 skeletal fragments, 54.4%). A distinctly smaller collection consisted of sheep and goat remains (14 bone fragments, 24.5%). A pig bone fragment, two dromedary remains (3.5%) and nine bivalve shell fragments were also identified (**Table 15.8**).

TAXONS	*N*	*%*
10th–11th c.		
Cattle	26	44.8
Sheep/ goat	32	55.2
NISP	**58**	**100/ 22.0**
Unidentified	205	78.0
TOTAL	**263**	**100**

Table 15.6. Chronological distribution of animal remains from 1/SH by species (prepared by Marta Osypińska).

TAXONS	*N*
Cattle	28
Sheep/ goat	1
Cat	1
Bivalvia	1
Unidentified	73
TOTAL	**103**

Table 15.7. Distribution of animal remains from 2/SH by species (prepared by Marta Osypińska).

TAXONS	*N*	*%*
8th c.		
Cattle	74	50.7
Sheep/ goat	48	32.8
Pig	1	0.7
Donkey	3	2.0
Dromadery	9	6.2
Dog	1	0.7
Fish	1	0.7
Mollusc	9	6.2
NISP	**146**	**100/64.8**
Unidentified	79	35.2
TOTAL	**225**	**100.0**
second half of 8th c.		
Rodent	**20**	
Unidentified	**25**	
TOTAL	**45**	

Table 15.8. Chronological distribution of animal remains from 1/GN by species (prepared by Marta Osypińska).

Species – Trench 2/GN

A total of 1,420 animal remains were discovered during the excavation conducted at Trench 2/GN (**Table 15.9**). They came from three phases of settlement at this site, dating to the 9th–10th century, 11th century, and 12th and later centuries. The smallest collection of remains came from the oldest period. A total of 35 osteological fragments were found, of which only 14 were identified (**Table 15.9**). These included bone elements of cattle (eight fragments), ovicaprids (five fragments) and a donkey (one fragment). The collection of animal remains dating to the 11th century was slightly more numerous. This collection consisted of 78 fragments; however, only 24 fragments could be identified diagnostically. Cattle remains were the most numerous (16 fragments). In addition, there were also sheep/goat bone fragments (seven fragments) and a canine bone fragment.

The most numerous collection of remains found at 2/GN was dated to the 12th century and slightly later. There were a total of 1,161 bone fragments, of which 49.4% (574 fragments) were taxonomically identified. This collection was clearly dominated by cattle bone fragments (65.8%). Sheep and goat remains were the second most common (30.6%). Other species were found in minimal percentages. In terms of the 12th century remains, bone fragments of a donkey (seven fragments), a dromedary (six fragments) and a dog (three fragments) were identified. In addition to mammalian remains, a bird bone and two bivalve shell fragments were also found (**Table 15.9**).

TAXONS	*N*	%
9th–10th c.		
Cattle	8	
Sheep/ goat	5	
Donky	1	
NISP	**14**	
Unidentified	21	
TOTAL	**35**	
11th c.		
Cattle	16	
Sheep/ goat	7	
Dog	1	
NISP	**24**	
Unidentified	54	
TOTAL	**78**	
>12th c.		
Cattle	378	65,8
Sheep/ goat	176	30.6
Dromedary	6	1.0
Donkey	7	1.2
Gazell	1	0.2
Dog	3	0.5
Bird	1	0.2
Mollusc	2	0.3
NISP	**574**	**100/49.4**
Unidentified	587	50.6
TOTAL	**1 161**	**100**
***NISP** from dated contexts*	**612**	
unidentified from dated contexts	**662**	
Remains without chronology		
Cattle	36	
Sheep/goat	5	
Ichneumon	1	
Oyster	1	
Unidentified	103	
TOTAL	**146**	
SUMMARY IN 2/GN	**1 420**	

Table 15.9. Chronological distribution of animal remains from 2/GN by species (prepared by Marta Osypińska).

15.3.2. *Anatomical distribution*

Almost complete anatomical elements of the skeletons of the two main animal species at Sobawere identified (**Table 15.10**). In the distribution of cattle anatomical remains notably only the jawbone is absent. In terms of sheep and goat bones, there were no separately reported bone fragments such as the sacrum, remains of the sternum or smaller skeletal elements such as a tarsal bone or ph III. Commonly, cattle remains included teeth, vertebrae, fragments of femur, humerus, and costae. The low frequency of pedicle remains is noticeable. The most common remains of domestic small ruminants included vertebrae, teeth, and costae (**Table 15.10**).

In contrast, the anatomical distribution of the remains of another common species was very incomplete (**Table 15.10**).

Analysis taking into account the technological division of animal carcasses provided more data (**Table 15.11**). In the case of cattle, the Head (H) elements dominated the Soba material, with a total of 354 remains from this category found, representing 22.76% of the total number of cattle remains from medieval Soba (**Table 15.11**). The second largest category in terms of percentages are the remains of the Thorax (T). A total of 299 fragments of such bones were identified, representing 19.22% of cattle osteological elements. Bone fragments from the

BONE	CATTLE	SHEEP/GOAT	DROMEDARY	DONKEY
Cranium	51	46		
Proc. cornuales	15	3		
Maxilla		10		
Dentes (teeth)	238	125	4	
Mandibula	50	38	1	1
Vertebrae	197	194	1	3
Os sacrum	1			
Sternum	1			
Costae	100	162	3	
Scapula	71	57	2	
Humerus	102	43		5
Radius	51	51	8	1
Ulna	7	14	1	1
O. carpi	54	6		1
O. metacarpalia III + IV	59	13		
Pelvis	36	39	1	1
Femur	113	76		1
Patella	7	1		
Tibia	77	54		1
O. tarsi	22	1	1	1
Calcaneus	21	4		
Talus	52	18		
Centrotarsale	8			
O. metacarpalia III + IV	35	12		1
Metapodium	42	9	2	2
Ph proximalis	73	9	1	4
Ph media	47	1		
Ph distalis	25			4

Table 15.10. Anatomical distribution of livestock remains from Soba (prepared by Marta Osypińska).

	Cattle			Sheep/goat			Model skeleton
	N	*%*	*#*	*N*	*%*	*#*	*%*
H	354	22.76	2.76	222	22.51	2.51	20
T	299	19.22	-23.78	356	36.10	-6.9	43
PPAL	231	14.85	9.85	165	16.73	11.73	5
DPAL	134	8.61	0.61	19	1.92	-6.08	8
PPPL	233	14.98	11.98	170	17.24	14.24	3
DPPL	159	10.22	3.22	44	4.46	-2.54	7
PH	145	9.32	-4.68	10	1.01	-12.99	14

Table 15.11. Anatomical distribution of ruminants from Soba in terms of the technological division of the carcasses (prepared by Marta Osypińska).

proximal parts of the thoracic and pelvic limbs, i.e., elements of the carcass with the largest meat occupancy volume, represented very similar proportions. For the thoracic limb bones, 231 fragments were identified – 14.85%. Bone elements from the proximal part of the pelvic limbs were identified in 233 cattle remains, 14.98%. Bone fragments from the distal part of the pelvic limb represented a significant percentage for this species (159 fragments, 10.22%). The proportion of phalanges was lower (145 fragments, 9.32%) while the proportion of bones from the distal part of the pelvic limbs was lowest (134 fragments, 8.61%).

The next stage of the analysis involved exploration of the differences between the proportions of subsequent elements of the cattle carcasses from Soba and the benchmark data for the skeleton of ruminants. In the course of the analysis, it was observed that proportionally, the highest surplus seen in the case of the proximal parts of limbs – mainly the pelvic limb, while slightly less in the case of a thoracic limb. The focus is drawn to the very large deficiency of the elements of the Thorax (-23.78%) (**Table 15.11**).

Interestingly, the technological distribution of small ruminant carcasses was very similar to that of cattle carcasses in Soba. The main difference was in terms of the proportion of the remains of the Thorax. In the group of small ruminant bones, this proportion was significantly higher than in cattle – 36.1% (356 fragments). In contrast, there were markedly lower proportions of bones from the distal part of the pelvic limb (DPPL), 4.46%, and phalanges (-12.99%). The analysis of the difference between the proportions of carcass parts from small ruminants at Soba and the data from the model skeleton showed a clear surplus of elements from the proximal parts of the limbs, and a slight surplus of Head (H) remains. Other elements of sheep and goat carcasses showed deficiencies, with a particularly high proportion observed in relation to phalanges (**Table 15.11**).

Anatomical distribution – Trench 1/OS

Almost all elements of the cattle skeleton were discovered in Trench 1/OS (**Table 15.12**). However, no pedicles, jawbone, ulna or calcaneus were identified in any of the separate chronological phases.

Chronological analysis of the distribution of cattle remains from 1/OS revealed some differences in the proportions of cattle remains between subsequent phases. It should be stipulated, however, that these were relatively small collections, so the pattern may be somewhat statistically biased. The oldest settlement phase from 1/OS was dominated by Thorax remains (28.1%). Identical percentages of Head and PPPL remains were found – 18.7% each. A relatively high percentage was also represented by bone remains from the distal part of the thoracic limb. Compared to the proportions of the model skeleton, a clear surplus in the proportion of remains from the proximal part of the pelvic limb was identified (18.8%). Bones from the thoracic limb also had a slight surplus (PPAL: 4.3%). Other parts of the carcass were represented by less remains than expected from the model skeleton (**Table 15.13**). The material from 1/OS, dating to the 10th–11th century was dominated by Head remains representing 24.5% of cattle bones from this period. The proportion of the remains of Trunk, PPAL, PPPL and Ph was significant. However, when compared with the benchmark data, there was a clear deficiency in numbers of Thorax and PPAL (-29.8% each). A significant surplus can only be observed for PPPL bones (13.9%). Other elements of cattle carcasses from the 10th–11th century were reported either in small surpluses or small deficiencies, which can be considered to be in balance with the data from the model skeleton (Table 15.13). Head bones predominated (37.7%) in terms of cattle remains from the earliest phase of settlement at 1/OS. There were also relatively high percentages of remains for the most attractive elements of the carcass: Thorax and proximal parts of the limbs. The comparative analysis with benchmark data revealed a significant surplus of Head remains in this group (17.7%), and PPPL remains (9.6%). A slightly smaller surplus was reported in PPAL remains (8.3%). The other parts of the carcass,

	7th–10th c.			10th–11th c.			>11th c.			Model skeleton
	N	%	#	*N*	%	#	*N*	%	#	%
H	6	(18.7)	-1.3	13	24.5	4.5	51	37.7	17.7	20
T	9	(28.1)	-14.9	7	13.2	-29.8	15	11.1	-31.9	43
PPAL	3	(9.3)	4.3	7	13.2	-29.8	18	13.3	8.3	5
DPAL	5	(15.6)	7.6	4	7.5	-0.5	9	6.6	-1.4	8
PPPL	7	(21.8)	18.8	9	16.9	13.9	17	12.6	9.6	3
DPPL	0	–	-7	5	9.4	2.4	12	8.8	1.8	7
PH	2	6.25	-7.7	8	15.1	1.1	13	9.6	-4.4	14

Table 15.12. Technological distribution of the cattle carcasses from 1/OS, chronologically (prepared by Marta Osypińska).

	7th–10th c.		10th–11th c.		>11th c.		Model skeleton
	%	#	%	#	%	#	%
H	24.49	4.5	23.40	3.4	17.75	-2.2	20
T	40.81	-2.2	40.42	-2.5	44.85	1.8	43
PPAL	20.40	15.4	21.27	16.3	13.08	8.1	5
DPAL	2.04	-5.9	4.25	-3.7	0.93	-7.0	8
PPPL	12.24	9.2	10.63	7.6	14.01	11.0	3
DPPL	–	–	–	–	5.60	-1.4	7
PH	–	–	–	–	3.73	-10.3	14

Table 15.13. Technological distribution of the sheep and goat carcasses from 1/OS, chronologically (prepared by Marta Osypińska).

i.e., distal parts of the limbs and phalanges, were reported in proportions that are nearly in balance with the benchmark data (**Table 15.13**).

The anatomical distributions of the remains of small ruminants from 1/OS were very incomplete. Pedicles or small skeletal elements such as calcaneus, tarsal bone or phalanges II and III were not present in any contexts. Bones from the distal part of the pelvic limbs and from phalanges were not found in materials from phases dated to the 7th–10th century and 10th–11th century.

Due to the relatively small collections of caprid remains in various chronological groups, and the similarity in the numbers of these collections in subsequent settlement phases, only a partial analysis of technological anatomical distributions of carcasses of these animals was performed (**Table 15.14**). The most numerous collections were Thorax remains. Their proportion was always just over 40% (**Table 15.14**). Proportions of Head remains were in the range of approximately 24.5% (17–24%). The percentages of bone elements from proximal parts of the limbs were also highe. In contrast, bones from the least attractive parts of the carcass (distal parts of the limbs and phalanges) were either not found or represented minimal percentages (**Table 15.13**).

Anatomical distribution – Trench 1/CS

As already mentioned, all animal remains from Trench 1/CS were dated to the 8th century. Analysis of the anatomical distribution of the remains was conducted only for cattle and sheep/goat due to the numbers of remains. All skeletal elements of cattle remains were found.. In contrast, for sheep/goat remains, the following parts were not reported: pedicles, ulnae, carpal bones, patella, tarsal bones and phalanges.

The greatest number of Thorax elements (23.7%) were reported when examining cattle remains chronologically. Bones from DPPL (18.5%) and PPAL (17.1%) also had high percentages. There were a similar proportion of Head remains and remains of the proximal part of the pelvic limb (12.2%). Comparative analysis with benchmark data indicated a marked deficiency in the remains of the three Thorax, and, to a slightly lesser extent, in Head remains. In contrast, surpluses can be observed for bone fragments from PPAL (12.1%), DPPL (11.5%) and PPPL (9.2%). Slight deficiencies were observed in the distal part of the thoracic limb and phalanges (**Table 15.14**).

The carcass proportions of the sheep and goat from 1/CS were slightly different. The highest percentages

	Cattle		Sheep/goat		Model skeleton
	%	#	%	#	%
H	12.2	-7.77	22.2	2.22	20
T	23.7	-19.23	36.5	-7.5	43
PPAL	17.1	12.13	18.2	13.25	5
DPAL	5.5	-2.46	4.7	-3.24	8
PPPL	12.2	9.23	12.7	9.7	3
DPPL	18.5	11.53	5.5	-1.45	7
PH	11.5	-2.47	0	–	14

Table 15.14. Technological distribution of cattle carcasses and carcasses of ovicaprids from 1/CS (prepared by Marta Osypińska).

	Cattle				Sheep/goat				Model skeleton
	6th–7th c.		9th–11th c.		6th–7th c.		9th–11th c.		%
	%	#	%	#	%	#	*n*	#	
H	25.2	5.2	9.2	-10.8	14.3	-5.7	0	–	20
T	18.8	-24.2	28.7	-14.3	38.5	-4.5	6	–	43
PPAL	11.8	6.8	24.1	19.1	18.7	13.7	4	–	5
DPAL	8.9	0.9	9.2	1.2	3.8	-4.2	0	–	8
PPPL	15.3	12.3	16.1	13.1	22.5	19.5	7	–	3
DPPL	6.9	-0.1	8.0	1	1.1	-5.9	0	–	7
PH	12.8	-1.2	4.6	-9.4	1.1	-12.9	0	–	14

Table 15.15. Technological distribution of cattle carcasses and carcasses of ovicaprids from 1/CW (prepared by Marta Osypińska).

were represented by the Thorax (36.50%), Head (22.22%), and proximal parts of the following limbs: thoracic limb (18.25%) and pelvic limb (12.70%). However, a comparison with benchmark data indicated that the largest surplus of remains was observed in the following categories: PPAL (13.25%) and PPPL (9.7%). The remains of the Thorax and distal parts of the limbs were found in a slight deficiency, while the remains of the Head were found in a percentage similar to the standard (Table 15.14).

Anatomical distribution – Trench 1/CW

In Trench 1/CW, we analysed ruminant remains in two chronological groups: 6th–7th centuries and 9th–11th centuries. Cattle remains from the older phase were dominated by head (H) bone elements, which constituted 25.2% of the cattle bones. The highest surplus of bone elements was recorded in the PPPL group (12.3%). Smaller surpluses were visible in groups H (5.2%) and PPAL (6.8%). The remaining elements of the cattle carcass were represented by deficient remains. The proportions of cattle carcasses in bone materials dated to the 9th–11th century were different. Surpluses were noticeable only in two groups: PPAL (19.1%) and PPPL (13.1%). The remaining elements of the carcass were represented by deficient remains (**Table 15.15**).

Among the remains of ovicaprids from the older period (6th–7th century), we noted surpluses only in the proximal parts of the limbs (PPAL: 13.7%; PPPL: 19.5%). The remaining parts of the carcass of small ruminants were recorded as deficient in relation to the reference skeleton. The number of sheep and goat remains in the chronologically younger group (9th–11th century) was very low. It was only possible to compare bone fragments numerically, and most came from T and PPPL (Table 15.15).

Anatomical distribution – Trench 1/SH

The collection of remains discovered in Trench 1/SH was dated to the 10th–11th century. These cattle remains only represented some skeletal elements (**Table 15.16**). Teeth, a cranial fragment, vertebrae, scapula, humerus, carpal bone, fragments of metacarpal bone, pelvis, femur, talus, and phalanges I and II were identified during the archaeozoological analysis. The collection of sheep/goat remains was somewhat more anatomically abundant. Cranial fragments, a tooth, vertebrae, costae, fragments of the scapula, humerus, radius, metacarpus, pelvis, femur, tibia, talus, calcaneus, and phalanges I and II were reported (Table 15.16).

Due to the low frequency, only a numerical summary of remains from each category of technological division was made (Table 15.16).

	Bovine animals (cattle)	Sheep/goat
	N	*N*
H	9	2
T	1	12
PPAL	2	5
DPAL	4	1
PPPL	6	6
DPPL	2	3
PH	2	3

Table 15.16. Technological distribution of cattle carcasses and carcasses of ovicaprids from 1/SH (prepared by Marta Osypińska).

Anatomical distribution – Trench 2/SH

The anatomical distribution of cattle remains of small ruminants from Trench 2/SH was also incomplete. The cattle skeleton was represented by fragments of teeth, mandible, vertebrae, costae, scapula, humerus, radius, carpal and metacarpal bones, one femur, tibia and phalanx. Small ruminants were represented only by a single tooth.

In terms of carcass division, the most frequent skeletal fragments included Head (7 pieces) and Thorax (seven pieces) (**Table 15.17**). In addition, six fragments came from the proximal part of the thoracic limb, four fragments came from the distal part of the thoracic limb and two fragments came from the proximal part of the pelvic limb. There was also one phalanx (Table 15.17).

	N
H	8
T	7
PPAL	6
DPAL	4
PPPL	2
DPPL	0
PH	1

Table 15.17. Anatomical distribution in terms of technological division of the cattle carcass – 2/SH (prepared by Marta Osypińska).

Bone	**8th c.**
	N
Cranium	4
Proc. cornuales	
Dentes (teeth)	6
Maxilla	
Mandibula	2
Vertebrae	7
Os sacrum	
Costae	7
Sternum	
Scapula	6
Humerus	8
Radius	2
Ulna	
O. carpi	1
O. metacarpalia III + IV	5
Pelvis	2
Femur	6
Fibula	
Patella	
Tibia	6
Fibula	
O. tarsi	
Talus	4
Calcaneus	
O. metatarsalia III + IV	2
Ph proximalis	3
Ph media	3
Ph distalis	

Table 15.18. Chronological distribution of anatomical remains of cattle from 1/GN (prepared by Marta Osypińska).

Anatomical distribution – Trench 1/GN

The cattle remains in Trench1/GN generally came from the 8th century layers of soil. The majority of cattle bone elements were found in this collection (**Table 15.18**), but analysis did not identify fragments of pedicles, maxilla, sacrum, sternum, ulna, small tarsal bones, and phalanx III (**Table 15.18**).

Small ruminant remains came from different parts of the skeleton. These included teeth, mandibular fragments, vertebrae, costae, radius bone, metacarpal bone, pelvic bone, femur, tibia, talus, calcaneus, metatarsal bone and phalanges I and II (**Table 15.19**).

Anatomical distribution – 2/GN

In Trench 2/GN, animal remains were discovered in layers of soil dated to three settlement phases (9th–11th century; 11th century; >12th century) and in topsoil layers. Due to the corresponding frequency, analysis of the anatomical distributions was only conducted for cattle and sheep/goats.

Only a few cattle remains were discovered in contexts dating to the 9th–10th century. These included fragments of vertebrae, radius bone, carpal bone, metacarpal bone and a phalange I. Only a small amount of skeletal cattle elements were reported in the 11th century osteological material. These included fragments of teeth, mandible, vertebrae, humerus, radius, carpal, metacarpal and femur bones. The collection of cattle bones from the earliest phase, dating to the 12th century and later, was the richest and most diverse. Almost the complete range of the cattle bones was reported here. Deficiencies mainly concerned small elements of the skeleton, such as the patella, fibula or phalange III, or elements which are rarely preserved, such as the sternum (**Table 15.20**).

Several cattle bones, including mainly teeth, one vertebra, fragments of humerus, carpal and metacarpal

Bone	Phase 5
	N
Cranium	
Proc. cornuales	
Dentes (teeth)	11
Maxilla	
Mandibula	4
Vertebrae	6
Os sacrum	
Costae	11
Sternum	
Scapula	
Humerus	
Radius	2
Ulna	
O. carpi	
O. metacarpalia III + IV	2
Pelvis	2
Femur	1
Fibula	
Patella	
Tibia	4
Fibula	
O. tarsi	
Talus	2
Calcaneus	1
O. metatarsalia III + IV	1
Ph proximalis	1
Ph media	
Ph distalis	

Table 15.19. Chronological distribution of anatomical remains of sheep and goat from 1/GN (prepared by Marta Osypińska).

Bone	9th–10th c.	11th c.	>12th c.	Top soil
	N	*N*	*N*	*N*
Cranium			20	
Proc. Cornuales			4	
Dentes (teeth)		3	77	11
Maxilla				
Mandibula		4	6	
Vertebrae	2	1	50	1
Os sacrum				
Costae			17	
Sternum				
Scapula			15	
Humerus		1	29	1
Radius	1	1	13	
Ulna			3	
O. carpi	3	1	13	1
O. metacarpalia III + IV	1	2	19	2
Pelvis			9	
Femur		2	25	
Patella				
Tibia			17	
Fibula				
O. tarsi			5	1
Talus			8	
Calcaneus			5	
O. metatarsalia III + IV			16	
Ph proximalis	1	1	23	2
Ph media			4	
Ph distalis				

Table 15.20. Chronological distribution of anatomical remains of cattle from 2/GN (prepared by Marta Osypińska).

bones, as well as tarsal bone and phalange I, were found in the topso**il (Table 15.20).**

Due to the corresponding frequency, a full analysis of the anatomical distribution in terms of technological division was conducted only for materials dating to the 12th century (Table 15.20). The collection was dominated by Head remains (29.6%), as well as the Thorax (16.4%). Comparison with reference data showed that the highest surplus of remains was in the proximal parts of the limbs (thoracic 10.8%; pelvic 10.5%).

	9th–10th c.	11th c.	>12th c.			Top soil	Model skeleton
	N	*N*	*N*	*%*	#	*N*	
H	0	7	112	29.6	9.6	11	20
T	2	1	62	16.4	-26.6	1	43
PPAL	1	2	60	15.8	10.8	1	5
DPAL	4	3	32	8.4	0.4	3	8
PPPL	0	2	51	13.5	10.5	0	3
DPPL	0	0	34	9.0	2.0	1	7
PH	1	1	27	7.1	-6.9	2	14

Table 15.21. Technological division of 2/GN cattle carcasses (prepared by Marta Osypińska).

BONE	9th–10th c.	11th c.	>12th c.	Top soil
	N	*N*	*N*	*N*
Cranium		1	13	
Proc. Cornuales		1	1	
Dentes (teeth)			23	
Maxilla			3	
Mandibula			14	
Vertebrae	5		33	
Os sacrum				
Costae			26	
Sternum				
Scapula		1	13	
Humerus		1	5	
Radius		1	8	1
Ulna				
O. carpi			1	
O. metacarpalia III + IV			4	
Pelvis			8	
Femur		2	9	
Patella				1
Tibia			8	1
Fibula				
O. tarsi				
Talus			3	2
Calcaneus				
O. metatarsalia III+IV			2	
Ph proximalis				
Ph media				
Ph distalis				

Table 15.22. Chronological distribution of anatomical remains of sheep and goat from 2/GN (prepared by Marta Osypińska).

There was also a relatively large surplus for the Head (9.6%). The biggest deficiency was in the group of bones from the Thorax (-26.6%) (**Table 15.21**).

In the oldest collection of remains, dating to the 9th–10th century, only five fragments of sheep and goat vertebrae were discovered. The collection dating to the 11th century was also very sparse. Single elements of cranium, pedicle, scapula, humerus, radius, and two fragments of femur were identified here. In contrast, the remains of a sheep and a goat from the 12th century soil layers were numerous and anatomically diverse. A large amount of small skeletal elements were not noted, as well as those that are rarely preserved in archaeozoological material, such as the sternum.

Very few ovicaprid remains were discovered in the topsoil (**Table 15.23**), includinga fragment of radius bone, patella, tibia and two fragments of talus.

A full analysis of the anatomical division of sheep/goat remains in technological terms was only possible for the latest remains – the 12th century. The highest frequency was reported in the Thorax group (36.6%). The percentage of Head elements was also high (25.4%). Comparison with ruminant skeletal reference data showed that the greatest surplus of remains was in two groups: the proximal parts of the thoracic and pelvic limbs (11.1% and 12.5%). Deficiencies included the remains of the Thorax, distal parts of the limbs and phalange bones (Table 15.23).

15.3.3. *Age of the animals at Soba*

The remains of juvenile animals represented a relatively low proportion in the osteological materials from Soba. A percentage of sub-adult ruminant remains in the range of 5–8% is considered typical for archaeozoological materials. In the group of cattle remains from Soba, in general, the percentage of young animal bones was 4.18%. Apart from a single fragment, all the others were obtained from individuals killed at sub-adult age, i.e., around 2–4 years. The most abundant collection of remains of sub-adult cattle was found in two contexts: Trench 1/CW, material dated to 9th–11th century, and Trench 2/GN, phase 6 (**Table 15.24**).

	9th–10th c.	11th c.	>12th c.			Top soil	Model skeleton
	N	*N*	*N*	*%*	#	*N*	
H	0	2	41	25.4	5.4	0	20
T	5	0	59	36.6	-6.4	0	43
PPAL	0	3	26	16.1	11.1	1	5
DPAL	0	0	5	3.1	-4.9	0	8
PPPL	0	2	25	15.5	12.5	2	3
DPPL	0	0	5	3.1	-3.9	2	7
PH	0	0	0	–	-14	0	14

Table 15.23. Technological division of 2/GN sheep and goat carcasses (prepared by Marta Osypińska).

15.3.4. *Livestock morphology at Soba*

Despite the poor state of preservation of the Soba remains, it was possible to conduct an osteometric study based on typical archaeozoological standards (Driesch 1976). With regards to the cattle remains, several hundred metric data samples were extracted from various skeletal elements. However, no bone was preserved that would allow us to calculate the height at the withers of cattle or sheep/goats. The scoring, however, proved to be extremely useful in this situation and made it possible to assess a morphological picture of herds farmed at Soba. The osteometric data of cattle from Soba, transposed onto scoring scales, ranged from 0 to 64 points (**Figure 15.2**). The highest frequency of points was between 15 and 39, culminating at a value of 20–24 (19%). The resulting graph was close to normal (Lasota-Moskalewska 2008). It testified to well-stabilised breeding, with an absence of the use of breeding procedures aimed, for example, at selecting individuals of a certain size. The Soba cattle population presents itself as well-bred, homogeneous and without the influence of cattle with different morphotypes. Concentration of points in the range of up to 30 is indicative of the breeding of low- and middle-aged cattle at Soba. Based on the data for the NE African population, it can be estimated that the height at withers

	Context	Young	Sub-adult	
		N	*N*	
Cattle	OS1; 7th–10th c.		1	
	OS1; 10th c.		4	
	OS1; >11th c.		1	
	OS1; >11th c.	1	3	
	OS2; 11th c.		1	
	CS1/200		6	
	CS1/221		2	
	CS1; 8th c.		1	
	CS1; 8th c.		1	
	CW1/19		3	
	CW1; 9th–11th c.		18	
	CW1/205		1	
	CW1/243		1	
	SH1; 10th/11th c.		1	
	SH1; 10th c.		2	
	GN1; TS		2	
	GN2; ph 6		14	
	GN2; ph 7		2	
Total		**1**	**64**	**4.18%**

Table 15.24. Age of animals – cattle (prepared by Marta Osypińska).

	Context	Young	Sub-adult	
Sheep/goat	OS1; 10th c.		1	
	OS1; 11th c.		1	
	Cs1/200		1	
	Cw1/195		1	
	CW1; 9th–11th c.		1	
	CW1/243		3	
	CW1; 9th–11th c.		7	
	SH1; 10th/11th c.		3	
	GN1; ph 5		1	
	GN2; ph 6		1	
	GN2; ph 7		1	
Total		**0**	**21**	**2.12%**

Table 15.25. Age of animals – sheep and goat (prepared by Marta Osypińska).

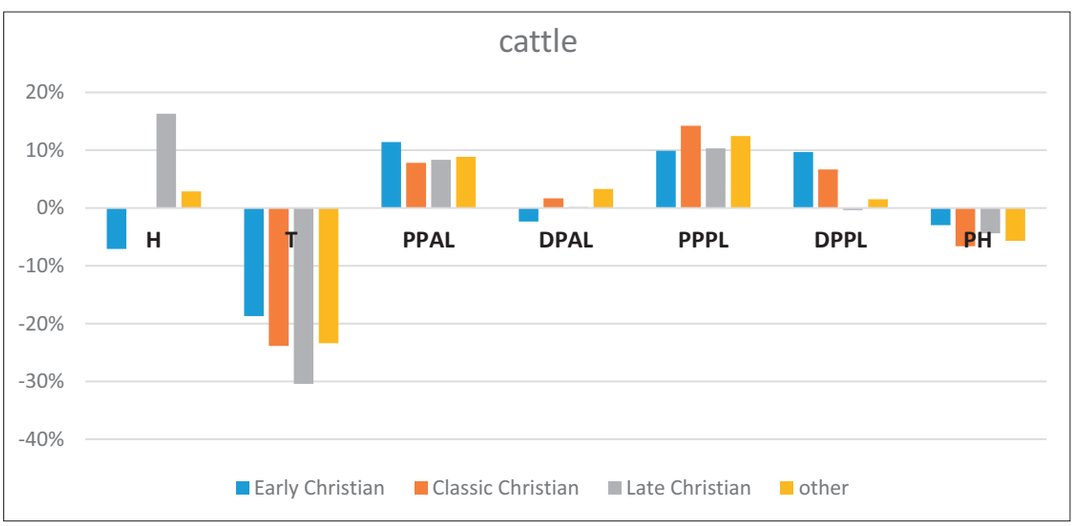

Figure 15.2. Chronological distribution of anatomical remains of cattle in terms of the technological division of the carcass (prepared by Marta Osypińska).

of this type of cattle did not exceed 120–125cm. It is noteworthy that the prevalence of the cattle pedicles in the osteological collections was very low. This observation may provide a rationale for the hypothesis that a significant proportion of the cattle population was hornless. The analysis of the osteometric data in the perspective of the chronological division showed no change in the image of the cattle population between the 8th and >11th century.

Only six measurements of small ruminant bones were obtained. This is too small a number to make a reliable analysis. Attention is drawn, as in the case of cattle, to the low prevalence of sheep and goat pedicles in the materials from Soba. Similarly, this may indicate a significant proportion of hornless individuals in the population.

15.3.5. *Traces on bones – taphonomy*

The poor state of preservation of the animal remains was also reflected in the ability to record the traces preserved on the bones, mainly using traces from the biostratonomic stage. The surface of the remains was eroded. Most of the preserved traces from the consumer processing stage were traces left by open fire. Evidence of burning or charring of the bones were the main vestiges reported. These generally concerned cattle bones, although several were also reported on sheep and goat bones. In addition to the fire damage, an oyster shell with blunted edges (used as a spoon?), and chop marks on a bovine cranial fragment were also found.

15.4. Livestock society – summary

With osteological material of definite and varied chronology available, an attempt was made to assess the possible dynamics and direction of change in livestock farming patterns and animal use in medieval Soba (**Table 15.26**). The osteological collections from Soba were divided into four collections: Early Phase (6th–8th century), Middle Phase (9th–11th century), Late Phase (>11th century) and Without Chronology.

Two of the osteological collections from Soba were fully datable to the oldest period. These included remains from three area: Trenches OS, 1/GN and 1/CS (Table 15.26). The groups differed significantly from each other. The remains from 1/OS are the only collection from Soba where bones of small ruminants predominated (52.7%). Another characteristic feature of this area was the highest percentage of non-ruminant livestock remains reported in this study and the highest

Chronology	Context	NISP	Cattle	Sheep/goat	Other livestock	Wild animals
		N	%	%	%	%
EARLY PHASE 6th–8th c.						
	OS1	93	34.4	52.7	4.3	8.6
	CS1	426	68.2	29.5	1.8	1.5
	GN1	146	50.7	32.8	9.5	6.8
TOTAL – EPH		**665**	**59.5**	**33.5**	**3.9**	**3.0**
MIDDLE PHASE 9th–11th c.						
	OS1	101	52.4	46.6	1.0	-
	CW1	917	53.2	43.3	2.6	0.9
	SH1	58	44.8	55.2	-	-
	GN2	38	63.1	31.5	5.2	-
TOTAL – MPH		**1114**	**53.0**	**43.8**	**2.4**	**0.7**
LATE PHASE >11th c.						
	OS1	241	56.0	40.0	4.0	-
	GN2	574	65.8	30.6	2.8	0.7
TOTAL – LPH		**815**	**62.9**	**33.3**	**3.2**	**0,5**
WITHOUT CHRONOLOGY						
	SH2	30	(93.3)	(3.3)	(3.3)	(3.3)
	GN1/top soil	57	(54.4)	(24.5)	(5.3)	(15.8)
	GN2/top soil	24	19	5	0	0
TOTAL WITHOUT CHRONOLOGY		**111**				

Table 15.26. Compilation of taxonomic data from different archaeological contexts (prepared by Marta Osypińska).

percentage of wild animal remains (8.6%). However, the collection of remains from 1/OS is relatively small (NISP=93) and therefore not statistically representative.

Much more statistically reliable seems to be the second early Christian osteological collection from Soba: 1/CS. It was characterised by a clear dominance of cattle remains (68.2%) over the other taxonomic groups. The percentage of small ruminant bones was among the lowest (29.5%). The percentage of remains of other livestock and wild animals was also minimal. Trench 1/GN was also dominated by cattle remains (50.7%), although there were slightly less of these than in 1/CS. The percentage of small ruminant bones was similar to their percentage in 1/CS at 32.8%. In contrast, the 1/GN collection had the highest percentage of other livestock remains in Soba, at 9.5% (Table 15.26). The percentage of wild animal remains was also relatively high (6.8%).

The total analysed faunal collection from Soba dating to the Early Period (NISP=655) was characterised by a clear dominance of cattle (59.5%) and a low percentage of sheep/goat (33.5%). Remains from other livestock or from wild animals represented relatively low percentages oscillating around three per cent in both cases (Table 15.26).

The most numerous collection of animal remains from Soba (NISP=1,114) came from the phase identified here as Classical Christian. Materials dated in this way were discovered in the following areas: Trenches 1/OS, 1/CW, 1/SH, and 2/GH. In three of the collections (1/OS, 1/CW, and 2/GN) we can observe a predominance of cattle remains, while in 1/SH there is a slight predominance of sheep/goat remains. However, it should be noted that the collections from 1/SH and 2/GN are not fully representative due to their low numbers. A key feature of the material dated to this phase appears to be the negligible percentage of remains of other livestock and wild animals. In some sites, they were not reported at all (Table 15.26).

In terms of the overall collections defined chronologically as Classical Christian, we observe the predominance of cattle remains (53%) over sheep and goat remains (43.8%). This difference is, however, smaller than in the early period. The percentage of remains of other livestock (2.4%) is lower than in the older material, while the remains of free-living animals are reported here at an almost negligible level (0.7%) (Table 15.26).

A fairly numerous (NISP=815) collection of remains came from a period conventionally described as Late Christian (>11th century). Collections from two trenches were analysed here: 1/OS and 2/GN. Both groups were statistically reliable, although different in the proportion of remains reported. In both groups, cattle remains were clearly dominant, although in 1/OS their predominance over small ruminant bones was lower (56%) and at 2/GN clearly higher (65.8%). At 1/OS, the percentage of ovicaprids was 40% while in2/GN it was 30.6%. The percentage of other livestock remainsalso varied. In the late materials, wild animal skeletal elements were found at a negligible level or were not reported at all (Table 15.26).

The earliest collection was characterised by the most pronounced dominance of cattle remains (62.9%) over sheep/goat bones (33.3%). In contrast, the percentage of bones of other domesticated species was low at 3.2%. The percentage of wild animal remains was the lowest of all the phases analysed – just half a percent.

For information purposes, taxonomic data of materials without absolute chronology were also collated, of which there were 111 fragments (Table 15.26).

A comparative analysis of the anatomical data of the cattle remains from Soba indicated a very homogeneous and chronologically consistent pattern of beef carcass division. The only noticeable differences are in the head remains, ranging from a deficiency in the early period, through a balance in the 'classic' period to a surplus in the period after the 11th century (Figure 15.2). It is therefore possible to suggest the hypothesis that the eating of beefhead meat became more widespread over time. In contrast, consistently, bones from the Thorax, i.e., vertebrae and costae, are reported as being in a deficiency in all periods. It is possible that the meat was filleted in the early stages of carcass splitting from this area (fillet), and the vertebrae and costae discarded outside the study area. This is, in fact, a feature typical of the entire Nubian population (Osypińska 2018). The parts of the beef carcass with the largest meat occupancy volume – the proximal parts of the limbs, i.e., the 'shoulders' and 'legs' – were moderately subdivided. Interestingly – in the case of the beef carcass, surplus (small or slightly larger) bones from the distal segment of the pelvic limb – which is theoretically unattractive in terms of consumption – are also reported (**Figure 15.3**). As with the remains from the Thorax, the use of elements from these parts of the beef carcass in cooking is characteristic of the entirety of medieval Nubia.

The carcass division of small ruminants was essentially similar to the exploitation of the beef carcass. The main difference was that bones were more finely

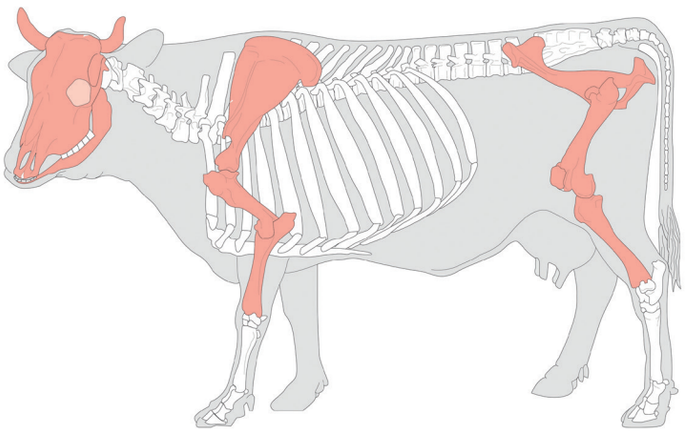

Figure 15.3. Carcass elements of cattle with the highest frequency in Soba (highlighted in colour) (prepared by Marta Osypińska).

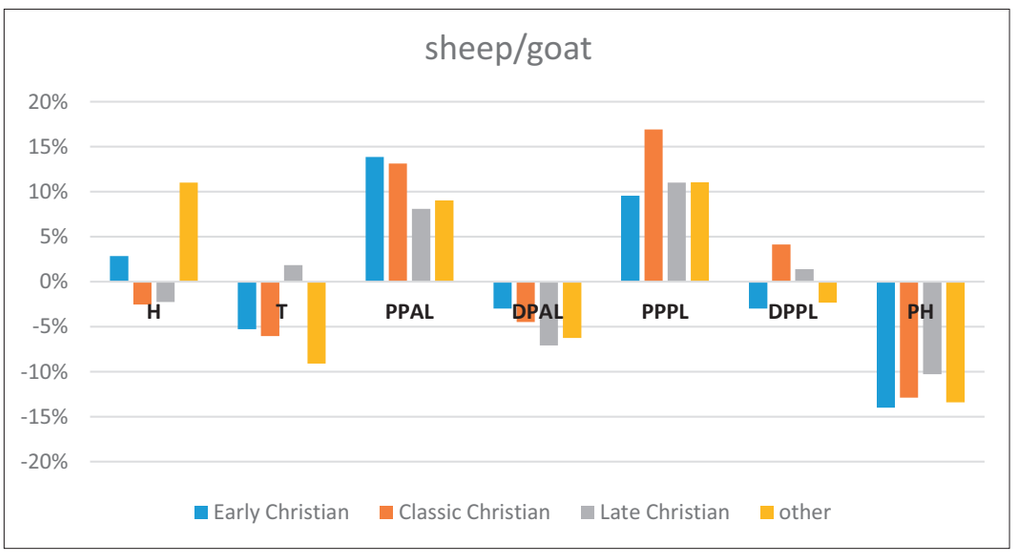

Figure 15.4. Chronological distribution of anatomical remains of sheep/goat in terms of the technological division of the carcass (prepared by Marta Osypińska).

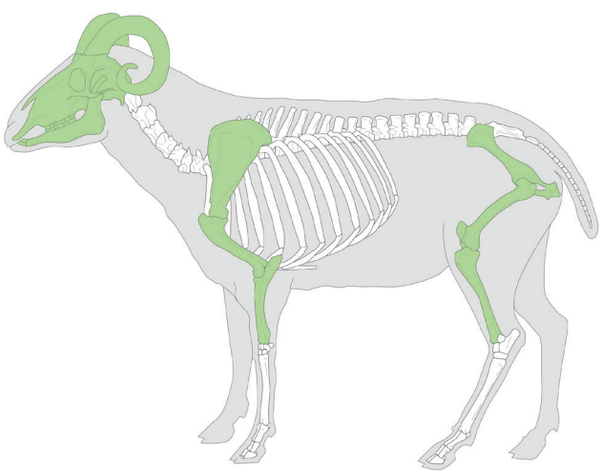

Figure 15.5. Carcass elements of ovicaprids with the highest frequency in Soba (highlighted in colour) (prepared by Marta Osypińska).

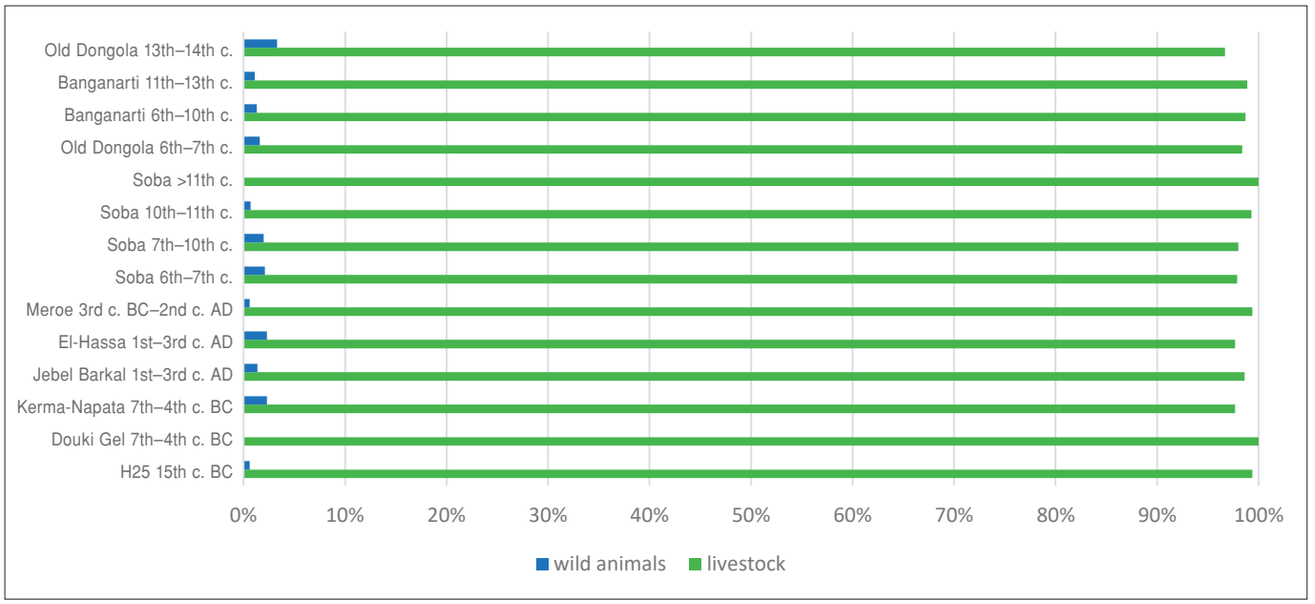

Figure 15.6. Comparision of the proportions of domesticated and wild animal remains from different Nubian centres – Antiquity and Middle Ages (prepared by Marta Osypińska).

divided, with the largest meat occupancy volume. It is possible that fragmented bones with sheep or goat meat were used to enrich sauces or soups.

15.5. A model for animal exploitation at Soba compared to other centres in Nubia

Since the end of prehistory and the spread of animal husbandry in the Middle Nile Valley, hunting, but also fishing, has drastically declined in importance. In some centres, virtually no remains of free-living fauna are found in archaeozoological collections. However, when comparing the faunal material from Soba with that from other medieval centres, certain differences can be observed. The first difference involves the taxonomic diversity of the wildlife present. Despite the negligible percentage of wild animal remains in the total osteological material from Soba, both the data from earlier studies (Chaix 1998) and the current study indicate the presence of the remains of several wild animal species. Bones of vertebrates – mammals, birds, reptiles, and fish – as well as invertebrates were reported. The bone material from Makuria, on the other hand, is much poorer in this respect. Usually, the remains of only a single wild animal species were reported there. The frequency of wild animal remains in Soba is higher than in Makuria. The percentage can be compared to those reported at the Kushite sites (Kerma, Napata, 7th–4th century BC), or to some Meroitic sites (1st–3rd century AD) such as El-Hassa (**Figure 15.6**).

In the context of these observations, it is possible to hypothesise that the environment in which Soba was located, and therefore the availability of game, explains the percentage of hunting in the economy. This reasoning may explain both the higher species diversity and the slightly higher percentage of wild animal remains in the osteological material in Soba than in Makuria, which is located much further north. While indicating the dominant role of ruminant husbandry in Soba, it is evident that the environment in which the capital of Alwa was located was a sahel and savannah area, abundant in pasture for both wild and domesticated fauna (**Figure 15.7**). These were areas inhabited by diverse animal species. Makuria was in contrast located in



Figure 15.7. Cattle grazing on a stubble, the region of the so-called Gezira, contemporary Soba area (prepared by Marta Osypińska).

semi-desert and desert areas, whereas wildlife mainly inhabited the green zone in the Nile valley.

It seems that environmental conditions are only one a factor, perhaps a secondary one, in the pattern of environmental exploration by Nubian communities in antiquity and the Middle Ages. This is supported by the generally very low percentage of wild animal remains in all the material, including at sites located in environmental zones close to Soba such as Meroe, while on the other hand, in late medieval Dongola and especially in the Funji period, we see an increase in the importance of hunting and fishing in the economy. It seems that cultural and social conditions were just as important as environmental factors, as well as perhaps economic factors. These include the status of the population, access to and skill with weapons, the need for animal raw materials derived from wild animals (ivory, skins), and specialisation or tradition. Obviously, traces of, for example, wild-animal trapping are not preserved in osteological collections. Evidence of the export of live animals like antelope species, giraffes, and wild cats from Nubia is however provided by ancient written sources. Nevertheless, there seems to have been no general demand in Nubia to supplement the diet with wild animal meat and fish. The supply of livestock meat appears to have fully met the demand of communities living on the Middle Nile in both antiquity and the Middle Ages. It is likely that the scarce remains of wild animals, such as antelopes and gazelles, are the result of the hunting activities of elites who regarded hunting as a form of entertainment. Hunting is also often a form of weapons training, which in turn predisposes certain groups such as military men who have both the skills and access to weapons for such activities.

We can conclude that Soba, in terms of the contribution of wild animals to the economy, stands out from other known centres in medieval Nubia, both in terms of species diversity and the percentage of wild animal remains in the collections. Similarities for the patternof wild fauna exploitation can be found in earlier Kushite (Napatan and Meroitic) centres rather than in Makuria.



Figure 15.8. Cattle from the Sennar area with morphological features similar to Soba cattle (prepared by Marta Osypińska).

15.6. Animals in the economy of Soba in comparison with other Nubian Centres

To identify patterns of animal management in medieval Soba, as well as to possibly diagnose specificities in this respect in the capital of Alwa, the percentages of the most important animals from an economic point of view were collated. These were cattle, sheep/goat, and 'other domestic species'. This formula was adopted because, in terms of the species next in economic position after ruminants, there are large differences between sites in Nubia. In medieval Makuria, the third most important species in the consumption model was the pig – a species not farmed in Kushite centres, and virtually of no importance in Soba. Hence, it was decided to only generally examine the remains of other livestock species in this category: camel, donkey, horse, and pig (**Table 15.27**).

Another procedure was the selection of centres. Data from urban centres with either high political or religious status (or both combined) were selected for comparative analysis. Small provincial centres (e.g., Selib or H25) were not examined here.

In ancient Kushite centres, cattle dominated the osteological material. Particularly at sites of high religious status (temples), the dominance of cattle remains may have been total (e.g., Sonyat, the temple of Amon at Meroe – 100% cattle). Very high percentages of cattle remains are also reported in urban centres. Meroe is a case in point, where this percentage was 94%. In other Meroitic towns, the consumption model was again based on beef. To sustain such a consumption model for a population living in large urban-type centres, an economic model was needed in which the rearing of large herds of cattle for slaughter was important. To ensure an adequate supply of beef and to sustain such a consumption model, it is necessary to maintain very large herds of cattle, and thus have access to extensive pastures of good quality with permanent access to water.

Similarly, a predominance of cattle remains over other species is reported in Soba, irrespective of the phase of settlement-chronology or, of the location (mound/trench). However, this is not as high as in the Meroitic contexts. Another feature that brings the

	Cattle %	Sheep/goat %	Other domestic %
KUSH			
Meroe	94%	6%	–
El Hassa	86%	14%	–
Muweis	83%	17%	–
Jebel Barkal 1st–3rd c.	72%	27%	0.25%
Dangeil	67%	33%	–
MEDIEVAL ALWA			
Soba 6th–8th c.	59.5	33.5	3.9
Soba 9th–11th c.	53.0	43.8	2.4
Soba >11th c.	62.9	33.3	3.2
MEDIEVAL MAKURIA			
O. Dongola 6th–9th c.	37.00	48.52	14.47
O. Dongola 12th–14th c.	54.52	37.64	7.82
Banganarti 7th–9th c.	44.76	39.18	16.05
Banganarti 10th–11th c.	44.04	36.81	19.14
Banganarti 12th–14th c.	38.22	43.62	18.14

Table 15.27. Summary of percentages of the main breeding species from different centres in ancient and medieval Nubia (prepared by Marta Osypińska).

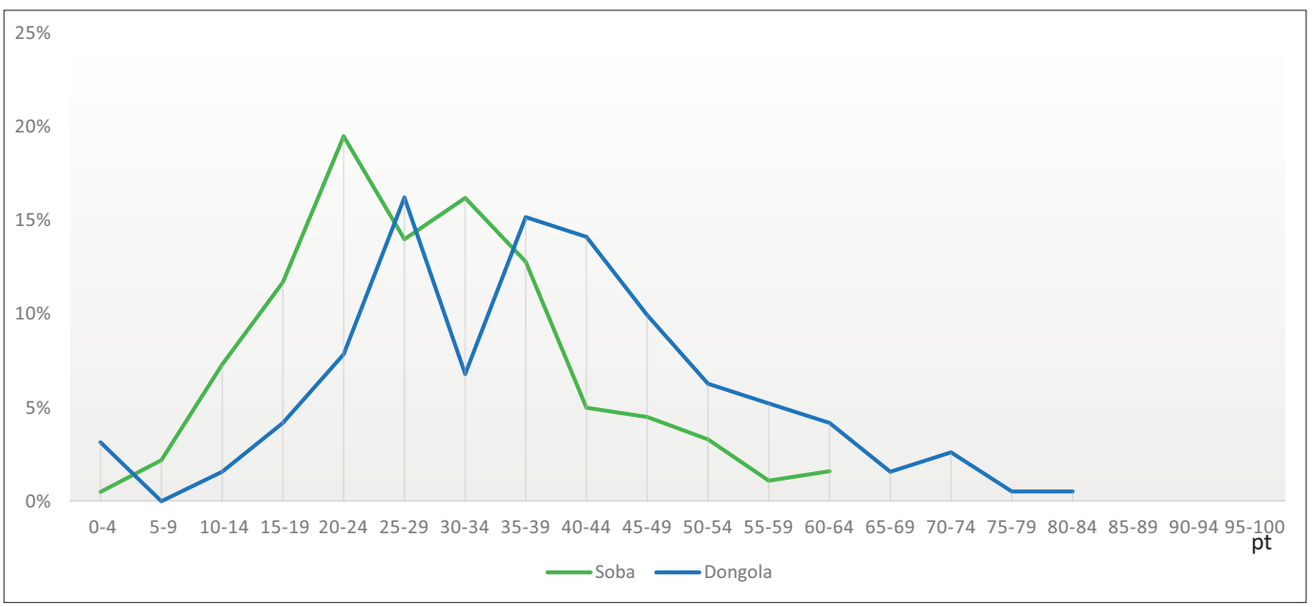

Figure 15.9. Compilation of morphological data of medieval cattle from Soba and Old Dongola (prepared by Marta Osypińska).

Soba animal management model closer to the Kushite one is the absence of the domestic pig. Apart from a few bones of juveniles, this species is entirely absent. In contrast, in the chronologically equivalent Makurian centres, the proportions between the main species, cattle and small ruminants, are more diverse in both chronological and topographical perspectives. It is worth noting at this point, however, that the Soba pig remains are currently the southernmost documented record of the presence of these animals in sub-Saharan NE Africa.

However, small ruminants played a primary role in post-consumption materials in the Early Christian Period in Dongola and the Late Christian period in Banganarti. The prevalence of cattle over sheep and goat in Banganarti in the Early and Classic periods is, in contrast,

Bovine animals (cattle)	Sheep/goat	Other dom.
[1] 25%–47%	[1] 5%–27%	[1] 0%–5%
[2] 48%–70%	[2] 28%–51%	[2] 6%–11%
[3] 71%–94%	[3] 52%–75%	[3] 12%–19%

	Cattle %	Sheep/goat %	Other domestic %	NISP
KUSH				
Dangeil	2	2	1	
Muweis	3	1	1	
El Hassa	3	1	1	
Meroe	3	1	1	
Jebel Barkal 1st–3rd c.	3	1	1	794
MEDIEVAL ALWA				
Soba 6th–8th c.	2	2	1	509
Soba 9th–11th c.	2	2	1	1068
Soba >11th c.	2	2	1	241
MEDIEVAL MAKURIA				
O. Dongola 6th–9th c.	1	2	3	4940
O. Dongola 12th–14th c.	2	2	2	2595
Banganarti 7th–9th c.	1	2	3	1881
Banganarti 10th–11th c.	1	2	3	5688
Banganarti 12th–14th c.	1	2	3	4133

Table 15.28. Compilation of data from ancient and medieval Nubian centres using scoring (prepared by Marta Osypińska).

low. The only material showing similar proportions between species as reported in Soba is a collection from Old Dongola dating to the Late Makurian period.

A comparative analysis was conducted using a numerical cypher to objectivise the data on the animal management model. From the dozens of possible models, three main models emerged for the Nubian materials (**Table 15.28**). The first one, 3-1-1, was reported only for the Meroitic centres. It indicated a very high percentage of cattle and a low percentage of other livestock. Only the faunal material from Dangeil deviates from this model, but it is similar to the pattern reported in the medieval material: 2-2-1/2. It reflected a moderate proportion of cattle remains and small ruminants and a small to moderate proportion of other species. This is a model typical of Soba, where it is reported regardless of chronological variation. The only material from Makuria that corresponds to this are the remains from the Citadel of Dongola dating to the Late Christian period. Other collections from Makuria are dominated by the 1-2-3 model, i.e., characterised by a low percentage of cattle, a medium percentage of small ruminants and a high percentage of remains of other livestock, in this case, the pig, compared to Nubian data.

To trace the pattern of animal management even more precisely, an analysis of material only dating to the Christian Middle Ages in Nubia was conducted. Again, three patterns emerged here, corresponding to different models of animal management. However, one was found exclusively in Soba and another exclusively in Makuria (**Table 15.29**). The first one, 3-1-1, indicated the high dominance of cattle, the low importance of sheep/goats and the small role of other domesticated species. However, collections from Soba dating to the 9th–11th centuries also outlined a model similar to the one reported in late Makurian Dongola – 2-1/3-1/2, although mainly in terms of the importance of cattle. In both collections, it was medium (compared to other medieval collections from Nubia). In Soba, however, in the same model the role of small ruminants was high, while in Dongola it was low. On the other hand, the importance of other domestic species in Soba is low and in Dongola medium. The third model, 1-1/2/3-3, was noted only in the Makurian centres of Dongola and Banganarti. It pointed to the low proportions of cattle remains, the varied role of sheep and goats and the consistently high importance of the other species, in this case, the pig.

	Cattle %	Sheep/goat %	Other domestic %	NISP
Soba 6th–8th c.	3	1	1	665
Soba 9th–11th c.	2	3	1	1114
Soba >11th c.	3	1	1	815
O. Dongola 6th–9th c.	1	3	3	4940
O. Dongola 12th–14th c.	2	1	2	2595
Banganarti 7th–9th c.	1	2	3	1881
Banganarti 10th–11th c.	1	1	3	5688
Banganarti 12th–14th c.	1	3	3	4133

Cattle	[1] 37%–45%	[2] 46%–54%	[3] 55%–64%
Sheep/goat	[1] 33%–38%	[2] 39%–43%	[3] 44%–49%
Other domestic	[1] 2%–7%	[2] 8%–14%	[3] 15%–21%

Table 15.29. Compilation of data from medieval Nubian centres using scoring (prepared by Marta Osypińska).

15.7. Morphological features of Soba livestock compared to data from Nubia

An analysis of morphological features of cattle from Soba compared to cattle from other regions of Nubia was conducted. This choice was made because the osteometric data of cattle are the most abundant; there are no problems associated with unambiguous species identification (as in sheep and goats); and because cattle were the most economically important species in the capital of Alwa.

To objectify the data, the measurements were transposed onto appropriate scoring scales created for cattle from NE Africa. Bone measurements of cattle from Old Dongola (Christian period, 12th–14th century), Gebel Barkal (Meroitic period, 1st–3rd century) and Site H25 (Northern Dongola Reach, period of the Egyptian occupation 15th century BC) were selected for analysis, due to availability and sufficiently large quantity.

A comparison of osteometric data from the capital cities of the two Christian states, Soba and Old Dongola, was conducted first. The comparative analysis shows noticeable differences between the cattle populations from these two metropolises. The first observation – a non-metric one – concerns the range of horns and horn forms. In the materials from Soba, very few fragments of pedicles have been found. Given the presence of all other skeletal elements, it is possible to hypothesise that the absences were not the result of carcass distribution, such as carcass dissection in other sites. It appears that a large proportion of the population may have been hornless. All reported fragments were from short-horned individuals.

In the materials from Dongola, the percentage of not only pedicles but also horn sheaths was a major component of the anatomical distribution of the cattle. The horns were very diverse: short, typical of the taurine cattle, but also massive, long, crescent-shaped or lyrate. Such horns are found in populations of native African cattle.

In addition, the osteometric data transposed to scoring scales shows morphological differences between Soba and Dongola cattle. The cattle from Soba are clearly smaller and very homogeneous morphologically. Converted into points, the osteometric data range from 0–4 to 60–64. A single bar graph was obtained with the highest frequency in the value of 20–24 points. This indicates that breeding was very stable, the population was crossbred anda homogeneous, and the cattle mostly represented the small-sized type.

In Dongola, the points on the graph ranged from 0–4 to 80–84. A two-vertex graph was obtained, indicating the diversity of the cattle population. The largest number of measurements corresponded to 25–29 points, and 35–44 points. The population was therefore dominated by middle-aged cattle, although individuals with a large bone size were also reported. This indicates a dynamic situation in local breeding and a percentage of animals of different morphological types in the population. It seems that in addition to local cattle, imported animals from outside the Nile Valley were also used in Dongola.

In the second stage of the morphology analysis, the data from Soba were compared with those from sites dating to ancient Kush. The first of these, H25, is a settlement located in the Northern Dongola Reach. It was dated to the 15th century BC, that is, the period of Egyptian influence. The second of the sites dates to the 1st–3rd century AD. The data comes from the most

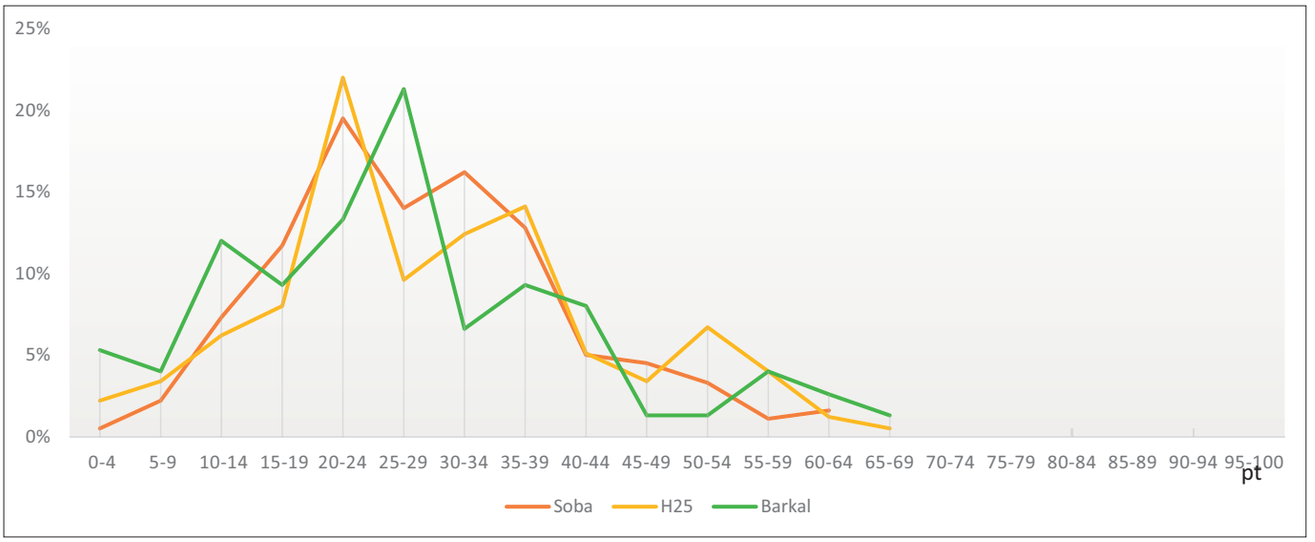

Figure 15.10. Compilation of morphological data of Soba cattle and Kushite cattle from settlement H25 and Gebel Barkal (prepared by Marta Osypińska).

important of the Kushite religious centres, Gebel Barkal. The remains were discovered in one of the smaller temples located by the Great Temple of Amun. Gebel Barkal is located in the vicinity of the Southern Dongola Reach and the Fourth Cataract.

The comparison of Soba cattle with ancient cattle yielded astonishing results. The main conclusion is that there is a very high morphological similarity between Soba cattle and the cattle prevalent in antiquity. The range of points at all three sites from 0–4 to 60–69 was almost identical (**Figure 15.10**). The cattle from Gebel Barkal were slightly different, with slightly larger sizes predominating. In contrast, the picture of morphological features of cattle from Soba and cattle from H25 seem almost identical. In both cases, osteometric data dominate with a value of 20–24 on the scoring scale, and in both cases the main point cloud ranges from 15–19 to 35–39 (Figure 15.10). At all sites, when the osteometric data were transposed onto the scoring scales, we obtained a single bar graph, close to the 'normal'. This indicates stable breeding without the importation of morphologically different individuals or selection procedures. Small-sized, fine-boned, short-horned cattle predominate (**Figure 15.11**). Their height can be estimated at 150–125cm at the withers.

Unfortunately, due to the poor state of preservation of the remains, it is difficult to say more about the morphological characteristics of other animals farmed in Soba. The essential data we have is the widespread, probable hornlessness of sheep. This is a feature



Figure 15.11a. Short-horned and hornless cattle from the Gezira area (photo Marta Osypińska).



Figure 15.11b. Short-horned and hornless cattle from the Gezira area (photo Marta Osypińska).



Figure 15.12. Hornless sheep, Sudan's Northern State (photo Marta Osypińska).



Figure 15.13. Shepherd with his dog, so-called Gezira, Sennar area (photo Marta Osypińska).

commonly found today throughout the northern part of Sudan (**Figure 15.12**).

15.8. Conclusions

Based on the conclusions of the analysis of the livestock management model, we can assess the economic model and specificity of Soba in the Middle Ages. Unfortunately, the current state of research does not allow us to assess to what extent the data from Soba is representative of the kingdom of Alwa.

The first conclusion concerns the clear difference in the livestock model identified in Soba from that found in its northern neighbour, Makuria. The Soba economy was based on the rearing of cattle and small ruminants. The high importance of beef in the diet indicates developed cattle breeding, ensuring the supply of sufficient meat. To maintain such a pattern of consumption, suitable environmental conditions are needed, specifically the availability of extensive, good-quality pasture with constant access to water. Sufficiently large herds of cattle need to be sustained to maintain herd replacement for slaughter. A cow usually gives birth to one calf a year, which from an economic point of view can only be used for slaughter after 2–3 years. Usually, the animals that are not needed for breeding – the surplus males – are used for meat. The same applies to the farming of small ruminants, although the breeding cycle is slightly shorter in these animals than in cattle.

Analyses taking into account the chronological variation of the bone material from Soba did not reveal major changes or dynamics in the faming pattern. We are unable to say to what extent the decrease in the percentage of cattle remains seen between the early and middle phases is representative, or to what extent it is the result of a relatively small sample or the sociotopographical peculiarities of the location of the archaeological trenches. If we take into account the results of Chaix's study of the materials corresponding to the early phase, then the possibility exists that the Soba farming pattern is particularly static and conservative.

An interesting feature of the faunal collections from Soba is the significant presence of dog remains, with no gnawing signs on the entire bone collection. Nevertheless, it appears that dog breeding may have played an important role in the context of the developed farming of large ruminant herds, with the need for support from herding dogs (**Figure 15.13**).

Donkeys and camels were also used in the capital of Alwa. However, it is difficult to say conclusively whether these animals played any role in consumption. The percentage of their remains was negligible, so it can be suspected that they were animals that played a role mainly in transport.

Despite the development of pig farming in medieval Makuria – a completely new species for Nubia – it seems that, at least until the late phase (after the 11th century), pig rearing was not at all widespreadin Soba. Only a few bones of young pigs have been found, which may have been imports. Socio-topographical studies from Banganarti indicate that pig rearing was most likely linked to the emergence of a cultured community in Nubia (of which diet was an element) with a link to the Greco-Roman world. It is possible that it was mainly the religious elite who specifically cultivated the presence of pork in the diet, as may be indicated by the very high percentage of pig remains reported at Banganarti, a centre of pilgrimage. The percentage of pork in the



Figure 15.14. Northern Gezira short-horn cattle (photo Marta Osypińska).

diet was at a particularly high level in the so-called eastern district, inhabited by people of high social status. Perhaps the clergy in Soba, due to the lack of pigs in the local livestock, were forced to import individuals for their own use. This type of practice is known from Egypt in the Roman period. Texts discovered both at Qasr Ibrim and in the Red Sea Mountains show that Roman legionaries stationed, for example, in Alexandria, sent piglets to their colleagues stationed in Nubia. This was a region where these animals were not farmed. For the legionaries, a lack of access to pork was a serious problem. It is therefore possible that the Soba elite with cultural ties to the Mediterranean world may have acted in the same way.

The animal use pattern identified for Soba was based almost exclusively on ruminant livestock, especially cattle. This is a pattern characteristic of all Nubia during the Kushite period – from the Kerma period to Meroe (Osypińska 2018). One factor that differentiated the osteological materials from Soba, although of marginal importance, was the taxonomic diversity of wild species and the relatively high percentage of the total number of remains identified.

Extremely interesting data was provided by the analysis of the morphology of Soba cattle. The first and fundamental thesis that emerges from the archaeozoological research indicates that, in terms of the farming model and morphological type, the cattle from Soba find far more similarities to the ancient Kush period than to the neighbouring Christian, chronologically analogous, kingdom of Makuria to the north. Data on the morphology of cattle from Soba clearly indicates that farming was extremely well established and based on a population of short-horned, small-sized taurine cattle. Interestingly, it appears almost morphologically identical to cattle reported at a site quite distant topographically and chronologically – H25. The Egyptian colonial periodis, according to researchers (Chaix 2013), a time when a very significant change in cattle farming takes place in Nubia. The native *primigenius*, long-horned cattle, are gradually displaced and replaced by taurine, short-horned cattle coming from the Middle East, through Egypt. These were better suited to backyard farming, yielded more dairy produce, were smaller in size and were therefore less demanding in terms of food. The archaic long-horned cattle, raised mainly by nomadic shepherds of sub-Saharan Africa since prehistory, were displaced further south and beyond the Nile Valley (Chaix 2013; Osypińska 2018). At Site H25, we can observe evidence of this process.

Recent biochemical (precipitates) (Osypińska 2022) studies indicate that cattle from outside the Nile Valley began to be imported into the Dongola Reach from the Napatan period onwards. There are ongoing studies that will be able to indicate where these cattle were imported from, but evidence suggests that it may have been Kordofan. This particularly increased during the medieval period, as evidenced by data from precipitates of cattle from as early as the Early Christian period at Banganarti and Old Dongola. In addition, osteometric data indicatesthe presence of animals not only larger but with distinctive horn forms – typical of native cattle – in the Makurian cattle population.

CHAPTER 16

PLANT MACRO-REMAINS FROM MEDIEVAL CONTEXTS IN SOBA. THE COMPOSITION OF MUDBRICKS AND THE TAPHONOMY OF SEEDS

Agata BEBEL-NOWAK

Compared to other parts of the world, archaeobotanical research in Nubia is at an early stage. However, this does not mean that some patterns and chronological changes cannot be identified, and there is a significant (and growing) number of sites where archaeobotanical research has been conducted or is currently in progress (Clapham 2019).

Previous archaeobotanical research was carried out in Soba by van der Veen and Lawrence (1991) and later by Cartwright (1998; 1999). Samples analysed during this research mostly contained cereals, pulses, fruits, and weed remains, which is similar to the results obtained in 2022. Van der Veen and Cartwright stated that Soba's flora from the 6th to the 13th century AD (this period also covers samples analysed in 2022) resembled today's vegetation in the region.

Present-day vegetation around the site is quite abundant due to the presence of local farms and gardens. Because of this, there is a high risk for contamination of samples with modern plants. All of the samples contained modern wild grasses that surround the trenches, and one of the samples contained uncharred seeds of *Chenopodiaceae* in addition, which also grow around the site. In the close vicinity, one can find a lot of fruit trees as well (e.g., *Ziziphus spina-christi* (L.) Willd. – Christ's thorn jujube), vegetables (e.g., *Cucumis* (L.) – cucumber) or decorative plants (e.g., *Casia spp*.), but none of their remains were found in samples analysed in 2022. This might be due to the fact that these particular plants were not popular when Soba was occupied historically, or due to the small number of analysed samples. Further research might help answer this question.

This chapter presents the results of the analysis of samples collected at the archaeological site of Soba during the 2019–2020 and 2021–2022 seasons. In general, the samples contained a typical set of Nubian plants: cereals, weeds, and fruits. As a consequence of the small number of samples, the results cannot be representative for the whole region and period in question. Further research at the site is required to acquire more comprehensive interpretations (and this is planned for future excavations).

16.1. Methods and materials

In 2022 the archaeobotanical material from Soba, recovered in the current and previous seasons, was studied. During the analysis, 13 samples from two trenches (1/GN, 2/GN and 1/SH) and three types of contexts (fill of a glass bottle, ash layers and mud-brick samples) were analysed. The samples are dated from the 7th/8th to the 11th century AD (**Table 16.1**). The

Sample ID	Date	Trench and occupational phase	Context	Volume (ml)
188	1st half of the 9th century – ?	1/GN, Phase 5	fill of the pot	1500
204	7th/8th century – 2nd half of the 8th century AD	1/GN, Phase 2	mud brick (Wall 3)	1500
206			mud brick (Wall 5)	3000
202			fill of the pilgrim bottle	100
203				5600
222	*c*. 11th c. AD	2/GN, Phase 4	mud brick (Wall 2)	500
223	9th – 10th c. AD	2/GN, Phase 2	mud brick (Wall 4)	500
224			mud brick (Wall 1)	500

Table 16.1. Samples containing plant remains analysed in 2022 (prepared by Agata Bebel-Nowak).

Sample ID	**Fill of the pots**			**Mudbrick**					**Total**
Plant ID	**188**	**202**	**203**	**204**	**206**	**222**	**223**	**224**	
Panicum milliaceum L.		21 (ch.)	2 (ch.)						23
Vitis vinifera L.			9 (ch.)						9
Linum usitatissimum L.		97 (ch.), 67 fr (ch.)	1 (ch.)						98; 67 fr
Hordeum sp. (rachis internode)			1 (ch.)						2
Cerastium cf.			2 (ch.), 6 fr (ch.)						2; 6 fr
Setaria verticillata (L.) P.Beauv.					1 (ch.)				1
Poaceae intet. (wild grasses: caryopses)						1 (unch.); 1 fr (ch.)			1
Poaceae intet. (wild grasses: culms and roots)				Present (unch.)	Present (unch.)	Present (unch.)	Present (unch.)	Present (unch.)	Present
Indet.	3 (ch.)								

Table 16.2. Results of samples analysis; ch – charred; unch. – uncharred; fr – fragment (prepared by Agata Bebel-Nowak).

volume of the samples was measured in a dry state and ranged from 75ml to 5600ml. Archaeobotanical samples were dry-sieved in 2022, using a set of two sieves (0,5mm and 1mm). Plant remains from mudbrick samples (**Table 16.1**) were recovered with the water flotation method and the same set of sieves. All samples were sorted manually in Soba using a PZO MST 130 microscope, using 1–4× magnification. The specimens were then identified in Beirut using an OPTICA microscope (7×–30× magnification). All specimens were identified based on their morphology and comparison with reference illustrations and photos (Jacomet 2006; Neef *et al*. 2012). The samples contained crops (*Cerealia* – cereals and *Linum usitatissimum* L. – flax), fruits (*Vitis vinifera* L. – grapes) and weeds (*Cerastium sp*., *Setariaverticillata* (L.) P. Beauv. – bristly foxtail). Pulses (*Fabaceae*), found by van der Veen and Lawrence (1991) and Cartwright (1998), were absent in samples examined in 2022. Five samples (two samples from ashy layers, one sample from the fill of a pot and two mudbrick samples) turned out to be empty. Charcoal and wood samples were stored for further analysis (see Chapter 17).

16.2. Results and discussion

In most cases specimens were well preserved, and the majority were carbonised. Uncharred remains are considered to represent modern contamination (except from mudbrick samples). In the case of the mudbrick samples, one can assume that uncharred specimens are contemporary to the mudbrick itself; however, the amount of uncharred material found in the bricks is too scarce to consider this as intentional organic temper. Uncharred remains recovered from the mudbrick samples are currently undetermined (with a morphology of culms and roots and a seed found that only identified the family as *Poaceae*). **Table 16.2** presents the results of the sample analysis.

Mudbrick samples exclusively contained undetermined *Poaceae* remains. In this instance, it is safe to assume that the culm remains are remains of wild grasses from silt used for mudbrick production. These roots can not be modern (growing through medieval bricks), as it is impossible for modern, desiccated culms and seeds to be incorporated into already existing mudbricks. As such they are considered to be contemporary to the mudbrick's production process.

The charts (**Figures 16.1** and **16.2**) do not include roots and culm fragments recovered from mudbrick samples as these were too tangled to be counted. Across the charts, one fragment is counted as 0.5 of a whole specimen. The charts are based on a total count of fragments and complete specimens. Chart 1 (**Figure 16.1**) shows the relative proportions of all taxa from samples analysed in 2022. Chart 2 (**Figure 16.2**) presents the relative proportions of crops, fruits and weeds found at Soba. Due to the number of flax seeds, crops are the most numerous group. In future, when more material has been analysed, that trend might change.

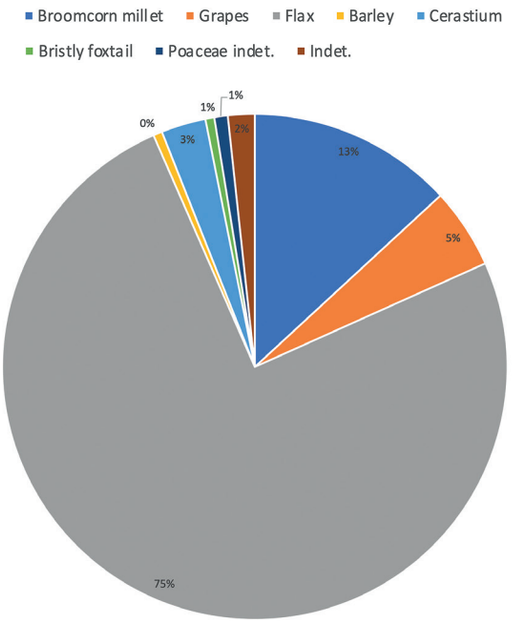

Figure 16.1. Relative proportions of taxa analysed in 2022 (prepared by Agata Bebel-Nowak).

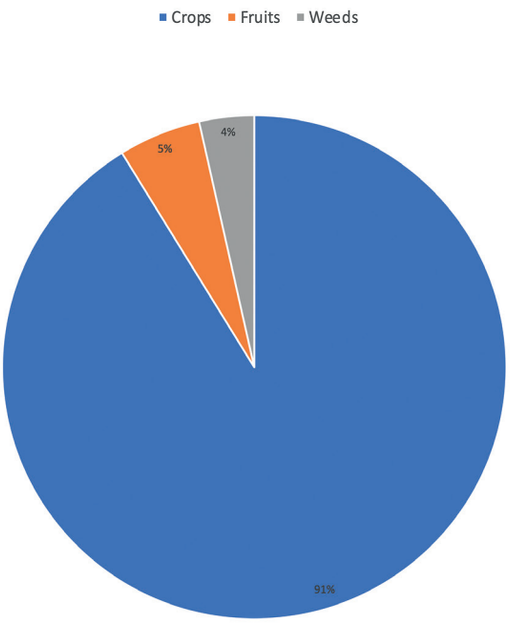

Figure 16.2. Relative proportions of crops, fruits, and weeds (prepared by Agata Bebel-Nowak).

Flax seeds were not found in Soba previously, but linen textiles have been identified here before (Vogelsang-Eastwood 1991). Flax was introduced to Nubia in the Neolithic period, and was cultivated as a fibre crop from then onwards; it was very popular before the introduction of cotton (Thurman and Williams 1979; Adams 1996; Clapham and Rowley-Conwey 2007; Clapham 2019). Seeds of *Cerastium* cf. found in samples 203 and 205 were not found at Soba previously. *Cerastium* is a common weed of flax crops (Gruzdeviene and Jankauskiene 2011; Maier and Harwath 2011).

As both flax and *Cerastium* seeds were found at Soba, it may indicate that flax was cultivated locally; another explanation, less probable, is that flax was imported unprocessed, with the weed seeds present.

Following a detailed analysis of the samples and a review of earlier publications, it has become clear that grapes are a more common find at Soba than *Panicum miliaceum* L. – broomcorn millet. Broomcorn had not been found in Soba samples previously, but grape seeds were found in 2022 as well as in previous analyses (van der Veen and Lawrence 1991; Cartwright 1998; Bebel-Nowak 2022). The earliest examples of domesticated broomcorn come from South Asia (China). The earliest attested finds of domesticated broomcorn in Nubia come from Ukma (Classic Kerma Period, *c*. 1700 BC) and it was introduced (as were other summer crops) to Nubia in the Meroitic period (Webber and Fuller 2007; Beldados 2019; Clapham 2019). Because this domestic cereal was absent at that time in Egypt and Mesopotamia, it is most likely that it was introduced through the Arabian Peninsula and/or the Arabian Sea (Winchell *et al.* 2018).

A case study at Qasr Ibrim (Clapham and Rowley-Conwy 2007) has shown that occurrences of *Pennisetum glaucum* – pearl millet – are intercurrent with findings of broomcorn millet. So far, pearl millet remains were only found during previous research at Soba, and broomcorn millet only in samples analysed in 2022. This might be because samples were collected in different contexts; further analysis is required to shed more light on this issue. Analysis of more samples may show some chronological patterns of cultivation of these two crops as well – at present, it seems that Broomcorn millet was not cultivated in Soba before the 8th century AD. All broomcorn seeds found in Soba have burst, due to exposure to high temperatures.

Grapes were known in Nubia from at least the Egyptian New Kingdom Period, with examples found at Semna as temple deposits (Fuller and Edwards 2001). The grapevine was rarely cultivated in Nubia due to their high watering needs, although there are a few known inscriptions that mention grape cultivation, as well as wine making in Kawa and offering grapes in the temple in Sanam during the reign of Taharqa (7th century BC) (Macadam 1955; Pope 2013). Thanks to some innovations in irrigation (donkey powered mills and *saqia*),

grapevine cultivation became possible in the Meroitic and medieval periods. Wine presses have been found in Lower Nubia and grape wood charcoal was found in Arminna (Adams 1996; Fuller 1999; Fuller and Edwards 2001). The vine was also a popular motif in post-Meroitic art (Fuller and Lucas 2021). Wine was a popular product imported from Egypt, where it was produced since Predynastic times (Fuller and Lucas 2021).

The one barley rachis node found in Soba is not enough evidence for local cultivation of this crop. Further analysis of more material is, once again, required. Previous analysis by van der Veen and Lawrence (1991) and Cartwright (1998) suggest that barley was imported rather than grown locally in Soba.

16.3. Conclusion

Plant remains found in samples analysed in 2022 are rather typical for the region, but not for Soba. Barley, grapes and *setaria* sp. have been found in Soba previously, but broomcorn, flax and *cerastium* were recovered at the site for the very first time. The data indicates that broomcorn was most likely introduced to Soba no earlier than in the 8th century AD. Another very important piece of information gained through the analysis of these samples is that flax might have been cultivated locally. *Cerastium*, which is a flax weed, strongly suggests this. Even though the grapevine was not a popular crop in Nubia, findings of grape pips are common at Soba; but currently there is no evidence that indicates whether grapes were cultivated locally or imported.

The samples examined in 2022 represent a lower diversity than samples from previous research, due to the smaller number of collected samples and reviewed material. Further excavation in Soba may provide more diverse material for study, and consequently more detailed conclusions, which will shed some light on the archaeobotany of the region and period.

CHAPTER 17

PLANT MACRO-REMAINS FROM MEDIEVAL CONTEXTS IN SOBA. WOOD AS A SOURCE OF PALEOENVIRONMENTAL AND PALEOETHNOBOTANICAL DATA

Grzegorz SKRZYŃSKI

Remains of tree trunks and shrubs (in the form of wood and other vegetative tissues) are probably the most common and abundant macroscopic plant remains found during archaeological excavations. They carry great potential for interpretation, both in studies focused on the economies of ancient societies, and in enabling the reconstruction of past plant communities. Moreover, they provide insights into changes in past flora, induced by natural climatic fluctuations or anthropogenic factors, affecting environmental and landscape changes.

The xylological analysis of materials obtained during the study of the medieval remains of the city of Soba allowed us to obtain data to learn about some aspects of plant economies as well as to create an outline of the environmental background in which the inhabitants of the capital of the Kingdom of Alwa functioned.

17.1. Material and method

During the excavations, 68 samples were collected and submitted to taxonomic research. The remains were mostly charcoal, and rarely uncharred, dried tissues. Samples were collected from organic materials only, which, based on the stratigraphy, could be identified as contemporary with the medieval city. Intrusions such as modern roots and vegetative tissues deposited by modern-day animals were omitted.

The taxonomic determination of materials was based on the analytical results of the anatomical structure of wood, which were performed by transverse, longitudinal tangential and longitudinal radial observations. In the case of coniferous plants, observations of the characteristic structure of tracheids and elements connecting them were carried out, and the presence/absence of specific softwood structures (e.g., resin channels) was taken into account. The wood (hardwood) of deciduous plants was determined primarily based on analysis of the arrangement of vessels (conductive elements not found in gymnosperms) and their specific microstructural features, such as the structure of perforation plates between vessels. The anatomy of ray parenchyma and others recommended by IAWA microscopic key characteristics were also analysed both in soft- and hardwood (Wheeler *et al*. 1989; Richter *et al*. 2004). Specialist publications (Parameswaran and Conrad 1982; Rolando, Roset 1991; Rolando 1992; Neumann *et al*. 1998; Neumann et al. 2000) and The InsideWood Database (https://insidewood.lib.ncsu.edu last accessed on 5th April, 2023) were used for the determinations, and the identified material was compared with the author's comparative collection collected in Egypt.

In the case of monocotyledonous plant tissues, observations were made in cross-section only. The image of atactostelically arranged vascular bundles was analysed and their anatomical structure was compared with those described in the literature (Grosser and Liese 1971; Liese 1998; Thomas 2013).

Some of the designations are given in higher taxonomic ranks (i.e., genus, family) because a precise determination of some species based on an anatomical structure is impossible or very uncertain.

During the analysis, the following microscopes were used: binocular Olympus SZ 30, working in the magnification range of 9–80×, and metallographic Olympus BH-2 with optics allowing for magnification of 50–500×.

Plant names are given according to The International Plant Names Index (http://www.ipni.org accessed on the 5th April, 2023) and the World Checklist of Vascular Plants 2023 (https://powo.science.kew.org/ accessed on the 5th April, 2023).

17.2. Results

In total, 1044 remains were examined, a significant part of which were charred. This collection consisted of 62 samples, as six of the submitted samples did not contain plant remains. The vast majority of remains came from various pit fills and cultural strata. Almost all of the charcoals submitted for testing are at their largest dimension (width, height or thickness) at least 5mm, with a maximum of less than 50mm. Based on the appearance of the vascular system, growths and cross-sections, it

Sample No	Taxa										
	Acacia nilotica	*Balanites aegyptica*	*Capparis decidua*	*Calotropis procera*	*Juniperus procera*	*Oxytenanthera abyssinica*	*Ziziphus spina-christi*	*Acacia* sp.	*Tamarix* sp.	*Arecaceae*	Indeterminate
SOBA_2019/OS1/s001				3						3	
SOBA_2019/OS1/s002				6							
SOBA_2019/OS1/s003				3							
SOBA_2019/OS1/s004	1		1							13	
SOBA_2019/OS1/s005										1	
SOBA_2019/OS1/s015								9			
SOBA_2019/OS1/s022								20			
SOBA_2019/OS1/s055			55								
SOBA_2019/OS1/s057										1	
SOBA_2019/OS1/s060	1					1					
SOBA_2019/OS1/s079								3			
SOBA_2019/OS2/s058										84	
SOBA_2019/OS2/s059								41			
SOBA_2019/OS2/s067						74					
SOBA_2019/O1/s061			1					14			
SOBA_2019/O1/s068	3							6			
SOBA_2020/CW1/s095	1							63		1	
SOBA_2020/CW1/s098			1					3			
SOBA_2020/CW1/s099			1	8				3			
SOBA_2020/CW1/s100								24	2		2
SOBA_2020/CW1/s102								5			
SOBA_2020/CW1/s103										14	
SOBA_2020/CW1/s104				1				4	1		
SOBA_2020/CW1/s106			1					9			
SOBA_2020/CW1/s108								16	3		
SOBA_2020/CW1/s109					6						
SOBA_2020/CW1/s111								34		3	
SOBA_2020/CW1/s155	4			7		5					
SOBA_2020/ CW1/s156				8				2		2	
SOBA_2020/ CW1/s157	21										
SOBA_2020/ CW1/s158	4			11						2	
SOBA_2020/ CW1/s159							15				

SOBA_2020/ CW1/s160		1		3				2			
SOBA_2020/CS1/s105	2		4				1	6			
SOBA_2020/CS1/s113	17		1	1							
SOBA_2020/SH1/s084			6								
SOBA_2020/SH1/s085			8								
SOBA_2020/SH1/s087	12										
SOBA_2020/SH1/s092						20					
SOBA_2020/SH1/s093			18								
SOBA_2020/SH1/s094										3	
SOBA_2021/GN1/s163	2										
SOBA_2021/GN1/s165										5	
SOBA_2021/GN1/s167	18										
SOBA_2021/GN1/s171	33										
SOBA_2021/GN1/s174	5									3	
SOBA_2021/GN1/s177	1										
SOBA_2021/GN1/s180			13			2		12			
SOBA_2021/GN1/s182						18					
SOBA_2021/GN1/s183	3					5					
SOBA_2021/GN1/s185											20
SOBA_2021/GN1/s186	2					14					3
SOBA_2021/GN1/s199	4										1
SOBA_2022/GN1/s228			1								
SOBA_2021/GN2/s191				2							
SOBA_2021/GN2/s192	5			5							
SOBA_2021/GN2/s193	97				1						1
SOBA_2022/GN2/s207	9										8
SOBA_2022/GN2/s210	1										
SOBA_2022/GN2/s214				3							
SOBA_2022/GN2/s217								8			
SOBA_2022/GN2/s218										3	

Table 17.1. Results of wood and other vegetative tissue analyses (prepared by Grzegorz Skrzyński).

was possible to conclude that the majority of the remains were remnants of trunk or branch tissue. Only in the case of wood fragments of *Calotropis procera* are we also dealing with twig remains. In the case of monocotyledonous stems, it is not possible to observe their annual growth, but for palms, it is possible to distinguish, based on the structure of the vascular bundles, whether the examined fragment comes from the stem tissue or the petiole (Thomas 2013). Based on this feature, it was found that the remains of palms at Soba are mainly fragments of logs, and to a lesser extent, the remains of petioles. Among the remains of palms, vascular bundles belonging to the genus *Hyphaene* were probably found; however, due to the diversity in anatomical structure among palms and the lack of appropriate comparative materials, a definitive determination of this taxonomic affiliation was abandoned.

In the case of bamboo remains, it was decided to designate them to the rank of species, taking into account that only one indigenous species of this grass – *Oxytenanthera abyssinica* – occurs in the study area. The same was done for *Juniperus procera*, the only juniper species found in Sudan.

In total, the wood of 10 taxa of trees and shrubs was identified. The wood of *Acacia* sp. was the most numerous (284 fragments in total), but it did not have the highest frequency in the samples – it only occurred in 20 out of the 62 examples. Charcoal from the wood of *Acacia nilotica* occurred with the highest frequency. This species was recorded in 21 samples, and in terms of abundance, it was in second place (246 fragments). The remaining taxa were less frequent – in 14 samples, 138 fragments of *Arecaceae* tissues were found, in 13 samples, the wood remains of *Capparis decidua* (111 fragments) and *Calotropis procera* (61 fragments) were found, and in eight samples the remains of *Oxytenanthera abyssinica* bamboo stems were found (139 fragments). The rarest were the remains of the tamarisk *Tamarix* sp., which occurred in three samples, *Ziziphus spina-christi* and *Juniperus procera*, which were found in two samples, and *Balanites aegyptiaca*, which was found in only one. Detailed data for this is presented in **Table 17.1**.

17.3. Discussion and conclusions

Wood was undoubtedly one of the basic raw materials of the medieval economy. It was used for fuel, as a building material, and as a material for making tools. The present research confirms only the use of wood of the identified taxa as fuel. We can indirectly assume that if individual taxa constituted a reservoir of energy, they were also available to other sectors of the economy based on wood processing. Some of the identified taxa could provide economic materials, but due to their properties they could have wider applications as well. In the case of *Balanites aegyptiaca*, it has edible fruits, which, like the bark of this tree, were used in folk medicine. Fish poison was also made from the bark. The leaves of this tree provide cooking oil, and in times of famine, they were also eaten cooked (Mubarak *et al.* 1982, 152–161). Edible fruit is also provided by *Ziziphus spina-christi*, *Capparis decidua* and palm trees, whose leaves may have been used for roofing. Acacia pods and leaves as well as tamarisk leaves were probably fodder for breeding animals (Mubarak *et al.* 1982, 160). Acacias were also used in folk medicine and for the production of gum arabic. Even *Calotropis procera*, today considered a weed, could provide fibres for the production of ropes, medicinal substances and poisons (Medwecka-Kornaś 2014; Kaur *et al.* 2021).

When analysing the obtained results, one should consider whether the collection of wood samples is a reflection of the surrounding plant communities or instead a reflection of preferences in the use of individual taxa exploited by the population living in Soba.

Charcoal deposits discovered during the exploration of objects or strata, which are characterised by their long-term use by former inhabitants, are the most suitable for reconstructing past plant communities (Chabal *et al.* 1999; Asouti and Austin 2005). In the case of most of the remains discussed here, we are dealing with a collection coming from cultural layers and objects of an anthropogenic nature. It is assumed that for the Mediterranean areas, at least 250 (and optimally 400–500) fragments of wood should be identified (Chabal *et al.* 1999) for an accurate reconstruction. In turn, for the tropics, the smallest number of wood remains that will reliably reflect the image of local stands was estimated as 200 to 300 fragments (Scheel-Ybert 2002) and the same number is given by Neumann for Sahelian sites (1999). Another condition is a sufficient number of analysed samples, and this is estimated to be at least 25 samples per site (Asouti and Austin 2005). In such a context, it seems that the paleoenvironmental reconstruction for Soba based on the obtained materials is fully validated. We can therefore presume that the plant communities exploited by the medieval inhabitants of the city were dominated by various species of acacia with an admixture of other trees and shrubs (**Figure 17.1**). This may, of course, be a misleading generalisation.

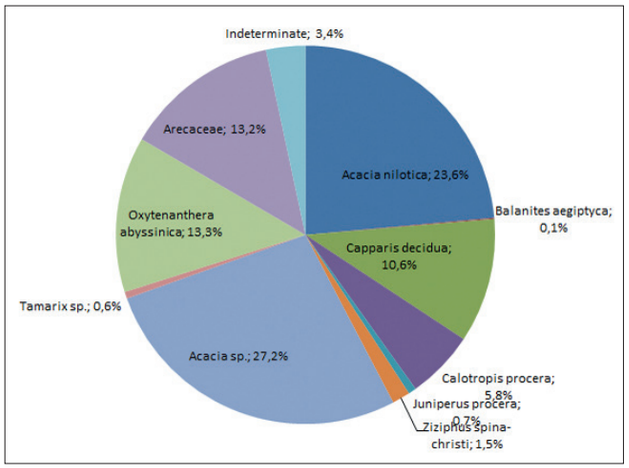

Figure 17.1. The number of individual taxa in the samples expressed as a percentage (prepared by Grzegorz Skrzyński).

The immediate surroundings of the site are a mosaic of various ecosystems – from savannah to riverside. The dry areas of the savannah may have been overgrown with acacias, present alone among grass communities or forming light, sparse groupings. *B. aegyptiaca, Z. spina-christi* and *C. decidua* could also occur as individual trees in these areas. These species could also be part of more compact forest stands. Alternatively, these taxa may have formed a thorn savannah. Palms and acacias could have grown on the clayey soils of the floodplains, while the areas closest to the river may have been overgrown by moisture-loving acacias (including *A. nilotica*), tamarisks and palms, e.g., the genus *Hyphaene*. *C. procera* may have been present in all these communities, as well as in ruderal areas.

Among the identified materials, however, some plant remains were found that cannot be placed in the flora surrounding the site reconstructed, as based on a contemporary image. Both the bamboo *Oxytenanthera abyssinica* and the juniper *Juniperus* cf. *procera* are now only found far away from Soba (Anjulo *et al.* 2022; Kerfoot 1961). Water conditions suitable for *O. abyssinica* could have provided moist ecosystems close to the Nile (Anjulo *et al.* 2022), but the same humid stands would not be suitable for *J. procera*.

The presence of this plant at the site, which currently occurs in areas with a much higher annual rainfall (Eckenwalder 2009, 302), cannot be explained by climate change, as it has been proven that changes in humidity during the Medieval Climate Anomaly did not affect the areas under consideration here (Lüning *et al.* 2018). The presence of juniper in Soba could be explained in two ways. The first assumes that the wood of *J. procera* arrived from the upper course of the Nile along with the flood waters that often hit this area today (Williams *et al.* 2010), and were known to occur in the medieval period (Butzer 1980). This thesis can be supported by medieval source materials describing wood floating on the Nile floods (Maqrizi in Vantini 1975, 607, 611). Moreover, wood has been observed to have floated from Ethiopia on the Nile until recent times (Alrajoula *et al.* 2016, 945–947). A second, alternative explanation can be found in human activity. It is possible that the juniper wood reached Soba as a finished product (although the identified fragments do not show signs of processing) or, more likely, as a semi-finished product – as raw material.

Human activity may thus have impacted the remains fround at Soba, which may have affected the paleoenvironmental reconstruction. As such, despite the fulfilment of all the methodological recommendations described above, it is not possible to definitively determine whether the image of the environment preserved in the collection of charcoals corresponds to the actual environmental conditions prevailing 1000 years ago. In the case of anthropogenic deposits of plant remains, it should always be taken into account that any reconstruction of the environment based solely on these remains may be distorted by the selective acquisition of certain taxa due to human economic factors.

17.4. Summary

This research made it possible to identify 10 plant taxa as the basic reservoir of wood as a raw material for the inhabitants of the medieval urban complex in Soba. It can also be assumed that the identified plants also provided, apart from wood, other products important for the local economy. It seems likely that the remains of *Juniperus procera* found at the site may be evidence of trade with other parts of Africa or they may indicate the collection of timber drifting down the Nile. The obtained results correspond to and complement the earlier results of archaeobotanical research conducted at Soba (van der Veen and Lawrence 1991; Cartwright 1999). However, thanks to the extensive project of obtaining research materials, they stand out in terms of the number of collected remains and the taxa identified.

Based on the contemporary botanical description of the site (van der Veen and Lawrence 1991), it is possible to assume that the obtained results of environmental reconstruction, despite signs of possible disturbance, likely reflect the vegetative environment at the site.

APPENDIX 1

RADIOCARBON DATING

Mariusz DRZEWIECKI

18.1. Selection of samples

The aim of the radiocarbon dating was to establish timeframes for past human activities in each explored area. During the two seasons of fieldwork in Soba (2019–2020 and 2021–2022) ten trenches were opened in various parts of the site (methodology and results of excavations are described in Chapters 4–7). One of the outcomes of the excavations was the identification of various occupation phases. The basic means for this was close observation of the stratigraphy and of the distribution of the small finds. The sequence of settlement was established for each individual trench and had crucial impact on the way we selected samples for the radiocarbon analysis (**Table 18.1**).

In ideal circumstances, we would establish timeframes for occupation phases recorded in each trench. The main obstacle in achieving this was a lack of suitable organic materials from well-defined contexts in all phases and in all trenches. The most extreme situation was observed in two out of ten trenches, where no organic materials were found. The two trenches (1/G and 2/SH) were relatively shallow (not more than 0.5m in depth). In 1/G and 2/SH, the explored residues underwent intensive post-depositional processes involving both standing and flowing water. Wind and water have disintegrated or carried away lighter materials such as organics and/or accumulated materials taken from the other areas of the archaeological site or even from beyond the site.

In other trenches, the situation was much better, and we were able to obtain organic samples from well-defined contexts. However, the remains in some phases were modest and badly disturbed. It was especially the case for the earliest phases in Trenches 2/OS, 1/O, and 1/SH. The most secure samples were obtained from occupation layers such as floors, cooking areas and hearth deposits which were rich in ash and charcoal. The most abundant in sampling material were the remains of an extensive fire, recorded in Trench 1/GN, during which a store/kitchen burned down. As a result, its wooden roof collapsed, sealing the contents of the store.

18.2. Analysis and results

Altogether, 27 samples (all charcoal) have been sent to Poznan Radiocarbon Laboratory where they have been prepared and subsequently analysed. Sample preparation procedures which were used are available at https://radiocarbon.pl/en/prl-quality-tests/ (accessed on 24th April, 2023). Radiocarbon analysis was conducted using spectrometer 1.5 SDH-Pelletron Model 'Compact Carbon AMS' produced by the National Electrostatics Corporation, Middleton, USA (for details see https://radiocarbon.pl/en/ams-quality-tests/ accessed on 24th April, 2023).

In 2020, after the first season of fieldwork, 15 samples were examined (lab. job no. 16132/20). In 2022 after the second season, 12 samples were analysed (lab. job no. 19184/22). Calibration of the radiocarbon dates (BP years) was undertaken using Oxcal v 4.4.2 software, based on Bronk Ramsey (2020); r:5 and IntCal20 atmospheric curve (Reimer *et al*. 2020). The results of the radiocarbon analysis and calibration are presented in **Table 18.2** and **Figure 18.1**.

18.3. Discussion

During the first British Institute in Eastern Africa (BIEA) project in Soba, directed by Welsby and Daniels, nine ^{14}C dates were obtained (Switsur 1991, 350–351). All samples came from the churches on Mound B. Five samples were analysed in the University of Cambridge Radiocarbon Laboratory and four in the Scottish Universities Research & Reactor Centre.

During the second BIEA project in Soba, directed by Derek Welsby, seven ^{14}C dates were obtained (Ambers 1998, 279). This time the samples were collected from Mound Z and were associated with Building F and graves. All samples were analysed at the Department of Scientific Research of the British Museum.

Dates obtained during the current project have been taken from samples collected in various areas of the site (O, OS, GN, CW, CS, and AE). None of them came from the mounds previously investigated. In this context, they are bridging gaps in our knowledge of the

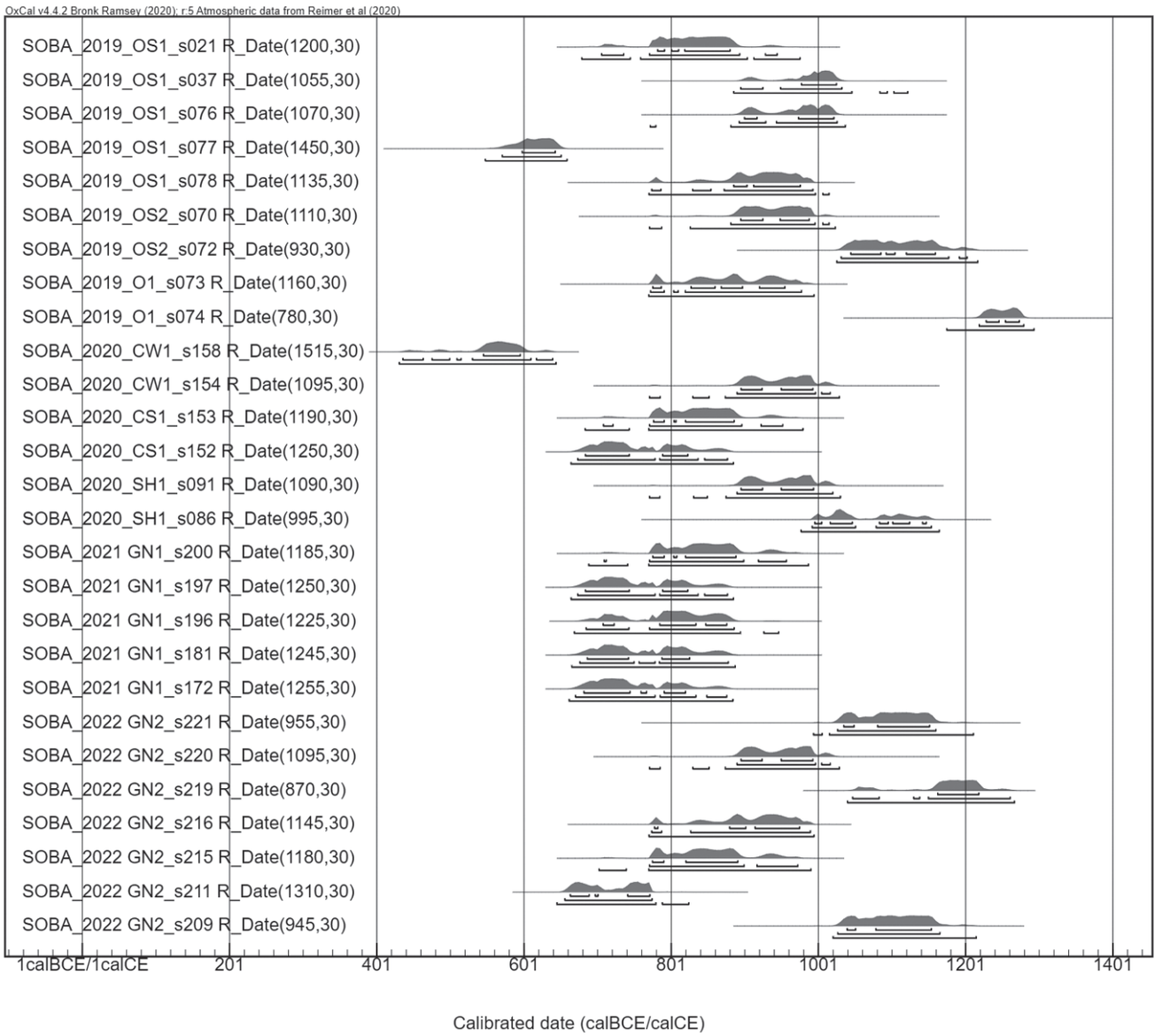

Figure 18.1. Calibration of the radiocarbon analyses (prepared by Mariusz Drzewiecki).

city's chronology. The new radiocarbon dates have been obtained from a different laboratory and using different, state-of-art technology (AMS). In this context the 27 new radiocarbon dates, together with the 16 older ^{14}C results are starting to build chronological sequence for the medieval metropolis.

Trench	Occupation phase	Number of samples selected for radiocarbon analysis (inventory numbers of the samples)
1/OS	phase 5 (cemetery)	two (SOBA_2019/OS1/s021 and SOBA_2019/OS1/s037)
	phase 4 (abandonment and occasional usage)	
	phase 3 (occupation, mud brick architecture)	one (SOBA_2019/OS1/s078)
	phase 2 (occupation, mud brick architecture)	one (SOBA_2019/OS1/s076)
	phase 1 (the earliest occupation, no architecture)	one (SOBA_2019/OS1/s077)
2/OS	phase 5 (occasional usage and looting?)	
	phase 4 (cemetery)	no materials suitable for radiocarbon analysis (human remains were heavily eroded)
	phase 3 (occasional occupation)	one (SOBA_2019/OS2/s070)
	phase 2 (lime production, mud brick architecture)	one (SOBA_2019/OS2/s072)
	phase 1 (the earliest occupation, no architecture)	no materials suitable for radiocarbon analysis
1/O	phase 4 (brick extraction)	
	phase 3 (abandonment)	
	phase 2 (red brick building)	two (SOBA_2019/O1/s073 and SOBA_2019/O1/s074)
	phase 1 (the earliest occupation, no architecture)	only one small charcoal sample available, circumstances of its deposition are untraceable
1/CW	phase 4 (looting, occasional occupation and funerary activities)	
	phase 3 (occupation, mud brick architecture)	one (SOBA_2020/CW1/s154)
	phase 2 (occupation, timber architecture)	
	phase 1 (occupation, mud brick architecture)	one (SOBA_2020/CW1/s158)
1/CS	phase 4 (occupation, red brick architecture)	mixed top soil
	phase 3 (pits filled with brick rubble)	no materials suitable for radiocarbon dating available
	phase 2 (occupation, mud brick architecture)	one (SOBA_2020/CS1/s152)
	phase 1 (occupation, no architecture)	one (SOBA_2020/CS1/s153)
1/G	phase 4 (topsoil mixed deposits)	no materials suitable for radiocarbon analysis
	phase 3 (occasional occupation, no architecture, alluvium)	no materials suitable for radiocarbon analysis
	phase 2 (pits)	no materials suitable for radiocarbon analysis
	phase 1 (occasional occupation, no architecture, alluvium)	no materials suitable for radiocarbon analysis
1/GN	phase 5 (occasional occupation)	one (SOBA_2021/GN1/s172)
	phase 4 (pits damaging remains of the previous architecture)	
	phase 3 (occupation, timber and mud brick architecture)	
	phase 2 (kitchen and storage)	three (SOBA_2021/GN1/s181, SOBA_2021/GN1/s196, and SOBA_2021/GN1/s200)
	phase 1 (the earliest occupation, timber and mud brick architecture)	one (SOBA_2021/GN1/s197)
2/GN	phase 7 (occasional occupation, topsoil)	
	phase 6 (occasional occupation, no architecture)	one (SOBA_2022/GN2/s211)
	phase 4A/5 (abandonment)	two (SOBA_2022/GN2/s209 and SOBA_2022/GN2/s219)
	phase 4 (mud brick architecture, timber architecture)	
	phase 3 (timber and mud brick architecture)	one (SOBA_2022/GN2/s220)
	phase 2 (garden)	two (SOBA_2022/GN2/s215 and SOBA_2022/GN2/s216)
	phase 1 (the earliest occupation, timber and mud brick architecture)	one (SOBA_2022/GN2/s221)
1/SH	phase 4 (occasional occupation, timber architecture)	one (SOBA_2020/SH1/s086)
	phase 3 (timber and mud brick architecture)	
	phase 2 (occupation, timber architecture ?)	one (SOBA_2020/SH1/s091)
	phase 1 (single prehistoric? grave)	no materials suitable for radiocarbon analysis (human remains were heavily eroded)
2/SH	no phases (mix of small finds, gravel, and sand)	no materials suitable for radiocarbon analysis (animal remains were eroded and fragmented)

Table 18.1. Samples selected for radiocarbon analysis and their archaeological contexts (prepared by Mariusz Drzewiecki).

Inv. no of the sample	Lab no	^{14}C date (BP)	Calibration (CE)		
			68.3% probability	95.4% probability	99.7% probability
SOBA/2019/OS1/s021	Poz-122458	1200 ±30	782 (7.9%) 792 801 (7.4%) 811 819 (53.0%) 881	706 (5.0%) 736 771 (88.3%) 894 929 (2.1%) 945	679 (6.6%) 745 759 (89.0%) 904 913 (4.1%) 976
SOBA/2019/OS1/s037	Poz-122727	1055 ±30	978 (68.3%) 1025	895 (13.7%) 925 949 (81.8%) 1033	886 (99.3%) 1046 1084 (0.1%) 1094 1103 (0.3%) 1122
SOBA/2019/OS1/s076	Poz-122453	1070 ±30	900 (14.9%) 917 974 (53.3%) 1022	893 (23.6%) 929 944 (71.8%) 1026	772 (0.1%) 780 882 (99.6%) 1037
SOBA/2019/OS1/s077	Poz-123460	1450 ±30	598 (68.3%) 643	571 (95.4%) 651	548 (99.7%) 659
SOBA/2019/OS1/s078	Poz-122452	1135 ±30	886 (14.5%) 904 913 (53.8%) 976	774 (3.9%) 787 830 (5.5%) 855 873 (86.1%) 993	771 (99.5%) 997 1007 (0.2%) 1015
SOBA/2019/OS2/s070	Poz-122454	1110 ±30	895 (29.6%) 925 949 (38.7%) 988	882 (94.2%) 996 1007 (1.3%) 1015	771 (1.3%) 788 827 (98.4%) 1024
SOBA/2019/OS2/s072	Poz-122456	930 ±30	1045 (31.3%) 1086 1093 (8.3%) 1105 1120 (28.7%) 1160	1032 (93.2%) 1178 1192 (2.3%) 1203	1026 (99.7%) 1217
SOBA/2019/O1/s073	Poz-122474	1160 ±30	776 (7.8%) 787 828 (18.3%) 860 869 (20.0%) 898 921 (22.2%) 955	773 (10.4%) 791 804 (1.2%) 810 820 (83.9%) 978	770 (99.7%) 995
SOBA/2019/O1/s074	Poz-122455	780 ±30	1229 (31.4%) 1246 1255 (36.9%) 1274	1219 (95.4%) 1280	1175 (99.7%) 1294
SOBA/2020/CW1/s158	Poz-123461	1515 ±30	546 (68.3%) 596	436 (4.7%) 464 476 (5.4%) 500 510 (0.5%) 515 531 (81.0%) 610 618 (3.9%) 640	431 (99.7%) 644
SOBA/2020/CW1/s154	Poz-122451	1095 ±30	896 (27.0%) 924 950 (41.2%) 993	890 (91.1%) 997 1005 (4.4%) 1017	771 (0.6%) 786 830 (0.4%) 852 874 (98.8%) 1029
SOBA/2020/CS1/s153	Poz-122450	1190 ±30	777 (11.4%) 791 805 (1.6%) 807 820 (55.3%) 886	709 (1.6%) 722 771 (88.0%) 897 923 (5.8%) 952	684 (3.5%) 744 770 (96.2%) 980
SOBA/2020/CS1/s152	Poz-122449	1250 ±30	684 (47.0%) 744 789 (21.2%) 823	674 (61.3%) 779 785 (26.0%) 837 846 (8.1%) 877	665 (99.7%) 885
SOBA/2020/SH1/s091	Poz-122448	1090 ±30	896 (26.6%) 925 950 (41.6%) 994	890 (95.4%) 1020	771 (0.4%) 785 831 (0.2%) 850 875 (99.1%) 1031
SOBA/2020/SH1/s086	Poz-122446	995 ±30	996 (7.0%) 1005 1017 (33.4%) 1047 1084 (8.1%) 1096 1102 (16.9%) 1125 1142 (2.8%) 1147	992 (50.4%) 1051 1079 (45.0%) 1154	977 (99.7%) 1165
SOBA/2021 GN1/s200	Poz-151187	1185 ±30	776 (11.7%) 791 804 (2.1%) 808 820 (54.4%) 889	710 (0.2%) 712 771 (86.5%) 899 919 (8.7%) 957	689 (2.4%) 742 770 (97.3%) 987
SOBA/2021 GN1/s197	Poz-151203	1250 ±30	684 (47.0%) 744 789 (21.2%) 823	674 (61.3%) 779 785 (26.0%) 837 846 (8.1%) 877	665 (99.7%) 885
SOBA/2021 GN1/s196	Poz-151265	1225 ±30	708 (9.1%) 723 785 (40.8%) 834 848 (18.4%) 876	685 (22.4%) 743 771 (73.1%) 886	669 (99.3%) 895 927 (0.4%) 947

SOBA/2021 GN1/s181	Poz-151116	1245 ±30	687 (42.0%) 743 788 (26.3%) 826	677 (46.0%) 750 757 (7.0%) 779 785 (42.4%) 878	666 (99.7%) 888
SOBA/2021 GN1/s172	Poz-151115	1255 ±30	682 (50.4%) 745 760 (3.9%) 767 791 (14.0%) 820	671 (68.2%) 779 786 (21.5%) 834 849 (5.8%) 876	662 (99.7%) 885
SOBA/2022 GN2/s221	Poz-151189	955 ±30	1035 (11.2%) 1049 1081 (57.1%) 1152	1027 (95.4%) 1160	994 (0.4%) 1006 1016 (99.3%) 1211
SOBA/2022 GN2/s220	Poz-151188	1095 ±30	896 (27.0%) 924 950 (41.2%) 993	890 (91.1%) 997 1005 (4.4%) 1017	771 (0.6%) 786 830 (0.4%) 852 874 (98.8%) 1029
SOBA/2022 GN2/s219	Poz-151282	870 ±30	1163 (68.3%) 1219	1047 (11.1%) 1083 1130 (0.8%) 1138 1150 (83.5%) 1261	1040 (99.7%) 1267
SOBA/2022 GN2/s216	Poz-151266	1145 ±30	778 (2.8%) 783 880 (17.4%) 902 915 (48.1%) 975	774 (5.9%) 788 827 (89.6%) 990	771 (99.7%) 995
SOBA/2022 GN2/s215	Poz-151281	1180 ±30	775 (12.1%) 791 821 (56.2%) 891	771 (82.7%) 900 917 (12.8%) 973	703 (1.6%) 740 770 (98.1%) 991
SOBA/2022 GN2/s211	Poz-151117	1310 ±30	664 (29.2%) 689 698 (3.2%) 701 742 (35.9%) 772	656 (95.4%) 775	646 (98.8%) 780 789 (0.9%) 825
SOBA/2022 GN2/s209	Poz-151280	945 ±30	1040 (8.9%) 1051 1079 (59.4%) 1154	1027 (95.4%) 1166	1021 (99.7%) 1215

Table 18.2. Results of radiocarbon analysis and calibration
(analysis by Poznań Radiocarbon Laboratory; calibration by Mariusz Drzewiecki).

APPENDIX 2

LIST OF DEPOSITS

Tomasz MICHALIK

Excavations in Soba were conducted following the locus-based method in 2019–2022. The methodology was based on the Archaeological Site Manual published by the Museum of London Archaeology Service (1994). Deposits were differentiated based on properties such as compaction, color, composition, and inclusions, as well as the presence of artefacts and ecofacts. During excavations, two main deposit categories were identified: cultural layers, which contain traces of human activity (e.g., activity layers, occupational layers, destruction layers), and natural layers (comprising natural soil, bedrock, alluvium, and other sediments formed through natural processes). Detailed descriptions and characteristics of these distinct deposits for each trench are presented in the tables below (**Tables 19.1–19.10**). This appendix enhances Chapters 4–7 by offering supplementary context on the archaeological remains uncovered during the excavation process.

ID	Description	Characteristic
0_1OS	Compaction: loose; Colour: light yellow; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery	surface
1_1OS	Compaction: loose; Colour: light yellow; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, shells, glass, animal bones, human bones	occupation layer cut by graves
2_1OS	Compaction: loose; Colour: brown; Composition: sand; Inclusions: organic remains; Artefacts and ecofacts: pottery, animal bones, human bones	zoonotic layer cut by graves
3_1OS	Compaction: slightly compact; Colour: grey; Composition: gravel sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, stone tools, metal item, animal bones, human bones	occupation layer cut by graves
4_1OS	Compaction: loose; Colour: lighy grey; Composition: mix of gray and yellow sand with admixture of gravel; Inclusions: ashes; Artefacts and ecofacts: pottery, human bones, animal bones	occupation layer cut by graves
5_1OS	Compaction: loose; Colour: grey; Composition: sand, mud bricks debris; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, stone tools, shells, beads, animal bones, human bones	occupation layer with traces of destruction cut by graves
6_1OS	Compaction: loose; Colour: orange-brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, glass, beads, shells, animal bones, human bones	occupation layer cut by graves
7_1OS	Compaction: slightly compact; Colour: yellow; Composition: gravel sand with mud brick debris; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, beads, shells, stone tools, metal items, animal bones, human bones	occupation layer with traces of destruction cut by graves
8_1OS	Compaction: hard; Colour: grey; Composition: silt and gravel; Inclusions: none; Artefacts and ecofacts: pottery, glass, animal bones	flawed mud from walls with partially preserved mud bricks
9_1OS	Compaction: slightly compact; Colour: brown-grey; Composition: gravel sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, animal bones, glass	fill of pit, traces of hearth
10_1OS	Compaction: slightly compact; Colour: yellow-grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery	fill of robber cut
11_1OS	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tool	occupation layer
12_1OS	Compaction: loose; Colour: grey-brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, glass, animal bones	occupation layer
13_1OS	Compaction: slightly compact; Colour: dark grey; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery	fill of pit, traces of hearth

14_1OS	Compaction: loose; Colour: grey-brown; Composition: gravel sand; Inclusions: fragments of mudbricks; Artefacts and ecofacts: pottery, animal bones	fill of robber cut
15_1OS	Compaction: loose; Colour: dark yellow; Composition: gravel sand with mudbricks debris; Inclusions: none; Artefacts and ecofacts: pottery, shells	occupation layer with traces of destruction
16_1OS	Compaction: loose; Colour: grey; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: pottery, glass	occupation layer, consumption waste
17_1OS	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
18_1OS	Compaction: slightly compact; Colour: yellow-grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, beads, animal bones	occupation layer
19_1OS	Compaction: compact; Colour: grey; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: pottery, glass, metal item, animal bones	fill of pit
20_1OS	Compaction: loose; Colour: yellow-orange; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
21_1OS	Compaction: compact; Colour: yellow-grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer
22_1OS	Compaction: compact; Colour: yellow-grey; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery, beads, animal bones	occupation layer
23_1OS	Compaction: compact; Colour: dark gray; Composition: ashes with gravel sand; Inclusions: charcoals; Artefacts and ecofacts: pottery; animal bones	occupation layer with traces of hearth
24_1OS	Compaction: slightly compact; Colour: yellow-bronze; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery, stone tools, animal bones	activity layer
25_1OS	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
27_1OS	Compaction: slightly compact; Colour: yellow; Composition: gravel sand; Inclusions: ashes, charcoals; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer with traces of hearth
26_1OS	Compaction: compact; Colour: gray; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
28_1OS	Compaction: slightly compact; Colour: brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tool, animal bones	occupation layer
29_1OS	Compaction: slightly compact; Colour: grey-yellow; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery, stone tool, animal bones	occupation layer
30_1OS	Compaction: slightly compact; Colour: grey-yellow; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery, beads, glass, animal bones	occupation layer
31_OS	Compaction: slightly compact; Colour: yellow; Composition: gravel sand; Inclusions: ashes, charcoals; Artefacts and ecofacts: pottery	occupation layer
32_OS	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
33_OS	Compaction: compact; Colour: red-brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tool, animal bones, beads	occupation layer
34_OS	Compaction: compact; Colour: redish-brown; Composition: gravel sand: Inclusions: none; Artefacts and ecofacts: none	natural soil

Table 19.1. List of deposits Trench 1/OS (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_2OS	Compaction: loose; Colour: light yellow; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery	surface
1A_2OS	Compaction: loose; Colour: yellow-grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: none	fill of pit
1B_2OS	Compaction: loose; Colour: yellow-grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: none	fill of pit
1_2OS	Compaction: loose; Color: light brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, beads	occupation layer
2_2OS	Compaction: loose; Colour: light brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer
3_2OS	Compaction: loose; Colour: light brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer cuted by grave
4_2OS	Compaction: loose; Colour: light brown; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery, glass, animal bones	occupation layer
5_2OS	Compaction: loose; Colour: light brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, iron ring, animal bones	occupation layer cuted by grave
6_2OS	Compaction: loose; Colour: light brown; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery	occupation layer
7_2OS	Compaction: loose; Colour: brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
8_2OS	Compaction: loose; Colour: brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
9_2OS	Compaction: loose; Colour: light brown; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: none	fill of pit
10_2OS	Compaction: loose; Colour: brown; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: pottery, animal bones	fill of pit
10A_2OS	Compaction: hard; Colour: grey; Composition: limestones; Inclusions: none; Artefacts and ecofacts: none	post-production layer, limestones
10B_2OS	Compaction: compact; Colour: brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: none	post-production layer
11_2OS	Compaction: loose; Colour: brown; Composition: gravel sand Inclusions: ashes; Artefacts and ecofacts: pottery	fill of pit
12_2OS	Compaction: loose; Colour: brown; Composition: gravel sand Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
13_2OS	Compaction: compact; Colour: white; Composition: lime; Inclusions: none; Artefacts and ecofacts: none	post-production layer, lime
13A_2OS	Compaction: compact; Colour: black; Composition: charcoal; Inclusions: none; Artefacts and ecofacts: none	post-production layer, charcoal
14_2OS	Compaction: compact; Colour: brownish-red; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery	occupation layer
15_2OS	Compaction: compact; Colour: brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: none	natural soil

Table 19.2. List of deposits Trench 2/OS (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_1O	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: red bricks debris, white plaster; Artefacts and ecofacts: pottery	surface
1_1O	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: red bricks debris, white plaster; Artefacts and ecofacts: pottery	destruction deposit
2_1O	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: red bricks debris, white plaster; Artefacts and ecofacts: pottery, animal bones	destruction deposit
3_1O	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: red bricks debris, white plaster; Artefacts and ecofacts: pottery, shells, stone tools, animal bones	destruction deposit
4_1O	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: red bricks debris, white plaster, ashes; Artefacts and ecofacts: pottery, animal bones	destruction deposit
4A_1O	Compaction: loose; Colour: yellow; Composition: gravel sand; Inclusions: ashes; Artefacts and ecofacts: none	occupation layer
4B_1O	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
5_1O	Compaction: hard; Colour: red; Composition: red bricks; Inclusions: silt (mortar); Artefacts and ecofacts: none	floor
5B_1O	Compaction: loose; Colour: light gray; Composition: gravel sand; Inclusions: fragmented fired bricks; Artefacts and ecofacts: pottery, animal bones	floor bedding
6_1O	Compaction: loose; Colour: yellow-brown; Composition: gravel; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
7_1O	Compaction: compact; Colour: brown; Composition: gravel; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
8_1O	Compaction: compact; Colour: brown; Composition: gravel; Inclusions: none; Artefacts and ecofacts: pottery	occupation layer
8A_1O	Compaction: compact; Colour: brown; Composition: gravel; Inclusions: none; Artefacts and ecofacts: none	natural soil

Table 19.3. List of deposits Trench 1/O (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_1CW	Compaction: loose; Colour: yellow-grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, metal item, beads	surface
1_1CW	Compaction: loose; Colour: grey; Composition: sand with silt; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones, shell, beads	destruction layer with traces of food processing cuted by grave
2_1CW	Compaction: loose; Colour: grey; Composition: sand; Inclusions: charcoals; Artefacts and ecofacts: pottery, stone tools, animal bones, beads, shells	destruction layer and traces of food processing
3_1CW	Compaction: loose; Colour: brownish grey; Composition: sand; Inclusions: red brick debris; Artefacts and ecofacts: pottery	destruction layer and traces of food processing
4A_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: none	earthen floor
4_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery	occupation layer
5_1CW	Compaction: loose; Colour: brownish grey; Composition: sand and silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, beads, stone tools, animal bones	fill of robber cut
6A_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: none	earthen floor
6_1CW	Compaction: slightly compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: pottery, animal bones	occupation layer
7_1CW	Compaction: compact; Colour: yellow; Composition: sand; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones	occupation layer
8_1CW	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, glass, beads	occupation layer
8A_1CW	Compaction: compact; Colour: greyish; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
9_1CW	Compaction: loose; Colour: brownish grey; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones	fill of robber cut
10_1CW	Compaction: slightly compact; Colour: greyish orange; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, animal bones, shells, beads	occupation layer
10A_CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: none	earthen floor
11_1CW	Compaction: slightly compact; Colour: greyish orange; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, animal bones, shells, beads	occupation layer
11A_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: none	earthen floor
12_1CW	Compaction: loose; Colour: greyish brown; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, stone tools	fill of robber cut
13A_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: none	earthen floor
13_1CW	Compaction: slightly compact; Color: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
14_1CW	Compaction: loose; Colour: greyish brown; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, shells, beads, animal bones	fill of robber cut
15A_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: none	earthen floor
15_1CW	Compaction: slightly compact; color: greyish orange; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery, animal bones	occupation layer
16A_1CW	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: limes; Artefacts and ecofacts: none	earthen floor
16_1CW	Compaction: slightly compact; color: brownish orange; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery, animal bones	occupation layer
17_1CW	Compaction: loose; Color: greyish brown; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones, stone tools, shells, beads	occupation layer (cooking debris)

18_1CW	Compaction: loose; Colour: greyish brown; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones, mud-stoppers, stone tools, beads	fill of robber cut
19_1CW	Compaction: loose; Color: greyish brown; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, beads	occupation layer
20_1CW	Compaction: compact; Color: brownish grey; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones, shells, beads	occupation layer
21_1CW	Compaction: hard; Color: brownish grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery, animal bones	occupation layer
22_1CW	Compaction: moderate compact; Colour: brownish grey; Composition: silt; Inclusions: charcoal; Artefacts and ecofacts: pottery, animal bones	fill of robber cut
23_1CW	Compaction: compact; Colour: grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: none	earthen floor
24_1CW	Compaction: compact; Color: dark grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery, animal bones, stone tools, beads, metal item, clay figurines	occupation layer
25_1CW	Compaction: compact; Colour: grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: none	earthen floor
26_1CW	Compaction: loose; Color: dark grey; Composition: silt; Inclusions: gravel; Artefacts and ecofacts: none	natural sediment
27_1CW	Compaction: loose; Color: light grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
28_1CW	Compaction: loose; Color: brownish black; Composition: silt with sand; Inclusions: gravel; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer
29_1CW	Compaction: compact; Colour: grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery	earthen floor
30_1CW	Compaction: loose; Color: brown; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: stone tool, glass	occupation layer
31_1CW	Compaction: loose; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer
32_1CW	Compaction: loose; Colour: black-grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery	occupation layer
33_1CW	Compaction: compact; Colour: light brown; Composition: sand; Inclusions: none; Artefacts and ecofacts: none	natural sediment
34_1CW	Compaction: loose; Color: light yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools	occupation layer
35_1CW	Compaction: compact; Colour: grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: none	earthen floor
36_1CW	Compaction: compact; Color: brownish-black; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: deposit not fully explored	occupation layer (?)

Table 19.4. List of deposits Trench 1/CW (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_1CS	Compaction: loose; Colour: yellow-grey; Composition: sand; Inclusions: red brick fragments; Artefacts and ecofacts: pottery	surface
1_1CS	Compaction: loose; Colour: grey; Composition: silt; Inclusions: red brick fragments; Artefacts and ecofacts: pottery, stone tools, animal bones	destruction layer and traces of food processing
2_1CS	Compaction: loose; Colour: grey; Composition: silt; Inclusions: charcoal; Artefacts and ecofacts: pottery, stone tools, beads, metal item, animal bones	destruction layer and traces of food processing
3_1CS	Compaction: loose; Colour: brownish grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
4_1CS	Compaction: loose; Colour: grey; Composition: silt; Inclusions: red brick fragments; Artefacts and ecofacts: pottery, stone tools, beads, animal bones	destruction layer, fill of cut
5_1CS	Compaction: compacted; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	earthen floor
6_1CS	Compaction: loose; Colour: grey; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones	occupation layer
7_1CS	Compaction: loose; Colour: grey; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, stone tools, beads, animal bones	destruction layer, fill of cut
8_1CS	Compaction: loose; Colour: brownish grey; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, animal bones, stone tools	occupation layer
9_1CS	Compaction: loose; Colour: light brown; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	occupation layer
10_1CS	Compaction: loose; Colour: dark grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: deposit not explored	fill of pit
11_1CS	Compaction: compacted; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
12_1CS	Compaction: compact; Colour: black; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery, animal bones	occupation layer
13_1CS	Compaction: compact; Colour: brown; Composition: clay; Inclusions: none; Artefacts and ecofacts: pottery	occupation layer

Table 19.5. List of deposits Trench 1/CS (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_1G	Compaction: loose; Colour: grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: none	surface
1_1G	Compaction: loose; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery	occupation layer
2_1G	Compaction: hard; Colour: brownish grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery	alluvial deposit / earthen floor (?)
3_1G	Compaction: hard; Colour: grey-brown; Composition: alluvium (?); Inclusions: lime; Artefacts and ecofacts: pottery	alluvial deposit (?)
4_1G	Compaction: loose; Colour: dark grey; Composition: sand; Inclusions: not explored; Artefacts and ecofacts: not explored	fill of pit
5_1G	Compaction: loose; Colour: dark grey; Composition: sand; Inclusions: not explored; Artefacts and ecofacts: not explored	fill of pit

Table 19.6. List of deposits Trench 1/G (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_1GN	Compaction: loose; Colour: light yellow; Composition: gravel sand; Inclusions: fragments of red bricks; Artefacts and ecofacts: pottery	surface
1_1GN	Compaction: loose; Colour: light yellow; Composition: gravel sand; Inclusions: fragments of red bricks, charcoals and ashes; Artefacts and ecofacts: pottery, animal bones, shell, stone tool, glass, beads	occupation layer with traces of destruction
2_1GN	Compaction: loose; Colour: light yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery (deposit not fully excavated)	fill of pit
3_1GN	Compaction: loose; Colour: light yellow; Composition: gravel sand; Inclusions: fragments of red bricks, charcoals and ashes; Artefacts and ecofacts: pottery, animal bones, stone tools	occupation layer with traces of destruction
4_1GN	Compaction: loose; Colour: grey-brow-orange; Composition: sand; Inclusions: fragments of red bricks, charcoals and ashes; Artefacts and ecofacts: pottery, animal bones, stone tools	occupation layer with traces of destruction
5_1GN	Compaction: compact; Colour: grey; Composition: silt; Inclusions: organic; Artefacts and ecofacts: shell; glass bottle (deposit not fully explored)	earthen floor
6_1GN	Compaction: loose; Colour: greyish yellow; Composition: sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, animal bones, shell	fill of robber cut
7_1GN	Compaction: loose; Colour: dark yellow and orange; Composition: sand; Inclusions: charcoals, mudbricks; Artefacts and ecofacts: pottery, animal bones, shell, stone tools, CBM, metal items	destruction layer with traces of burning
8_1GN	Compaction: compact; Colour: grey; Composition: sand; Inclusions: silt; Artefacts and ecofacts: pottery, stone tools (deposit not explored)	destruction layer with traces of burning
9_1GN	Compaction: loose; Colour: greyish yellow; Composition: sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: deposit not fully explored	fill of robber cut
10_1GN	Compaction: loose; Colour: grey; Composition: sand; Inclusions: charcoals, ashes, red bricks; Artefacts and ecofacts: pottery, animal bones, shell	fill of robber cut
11_1GN	Compaction: loose; Colour: yellow-black; Composition: sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, stone tools, metal item	destruction layer with traces of burning
12_1GN	Compaction: compact; Colour: grey; Composition: silt; Inclusions: charcoals; Artefacts and ecofacts: iron item, cord	earthen floor
13_1GN	Compaction: compact; Colour: dark yellow; Composition: silt and sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones, shell, stone tools	occupation layer
14A_1GN	Compaction: compact; Colour: dark grey; Composition: silt; Inclusions: salt/lime?; Artefacts and ecofacts: pottery, animal bones	occupation layer
14B_1GN	Compaction: compact; Colour: dark grey; Composition: alluvium; Inclusions: salt?; Artefacts and ecofacts: none	natural soil
15_1GN	Compaction: compact; Colour: yellow; Composition: gravel sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, beads (deposit not fully explored)	fill of oven

Table 19.7. List of deposits Trench 1/GN (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_2GN	Compaction: slightly compact; Colour: light yellow; Composition: gravel sand; Inclusions: fragments of red bricks; Artefacts and ecofacts: pottery, stone tools	surface
1_2GN	Compaction: slightly compact; Colour: light yellow; Composition: gravel sand; Inclusions: fragments of red bricks; Artefacts and ecofacts: pottery, animal bones, stone tools	occupation layer
2_2GN	Compaction: compact; Colour: yellowish-grey; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: pottery, beads, animal bones, shells, stone vessel?, metal item	occupation layer
3_2GN	Compaction: compact; Colour: dark yellow; Composition: sand; Inclusions: organic materials; Artefacts and ecofacts: pottery, stone tool, animal bones	occupation layer

4_2GN	Compaction: compact; Colour: light grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, shell, stone tools	sprased mud (?)
5_2GN	Compaction: loose; Colour: greyish, black, yellow; Composition: sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, animal bones, shell, stone tools, glass, CBM	fill of pit
6_2GN	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	earthen floor
7_2GN	Compaction: loose; Colour: dark yellow; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: none	organic soil
8_2GN	Compaction: loose; Colour: greyish yellow; Composition: sand; Inclusions: silt; Artefacts and ecofacts: pottery, stone tools	occupation layer
9_2GN	Compaction: loose; Colour: greyish yellow; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: pottery, animal bones, stone tool	occupation layer
10_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones, stone tools	occupation layer
11_2GN	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	earthen floor
12_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	fill of pit (related to the plant cultivation system)
13_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones	fill of pit (related to the plant cultivation system)
14_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, animal bones, shells, stone tools	fill of pit
15_2GN	Compaction: compact; Colour: dark grey; Composition: silt; Inclusions: lime; Artefacts and ecofacts: pottery, animal bones	earthen floor
16_2GN	Compaction: loose; Colour: greyish yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: none	occupation layer
17_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: pottery, animal bones	occupation layer
18_2GN	Compaction: compact; Colour: dark grey; Composition: lumpy sand; Inclusions: charcoals, ashes; Artefacts and ecofacts: pottery, beds, animal bones, shell, stone tool	fill of well
19_2GN	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	occupation layer
20_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tool, glass, animal bone	occupation layer
21_2GN	Compaction: compact; Colour: dark grey; Composition: lumpy sand; Inclusions: ashes; Artefacts and ecofacts: pottery, stone tools, animal bones	fill of well
22_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer
23_2GN	Compaction: hard; Colour: dark grey; Composition: alluvium; Inclusions: salts (?); Artefacts and ecofacts: none	earthen floor
24_2GN	Compaction: compact; Colour: grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
25_2GN	Compaction: loose; Colour: yellow; Composition: sand; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, animal bones	occupation layer, possible traces of flooding
26_2GN	Compaction: compact ; Colour: light grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	construction layer (remains of well construction)
27_2GN	Compaction: slightly compact; Colour: brownish; Composition: sand; Inclusions: smashed red bricks, charcoals; Artefacts and ecofacts: pottery, stone tools, animal bones	fill of construction shaf
28_2GN	Compaction: hard; Colour: red; Composition: clay; Inclusions: none; Artefacts and ecofacts: none	natural soil

Table 19.8. List of deposits Trench 2/GN (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_1SH	Compaction: loose; Colour: yellowish grey; Composition: gravel sand; Inclusions: none; Artefacts and ecofacts: pottery	surface
1_1SH	Compaction: loose; Colour: yellowish grey; Composition: sand and gravel; Inclusions: none; Artefacts and ecofacts: pottery, shells, glass, bones, animal bones	occupation layer
2_1SH	Compaction: compact; Colour: light grey; Composition: silt with lime; Inclusions: none, Artefacts and ecofacts: none	earthen floor
3_1SH	Compaction: loose; Colour: brownish; Composition: sand with silt; Inclusions: gravel; Artefacts and ecofacts: pottery, stone tools, glass fragments, beads, animal bones	occupation layer
4_1SH	Compaction: loose; Colour: light grey; Composition: sand; Inclusions: ashes; Artefacts and ecofacts: pottery, glass, animal bones	waste/fire place debris
5_1SH	Compaction: loose; Colour: yellow-brownish; Composition: sand with silt; Inclusions: none; Artefacts and ecofacts: pottery, stone tools, glass, animal bones	occupation layer
6_1SH	Compaction: compact; Color: light grey; Composition: silt; Inclusions: ashes; Artefacts and ecofacts: pottery	earthen floor
7A_1SH	Compaction: compact; Color: grey; Composition: gravel; Inclusions: none; Artefacts and ecofacts: none	bedding
7B_1SH	Compaction: compact; Color: light grey; Composition: silt; Inclusions: none; Artefacts and ecofacts: none	earthen floor
7_1SH	Compaction: compact; Color: grey; Composition: gravel bonded with silt; Inclusions: none; Artefacts and ecofacts: pottery	bedding
8_1SH	Compaction: compact; Color: light grey; Composition: silt with lime; Inclusions: ashes; Artefacts and ecofacts: none	earthen floor
9_1SH	Compaction: loose; Color: brownish red; Composition: sand with silt; Inclusions: ashes, charcoals, gravel; Artefacts and ecofact: pottery, glass, stone tools, animal bones	occupation layer
10_1SH	Compaction: loose; Color: yellow red; Composition: gravel sand with silt; Inclusions: charcoals; Artefacts and ecofacts: pottery, glass, stone tools, animal bones	occupation layer
11_1SH	Compaction: compact; Color: brownish red; Composition: gravel with silt; Inclusions: none; Artefacts and ecofacts: none	natural soil (settlement hiatus)
12_SH	Compaction: compact; Color: dark brown; Composition: gravel sand; Inclusions: gravel; Artefacts and ecofacts: none	fill of grave
13_SH	Compaction: hard; Color: dark brown; Composition: gravel; Inclusions: lime; Artefacts and ecofacts: none	natural soil (bedrock)

Table 19.9. List of deposits Trench 1/SH (prepared by Tomasz Michalik).

ID	Description	Characteristic
0_2SH	Compaction: loose; Colour: yellow; Composition: sand, gravel and small stones; Inclusions: gray sand; Artifacts and ecofacts: pottery, animal bones	surface
1A_2SH	Compaction: semi-compacted; Colour: gray; Composition: sand and gravel; Inclusions: pockets of yellow sand; Artifacts and ecofacts: pottery, animal bones and stone tools	bank of a seasonal stream
1B_2SH	Compaction: semi-compacted; Colour: gray; Composition: sand and gravel; Inclusions: pockets of yellow sand; Artifacts: pottery	bank of a seasonal stream
2A_2SH	Compaction: semi-compacted; Colour: gray; Composition: gravel; Inclusions: pockets of sand; Artifacts and ecofacts: only in the top section of the layer - pottery and animal bones	gravel – the top of the natural soil
2B_2SH	Compaction: semi-compacted; Colour: gray; Composition: gravel; Inclusions: pockets of sand; Artifacts and ecofacts: only in the top section of the layer - pottery	gravel – the top of the natural soil
3_2SH	Compaction: semi-compacted; Colour: brownish-red; Composition: gravel; Inclusions: none; Artefacts and ecofacts: none	natural soil

Table 19.10. List of deposits Trench 2/SH (prepared by Tomasz Michalik and Mariusz Drzewiecki).

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