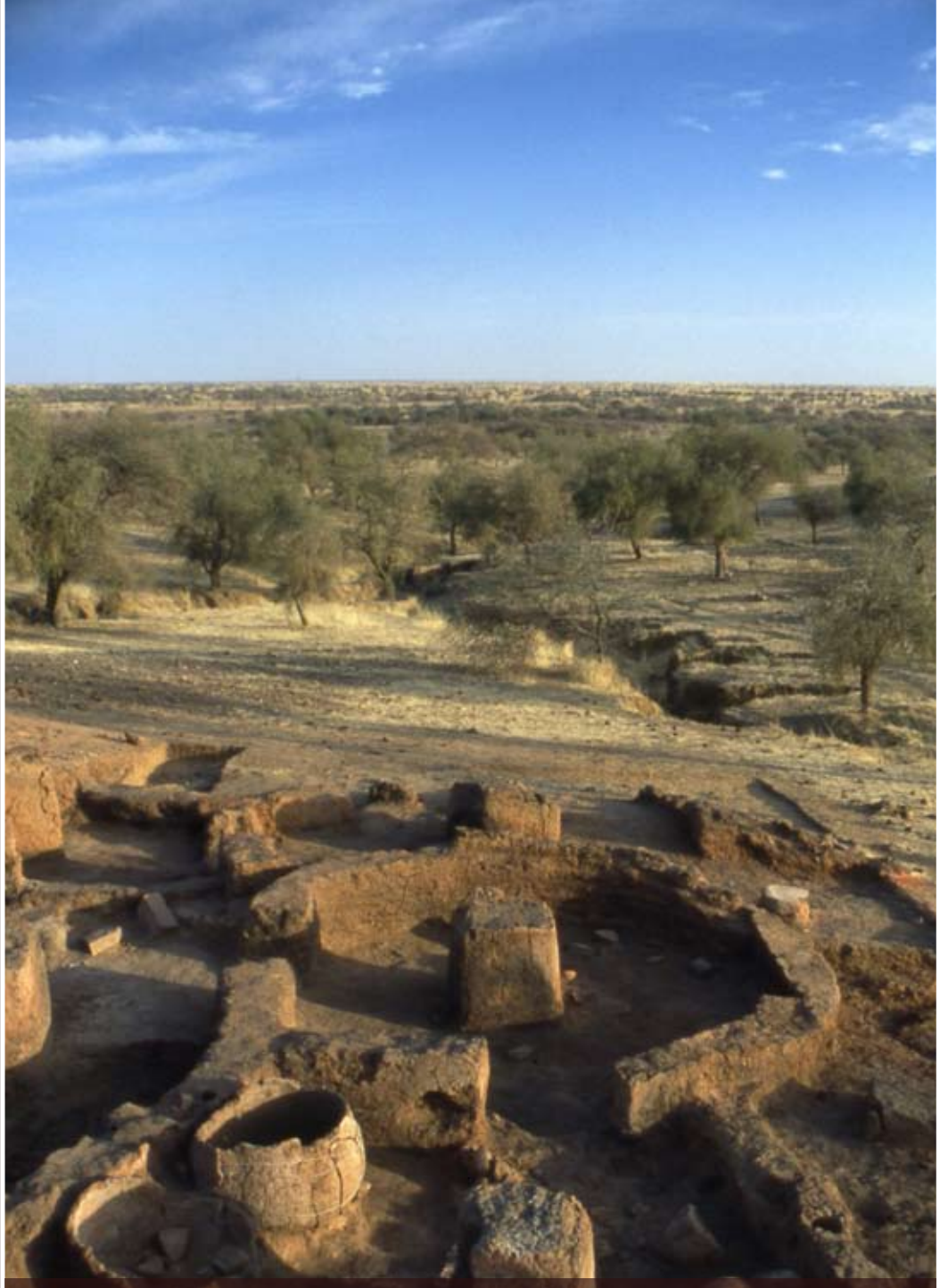

Oursi hu-beero

A Medieval House Complex in Burkina Faso, West Africa

L.P. Petit,
M. von Czerniewicz
C. Pelzer (eds)

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Editors' Preface

Dedicated to the memory of the inhabitants of Oursi hu-beero.

The purpose of archaeology is to learn more about past societies. However, since only a small part of what originally existed has been preserved, ancient societies are still far from understood, let alone reconstructed convincingly. Scholars struggle hard to understand the scarce findings by employing comparison and common sense, and try to place these little bits and pieces of evidence into the big jigsaw puzzle that is called history. But the picture that was originally printed on this puzzle is constantly blurred by opposing opinions and misinterpretations. The less hard data that exists, the more space that is available for different ideas and thus fierce disputes. Archaeologists are hoping for a situation that is close to a 100% reflection of the past; ideally, a second Pompeii.

Oursi hu-beero is certainly not a second Pompeii. Not even close. However, it has a lot in common. Both sites possess well-preserved architecture, reveal signs of daily activities, were rapidly buried under debris and exhibit hardly any post-depositional processes. And research at Pompeii as well as Oursi hu-beero came up with traces of inhabitants in their struggle to escape a catastrophic event.

After several years of excavations in West Africa, we were more than surprised in the year 2000 to discover evidence of such a well-preserved house complex. Former publications dealt with slow developments and processes, and contained words like “transitions”, “change” and “inventions”. As the reader will notice, this publication is different. With the help of numerous colleagues, individuals and institutions we were able to explore a situation, an event. For the first time we could experience, without much imagination, how it was to live 1000 years ago in the West African savannah.

The editors see this publication as a contribution to a better understanding of Africa’s past. The puzzle isn’t finished yet, not least because this volume is too drenched with interpretations. And these should be challenged, and if necessary, changed in the future. We hope that the work carried out at Oursi hu-beero will stimulate further research and will raise the level of knowledge and respect for West African history and culture.

Leiden, Haan and Mauritius
The editors

Acknowledgement

While undertaking fieldwork, we received enormous hospitality and kindness from the inhabitants of Oursi and the wider region. Many of them have participated in the excavation or in the OHB project. Without their help, the work would not have been possible. Our sincere thanks to all of them.

The excavations in 2000 and 2001 were supported financially by the German Research Foundation (Deutsche Forschungsgemeinschaft). Additional financial support came from Maya von Czerniewicz and Lucas P. Petit. We are particular indebted to the Centre National de la Recherche Scientifique et Technologique (CNRST) and to the Direction de Patrimoine Culturel (DPC) of the Ministry of Culture of Burkina Faso for permitting and assisting the team to work at Oursi during these years. The Université du Ouagadougou and the Johann Wolfgang Goethe-Universität, Frankfurt am Main were the executing institutes. Grateful thanks are due to Dr Kalo Antoine Millogo and Prof. Peter Breunig for their help before, during and after the excavation seasons.

The editors would like to extend a very sincere expression of gratitude to the people at the Römisch-Germanisches Zentralmuseum in Mainz, who restored and conserved many of the metal objects of Oursi hu-beero and made helpful suggestions about production and function. Further assistance was provided by people from the Johann Wolfgang Goethe-Universität, Frankfurt am Main, the Universität zu Köln and the Leiden University. We wish to thank Fokke Bloema of ARCHEON in the Netherlands for making a reproduction of one of the metal objects for the Musée d'Oursi.

Several institutes facilitated permanent storage of the finds: Musée National du Burkina Faso à Ouagadougou, Campement de Gorom Gorom, Musée d'Oursi and Johann Wolfgang Goethe-Universität, Frankfurt am Main.

The heritage management project OHB started in 2004. Financial support for the re-excavation, site protection, museum construction and exhibition was given by the Kulturerhaltprogramm, Auswärtiges Amt (Germany), Ambassador's Fund for Cultural Preservation (USA), Programme de Développement Local de l'Oudalan (financed by the Netherlands), Ambassade de France, and Niong Nongo e.V. (Partner für eine engagierte Entwicklungszusammenarbeit). Without the help of Désiré-Clément Conombo, technical advisor of the Ministry of Culture in Burkina Faso, the OHB project would certainly not be the same. Stéphane Ngondy and Hélène Suarez worked pro-bono on graphic design and text editing of the exhibition. Cécile Tassin-Pelzer provided inestimable material and logistical assistance to the whole of the OHB project. All these institutions and persons have contributed to the success of the OHB project and the presence of an on site museum.

We are grateful to Laura Crowley for carefully reading and commenting on the draft. She made many helpful suggestions about grammar and clarity of expression. Nevertheless, we are still responsible for discrepancies and failures. The editors owe a special debt of gratitude to Dr Joachim Eisenberg for his editorial comments. Furthermore, the editors wish to thank all contributors and people who have assisted with the production of this volume. In particular we are grateful to Karsten Wensink and Corné van Woerdekom of Sidestone Press. They assisted us in the final and often most difficult stage of the project, the publishing process.

Besides the people involved in the scientific part, we also wish to thank all those who supported us or the project in other ways. We owe them recognition. Last but not least, we are greatly indebted to our partners Sabine Petit, Michael von Czerniewicz and Cécile Tassin-Pelzer, who allowed us to work on this publication even though it meant giving up many evenings and weekends.

Foreword

Prof. Dr Peter Breunig, University of Frankfurt am Main

The excavation of the archaeological site Oursi hu-beero, presented in this publication, was carried out within a programme of the so-called "Sonderforschungsbereich 268". Such programmes are financed by the German Research Foundation (DFG) for the structural improvement and strengthening of specific fields of research. The SFB 268 was a cooperation between social anthropologists, linguists, geographers, botanists, archaeobotanists and archaeologists - an interdisciplinary research concept initiated in order to achieve insight beyond the reach of individual disciplines. Between 1988 and 2002, it constituted one of the largest research projects of the Johann Wolfgang Goethe-Universität, Frankfurt Main, where it was based. The project's title mirrors the overall topic of the research: "Cultural Development and Language History in the Natural Environment of the West African Savannah" or, in short, "Man and Environment in West Africa". At times, up to 100 natural and cultural scientists from Germany and African institutions were united in a densely woven net of interlinked research activities and partnerships. By these means, ideal conditions were met, enabling the running of substantial programmes by the participating disciplines.

Originally, the archaeological programme was focused on the emergence of food producing communities or the process of the "Neolithisation" in European and Near Eastern terminology. Case studies were carried out in Burkina Faso and Nigeria, supplemented with studies accomplished in the Benin Republic starting in 1996. We soon learned that the then current knowledge in each of the chosen regions was too small to focus any activity directly on the relevant topic. The details of food-production were not known, nor what the concomitant phenomena of its emergence were, or how old they are. For this reason it proved necessary to identify early food production and place its markers into a sequence by recording all kinds of archaeological data. One of the consequences was the extension of the studies into the Iron Age period. This became necessary since initial results had shown that the emergence of food producing communities was not a single event, but a long-term process, with progress and setbacks beginning in the 2nd millennium BC and lasting 2000 years, or until the early Iron Age, in the traditional model of prehistoric stages.

For the aforementioned reason, the archaeological programme conducted by the SFB 268 in Burkina Faso included Iron Age sites. The regional focus was the province of Oudalan which is situated in the Sahelian North of the country near the border with Mali and Niger. Surveys carried out by Maya von Czerniewicz and Ralf Vogelsang provided definite evidence of settlement sites dating to the Iron Age. Numerous settlement mounds with abundant surface finds and considerable stratifications were located and excavated by sampling. Soon, substantial assemblages from different phases of the Iron Age had been collected and analysed. Specific attention was dedicated to plant and faunal remains, sampled systematically and analysed by Stefanie Kahlheber, Katharina Neumann and Dirk Uebel (archaeobotany) and Veerle Linseele (archaeozoology). Collateral studies were carried out by Jeanne Millogo, Antoine Millogo and Lassina Koté from the University of Ouagadougou and by Sonja Magnavita at the graveyard of Kissi which provided instructive inventories dating to the 1st millennium AD. Thereby, the team was able to describe the Iron Age in the north of Burkina Faso in ecological, economical and cultural terms. The excavations were very useful in this respect, but the disadvantage was the almost complete invisibility of

structures inside the small test-trenches and in most cases also on the eroded surfaces. Thus, it remained unknown how the Iron Age villages in general were spatially organised and what happened in detail there.

As the reader will learn, Oursi hu-beero described in this book is a remarkable exception, an archaeological windfall. Like a flashlight it illuminates impressive and tragic details of life as it was lived about 1000 years ago. Our knowledge of the past would be considerably greater if all periods were represented by sites like this.

I am indebted to Maya von Czerniewicz, Lucas Petit and Christoph Pelzer for the excellent fieldwork carried out there, and in particular for initiating this publication, even though new engagements have occupied them since the end of the SFB 268-project.

Chapter 1

Introduction to Oursi hu-beero

Lucas P. Petit, Maya von Czerniewicz and Christoph Pelzer

1.1 Physical setting

The site of Oursi hu-beero (14°41.228" N and 0°27.733" W) is located in the province Oudalan in the north-eastern part of Burkina Faso (Figure 1.2). The landscape is characterised by flat plateaus, interrupted by shallow floodplains, longitudinal dune systems and lakes (Figure 1.1). The Late Pleistocene sand dunes, on which the archaeological site is located, form the principal topographical features of the area and traverse east to west, similar to the prevailing wind direction (Andres *et al.* 1996; Albert and Küppers 2001: 165). They hold a remarkable array of prehistoric and historical remains, assuming a preference of sorts for this zone in antiquity (Breunig and Wotzka 1993; Vogelsang 1995) or favourable preservation conditions (Neumann *et al.* 2000: 328). One of the reasons for a selective behaviour among the ancient occupants could be the dune's role in the region's natural water management system: the sand dunes act as dams to block the water from flowing northwards towards the old valley system of the Béli (Krings 1980: 9). During the rainy season in particular, this endoreic basin, Mare d'Oursi (Figure 1.4), is flooded, providing men and livestock in this semi-arid area with sufficient water supply throughout the year (Chevallier *et al.* 1985; Grouzis 1989).

The area belongs to the Sahelian zone (Le Houérou 1989) and has today an average annual rainfall of about 462 mm (Claude *et al.* 1991). The present-day vegetation is heavily influenced by anthropogenic impact and is characterised by an open grassland with only a few trees, mainly *Acacia* species (Guinko 1984; Ballouche and Neumann 1995). Most people in the area live as agro-pastoralist (Reenberg and Fog 1995). However, continuous land desertification and soil erosion, particularly due to unpredictable precipitation, intensive grazing, trampling and population growth, is recently a major concern for the inhabitants of the areas (see Chapter 2, this volume; Le Houérou 1989: 44; Lindqvist and Tengberg 1993; Abdel-Rahman *et al.* 2008).

Fig. 1.1 Aerial picture of northern Burkina Faso. Mare d'Oursi is visible in the background. Photo was taken in 2001.

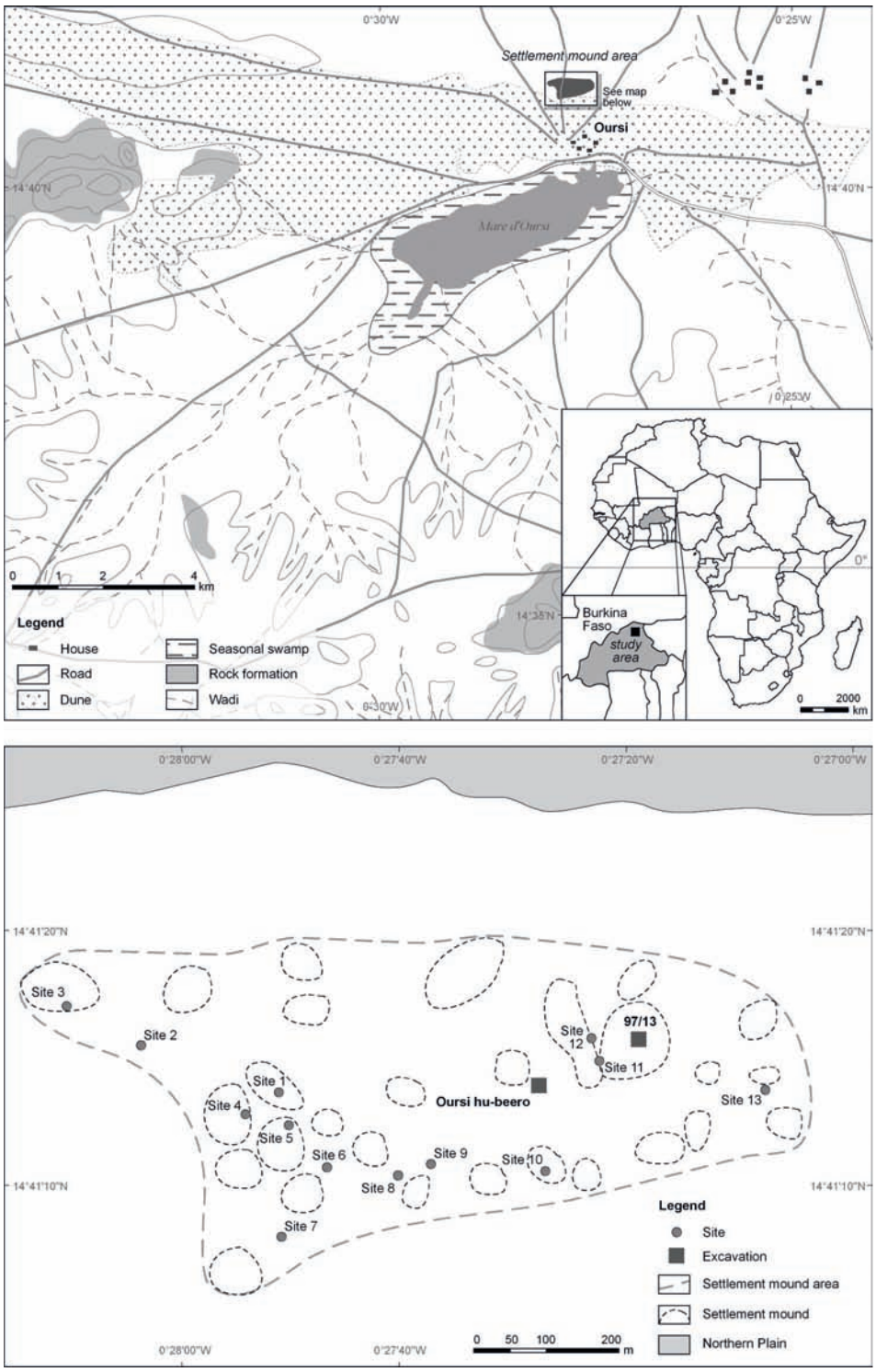


Fig. 1.2 Location of Oursi hu-beero. Map was made by J. Eisenberg and based on Albert (2002).

The geological rock formations in this part of Burkina Faso are of primarily Precambrian origin and comprise of granites and eroded volcano-sedimentary rocks (Haughton 1963; Gallais 1975; Krings 1980; Thiemeyer 2004: 88). Some gneiss, quartzitic sandstone and lateritic formations are also to be found in the area. The inhabitants of Oursi hu-beero could collect most of these rock types within walking distance.

1.2 History of archaeological exploration

Up to 1985, only two archaeological sites were known in the north of Burkina Faso: Aribinda (Dupré and Guillard 1986) and Wairegaigu (Wai-Ogusu 1976: 273; Calvocoressi and David 1979: 12). From 1985 onwards, a research group from France began conducting archaeological work in the region of Oursi (*e.g.* Grouzis 1988: 243). This archaeological reconnaissance survey was part of a larger interdisciplinary project aimed at elucidating the structures, productivity and dynamics of ecological systems of the Sahel.

The university of Frankfurt started conducting research in the province of Oudalan in 1991 and by the end of the project in 2002 (Preface, this volume) had discovered more than 200 archaeological sites from the Late Stone Age up to the Medieval Period (see Chapter 4, this volume; cf. Breunig and Wotzka 1993; Vogelsang 1995; 1996; 2000; Vogelsang *et al.* 1999; Hallier 1999; Pelzer and Magnavita 2000; Frank *et al.* 2001; Magnavita *et al.* 2002; Von Czerniewicz 2004).

In 1997 an archaeological project was launched by the university of Ouagadougou and the university of Toulouse le Mirail around the village of Markoye. This resulted in the discovery and study of rock paintings and scattered Middle Palaeolithic and Neolithic stone tool concentrations (Barbaza *et al.* 1998; Millogo 2000; Barbaza and Jarry 2003; 2004; Barbaza *et al.* 2005).

1.3 Excavation project at Oursi

Oursi hu-beero was discovered in 1997 by Peter Breunig and Maya Hallier during excavation work on a group of settlement mounds near the modern village of Oursi (Figure 1.3; Hallier and Petit 2000a; Von Czerniewicz 2004). The still visible burnt remains, located a few hundred metres west of the excavation trench, had attracted the attention of the archaeologists. Subsequent research conducted by Christoph Pelzer made clear that none of the ethnic groups living close to the remains today knew of any oral traditions associated with the site. This was interpreted as an indicator for a date of the site before the arrival of the first of these groups in the area by the end of the Medieval Period ($15^{th}/16^{th}$ century AD). Given the fact that the excellent preservation and uniqueness of the remains seemed to point to an extremely young age of the ruins, the team's interest in the site was aroused by this apparent contradiction. Although the site did not fit in with the main research goals of the SFB project (see Preface, this volume) at that time, a test pit was dug to obtain some charcoal samples for ^{14}C dating (see Chapter 14, this volume). The ruins were then left aside until the year 2000 - the year of the first excavation season.

The scientific interest in the site increased in that year as several large erosion gullies were threatening the structures. After discussions with the university of Frankfurt and the university of Ouagadougou, it was decided to excavate a part of the site during the spring of 2000, under the direction of Maya Hallier and Lucas Petit (Hallier and Petit 2000a; 2000b; 2001; Petit and Hallier 2000). The important outcome of this short season and the ongoing destructive erosion processes provided the reasons to continue the work on a larger scale in 2001. With the exception of a small part on the southern side of the excavation, the structures were completely excavated.

The research project at Oursi hu-beero had four main goals: firstly, the site had suffered severely from erosion associated with rapid incision. Numerous deep gullies approached the site, making immediate action vital (Figure 2.1). Furthermore, architectural features are very scarce in African archaeology and the site provided a unique opportunity for the study of early mudbrick constructions. Thirdly, the settlement patterns in the vicinity of Oursi hu-beero were to be investigated in order to decipher the role and relationship between the complex and the settlement (in relation to previous archaeological excavations at Oursi, see Von Czerniewicz 2004). And fourthly, the archaeological data of Oursi hu-beero needed to be set into a historical framework: the site seemed to be suitable for closing the gap between archaeology and history, between static objects and written sources.

1.4 Preservation project at Oursi

Discussions on preservation with Antoine Millogo from the university of Ouagadougou after the excavation season in 2001 led to the decision to refill the structures cautiously since it was not then clear how the structures could be protected from environmental stress. After three years of organising sponsors and logistical questions by Christoph Pelzer, the project OHB was founded in the year 2004 in order to preserve the endangered site and make it accessible for public (see Chapter 15, this volume).

1.5 Excavation team

The policy of the Oursi hu-beero project was to expedite the processing of the finds in order to attain the goal of timely publication. To that end, many specialists were invited into the field or were included in the final preparation of the finds. The on-site staff of the 2000 season consisted of: Maya Hallier (now von Czerniewicz), co-director; Christoph Pelzer, historian; Antoine Millogo, archaeologist, and Lucas Petit, co-director. The 2001 staff consisted of: Maya Hallier, co-director; Christoph Pelzer, historian; Antoine Millogo, archaeologist; Lucas Petit, co-director; Veerle Linseele,

Fig. 1.3 Mudbrick buildings in modern Oursi. Photo was taken in 2005.

Fig. 1.4 The east bank of Mare d'Oursi with a mudbrick production place. Photo was taken in 2005.

archaeozoologist and Nicole Rohde, preparing archaeobotanical samples. The permanent staff was assisted by a team of Oursi inhabitants, some of them trained in archaeological techniques in the past. Re-excavation work and preparation for long-term preservation was carried out in 2005.

The off-site staff consisted of: Daniela Euler, pottery restorer; Stefanie Kahlheber, archaeobotanist; Alexa Höhn, charcoal analyst; Barbara Voss, illustrator; Monika Heckner, illustrator and computer specialist; Martina Böhm, internet web page designer and Klaus-Dieter Albert, geographer. Several institutes have generously supported this salvage expedition: Römisch-Germanisches Zentralmuseum, Mainz: preservation of metal objects; Johann Wolfgang Goethe-Universität, Frankfurt am Main: provision of library facilities, working labs and storage rooms; le Campement in Gorom-Gorom and le Musée National in Ouagadougou for storing finds in Burkina Faso.

Fig. 1.5 Excavation team 2000 (a), excavation team 2001 (b), excavation team 2005 (c).

Chapter 2

Geomorphodynamic Events at Oursi

Klaus-Dieter Albert[1]

2.1 Introduction

Gully erosion is a common phenomenon in arid and semi-arid regions around the world (Marzolff *et al.* 2002; Strahler and Strahler 1997: 393). The highly sensitive plant cover in these areas can easily be depleted by, for example, fires or grazing herds. Very soon a maze of sharp edged rills and gullies are developed. Even though gully erosion is generally considered to be a major process in land degradation, there is still a lack of adequate methods for the documentation and monitoring of their development. The settlement mounds at Oursi today are strewn with deeply branched erosion gullies, from which sediments are constantly washed out of the mounds and re-deposited in the colluvial plains (Figure 2.1). The question of interest to both geomorphologists and archaeologists is whether the undulating relief seen today does actually represent the historical settlement, or if it has developed only fairly recently by erosion (Albert 2002; Marzolff *et al.* 2002).

Fig. 2.1 Oursi hu-beero endangered by erosion gullies. Photo taken in 2005.

1 This chapter is part of Albert's Ph.D. dissertation submitted to the Johann Wolfgang Goethe-Universität, Frankfurt am Main in 2002. It was translated and slightly reduced in length by Laura Crowley, Lucas P. Petit and Joachim Eisenberg, all given Albert's consent.

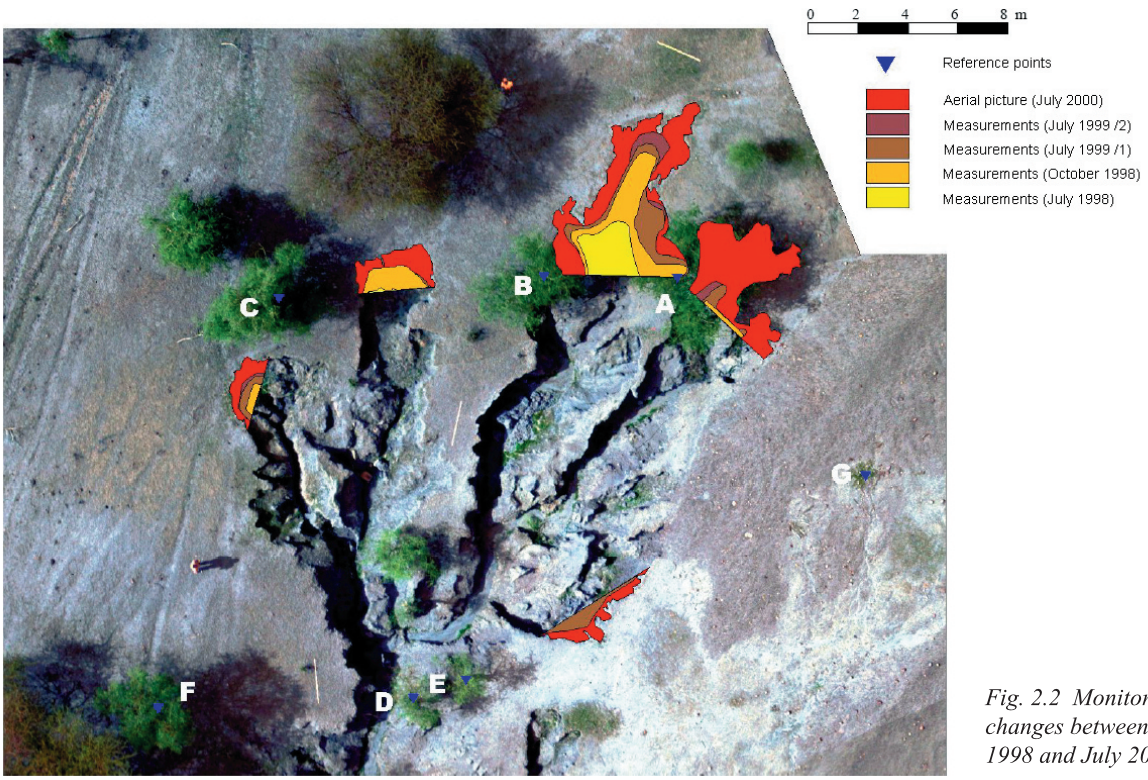


Fig. 2.2 Monitoring changes between July 1998 and July 2000.

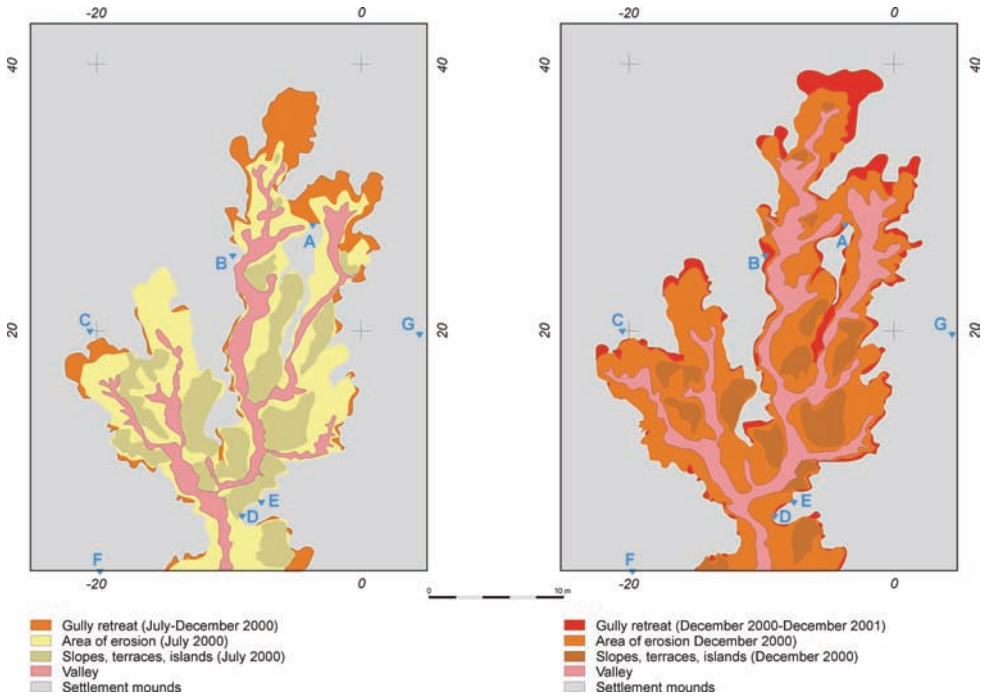


Fig. 2.3 Gully development in 2000 and 2001.

2.2 Monitoring recent geomorphodynamic events at the settlement mounds of Oursi

Two different methods were used to investigate gully development at the settlement mounds of Oursi. Measurements in the field were undertaken during the rainy season of 1998 (from the beginning of July until the end of October 1998) and in the beginning of the rainy season of 1999 (Figure 2.3). Using trees in the vicinity of the gully as fixed reference points, distances to the headcuts and gully width were measured. Elevations were taken from a site datum, which was subsequently used as a fixed point, from which radial distances to the different gully-heads were measured. However, it should be mentioned that only linear retreat and width increase can be deducted by this method (Marzolff *et al.* 2002).

Even during 1998 we were astonished by the extension - some more than three metres - of the different headcuts of the gullies. Their width had increased 160-170 cm, and even more than 200 cm if we include a newly formed gully on the western side. An area of 40 m² was washed out of the system in only a few months. The decrease in depth was, however, relative small - not exceeding 50 cm. The uppermost headcuts had changed most actively and these control the development of the gully. The removal of material in the lower gully sectors, where different channels assimilated, was considerably less (section F-D).

A slight increase in width and depth was noticed at all gully-arms in 1999. More extensive erosion processes were detected in a younger, western side-arm of the gully. The extension velocity at the headcuts changed from a few centimetres between October 1998 and beginning of July 1999 to one metre by the end of July 1999 (section A-B). The depth, however, did not change within these three weeks. The enlarging of the gully under investigation continued in 1999 and 2000. The sections C-F and G-A in particular grew a few decimetres, and all gully-heads retreated clearly towards the interior of the group of settlement mounds. During spring of the year 2000, section G-A acquired a second branch that grew in a relatively short period up to four metres. At the same time, we saw an increase in length in all other gully-arms, and the headcut in section A-B grew more than two metres.

Much more detail was achieved in 2000 and 2001 by the use of a large-scale remote sensing system for aerial survey and image processing, which was developed at Frankfurt University's Department of Physical Geography (Marzolff *et al.* 2002). Numerous aerial photographs were taken with a remote controlled SLR camera fixed on a kite (Figure 2.4), in order to collect adequate quantitative data of the gully development at Oursi. The first set of photographs of the gullies was taken in July 2000 and later compared with a second (December 2000) and a third set (December 2001).

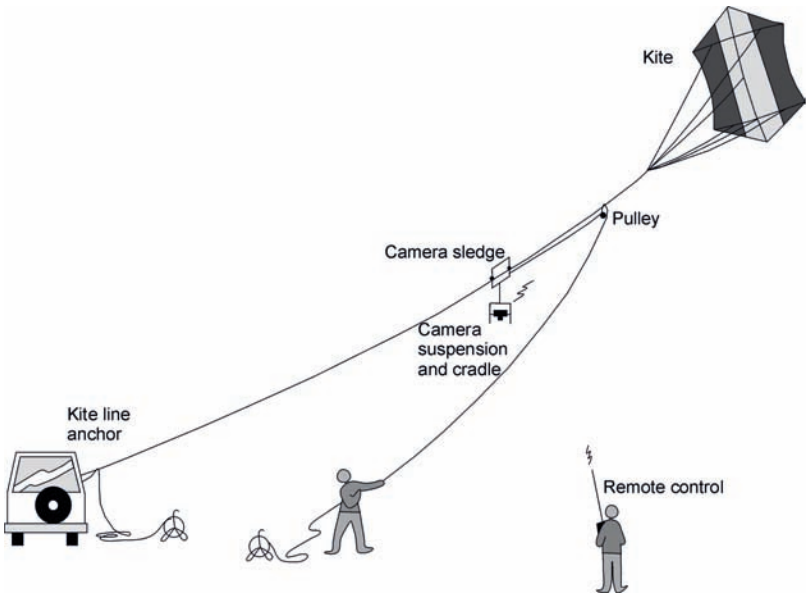


Fig. 2.4 Kite system, comprising rokkaku kite and camera suspension (after Marzolff et al. 2002: Fig. 4).

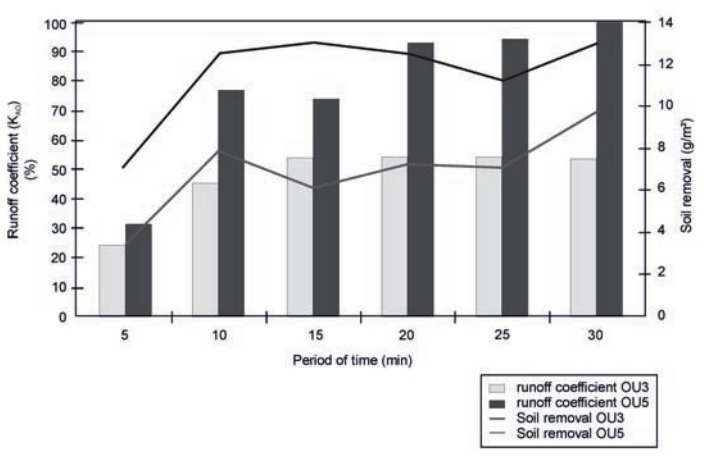


Fig. 2.5 Soil removal and runoff coefficient of different surface covers at the settlement mounds of Oursi.

Geometric corrections were applied, using ground control points, and RMS errors of 2-8 cm were achieved.

As the different research periods progressed, the advance of the main branch (section A-B) was considerable (19.5 m²), and gullies A-B and G-A became united, leaving a small island in the middle. Additionally, new lateral headcuts of gully A-B and G-A developed (2000). In the eastern part of the studied area, less erosion processes were detected and, in contrast to previous years, section B-C hardly revealed any changes (1.8 m²). Also section C-F had advanced more slowly (1.2 m²). It seemed that the extensive enlargement of the neighbouring branch had reduced the catchment area for these gullies. Section G-F showed an increase of 5 m² (2000) and in 2001 section A-B had increased even more (11.9 m²). The smaller lateral branch advanced another 1.9 m², even though the retreat of the main headcut by 6 m had logically caused a decrease in the catchment area of the smaller gully.

The enlargement of the catchment area had also influenced section G-A, and in 2000 it clearly showed two branches (increase in area of 3.4 m² and 1.4 m²). The majority of the sediment loss added to the length rather than the width, testifying to the linear nature of this type of gully. In the western part in particular, some smaller gullies had cut into the settlement mound deposits. However, as these gullies were not influenced any more by any of the catchment areas, it is expected that the existing headcuts will not retreat rapidly in the nearby future (catchment area of only 3485 m² in December 2001).

2.3 Surface cover and its relation to above-presented geodynamic processes

Erosion processes and the development of gullies are not only influenced by the size of the catchment area, but strongly by its surface cover and substrate. These determine the patterns of runoff and infiltration capacity of rainwater. Two types of surface covers can be distinguished at the group of settlement mounds investigated here:

- surfaces with a dense cover of settlement residuals (coarse material, sherds, pisolites (OU5));
- clayey sandy deposits without or with little coarse material and relative sparse vegetation at the beginning of the rainy season (OU3). This type is mainly found between the higher settlement mounds.

Figure 2.5 shows the runoff coefficient and rates of soil erosion of both surface covers. We see a sharp increase in the runoff coefficient on type 1 of up to 70 %, and it still increases continuously after 30 minutes. The sandy sediments, however, find a stable coefficient between rainfall and runoff after 15 minutes. This is also visible in the data of the infiltration capacity. During the first 30 minutes of the experiment, we see a lower infiltration capacity in type 1 compared to the second type (61.4 mm/h related to

92.7 mm/h). The same difference can be seen in the erosion rates: 6-10 g/m² on type 1 compared to 11-13 g/m² on the sandy deposits.

Decreased infiltration causes strong runoff on the uppermost slopes of the settlement mound surfaces. The erodibility of the clayey sandy deposits below the settlement debris and along the drainage lines results in enormous soil loss and in advanced gully development.

Another point that influences the soil loss and morphodynamics of this group of settlement mounds is the frequent passing of animal herds on their way to Mare d'Oursi. The animals prefer the area in between the settlement mounds with a gradual rise rather than the steep slopes of the mounds themselves. The animal paths, which are visible on aerial photographs, do not contain vegetation and are subsequently deepened by being frequently trodden. The results are animal-made gullies without protecting elements, such as pisolites, ceramics and vegetation.

2.4 Pedogenetics

As mentioned above, the texture of the uppermost layers of the settlement mound is relatively heterogeneous, containing a high clay percentage and many additives, such as ceramic sherds. In profile OS7 in the western part of the research area, the yellowish-brown dune sand, without any anthropogenic components, begins in a depth of 120 cm. Seen at other sites in the paleodunes, the colour spectrum of profile OS7 shows the development of typical dune soils.

Profile OS8 is situated east of the same gully and cuts into the settlement mound. Some differences are, however, noteworthy. It was not the expected anthropogenic deposit that was discovered on top, but a package of fine-grained sandy sediments, lacking in archaeological material. Directly below this rather unexpected layer, a 10 cm sandy deposit with large quantity of cultural debris was discovered, until succeeded by a layer of secondary-deposited medium-grained dune sand at a depth of 175 cm. The accumulation sequence seems to be the result of former erosion processes.

On the middle slopes of the settlement mounds west of the gully, a cemetery is being used by the modern inhabitants of the region. A part of the cemetery is already damaged and cut by one of the gullies. The profiles show bones and ceramic vessels (OS9). The uppermost layer is a mixture of slightly clayey sands and anthropogenic material, and is relatively thin compared to other places (45 cm). The density of anthropogenic material

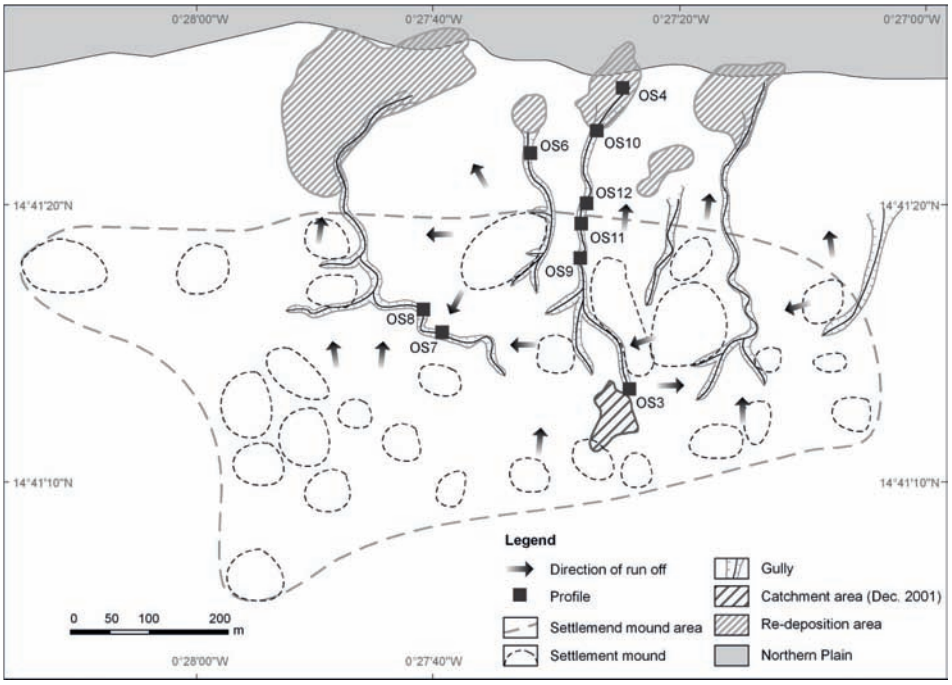


Fig. 2.6 Map showing the settlement mounds, gullies and studied profiles.

on the surface points to extensive erosion activities, which had removed the finer material.

The sediments below the bones are homogeneous and correspond to the slightly eroded fine-grained paleodune sands. In adjacent areas these natural sands are even visible on the recent surface. Surveys along the same northern slopes have proven that this is quite typical.

Further downslope, stratified layers of coarser material and fine-grained sands are covered by re-deposited sands (OS11). One of the lower layers contains iron slag and fragments of grinding stones. The uppermost layer at profile OS11 contains dune sands and coarse settlement mound material. An almost identical profile was drawn a little lower (OS12). The uppermost layers are, however, less massive here than at profile OS11. Additionally, fewer stratified fluvial layers with few coarse grained layers were encountered in the lower part of profile OS11.

Downslope in particular, we see that the different gullies had cut the accumulations of even older erosion activities. Below 160 cm, profile OS6 reveals fine-grained dune sand, with its typical yellowish colour of sands originating from Ogolian dunes. An OSL sample taken at a depth of 170 cm gives a date of 21.9 ± 2.2 ka BP (HDS 828). At a depth of around 150 cm, on top of these Ogolian sands, a red-yellowish layer with large ceramic sherds was found, followed by a homogeneous fine-grained substrate with some clayey dark brown sediment. Another OSL sample taken at a depth of 110 cm resulted in a date of 4.8 ± 0.8 ka BP (HDS 827b). The uppermost layers consist of a medium-grained sandy substrate, containing many ceramic sherds and coarse grained material.

North of the settlement mounds and their fans, several spacious colluvial plains were formed by these extensive erosion processes. Profile OS10 shows younger colluvium on top of older sediments and material from the settlement mounds. The younger very coarse-grained sand deposits reach to a depth of 50 cm. Beneath this layer, a 90 cm thick brown-coloured clayey and fine-grained sand was seen. Its oldest part contains more sand and ceramic fragments. A comparable younger coarse-grained and sandy layer was unearthed in profile OS5. These clearly visible layers mark the different erosion phases. Below these deposits up to 90 cm, a somewhat browner and clayier sand with ceramic sherds was discovered. Approximately 90-100 cm below the surface more and more clayey brown sediments appear, still containing coarse material.

More to the north, less colluvial deposits were found. Profile OS4 reveals a sand layer of only 70 cm with sediment mound deposit that was discovered on top of the glacis substrate. Due to a decrease in runoff power, the sediments here are much finer-grained. The lower sediments are solidified and have stagnic properties.

2.5 Conclusion

The heterogeneous deposits of the settlement mounds - mainly clay-sandy matrix with coarse debris, ceramic fragments and stones - are comparable with the material seen during excavations at the settlement mounds. The headcuts of the gully under investigation have cut into settlement mound layers, sometimes revealing intact ceramic vessels. This assumes a broader accumulation of occupation layers, at least in the basic sectors. A thin layer of settlement mound material was recognised at a few spots along the slopes. It marks the transition between the main settlement mound deposits and the secondary deposits downslope, containing both dune sands and settlement mound material. The stratified layers of coarse and fine sediments with a clear fluvial facies were not identified along the northern slopes, but are sometimes located directly next to dune sand deposits. This points to multiple fills of gullies with settlement mound material (for example profiles OS11 and OS12), covered with a mixture of sands and settlement mound debris. Some of the recent gullies follow older ones that were filled in at a later stage and levelled even further by younger accumulation processes. The coarser deposit seen in profile OS6 does not, however, show this stratification and it remains unclear, if it should be interpreted as a fill in an older gully or accumulation in situ. In any case, the Holocene dune deposits visible in the lower part are clearly eroded, assuming that the sand sediments above the deposits with a date of 4.8 ± 0.8 ka BP originally arrived from the dunes. This means that the layer situated lower, with the

ceramic fragments, should be older. Von Czerniewicz has dated these pottery sherds to the Late Stone Age (pers. communication). However, one sherd dates to the Iron Age, which complicates the origin of the deposits. Layers on top of the sandy sediments are much coarser and stem from a younger erosion phase, probably during the Iron Age.

The differentiated sediments of the deposits point to a variable geomorphological history of the settlement mounds. This study proves that the removal of sediments was very common during and in between occupation phases, which means that the settlement mounds were constantly changing: accumulating and eroding material. Subsequent developments in the settlement mounds can be extracted from the results, if we reconsider contemporary geomorphodynamic events in motion at different places.

1 Starting at a point in the early development, the northern slopes were typical of a Late Pleistocene dune relief (21.9 ± 2.2 ka BP) with Holocene dune soils (Chromic Arenosols) and dense vegetation from the top of the dunes up to the northern slopes. It is assumed that parts were destroyed by animal herds on their way to Mare d'Oursi.

2 At the moment people settled the higher slopes of the dunes, the accumulation of occupation layers began. It is expected that walking and digging activities along the lower slopes resulted in excessive erosion and erosion of soils. After clearing the habitation area and the zones outside the compounds of vegetation, erosion processes continued. Sometimes settlement mound debris was secondarily accumulated in areas downslope and artefacts were mixed with dune sand by walking and moving.

3 During the continuous and dense occupation in the middle and Late Iron Age (5th-13th century AD), the settlement mounds grew, as excavations in 1997 have proven (von Czerniewicz 2004). It can be assumed that as a result of the increase in accumulation, the removal of sediments also increased. Sediments were transported from the top, accumulated temporarily downslope, and by new processes continued their way to the lower plains through the different gullies and drainage lines. Thereby the differences in settlement mound accumulation were caused in an accentuation of the mound-relief.

4 Probably during, but certainly after the abandonment of the settlement mounds, the drainage lines were filled again with sediments. Removal and residual enrichment of coarse settlement debris on the surfaces, as well as recovering vegetation caused a continuous decrease in erosion processes and led thus to a stabilising of the morphology.

5 The decrease in vegetation and the intensification of animal movements in more recent times have caused an advanced increase in soil loss at the headcuts. Older drainage lines are now cleared and the slopes of the settlement mounds have recently been cut severely by deeply incised gullies.

Most important is that, during the development of the settlement mounds by linear erosion processes, more complex sedimentation and depositional relationships in the lower part of the mounds have prevailed, rather than a normal even removal of sediments. The typical succession in an upside-down stratigraphy in the lower parts, as it is normally presented in geoarchaeological publications (*e.g.* Rosen 1986), is only partly visible here. This system is altered by continuing cuts and fills with different accumulation types. The relief of the settlement mounds definitely does not represent that at the time of the abandonment. This shows that we should always involve geomorphodynamics in the reconstruction of occupation phases where excessive erosion processes have played a significant role in the history of the site, both during and after its settling.

Chapter 3

Oursi hu-beero *in Situ*

Lucas P. Petit and Maya von Czerniewicz

3.1 Excavation method

3.1.1 Excavation strategies

The excavations at Oursi hu-beero were carried out according to the rules and definitions of debris-layer analysis, developed in England (by General Pitt-River) and on Middle Eastern settlement mounds (*e.g.* Wheeler 1954; Kenyon 1981). Following the results of the work by von Czerniewicz in 1997, the burnt remains were considered to be the latest occupation phase of the settlement mounds (von Czerniewicz 2004).[1] Although the excavation policy was to clear and investigate the burnt remains, attention was paid to the effects of erosion and other post depositional processes at the settlement mound (see Chapter 2, this volume). Additionally, subsequent testing of underlying strata was necessary for understanding the stratigraphic position and character of this building phase. The spatial units were excavated with trowels, small picks and traditional short-handled agricultural hoes.

The basic unit in the stratigraphical excavation was the locus. A locus is any unit that has been deposited during one single process, either human induced or otherwise. In some cases, for example pits, a locus is not a deposit but the opposite: the removal of material. The method of excavation was such that the different units were separated while digging, in order to collect the material culture within that particular locus.

Secondly, a locus was the elementary volume unit used for establishing archaeological relationships. The excavation of structures with a limited number of occupation phases and chronologically successive layers makes the separation of these different units easier, along with distinct expectations made based on the test trench. The debris on top of the original walking surface can be considered as having been deposited in one single process. As the reader will notice, this debris layer could be divided once more into an upper and lower part, separated by material culture (see Chapters 4 and 5, this volume). Spatially, most loci are limited to one single room, with the exception of the uppermost layers (*e.g.* topsoil) and some depositions excavated during the first season. Mudbrick structures have been given a sequence wall number after the excavation.[2]

3.1.2 Grid systems

Two grid systems were used at Oursi hu-beero. During the excavation work the site was divided into trenches and squares that were numbered starting with A (Figure 3.1). This grid system was oriented more or less north south. During the first season, the excavated trench was divided into three 4x4 m squares (A, B and C), separated by an one meter balk (AB). This subdivision, generally used on man-made mounds, has the general advantage of enabling good interaction between vertical and horizontal information. Due to the limited size and irregular shape of the structures, changes in the excavation strategy in 2001 were inevitable. Too many balks would hamper the excavation work and eliminated the advantages of the above described grid system. After studying the data of

1 The excavations in 2001 have, however, revealed that remains of a structure covered the most south-western occupation remains of Oursi hu-beero (see Chapter 4, this volume).

2 During the first season, some walls were assigned a locus number.

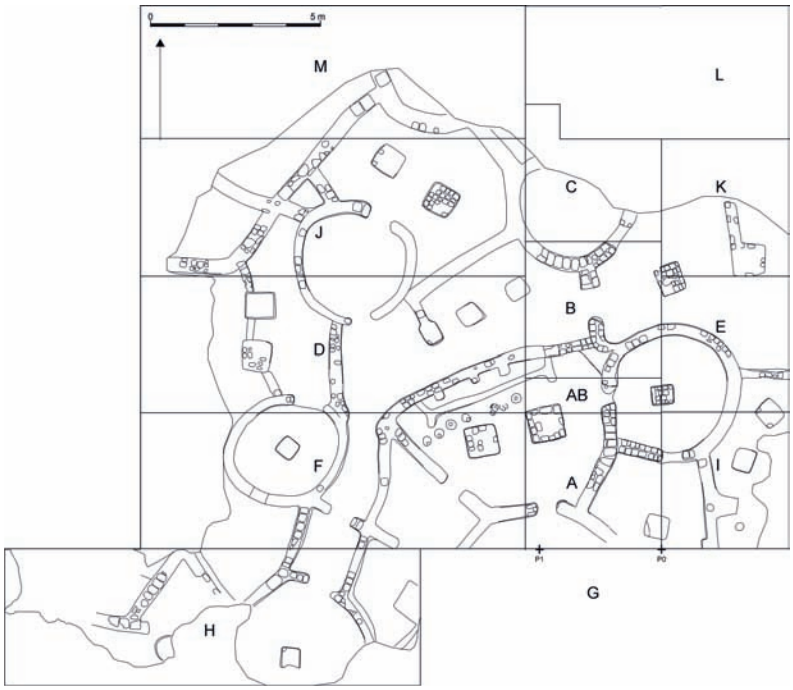


Fig. 3.1 Excavation area divided into trenches and squares.

the first season, it was decided not to enlarge the squares (as is normally proposed), but instead to use room division as the ultimate archaeological unit. Every room was treated as an archaeological excavation unit, and was excavated in test trenches. The different doorways from one room to the other acted as intermediate sections and connected the accumulated history of both units. It was taken care that none of the rooms were just 'cleaned'.

The second co-ordinate system at Oursi hu-beero, a checkerboard, was made after the excavation (Figure 3.2). Characters denote the grid column (X-axis) and integers denote the grid row (Y-axis). In the case of artefacts and vessels, provenience is

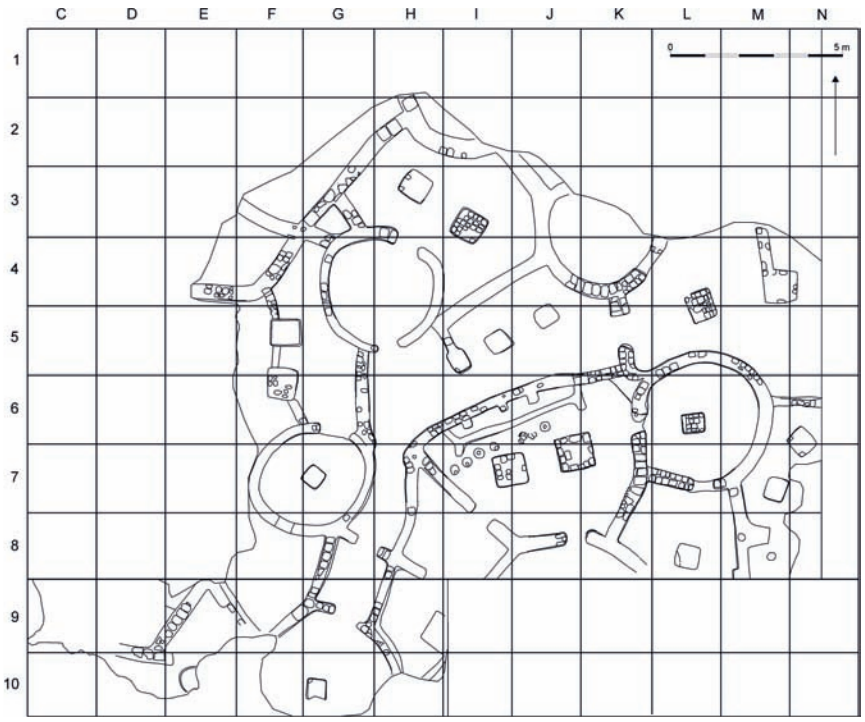


Fig. 3.2 Grid system according to a checkerboard.

recorded beside the trench, locus and bucket number, according to the position within its context (the relationships with the structures). The exact position was mentioned on the top plan drawings.

3.2 Registration method

Archaeological excavation data is not easy to bring into one closed framework. On one hand the data should be objective and the result of a clear methodological approach. On the other hand it is based on the subjectivity of the excavator, the registrar and the researcher. The recording system used at the excavation of Oursi hu-beero was so established that there was a double check of each find and locus.

3.2.1 Locus number

As the main entity, each locus was given a separate number, which means that there are no two and the same numbers at Oursi hu-beero. The season of 2000 included locus numbers 1 to 53 and the year 2001 the numbers 60 to 121 (for a complete list of loci, see Appendix A, this volume).

3.2.2 Bucket number

Every day new bucket numbers were assigned to the different loci. A separate bucket number was given to each 'bucket', in which one type of material (*e.g.* pottery, stone, archaeobotanical sample) was collected. There are no two identical numbers at the site: each bucket number is unique. For example, all pottery sherds found in one day in locus 12 were put into bucket with the number *1002*. The following day, in which the work continued in locus 12, the pottery was collected in a bucket with number *1003* (depending on the last number of the former day). Special finds, or finds of which the material could not be established during the excavation, were assigned their own numbers. All bucket numbers are distinguished in this volume from other numbering systems by an italic style (for a complete list of bucketnumbers, see Appendix B, this volume).

3.2.3 Wall number

After the excavation work the different architectural features were given wall numbers. A wall is defined as an architectural element that was erected in one single process, forming one continuous entity. If another element was built against this unit, it will get a separate number. All wall numbers are distinguished in this volume from the locus number by underlining.

3.2.4 Room number

Room numbers were assigned after the excavation, in order to make this publication more transparent, regarding locus, bucket and wall numbers. This volume will primarily deal with room numbers as the main parameter, for explaining the use of space, the positioning of finds and the activity areas (for example: this vessel was uncovered on the roof above room no. 5).

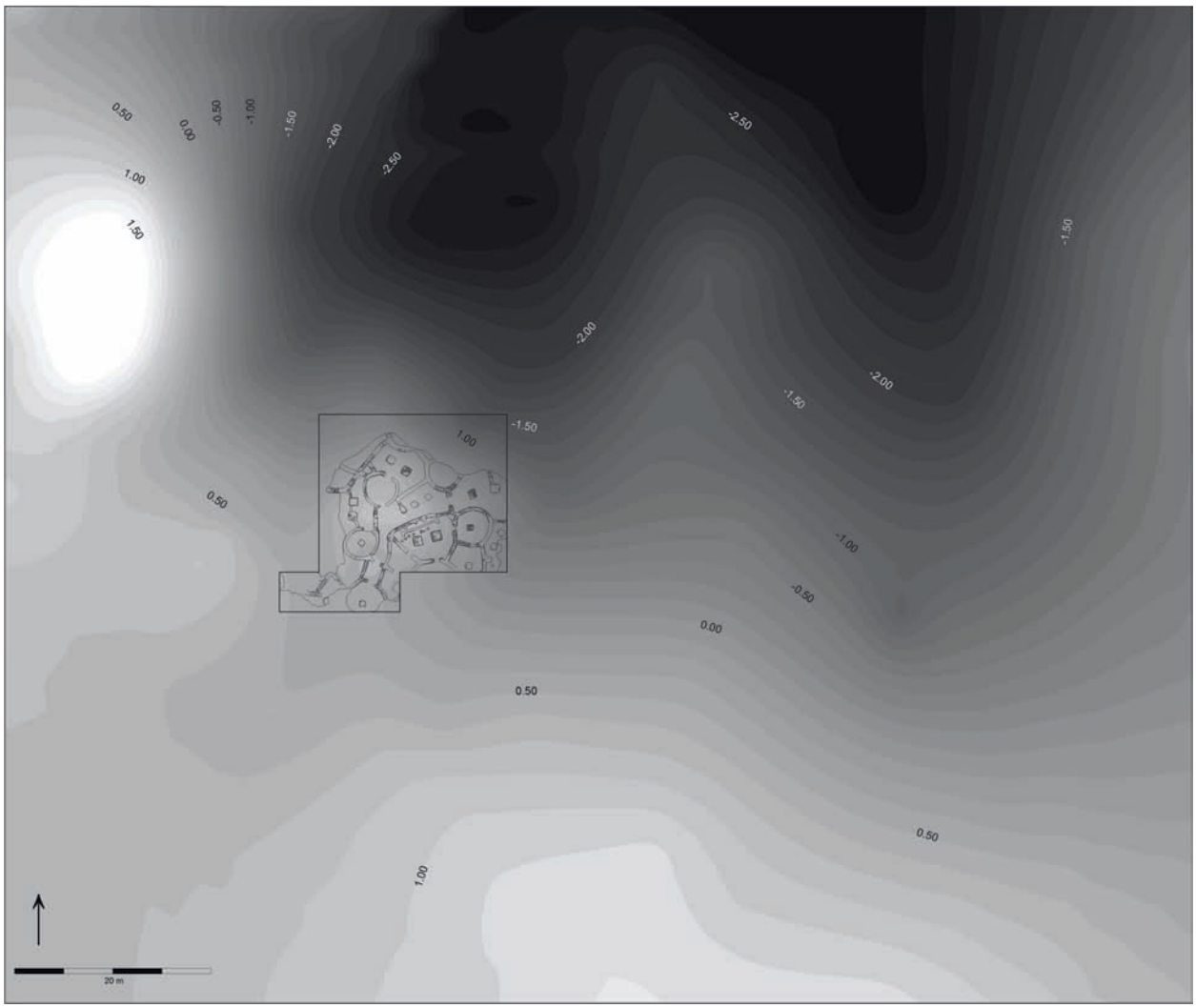
3.2.5 Photographic documentation

The photographic record is extensive for the two seasons of excavation and the re-excavation season in 2005. An archive of prints is stored at the Johann Wolfgang Goethe-Universität, Frankfurt am Main (section African Archaeology and Archaebotany) and in the private possession of the executive team members. The photographs encompass pictures of the region of Oursi hu-beero, excavation seasons 2000, 2001 and 2005, general views of the site and images of artefacts. During both seasons the work was recorded on VHS tapes.

3.2.6 Plans and sections

In the field all plans and sections were drawn to scale 1:20.[3] The final top plan of the structures was produced with a total station. During fieldwork, material culture was always drawn in relation to structures, rather than to its location within a trench or square. This enables us to overcome differences in precision between the field drawings and the map achieved by the total station. Sometimes, photographs taken from above were used to fill in details on the top plans.

Fig 3.3 Contour map of the area around Oursi hubeero in 2000.



3 Exceptions are drawings of the human skeletons (scale 1:10) and of the charred rope remains in room no. 20 (scale 1:1).

Chapter 4

Stratigraphical Setting

Lucas P. Petit and Maya von Czerniewicz

4.1 Introduction

The purpose of this chapter is to provide an overview of the stratification at Oursi hu-beero, compared and associated with the archaeological periods represented at the neighbouring settlement mounds of Oursi 97/13 and Oursi 94/45 (von Czerniewicz 2004) (Figure 1.2). It is designed as a general introduction and background essay to the more technical chapters in this volume.

4.2 Stratigraphical analysis of Oursi hu-beero

In the interest of clarity of presentation, the stratigraphical data will be presented chronologically - from bottom (level 4) to top (level 1).[1] This means that intrusive elements, such as pits and trenches, will be described 'later' with the original occupation layers. The term 'level' is used in this report for the stratigraphy of the Oursi hu-beero excavations and 'phase' for the sequence of Oursi 97/13 (von Czerniewicz 2004). Levels are separated from each other by a period of abatement and/or major destruction. Post-depositional processes, such as erosion or animal disturbance, not being human induced, are not part of the stratigraphic overview.

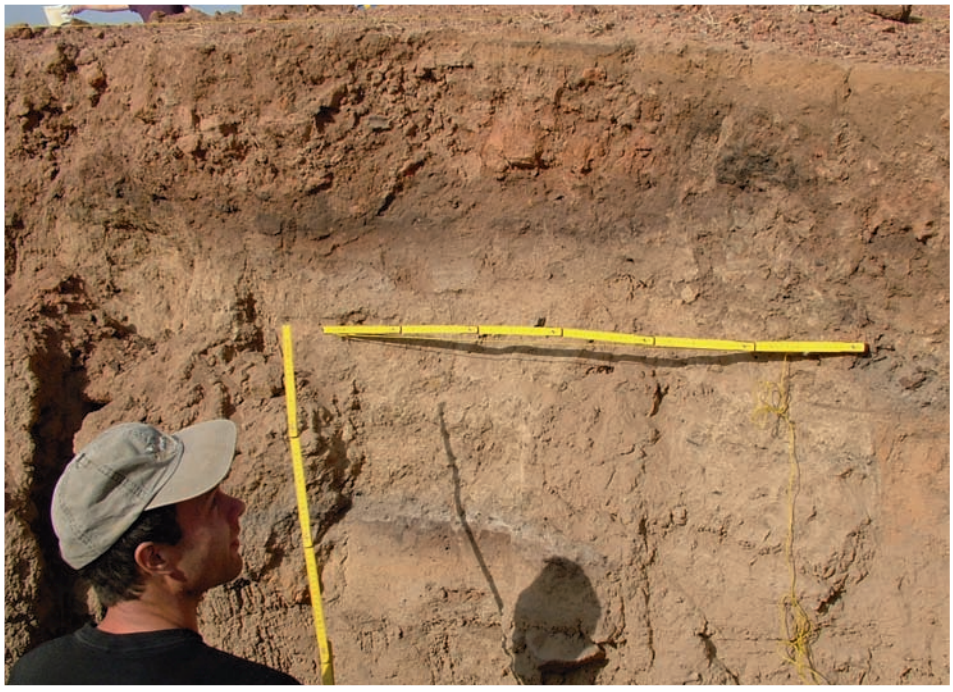


Fig. 4.1 Section B. Note the red burnt wall and roof debris of Oursi hu-beero, as well as the dark brown clay-floor in the upper part of the profile.

1 Although all levels will be described briefly in this chapter, this volume is mainly concerned with level 3. The level numbering is locally assigned and is in no way related to the phase numbers at Oursi 97/13.

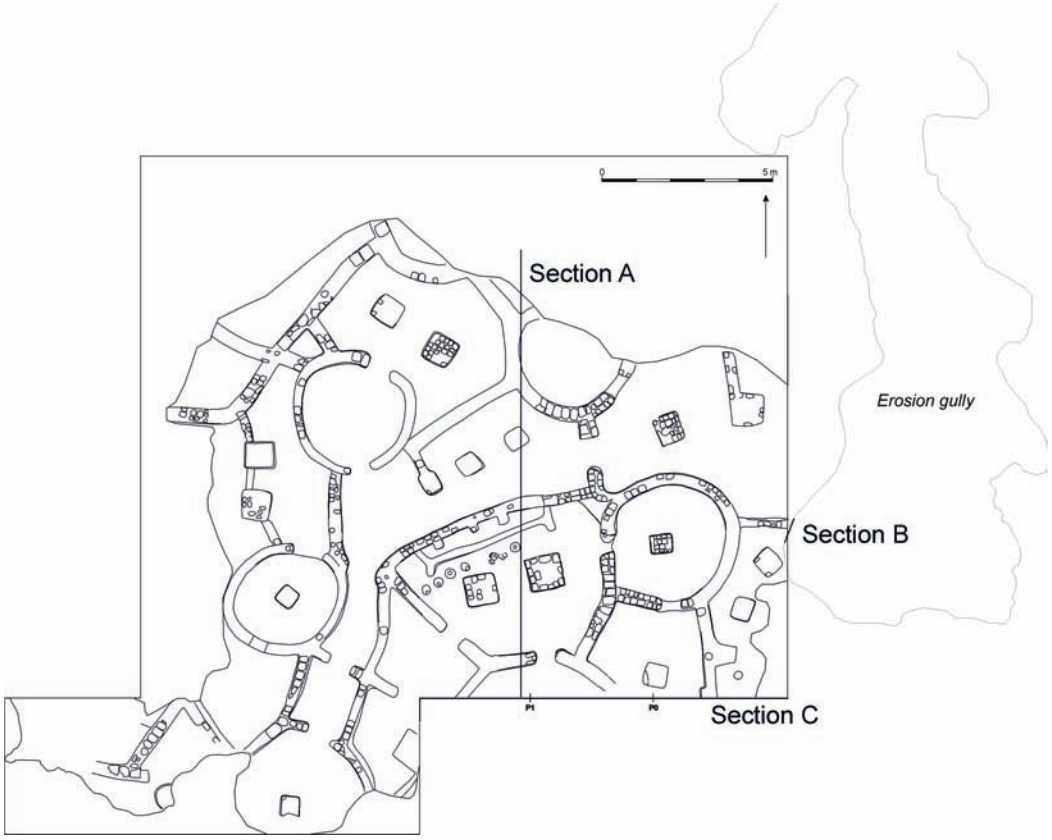


Fig. 4.2 Top plan showing the location of the section drawings.

4.2.1 Level 4 (yellow-red)[2]

The oldest occupation level at Oursi hu-beero so far was detected within a small trench opened in 2000 under room no. 7 (Figure 4.4). Contemporary remains were seen in a section (B) inside a water gully in 2005 (Figures 4.1 and 4.3) and protruding from some of the floors of level 3. In the small trench dug through the floor of room no. 7 (Figure 4.4), green sun-dried mudbricks were discovered together with a package of occupation debris and natural deposits. These deposits did not reveal traces of a conflagration, and we assume a slow process of collapse and abandonment of the level 4 structures. Multiple sand layers had covered the wall stumps of level 4. However, section B did not show signs of a gap in occupation and the period of abatement might have been limited to the northern part of the area.

4.2.2 Level 3 (red-blue)

At the start of level 3 a new building was erected with a similar appearance as the structures discovered in previous level. The wall stumps of the level 4 complex were (partly) protruding from the natural deposits and used as foundation structures (for a detailed explanation see Chapter 5, this volume). A fire at the end of level 3 had 'preserved' the mudbrick walls to a maximum height of 1.5 metres and the compacted destruction debris had sealed off the archaeological remains, protecting them from post-depositional processes.

Soon after the start of the excavations at Oursi hu-beero the stratigraphy was understood: large destruction debris covered the floors and the exceptional preserved material culture. An attempt was made to divide the destruction debris once more.[3] The

2 Level 4 is not the oldest occupation level of the settlement mounds. Section B shows a continuing stratification of anthropogenic and natural material below level 4 ("Older levels" in Figure 4.3).

3 Although they were separated archaeologically, the material on the floor and the objects on top of the roof should be considered contemporary. Maintaining a division between floor and roof was attempted, but natural failures were made while digging (named roof/floor in Appendix B, this volume).

Fig. 4.3 Section drawings (section A is pictured from south to north, section C from west to east, and section B from south-east to north-west).

Fig. 4.4 Part of a circular mudbrick structure of level 4 immediate below the architectural remains of level 3.

character of the roof fragments points to an accessible upper storey. Particularly recognisable in room no. 17, broken ceramic vessels and other objects were found on top of the roof debris.

4.2.3 Level 2

Very thin evidence of building activity after level 3 was discovered in the south-western corner of the excavation. Wall 30 was built on top of the floors of level 3, whereas the other level 3 structures of Oursi hu-beero were built prior to the floor make-up. Unfortunately, this part of Oursi hu-beero was hardly subjected to the fire and heat: no destruction material could be uncovered between the floor and the mudbricks of wall 30. Its position, directly below the modern walking surface, makes it even harder to identify its stratigraphical position.

4.2.4 Level 1 (blue upwards)

Three pits were dug in the eastern part of the complex (Figure 4.5; Pit A is visible in section A, Figure 4.3).[4] The fill of these pits had the same structure, texture and colour as the surrounding earth. The large and elaborate pit C was identified in room no. 18 (Figure 4.5). The limits of this pit were determined by the courses of the walls, which were either still visible or known by the pit-makers. The excavation of this disturbance revealed numerous layers of organic remains and clay - arguments to assume a certain period of time in which the depression was filled in. At the end of this period, however, the pit seems to be filled relatively fast with burnt wall and roof fragments. Two smaller almost rectangular pits were detected at Oursi hu-beero (pits A and D). They are not as deep as the former one - the disturbance between room nos 7 and 20 did not cut through

4 Pit B is the result of excavation work in 1997: charred plant remains were collected in order to achieve an absolute date (see Chapter 14, this volume).

the walking surface. The stratigraphical relationship between the three intrusive elements is unclear, and it may be possible that levels 1 and 2 should be considered contemporary.

4.3 Adjacent sites

4.3.1 Introduction

Oursi hu-beero was excavated according to the debris-layer analyses, in order to extract as much information about one occupation period. The aim of the excavation carried out in 1997 at Oursi 97/13 and Oursi 94/45 was different and so was the excavation method. A ceramic chronology of northern Burkina Faso was the ultimate goal, to be based on the material of these sites, among others (von Czerniewicz 2004). Deep trenches were made in order to get as much information as possible in a minimum period of time. Pottery and other objects were divided according to artificial strata of 10 cm. No occupation levels, as were seen at Oursi hu-beero, were identified, rather, a ceramic-based sequence.

4.3.2 Overview of the archaeology of the region Oursi

The region around Oursi hu-beero contains a wide array of archaeological sites that go back to the Late Stone Age (Figure 4.6; see Chapter 1, this volume). Even earlier human occupation, such as Middle Palaeolithic stone complexes, can be found a little north-east of Oursi, near the modern village of Markoye (Barbaza *et al.* 1998; Barbaza and Jarry 2003; Barbaza *et al.* 2005). It seems that at least from the Late Stone Age onwards, peoples have settled around Mare d'Oursi. In the beginning the people were mobile and changed their settlements relatively often. Excavations at Oursi 94/45 have revealed that, nevertheless, people did return to former villages, possible seasonally. The same excavation uncovered domesticated millet (Neumann *et al.* 2000: 330); an argument to assume that farming already had its place in the subsistence strategy.

Around the middle of the first millennium BC, numerous man-made mounds appear in West Africa, in some regions a little earlier as in others. In Burkina Faso a clear

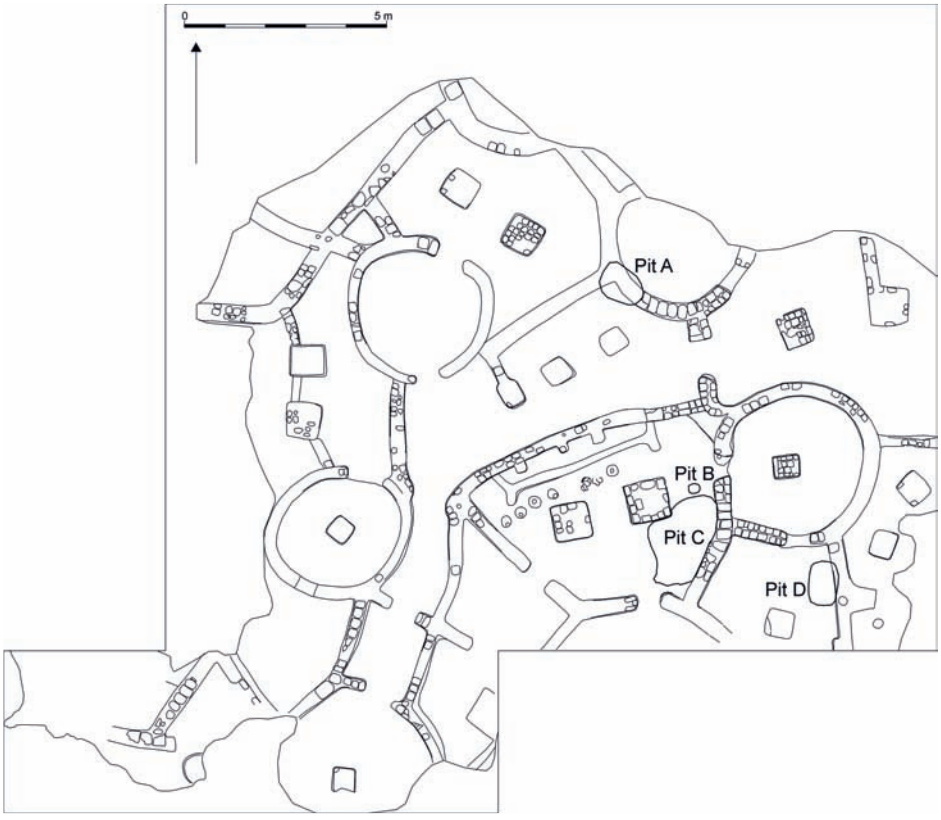


Fig. 4.5 Top plan showing level 1 remains.

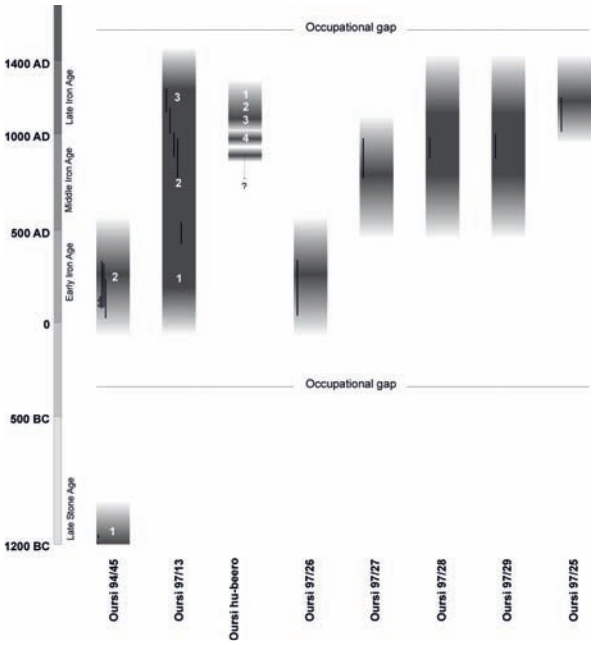


Fig. 4.6 The chronologies of sites in the proximity of Oursi hu-beero (after von Czerniewicz 2004).

sedentary subsistence pattern in permanent villages was first adopted at the end of that millennium and flourished during the next one (Albert *et al.* 2000). In the area around Oursi the village society developed relatively quickly. Excavations revealed an almost continuous settlement history until approximately the 14th and 15th century AD, a time in which quite suddenly all settlement mounds were abandoned. The reasons for this abatement pattern that is visible in many areas of North and West Africa (*e.g.* Robert 1970; Lingané 1995: 222; McIntosh 1995: 376-377; Togola 1996: 108; Petit 2005: 108-109) are still fiercely debated and should possible be thought in combination of a change in society structure, an increasing dominance of nomadic groups (Breunig and Neumann 2004: 124) and a climate deterioration (Sutton 1982: 310; McIntosh 1995: 376).

Whereas the society and its subsistence strategies did not change much during the Iron Age, the pottery reveals decorative and morphological changes. This enables archaeologists to relatively date Early, Middle and Late Iron Age assemblages (von Czerniewicz 2004). Based on pottery alone, the site of Oursi hu-beero can be placed in the transitional period between the Middle and Late Iron Age (see Chapter 6, this volume). Contemporary with Oursi hu-beero were the sites Oursi 97/25, Oursi 97/28, Oursi 97/29 and Oursi 97/13. The latter is part of the settlement mounds that also include Oursi hu-beero and we may suggest that around AD 1100 a quite extensive village was situated around the building.

4.3.3 The group of settlement mounds at Oursi

The group of settlement mounds is located north of Mare d'Oursi and spans an area of approximately 100 x 200 m (Figure 1.2). The archaeological site is easily recognisable by the artefact density on the surface (Figure 4.7). Erosion processes have removed lighter material, leaving a layer of human produced and brought-in material behind. Additionally, it protects the site at a certain degree from further erosion. However, during the last decades heavy rainfall has resulted in deeply incised gullies (see Chapter 2, this volume).

After the discovery of this group of settlement mounds in 1997, excavations were undertaken in the same year (Oursi 97/13). The deep trench at one of the highest points gave intriguing information about the settlement processes that took place from the beginning of the Iron Age till the 14th century AD. The eight-metre profile shows different layers of artefact concentrations, natural deposits and a continuous presence of charcoal fragments (von Czerniewicz 2004). However, no architectural elements were

recognised. This discovery does have major implications for the geophysical origin of the settlement mounds. In the 1990s, Vogelsang started a discussion, as to whether they are really settlement mounds or trash-hills (2000: 194; cf. Albert 2002). He questioned the enormous deposition speed in Saouga, a site located to the south of Oursi hu-beero. Can they really be the remains of subsequent settlements, or should it all be considered debris? Oursi hu-beero is located within the area of the settlement mounds, but on a shallow plain in between two higher peaks (Figure 1.2). We have seen that levels below Oursi hu-beero too reveal architectural evidence (Chapter 3, this volume) - elements that were not seen by von Czerniewicz in the deep cut on the higher mound. A coarse survey of the area in the years following 2001 reveals that most evidence of mudbrick structures (Figure 1.2) are located in between these so-called "settlement mounds". We suggest therefore that the actual building area during the Iron Age was the shallow plain in between the “hills”. During occupation, debris and rubbish were deposited on the sides; areas that sooner or later reached a higher elevation than the building area. Being rubbish and debris, it may also explain the problems of the ^{14}C dates from the excavations, which were not at all in chronological order (von Czerniewicz 2004). Although excavations of the debris hills are useful in this respect, a more clean and complex stratification may be found in between the mounds.

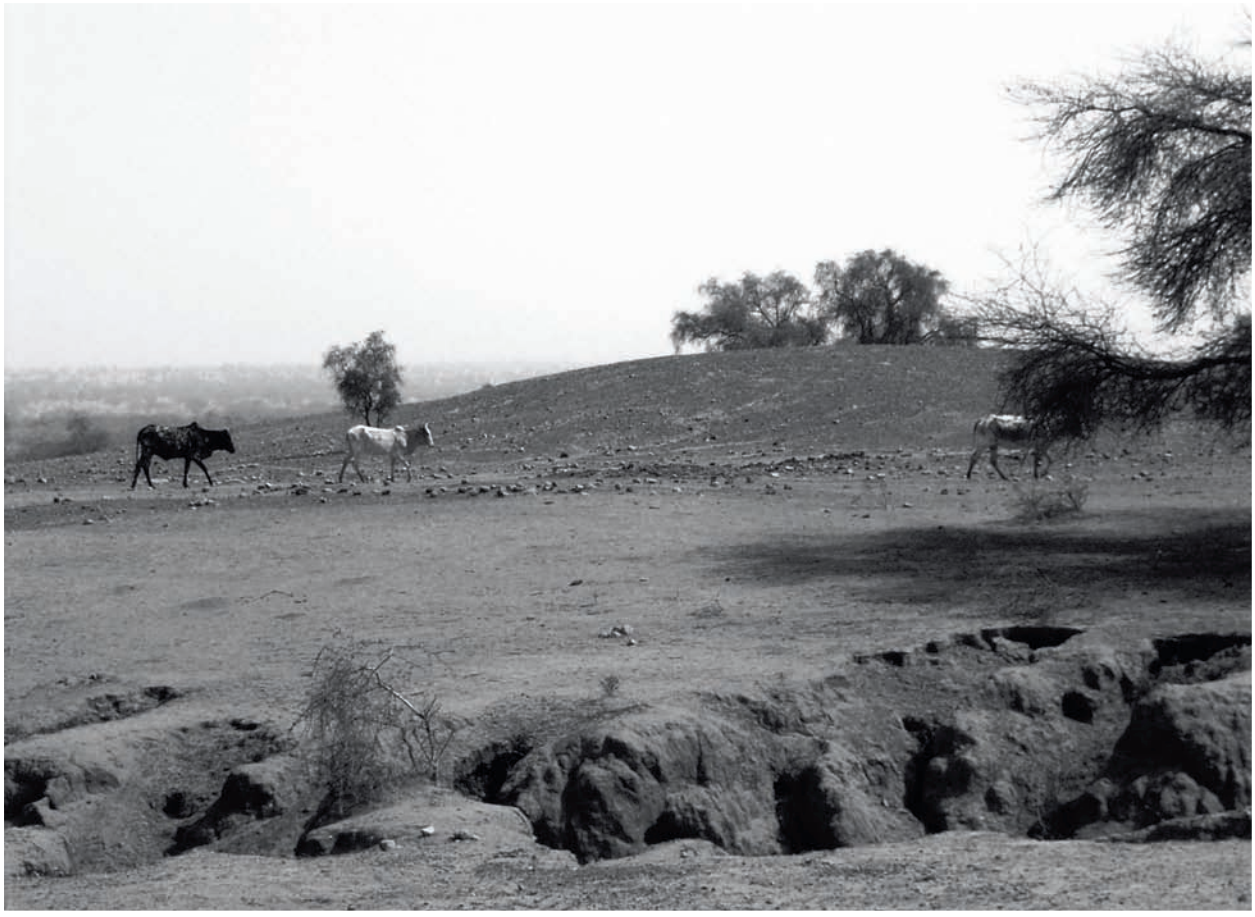


Fig. 4.7 Settlement mound at Oursi showing artefact density.

Chapter 5

Architecture and Related Objects

Lucas P. Petit

5.1 The architecture

5.1.1 The overall plan

Oursi hu-beero revealed the remains of 28 clustered rooms. The units are not free standing, but instead are built adjacent to one another. One or more of the enclosing walls of each unit is shared with an adjoining unit. Most striking are the seven circular spatial units, room nos 4, 6, 7, 10, 13, 22 and possibly 19 (Figure 5.2). These chambers, with an outer diameter of 3.5 to 4.2 m, were built at more or less regular distances from each other (between 5.6 to 7.3 m from the centre of the room to the centre of the two nearest curvilinear rooms). In between these enclosures, intermediate walls were erected without any consistent direction or shape. All of these architectural remains together can with certainty be interpreted as belonging to one differentiated building complex.

5.1.2 The construction history

Three possible construction systems can be proposed for the building of Oursi hu-beero, with a personal preference for one. A first system is a pre-planned building method: the whole complex was planned and erected in a short period of time. It is assumed that planning and the actual building of architectural units, needs a well-organised social system (for example extended family). The second method, an advanced version of the first one, includes pre-planning, but in connection with the re-use of older elements. When dealing with settlement mounds, building activities were particularly affected by ancient remains, either by real visible evidence, such as wall stumps or pits, or by social and religious motives (for example some places are considered to be sacred sites). Additionally, the walls of former structures are ideal foundations. The third method is a

Fig. 5.1 Objects on the floor in room no. 22 looking west. Photo was taken in 2001.

long continuous building process. In a hypothetical case, one unit was constructed (starting point). During occupation, walls and rooms were attached to this unit. The actual pre-planning only concerns that particular part that was added to the complex. The ultimate argument for this method is abutting rather than intertwining architectural elements. Normally, the overall plan of the complex is irregular, with elevation differences in the inner floors.

The three methods and their transitions - pre-planning, pre-planning based on ancient architectural remains and a continuing building process - are usually hard to assess. Looking at the building methods and re-viewing the overall plan of Oursi hu-beero, a few things are notable. With the exception of the seven circular rooms, none of the units show any regularity that could indicate a 'clean' pre-planning. The orientation, the shape and the size of each room differ remarkably, even when taking the geographical situation into account (Oursi hu-beero was built on a kind of peninsula, see Figure 3.3). It is, of course, very difficult to suggest purposeful planning when many things may just have been the result of repetition within a well-defined scheme.

In the case of Oursi hu-beero, a coherent plan does not seem to have existed. Each activity was probably planned, but rather without formulating the final outcome prior to the construction. Test-trenches in the northern part of the excavation area (grid co-ordinates J2, J3 and J4) have revealed the remains of an older circular wall, directly underneath room no. 7. The same situation was seen in room nos 12 and 22. Room nos 10, 4 and 7 were built at the same time. All other walls are abutting them. Room nos 22, 19 and 13 show a different picture. Wall 62 is part of room no. 22 (forming the south-western corner), but acts also as a supporting wall of room nos 24 and 18. The same situation was encountered in room nos 13 and 19 (respectively walls 28 and 43).

The hypothesis considered here, based on previous explanations, is the following: in the beginning Oursi hu-beero included, at the least, seven rounded huts, that were erected on still visible, older wall stumps. They were located at a more or less regular distance from each other. At a certain moment, the inhabitants began constructing a larger complex. One of the reasons for this activity could be the collapse of parts of room nos 13, 19 and 22. Intermediate walls between the circular rooms were erected and passages were constructed to separate certain domains from other parts of the complex. Perhaps some of the rooms became an outer space or courtyard (room no. 19). The walls have constantly underwent renovation activities, ranging from re-plastering to rebuilding. Larger pillars, possibly not in use during the first phase, were made to support an upper storey.

5.1.3 The construction techniques

The exceptional preservation of the complex of Oursi hu-beero is largely explained by the fire and the subsequent collapse; the vulnerable sun-dried mudbricks were accidentally burnt by the extreme high temperatures. The final result was a weather-resistant material that could survive more than 1000 years without considerable change, even though located immediately below the surface. Despite our first idea that we were witnessing a complex constructed with deliberately fired mudbricks[1], a clear continuing degree of firing from the outside of the walls to the inside shows that it was the final conflagration that caused the mudbricks to become what they are now. Identifiable at the rectangular pillars in particular, the mudbrick surface facing inside the room have experienced more heat than the pillars' interior.

All walls were constructed with sun-dried mudbricks.[2] The bricks were probably made of the clay deposits at the eastern edge of the Mare d'Oursi, although not

1 Deliberately fired mudbricks are considerably rare in Sub-Saharan sites dated to the Iron Age. A few examples have been excavated at the ancient city of Gao, dated to the 12th century AD (Maury 1951: 845; Flight 1975a; 1975b; 1979; Insoll 1996: 24-26), at Koumbi Saleh and at Jenné Jeno (McIntosh 1995). Ibn Sa'id mentioned in his Kitāb Baṣt al-arḍ fi 'l-ṭūl wa-'l-'arḍ (13th century AD) that the use of pre-fired bricks was limited to distinct persons, mainly rulers or persons of wealth and distinction, who were given permission to use them (Levtzion and Hopkins 1981: 185).

2 In West Africa the number of archaeological sites with rectangular and regular bricks is said to be limited to Post-Islamic times (cf. Kröger 2001: 62, note 2). In northern Benin rectangular sun-dried mudbricks were discovered in the ancient village of Yohongou-I dated to the 8th century AD (Petit 2005: 54, Fig. 5.26d).

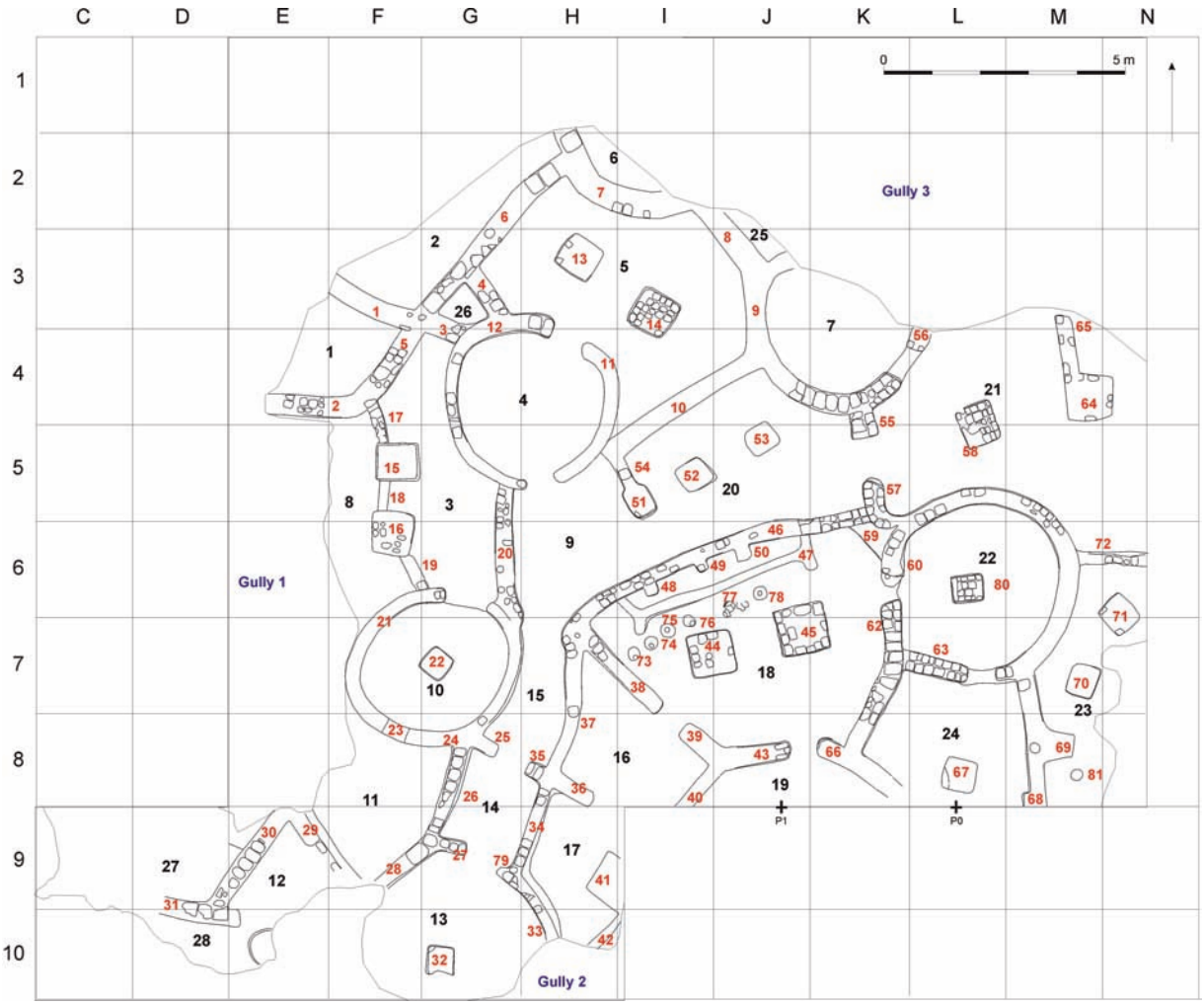


Fig. 5.2 Top plan with wall (red) and room numbers (black).

petrographically tested (c.f. Figure 1.4). Coarse organic material was added to the clay as temper, in order to minimise shrinkage cracks during drying. No moulds were used in the production process. In contrast to the general standardisation in mudbrick using societies throughout history, the bricks used for the building of Oursi hu-beero vary consistently: from 12.30 by 13.60 cm up to 33.40 by 45.10 cm and between 6 and 12 cm thick. Each mudbrick was, however, more or less rectangular in form and exhibited rounded edges. The lower side was made purposely rough, in order to help the mortar and mud plaster to adhere to the bricks. A similar function could have had the rough character of the upper side. It reveals either a remarkably clear print of the constructor's hand or grooves caused by moving the finger tips across the wet surface of the still plastic clay (Figure 5.3).[3] The latter motion could have been executed multiple times, depending on the satisfaction level of the constructor, but always carried out from the same direction.

At Oursi hu-beero no standardised method of construction was noticed. Walls were built either on top of older wall remains or directly over older occupation layers with no footings or foundation trench. The disadvantage of the latter is an increase change of premature collapse, due to the unstable surface. All mudbricks are placed on their flatter sides, with the hand-print pointing up. Walls may exist of headers or stretchers, without a certain preference or standardisation, and could be constructed with one or two parallel rows. Differences in mudbrick shapes and sizes consequently cause varying

3 A remarkable parallel of a handmade brick with finger impressions was found in Pre-Pottery Neolithic Jericho, Palestine (*e.g.* Kenyon 1959: Fig. 21; Roaf 1990: 31).

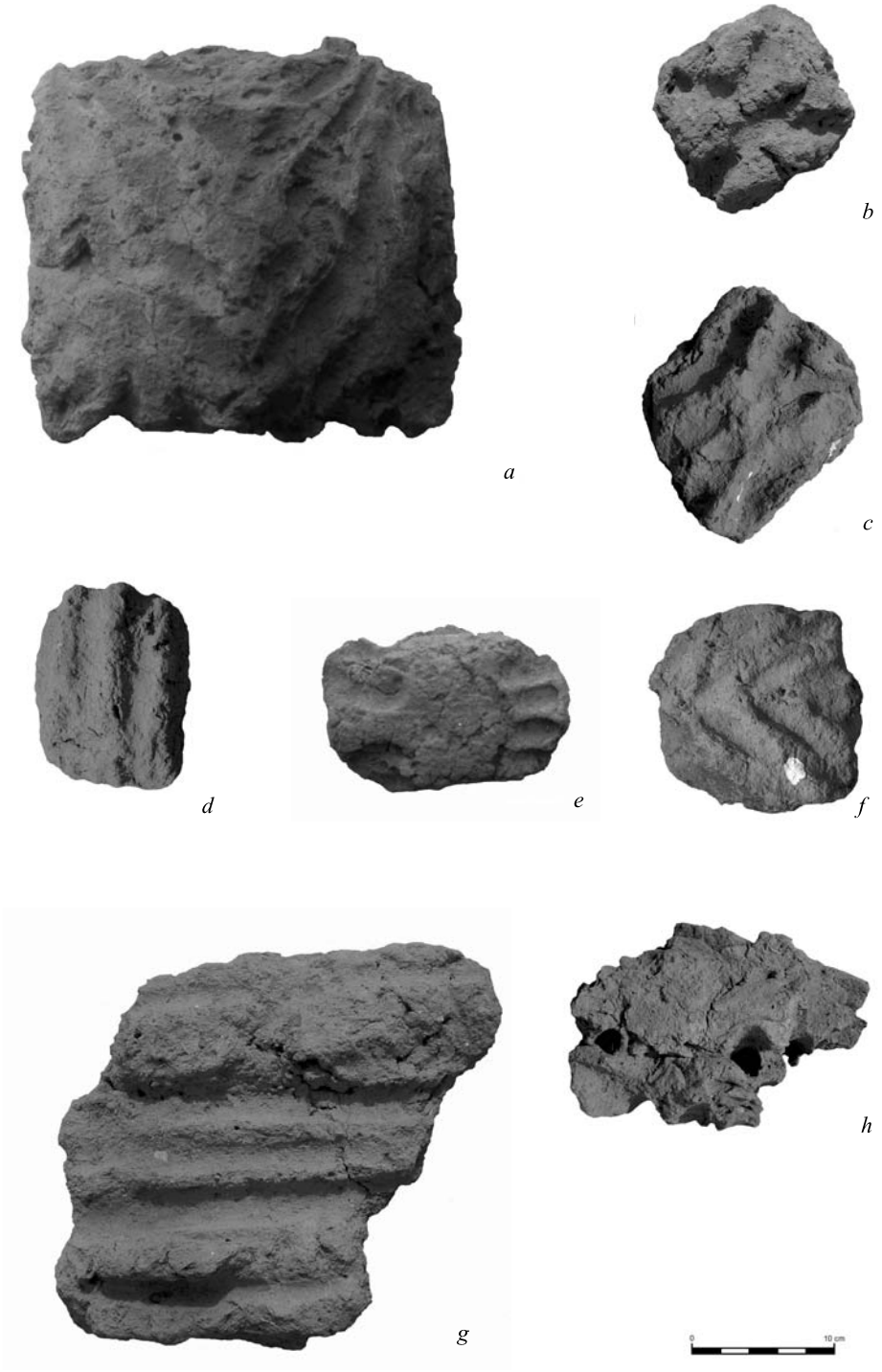


Fig. 5.3 Mudbrick (a-f) and roof debris (g-h). Note the finger- and hand-impressions on the mudbricks.

wall thickness, giving the impression of a poorly constructed architectural complex. This may reflect a lower social rank of the inhabitants or different construction times. However, at least some of the walls seems to have been built up from both directions contemporaneously, not exactly meeting at a right angle (*e.g.* wall 46) and assuming a lack of architectural expertise. Walls abut as well as bond at corners and entrance and access was gained through up to 0.95 m spaces between walls. Since hardly any outer walls survived, there is no direct evidence of windows. If they have existed, they were rather small, since mudbrick walls do not allow large openings.

The mudbricks were set in a mud mortar, that was relatively difficult to distinguish from the unfired bricks themselves. This leads to the conclusion that the actual raw

material of the plaster and mortar was identical to the clay used for the production of mudbricks. Only the fire that ended the occupation at Oursi hu-beero did cause a colour distinction between these different building elements, probably due to a different amount of organic content. Space between walls were sometimes filled in completely with clay. Both faces of the walls were plastered. The sometimes multiple plaster layers encountered on the architectural elements inside the complex (*e.g.* bench 47 and pillars 73-78) suggest that plaster was used, beyond for protection, also for aesthetic reasons. Finger and hand marks of the ancient builders can still be discerned in the mud layers (Figure 5.3a-f) that joined perfectly with most of the hard-packed floors. The floor plaster, in many cases more than 5 cm thick, was smeared on top of trampled earth. To protect the floor, as well as for hygienic reasons, a thick layer of sand and ashes was put over the hardened surface. This habit is similar to the situation experienced in the modern village of Oursi.

An upper storey was only archaeologically traceable by secondary evidence. Oursi hu-beero has revealed seventeen rectangular mudbrick pillars. The span from these pillars to the supporting walls does not go beyond 2.10 m. This is still shorter than the mean length of *Acacia nilotica* (Chapter 10, this volume). In the rooms that did not contain a mudbrick pillar (room nos 4, 7, 9 and 11), a wooden beam was used. The three smaller passages, room nos 14, 15 and 16, did not need this extra support (under two metres span-width). The encountered roof debris at Oursi hu-beero offers intriguing information on roof construction techniques. The structure of the roof, such as large timbers and smaller beams, sat apparently directly on top of the walls and supporting pillars. Burnt roof fragments revealed wood impressions and holes, showing a diameter for these wooden timbers of between 40 and 72 mm (Figure 5.3g-h), but thicker ones were certainly also used. This wooden framework was coated with organic-tempered clay, forming a flat smoothed roof, suitable for most of the normal domestic household activities. The enormous supporting weight that the roof could bear was illustrated by a lower grinding stone that had been fallen from the roof in the centre of the complex during the conflagration. No evidence of drain piping of pottery was discovered at Oursi hu-beero (cf. Posnansky 1972; 1973; York 1973: 160; McIntosh 1974).

5.1.4 Comparable contemporary and ancient architecture

The time-consuming search for parallels, particularly with the purpose of accumulating dating information or distribution patterns, has attracted widespread criticism, especially in the 1960s and 1970s. Choices upon which holistic theories are proposed, are mainly depending on the researcher's interests, available literature and executed (and published) research. Any given similarity does not have to imply a direct relationship or place of origin, and the absence of similarities is not automatically suggesting an own evolutionary trajectory. Only specific characteristics can be used for answering questions, concerning areas of origin or distribution patterns. The problem is to decipher which features are mirroring relationships and which are simply the result of the same construction materials (cf. Insoll 2003: 218).

The architectural layout of Oursi hu-beero consists of curvilinear and irregular adjacent units. Although the size of this building exceeds most contemporaneous residences in West Africa the use of different plans of rooms in the same building is a regular occurring phenomenon. The Lobi in Burkina Faso constructs similar densely built spatial units with a flat, accessible roof (*e.g.* Meyer 1981; Schneider 1990: 277-279). The closed differentiated complexes, existing of numerous circular, rectangular and irregular rooms, mirror the narrow social and economic integrity of the family. The living rooms, food processing places, storage and religious rooms are protected from others, even from visual contact. The interior of the house, too, shows this conservatism: small units with narrow doorways and additionally narrow holes to the roof. Through some of these holes one could climb to the roof. The flat roof serves as living space (*e.g.* Meyer 1981: Abb. 4 and 36). Another similar type of complex can be viewed in northern Benin - the Tata Somba. The rooms on the ground floor are small, sticky and dark, and parallel the situation at Oursi hu-beero. Here most daily activities are carried out on the flat roof. North of the area under investigation, we see Dogon houses with some similarities with the ruins at Oursi hu-beero. The house consists of

several separate connected units, circular, rectangular and irregular. Wooden beams are holding a second storey. The Dogon house has no windows in order to keep the interior distinct, enclosed and cooler. Small openings in the roof let in light. Related to the function it seem worth to mention that the Dogon do not have a separation between their spiritual and mythological ancestry and their everyday life.

Probably the best archaeological parallel to the layout of Oursi hu-beero was discovered at Jenné Jeno (McIntosh 1995: 65). Early Phase IV of this settlement in the Niger Delta exhibits several curvilinear and rectilinear structures made of sun-dried cylindrical mudbricks - the so called djenney-féré (McIntosh and McIntosh 1980: 106-109; McIntosh 1995: 18). The houses were 3.4 - 3.8 metres in diameter, which is almost identical to the circular units discovered at Oursi hu-beero. The bricks at Jenné Jeno were formed by hand. Although a pillar is missing, the construction methods, building material and shape of this 11th century AD building parallel the construction technique at Oursi hu-beero. At the same time a city wall of handmade circular sun-dried mudbricks was constructed at Dia in Mali. The mudbricks have an average size of approximately 20 cm in diameter and 9 cm in thickness (Haskell *et al.* 1986: 32). Although the dating of the wall was problematic, the excavators suggest its construction date to the same period as the late Phase III Jenné Jeno city wall, around AD 700-850 (McIntosh and McIntosh 1982: 30).

We are dealing at Oursi hu-beero with a construction method (mud and mudbricks) that is a global phenomenon and common to almost all cultures in semi-arid and arid areas. The origin of mudbricks in traditional Saharan and Sahelian architecture remains obscure. Some scholars suggest that the origin of moulded mudbrick technology can be found in these areas and moved northwards (Devisse 1970), whereas others promote the idea of Near Eastern place of origin. At least the linguistic evidence suggests an Egyptian invention, around 2000 BC ("adobe" originates from the Middle Egyptian word dj-b-t, meaning mudbrick). Iron Age sites with identifiable sun-dried mudbricks are rare in West Africa and dated only from the late 8th century AD onwards (McIntosh and McIntosh 1980: 106-109; 1984: 90; Petit 2005: Fig. 5.26.d).

Another intriguing items in the structure of Oursi hu-beero are the rectangular mudbrick pillars. Rectangular pillars made of mudbrick are, at least in West African archaeological contexts[4], extremely rare. Nowadays, most of the mosques in West Africa are using engaged pillars.

Considering the fact that the structure of Oursi hu-beero equals the earlier building remains (see Chapter 4, this volume), I assume the general layout to be purely indigenous. Comparable layouts can still be seen in contemporary societies in many West African countries, although the size of the clustered spatial units in Oursi is uncommon. Some of the building features, like the mudbricks and rectangular mudbrick pillars, may not be locally invented, but its precise trajectory and place of origin remains obscure.

5.2 The rooms and related objects

What follows is a detailed description and study of the different rooms of Oursi hu-beero. This chapter contains information about layout, building methods, and equipment. The functions of the different spatial units will be discussed in the concluding Chapter 16.

5.2.1 Room no. 1

Room no. 1 has been much destroyed by a former erosion gully that extended on the western side of Oursi hu-beero (Figure 5.4). The architectural elements that were still discovered *in situ* are the lower parts of walls 1, 2 and 5, forming an irregular walled chamber. The internal measurements of room no. 1 were 2.65 by 2.05 m. The walls were generally 42 cm wide and consisted of slightly rectangular mudbricks. The walls of room no. 1 were mud-plastered inside and outside. Walls 2 and 5 were most likely built

4 Rectangular mudbrick pillars are common in the Near East and Mediterranean area, especially during the first millennium BC but also later.

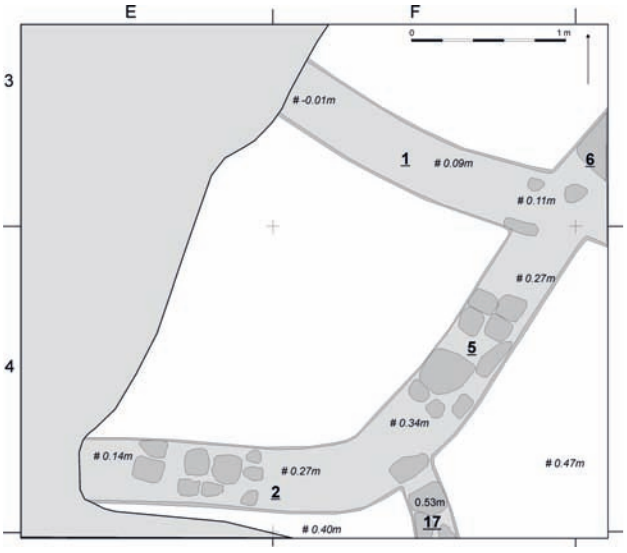


Fig. 5.4 Top plan of room no. 1.

contemporary. A slight difference in orientation of wall 6 after the junction with walls 1 and 3 is the only argument to suppose wall 6 not to be contemporary with wall 5. The same theory counts for walls 1 and 3. No destruction debris, nor occupational accumulation or equipment was discovered on the floor of room no. 1.

5.2.2 Room no. 2

Room no. 2 encompasses a long, slightly rectangular unit that has suffered heavily from the same erosion gully that did damage to room nos 1, 8 and 11 (Figure 5.5). The interior dimensions of this walled unit measure 4.40 by 3.60 m. The north-eastern wall 7 belongs to one of the seven circular rooms. According to the suggestion described above, the eastern wall 6 abuts wall 7. Parts of wall 6 were built with relatively large, rectangular mudbricks, measuring on average 37 by 33 cm.

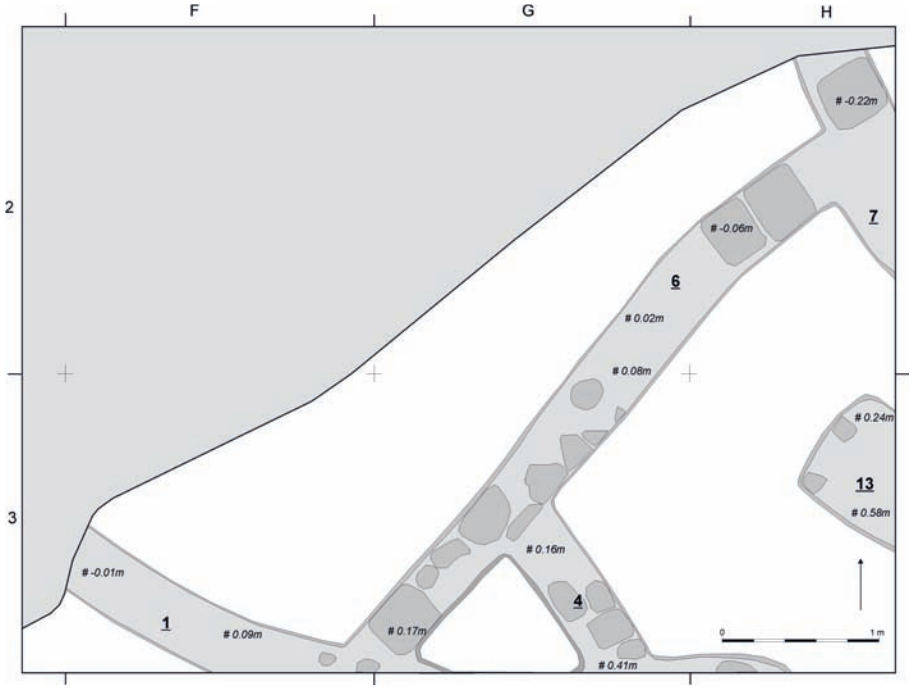


Fig. 5.5 Top plan of room no. 2.

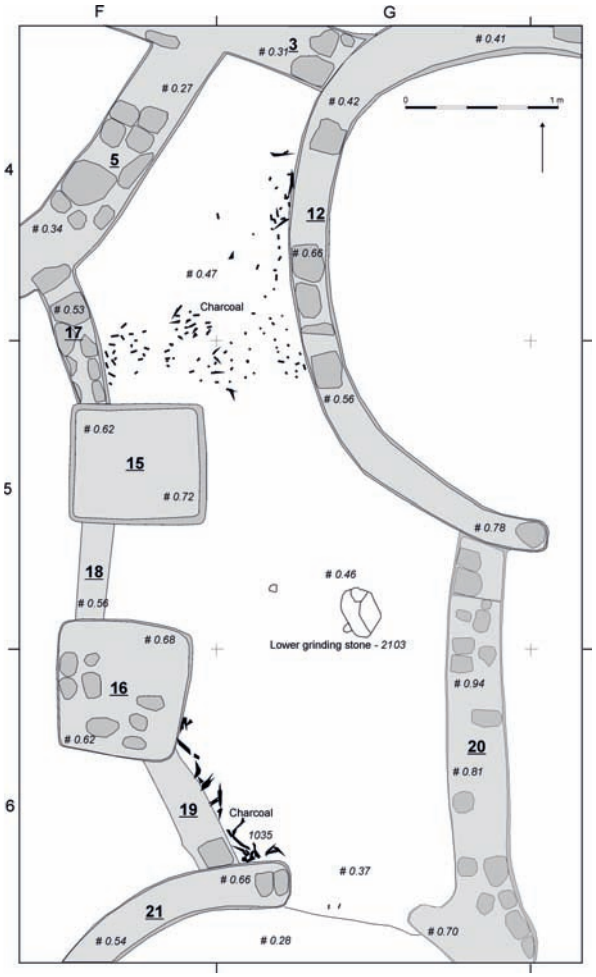


Fig. 5.6 Top plan of room no. 3.

5.2.3 Room no. 3

Room no. 3 was formerly part of a large pillared room between the two circular units, nos 4 and 10, and the irregular northern room no. 1 (Figure 5.6). The small incoherent partition walls 17, 18 and 19, built between pillars 15 and 16 and walls 2 and 21, indicate that the original room was wider and could have covered both room nos 3 and 8. The internal dimensions of room no. 3 are 5 by 2.10 m, and the room is orientated north-south. Wall 20 is the eastern enclosure of room no. 3 and joints wall 12 of the circular room no. 4 with wall 24 of room no. 10. The remains of a fully inserted mudbrick pillar were detected in the most northern part of wall 20. This assumes that the original room no. 3 was connected with room nos 9 and 20, forming an almost 12 m hallway with at least 6 mudbrick pillars. The northern wall 17 and southern wall 19 should be considered real upper structures that close room no. 3, whereas wall 18 was in use as a threshold with a height of 10 cm. It was the only passage to room no. 3 and thus to room no. 10. The rectangular pillars 15 and 16 measure respectively 0.92 by 0.8 m and 0.87 by 0.93 m. The orientation of the pillars, exactly to the magnetic compass points, is similar to the direction of wall 20. All other architectural elements have been constructed in a different orientation and manner. The pillars, approximately 0.7 m from each other, are built with small oval and rectangular shaped mudbricks. Each course consists of approximately 25 mudbricks, similar to pillar 14 discovered in room no. 5.

Prominent in room no. 3 is a lower grinding stone (*2103*), stabilised with pebbles and directly facing the entrance between pillars 15 and 16. According to several studies the higher side of this asymmetric ground stone would have been pointing to the miller, which means that the person would have looked towards wall 20 (cf. Petit 1999; Chapter 7, this volume). The northern part of the room had suffered from erosion, similarly to room nos 1 and 2. Only a very small layer of occupational accumulation with charcoal

fragments survived the post-depositional processes here. The southern doorway forms the only entrance to room no. 10. Against the interior of wall 19 a number of wooden beams (the largest approximately 30 mm in diameter) was found, of which one was probably worked (*1035*). It may have been used as a wooden fence to close room no. 10. Other evidence of human occupation was some dispersed ceramic sherds, plant remains and faunal remains.

Probably after part of room no. 8 had collapsed, room no. 3 was closed by the newly established partition walls 17 and 18. Assuming the former room no. 8 was originally the most western part, the new features could have formed the new outer walls, implying that the only entrance to room nos 3 and 10 was between pillar 16 and the circular wall 21.

5.2.4 Room no. 4

Room no. 4 is one of the seven circular rooms (Figures 5.7-8). The unit has two entrances, not exactly facing each other. The northern passage connects room no. 4 with room no. 5 and is approximately 0.64 m wide. The room could also be entered from the south. Here, both door-posts, but especially that at the southern end of wall 12, were heavily worn by use (Figure 5.8). The room has an interior diameter of approximately 3.05 m. Most of the walls were erected with courses of one mudbrick. The smaller western wall 11 included less information about the building methods, due to its poor preservation. No layer of plaster was detected on the latter. Instead of a mudbrick pillar, a large wooden pole (*1612*) was embedded at least 20 cm into the floor, more or less in the centre of the room (Figure 5.8). With a diameter of 16.5 cm at the base, it could bear considerable weight.

The floor, built up with plaster and a layer of sand and ashes, reveals a large amount of objects that were already discarded during occupation. Several grinding stones (*e.g. 1392* and *2015*), pottery sherds, basketry (*1119*), faunal remains, a metal object, coprolites and charcoal fragments were found in the occupation layer on top of the floor.

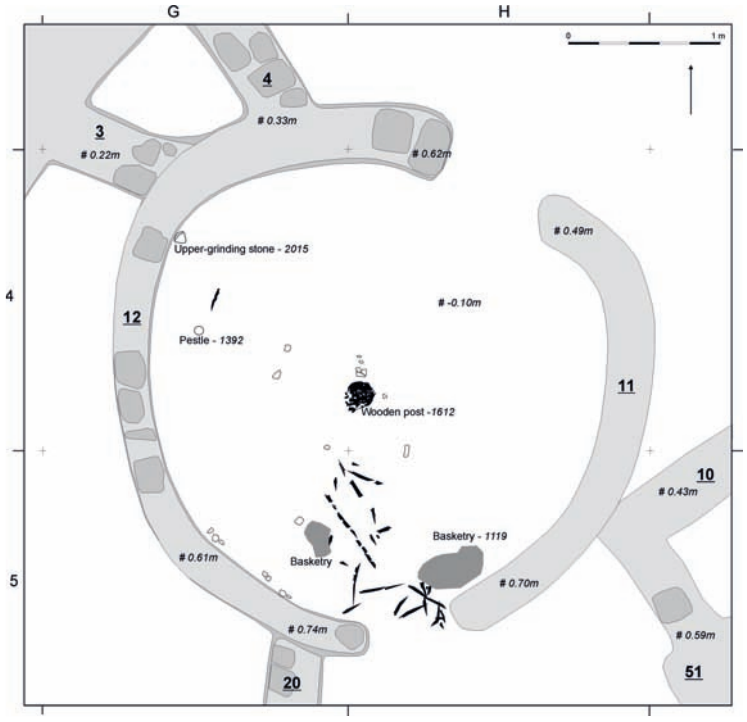


Fig. 5.7 Top plan of room no. 4.

Fig. 5.8 Room no. 4, looking north. The northern entrance to room no. 5 was not yet excavated. Photo was taken in 2001.

5.2.5 Room no. 5

Room no. 5 is the largest room in the northern sector of the complex (Figure 5.9). Two square pillars 13 and 14 were constructed in the centre of the hall as support for the roof. The irregular shape of room no. 5 implies that it was constructed after room nos 7, 6 and 4. The intermediate walls 10 and 6 closed this northern unit. The entrance, 64 cm wide, was in between walls 11 and 12 and its door-posts show some abrasion. Wall 7, in the north, is relatively thick and reveals rebuilding evidence. It was constructed on top of older walls stumps. The interior of walls 8, 9, 10 and 11 was not plastered. However, this might be the result of erosion processes. The pillars are regularly made with small, almost rectangular bricks. Wall 4, constructed at a later stage, was made in order to cut off the smaller corners formed by walls 3 and 6. On the other side of the entrance, towards the east, the narrow corner of walls 10 and 11 revealed more material culture than the rest of the room; probably discarded pottery and stone artefacts. The beaten earth floor was covered with mud plaster, visible in the southern part of the room near the entrance to room no. 4. This layer was covered with sand and ashes, although not of the same quantity (and quality) as, for example, in room nos 4, 9 and 20. The walking surface is slightly sloping up to the north.

No complete vessels were found inside the room. The entire room appears to have been cleaned before the final destruction or was not filled with equipment in the last few days. People did use this room, but in activities that did not need any larger equipment. A scatter of pottery sherds was discovered, already broken before the final conflagration. Other finds were faunal remains, one shell, metal objects (*e.g. 1558*) and charcoal fragments.

5.2.6 Room no. 6

Most of room no. 6 was eroded after the destruction of Oursi hu-beero. Only a part of the southern enclosure 7 bears testimony to its original circular shape (Figure 5.10). No entrances to the other excavated units were found. Wall 7 was constructed directly on top of an older circular room. It should be seen as belonging to the oldest rooms of the complex, at least before walls 8 and 6 were constructed. The floor did not survive the post depositional processes and no material culture could be associated with this spatial unit.

5.2.7 Room no. 7

The circular room no. 7 is considered as one of the oldest elements of Oursi hu-beero. With a diameter of 3.10 m, this unit is equal in size to room nos 4 and 10 (Figure 5.11).

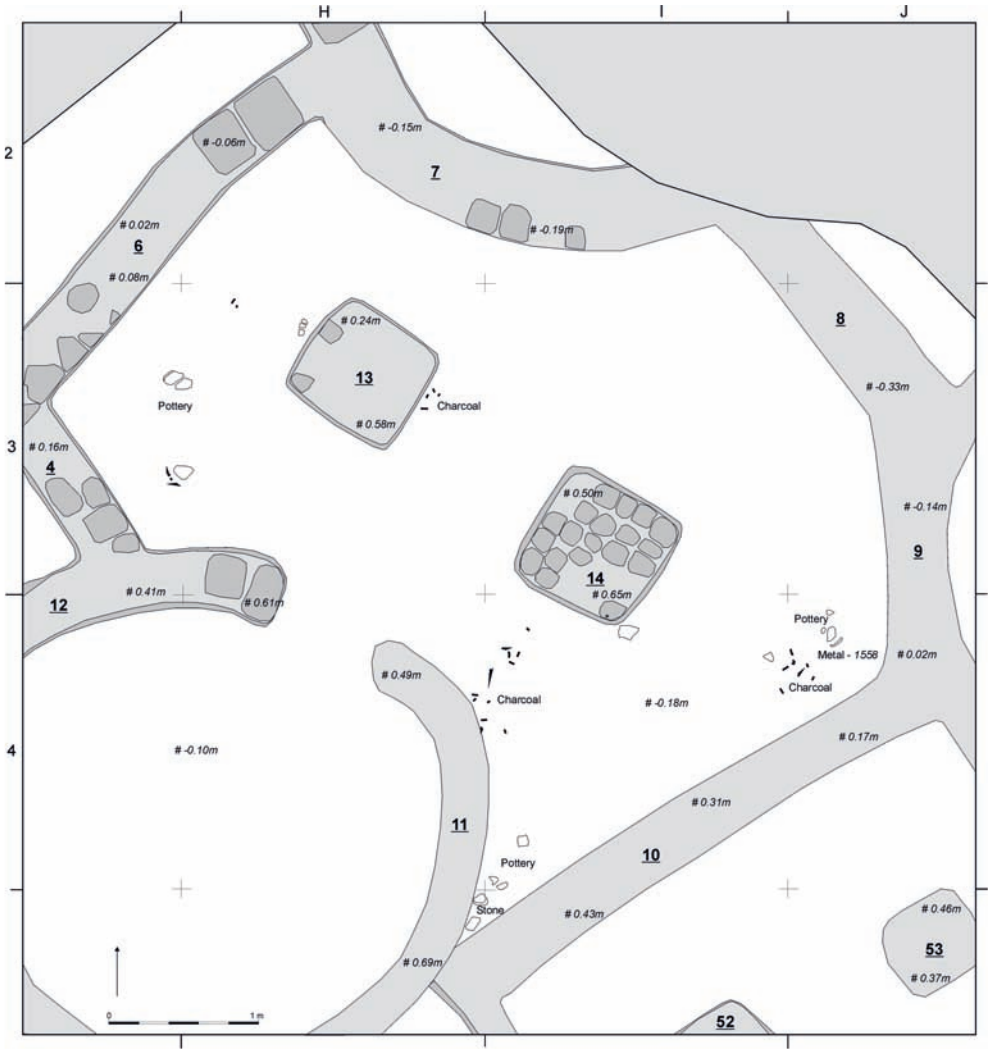


Fig. 5.9 Top plan of room no. 5.

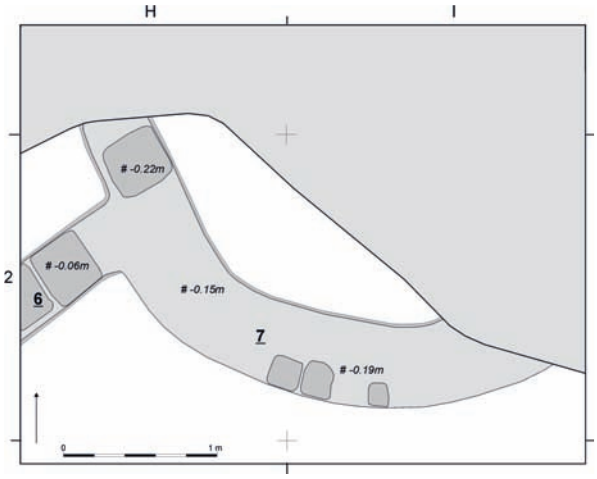


Fig. 5.10 Top plan of room no. 6.

Similarly to room no. 4, the roof was supported by a wooden pole. The northern part of the room had suffered from extensive erosion. An entrance to room no. 21 was found between walls 56 and 9, measuring 64 cm. Wall 9 had suffered a later disturbance - pit A (Figure 4.5). The room was built on top of an older wall stump; except for the north-western part where the older wall remains were running a little more to the south (Figure 4.4). The walls of the earlier phase are smaller in size and made of greenish coloured mudbricks (similar to the walls 31 and 30 in the south-western part of the excavation area). Part of this older wall protrudes as a threshold in the door opening between walls 56 and 9. Wall 9 was plastered, although pit 3 damaged most of the interior face. The wooden pillar (*252*), with a diameter of 12 cm, was positioned in the centre of the room. The floor was horizontal and situated almost 20 cm under the floor level of room nos 20 and 21.

The beaten earth floor was covered with a thick and multi-coloured package of sand and ashes. One of the most intriguing artefacts in Oursi hu-beero was found on the floor of this room, directly west of the wooden pillar. This metal object was identified as a slave chain or horse bit (*250* and *251*). The other artefacts had already been discarded during occupation: pottery sherds, charcoal fragments, plant remains, grinding stones, one bead, another metal object and faunal remains.

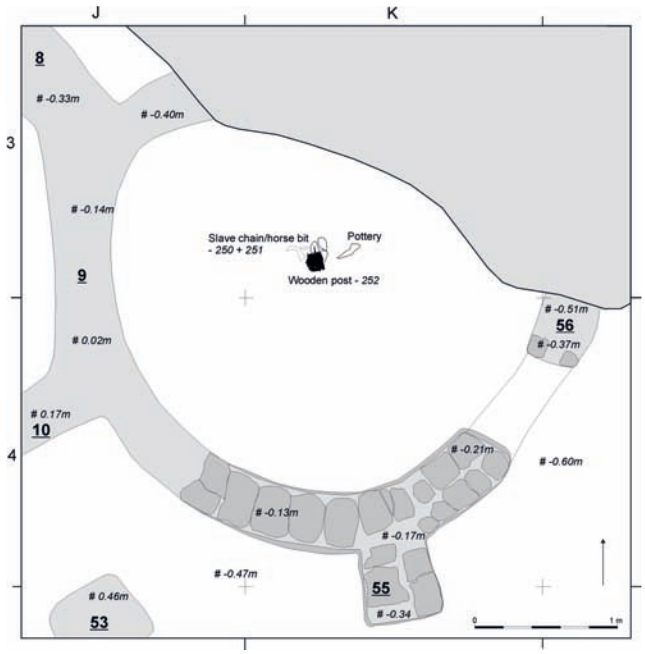


Fig. 5.11 Top plan of room no. 7.

5.2.8 Room no. 8

Room no. 8 was encountered in squares F5 and F6, directly west of room no. 3 (Figure 5.12). Small north-south orientated walls, 17, 18 and 19, between pillars 15 and 16 separated room nos 3 and 8. Wall 2 and the circular wall 21 are, respectively, the northern and southern delimiters. A possible explanation for the construction of these intermediate walls and the division of this bigger room into two separate units, is the erosion processes of gully 1. Part of room no. 8 had collapsed in the past (most likely the western wall), which made walls 17 and 19 the new exterior of the building. Room no. 8 was not roofed and not being used during the last days as living or working room by the inhabitants. With the exception of a little stripe near the pillars and the intermediate small walls, the original walking surface did not withstand the post-depositional processes.

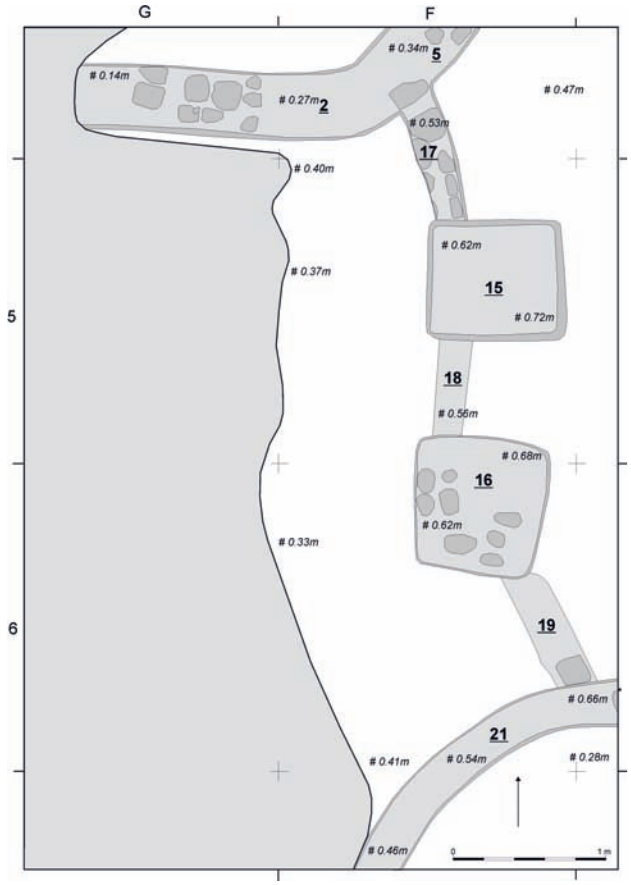


Fig. 5.12 Top plan of room no. 8.

5.2.9 Room no. 9

Room no. 9 is a relative small unit that originally belonged to a large pillared rectangular hall, together with room no. 20 (Figure 5.14). Wall 64, between wall 10 and pillar 51, had divided this hall into two separate rooms with an one metre wide passage next to pillar 51 (Figure 5.13). To the north one can enter the circular room no. 4 by a doorway between the walls 11 and 12. Wall 20, running north-south is made of at least two rows of mudbricks and separates room no. 9 from room no. 3. A wooden post with a diameter of 14 cm (*1131*) was placed in the centre of the room to support the roof (Figure 5.13). This post stands in one line with the mudbrick pillars 51, 52 and 53 in room no. 20 - another argument for its original 'hall' function. The floor consists of a layer of beaten earth and plaster on which multiple sand and ash layers were laid. The plastered floor smoothly continued into the plastered faces of the walls. Hardly any

Fig. 5.13 Room no. 9 looking north-east. Photo was taken in 2005.

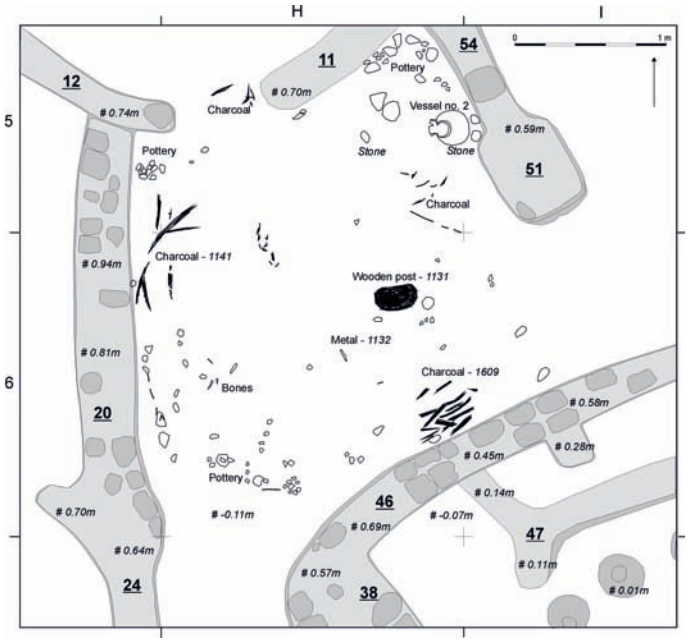


Fig. 5.14 Top plan of room no. 9.

difference in the elevation of the original walking surface is visible.

Against wall 46 a pile of charred wood was found (*1609*), nicely placed parallel to the direction of the wall. The concentration of charcoal fragments on the north-western side is probably what remains of the roof (*1141*). Other finds discovered in room no. 9 include pottery sherds, faunal remains, grinding stones, one metal object (*1132*), coprolites and plant remains. The almost complete jar no. 2 was found in the north-east corner of room no. 9.

5.2.10 Room no. 10

Pillared room no. 10 is one of the seven circular and oval shaped rooms at Oursi hubeero (Figures 5.15-16). Its internal dimensions are 3.07 by 2.65 m. The overall plan shares similarities with room no. 22. Room no. 10 comprises of two half, almost circular walls, thus leaving two doorways. The southern entrance measures 0.46 m, whereas the northern opening is, due to frequent use, wider, approximately 0.89 m. At a later stage, the southern entrance of the house was blocked with mudbricks and mud plaster. The absence of wear at the corners of this southern entrance points to a limited amount of time passing between the construction of the house and the moment of 'blocking'. All adjacent walls were abutting the oval shaped walls, suggesting that the room was a starting point in the construction process. The walls of room no. 10 consist of several courses of hand-formed mudbricks, which were placed in one line. Both the exterior and interior of the walls were finished with a layer of plaster. Although no successive layers of plaster were discovered, the later change in the structure by blocking the southern doorway with bricks and a layer of plaster shows that the walls were re-plastered at least once. Most likely the "older" plaster had partly fallen off or been taken away deliberately by the inhabitants, before the re-plastering activities took place. The walls were still preserved to a height of 50 cm above the floor. A square mudbrick pillar (22) was erected in the centre of the room, with sides measuring 0.58 m. The floor of room no. 10 is a yellow, beaten earth surface coated with plaster and covered with up to 5 cm ashy material and sand. The walking surface is slightly sloping towards the south with an elevation difference of approximately 15 cm, a situation that corresponds with the topography of the settlement mound (the highest point of this part of the settlement mound is in room no. 3). The passage between room no. 10 and room no. 3 was bridged by a plastered step, which showed some marks of wear in the middle.

No complete ceramic vessels were discovered in this part of the building. Several grinding stones were uncovered on the floor. A lower grinding stone (2039) was located

Fig. 5.15 Room no. 10, looking north-north-east. Photo was taken in 2005.

east of the mudbrick pillar, a pestle and a small upper grinding stone (*1785*) against the western wall and another upper grinding stone (*1786*) near the entrance to room no. 3. Most informative, however, was the enormous amount of charred wood spread on the walking surface in the southern half of room no. 10 (see Chapter 9, this volume). With the exception of a few larger beams, these are the remains of small reeds and wood, probably from animal fodder. Other artefacts and remains found in the room were coprolites, rope fragments, faunal remains and plant remains.

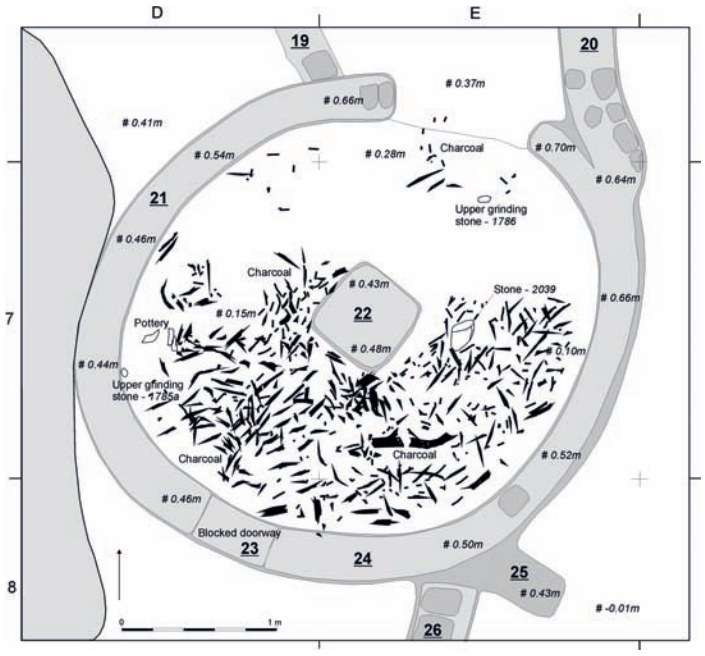


Fig. 5.16 Top plan of room no. 10.

5.2.11 Room no. 11

The irregular room no. 11 was 'left over' after the construction of room nos 10, 13 and possibly room no. 12 (Figure 5.17). This unit could be entered from room no. 12 through a wide passage (of more than one metre). The internal measurements of this room were minimally 2.8 m wide by 3.2 m long. In an early stage of Oursi hu-beero, room no. 11 was connected with room no. 10, however, shortly after the construction the doorway was blocked. Gully 1 has destroyed a large part of this room. The floor, which

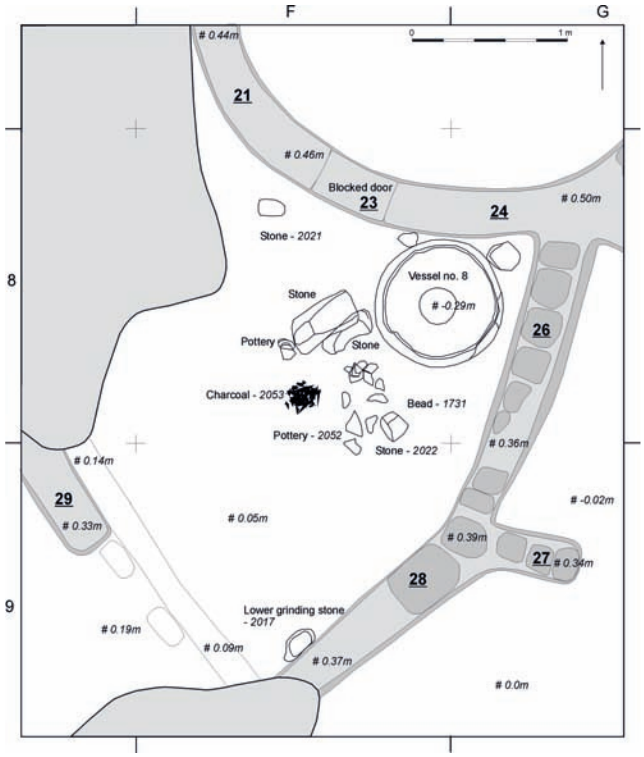


Fig. 5.17 Top plan of room no. 11.

is slightly sloping down towards the west, consists of a soft beaten earth surface with occupational accumulation. There is a 15 cm difference in height between room nos 11 and 12. The threshold in between was formed by protruding architectural remains of an earlier occupation phase. Frequent trampling, however, has led to some wear on this step. This room contains a wooden pole (*2053*) for holding the roof construction. With a diameter of only 12 cm it is questionable whether this pillar could bear such a heavy clay roof as was found in the other rooms. The fact that hardly any burnt roof material was found on top of the floor could point to the use of this pole for holding a kind of shade, for example to prevent the contamination of the contents of storage vessel no. 8.

The huge water jar no. 8, which was imbedded almost 30 cm into the beaten earth floor, was situated in the north-eastern corner. The base shows a half-rounded deepening in order to collect material that should not be extracted together with the fluid. The largest diameter of this vessel measures 0.84 m. The position in the corner of walls 24 and 26 and not in front of the former opening to room no. 10 led to the assumption that this vessel was already in use during the first stage of the building, before the doorway to room no. 10 was blocked. Several larger stones were found in front of vessel no. 8, some of them seemingly arbitrarily placed or fallen on top of each other. Except for stone *2022*, the stones were used for either hammering or grinding. Stone *2022* shows fire cracks that could point to a function as hearth stone (Chapter 7, this volume). A ceramic vessel was smashed between these stones, not far from the remains of the charred wooden pole. The other remains that were found on the floor were dispersed random remains of human occupation, such as one bead (*1731*), pottery sherds, faunal remains, lower grinding stone (*2017*) and charcoal fragments.

5.2.12 Room no. 12

Room no. 12 is a triangular room formed by walls 29, 30 and the doorway to room no. 11 (Figure 5.18). Unfortunately, the southern part has been damaged by gully 2. The internal dimensions, in as far as they have survived, were 2.90 by 1.80 m. Although only one half of the door post to room no. 28 was found (wall 31), the complex of Oursi hubeero definitively continued towards the north. Careful investigation of walls 30 and 31 and the beaten earth floor of room no. 12 revealed some information on buildings,

standing both prior to and after the occupation of Oursi hu-beero. Wall 31 seems to have been in use before the final destruction. The question as to how far the buildings continued to the south remains open. Wall 30 was built regularly with larger and more rectangular mudbricks than were used in other parts of the building. It abuts both walls 29 and 31 and seems to have been constructed a little later than the floor surface of room no. 12. In that instance, room no. 12 did not have a western enclosure and should be considered as part of a large unit or courtyard. The absence of roof and mudbrick debris under wall 30 makes a chronological assignation rather difficult. There are, in general, no signs that rooms nos 12, 28 and 27 were roofed during the last occupation phase. The stump of wall 31 seems to have been visible after the fire and was used again, together with the 'new' wall 30. The greenish coloured mud used for the bricks contrasted with the yellowish plaster-layer and mortar. No traces of extensive use or wear were discovered. Fragments of a circular clay bin imbedded in the doorway between room nos 12 and 28 are probably the remains of an older phase. Room no. 12 reveals a beaten earth floor that was rendered almost perfectly horizontal.

However, we should take into account that all these remains were found only 15 cm below the modern surface. Contamination and disturbances are likely to have taken place. This also holds true for the material culture found in this spatial unit. Numerous pottery sherds, grinding stones, one metal object and faunal remains were found in the layer on top of the beaten earth floor. None of them could be stated as being *in situ*.

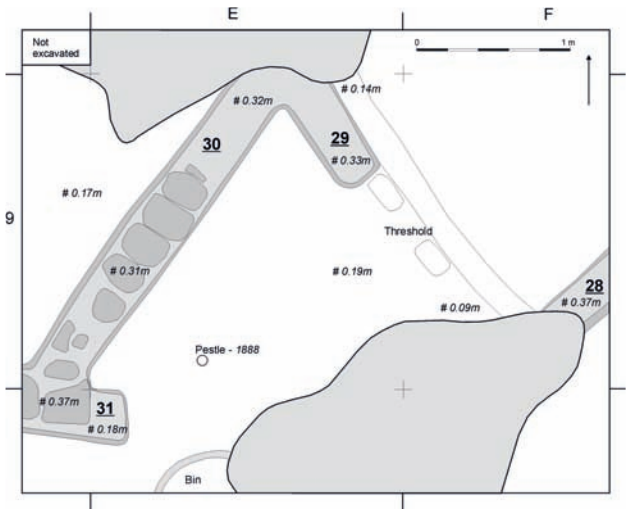


Fig. 5.18 Top plan of room no. 12.

5.2.13 Room no. 13

Room no. 13 is one of the circular units that were uncovered at Oursi hu-beero (Figure 5.19). Similarly to the other rooms in the southern part of the building (room nos 12, 17 and 28), the remains have suffered from erosion processes. Only the northern entrance to room no. 14 has survived. The door post, wall 27, was attached to walls 28 and 26. The three architectural elements were abutting each other rather irregularly and somewhat sloppily. However, no chronological sequence could be extracted. Wall 28 contained the largest mudbrick of the building, measuring 33 x 46 cm. The plaster layer of wall 13, especially on the interior of room no. 13, shows differences in thickness, pointing to multiple plastering phases. Wall 27 consists of several courses of three mudbricks. In order to stabilise this door post, a considerable quantity of mortar and clay-plaster was used. Wall 33 curves, and its upper part was slightly tilted towards the south-west. Similarly to the walls of room no. 17, this slant was probably caused by the fact that part of the wall was built on top of older ones and the other half was rather 'hanging' in between, built on "softer" settlement mound layers. However, this tilting phase was not at the end of the occupation. Rather, the walls were plastered again and

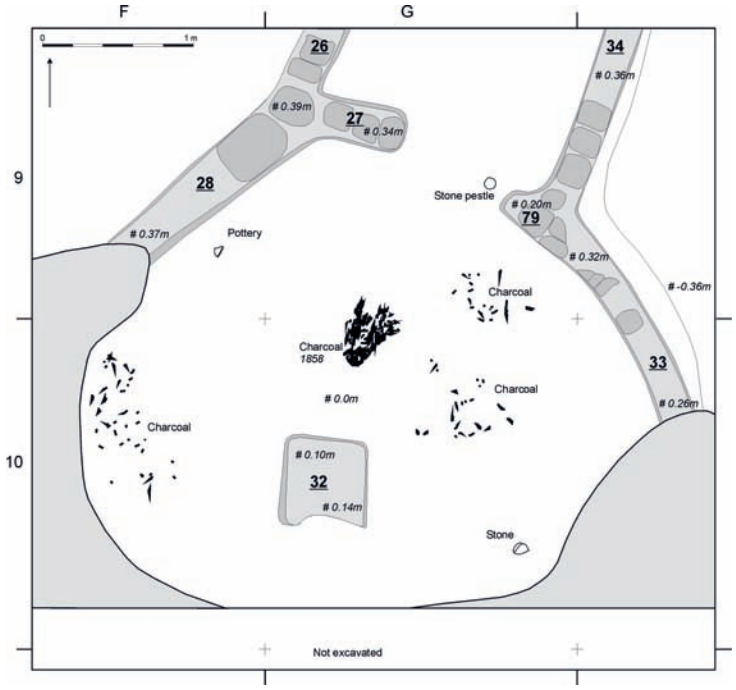


Fig. 5.19 Top plan of room no. 13.

supported by extra mudbricks. A rectangular mudbrick pillar 32, preserved to a height of 14 cm, was found very close to gully 2. Similarly to the pillar of room no. 24 (67), one side was damaged or abraded. A half rounded 'bite' had been taken out of the southern face. It seems to have been formed by frequent grinding or rubbing. No plaster layer was put on the 'uncovered' mudbricks afterwards.

We assume this damage pattern has to do with the large beam (*1858*), found horizontally on top of the floor. The fact that the base of this beam was not imbedded into the floor makes an interpretation as a roof support unlikely. The minimum length of the charred log was 45 cm and the diameter approximately 18 cm. A possible function of this trunk, also seen in many modern African households, was as a means to climb onto the roof: *i.e.* a ladder (Chapter 10, this volume). Other finds in this room include several pottery sherds, charcoal fragments, coprolites, a grinding stone and plant remains.

5.2.14 Room no. 14

The rectangular room no. 14 could be entered from room nos 13 and 15 (Figure 5.20). The inner dimensions averaged to about 2.09 x 1.70 m. The two long parallel walls, 26 and 34, were regularly built, although the upper part of wall 34 did slope slightly towards the west. The four short walls, 25, 35, 27 and part of wall 33, had formed the doorways and were regularly constructed with two or three mudbricks and a large amount of plaster. The mud plaster on the floor was found to be almost horizontal, with only one centimetre difference from north to south. It was covered, similarly to most other rooms, with greyish-yellowish dune-sand.

In the sand cover a stone pestle, some random pottery sherds, charcoal fragments, an iron object (*1830*) and some faunal remains were found, but rather randomly dispersed. The material culture discovered on the floor of room no. 14 did not attest to any function other than as a regular passage, or hallway, between the circular room no. 13 and the other passage, no. 15.[5]

5 During excavation we did not divide the material culture and sediment of room nos 14 and 15, due to the slightly lower preserved walls 25 and 35. Material culture besides the objects that were discovered *in situ* will be described under room no. 15.

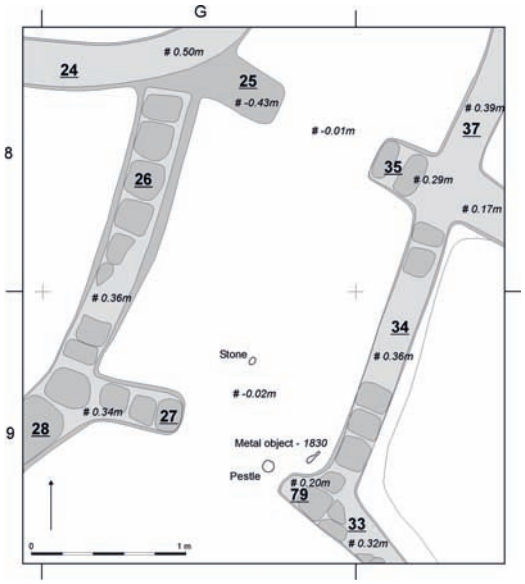


Fig. 5.20 Top plan of room no. 14.

5.2.15 Room no. 15

Room no. 15 is a narrow corridor running between a closed western part of the building (*e.g.* room nos 3, 10, and 11) and the central room nos 16, 17 and 18 (Figure 5.21). The importance of this room is not its building method or location, but the discovery of a human skeleton under the thick layer of roof and wall debris (Chapter 13, this volume). The interior dimensions of the room, 3.03 by 1.66 m, are rather small, suggesting that the function of this is one of just a passage, similarly to room no. 14. The unit is formed by the back walls of the large room nos 10 (24) and 16 (37). The walls were plastered irregularly, with wall 24, for example, showing a thick layer, up to 8 cm, while other walls bears a layer of only 3 cm. The small sidewalls 25 and 35 were door posts, which could be closed with a wooden door or fence. The concentration of charcoal in the south-western corner of the passage (*2062*) might be the remains of this closure. The floor was built up with packed earth, mud plaster and covered with a layer of up to 10 cm of sand and ashes. The thickness of the layer was much greater at the sides than in the middle of the room (probably a consequence of traffic).

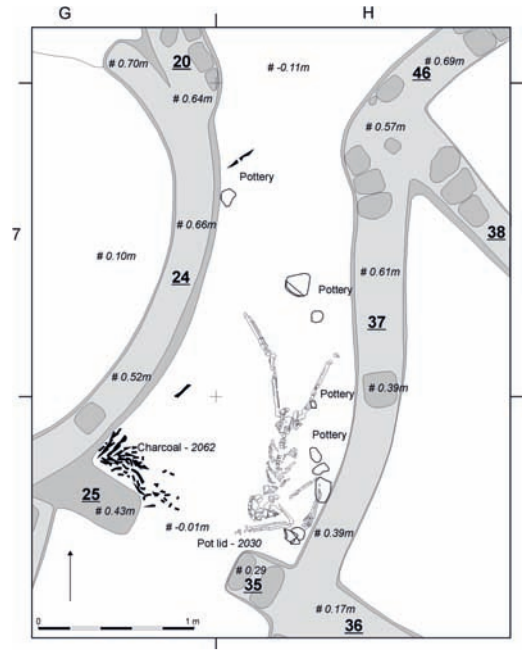


Fig. 5.21 Top plan of room no. 15.

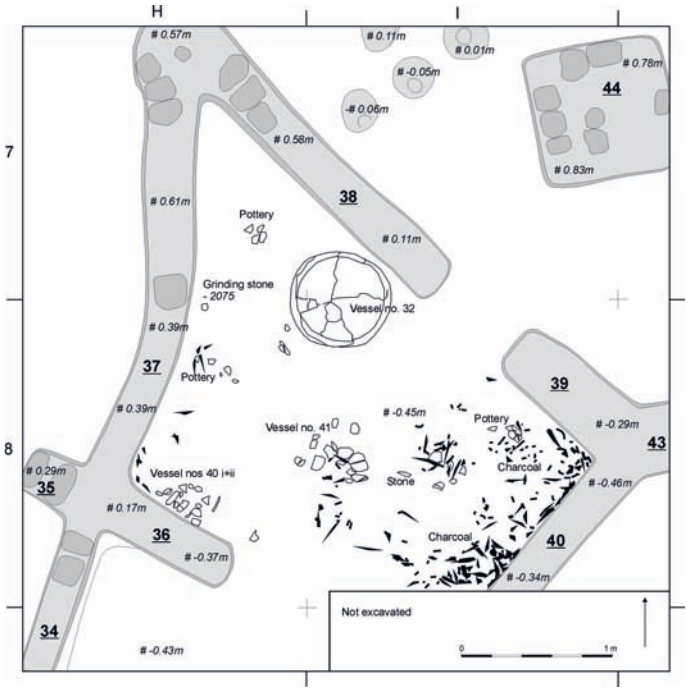


Fig. 5.22 Top plan of room no. 16.

The function as a passage was also underlined by the limited material culture found in situ on the floor: a few pottery sherds, a pottery lid (*2030*), faunal remains, grinding stones and charcoal fragments. Two cowry shells were found in association with the human skeleton.

5.2.16 Room no. 16

Room no. 16 contained a large number of ceramic vessels and other objects. The room was encountered in squares H7, H8, I7 and I8 and its diamond-shaped interior measured 3.24 by 3.06 m (Figure 5.22). The walls were built with one row of mudbricks and covered with a thin layer of mud plaster. The western wall 37 shows a slight curve, which might point to a second building stage after part of the wall had collapsed. Probably in order to follow the parallel line of room nos 10 and 11, this wall was built in a more south-western direction. Wall 36 is directly on the other side of the door post 35 and would have had the same function. Wall 38 was constructed in the first stage, adjoining walls 37 and 46. The east-west erosion gully 2 had damaged part of wall 40, the most eastern delimiter of room no. 16. Only the lower mudbrick courses were preserved, revealing a regular building method and a thin layer of plaster. This wall joins walls 39 and 43. The entrance to room no. 18 is rather small (60 cm). A point to note is the right-angled north-eastern corner (walls 39 and 40). This regularity is somewhat unusual, when studying the top plan of the building.

A large vessel, no. 32, was found against wall 38 directly west of the entrance to room no. 18. This almost intact vessel had a rim diameter of 59 cm and was 39 cm deep. The slightly rounded base was positioned inside the sand layer. In contrast to the water jars in room nos 11 and 18, vessel no. 32 was not imbedded into the mud floor plaster. In the centre of the room stood a smaller vessel (no. 41), which had unfortunately broken into numerous fragments. Charcoal fragments were discovered amongst the sherds. Several other concentrations of pottery sherds indicate that some other vessels were situated in the room shortly before the building collapsed. Vessel nos 40 I and 40 II were standing in the south-western corner of room no. 16. A stone pestle (*2075*) was found against wall 37. A concentration of charcoal fragments and coprolites was found against wall 40. Other more random finds included faunal remains, hematite (*1476b*), one grinding stone (*1491*) and charcoal fragments.

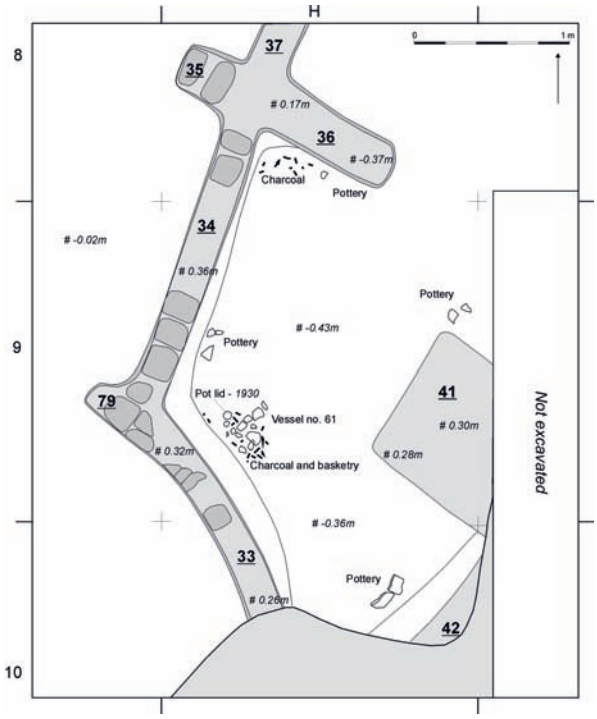


Fig. 5.23 Top plan of room no. 17.

5.2.17 Room no. 17

Room no. 17 could only be entered from room no. 16. A large pillar 41 stands in the former centre of the room, but was at the time of the fire connected to wall 33 by enclosure 42 (Figure 5.23). The pillar could still have been used as a supporting element, but was in use additionally as the eastern enclosure of room no. 17. The reason for decreasing the room's size might be caused by gully 2, which presumably had already damaged part of the southern walls during occupation. Measuring 3.28 by 2.11 m the room is, due to the construction of this later partition wall, relatively small. The walls 33, 34 and 42 are slanted towards the south. Wall 42, in the south-eastern corner, closes the passage between wall 33 and pillar 41. Similarly to the intermediate walls 17, 18 and 19, wall 42 acted as the new exterior wall of this unit. The rectangular pillar 41, measuring 101 by 99 cm is similar to the size of pillars 44 and 58. The layer of sand and ashes on top of the sloping beaten earth floor is less thick than in most other rooms.

One vessel, no. 61, was found in the south-eastern part of the room leaning against wall 33, together with a pottery lid (*1930*). The ceramic fragments of this container were dispersed over a larger area, showing the impact of the roof and wall collapse. Other artefacts in the room were charcoal fragments, pleated leaf sheets of basketry or mats, some plant remains and faunal remains. Additionally, several beads, probably part of a necklace, were found near the entrance to room no. 16.

5.2.18 Room no. 18

Room no. 18 is considered to be the centre of the building (Figure 5.26). The unit was encountered in squares H6, H7, I6, I7, J6, J7, J8, K6, K7 and K8. Being the largest room discovered at Oursi hu-beero, several architectural features were built inside. Two large rectangular mudbrick pillars 44 and 45 were erected on an east-west line (Figure 5.25). Measuring 94 by 94 cm and 107 by 105 cm respectively, they belong to the larger examples of the complex. The exterior of pillar 45 was finished with multiple layers of plaster, pointing to restoration activity during occupation. The northern wall 46 was erected with two rows of mudbricks. This building method is similar to that of the walls of room no. 22. The irregularity of the western part of wall 46 seems to point to rebuilding. Three smaller supporting offsets, 48, 49 and 50, were constructed, adjoining wall 46 most likely in order to strengthen the longest wall of the building. The fact that these smaller offsets were abutting wall 46 might be another argument to assume a

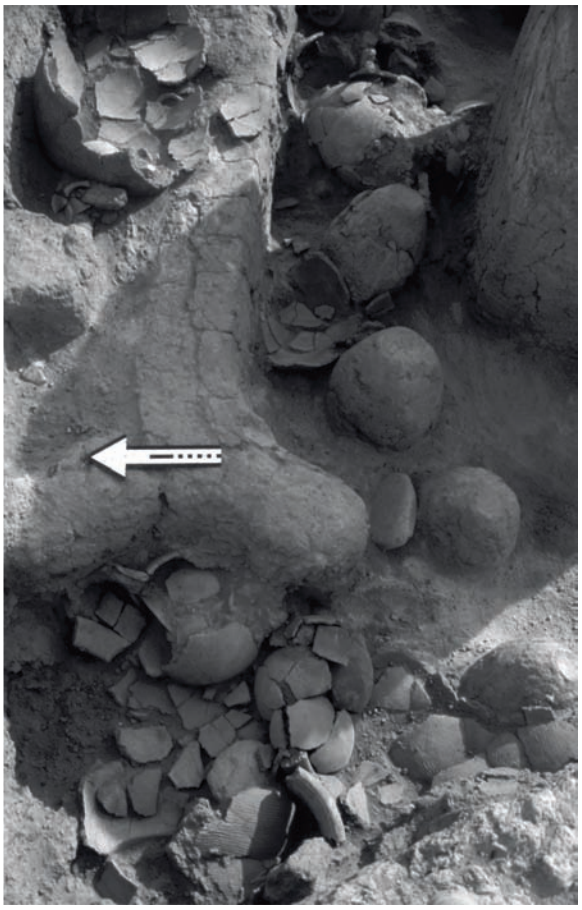


Fig. 5.24 Broken pottery in room no. 18 looking east. Photo was taken in 2001.

rebuilding of part of this wall. Wall 38 was attached to wall 46 and revealed the one-row-of-mudbricks method, similar to that of most other walls in Oursi hu-beero. The doorway to room no. 16 between walls 38 and 39 is not very wide, only 60 cm. Walls 39 and 43 form the southern corner of room no. 18. An even smaller entrance (48 cm wide) to room no. 19 existed in the south-western corner. Walls 62 and 60 were built in different stages. Wall 60 belongs to the original circular unit that was probably the earliest building stage, whereas wall 62 was built to complete room no. 22 and to form the eastern border of room no. 18. Wall 62 was partly damaged by pit C, dug into the roof debris, the floor and older occupation layers of the settlement mound (Chapter 4, this volume). Although the pit makers left the wall untouched, subsequent erosion

Fig. 5.25 Room no. 18 looking north. Photo was taken in 2005.

Fig. 5.26 Top plan of room no. 18.

processes have partly destroyed it. In the north-eastern corner, formed by walls 46, 57 and 60, a small platform, 59, was made. Wall 57 in particular was constructed very irregularly, almost hastily. Abutting wall 60, it was built later than the other features in this part of the building. Wall 46 was constructed against wall 57, consequently pointing to a later date. The most striking element in this room, however, is the well-finished clay installation 47, extending along most of wall 46. Two offsets were constructed on the corners, probably to enhance its appearance. A thick layer of plaster covered the mudbricks forming a rounded upper side. The 40 cm high bench 47, constructed on top of the plastered floor, was filled with ashes. The eastern part, which that was excavated, revealed some pottery sherds, bones and charcoal. Abutted to wall 46, this feature may have been constructed at a later stage, although this has not been convincingly proved. The bench was surmounted by at least nine small half-rounded pillars (Figure 5.24). With an outer diameter of maximum 30 cm and in average 25 cm high, the function of these pillars is still obscure. The lower sides were fixed with mud on the plastered beaten earth floor. The upper side is round with small flattened top; perhaps to place something on top. Somewhat similar pillars can be viewed in Lobi houses (*e.g.* Schneider 1990: 189, Tafel 23) and Bulsa (*e.g.* Kröger 2001: 60). In both ethnographic examples, two small clay pillars and a clay bench were used as cooking installation. Sometimes, multiple such installations were built next to each other (Meyer 1981: 16, Fig. 22). However, at Oursi hu-beero no traces of use, no wear, no erosion, no black burnt sides or damage patterns were seen. Suggested functions, like pottery making, seats, installations for producing leather or cooking installations are therefore not very likely. The space between the pillars and the bench is narrow, not more than 25 cm. Additionally, the rectangular roof-pillars are located not far from the smaller ones. If in use in daily activities, they would have been highly unpractical. The absence of any sign of use on both the bench and the pillars is an argument to assume that room no. 18 did

not serve as a normal domestic room (see, however, Chapter 11, this volume).

Room no. 18 contains one of the most striking pottery assemblage. Numerous ceramic vessels were found on top of the bench and on the floor (Figure 5.24). In the western corner between the bench and the walls 46 and 73 stood at least four vessels. On top of the bench two large vessels, nos 33 and 36, a small juglet, no. 35, and a highly burnished jar, no. 34, were found. Fragments of jar no. 34 were located inside the larger vessel no. 33, indicating an original superposition of the two containers. Originally there were more vessels standing on the bench. The remains of four jars were discovered between the small pillars, smashed, probably fallen off installation 47. In association with the ceramics, several grinding stones were found. Most of them were used for only a limited time. A large water jar, no. 31, stood in the southern part of the room against a wall between the entrances to room nos 16 and 19. It is almost a copy of the one discovered in room no. 11 (vessel no. 8). A concentration of charcoal fragments was discovered against the eastern exterior of vessel no. 31. Smaller vessels were encountered on top of the floor against pillar 44 (vessel nos 29 and 30) and against wall 39 (vessel no. 42). An interesting find was vessel no. 71 discovered near the doorway to room no. 22. Although it had suffered from roof and wall debris, the vessel was filled with yellowish dune sand. A most likely function was its use for adding to the floor covering: a kind of buffer when needed immediately. One stone, without any abrasion or traces of use and some bones were found on top of the bench. On the floor two larger stones were discovered in the north-eastern corner close to the installation 59. One stone did act at a certain moment as a grinding instrument, although it is unknown if that was its purpose during the days of Oursi hu-beero. Other finds include fragmentary pottery, pot lids, faunal remains, grinding stones, plant remains, coprolites, metal objects and charcoal fragments. In the middle of the room, between pillar 45 and 44, a male human skeleton was discovered (Chapter 13, this volume). The legs were slightly bent and were resting on top of wall and roof fragments.

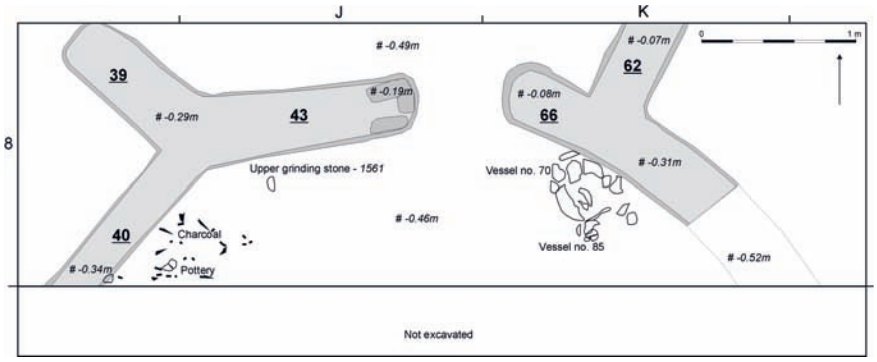


Fig. 5.27 Top plan of room no. 19.

5.2.19 Room no. 19

Only a small segment of room no. 19 was discerned, situated south of room no. 18 (Figure 5.27). The space, measuring approximately 55 cm between walls 66 and 43, was the entrance to room no. 18. Wall 40, which suffered heavily from the erosion processes of gully 2, forms the western boundary of room no. 19. The door posts contained multiple plaster layers, especially wall 66. While the latter did not extend to the east, it seems that room no. 19 and no. 24 were en suite after part of wall 66 collapsed. Only very scarce evidence in the form of a threshold between the two rooms hints at the original course of wall 66. At the time of the fire, only the western part of the wall was in use: as a door post to room no. 18. The floor of room no. 19 comprises beaten earth with some sand and ashes, however the last two occur only at the entrance. The presence of these materials is the result of frequent walking from room no. 18 into room no. 19 rather than wilful deposition.

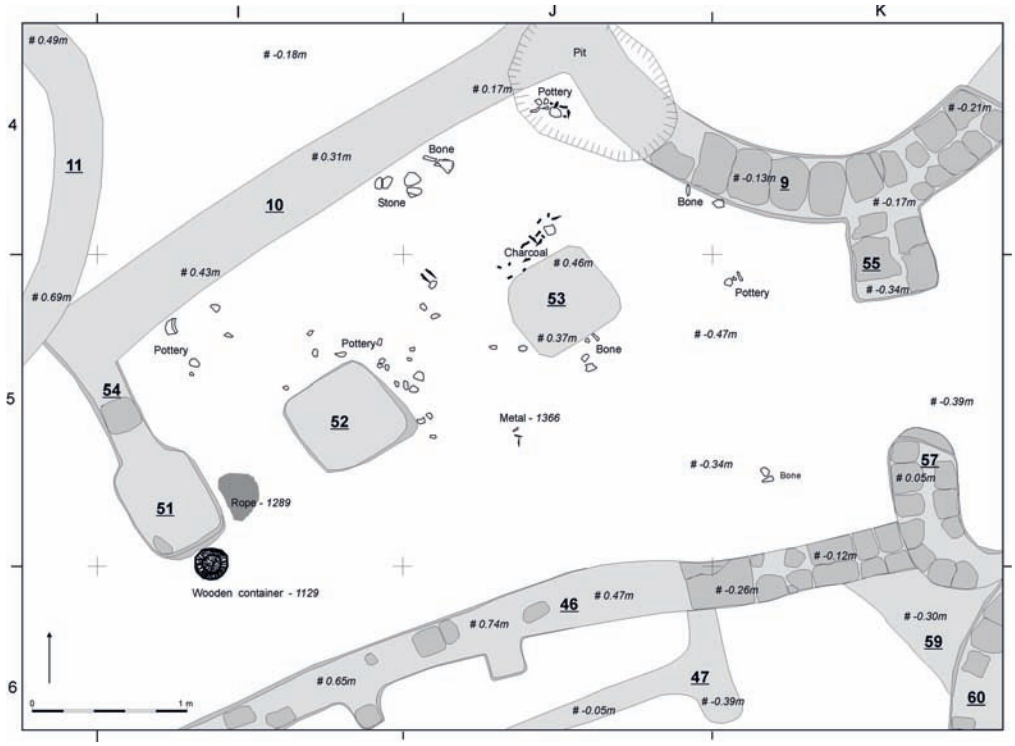


Fig. 5.28 Top plan of room no. 20.

Vessel no. 70 was found east of the doorway against wall 66. Charcoal fragments were discovered among the ceramic sherds. Black charcoal coating on the inside of the vessel implies some kind of cooking function. On the other side of the door a fragment of an upper grinding stone (*1561*) was found. This granite household equipment was still in use after it broke. Other material culture that was encountered on the floor included pottery fragments, charcoal fragments and plant remains.

5.2.20 Room no. 20

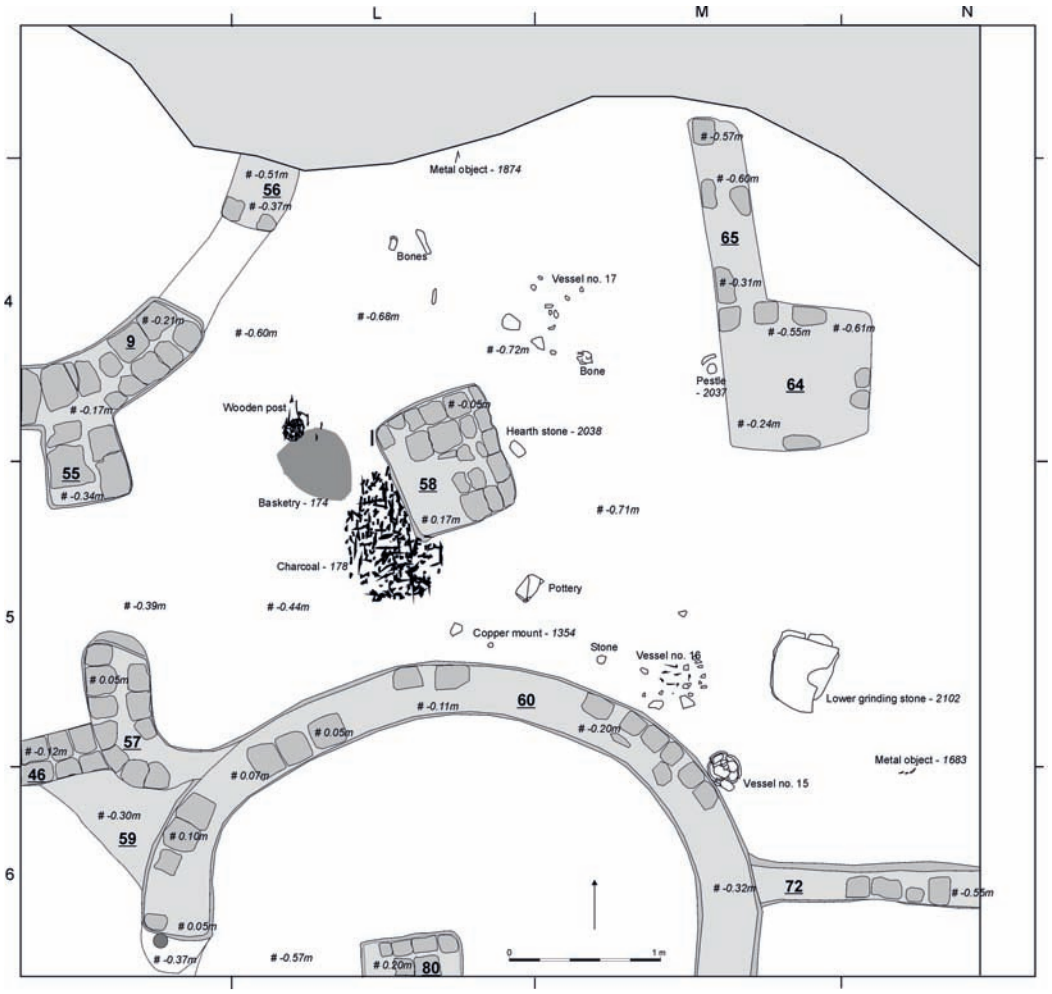
Room no. 20 is a large rectangular room, encountered in squares I5, I6, J4, J5 and K5 (Figure 5.28). The doorway to room no. 21 is relatively wide (85 cm) and shows abrasion at the northern door post 55. This pattern is not visible at the regularly built and rounded door post 57. The other western entrance was made in a later stage. Originally, room nos 9 and 20 belonged to the previously discussed long east-west room with three mudbrick pillars and one wooden pole. At a certain moment, the unit was divided by an additional intermediate wall 54 that connected pillar 51 to the northern enclosure wall 10. The newly constructed doorway between pillar 51 and wall 46 received two small additions for securing a door. The addition on the southern side of pillar 51 is less clear but visible through a vertical impression of a round wooden door hinge. Wall 10, a wide and well constructed part of the building, runs parallel to the former row of pillars. As discussed previously, it ended abruptly on its western side. Considering the fact that the circular room no. 4 was one of the first architectural units, wall 10 was built roughly against wall 11 at a later stage. Wall 10 abuts the circular construction of room no. 7, wall 9. The southern end of this large pillared room was formed by wall 46. The rebuilding of this wall in the east is visible by the slight change in orientation, considering the general outline of room no. 20. The three pillars were built rather hastily and show irregularity in shape and size. Whereas the most western one, 51, is rectangular and almost half the size of the largest pillar 45, pillar 52 is more diamond shaped, accentuated by a large amount of plaster at the corners. Pillar 53 is square shaped and fits in the general look of the other roof supporting devices. The floor is of beaten earth with a layer of mud plaster and successive layers of sand. The surface slopes slightly down to the east. There is at least 25 cm difference in height between room nos 9 and 21.

Not many objects were in use at the moment of the final fire. Many of the excavated remains were discarded or lost items, fallen and left in the floor cover. A large charred wooden container (*1129*) was standing on the southern side of pillar 51 (Chapter 10, this volume). At first glance, it fits the function as a wooden door hinge. Secured in the floor as well as in the roof it could turn easily. The lower part was, however, not placed inside the floor but just standing on top. It had a perfectly flat base, which would be inefficient when using this beam as an axle. The upper side was bowl shaped and had regular walls. Besides the flattened shape, the type of wood too, points more to a function as container rather than building material. Directly east of this charred wooden item, the remains of a rolled up rope (*1289*) were discovered on the floor (Figure 8.4). A large amount of faunal remains and corpolites was found, suggesting that this room served as a passage that was not cleaned regularly. Other finds were pottery sherds, grinding stones, one metal object (*1366*), plant remains and charcoal fragments.

5.2.21 Room no. 21

Room no. 21, located in the north-eastern part of the complex, was found in squares K5, K6, L4, L5, L6, M4, M5, M6, N4 and N5 (Figure 5.29). Measuring 5.68 by 5.10 m, it is one of the largest rooms of the building, especially considering the fact that the northern and eastern enclosures were not preserved (due to gully 3). Originally, two mudbrick pillars, 58 and 64, were present to support the roof. During the time of occupation, the north-south wall 65 was constructed adjacent to pillar 64. There must have been an eastern and northern wall not far from the edge of the excavation unit. The circular room no. 7 can be entered from room no. 21 through a doorway between walls 9 and 56. Most of the southern end of room no. 21 was formed by the circular wall 60. The small

Fig. 5.29 Top plan of room no. 21.



wall 72 connects wall 60 with the presumed eastern wall. Wall 72 was built up similarly to most other walls, but had been damaged, most likely during the time of occupation, as is evident from the plaster layers, some of which covered damaged mudbricks. Wall 72 abuts wall 60 and was constructed in a later stage as the circular room no. 22. Wall 57, part of the doorway towards room no. 22, was built adjacent to wall 60 and finished with a thick layer of plaster forming a rounded corner. On the other side, wall 55 abuts wall 9. Pillar 58 is rectangular in shape and is orientated to wall 57, the doorway and wall 55. The second pillar 64 is larger and shows no plaster on its exterior. Some of the corners show abrasion. The floor is slightly sloping down to the east, with at least 30 cm difference from west to east. The beaten earth floor, especially in the west, was covered with a thick layer of sand. Many older walls were protruding, most likely already during the time of occupation. Pillar 58 was built on an unstable surface and has slightly subsided. This might be the reason why a wooden post was positioned directly west. The diameter of 14 cm is similar to the other wooden supporters.

Most striking in room no. 21 is a pile of charred wood against the western face of pillar 58. It covered a range of at least 60 cm in diameter and was still 40 cm high at the moment of discovery. Different kinds of wood types were stored here (see Chapter 10, this volume). A vessel, no. 16, was found on the floor in the southern part of the room. The ceramic sherds all lay horizontally on the floor, implying that this container had broken before the final collapse. A little more to the south-east, facing wall 60, another vessel, no. 15, was found. A lower grinding stone (*2102*) was discovered in the same corner as vessel no. 15. The stone was placed on a mudbrick platform preventing it from moving during the grinding activity. Other artefacts *in situ* were: pottery sherds, faunal remains, pleated leaf sheets of basketry or mats (*174*), coprolites, grinding stones (*e.g. 2037*), iron slag, molten clay slag, a copper mount, charcoal fragments, plant remains and other metal objects (*e.g. 1874* and *1354*).

5.2.22 Room no. 22

Room no. 22 is one of seven circular units that were most likely constructed during the oldest occupation phase of Oursi hu-beero (Figures 5.30-31). The room can be entered from room no. 18 and room no. 24 by two doorways. The width of both entrances is limited (the openings measuring 48 and 58 cm respectively) and the threshold was

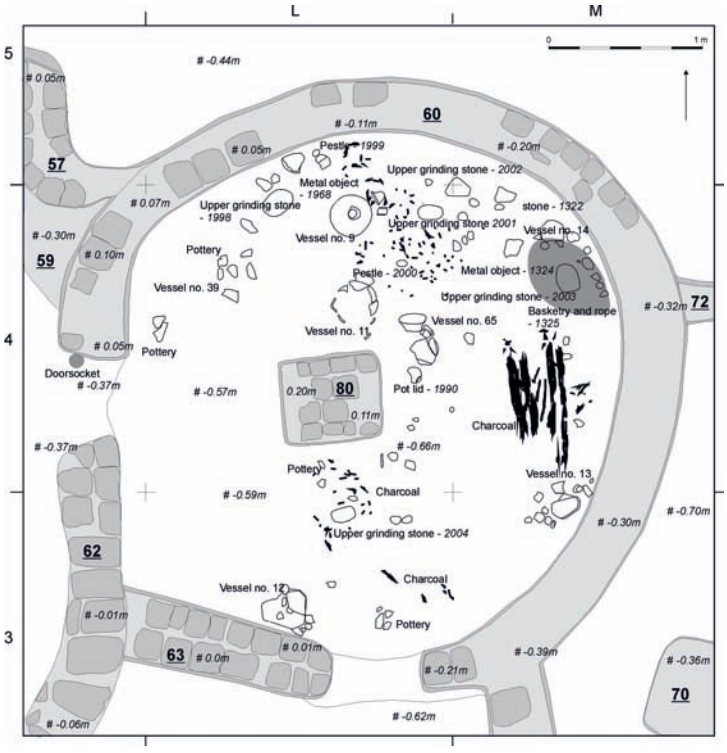


Fig. 5.30 Top plan of room no. 22.

Fig. 5.31 Room no. 22 looking north. Photo was taken in 2005.

formed by protruding older wall stumps. Evidently, these clay plaster steps bridge the difference in height between the floors of the rooms (the floor of room no. 22 is 20 cm lower than room no. 18 and 6 cm lower than room no. 24). The door posts at the entrance to room no. 18 were damaged and worn from frequent use. Furthermore, the threshold shows abrasion from frequent trampling. A small door socket, where the door hinges were secured, was found in the threshold between room nos 22 and 18. The curved wall 60 forms the main building feature and encloses almost three quarters of the interior. The pillar, 80, is rectangular and regularly constructed. The only irregularity to be noticed is the fact that the pillar was not placed exactly in the centre of the room. Walls 63 and 62 were added later, probably at the moment that the rest of the complex was constructed. Most likely, the south-western part of the circular room had collapsed and was renovated at the moment Oursi hu-beero was rebuilt and enlarged. Firstly, wall 62 was constructed, onto which wall 63 was attached. The latter is very regular made and, in contrast to wall 62, was plastered on both sides. A very small niche, approximately 15 cm deep, was discovered in wall 63, containing some pottery sherds and faunal remains. At the other side of the entrance to room no. 24, wall 82, was constructed as an extension of wall 60, but with a different building method. This feature was constructed by only one line of mudbricks, whereas wall 60 was made with multiple rows. The floor is slightly inclined towards the east, similarly to most other rooms in this part of the building. Covered with sand and ashes, the plastered beaten earth floor was clearly identifiable from super-imposed wall and roof debris.

Directly facing wall 63, fragments of a large vessel, no. 12, were found. Large parts were missing and it can be assumed that this container was already fragmentary at the moment of the final fire. An almost complete flask, no. 9, was placed north of pillar 80. Some charcoal fragments were found inside. Immediately south of this vessel another almost complete vessel was discovered, no. 11. A third one, no. 65, was damaged by the impact of the roof collapse. A pot lid was found nearby and was probably in use to protect the content of the bottle from contamination. Two other vessels, nos 14 and 13, were facing wall 60, both, unfortunately, were heavily damaged. Vessel no. 13 contained some faunal remains and charcoal fragments. Several grinding stones were encountered amongst these vessels. Most of them have been heavily used. A further somewhat puzzling find was a concentration of four large charcoal beams and some smaller branches that were unearthed in the eastern part of the room (Figures 10.4). They were located side by side in a north-south direction and had an average diameter of 6 cm (Chapter 10, this volume). Other finds on the floor include dispersed pottery sherds, grinding stones, plant and faunal remains, charred remains of basketry or mats (*1325a*), metal objects (*e.g. 1324* and *1968*) and charcoal fragments.

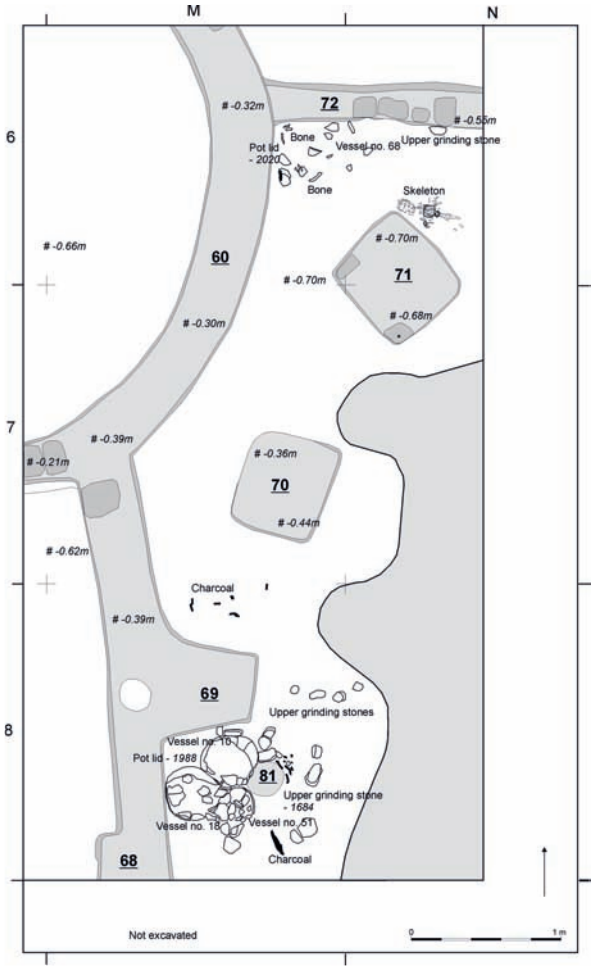


Fig. 5.32 Top plan of room no. 23.

5.2.23 Room no. 23

Room no. 23, uncovered in the south-eastern part of the excavated area suffered from the erosion processes of gully 3 (Figure 5.32). The two mudbrick pillars 71 and 70 were somewhat randomly placed in the room. The rectangular pillar 70 shows some abrasion on the north-western face, where the plaster layer was not preserved. The western enclosure consists of the circular wall 60 and the straight wall 68. The latter shows two offsets, from which one 'enters' room no. 23 (69). A circular hole was discovered inside wall 68. It contained charcoal fragments, pottery sherds of vessel no. 26 and faunal remains. It is most likely that a wooden beam had originally stood here. During construction work, the mortar and mudbricks were placed carefully around this supporting feature. The beam had been removed before, or burned down during, the final conflagration and the hole filled with roof debris and artefacts. The smaller northern wall 72 had already suffered during occupation times. Restoration work was detected on the northern face of the wall. There were no doorways in the eastern and northern walls, giving the room no access to the other parts of the complex.

Facing wall 69, a small clay pillar 81 was discovered, identical to the ones found in front of the clay bench in room no. 18. Around this feature stood three pottery vessels. Vessel no. 10, exactly in the north-western corner of wall 69 and 68, was not decorated and had suffered from the erosion processes of gully 3. Next to this container, vessel no. 18 was found. A pottery lid (*1988*) was found together with vessel no. 18. The third pot, no. 51, contained some faunal remains as well as some charcoal fragments. Several grinding stones (*e.g. 1684*) were found in front of these vessels. The whole set-up calls to mind that found in room no. 18: small pillars, complete vessels and grinding stones. The walking surface consists of beaten earth only, although erosion processes could have removed the sand cover. During excavation it was very hard to find this beaten

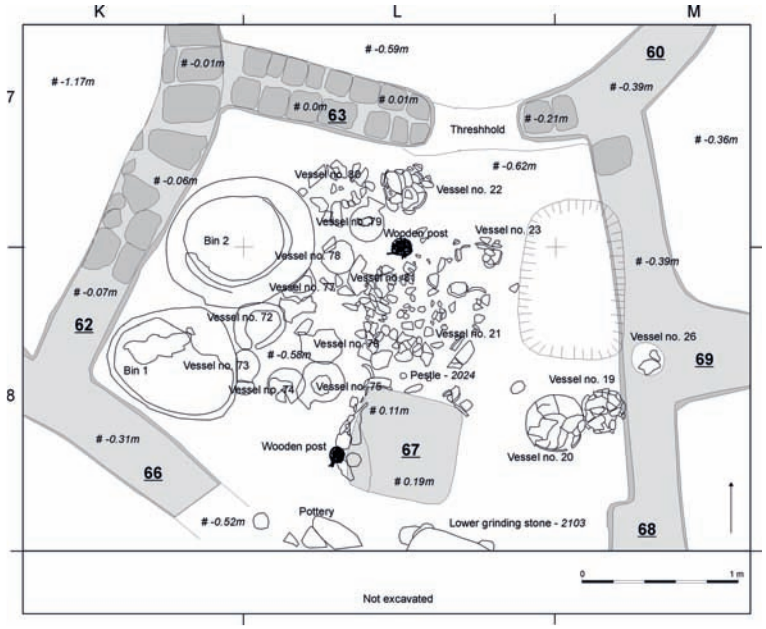


Fig. 5.33 Top plan of room no. 24.

earth floor and only clear flat lying pottery sherds and a concentration of charcoal fragments indicated a surface. In the northern part of room no. 23 some faunal remains were discovered together with broken vessel no. 68 and a pottery lid. Based on its fragmentary condition, wide dispersion, and its missing several fragments, suggests that this vessel was already broken before the collapse of the building. Close to the northern face of pillar 71, the bones of a young child were excavated. Although the skeletal remains were heavily burnt and partly out of context, the position of the child could be reconstructed. With its knees bent and its arms around them, the skeleton shows the characteristic position of a very scared, seated young child (Chapter 13, this volume).

5.2.24 Room no. 24

Room no. 24 was found in squares K8, L7, L8, M7 and M8 (Figure 5.33). The interior of room no. 24 is trapezoid in shape and measures 3.46 by 2.87 m. From this unit one has access to room nos 22 and 19. Wall 66 probably collapsed during the time of occupation. It was not rebuilt and its remains were used for a certain time as a threshold between room nos 24 and 19. The plastered wall 63 to the north was formed in a very regular way by two rows of rectangular and square shaped mudbricks. The wall abuts wall 62, to be distinguished by the fact that the plaster layer of wall 62 is still visible at the place were the two walls touch each other. Wall 68 in the east shows an offset feature at its far southern end. At first glance, it would appear that pillar 67 was not constructed in the exact centre of the room, but rather nearby the original wall 66. This may suggest that the other end of room no. 24 should be some 1.30 m further to the south, measured from pillar 67. Square, measuring 69 by 70 cm, it is similar in size and shape to pillar 22 in room no. 10 and pillar 80 in room no. 22. The western face shows some abrasion and damage, similar to the traces that were seen on the southern face of pillar 32 in room no. 13.

In room no. 24 a pottery vessel, no. 82, was placed against the worn-off flank, providing evidence that this abrasion was already present at an earlier stage of occupation. The charred remains of two wooden beams were discovered, one was standing directly west of the damaged side and another one was located close to pillar 32. Two large clay bins (bin 1 had a maximum diameter of 81 cm and bin 2 of 90 cm) were placed on a stone construction in the western part of room no. 24, immediate facing walls 62 and 66. Bin 1, situated in the corner formed by walls 62 and 66, was irregular, slightly oval shaped, and its upper part was damaged by roof and wall debris. A flat circular cover was found inside this bin (Figure 5.35). This lid was made using the same clay and temper as the bins. At the moment of the fire, bin 1 was apparently

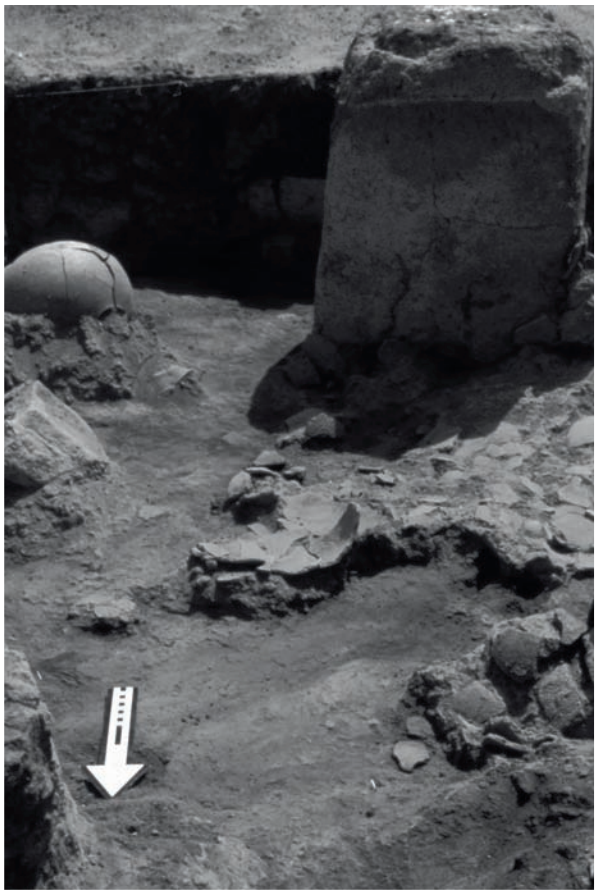


Fig. 5.34 Room no. 24 looking south. Photo was taken in 2001.

Fig. 5.35 Room no. 24 looking north. Note the fragment of the clay lid inside bin 1. Photo was taken in 2000.

closed. Several pottery sherds were found on top of the cover, probably belonging to a small shallow vessel. Intriguing were the skeletal remains of a pregnant sheep/goat, also situated on top of the clay cover (Chapter 9, this volume). Inside this container, a large number of different plant remains were found (Chapter 11, this volume). Although bin 2 did not reveal any material culture, a similar storage function can be expected. No cover was detected for bin 2. At least 16 restorable vessels were found on the floor in the central room (vessel nos 19, 20, 21, 22, 23, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81 and 82), with a preponderance of storage jars with a narrow rim opening. The intense heat of the fierce destruction fire had partially melted roof fragments, wall debris and the ceramic pieces into a hard cement layer (Figure 5.34). The difference in condition of the containers probably marks the different amounts of roof debris that had fallen on top. Only three containers were still in their upright position (nos 19, 20 and 72). Room no. 24 contained the two large clay bins and numerous vessels that were all, except for two, grouped together in the centre of the room. The two large rounded vessels, nos 20 and 19 were placed side by side against wall 62. Directly south of pillar 67 a lower grinding stone was found, unfortunately outside the excavation area (Figure 4.3, section C). In contrast to the lower grinding stone (*2103*) in room no. 21, this heavy object was placed on top of a stone built platform. Another grinding stone was found in the eastern part of this room. It had been heavily used and abraded until it was discarded. Other artefacts in the room were charcoal fragments, faunal and plant remains, a quartz flake and one metal object.

5.2.25 Room no. 25

The badly preserved remains of room no. 25 were encountered in the northern part of the complex. Similarly to room nos 6, 7 and 21, this unit suffered extensively from the erosion processes that occurred along the entire northern slope. Only a very small part of the original floor and the two most southern walls are all that remained of room no. 25: the intermediate wall 8 that forms the south-western enclosure of room no. 25, and part of the circular wall 9. It is most likely that wall 7 acted as the northern flanking wall. No material culture could convincingly be associated with the interior of room no. 25.

5.2.26 Room no. 26

It is questionable if unit no. 26 can be considered a room. Measuring 1.02 by 0.89 m and completely surrounded by walls, it is not accessible. Wall 4 that joins wall 6 and the circular wall 12 was built up a little later. It abuts the two features and was plastered. Wall 3 abutted wall 12, but bonded walls 5 and 6. A floor could not be detected. No material culture was found inside room no. 26.

5.2.27 Room no. 27

Room no. 27 is defined as the space on the western side of wall 30 and north of the partly remaining wall 31. It is uncertain if these parts belonged to the complex of Oursi hu-beero. The remains of the walls were uncovered immediately below the topsoil. In contrast to most others, the walls showed no signs of fire or destruction. No evidence of roof or wall debris that point to a collapse or violent end of occupation was detected here. An explanation for this is that the fire which ended the occupation at Oursi hu-beero did not reach this part of the building. Most of the remains of room no. 27 had suffered from erosion processes after the abandonment of the site. It was, however, stated that part of the burnt floor of room no. 12 ran underneath wall 30. This makes wall 30 later in time than the fierce conflagration. Wall 31, however, was older than wall 30 and was in existence during the main occupation phase, phase 3. Room no. 27 should perhaps not be considered a room in the strict sense, but rather as a courtyard with some older, still visible, wall stumps (31).

5.2.28 Room no. 28

Similarly to room no. 27, room no. 28 was not a closed unit. Encountered in squares D10 and E10, it was also heavily damaged by gully 2. Wall 31 had been built earlier than the complex and had survived the final fire. After the destruction of the building,

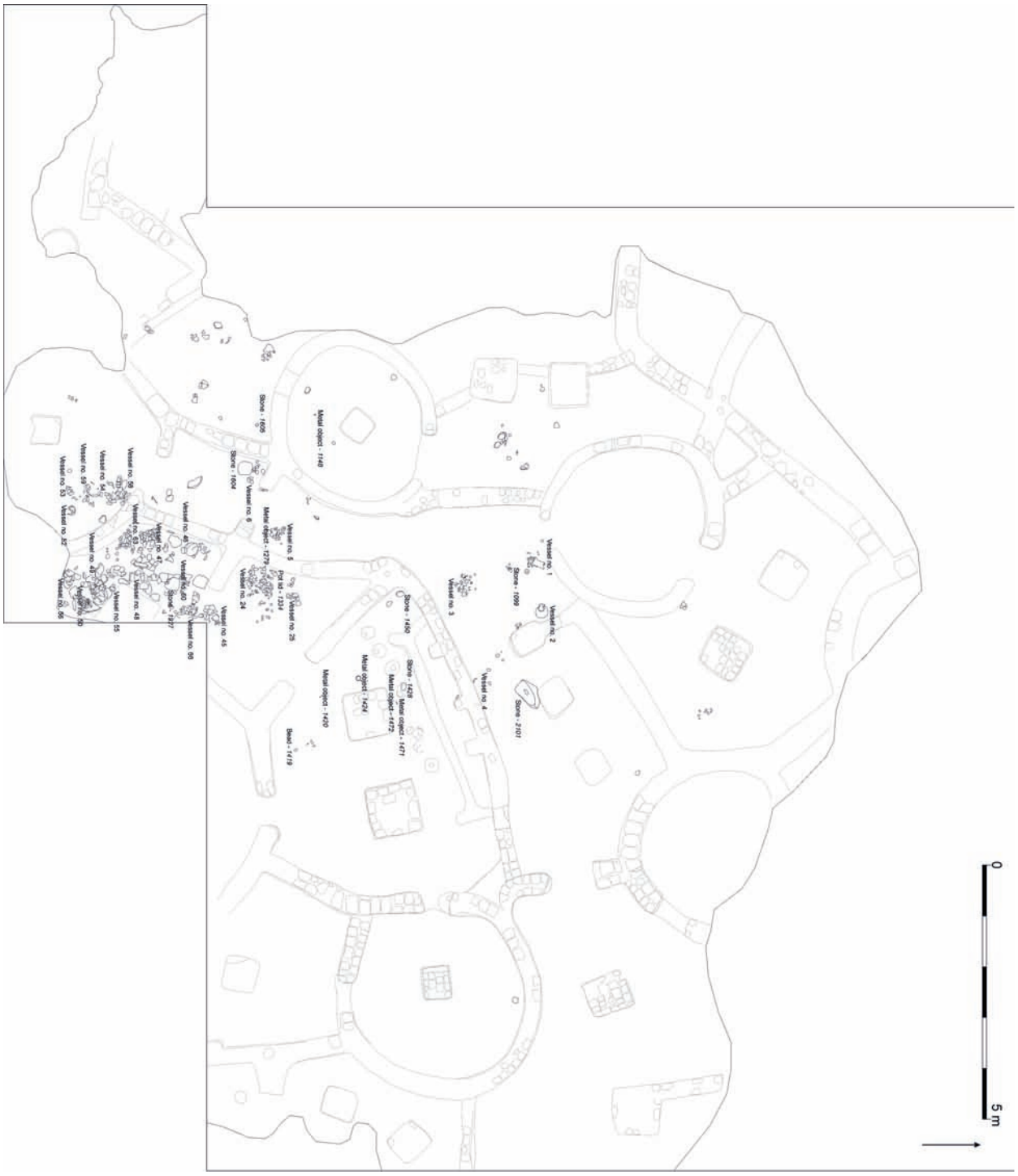


Fig. 5.36 Top plan of objects originally located on the roof.

wall 30 was constructed. It is probable that this part of the settlement mound was reused and rebuilt, whereas the Oursi hu-beero complex was left unoccupied. No material culture was discovered *in situ* on the floor.

5.3 The roof and related objects

The clear distinction between the activities that were carried out in the interior of the complex and on the roof at Oursi hu-beero is unique in the history of architecture in

West Africa.[8] For the first time, archaeological evidence was discovered that proves the existence of a second floor that would have been stable and strong enough to hold considerable weight. Almost all rooms were roofed in the same way. Large wooden beams held a thick (up to 20 cm) layer of mud and reed. The surface of the roof was made horizontally. It is unclear if all the roofs together formed one surface or if there were small separating walls standing in between. The amount of roof debris in most rooms does not suggest a second floor with a similar massive clay roof. However, room no. 18 seems to be an exception. Both the large pillars, 44 and 45, and the thick layer of roof debris, hint at the existence of a second clay roof.

The roof was used for numerous activities. There is a concentration of pottery in the southern part of the building, right above room nos 13, 16 and 17 (Figure 5.36). At least 24 vessels were standing close to the southern wall of the roof, almost like a storage place. Furthermore, fragments of a clay bin were found amongst the roof fragments, similarly to the examples that were uncovered on the floor of room no. 24. Other vessels had stood on the roof of room nos 3 and 9. Several metal objects were placed on the roof, even more than inside the rooms. Numerous arrowheads, spear heads and other weapons, and jewellery, such as copper bracelets, beads and decorated objects, were found on top of roof debris. Besides several upper grinding and sharpening stones, the large lower grinding stone above room no. 20 show the enormous weight the roof could hold. Right on top of the pillar 51, the collapse of the building caused the stone to glide away and fall down onto the roof and wall debris in room no. 20.

8 Identical archaeological findings were made in Syria (Tell Sabi-Abyad - www.sabi-abyad.nl) and the Mediterranean (Thera - Shaw 1977).

Chapter 6

The Pottery

Maya von Czerniewicz

6.1 Introduction

The inventory of Oursi hu-beero offered a considerable quantity of ceramic remains. On one hand, this chapter deals with the description of the sherds that could not be refitted to more or less complete vessels, and on the other hand, the almost complete vessels found inside the complex will be described. According to the results of the ceramic analysis and the ^{14}C dates of the surrounding settlement mounds, the inventory of Oursi hu-beero is related to the Iron Age of northern Burkina Faso (von Czerniewicz 2004: 127, Table 45). Radiocarbon dates, as well as the vessel forms and decoration techniques of the ceramics of Oursi hu-beero indicate that the house was inhabited at a period which can be defined as a transition between the Middle Iron Age and the Late Iron Age (Figure 4.6).

Having already recorded the ceramic material of three settlement mounds in northern Burkina Faso - one only a few dozen metres away from Oursi hu-beero - we were able to file the finds directly in the field. The focus of the analysis was the vessel forms and the decoration of the pottery, since it was known from the pottery of other

Fig. 6.1 Broken pottery in room no. 18. Photo was taken in 2001.

sites that the production techniques for the vessels, such as for rim shape or the thickness of the vessel wall, did not change very much throughout the course of the Iron Age. Before going into detail, some definitions used regarding the categorisations of vessel forms and decoration techniques found in the inventory of Oursi hu-beero should be explained.

6.2 Characteristic and form

The body thickness of the vessels between 7 and 9 mm can be defined as relatively fine - in comparison to the wall thickness of up to 41 mm at other excavations in the area (von Czerniewicz 2004: 25 and 54). The tempering shows fine sand and organic additions. The mostly well-burnished sherds often reveal a slip covered surface. The slip can be red or black. The traces on some of the vessel bases indicate a forming of the vessels with the tamper and concave anvil technique (Sterner and David 2003). The vessel container was formed with a tamper, probably inside a shallow earthen depression, furnished with mats, which left the typical impressions on the still wet clay. After a short period of drying, the rim of the vessel was modelled. The later adjunct of the rim to the vessel body may be the explanation why the rims often broke from the vessel bodies in an accurate cut. The vessels of Oursi hu-beero show the following variations in their outer appearance:

- Flask: closed vessel, generally with neck. The part of the vessel with the minimal diameter is smaller than or equal to a third of the part of the vessel with the largest diameter (Balfet *et al.* 1989: 22).
- Pot: closed vessel, with or without a rim. The part of the vessel with the minimal diameter is larger or equal to a third of the part of the vessel with the largest diameter (Balfet *et al.* 1989: 19).
- Bowl: open recipient with slightly everted vessel walls (Balfet *et al.* 1989: 15).
- Bin: large, immobile container that is unfired or fired at low temperatures.
- Pot lid: stopper of vessels. In the case of Oursi hu-beero all lids are of the right size to close the flasks and have been specifically made to do so. On all other sites in northern Burkina Faso, the flask lids are made from pot sherds (von Czerniewicz 2004: 26; McIntosh 1995: 147).
- Chalice: a footed bowl (Hendrix *et al.* 1997: 39).

Looking at the vessel forms in detail, it is obvious that there are two dominant types in the inventory of Oursi hu-beero. The first group of vessel forms are the flasks, with narrow necks of up to a length of 16 cm (cf. vessel no. 1 - Figure 6.15:12). Underneath the straight or slightly everted neck, a round body with a round base forms the actual container of these vessels (Table 6.1). The second category of complete vessels is the pot. Pots have a short rim, which is only slightly everted and to a small extent funnel-like (Table 6.2). The rim lip of the flasks as well as that of the pots is rounded. Bowls are rare in the inventory of Oursi hu-beero. The two examples show slightly everted walls.

Table 6.1 Shapes of complete flasks.

	Vessel no.
Flask with straight neck and everted rim	1, 13
Flask with everted neck (funnel shape)	19, 37
Flask with everted rim and neck	2, 3, 9, 11, 16, 20, 21i, 22, 23, 34, 36, 38, 46, 47, 52, 54, 60, 65, 70, 72, 73, 75, 76, 77, 79, 80

Table 6.2 Shapes of complete pots and bowls.

	Vessel no.
Pot with everted rim	4, 8, 10, 24, 27, 31, 32, 36, 38, 39, 42, 43, 44, 49, 51, 52, 57, 61, 63, 64, 67, 72, 78, 80
Pot with rim in a 90 degree angle	33, 41, 45
Bowl	50, 21iii

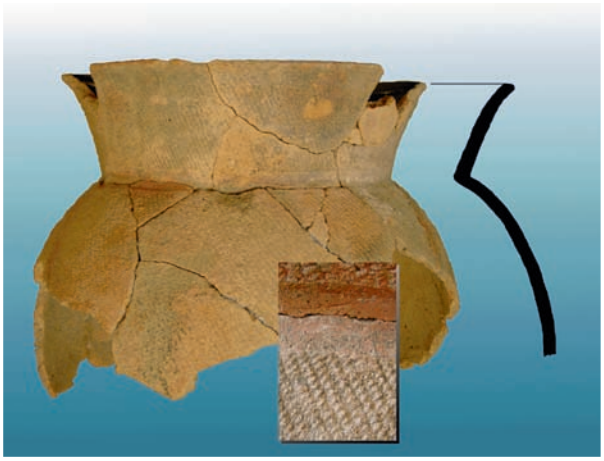


Fig. 6.2 Vessel no. 72.

6.3 Functional analysis

The dominant vessel types of pot and flask support the fact that these vessels were primarily in use for storage reasons, or - in the case of the pots - maybe for cooking (Keding 1997: 70; David and David-Hennig 1971). Slipping of the flasks and pots may have served a functional purpose, leaving the pottery less permeable for liquids, especially when well polished (Shepard 1974: 191). Most of the flasks had lids to protect the probable liquid content against contamination and even the large storage bins were covered with large lids to protect the content.

Regarding the use of the different rooms of the house, the centre of the house contains a concentration of flasks, pots and large bins. The largest accumulation was found in room no. 24, where a large number of flasks (at least ten almost complete vessels) and pots were located next to two large storage bins, in which the burnt content could still be determined as *Acacia nilotica*. These plant remains are, for example, used for dying leather today (Chapter 11, this volume).

A second accumulation of vessels is located on the roof of room nos 16 and 17, where more pots than flasks were found, indicating the storage of more solid than liquid items. Outstanding are the finds in room no. 18. Among these, an omphalos-shaped vessel was found. Omphalos-shaped vessels are interpreted as having been used for water storage, since the omphalos base retains the suspended matter in the water while dipping. A small dip vessel, found next to the vessel, supports the argument for liquid storage. The row of pots encountered on top and at the base of the mudbrick bench were filled with ashes.

Despite the fact that the definitive use of all the vessels still remains uncertain, it is clear that the centre of the house was the heart of the building. Here, daily nutrition,

Fig. 6.3 Vessel no. 80.

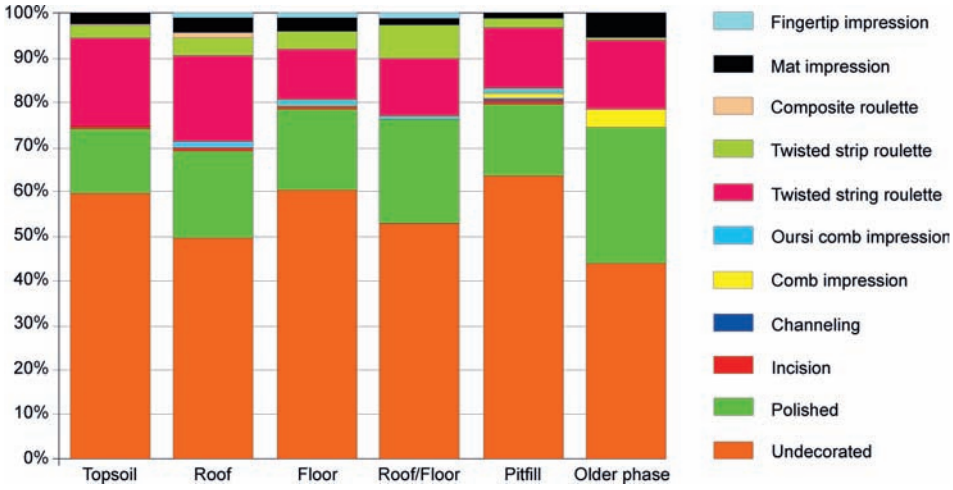


Fig. 6.4 Different decoration and finishing techniques used at Oursi hu-beero.

household goods such as ingredients for dying and the ash of potential ancestors were kept side by side. This leads to the assumption that the worship took a central role in the life of the inhabitants, as they let the ancestors take part in daily life.

6.4 Decoration

The decoration on the ceramic finds of Oursi hu-beero can be categorised into different types of roulette, incision, channelling and various types of impression in the vessel surface (Table 6.3). The surface treatment of polishing or burnishing of the vessels of Oursi hu-beero is also categorised as decoration since the polish stands intentionally in direct contact with other decoration techniques on the vessel and is therefore part of the motif that the potter had in mind. In the following, the different decoration techniques used on the ceramics of Oursi hu-beero will be explained, before analysing the distribution of the decoration on the sherds and on the restorable vessels.

6.4.1 Roulette

- Twisted string roulette: A twisted string is rolled over the surface of the vessel before firing (von Czerniewicz 2004: 15; Rapp 1984: 108; Soper 1985: 35).
- Twisted strip roulette: Roulette made from plaited blades. The imprint of this instrument, rolled over the surface of the vessel before firing, is much more square than the smooth impressions of the string roulette (von Czerniewicz 2004: 15; Rapp 1984: 108; Soper 1985: 35).
- Composite roulette: Combination of an inflexible core wrapped by a string. This object is rolled over the vessel surface before firing (Rapp 1984: 108; Soper 1985: 35).

6.4.2 Impression

- Fingertip impression: Fingertips are pressed into the still-wet clay of the vessel (von Czerniewicz 2004: 15).
- Mat impression: A mat should be understood as an even, two-dimensional netting (Adovasio and Andrews 1985: 35). Pressed onto the surface of the vessels, small and opposite impressions are created (von Czerniewicz 2004: 15).
- Comb impression: Impressions on the vessel surface created by an object with at least two teeth (von Czerniewicz 2004: 15; Keding 1997: 76).
- Oursi comb impression: Impressions on the vessel surface created by an object with at least two teeth. The impressions are large round dots. The surface has been slipped and polished after the comb had been lowered into the vessel surface (von Czerniewicz 2004: 36).
- Single cord impression: A single cord is pressed onto the vessel surface before firing.

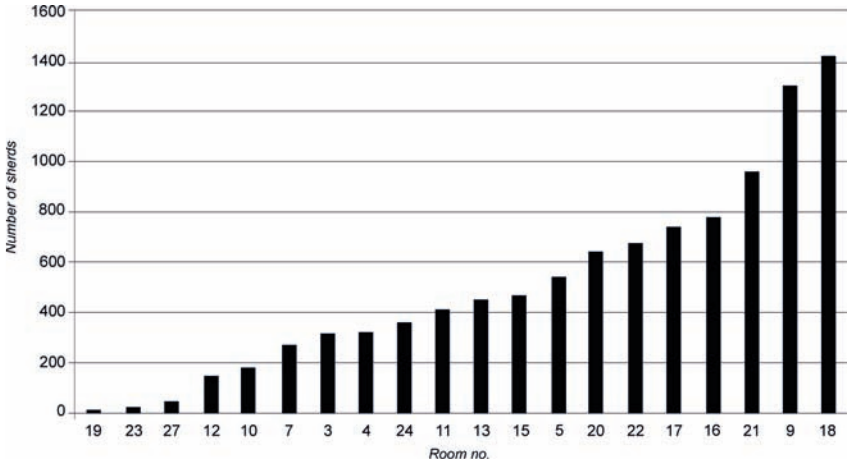


Fig. 6.5 Total amount of sherds found in the rooms.

6.4.3 Other techniques

- Channelling: Horizontal-parallel deepening on the vessel rim with smooth edges. The channels are created by modelling the clay and lead to a wavy profile of the vessel rim (von Czerniewicz 2004: 15; McIntosh 1995: 136).
- Incision: The decoration tool has a U- or V-shaped point which cuts into the surface of the vessel (von Czerniewicz 2004: 15).
- Polishing: Smoothing the surface of the vessel (von Czerniewicz 2004: 15). The surface is regular and has a uniform lustre.
- Burnishing: The surface may be regular, but the tool is used directionally so a pattern may be produced. Because the burnished lines have a consistent lustre, the overall effect is a combination of lustre and matte or a non-uniform lustre (Rye 1981: 90).

The above defined different decorating techniques were found on the fragmentary ceramic material of Oursi hu-beero as well as on the restorable vessels. In the following, the characteristics of the fragmentary pottery will be described, before explaining the shape and decoration of the complete vessels in detail.

6.5 Distribution and decoration of the fragmentary pottery of Oursi hu-beero

6.5.1 The distribution of the sherds

In all layers, ceramic sherds were found that could not be refitted to complete vessels. Most of them came from destroyed pots, which were scattered during the collapse of the house. Others look very worn and eroded. It would appear that those sherds have been lying exposed on the floor for quite a long time. They were already on the floor before the roof collapsed, indicating a longer occupation period of this place. To give an overview of the distribution of the sherds inside the house, Figure 6.5 indicates the total

Decoration pattern	Total amount of sherds
Undecorated	7796
Polished surface	2653
Incision	33
Single cord impression	87
Channels	32
Comb impression	17
Oursi comb impression	110
Twisted string roulette	2330
Twisted strip roulette	595
Composite roulette	22
Mat impression	403
Fingertip impression	83
Total	**14.161**

Table 6.3 Decoration of the fragmentary pottery.

number of sherds found in each room.

The highest accumulation of sherds is in room nos 21, 9 and 18. Those rooms belong to the centre of the house, as well as the room nos 20, 22, 17 and 16. The amount of sherds in the rooms declines considerably with an increasing distance to the centre, leaving the centre the best-equipped part of the house.

It would appear that the circular rooms in the north-western part of the house (nos 10, 4, 7) were not used for storage or cooking purposes, because the amount of sherds here is very limited (Figure 6.5). On the other hand, the units surrounding the centre (room nos 9, 20, 21, 16 and 17) bear the highest number of ceramic finds and therefore indicate usage as storerooms, and - in room no. 21 alone - as a cooking place. The use of room no. 24 for storage purposes is supported, although this room did not offer a lot of sherds (Figure 6.5), by the quantity of complete vessels (see further up).

The finds on the roof also indicate use as storage areas, since most of the rooms or doorways mentioned above (room nos. 16, 17, 9 and 18) exhibit a high amount of sherds on their roof. Thus, the centre of the house, including its doorways and its roof was used for worshipping the ancestors (room no. 18) as well as for cooking (room no. 21) and for storage purposes.

6.5.2 Decoration

The decoration methods on the single sherds varies only slightly. The quantity of sherds from the roof/floor gives an indication of the inventory of the house. Shown in Figure 6.6, the decoration techniques on the ceramic sherds of Oursi hu-beero exhibit both characteristics of Middle Iron Age and Late Iron Age pottery assemblages in Burkina Faso. The decoration in the older level 4 (more comb impression and mat impression on the vessel surfaces) tends to indicate an occupation period more in the Middle Iron Age than the Late Iron Age, as has been proven for other sites of the Middle Iron Age in northern Burkina Faso (von Czerniewicz 2004: 133).

During the last occupation of the house the ceramics display the following characteristics: the typical large comb impression on the vessels of northern Burkina Faso, which is common in the Middle Iron Age, vanishes from the inventory and therefore only a few individual sherds decorated in this manner could be obtained at Oursi hu-beero. This so-called “Oursi comb” decoration gives clues about the very last vestiges of the Middle Iron Age decoration tradition in the house. The use of twisted strip roulette as a decoration pattern on the vessels is explicitly an indicator for a Late Iron Age date. Furthermore, the high percentages of twisted string roulette decoration and polished vessel surfaces point unmistakably to an occupation of the house during the Late Iron Age (von Czerniewicz 2004: 121). Based on these characteristics, a transitional date between the Middle Iron Age and the Late Iron Age for the occupation at Oursi hu-beero is suggested. It is obvious that the mound was hardly occupied after

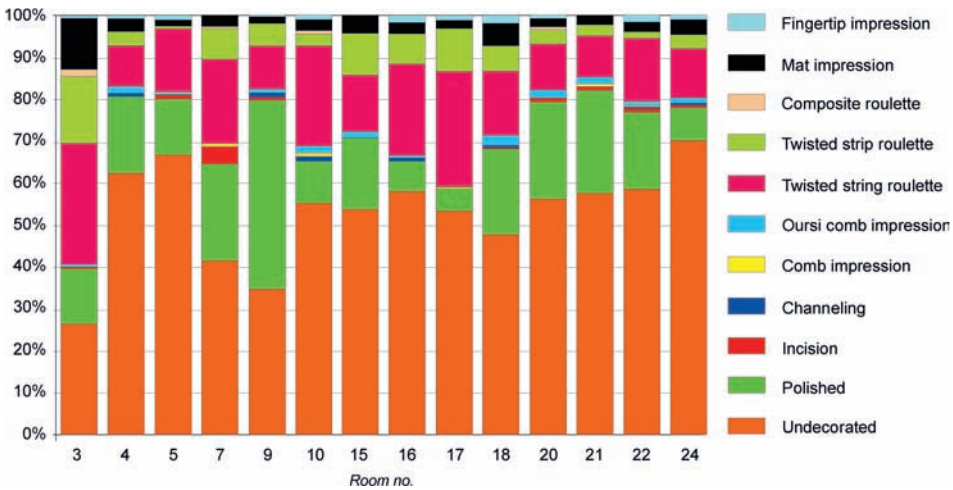


Fig. 6.6 Distribution of decorated sherds in completely excavated rooms.

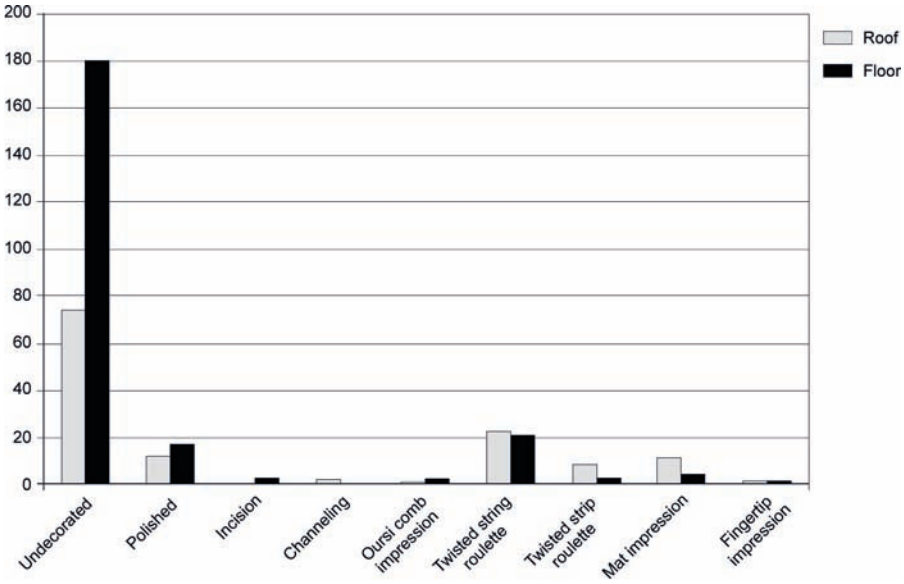


Fig. 6.7 Decoration patterns of the fragmentary pottery in room no. 24.

the house was destroyed, as the distribution of the decorations found in the topsoil is comparable to those of the occupation layer.

As can be seen in Figure 6.6, the decoration of the potsherds varies between the rooms. Three areas and some exceptions can be defined. The first area is the centre of the house with room nos 18, 20, 21 and 22. Half of the sherds are undecorated and the other half shows, in quite similar distribution, all the other decoration techniques. The second area consists of room nos 10, 15, 16 and 17, in which the decorated half of the sherds is no longer dominated by a polished surface but by a decoration made with the twisted string roulette. In the third area (room nos 4 and 5) there are more undecorated than decorated sherds.

As explained above, the centre of the house plays an exceptional role, which is emphasised by the particular variety of decoration patterns used and by the homogeneity of the ceramic decoration. The centre differs from the annex rooms (second area) in the use of polishing of the vessel surfaces and less twisted string and twisted strip roulette decoration. The roulette decoration technique can be used to roughen the vessel surface and therefore to facilitate the transportation of the vessels and to enlarge the surface of

Fig. 6.8 Bin 1 and 2 in room no. 24 looking west. Photo was taken in 2005.

Fig. 6.9 Pot lids.

Fig. 6.10 Vessel no. 37.

the vessels to let water or other liquids evaporate to cool them down. The polishing of vessels stands in contrast to the above described treatment. It may be concluded that the vessels in the centre were not primarily used for transportation or for the storage of liquids, but for storing dry goods, a theory which is underlined by the archaeobotanical finds in that area (see Chapter 11, this volume). On the other hand, the main purpose of the vessels in the second area was to store liquids or to gather goods from outside the house.

In the third area, the undecorated parts of the vessels seem to dominate the inventory. Assuming that the decoration of a vessel increases its value, since the potter would have invested more time in the production of the ceramic, the vessels of this outer area appear to be of less value. Thus it can be said that either only a small part of the vessel body was decorated or only a limited number of vessels was decorated, and the rest was undecorated. It may be concluded that the ”relative” value of the vessels declines with increasing distance from the centre.

Room nos 3, 7, 9 and 24 (Figure 6.6) do not fit in any described area. In comparison to the other rooms, room no. 3 contained only a small number of undecorated sherds and a high number of sherds decorated with composite roulette and mat impression. None of the other rooms in the western part show any composite roulette at all, which can only be found in the rooms of the centre. However, there is no direct doorway leading from the western part of the house to the centre. The interpretation of the composition of the decorated sherds in room no. 3 must be left open.

Fig. 6.11 Knotted string roulette on vessel no. 9.

Vessel no.	Rim	Neck	Shoulder	Upper part of the vessel body	Part of the vessel with the largest diameter	Lower part of the vessel body
2		Polish			Band of TSR	
9	Red slip				Band of KSR	Mat impression, burnish
11	Black slip, polish		Black slip, polish, Oursi comb impression	5x single cord impression		Mat impression, burnish
19		Oursi comb impression (garlands)		3x single cord impression	Band of TSR	Mat impression
20		Band of TSR	Polish	Polish	Polish	Polish
21i			Oursi comb impression, red slip, polish	1x single cord impression	Band of TSR	Mat impression, burnish
22			Oursi comb impression (double triangle)	3x single cord impression	Band of TSR	Mat impression, burnish
37	Band of TSR	Red slip, polish	Band of TSR	Red slip, polish	Red slip, polish	Red slip, polish
38			Band of TSR	Band of TSR	Band of TSR	Mat impression, burnish
46		Polish	3x Oursi comb impression (rows)	5x Oursi comb impression (perpendicular), 8x single cord impression	Band of TSR	Mat impression, burnish
60		Band of TSR	1x line of red paint	Mat impression, burnish	Mat impression, burnish	Mat impression, burnish
70		Band of TSP	Polish		Band of TSR	Mat impression, burnish
73	Black slip, polish	Black slip, polish	Brown and red slip	5x single cord impression	Mat impression, burnish	Mat impression, burnish
75		4x Oursi comb impression (perpendicular)	3x single cord impression	1x red painted band	Band of TSR	Mat impression, burnish
76	Interior red slip, exterior black slip		Black slip, polish	5x single cord impression	Band of TSR, red slip	Mat impression, burnish, red slip
77			Oursi comb impression (garland), brown slip, polish	5x single cord impression	Band of TSR	Mat impression, burnish
79	Black slip, polish		Oursi comb impression (garland), brown slip, polish	3x single cord impression	Band of TSR, brown slip	Mat impression, brown slip

Table 6.4 Decoration on a selection of restorable flasks and pots (TSR=Twisted String Roulette; TSP=Twisted Strip Roulette; KSR=Knotted String Roulette).

Room no. 7 exhibits the main decoration techniques of the two occupation horizons. Here, in one column (Figure 6.6), the characteristics of the two stages can be seen: the older level 4 - with incision and comb impression more in the tradition of the Middle Iron Age - and level 3 with twisted strip roulette and mat impressions, pointing to a Late Iron Age date.

The high number of polished sherds is outstanding for the decoration patterns of room no. 9. The differences in the decoration patterns may be explained by the fact that this room offers almost four times the number of sherds than the other rooms. The description of the restorable vessels further down reveals that the largest part of the vessel bodies is polished. It has been proved that room no. 9 is one of the storage centres of the house. Hence, it is not surprising that polished sherd surfaces dominate in this room. This indicates that this pottery was not used for transportation.

Room no. 24 shows an astonishingly high amount of undecorated sherds. Since the thirteen described restorable vessels of this room are all decorated, the conclusion may be drawn that more undecorated than decorated pots were destroyed in this room. Looking at the distribution of the sherds in room no. 24 between roof and floor (Figure 6.8), the impression is strengthened by the fact that more undecorated vessels were destroyed on the floor than on the roof. Since most of the restorable vessels were flasks, it can be assumed that the destroyed vessels were mainly undecorated pots. This must be regarded as speculation and a mere attempt to explain the differences.

Despite the described differences in the distribution of the decoration patterns of all rooms, it seems that no room stored a specifically ornamented ceramic. This conclusion seems to satisfy in relation to the vessel sherds, but some decoration schemes do not fit into the distribution pattern mentioned above for the almost complete vessels.

6.6 Decoration of the complete vessels

In contrast to the above described single sherds, those vessels that could be mended offer more insight into the different forms and combinations of decorations. Most of these pots were destroyed due to the collapse of the roof construction but could be refitted since their sherds were found in a restricted area. Many of these vessels and their contents, which consisted largely of very hard baked sediment, were brought to the University of Frankfurt am Main for restoration and analysis.

The most lavishly ornamented vessels of Oursi hu-beero are the flasks, which have a slightly everted rim, a funnel shaped neck and a rounded rim lip. In most cases, the rims of these vessels are undecorated but generally show a black, brownish or sometimes red highly polished slip (Table 6.4). The upper part of the vessel body is also covered with a brown or black, highly polished slip. The decoration patterns on these flasks can be categorised into two groups. One group has the characteristic Oursi comb impression on the upper part of the body (vessel nos 11, 19, 21, 22, 46, 75, 77 and 79); the upper part of the body of the other group does not show these impressions (vessel nos 9, 70, 73 and 76). The comb impression consists of vertical, parallel impressions or garlands of multiple rows, as well as triangle shaped multiple rows. Underneath the polished or comb impressed surface, between three and five vertical rows of single cord impressions follow on the part of the vessel with the largest diameter. The red slip of this part of the vessel is conserved in the small imprints of this decoration (*e.g.* vessel no. 21). Subsequent to receiving the single cord impressions, the flasks are decorated with a band of roulette impressions. In most cases, the roulette tool was made of a twisted string, although twisted strip impressions exist also (vessel no. 21). The lowest part of the vessel body of all of the flasks is ornamented with red slip and mat impressions.

Like the above described flasks, the pots show elaborate decoration too (Table 6.5). The pots have a slightly everted rim with a rounded rim lip. In some cases, the rim is decorated with roulette impression (vessel nos 36, 72 and 78), incisions (vessel no. 32) or channelling (vessel nos 27, 33 and 80). The body of the pots is decorated with roulette impressions (vessel nos 8, 31, 33, 36, 44 and 72), or can be divided into an upper and a lower zone with different decoration patterns. The upper zones mostly exhibit roulette impressions (vessel nos 27, 28, 32, 43, 51, 78 and 80), whereas the lower part of the body was decorated with mat impression (vessel nos 43 and 78) or fingertip impressions (vessel nos 28 and 80). The transition between the different zones of the vessels is emphasised with lines made of red paint (vessel nos 72 and 78) or single cord impressions (vessel no. 28).

The rich decoration arranged in different zones on the vessel points to a very conscientious production of the ceramics found predominantly in the centre of the house. Since the vessels were found in areas of storage and cooking, it seems obvious that these containers were not only in use for decorative matters. The ceramic inventory of the house is a well produced utility ware. In comparing the inventory with the ceramic finds of other settlement mounds in northern Burkina Faso (von Czerniewicz 2004), it is clear that the decoration patterns on the ceramics of Oursi hu-beero in themselves do not differ from other sites (disregarding the two exceptions described below). The fact that each vessel in the inventory of Oursi hu-beero was decorated in a richness, which does not occur on any other site in the same region, makes the ceramic material remarkable.

6.7 Large water jars

Vessel no. 8 is a large storage vessel with a height of 74 cm (Figures 5.15 and 6.12). The largest diameter of the body (84 cm) is ornamented with twisted string roulette. A small hollow in its base holds back (most likely) the suspended matter in liquids, mainly water, so that drawing water from this container is possible without whirling up the particles. Vessel no. 31 is a large storage vessel with a height of 89 cm (Figure 6.13). The body diameter (85 cm) is ornamented with rough twisted string roulette. Similarly to vessel no. 8, this vessel shows a small half-rounded bulge at its base. Both vessels may have been used for the storage of liquids, most likely water, which is emphasised by the fact that both containers have an omphalos-modelled base. Furthermore, the decoration with twisted string roulette increased the surface area to the point that the evaporation of water through the vessel walls kept the liquid inside the jar cool. To facilitate the evaporation, both vessels were standing on the floor and were not lowered into the walking surface.

Vessel no.	Rim	Shoulder	Upper part of the vessel body	Part of the vessel with the largest diameter	Lower part of the vessel body
27			Band of TSR		
28			10x single cord impression		
32	Interior regular incisions		Band of TSR		
33	Channels		TSR	TSR	TSR
36	TSP, red slip		TSP	TSP	TSP
43			TSR	TSR	Mat impression, burnish
44			TSR, burnish	TSR, burnish	TSR, burnish
51	Black slip, polish	Band of TSR			
72	interior red slip, exterior 2x band of TSP	1x line of red paint	TSP, red slip	TSP, red slip	TSP, red slip
78	Interior red slip, exterior band of TSR	1x line of red paint, band of TSR, red slip	Mat impression, red slip	Mat impression, red slip	Mat impression, red slip
80	Interior 2x channels, exterior sculpted band, red slip	Band of TSR	Band of TSR	Band of TSR	Fingertip impression

Table 6.5 Decoration on a selection of restorable flasks and pots (TSR=Twisted String Roulette; TSP=Twisted Strip Roulette).

6.8 The bins

In room no. 24 two large containers made of clay were found (Figures 5.35 and 6.8). The two undecorated vessels of more than one metre in diameter were used for storage (Chapter 11, this volume). In the southern bin a cover was found which could be reconstructed to half of its original size. This vessel contained, among residues, the remains of a sheep with its foetus (Chapter 9, this volume).

6.9 The pottery lids

Next to vessel no. 54 a small ceramic disk was found (*1828*). This slightly concave lid has a diameter of 87 mm and fitted exactly in the opening of flask. In total, 22 complete or nearly complete pot lids were found on the site (Figures 6.9 and 6.17). Nineteen of them are comparable in size to the above described cover; three posses a smaller diameter, between 57 and 41 mm. Pot lids had been in use at other Iron Age sites in West Africa, but there the lids had been produced of discarded pot sherds, which were chipped to a roughly circular and manageable size (Connah 1981: 159; von Czerniewicz 2004: 26, 54 and 82; de Grunne 1983; McIntosh 1995: 147). Oursi hu-beero is the only known site where the lids had been made of fired clay directly in the form they were meant to have. Only 4 lids were made from discarded pottery sherds. One lid shows two times two perforations of about 0.5 cm in diameter (Figure 6.17:17).

6.10 Imported vessels and imported decoration?

The remains of vessel nos 55 and 56 belong to two chalices with high-footed bases (Figure 6.15:42-43). Unfortunately, the bases are the only part of the vessels that were preserved. The diameter of the footed bases of about 10 cm implies a small vessel, otherwise the foot would not have been able to stabilise the container. High-footed bases like the ones described above are unknown in the Iron Age ceramic inventory of northern Burkina Faso. Looking at other Iron Age sites, Jenné Jeno in the Niger Delta of Mali is the nearest site where high footed bases were encountered (McIntosh 1995: 155, 173, 211 and 212). Here, the footed containers date to 350 - 850 cal AD (McIntosh 1995: 154) and are slightly older than the finds of Oursi hu-beero. High footed bases can also be found in the abri of Dangandouloun in Mali (Mayor-Huysecom 2005: 185, fig. 140, no. 15). For these ceramic finds, Mayor-Huysecom gives a chronological range of between the 7th and the 12th century AD (2005: 182). Ceramics with high footed bases in the same region of the Niger bench can be found on the site of Tiébala FII (Curdy 1982: figs 6, 7 and 8), dating to the 6th century AD, Mouyssam II (Raimbault and Sanogo 1991: 325-342, figs 15 and 16) with a date between 605 and 680 cal AD, and Kawinza I (Raimbault and Sanogo 1991: 282-298, fig. 1), dating to between 670 - 880 and 960 - 1020 cal AD (Fontes 1991: 270). All containers with high footed bases seem to be slightly older than the ones found in Oursi hu-beero. It seems likely that this new form of pottery was introduced to the site of Oursi hu-beero from northern territories - most likely the Niger bench. It is remarkable that the import of the new pottery form can

only be distinguished for the site of Oursi hu-beero. A comparable form has not been found in the inventory of other settlement mounds in the Oudalan.

Furthermore, two complete vessels were also different from assemblages found at other neighbouring settlement mounds (von Czerniewicz 2004). The first, vessel no. 37, is round in shape, well-polished and has a very short and thick rim (Figures 6.10 and 6.15:5). This rim shape is unknown in northern Burkina Faso. The nearby site Jenné-Jeno does not present any comparable rim shape either. The only comparable finds seem to be in the ceramic inventory of the abri of Dangandouloun in Mali (Mayor-Huysecom 2005: fig. 136, no. 02, fig. 137, no. 33), dating to between the 7th and the 12th centuries AD and in the inventory of Dia in Mali (Bedaux *et al.* 2005: 206, fig. 7.1.2:X3). For the latter an average age between 800 BC and AD 500 is estimated (Bedaux *et al.* 2005: 203 and 237). Similar to the high-footed bases, it may be possible that the short, thick rim shape found at Oursi hu-beero has its origin in the area of the Niger bench.

A decoration of twisted string roulette with knots, applied as a horizontal band on vessel no. 9, is unknown on the ceramic material of other Iron Age sites in northern Burkina Faso (Figures 6.11 and 6.15:15). The unusual decoration points to a more eastern place of origin, for example Nigeria, where the decoration technique of the twisted string roulette with knots is known since the Early Iron Age (Wiesmüller 2001: 168). The same form of roulette is also known from Dhar Tichitt in Mauretania (Holl 1986: 74, fig. 31i). This site is dated to between 63 cal BC and 1357 cal AD. In Mali, on the site of Karkarichinkat in the Tilemsi Valley, knotted string roulette is also present (Smith 1974: Plate XI c,d) and with a date of 2719 to 1891 cal BC much older than the other parallels. For the Oursi hu-beero vessel with knotted string roulette decoration an origin either in the north or the east can also be posited.

The fact that these items have only been found in Oursi hu-beero and not in other settlement mounds in the same region points to an interpretation of these ceramic vessels or the knowledge of this special vessel form and decoration as imported. Import of goods or knowledge into northern Burkina Faso in the time of the occupation of Oursi hu-beero is not unlikely, as similarities with the ceramic inventories of northern Burkina Faso and the Niger bench region show (von Czerniewicz 2004: 153). Even more convincing is the discovery of a burial site, situated approximately 40 km south-west of Oursi hu-beero, where it is demonstrated that goods were imported from the Niger bench and southern Nigeria to northern Burkina Faso (Magnavita 2006: 195). Magnavita posits a trading route from or to the North of Burkina Faso, most likely over the river Niger (2006: 197). Other sites at the Niger bench, like Jenné-Jeno, also offer testimonies for trading routes along the river Niger and beyond (McIntosh 1995: 390). In the context of the increase in Trans-Saharan trade around the end of the first millennium AD (McIntosh 1995: 390), northern Burkina could provide copper and slaves and therefore was a point of interest in the intensifying exchange of goods from north to south and vice versa.

In summary, some elements in the pottery assemblage of Oursi hu-beero should be considered as "foreign". This foreignness can be explained by goods-transfer or by the exchange and distribution of techniques and traditions. Modern examination methods, such as petrologic and neutron activation analysis of these particular pottery remains, might provide the answers to the question as to whether these two objects should be considered as having been locally made or imported. In fact, the inhabitants of the house would have been familiar with these elements, and would not have considered the two vessels as "special": they were discovered amongst other locally influenced or oriented containers.

Fig. 6.12 The large water jar no. 8 in room no. 11 looking north. Photo was taken in 2005.

Fig. 6.13 Vessel no. 31 in room no. 18 looking south-west. Photo was taken in 2001.

Bucket no.	Locus	Provenance	Vessel no.	Rim diameter (mm)	Finishing techniques	Figure
1274	89	Roof		400	TSR	6.14:1
1708	83	Floor room no. 23	10	400	Incisions	6.14:2
1389-1	83	Roof		350		6.14:3
1292-1	90	Roof		380		6.14:4
1281-3	74	Floor room no. 9		380		6.14:5
1727	86	Floor room no. 16	40i	320	TSR	6.14:6
1232-3	74	Floor room no. 9		280	TSR	6.14:7
1145-3	73	Topsoil		500		6.14:8
1820	105	Roof	58	350	TSP, fingertip impression	6.14:9
2072	118	Floor room no. 18	38	320	TSR, mat impression, burnish	6.14:10
1954	114	Floor room no. 23	18			6.14:11
339/341/342	19	Floor room no. 24	72	332	TSP, red slip	6.14:12
2050	99	Floor room no. 24	21i	320	TSR, polish, mat impression, Oursi comb impression, red slip, single cord impression	6.14:13
1963	99	Floor room no. 24	20	160	TSR, polish	6.14:14
308/320/323	19	Floor room no. 24	80	290	TSR, channels, sculpted band, red slip, fingertip impression	6.14:15
2040	99	Floor room no. 24	21iv	300		6.14:16
179-1	19	Floor room no. 24		320	Slip, burnish	6.14:17
99-1	14	Roof		260		6.14:18
1355-1	86	Roof		180		6.14:19
1479	86	Floor room no. 16	40ii	280	TSR	6.14:20
1452c-1	86	Roof	24iv	240		6.14:21
1769	104	Roof	47	200	TSP, TSR	6.14:22
1355-2	86	Roof		220	TSR	6.14:23
1987	118	Floor room no. 18	43	230	TSR, mat impression, burnish	6.14:24
25-2	5	Roof		182		6.14:25
1916	104	Roof/floor room no. 17	61ii	210	TSR, burnish, fingertip impression, mat impression	6.14:26
2092	118	Floor room no. 18	44	300	TSR, burnish	6.14:27
263	19	Floor room no. 24		370	TSP	6.14:28
1537-1	65	Roof		280		6.14:29
2009	114	Floor room no. 23	51	240	TSR, black slip, polish	6.14:30
1884	104	Roof	60	220	TSR, mat impression, red paint, burnish	6.14:31
1917	106	Gully	62	250	TSR, TSP, burnish	6.14:32
1165-2	77	Gully		180		6.14:33
1052-1	67	Roof		500		6.14:34

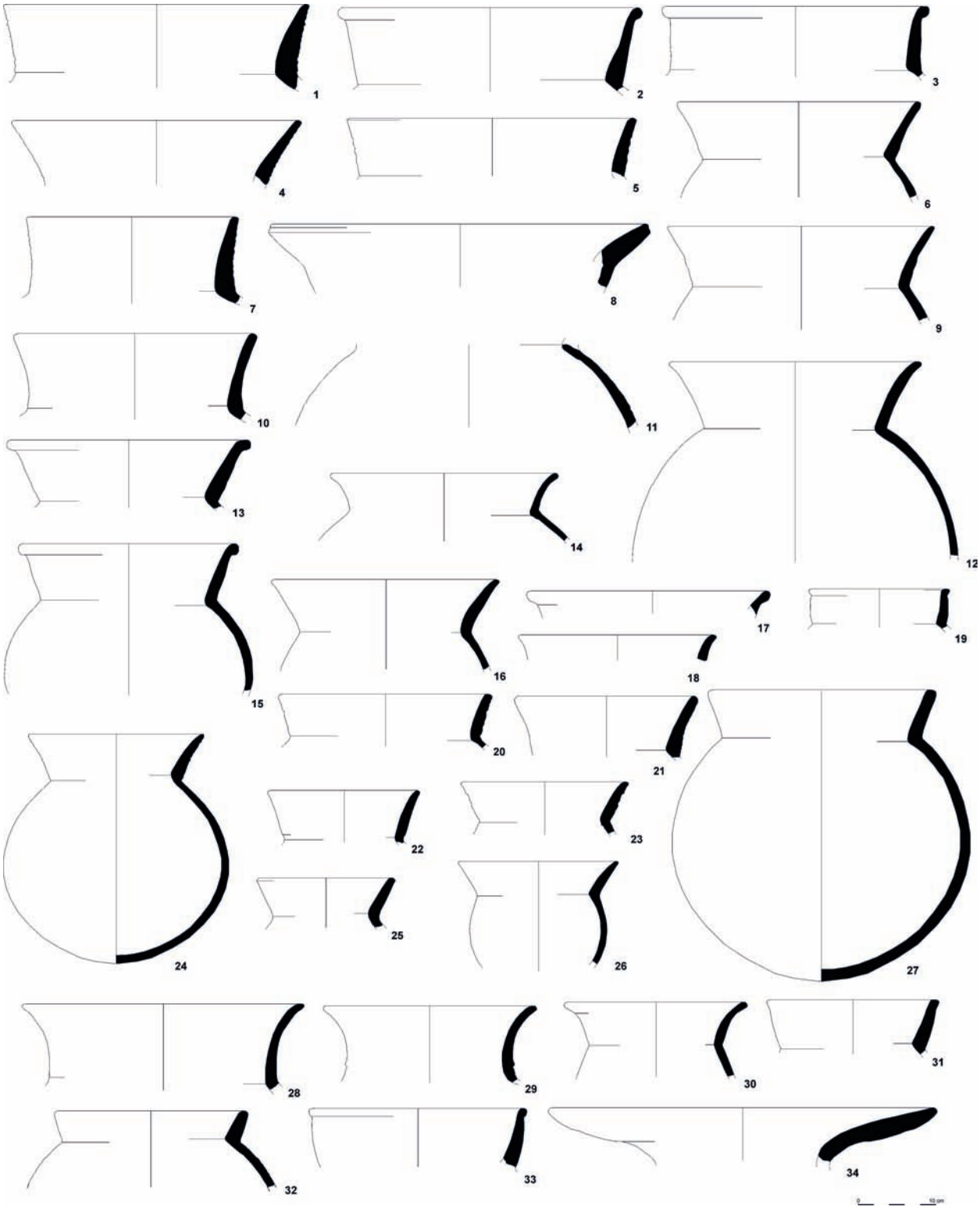


Fig. 6.14 Flasks and pots (rim diameter equal or wider than 160 mm).

Bucket no.	Locus	Provenance	Vessel no.	Rim diameter (mm)	Finishing techniques	Figure
1110-1	67	Roof		149		6.15:1
1136-1	71	Roof		120		6.15:2
322	19	Floor room no. 24		120	TSR, incision, slip, burnish	6.15:3
1092/1120	67	Roof	3	100	TSP, TSR, burnish	6.15:4
2090	118	Floor room no. 18	37	130	TSR, red slip, polish	6.15:5
1819	105	Roof/floor room no. 13	54	125	Burnish	6.15:6
1950	98	Floor room no. 22	11	140	Oursi comb impression, single cord impression, mat impression, burnish, polish, black slip	6.15:7
1985	118	Floor room no. 18	26		Brown slip, burnish	6.15:8
2078	100	Floor room no. 21	15			6.15:9
1992	118	Floor room no. 18	69			6.15:10
1980	118	Floor room no. 18	28		Single cord impression, fingertip impression, TSR	6.15:11
1085	67	Roof	1		Red slip, burnish, incision	6.15:12
1973	117	Floor room no. 18	34	120	Red-brown slip, burnish	6.15:13
1983	118	Floor room no. 18	42	100		6.15:14
1949	98	Floor room no. 22	9	145	KSR, red slip, burnish, mat impression	6.15:15
1762	104	Roof	46	140	Oursi comb impression, single cord impression, TSR, mat impression, polish, burnish	6.15:16
1061	67	Roof	67	110	TSP, burnish	6.15:17
1817	105	Roof/floor room no. 13	52	120	TSP, burnish	6.15:18
1660	104	Roof	49	95	TSR, single cord impression	6.15:19
1118-1	69	Roof		140		6.15:20
2026	117	Floor room no. 18	36	130	Oursi comb impression, TSP, red slip, single cord impression, TSR, mat impression	6.15:21
1962	99	Floor room no. 24	19	140		6.15:22
1232-2	74	Floor room no. 9		80		6.15:23
1594	101	Roof		160	TSP	6.15:24
1951	98	Floor room no. 22	65	150		6.15:25
1083	67	Floor room no. 9	2	130	TSR, polish	6.15:26
2036a	99	Floor room no. 24	21ii	130		6.15:27
25-1	5	Roof		132		6.15:28
1281-1	74	Floor room no. 9		130		6.15:29
1965	99	Floor room no. 24	23	150		6.15:30
1232-1	74	Floor room no. 9		120	Black slip, burnish	6.15:31
353	19	Floor room no. 24		150	TSP, slip, burnish, mat impression	6.15:32
90-1	14	Roof		150	TSP, red slip, burnish	6.15:33
179-2	19	Floor room no. 24		100	Black slip, burnish	6.15:34
352	19	Floor room no. 24		139	TSP	6.15:35
1118-2	69	Roof		160	TSP	6.15:36
1964	99	Floor room no. 24	22	140	TSR, single cord impression, mat impression, Oursi comb impression, burnish	6.15:37
99-2	14	Roof		120	Slip, burnish	6.15:38
327	19	Floor room no. 24	75	134	Slip, Oursi comb impression, single cord impression, red paint, TSR, mat impression, burnish	6.15:39
1633	100	Floor room no. 21	16	120	Black slip, burnish	6.15:40
90-2	14	Roof		160	TSR	6.15:41
1735	104	Roof	55	105		6.15:42
1742b	104	Roof	56	100		6.15:43
1398-1	88	Roof		100		6.15:44

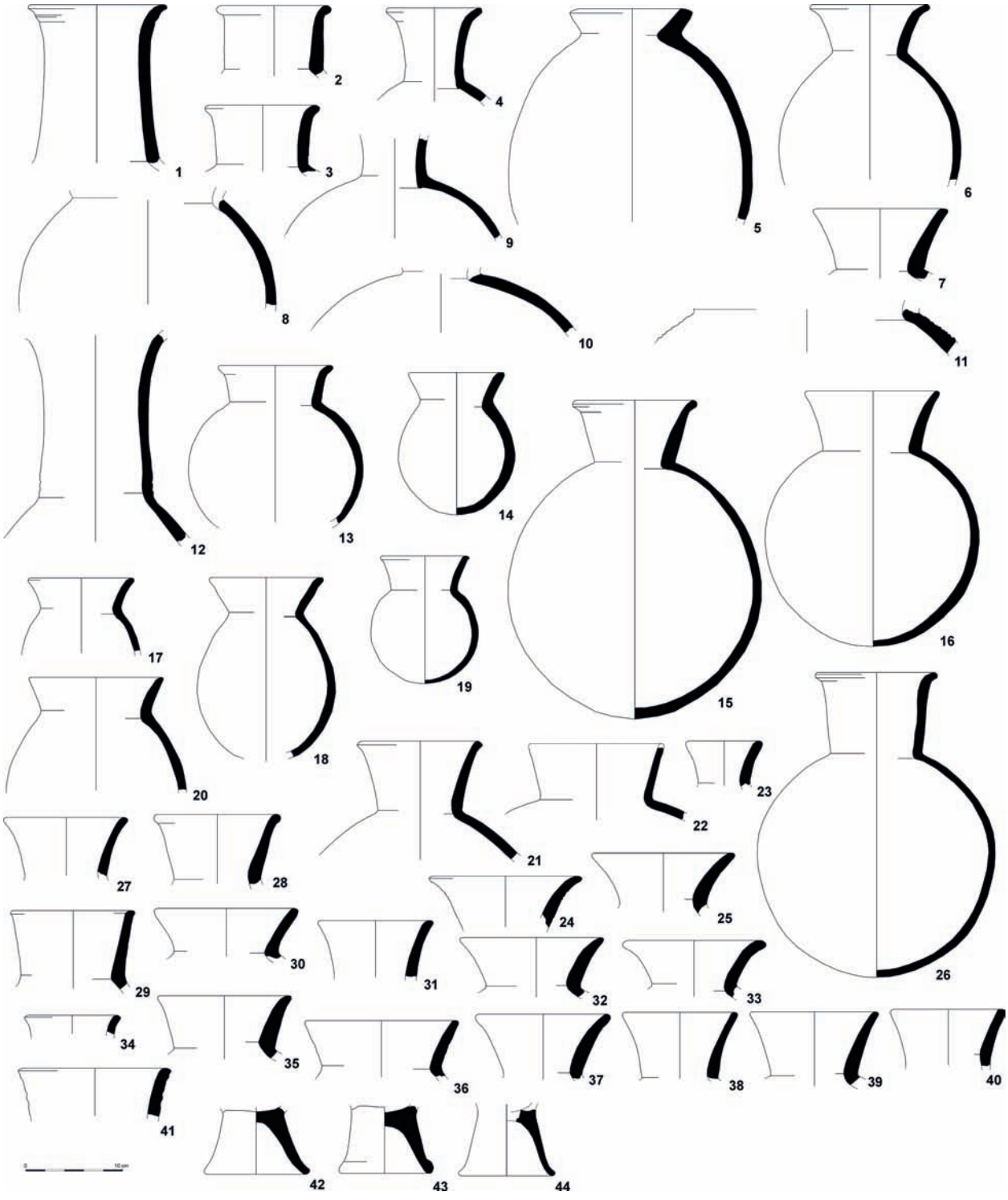


Fig. 6.15 Flasks (rim diameter smaller than 160 mm).

Bucket no.	Locus	Provenance	Vessel no.	Rim diameter (mm)	Finishing techniques	Figure
1995	86	Roof	45	440		6.16:1
1-1	1	Topsoil		650		6.16:2
1452a-2	86	Roof	24i	400		6.16:3
1996	119	Floor room no. 16	32	590	TSR, incision	6.16:4
1942	104	Floor room no. 17	64	110		6.16:5
1673-3	106					6.16:6
1994	119	Floor room no. 16	41	380		6.16:7
2087	118	Floor room no. 18	27	500	TSR	6.16:8
1221	80	Floor room no. 21		120		6.16:9
1452b	86	Roof	24iii	150		6.16:10
1477	86	Roof	24ii	150		6.16:11
1116	67	Roof	4	110	Oursi comb impression, fine mat impression, burnish	6.16:12
1145-2	73	Topsoil		330		6.16:13
1416	88	Floor room no. 18		460		6.16:14
1788	105	Roof	59	300	TSR	6.16:15
187	19	Floor room no. 24		220		6.16:16
1338	66	Roof		500	TSR	6.16:17
1714	104	Roof	50	190	TSP	6.16:18
90-3	14	Roof		240		6.16:19
218	19	Floor room no. 24		140		6.16:20
1386	71	Floor room no. 22		380		6.16:21
1843-1	106	Gully				6.16:22
1285-7	89	Roof	7	140		6.16:23
1216-1	82	Roof		105		6.16:24
1895	104	Floor room no. 17	61i	340	TSR, burnish	6.16:25
2074	117	Floor room no. 18	33	500	TSR, channels	6.16:26
1274-2	89	Roof	6	120		6.16:27
1274-1	89	Roof		140		6.16:28
1165-3	77	Gully		260		6.16:29
1302-2	89	Roof		130		6.16:30
1145-1	73	Topsoil		330		6.16:31
1011-1	63	Roof		280		6.16:32
1281-2	74	Floor room no. 9		320		6.16:33
7	2	Roof		405		6.16:34
1673-1	106	Gully		410		6.16:35
2036b	99	Floor room no. 24	21-III	90		6.16:36
1673-2	106	Gully		260		6.16:37
1789	104	Roof	57	160		6.16:38
1922	104	Roof	63	110		6.16:39

Fig. 6.16 Pots and bowls.

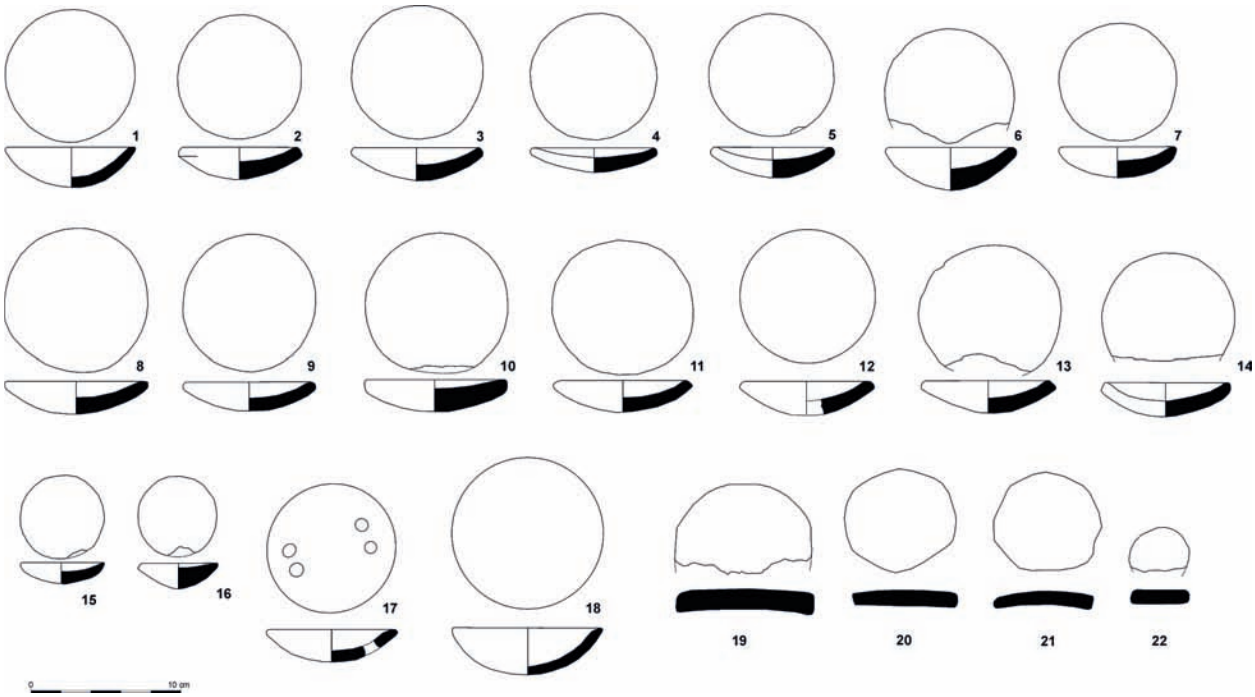


Fig. 6.17 Pot lids.

Bucket no.	Locus	Provenance	Associated vessel no.	Diameter (mm)	Description	Figure
1828	105	Roof	54	87		6.17:1
1427	88	Roof	69	83		6.17:2
1487	88	Floor room no. 18		89		6.17:3
289	19	Floor room no. 24		86		6.17:4
1988	114	Floor room no. 23		84		6.17:5
2030	113	Floor room no. 15		87		6.17:6
1451	86	Floor room no. 16		79		6.17:7
1334	86	Roof		97		6.17:8
1454	88	Floor room no. 18		89		6.17:9
1770	105	Roof	53	96		6.17:10
1827	105	Roof		93		6.17:11
90-4	14	Roof		91		6.17:12
1990	98	Floor room no. 22		95		6.17:13
2020	114	Floor room no. 23	68	92		6.17:14
1930	104	Floor room no. 17		57		6.17:15
1053	67	Roof		54		6.17:16
1216-2	82	Roof		85	Pot lid with 4 holes	6.17:17
1916	104	Roof		102	Shallow bowl maybe used as pot lid	6.17:18
1341-1	85	Floor room no. 24		92		6.17:19
2025	106	Gully		75		6.17:20
1834	109	Floor room no. 12		73		6.17:21
1165-1	77	Gully		41		6.17.22

Chapter 7

Stone Objects

Lucas P. Petit

7.1 Introduction

The importance of stone tools for post-Stone Age peoples has long been archaeologically neglected (Wright 1991; Petit 1999; Rowan and Ebeling 2008: 1). One of the many reasons for this omission is a lack of typological change among one of the most abundant classes of stone artefacts - grinding stones - especially due to a clearly defined functional shape. Furthermore, the considerable variation in nomenclature from report to report did not help to increase the analytical attention to stone objects other than knapping tools by archaeologists. This chapter presents an in-depth study of the stone artefacts at the medieval site of Oursi hu-beero, in order to demonstrate its significant contribution to archaeological research.

7.1.1 Definition and classification

The stone objects are grouped into five typological categories based primarily on function: grinding stones, sharpening stones, hearth stones, slag fragments and raw material. A grinding stone is defined as every stone by which an activity is performed together with another object, resulting in a crushed or milled substance. Although more often the more general term ground stones is used, which is mainly based on manufacturing (cf. Hersh 1981; Wright 1992: 21; Hovers 1996: 172), I personally prefer the more 'close-to-human-society' term grinding stones, in which human behaviour is reflected and a specific mode of action is represented (Leroi-Gourham 1971; Dubreuil 2001: 73). Sharpening stones are, in the case of Oursi hu-beero natural pebbles that have a certain predefined shape. Tools, in most cases metal or bone objects, could be sharpened by abrasion on the stone surface. Hearth stones are very difficult to identify in archaeological contexts. At Oursi hu-beero it can be concluded that most of these hearthstones were discarded grinding stones. Slag fragments, the material residue of

Fig. 7.1 Discarded lower grinding stone reused at the modern cemetery nearby Oursi hu-beero. Photo was taken in 2001.

smelting, casting or hammering processes from metalworking, can be found on the surface throughout the Sahelian zone of Burkina Faso and beyond. In the case of Oursi hu-beero also overheated clay (so called "clay-slag") has been described under this term. Hematite, a red to black oxide of iron, was brought to the site in its raw form.

7.2 Grinding stones

Grinding stones form an essential and obvious role in daily economic tasks, but as Gronenborn put forward, they also appear to have a symbolic meaning when used as burial goods (2005). The importance of these objects in contemporary African societies is reflected in the numerous proverbs, songs and sayings that focus on either the miller or the stones. That old mills are thrown away for new ones, meaning 'new kings bring new changes' (Zulu proverb, Robertson 1880), is just an example of the symbolic meaning grinding stones have in contemporary societies.

Two different types of upper grinding stones were discovered at the site of Oursi hu-beero: an one-handed (N=10) and a two-handed type (N=15).[1] Most production traces could be identified on the larger two-handed upper grinding stones. Rough flaking, pecking and re-sharpening form the main production techniques in grinding stone manufacture and traces are often still visible on the sides that were not worn off by intensive use (cf. Roux 1985; Hayden 1987; Adams 1988: 311; Gronenborn 1995). The smaller one-handed is characterised by its hand-held size, the convex grinding face (Adams 1988: 308) and the multidirectional pattern of striations. The advantage of the two-handed stones is the extra force that can be added by the miller and thus the production of a finer-grained end product or the grinding of harder and tougher materials. These stones were not held or carried, as the one-handed stones were, but were only dragged with horizontal movements towards and from the miller. These motions can be macroscopically distinguished by regular scratches on the grinding surface (cf. Petit 1999: 159; de Beaune 2000: Fig. 29). Most of the stones have a convex grinding face along the longitudinal and transverse axis. The upper side was generally not worked and shows polishing, due to repeated contact with the miller's hands (cf. Daviau 2002: 149). The distinction between an one-handed and a two-handed upper grinding stone is also visible in the use of raw material. 67% of the unmodified stones are produced from the hard coarse-grained granite rock, whereas sandstone and quartzite was used for producing the oval shaped two-handed grinding stones. Some of the stone tools were in use both as upper grinding stone and pestle. A concentration of upper grinding stones (N=6) was discovered on the floor of room no. 22. However, the rest were dispersed randomly over the complex, both on the floor and on the roof. The numerous smaller fragments of lower grinding stones that were discovered during excavation (N=16) had been discarded by the inhabitants.

Four lower grinding stones were still in use at the moment of the conflagration. The largest stone (*2101*), measuring 610 by 365 mm, was located on the roof, directly above room no. 20. The stone reveals one higher side that was most likely pointed toward the miller (*e.g.* Bartlett 1933; Erman 1971; Bornstein-Johanssen 1975: 287-295; Darby *et al.* 1977: 508-510; Baines and Malek 1988: 195; de Beaune 2000: Fig. 31). The sloping position improves the homogeneity of the powder, because the grinding material will roll slowly downwards during grinding. However, it is also known from ethnographic evidence (*e.g.* Livingstone and Livingstone 1866: 543; de Beaune 2000: Planche II), as well as from archaeological sources (*e.g.* Reynolds 1969: Pl. V) that lower grinding stones were used in a perfectly horizontal position. A lower grinding stone (*2102*) with a similar shape to the one on the roof was discovered in room no. 21 (Figure 7.2). This granite stone was nicely placed on top of a mudbrick platform, approximately 35 cm above the sandy cover of the floor. Several pecking traces on the sides show that it was modified into the preferred shape. The miller sat on the eastern side of the stone, looking towards the entrance of room no. 20. Part of the stone was worn off, due to intensive use. Similar platforms with grinding utensils are still in use in contemporary African societies and its well constructed character reflects the importance of this

1 Other 13 examples are irregular or too fragmentary to assign to a certain type.

Fig. 7.2 Lower grinding stone (2102) in room no. 21 looking west. Photo was taken in 2001.

equipment for everyday life (Geis-Tronich 1991: 87-89; Schneider 1990: 281). Another lower grinding stone (*2103*), in room no. 24, was placed on smaller stones and situated *c.* 30 cm above the floor. A platform made of stones was also encountered in room no. 3, where a lower stone was only stabilised by three smaller pebbles. The grinding stone itself was positioned relatively close to the walking surface. This hardens the milling activity, with the miller sitting in a far more uncomfortable bent position than at the two other installations. All lower grinding stones at Oursi hu-beero were made of granite and show concave grinding surfaces. The shallow depressions of the lower grinding stones imply a convex grinding face of the upper grinding stones. The one-handed upper grinding tools in particular come in this shape, suggesting that the large lower grinding stones were used in connection with the 10 smaller grinding stones. The Gulmance in

Fig. 7.3 Pestle (1730) with traces of red hematite powder.

Burkina Faso have a proverb that goes: Li naali nuaidi ke gu bindu gbendi: the older a person, the shorter his/her days (Geis-Tronich 1991: 87). But its literal translation, "the more shallow the lower grinding stone, the smaller the upper stone", reflects very well the abrasion pattern of the grinding stones discovered at Oursi hu-beero. If a lower grinding stone has been worn off too much, the depression causes the outer sides of the upper stone to abrade as well.

Several pestles were discovered on the roof and inside the rooms. Five different categories were distinguished at Oursi hu-beero: the conical pestle (N=1), the rounded type (N=20), the half rounded type (N=4), the rectangular shaped stone (N=1) and the (slightly) irregular stone (N=9). The latter were chosen for their natural form and were not manufactured into a predefined shape by pecking or flaking. The other pestles seem to have been modified, although production traces were hardly present due to intensive use. In almost all cases, multiple faces of the stones were used for grinding, as is evident in striations, smoothing and sometimes polishing. Damage patterns that occur on 25.5 % of the assemblage are the result of hammering and pounding. Whereas most upper grinding stones were moved regularly and gently, the pestles were used with both circular and horizontal motions (cf. de Baune 2000: Fig. 24). This difference is visible by analysing the striations on the grinding faces. There is a preference for granite (N=13), but quartz (N=2), quartzite (N=1), hematite (N=1), chalcedony (N=1), flint[2] (N=1) and gabbro (N=1) were also used (one is of unknown material).

Functional analysis must extend further than general grinding activities, especially now that wear patterns and residue analysis has become a normal procedure in artefact studies (*e.g.* Semenov 1964; Keeley 1974; 1980; Adams 1988; 1993; Dubreuil 2004). However, the validity of using micro wear-polishes alone for identifying ground materials has been questioned altogether (Newcomer *et al.* 1987: 262; Grace 1989). In a thorough functional analysis, morphology, raw material, pollen data and chemical residue studies should also be included (Jones 1990; Hillman and Davies 1990: 207). If we look at the use-wear pattern on the grinding tools at Oursi hu-beero, we see a very regular striation pattern on two-handed upper grinding stones. Their size and weight, as well as the handling technique make the milling of harder and tougher products possible with these tools. From the archaeobotanical record, *Pennesitum Glaucum* is a possible candidate for having been milled by this stone. The use of sandstone and quartzite for these large regular stones has the disadvantage that when applying the same force the less closely bonded minerals of the stone itself will contaminate the end product. On the other hand sandstone seems easier to modify into the preferred shape than the harder granite. All one-handed upper grinding stones show multidirectional striations, showing that both horizontal and circular motions were applied. The stone is relatively light compared to the two-handed stones and the ground product is completely dependent on the force of the miller. It means that the grinding product was either less hard or tough, or that these stones were in use only as ‘finishing’ tools. Most of the lower grinding stones that were discovered *in situ* exhibit the typical concave grinding surface associated with one handed upper grinding stones.

On three pestles (*1730*, *1392*, *2037*) and one lower grinding stone (*2002*) ground hematite was detected (Figure 7.3). The use of stone pestles for grinding and pulverising hematite is known in contemporaneous societies (cf. de Beaune 2000: Planche VII), but is relatively scarce in archaeological contexts (Yahalom-Mack 2007: 641; Petit in prep.). Whereas upper and lower grinding stones were, in most cases, used for wheat grinding (compare ethnographic analogies such as Geis-Tronich 1991: 87), pestles could have been used for grinding many different products. We assume that, similarly to ethnographic and archaeological examples (Darby *et al.* 1977: 508-509; de Beaune 2000: Planche VI-VII), vegetable products such as roots and nuts were also smashed and ground with these stone objects (cf. Boshier 1965; Mercer 1981: 154).

2 Flints could additionally be used for starting fires (cf. MacLean and Insoll 1999: 87).

7.3 Sharpening stones

One igneous pebble found at the site of Oursi hu-beero seems to have been used as sharpening stone. The irregular stone (*1282b*) was probably collected by the inhabitants because of its material rather than its shape. Multidirectional striations, as well as polishing and smoothing on all sides, show that this stone was used for sharpening and grinding. Some of the pestles (*e.g. 1060*) were also used for sharpening tools.

7.4 Hearth stones

The hearth stones used at Oursi hu-beero were either rounded natural cobbles/pebbles or discarded grinding stones. At least three specimens are needed to form a hearth or cooking place. This type of furniture has been discovered on sites from prehistoric times onwards and is still in use by sedentary and nomadic groups living in Burkina Faso.[3] It was very difficult to identify the stones in the complex as having been used as hearths, as the final fire ruined the context: charcoal and ashes. Some stones, however, show many small cracks that occur when a stone is in a continual process of heating and cooling. Six of these hearth stones could be identified: two were discovered in pairs and two alone. Room no. 21 revealed two granite cobbles showing the previously mentioned heat-cracks. Probably located on the roof of room no. 4, two similar stones, one of quartzite and one of granite were in use. The exemplary stones were discovered on the floor of room no. 11 and the floor of room no. 17.

The hearth of a house plays a fundamental role in food production, and is often considered the centre of a kitchen. It is, however, questionable if we can speak of a kitchen in the case of Oursi hu-beero, besides the problem of its modern cultural meaning and associated items and human behaviour. The central place where raw materials are transformed into cooked meals has been observed and studied in different contemporaneous societies, in particular the ritual, religious and symbolic aspects (Radcliff-Brown 1922; among others). In archaeology, due to the fragmentary contexts, the actual dynamics of the kitchen were neglected until quite recently (*e.g.* Brumfiel 1991; 1992; Hastorf 1991; Insoll 1994; 1999; MacLean and Insoll 1999: 78). This is mainly due to the fragmentary nature of archaeological contexts, which hampers an adequate functional identification of rooms and activity areas. At Oursi hu-beero two places may have been used as food processing areas: room nos 11 and 21. Both contained one or more hearth stones and associated material culture, like vessels and grinding stones. The latter unit was roofed[4], whereas room no. 11 was covered by a reed mat, or other light organic material.

7.5 Slag

There were two different types of slag discovered at Oursi hu-beero. Metal slag was very rare and should be considered as intrusive rather than being *in situ*. It is the result of iron smelting - an activity that has been regularly practised from the beginning of the modern era in northern Burkina Faso (*e.g.* Andah 1978; Martinelli 2004). The excavation of von Czerniewicz at BF 97/13 revealed several slag fragments and furnace remains that point to this important handcraft in the close vicinity of the site and thus also of Oursi hu-beero (von Czerniewicz 2004).

The other type of slag is different. A large number of these remains were found in room no. 21 (Figure 7.4). They are very light and spongy and have different colours, ranging from white, blue to black. The weight gave us the impression that these were not the result of metallurgy, although a metallic sheen was visible. White ashes, charcoal fragments and mudbrick debris were discovered in association with these slag fragments. This type is more likely to be clay fragments, which were molten under extreme high temperatures. The concentration of wood in the vicinity of the find spot

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3 In contemporaneous societies, sometimes conical clay pillars, similar to the features found in room nos 18 and 23, were used for holding a cooking vessel above the fire (*e.g.* Schneider 1990).

4 Parallels in recent West African villages show that in roofed units fires and hearths were made - especially necessary in rainy seasons (Schneider 1990: 279; Geis-Tronich 1991: 94 and Abb. 93). The smoke could leave the room through a small hole in the ceiling.

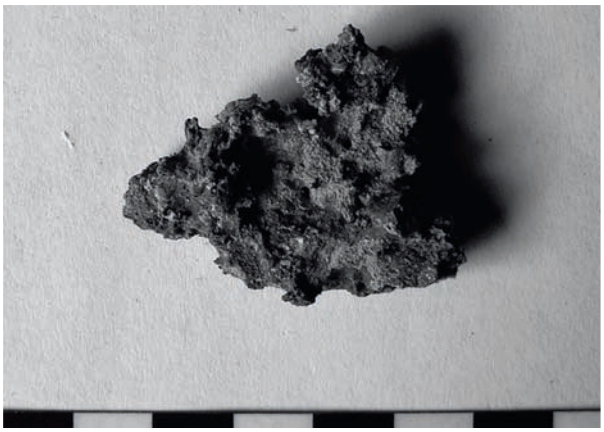

Fig. 7.4 Clay slag (1356).

raised the temperature during the conflagration, causing the clay - probably roof and wall debris - change its texture and structure and became the slag-like material. The high proportion of metal elements in the natural clay causes the shiny appearance.

7.6 Hematite

Hematite stone can be picked up as stray finds from the surface of the settlement mounds of Oursi and was also found during the excavation at Oursi hu-beero and BF 94/45 (von Czerniewicz 2004). As explained above this iron rich rock was pounded and used to colour textiles and pottery and was most likely in use as the essential material for preparing rock paint (*e.g.* How 1962: 26-42; Bednarik 1992). At Oursi hu-beero not only the raw material and lumps of pounded material were found (in vessel no. 58), but also the instruments by which the grounding and pounding activities were performed: three pestles and one fragment of a concave lower grinding stone show traces of pounded hematite.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Figure
1450	88	Roof	Upper grinding stone	?	L172, W125, H43	7.5:1
1428	88	Roof	Upper grinding stone	Granite	L140, W100, H40	7.5:2
1099	67	Roof	Upper grinding stone	Quartzite	L151, W92, H41	7.5:3
1125	69	Roof	Upper grinding stone	Quartzite	L118, W109, H46	7.5:4
1491	86	Roof	Pestle	Granite	L48, W48, H49	7.5:5
1111	67	Roof	Pestle	Granite	L56, W56, H55	7.5:6
1060	67	Roof	Pestle	Limestone (?)	L94, W52, H46	7.5:7

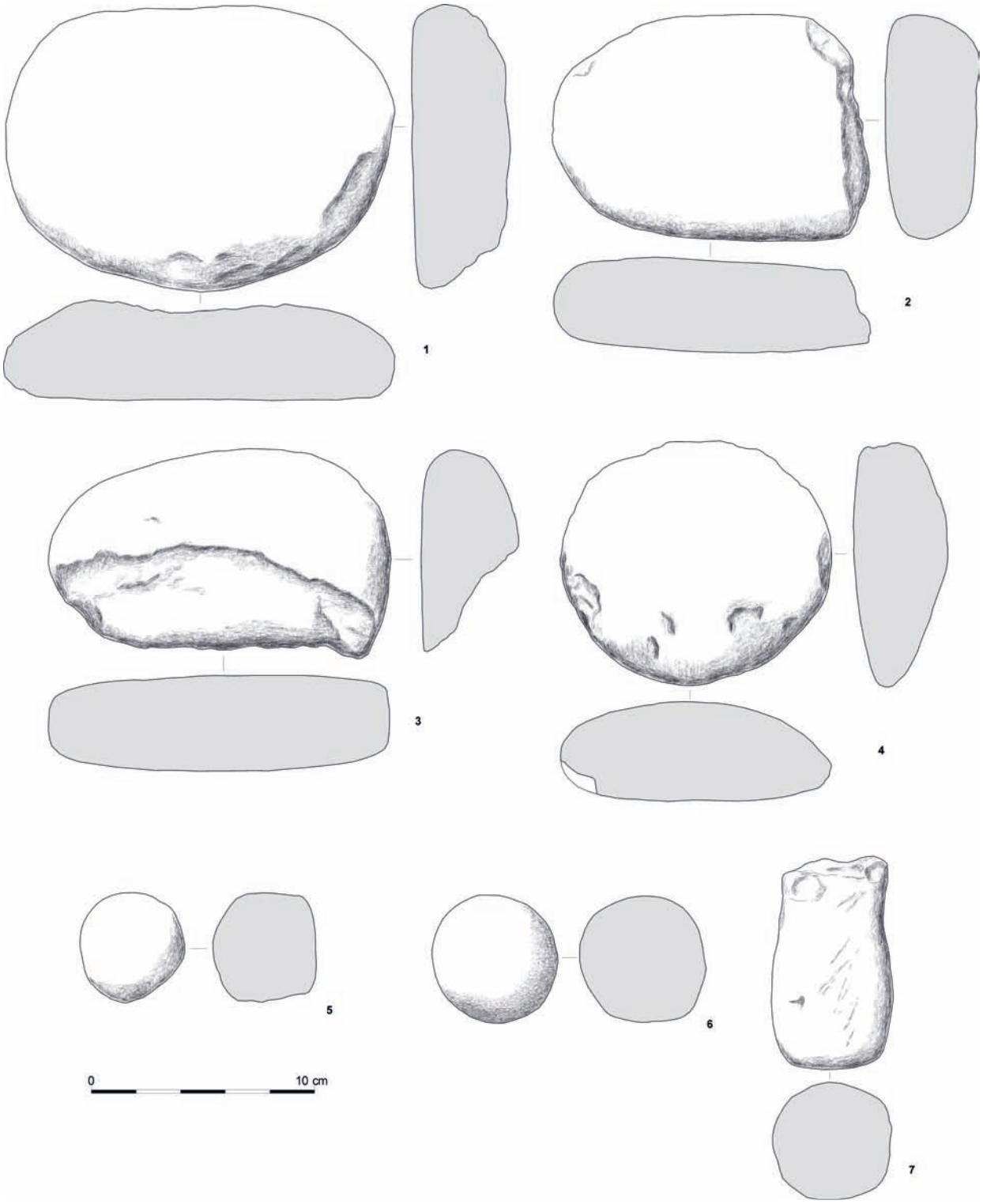

Fig. 7.5 Grinding stones.

Chapter 8

Miscellaneous Finds

Lucas P. Petit and Maya von Czerniewicz

8.1 Introduction

The finds are arranged according to the following classes: miniature vessel (for other pottery objects see Chapter 6, this volume), tools, weight, weapons, personal objects and processed plant remains and animal hare. A complete list of miscellaneous finds registered for each locus is included at the end of this chapter. Many objects were too fragmentary or too corroded to be assigned to any of the classes specified below.

8.2 Miniature vessel

An oxidised, fired, miniature jar (*1278*), 37 mm in height, was encountered in the roof debris of room no. 24 (Figures 8.3i and 8.8:1). It is a very rudimentary handmade vessel, made from a ball of clay in which a hole was pinched. This technique is nowadays still applied for the simplest of small, round-bodied vessels (cf. Petit 2005: 126). The everted rim of this object has a diameter of 35 mm. Miniature vessels are found all over the world. What is probably the largest group of West-African miniatures was found at the archaeological site of Komenda in Ghana (Calvocoressi 1975). The smallest object at Komenda is equal to the vessel from Oursi hu-beero in both size and finishing techniques. Another parallel was discovered at Vume Dugame (Davies 1961).

When it comes to attempting to ascribe some sort of function or to this object, we are left with more question marks than anything else. Older travel reports mention miniature vessels as being in use in fetish praxis (*e.g.* Bowdich 1819: 279). Among modern groups, such as the Akan people, miniature vessels are in use to supply ancestors with food. In general most scholars suspect some kind of ceremonial function

Fig. 8.1 Bracelet (1424) in room no. 18 looking north-east. Photo was taken in 2001.

for such vessels, but we should not underestimate the involvement of children in this respect. In other parts of the world these objects are also discovered in burial contexts (*e.g.* Tomaz 2005: 266).

8.3 Tools

The general definition of a tool is a device used to perform or facilitate manual or mechanical work. In the case of Oursi hu-beero we limit the class of tools to objects that were wilfully modified.

8.3.1 Perforated pottery disc

A fragment of a perforated pottery disc (*1225*) was discovered on the roof of room no. 23 (Figure 8.8:2). The disc under study is made from a pottery sherd and was deliberately modified to form a disc with a diameter of 51 mm. The edges of the sherd were rubbed smooth on a stone or some other abrasive material. The circular sherd was perforated through the centre to produce a flat washer-type bead or artefact. Often, these are termed spindle whorls because of their similarity to clay and stone objects used on spindles throughout the world. The whorl is a small pierced weight into which the base of a short stick or spindle is attached. Fibres are fixed to the top of the spindle that can be twisted or rotated by hand to twist fibres together into yarn. In many cases reused potsherds were taken, chipped to a roughly circular and manageable size, and pierced. It has been said that the diameter of the whorl reflects the type of fibres (van der Kooij and Ibrahim 1989: 59). The Egyptian examples are much larger (and heavier) than many spindle whorls found in the Southern Levant. The later equipment was used in wool spinning, whereas in the Nile region flax was used. The earliest spindle whorls in the West Africa were found in the 11th and 12th century AD (*e.g.* Desplagnes 1951; Joire 1955; Barth 1977; Robert-Chaleix 1983; Chavane 1985; McIntosh 1995). Other explanations for this object include a contraption for constraining the movements of chicken, "simply by pulling the animal's foot through the hole so that the disc encircles the leg" (Shinnie and Kense 1989: 191), as a cover, similar to the lids shown in Figure 6.15, or as a weight (Shinnie and Kense 1989: 191). However, the hole, pierced in the recycled vessel fragment, seems to be an essential part of this tool and for this reason we may exclude a function as lid or game piece.

8.3.2 Clamps and Tweezers

An iron clamp (*1683*), unfortunately heavily damaged, was found on the floor in room no. 21 (Figure 8.8:4). Some charred organic fibres were discovered where the two iron fragments 'touch' each other. A much larger example with a keyhole-like shape (*1678*) was discovered amongst the roof fragments of room no. 13 (Figure 8.8:5) as well as further two small fragments (*1883* and *1186*) in the topsoil (Figures 8.8:22 and 24). The clamps were formed from a single flattened rod. An interesting point is that clamps and tweezers will function only when they are flexible. Iron, without steeling, does not normally have that particular characteristic. However, considering that iron was indeed chosen, the blacksmith must have had some degree of knowledge of the carbonising and hardening of iron. Future analysis of the objects should test this hypothesis.

8.3.3 Needles, pins and nails

Several complete and fragmentary pins and/or needles were discovered, spread randomly over the complex. Most of them are corroded, with burnt mudbrick residues attached. Most of the pieces are extremely small and are categorised to this sub-class when bearinging at least one pointed end and/or a long general shape. The needle (Figure 8.8:9) that was discovered in occupation accumulation below Oursi hu-beero reveals a pointed and one wider end. The objects grouped under this sub-class have a diverse profile, ranging from round (Figure 8.8:7), to rectangular (Figures 8.8:8 and 9) to flattened (Figure 8.8:10).

Fig. 8.2 Slave chain or horse bit (250 + 251).

8.3.4 Rings and chains

The majority of the seven rings (*1126*, *1426b*, *1447*, *1509*, *1887* and two stray finds) and three chain fragments (*1526*, *1571* and *1741*) were made of iron (only one stray find seems to be made of copper alloy or bronze). With the exception of object *1126*, all others are fragmentary, which makes it difficult to ascribe a specific purpose or function. One envisage links of a chain, an earring, a ring or a use in construction work. An intriguing find discovered on the floor of room no. 5 comprises the two fragments of one iron chain with very small, circular links (Figures 8.12:11 and 12).

8.3.5 Slave chain or horse bit

In the centre of room no. 7 several heavily corroded iron objects (*250* and *251*) were encountered in the year 2000, close to a charred wooden post (Figure 8.2). These finds remain, since their discovery, the subject of fierce discussion (Pelzer *et al.* 2009: 217-218, Fig. 4). The group consists of three parts that were originally connected (Figure 8.2). Besides two chains, the half rounded metal plate in particular gives rise to speculations. This plate has two loops at the end with incised lines, interpreted as decoration. The two chain fragments each consist of a larger ring and several chain pieces. The type of chain is called the Roman Chain (or foxtail within the jewellery business), although it was developed by the Egyptians, approximately 500 BC. It was one of the most popular necklace types in the Roman Empire from the 1st to the 3rd century AD. In this method each individual link is fused and, in the case of Oursi hubeero, formed from iron threads and then woven together. No regional parallels for this type of chain are known to the authors. In general, such iron objects required a certain knowledge and experience in tool production. All of the chain pieces were of excellent quality and could endure extreme force.

Its exact function remains puzzling, especially considering that slightly similar objects are interpreted either as slave chains or as a horse bits. According to a modern smith who is specialised in the reproduction of archaeological finds, it appears that the iron plate and part of the chain form the circle that would have been fixed around the neck of the slave. The larger ring and chain were used to fix the slave to an immobile feature, for example the wooden pole which was situated directly east of the object's findspot. Examples of the use of such chains for slave holding have been discovered in the Netherlands (pers. communication Fokko Bloema).

Other similar objects discovered in the Mediterranean World and Eastern Europe were, however, identified as a horse bit. The rings and the "Roman chain" form the part that was placed in the horse's mouth. To stabilise the bit, a piece of metal or some other material was placed over the upper nose of the horse. Two loops on each side were made to secure the rest of the bit. Such an extra element, referred to as Cavesson, is not frequently discovered, but examples have been excavated in Eastern Europe and in Italy.

a

b

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Fig. 8.3a Lance point (1394)
Fig. 8.3b Spear point (1017)
Fig. 8.3c Possible axe (1324)
Fig. 8.3d Bell (96)
Fig. 8.3e Iron object (1471)
Fig. 8.3f Bracelet (1066)
Fig. 8.3g Ankle ring (1692)
Fig. 8.3h Bronze mount (1354) - front and back
Fig. 8.3i Miniature vessel (1278)
Fig. 8.3j Pottery disc (1225)
Fig. 8.3k Nail (1087)
Fig. 8.3l Bone pendant (1062)

8.3.6 Nails and pins with hooks and rings

Four objects (Figures 8.9:1, 6-8), of which three were found on the roof and one in topsoil, had a somewhat similar appearance: an iron pin with one tapered and one hooked end, to which in at least three cases an other iron fragment was attached (*1087*, *1414* and *1447*). One fragment comprises part of the pin and the hook only (*11*). The smaller specimen *1414* might have been used either in house construction or as a clothespin. The other objects are large enough to be used outside the house, for example to tether small animals.

8.3.7 Iron bands

On the roof above room no. 20, fragments of a flat strip of iron was found (*1086a-d*) whose function remains puzzling. With three 90° corners it seems to have been wrapped around something rectangular in shape. It was broken into five fragments. A small flat piece of iron with at least two perforations (*1112*) was found in roof debris above room no. 10 (Figure 8.8:23). This object was too fragmentary to extract its function.

8.4 Weight (?)

A conical clay object (*1840*) was discovered on the roof above room no. 17, probably accidentally fired during the conflagration (Figure 8.9:9). No modification or damage pattern give us any hints about its function. One of the possible purposes of such a regular formed clay object is as a weight (43 g).

8.5 Weapons

Weapons seem to have played an important role at Oursi hu-beero. Numerous objects were identified as tools for hunting, fishing, or for defensive and offensive purposes.

8.5.1 Knives, sickle blades, swords, daggers, spear and lance points

The objects in this sub-class do not have to be used as weapons. However, as most items are extremely fragmentary, it is often very difficult to differentiate between the specific functions. Multi-functionality should be expected. Many of the fragments show, besides a flattened profile, a pointed end or a cutting edge. Four examples bear a cutting edge (*1001a*, *1056a*, *1519* and *1874*; Figures 8.9:1-3 and 8.10:2), suggesting they were used as knife or dagger. Two fragments (*1394* and *1418*; Figures 8.9:4 and 8) and one almost complete iron example (*1385*; Figure 8.10:1) are pointed, but have a flattened and wide profile. They were probably used as spear point. One large object (*1324*; Figures 8.3c and 8.10:5) looks like an axe that was positioned on a wooden handle. The connecting point was not preserved. It comprises a more stable and thicker piece of metal, which is required for example, in tree-cutting.

8.5.2 Knife and dagger handles (?)

The question mark in the sub-heading shows the uncertainty of this functional description. One object contains six iron rings (*1332*; Figure 8.10:4). They were originally placed on a wooden stick, of which charred remains are still visible on the interior of the rings. Some kind of handle is probably accurate, but whether this was part of a dagger, a knife or another tool with a handle, is uncertain. Another, larger, object was discovered on the floor of room no. 18 and consists of a handle and most of the cutting edge (*183*; Figure 8.10:3). Although it is heavily corroded, a function as dagger is presumed.

8.5.3 Arrowheads

It is quite difficult to distinguish functionally between various iron points that are in such a fragmentary state as those at Oursi hu-beero. The two arrowheads (*1001b* and *1889*) were made of iron and discovered in the topsoil (Figures 8.11:5 and 6).

8.5.4 Hook

A fragment of a fish-hook like object (*1098*) was discovered on the roof above room no. 18 (Figure 8.9:1). The slightly bearded point was bent upwards, forming the typical

hook shape. That this iron object was used in fishing was only based on its shape and should therefore taken with caution.

8.5.5 Stone flakes

Both stone flakes were discovered in the topsoil and there is no direct or indirect evidence that the quartz and quartzite tools were used at Oursi hu-beero (Figures 8.12:2 and 3). Small (use) retouch on both objects points to their use as arrowheads or cutting tools.

8.6 Personal objects

8.6.1 Bracelets

Eight large rings were discovered: six bracelets (*231*, *1066*, *1204a*, *1377*, *1489* and *1718*), one ankle ring (*1692*) and one unknown (*1648*). Three of the items were made of bronze or copper alloy (Figures 8.12:4, 8 and 10). The iron objects are fragmentary and heavily corroded (Figures 8.8:21, 8.12:5-6, 7 and 9). Except for an ankle ring (Figures 8.3g and 8.12:8), which was found *in situ*, the objects' function as bracelets is based purely on their circular shape. The large fragment of a copper bracelet found on the roof above room no. 9 is a good example of the excellent metal craftmantship that existed in West Africa in the 11th century AD (Figures 8.3f). Two wires with a rectangular section were wrapped around each other and bent into a circular form (cf. Schneider 1990: 231, Figs 125a-b). One top end was preserved and folded, forming an eye.

8.6.2 Mount

A copper-alloy object with a discoid shape and a hole pierced in the middle (*1354*) was found on the floor in room no. 21 (Figures 8.3h and 8.9:13). It is a like a small wagon wheel with a slightly half-rounded bulb. The disc is decorated with the hammered impressions of a pointed object, radiating from the centre of the object towards the outer edge: eight double-lines, containing seven times two circular grouped indentations and one space with four circular indentations. On the reverse of the disc textile fragments were discovered in a radial pattern. It was probably used to decorate and reinforce a belt, or to decorate other items of dress.

8.6.3 Beads

There are 21 beads recorded at Oursi hu-beero, most of them complete and well-made (Figures 8.13:1-19). Milk quartz was used in 11 examples. Ostrich shell (*1446*, *1795* and *1940b-d*), chalcedony (*1511*), glass (*1419*, *1485* and *1689*) and brown sandstone (*1940a*) are the other materials used for manufacturing beads. The quartz examples display some flat faces that occur during production through rubbing and grinding. They are less carefully finished than the other beads, more than likely due to the greater hardness of the raw material. The holes were drilled from both sides, and taper slightly. Beads made of quartz and other hard stone types, such as pegmatite or dolerite are common throughout West Africa (cf. Calvocoressi 1975).

8.6.4 Cowry shells

Five cowry shells were encountered in and around Oursi hu-beero (Figures 8.13:20-23). One was picked up a little to the west of the site and one was found in the topsoil directly above room nos 15 and 16 (*1188* and *1350*). Two cowry shells were discovered near the female skeleton (*1781a-b*). All five shells probably belong to the *Cypraea Moneta*, originating in the Maldives and brought overland from North Africa (*e.g.* Tyron 1885: 177-178; York 1972: 93-101). The average length of the excavated specimens is 16.5 mm with a range of between 14.5 and 19.5 mm. All of the shells were prepared for stringing. As they were being found in deposits dated to pre-monetary times, the specimens would have been used as pendants or personal decorative objects, rather than currency (Johnson 1970a: 7-49; 1970b: 331-353). Arab (such as Ibn Battuta, see Levtzion and Hopkins 1981: 281) as well as European writers (cf. Barbot 1732: 338) have mentioned the use of these shells as trade items and currency in post-Iron age contexts. From the 18th century AD onwards, these molluscs played a role in trade, and

exchange patterns. During the Iron Age cowry shells were relatively rare in West Africa; cf. the few finds at Kissi, dated to the 6th century AD (Magnavita *et al.* 2002) and the settlement mound of Yohongou from the 9th century AD (Petit 2005).

8.6.5 Bone pendant

A fragment of a bone object (*1062*), probably a decorative pendant, was encountered on the roof above room no. 20 (Figures 8.3l and 8.13:24). At least three holes were pierced on one side that had been made purposely flat prior to the drilling. The other side and top end show additional smoothing, perhaps, where a rope was attached.

8.6.6 Bell

A small copper bell was found on the roof of room no. 24 (Figure 8.3d). Similar objects were discovered at the site of Sincu Bara in the Middle Senegal Valley (Thilmans and Ravisé 1980). The lengthy occupation phase of Sincu Bara was originally dated to between the 5th and 11th centuries AD, but recent excavations have stated that the copper objects must be dated to one of the later occupation phases (McIntosh and Bocoum 2000).

8.7 Processed plant remains and animal hair

8.7.1 Textile

Textile fragments were preserved on one of the iron objects (*1354*) during the oxidation process (Figure 8.12:13C). Parallel finds were encountered in Kissi (Magnavita *et al.* 2002: 36-37) and Tellem (Bedaux and Bolland 1980:10). The count of the textile, which is defined as the threads per unit of length, is 11/9 (mean 11 warp-threads and 9 weft-threads to the centimetre). The cloth was made using the simplest of all weaves (the tabby or plain weave - see Hodges 1995: 140). In this the wefts pass over and under adjacent warps in one row, the order being reversed in the next and so on. The different threads, although changing in width, are relatively fine, measuring approximately 0.18 mm. As figure 8.12:13C shows, the different orientation of the fragments points to the use of the copper mount as cloth- or clothing-holder.

8.7.2 Rope (see for processed plant remains, including rope, Chapter 11, this volume) - by Lucas Petit and Stefanie Kahlheber

The charred remains of a long coiled cord (*1289*) was discovered in the year 2001, to the south-east of pillar 51 on the floor of room no. 20 (Figure 8.4). The excavation of the fibres were extremely difficult due to the harmattan wind and the coarser brick chunks around the remains. The extremely tiny, fragile parts were drawn (and photographed) fragment by fragment, resulting in a detailed plan (Figure 8.4). While some fragments were found inside the floor cover of the room, we assume that the rope was already lying there before the final fire. The rope was made with two yarns that were simply twisted.

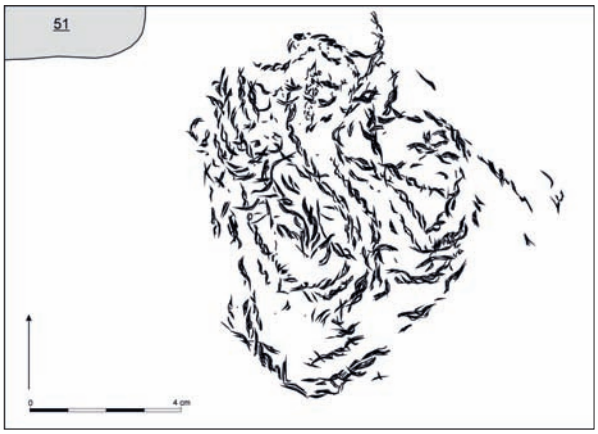

Fig. 8.4 Top plan of a coiled up rope (1289) in room no. 20.

Another fragment of a charred rope was found among charcoal remains (1758) on the floor of room no. 10. The rope (Figure 8.5) is about 10 (9-13) mm thick. One end is truncated and obviously broken as a result of charring; the other end is conically tapered and the damage could date back longer. The rope consists of three left-hand plied strands each made of two right-hand twisted yarns (Figures 8.5 and 6). The yarns are spun of fibres which have been identified as animal hair. The individual hairs are straight, round in cross section and hollow. Their length is not measurable; the thickness of six hairs measures between 90 and 130 µm. Under high magnification most of the filaments show a rough, uneven surface, although some hairs show evidence of wavy elevations (Figure 8.7). These are interpreted as scale rims, the surface might thus be described as being covered in closely arranged wavy scales. With their considerable thickness the hairs may have originated from goat, cattle or horse. Goat hair measures 80-130 mm (Farke 1986), that of cattle 40-250 µm (Latzke and Hesse 1988) and horse hair either up to 350 µm (Latzke and Hesse 1988), or 80-400 µm (Farke 1986). The closed scaled surface structure is most similar to that of horse hairs as illustrated in Latzke and Hesse (1988: 54). References for hair measurements and the surface structure of other equids, such as donkey, were not available to the author, but could be comparable to that of horse and should therefore also be taken into consideration. Evidence for equids in Oursi hu-beero is also revealed in a bone find in the roof debris of room 10 (Chapter 9, this volume), and by faeces found on the floor of the same room. Horse hairs are very tough and stiff, and the long hairs from the tail and mane can be processed into cordage without pre-treatment. Strings and ropes made of horse hair have a great tensile strength, but are also flexible. The preserved type of twisted (or laid) rope is the prevailing form of rope. The oppositing twists of strands and rope result in a stable product which does not unravel too easily. The interpretation of room no. 10 as a stable by Linseele (Chapter 9, this volume) suggests that the rope could have served to tie animals.

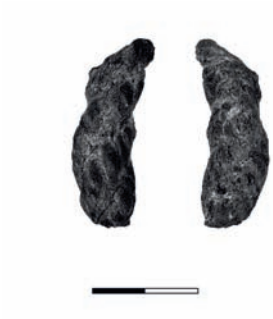

Fig. 8.5 Charred fragment of twisted rope (1758). Scale is 2 cm.

Fig. 8.6 Close-up showing the manner of manufacture.

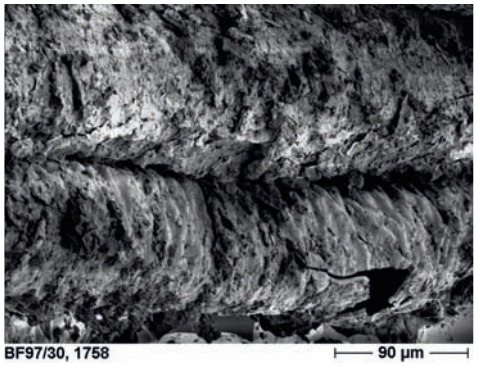

Fig. 8.7 SEM microcraph of single hairs. The lower one shows wavy elevations which are interpreted as closely arranged scale rims.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
1278	85	Roof room no. 24	Miniature vessel	Pottery	D45, H47	Handmade, complete	8.8:1
1225	83	Stray find	Perforated disk	Pottery	D61, H9	Recycled pottery sherd, fragment	8.8:2
1001c	60	Topsoil	Pin/nail	Iron	L54, W7.5, H7.5	Two fragments	8.8:3
1683	100	Floor room no. 21	Clamp	Iron	L67, W22, H4	Textile fragments, fragment	8.8:4
1678	105	Roof	Clamp	Iron	L99, W67, H17	Complete (?)	8.8:5
1582	104	Roof	Pin	Iron	L56, W21, H11	Complete	8.8:6
1711	106	Gully 1	Pin	Iron	L59.5, W4, H4	Fragment	8.8:7
1227	81	Stray find	Pin/needle	Iron	L45, W4.5, H4.5	Fragment	8.8:8
318	37	Older level	Needle	Iron	L51, W6, H4	Complete	8.8:9
259	31	Floor room no. 24	Pin	Iron	L52, W8, H3.5	Fragment	8.8:10
1426a	92	Topsoil	Nail	Iron	L49.5, W7, H6	Complete	8.8:11
1204b	81	Topsoil	Pin/needle	Iron (?)	L15, W2.5, H2.5	Fragment	8.8:12
1886	110	Topsoil	Pin	Iron	L22, W3.5, H3.5	Fragment	8.8:13
1879	100	Floor room no. 21	Pin	Iron	L18, W3, H2	Fragment	8.8:14
1742a	104	Roof	Nail	Iron	L30, W5, H4	Fragment	8.8:15
85	1	Topsoil	Pin	Iron	L26, W4, H4	Fragment	8.8:16
46	8	Roof	Pin	Iron	L23, W7, H5	Fragment	8.8:17
1205a	80	Floor room no. 21	Pin/needle	Iron	L21, W3.5, H2.5	Fragment	8.8:18
1559	93	Floor room no. 5	Bracelet (?)	Iron	L21, W9, H7	Fragment	8.8:19
1056c	67	Roof	Pin (?)	Iron	L13, W7, H6	Fragment	8.8:20
1718	106	Gully	Bracelet (?)	Iron	L29.5, W7, H5	Fragment	8.8:21
1186	79	Topsoil	Clamp	Iron	L23, W6, H4	Fragment	8.8:22
1112	69	Roof	Band	Iron	L29, W10, H2	Band with perforations, fragment	8.8:23
1883	110	Topsoil	Clamp (?)	Iron	L37.5, W9.5, H3.2	Fragment	8.8:24
1560	95	Topsoil		Iron	L38, W10	Fragment	8.8:25

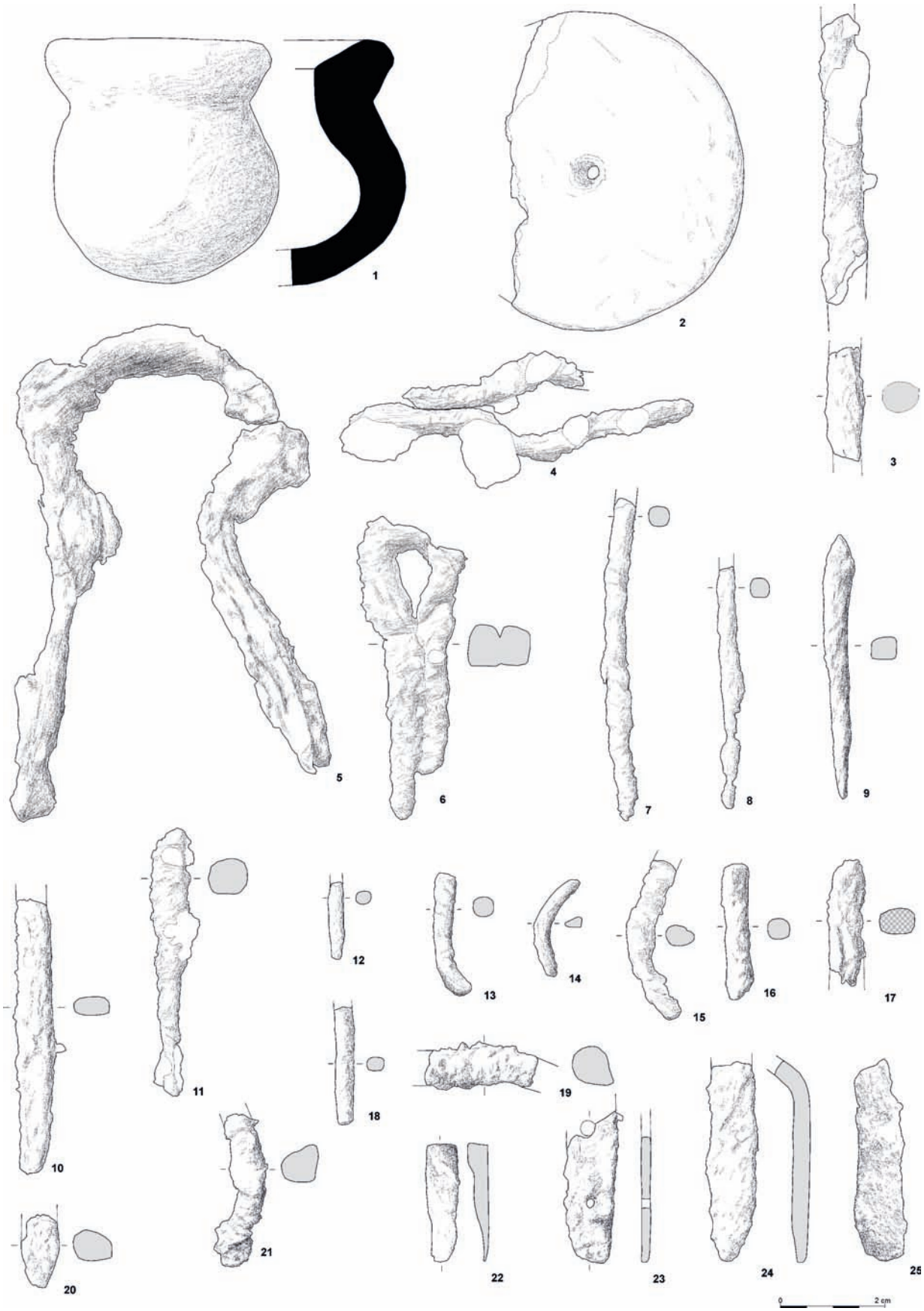

Fig. 8.8 Miscellaneous finds.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
1447	93	Roof	Ring + chain	Iron	L15.5, W11, H5.5	Fragment	8.9:1
1509	94	Topsoil	Ring	Iron	L14, W10.6, H2.1	Fragment	8.9:2
1126	71	Roof	Ring	Iron	L28, W27, H5.3	Complete	8.9:3
1887	110	Topsoil	Ring	Iron	L22, W4.5, H2.5	Fragment	8.9:4
1741	104	Roof	Chain	Iron	L28, W23.5, H2.1	Fragment	8.9:5
1087	68	Roof	Nail with iron wire	Iron	L107, W10, H15	Fragment	8.9:6
1414	93	Roof	Nail with iron wire	Iron	L46, W12	Fragment	8.9:7
11	2	Topsoil	Pin with hook	Iron	L58, W9, H5	Fragment	8.9:8
1840	104	Gully	Weight (?)	Clay	L44, W33, H43	43 gram	8.9:9

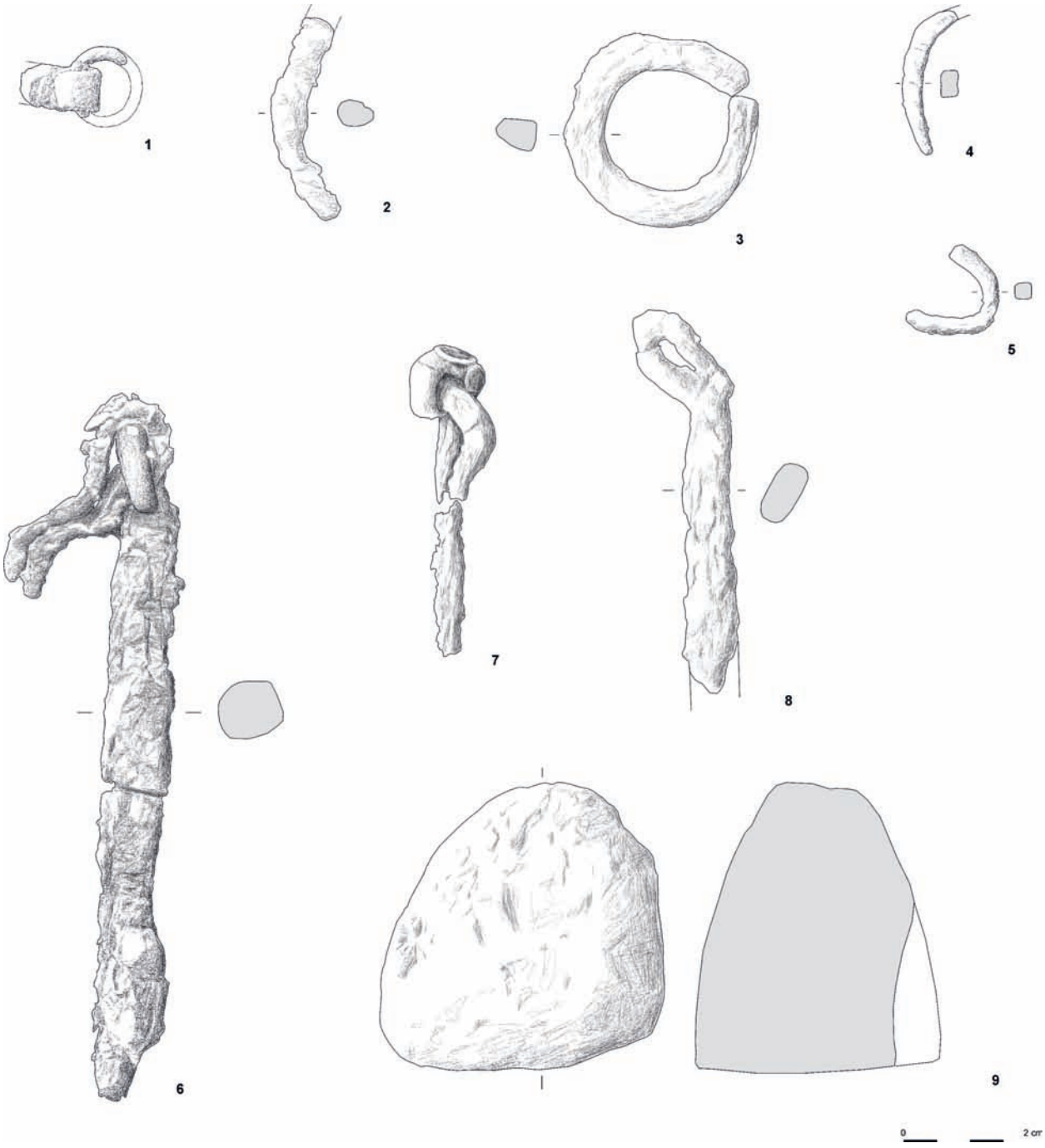

Fig. 8.9 Miscellaneous finds.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
1385	88	Roof	Spear point	Iron	L106, W21, H2.5	Complete	8.10:1
1874	100	Floor room no. 21	Knife/ sickle blade	Iron	L63, W16, H3.5	Fragment	8.10:2
183	24	Floor room no. 18	Dagger/knife handle	Iron	L144, W12, H12.5	Fragment	8.10:3
1332	92	Topsoil	Knife handle (?)	Iron	L58, W15, H15.5	Wood remains in tube	8.10:4
1324	71	Floor room no. 22	Axe (?)	Iron	L82, W38, H3.5	Fragment	8.10:5

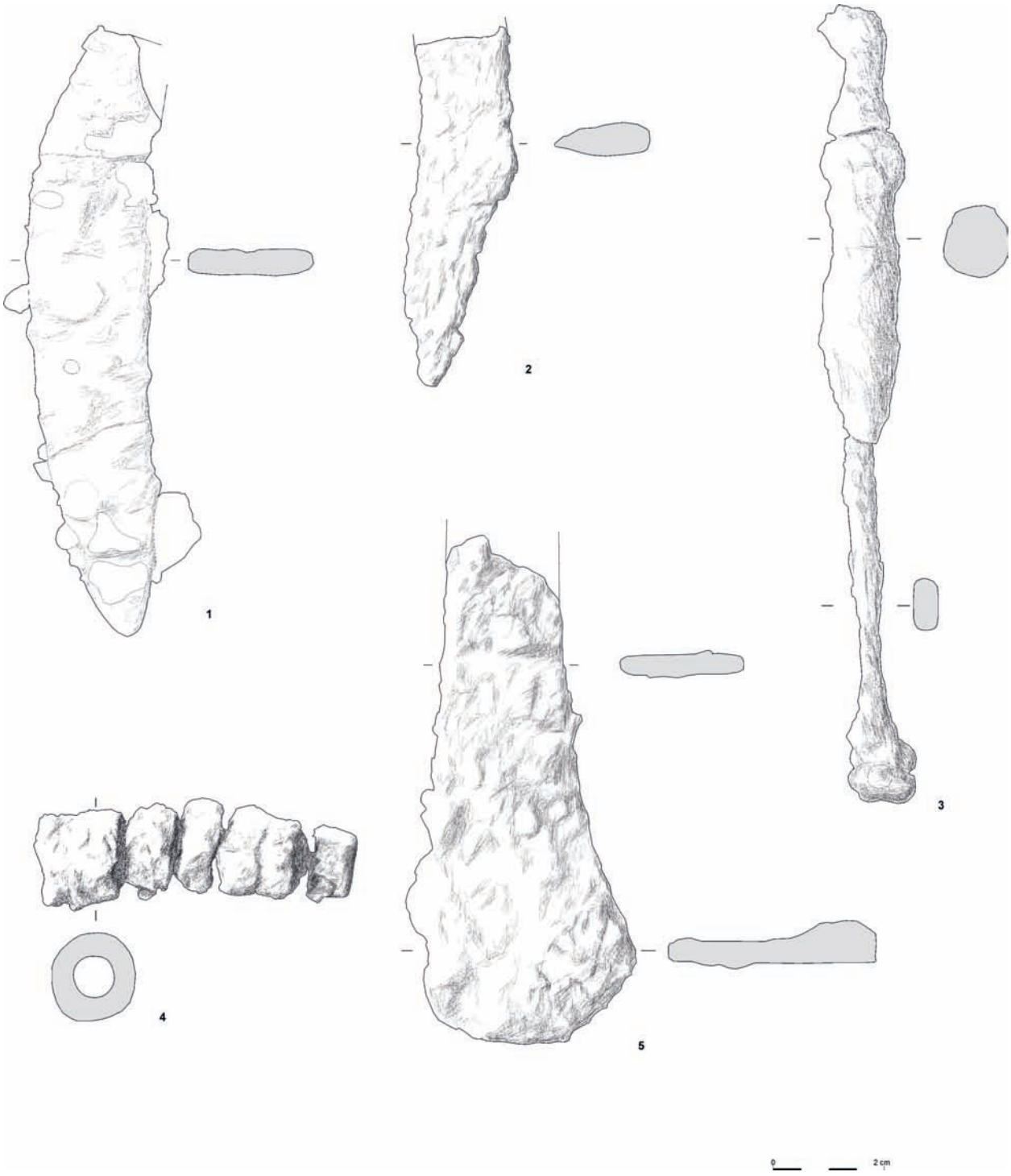

Fig. 8.10 Miscellaneous finds.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
1056a	67	Roof	Knif/sword	Iron	L34, W21, H3	Fragment	8.11:1
1001a	60	Gully	Sword	Iron	L46, W20.5, H2	Fragment	8.11:2
1519	95	Topsoil	Knife	Iron	L27.5, W18, H2.5	Fragment	8.11:3
1394	71	Room no. 22	Lance point	Iron	L63.5, W20.5, H3	Fragment (only part shown)	8.11:4
1001b	60	Topsoil	Arrowhead	Iron	L46, W6.5, H4	Leaf shaped blade	8.11:5
1889	110	Topsoil	Arrowhead	Iron	L44.5, W5-8, H5	Fragment. shaft	8.11:6
1017	64	Topsoil	Spear point	Iron	L98, W11, H8	Large fragment	8.11:7
1418	93	Roof	Spear point	Iron	L66, W24, H2	Almost complete	8.11:8
1558	93	Room no. 5	Spear point	Iron	L 116, W10.5, H6.5-3	Bearded point	8.11:9
175	16	Room no. 21	Point	Iron	L27, W12, H7	Fragment	8.11:10

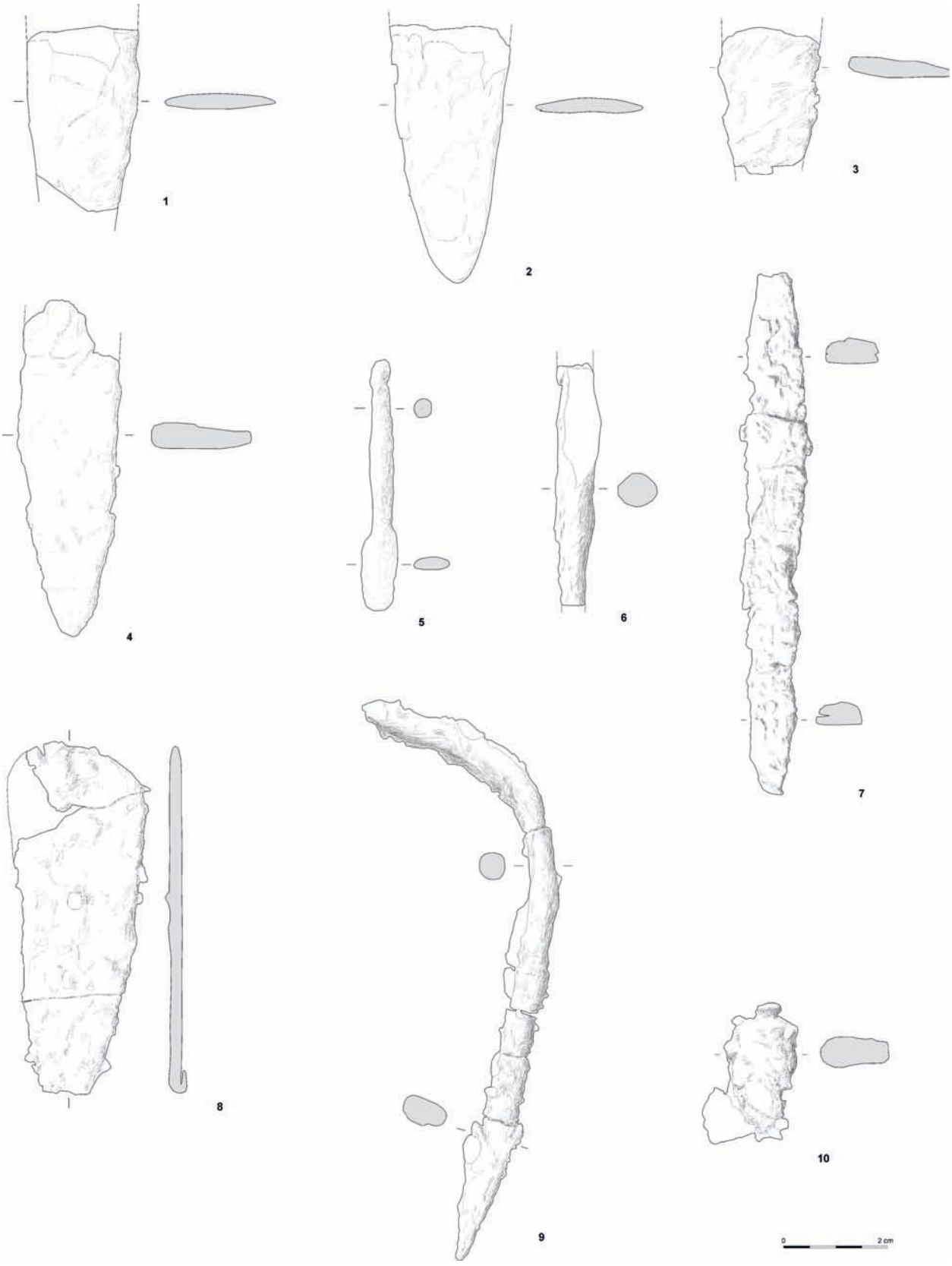

Fig. 8.11 Miscellaneous finds.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
1098	68	Roof	Hook (?)	Iron	L18, W8, H4	Fragment	8.12:1
1200	81	Topsoil	Flake	Quartzite	L27.5, W34, H7.3	Retouch (?)	8.12:2
1190	78	Topsoil	Scraper	Quartz	L35, W24, H11	Retouch, bulb	8.12:3
1489	94	Topsoil	Ring	Bronze/copper	L38.5, W3.5, H3.5	Complete	8.12:4
1204a	81	Topsoil	Bracelet	Iron	L24.5, W5, H5	Fragment	8.12:5
1648	83	Roof	Bracelet (?)	Iron	L18, W8, H3	Fragment	8.12:6
231	18	Room no. 21	Bracelet	Iron	L41, W9, H6	Fragment	8.12:7
1692	83	Room no. 23	Ankle ring	Copper alloy (?)	D48.8, H6	Complete	8.12:8
1377	86	Roof	Bracelet	Iron	L51, W16, H5.5	Fragment	8.12:9
1066	67	Roof	Bracelet	Copper alloy (?)	L62, W40, H5	Fragment	8.12:10
1571	93	Room no. 5	Chain	Iron	L30, W5, H5	Part of a chain	8.12:11
1526	93	Room no. 5	Chain	Iron	L26, W5, H5	Part of a chain	8.12:12
1354	80	Room no. 21	Mout	Copper alloy	D36, H0.25	Decorated	8.12:13

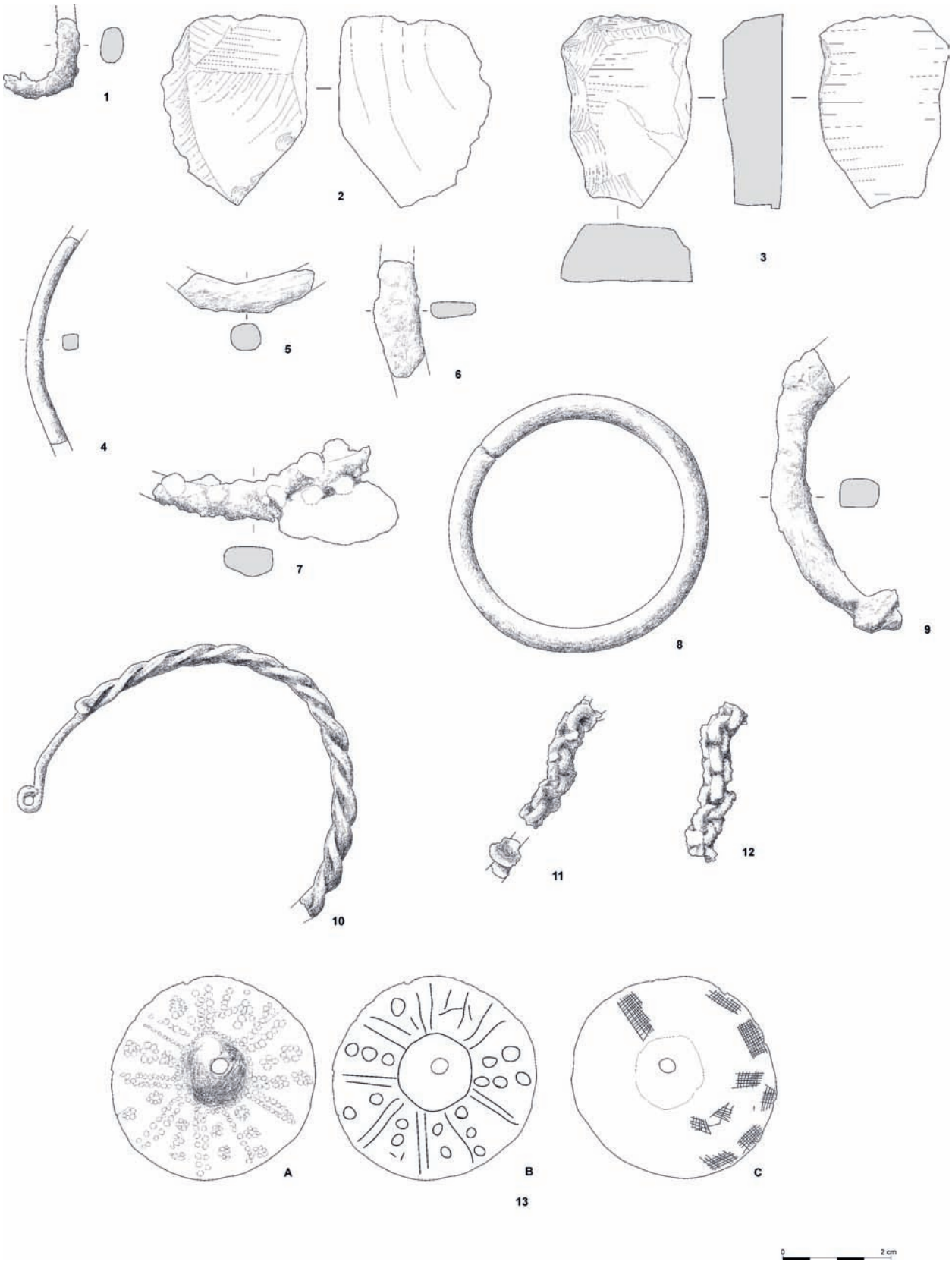

Fig. 8.12 Miscellaneous finds.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
23b	4	Topsoil	Bead	Quartz	L9, W6.5, H6.5	Long barrel	8.13:1
1795	96	Room no. 10	Bead	Ostrich shell	L4.5, W4.5, H1.3	Flat rectangular	8.13:2
1446	86	Roof	Bead	Ostrich shell	L6, W6.2, H1.9	Flat cylindrical	8.13:3
1940b	104	Room no. 17	Bead	Ostrich shell	D7, H0.9	Flat cylindrical	8.13:4
1940c	104	Room no. 17	Bead	Ostrich shell	D7, H1	Flat cylindrical	8.13:5
1940d	104	Room no. 17	Bead	Ostrich shell	L7, H0.85	Flat cylindrical	8.13:6
1689	106	Gully	Bead	Glass (?)	L5.5, W5, H2.2	Cylindrical	8.13:7
1485	94	Topsoil	Bead	Glass	L7, W7.5, H8	Diamond shaped	8.13:8
23a	4	Topsoil	Bead	Quartz	L6, W11, H11	Flat cylindrical	8.13:9
1511	94	Topsoil	Bead	Chalcedony	L7.5, W5.3, H5.2	Long barrel	8.13:10
1419	88	Roof	Bead	Glass	L8.8, W5.2, H2.3	Fragment, barrel	8.13:11
1929	104	Room no. 17	Bead	Quartz	L11.5, W11, H10.5	Biconical	8.13:12
1943	104	Room no. 17	Bead	Quartz	L12, W11.5, H10	Biconical	8.13:13
1185	77	Gully	Bead	Quartz	L11.5, W8.5, H8.5	Biconical	8.13:14
1455a	86	Roof	Bead	Quartz	L13.5, W10.5, H8.5	Biconical	8.13:15
1731	101	Room no. 11	Bead	Quartz	L10.5, W8.5, H8	Biconical	8.13:16
217	26	Room no. 7	Bead	Quartz	L15.2, W12.7, H11	Biconical	8.13:17
1455b	86	Roof	Bead	Quartz	L10, W10, H8.5	Cylindrical	8.13:18
1940a	104	Room no. 17	Bead	Sandstone	L29, W9.5, H9	Long	8.13:19
1781a	89	Room no. 15	Pendant	Cowry shell	L14.5, W9, H7		8.13:20
1188	78	Topsoil	Pendant	Cowry shell	L14.5, W10.5, H5		8.13:21
1781b	89	Room no. 15	Pendant	Cowry shell	L15.5, W11.5, H7.5		8.13:22
1350	66	Roof	Pendant	Cowry shell	L19.5, W8, H6		8.13:23
1062	65	Roof	Pendant	Bone	L18.5, W11, H11	Fragment	8.13:24
42	8	Roof	Pin (?)	Iron	L48, W8, H5	Fragment	8.13:25
1471	88	Roof	Pendant (?)	Iron	L37, W20, H7	Fish shaped metal piece	8.13:26

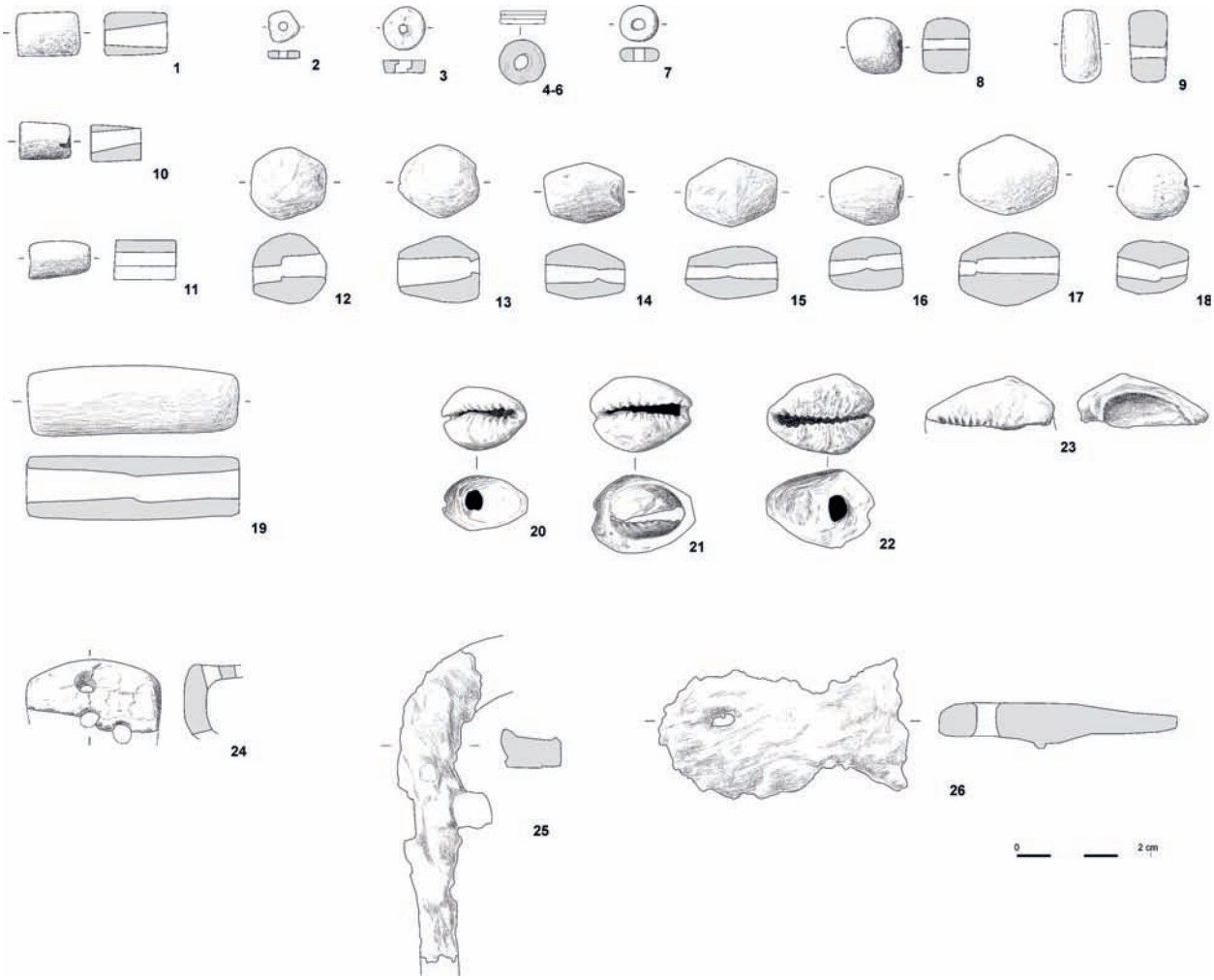

Fig. 8.13 Miscellaneous finds.

Bucket no.	Locus	Provenance	Type	Material	Measurements	Remarks	Figure
5	1	Topsoil		Iron			
58	10	Topsoil	Sword	Iron		Several fragments	
96	14	Roof	Bell	Copper		Complete	Fig. 8.3d
120	14	Roof	Arrowhead	Iron		Complete (?)	
203	19	Floor room no. 24	Flake	Quartz		Retouch (?)	
210	12	Floor room no. 12	Pin (?)	Iron		Fragment	
212	26	Floor room no. 7		Iron			
255	30	Roof		Iron			
1018	64	Roof	Knife (?)	Iron		Several fragments	
1039	65	Roof	Knife/sword	Iron		Several fragments	
1086	65	Roof	Band	Iron		Several fragments	
1088	65	Roof	Spear point	Iron		Fragment	
1093	66	Floor room no. 4		Iron			
1117	69	Roof	Bead	Quartz			
1148	69	Roof		Iron		Long object	
1226	21	Roof		Iron			
1228	82	Roof		Iron			
1279	89	Roof		Metal		Several fragments	
1323	71	Floor room no. 22	Arrow head	Iron			
1349	66	Roof	Bracelet	Iron			
1366	75	Floor room no. 20		Iron			
1420	88	Roof		Iron			
1424	88	Roof	Bracelet	Iron		Complete	Fig. 8.1
1439	88	Roof		Iron			
1525	93	Floor room no. 5		Metal			
1533	88	Floor room no. 18		Metal		Small fragment	
1583	104	Roof		Metal			
1683	100	Floor room no. 21	Clamp	Iron		Several fragments	
1764	104	Roof		Iron			
1771	104	Roof		Iron		Complete (?)	
1791	105	Roof/floor		Iron			
1830	89	Floor room no. 14		Iron			
1883	104	Roof		Iron		Fragment	
1968	98	Floor room no. 22		Iron			

Chapter 9

Faunal Remains

Veerle Linseele[1]

9.1 Introduction

The faunal remains from Oursi hu-beero consist mainly of bones, but some eggshells, molluscs and faeces were also found. The remains are described by animal species. For all wild species the present geographical distribution and habitat are indicated, while for the domestic species the existing information on their introduction and appearance is summarised. Where available, (ethno-) historical data on the animals are included. In addition, the fauna from Oursi hu-beero is compared to that from other sites in North Burkina Faso near Oursi, Corcoba BF 97/5 (Breunig and Neumann 2002), Oursi Village BF 97/13 and Oursi BF 94/45 (von Czerniewicz 2004), near Kissi, BF 96/22 and BF 97-31, (Magnavita *et al.* 2002) and near Saouga, BF 94/120 and BF 95/7 (Vogelsang *et al.* 1999; Vogelsang 2000; von Czerniewicz 2004). Chronologically, these sites cover the Late Stone Age (2200-1000 BC), the Early (AD 0-500), Middle (AD 500-1000) and Late Iron Age (AD 1000-1400) of northern Burkina Faso. Their fauna was part of the doctoral research of the present author (Linseele 2007). In order to explain the occurrence of the different animal species at Oursi hu-beero, the faunal description is followed by a taphonomic analysis. In a next step, inferences are made about the food procurement strategies of Oursi hu-beero's inhabitants and about the former climate and environment of the site. Furthermore, the spatial distribution of the animal remains is discussed in an attempt to shed light on the function of the different rooms of the house.

Like the other finds from the house, the faunal remains were mostly hand-collected. Since recovery chances of bones of small animals, such as fish, usually increase considerably when sieving is practised (Payne 1975) a test was carried out. Fifteen litres from the roof destruction layer of room no. 20 were sieved through 4 millimetre meshes,

Fig. 9.1 Cattle on the settlement mounds of Oursi.

1 The faunal research of Oursi hu-beero was part of my doctoral thesis, prepared at the Royal Museum for Central Africa (RMCA), Tervuren, Belgium with a grant from The Belgian Federal Science Policy Office. I am most grateful to Lucas Petit and Maya von Czerniewicz for the unforgettable experience of excavating with them at Oursi hu-beero. Christoph Pelzer is acknowledged for sharing his knowledge on the customs in present day and historical Burkina Faso. I thank Wim Van Neer (Royal Belgian Institute of Natural Sciences) for his comments on an earlier draft of this paper.

showing that large amounts of debris remained in the sieve residue. The sorting of the residue was very time-consuming and yielded few extra bones compared to hand collecting. It was therefore decided to limit sieving to contexts that were already being processed for the retrieval of archaeobotanical remains, *i.e.* deposits lying directly on the floor and pot contents (see Chapters 12 and 13, this volume).

9.2 The fauna

All animal remains from Oursi hu-beero were exported to the Royal Museum of Central Africa (RMCA) in Tervuren (Belgium), where they were identified by comparison with the available modern skeletons of African animals. Oursi hu-beero's total bone sample consists of almost 7500 pieces, of which about 1300 or 17% could be identified beyond class level. This relatively low percentage is due to rather heavy fragmentation, probably resulting from trampling by humans and animals. The fire in the house, on the other hand, does not seem to have affected the identification rate of the bones.

The species that were found are listed in Appendix D. The figures in this table represent the number of identified specimens (NISP). When several bones were found that probably belonged to the same individual, this is mentioned in the text. Where the preservation of the mammalian and bird bones allowed it, standard measurements, described in von den Driesch (1976), were taken (Table 9.2). For the fish remains, the standard length (SL), *i.e.* the distance from the tip of the snout to the beginning of the tail, was estimated by direct comparison with modern fish of known size (Table 9.1).

9.2.1 Molluscs

Fifteen mollusc remains, spread over several rooms of the house, were collected. Eleven of these are from a large freshwater bivalve; probably *Chambardia* sp. or *Spathopsis* sp. Besides bivalve remains, there is also a fragment of a gastropod that is too small to be more precisely identified. Three cowry shells (*Cypraea* sp.) were discovered as well. These exotic marine gastropods are discussed together with the miscellaneous finds in Chapter 8.

9.2.2 Fish

Lungfish (*Protopterus annectens*) (Figure 9.2:1)

Protopterus annectens is the only lungfish species occurring in West Africa (Lévêque 1990: 76). Three bones of this fish were retrieved from Oursi hu-beero, belonging to specimens measuring between 60 and 80 cm SL. One of these bones, a cranial rib, shows cut-marks. Lungfish are well adapted for survival in extreme habitats such as temporary lakes, thanks to their ability to breathe atmospheric oxygen. In addition, when the dry season sets in, they bury themselves in the humid ground and form a cocoon that prevents desiccation until the next floods. They can easily be caught from these burrows (Lévêque 1990: 77). Although lungfish have only a few well-ossified bones (the jaws, the cranial roof, part of the hyoid) they are commonly found amongst the studied Iron Age faunal remains from northern Burkina Faso.

Gymnarchus niloticus (Figure 9.2:2)

One caudal vertebra of this eel-like fish was collected from the topsoil at Oursi hu-beero. *Gymnarchus niloticus* lives mainly in swamps. During the floods, it builds floating nests of grass, from which it is easily caught (Reed *et al.* 1967: 32). It is not a common species in the archaeofauna from the area and was only recorded at Late Stone Age Corcoba (BF 97/5).

Length (cm)	<10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120
Lungfish (*Protopterus annectens*)							2	1				
Gymnarchus niloticus												1
Clarias sp.			8	19	5	4	1	1				
Nile perch (*Lates niloticus*)										1		

Table 9.1 Fish length reconstruction

Clariid catfish, probably mostly *Clarias* sp. (Figure 9.2:3)

In West Africa, the family of the clariid catfish comprises the genera *Heterobranchus* and *Clarias*, which can be differentiated osteologically from the pectoral spine (von den Driesch 1983: Fig. 19b; Gayet and van Neer 1990: Pl. I, fig. 6-7, 247). All twelve clariid pectoral spines found at Oursi hu-beero are from *Clarias*. The seventy-two other bones of clariids therefore probably also belong to this genus. Clariid catfish bones were found dispersed over several rooms of the house, but more than half of them were collected in mixed contexts that were not associated with a floor or roof of a distinct room. The specimens found have an estimated standard length of between 20 and 60 cm, with only two bones from slightly larger individuals. All clariids have an accessory breathing organ, enabling them to use oxygen from the atmosphere (Teugels 1992: 468). This ability and their high tolerance to elevated temperatures allow them to survive in adverse conditions. Reed *et al.* (1967: 78) mention that *Clarias* can live out of the water for several hours, and in damp, muddy places even for months. Clariid bones preserve well in archaeological contexts and their cranial roof fragments are easily recognised from the external ornamentation. They are numerous at all studied sites in northern Burkina Faso.

Nile perch (*Lates niloticus*) (Figure 9.2:4)

One caudal vertebra of Nile perch of about one metre long was recovered from the erosion gully. Nile perch is an open water species that lives in permanent, deep, and well-oxygenated waters. The flesh of *Lates* is the most prized of all African freshwater fish (Reed *et al.* 1967: 111). At the archaeological sites near Oursi, only Late Stone Age and Early Iron Age contexts yielded Nile perch bones.

9.2.3 Amphibians

Frog or toad (Anura) (Figure 9.3:1)

One tibiofibula of a frog or toad was recovered from Oursi hu-beero. This bone is not very diagnostic and moreover, the reference collection for this group in the RCMA is not complete. It was collected from the sample of the roof of room no. 20 that was test-sieved. More systematic sieving at the site would probably have resulted in a larger number of bones of this animal group. Anura are very numerous on some of the Iron Age settlement mounds from northern Burkina. Among these, bullfrog (*Pyxicephalus edulis*), a large, burying species (Rödel 1996: 67-70), seems to be most common.

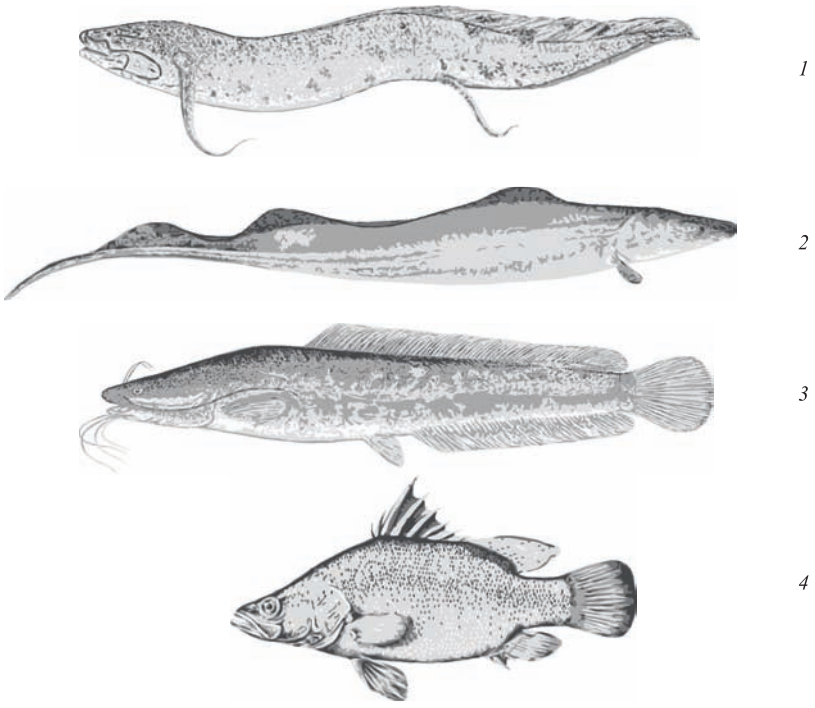

Fig. 9.2 Fish (1= Lungfish, 2= Gymnarchus niloticus, 3= Clariid catfish, 4= Nile perch). Not on scale.

9.2.4 Reptiles

Sahelian giant tortoise (*Geochelone sulcata*) (Figure 9.3:2)

Eleven carapax fragments of a large tortoise were collected from the destruction debris of room nos 18 and 20. Some of these pieces fit together and they are probably all from one individual. Two fragments of burnt long bones from the roof of room no. 9 are possibly tortoise as well and might go with this carapax. Because the carapax was about 40 cm long, it must have belonged to *Geochelone sulcata*, the largest African tortoise (Villiers 1958: 129). The species occurs in the Sahel and adjacent parts of the Sudan zone, but is most frequent in very arid areas, where it buries itself during the dry season (Villiers 1958: 129). Blench (2000a: 333) mentions that very large tortoises are nowadays kept in some courts of the Muslim emirs and that the Dogon in Mali raise giant tortoises for their meat. No other archaeological site in northern Burkina Faso has yielded large tortoise remains.

Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)

A mixed context yielded a small carapax fragment that could not be assigned with certainty to either *Kinixys* or *Pelusios*. Judging from the species present at the other sites in northern Burkina Faso, it may have belonged to *Pelusios adansonii*.

Agama (*Agama* sp.) (Figure 9.3:3)

A maxilla of a small lizard from the roof of room no. 20 was attributed to the genus *Agama*. *Agama agama* is the most widespread and abundant species of this genus in present-day Burkina Faso and Mali according to Böhme *et al.* (1996: 13). They observed the animal in rocky habitats but also found it very often in and around human settlements. Agama has occasionally been recorded at other studied archaeological sites in northern Burkina Faso.

Monitor lizard (*Varanus* sp.) (Figure 9.3:4)

Two monitor lizard bones were collected at Oursi hu-beero: an articular from the roof of room no. 5 and a vertebra from the roof of room no. 16. Two species of monitor lizard occur south of the Sahara: Varanus niloticus, which needs a green environment and the

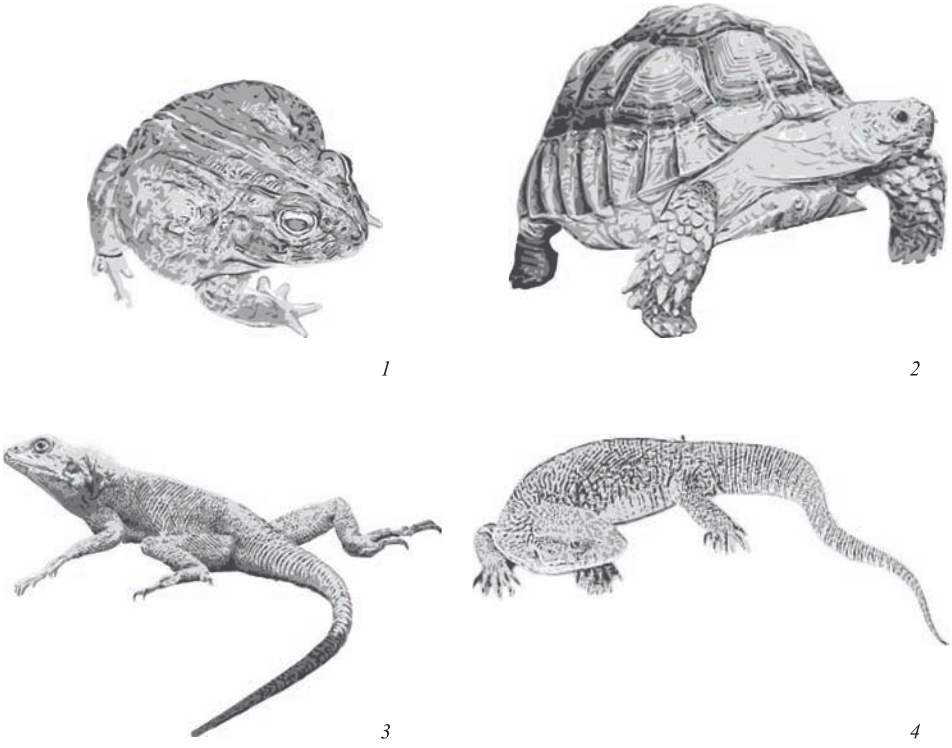

Fig. 9.3 Amphibians (1= Frog or toad) and reptiles (2= Sahelian giant tortoise, 3= Agama, 4= Monitor lizard). Not on scale.

proximity of water, and *Varanus exanthematicus*, a species of open and dry environments (Mertens 1942). Data on the distribution of this genus (Böhme *et al.* 1996: 17-20) indicate that the former is not so common in Burkina Faso. The two species of monitor lizard can be distinguished osteologically by the shape of the parietal bone and by the size of the cranial bones relative to the body (Mertens 1942). Unfortunately these traits can rarely be used in archaeological contexts. In western Africa nowadays, monitor lizards are considered to be very tasty animals and their skins produce much appreciated leather (de Bruffrénil 1993). Monitor lizards are commonly found at the studied sites in northern Burkina Faso and remains with cut-marks have been recorded.

Snake (Serpentes)

One vertebra of an unidentified snake was found at Oursi hu-beero. More than fifty snake species occur in Burkina Faso (Chippaux 2001). Snake vertebrae were regularly encountered at the other studied sites from northern Burkina Faso.

Crocodile (cf. *Crocodylus niloticus*)

The house of Oursi hu-beero yielded six crocodile bones. These are probably from *Crocodylus niloticus* since the two other African crocodile species do not seem compatible with the environment around the site. *Crocodylus cataphractus* lives mainly in large bodies of water (Villiers 1958: 314) and *Osteolaemus tetraspis* is characteristic for the southern Sudan zone and the Guinean zone (Villiers 1958: 324). One crocodile vertebra comes from the roof of room no. 11, while all other bones, one dental, one metapodal and three phalanges, were retrieved from the floor and roof of room no. 5. There are no crocodiles in the lake of Oursi nowadays. They probably became locally extinct as a result of over hunting, a phenomenon that occurred in many other parts of their original distribution zone in Africa (Villiers 1958: 291). Crocodiles are hunted for their meat and skin, or because they are considered dangerous or competitors for fishermen (Villiers 1958: 289). Some crocodile remains were found in the Late Stone Age layers at Corcoba, close to Oursi hu-beero, but none are known from Iron Age contexts in the surrounding area.

9.2.5 Birds

Domestic chicken (*Gallus gallus* f. domestica)

Twenty-nine remains of large Galliformes have been retrieved from Oursi hu-beero. When dealing with this group in contexts from the end of the first and beginning of the second millennium AD in northern Burkina Faso, three species need to be taken into account: the local double-spurred francolin (*Francolinus bicalcaratus*) and guinea fowl (*Numida meleagris*), and the imported, domestic chicken. MacDonald (1992a) described a number of morphological and metrical traits allowing the distinction of bones from these species. Unfortunately the identification is only possible for a few elements that, furthermore, need to be fairly complete. Out of the twenty-nine large galliform bones from Oursi hu-beero, only four could be identified to species level. They all belong to domestic chicken, a species that was also identified at other Late Iron Ages sites in northern Burkina Faso. Guinea fowl has also been attested at archaeological sites in the region, but is less common than domestic chicken. One of the large galliform bones from Oursi hu-beero, a distal tibiotarsus, had cut-marks. Guinea fowl is the only possible native domestic animal of West Africa, and the exotic chicken was only introduced in western Africa at about the end of the first millennium AD (MacDonald 1992a). Chickens are easier to control than guinea fowl (MacDonald 1992a: 307), which might explain why these are often preferred.

Pigeon or Dove (Columbidae)

On the roof of room no. 20, an ulna fragment belonging to the Columbidae family was discovered. More than ten species of this family occur in Burkina Faso nowadays (Dowsett and Dowsett-Lemaire 1993: 92). Al-Umari, writing in the 14th century AD, reports that the peoples from West Africa kept pigeons (Levtzion and Hopkins 1981: 267).

Bird eggshell

A few rooms, both roof and floor levels, yielded fragments of bird eggshells. These eggshell fragments were between 0.2 and 0.4 mm thick, with only one piece, from the topsoil of room no. 27, of about 0.7 mm thick. According to Keepax (1981: 323) eggshell thickness is broadly related to species. The Oursi hu-beero eggshells fall within the range this author gives for chicken and a few wild bird species, but seem too thin for guinea fowl. The thicker shell piece falls in the range of, amongst others, guinea fowl and goose (Keepax 1981).

9.2.6 Mammals

White-toothed shrew (*Crocidura* sp.)

A white-toothed shrew mandible, easily recognisable because of its typical insectivore teeth and its size, was found on the roof of room no. 16/18. About 103 species from the genus *Crocidura* are known from all vegetation types and altitudes of the African continent (Kingdon 1997: 146). Shrews are occasionally represented in archaeological contexts from northern Burkina Faso.

Hare (*Lepus capensis*/*saxatilis*) (Figure 9.4:1)

Six hare bones, spread over five different rooms, are identified at Oursi hu-beero. Two hare species occur in West Africa nowadays, *Lepus capensis*, which lives in completely open grasslands, steppes and sub deserts, and *Lepus saxatilis*, which prefers greener grasslands (Kingdon 1997: 154-155). Hare is fairly well represented in the studied archaeozoological samples from northern Burkina Faso. However, at none of the sites are upper incisors, which allow an osteological differentiation between the two possible species (Petter 1959: Fig. 2), present.

Striped ground squirrel (*Euxerus erythropus*)

One mandible of a ground squirrel was found from a mixed context. It is a common and widespread African species that occurs in open woodlands, Sudanic savannahs and Sahelian habitats (Kingdon 1997: 161). It is regularly present in archaeological contexts from northern Burkina Faso, but never in large numbers.

Lesser pouched rat (*Cricetomys gambianus*)

Only one bone fragment, a proximal tibia of this giant rat, was found at Oursi hu-beero. *Cricetomys gambianus* occurs in very varied environments over large parts of Africa (Kingdon 1997: 200). At other Iron Age sites in the area it is either absent or represented by just a few bones. It is a species that is found on archaeological sites all over Africa and even today its meat is highly prized (Dorst and Dandelot 1970: 30).

Small rodents, probably mostly multimammate rat (*Mastomys natalensis*)

Most rooms yielded some bones of small rodents, with concentrations in room no. 9 (N=91) and room no. 20 (N=100). The skeletal distribution suggests that these represent a few fairly complete specimens. More precise identification was possible for fourteen maxillar and mandibular tooth rows, looking at their morphology and size. Taxa present are Gerbil (*Gerbillis* sp.) and multimammate rat (*Mastomys natalensis*). The genus *Gerbillus* counts over 50 African representatives, which range throughout the drier parts of the African continent (Rosevear 1969: 181). Multimammate rat is the most common and most widespread indigenous rodent of Tropical Africa (Rosevear 1969: 413). It is chiefly associated with man, his houses, food stores, farms and other clearings (Rosevear 1969: 417).

Dog (*Canis lupus* f. familiaris), medium-sized carnivore

Fifty-four canid bones were found scattered all over the site, in room nos 3, 4, 5, 7, 9, 12, 15, 17, 20, 21 and 22. The identification as dog rather than jackal (*Canis aureus*/*adustus*) is based on their find in a settlement context with few hunted animals, the observed size variation, and osteometrical criteria for the distinction of canid species (*e.g.* MacDonald and MacDonald 2000: Figs 8.8 and 8.9). The presence of some jackal bones cannot, however, be entirely ruled out, especially since measurements on

one mandible fall also within the range for jackal (MacDonald and MacDonald 2000). Eleven bones of medium-sized carnivores were too fragmented for a more precise osteological identification. They are probably also from dogs, although caracal or serval (see below) are possible as well. The skeletal parts that could be identified are mostly compact elements (metapodials, podals and phalanges) and elements that are easily recognisable from small fragments (teeth, skull parts). All dog bones are fused, with the exception of a proximal humerus that is fusing. Three burials at Chin Tafidet (Paris 2000) in Niger, dated to 2600-1300 BC, yielded the oldest West African remains of domestic dog. In northern Burkina Faso dogs appear in the Early Iron Age and during the Middle and Late Iron Age they make up a substantial part of the domestic fauna (between 9 and 38 %) (Linseele 2003: Fig. 2).

Slender mongoose (*Herpestes sanguineus*)
One sacral bone of a small viverrid from the floor of room no. 21 was attributed to the slender mongoose, the smallest species of this family living in the area today. *Herpestes sanguineus* occurs in a variety of habitats: all wooded, savannah, thicket and forest habitats (including the driest acacia and the wettest forests) and even extensive papyrus and forest swamps (Kingdon 1997: 242). The animal was also recognised at some of the other archaeological sites in northern Burkina Faso.

Medium-sized genet or mongoose (viverrid), small carnivore
Seven burnt bones of a medium-sized genet or mongoose were found in roof material from room no. 9. A few species occur in northern Burkina Faso nowadays. The collected skeletal elements, metapodials and phalanges, are not sufficiently diagnostic to allow a species identification. Presumably, all elements are from one individual. There are moreover three bones, all from different rooms, that could not be identified more precisely than “small carnivore”.

Caracal (*Felis caracal*) or serval (*Felis serval*)
One third metacarpal and four first phalanges of a medium-sized cat were found on the floor and roof of room no. 5. They belong to either caracal or serval. All remains are probably from one individual. Cut-marks were visible all around the distal end of three of the four first phalanges. Caracal is widely distributed in all savannah types; serval on the other hand is an animal of open grassy habitats and is particularly abundant near marshy places and rivers (Kingdon 1997: 279-281).

Aardvark (*Orycteropus afer*) (Figure 9.4:2)
A few phalanges and metapodials from aardvark were collected from the roof of room no. 9 and the roof and floor of the adjacent room no. 18. Because of their proximity to each other, all bones may belong to one individual. One first phalanx also had cut-marks. Aardvark can be found over large parts of sub-Saharan Africa but is seldom seen (Kingdon 1997: 294-295). Nowadays the animal is hunted mainly because its holes are inconvenient or dangerous for humans and their livestock (Kingdon 1997).

African (savannah) elephant (*Loxodonta africana africana*)
In the roof debris of room no. 9, there was a burnt fragment of a tail vertebra of an elephant. The animal was adult since the epiphyses are fused to the vertebra body. At present, the African savannah elephant has disappeared from much of its original distribution zone. A relic population remains in the Malian Gourma, however, and during the rainy season its range extends as far south as Burkina Faso (Roth and Douglas-Hamilton 1991: 504). The tail vertebra from Oursi hu-beero is the first elephant find for northern Burkina Faso, but the species was identified previously for the Late Stone Age of the Windé Koroji region in Mali, not so far north of Oursi (MacDonald *et al.* 1994: 13).

Warthog (cf. *Phacochoerus aethiopicus*) (Figure 9.4:3)
One suid rib was retrieved from a mixed context. Taking into account the modern distribution of African wild pigs, this rib is probably from warthog, a species that is

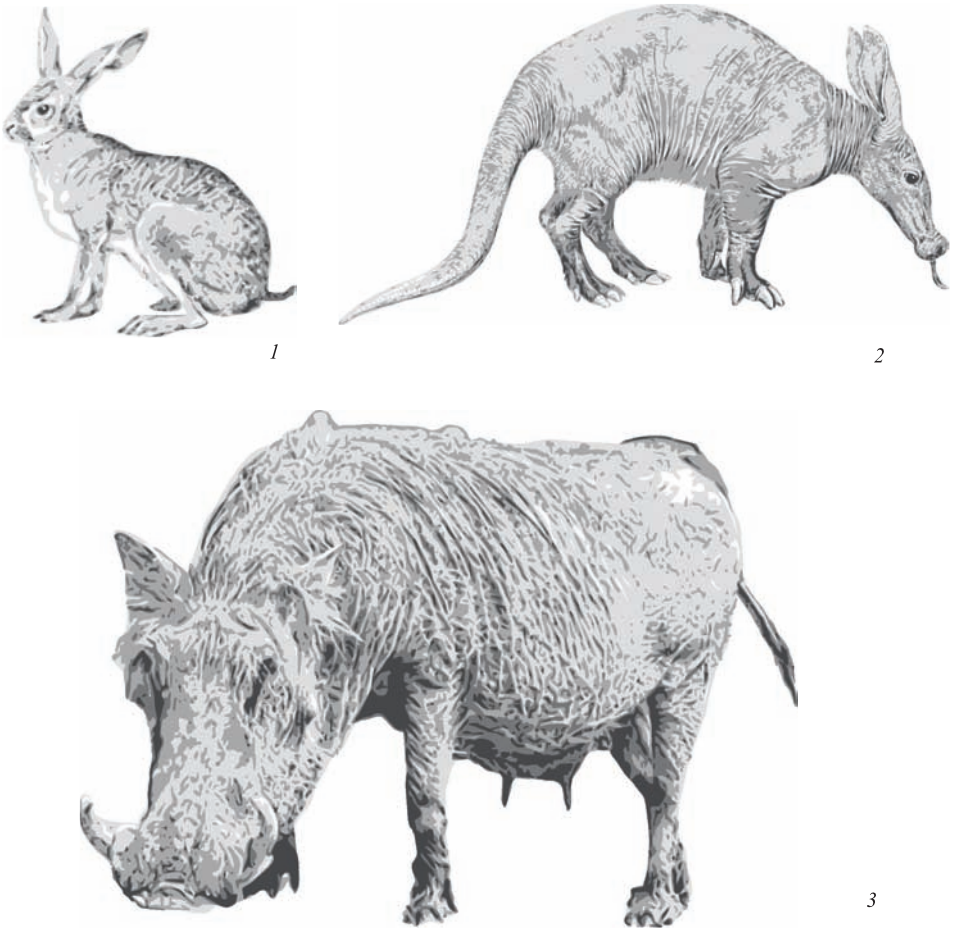

Fig. 9.4 Mammals (1= Hare, 2= Aardvark, 3= Warthog). Not on scale.

able to live in arid and open areas (Kingdon 1997: 334). However, domestic pig, with its controversial date of introduction into western Africa, cannot be entirely excluded (Blench 2000b). Some suid bones have been identified for other sites in North Burkina Faso as well.

Antelopes

Three fragments of first phalanges found at Oursi hu-beero are from antelopes. Two of them were collected from roof material of either room no. 16 or 18. The other bone is from a disturbed context. The size of the phalanges suggests that they are from three different species. A small, a medium-sized and a large antelope are probably present. Based on the species that have been identified before at other sites in northern Burkina Faso, the small antelope is probably either a Grimm's duiker (*Sylvicapra grimmia*) or oribi (*Ourebia ourebi*), the medium antelope either a Bohor reedbuck (*Redunca redunca*), kob (*Kobus kob*) or red-fronted gazelle (*Gazella rufifrons*) and the large antelope either a roan antelope (*Hippotragus equinus*), tiang (*Damalicus lunatus*) or hartebeest (*Alcelaphus buselaphus*).

Sheep (*Ovis ammon* f. *aries*) and goat (*Capra aegagrus* f. *hircus*), small bovid

A total of 363 remains of domestic sheep and goat was retrieved. With the aid of the traits described in Boessneck *et al.* (1964), 67 of the remains were identifiable as sheep and 52 as goat. Some authors (*e.g.* Badenhorst and Plug 2003) warn, however, that these traits might not always be valid for the African types. The "small bovids" listed in Table 9.1 are most probably also sheep or goat, although small or medium-sized antelopes might be present as well. A more precise identification was impossible on a purely osteological basis because the fragments were either too small or not diagnostic enough (ribs, vertebrae). Room no. 23 yielded most ovicaprine and small bovid bones (N=94),

followed by room no. 20 (N=91), room no. 21 (N=81) and room no. 5 (N=51). A concentration of ovicaprine faeces was found in room no. 16. The ovicaprines from Oursi hu-beero, as well as the other Iron Age sites in northern Burkina Faso, are relatively tall and slender (Table 9.2), although they show considerable variation in size (Linseele 2007: 127-132). Nine ovicaprine bones showed traces of butchering. First or second phalanges with cut-marks are best represented, but there is also one metatarsal bone with cut-marks, a distal tibia with cut and chop marks and one chopped and burnt femur shaft. A small bovid lumbar vertebra, moreover, had cut-marks all around the centre. The ovicaprine sample from Oursi hu-beero is too small to construct age distribution curves. Twenty-three out of the 24 small bovid bones from bin 1 in room no. 24 are of a foetus, however. They probably represent one individual. Osteologically there were no traits that allowed identification as ovicaprine, but in view of the anthropogenic context this is most likely. Comparison with the lengths of ovicaprine foetus bones given by Habermehl (1975: table 11-12) suggests the animal died somewhere between about three and four months after conception. Domestic ovicaprines are present in West Africa from around 2000 BC onwards (MacDonald and MacDonald 2000: 128), but in northern Burkina Faso there is no osteological evidence for them before the beginning of the Iron Age. They are known from Late Stone Age sites in the nearby Windé Koroji region of Mali (MacDonald 1996), although they form only a minor component of the fauna there.

Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*), large bovids

Seventy bovine bones fall in the size range of cattle and African buffalo. Using the metrical and morphological criteria described by Peters (1988), 11 elements could be identified as cattle. Since no positive identification of African buffalo could be made, it is likely that all other bovine bones also belong to cattle. Buffalo has not been identified for the Iron Age in northern Burkina Faso, but it was present in Late Stone Age Tin Akof (Van Neer 2002: 258). Most of the "large bovid" bones in Appendix D are probably cattle as well. Osteologically it could not be excluded, however, that they do not belong to large antelopes. Fragments of roan antelope in particular can be confused with cattle, whereas the other large antelope species are considerably smaller. Cattle and large bovid bones were spread over almost the entire house. Most bones were found in room no. 20 (N=25). They were also relatively numerous in room no. 23 (N=17), room no. 21 (N=12) and room no. 9 (N=11). Most of the cattle of Oursi hu-beero (Table 9.2) fall in the "middle size group", comparable to the modern N'Dama, described in MacDonald and MacDonald (2000: 129). Some approach the size of modern zebu type cattle (Linseele 2007: 137), which are larger than the N'Dama. A smaller type also seems to be present. One distal cattle metatarsal had cut-marks on the middle part of the shaft. There was one chopped large bovid rib and one chopped femur shaft fragment. As for the ovicaprines, there are not enough data to ascertain the slaughter age of the cattle. In West Africa, south of the modern Sahara, cattle appear in *c.* 2000 BC (MacDonald and MacDonald 2000: 128). Like the ovicaprines, they are not archaeologically attested in northern Burkina Faso before the beginning of the Iron Age, although there are some identifications for Late Stone Age sites in the nearby Windé Koroji region of Mali (MacDonald 1996). The earliest West African cattle are humpless taurine or perhaps rather of the Sanga type (for discussion see Grigson 1991) and from halfway through the first millennium AD onwards, humped cattle, or zebu, introduced from Asia, were also rapidly spread over the African continent (Meghen *et al.* 1994). The cattle from Oursi hu-beero could belong to either of those three types (taurine, Sanga, zebu).

Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)

One femur shaft of a horse or donkey was found in a mixed context. In the roof debris of room no. 10 there was also an equid molar, which is not well enough preserved for a more precise identification. There is indirect evidence for donkey from the floor of room no. 10 at Oursi hu-beero, where dung was found that seems too small for horse. Good osteological evidence in western Africa for both horse and donkey dates to the second half of the first millennium AD (MacDonald and MacDonald 2000: 140; MacEachern *et al.* 2001). Most Late Iron Age sites in northern Burkina Faso have

yielded a few equid remains. Where identifications to species level were possible, they always appeared to be horse. In many pre-colonial West African societies, horses were a symbol of high social status and wealth, because of their association with warfare (Law 1995). Horse are not easy to keep under West African ecological conditions (Law 1995). Donkeys, on the other hand, are low cost animals that stay healthy on varied and often poor-quality diets (Blench *et al.* 2000: 211).

9.3 Interpretation

9.3.1 Taphonomy

Any interpretation of archaeological fauna should be preceded by a taphonomic analysis that tries to reconstruct the history of events between the death of the animals and the recovery of their remains (Gautier 1987). The small lizards, frogs or toads, small rodents and shrew from Oursi hu-beero are probably penecontemporaneous intrusives, i.e. animals that lived and died on the site independently from its human inhabitants during or shortly after the site's occupation (Gautier 1987: 49). Observations during the excavation suggest that the rodents lived in cavities and crevices in the walls. The bird eggshells from Oursi hu-beero are probably not consumption refuse, but rather the remnants of hatched eggs. Lewicki (1974: 112) mentions that the medieval sources on West Africa contain no references to the use of eggs as food, and thinks rather they were allowed to hatch. The wild carnivores are only represented by metapodials and phalanges. These bones typically stay attached to the fur when this is removed, indicating that the animals were not eaten but rather were caught for their skin. This is also corroborated by the cut-marks on the caracal/serval phalanges, which are typical skinning traces (Lyman 1994: 298). The equids were presumably not consumed either, nor was the elephant. The former was probably used as a source of animal power, while the elephant tail vertebra may have been part of a tail that was taken as a kind of trophy from an animal that was hunted or found dead. The Gulmanceba[2], for example, one of the oldest ethnic groups of northern Burkina Faso (Krings 1980: 49), are known to take tails as hunting trophies (Geis-Tronich 1991: 226).

All other animal remains are considered to be consumption refuse. This is confirmed by the finds of cut and chop marks. Part of the burning observed on the bones may also be a consequence of food processing, rather than the fire in the house. Burning was not systematically recorded for the unidentified remains, but about 230 of the nearly 1300 identified bones are burned (Appendix D). After their consumption, molluscs may have served as raw material. Along the prehistoric Nile there is evidence that Spathopsis was collected for food, but also that the shell was used for the manufacture of various objects (beads, fish hooks, potter tools) (Gautier 1983: 60; Van Damme 1984: 68). Besides the classical domestic food animals - cattle, sheep and goat - also dogs appear to have been eaten during the Iron Age in northern Burkina Faso (Linseele 2003). The North African Berbers may have influenced this habit. Good arguments for dog eating came from a site near Saouga (BF 95/7), for example, where a second neck vertebra was found, bearing cut-marks on all sides. There are no dog bones with cut-marks from Oursi hu-beero, but the fact that they were found scattered within the house is a an indication for dog consumption at this site. If the dogs found were not eaten, but killed for example during the fire, then nearly complete, articulated skeletons, like those of the three humans would be expected (Chapter 13, this volume).

9.3.2 Paleo-ecology and paleo-economy

Besides the keeping of domestic stock, the inhabitants of the settlement of Oursi practised fishing, hunting and the collection of molluscs. They thus exploited both wild and domestic resources to meet their needs for animal proteins. The use of very diverse food resources is a common economic strategy in arid West Africa that should be seen

2 Most of the ethnographic parallels used in this chapter refer to the Gulmanceba, because, compared to other West African ethnic groups, much information is available on their material culture and daily life. There is, however, no reason to assume that the inhabitants of Oursi hu-beero were (ancestors of the) Gulmanceba.

as way to minimise the risk of starvation or inadequate food supply. The relative importance of the different activities can be highly variable and seems to depend mostly on the local environment.

The harvesting of molluscs at Oursi hu-beero was of marginal importance, especially bearing in mind that these have a low food value compared to the amount of waste they produce. Fishing was not so common either, and moreover, more than half of the fish remains are from contexts which are not directly associated with the human habitation of the site (erosion trenches, gullies or topsoil). The relatively low numbers of fish may partly be a consequence of the sampling technique used (hand-collecting), but a paucity of fish was also observed at the contemporary and neighbouring site Oursi Village (BF 97/13) where all sediment was sieved on 10 mm meshes. Corcoba (BF 97/5) and Oursi (BF 94/45), on the other hand, have yielded many more fish remains. Both sites are situated closer to the Mare d'Oursi, but they are also considerably older, dating to the Late Stone Age and Early Iron Age. Oursi hu-beero's fish remains are dominated by shallow water species: lungfish and clariid catfish. One bone of a deepwater species (Nile perch) and one of a species typical for marshy environments (*Gymnarchus niloticus*) were found as well. Both were collected from a secondary context and might thus be older or younger than the site's habitation. According to the local people of Oursi, only lungfish and clariids can be found in the lake near the village today. They also claim that catfish died out at some point, but was later re-introduced. Lungfish can survive complete habitat desiccation, but clariid catfish cannot and might thus have disappeared during years of severe droughts, unless they had survived in some small marginal, muddy habitats. As already mentioned, Late Stone Age Corcoba (BF 97/5) has not only a rich and very diverse fish fauna, but is also characterised by high frequencies of open water species. It appears that the various fish species disappeared gradually from Mare d'Oursi until only the most resistant ones, clariids and lungfish, were left. The exact timing of this process is not yet very clear, but it probably occurred during or shortly after the Late Stone Age/Iron Age transition. Fishing in shallow water is relatively easy and does not need specialist skills. The fishing techniques used by the people of Oursi hu-beero were probably similar to the ones used in the Mare d'Oursi nowadays: clap nets, cast nets, spears and multiple longlines, alongside simple catching by hand (pers. observation).

At Oursi hu-beero hunting for food seems to have been an opportunistic activity, as hunted animals appeared only occasionally on the menu. According to Lewicki (1974: 91-92) "medieval Sudanic hunters, like those of the present day, used bows and arrows, sometimes poisoned, and took hunting dogs with them". Some present day ethnic groups, like the Gulmanceba, use various types of traps as well, although these are despised as hunting gear (Geis-Tronich 1991: 227-231). From the description of the fauna, it is clear that most of the wild reptiles and mammals recorded still occur in the present-day Sahelian landscape around the site. Wild carnivores, hunted for their skin, seem to be more numerous at Oursi hu-beero than at other sites from northern Burkina Faso, while the large tortoise and the aardvark remains from Oursi hu-beero are unique finds for the area. Whether these observations are of any significance, *i.e.* related to a possible elite status of the site, is not clear. In any case, differences may also be related to the special nature of Oursi hu-beero, namely as being an abruptly abandoned settlement.

Herding was clearly the most important strategy for obtaining animal food at Oursi hu-beero. Besides providing meat, the herded domestic animals may have been a source of hair, milk or draught power. However, since no age profiles are available, it is difficult to ascertain the importance of these secondary products. Among the domestic species, ovicaprines are much more numerous than cattle, which fits well with the general image for the Iron Age of the area. Cattle need good pasture areas, of which there were probably not sufficient near Oursi, at least not year-round. Ovicaprines are much more tolerant in terms of diet and can therefore be kept more easily near settlements of sedentary people in a Sahelian region. Unusual within Iron Age northern Burkina Faso, is the slight predominance of sheep over goat at Oursi hu-beero. Sheep are grazers, while goats are browsers that can survive on a much coarser diet. The predominance of sheep might thus mean that the environment was favourable enough to

keep large flocks of this species, although a similar predominance would then also be expected at neighbouring sites. Alternatively, the larger amount of sheep might be related to a higher social status of Oursi hu-beero's inhabitants. Today also, the value of a sheep is on average higher than that of a goat (*e.g.* Geis-Tronich 1991: 464). As mentioned in the description of the fauna, most of the cattle from Oursi hu-beero were medium-sized or larger. MacDonald (1995: 302) found cattle of comparable size in Phases I through III at Jenné-Jeno, alongside a smaller type of cattle. He interpreted the larger cattle as a possible trade product obtained from nomadic pastoralists, while the sedentary people themselves would have kept the smaller cattle. Sedentary agriculturalists in Burkina Faso nowadays hire nomadic Fulani to herd their cattle for them (Krings 1980: 57). A similar strategy, instead of trade with nomadic people, might also explain the presence of relatively large cattle at Oursi hu-beero. Although dogs were eaten in Iron Age northern Burkina Faso, including at Oursi hu-beero, they were possibly not regarded as an ordinary source of proteins. This is at least suggested by ethnographic parallels (Frank 1965). Dog meat in Africa is sometimes associated with religion (Frank 1965), but the customs associated with it differ so greatly from one ethnic group to another that it is impossible to make suggestions about the meaning of dog consumption at Oursi hu-beero.

6.4 Spatial analysis

Room no. 20 has the largest amount of bones and the fragments are relatively large. Many intrusive animals and some unidentified dung were found in it as well. The room seems thus to contain a lot of rubbish, maybe because it was a kind of corridor that served as a passageway and was not kept clean. Room no. 5, on the other hand, contained few bones, which were generally small, but were derived from a variety of species. It looks as though large pieces of waste were regularly removed from this room.

Interestingly, animal dung was collected from the floor of a few rooms. Possible donkey faeces were found in room no. 10 and in room no. 16 there was a concentration of ovicaprine droppings. While room no. 10 was already in a state of neglect before the fire, room no. 16 was still in use (see Chapter 5, this volume). Animals were probably allowed to walk around in abandoned parts of the house, as can be observed in many African villages nowadays. Room no. 16 may have been used a stable, however, where sheep and goat were kept for at least part of the day or year. Possible parallels can be seen in contemporary Gulmanceba houses, which have a separate room for every type of animal (Geis-Tronich 1991: 63).

With the possible exception of room no. 24, none of the rooms contained evidence for storage of animal food. The only method of meat-preservation from medieval West Africa transmitted by the Arabic sources is sun-drying of slices or strips of meat (Lewicki 1974: 101). The technique is still applied nowadays (Bender 1992) and since treated meat is boneless, it will not leave any archaeological traces. Again according to Lewicki (1974: 101), the only method of fish preserving recorded by the Arab travellers and geographers in medieval West Africa is salting, but he believes sun-drying and smoking were probably practised as well. Fish treated in these ways should be visible archaeologically in the form of fish bone concentrations and articulated skeletal elements, which were not recorded at Oursi hu-beero. The vessels do not seem to have been used for animal food storage either, since most of them contained either no animal bones, or only some unidentified small fragments (Appendix D). It is unclear if the ovicaprine foetus in bin 1 in room no. 24 should be considered as stored food, as the remains of a disposed individual, or perhaps as the remains of some kind of ritual.

Next pages:

*Table 9.2 Measurements (mm) on animal remains according to the standard system of von den Driesch (1976) (()=estimate, *=unfused).*

Chicken (*Gallus gallus* f. domestica)																				
Ulna	Dic	◤10.0																		
Hare (*Lepus capensis/saxatilis*)																				
Humerus	Bp	◤11.5																		
Os femoris	SD	◤ 7.4	-																	
		◤12.8	◤12.2																	
Lesser pouched rat (*Cricetomys gambianus*)																				
Tibia	Bp	◤ 9.4																		
Dog (*Canis lupus* f. familiaris)																				
Mandibula	7	◤67.0	-	-	-															
	8	◤63.3	◤65.0	-	-															
	9	◤57.3	◤58.7	-	-															
	10	◤27.1	◤30.3	◤28.9	-															
	11	◤37.0	◤36.0	-	-															
	12	◤30.0	◤30.1	-	◤ 35															
	14	◤16.4	◤19.2	◤16.6	-															
	19	◤18.6	◤18.6	◤21.0	-															
	20	◤14.3	◤19.0	-	◤17.1															
Os metacarpale I	GL	◤17.7																		
	Bd	◤ 5.0																		
Patella	GL	◤14.3																		
	GB	◤ 7.9																		
Talus	GL	◤24.5	◤22.8	◤22.2	◤22.1															
Calcaneus	GL	◤(36)																		
	GB	◤(15)																		
Os tarsala II et III	GB	◤20.2																		
Slender mongoose (*Herpestes sanguineus*)																				
Os sacrum	GB	◤18.9																		
	BFcr	◤ 6.6																		
	HFcr	◤ 2.7																		
Sheep (*Ovis ammon* f. aries)																				
Radius	Bd	◤26.4	◤23.2	22.5*																
Os metacarpale III et IV	Bp	◤18.4	-																	
	Bd	-	◤24.5																	
Os femoris	Bp	◤31.5																		
	DC	◤13.1																		
	SD	◤13.6																		
Os metarsale III et IV	Bp	◤18.6	◤18.6	-	-															
	SD	◤ 8.8	◤ 8.8	-	-															
	Bd	-	-	◤23.8	◤20.9															
Talus	GLI	◤25.9	◤24.5	◤23.7	-															
	GLm	◤24.5	◤23.9	◤25.5	◤24.8															
	Dl	◤14.8	◤19.0	◤14.0	◤14.8															
	Bd	◤16.1	◤16.8	◤15.7	◤18.9															
Phalanx proximalis	GL	◤40.4	◤39.5	◤38.9	◤33.8	◤33.3	◤32.6	◤32.5	-	-	-	-	-							
	Bp	◤13.5	◤11.8	◤11.6	◤10.5	◤10.1	◤10.6	◤10.2	◤ 9.9	-	-	-	-							
	SD	◤11.0	◤ 9.0	◤ 6.5	◤ 7.6	◤ 7.5	◤ 8.0	◤ 7.8	-	◤ 7.6	-	-	-							
	Bd	-	◤11.5	◤ 9.8	◤ 9.5	◤ 9.3	◤10.5	◤ 9.9	-	◤ 9.2	◤ 9.3	◤12.1	◤10.6							
Phalanx media	GL	◤29.4	◤24.0	◤23.9	◤23.8	◤23.2	◤22.7	◤21.9	◤21.7	◤20.8	◤20.7	◤20.6	◤19.5	◤19.1	◤17.6					
	Bp	◤12.4	◤ 9.0	◤13.3	◤ 8.9	◤ 9.5	◤11.1	◤ 9.7	◤10.2	◤ 9.0	◤11.0	◤10.0	◤11.1	◤ 9.1	◤10.3					
	SD	◤ 8.7	◤10.8	◤ 9.7	◤ 6.9	◤ 6.8	◤ 7.3	◤ 6.9	◤ 6.8	◤ 6.6	◤ 8.1	◤ 7.3	◤ 8.0	◤ 6.3	◤ 7.2					
	Bd	◤10.2	◤10.9	◤ 9.8	◤ 8.1	◤ 7.2	◤ 9.2	◤ 9.7	◤ 8.7	-	◤ 9.5	◤ 7.8	◤ 7.8	◤ 7.1	◤ 7.5					
Phalanx distalis	DLS	◤35.2	◤28.4	◤25.1	◤24.7	◤24.5														
	Ld	◤28.8	◤23.5	◤20.3	◤20.8	◤18.9														
Goat (*Capra aegagrus* f. hircus)																				
Humerus	Bd	◤23.9																		
	BT	◤23.4																		
Radius (+ ulna)	Bp	◤29.6	◤26.7	◤(23)	-															
	BFp	◤28.7	◤26.4	-	◤24.0															
	DPA	-	-	-	◤19.9															
Os metacarpale III et IV	Bp	◤23.2	-	-																
	Bd	-	25.1*	21.6*																
Tibia	Bp	◤33.1																		
Os metarsale III et IV	Bp	◤16.5																		
Talus	GLI	◤29.4	◤28.3	◤26.6	◤26.5	◤24.4														
	GLm	◤27.3	◤26.4	◤26.1	◤25.6	◤25.6														
	Dl	◤15.3	◤15.3	◤15.3	◤15.0	◤13.9														
	Bd	-	◤17.3	◤16.9	◤16.7	◤17.9														

Goat (*Capra aegagrus* f. hircus) - continued																
Calcaneus	GL	◤63.8	◤51.2	-												
	GB	◤18.5	◤14.2	◤(17)												
Phalanx proximalis	GL	◤41.6	◤37.3	◤35.4	◤34.3	◤31.9	◤31.6	◤30.3	-	-	-	-	-			
	Bp	◤13.3	◤11.4	◤12.1	◤10.9	◤10.0	◤9.1	◤10.2	◤12.3	◤11.3	◤10.7	-	-			
	SD	◤10.8	◤9.7	◤10.0	◤9.6	◤7.9	◤8.7	◤7.3	-	◤9.3	-	-	-			
	Bd	◤12.7	◤11.7	◤11.0	◤10.3	◤9.6	◤9.3	◤8.8	-	-	-	◤9.8	◤8.1			
Phalanx media	GL	◤26.0	◤22.4	◤21.5	◤20.1	◤19.6	◤18.3	◤17.6	-	-						
	Bp	◤12.5	◤11.5	◤9.8	◤10.5	◤11.7	◤9.3	◤9.1	◤11.8	◤9.3						
	SD	◤8.9	◤7.9	◤6.5	◤7.4	◤8.0	◤6.2	◤6.3	◤8.0	-						
	Bd	◤9.5	◤8.6	◤8.8	◤8.2	◤8.8	◤6.5	◤6.6	-	-						
Sheep (*Ovis aries* f. ammon) or goat (*Capra aegagrus* f. hicus)																
Mandibula	9	◤20.8	-													
	15b	◤16.9	-													
	15c	◤12.1	◤14.9													
Scapula	GLP	◤29.3	◤25.8													
	LG	◤24.9	◤21.3													
	BG	-	◤19.7													
Humerus	BT	◤15.3														
Ulna	BPC	◤18.2	◤17.6	◤17.2	◤14.5											
	DPA	◤20.2	-	◤24.3	-											
Tibia	Bp	◤33.9	-	-	-	-	-	-								
	Bd	-	◤28.5	◤24.6	◤24.2	◤24.1	◤22.8	◤21.7								
Malleollus lateralis	GD	◤23.7														
Os coxae	SB	◤6.2	-	-												
	LA	◤28.5	◤(28)	◤26.8												
Patella	GL	◤(29)	◤28.3	◤26.1	◤22.7	-										
	GB	◤21.1	◤19.4	-	-	◤15.9										
Os metarsale III et IV	Bp	◤11.9														
Os centroquartale	GB	◤21.0	◤19.8	◤19.1	◤19.1	◤18.8	◤17.9									
Phalanx proximalis	GL	◤37.9	◤31.5		-	-	-	-			-	-		-		
	Bp	◤12.2	◤10.6	◤12.5	◤12.0	◤11.1	◤9.1	-	-	-	-	-	-	-		
	SD	◤10.5	◤8.0	-	-	-	-	◤9.6	◤8.0	-	-	-	-	-		
	Bd	◤12.4	◤9.8	-	-	-	-	-	-	◤10.8	◤10.8	◤10.7	◤10.5	◤10.0		
Phalanx media	GL	◤22.3	◤20.4	-												
	Bp	◤10.0	◤8.8	◤7.9												
	SD	◤6.9	◤6.1	-												
	Bd	◤7.1	◤6.7	-												
Cattle (*Bos primigenius* f. taurus)																
Axis	BFcr	◤82.0														
Scapula	GLP	◤59.1														
	LG	◤(53)														
	BG	◤(35)														
Os metacarpale III et IV	Bp	◤41.8														
Phalanx proximalis manus	GL	◤(53)	-													
	Bp	◤(27)	◤27.0													
	SD	◤(23)	◤24.8													
	Bp	◤(24)	-													
Phalanx media manus	GL	◤37.0														
	Bp	◤27.0														
	SD	◤22.4														
	Bd	◤22.8														
Tibia	Bd	◤70.3														
Os metarsale III et IV	Bd	◤(52)	◤54.4													
Calcaneus	GB	◤38.0														
Phalanx media pedis	GL	◤40.5	◤39.4	◤37.4	◤(37)	◤(37)										
	Bp	◤30.3	◤26.4	◤26.9	◤(24)	◤(23)										
	SD	◤26.3	◤21.5	◤21.7	◤20.1	◤(21)										
	Bd	◤26.2	◤22.3	◤22.6	◤(20)	◤(19)										
Phalanx proximalis	GL	-	-													
	Bp	◤(28)	26.2*													
	SD	-	-													
	Bd	-	-													
Phalanx media	GL	-														
	Bp	◤30.0														
	SD	-														
	Bd	-														
Phalanx distalis	Bp	◤17.9														

Chapter 10

Analysis of the Charcoal Finds

Alexa Höhn

10.1 Introduction

Oursi hu-beero offers a unique opportunity to analyse charcoal from well-defined archaeological structures. In the region of the Mare d'Oursi, as well as in other Sahelian sites, charcoal analyses have thus far mainly dealt with fragments dispersed in settlement debris (Neumann *et al.* 1998; Rolando and Raimbault 1992; among others). Such charcoal assemblages are useful for reconstructing former vegetation and climate, due to the rather random character of these samples (cf. Chabal 1992). With Oursi hu-beero, where wood and wooden structures were charred and preserved *in situ*, we can now gain an insight into pre-historic wood-use. The main aim of the investigation of the charcoal was to find out if there was a selection of special wood-types for special purposes.

The woody vegetation in the vicinity of Oursi hu-beero can be reconstructed from the finds in the neighbouring and partly contemporary site Oursi North (BF 97/13), where large amounts of dispersed charcoal from settlement layers were found. This allows us to draw some conclusions concerning anthropogenic elements and climatic conditions around AD 1000: human impact on the woody vegetation was high. Agroforestry parks had been established with *Faidherbia albida* present and pointing to the presence of livestock-breeding. Fallow species comprise a large part of the identified fragments. Within this group *Guiera senegalensis* dominates. It points to degradation through overgrazing and, thus, like *Faidherbia albida*, can be seen as an indicator for the strong influence of livestock on the vegetation. At that time the region

Fig. 10.1 Pile of charred wood in room no. 9 (1609). Photo was taken in 2001.

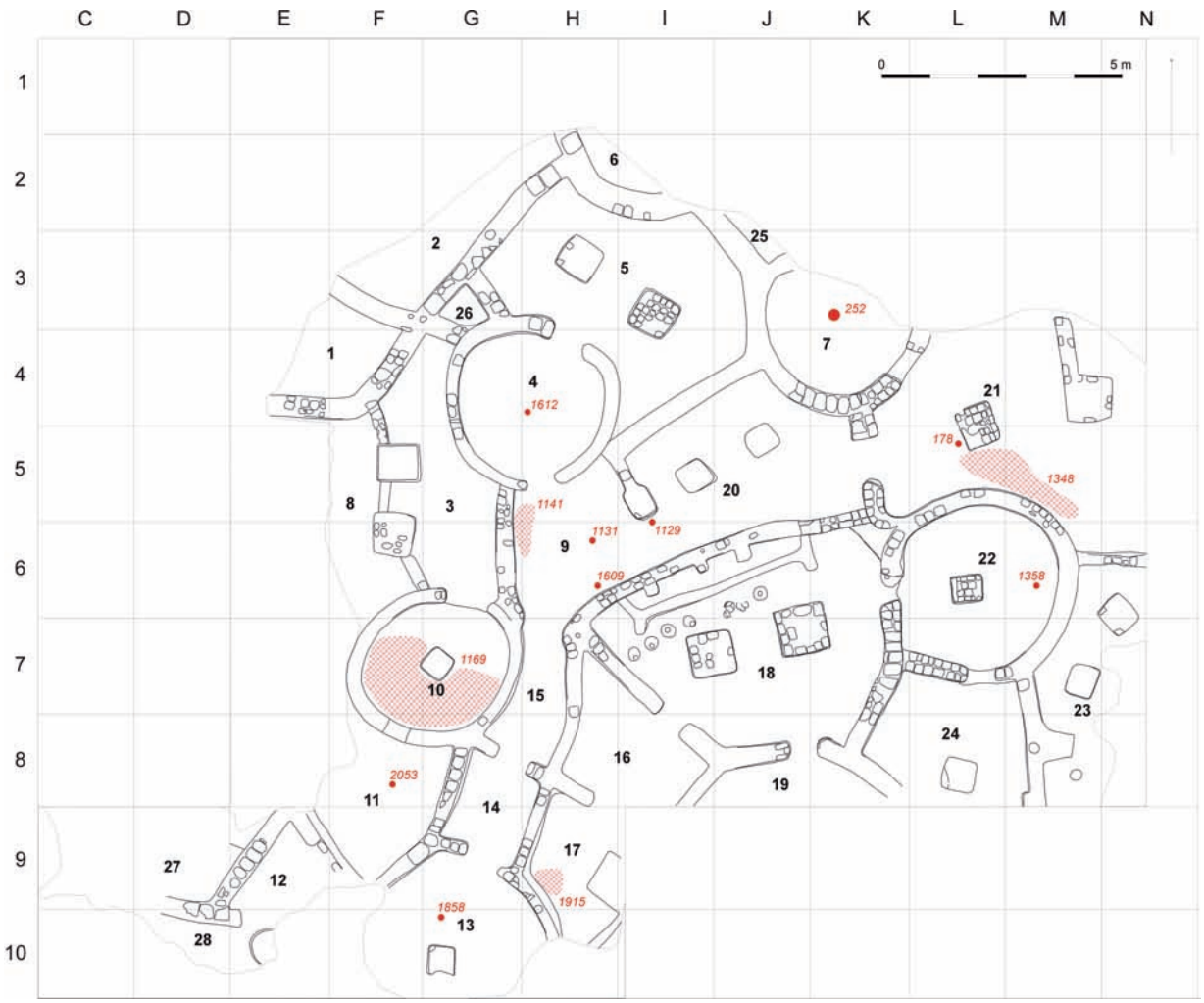

Fig. 10.2 Location of analysed samples and major wood types identified (red).

probably received higher annual precipitation than today. The presence of *Vitellaria paradoxa* and *Detarium microcarpum* in the charcoal assemblage points to precipitation as high as 600 to 750 mm/a. On the whole, the anthracological record of all Iron Age sites of the region contains many Sudanian taxa. Around AD 1000 the vegetation clearly had a north Sudanian or Sahelo-Sudanian character (Höhn 2005).

10.2 Samples

Considerable amounts of well preserved charcoal were found in the sediments of Oursi hu-beero. The size of many fragments is exceptional, fragments of two to five cm^3 and more are common. The good preservation facilitates the identification of the fragments. Thirteen samples were analysed (Table 10.1). Samples came from definite structures such as stumps embedded in the floor, wooden objects and from debris dispersed on the floor of the rooms. Fifteen taxa were identified. They correspond very well with those found in the neighbouring settlement mound of Oursi North (Höhn 2005).

From the posts and poles (Figure 10.3) only a few fragments were analysed. It was clear that they belonged to one object, and, just to ensure that nothing was missed, up to 50 fragments were analysed (Table 10.1). The samples of the charcoal piles and of the charcoal from the floor measured between half a litre and three litres. A sub-sample of about 250 ml was analysed from samples *1169*, *1348* and *1609*. Since the fragments were larger in samples *178*, *1141* and *1915*, sub-samples of half a litre each were analysed in order to reach a representative quantity of analysed fragments. The results for the different features will be described and discussed below.

Feature	Room	Bucket	Charcoal types, in order of abundance
Post, D 16.5 cm	4	*1612*	*Acacia* sp.
Post, D 12 cm	7	*252*	*Acacia* sp.
Post, D 14 cm	9	*1131*	*Vitellaria paradoxa*
Post, D 12 cm	11	*2053*	*Guiera senegalensis, Acacia* sp.
Traditional ladder	13	*1858*	*Acacia* sp., *Faidherbia albida*
Container	9/20	*1129*	*Commiphora africana/pendunculata*
Parallel pieces of wood	22	*1358*	*Anogeissus leiocarpus, Acacia* sp., cf. *Prosopis africana, Guiera senegalensis, Combretum micranthum*
Pile of wood	21	*178*	*Guiera senegalensis, Acacia* sp., *Ziziphus* sp., *Faidherbia albida*
Pile of wood	9	*1609*	*Guiera senegalensis, Combretum micranthum*
Pile of wood/dispersed wood	21	*1348*	*Guiera senegalensis, Acacia* sp., *Anogeissus leiocarpus,* Rubiaceae Type I and II, *Ziziphus* sp., *Faidherbia albida, Diospyros mespiliformis*
Dispersed wood	10	*1169*	*Guiera senegalensis, Faidherbia albida, Ziziphus* sp., *Acacia* sp., *Anogeissus leiocarpus, Combretum micranthum, Terminalia avicennioides/macroptera*
Dispersed wood	17	*1915*	*Guiera senegalensis, Faidherbia albida, Acacia* sp., *Ziziphus* sp., *Grewia bicolor/villosa/flavescens*
Dispersed wood	9	*1141*	*Guiera senegalensis, Faidherbia albida, Detarium microcarpum, Ziziphus* sp.

Table 10.1 Charcoal samples.

10.3 Wooden structures and objects

10.3.1 Posts and poles

Material

The posts were made mainly from the wood of the *Acacia* type (Table 10.1, Figure 10.3). The anatomical characteristics hint at the use of *Acacia nilotica*. This wood is valued as construction timber in the Sahel (Maydell 1990), due to its durability and resistance to insects (Irvine 1961). In the assemblages of the neighbouring settlement mound Oursi North, however, *Acacia* fragments with anatomical features pointing to *A. nilotica* were rare. It makes sense though, that if *Acacia nilotica* was primarily used for construction purposes, it was rarely burned in the hearth fires and thus is probably underrepresented in the settlement mound debris.

The post in room no. 9 was the only one for which wood of the Sheabutter tree, *Vitellaria paradoxa*, was used (Figure 5.13). The wood is, like *Acacia*, regarded as valuable for construction works (Lovett and Haq 2000; Hall *et al.* 1996). However, *Vitellaria paradoxa* is only felled when the tree is not needed as a source of fruit anymore, possibly because it does not bear enough fruit anymore, or it throws too much shadow on the crops in the fields. The different choices of wood could be due to different construction phases, but since only one post differs from the others it could also be mere chance.

The sample taken from the post in room no. 11 contained two taxa: *Acacia* sp., again probably *Acacia nilotica*, and *Guiera senegalensis*. The charcoal fragments of *Acacia* sp. are the remains of the post, since they originate from wood with a width of about 10 cm. The fragments of *Guiera senegalensis* came from a smaller piece of wood about four centimetres wide, and the pith was present in many fragments. This points to smaller branches being the source of the fragments found.

From the wooden stumps in room nos 21 and 24 unfortunately samples were not taken.

Function

The wooden posts had most probably been erected to support the ceiling. Their position in the middle of the rooms and being embedded into the floor support this view. Burnt pieces of clay with imprints of branches found within many rooms are signs of a flat roof made of daub (cf. Chapter 5, this volume). Today, the daub is plastered onto a wooden substructure which is in turn either carried by posts along the wall or the walls themselves (Denyer 1978). The construction can be supplemented with columns or wooden posts in the middle of the rooms (cf. Schneider 1991; Fiedermutz-Laun 1983). In Oursi hu-beero the main weight of the ceiling must have been borne by the walls, since posts along the walls are missing. The wooden posts in the middle of the room probably supported a beam, onto which rafters were laid.

In room no. 11 no traces of a daub roof were found. It is possible that here the post carried a wooden shade to shield the water jar no. 8 in the corner of the room. The post

Fig. 10.3 Remains of the wooden post in room no. 4 (1612). Photo was taken in 2001.

Fig. 10.4 Parallel pieces of charred wood in room no. 22 (1358). Photo was taken in 2001.

Fig. 10.5 Container made from wood of Commiphora sp. between room no. 9 and room no. 20 (1129). Photo was taken in 2001.

was made from wood of the *Acacia* type. The smaller wooden pieces from *Guiera senegalensis* in the sample may have originated from the shade. Twigs of *Guiera senegelansis* are used today to weave fences, shades or partitions (Maydell 1990; Krohmer 2004).

10.3.2 Ladder

Material

A charred log with a length of 45 cm was found lying horizontally on the floor in room no. 13. One end was cleanly cut, while the other end was fractured. All large fragments (>2 cm^3) were identified as *Acacia* sp., possibly *Acacia nilotica*. A diameter of 15 cm was estimated from the wood anatomical features, which is in line with the measurement of 18 cm taken during the excavation. Among the smaller fragments only four were not from *Acacia* sp., but came from *Faidherbia albida*.

Function

The trunk was probably a means to climb onto the roof. Even today large logs are leant against the walls of houses and serve as ladders. Notches, chopped into the wood, facilitate climbing. The diameter of the charred wood corresponds to the size of those ladders in use today (cf. Schneider 1991; Fiedermutz-Laun 1983). Notches, however, were not visible on the find. Another possibility is that the wood had been part of the roof construction. However, in the other rooms no such large parts of the roof were found. The fragments from *Faidherbia albida* are probably contaminations from the ceiling.

10.3.3 Wooden container

Material

Most striking was the find of a charred wooden container (Figure 10.5), carved out of the wood of *Commiphora africana* or *C. pendunculata*. The small vessel was standing on the floor in the passage from room no. 9 to room no. 20. The measurements taken during the excavation yielded a height of 7 cm, an outer diameter of 21 cm and an inner diameter of 12 cm. The rim of the bowl was 4 cm wide. The wooden container confirms wood selection according to mechanical properties. Due to its soft nature *Commiphora* wood is well suited for carving. From ethnographic studies *Commiphora africana* is known to be used in this manner today. In Ethiopia larger logs are hollowed out for water vessels, milk jugs and the like (Burkill 1985).

Function

The position on the floor and in the opening between two rooms is quite peculiar. However, nothing is known about the content of the container, and thus no assumptions concerning its function can be made.

10.3.4 Parallel pieces of wood

Material

The wooden formation found in room no. 22 consisted of four larger and three smaller pieces of charred wood (Figure 10.4). During the excavation a width of about 6 cm was measured for the larger logs. All pieces were sampled together. The sample consisted of five taxa: Almost 80 % of the fragments belong to *Anogeissus leiocarpus*, 20 % were identified as *Acacia* sp. Here the anatomical features point rather to *A. raddiana*, *A. seyal* or *A. senegal* than to *A. nilotica*. Within the 204 identified fragments three fragments of cf. *Prosopis africana* type, one of *Combretum micranthum* and one of *Guiera senegalensis* were found.

It can be assumed that the larger logs were taken from *A. leiocarpus*. The fragments belonged to branches, measuring about five centimetres in width. This is in line with the diameter measured during the excavation. The large number of fragments supports this conclusion as well. The smaller branches were then probably *Acacia* sp. The few fragments of other wood types may belong to roof material.

Function

The pieces of wood found on the floor in room no. 21 give the impression that they have intentionally been put there. If so, the branches had probably formed some kind of platform.

Similar wooden constructions are used today in some regions of Africa to raise granaries above the ground (cf. Fiedermutz-Laun 1983). In room no. 22, however, no sherds, pots or chunks of loam were found on or close to the wood, which could have been part of the granary. Another hypothesis is that the wood had been part of a sleeping berth. The wood could also have been part of the ceiling. *Anogeissus leiocarpus* is used for the construction of buildings, as posts and for roofing (Burkill 1985). In Oursi hubeero, however, the wood of *A. leiocarpus* was for some reason rarely used for construction. Judging from the small amounts found within the accumulated charcoal samples, the wood seems to have been used only incidentally in the construction of the ceiling. However, the wood may have been collected for fuel and just been stored in the room. *A. leiocarpus* is excellently suited for fuel, giving out great heat (Burkill 1985). The room further contained many bottles, ceramics, grinding stones and metal objects, but as long as no special function can confidently be assigned (see Chapter 5, this volume), it is not possible to further interpret the find.

10.3.5 Charcoal accumulations

Material

Different types of charcoal concentrations, not assigned to special structures, were sampled as well. Six samples were analysed, resulting in an interesting similarity: in all samples most fragments belonged to *Guiera senegalensis* (Table 10.2).

Three samples were taken from charcoal fragments that were found dispersed on the floor in three different rooms (Table 10.2). In room no. 10 there was so much charcoal accumulated on the floor that it was drawn on the top plan. One sample (*1609*) was obtained from the charcoal accumulation found close to the southern wall of room no. 9, adjacent to room no. 18 (Figure 10.1). Another sample (*178*) originated from a concentration of charcoal, measuring 60 by 60 by 40 cm, which was found next to the mudbrick pillar in room no. 21. Sample *1348* was taken from the same charcoal accumulation, but is probably contaminated with charcoal that was dispersed on the floor (Petit, pers. communication).

Despite the different contexts, the composition of the samples is quite similar: *Guiera senegalensis* is by far the most prevalent wood type. Only in sample *178*, the wood pile of room no. 21, is it present to less than 70 % and in that one sample fragments of *Acacia* sp. are almost as abundant (Table 10.2). In this sample, as in the

other charcoal accumulations, the fragments of the *Acacia* sp. type comprise rather *A. raddiana*, *A. seyal* or A. *senegal* than *A. nilotica*, as was the case in the posts.

Guiera senegalensis and *Ziziphus* sp. are present in every sample, *Faidherbia albida* is only missing in sample *1609* (room no. 9). *Acacia* sp. is absent in both samples from room no. 9. *Anogeissus leiocarpus*, *Combretum micranthum* and *Grewia* sp. are recorded in two samples. *Detarium microcarpum*, *Diospyros mespiliformis*, Rubiaceae type 1, Rubiaceae type 2 and *Terminalia avicenniodes*/*macroptera* are each present in one sample.

The samples from the pile of wood in room no. 21 contain a higher number of fragments that are derived from larger branches than the samples originating from the floor and the accumulation in room no. 9. Diameters of four to five centimetres can be deduced from the size and structure of the *Acacia* sp. fragments. The fragments of *Guiera senegalensis*, on the other hand, are parts of branches of about one to two centimetres in diameter.

Origin

Roof timberwork

The samples taken from the charcoal dispersed on the floor are mostly the remnants of the wooden substructure of the flat roof (cf. Chapter 5, this volume). *Guiera senegalensis* must have been the main constituent of the timberwork, as it dominates these samples. *Faidherbia albida* is the other main component. *Ziziphus* sp. and *Acacia* sp. were regularly used as well. Other trees and shrubs may have been integrated into the construction when they were available. However, the fragments of other taxa found in these samples (Table 10.2), could just as well have been parts of other wooden objects. While not every fragment found on the floor must have come from the timberwork, it can be assumed that most of the fragments did.

Guiera senegalensis is a shrub or small tree. The wood is knotted and short, but it is also very hard (Burkill 1985). The wood is of adequate size and it probably was present in the vicinity of the homestead in high quantities, as already indicated by the quantities found in Oursi North (Höhn 2005). Of *Ziziphus spina-christi* it is known that it is used in the construction of the roof of mudbrick houses and as a general building-material (Burkill 1997). The wood of *Faidherbia albida* is soft and easy to work. It is not resistant to borers, termites or fungal attack (Burkill 1995), but nevertheless used for housing construction (Hines and Eckmann 1993). The different *Acacia* species, with the exception of *A. nilotica* and *A. senegal* are also more or less susceptible to insect attack but still used for construction work, if available in large enough sizes (Burkill 1995).

Today the flat roofs of adobe houses are made of a thick layer of loam plastered onto a wooden substructure consisting of two or three layers (large beams, medium-sized rafters and smaller rods, compare Schneider 1991; Fiedermutz-Laun 1983; Denyer 1978). The last layer consumes the largest amount of material since the rods have to be placed alongside each other in order to support the loam. It seems that in Oursi hu-beero

Room no.	**9**	**10**	**17**	**21**	**9**	**21**
Sample	*1141*	*1169*	*1915*	*1348*	*1609*	*178*
Feature	Floor	Floor	Floor	Pile/floor	Pile?	Pile
Guiera senegalensis	71.0	77.3	89.7	73.2	91.9	41.2
Ziziphus sp.	2.8	7.1	0.7	2.7	7.0	15.5
Faidherbia albida	18.6	8.8	5.9	1.1		7.4
Acacia sp.		2.9	2.9	9.3		35.8
Anogeissus leiocarpus		1.7		7.1		
Combretum micranthum		1.3			1.2	
Grewia sp.	2.1		0.7			
Detarium microcarpum	5.5					
Rubiaceae type 1				4.4		
Rubiaceae type 2				1.6		
Terminalia avicenniodes/macroptera		0.8				
Diospyros mespiliformis				0.5		
Sample size (fragments)	146	238	136	183	86	148

Table 10.2 Charcoal concentrations (%).

this layer was constructed mainly from *Guiera senegalensis*. *Ziziphus* sp. was most likely used for this layer as well, since the fragments stem from wood with small diameters (cf. Höhn 2005). Wood of *Faidherbia albida* and *Acacia* sp. was most probably used to make the rafters and beams.

Firewood?
The pile of charcoal in room no. 21 may have been firewood. The clean sample (*178*) comprised four wood types. *Guiera senegalensis* and *Acacia* sp. dominate the assemblage with almost equal shares. *Ziziphus* sp. and *Faidherbia albida* are present in minor amounts. The fragments of *Acacia* type in particular came from wood with diameters of about 5 cm.

The charcoal pile in room no. 21 had not been part of the timberwork of the ceiling, as the volume of about 140 litres renders this interpretation unlikely. It was most probably some kind of wood stock. The purpose for which it was stored there, however, can not be resolved with certainty. The situation within the house renders firewood the most likely explanation, especially since all taxa are suitable as firewood. The large number of thick branches makes sense, since thicker branches burn slowly and give off a longer-lasting heat, which is suitable for cooking. However, since the same taxa were used for the timberwork of the roof, it cannot be excluded that material intended for roof repair or construction had been stored in room no. 21.

Fodder?
One hypothesis concerning the vast number of charcoal fragments found in room no. 10 is that at least some of the fragments are remnants of leaf fodder. Room no. 10 may have been a sheep shed, where the animals were kept temporarily (see Chapter 11, this volume). Today branches of *Guiera senegalensis*, *Ziziphus* sp. and *Faidherbia albida* are cut during the dry season to feed the livestock. Even though *Guiera senegalensis* is not one of the most sought-after fodder trees of the Sahel, sheep and goats do eat the leaves (le Houérou 1980; Toutain 1980), and as *G. senegalensis* remains in full leaf a long time into the dry season, it thus provides food when other trees and shrubs are bare (Toutain 1978). Assuming that the hypothesis of *G. senegalensis* having been used as fodder is correct, the fire that destroyed the house probably took place towards the end of the dry season.

10.4 Conclusions

The results of the charcoal analyses show that wood selection took place. Criteria were suitability and availability. For the wooden container the material was selected according to its mechanical properties. The soft wood of *Commiphora* is carved easily and nicely. Suitability was also important in choosing the wood of the posts. With *Acacia nilotica* and *Vitellaria paradoxa* hard, durable and insect-resistant woods were used. However, for roof construction, where large quantities of wood were necessary, it seems that availability was more important than suitability. The builders did not choose exclusively insect resistant woods. Either they were unaware of these flaws or they bore the consequences because only these taxa were to hand in large enough quantities. In roof construction, suitability probably meant having the appropriate size, rather than durability. Shrubs or small trees like *Guiera senegalensis* and *Ziziphus* sp. furnished smaller branches, while larger trees like *Acacia* sp. and *Faidherbia albida* were used where larger logs were needed.

That wood selection took place is also confirmed by another case. As well as the charcoal samples from Oursi hu-beero, *Guiera senegalensis* predominates those from the contemporary phases of the neighbouring settlement mound Oursi North. In the settlement mound, however, it is accompanied by large shares of *Combretum micranthum* (Höhn 2005), a wood that is virtually absent in Oursi hu-beero. Perhaps the reason can be sought in the different contexts. In Oursi hu-beero the main source of charcoal fragments is construction wood. Selection was important and accordingly there are less taxa present and the share of *Guiera senegalensis* is very high. In Oursi North the main source of charcoal is firewood (Höhn 2005). Availability is more important

than suitability, since many taxa are more or less suitable as firewood. Moreover, multiple events of firewood collection lead to a larger number of wood types in the assemblage (Chabal 1992). It can be concluded that *Guiera senegalensis* was used as firewood as well as for construction. *Combretum micranthum*, on the other hand, was primarily taken as fire wood and was not important as building material. According to their shares in the assemblages of Oursi North and Oursi hu-beero, both taxa must have been present in the vicinity of the settlements in large amounts.

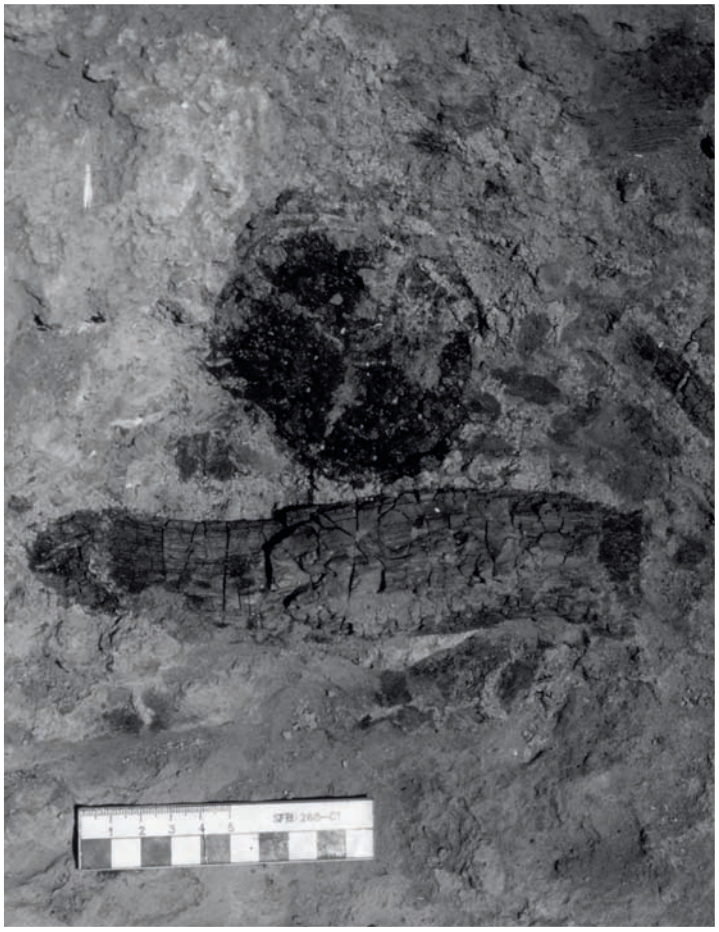

Fig. 10.6 Charcoal beam and post in room no. 24. Photo was taken in 2000.

Chapter 11

Non-Charcoal Archaeobotanical Remains

Stefanie Kahlheber

11.1 Introduction

In the last decades a number of archaeological sites bordering the Mare d'Oursi in northern Burkina Faso have been excavated and sampled for plant remains (von Czerniewicz 2004; Kahlheber 2004; Höhn 2005). Most of these sites, ranging from the Late Stone Age to historical times, constitute settlement mounds, with botanical remains dispersed within the settlement debris. Oursi hu-beero is the only one excavated with well-defined archaeological structures and features, allowing us to assign ancient plant remains to distinct structures and activity zones within the dwelling, and to identify their utilisation and purpose.

The investigation of the archaeobotanical remains of Oursi hu-beero thus focuses on gaining contextual information, looking at spatial distribution and functional interpretation. In this chapter all types of archaeobotanical remains including fruits, seeds and tubers, as well as processed plant material, are considered.

11.2 Material and methods

Archaeobotanical material was retrieved in the two excavation campaigns of 2000 and 2001. Large plant remains, including fruits, seeds and charcoal, were collected separately during excavation. Smaller remains were extracted from soil samples taken from selected excavation units and contexts comprising between 0.5 and 80 litres. In addition, special features such as vessels and their surroundings were also sampled. Sample processing, which included dry-sieving with 2.5 mm, 1.0 mm and 0.5 mm meshes and fractioned bucket flotation, took place on site and was carried out by Nicole Rohde from the University of Frankfurt am Main, and Sambo Dicko, a team member from Burkina Faso.

All in all, 152 systematic and 50 handpicked archaeobotanical and charcoal samples were taken, from which only selected samples have been analysed (Figure 11.1 and Appendix C). The remains were identified by using the carpological reference collection at the Johann Wolfgang Goethe-Universität, Frankfurt am Main. Criteria for identification and descriptions of morphological and anatomical characters of the taxa are given elsewhere (Kahlheber 2004). Taxonomy and nomenclature refer to the Flora of West Tropical Africa (Keay 1954; 1958; Hepper 1963; 1968; 1972) and, in the case of taxonomical revisions, to Lebrun and Stork (1991; 1992; 1995; 1997; African Flowering Plants Database).

11.3 The fruit and seed inventory of Oursi hu-beero

The plant material obtained from different loci is inconsistent in quantity and preservation. Fruits and seeds found in various containers in particular are extraordinarily well preserved and bear additional information such as insect infestation or degree of maturity. The remains are charred except for the endocarps of *Celtis integrifolia*, which are preserved due to natural calcification. Other uncharred remains, including achenes of Cyperaceae, are perceived as being modern intrusions. The material comprises seeds, fruits and tubers. 148 samples from 50 loci were studied or screened respectively (Appendix C), producing about 40 taxa (Table 11.1). Most of these were

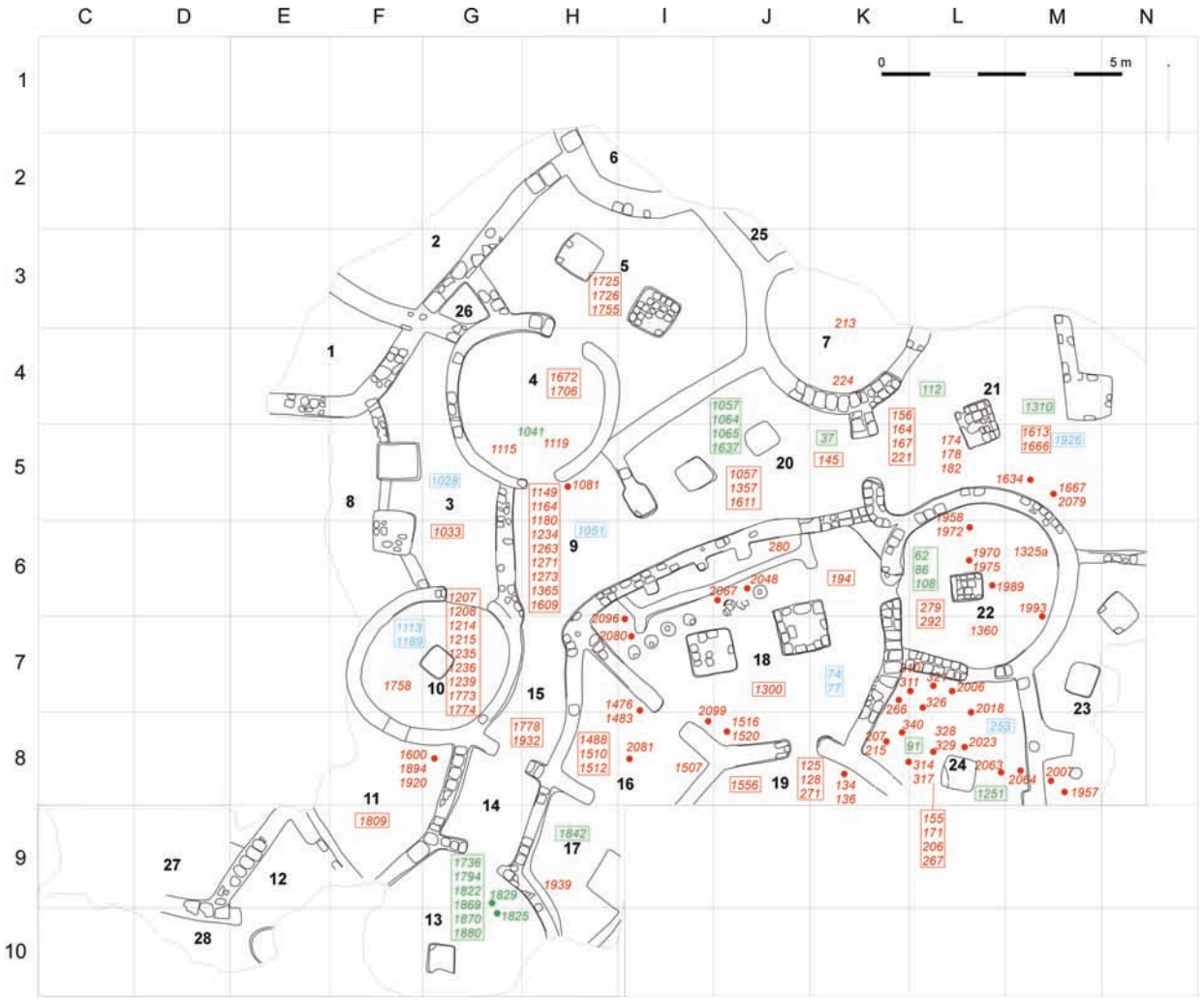

Fig. 11.1 Location of analysed samples (floor samples in red, roof samples in green, samples with an unclear context in blue). Numbers within boxes indicate a random room-sample.

found within the soil samples.

The plant inventory comprises four confidently identified domesticated species: the cereals *Pennisetum glaucum* (pearl millet) and *Sorghum bicolor* and the pulses *Vigna unguiculata* (cowpea or eye bean) and *V. subterranea* (Bambara groundnut). Another potential crop is hidden behind the taxon *Hibiscus asper* vel *sabdariffa*, which includes the domesticate *H. sabdariffa* (Guinea sorrel) and *H. asper*, one of its potential wild ancestors (Stevels 1990; Krebs 2001). Identification of *Lagenaria siceraria* (bottle gourd or calabash) is mainly hampered by the heavy fragmentation of the finds that consist of pericarp fragments; therefore the evidence is not fully conclusive. In contrast to the other domesticated species, the bottle gourd is not primarily a human food, but used for household utensils such as various containers and dippers (Burkill 1985).

Of the fruits and seeds from woody plants, *Acacia nilotica* is the most common species. Keay (1958) distinguishes three varieties distributed in West Africa: var. *nilotica* (L.) Willd. ex Del., var. *tomentosa* (Benth.) A. F. Hill and var. *adansonii* (Guill. and Perr.) O. Ktze. The morphology of the preserved pods, being slightly constricted between the seeds, points to variety *adansonii*. Other tree taxa represented in the fruit and seed record are *Sclerocarya birrea* and, in smaller numbers, *Acacia* sp., cf. *Adansonia digitata*, cf. *Annona senegalensis, Balanites aegyptiaca*, *Celtis integrifolia*, *Detarium* cf. *microcarpum*, *Grewia* sp. and *Ziziphus mauritiana* vel *spina-christi*.

Various wild herb species, grasses and Cyperaceae complete the assemblage. Common are *Borreria* spp., *Gisekia* sp., *Zaleya pentandra* and small-seeded Fabaceae including *Alysicarpus* sp. Fruits and vegetative remains of Poaceae occur in many samples and comprise mainly genera of the tribe Paniceae like *Brachiaria*, *Cenchrus* and

Digitaria. Cyperaceae fruits, which are common but not very numerous, were not identified to species level; however the edible tubers of *Cyperus esculentus* are part of the assemblage.

11.4 Discussion

11.4.1 Food supply and diet at Oursi hu-beero

The plant species recorded in Oursi hu-beero are typical for archaeobotanical assemblages from Iron Age sites in the West African Sahel (cf. Kahlheber and Neumann 2007). The cereal *Pennisetum glaucum* (pearl millet) is by far the most common plant remain, occurring in every room archaeobotanically sampled (Appendix C). Samples with high proportions of pearl millet were found on the floors of room nos 4, 7, 10, 13, 18 and 21. With the exception of room nos 18 and 21, these are all circular rooms. The samples from room no. 7 (*213* and *224*) consist of pearl millet grains with husks and involucres, still arranged in infrutescenses. Storing entire infrutescenses (ears) is the most widespread storing practice in societies cultivating pearl millet (FAO 1994; Andrews and Kumar 2006). It is said to be more economical, limits the risk of wastage and facilitates conservation. According to Proctor (1994), the storage of unthreshed grain may also retard infestation by some pests. The storage of pearl millet in the form of clean grains is, in contrast, a quite recent practice (FAO 1994). Traditionally, threshed grains are never kept for long and are soon prepared for food. Traces of such a stage are visible in room no. 13 (*1736*), where threshed pearl millet grains are baked together on fragments of calabash (Figure 11.2). A few sorghum grains are included in the sample. Lumps of cleaned pearl millet like in sample *74* (room no. 18), and sample *164*, on the

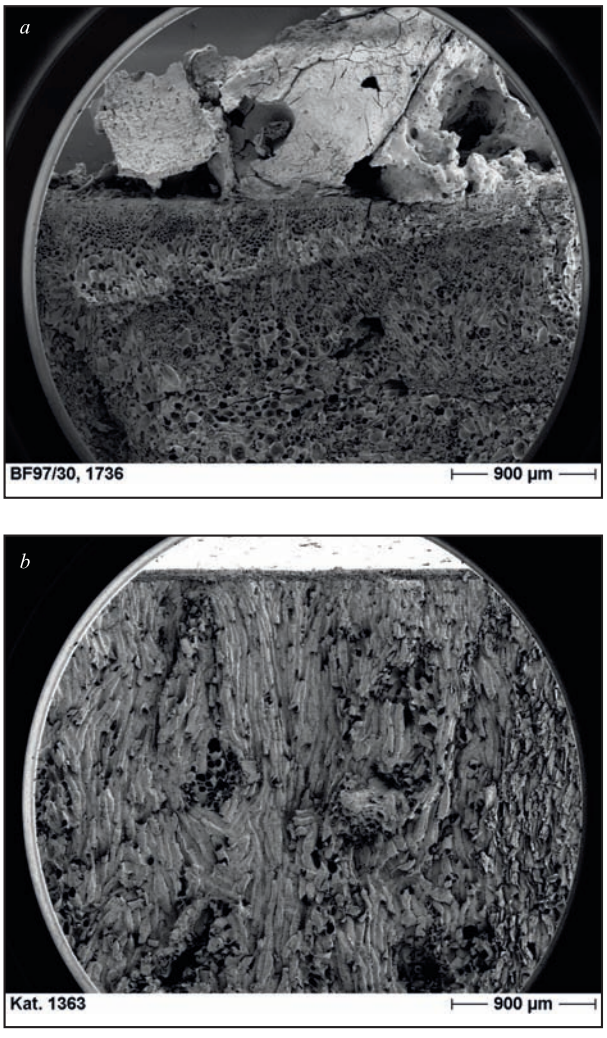

Fig. 11.2 SEM micrographs of pericarp fragments of calabash (Lagenaria siceraria) a) found in Oursi hu-beero with pearl millet grains attached (1736), and b) of a modern specimen.

floor of room no. 16, could also be the result of accidental charring during food preparation. The sediment sample *1794* of room no. 13 contains many pearl millet grains, but also many remains of other domesticated species, which are either food stocks or stored seeds for the next sowing season. Two samples of room no. 4 (*1119* and *1706*) consist of amorphous lumps, showing vesicles of the size of pearl millet grains, but not the typical morphological characters. Identification is therefore uncertain. These samples could be composed of grains merged together when exposed to extremely high temperatures during food processing or possibly during the destructive fire event. In room no. 21 a sample with a high proportion of *Pennisetum glaucum*, but also containing other plant species as well as pearl millet threshing remains, derives from sediment (*1667*) around vessel no. 16. It is the only sample with high pearl millet quantities which is associated with a vessel, but is probably the result of contamination during the destruction of the site.

The ubiquity of pearl millet finds is mainly due to its importance as a staple, being frequently processed, cooked and eaten; the incorporation of pearl millet threshing remains into the construction material of the building, however, may have contributed to the omnipresence of this species as well.

Vigna unguiculata (cow pea or eye bean), a pulse species, is the second most important crop species. It is less common than pearl millet, but still occurs in about 70 % of the rooms archaeobotanically sampled. High concentrations were found in samples of the room nos 13, 16, 19 and 21, but all samples also comprise minor proportions of other plants. In room no. 13, seven of eight samples contained cow pea, two of them revealing almost pure concentrations (*1794* and *1822*). In addition, the contents of the vessel nos 54 and 59 (respectively *1829* and *1825*), which were probably standing on the roof of room no. 13, contained mostly cow pea, alongside small numbers of other plant species. These might be interpreted as storage finds insignificantly contaminated by destruction debris or occupational accumulations. Other samples with high numbers of *V. unguiculata* were obtained from the floors of room nos 16 (*1507*), 19 (*1556*) and 21 (*174*, *178*, *182* and *1666*). *1507* and *1556* also contain high numbers of seeds of Bambara groundnut, *Vigna subterranea*. It is unclear whether this composition is original, or if the species stem from two different contexts.

Sorghum bicolor, the second cereal species, and *Hibiscus* sp. both occur in small numbers only. *Hibiscus* sp., possibly *H. sabdariffa*, is a secondary crop species, used as a vegetable and ingredient in soups. The species is present in samples of room no. 4 and, most often, of room no. 13. Sorghum is more common, although quantities are equally low; evidence is provided by samples from seven rooms (nos 4, 9, 10, 13, 19, 21 and 22). All of these samples also contain pearl millet, which suggests that both cereals have been cropped, processed and cooked together. It may owe its minor importance to its late arrival in Sahelian food complexes. The investigation of the neighbouring settlement mound Oursi North revealed that this crop arrived around AD 700-800 only, probably due to intensifying trade contacts during the early Islamic period (Kahlheber 2004). Around AD 1000 still, its cultivation was obviously not as important as that of pearl millet.

The fruit and seed finds show that for their subsistence, the inhabitants of Oursi hubeero relied greatly on farming products. Frequent and ubiquitous pearl millet remains suggest a cereal-based nutrition. Pearl millet, pulses and Guinea sorrel are thought to have been cultivated in mixed cropping systems which form the economic base of Iron Age agriculture and are still traditionally practised all over the savannah zones of West Africa (Fussell 1992). Today, pearl millet is the most important staple crop in rain-fed agrarian systems of the Sahelian zone because of its physiological and ecological adaptation to dry conditions (Andrews and Kumar 2006). Cow pea is ecologically equally well adapted. The crop copes with a wide range of soil types including infertile land (Madamba *et al.* 2006) because it receives a significant amount of its nitrogen requirement from the atmosphere. Generally grown under rain-fed conditions, cow pea plays an important role in multiple cropping systems and allows for a certain intensification of agriculture. It is the preferred pulse in large parts of Africa and serves as a cheap source of plant protein.

Table 11.1 List of plant taxa found in Oursi hubeero and their use (ordered by plant families).

Taxon	Family	Preserved plant parts	Main use/significance
Gisekia pharnacioides	Aizoaceae	Seed	Ruderal weed
Zaleya pentandra	Aizoaceae	Seed	Ruderal weed
Amaranthus sp.	Amaranthaceae	Seed	Ruderal weed, pot-herb (leaf)
Sclerocarya birrea	Anacardiaceae	Endocarp	Food (fruit, seed)
Annona senegalensis	Annonaceae	Seed fragment	Food (fruit, seed)
Balanites aegyptiaca	Balanitaceae	Fruit	Food (fruit, seed)
Adansonia digitata	Bombacaceae	Seed fragment	Food (fruit, seed), container (pericarp)
Heliotropium sp.	Boraginaceae	Seed	Savannah plant, ruderal weed
Cleome gynandra	Capparidaceae	Seed	Food (leaf)
Commelina sp.	Commelinaceae	Seed	Ruderal weed
Convolculaceae, indet. sp.	Convolvulaceae	Seed	Savannah plant, ruderal weed
Cucurbitaceae, indet. sp.	Cucurbitaceae	Seed	Food (fruit, seed)
Lagenaria siceraria	Cucurbitaceae	Pericarp	Container (pericarp), food (seed, young fruit)
Cyperaceae, indet. sp.	Cyperaceae	Seed, fruit	Wetland plant
Cyperus esculentus	Cyperaceae	Tuber	Food (tuber)
Detarium cf. *microcarpum*	Leguminosae-Caesalpiniaceae	Endocarp	Food (fruit, seed)
Fabaceae, indet. sp., small-seeded	Leguminosae-Fabaceae	Seed	Weed, fodder
Vigna subterranea	Leguminosae-Fabaceae	Seed	Food (seed)
Vigna unguiculata	Leguminosae-Fabaceae	Seed, pod	Food (fruit, seed, leaf)
Acacia nilotica	Leguminosae-Mimosaceae	Seed, pod	Tanning agent (fruit), fodder (fruit), food (young fruit)
Acacia sp.	Leguminosae-Mimosaceae	Seed	Fodder
Hibiscus asper vel *sabdariffa*	Malvaceae	Seed	Food (fruit, seed, leaf)
Malvaceae, indet. sp.	Malvaceae	Seed	Food (fruit, seed, leaf)
Mollugo sp.	Molluginaceae	Seed	Ruderal weed
Nymphaea sp.	Nymphaeaceae	Seed	Food (fruit, tuber)
Brachiaria sp.	Poaceae	Fruit	Savannah plant, ruderal weed
Cenchrus sp.	Poaceae	Caryopsis, involucrum	Ruderal weed
Dactyloctenium aegyptium	Poaceae	Fruit	Savannah plant, ruderal weed
Digitaria sp.	Poaceae	Fruit	Savannah plant, ruderal weed
Eleusine indica	Poaceae	Fruit	Ruderal weed
Eragrostis sp.	Poaceae	Fruit	Savannah plant, ruderal weed
Paniceae	Poaceae	Caryopsis, floret	Savannah plant, ruderal weed
Pennisetum glaucum	Poaceae	Caryopsis, involucrum	Food (caryopsis), technical use (culm, leaf)
Poaceae, indet. sp.	Poaceae	Caryopsis, floret, culm, leafsheath	Savannah plant, ruderal weed, technical use (culm, leaf)
Sorghum bicolor	Poaceae	Caryopsis	Food (caryopsis)
Portulaca sp.	Portulacaceae	Seed	Ruderal weed
Ziziphus mauritiana vel *spina-christi*	Rhamnaceae	Endocarp	Food (fruit)
Borreria sp.	Rubiaceae	Seed	Savannah plant, ruderal weed
Mitracarpus scaber	Rubiaceae	Seed	Ruderal weed
Corchorus sp.	Tiliaceae	Seed	Ruderal weed, food (leaf)
Grewia sp.	Tiliaceae	Endocarp	Food (fruit)
Celtis integrifolia	Ulmaceae	Endocarp	Food (fruit, leaf), fodder
Phyla nodiflora	Verbenaceae	Fruit	Wetland plant
Tribulus terrestris	Zygophyllaceae	Fruit	Ruderal weed

Finds of tree taxa are relatively meagre except for those of *Acacia nilotica* and *Sclerocarya birrea*. They occur in many contexts associated with food residues, such as kitchens and waste accumulations, but always in small numbers. The taxa found probably represent only a small part of the wild flora collected for food purposes. Other archaeological sites in the Sahelian and Sudanian zone give evidence for the use of a wide range of wild species (Kahlheber and Neumann 2007), and especially oil- or fat-containing fruits and seeds, such as *Sclerocarya birrea*, *Balanites aegyptiaca*, *Detarium microcarpum* and *Ziziphus* sp., are highly valued even today (Harris and Mohammed 2003; Seignobos 1982). Furthermore, the species offer valuable nutritional sources for vitamins and microelements. The exploitation of wild resources combined with agricultural activities is seen as a characteristic feature of rural economies in sub-Saharan Africa (Neumann 2005).

11.4.2 Acacia nilotica - human food, fodder or source of tanning agents?

Acacia nilotica is the most common woody plant identified among the fruit and seed remains, with 34 samples providing evidence. Most finds originate from room nos 13, 19 and 24. In room no. 13 seed fragments were recovered in five out of eight examined samples (1 sediment sample and 7 hand-picked samples). In room no. 19 the species is present in three (*125*, *271* and *1556*) out of six examined samples (3 sediment samples and 3 handpicked samples). In both rooms *A. nilotica* occurs in small numbers only, associated with various other species. In room no. 24, in contrast, *A. nilotica* occurs widely and is recorded in 18 out of 23 samples (15 sediment samples and 8 hand-picked samples). The analysed samples of the contents of bin 1 (*155*, *171*, *206*, *207* and *215*) and bin 2 (*266* and *267*) in particular consist almost exclusively of seeds and pod fragments of *A. nilotica*. *A. nilotica* is also the single species found in large quantities in samples deriving from the area surrounding vessel nos 79 (*326*) and 80 (*311* and *321*),

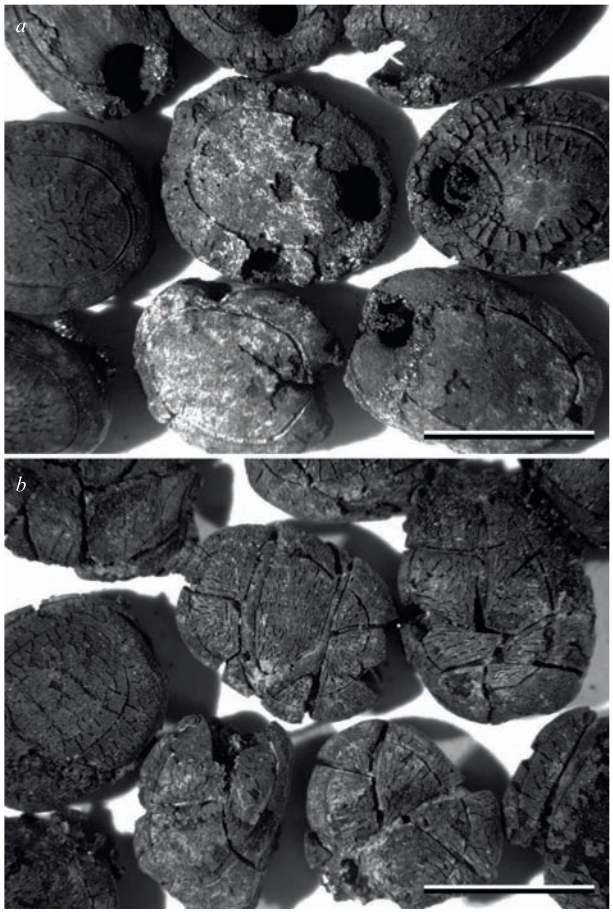

Fig. 11.3 Seeds of Acacia nilotica of the bins in room no. 24; a) insect infested seeds of bin 1 (206); b) seeds with cracked testae of bin 2 (267). Scale 5 mm.

whereas the content of the latter (*310*) is poor in evidence. Samples taken of the contents of, under and around all other vessels in room no. 24 show fewer finds of *A. nilotica* (vessel nos 72, 74 and 75), associated with other plant species and charcoal, or only a small number of indistinctive remains, which might be fragments of pods of *A. nilotica* (vessel nos 19, 20, 21, 22 and 23).

It is probable that only the two large bins in room no. 24, from which the majority of finds come, originally contained pods and seeds of *A. nilotica*. The numerous finds surrounding vessel no. 80 stand in contrast to the small find quantities inside it, and may well derive from bin 2, situated in the immediate vicinity. Correspondingly, the vessel nos 19 and 20, which do not include finds of *A. nilotica*, are located farthest away from the two bins, at the other side of room no. 24. The presence of fewer pods or seeds in or around all the other vessels discovered on the occupational layer of room no. 24 is explained by contamination during the destruction of the building, which is underlined by their frequent association with seeds and fruits of pearl millet and weed species.

The quantity of the finds and the monospecific composition of the bin contents indicate that they represent stocks. It is most probable that the stored items consisted of entire pods enclosing mature seeds. Many seeds show signs of insect attack (Figure 11.3). In bin 1, 10 out of 24 (*206*) and 27 out of 34 (*215*) seeds were infested, whereas in a sample of bin 2 (*267*) only 1 out of 14 seeds are visibly damaged by insects. A similar degree of infestation is observable in the sample coming from the surroundings of vessel no. 80 (*311*), which is believed to originate from bin 2: here insects have attacked 3 out of 29 seeds. Indeed, seeds of *A. nilotica* are often infested by bruchids (seed beetles) that may destroy up to 70 % of them (Fagg and Mugedo 2005: 23). Bruchids are recognised as the most significant pests of stored pulses (Proctor 1994), but many other insects, other coleopteran species especially, could have caused the damage. The seeds may well have been infested long before the harvest, as is known from the biological cycle of most bruchid species. However, the large degree of damage to the seeds of bin 1 in particular points to long-term storage of the harvest. Hence, the seeds of bin 2, with a lesser degree of insect caused damage, were stored for a shorter time period. The differing storing duration of the stocks of bin 1 and bin 2 might also be indicated by their unlike preservation: Samples of bin 1 consist of seeds with at least some of the testal layers intact, whereas the testae of the seeds of bin 2 and from the surroundings of vessel no. 80 are cracked (Figure 11.3); their cotyledons have popped up and poured out. A possible explanation for this observation is that the seeds of bin 2 had been fresher and their water content higher, thus reacting differently to the seeds of bin 1 during the charring process.

The presumed long-term storage of *A. nilotica* corresponds to the type of container used. The two containers in room no. 24 are more than one metre in diameter and are not decorated (see Chapter 6, this volume). In bin 1 the vessel's covering was found. Comparable large containers made of clay, which can be sealed, are commonly utilised for the long-term storage of seed and pulse grain within dwellings (Proctor 1994). The larger ones are often fabricated *in situ*. Traditionally, the stored seeds are mixed up with different natural insecticides, such as mineral substances, ashes, substances of plant origin (*e.g.* oils and powders) and of animal origin, for example faeces (Bell 1998). However, in Oursi hu-beero, a treatment with such insecticides for storage protection is no longer traceable.

The large stock of pods of *Acacia nilotica* suggests that they must have been of importance to the inhabitants of Oursi hu-beero. No other wild plants, only crops, have been found in such quantities. There are various purposes which the pods and seeds could have been used for. Pods, as well as the foliage of *A. nilotica*, make excellent animal fodder rich in protein (11-16 %) and crushed seeds are said to be a useful cattle food (Burkill 1995: 186-190; Fagg and Mugedo 2005: 19-25). Young fruits are occasionally eaten as a vegetable and in Haussaland the seeds, roasted, serve as food flavouring. Furthermore, there are numerous medical applications for *A. nilotica*.

The main usage, however, is in the exploitation of pods for tanning leather and dyeing. The processes are based on the high tannin content of the pods varying between 12 and 19 % for entire pods and 18 and 60 % after the removal of the seeds (Fagg and Mugedo 2005). In sub-Saharan Africa, pods are collected for tanning preferably from

the tree, soon after turning black, to avoid mineral contamination from the soil. Tannin concentration drops with the degree of maturity, and harvesting later therefore changes the colour of the tanned leather. Handling after harvest includes the sun-drying of the pods and removal of seeds and fibrous matter. The latter increases the tannin yield and helps to avoid fermentation, since seeds have high contents of sugar-like components. The traditional process for preparing hides is carried out in pots or pits and usually takes several days. A basic method for tanning goat hides is described by Fagg and Mugedo: simply filling the skins with crushed wet pods for 48 hours. As a source for dyes, *Acacia nilotica* pods produce brownish as well as grey to black colours, if combined with a mordant of iron-rich mud (Fagg and Mugedo 2005). Traditionally, the dyes were used for cloths made of cotton. Black dyes combining iron mordants and tannins most probably from *A. nilotica* have been identified in ancient Egyptian textiles dating back to the 18th Dynasty (1542-1305 BC) (Fagg and Mugedo 2005: 20) and may represent the oldest evidence for this dying technique.

The long-term storage of pods implies that not only the seeds were used, given that storage space within the dwellings is limited. Their degree of maturity renders human consumption unlikely, for which young pods are preferred. The pure and monospecific composition of the bin contents constitutes a major argument against the interpretation of the stored fruits as animal fodder: a number of other *Acacia* species are equally valuable for fodder (cf. Burkill 2004) and available in the environment of modern Oursi (cf. Claude *et al.* 1991). It would be reasonable to collect and store these fruits together if usable for the same purpose. Moreover, animals in traditional West African households are only fed and kept within stables near the house by exception, preferably to graze in the surrounding savannah. Long-term storing of fodder is a very recent practice. In short, the main functions of *A. nilotica* - tanning and dyeing - seem also to have been practised in Oursi hu-beero.

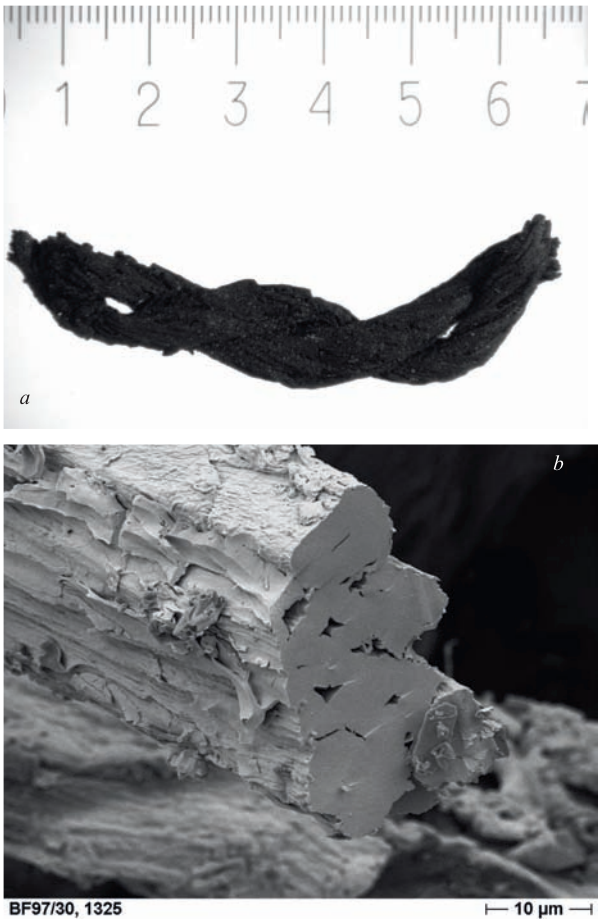

Fig. 11.4 a) Charred fragment of string (1325a) from room no. 22 (scale in mm); b) SEM micrograph of a string filament, consisting of parallel arranged fibres.

11.4.3 Processed plant material

Processed plant material is present in the form of small pieces of narrow leaf sheaths, folded culms and string fragments. The leaf sheath fragments occur in abundance on the floors of room nos 17 (*1939*), 22 (*1325a*) and, in smaller numbers, that of room no. 21 (*156* and *182*). The charred remains are mostly 2-5 mm long, 1-2 mm wide and 0.2-0.3 mm thick and show straight parallel veins, which are characteristic for monocotyledonous plants. The leaf sheath fragments are either centrally compressed as having been interlaced, or show sharp turns, which are produced when a strand is folded back into the fabric at its edge (Chapter 12, this volume; Figure 12.1). Bent culms have been found in room no. 21 (*174*). Such features are typical for strands of plaited fabrics of basketry, *e.g.* baskets and mats (Wendrich 2000). In actual fact, plant parts of monocotyledons like grasses and palms as well as reed, rushes and sedges are the most common material used in basketry production. However, morphological characters did not allow for the identification of the species from which the leaf fragments originated. Phytolith analysis of the charred material indicates that the utilised material might originate from seven grass genera (Chapter 12, this volume). Of these, the genera *Hyparrhenia* and *Andropogon* are rich in species that still occur in northern Burkina Faso (Lebrun *et al.* 1991). Whereas *Hyparrhenia* species mainly provide thatch for houses and are often unsuitable for the fabrication of mats (*e.g. H. subplumosa*), *Andropogon* species supply material of high quality, which is used for matting and basketry (Burkill 1994).

Unfortunately, there is no larger fragment of basketry preserved which could give information on the fabrication technique applied. The delicacy of the leaf fragments suggests that they stem rather from fine basketry used in the interior of the house than constituting construction elements used for fencing or roofing, which would be coarser. Corroboratively, the remains originate exclusively from closed rooms (nos 17, 21 and 22). However, it remains unclear as to whether the basketry remains derive from flat objects like mats and pot lids or basket- and bag-like containers, and, hence, nothing can be said on their function.

Charred fragments of strings were found on the floor of room nos 21 (*156*) and 22 (*1325a*). The largest find measures 6 mm in length and 1 mm in width and consists of two z-spun s-plied yarns (Figure 11.4a). Z-twist indicates a right-handed or clockwise direction of twist; s-twist indicates a left-handed or counterclockwise direction. The present type of fabrication is the easiest and most common for strings (Schenek 2006). Under high magnification, the yarns prove to consist of parallel plant fibres arranged in strands (Figure 11.4b). The individual fibres are inconsistent in diameter (5-11 µm) and seem to be slightly compressed. They are thick-walled and have small lumina; their surface is rough.

A number of plants are used for the fabrication of strings, cords and ropes (Burkill 2004). The PROTA-database (http://database.prota.org), for example, lists 218 species of West Africa whose fibres are exploited. The list of plant species documented by finds of fruits, seeds and tubers (Table 11.1) offers at least fourteen taxa which provide fibres for ties and cordage. Among these are two plant families, Malvaceae and Tiliaceae, which include many species yielding fibres of major importance. Jute is obtained from *Corchorus* species, herbaceous or shrubby members of the Tiliaceae. Jute fibres are known for their strength and durability and they are manufactured into cordage and cloth (Burkill 2000). Cultivation of Jute takes place predominantly in Asia, whereas in Africa wild growing *Corchorus* species are mainly exploited for their leaves. *Hibiscus* species (Malvaceae) produce bast fibres qualitatively similar to that of Jute. Modern fibre production in West Africa is restricted to *Hibiscus sabdariffa* cultivar group Altissima, a tall growing plant introduced from Asia. But the indigenous cultivar and wild *Hibiscus* species are also used for fibre production (Burkill 1997). Regrettably, there is not enough reference material available for identifying the plant fibres; but in future studies the two plant families mentioned should be checked preferentially.

A fragment of a thick rope found among charcoal remains on the floor of room no. 10 (*1758*) has been proved to derive not from plant fibres but from animal hair. It is described in detail in Chapter 8.7.

11.5 Conclusion

In comparison to other contemporaneous sites in northern Burkina Faso the assemblage of Oursi hu-beero has not - except for the finds of calabash - provided substantial new evidence. Quite the contrary, 44 taxa found in Oursi hu-beero are opposed to an assemblage of 153 taxa in the neighbouring tell Oursi Nord (BF97/13; Kahlheber 2004). The new data gained is of different quality: the contextual information obtained provides a more solid basis for the interpretation of plant remains, otherwise merely footing on ethnographic parallels.

Cultivated plants have been shown to be present in large quantities. Pearl millet appeared in its highest proportions in circular rooms, which may have been the place for cooking, eating and storing crops. Fragments of pearl millet infrutescences demonstrate that entire ears have been stored, whereas smaller quantities of threshed cereal were kept in calabashes and possibly vessels. Pulses were stored in vessels and, most interestingly, not always pure as indicated by mixed concentrations of cow pea and Bambara groundnut. Samples of various vessels - intact as well as broken ones – have shown that in many cases the contents consist of destruction debris or waste, which could have fallen into them when the building collapsed. A possible explanation is that most of the smaller vessels were not used for storage, or originally contained water. The storage of ripe pods of *Acacia nilotica*, restricted to a confined area, room no. 24, strongly suggests that specialised activities took place in Oursi hu-beero. The processing - tanning and dyeing - of leather would be a sound explanation going hand in hand with the results of the faunal analysis that domestic stock have been kept and butchered in large numbers, and wild animals, caught for their skin, were present (Chapter 9, this volume). Possibly, also the mysterious bench in room no. 18 is associated with leather processing and working.

11.6 Acknowledgements

I am especially grateful to the excavation team of Oursi hu-beero, in particular Nicole Rohde, for recovering and processing the archaeobotanical samples. Christoph Herbig and Tanja Zerl assisted in sorting the plant remains in the archaeobotanical laboratory in Frankfurt. Manfred Ruppel of the Institute of Biological Sciences at the Johann Wolfgang Goethe-Universität, Frankfurt am Main, made SEM photographs of selected finds. Many thanks to Sonja Magnavita for examining the string and rope fragments with me.

Table 11.2 List of vessel samples and their interpretation (ordered by rooms) (7=Hand-picked, 8=Standard archaeobotanical sample).

Vessel	Sample location	Sample state	Room	Position	Bucketno.	7	8	Interpretation
1	Content	Clean	9	Roof	*1081*		472	Refilled with house debris, waste
8	Content	Might be contaminated	11	Roof	*1600*		521	Refilled with house debris, waste
8	Content	Might be contaminated	11	Floor	*1894*	x		Refilled with house debris
8	Content	Might be contaminated	11	Floor	*1920*	x		Refilled with house debris
8	Content	Might be contaminated	11	Roof	*1600*		521	Refilled with house debris
52	Content	Might be contaminated	13	Roof	*1880*	x		Contaminated with kitchen remains
54	Content	Might be contaminated	13	Roof	*1829*	x		Storage of *V. unguiculata*, contaminated with kitchen remains and waste
58	Content	Might be contaminated	13	Roof	*1870*	x		Contaminated with kitchen remains, waste
59	Content	Might be contaminated	13	Roof	*1825*		541	Storage of *V. unguiculata*, contaminated with kitchen remains and waste
32	Content	Clean	16	Floor	*1476*		509	Refilled with house debris, waste
32	Content	Clean	16	Floor	*1483*	x		Refilled with house debris
41	Surrounding	Clean	16	Floor	*2081*	x		House debris
61	Surrounding	Might be contaminated	17	Floor	*1939*	x		House debris, vessel covered with calabash or mat?
26	Content	Clean	18	Floor	*2080*		565	Empty
31	Content	Clean	18	Roof	*1516*		515	Contaimned with waste, calabash on top of vessel?
31	Content	Clean	18	Roof	*1520*		517	Refilled with house debris, waste
37	Content	Clean	18	Floor	*2048*		561	Contaminated with waste, processing product?
38	Content	Clean	18	Floor	*2067*		562	Contaminated with few waste
42	Content	Clean	18	Floor	*2099*		568	Empty
93	Content	Clean	18	Floor	*2096*		567	Empty
70	Content	Clean	19	Floor	*134*	x		Refilled with house debris, calabash on top of vessel?
70	Content	Clean	19	Floor	*136*		31, 42	Contaminated with waste
15	Below	Might be contaminated	21	Floor	*2079*		566	Waste
16	Content	Might be contaminated	21	Floor	*1634*	x	525	Refilled with house debris, waste
16	Surrounding	Might be contaminated	21	Floor	*1667*		526	House debris, waste, kitchen remains
9	Content	Clean	22	Floor	*1958*		550	Empty
9	Below	Clean	22	Floor	*1972*		551	House debris, waste, kitchen remains
11	Below	Clean	22	Floor	*1970*		553	House debris
11	Content	Clean	22	Floor	*1975*		554	Refilled with house debris
13	Below	Clean	22	Floor	*1993*		556	Waste
65	Below	Clean	22	Floor	*1989*		555	House debris, waste
18	Content	Clean	23	Floor	*2007*		557	Contaminated with waste
51	Content	Clean	23	Floor	*1957*		552	Empty or possibly former pearl millet store
19	Content	Clean	24	Floor	*2064*		564	Contaminated with waste
20	Content	Clean	24	Floor	*2063*		563	Contaminated with waste
21	Below	Clean	24	Floor	*2023*		560	Waste
22	Content+surrounding	Clean	24	Floor	*2006*		559	Contaminated with waste
23	Content+below	Clean	24	Floor	*2018*		558	Contaminated with waste
Bin 1	Content	Clean	24	Floor	*155*	x		Storage of *A. nilotica*
Bin 1	Content	Clean	24	Floor	*171*	x		Storage of *A. nilotica*
Bin 1	Content	Clean	24	Floor	*206*	x		Storage of *A. nilotica*
Bin 1	Content	Clean	24	Floor	*207*		63	Storage of *A. nilotica*
Bin 1	Content	Clean	24	Floor	*215*		Soil	Storage of *A. nilotica*
Bin 2	Content	Clean	24	Floor	*266*		77, 78	Storage of *A. nilotica*
Bin 2	Content	Clean	24	Floor	*267*	x		Storage of *A. nilotica*
72	Content	Clean	24 (19/24)	Floor	*340*	x		Refilled with house debris, contaminated with few *A. nilotica* from bins?
74	Content	Clean	24 (19/24)	Floor	*314*		90, 91	Contaminated with waste, possibly filled with *A. nilotica*
74	Content	Clean	24 (19/24)	Floor	*317*	x		Possibly filled with *A. nilotica*
75	Content	Clean	24 (19/24)	Floor	*328*	x		Possibly filled with *A. nilotica*
75	Content	Clean	24 (19/24)	Floor	*329*		96, 97	Contaminated with waste, possibly filled with *A. nilotica*
79	Surrounding	Clean	24 (19/24)	Floor	*326*		94, 95	*A. nilotica* from vessel or bins
80	Content	Clean	24 (19/24)	Floor	*310*		Soil	Possibly filled with *A. nilotica*
80	Surrounding	Clean	24 (19/24)	Floor	*311*	x		*A. nilotica* from vessel or bins
80	Surrounding	Clean	24 (19/24)	Floor	*321*		92	*A. nilotica* from vessel or bins

Chapter 12

Phytolith Analysis of Charred Leaf Remains of Plaited Basketry

Ahmed Gamal El-Din Fahmy and Stefanie Kahlheber

12.1 Introduction

Among the plant remains of Oursi hu-beero (cf. Chapter 11, this volume) are many charred fragments of narrow leaf sheaths, either being compressed in the middle (Figure 12.1b) or showing sharp turns as having been folded (Figure 12.1a). Indeed, such features are typical for strands of plaited fabrics of basketry, *e.g.* baskets and mats (Wendrich 2000). The charred remains are mostly 2-5 mm long, 1-2 mm wide and 0.2-0.3 mm thick, and show straight parallel veins which are characteristic for monocotyledonous plants. In fact, plant parts of monocots such as grasses and palms, as well as reed, rushes and sedges are the most common material used in basketry production. However, the morphological characteristics of the charred leaf fragments did not allow for their assignment to an appropriate taxonomic category (*i.e.* family, subfamily or genus). Therefore, phytolith analysis was applied in order to identify the origins of the plaited plant material.

Phytoliths are silica bodies deposited in cell walls, cell lumina and intercellular spaces in leaves, internodes, stems, inflorescence, and seed testa of many plant species (Piperno 1988; Runge 2000). They are common in the grass family Poaceae as well as in other families like Cyperaceae, Marantaceae or Moraceae. They consist of amorphous silicon dioxide ($SiO_2 \cdot nH_2O$). Phytoliths of grasses are of particular interest as they possess distinctive morphological features which have encouraged many investigators to identify the plants from which fossil phytoliths have originated, and to reconstruct with their help environmental conditions in the past.

12.2 Sample preparation

For preparation, a sample (*1325a*) was chosen from the eastern part of room no. 22 in Oursi hu-beero. Fifty charred leaf fragments were treated with 32 % HCl and 35 % H_2O_2 in order to dissolve carbonate crystals and to clear the material from organic impurities;

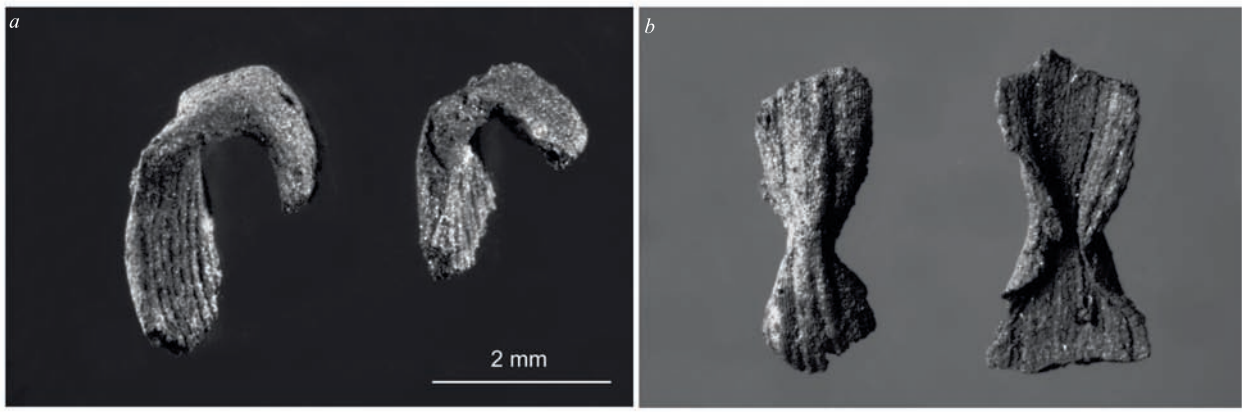

Fig. 12.1 Charred fragments of plaited leaf remains (1325a).

H [µm]	W [µm]	L [µm]	T [µm]
9-12	12-24	4-6	4-6

Table 12.1 Dimensions of eight bilobate phytoliths. H=height, W=width, L=length of the shank, T=thickness of the shank.

this eases microscopy. Examination was undertaken using a "Leitz LaborLux" microscope connected to a digital "Leica" camera. Residues were mounted in Neo-mount, a histological fixative.

12.3 Results

12.3.1 Phytolith morphology

The microscopic examination showed the presence of well-preserved phytoliths. Four morphotypes were recognised:

1 Short cells of unilobate and bilobate phytoliths (Figure 12.2a). The material comprises bilobates with pointed, flattened and convex outer margins as well as tiered top ends. The size dimensions of eight well preserved bilobate phytoliths are given in Table 12.1.

2 Long cells with regular rounded toothed ridges (cf. Brown 1984: IA1e) (Figure 12.2b).

3 Rectangular plates with irregular scattered discoid bumps on the surface (Brown 1984: IB1c) (Figure 12.2c).

4 Scalariform phytoliths with a rectangular outline and elliptical openings forming a ladder-like appearance (Figure 12.2d).

Figure 12.3 shows the phytolith spectrum of sample 1325a with percentages of all morphotypes. Unilobate and bilobate types constitute 12 % of the discovered phytoliths. Long cells, rectangular and scalariform plates occur in proportions of 23 %, 47 % and 18 %, respectively.

12.3.2 Identification and discussion

The identification of fossil phytoliths is based on relating a morphotype assemblage to genus, tribe, subfamily and family level (Piperno 1988; Pearsall 2000). The assemblage which has been identified in this study is attributed to the family Poaceae. For further identification a collection of 236 grass species growing currently in West Africa provides reference. According to the classification scheme of Twiss *et al.* (1969), it is possible to identify three subfamilies of Poaceae based on their short cell phytolith assemblage. Bilobate morphotypes are significant to the subfamily Panicoideae. Saddle-shaped phytoliths characterise the subfamily Chloridoideae. Rounded, rectangular and crescent morphotypes are well represented in the Pooideae. The presence of uni- and bilobate phytoliths, holding a proportion of 12 %, is a clear signal for attributing the plant material to the subfamily Panicoideae. This subfamily includes two tribes: Andropogoneae and Panicoideae. Brown (1984) noted that rectangular plates with irregular scattered discs (morphotype IB1c) are commonly observed in species belonging to the Andropogoneae. This morphotype is highly represented in the investigated sample (47 %) and its dominance lead to focus on members of the Andropogoneae during identification.

Further classification has been possible due to the presence of a certain type of bilobate phytoliths. The outer margins of bilobate phytoliths have been considered to be of morphologically stable character (Lu and Liu 2003; Gallego and Distel 2004). The bilobate fossil phytoliths under study are characterised by flattened and convex outer margins. The examination of reference material revealed that this character occurs in 24 species belonging to seven genera, namely *Andropogon*, *Elytrophorus*, *Hyparrhenia*, *Ischamum*, *Sorghastrum*, *Trachypogon* and *Urelytrum*. From these, *Andropogon* species seem to be the most likely material used for basketry due to ethnographical evidence.

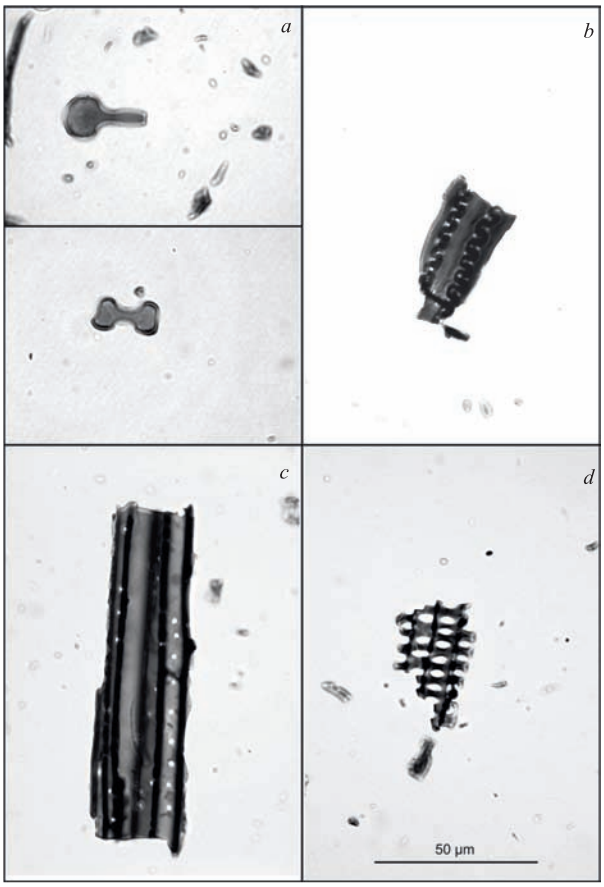

Fig. 12.2 Phytolith morphotypes from charred leaf remains (1325a) of Oursi hubeero. a) Unilobate and bilobate phytolith, b) long cells with regular rounded toothed ridges, c) rectangular plates with irregular scattered discoid bumps on the surface, d) scalariform phytoliths with rectangular outline.

Therefore, subsequent investigations concentrated on this genus. A comparison with 17 species originating from West Africa demonstrated that the bilobate phytoliths recorded in *A. ascinoides* match perfectly with the fossil material. Furthermore, long cells with regular rounded toothed ridges have been observed in *A. curvifolius*. Both morphotypes are well represented in the fossil sample. Thus, microbotanical evidence strongly suggests that the fossil phytoliths and, consequently, the leaf fragments from Oursi hubeero originate from species of the genus Andropogon.

12.4 Conclusion

The phytolith analysis of charred leaf remains of plaited basketry indicates that the material utilised may originate from seven grass genera: *Andropogon*, *Elytrophorus*, *Hyparrhenia*, *Ischamum*, *Sorghastrum*, *Trachypogon* and *Urelytrum*. The genera *Elytrophorus*, *Ischamum* and *Sorghastrum* do not comprise species exploited for basketry (Burkill 1994). *Trachypogon* and *Urelytrum* only include a small number of species (*Trachypogon spicatus*, *Urelytrum digitatum*, *U. giganteum*) used for thatching and matting, but they are not widely distributed in Northern Burkina Faso (Lebrun *et al.* 1991). *Hyparrhenia* and *Andropogon*, on the other hand, are genera rich in species that still occur in the research region. Whereas *Hyparrhenia* species mainly provide thatch for houses and are often unsuitable for the fabrication of mats (*e.g. H. subplumosa*), *Andropogon* species supply material of high quality used for matting and basketry.

According to Clayton (1972) the genus *Andropogon* comprises 29 species distributed across west tropical Africa. Of these, ten appear in The Flora of Burkina Faso (Lebrun *et al.* 1991). Burkill (1994) mentions nine Andropogon species as being used for fencing and thatching, as mats and screens, and for having some importance as local items of merchandise: *A. canaliculatus*, *A. chinensis*, *A. fastigiatus*, *A. gayanus*, *A. pinguipes*, *A. pseudapricus*, *A. schirensis*, *A. tectorum* and *A. tenuiberbis*. With the exception of *A. tenuiberbis*, all of them are currently distributed in northern Burkina Faso (Lebrun *et al.*

1991). *A. gayanus*, in particular, is of major ethnobotanical importance as it is widely distributed in West African savannas, and is planted in hedges around habitations and fields to be harvested for basketry (Burkill 1994). Despite the fact that phytolith analysis can not prove the exploitation of *A. gayanus*, this species remains one of the most probable candidates for supplying the raw material of plaited basketry having been used in Oursi hu-beero.

12.5 Acknowledgements

A.G.E. Fahmy would like to thank the Alexander von Humboldt-Stiftung, Germany, for awarding a research fellowship to undertake studies on African phytoliths. Thanks are also due to Dr Katharina Neumann for her kind support and for offering research facilities at the department of African Archaeology and Archaeobotany at the Johann Wolfgang Goethe-University in Frankfurt am Main. S. Kahlheber appreciates the funding from the Deutsche Forschungsgemeinschaft. We are especially grateful to the excavation team of Oursi hu-beero, in particular Nicole Rohde, for recovering the botanical material. Many thanks to Richard Byer for language editing.

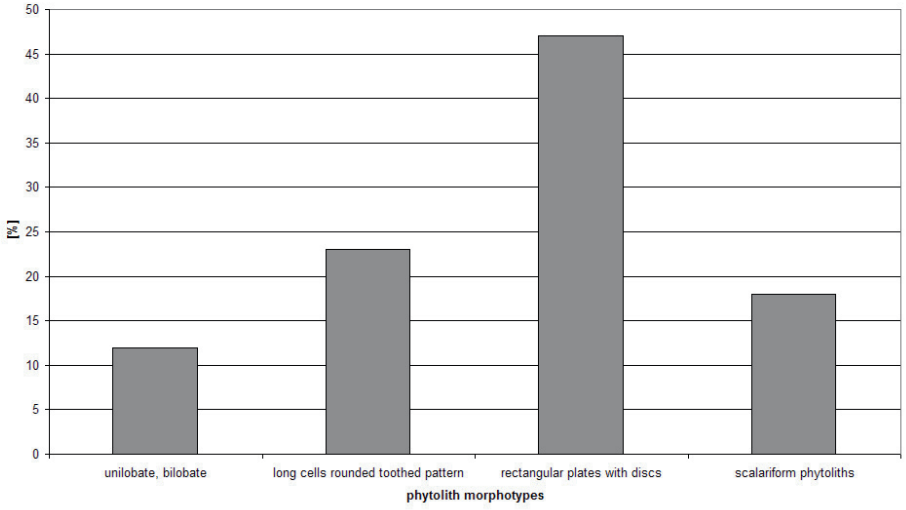

Fig. 12.3 Percentages of phytolith morphotypes from charred leaf remains of Oursi hu-beero (1325a). A total of 200 morphotypes has been counted.

Chapter 13

Human Remains

Lucas P. Petit[1]

13.1 Introduction

The remains of three human individuals were unearthed below the heavy roof debris of Oursi hu-beero (Figure 13.2). Most of the bones show contact with high temperatures. Nevertheless, the skeletal remains were still articulated. Their context was documented in pictures, descriptions and drawings. During the analyses at University of Frankfurt am Main the bones were fitted together and studied for their preservation conditions, sex, age and causes of death. Details of the discoveries and contexts are noted in Chapter 5.

13.2 The skeletal remains in room no. 15

The human skeleton in room no. 15 (Figures 13.1-3) was almost fully extended, with the skull to the south. The individual was resting on its right side with the head facing east, looking to wall 37. Both arms were bent along the frontal side of the skull. The right arm seemed to 'reach' towards something (Figure 13.1). The legs were slightly hocked and heavily damaged from the fire.[2] From the right leg and feet only fragments of the femur survived the intense heat. From the left leg there are fragments of the femur, part of the tibia and of the fibula. The bones of both feet (*e.g.* tarsus and metatarsus) were missing.

Fig. 13.1 Skeletal remains in room no. 15. Photo was taken in 2001.

1 The skeletons were studied with the help of Marion Demmel, to which I am greatly indebted.
2 The condition of the bones indicates that the fire had a temperature range from 300 to 750°C.

Fig. 13.2 Location of human remains (red).

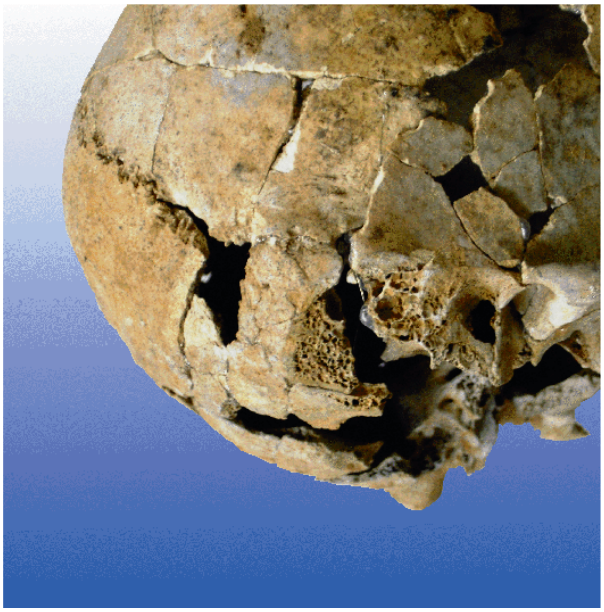

Fig. 13.3 Right side of the skull in room no. 15 showing missing suture.

Fig. 13.4 Skeletal remains in room no. 15.

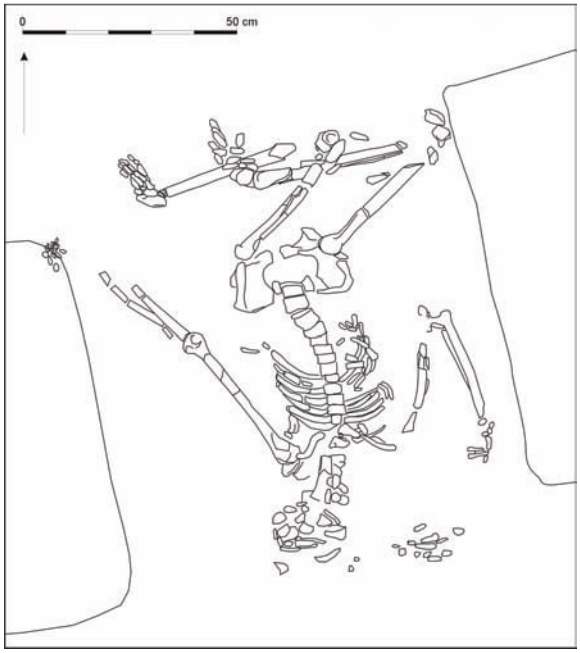

Fig. 13.5 Skeletal remains in room no. 18.

The remains belong to an adult female, approximately 30 years old. Measuring the long bones of the person indicated a height of approximately 153 ± 4 cm. With the skeleton were two perforated cowry shells (*1781*) that were most likely used as pendants (Figures 8.13:20, 22). The left parietal and temporal bones were particularly damaged, probably by fallen roof debris. Similar fractures were seen on the ribs and the left femur. The mandible of the person was pointing away from the chest. Part of the mastoid process and the occipitomastoidal suture on the right side of the skull were missing (Figure 13.3). A sharp blade had cut off part of the right temporal bones. The position of the humurus, ulna and radius is natural for someone who has fallen or collapsed on the floor. Unusually, the bend phalanges are inside the sand and ashes of the floor, as if the person had a muscular contraction shortly before her death .

This individual suffered a deadly trauma to the occipital part of the head and part of the neck. The position of the head, chin and the fingers points to choking. The blow was delivered from behind, suggesting that the women moved away from her attacker. Probably on her way out, the blow cut off her ear-bone and damaged part of the right side of the cranium. With a slit throat the women collapsed and died in the room no. 15, even before the house was set on fire. The unhealed injuries show fine, parallel scratch marks that appear to be caused by minute irregularities on the blade's surface (Mays 2003: 167). Assuming that the female victim was indeed fleeing, the directions of these scratches point to obliquely downwards blow directed at an angle of approximately 60°. The attacker was probably right-handed and a little taller than the victim.

13.3 The skeletal remains in room no. 18

The second human individual was found between the two pillars 44 and 45 of the central room no. 18 (Figure 13.5). Almost all postcranial bones were present and still articulated. The person lay on his back with a slightly curved spine. The left arm reaches towards pillar 44 and the other arm is bent similarly to that of the individual discovered in room no. 15. Both legs rest on large fragments of roof debris, assuming that the roof had collapsed before the person was positioned there (Figure 13.8).

The skeletal remains belong, most likely, to a male adult, probably in his thirties and *c.* 158 ± 4 cm in height. Closer examination of the bones reveals multiple fractures of long bones, such as femur, humurus, radius, tibia and fibula. Also, the skull was completely crushed (Figure 13.5) and some parts of the right frontal and temporal bones were discovered more then 20 cm away from the rest of the cranium. These fractures and injuries were probably caused by falling brick debris. Because the cranium was heavily damaged, the final cause of death could not be reconstructed. The fractures on the skull were, however, without doubt mortal.

The position of the legs does include some information about the last moments of his life. The roof debris was certainly there at the moment this person came along. Most

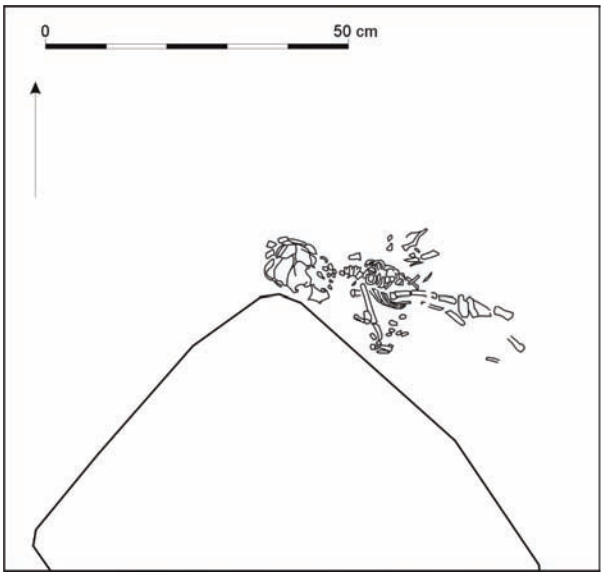

Fig. 13.6 Skeletal remains in room no. 23.

likely, the house had already been set on fire and part of the second floor collapsed. Why did the person not leave the house? Drawing from the evidence of the female adult in room no. 15, it was stated that the inhabitant's death was not an accident. This person did not or could not leave the house voluntarily, and remained in the burning house. Part of the roof collapsed. This individual fell on his back on top of this debris and immediately afterwards other debris fell, fracturing his skull and causing immediate death. A second possible explanation is that the person was still (maybe unconscious or dead) on the roof and fell down after the roof collapsed.

13.4 The skeletal remains in room no. 23

The individual found in room no. 23 had suffered from some erosion processes and animal disturbances. Nevertheless, the position of the human bones could be studied and documented (Figures 13.6-7). The remains belong to a child, probably five to six years old (based on its teeth profile). This probably female juvenile (sex based on the mentum, the teeth arch and the angulus of the Ramus) was sitting between pillar 71 and wall 72. In contrast with the other individuals, who died more or less horizontally, this individual was still sitting in an upright position. Except for the maxilla and zygomatic, most of the cranial remains were present. The mandible and the rest of the frontal side of the skull show heavy damage. The postcranial bones were represented by vertebrae, the left radius, ulna and several smaller bones of the left hand, fragments of the right radius, half of the left femur and left fibula and both tibias. Nine phalanges were discovered, belonging to the left foot.

The infant sat with its knees bent, almost touching the head. Both arms were placed around the legs, holding them stiff against the body. A copper ring was around the right tibia and fibula (Figures 8.3g and 8.12:8). No other material culture was found in connection with the skeletal remains.

Some of the longer bones show fractures that were probably caused by the fallen bricks. No clear evidence was gathered concerning the cause of death of this young child. It is most likely that smoke poisoning was the ultimate cause of death. The articulated position of the bones might point to a death shortly before or during the collapse. Brick debris buried the corpse, preserving the original position of the body.

13.5 Conclusions

All three individuals suffered from a heavy trauma. The female adult was killed by means of a direct blow to the right side of her head. Several studies have discovered that

such a trauma indicates that injuries were sustained while the - in most cases - female victim was fleeing her attacker (Larsen 1997: 157). The male adult and the infant probably died from heavy roof fragments that caused mortal fractures to their skulls. Although the latter two persons may not have been slain, it seems obvious that the same humans that killed the female victim were also responsible for their death.

The discoveries at Oursi hu-beero show the enormous potential that these kinds of data have for drawing inferences about human behaviour and conflict situation in earlier societies (Larsen 1997: 109). The archaeological skeletons are regarded as the only direct evidence of violent interaction, beside material culture (weaponry) or architectural features (defensive systems). But although violent injuries are highly intriguing and potentially informative (Jurmais 1999: 195), they are the result of a local event and should be considered as such.

Fig. 13.7 Skeletal remains in room no. 23. Photo was taken in 2001.

Fig. 13.8 Skeletal remains in room no. 18. Photo was taken in 2001.

Chapter 14

Radiocarbon Dates

Maya von Czerniewicz and Lucas P. Petit

14.1 Introduction

Radiocarbon dating, although assumed to be an absolute dating method, can only yield limited chronological precision. It has its limitations both in terms of accuracy and for the time range where it is useful. The divergence of radiocarbon dates from true ages before 1000 BC is well known, and short-term wiggles in the curve have caused researchers to disagree on centuries even for more recent periods. Re-use of timbers, contamination before, during and after sampling and, which is most often the case, stratigraphical failures during excavations affect the final radiocarbon date considerably. Some points should be observed in order to reach a higher precision:

- Multiple samples of a single stratigraphical unit should be dated. One single radiocarbon determination does not give a secure date, as has recently been acknowledged by most archaeologists.
- Short-living samples, such as seeds, should be used.
- Statistical analyses, such as the Bayesian analysis (Ramsey 2005: 57), wiggle matching and weighting average (*e.g.* Ward and Wilson 1978: 19-31; Long and Rippeteau 1974: 205-215) should be employed to improve the resolution of radiocarbon dating.

14.2 Sampling context

Sample 1 (UtC 8600) was taken in 1996. One-year-living seeds were discovered inside a small test-pit with a depth of 0.50 m. The hard-fired mudbrick debris had sealed off the charred seeds for contamination or later disturbances. The same situation can be assumed for the two other samples that were taken during the 2000 campaign. Sample 1 was discovered in between the destruction debris. The second sample, a fragment of a charred timber situated between the floor and the burnt debris layer, and the third, a fragment of a wooden post, are considered building material (see Chapter 10, this volume). At least one metre of a hard burnt mudbrick layer had protected the last two samples. All three samples were packed in a plastic bag shortly after recovery.

14.3 Interpretation of the results

If we look at the ^{14}C ages (Table 14.1), the most surprising aspect is the difference between the short-living seed and the other two samples. Roof timbers are often re-used, especially in arid and semi-arid regions. If a building was not burned down, newcomers or re-builders normally reuse these ‘older’ valuable construction elements. It is expected that building material is in general much older than the final fire. The short-living seed had stopped exchanging carbon-14 with its environment not very long before the final fire, whereas we assume, considering the occupation deposits and multiple sand layers on the floors, that the construction of the complex occurred much earlier. If we take all of the results as they are and assume that the house was in use for at least one year, the oldest date for the fire must be 1021 cal AD and the youngest possible date 1024 cal AD.

What about the reliability of these results? These samples are significantly different at a 95 % level. Should we believe that the youngest two samples are correct? The wooden pillar and roof material were certainly used at the time of the fire, and thus had

died before the conflagration. Two explanations can be given for the statistical difference between the samples: The 'older' charred seed had contaminated the burned remains of Oursi hu-beero. We should keep in mind that the sample was collected from debris and not from floor material. Or, the samples sent in to different radiocarbon laboratories have systematic biases. Maybe this explains why the ^{14}C age of the University of Utrecht is 'older' than the samples sent to the laboratory of Kiel? Each laboratory has different environmental effects and chemical pre-treatment deficiencies and this might affect the outcome of each sample.

The two calibrated ages produced by the laboratory of Kiel are very similar and statistically the same at 95 % level. The weighted average (*e.g.* Ward and Wilson 1978; Long and Rippeteau 1974) of these two samples is 963 ± 25 BP and the calibrated date is 1020-1059 cal AD, 1067-1072 cal AD and 1075-1155 cal AD (95 %).

We tend to believe the date of the fire to be at the end of the 11th century or beginning of the 12th century AD.

	UtC-8600	**KL-4860**	**KL-4861**
Sample description	Carbonised seed	Charred wood	Charred wood (*acacia* sp.)
Sample location	Room no. 18	Room no. 21	Room no. 7
Locus-bucket no.		16-*235*	26-*252*
Context of sample	Destruction debris	Between floor and debris	Inside floor make-up
Function	Food	Roof timber	Post
Laboratory	University of Utrecht (NL)	University of Kiel (D)	University of Kiel (D)
^{14}C Age	1092 ± 43	960 ± 30	970 ± 45
Calibration Data Set	Calib 5.0.1	Calib 5.0.1	Calib 5.0.1
1σ - ranges	895-925 cal AD, 935-992 cal AD	1024-1048 cal AD, 1085-1123 cal AD, 1138-1150 cal AD	1019-1051 cal AD, 1081-1127 cal AD, 1135-1152 cal AD
2σ - ranges	785-785 cal AD, 828-839 cal AD, 866-1024 cal AD	1021-1155 cal AD	988-1167 cal AD

Table 14.1 The three ^{14}C samples, their context and calibrated results.

Chapter 15

Cultural Preservation and Socio-Economic Development: the Oursi hu-beero Project

Christoph Pelzer

15.1 Introduction

The need to preserve Oursi hu-beero was obvious for everybody involved in the excavations of the site. It is of significant importance for the national heritage of Burkina Faso and for West African archaeology. To find the ruins of a mudbrick house complex from the 11th and 12th century AD is a rare discovery in Sub-Saharan archaeology. The fact that it was destroyed in an attack that left it with most of its equipment made it a valuable exception to settlement mounds that normally contain multitudes of broken or lost, mostly small objects, the overwhelming majority being potsherds. Thus, the ruins contained a lot of valuable information on the actual event of the attack as well as a snapshot of a particular household early in the second millennium AD (see Chapters 5 and 19, this volume).

Furthermore, the site clearly required protection from destruction by erosion. Two erosion gullies were already dangerously close during the excavation campaigns in 2000 and 2001. The entire team of researchers, Dr Antoine Kalo Millogo from Ouagadougou University in particular, felt an obligation to prevent the site's destruction. It was so special in its archaeological and historical nature that the researchers felt a professional responsibility to preserve it for the heritage of the country and the benefit of the local population.

This chapter outlines how the project "Oursi hu-beero – Préservation Culturelle et Développement Touristique dans le Sahel Burkinabè" (OHB) was designed and implemented. The objective is to give an account that details major motivations, ideas, strategies and activities as well as the problems encountered and solutions found. It is enriched with some literature on the issue and is intended to serve as source of experience from which future projects in the country, or in the field of cultural preservation in general can draw. This seems to be especially important given the role that pilot-project Oursi hu-beero (OHB) has played in the field of cultural heritage preservation and local development in Burkina Faso.

Fig. 15.1 On site Museum at Oursi hu-beero. Photo was taken in 2006.

15.2 Planning and funding the project

With a desire to do something about the preservation of the site, two things were essential: first, a feasible and sustainable project design. Apart from a project that had tried to preserve a site with funerary jars in nearby Gandéfabou (see below), no practical experience had been at hand to be drawn from. Funding was a further problem. As is most often the case in archaeological research projects, there was no budget foreseen for eventual preservation. Funding was already scarce for research; so preservation was out of the question within this setting.

It was clear from the beginning that for such a remote site in one of the poorest countries in the world, the project could not work from a heritage preservation approach only. So the idea was developed to embed the preservation of the site in a cultural tourism approach to create an economic model that would be an incentive for the local population. The cultural heritage and local development through tourism approach can be a promising one in terms of economic diversification and thus an interesting one for the local population to get involved (Teye 2009: 167). Cultural preservation as an interest in itself remains a "luxury" for rich countries. Identity-building effects, too, and world-view.

With regard to the needs of the tourists targeted by the project it is important to underline that authenticity of experience is, for a lot of tourists - and surely for individual or small group of tourists from Europe - an important factor (McKercher and du Cros 2002: 40-41, 73-81; Timothy and Nyaupane 2009: 34). Obviously, this definition of authenticity is different from the one in the context of the UNESCO World Heritage List (Labadi 2010), as it circumscribes the authenticity of experience that is provided by the site and the project put in place, combining heritage and infrastructures as well as the modern natural and socio-cultural realities linked to them.

The interest in visiting a site is not only determined by historical significance, architectural impressiveness and inclusion in an important canon like the World Heritage List. Even if it is obviously not a major attraction like the pyramids in Egypt or, more nearby, the Bandiagara escarpment in Mali, a small, relatively unspectacular archaeological site like Oursi hu-beero is interesting to visitors if they are able to understand the specific significance of what they are encountering and experiencing.

The development of a tourism site needs an adapted explanatory approach to help the visitor understand the nature and specific importance of the preserved site. This makes a visit to the site more attractive on the one hand and incites appropriate behaviour by visitors to minimise negative impact on the site and its socio-cultural surroundings on the other. For Oursi hu-beero, small scale cultural tourism is the most appropriate form, harmonising educational purpose and economic impact.

For the design of the project, several factors had to be taken into account:

- The different expectations and interests of all stakeholders – administrators, academics, local population, and donors – must be identified and taken into account (McKercher and du Cros 2002: 81-83);
- Effective communication between all parties needs to be ensured throughout the project;
- Physical site protection needs to be planned and carried out in a thorough manner to allow for the highest degree of sustainability possible, especially in a country where relevant experiences and means are missing;
- The sustainability of something as vulnerable as an open archaeological site depends on the successful engagement of the local population.

After the SFB 268 had come to an end in December 2002 (see Foreword by Breunig, this volume), the search for funding for preservation commenced from early 2003 on. As no funding seemed to be accessible in Burkina Faso itself, international calls for proposals were a promising alternative. Of course, all different funds and programs need a different approach so that the project meets the objectives targeted by the specific fund. Consequently, each application had to be rewritten in response to the specific framework of the particular call for proposals at a given moment in time, because,

obviously, objectives change from programme to programme and even within them from year to year.

Among the different tracks followed in 2003 was the Ambassador's Fund for Cultural Preservation (AFCP). This is an annual grant fund of the US State Department to support small-scale heritage projects in developing countries up to a maximum budget of approximately 30.000 US$.[1] The AFCP functions on the basis of competitive proposals from 121 eligible countries which are preselected and submitted by US ambassadors in those countries, with the possibility of multiple proposals from the same country. These proposals are evaluated by the Cultural Heritage Center in the State Department's Bureau of Educational and Cultural Affairs and selected by a committee in Washington.

Unfortunately, the project did not get funding from the AFCP in 2003. A major problem seemed to have been created by the budget for international airfares. The travel costs of two archaeological specialists, Dr Lucas Petit, then at Leiden University, and Dr Maya von Czerniewicz, then at Cologne University, had been included in the budget, but were not eligible within the AFCP call for proposals.

In 2004 the project was rewritten with a new budget. Educational activities were added, intended to bring the national public closer to the site and to raise awareness about site preservation, which were specifically targeted in that year's call for proposal. The project was again selected by the Embassy for submission to the competition and this was successful. In 2004 grants were given to small-scale projects in 50 countries. Oursi hu-beero was chosen among a total of 12 projects from Africa and received the maximum grant, the highest allocation for the continent in that year.[2]

Armed with the positive answer received from Washington, contact was renewed with the German embassy, which had also been approached the year before. Part of the thinking was that the original excavations of the site had been conducted within a German-Burkinabè scientific cooperation framework, and that Germany should be given the opportunity to play a role in its preservation too. The fact that OHB now presented a cooperation possibility between different embassies was definitely a diplomatic advantage. As the German embassy to Burkina Faso had no funds available in their own budget, the Federal Foreign Office in Berlin was contacted. Here, the project fitted into the Cultural Preservation Programme (Kulturerhaltprogramm). This programme was been in existence since 1981 and has the safeguarding of cultural heritage in developing countries as one of its two main objectives. Supporting preservation efforts, it aims at contributing in building a sense of national identity in developing partner countries.[3]

A couple of points needed to be clarified to make the Oursi hu-beero initiative eligible for this programme: it had to be shown that the museum part of the project was clearly different from the preservation work on site as the programme is designed to be bilateral and does not intend to intervene in basket funding with partners from third countries.[4] For the needs of the project it was convenient that the Cultural Preservation Programme provides support to museums. However, it was rather exceptional for the programme to finance the construction and equipment of the *in situ* museum as a new infrastructure. To use the funding for construction only became possible by convincingly showing that there was no suitable infrastructure available in Oursi that could have been used for the project's objectives and that constructing a new on site-museum thus presented a clear added value. A third important point, also holding true for the AFCP, was the agreement of the host country to the implementation of the project to ensure ownership.

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1 See http://exchanges.state.gov/culprop/afcp/ [last accessed on January 30th, 2010]. Another track that was unsuccessfully followed in 2003 was the Rolex Awards of Enterprise.

2 See the annual report 2004-5: http://exchanges.state.gov/media/pdfs/chc/2004-5afcpannual.pdf [last accessed on January 30th, 2010].

3 See http://www.auswaertiges-amt.de/diplo/de/Aussenpolitik/KulturDialog/ZieleUndPartner/Kulturerhalt.html [last accessed on January 30th, 2010]. For the English version see http://www.auswaertiges-amt.de/diplo/en/Aussenpolitik/KulturDialog/Kulturerhalt.html [last accessed on January 30th, 2010].

4 See http://www.auswaertiges-amt.de/diplo/en/Aussenpolitik/KulturDialog/Kriterien.pdf [last accessed on January 30th, 2010].

In September 2004, the project's activities could finally start. The AFCP funding had arrived, the contract with the German embassy was to be signed soon, and the rainy season was coming to an end, allowing for another period of intervention on the site. During the course of the project, other donors made smaller, precisely targeted contributions to the project's technical and budget needs:

- Programme de Développement Local de l'Oudalan (PDL/UDL), financed by the Royal Dutch Embassy: preserving the site;
- Cooperation and Cultural Action Service of the French Embassy (Service de Coopération et d'Action Culturelle de l'Ambassade de France): training for local population;
- German NGO "Niong Nongo e.V. – Partner für eine engagierte Entwicklungszusammenarbeit".

15.3 Lessons learnt from site preservation efforts in Gandefabou

When the Oursi hu-beero project started out, there was relatively little experience with cultural heritage projects and local tourism development to be drawn from in Burkina Faso. Dr Antoine Millogo and Dr Lassina Koté, both archaeologists from Ouagadougou University, had tried to preserve an archaeological site in Gandefabou. The latter locality in the Sahel zone of Burkina Faso is quite close to Oursi, only some 40 minutes drive over sandy tracks to the west. On a dune overlooking a dry riverbed is a tourist camp, a private sector initiative by a local family of the Kal Awel, part of the Kal Tamaschaq (Tuareg) ethnic group in the region.

Close to the tourist camp, archaeological excavations had been carried out in 1996. These excavations were funded by the Royal Embassy of the Netherlands in Ouagadougou and had received logistical support from the Programme du Sahel Burkinabè (PSB) whose branch in Gorom-Gorom, the provincial capital, was also financed by the Dutch. Of the different sites excavated during scientific work, a funerary site with burial jars was chosen for a preservation project (see Millogo and Koté 2000). A roof was erected from wood and thatch, and a fence was built around it. Later on, the excavation area, with the jars *in situ*, was cast in cement to stabilise the soil. This was a local solution to stabilise the endangered site when the effects of the rainy season were threatening to destroy the open site.

The site development encountered a number of problems, which ultimately led to the abandonment of preservation efforts. This conclusion was reached on a joint visit to the site by archaeologists and representatives of the Ministry of Culture, the Arts and Tourism (Ministère de la Culture, des Arts et du Tourisme, MCAT[5]) in January 2005. Ironically, a UNESCO report on "Tourism, Culture, and Development in West Africa – for a cultural tourism consistent with sustainable development", published in September 2004 and covering Burkina Faso, Cap Verde, Ghana, Mali, Niger, Senegal, still mentioned the Gandefabou project as an archaeological asset (UNESCO 2004: 15). To cut a long story short, it will suffice for our needs here to say that the versions told by the various stakeholders in this project differ widely and are often even contradictory. Clearly, one of the major problems of the project had been communication between the locals, the archaeological and the development worlds.

One of the most important points of this experiment in setting up an on-site museum by preserving an archaeological site had been to learn lessons from it for future projects (Millogo and Koté 2000: 363). Important lessons learned about an integrated preservation and development project on an archaeological site were:

- Archaeologists have a crucial knowledge of the nature of the site, but are not automatically knowledgeable and experienced development planners for heritage sites. Also, with a full-time job at a university, they do not have enough time at their disposal to be able to fulfil the role of head of a development project in all its facets. Thus, a full-time expert in cultural heritage development cooperation would be the best choice to coordinate the project work and take responsibility for its entirety.

5 Today renamed as « Ministère de la Culture, du Tourisme, et de la Communication ».

Fig. 15.2 Gandefabou. Photo was taken in 2005 (by J.-P. Marchive).

- On the other side, a project on an archaeological site of course still needs the scientist's technical know-how related to the site, and intervention on the site has to be followed closely by the competent national authorities. This is necessary to avoid damage that could be caused by development interests overruling preservation needs.

In the Oursi hu-beero approach, this major problem – of clearly defining the different roles of the various actors who need to be involved in such a project – was addressed. In this way, it benefited from the problems and the lessons learned from the Gandefabou project.

15.4 Institutional anchorage: laws, policies and politics of heritage

To be able to work on the preservation of the site, the Oursi hu-beero project had to be, of course, carried out on a clear basis according to the laws of Burkina Faso.[6] The national authority for the protection of cultural heritage is the Ministry of Culture, Arts and Tourism (Ministère de la Culture, des Arts et du Tourisme, MCAT) which was approached with the project description. The project was scrutinised by the competent services and well received.

In fact, the Minister at that time had, on a visit to Oursi in 2003, declared that he wanted the cultural heritage of the region to be developed to create income through tourism.[7] So the project was ideal for showing something concrete being done in a politically desirable direction. Consequently, it was placed under the authority of the MCAT. For the funding research activities, the Minister issued a letter underlining the importance of the project.

Within the MCAT the Department of Cultural Heritage (Direction du Patrimone Culturel, DPC) was responsible. The DPC, after having examined the project, issued an authorization letter for the planned preservation work and for the building of a museum in situ. The official letters and authorisation of the project were of course presented to the competent administrative authorities on the provincial level to explain what would be done.

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6 Ordonnance N°85-049/CNR/PRES/ du 29 août 1985 portant protection du patrimoine culturel; see www.culture.gov.bf/Site_Ministere/textes/reglementation/loi_dpc1.htm. Or http://w3.univ-tlse2.fr/utah/archdata/ [last accessed January 30th, 2010].

7 See on this behalf the newspaper article "Le ministre Mahamoudou Ouédraogo dans le Sahel : Mieux exploiter le gisement touristique", Sidwaya N° 4734, April 15th 2003. See also an interview with the Minister "Les projets du ministère de la Culture", *id.*

As easy and straightforward as it might seem, if one only looks at the legal and institutional framework, the institutional anchorage part of the project turned out to be one of the most difficult topics the project had to deal with, demanding time, energy and to some degree even civil courage. As described in other cases, such as the failure of the inscription of Agadez in Niger to get onto the UNESCO World Heritage List, such projects are often dealt with on another level altogether, where conflicts arise that are based on the economic, social and political ambitions of different actors (see Scholze 2008: 227).

In this case, the project was not to be met with open arms at the University of Ouagadougou. Partly responsible for this seemed to be quarrels over authority and personal feuds that the Department of History and Archaeology (Département d'Histoire et Archéologie, DHA) had with the DPC. While the former is responsible for archaeological research, the latter is legally in charge of cultural heritage and, thus, was the competent authority for preservation issues, leading to conflict over responsibilities where the DHA still saw itself in charge, as far as archaeological sites were concerned. Given the fact that cultural heritage projects are somewhat rare in a poor country, *i.e.* a scarce resource, there were "ownership" struggles over the control of the social, political and economic capital at stake.

Understandably, the Minister was alarmed by this conflict and by rumours that were circulated about the project undertaking illegal excavations. This could have easily been the end of the preservation efforts and the project linked to them. Fortunately, instead of playing safe by stopping the project, the Minister chose to ask for clarification of the legal basis of the Oursi hu-beero project. This was established with the competent services of the Ministry, which convinced the Minister that he was in a position to further lend his political support to OHB.

By demand of the Minister, the Director of the National Center for Scientific and Technical Research (Centre National de la Recherche Scientifique et Technologique, CNRST), the service responsible for issuing research permits for foreign academics, was also consulted. As it was not archaeological research anymore, but preservation work on a site that had already been scientifically documented, no research permit was needed. But it was considered useful to verify if the obligations related to research permits issued in the past had been met. The Director of the CNRST had this checked and on this basis saw no reason why the project should be hindered.

To explain the gravity of the nuisances experienced, disproportional given the micro-project size of OHB, the above-mentioned scarcity of funding for cultural heritage projects has to be taken into account. As a consequence, protectionist, monopolistic reactions as well as conflict between key actors in the cultural heritage "market" are quite common. While the fight was clearly for political, social and economic interests, it was lead by a strong ideological rhetoric.

15.5 Implication of local stakeholders

Apart from the government structures dealing with cultural heritage, the most important group of stakeholders to have on board for a successful project was the local population. To express it in a simple and catchy formula: those who live with the project have to make it live.

As mentioned before, the motive for the local population in a country with a very low human development index to get involved in an endeavour like Oursi hu-beero is unlikely to be purely a concern for the heritage which had been the starting point of the researcher involved. Burkina Faso is one of the countries ranking in the bottom group of the United Nations Development Programme's Human Development Index (177 of 182). Two of the three factors used to calculate the HDI are education and GDP.8 Exactly these factors, a good knowledge level and a decent standard of living (see Willis 2005: 5-8), would be those that have to be reached to see the intrinsic – *i.e.* aesthetic, educational and socio-psychological – value in preserving a heritage site to which the

8 See UNDP's Human Development Report 2009: http://hdr.undp.org/en/media/HDR_2009_EN_Complete. pdf.

local population does not have a (ritual) link itself. In less-developed regions the perception of heritage preservation is mostly in economic terms and people need to see how it connects to improving their livelihoods (Timothy and Nyaupane 2009: 31-32).

There also is a degree of pride and of a heightened self-confidence involved in having a functioning cultural tourism attraction as a local asset, but this clearly comes after the link to economic realities. Nevertheless, and however difficult to measure, the empowerment felt by locals, the impact on self-esteem and solidarity, should not be underestimated. This goes along with the fact that projects like OHB help to draw more attention to a remote locality on the national and international level, thus reducing its "peripherality" (Timothy and Nyaupane 2009: 35).

Involvement of the local population thus needs to address their interests, first of all economically and secondly with regard to education that matters to them. In more technical terms of development this translates as the vital concern with laying the basis for sustainability. It is possible to build good infrastructure during the actual implementation phase of a project, but they need to be run efficiently to reach mid- and long-term objectives of development which is only possible when the project is well-integrated into its human and social environment.

Taking this into account, OHB tried to have local actors involved at all stages of the project's planning and implementation. A participative approach with a credible involvement of the local population is a key factor for success in such undertakings (Diamitani 2007: 145). What the project would set out to do was explained in meetings with local stakeholders right from the start, when the project was designed in early 2003, *i.e.* long before funding became available in the second half of 2004. Trusting relationships with the population that had been established during the period of research of the SFB 268 were, of course, instrumental in achieving a level of good communication and mutual understanding.

A traditional authority of the province, the since colonial days so-called "Chef de Canton", issued a letter endorsing the project and its objectives. This was helpful in encouraging authorities and donors, not so much for influencing local decision-making. The "Chef de Canton" being of the Kal Tamashaq (Tuareg) group, he does not play a major role in Oursi. Although the first amenokal (which is the actual word for ruler in the Tamashaq language) who established supremacy of the Kal Tamashaq in the region at the turn from the 18th to the 19th century AD, is said to have established his first camp near the Mare d'Oursi, the amenokal of our days has no direct influence on the local politics there. Still, a good knowledge of underlying socio-anthropological and historical structures within a cultural cooperation project was a valuable spin-off from the research conducted by the SFB 268 of the University of Frankfurt (Pelzer 2003; Pelzer *et al.* 2003). It made partners feel understood and respected. Later in the project customary and religious authorities attended the civic society event in Gorom-Gorom (see below) to express their support for the initiative.

15.6 Re-excavating the site

After the end of the scientific excavation campaigns in 2000 and 2001, the site had been refilled in order to protect it from damage. Hence it needed to be re-excavated in order to preserve it. Even if preservation work is not a scientific endeavour, for the sake of technical accuracy and the least impact on the archaeological evidence as possible, it seemed to be the best solution to have the original archaeologists come back to do the re-excavation. The professional archaeologists had agreed to work pro bono with only their expenses covered. This is, of course, a remarkable feature that distinguishes a project like Oursi hu-beero from a development cooperation project with well-paid international experts and made it much more economical in terms of budget needs.[9]

9 The Faculty of Archaeology of Leiden University agreed to let Dr Petit participate in the project without having to take a vacation, which is of course an indirect contribution to the project for which we are grateful. Michael von Czerniewicz, an engineer by training, spent his holidays on the site and was a useful advisor for technical matters.

From January 12th to 20th, 2005, the archaeologists conducted a quick and precise re-excavation of the site. Administrative preparation and logistics had been taken care of beforehand by the OHB-project, so that the specialists could fully concentrate on the technical work. The project could also draw on experienced local workers that had already been working on the site in the past.

Dr Millogo of the University of Ouagadougou acted as technical supervisor on behalf of the national authorities. In fact, as pointed out earlier, Dr Millogo had already taken part in the excavations in 2000 and 2001, also as the technical supervisor on behalf of the DPC, and was thus the most qualified person to play this role.

The work on the site was intensively documented to create data on the state of the site at the moment of preservation. This was done as a counterweight to the fact that opening the site exposes it to degradation by erosion, animals and also humans in the course of its "commodification" as a cultural tourism asset. The stress exerted on a site by tourism activity needs to be balanced by extensive documentation to ensure proper conservation (McKercher and du Cros 2002: 79-81; Stubbs 2009: 60-61, 141).

During the re-excavation, visits from the Ministry had been planned to make the ministerial supervision within this key phase of the project a reality. Two technical advisors from the MCAT came and stayed for three days with the excavation team. The head of the National Heritage department (Direction du Patrimoine Culturel, DPC) of the MCAT also came for a technical visit with a team from the DPC to see what was being done in the re-excavation and on the museum construction site and to discuss the project's progress *in situ*.

These visits were important elements confirming the national ownership of the re-excavation phase and the museum construction as they ensured control of these sensitive intervention activities on the heritage site. During this period they:

- observed the re-excavation work of the Oursi hu-beero site;
- examined the excavations for the museum's foundation and their impact on the archaeological heritage;
- participated in a civil social event in the provincial capital (see below);
- visited the remains of the Gandefabou project.

15.7 Preserving the site

The developing gullies near the site were an effect of surface water coming down from a higher point in the system of settlement mounds. This surface water had already destroyed parts of the site and kept doing so at a frightening speed. The gullies start developing on the settlement mounds at points where the quantity and speed of the water are high enough to start digging into it. Once the surface is disturbed, these gullies quickly develop up-mound.

Two gullies near the site were threatening to completely eradicate it in a very short time. In the very bad rainy season for Oursi in 2004 – villagers complained of having had only one big rainfall in that year – the gully to the east of the site had nevertheless proceeded significantly and started to damage it substantially. The aerial photographs that we had taken in 2001 from a small airplane showed that the gully was still at a safe distance from the excavated site; this speaks for the urgency in which the project's preservation effort had to intervene.

The search for a viable protection structure to erect over the site was one of the most difficult tasks of the project. No existing experiences could be drawn from in the Burkinabè context. Different solutions were studied and discarded. Some because they were unconvincing as a sufficient and sustainable protection system, others because they were technically and/or financially too demanding within the framework of the project.

Fortunately, when the Programme de Développement Local (PDL) de l'Oudalan (Oudalan Local Development Programme) became a partner they provided the expertise of their civil engineers. In a study they developed a protection system that would effectively reduce impact from rainfall and subsequent surface water, sun and wind erosion. As these measures were more expensive than initially foreseen in the OHB budget, they were introduced as a micro-project in the PDL-programme, which

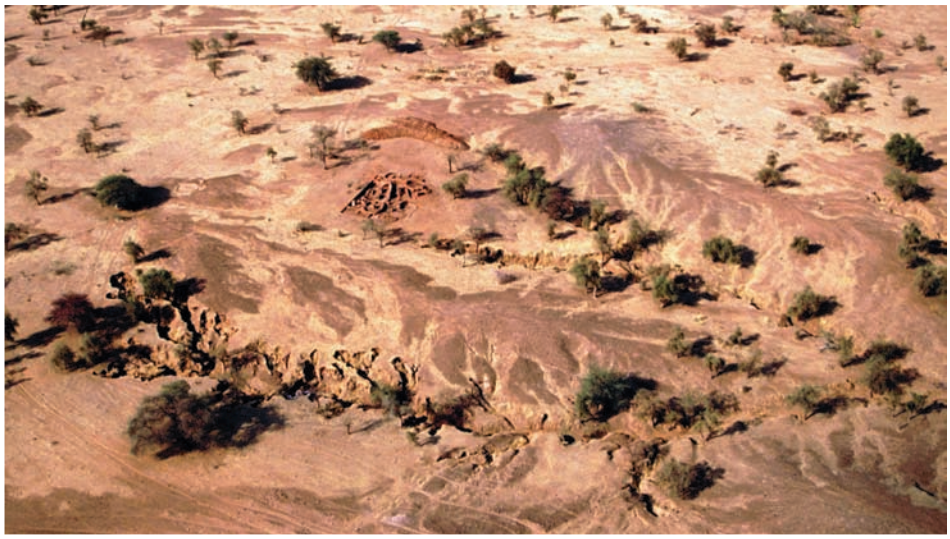

Fig. 15.3 Aerial picture of the site and the erosion gullies. Photo was taken in 2001.

Fig. 15.4 Protection measures at the site. Photo was taken in 2005.

Fig. 15.5 Building the museum. Photo was taken in 2005.

completed the budget.

To protect the open site from rainfall a roof was erected. Its carrying pillars were planted into the site where the archaeological remains permitted it. To fulfil their role, their points of contact with the roof were adjusted by angular supports enabling the weight to be carried in the right spot. Walls were built around the site to protect it from wind erosion and animal impact. Actually, it was first planned to close the site completely only on the weather side, but it quickly emerged that goats would use the roof as a place to find shade in the midst of the ruins. So, the solution was adapted and a wall high enough to keep out most animals was built all around the site.

The erosion gullies that had been threatening the site were filled and stabilised by gabions, *i.e.* rocks kept in place by strong netting wire. In other spots with less pressure, only rocks were placed. This was necessary to place site and protective walls and roof out of danger. The surface water coming down from the top of a higher settlement mound than the site of hu-beero, which had been digging the dangerous gullies before, was diverted by a small wall to prevent new incision processes near to the site.

As there was no successful practical experience in site protection available, solutions were tailor-made for Oursi hu-beero, finding ways to tackle the problems by using technically adapted means in the local context. The result is that the site – which would probably have disappeared or been severely damaged by now – is still in good shape using a not all too expensive protection system that could be put in place by a local construction company from Gorom-Gorom and can be repaired quite easily.

Of course, stress from tourist visits also has to be dealt with. A lockable gate facilitates managing of visitor access. While it was chosen that the site should be presented as a hands-on archaeological experience, access is only granted to small groups accompanied by OHB-staff. When groups are significantly bigger than ten people, they are split into two or more parts. To avoid frustration the waiting time is actively filled by the museum staff. Inside the site, a precise itinerary is used, allowing visitors to see all different parts of the complex without accessing the more vulnerable parts. This itinerary also avoids any climbing or striding over archaeological substance. In 2008, the floor level of the site was filled with white dune sand to protect it from direct impact. What is more, the sand floor heightens the authenticity of the site experience as it resembles more closely what it would have looked like in the past.

15.8 Building the museum

For the museum, a construction method was chosen that combined ecological and socio-cultural concerns. Woodless construction (Construction sans bois) tries to promote a way of building that adds to other initiatives and techniques of preserving the vegetation of the Sahelian savannah.[10]

Of course, the building of one museum does not contribute to preserving the environment. It is too isolated an event. Furthermore, it could have been done entirely with wood from plantations, given that the project grant provided means not available to the local population. But it is a showcase project where people in the region can see and experience the potential of this construction technique on a large scale. Woodless construction reaches its environmental efficiency only when more and more villagers use this technique. Up until now, a lot of them keep using wood from their natural environment to cover their houses with a layer of wood and then a layer of clay – exactly as was done in Oursi hu-beero a millennium ago (see Chapter 5, this volume).

Woodless construction has the advantage that it provides cool interiors without using the amount of wood needed for the former. It was vital to the project to come up with a solution to provide relatively cool interior space that allows visitors to stay inside the museum in a pleasant atmosphere to take their time and come to an understanding of the exhibition and the place they have come to visit. As Oursi had no electricity– even Gorom-Gorom, the provincial capital, only has it since 2001 – and there were no plans to electrify the village in the near future, a non-electrical solution had to be found. Solar

10 See http://www.constructionsansbois.org or http://www.woodlessconstruction.org [last accessed on February 28th, 2010].

Fig. 15.6 Production of mudbricks. Photo was taken in 2005.

panels were not an option as they get stolen very often and need a degree of maintenance difficult to supply in a remote village. In the museum building as it is now, with walls of over 1 meter thick, the interior is quite cool so that visitors can spend as much time as they want to go through the exhibition.

Another major concern had been to find an aesthetic solution for the archaeological landscape in which the museum was to be built. The idea was to have a building that would not dominate the surrounding settlement mounds but rather blend into the landscape. At the same time it was supposed to be attractive for visitors. A connection with the site is evident in its mudbrick architecture.

The colours used were chosen to fit the building into the surrounding landscape and at the same time to create a relationship with the site. The outer walls are supposed to reflect the grey of the sand typically coming from settlement mounds, where the mix of ashes produced mostly by hearth fires from the people who had been living there produces that particular shade of grey, which is thus indicative of past human occupation. The interior walls are an earthly red used in houses of sedentary populations nowadays. As red is the colour of the site this was preferred over ochre, the other natural tone widely used in the area. Doors, windows and the gutters evacuating water from the roof are a deep blue, to approximately match the Sahelian sky on a sunny day.

On the ground lies fine white sand from the dunes – like it used to be in Oursi hu-beero and as it is found in some sedentary habitats nowadays. This pure white sand is found by digging in some parts of the dune field separating the modern village of Oursi and the cluster of settlement mounds where Oursi hu-beero is located.

Woodless construction enabled us also, as an impact on a socio-economic level, to buy as much local construction material as possible. Notably mud bricks, water, sand and gravel could be purchased locally. Transport by ox-cart added a further possibility of income for the villagers. The biggest part of this budget was paid out for the mudbricks that were fabricated around a waterhole in the valley, some 800 metre to the north of the site.

This does not represent a lasting, sustainable impact of the project, but was useful to get large parts of the village population in touch with the project site – leading to intensified exchanges on what was actually being done there. Also, this injection of money for goods and labour into the village came at a valuable moment for the local population. After the bad harvest of 2004, caused by erratic rainfall and a locust plague, the opportunity given by the project to earn money was warmly welcomed by the villagers. It furnished them with cash in time to buy subsidized millet that was provided by the government to diminish the impact of the food crisis by counterbalancing speculation effects on local prices.

Linking back to the fact that a heritage initiative in a less-developed region is mostly perceived from an economic perspective, this element was useful in establishing

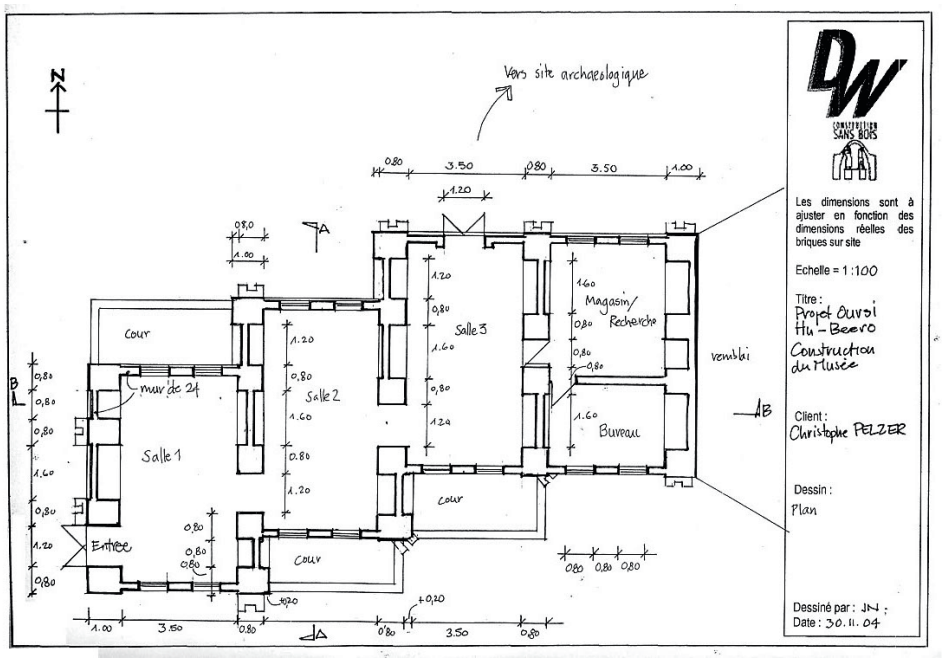

Fig. 15.7 Groundplan of the museum.

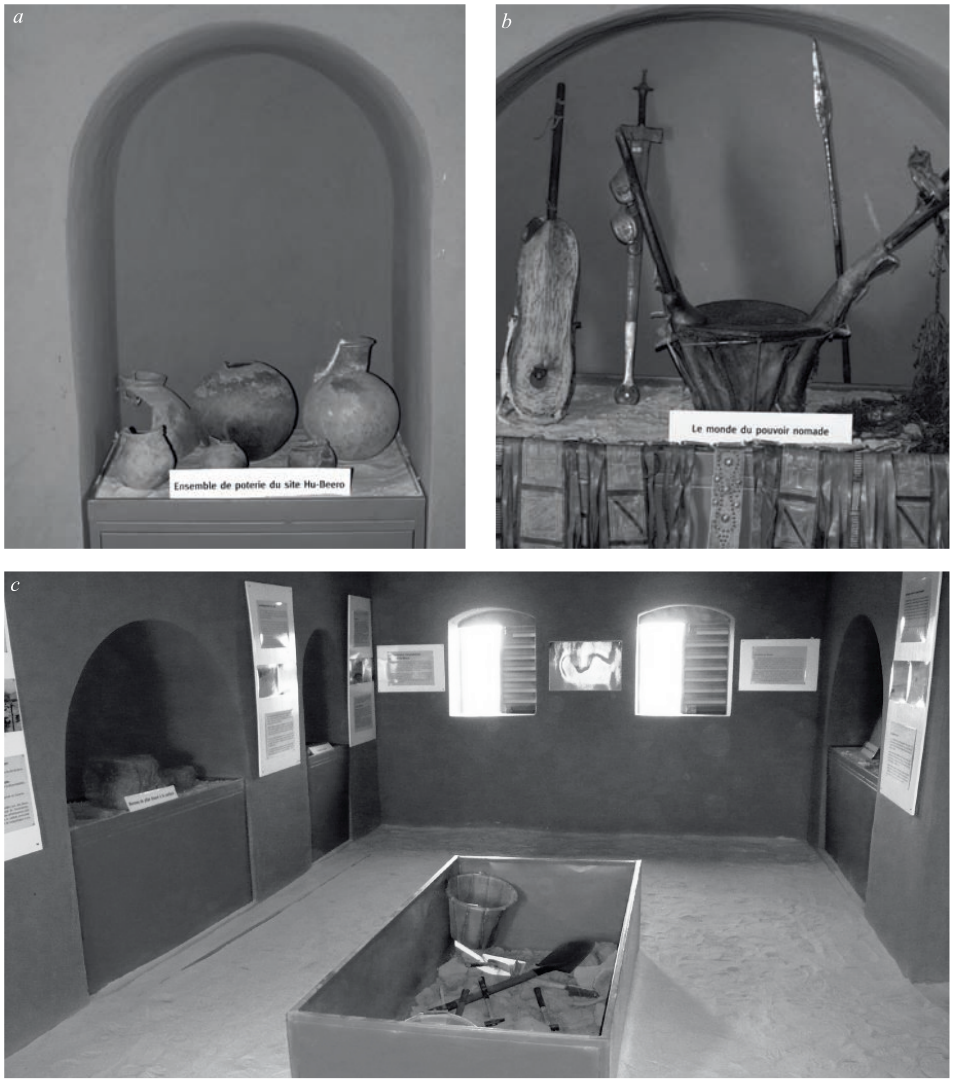

Fig. 15.8 (a-c) The interior of the museum. Photos were taken in 2008.

a direct, short term relationship with what the project was building. Together with representatives of the village it was made sure that there was an even repartition between the quarters Tarbey, Gandatchié, Yabilanouindi, Ouindibéra, Ouangaréouindi, Bodéouindi et Hondobo. Inside of the quarters the population organised the distribution of work itself. The production and transport of the bricks resulted in interaction with the site in a very concrete way so that, for the villagers, the construction of the museum was not just another project.

The construction site was chosen together with Development Workshop (DW) Burkina Faso, the contractor for the museum construction. OHB wanted it to be on the archaeological site to create a direct relationship between museum and site. As the construction site sits on top of the archaeological layers of a settlement mound, quite mobile as a foundation, there were worries about the stability of the building. These could be discarded from DW's viewpoint.

A second concern for the construction site was that the settlement mounds were used as burial grounds. Here the mobile character of the soil was an advantage when digging the graves. The youngest tombs were moving towards of the excavation site from the west, exactly where the museum was supposed to be built. This was because of the fact that for the villagers, unaware of the archaeological value of the site, the hardened structures of hu-beero had provided a sort of quarry for blocks used as weights on the thorny branches put on the fresh graves to keep animals from digging up the corpses.

Obviously, this issue required discussion within the village community. A respected elder and the president of the youth association were contacted to lead a debate in their respective circles on whether the museum could be built there. Both came back with positive messages and encouraged the construction on that very site. The villagers saw no problem in locating future burials away from the site. They let the project know that they had already stopped using the site for "weight making" after having understood the importance of the site and its possible use in attracting tourism.

As can be seen from the plan, the museum is subdivided into four rooms: three spaces are communicating for exhibition purposes with an entrance and exit that leads to the site. A separate quarter has been reserved for administration, archaeological research and storage purposes.

15.9 Writing and producing the exhibition

As has been said before, a compromise was searched for when compiling the exhibition. Two main objectives had to be reconciled in the same exhibition: firstly, the education of local and national visitors, including school classes. Secondly, the exhibition had to be written in a way that would enrich the experience of its paying public, cultural tourists coming to Oursi (McKercher and du Cros 2002: 6-7, 25-42). As the running costs of museum and site were planned to be self-financing with entry fees, the latter group are, of course, equally important. As a consequence, the content and style of the exhibition are a cross between the academic picture of the archaeology, history and ethnography of the region and a big public approach, having in mind both national and international visitors.

Another limiting factor to options was that the exhibition was to be compiled using locally available and inexpensive materials. These have the advantage that repair and change of the content are easy and inexpensive undertakings, allowing for the possibility of updating the exhibition content quite easily. The competent Burkinabè authorities, *i.e.* in the case of the museum content the National Museum, would encounter no major problems in terms of budget if they wanted to change contents of the exhibition. With the local and low-cost solution taken it would only take the work of rewriting, but no major new investment.

The exhibition, following the spatial distribution inside the museum of the three units open to visitors, consists of three parts:

- Explanation of the project and introduction to the history of the Middle Ages of the Niger bend to understand the historical context in which the site is embedded;
- Archaeological description of the Oursi hu-beero site;
- History of the ethnic groups living in the area today, explaining the changes that

have taken place since the times when Oursi hu-beero was inhabited in the Middle Ages.

While the third room of the museum part, showcasing the ethnic mosaic of today and its historical coming into being, is not directly related to the archaeological site in a strict sense, it plays an important role in the audience orientation of the exhibition. The local population had always shown a keen interest in understanding what had happened since the destruction of Oursi hu-beero. It is interesting for them to get to know a version of the region's past as presented by a historian (albeit written in "big public" style[11]) and to compare it with their oral traditions explaining how things became what they are. In conversations with tourists in the region the will to understand where they were had also been identified as one of the major interests. The museum and site give them a glimpse of the past in an area where most of the visitors know little about medieval history; it often comes as a surprise that there was one. Explaining the different processes that led to the transformation of the sedentary lifestyle characteristic of roughly the first fifteen centuries of our era and that left settlement mound concentrations like the one in Oursi to the immigration of the more nomadic groups like Fulani and Kal Tamashaq (Tuareg; see Pelzer 2003), adds to the deepening of the visitor's understanding and experience, in the absence of a provincial museum.

The scenography for relating these stories is simple: strong plywood panels painted white are fixed on the walls around an exhibition room in a clockwise direction starting from the entry point. The panels, basically of two different formats according to the space available on the walls in between the alcoves, are divided into text parts in the upper and lower sections and a picture part in the middle. Only landscape format pictures have been used, thus creating a "decorative band" of photos around the room. A third small format is used on the southern and northern walls in between windows. Different sizes of large scale photos diversify the strictness of this approach and add to the visual appeal of the exhibition. Big landscape photos are placed on the walls in room nos 2 and 3 that are visible on a diagonal axis through the passageways when one enters into the museum.[12]

Simple metal exhibition tables were designed and produced that fit into the alcoves in the walls. They were painted in the same blue as the other metal parts (doors, windows and gutters) to add to the aesthetic coherence of the building. Their exhibition function is created by a rim, which is filled with the fine white sand also on the floor. On this sand layer, objects are displayed.

To make the spatial partition more diverse, structuring elements were integrated in the middle of the rectangular rooms. These were:

- an excavation scene;
- a big pottery jar and a big topplan of the site;
- three stands for ethnographic objects.

Experiences related by the museum staff show that the big topplan in particular catches a lot of attention. It is mounted on a slightly inclined prop and oriented to the north. Visitors look down on it and get an impression of spatial distribution inscribed "into the ground". As they stand to the south of the plan because of its orientation and inclination, they get to look through the northern windows of the museum room where they see, at the same time, the site the plan is representing.

This scenography cannot, of course, be compared to the possibilities that are given in other contexts, given that among other factors a lot of materials used in modern museums were not available and that the museum site does not have electricity. It was developed, again, to fit into the local context, using local means.

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11 Hélène Quénot, today Suarez, has to be thanked for editing the texts and forcing the author to be as simple and clear as possible without reducing the complexity of matters where they have an importance. Her work was *pro bono*.

12 Stéphane Ngondy developed the scenographic concept of the panels and their production. While working for the Centre Culturel Français Georges Méliès in Ouagadougou, he participated pro bono in the project – making for nocturnal work sessions in the author's home, which turned into an exhibition production workshop for weeks in early 2005.

15.10 Management training for local population

The Oursi hu-beero project had been designed in anticipation of a major event in Burkina Faso: the elections of local representatives in newly established rural communities in early 2006. This profound change of the administrative architecture to a more decentralised system has, of course, a major impact on the planning of the institutional linkages of heritage preservation and a museum project. The Malian case also provides evidence for this (Simeone 2007).

It seemed therefore necessary to explain the decentralisation process to the population, especially in such a remote place as Oursi, to provide a better understanding of how the project of a museum could then fit into the new administrative set-up of the rural municipality. In the end a status of community museum run by a local steering committee was chosen. This gives the museum certain autonomy in its management and financial affairs. At the same time, the steering committee comprises a representative of the municipality to ensure they are aware of the project management and can participate in its steering.

In the context of these trainingsessions, the decision that locals would staff the museum and facilitate visits to the site today was taken (Diamitani 2007: 145). It was actually left to the training participants to come up with suggestions. They chose two young adults who had been to secondary school for some time, thus being skilled enough to run a project.

With hindsight, this was an excellent decision. The museum and site offer these young men the possibility to make use of their relatively high level of education in the local context and have an interesting job; an opportunity which they have taken up impressively, showing a high level of appropriation of the project and responsibility for its infrastructures.

The management system developed relies on a two pillar-approach harmonising national and community responsibilities and defining the roles (see diagram). A serious shortcoming remains until today that the community museum status of the project infrastructures has not been formally stated.

Regarding the self-financing mechanism, a balance needed to be struck. The entrance fee for museum and site has been set at 2.000 FCFA (*c.* 3 €) for international tourists, 1.000 FCA (*c.* 1,5 €) for nationals, and 500 FCFA for pupils and students. Local visitors can enter free of charge to ensure the educational purpose of the museum. Visitors in general seem to find that they are getting acceptable value for money; with the staff spreading awareness that these fees finance the project's functioning. The project also pays a small monthly sum to the municipality for the development of the latter. This is mostly symbolic as the revenues of the project are scarce enough to ensure functioning.

Since commencement of its activities in mid-2005, Oursi hu-beero has been operating without subsidies. The entrance fees received from international tourists and national visitors have been enough to pay the staff, the maintain of the museum and site and maintain a bank balance. Obviously, the self-financing system is fragile and would not be able to pay for major repair. For the future a security net should be established, maybe by creating a fund or another body that could step in when bigger investments should become necessary. Still, it must be underlined that it is rather surprising that the first five years of running the museum and site have been possible.

Visitor numbers went up from the first year with a mere 16 paying visitors per month average to over 50 in subsequent years. Of course monthly visitor numbers are very seasonal. Highest numbers are received during the dry season from October to March with for example 170 paying visitors in February 2007. This number comprised a lot of pupils and students, with the result that the actual entrance fees received had been one third higher the month before with only 144 paying customers. This is a good example of the balance in between self-financing and indirect investment into national education.

The increase in numbers is probably a lot due to "word of mouth". By now, the major travel guides that have been updated since 2005 have the site and museum and review it positively. The internet plays a role with the oursi-hubeero.com website and a

Fig. 15.9 Aly Issa and Hamidou Mamadou at the entrance sign.

group on facebook. Organisation of visits has been made easier by the installation of a telephone with a small solar panel, reassuring visitors that they will actually find an open museum when they have come all the way up to the North-East of Burkina and even crossed the sand dunes before arriving at the museum.

15.11 Civil society and educational activities

Being in many respects a pilot-project for Burkina Faso, OHB tried to reach out to a larger part of the population than only those directly involved in the project. The objective was to raise awareness of the topics of heritage and local development. Activities fell into two classes: civil society events and interventions in primary, secondary and higher education contexts.

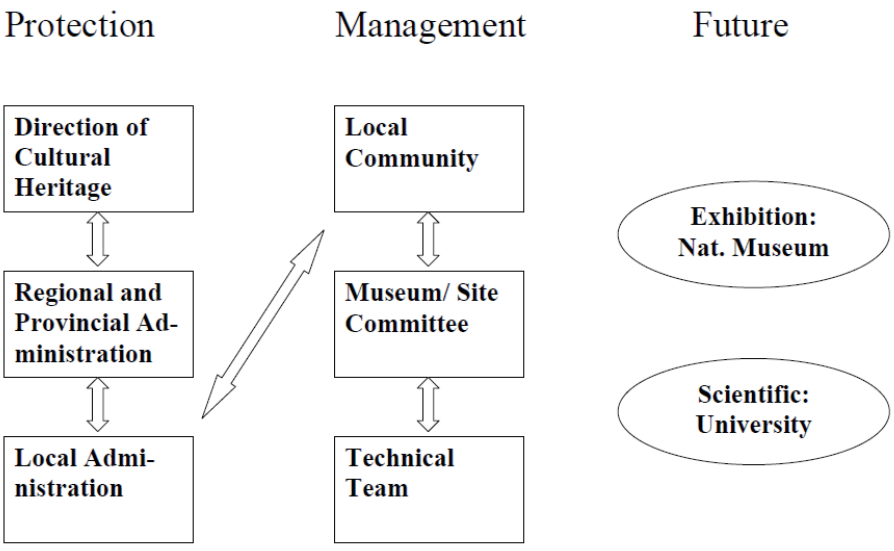

Fig. 15.10 Management model.

Civil society events were organised in the provincial capital, Gorom-Gorom, and in the national capital, Ouagadougou. With regard to the project's content, it was an obvious choice to present it to the general public in Gorom-Gorom. Usually, it is more common to present a project in meetings with representatives of administration services and projects active in the province. But that would have left out a lot of people with an interest in learning about this project dealing with the region's archaeology and history, depriving them a chance to express their views.

During the actual re-excavation, OHB organised an evening under the title "Archaeology and Cultural Heritage: The treasures of the Sahel zone of Burkina Faso". The time was set at an evening hour where everybody could come as an interested citizen. The Lycée Provincial, also a partner of OHB in the organisation of educational visits on the site, hosted the event. The Headmaster had provided the cafeteria as venue, suitable for a maximum of 250 people, because of his desire to turn the school into a place of public debate, an "agora" as he liked to put it. Only very rarely are there occasions in the remote province of Oudalan where people would have accepted to speak at the school for free, so that the OHB initiative was more than welcome.

OHB had provided simple invitation posters that had been put up in shops and public places over Gorom-Gorom. The result was overwhelming: the venue was full, and people were even looking through the windows from outside to follow what was happening inside. The panellists included the team of archaeologists, an advisor from the Ministry of Culture, Arts, and Tourism and the head of project, while the province of Oudalan was represented by their top administrators. It should be noted that the event was not only a success in pulling a crowd, but that a lot of key figures in local life were present as interested citizens.

In particular, the already mentioned presence of a delegation of religious notables should be noted, demonstrating their support for the project. As anodyne as this may appear, seen from a purely scientific or technical preservation interest viewpoint, such support is essential in building an atmosphere of understanding and trust for a project in local society. Heritage projects that obviously operate in sensitive areas of social construction of histories and religious interpretations of past and present particularly need to establish a dialogue on perceptions in local society to create a level of acceptance that favours the integration of the project into the existing socio-cultural landscape.

As well as representatives of the more traditional society, important figures from the local development context were to be found in the audience. This proved to be very useful later. It was, for example, the starting-point of the cooperation with the PDL (see above). The national director of the PDL had been at the event and, when later approached by OHB regarding the possibility of becoming a technical and financial partner of the project, he declared that it had been the presentations and discussions at the civil society event there that had convinced him of the pertinence of the project's approach.

Another important civic society event in the project's history was at the American Cultural Center (ACC) in Ouagadougou, part of the American Embassy. Lying some 360 km away from the project site, the objective was naturally different. Here, it was more to raise awareness of the potential and added value of linking cultural preservation and local development. For the latter the evening was important as it was set in the diplomatic and donor organisation headquarters' context.

While the Director of the ACC had been doubtful about the numbers that would be drawn by such a topic, the presentation of the OHB project turned out to be one of the most successful evenings the centre had seen in terms of attendance. The audience included a good number of ambassadors, high ranking diplomats and decision makers from development agencies, obviously an important target as the objective was to raise awareness of the importance and potential of the topic. Nationally more important, it also included teachers and students from Ouagadougou University. Students proved to be especially eager to hear about the project and seemed to be enthusiastic about it. The evening event also produced a positive echo in radio shows and newspapers, relating the key messages of the evening to their audiences.

Fig. 15. 11 The protected site. Photo was taken in 2006.

Fig. 15.12 The protected site. Photo was taken in 2006.

Fig. 15.13 The museum and site. Photo was taken in 2006.

While the educational activities of OHB had been a very late addition to the project's design – in fact mostly triggered off by the emphasis, that the AFCP call for proposals had laid on this in its 2004 edition – it turned out to be one of the project's most interesting and rewarding parts. It led to the conviction that, given the matter they deal with and its value to the community, cultural heritage projects should always consider making their educational component as large as possible.

In this case, visits to the site by the primary school of Oursi and the secondary school in the provincial capital Gorom-Gorom were organised at different stages of the project. By inviting them several times, not only the archaeological and historical stories, but also the project dimension, *i.e.* the reasons for doing the project and for the choices that had been taken, were at the centre of debate.

15.12 Official opening in 2006

After it had started functioning informally in mid-2005, an official opening ceremony took place on November 20th, 2006. It was a surprise to see that the opening of such a small scale project attracted a significant number of important guests from Ouagadougou, the capital, given the fact that they had to travel some 360 km, of which 260 were not asphalted in 2006. As it represented at least a two day trip, this investment of energy and time was a good indicator of the interest that cultural heritage is able to spark off.

From the central authorities on the Burkinabè side were notably present: the Minister of Culture, the State Minister in charge of Alphabetisation and Non-Formalised Education and the Director of the National Museum. From the regional, provincial and local authorities the Governor of the Sahel Region, the High Commissioner of Oudalan Province and the Prefect of Oursi were present. The donor community was represented by Their Excellencies the ambassadors of the Federal Republic of Germany, the United States of America and the Kingdom of the Netherlands.

The marked interest of all these personalities which prompted them come to one of the remotest municipalities of Burkina Faso to inaugurate a small cultural heritage site

Fig. 15.14 Official opening of the Museum in 2006.

made this an important day for the local community. Events like this greatly help to reduce the "peripherality" mentioned earlier and to heighten the populations' pride and self-esteem. The people of Oursi led by their mayor expressed their appreciation by "turbaning" their visitors, symbolic sign of making them part of the community.

15.13 Larger development context and goals

As a development project, Oursi Hu-Beero follows a strategy that is in line with approaches, such as the former Italian Trust Fund for Culture and Sustainable Development (ITFCSD) of the World Bank, now the Multi-Donor Trust Fund....[13] Cultural projects are seen to be vital to processes of identity building (nation building). Developing cultural pride is especially important in poor countries where one of the main development objectives should be to boost confidence and belief in one's own capacities. In the case of countries like Burkina Faso that are changing their administrative system from a highly centralised to a decentralised structure, these kinds of projects are also a good way to influence decentralisation as a lively experience by involving the local population and allow them to take responsibility as citizens.

As concerns the economic side of projects like OHB, there is growing attention to the possibility of generating income from cultural assets, while promoting their educational value at the same time. This approach creates employment and income, stimulates enterprise development, fosters private investment and generates resources for environmental and cultural conservation. From a human and social perspective, the appreciation of a local community's and a nation's own cultural patrimony brings awareness of their identity. Projects like OHB aim at implementing an intelligent and sustainable tourism that:

- efficiently protects the cultural heritage as a source of cultural awareness and confidence;
- creates economic growth on a national and regional level, providing income opportunities for the local community (especially youth).

All while protecting the local community from the undesirable effects of "wild" tourism development. This is also to be seen as a positive input for social mobilisation and empowerment, promoting inclusion and complementing capacity building and good governance strategies.

The UNESCO programme "Tourism, Culture, and Development in West Africa – for a cultural tourism consistent with sustainable development" covering Burkina Faso, Cap Verde, Ghana, Mali, Niger, Senegal (2004: 11-12) provides the following principles of how to develop sustainable cultural tourism. Projects should be:

- respectful of the culture of local populations and of the environment as worth preserving for present and future generations;
- profitable and fair for local populations via the development of tourism-based economic activities whose benefits will facilitate job creation and the development of services;
- educational, in that they heighten the awareness of tourism actors, including local populations, of the importance of preserving cultural and natural heritage;
- responsible and community-spirited, so that the wealth generated by tourism is redistributed to improve the living conditions – health, education, farming, etc. – of the poorest groups, especially in developing countries;
- participatory: the beneficiaries must be fully involved in the decision-making processes and the shaping of cultural tourism policies;
- unificatory, via national, subregional and international networking of community associations, international institutions, and the public and private sectors;
- ethical in designing and implementing projects that recognise and enhance cultural identity and human dignity;

13 A pdf-file on the ITFCSD can be downloaded from the World Bank-website: http://siteresources.worldbank.org/INTCHD/Resources/itfcsd-rev.pdf [last accessed on February 28th, 2010].

- protective, so that all the actors concerned, including the tourists, are sure of their well-being and safety;
- upgradeable and quality-orientated, so as to enhance and promote new tourist products adapted to changing tourist requirements, and to remain viable in relation to competing destinations;
- imaginative and creative, so as to promote the cultural events and savoir-faire that increase the richness and specific character of traditional and contemporary forms of cultural expression.

Even if not planned on this basis (the report came out only when the project had already been designed and was about to start), OHB can be regarded as a project that has tried to address a lot of these points. Of course, more will have to be done in the future to sustain the project and to enhance its impact along these lines. For example, a programme could be developed to help the population to get to know the tourists and to identify their needs, helping them to develop products that can be sold to customers who come to visit the site and museum.

The report sums up what has been said in relation to socio-economic development and poverty reduction strategies: “Seen in this light, cultural tourism can be a vector for the knowledge, safeguarding and enhancement of culture and cultural identity. At the same time it can contribute to the development of a region via real involvement both of tourism's strategic actors and of the populations living in poverty that should be able to draw economic and social benefit from the situation” (UNESCO 2004: 12).

In a report by Euromonitor International, “Tourism in Africa: Trends, Issues and Forecasts”, Burkina Faso appeared in a line of six “key volume growth destinations to watch” (13th Sept. 2006, p. 19). This is rather surprising for a landlocked country, having neither beaches nor mountains to offer. It is a destination chosen by many travellers for the good atmosphere and easy contact with its friendly population, providing a mosaic of ethnic diversity while being a stable country, and thus a relatively safe destination. Developing heritage based cultural tourism as part of an authentic travel experience seems indeed to be a very good growth opportunity for Burkina Faso. In this respect the conclusion reached by the UNESCO report can be shared: “Given its enormous potential […] and promising initiatives already under way, cultural tourism is a sector with a future in Burkina Faso” (UNESCO 2004: 17).[14] Burkina is only beginning to develop its own cultural assets which could be integrated into different kinds of itineraries, also including neighbouring Mali, to diversify its offering and make it suitable for the different needs and expectations of potential customers.

15.14 Conclusion

In terms of economic development, OHB has had a visible impact on tourism development in the area. There are two privately owned tourist camps, quite basic with traditional huts, but catering for an authentic experience. The tourist camp of Gandefabou that has been a success for nearly two decades now actually opened an antenna in Oursi after the site and museum had opened as they made an overnight stay attractive enough. The enhanced road in between Gorom-Gorom and Oursi and the new asphalt road (160 km) from Kaya to Dori make the journey from Ouagadougou less difficult. Unfortunately, the activity of "Al Qaida au Maghreb islamique (AQMI)" who released Spanish hostages from Mali over the Burkinabè border not far from the museum makes 2010 a difficult year for the project as tourist numbers have of course dropped. This will hopefully be redressed in 2011 with a heightened security ensured by Mali, Niger and Burkina Faso on the three country-border of Oudalan province.

Returning to addressing local educational needs and identity-building, a couple of anecdotal experiences describe what the project stands for and sets out to do:

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14 See also the “Sustainable Tourism for Eliminating Poverty” initiative of the United Nations’ World Tourism Organisation; http://www.unwtostep.org/. In Burkina Faso, the ST-EP Foundation financed the development of a community-based tourism complex in Bazoulé.

While the exhibition team was working inside the museum on the installation of the panels in 2005, two gentlemen of the Saybaatan, a small ethnic group living in two settlements in the vicinity of Oursi (see Barral 1977; Pelzer 2003), were passing by. Invited in, the younger of the two men, literate in French, translated some panels explaining the ethnic history of the region, comprising their own ethnic group. The older man who had carefully listened to his companion, then came over, shook hands and thanked the team for the work being done. He said that this would help their children to better understand where they came from.

While we were discussing management issues with the staff in 2006, a group of women from the village came walking up to the museum. Great laughter broke out among everybody when they were jokingly accused of obviously having little understanding of important things, being the last women in the entire village to pay a visit to the museum. As the staff explained later, women and girls seem to have shown in numbers particular interest in the museum and responded to this educational offer.

On another occasion in 2008, a small group of travelling "marabouts" (Quran teachers) told us that they had heard about the museum across the border in Mali and had decided to come to see it next time on peregrination in Burkina. They visited, with translation into Fulfulde provided by the museum staff. At the end of their stay, visibly happy with what they had learned, they gathered to say a prayer in which they asked for a blessed existence for the museum project and the people involved in it.

While OHB's success with international visitors is vital for its economic survival and to explain the history and culture of the region to these visitors, it is an even greater satisfaction that OHB seems to have taken its place in the local society. It is a foremost concern of the project in terms of human development and a raised local standard of living in Oursi and its surroundings that the project should have a modest but hopefully lasting impact. Beyond this, the interaction with the wider world, reduction of "peripherality" and becoming a small arena for intercultural dialogue on national and international level, is an added value to projects of this kind.

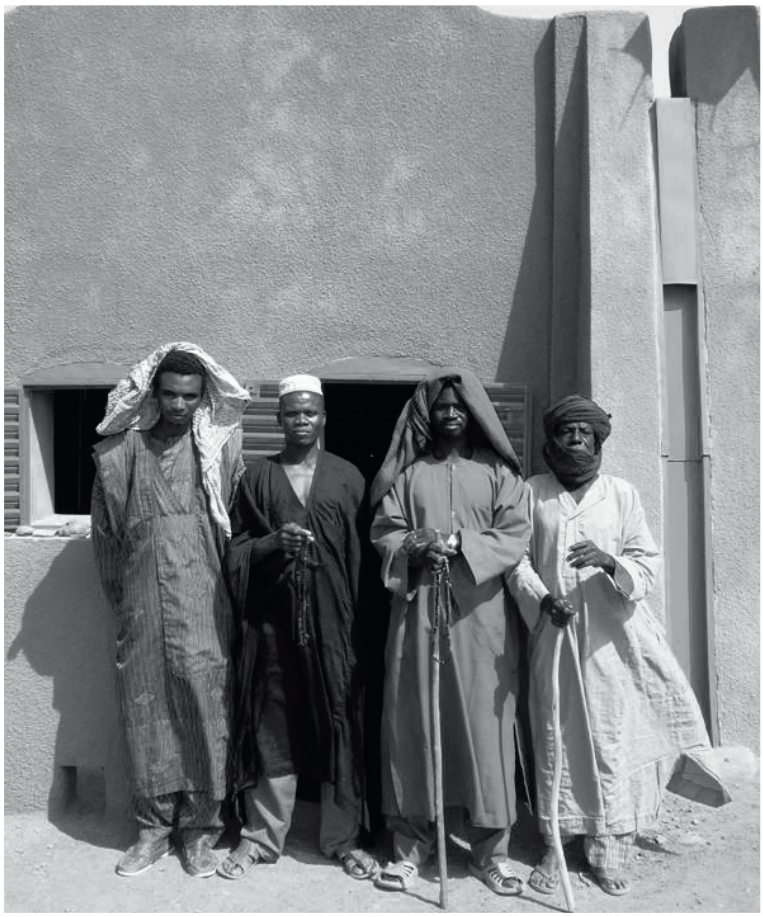

Fig. 15.15 Marebouts in front of the museum.

Chapter 16

Oursi hu-beero

Lucas P. Petit, Maya von Czerniewicz and Christoph Pelzer

16.1 Introduction

The excavation at Oursi hu-beero, which revealed tremendously well-preserved architecture and an almost intact equipment assemblage, has much information to offer in comparison with what are otherwise usually badly preserved and very fragmentary remains out of context, likely to be found in settlement mounds. The evidence from Oursi hu-beero demonstrates, for example, proof of spatial differentiation within households, a functional preference for certain wood-types, and a productive and stable local economy that was made available through surplus resources. In this lies the bulk of new intriguing evidence about Late Iron Age societies in West Africa: a building, their inhabitants and equipment, suddenly frozen. The problem for the editors and all who helped during the different stages of the research was to find a way to unfreeze this scene without missing or destroying elements. The following presents the salient conclusions regarding life and death at Oursi hu-beero.

The preceding chapters have focused on different aspects of the excavation and the ecosystem of Oursi hu-beero. These results proved that the site is rich and rewarding, capable of making an important contribution to the archaeology and history of northern Burkina Faso. Our objectives were, however, not only to assess the different specialised objects of study, but also to understand the local society. We wanted to extrapolate, to put some missing pieces in the large West African historical puzzle, which is still far from complete. In order to reach this goal, we have tried to go beyond the descriptive stage in this final chapter. The editors are, however, aware of their intellectual limitations when it comes down to constructing a lively and inspiring concluding chapter on the basis of highly specialised reports. Concluding actions are regularly limited to summarising in similar reports. The generally executed, rather conservative method among editors of archaeological reports is to favour certain opinions and ideas, and choose between conflicting interpretations: choose the one that fits best. The result is a nice and well-written story, in which the former disagreements are flawed and hidden from the reader. This chapter might be slightly different.

The goal from the beginning of the project Oursi hu-beero was to try to recognise the importance of seemingly insignificant phenomena. This includes also differences in interpretation and ideas, which might be valuable for one, but meaningless for others. How can we decide what information or interpretation is meaningful (or scientific correct), when such a broad range of topics is included? The aim of this last chapter is to find a balance between the presentation of facts, data and interpretations. Whereas previous chapters were built on the result of the author(s)'s own ideas and interpretations, this final chapter tries to bind all these chains into an intriguing and inspiring story. This, however, means that the editors were faced with conflicting opinions and interpretations, such as different functional room descriptions. Different plausible hypotheses can explain the situation (cf. Devisse 1981: note 29) and we are promoting the idea that all potential explanations should be published in a final chapter. This method of concluding the project of Oursi hu-beero hopefully will give the reader the opportunity to retrace the road from (arte)facts to interpretations and to provide him or her with enough data to critically assess the results, which may well be sometimes conflicting.

We hope that this chapter as well as the whole volume will stimulate and influence further study on the material culture, the social organisation and the inhabitants of Oursi hu-beero, Burkina Faso and West Africa. It seems superfluous to mention that there is much more scientifically possible with this unique site than the authors of this volume have accomplished. We would like to ask all who are interested in Oursi hu-beero to continue searching and researching for a more realistic and lively past. The history of Oursi hu-beero is never finished and never final. Available data, plans and figures can be obtained from the editors, as long as the site, the environment and the recent population is given the greatest possible respect.

16.2 Researching processes and events: a methodological bias?

Chapter 19 also deals with two temporal concepts which are intriguing for both archaeologists and historians: processes and events (*e.g.* Pelzer *et al.* 2009). Whereas archaeologists have to generalise upon their scarce discoveries, trying to shed some small light on a dark past full of unknown situations, historians must convert a continuous flow of events into traditions and changes - into processes. Both disciplines are dealing thus with remains of short former periods, but from a different background. Instead of growing towards one another due to a general common interest in the past, both fields are increasingly moving away from each other, mainly due to disillusionment and misunderstandings (cf. Vansina 1995: 370). The dissonance at the juncture between the two disciplines can be simply explained by the difference in the sources, but it seems to the editors of this volume more to be the result of a completely different methodology during the process of reconstruction. The field archaeologist is trying to recall trajectories (not evidently evolutionary!) from limited assemblages of material culture often from different sites and areas, whereas the historian is attempting to construct immaterial events on the basis of literary evidence. The study of non-material aspects of human thought and activity among historians can contribute enormously to the archaeological reconstruction. And archaeology can benefit a great deal by including written and oral evidence in its results. However, there are three major problems when co-operating: 1) trajectories or processes are not the same as events and are hard (if not impossible) to compare and relate, 2) lively literary accounts are not the same as static mute objects, making differences in reconstructions explainable, and 3) pieces of evidence are often contradictory and conflicting (cf. McIntosh and McIntosh 1981: 22). These differences result in a regularly occurring rejection of the other's theories, even though the underlying grounds of the differences are known. Gaps in each other's reconstruction are filled with speculation, reaching ultimately irreconcilable positions. Knowing the limits of each other's discipline seems the first step towards a united future, which is, for the editors of this volume, the ultimate goal. Oursi hu-beero could form a small bridge between archaeologists and historians: the site was occupied almost at the end of the interest of most archaeologists and at the start of literacy in the area. We could envision two disciplines active at the site of Oursi hu-beero. The interdisciplinary approach during all stages of research at Oursi and the presence of the historian Christoph Pelzer have certainly stimulated all in bringing as much information as possible to the surface.

16.3 The time before the event

16.3.1 The settlement

The location of the settlement near a perennial water source and close to important towns along the river Niger must have influenced the settlement of Oursi both in the regional and interregional sense. Visible in the "foreign" influences on the material culture found in the excavation, we may suggest that Oursi had played a role in the regional economic system and possibly even beyond this local level. Mobile groups, especially pastoralists visited the lake with their livestock regularly, passing the village on their way back and forth to the fertile plains. Contact between the more mobile groups and the sedentary occupants of the village is thus very likely. An exchange system is expected, although the villagers seem to have had a mixed subsistence economy, with animal husbandry, farming strategies, fishing and hunting. The spread of

energy among different livelihood strategies is important for survival through certain unexpected dry periods or other unexpected environmental, social or economical events; it will extend life in semi-arid zones until they become competitive rather than complementary.

The excavation of Oursi hu-beero and the survey of the site's surface revealed evidence of the settlement layout. The destruction layer discovered at Oursi hu-beero, marked by red burnt mudbricks and mudbrick debris, has become a key feature in identifying contemporaneity. The wall stumps were partly preserved by the fire, showing equal building methods throughout the settlement with handmade mudbricks and round and rectangular spatial units. The question remains if Oursi hu-beero should be considered one building whose outer walls were unfortunately not preserved, or if the settlement was a conglomerate of constructed units, with little or no free space in between the units. The dispersed and isolated burnt remains on the site, alongside ethnographic analogies, promote the idea of single units during the Iron Age separated by a lot of unbuilt space and courtyards.

The remains of at least 13 compounds, identified by the typical red burnt mudbrick debris, were detected on the settlement mounds' surface in the year 2005. Oursi lacks centralised planning regarding the different buildings. Most of the houses are clustered in the centre of the area in between the large settlement mounds. Even though the architecture does not seem to have any parallels in the area, the equipment in the rooms as well as the size of the settlement (2 ha.) seems to point to a village, rather than an urban centre.

16.3.2 The house

Chapter 5 has described the possible construction history of the residence of Oursi hu-beero. Seven circular units were built on top of older wall stumps, and seem to follow a long construction tradition. Although some scholars have tried to construct a symbolic meaning of circular house designs in West Africa (*e.g.* Crawford 1913: 114; Isichei 1997: 99), the shape seems to be the most convenient and easy form for construction (Ogundele 1998: 261). The buildings stood at regular distances from each other and were accessible by only one entrance. Small walls divided properties and connected these huts, but their exact layout remains obscure, due to later construction work. Architectural remains detected in an erosion gully a little to the east of the excavation area in 2005 show that in even earlier times circular as well as straight walls had existed. As regards architectural construction techniques, there seems to have been a considerable degree of conservatism. No signs of rectangular buildings were seen, as have been discovered at other sites (McIntosh 1995: 65) and the conglomerate of rooms at Oursi hu-beero seems thus the result of a longer time period in which the household grew from a few dispersed circular rooms to a large, completely roofed compound. Some of the spatial units at the sides of the excavated areas reveal signs of erosion, which had already begun to occur during occupation, as well as subsequent rebuilding and renovation activities. The environmental, human and animal impact on the site as was stated recently (Chapter 4, this volume) seems to have begun already during the Iron Age and did cause the people to change their building layout and most likely even the settlement layout.

The building was constructed of handmade mudbricks on top of older architectural remains. The walls still stands to a maximum height of 1.50 m and we assume that the original height of the walls were more or less equal throughout the building. Although the floor levels vary considerably due to irregular older building constructions, we reason here, mainly out of practical reasons, the roof to be more or less horizontal, indicating that the walls of the eastern part were higher than the ones of the western rooms. Recent domestic houses in various areas of West Africa show wall heights of etween 1.60 and 2 metres (*e.g.* Ogundele 1998: 265). Some of the walls consist of one line of mudbricks, whereas others were made of two parallel rows. Plaster was used to protect the walls, and some spots reveal multiple layers. The plastering activity states that Oursi hu-beero was occupied for a relatively long and intensive period and that the inhabitants were a sedentary group with the intention to stay there.

The average room size at Oursi hu-beero is 8.6 m², which is a little smaller than recent constructions. Patricia Crooke's ethnographic study of Yoruba houses shows a traditional room size of around 9.3 m² (1966). At Hani an average room was approximately 9.7 m² (McIntosh 1976: 48), at Begho in Ghana typical rooms measured 8-15 m² (Posnansky 1975) and among the Tiv in Nigeria the circular house (room) size varies from 12 to 71 m² (Ogundele 1998: 265). In the case of Oursi hu-beero the size probably depended on the size and strength of the wooden timbers supporting the heavy clay roof, and less culturally ascribed.

The area south of room no. 18, on the top plan marked as "room" no. 19, was probably devoid of architectural elements and should be interpreted as an open space. It is characterised by a hard packed earth floor, which contrasts with the sand cover detected on the floor of most other rooms, and a concentration of organic remains and animal droppings along the sidewalls. It is also noteworthy that the most eastern wall of room no. 17 was added during occupation, partitioning the unit. This architectural change seems only necessary if the eastern part of the room had partly collapsed or was severely damaged. The southern wall of room no. 24 was already out of use at the moment of conflagration and there was a direct entrance from open space 19 to room no. 24. The grinding stone south of pillar 67 is not atypical for a courtyard.

Due to the fire we were able to detect evidence of a second floor that was supported by rectangular mudbrick pillars and in some of the rooms by wooden posts. The roof consisted of wooden timbers at which a thick layer of clay - up to 20 cm - was smeared. The numerous finds encountered on top of roof debris suggest that the second floor was in use for daily activities, such as food processing, storing, sleeping and eating. Similar habits can be viewed in many contemporary arid and semi-arid regions of the world. The fact that multiple activities were carried out on the roof and regular movement was necessary leads us to assume that the second story comprised a more or less flat roof over most of the building.

Erosion gullies, especially to the west and south of the building, had already damaged part of the house during occupational times. The exact outline of the building and the orientation of the outer walls could only be detected from secondary evidence. The result of the analysis is a reconstruction, pictured in Figures 16.1-4, which combines archaeological data and ethnographic examples.

16.3.3 The people

Discussions about the ethnicity of ancient populations and the relationship with the recent past often go hand in hand with the construction of modern identity, and regularly evolve into manipulation and nationalism. The grounds of these emotional and often symbolically charged ideas are shaky due to the scarce archaeological and subjective historical pieces of evidence, and are therefore to be used with extreme caution by modern ideologists (and thus historians and archaeologists). Moreover, the recent division between ethnic groups and their specific social character does not have to be coherent with the late Iron Age. We cannot answer the question: who were these people? And although we have chosen a Songhai site name, any relationship with the modern inhabitants of the region is purely arbitrary.

16.3.4 Population size

Estimating the population size of a settlement can provide information about subsistence and socio-political organisation, as well as population trends. However, the main problem is that archaeologist has to make generalisations from only a select sample. They have to extrapolate population figures from a very small quantity, with all the risks and uncertainties that are involved. Reliable demographic evidence from excavations (*e.g.* textual evidence) is extremely rare and archaeologists are regularly left with only indirect pieces of evidence. There are many ways for calculating the number of inhabitants of a certain village, for example on the basis of floor area (LeBlanc 1971; Naroll 1962), number of households (Lightfoot 1994), number of rooms (Hill 1970), number of artefacts (Cook 1972; Hassan 1981), amount of food refuse (Cook 1972), storage pits (cf. Hill 1983), hearth size (Ciolek-Torello and Reid 1974), site size (Hack 1942), carrying capacity (Renfrew and Angel 1972; Butzer 1976), and

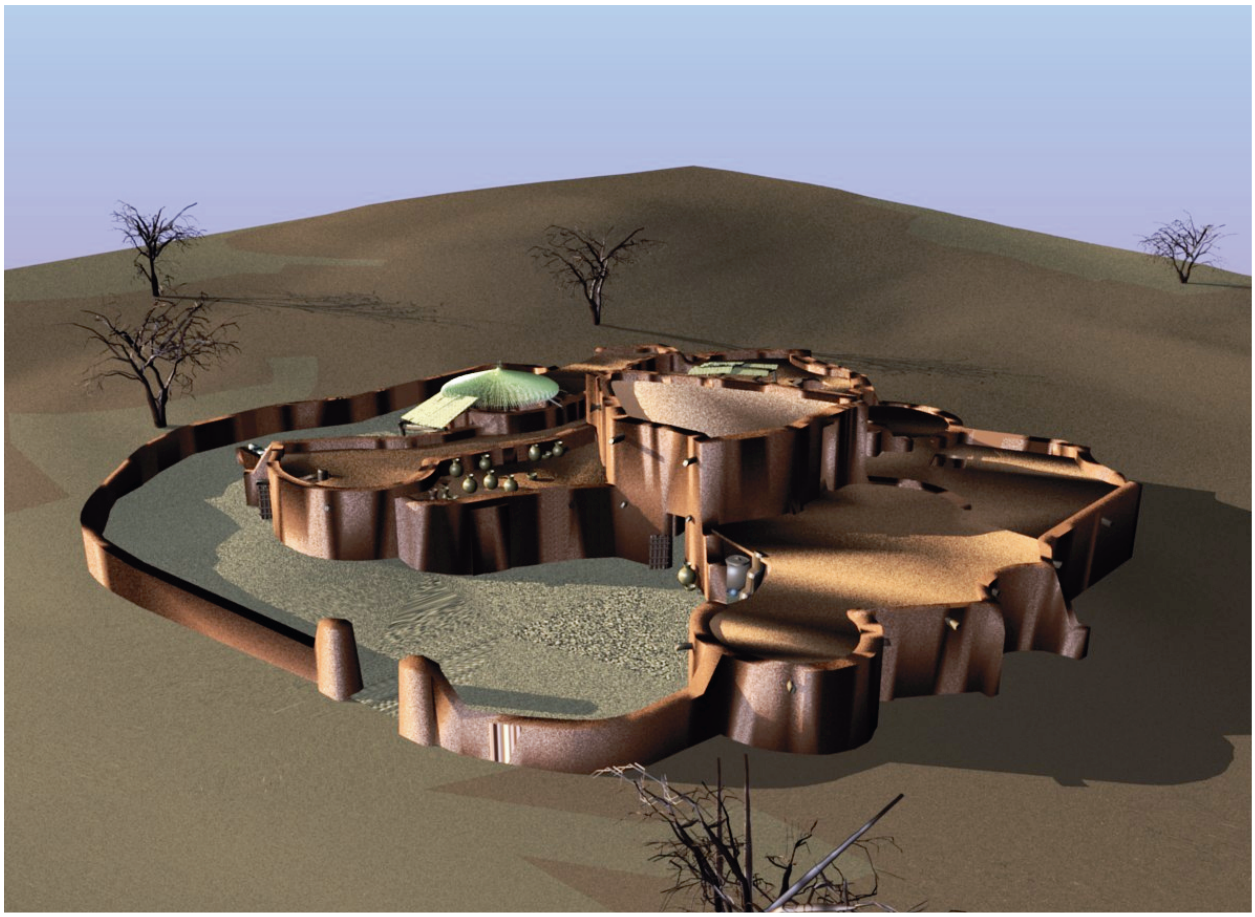

Fig. 16.1 Reconstruction of Oursi hu-beero looking north-west.

Fig. 16.2 Reconstruction of Oursi hu-beero looking east.

Fig. 16.3 Reconstruction of Oursi hu-beero looking north-west.

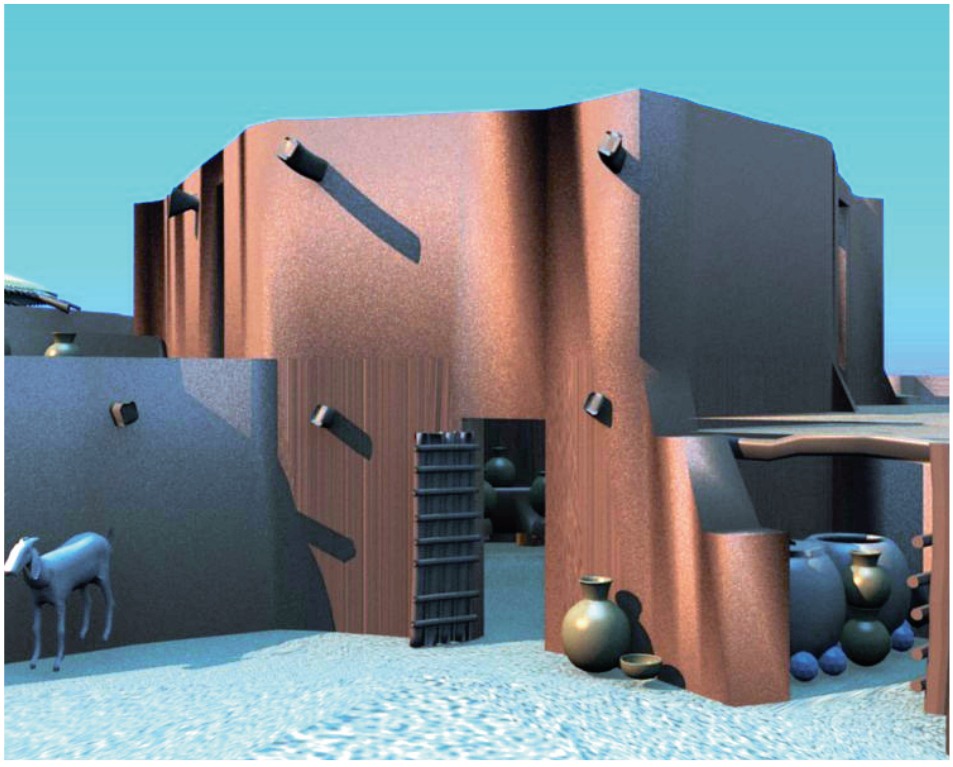

Fig. 16.4 Reconstruction of Oursi hu-beero looking north.

number of burials (Cook 1972). The degree of success is highly dependent on the type of site and the methods of investigation. One of the biggest problems, especially on settlement mounds, is the question of contemporaneity – were all dwellings occupied at the same time? In the case of Oursi we can be pretty sure that all of the burnt structures were destroyed at the same period, and thus inhabited during the last moments. By relying on modern analogies provided by contemporary villages scholars try to overcome the numerous factors that determine population estimates in the past. For numerous areas in the world, among different groups and in various times population density has been estimated, with (as the reader) will notice completely different outcomes: 25-50 persons/ha in modern Mexican settlements (Parsons 1971: 23; Blanton *et al.* 1982: 10), 73 persons/ha in modern Eastern China (National Administrative Bureau of Land of China 1994: 143), 100-200 persons/ha in contemporary Southwest Asian communities (Adams 1965: 25), 146-389 persons/ha in the Jenné area (McIntosh 1995: 374-375), 177-240 persons/ha in Koumbi Saleh (Mauny 1970), 286-302 persons/ha in Yemen (van Beek 1982) and 350-550 persons/ha during the Iron Age in the Jordan Valley (Kaptijn 2009: 372). The following paragraph deals with some estimation methods and the results when applied to the village of Oursi. We have chosen to use only ethnographic analogies from West African contexts.

In the case of Oursi hu-beero best chance of estimating a reliable population size seems to be by using the following four approaches: settlement size, the number of households, the number of rooms and the floor area. The advantage at Oursi hu-beero is that the excellent preservation of the architecture and content enable us to differentiate between living units and courtyards. However this advantage is countered by the erosion processes at the side of the building and at other areas of the settlement mounds, as well as by the restricted excavation area. The phase with the burnt remains, to which Oursi hu-beero belongs, seems to have reached a minimum areal extent of approximately 2 ha. On 14 spots (Figure 1.2) dispersed over the settlement mounds surface fired mudbricks were detected and fragments of burnt walls were popping up from the sandy soil. No occupation remains or material culture were encountered outside this area, and the maximum settled area is thus assumed not to be much larger. Compared to other excavated sites in West Africa dated to the 9th, 10th and 11th centuries AD, such as Tegdaoust (12-25 ha – Kea 2004: 756), Jenné Jeno (33 ha - R.J. McIntosh 1980; S.K. McIntosh 1995: 374), Bentia Village (33 ha – Arazi 1999), Kalifa Gallpou (40 ha), Koumbi Saleh (44 ha – Berthier 1997), Dia (50 ha), Toladie (85 ha – Kea 2004: 760) and Soy (110 ha), the village of Oursi was rather small and the number of inhabitants seems thus in no way comparable with the mentioned sites (cf. Wilkinson 1993a; 1993b; 1994; Kea 2004). If we take a population density of between 146 and 389 persons per hectare (McIntosh 1995: 174), the village of Oursi had a population range in the 11th century AD between 292 and 778 persons.

Looking at the number of burned structures, the density of buildings seems to have been rather low, of course assuming that only those isolated households would have covered the dunes and not a conglomerate of densely built houses from which most have been eroded away. The excavated building of Oursi hu-beero make up an area of approximately 300 m² which should be considered a minimum extent since most outer walls were eroded away (see below). If we consider that all 14 houses had an equal size and were occupied at the same time the total inhabited floor area in the village is estimated to be 4200 m². Naroll (1962) suggested on the base of 18 societies a formula of 10 m² of floor area per person. This means that the village of Oursi had a population size of 420 persons, meaning an average of 30 persons in each household.

A third method that can be used to calculate the population size is to count the number of compounds or households (cf. Lightfoot 1994: 148). On the basis of several cross-cultural studies of household size one could expect between 2 and 12 people in each household, with an average between 5 and 8 (e.g. Sumner 1979: 169-170; Kramer 1982: 159-160). The discovery of one male and one female adult as well as one child under the debris will not be used as the average since no family relationships analysis was carried out, nor is it known if others were living in the household as well. In this study we will define Oursi hu-beero as one compound and assume each of the 13 other burnt structures to be one household. This means that the village had a population

between 70 and 112 people. A demographic study in the Oubritenga Province in central Burkina Faso reveals that today, villages range in size from 10 to 200 dispersed compounds, with an average of about 60 compounds (Diallo 2005: 1). On average, 10-12 people live in one compound. If we take this number for calculating the number of inhabitants of Iron Age Oursi, the village had a total number of between 140 and 168 people.

A fourth approach on which the population of Oursi can be estimated is the number of roofed rooms. Oursi hu-beero had 28 clustered rooms of which at least 19 were roofed and used during the final period. Assuming that all 14 buildings had the same number of rooms, which is indeed highly speculative, the total number of rooms used by people at the village is calculated to be 266. A study carried out in 1980 in the area around the Mare d'Oursi came up with 3.36-3.95 person per room, slightly depending on the kind of ethnic group (Sodter 1980). Using this number (without including the actual size of the rooms), approximately 894-1051 people lived in the village. This seems unreasonably high and probably erroneous. No references were found in which the size of the rooms per person were presented in areas in West Africa. Hill (1970: 75) arrives in Hopi and Zuni pueblos at a formula of 2.8 persons per room, based on an average room size of 9 m². The average size of the rooms at Oursi hu-beero was approximately 8.6 m², suggesting approximately 2.7 persons per room (cf. Table 16.1). Using this formula the village contained 718 inhabitants.

Room no.	Surface area (m²)	General room morphology
3	8.40	Irregular
4	7.25	Circular
5	16.13	Irregular
7	6.75 (estimated)	Circular
9	6.80	Slightly rectangular
10	6.48	Circular
14	3.10	Rectangular
15	3.20	Slightly rectangular
16	5.95	Slightly rectangular
17	5.23	Slightly rectangular
18	20.38	Slightly rectangular
20	12.10	Slightly rectangular
22	9.55	Circular

Table 16.1 Completely preserved, roofed rooms at Oursi hu-beero and their surface area.

Table 16.2 summarises the different outcomes of our short exercise. The wide range of between 70 and 1051 inhabitants shows the danger of using such estimations for further reconstructions. Even though we tend to believe that the estimation of population size based on number of compounds seems the most appropriate here, we are left with no certainties at all. More research has to be carried out at the settlement mounds of Oursi, as well on ethnographic evidence. It is important to keep the following limitations in mind. Firstly, it is not clear how many households were occupied during the final period. It is also not known how many abandoned houses were eroded away during the last 1000 years or so, especially that hadn't been destroyed by fire. Thirdly, the various compounds were certainly not equal in size considering the rather irregular shape of Oursi hu-beero and include functional differentiations. Fourthly and related to the third limitation, the compounds may not have housed the

Approach	Standard	Estimated population	References
Settlement size	146-389 persons per ha.	292-798	McIntosh 1995: 174
Floor area	10 m2 per person	420	Naroll 1962
Number of compounds	5-8 persons per compound	70-112	Sumner 1979: 169-170; Kramer 1982: 159-160
Number of compounds	10-12 persons per compound	140-168	Diallo 2005: 1
Number of rooms	3.36-3.95 persons per room	894-1051	Sodter 1980
Number iof rooms	2.7 persons per room	718	Hill 1970: 75

Table 16.2 Population estimates for Oursi hu-beero.

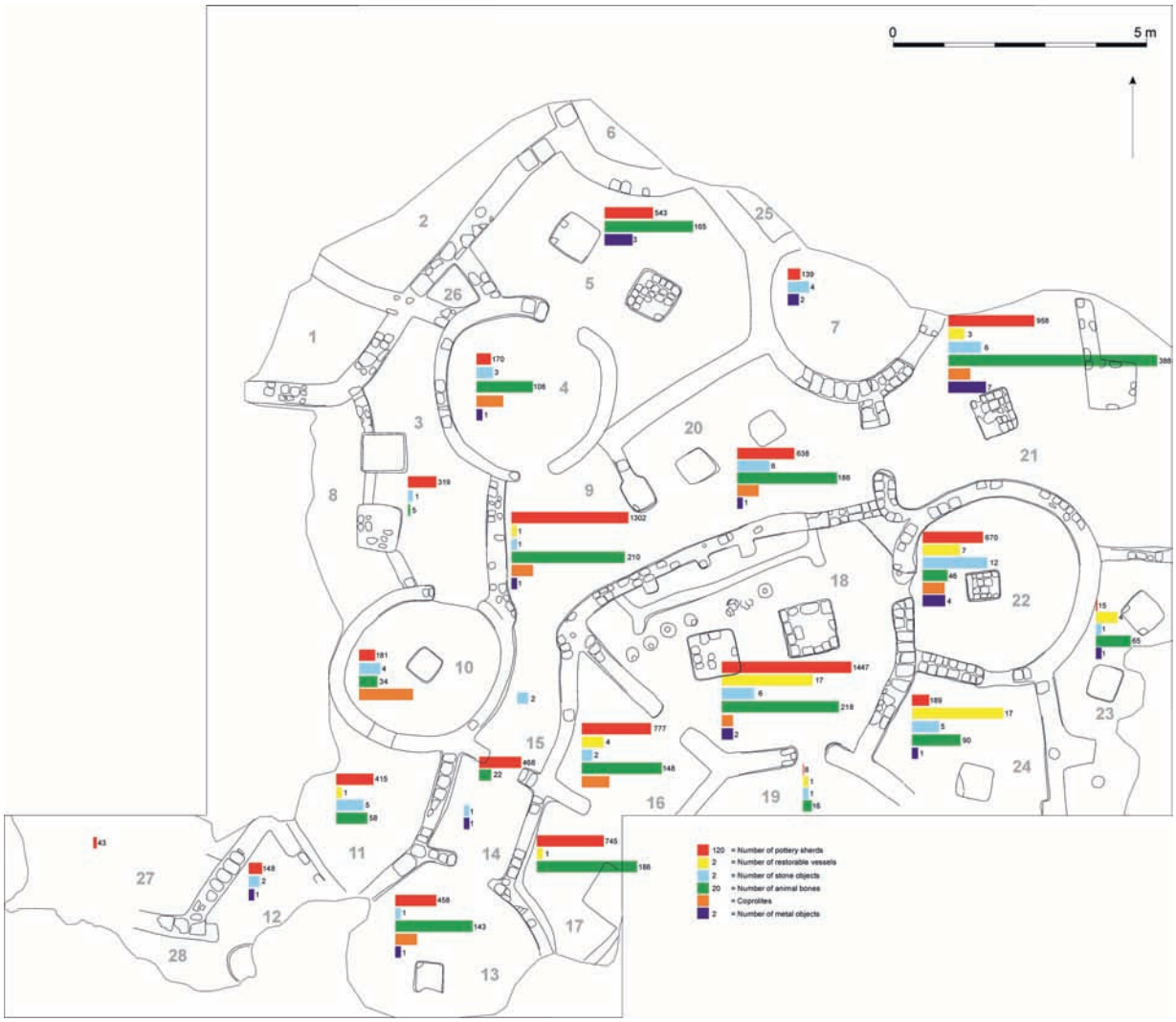

Fig. 16.5 Artefact density at Oursi hu-beero.

same number of inhabitants. And last but not least, the use of ethnographic and ethnohistoric analogies is difficult, due to the uncritical use of terms such as building, room, house, household or compound.

16.3.5 Intrasite Spatial Analysis

The fascinating well-preserved conditions of Oursi hu-beero enable us to draw a detailed map of the daily activities that were carried out shortly before the building was destroyed. And this situation is extremely rare in West Africa and even beyond. Since the beginning of archaeological research, there has been an enduring interest in settlement and room functions, but meagre preservation conditions have often reduced enthusiasm among scholars. They were waiting for the ultimate and once-in-a-lifetime discovery in which some sort of catastrophe has left the ancient inhabitants no time for any pre-abandonment clearance, scavenging, or any refuse disposal behaviour. Oursi hu-beero is such a remarkable example of a unique discovery in which each room still reveals abundant evidence of former activities, the archaeological sample is relatively complete (except for vulnerable materials), hardly subjected to post depositional processes and excavated with adequate modern recovery procedures (although mistakes are certainly made). The tendency for humans to pattern their behaviour spatially is also evident at Oursi hu-beero, although most rooms seem to have been multi-functional. In order to reconstruct the nature and intensity of certain activities in the different spatial units at Oursi hu-beero, both spatial clustering and compositional patterning of artefacts are included (cf. Ferring 1984: 117).

The translation of artefacts and remains into human behaviour still mainly depends on ethnographic analogies with all their known disadvantages and shortcomings. Ethnographic models should be used with great caution and within a restricted area; they are almost never generally applicable. In the following reconstruction we have combined architectural characteristics and the implements and materials used in certain activities as definers of room function, and have compared those with exemplary ethnographic analogies. In this way, the different functional patterns and their relationship was hoped to be revealed, which the authors consider to be a good way to understand the complex social organization of an ancient settlement. While each room seems to have been used for more than one activity we have decided to divide the following paragraph into different kinds of functions and their location within Oursi hu-beero, rather than a division in rooms.

Animal holding

Although animal holding is and most likely was an important subsistence activity in the area around Mare d'Oursi, recent analogies of keeping animals inside the houses are limited. Pasture lands were available in the plains to the north of the lake and herds are extremely mobile, as are their herdsmen. Only by exception are animals kept in the interior, for example during periods of illness and pregnancy. More frequently, groups of animals are protected from wild animals in an enclosed area nearby the house. Bushes with thorns are used as fences today.

Nevertheless, there are some direct and indirect pieces of evidence that animals were kept inside the house. The most obvious signs that animals were able to enter almost all rooms are the presence of coprolites. Coprolites were encountered in several rooms with larger concentrations in room nos 4, 10 and 16 and a smaller amount in room nos 9, 13, 18, 20, 21 and 22.

Room no. 10 in particular seems to have been used for animal holding. Other artefact groups are few and it seems that this part of the building was roofed with organic materials and wood. The remains of a wooden fence were discovered close to the entrance. This part of the complex was accessible from the outside, since part of the structure had collapsed during its habitation. It is possible that the partly ruined rooms were re-used as animal stables. Analysis of charcoal from the same room also hints at animal holding, since it contains leaves that are often eaten by sheep and goats. As the construction drawing suggests, animals were able to walk from the courtyard into this room.

Storage

The inhabitants of Oursi hu-beero would have produced a surplus in order to protect themselves from misfortune, mismanagement and the effect of dry seasons on daily food procuring. They enjoyed economic independence throughout the year by intensifying subsistence production and maximisation of land exploitation during favourable times. The excavations have revealed numerous signs of storage patterns with a seemingly primarily economic background. Ensuring sufficient food is vital in arid and semi arid areas, where climatic conditions are unpredictable. However, some storage facilities at Oursi hu-beero might have been more socially induced, for example in order to create and maintain exchange networks or to show the inhabitants' social status and value.

A stock of wood has been identified in room no. 21. Firewood seems the most suitable explanation, since all taxa are suitable for this function. However, a stock for roof repair cannot be excluded.

With the possible exception of room no. 24, no rooms contained evidence for the storage of animals as food. Bin 1 in room no. 24 contained the remains of an ovicaprine foetus. But it remains obscure whether this was stored food, a disposed individual or perhaps the remains of some kind of ritual.

Many restorable flasks were discovered in room no. 24. Together with two bins similar to present-day granaries, which yielded the charred remains of *Acacia nilotica*, they seem to point to the storage function of this room. However, while no signs of the vessels' contents were discovered, the storing of (empty) ceramic vessels is also possible, perhaps waiting to be sold. Recent ethnographic studies observe of prestige

surplus of ceramic vessels among women of the Kassena in southern Burkina Faso. Compared to other rooms, room no. 24 had a very limited number of broken single sherds. The many flasks were certainly used for fluids, since the opening was small and easily closed by the perfect round potter lids. Since no lids were found in room no. 24, it can be suggested that the vessels were not filled at the time of the conflagration. Water was stored in at least two large vessels in room no. 11 and room no. 18. Where in room no. 24 numerous empty flasks were located, on the roof debris in room nos 16 and 17 many pots were found. No signs of their contents were found, but a more solid content is assumed.

Room no. 7 reveals a high proportion of pearl millet grains with husks and involucres, which is said to be more suitable for storing. No ceramic containers were discovered associated with the plant remains. Also nearby vessel no. 16 in room no. 21, some pearl millet was discovered, but it might be the result of contamination during the final destruction. Other ceramic vessels, nos 54 and 59, which were standing on the roof of room no. 13, were used for storing cowpeas. The same food products were discovered in room nos 16, 19 and 21.

Room no. 24 revealed two low fired bins that resemble recent granaries. The bins were raised by putting them on stones, probably aiming at preventing moisture from reaching the content (cf. Ogundele 2007: 218). Remains of a clay lid were discovered in bin 1. According to Ogundele, the use of this cover seems to have been developed and evolved from pottery technology (2007: 219). Certainly, it could not completely close the bins and it might be a protection against the domestic animals that were able to enter almost all of the rooms (see above). The content of the two bins in room no. 24 consists almost exclusively of seeds and pod fragments of *Acacia nilotica*. The quantity of these finds and the monospecific composition indicate that they represent stocks. There are different functions for this plant surplus, from human food, to fodder to tanning agent. The most likely usage is for tanning leather and dyeing. The maturity of the harvest in particular remains a point against human consumption, and the pure and monospecific composition of the bin contents constitutes a major argument against the interpretation of the stored fruit as animal fodder.

The existence of stored material in Oursi hu-beero does not have to suggest that the residents belonged to an elite group who were controlling surplus and labour. Similarly to recent populations in smaller villages, we suggest that the surplus was mainly organised on a household level with the ultimate goal of overcoming the dry period or sometimes bad years.

Food preparation and consumption

Most indicative for food preparation activities are the lower grinding stones in situ. At Oursi hu-beero four lower grinding stones were discovered that seem to have been used shortly before the conflagration. Room no. 21 reveals a worn out lower stone embedded into a clay platform, and also room no. 24 contains a lower grinding stone that was fixed on a platform. A third smaller stone was discovered on the floor in room no. 3. Whereas the first two were situated near other food preparation and storage facilities, this lower grinding stone was found in a room probably associated with animal holding (see above). Its position on top of the floor in between stones to avoid slipping indicates, however, that it had some sort of function during the time animals were kept in room no. 10. The largest lower grinding stone was in use on the roof above room no. 20. The stone had been used for quite a long time and a hole had been formed in the middle due to intensive use. Nevertheless, the stone could have been used on the sides.

Room no. 21 revealed two hearthstones, but no direct association between these stones could be stated. Other single stones with heat cracks were discovered on the floors of room nos 11 and 17 and on the roof above room no. 4. The number of pottery sherds and some restorable vessels suggest this room to have been used for cooking and storing.

Room no. 13 contained threshed pearl millet grains baked together on fragments of calabash, Sorghum bicolour and Hibiscus sp. They seem to be the remains of prepared food. Also the lumps of cleaned pearl millet in room nos 18 and 16 may be the result of accidental charring during food preparation. Merged grains found in room no. 4 might

be evidence of food preparation, although the exposure to heat could also be the result of the final conflagration.

Religious activities

It is difficult to assess the role that religion played in the life of the inhabitants of Oursi hu-beero. The focus of archaeologists on subsistence, settlement and economy is particular visible among scholars working in Sub-Saharan Africa. This ignorance for religion arises from the fact that there is no agreed-upon theoretical or methodological framework for dealing with ancient religion (Marcus 1978), and the lack of exact provenance of items possibly used for ritual. Ritual and religious activities have played a prominent role in historical and sub-recent African societies not only within the community, but also at the level of the individual. A good example of ritual behaviour in daily activities in historical times is the symbolic meaning and accompanying rituals of iron production (Herbert 1993). The whole production cycle was wrapped in a veil of secrecy, only penetrated by special families and persons. It is thus to be expected that in the Late Iron Age, people of Sub-Saharan villages would have also carried out activities that may be interpreted as being ritual or religious. But how are archaeologists able to distinguish those from regular daily activities? Besides the absence of a theoretical and methodological set of data, we are faced with very meagre evidence from Iron Age settlements of activities that cannot be categorised among one of the groups mentioned above; the regular activities carried out by the inhabitants in order to survive. Most information stems from historical and sub-recent studies, in which written documents in particular give the necessary details. It is extremely difficult to translate a particular activity from a static object. This counts for all objects, but especially for those which do not reveal traces of use, like grinding, rubbing, firing.

At Oursi hu-beero no movable objects were found that could be interpreted as having been used in ritual activities. By using ethnographic examples we were able to assign a function to all of the objects, except for one clay dome-shaped item. But what if ritual activities were performed with regular objects, such as flasks, grinding stones and animals? Archaeologists may discover the different objects *in situ* thinking that the room was used as kitchen. Unless textual evidence is present, archaeologists will always have to deal with this unsolvable problem. There are, however, other moments in which scientists are not able to explain certain contexts. This might be a special room shape, an unusual arrangement of household equipment, signs of artistic expressions on building features or an over-average number of a certain object. If this situation is found, the scholar is faced with a modern conflicting issue. If he or she interprets the finds as a ritual place, colleagues will criticise the scholar for applying the reasoning that what is unknown to archaeologists must be religious. However, when the situation in the field is so unusual, and without any ethnographic analogies, the scholar has extreme difficulty in fitting it in a regular concept of ancient societies. This is what occurs at the site of Oursi hu-beero.

Room no.18 reveals an arrangement and certain features that do not have any known parallel. Each find can certainly be explained, but the group is hard to place into a known scheme. Two different functions have been suggested for this arrangement, and one of them is ritual. The ceramic vessels as well as the bench were filled with ashes. This habit is known from other ethnographical examples where it is related to ancestor worship. Also, the smaller clay pillars in front of the bench, showing no sign of regular use, can be explained in the same way, comparable to traditions among contemporary groups like the Somba in northern Benin. In the same room the pottery reveals a larger variety of decoration than in the other spatial units. The increase of polishing and decrease of string and strip roulette especially suggest this room not to be associated with transportation, liquid storage or cooking activities. Are we seeing here a central room with a special, ritual function? There is another explanation possible, especially due to the finds made in room no. 24.

Craft and industrial activities

Room no. 24 provides intriguing information about the house. A large number of flasks and pots were discovered, most of them smashed on the floor during the conflagration,

and two large bins were standing along the western wall. The presence of several pots in one room points to a storage function for that particular space (see above), either for storing the content or the vessels themselves. It is also suggested and seen in recent African societies that women possess a number of pots as a dowry. The charred content of the two bins in particular suggest, however, the storage of the seeds of *Acacia nilotica*. A number of arguments prove that these remains were not used as fodder but for another purpose. One of the most favoured suggestions is the dying of leather. Further equipment that is needed for this craft are ashes, water, ceramic containers and places to let the skins dry. All of these objects were found in the rooms surrounding the storage room. The identification of room no. 18 as a cultic or religious centre is thus far from certain, and it might well have had a function in industrial activities. To be discussed is the absence of any signs of use on the items in room no. 18, which is to be expected if they were used regularly in an industry.

The discovery of the hematite stone, the ground colour powder and the grinding equipment is a relatively rare find in archaeological contexts. Hematite is a heavy, deep red iron oxide and produces a red colouring material if ground. The raw product can be found not too far away from the site. A chunk of hematite was encountered on the floor of room no. 16. One face reveals the marks of grinding. Several grinding stones reveal traces of hematite powder. Three pestles with a red stain probably from hematite were detected in room nos 4, 11 and 21 respectively and a lower grinding stone with a similar substance on the grinding surface was encountered on the floor of room no. 22. Most remarkable, however, was the discovery of the actual product: a small amount of powdered hematite could be associated with vessel no. 58, which was located on the roof above room nos 13 and 21. It remains still obscure as to whether each household was colouring their own textiles, skin, pottery or architectural features, or if this was a specialised activity performed by only a few inhabitants in the village. Considering the idea of leather dying in the same house, an association with colouring animal skins is a reasonable explanation, however not stated at this point. Nevertheless it is known that red powder mixed with oil and rubbed on hides keeps them soft and flexible. Also the connection between textile production and hematite powder is regularly found in archaeological contexts all over the world (*e.g.* Wouters *et al.* 1990; Baldia and Jakes 2007).

Other more individual craftsmanship that took place in the house was the (re)-sharpening of metal equipment. A stone with signs of this activity was discovered on the floor of room no. 9. The few pieces of metal slag discovered in and around Oursi hu-beero should be interpreted as being accidentally or naturally mixed with occupation remains. No signs of any metal production were discovered in the house. About one hundred meters to the north, on the edge of the plateau looking over the long flat plains, a large concentration of iron slag was found, indicating the production of metal to be in the vicinity. It is unknown if this production evidence was contemporaneous with the habitation of Oursi hu-beero.

Habitation

Comparably to recent examples, most of the living activities probably took place in the courtyard or on the roof. There is, except for the activities discussed above, little evidence for living in the sense of sitting, sleeping and eating. The only example might be room no. 22. It comprises parallel pieces of wood that might be the remains of a sleeping berth. However, other possible functions could be a stock of firewood or fragments of the ceiling. The regular positioning of the large beams (more or less North-South) and at least three smaller parallel branches in between point to a deliberate action. The discovery of charred leaf remains of baskets or mats directly north of these charred beams seems to promote the idea of furniture. Also other finds in room no. 22 suggest this unit was used for habitation. An assemblage comprising one vessel showing a rare decoration, several one-handed upper grinding stones and numerous metal objects differs from rooms with mass products, lower grinding stones or evidence for storage.

16.4 The event

16.4.1 Introduction

The remains provide detailed information about the final event that ended Oursi hu-beero. Nobody at the complex seemed to have expected what came at the start of the second millennium AD. The act literally overran and surprised the inhabitants, not only those of the house but of the whole village. To reconstruct historical and archaeological events, however, is virtually impossible considering the uncountable possibilities that could have taken place. To connect general processes during the African Middle Ages with things that happened in northern Burkina Faso is, therefore, not only very difficult but also very dangerous. The discussion between historians and archaeologists (Robertshaw 1997; 2000) should, in the view of the authors of this volume, be replaced by a critical discussion about the events that can be recognised within the processes. At Oursi hu-beero different processes are identified that were important for the West African Iron Age, but also for the literary African Middle Ages. The event that ended the occupation is part of the processes, although a one-to-one cause and effect is hardly realistic.

16.4.2 Year, season and time

Year

Whereas in many archaeological settlement studies, absolute dates could be established by numerous ^{14}C dates, the samples studied at Oursi hu-beero give room for certain speculations. The contradiction or large divergence between the short-living samples and building wood, as described in chapter ^{14}C, is astonishing, where the latter reveal a later date. By using numerous techniques, such as weighted average of the ^{14}C dates, we tend to believe that the occupation of Oursi hu-beero can be placed in the 11th or beginning of the 12th century AD. The ceramic evidence found on the floors of the complex places the occupation period in the transition from middle to late Iron Age, which was dated by Von Czerniewicz (2004) to around AD 1000. The fact that the ceramics point to a slightly older date might be explained by the importation of "older" ware from the north.

Season

Determined by the climate, the occupants of Oursi hu-beero, like their modern counterparts, lived their economic lives in regular cycles that fluctuated throughout the year. These dynamic activities involved, for example, working on the land in certain months, building stocks of products and the use of the roof for daily activities during the dry season, and the plastering of the house shortly after the rainy season. The methodology of extracting seasonal information that was an integral part of prehistoric settlement studies in the 1960s and 1970s as a component of the New Archaeology (Willey 1953; Winters 1969), appears to have a good testing ground in Oursi hu-beero. No other examples of archaeological settlement studies in Africa dated to late antiquity are known to the authors, which have tried to reveal information about the season the destruction took place.

What methods are available and which can we actually use at Oursi hu-beero? At prehistoric excavations, the most frequently used method of estimating the season of site occupation was to determine the presence or absence of available plants and animals (*e.g.* Winters 1969; Pike-Tay 1991). More advanced methods have been developed over the last twenty years, ranging from microscopic analyses of growth increments in teeth, bone, fish otoliths, shells and antler pedicles (Monks 1981; Van Neer *et al.* 2005). The growth rate is influenced by seasonal changes in the environment. At Oursi hu-beero, specialised studies of discovered plants and animals, as well as the distribution pattern of the material culture within the house have come up with surprisingly detailed evidence concerning the time of year in which the house was destroyed.

In room no. 10 evidence of *Guiera senegalensis* was encountered, interpreted as animal fodder. Since this taxa stay in full leaf a long time into the dry season at a time when other trees and shrubs are bare, its presence implies that the destruction took place

towards the end of the dry season. The stocked organic remains in bin 1 and 2 show signs of insect attack. The evidence from bin 1 especially points to long-term storage of the harvested seeds. Considering the storage of plant material took place directly after the harvest at the beginning of the dry season, there must have been sufficient time for the insects to infest the surplus. A weaker argument that the conflagration took place in the dry season may be the absence of three associated hearthstones in the interior of the house. This could indeed mean that cooking was executed outside or on the roof, which was usually not possible during the rainy season (cf. Osasona 2002, 4-6). However, we should be careful using this argument as temporary shelters of plants for cooking, as are often seen in recent West African societies will not survive the fire. What we do see at Oursi hu-beero is a large number of vessels on the roof. Even though part of the roof might have had a cover too, this astonishing number would not have been expected to stay there during heavy rains. Different shapes were found, including serving vessels and storage containers. The latter in particular suggest that no rain was expected by the inhabitants. Intriguing, too, is also the wood storage in room no. 21. The collection of firewood increases at the end of the dry season in order to survive the rainy months. The presence of a major stock in the house indicates that the destruction of the houses did not occur at the end of the rainy season. Also the content of some of the coprolites support this hypothesis, although not conclusively (Kahlheber, personal communication; see also Petit *et al.* 2008).

Pondering the evidence presented above, we are confident in proposing that the final fire took place at the end of the dry season, but before the rain began to increase. In order to detect which months, it is necessary to look at the historical climate tables; the palaeoclimate data. What were the climate conditions during the 11th and beginning of the 12th centuries AD? And interestingly did the dry season in the 11th and 12th centuries AD equal that of recent times, namely the period between October and June? It is beyond the scope of this publication to give a complete summary of the paleoclimatic changes of the last few millennia. Rather, we will concentrate on the two centuries in which we place the habitation of Oursi hu-beero, the 11th and 12th centuries AD, and compare the outcome with the conditions today.

For early historical times, when we consider the occupation of Oursi hu-beero to be, natural sciences data are rare and rest primarily on lake levels (Maley 1981; Russel *et al.* 2003) and ponds deposits (Ballouche 1998; 2001; Ballouche and Neumann 1995). Let us look at the general ideas about climate conditions at the end of the first and beginning of the second millennium AD. Even though some scholars seems to exaggerate the data (*e.g.* Reichelt 1977), the end of the first millennium AD marks “a humid pulse between two drier periods” (Mayor *et al.* 2005: 29). The following drier period started around the 11th century AD, and seemed to have caused a major shift in occupation pattern in West Africa (Brooks 1986: 51-52; McIntosh 1995: 376). This aridification was detected at several places throughout West Africa, including the Lake Chad area, where a drop in the water level over the last millennium was identified (Sutton 1982: 310). There was a moderate drop between AD 1000 and AD 1150, but a severe one around AD 1300 (Maley 1973: 177). Studies in the Inland Niger Delta indicate increasingly dry conditions during the 11th and 12th centuries AD (MacDonald 1992b) and the Bosumtwi Lake in Ghana was also low from the 10th century AD onwards (Talbot and Delubruas 1980: 341-342). Also textual evidence point to a short-lived climatic change during these centuries (*e.g.* McDougall 1985: 8; see however Nicholson 1980; Brooks 1998). However, this picture is not as simple as described above. Climatic reconstructions are generally based on paleoecological data. While everybody is agreed upon the fact that the impact of man on the vegetation during the last 3 or 4 millennia is incontestable (Ballouche 2002), man's influence on that paleoecological data is still not fully understood (Ballouche 2001; Mayor *et al.* 2005: 27). To what extent are these supposed signs of a drier climate the result of human induced change in the vegetation cover?

For the moment, we will propose that the paleoecological evidence for a dry period in the 11th and 12th centuries AD that has been backed up by newly gathered data on dune reactivation (Stokes *et al.* 2004) is mainly climate induced. The question remains as to whether the inhabitants would have noticed this change. Year by year variability

dictated their lives, and a gradual change would hardly have been seen unless a change in food quality/quantity and vegetation was experienced (Höhn *et al.* 2004: 247). And that seems not to have been the case if we compare the archaeobotanical and archaeozoological data of Oursi hu-beero with Late Iron Age sites in the vicinity. But even if the inhabitants had not noticed a clear climate change, palaeoclimatic data reveal that the dry season was slightly longer in the 11th and 12th centuries AD (cf. Nguetsop *et al.* 2004). This means that the destruction of Oursi hu-beero took place between March and June.

Time

The places of discovery of the human individuals are dispersed across the complex. Considering the fact that people were expected to rest and sleep on the roof during night time and especially during the hot dry seasons, the inhabitants were not killed in their sleep. The location of the child in particular suggests that this person was on the ground floor and could only hide behind a pillar. It is less convincing that the child was sleeping on the roof, woken by attackers and could climb down the roof. Another argument for it being daytime is the fact that the female adult and the child were wearing jewellery. At the end of the dry season, the midday temperatures can rise up to 45°C in shade. The attackers (see below) would certainly have chosen a time that was less hot, presumably either in the early morning or in the early evening.

16.4.3 The attack

The artefacts discovered on the floor and upon the roof of Oursi hu-beero represent mainly regular household equipment and hunting tools. No signs of weapons used for defending or attacking were excavated and the three individuals could not be associated with any protecting item, such as a dagger, knife or sword. At Oursi hu-beero a very unusual situation was encountered; not only were signs of a hostile attack evident, the victims were still lying *in situ*, exactly on the spot where they were murdered. This is a very rare opportunity, since most victims in ancient crimes were reburied by family and relatives, or the evidence was disturbed or completely removed by post-depositional processes. Except for living suspects, the situation is comparable with a modern crime scene. Crime scene investigators often follow the same strategies as archaeologists. Even the smallest piece of evidence can be useful for pinpointing a suspect and for reconstructing the crime. That is what we try to do in the following paragraph; what happened here at the end of the dry season in the 11th or 12th century AD?

On that particular day in springtime or early summer the attackers came quickly and unexpectedly. The inhabitants were not able to flee the house or the situation. Maybe they tried to hide themselves in the dark areas of the house, but as we know unfortunately without success. As more than 13 different spots reveal evidence of intense burning, it must be assumed that the whole village experienced this attack. This situation would exclude an internal local dispute as the reason for the conflagration. It is unknown if other inhabitants were slaughtered as well, but the way the family of Oursi hu-beero found their deaths and the destruction of other compounds suggest that nobody was spared.

Three human skeletons were found at Oursi hu-beero, buried under heavy wall and roof debris and sealed off from later disturbances. The location of the female adult at the moment of the attack is difficult to reconstruct. Looking at the position of the body, it appears that the female tried to run away from her attacker. Thus, she was either in room no. 4 or in the long passage no. 9 or 20, or the adjacent room no. 21. The fact that she was not with the child shows how fast and unexpected the attack must have been. These were chaotic last minutes, in which she was running for her life. The right-handed murderer who was probably a little taller than the 1.53 metres of the woman, cut part of the ear and throat of the woman in passage no. 15. Some wood was discovered near the doorway to room no. 14, which might have originated from a door of some sort. This is, however, difficult to say from the remaining fragments and the idea of a closed fence that prevented her from leaving the room can only be proposed. After the attacker had given her a final blow, she dropped to the sandy floor with her head pointing towards the exit. The position of the chin away from the chest is experienced at a person who is

trying to breath, but is somewhat hampered. A cut throat might provide such an impediment. Furthermore the contraction of the fingers is a sign of choking, either due to this deep cut or the smoke. She was hit shortly before the house was set on fire and the dark sticky rooms must have filled quite fast with a deadly amount of smoke.

The cause of death of the male is more difficult to reconstruct. The position of the body, partly on top of roof fragments, shows that the victim was on the roof at the moment of the attack. His skull was badly damaged by roof fragments and located approximately 40 cm away from the rest of the body, but the skeletal remains did not show any sign of injuries. The fact that the person was still on the roof at the moment the house was set on fire seems to point to a violent death. If he was still alive (or conscious), he certainly would have tried to escape the fire by jumping, or at least by walking to the outer side of the roof. We found him in the centre. The attacker not only entered the house, but also climbed to the second floor.

The skeletal remains of the third victim, a child, were found in the eastern part of the complex, still in an upright position. She had hidden herself behind a large pillar in what was probably one of the darkest places in the house. Sitting with her legs bent and her head on her knees, she displayed the normal body position of a frightened child. The skull of the 5-year old child shows some damage, which could be the result of a strike from a sharp tool. It is however questionable, from comparable crime evidence, whether the body would have remained in an upright position if she was murdered so brutally. In a complex with two storeys, fire and smoke were probably deadly within a few minutes. The child, slaughtered or not, died within minutes of the complex being set on fire.

After the adults were assassinated, the complex was set on fire. This would have taken a while, as modern and historical sources tell us. Although the house was built with wood, the main body of the construction was of mud bricks that are not very flammable. With the exception of the most south-eastern part of the complex that was in use as courtyard, the whole complex was burnt down. This is rather exceptional, unless the fire was not naturally induced, and this seems surely the case at Oursi hu-beero. The attackers wanted to erradicate the occupation completely. We do not know if the attackers took items of value. But based on the condition of the equipment and the numerous complete vessels, robbery seems not to have been the primary reason. Supposing an entirely rational approach, this would exclude bandits or slave raiders as possible suspects. The attack seems to have been an act of political and strategic violence.

The interesting question to ask is if we can connect these archaeological discoveries to a historical process or event. In the latter half of the 11th century AD the Almoravids had strongly intervened in the affairs of the Ghana empire (Kea 2004: 790). The latter may not have actually captured the area, but influences of this Berber dynasty were seen further into the Middle Niger region, to the equally strong kingdom of Gao (Insoll 1996; 2000). Most of the historical sources report fights and attacks during this period (e.g. al-Bakri), and it is possible that some disputes took place at the borders or hinterlands of these empires, like the area around Oursi hu-beero. But it is not as simple as attributing our conflagration to the clashes between the Ghanese empire and the Almoravids. The historical sources available do not enable us to write such a detailed history of events. At least not yet. What we do know is that the village of Oursi was completely destroyed by surprise, probably by horsemen. We also know that Ghana had an army of 200,000 men of which many were horse warriors and that they regularly conducted raids in the countryside (Levtzion and Hopkins 1981: 81; Kea 2004: 746). Given that the Middle Niger was experiencing major political upheaval at that time, possible repercussions of it, maybe only in the form of a general upsurge of violence on as a consequence of political instability, would not seem to be outside the reasonable scope of historical imagination here (Hunwick 2000: 134). The archaeological findings point to a dramatic social change in West Africa, starting at the beginning of the 12th century AD. The reason for this change is still fiercely debated. What is generally acknowledged is that most of the permanent settlements in West Africa ceased between the 12th and 15th century AD in the North (*e.g.* McIntosh 1995: 376-377; Togola 1996: 108; von Czerniewicz 2004; Magnavita 2009: 83), which is a little earlier than in the southern areas (*e.g.* Petit 2005: 108-109). The occupation history of the settlement mounds on

which Oursi hu-beero is located fits with that picture. The only difference from other archaeological sites is that the latest phase (not taking some scattered later huts in account) was completely destroyed, indicating the presence of hostile groups in the neighbourhood. From the information gathered during the last decades, it is known that the region experienced a climate detioration that certainly would have undermined the society, and the sedentary communities in particular (*e.g.* Sutton 1982: 310). A logical consequence was an increase in more mobile groups, like pastoralists and nomads (Breunig and Neumann 2004: 124). They could actively search for food and were not dependent on sufficient precipitation. This increase caused social stress and competition for the limited resources and the sparse permanent water places. Oursi hu-beero happened to be located nearby such a permanent water source. However, it remains obscure as to whether the end of this village was the result of a foreign expedition or a dispute regarding resources.

16.5 The time after the event

These attackers obliterated the occupation at Oursi hu-beero and the ruins were abandoned. None of the walls, which were partly visible above the debris, were rebuilt nor were the incidentally fired mudbricks used for construction purposes, except for a small wall in the most western corner. Only recently, the inhabitants of the modern village of Oursi began to use the hard material as gravestones. Nevertheless, a few archaeological features point to some activity after the dramatic end in the 11th or 12th century AD. In the centre of the complex, a large and deep pit was dug. The pit fill exists of debris similar to the destruction debris. However, it was not filled immediately, as plant remains were found on the bottom of the pit. Most likely, the depression was filled naturally by wind and rain. Small layers of sand are extra evidence for a slow filling process. A similar situation was found in the northern part, where even part of the walls was destroyed. We can only guess the reason for the pit makers to dig large holes in the burned debris. Were they looking for valuable objects? Were they searching for the bodies of the deceased, in order to give them an appropriate funeral? If that was the case, some people probably survived the attack and wanted to give their village members a decent grave. But all this is speculative.

Fig. 16.6 School children visiting Oursi hu-beero in 2005.

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Appendix A

List of Loci

Lucas P. Petit

Locus no.	Room no.	Description	Finds	Contaminated?
1		*Topsoil*	Pottery, sediment samples, grinding stones, metal objects, faunal remains, charcoal	Yes
2	18	*Destruction debris and pitfill* - hard orange colored burnt mudbrick material and brown sediment	Pottery, sediment samples, grinding stones, metal object, slag, faunal remains, charcoal	Yes
3		*Wall* - burnt mudbrick pillar		No
4		*Topsoil* - white sandy sediment, deposited by eaolian processes	Pottery, sediment sample, grinding stone, faunal remains, charcoal, bead	Yes
5	18	*Destruction debris and pitfill* - coarse red-yellowish mudbrick debris and grey-brown sediment	Pottery, sediment sample, faunal remains	Yes
6	21	*Destruction debris* - red soft sediment with burnt mudbrick	Pottery, sediment sample, faunal remains, slag, charcoal	Yes
7	22	*Destruction debris* - black and red colored mudbrick debris	Charcoal	No
8	20	*Destruction debris* - red-orange colored burnt wall tumble, including mudbrick and plaster fragments	Pottery, sediment sample, faunal remains, metal objects	No
9	20	*Destruction debris* - medium hard mudbrick and roof debris	Pottery, sediment sample, faunal remains	Yes
10		*Topsoil* - white sandy sediment, deposited by eaolian processes	Pottery, sediment sample, faunal remains, metal object, charcoal	Yes
11	22	*Destruction debris* - red colored burnt mudbrick and roof debris	Pottery, sediment sample, faunal remains, charcoal	No
12	18	*Destruction debris and pitfill* - hard red-orange colored burnt mudbrick, roof debris and brown sediment on top of sandy floor	Pottery, sediment samples, grinding stone, faunal remains, metal object, charcoal	Yes
13	22	*Destruction debris* - coarse black and red colored burnt mudbrick and roof fragments	Pottery, sediment sample, faunal remains, charcoal	No
14	19/24	*Destruction debris* - red burnt mudbrick and roof fragments	Pottery, sediment sample, grinding stones, faunal remains, metal objects, charcoal	No
15	22	*Destruction debris* - loose, coarse red colored mudbrick and roof fragments	Pottery, sediment sample, faunal remains, charcoal	No
16	21	*Destruction debris* - black burnt sediment containing mudbrick, seeds and charcoal fragments	Pottery, sediment samples, hearth stone, faunal remains, metal object, charcoal	No
17	21	*Destruction debris* - white burnt sediment with melted clay fragments	Sediment samples, slag, faunal remains	No
18	21	*Destruction debris* - loose, red and yellow mudbrick and roof fragments	Pottery, sediment sample, grinding stone, faunal remains, metal object, hematite, mudbrick sample, charcoal	No
19	19/24	*Destruction debris* - hard red-orange colored sediment with burnt mudbrick and roof fragments on top of floor	Pottery, sediment samples, grinding stone, faunal remains, charcoal, stone	No
20	24	*Destruction debris* - fragment of mudbrick wall, including sediment	Pottery, faunal remains	No
21	20	*Destruction debris* - red-orange colored burnt mudbrick fragments	Pottery, sediment sample, faunal remains, charcoal	Yes
22	24	*Destruction debris and occupation accumulation* - content of bin 1 - sediment with orange-red colored mudbrick fragments	Pottery, sediment samples, faunal remains, charcoal, seeds	No
23	20	*Destruction debris* - hard red colored burnt mudbrick debris	Pottery, sediment sample, faunal remains, grinding stone, charcoal	No
24	18	*Destruction debris* - black and red colored fine mudbrick debris	Pottery, sediment samples, metal object, faunal remains, charcoal	No
24/30	18	*Destruction debris*	Pottery, sediment sample, charcoal	No
25		*Topsoil* - white colored sandy sediment	Pottery, sediment sample, faunal remains, slag, charcoal	Yes
26	7	*Destruction debris* - hard fine yellowish mudbrick debris, partly burnt	Pottery, sediment samples, faunal remains, metal objects, bead, grinding stone, charcoal	No
27	21	*Destruction debris* - coarse red-range colored mudbrick and roof fragments	Pottery, sediment sample, faunal remains, charcoal	No
28	7	*Destruction debris* - fine yellowish burnt mudbrick debris	Pottery, charcoal	No
29	22	*Destruction debris* - red burnt mudbrick and roof fragments	Pottery, faunal remains, charcoal	Yes
30	18	*Destruction debris* - coarse red colored mudbrick debris	Pottery, faunal remains, metal objects, charcoal	Yes

Locus no.	Room no.	Description	Finds	Contaminated?
31	24	*Destruction debris and occupational accumulation* - content of bin 2 - white-grey colored sandy sediment with burnt mudbrick fragments	Pottery, sediment samples, grinding stone, faunal remains, metal object, charcoal	No
32	18	*Occupational accumulation* - white colored ashy sediment	Pottery, faunal remains, charcoal	No
33	22	*Destruction debris* - red-orange colored coarse mudbrick and roof fragments	Pottery, sediment samples, faunal remains, grinding stones, charcoal	No
34	7	*Occupational accumulation* - black colored ashes and red colored sand	Pottery, sediment samples, grinding stones, faunal remains, charcoal	No
35	7	*Occupational accumulation* - hard grey-brown colored sediment	Pottery, sediment sample, charcoal	No
36	21	*Destruction debris* - loose red colored mudbrick debris, maybe contaminated by later erosion processes	Pottery, faunal remains	Yes
37		*Occupational accumulation* - hard yellow colored, fine sandy sediment	Pottery, faunal remains, metal object, charcoal	No
38		*Occupational accumulation* - hard yellow colored, fine sandy sediment	Pottery, sediment sample, charcoal	No
39-51		*Walls*		No
52		*Not given*		
53		*Occupational accumulation* - fine yellowish colored sediment with alternating sand layers	Pottery, sediment sample, grinding stones, faunal remains, charcoal	No
60		*Topsoil* - sandy sediment, deposited by eaolian processes	Pottery, faunal remains, stone, metal object	Yes
61		*Topsoil* - sandy sediment, deposited by eaolian processes	Pottery, faunal remains	Yes
62		*Topsoil* - sandy sediment, deposited by eaolian processes	Pottery, faunal remains	Yes
63	3	*Destruction debris* - hard red colored mudbrick and roof fragments	Pottery, faunal remains, charcoal	Yes
64	3	*Destruction debris* - hard red-orange colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, metal objects, mudbrick sample, charcoal	No
65	20	*Destruction debris* - coarse red colored roof debris with some sandy topsoil layers in between the fragments	Pottery, sediment samples, faunal remains, metal objects, grinding stone, charcoal	Yes
66	4	*Destruction debris* - coarse red coloreed mudbrick and roof fragments	Pottery, sediment samples, faunal remains, hearth stone, grinding stones, metal objects, charcoal, cowry	No
67	9	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, grinding stones, metal objects, charcoal	No
68	18	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, sediment sample, faunal remains, metal object, charcoal	Yes
69	10	*Destruction debris* - coarse red colored mudbrick and roof debris with a lot of charcoal	Pottery, sediment samples, faunal remains, metal objects, bead, grinding stone, coprolites, charcoal	Yes
70	4	*Occupational accumulation* - sandy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, grinding stones, charcoal	No
71	22	*Destruction debris* - red and orange colored coarse mudbrick and roof fragments	Pottery, sediment samples, faunal remains, metal objects, grinding stone, charcoal	Yes
72		*Pitfill* - coarse multi-colored sediment	Pottery, sediment samples, faunal remains, charcoal	Yes
73		*Topsoil* - alternating fine sand layers, deposited by eaolian processes	Pottery, sediment sample, faunal remains, grinding stones, charcoal	Yes
74	9	*Occupational accumulation* - sandy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, grinding stones, charcoal	No
75	20	*Occupational accumulation* - sandy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, metal object, charcoal	No
76	3	*Occupational accumulation* - sandy sediment on top of a beaten earth floor	Pottery, sediment sample	No
77		*Fill in an erosion gully* - soft sandy sediment	Pottery, faunal remains, bead, charcoal	Yes
78		*Topsoil* - sand layers deposited by eaolian processes and some mudbrick and roof fragments	Pottery, faunal remains, cowry shell, charcoal, stone	Yes
79		*Topsoil* - fine hard sandy sediment	Pottery, faunal remains, charcoal	Yes
80	21	*Destruction debris* - coarse red and orange colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, slag, metal objects, charcoal, grinding stone	Yes
81		*Topsoil* - fine hard sandy sediment	Pottery, faunal remains, stone, metal objects, charcoal	Yes
82	16/18	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, sediment sample, faunal remains, metal object, charcoal	Yes
83	23/24	*Destruction debris* - coarse red and orange colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, slag, grinding stone, metal objects, charcoal	Yes
84		*Topsoil* - fine hard sediment	Pottery, faunal remains, charcoal	Yes
85	24	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, charcoal	No
86	16	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, metal object, beads, grinding stones, charcoal	No
87	22	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, faunal remains, charcoal	No

Locus no.	Room no.	Description	Finds	Contaminated?
88	18	*Destruction debris* - coarse red colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, metal objects, grinding stones, human skeleton, charcoal	No
89	15	*Destruction debris* - coarse red and orange colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, metal objects, human skeleton, grinding stones, cowry, charcoal	No
90		*Occupational accumulation* - artificially made hole in wall containing material culture	Pottery, faunal remains, charcoal	Yes
91		*Pitfill* - brown-yellow colored sandy sediment	Pottery, faunal remains, charcoal	Yes
92		*Topsoil* - fine sandy sediment, deposited by eaolian processes	Pottery, metal objects, faunal remains, charcoal	Yes
93	5	*Destruction debris* - red and orange colored mudbrick and roof fragments	Pottery, sediment samples, faunal remains, metal objects, charcoal	Yes
94		*Topsoil* - fine yellow colored sandy sediment, deposited by eaolian or other natural processes	Pottery, faunal remains, metal objects, beads	Yes
95		*Topsoil* - fine yellow colored sandy sediment, deposited by eaolian or other natural processes	Pottery, faunal remains, metal objects, charcoal	Yes
96	10	*Occupational accumulation* - sandy and ashy sediment on top of a beaten earth floor	Pottery, sediment sample, faunal remains, grinding stones, bead, charcoal	No
97	5	*Occupational accumulation* - sandy and ashy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, charcoal	No
98	22	*Occupational accumulation* - sandy and ashy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, grinding stones, metal object, charcoal	No
99	24	*Occupational accumulation* - thin hard layer of sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, grinding stone, stone, charcoal	No
100	21	*Occupational accumulation* - sandy and ashy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, metal objects, hearth stone, grinding stone, charcoal	Yes
101	11	*Destruction debris* - hard red, orange and yellow colored mudbrick and roof fragments, only partly burnt	Pottery, sediment samples, faunal remains, grinding stones, slag, charcoal	Yes
102	21	*Destruction debris* - coarse soft red, orange and yellow colored mudbrick and roof fragments	Pottery, faunal remains, charcoal	Yes
103	19	*Topsoil and sediment of an erosion gully*	Pottery, sediment sample, grinding stone, charcoal	Yes
104	17	*Destruction debris* - hard coarse mudbrick and especially roof fragments	Pottery, sediment samples, faunal remains, metal objects, grinding stones, stone, charcoal, clay object, beads	Yes
105	13	*Destruction debris and occupational accumulation* - fine red and yellow colored sediment, only partly burnt	Pottery, sediment samples, faunal remains, metal objects, slag, hematite, charcoal, stone	Yes
106		*Mixed material* - content of erosion gully	Pottery, sediment sample, faunal remains, grinding stones, metal objects, charcoal	Yes
107		*Topsoil* - yellow fine and hard sandy sediment, deposited by eaolian processes	Pottery, faunal remains, grinding stone, charcoal	Yes
108a		*Mixed material* - content of an erosion gully	Pottery, faunal remains, charcoal	Yes
108b	7	*Destruction debris* - coarse black and red colored mudbrick and roof fragments	Pottery, faunal remains, charcoal	No
109	12	*Occupational accumulation* - fine yellow sediment, not burnt	Pottery, faunal remains, grinding stone, charcoal	Yes
110		*Topsoil* - yellow fine and hard sandy sediment, deposited by eaolian processes	Pottery, faunal remains, metal objects, charcoal	Yes
111		*Topsoil* - yellow fine and hard sandy sediment, deposited by eaolian processes	Pottery, faunal remains, charcoal	Yes
112	13	*Occupational accumulation* - thin layer of sediment on top of a beaten earth floor	Pottery, sediment sample, grinding stone, charcoal	No
113	15	*Occupational accumulation* - thin ashy and sandy layer of sediment on top of a beaten earth floor	Pottery, sediment sample, faunal remains, grinding stone, charcoal	No
114	23	*Occupational accumulation* - thin layer of sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, grinding stone	No
115	11	*Occupational accumulation* - thin layer of sediment on top of a beaten earth floor	Pottery, sediment sample, grinding stones, hearth stone, charcoal	No
116	27	*Occupational accumulation* - thin layer of sediment on top of a beaten earth floor	Pottery, faunal remains, charcoal	No
117	18	*Fill and occupational accumulation* - grey colored ashes inside a clay bench	Pottery, sediment sample, stone, faunal remains	No
118	18	*Occupational accumulation* - thin layer of ashes and sandy sediment on top of a beaten earth floor	Pottery, sediment samples, faunal remains, grinding stones	No
119	16	*Occupational accumulation* - thin layer of ashes and sandy sediment on top of a beaten earth floor	Pottery, faunal remains, grinding stone, charcoal	No
120	17	*Occupational accumulation* - thin layer of ashes and sandy sediment on top of a beaten earth floor	Pottery, faunal remains	No
121	19	*Occupational accumulation* - thin deposit on top of a beaten earth floor	Pottery	No

Appendix B

List of Bucketnumbers

Lucas P. Petit

The list is ordered by bucketnumbers. The season of 2000 included bucketnumbers *1* to *354* and the year 2001 the numbers *1000* to *2103*. Sometimes a bucketnumber was accidentally given twice. They were later divided by using characters (*e.g. 23a* and *23b*).

The finds were stored in the following places:
- Museum Ouagadougou - Le Musée National de Burkina Faso
- Museum Oursi - Le Musée Oursi hu-beero
- Frankfurt University - Johann Wolfgang Goethe-Universität, Frankfurt am Main
- Gorom Gorom - Le Campement de Gorom Gorom

Unfortunately part of the building in Gorom Gorom had collapsed in 2004-2005, burrying the finds from Oursi hu-beero under wall and roof debris. A new campement was constructed nearby leaving the ruins into disuse.

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1	1			Pottery	Fired clay		Museum Ouagadougou	6.16:2
2	1			Sediment sample			University Frankfurt	
3	1			Grinding stone	Granite, sandstone	9x upper grinding stones, 1x lower grinding stone, 4x pestles	Gorom Gorom	
4	1			Faunal remains	Bone		University Frankfurt	
5	1			Metal object	Iron		Museum Ouagadougou	
6	1			Sediment sample			University Frankfurt	
7	2			Pottery	Fired clay		Museum Ouagadougou	6.16:34
8	2			Sediment sample			University Frankfurt	
9	2			Faunal remains	Bone		University Frankfurt	
10	2			Charcoal			University Frankfurt	
11	2			Metal object	Iron	Pin with hook, fragment	Museum Ouagadougou	8.9:8
12	2			Grinding stone	Granite, sandstone	2x upper grinding stone, 1x pestle	Gorom Gorom	
13	1			Pottery	Fired clay		Gorom Gorom	
14	2			Pottery	Fired clay		Gorom Gorom	
15	4			Pottery	Fired clay		Gorom Gorom	
16	4			Sediment sample			University Frankfurt	
17	2			Wood		Might be modern	University Frankfurt	
18	2			Faunal remains	Bone		University Frankfurt	
19	4			Faunal remains	Bone		University Frankfurt	
20	1			Pottery	Fired clay		Gorom Gorom	
21	2			Grinding stone	Quartz	Pestle	Gorom Gorom	
22	2			Slag	Iron ore (?)	Black vesicular material with metal shine	Museum Ouagadougou	
23a				Bead	Quartz		Museum Ouagadougou	8.13:9
23b				Bead	Quartz		Museum Ouagadougou	8.13:1
24	4			Grinding stone	Granite	Upper grinding stone, fragment	Gorom Gorom	
25	5	18	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:25, 6.15:28
26	5	18	Roof	Sediment sample			University Frankfurt	
27	1			Faunal remains	Bone		University Frankfurt	
28	5	18	Roof	Faunal remains	Bone		University Frankfurt	
29	6	21	Roof	Pottery	Fired clay		Gorom Gorom	
30	4			Faunal remains	Bone		University Frankfurt	
31	2			Charcoal			University Frankfurt	
32	6	21	Roof	Faunal remains	Bone		University Frankfurt	
33	4			Charcoal			University Frankfurt	
34	6	21	Roof	Sediment sample			University Frankfurt	
35	6	21	Roof	Slag	Molten clay		Museum Ouagadougou	
36	2			Pottery	Fired clay	Highly vesicular, 4 fragments	Gorom Gorom	
37	8	20	Roof	Sediment sample		Modern material	University Frankfurt	
38	8	20	Roof	Faunal remains	Bone		University Frankfurt	
39	8	20	Roof	Pottery	Fired clay		Gorom Gorom	
40	2			Pottery	Fired clay		Gorom Gorom	
41	2			Pottery	Fired clay		Gorom Gorom	
42	8	20	Roof	Metal object	Iron	Pin (?)	Museum Ouagadougou	8.13:25
43	8	20	Roof	Pottery	Fired clay		Gorom Gorom	
44	5	18	Roof	Pottery	Fired clay		Gorom Gorom	
45	5	18	Roof	Faunal remains	Bone		University Frankfurt	
46	8	20	Roof	Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:17
47	8	20	Roof	Faunal remains	Bone		Museum Tervuren	
48	9	20	Roof	Pottery	Fired clay		Gorom Gorom	
49	9	20	Roof	Sediment sample			University Frankfurt	
50	9	20	Roof	Faunal remains	Bone		University Frankfurt	
51	1			Pottery	Fired clay		Gorom Gorom	
52	2			Pottery	Fired clay		Gorom Gorom	
53	2			Charcoal			University Frankfurt	
54	2			Faunal remains	Bone		University Frankfurt	
55	10			Pottery	Fired clay		Gorom Gorom	
56	10			Faunal remains	Bone		University Frankfurt	
57	10			Charcoal			University Frankfurt	
58	10			Metal object	Iron		Museum Ouagadougou	
59	10			Sediment sample			University Frankfurt	
60	11	22	Roof	Charcoal			University Frankfurt	
61	11	22	Roof	Faunal remains	Bone		University Frankfurt	
62	11	22	Roof	Sediment sample		Few plant remains only, *P. glaucum* including involucri	University Frankfurt	
63	2			Pottery	Fired clay		Gorom Gorom	
64	12	12	Floor	Sediment sample			University Frankfurt	
65	2			Pottery	Fired clay		Gorom Gorom	
66	12	12	Floor	Charcoal			University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
67	12	12	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
68	12	12	Floor	Pottery	Fired clay		Gorom Gorom	
69	11	22	Roof	Pottery	Fired clay		Gorom Gorom	
70	12	12	Floor	Faunal remains	Bone		University Frankfurt	
71	12	12	Floor	Pottery	Fired clay		Gorom Gorom	
72	12	12	Floor	Faunal remains	Bone		University Frankfurt	
73	11	22	Roof	Charcoal			University Frankfurt	
74	12	12	Floor	Charcoal and plant remains		*P. glaucum* lumped together	University Frankfurt	
75	12	12	Floor	Charcoal			University Frankfurt	
76	7	22	Roof	Charcoal			University Frankfurt	
77	12	12	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
78	11	22	Roof	Faunal remains	Bone		University Frankfurt	
79	1			Pottery	Fired clay		Gorom Gorom	
80	1			Charcoal			University Frankfurt	
81	1			Sediment sample			University Frankfurt	
82	1			Grinding stone	Granite	3x pestles, 1x upper grinding stone	Gorom Gorom	
83	1			Faunal remains	Bone	Insect remains	University Frankfurt	
84	1			Faunal remains	Bone		University Frankfurt	
85	1			Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:16
86	13	22	Roof	Sediment sample		*P. glaucum* including involucri, modern material	University Frankfurt	
87	1			Pottery	Fired clay		Gorom Gorom	
88	1			Grinding strone	Granite	Upper grinding stone	Gorom Gorom	
89	11	22	Roof	Pottery	Fired clay		Gorom Gorom	
90	14	24/19	Roof	Pottery	Fired clay		Museum Ouagadougou	6.15:33,41; 6.15:19; 6.17:12
91	14	24/19	Roof	Sediment sample		Modern material	University Frankfurt	
92	13	22	Roof	Faunal remains	Bone		University Frankfurt	
93	14	24/19	Roof	Faunal remains	Bone		University Frankfurt	
94	13	22	Roof	Charcoal			University Frankfurt	
95	6	21	Roof	Pottery	Fired clay		Gorom Gorom	
96	14	24/19	Roof	Metal object	Copper	Bell	Museum Ouagadougou	8.3d
97	14	24/19	Roof	Charcoal			University Frankfurt	
98	6	21	Roof	Faunal remains	Bone		University Frankfurt	
99	14	24/19	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:18; 65:38
100	6	21	Roof	Pottery	Fire clay		Gorom Gorom	
101	15	22	Roof	Pottery	Fired clay		Gorom Gorom	
102	14	24/19	Roof	Charcoal			University Frankfurt	
103	14	24/19	Roof	Faunal remains	Bone		University Frankfurt	
104	6	21	Roof	Faunal remains	Bone		University Frankfurt	
105	6	21	Roof	Charcoal			University Frankfurt	
106	11	22	Roof	Faunal remains	Bone		University Frankfurt	
107	14	24/19	Roof	Grinding stone	Granite, sandstone, quartz	3x lower grinding stones, 2x upper grinding stone, 1x pestle	Gorom Gorom	
108	15	22	Roof	Sediment sample			University Frankfurt	
109	15	22	Roof	Charcoal			University Frankfurt	
110	15	22	Roof	Faunal remains	Bone		University Frankfurt	
111	16	21	Floor	Charcoal			University Frankfurt	
112	18	21	Roof	Sediment sample		Modern material	University Frankfurt	
113	18	21	Roof	Faunal remains	Bone		University Frankfurt	
114	13	22	Roof	Faunal remains	Bone		University Frankfurt	
115	13	22	Roof	Pottery	Fired clay		Gorom Gorom	
116	13	22	Roof	Faunal remains	Bone		University Frankfurt	
117	18	21	Roof	Stone	Hematite		Museum Ouagadougou	
118	18	21		Mudbrick sample	Burnt clay		Gorom Gorom	
119	18	21		Pottery	Fired clay		Gorom Gorom	
120	14	24/19	Roof	Metal object	Iron	Arrowhead	Museum Ouagadougou	
121	18	21		Stone	Quartz	2x stones, not used	Gorom Gorom	
122	18	21		Charcoal		Mixed with locus 16	University Frankfurt	
123	19	19		Charcoal			University Frankfurt	
124	19	19		Pottery	Fired clay		Gorom Gorom	
125	19	19		Sediment sample		Mainly charcoal	University Frankfurt	
126	19	19		Faunal remains	Bone		University Frankfurt	
127	17	21	Roof	Slag	Molted clay		Museum Ouagadougou	
128	19	19	Roof	Charcoal and plant remains			University Frankfurt	
129	21	20	Roof	Pottery	Fired clay		Gorom Gorom	
130	21	20		Sediment sample			University Frankfurt	
131	21	20	Floor	Charcoal			University Frankfurt	
132	21	20		Faunal remains	Bone		University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
133	20	24	Floor	Pottery	Fired clay		Gorom Gorom	
134	19	19	Floor	Charcoal and plant remains		Content vessel no. 70, mainly charcoal	University Frankfurt	
135	19	19	Floor	Pottery	Fired clay		Gorom Gorom	
136	19	19	Roof	Sediment sample		Content vessel no. 70, few plant remains only	University Frankfurt	
137	18	21	Floor	Pottery	Fired clay		Gorom Gorom	
138	18	21	Floor	Charcoal		Mixed with locus 16	University Frankfurt	
139	19	24	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
140	19	22	Roof	Pottery	Fired clay		Gorom Gorom	
141	19	24	Floor	Faunal remains	Bone		Discarded	
142	19	24	Floor	Pottery	Fired clay		Discarded	
143	20	24	Roof	Faunal remains	Bone		University Frankfurt	
144	8	20	Floor	Faunal remains	Bone		University Frankfurt	
145	23	20	Roof	Sediment sample		Mainly charcoal	University Frankfurt	
146	23	20		Pottery	Fired clay		Gorom Gorom	
147	18	21		Faunal remains	Bone		University Frankfurt	
148	23	20		Faunal remains	Bone		University Frankfurt	
149	23	20		Grinding stone	Basalt (?)	Upper grinding stone	Gorom Gorom	
150	8	20		Pottery	Fired clay		Gorom Gorom	
151	22	24	Floor	Faunal remains	Bone		University Frankfurt	
152	22	24	Floor	Pottery	Fired clay		Gorom Gorom	
153	22	24	Floor	Sediment sample			University Frankfurt	
154	23	20	Floor	Charcoal			University Frankfurt	
155	22	24	Floor	Charcoal and plant remains			University Frankfurt	
156	17	21	Floor	Sediment sample		Modern material, faunal remains	University Frankfurt	
157	1			Pottery	Fired clay		Gorom Gorom	
158	22	24	Floor	Sediment sample			University Frankfurt	
159	22	24	Floor	Pottery	Fired clay		Gorom Gorom	
160	18	21	Roof	Faunal remains	Bone		University Frankfurt	
161	18	21	Roof	Charcoal			University Frankfurt	
162	14	24/19	Roof	Pottery	Fired clay		Gorom Gorom	
163	13	22	Roof	Pottery	Fired clay		Gorom Gorom	
164	16	21	Floor	Charcoal and plant remains		Mainly charcoal	University Frankfurt	
165	16	21	Floor	Faunal remains	Bone		University Frankfurt	
166	13	22	Roof	Faunal remains	Bone		University Frankfurt	
167	16	21	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
168	16	21	Floor	Faunal remains	Bone	Beetle (modern)	Discarded	
169	17	21	Floor	Faunal remains	Bone		University Frankfurt	
170	22	24	Floor	Faunal remains	Bone		University Frankfurt	
171	22	24	Floor	Charcoal and plant remains		Mostly *A. nilotica* pods	University Frankfurt	
172	16	21	Floor	Pottery	Fired clay		Gorom Gorom	
173	14	24/19	Roof	Charcoal			University Frankfurt	
174	16	21	Floor	Charcoal and plant remains		Mainly charcoal, plaited leafsheats	University Frankfurt	
175	16	21	Floor	Metal object	Iron		Museum Ouagadougou	8.11:10
176	16	21	Floor	Hearth stone		Natural stone	Gorom Gorom	
177	14	24/19	Roof	Faunal remains	Bone		University Frankfurt	
178	16	21	Floor	Charcoal and plant remains		Pile of wood, mainly charcoal	University Frankfurt	
179	19	24	Floor	Pottery	Fired clay		Museum Ouagadougou	6.14:17; 6.15:34
180	24	18	Floor	Pottery	Fired clay		Gorom Gorom	
181	24	18	Floor	Charcoal			University Frankfurt	
182	16	21	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
183	24	18	Floor	Metal object	Iron	Dagger	Museum Ouagadougou	8.10:3
184	24	20	Floor	Faunal remains	Bone		University Frankfurt	
185	19	24	Floor	Charcoal			University Frankfurt	
186	25	7	Roof	Pottery	Fired clay		Gorom Gorom	
187	19	24	Floor	Pottery	Fired clay		Museum Ouagadougou	6.16:16
188	19	24	Floor	Charcoal			University Frankfurt	
189	25	7	Roof	Slag	Molten clay	Highly vesicular	Gorom Gorom	
190	25	7	Roof	Sediment sample			University Frankfurt	
191	19	24	Floor	Faunal remains	Bone		University Frankfurt	
192	24	18	Floor	Charcoal			University Frankfurt	
193	24	18	Floor	Pottery	Fired clay	Vessel no. 71	Gorom Gorom	
194	24	18	Floor	Sediment sample			University Frankfurt	
195	25	7	Roof	Faunal remains	Bone		University Frankfurt	
196	19	24	Floor	Charcoal			University Frankfurt	
197	25	7	Floor	Charcoal			University Frankfurt	
198	24	18	Floor	Sediment sample		Content vessel no. 71, yellowish sand	University Frankfurt	
199	26	7	Floor	Pottery	Fired clay		Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
200	26	7	Floor	Sediment sample			University Frankfurt	
201	26	7	Floor	Faunal remains	Bone		University Frankfurt	
202	26	7	Floor	Charcoal			University Frankfurt	
203	19	24	Floor	Stone	Quartz	Flake with possible retouch	Museum Ouagadougou	
204	13	22	Roof	Pottery	Fired clay		Gorom Gorom	
205	26	7	Floor	Pottery	Fired clay		Gorom Gorom	
206	22	24	Floor	Charcoal		Few plant remains	University Frankfurt	
207	22	24	Roof	Sediment sample		Charcoal	University Frankfurt	11.3
208	22	24	Floor	Pottery	Fired clay		Gorom Gorom	
209	22	24	Floor	Faunal remains	Bone		University Frankfurt	
210	12	12	Floor	Metal object	Iron		Museum Ouagadougou	
211	26	7	Floor	Faunal remains	Bone		University Frankfurt	
212	26	7	Floor	Metal object	Iron		Museum Ouagadougou	
213	26	7	Floor	Charcoal and plant remains		Infrutescence fragments, mainly charcoal	University Frankfurt	
214	22	24	Floor	Sediment sample			University Frankfurt	
215	22	24	Floor	Sediment sample			University Frankfurt	
216	19	24	Floor	Pottery	Fired clay		Gorom Gorom	
217	26	7	Floor	Bead	Quartz		Museum Ouagadougou	8.13:17
218	19	24	Floor	Pottery	Fired clay		Museum Ouagadougou	6.16:20
219	26	7	Floor	Sediment sample			University Frankfurt	
220	27	21	Floor	Pottery	Fired clay		Gorom Gorom	
221	27	21	Floor	Sediment sample		Modern material, faunal remains	University Frankfurt	
222	27	21	Floor	Faunal remains	Bone		University Frankfurt	
223	28	7	Floor	Pottery	Fired clay		Gorom Gorom	
224	28	7	Floor	Charcoal and plant remains		Infrutescence fragments, mainly charcoal	University Frankfurt	
225	29	22	Roof	Pottery	Fired clay		Gorom Gorom	
226	29	22	Roof	Faunal remains	Bone		University Frankfurt	
227	19	24/19	Floor	Charcoal			University Frankfurt	
228	29	22	Roof	Charcoal			University Frankfurt	
229	18	21	Floor	Charcoal			University Frankfurt	
230	18	21	Floor	Pottery	Fired clay		Gorom Gorom	
231	18	21	Floor	Metal object	Iron	Bracelet, fragment	Museum Ouagadougou	8.12:7
232	18	21	Floor	Faunal remains	Bone		University Frankfurt	
233	27	21	Floor	Charcoal	\		University Frankfurt	
234	16	21	Floor	Sediment sample			University Frankfurt	
235	16	21	Floor	Charcoal			University Frankfurt	
236	16	21	Floor	Pottery	Fired clay		Gorom Gorom	
237	17	21	Floor	Sediment sample			University Frankfurt	
238	17	21	Floor	Faunal remains	Bone		University Frankfurt	
239	16	21	Floor	Faunal remains	Bone		University Frankfurt	
240	18	21	Floor	Grinding stone	Quartzite	Upper grinding stone, oval	Gorom Gorom	
241	26	7	Floor	Grinding stone	Sandstone	Upper grinding stone	Gorom Gorom	
242	30	18	Roof	Pottery	Fired clay		Gorom Gorom	
243	30	18	Roof	Charcoal			University Frankfurt	
244	26	7	Floor	Pottery	Fired clay		Gorom Gorom	
245	26	7	Floor	Charcoal			University Frankfurt	
246	26	7	Floor	Faunal remains	Bone		University Frankfurt	
247	26	7	Floor	Sediment sample			University Frankfurt	
248	30	18	Roof	Faunal remains	Bone		University Frankfurt	
249	30	18	Roof	Metal object	Iron		Museum Ouagadougou	
250	26	7	Floor	Metal object	Iron	Slave chain or horse bit	Museum Ouagadougou	8.2
251	26	7	Floor	Metal object	Iron	Slave chain or horse bit	Museum Ouagadougou	8.2
252	26	7	Floor	Charcoal		Wooden post	University Frankfurt	
253	31	24	Floor	Sediment sample		Many faunal remains, modern material	University Frankfurt	
254	31	24	Floor	Charcoal			University Frankfurt	
255	30	18	Roof	Metal object	Iron		Museum Ouagadougou	
256	30	18	Roof	Wood		Mineralised wood (?)	University Frankfurt	
257	31	24	Floor	Grinding stone	Granite	Pestle	Gorom Gorom	
258	31	24	Floor	Pottery	Fired clay		Gorom Gorom	
259	31	24	Floor	Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:10
260	31	24	Floor	Faunal remains	Bone		University Frankfurt	
261	32	18	Roof	Pottery	Fired clay		Gorom Gorom	
262	32	18	Roof	Faunal remains	Bone		University Frankfurt	
263	19	19	Floor	Pottery	Fired clay	Vessel no. 70	Gorom Gorom	6.14:28
264	19	19	Floor	Charcoal		Content vessel no. 70	University Frankfurt	
265	31	24	Floor	Pottery	Fired clay		Gorom Gorom	
266	31	24	Floor	Sediment sample		Mostly *A. nilotica*	University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
267	31	24	Floor	Charcoal and plant remains			University Frankfurt	11.3
268	32	18	Floor	Pottery	Fired clay		Gorom Gorom	
269	19	19	Floor	Pottery	Fired clay	Vessel no. 70	Gorom Gorom	
270	19	19	Floor	Charcoal		Content vessel no. 70	University Frankfurt	
271	19	19/24	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
272	30	18	Floor	Pottery	Fired clay		Gorom Gorom	
273	30	18	Floor	Charcoal			University Frankfurt	
274	30	18	Floor	Faunal remains	Bone		University Frankfurt	
275	33	22	Floor	Pottery	Fired clay		Gorom Gorom	
276	33	22	Floor	Charcoal			University Frankfurt	
277	32	18	Floor	Faunal remains	Bone		University Frankfurt	
278	33	22	Floor	Faunal remains	Bone		University Frankfurt	
279	33	22	Floor	Sediment sample		*P. glaucum* including involucri	University Frankfurt	
280	32	18	Floor	Charcoal and plant remains		Mainly charcoal	University Frankfurt	
281	34	7	Floor	Charcoal			University Frankfurt	
282	34	7	Floor	Pottery	Fired clay		Gorom Gorom	
283	34	7	Floor	Faunal remains	Bone		University Frankfurt	
284	34	7	Floor	Grinding stone	Granite	2x upper grinding stones, fragments	Gorom Gorom	
285	34	7	Floor	Sediment sample			University Frankfurt	
286	34	7	Floor	Charcoal			University Frankfurt	
287	33	22	Floor	Grinding stone		Pestle	Gorom Gorom	
288	33	22	Floor	Pottery	Fired clay		Gorom Gorom	
289	19	19/24	Floor	Pottery	Fired clay	Pot lid	Gorom Gorom	6.17:4
290	34	7	Floor	Pottery	Fired clay		Gorom Gorom	
291	34	7	Floor	Charcoal			University Frankfurt	
292	33	22	Floor	Sediment sample		Badly preserved	University Frankfurt	
293	33	22	Floor	Pottery	Fired clay	Vessel no. 11	Gorom Gorom	
294	33	22	Floor	Pottery	Fired clay	Vessel no. 12	Gorom Gorom	
295	24/30	18	Floor	Pottery	Fired clay	Vessel no. 71	Gorom Gorom	
296	24/30	18	Floor	Sediment sample		Content vessel no. 71	University Frankfurt	
297	24/30	18	Floor	Charcoal		Content vessel no. 71	University Frankfurt	
298	33	22	Floor	Charcoal		Around vessel no. 12	University Frankfurt	
299	34	7	Floor	Faunal remains	Bone		University Frankfurt	
300	34	7	Floor	Grinding stone	Granite	Pestle	Gorom Gorom	
301	33	22	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
302	34	7	Floor	Sediment sample			University Frankfurt	
303	35			Charcoal			University Frankfurt	
304	35			Pottery	Fired clay		Gorom Gorom	
305	36	21	Floor	Pottery	Fired clay		Gorom Gorom	
306	36	21	Floor	Faunal remains	Bone		University Frankfurt	
307	35			Sediment sample			University Frankfurt	
308	19	24	Floor	Pottery	Fired clay	Vessel no. 8	Gorom Gorom	6.3; 6.14:15
309	37			Pottery	Fired clay		Gorom Gorom	
310	19	24	Floor	Sediment sample		Content vessel no. 80, few plant remains only	University Frankfurt	
311	19	24	Floor	Charcoal and plant remains		Around vessel no. 80, mostly *A. nilotica*	University Frankfurt	
312	19	24	Floor	Faunal remains	Bone	Around vessel no. 80	University Frankfurt	
313	19	24	Floor	Pottery	Fired clay	Vessel no. 74	Gorom Gorom	
314	19	24	Floor	Sediment sample		Content vessel no. 74, mostly *A. nilotica*	University Frankfurt	
315	36	21	Floor	Faunal remains	Bone		University Frankfurt	
316	37			Charcoal			University Frankfurt	
317	19	24	Floor	Charcoal and plant remains		Charcoal vessel no. 74	University Frankfurt	
318	37			Metal object	Iron	Needle	Museum Ouagadougou	8.8:9
319	19	24	Floor	Sediment sample			University Frankfurt	
320	19	24	Floor	Pottery	Fired clay	Vessel no. 80	Gorom Gorom	6.3; 6.14:15
321	19	24	Floor	Sediment sample		Around vessel no. 80, mostly *A. nilotica*	University Frankfurt	
322	19	24	Floor	Pottery	Fired clay	Vessel no. 80 and other fragments	Gorom Gorom	6.3; 6.14:15; 6.15:3
323	19	24	Floor	Pottery	Fired clay	Vessel no. 80	Gorom Gorom	6.3; 6.14:15
324	19	24	Floor	Pottery	Fired clay	Vessel no. 76	Gorom Gorom	
325	19	24	Floor	Pottery	Fired clay	Vessel no. 79	Gorom Gorom	
326	19	24	Floor	Sediment sample		Around vessel no. 79	University Frankfurt	
327	19	24	Floor	Pottery	Fired clay	Vessel no. 75	Gorom Gorom	6.15:39
328	19	24	Floor	Charcoal and plant remains		Content vessel no. 75	University Frankfurt	
329	19	24	Floor	Sediment sample		Content vessel no. 75, mostly *A. nilotica*	University Frankfurt	
330	19	24	Floor	Pottery	Fired clay	Vessel no. 78	Gorom Gorom	
331	38			Pottery	Fired clay		Gorom Gorom	
332	37			Faunal remains	Bone		University Frankfurt	
333	19	24	Floor	Pottery	Fired clay	Vessel no. 75	Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
334	38			Charcoal			University Frankfurt	
335	19	24	Floor	Pottery	Fired clay	Vessel no. 78	Gorom Gorom	
336a	19	24	Floor	Pottery	Fired clay	Vessel no. 81	Gorom Gorom	
336b	19	24	Floor	Sediment sample			University Frankfurt	
337	19	24	Floor	Pottery	Fired clay	Vessel no. 78	Gorom Gorom	
338	19	24	Floor	Pottery	Fired clay	Vessel no. 77	Gorom Gorom	
339	19	24	Floor	Pottery	Fired clay	Vessel no. 72	Gorom Gorom	6.2; 6.14:12
340	19	24	Floor	Charcoal		Content vessel no. 72, no plant remains	University Frankfurt	
341	19	24	Floor	Pottery	Fired clay	Vessel no. 72	Gorom Gorom	6.2; 6.14:12
342	19	24	Floor	Pottery	Fired clay	Vessel no. 72	Gorom Gorom	6.2; 6.14:12
343	53			Pottery	Fired clay		Gorom Gorom	
344	53			Sediment sample			University Frankfurt	
345	19	24	Floor	Pottery	Fired clay	Vessel no. 73	Gorom Gorom	
346	53			Faunal remains	Bone		University Frankfurt	
347	53			Grinding stone	Granite, sandstone	2x upper grinding stones	Gorom Gorom	
348	53			Charcoal			University Frankfurt	
349	19	24	Floor	Pottery	Fired clay	Vessel no. 77	Gorom Gorom	
350	19	24	Floor	Pottery	Fired clay	Vessel no. 33	Gorom Gorom	
351	19	24	Floor	Charcoal			University Frankfurt	
352	19	24	Floor	Pottery	Fired clay		Museum Ouagadougou	6.15:35
353	19	24	Floor	Pottery	Fired clay		Museum Ouagadougou	6.15:32
354	30	18	Floor	Grinding stone	Granite	Lower grinding stone, fragment	Gorom Gorom	
1000	60			Pottery	Fired clay		Gorom Gorom	
1001a	60			Metal object	Iron	Sword, fragment	Museum Ouagadougou	8.11:2
1001b	60			Metal object	Iron	Arrowhead	Museum Ouagadougou	8.11:5
1001c	60			Metal object	Iron	Pin or nail, 2 fragments	Museum Ouagadougou	8.8:3
1002	61			Pottery	Fired clay		Gorom Gorom	
1003	61			Faunal remains	Bone		University Frankfurt	
1004	60			Stone		Not used or modified	Gorom Gorom	
1005	62			Faunal remains	Bone		University Frankfurt	
1006	62			Pottery	Fired clay		Gorom Gorom	
1007	60			Faunal remains	Bone		University Frankfurt	
1008	63	3	Roof	Pottery	Fired clay		Gorom Gorom	
1009	63	3	Roof	Faunal remains	Bone		University Frankfurt	
1010	63	3	Roof	Charcoal			University Frankfurt	
1011	63	3	Roof	Pottery	Fired clay		Museum Ouagadougou	6.16:32
1012	63	3	Roof	Pottery	Fired clay		Gorom Gorom	
1013	64	3	Roof	Pottery	fired clay		Gorom Gorom	
1014	64	3	Roof	Faunal remains	Bone		University Frankfurt	
1015	64	3	Roof	Charcoal			University Frankfurt	
1016	64	3	Roof	Sediment sample			University Frankfurt	
1017	64	3	Roof	Metal object	Iron	Spear point, fragment	Museum Ouagadougou	8.3b; 8.11:7
1018	64	3	Roof	Metal object	Iron	Knife (?), fragments	Museum Ouagadougou	
1019	64	3	Roof	Pottery	Fired clay		Gorom Gorom	
1020	64	3	Roof	Pottery	Fired clay		Gorom Gorom	
1021	64	3	Roof	Faunal remains	Bone		University Frankfurt	
1022	64	3	Roof	Charcoal			University Frankfurt	
1023	60			Pottery	Fired clay		Gorom Gorom	
1024	64	3	Floor	Charcoal			University Frankfurt	
1025	60			Faunal remains	Bone		University Frankfurt	
1026	64	3	Floor	Charcoal			University Frankfurt	
1027	64	3	Roof	Pottery	Fired clay		Gorom Gorom	
1028	64	3	Roof/floor	Sediment sample		Few plant remains only	University Frankfurt	
1029	65	20	Roof	Pottery	Fired clay		Gorom Gorom	
1030	65	20	Roof	Faunal remains	Bone		University Frankfurt	
1031	65	20	Roof	Charcoal			University Frankfurt	
1032	64	3	Roof	Mudbrick sample	Burned clay		Gorom Gorom	
1033	64	3	Floor	Charcoal and plant remains		Few plant remains only	University Frankfurt	
1034	64	3	Floor	Faunal remains	Bone		University Frankfurt	
1035	64	3	Floor	Charcoal		Worked wood (?	University Frankfurt	
1036	66	4	Roof	Pottery	Fired clay		Gorom Gorom	
1037	66	4	Roof	faunal remains	Bone		University Frankfurt	
1038	66	4	Roof	Charcoal			University Frankfurt	
1039	65	20	Roof	Metal object	Iron	Knife or sword, several fragments	Museum Ouagadougou	
1040	65	20	Roof	Sediment sample			University Frankfurt	
1041	66	4	Roof	Sediment sample		Few plant remains only	University Frankfurt	
1042	66	4	Roof	Pottery	Fired clay		Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1043	66	4	Roof	Faunal remains	Bone		University Frankfurt	
1044	66	4	Roof	Charcoal			University Frankfurt	
1045	65	20	Roof	Pottery	Fired clay		Gorom Gorom	
1046	65	20	Roof	Faunal remains	Bone		University Frankfurt	
1047	65	20	Roof	Charcoal			University Frankfurt	
1048	67	9	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1049	67	9		Faunal remains	Bone		University Frankfurt	
1050	67	9		Charcoal			Discarded	
1051	67	9	Roof/floor	Sediment sample		Few plant remains only	University Frankfurt	
1052	67	9	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:34
1053	67	9	Roof	Pottery	fired clay	Pot lid	Museum Oursi	6.17:16
1054	66	4	Roof	Hearth stone	Granite	Not worked	Gorom Gorom	
1055	67	9	Roof	Grinding stone	Granite	Lower grinding stone	Gorom Gorom	
1056a	67	9	Roof	Metal object	Iron	Knife or sword, fragment	Museum Ouagadougou	8.11:1
1056b	67	9	Roof	Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:20
1057	65	20	Roof	Charcoal and coprolites			University Frankfurt	
1058	67	9	Roof	Pottery	Fired clay		Gorom Gorom	
1059	66	4	Roof	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
1060	67	9	Roof	Grinding stone	Limestone (?)	Pestle, reused as sharpening stone	Gorom Gorom	7.5:7
1061	67	9	Roof	Pottery	Fired clay	Vessel no. 67	Gorom Gorom	6.15:17
1062	65	20	Roof	Pendant	Bone	Worked, fragment	Museum Ouagadougou	8.3l; 8.13:24
1063	67	9	Roof	Pottery	Fired clay		Gorom Gorom	
1064	65	20	Roof	Sediment sample		Mainly charcoal, modern material, faunal remains	University Frankfurt	
1065	65	20	Roof	Charcoal and plant remains		Few plant remains only	University Frankfurt	
1066	67	9	Roof	Metal object	Copper (?)	Bracelet, fragment	Museum Ouagadougou	8.3f; 8.12:10
1067	67	9	Floor	Charcoal			University Frankfurt	
1068	67	9	Floor	Pottery	Fired clay		Gorom Gorom	
1069	67	9	Roof	Faunal remains	Bone		University Frankfurt	
1070	67	9	Roof	Charcoal			University Frankfurt	
1071	66	4	Floor	Pottery	Fired clay		Gorom Gorom	
1072	66	4	Floor	Faunal remains	Bone		University Frankfurt	
1073	66	4	Floor	Charcoal			University Frankfurt	
1074	65	20	Roof	Pottery	Fired clay		Gorom Gorom	
1075	65	20	Roof	Faunal remains	Bone		University Frankfurt	
1076	65	20	Roof	Charcoal			University Frankfurt	
1077	68	18	Roof	Pottery	Fired clay		Gorom Gorom	
1078	68	18	Roof	Faunal remains	Bone		University Frankfurt	
1079	68	18	Roof	Charcoal			University Frankfurt	
1080	67	9	Floor	Sediment sample		Content vessel no. 2	University Frankfurt	
1081	67	9	Roof	Sediment sample		Content vessel no. 1, few plant remains only	University Frankfurt	
1082	67	9	Roof	Pottery	Fired clay	Vessel no. 1	Gorom Gorom	6.15:12
1083	67	9	Floor	Pottery	Fired clay	Vessel no. 2	Gorom Gorom	6.15:26
1084	68	18	Roof	Sediment sample			University Frankfurt	
1085	67	9	Roof	Pottery	Fired clay	Vessel no. 1	Museum Oursi	6.15:12
1086	65	20	Roof	Metal object	Iron	Band, 5 fragments	Museum Ouagadougou	
1087	68	18	Roof	Metal object	Iron	Nail with wire	Museum Ouagadougou	8.3k; 8.9:6
1088	65	20	Roof	Metal object	Iron	Spear point, fragment	Museum Ouagadougou	
1089	66	4	Floor	Sediment sample			University Frankfurt	
1090	65	20	Roof	Faunal remains	Bone		University Frankfurt	
1091	65	20	Roof	Grinding stone	Sandstone (?)	Upper grinding stone, fragment	Gorom Gorom	
1092	67	9	Roof	Pottery	Fired clay	Vessel no. 3	Gorom Gorom	6.15:4
1093	66	4	Floor	Metal object	Iron		Museum Ouagadougou	
1094	67	9	Floor	Sediment sample		Content vessel no. 2	University Frankfurt	
1095	67	9	Floor	Sediment sample		Content vessel no. 2	Museum Oursi	
1096	67	9	Floor	Sediment sample		Content vessel no. 2	University Frankfurt	
1097	67	9	Floor	Pottery	Fired clay		Gorom Gorom	
1098	68	18	Roof	Metal object	Iron	Hook (?)	Museum Ouagadougou	8.12:1
1099	67	9	Roof	Grinding stone	Quartzite	Upper grinding stone, fragment	Gorom Gorom	7.5:3
1100	67	9	Roof	Pottery	Fired clay		Gorom Gorom	
1101	67	9	Roof	Faunal remains	Bone		University Frankfurt	
1102	67	9	Roof	Charcoal			University Frankfurt	
1103	67	9	Roof	Sediment sample			University Frankfurt	
1104	69	10	Roof	Pottery	Fired clay		Gorom Gorom	
1105	69	10	Roof	Faunal remains	Bone		University Frankfurt	
1106	69	10	Roof	Charcoal			University Frankfurt	
1107	66	4	Floor	Pottery	Fired clay		Gorom Gorom	
1108	66	4	Floor	Faunal remains	Bone		University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1109	66	4	Floor	Charcoal			University Frankfurt	
1110	67	9	Roof	Pottery	Fired clay		Museum Ouagadougou	6.15:1
1111	67	9	Floor	Grinding stone	Granite	Pestle	Gorom Gorom	7.5:6
1112	69	10	Roof	Metal object	Iron	Band with perforations, fragment	Museum Ouagadougou	8.8:23
1113	69	10	Roof	Sediment sample		Few plants only	University Frankfurt	
1114	66	4	Floor	Sediment sample			University Frankfurt	
1115	66	4	Floor	Charcoal and plant remains			University Frankfurt	
1116	67	9	Roof	Pottery	Fired clay	Vessel no. 4	Gorom Gorom	6.16:12
1117	69	10	Roof	Bead	Quartz		Museum Ouagadougou	
1118	69	10	Roof	Pottery	Fired clay		Museum Ouagadougou	6.15:20, 36
1119	70	4	Floor	Charcoal and plant remains		Basketry (?)	University Frankfurt	
1120	67	9	Roof	Pottery	Fired clay	Vessel no. 3	Gorom Gorom	6.15:4
1121	71	22	Roof	Pottery	Fired clay		Gorom Gorom	
1122	71	22	Roof	Faunal remains	Bone		University Frankfurt	
1123	71	22	Roof	Charcoal			University Frankfurt	
1124	67	9	Floor	Sediment sample			University Frankfurt	
1125	69	10	Roof	Grinding stone	Quartzite	Upper grinding stone	Gorom Gorom	7.5:4
1126	71	22	Roof	Metal object	Iron	Ring	Museum Ouagadougou	8.9:3
1127	67	9	Floor	Pottery	Fired clay		Gorom Gorom	
1128	67	9	Floor	Sediment sample		Around and content of wooden container	University Frankfurt	
1129	67	9	Floor	Charcoal		Wooden container	University Frankfurt	10.5
1130	69	10	Roof	Charcoal			University Frankfurt	
1131	67	9	Floor	Charcoal		Wooden post	University Frankfurt	
1132	67	9	Floor	Metal object	Iron	Long object	Museum Ouagadougou	
1133	69	10	Roof	Pottery	Fired clay		Gorom Gorom	
1134	69	10	Roof	Faunal remains	Bone		University Frankfurt	
1135	69	10	Roof	Charcoal			University Frankfurt	
1136	71	22	Roof	Pottery	Fired clay		Museum Ouagadougou	6.15:2
1137	71	22	Roof	Faunal remains	Bone		University Frankfurt	
1138	71	22	Roof	Charcoal			University Frankfurt	
1139	67	9	Floor	Pottery	Fired clay		Gorom Gorom	
1140	67	9	Floor	Faunal remains	Bone		University Frankfurt	
1141	67	9	Floor	Charcoal		Dispersed wood	University Frankfurt	
1142	72			Pottery	Fired clay		Gorom Gorom	
1143	72			Faunal remains	Bone		University Frankfurt	
1144	72			Charcoal			University Frankfurt	
1145	73			Pottery	Fired clay		Museum Ouagadougou	6.14:8, 6; 6.16:13, 31
1146	73			Faunal remains	Bone		Discarded	
1147	73			Charcoal			Discarded	
1148	69	10	Roof	Metal object	Iron	Long object	Museum Ouagadougou	
1149	67	9	Floor	Charcoal and plant remains			University Frankfurt	
1150	67	9	Roof	Pottery	Fired clay	Vessel no. 3	Gorom Gorom	
1151	73			Coprolites		Uncharred coprolites	University Frankfurt	
1152	75	20	Floor	Sediment sample			University Frankfurt	
1153	70	4	Floor	Sediment sample			University Frankfurt	
1154	74	20	Floor	Sediment sample			University Frankfurt	
1155	76	3	Floor	Sediment sample			University Frankfurt	
1156	73			Sediment sample			University Frankfurt	
1157	71	22	Roof	Sediment sample			University Frankfurt	
1158	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
1159	77			Pottery	Fired clay		Gorom Gorom	
1160	77			Charcoal			University Frankfurt	
1161	77			Faunal remains	Bone		University Frankfurt	
1162	72			Sediment sample			University Frankfurt	
1163	73			Grinding stone	Granite,sandstone,quartzite	3x pestles,1x lower grinding stone, 1x upper grinding stone	Gorom Gorom	
1164	67	9	Floor	Charcoal and plant remains			University Frankfurt	
1165	77			Pottery	Fired clay		Museum Ouagadougou	6.14:33;6.16:29;6.17:22
1166	73			Faunal remains	Shell		University Frankfurt	
1167	69	10	Roof	Pottery	fired clay		Gorom Gorom	
1168	69	10	Roof	Faunal remains	Bone		University Frankfurt	
1169	69	10	Roof	Charcoal		Dispersed wood	University Frankfurt	
1170	77			Pottery	Fired clay		Gorom Gorom	
1171	77			Faunal remains	Bone		University Frankfurt	
1172	73			Pottery	Fired clay		Gorom Gorom	
1173	73			Faunal remains	Bone		University Frankfurt	
1174	74	20	Floor	Pottery	Fired clay		Gorom Gorom	
1175	74	20	Floor	Faunal remains	Bone		University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1176	74	20	Floor	Charcoal			University Frankfurt	
1177	78			Pottery	Fired clay		Gorom Gorom	
1178	78			Faunal remains	Bone		University Frankfurt	
1179	78			Charcoal			Discarded	
1180	74	20	Floor	Sediment sample		Much charcoal	University Frankfurt	
1181	77			Charcoal			University Frankfurt	
1182	79			Pottery	Fired clay		Gorom Gorom	
1183	79			Faunal remains	Bone		University Frankfurt	
1184	79			Charcoal			University Frankfurt	
1185	77			Bead	Quartz		Museum Ouagadougou	8.13:14
1186	79			Metal object	Iron	Clamp, fragment	Museum Ouagadougou	8.8:22
1187	69	10	Floor	Plant remains and coprolites		Few plant remains only, mainly coprolites	University Frankfurt	
1188	78			Pendant	Cowry shell		Museum Ouagadougou	8.13:21
1189	69	10	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
1190	78			Stone	Quartz	Scraper	Gorom Gorom	8.12:3
1191	80	21	Roof	Pottery	Fired clay		Gorom Gorom	
1192	80	21	Roof	Faunal remains	Bone		University Frankfurt	
1193	80	21	Roof	Faunal remains	Bone		University Frankfurt	
1194	71	22	Floor	Charcoal			University Frankfurt	
1195	71	22	Floor	Pottery	Fired clay		Gorom Gorom	
1196	79			Faunal remains	Bone		University Frankfurt	
1197	81			Pottery	Fired clay		Gorom Gorom	
1198	81			Faunal remains	Bone		University Frankfurt	
1199	81			Charcoal			University Frankfurt	
1200	81			Stone	Quartzite	Flake	Museum Ouagadougou	8.12:2
1201	72			Pottery	Fired clay		Gorom Gorom	
1202	72			Faunal remains	Bone		University Frankfurt	
1203	72			Charcoal			University Frankfurt	
1204a	81			Metal object	Iron	Bracelet, fragment	Museum Ouagadougou	
1204b	81			Metal object	Iron (?)	Pin or needle, fragment	Museum Ouagadougou	
1205	80	21	Floor	Metal object	Iron	Pin or needle, fragment	Museum Ouagadougou	
1206	80	21	Floor	Slag	Molten clay	Highly vesicular	Museum Ouagadougou	
1207	69	10	Floor	Charcoal			University Frankfurt	
1208a	69	10	Floor	Charcoal			University Frankfurt	
1208b	81			Pottery	Fired clay		Gorom Gorom	
1209	81			Faunal remains	Bone		University Frankfurt	
1210	81			Charcoal			University Frankfurt	
1211	69	10	Floor	Pottery	Fired clay		Gorom Gorom	
1212	69	10	Floor	Faunal remains	Bone		University Frankfurt	
1213	69	10	Floor	Charcoal			University Frankfurt	
1214	69	10	Floor	Coprolites			University Frankfurt	
1215	69	10	Floor	Sediment sample		Mainly charcoal, coprolites	University Frankfurt	
1216	82	16/18	Roof	Pottery	Fired clay		Museum Ouagadougou	6.16:24; 6.17:17
1217	82	16/18	Roof	Faunal remains	Bone		University Frankfurt	
1218	82	16/18	Roof	Charcoal			University Frankfurt	
1219	80	21	Roof	Faunal remains	Bone		University Frankfurt	
1220	80	21	Roof	Charcoal			Discarded	
1221	80	21	Roof	Pottery	Fired clay		Museum Ouagadougou	6.16:9
1222	83	23	Roof	Pottery	Fired clay		Gorom Gorom	
1223	83	23	Roof	Faunal remains	Bone		University Frankfurt	
1224	83	23	Roof	Charcoal			University Frankfurt	
1225	83	23	Roof	Pottery	Fired clay	Perforated pottery disk	Museum Ouagadougou	8.3j; 8.8:2
1226	80	21	Roof	Metal object	Iron		Museum Ouagadougou	
1227	81			Metal object	Iron	Pin or needle, fragment	Museum Ouagadougou	8.8:8
1228	82	16/18	Roof	Metal object	Iron		Museum Ouagadougou	
1229	84			Pottery	Fired clay		Gorom Gorom	
1230	84			Faunal remains	Bone		University Frankfurt	
1231	84			Charcoal			Discarded	
1232	74	20	Floor	Pottery	Fired clay		Museum Ouagadougou	6.14:7; 6.15:23, 31
1233	74	20	Floor	Faunal remains	Bone		University Frankfurt	
1234	74	20	Floor	Charcoal and plant remains		Mainly charcoal, few coprolites	University Frankfurt	
1235	69	10	Floor	Charcoal			University Frankfurt	
1236	69	10	Floor	Charcoal			University Frankfurt	
1237	82	16/18	Roof	Faunal remains	Bone	Egg	University Frankfurt	
1238	83	23	Roof	Sediment sample		Fine chalk	University Frankfurt	
1239	69	10	Floor	Charcoal			University Frankfurt	
1240	69	10	Floor	Coprolites			University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1241	69	10	Floor	Charcoal			University Frankfurt	
1242	83	23	Roof	Pottery	Fired clay		Gorom Gorom	
1243	83	23	Roof	Faunal remains	Bone		University Frankfurt	
1244	83	23	Roof	Charcoal			Discarded	
1245	82	16/18	Roof	Pottery	Fired clay		Gorom Gorom	
1246	82	16/18	Roof	Faunal remains	Bone		University Frankfurt	
1247	82	16/18	Roof	Charcoal			University Frankfurt	
1248	85	24	Roof	Pottery	Fired clay		Gorom Gorom	
1249	85	24	Roof	Charcoal			Discarded	
1250	85	24	Roof	Faunal remains	Bone		University Frankfurt	
1251	85	24	Roof	Sediment sample		Modern material	University Frankfurt	
1252	82	16/18	Roof	Sediment sample			University Frankfurt	
1253	84			Pottery	Fired clay		Gorom Gorom	
1254	84			Faunal remains	Bone		University Frankfurt	
1255	86	16	Roof	Pottery	Fired clay		Gorom Gorom	
1256	86	16	Roof	Faunal remains	Bone		University Frankfurt	
1257	86	16	Roof	Charcoal			University Frankfurt	
1258	74	20	Floor	Pottery	Fired clay		Gorom Gorom	
1259	74	20	Floor	Faunal remains	Bone		University Frankfurt	
1260	74	20	Floor	Charcoal			University Frankfurt	
1261	67	9	Floor	Pottery	Fired clay		Gorom Gorom	
1262	67	9	Floor	Charcoal			University Frankfurt	
1263	74	20	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
1264	83	23	Roof	Slag	Ore	Iron slag, metal shine	Museum Ouagadougou	
1265	87	22	Floor	Pottery	Fired clay		Gorom Gorom	
1266	87	22	Floor	Charcoal			University Frankfurt	
1267	87	22	Floor	Faunal remains	Bone		University Frankfurt	
1268	88	18	Roof	Pottery	Fired clay		Gorom Gorom	
1269	88	18	Roof	Faunal remains	Bone		University Frankfurt	
1270	88	18	Roof	Charcoal			Discarded	
1271	67	9	Floor	Coprolites			University Frankfurt	
1272	67	9	Floor	Faunal remains	Bone		University Frankfurt	
1273	74	20	Floor	Charcoal and plant remains			University Frankfurt	
1274	89	15	Roof	Pottery	Fired clay	Vessel no. 6 and other fragments	Museum Ouagadougou	6.14:1; 6.16:27-28
1275	89	15	Roof	Charcoal			University Frankfurt	
1276	89	15	Roof	Faunal remains	Bone		University Frankfurt	
1277	89	15	Roof	Pottery	Fired clay	Vessel no. 5	Gorom Gorom	
1278	85	24	Roof	Pottery	Fired clay	Miniature vessel	Museum Ouagadougou	8.3i; 8.8:1
1279	89	15	Roof	Metal object			Museum Ouagadougou	
1280	80	21	Floor	Charcoal			University Frankfurt	
1281	74	20	Floor	Pottery	Fired clay		Museum Ouagadougou	
1282	74	20	Floor	Grinding stone	Sandstone,basalt (?)	1x upper grinding stone, 1x pestle and sharpening stone	Gorom Gorom	
1283	74	20	Floor	Faunal remains	Bone		University Frankfurt	
1284	74	20	Floor	Grinding stone	Basalt (?),granite	2x upper grinding stones	Gorom Gorom	
1285	89	15	Roof	Pottery	Fired clay	Vessel no. 7	Gorom Gorom	
1286	88	18	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1287	88	18	Roof/floor	Faunal remains	Bone		University Frankfurt	
1288	88	18	Roof/floor	Charcoal			University Frankfurt	
1289	75	20	Floor	Rope	Organic (?)	Charred, coiled up	Museum Ouagadougou	
1290	88	18	Floor	Human remains	Bone		University Frankfurt	
1291	90	23/24	Roof	Faunal remains	Bone		University Frankfurt	
1292	90	23/24	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:4
1293	90	23/24	Roof	Charcoal			University Frankfurt	
1294	91			Pottery	Fired clay		Gorom Gorom	
1295	91			Faunal remains	Bone		University Frankfurt	
1296	91			Charcoal			University Frankfurt	
1297	88	18	Floor	Plant material		Modern (?)	Discarded	
1298	88	18	Floor	Sediment sample		Greenish	University Frankfurt	
1299	88	18	Floor	Pottery	Fired clay		Gorom Gorom	
1300	88	18	Floor	Charcoal and plant remains		Plant remains and coprolites	University Frankfurt	
1301	88	18	Floor	Human remains	Bone		University Frankfurt	
1302	89	15	Roof	Pottery	Fired clay		Museum Ouagadougou	6.16:30
1303	89	15	Roof	Faunal remains	Bone		University Frankfurt	
1304	89	15	Roof	Charcoal			University Frankfurt	
1305	92			Pottery	Fired clay		Gorom Gorom	
1306	92			Faunal remains	Bone		University Frankfurt	
1307	92			Charcoal			University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1308	80	21	Floor	Sediment sample			University Frankfurt	
1309	80	21	Floor	Charcoal			University Frankfurt	
1310	80	21	Floor	Charcoal and plant remains			University Frankfurt	
1311	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
1312	75	20	Floor	Charcoal			University Frankfurt	
1313	75	20	Floor	Faunal remains	Bone		University Frankfurt	
1314	71	22	Floor	Pottery	Fired clay		Gorom Gorom	
1315	71	22	Floor	Faunal remains	Bone		University Frankfurt	
1316	71	22	Floor	Charcoal			University Frankfurt	
1317	71	22	Floor	Sediment sample			University Frankfurt	
1318	85	24	Roof	Pottery	Fired clay		Gorom Gorom	
1319	85	24	Roof	Faunal remains	Bone		University Frankfurt	
1320	85	24	Roof	Charcoal			University Frankfurt	
1321	80	21	Floor	Sediment sample			University Frankfurt	
1322	71	22	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
1323	71	22	Floor	Metal object	Iron	Arrowhead	Museum Ouagadougou	
1324	71	22	Floor	Metal object	Iron	Axe, fragment	Museum Ouagadougou	8.3c; 8.10:5
1325a	71	22	Floor	Basketry and rope	Plant remains	Charred leaf remains of plaited basketry, rope remains	University Frankfurt	11.4; 12.1-2
1325b	66	4	Roof	Pottery	Fired clay		Gorom Gorom	
1326	66	4	Roof	Charcoal			Discarded	
1327	66	4	Roof	Charcoal			Discarded	
1328	86	16	Roof	Pottery	Fired clay		Gorom Gorom	
1329	86	16	Roof	Charcoal			Discarded	
1330	86	16	Roof	Faunal remains	Bone		University Frankfurt	
1331	92			Pottery	Fired clay		Gorom Gorom	
1332	92			Metal object	Iron	Knife handle (?), wood remains in tube	Museum Ouagadougou	8.10:4
1333	66	4	Roof	Clay sample	Burnt clay		University Frankfurt	
1334	86	16	Roof	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:8
1335	86	16	Roof	Pottery	Fired clay		Gorom Gorom	
1336	86	16	Roof	Faunal remains	Bone		University Frankfurt	
1337	86	16	Roof	Charcoal			University Frankfurt	
1338	66	4	Roof	Pottery	Fired clay		Museum Ouagadougou	6.16:17
1339	66	4	Roof	Faunal remains	Bone		University Frankfurt	
1340	66	4	Roof	Charcoal			University Frankfurt	
1341	85	24	Floor	Pottery	Fired clay		Gorom Gorom	6.17:19
1342	85	24	Floor	Faunal remains	Bone		University Frankfurt	
1343	85	24	Floor	Charcoal			University Frankfurt	
1344	85	24	Floor	Sediment sample			University Frankfurt	
1345	71	22	Roof	Pottery	Fired clay		Gorom Gorom	
1346	71	22	Roof	Charcoal			University Frankfurt	
1347	71	22	Roof	Faunal remains	Bone		University Frankfurt	
1348	80	21	Floor	Charcoal		Pile of wood or dispersed wood	University Frankfurt	
1349	66	4	Roof	Metal object	Iron	Bracelet, fragment	Museum Ouagadougou	
1350	66	4	Roof	Pendant	Cowry shell		Museum Ouagadougou	8.13:23
1351	80	21	Floor	Faunal remains	Bone		University Frankfurt	
1352	80	21	Floor	Pottery	Fired clay		Gorom Gorom	
1353	80	21	Floor	Grinding stone	Chalcedony	Pestle, fragment	Gorom Gorom	
1354	80	21	Floor	Metal object	Copper	Mount with decoration	Museum Ouagadougou	8.3h; 8.12:13
1355	86	16	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:19, 23
1356	80	21	Floor	Slag	Molten clay	Highly vesicular	Museum Ouagadougou	7.4
1357	75	20	Floor	Sediment sample		Few plant remains only, modern material	University Frankfurt	
1358	71	22	Roof	Charcoal		Parallel pieces of wood	University Frankfurt	10.4
1359	66	4	Roof	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
1360	71	22	Floor	Charcoal and plant remains		Few plant remains only, coprolites	University Frankfurt	
1361	71	22	Floor	Sediment sample			University Frankfurt	
1362	74	20	Floor	Faunal remains	Bone		University Frankfurt	
1363	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
1364	75	20	Floor	Faunal remains	Bone		University Frankfurt	
1365	74	20	Floor	Charcoal and plant remains			University Frankfurt	
1366	75	20	Floor	Metal object	Iron		Museum Ouagadougou	
1367	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
1368	75	20	Floor	Faunal remains	Bone		University Frankfurt	
1369	75	20	Floor	Charcoal			University Frankfurt	
1370	86	16	Roof	Pottery	Fired clay		Gorom Gorom	
1371	86	16	Roof	Faunal remains	Bone		University Frankfurt	
1372	86	16	Roof	Charcoal			University Frankfurt	
1373	66	4	Floor	Pottery	Fired clay		Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1374	66	4	Floor	Faunal remains	Bone		University Frankfurt	
1375	66	4	Floor	Charcoal			University Frankfurt	
1376	86	16	Roof	Sediment sample			University Frankfurt	
1377	86	16	Roof	Metal object	Iron	Bracelet, fragment	Museum Ouagadougou	8.12:9
1378	88	18	Roof	Pottery	Fired clay		Gorom Gorom	
1379	88	18	Roof	Faunal remains	Bone		University Frankfurt	
1380	88	18	Roof	Charcoal			University Frankfurt	
1381	80	21	Floor	Pottery	Fired clay		Gorom Gorom	
1382	80	21	Floor	Charcoal			University Frankfurt	
1383	80	21	Floor	Faunal remains	Bone		University Frankfurt	
1384	66	4	Floor	Sediment sample			University Frankfurt	
1385	88	18	Roof	Metal object	Iron	Spear point	Museum Ouagadougou	8.10:1
1386	71	22	Floor	Pottery	Fired clay		Museum Ouagadougou	6.16:21
1387	71	22	Floor	Faunal remains	Bone		University Frankfurt	
1388	71	22	Floor	Charcoal			University Frankfurt	
1389	83	23	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:3
1390	83	23	Roof	Faunal remains	Bone		University Frankfurt	
1391	83	23	Roof	Charcoal			University Frankfurt	
1392	66	4	Floor	Grinding stone	Granite	Pestle with traces of red ochre	Gorom Gorom	
1393	80	21	Floor	Sediment sample			University Frankfurt	
1394	71	22	Floor	Metal object	Iron	Lance point, fragment	Museum Ouagadougou	8.3a; 8.11:14
1395	85	24	Floor	Pottery	Fired clay		Gorom Gorom	
1396	85	24	Floor	Faunal remains	Bone		University Frankfurt	
1397	85	24	Floor	Charcoal			University Frankfurt	
1398	88	18	Roof	Pottery	Fired clay		Museum Ouagadougou	6.15:44
1399	88	18	Roof	Faunal remains	Bone		University Frankfurt	
1400	88	18	Roof	Charcoal			University Frankfurt	
1401	86	16	Roof	Faunal remains	Bone		University Frankfurt	
1402	83	23	Roof	Pottery	Fired clay		Gorom Gorom	
1403	83	23	Roof	Faunal remains	Bone		University Frankfurt	
1404	83	23	Roof	Charcoal			University Frankfurt	
1405	93	5	Roof	Pottery	Fired clay		Gorom Gorom	
1406	93	5	Roof	Faunal remains	Bone		University Frankfurt	
1407	93	5	Roof	Charcoal			University Frankfurt	
1408	83	23	Roof	Grinding stone	Granite	Pestle	Gorom Gorom	
1409	85	24	Floor	Charcoal			University Frankfurt	
1410	85	24	Floor	Pottery	Fired clay		Gorom Gorom	
1411	85	24	Floor	Faunal remains	Bone		University Frankfurt	
1412	85	24	Floor	Sediment sample		On top of vessels	University Frankfurt	
1413	85	24	Floor	Sediment sample		Underneath some vessels	University Frankfurt	
1414	93	5	Roof	Metal object	Iron	Nail with wire	Museum Ouagadougou	8.9:7
1415	85	24	Floor	Sediment sample			University Frankfurt	
1416	88	18	Floor	Pottery	Fired clay		Museum Ouagadougou	6.16:14
1417	88	18	Roof	Sediment sample			University Frankfurt	
1418	93	5	Roof	Metal object	Iron	Spear point	Museum Ouagadougou	8.11:8
1419	88	18	Roof	Bead	Glass	Fragment	Museum Ouagadougou	8.13:11
1420	88	18	Roof	Metal object	Iron		Museum Ouagadougou	
1421	85	24	Floor	Sediment sample		Around vessels	University Frankfurt	
1422	85	24	Floor	Sediment sample		Around vessels	University Frankfurt	
1423	92			Pottery	Fired clay		Gorom Gorom	
1424	88	18	Roof	Metal object	Iron	Bracelet	Museum Ouagadougou	8.1
1425	92			Faunal remains	Bone		University Frankfurt	
1426a	92			Metal object	Iron	Nail	Museum Ouagadougou	
1426b	92			Metal object	Iron	Ring, fragment	Museum Ouagadougou	8.8:11
1427	88	18	Roof	Pottery	Fired clay	Pot lid	Gorom Gorom	6.17:2
1428	88	18	Roof	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	7.5:2
1429	86	16	Roof	Pottery	Fired clay		Gorom Gorom	
1430	88	18	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1431	88	18	Roof/floor	Faunal remains	Bone		University Frankfurt	
1432	88	18	Roof/floor	Charcoal			Discarded	
1433	93	5	Roof	Pottery	Fired clay		Gorom Gorom	
1434	93	5	Roof	Faunal remains	Bone		University Frankfurt	
1435	93	5	Roof	Charcoal			University Frankfurt	
1436	94			Pottery	Fired clay		Gorom Gorom	
1437	94			Faunal remains	Bone		University Frankfurt	
1438	88	18	Floor	Sediment sample			University Frankfurt	
1439	88	18	Roof	Metal object	Iron		Museum Ouagadougou	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1440	86	16	Roof	Pottery	Fired clay		Gorom Gorom	
1441	86	16	Roof	Faunal remains	Bone		University Frankfurt	
1442	86	16	Roof	Charcoal			University Frankfurt	
1443	86	16	Roof	Pottery	Fired clay	Vessel no. 25	Gorom Gorom	
1444	83	23	Floor	Sediment sample		Around vessel no. 10	University Frankfurt	
1445	83	23	Floor	Pottery	Fired clay	Vessel no. 10	Gorom Gorom	
1446	86	16	Roof	Bead	Ostrich shell		Museum Ouagadougou	8.13:3
1447	93	5	Roof	Metal object	Iron	Ring and chain, fragment	Museum Ouagadougou	8.9:1
1448	88	18	Floor	Sediment sample		Content vessel no. 28	University Frankfurt	
1449	86	16	Floor	Faunal remains	Bone		University Frankfurt	
1450	88	18	Roof	Grinding stone	Basalt (?)	Upper grinding stone	Gorom Gorom	7.5:1
1451	86	16	Roof	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:7
1452a	86	16	Roof	Pottery	Fired clay	Vessel no. 24I	Gorom Gorom	6.16:3
1452b	86	16	Roof	Pottery	Fired clay	Vessel no. 24III	Gorom Gorom	6.16:10
1452c	86	16	Roof	Pottery	Fired clay	Vessel no. 24IV	Gorom Gorom	6.14:21
1453	86	16	Roof	Grinding stone	Basalt (?)	Upper grinding stone	Gorom Gorom	
1454	88	18	Floor	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:9
1455a	86	16	Roof	Bead	Quartz		Museum Ouagadougou	8.13:15
1455b	86	16	Roof	Bead	Quartz		Museum Ouagadougou	8.13:18
1456	88	18	Floor	Sediment sample			University Frankfurt	
1457	86	16	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1458	86	16	Roof/floor	Faunal remains	Bone		University Frankfurt	
1459	86	16	Roof/floor	Charcoal			University Frankfurt	
1460	88	18	Floor	Pottery	Fired clay		Gorom Gorom	
1461	93	5	Roof	Pottery	Fired clay		Gorom Gorom	
1462	93	5	Roof	Faunal remains	Bone		University Frankfurt	
1463	93	5	Roof	Charcoal			University Frankfurt	
1464	94			Pottery	Fired clay		Gorom Gorom	
1465	94			Faunal remains	Bone		University Frankfurt	
1466	94			Charcoal			Discarded	
1467	88	18	Floor	Faunal remains	Bone		University Frankfurt	
1468	93	5	Roof	Sediment sample			University Frankfurt	
1469	88	18	Floor	Charcoal		Content vessel no. 26	University Frankfurt	
1470	88	18	Floor	Pottery	Fired clay	Vessel no. 30	Gorom Gorom	
1471	88	18	Roof	Metal object	Iron	Fish shaped metal piece, function unknown	Museum Ouagadougou	8.3e; 8.13:26
1472	88	18	Floor	Sediment sample		Around vessel nos 24 and 25	University Frankfurt	
1473	88	18	Floor	Sediment sample		Around vessel nos 28 and 38	University Frankfurt	
1474	88	18	Floor	Sediment sample		Content vessel no. 38	University Frankfurt	
1475	88	18	Floor	Sediment sample		Around vessel nos 28 and 38	University Frankfurt	
1476a	86	16	Floor	Sediment sample		Content vessel no. 32, mainly charcoal	University Frankfurt	
1476b	86	16	Floor	Stone	Hematite		Museum Ouagadougou	
1477	86	16	Roof	Pottery	Fired clay	Vessel no. 24II	Gorom Gorom	6.16:11
1478	86	16	Roof	Grinding stone	Granite	Lower grinding stone, fragment	Gorom Gorom	
1479	86	16	Floor	Pottery	Fired clay	Vessel no. 40II	Gorom Gorom	6.14:20
1480	95			Pottery	Fired clay		Gorom Gorom	
1481	95			Faunal remains	Bone		University Frankfurt	
1482	88	18	Floor	Sediment sample		Content vessel no. 29	University Frankfurt	
1483	86	16	Floor	Charcoal and plant remains		Mainly charcoal	University Frankfurt	
1484	88	18	Floor	Charcoal			University Frankfurt	
1485	94			Bead	Glass		Museum Ouagadougou	8.13:8
1486	88	18	Floor	Sediment sample			University Frankfurt	
1487	88	18	Floor	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:3
1488	86	16	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
1489	94			Metal object	Copper or bronze	Ring	Museum Ouagadougou	8.12:4
1490	86	16	Floor	Pottery	Fired clay	Vessel no. 32	*In situ*	
1491	86	16	Roof	Grinding stone	Granite	Pestle	Gorom Gorom	7.5:5
1492	89	15	Roof	Faunal remains	Bone		University Frankfurt	
1493	83	23	Floor	Human remains	Bone		University Frankfurt	
1494a	83	23	Floor	Faunal remains	Bone		University Frankfurt	
1494b	89	15	Roof	Pottery	Fired clay		Gorom Gorom	
1495	89	15	Roof	Charcoal			University Frankfurt	
1496	83	23	Floor	Pottery	Fired clay		Gorom Gorom	
1497	95			Pottery	Fired clay		Gorom Gorom	
1498	95			Faunal remains	Bone		University Frankfurt	
1499	94			Pottery	Fired clay		Gorom Gorom	
1500	94			Faunal remains	Bone		University Frankfurt	
1501	86	16	Roof/floor	Pottery	Fired clay		Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1502	86	16	Roof/floor	Faunal remains	Bone		University Frankfurt	
1503	86	16	Floor	Charcoal			University Frankfurt	
1504	88	18	Floor	Pottery	Fired clay		Gorom Gorom	
1505	88	18	Floor	Faunal remains	Bone		University Frankfurt	
1506	88	18	Floor	Charcoal			University Frankfurt	
1507	86	16	floor	Charcoal and plant remains		Mainly *V. subterranea*, coprolites	University Frankfurt	
1508	95			Charcoal			University Frankfurt	
1509	94			Metal object	iron	Ring, fragment	Museum Ouagadougou	8.9:2
1510	86	16	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
1511	94			Bead	Chalcedony		Museum Ouagadougou	8.13:10
1512	86	16	Floor	Sediment sample		Charcoal	University Frankfurt	
1513	86	16	Roof	Pottery	Fired clay	Vessel no. 24	Gorom Gorom	
1514	86	16	Roof	Pottery	Fired clay	Vessel no. 25	Gorom Gorom	
1515	88	18	Roof	Pottery	Fired clay	Content vessel no. 31	Gorom Gorom	
1516	88	18	Roof	Sediment sample		Content vessel no. 31	University Frankfurt	
1517	88	18	Roof	Faunal remains	Bone	Content vessel no. 31	University Frankfurt	
1518	86	16	Floor	Pottery	Fired clay	Vessel no. 41	Gorom Gorom	
1519	95			Metal object	Iron	Knife, fragment	Museum Ouagadougou	8.11:3
1520a	88	18	Roof	Sediment sample		Content vessel no. 31, few plant remains only, mainly charcoal	University Frankfurt	
1520b	93	5	Floor	Faunal remains	Shell		University Frankfurt	
1521	93	5	Floor	Pottery	Fired clay		Gorom Gorom	
1522	93	5	Floor	Faunal remains	Bone		University Frankfurt	
1523	93	5	Floor	Charcoal			University Frankfurt	
1524	93	5	Floor	Sediment sample			University Frankfurt	
1525	93	5	Floor	Metal object			Museum Ouagadougou	
1526	93	5	Floor	Metal object	Iron	Chain, part	Museum Ouagadougou	8.12:12
1527	97	5	Floor	Sediment sample			University Frankfurt	
1528	96	10	Floor	Sediment sample			University Frankfurt	
1529	98	22	Floor	Sediment sample			University Frankfurt	
1530	99	24	Floor	Sediment sample			University Frankfurt	
1531	100	21	Floor	Sediment sample			University Frankfurt	
1532	88	18	Floor	Sediment sample		Content vessel no. 31	University Frankfurt	
1533	88	18	Floor	Metal object		Content vessel no. 31	Museum Ouagadougou	
1534	95			Pottery	Fired clay		Gorom Gorom	
1535	95			Pottery	Fired clay		Gorom Gorom	
1536	95			Faunal remains	Bone		University Frankfurt	
1537	65	20	Roof	Pottery	Fired clay		Museum Ouagadougou	6.14:29
1538	65	20	Roof	Faunal remains	Bone		University Frankfurt	
1539	65	20	Roof	Charcoal			University Frankfurt	
1540	93	5	Floor	Pottery	Fired clay		Gorom Gorom	
1541	93	5	Floor	Faunal remains	Bone		University Frankfurt	
1542	93	5	Floor	Charcoal			University Frankfurt	
1543	101	11	Roof	Pottery	Fired clay		Gorom Gorom	
1544	101	11	Roof	Faunal remains	Bone		University Frankfurt	
1545	101	11	Roof	Charcoal			University Frankfurt	
1546	102	21	Roof	Pottery	Fired clay		Gorom Gorom	
1547	102	21	Roof	Charcoal			University Frankfurt	
1548	102	21	Roof	Faunal remains	Bone		University Frankfurt	
1549	103	19	Roof	Pottery	Fired clay		Gorom Gorom	
1550	103	19	Floor	Charcoal			University Frankfurt	
1551	88	18	Floor	Pottery	Fired clay	Content vessel no. 1	Gorom Gorom	
1552	88	18	Floor	Pottery	Fired clay		Gorom Gorom	
1553	88	18	Floor	Charcoal			University Frankfurt	
1554	88	18	Floor	Faunal remains	Bone		University Frankfurt	
1555	65	20	Roof	Faunal remains	Shell	Egg (?)	University Frankfurt	
1556	103	19	Floor	Charcoal and plant remains		Mainly *Vigna* sp.	University Frankfurt	
1557	93	5	Floor	Pottery	Fired clay		Gorom Gorom	
1558	93	5	Floor	Metal object	Iron	Spear point	Museum Ouagadougou	8.11:9
1559	93	5	Floor	Metal object		Bracelet (?)	Museum Ouagadougou	8.8:19
1560	95			Metal object	Iron		Museum Ouagadougou	8.8:25
1561	103	19	Floor	Grinding stone	Granite	Uppeer grinding stone, fragment	Gorom Gorom	
1562	103	19	Floor	Sediment sample			University Frankfurt	
1563	88	18	Floor	Charcoal		Content vessel no. 31	University Frankfurt	
1564	88	18	Floor	Faunal remains	Bone	Content vessel no. 31	University Frankfurt	
1565	88	18	Floor	Grinding stone	Granite	Lower grinding stone, fragment	Gorom Gorom	
1566	72			Pottery	Fired clay		Gorom Gorom	
1567	72			Faunal remains	Bone		University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1568	72			Charcoal			University Frankfurt	
1569	88	18	Floor	Faunal remains	Bone	Content vessel no. 31	University Frankfurt	
1570	88	18	Floor	Pottery	Fired clay	Content vessel no. 31	Gorom Gorom	
1571	93	5	Floor	Metal object	Iron	Chain, part	Museum Ouagadougou	8.12:11
1572	93	5	Floor	Faunal remains	Bone		University Frankfurt	
1573	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1574	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1575	104	17	Roof	Charcoal			University Frankfurt	
1576	64	3	Floor	Pottery	Fired clay		Gorom Gorom	
1577	64	3	Floor	Faunal remains	Bone		University Frankfurt	
1578	64	3	Floor	Charcoal			University Frankfurt	
1579	89	15	Roof	Pottery	Fired clay		Gorom Gorom	
1580	89	15	Roof	Faunal remains	Bone		University Frankfurt	
1581	89	15	Roof	Charcoal			University Frankfurt	
1582	104	17	Roof	Metal object	Iron	Pin	Museum Ouagadougou	8.8:6
1583	104	17	Roof	Metal object			Museum Ouagadougou	
1584	89	14	Roof	Pottery	Fired clay		Gorom Gorom	
1585	89	14	Roof	Faunal remains	Bone		University Frankfurt	
1586	89	14	Roof	Charcoal			University Frankfurt	
1587	72			Pottery	Fired clay		Gorom Gorom	
1588	72			Faunal remains	Bone		University Frankfurt	
1589	72			Charcoal			University Frankfurt	
1590	72			Sediment sample		Charcoal and plant remains	University Frankfurt	
1591	64	3	Roof/floor	Charcoal			University Frankfurt	
1592	64	3	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1593	64	3	Roof/floor	faunal remains	Bone		University Frankfurt	
1594	101	11	Roof	Pottery	fired clay		Museum Ouagadougou	6.15:24
1595	101	11	Roof	Faunal remains	Bone		University Frankfurt	
1596	101	11	Roof	Charcoal			University Frankfurt	
1597	100	21	Floor	Pottery	Fired clay		Gorom Gorom	
1598	100	21	Floor	Faunal remains	Bone		University Frankfurt	
1599	100	21	Floor	Charcoal			University Frankfurt	
1600	101	11	Roof	Sediment sample		Content vessel no. 8, mainly charcoal, coprolites	University Frankfurt	
1601	75	20	Floor	Faunal remains	Bone		University Frankfurt	
1602	75	20	Floor	Charcoal			University Frankfurt	
1603	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
1604	89	15	Floor	Grinding stone			Unlocated	
1605	101	11	Roof	Grinding stone	Granite	Lower grinding stone, fragment	Gorom Gorom	
1606	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1607	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1608	104	17	Roof	Charcoal			Discarded	
1609	74	20	Floor	Charcoal and plant remains		Pile of wood, some plant remains	University Frankfurt	10.1
1610	74	20	Floor	Pottery	Fired clay		Gorom Gorom	
1611	75	20	Floor	Plant remains and coprolites		Few plant remains only	University Frankfurt	
1612	66	4	Floor	Charcoal		Wooden post	University Frankfurt	10.3
1613	100	21	Floor	Sediment sample		*P. glaucum* including incolucri, coprolites	University Frankfurt	
1614	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1615	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1616	104	17	Roof	Charcoal			University Frankfurt	
1617	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
1618	75	20	Floor	Faunal remains	Bone		University Frankfurt	
1619	75	20	Floor	Charcoal			University Frankfurt	
1620	100	21	Floor	Pottery	Fired clay		Gorom Gorom	
1621	100	21	Floor	Faunal remains	Bone		University Frankfurt	
1622	100	21	Floor	Charcoal			University Frankfurt	
1623	88	18	Floor	Pottery	Fired clay		Gorom Gorom	
1624	88	18	Floor	Faunal remains	Bone		University Frankfurt	
1625	88	18	Floor	Charcoal			University Frankfurt	
1626	72			Charcoal and plant remains			University Frankfurt	
1627	72			Faunal remains	Bone		University Frankfurt	
1628	72			Pottery	Fired clay		Gorom Gorom	
1629	72			Charcoal			University Frankfurt	
1630	83	23	Roof	Pottery	Fired clay		Gorom Gorom	
1631	83	23	Roof	Faunal remains	Bone		University Frankfurt	
1632	83	23	Roof	Charcoal			University Frankfurt	
1633	100	21	Floor	Pottery	Fired clay	Vessel no. 16	Gorom Gorom	6.15:40
1634	100	21	Floor	Charcoal and plant remains		Content vessel no. 16, few plant remains only, badly preserved *P. glaucum*	University Frankfurt	
1635	74	20	Floor	Pottery	Fired clay		Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1636	74	20	Floor	Charcoal		Wooden post	University Frankfurt	
1637	75	20	Floor	Charcoal and plant remains		Few plant remains only	University Frankfurt	
1638	88	18	Floor	Sediment sample		Ashes	University Frankfurt	
1639	101	11	Roof	Pottery	Fired clay		Gorom Gorom	
1640	101	11	Roof	Faunal remains	Bone		University Frankfurt	
1641	101	11	Roof	Charcoal			University Frankfurt	
1642	72			Sediment sample		P. glaucum including involucri, much charcoal	University Frankfurt	
1643	105	13	Roof	Pottery	Fired clay		Gorom Gorom	
1644	105	13	Roof	Faunal remains	Bone		University Frankfurt	
1645	105	13	Roof	Charcoal			University Frankfurt	
1646	101	11	Roof	Slag	Ore	Iron slag (?)	Museum Ouagadougou	
1647	72			Charcoal and plant remains			University Frankfurt	
1648	83	23	Roof	Metal object	Iron	Bracelet (?)	Museum Ouagadougou	8.12:6
1649	104	17	Roof	Pottery	Fired clay	Pot lid	Gorom Gorom	
1650	83	23	Roof	Stone		Not used	Discarded	
1651	83	23	Roof	Pottery	Fired clay		Gorom Gorom	
1652	83	23	Roof	Faunal remains	Bone		University Frankfurt	
1653	83	23	Roof	Charcoal			University Frankfurt	
1654	100	21	Floor	Pottery	Fired clay		Gorom Gorom	
1655	100	21	Floor	Faunal remains	Bone		University Frankfurt	
1656	100	21	Floor	Charcoal			University Frankfurt	
1657	105	13	Roof	Pottery	Fired clay		Gorom Gorom	
1658	105	13	Roof	Faunal remains	Bone		University Frankfurt	
1659	105	13	Roof	Charcoal			University Frankfurt	
1660	104	17	Roof	Pottery	Fired clay	Vessel no. 49	Museum Oursi	6.15:19
1661	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1662	104	17	Roof	Charcoal			University Frankfurt	
1663	101	11	Roof	Pottery	Fired clay		Gorom Gorom	
1664	101	11	Roof	Faunal remains	Bone		University Frankfurt	
1665	101	11	Roof	Charcoal			University Frankfurt	
1666	100	21	Floor	Charcoal and plant remains			University Frankfurt	
1667	100	21	Floor	Sediment sample		Around vessel no. 16, much *P. glaucum* including involucri	University Frankfurt	
1668	104	17	Roof	Sediment sample		Content vessel no. 49	University Frankfurt	
1669	70	4	Floor	Pottery	Fired clay		Discarded	
1670	70	4	Floor	Faunal remains	Bone		Discarded	
1671	70	4	Floor	Charcoal			Discarded	
1672	70	4	Floor	Sediment sample		Organic material and many coprolites	University Frankfurt	
1673	106			Pottery	Fired clay		Museum Ouagadougou	6.16:6,35,37
1674	106			Faunal remains	Bone		University Frankfurt	
1675	106			Charcoal			University Frankfurt	
1676	72			Sediment sample		Ashes	University Frankfurt	
1677	72			Pottery	Fired clay		Gorom Gorom	
1678	105	13	Roof	Metal object	Iron	Clamp	Museum Ouagadougou	8.8:5
1679	105	13	Roof	Sediment sample			University Frankfurt	
1680	72			Sediment sample		Few plant remains only, much charcoal	University Frankfurt	
1681	100	21	Floor	Pottery	Fired clay		Gorom Gorom	
1682	100	21	Floor	Faunal remains	Bone		University Frankfurt	
1683	100	21	Floor	Metal object	Iron	Clamp, fragment	Museum Ouagadougou	8.8:4
1684	83	23	Floor	Stone		Not used	Discarded	
1685	83	23	Floor	Charcoal		Content vessel no. 51	University Frankfurt	
1686	83	23	Floor	Faunal remains	Bone	Content vessel no. 51	University Frankfurt	
1687	83	23	Floor	Sediment sample		Content vessel no. 51	University Frankfurt	
1688	83	23	Floor	Pottery	Fired clay	Content vessel no. 51	Gorom Gorom	
1689	106			Bead	Glass (?)		Museum Ouagadougou	8.13:7
1690	83	23	Floor	Human remains	Bone		University Frankfurt	
1691	89	15	Floor	Charcoal			University Frankfurt	
1692	83	23	Floor	Metal object	Copper alloy (?)	Ankle ring	Museum Ouagadougou	8.3g; 8.12:8
1693	89	15	Floor	Human remains	Bone		University Frankfurt	
1694	89	15	Floor	Human remains	Bone		University Frankfurt	
1695	89	15	Floor	Pottery	Fired clay		Gorom Gorom	
1696	88	18	Floor	Human remains	Bone		University Frankfurt	
1697	105	13	Roof	Pottery	Fired clay		Gorom Gorom	
1698	105	13	Roof	Faunal remains	Bone		University Frankfurt	
1699	105	13	Floor	Charcoal			University Frankfurt	
1700	106			Pottery	Fired clay		Gorom Gorom	
1701	106			Faunal remains	Bone		University Frankfurt	
1702	106			Charcoal			University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1703	70	4	Floor	Pottery	Fired clay		Gorom Gorom	
1704	70	4	Floor	Faunal remains	Bone		University Frankfurt	
1705	70	4	Floor	Charcoal			University Frankfurt	
1706	70	4	Floor	Charcoal and plant remains			University Frankfurt	
1707	83	23	Floor	Charcoal			University Frankfurt	
1708	83	23	Floor	Pottery	Fired clay	Vessel no. 10	Gorom Gorom	6.14:2
1709	83	23	Floor	Faunal remains	Bone		University Frankfurt	
1710	106			Grinding stone		Upper grinding stone, fragment	Gorom Gorom	
1711	106			Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:7
1712	104	17	Roof	Pottery	Fired clay	Vessel no. 47	Gorom Gorom	
1713	104	17	Roof	Pottery	Fired clay	Vessel no. 48	Gorom Gorom	
1714	104	17	Roof	Pottery	Fired clay	Vessel no. 50	Gorom Gorom	6.16:18
1715	88	18	Floor	Faunal remains	Bone		University Frankfurt	
1716	88	18	Floor	Pottery	Fired clay		Gorom Gorom	
1717	83	23	Floor	Pottery	Fired clay	Vessel no. 51	Gorom Gorom	
1718	106			Metal object	Iron	Bracelet (?), fragment	Museum Ouagadougou	8.8:21
1719	88	18	Floor	Clay sample	Burnt clay	Sample of small pillars	Gorom Gorom	
1720	101	11	Floor	Pottery	Fired clay		Gorom Gorom	
1721	101	11	Floor	Faunal remains	Bone		University Frankfurt	
1722	101	11	Floor	Charcoal			University Frankfurt	
1723	106			Pottery	Fired clay		Gorom Gorom	
1724	97	5	Floor	Pottery	Fired clay		Gorom Gorom	
1725a	97	5	Floor	Faunal remains	Bone		University Frankfurt	
1725b	97	5	Floor	Charcoal and plant remains		Few plant remains only	University Frankfurt	
1726	97	5	Floor	Charcoal and plant remains		Few plant remains only, mainly charcoal	University Frankfurt	
1727	86	16	Floor	Pottery	Fired clay	Vessel no. 40I	Gorom Gorom	6.14:6
1728	97	5	Floor	Sediment sample			University Frankfurt	
1729	86	16	Floor	Charcoal			University Frankfurt	
1730	101	11	Floor	Grinding stone	Granite (?)	Pestle with traces of red ochre	Gorom Gorom	7.3
1731	101	11	Floor	Bead	Quartz		Museum Ouagadougou	8.13:16
1732	104	17	Roof	Grinding stone		Lower grinding stone (?)	Gorom Gorom	
1733	73			Pottery	Fired clay		Gorom Gorom	
1734	83	23	Floor	Pottery	Fired clay		Gorom Gorom	
1735	104	17	Roof	Pottery	Fired clay	Vessel no. 55	Gorom Gorom	6.15:42
1736	105	13	Floor	Charcoal and plant remains		*P. glaucum* lumped together	University Frankfurt	11.2
1737	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1738	107			Pottery	Fired clay		Gorom Gorom	
1739	107			Faunal remains	Bone		University Frankfurt	
1740	107			Charcoal			University Frankfurt	
1741	104	17	roof	Metal object	Iron	Chain, fragment	Museum Ouagadougou	8.9:5
1742a	104	17	Roof	Metal object	Iron	Nail	Museum Ouagadougou	8.8:15
1742b	104	17	Roof	Pottery	Fired clay	Vessel no. 56	Gorom Gorom	6.15:43
1743	104	17	Roof	Hearthstone		Not used	Gorom Gorom	
1744	104	17	Roof	Grinding stone			Unlocated	
1745	104	17	Roof	Grinding stone			Unlocated	
1746	105	13	Roof	Pottery	Fired clay		Gorom Gorom	
1747	105	13	Roof	Faunal remains	Bone		University Frankfurt	
1748	105	13	Roof	Charcoal			University Frankfurt	
1749	105	13	Roof/floor	Sediment sample			University Frankfurt	
1750	107			Pottery	Fired clay		Gorom Gorom	
1751	107			Faunal remains	Bone		University Frankfurt	
1752	107			Charcoal			University Frankfurt	
1753	97	5	Floor	Pottery	Fired clay		Gorom Gorom	
1754	97	5	Floor	Faunal remains	Bone		University Frankfurt	
1755	97	5	Floor	Charcoal and plant remains		Few plant remains only, mainly charcoal	University Frankfurt	
1756	96	10	Floor	Pottery	Fired clay		Gorom Gorom	
1757	96	10	Floor	Faunal remains	Bone		University Frankfurt	
1758	96	10	Floor	Rope	Animal hair	Some charcoal, possible horse hair	University Frankfurt	8.5-7
1759	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1760	104	17	Roof	Charcoal			University Frankfurt	
1761	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1762	104	17	Roof	Pottery	Fired clay	Vessel no. 46	Gorom Gorom	6.15:16
1763	104	17	Roof	Sediment sample		Content vessel no. 46	University Frankfurt	
1764	104	17	Roof	Metal object	Iron		Museum Ouagadougou	
1765	105	13	Roof	Pottery	Fired clay	Vessel no. 53	Gorom Gorom	
1766	80	21	Floor	Pottery	Fired clay	Vessel no. 15	Gorom Gorom	
1767	80	21	Floor	Sediment sample		Content vessel no. 15	University Frankfurt	
1768	80	21	Floor	Faunal remains	Bone	Content vessel no. 15	University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1769	104	17	Roof	Pottery	Fired clay	Vessel no. 47	Gorom Gorom	6.14:22
1770	105	13	Roof	Pottery	Fired clay	Pot lid	Gorom Gorom	6.17:10
1771	104	17	Roof	Metal object	Iron		Museum Ouagadougou	
1772	97	5	Floor	Pottery	Fired clay		Gorom Gorom	
1773	96	10	Floor	Charcoal and plant remains		Mainly charcoal, some coprolites	University Frankfurt	
1774	96	10	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
1775	89	15	Floor	Pottery	Fired clay		Gorom Gorom	
1776	89	15	Floor	Faunal remains	Bone		University Frankfurt	
1777	89	15	Floor	Charcoal			University Frankfurt	
1778	89	15	Floor	Sediment sample		Mainly charcoal and faunal remains	University Frankfurt	
1779	104	17	Roof	Faunal remains	Bone	Content vessel no. 46	University Frankfurt	
1780	105	13	Roof	Sediment sample		Red ochre (hematite?)	University Frankfurt	
1781a	89	15	Floor	Pendant	Cowry shell		Museum Ouagadougou	8.13:20
1781b	89	15	Floor	Pendant	Cowry shell		Museum Ouagadougou	8.13:22
1782	101	11	Floor	Pottery	Fired clay		Gorom Gorom	
1783	101	11	Floor	Charcoal			University Frankfurt	
1784	101	11	Floor	Faunal remains	Bone		University Frankfurt	
1785	96	10	Floor	Grinding stone	Hematite, granite	2x pestles, one used also as upper grinding stone	Gorom Gorom	
1786	96	10	Floor	Grinding stone			Unlocated	
1787	101	11	Floor	Grinding stone	Granite	Lower grinding stone, fragment	Gorom Gorom	
1788	105	13	Roof	Pottery	Fired clay	Vessel no. 59	Gorom Gorom	6.16:15
1789	104	17	Roof	Pottery	Fired clay	Vessel no. 57	Gorom Gorom	6.16:38
1790	105	13	Roof/floor	Slag			Museum Ouagadougou	
1791	105	13	Roof/floor	Metal object	Iron		Museum Ouagadougou	
1792	101	11	Floor	Pottery	Fired clay		Gorom Gorom	
1793	104	17	Roof	Pottery	Fired clay	Vessel no. 48	Gorom Gorom	
1794	105	13	Roof/floor	Charcoal and plant remains		Mainly *V. unguiculata*	University Frankfurt	
1795	96	10	Floor	Bead	Ostrich shell		Museum Ouagadougou	8.13:2
1796	107			Grinding stone	Granite	Pestle	Gorom Gorom	
1797	105	13	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1798	105	13	Roof/floor	Faunal remains	Bone		University Frankfurt	
1799	105	13	Roof/floor	Charcoal			University Frankfurt	
1800	101	11	Floor	Pottery	Fired clay		Gorom Gorom	
1801	101	11	Floor	Faunal remains	Bone		University Frankfurt	
1802	101	11	Floor	Charcoal			University Frankfurt	
1803	89	14	Floor	Pottery	Fired clay		Gorom Gorom	
1804	89	14	Floor	Faunal remains	Bone		University Frankfurt	
1805	89	14	Floor	Charcoal			University Frankfurt	
1806	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1807	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1808	104	17	Roof	Charcoal			University Frankfurt	
1809	101	11	Floor	Sediment sample		Mainly charcoal	University Frankfurt	
1810	89	14	Floor	Sediment sample		Mainly charcoal and modern material	University Frankfurt	
1811	83	23	Floor	Pottery	Fired clay		Gorom Gorom	
1812	83	23	Floor	Faunal remains	Bone		University Frankfurt	
1813	83	23	Floor	Charcoal			University Frankfurt	
1814	108a			Pottery	Fired clay		Gorom Gorom	
1815	108a			Faunal remains	Bone		University Frankfurt	
1816	108a			Charcoal			University Frankfurt	
1817	105	13	Roof	Pottery	Fired clay	Vessel no. 52	Gorom Gorom	6.15:18
1818	105	13	Roof	Pottery	Fired clay	Vessel no. 59	Gorom Gorom	
1819	105	13	Roof	Pottery	Fired clay	Vessel no. 54	Gorom Gorom	6.15:6
1820	105	13	Roof	Pottery	Fired clay	Vessel no. 58	Gorom Gorom	6.14:9
1821	105	13	Roof	Sediment sample		Red hematite powder (?), content vessel no. 58	University Frankfurt	
1822	105	13	Floor	Charcoal and plant remains		Mainly *V. unguicalata*	University Frankfurt	
1823	105	13	Roof	Sediment sample		Content vessel no. 58	University Frankfurt	
1824	105	13	Roof	Sediment sample		Content vessel no. 54	University Frankfurt	
1825	105	13	Roof	Sediment sample		Content vessel no. 59, mainly *V. unguiculata*	University Frankfurt	
1826	105	13	Roof	Sediment sample		Content vessel no. 52	University Frankfurt	
1827	105	13	Roof	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:11
1828	105	13	Roof	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:1
1829	105	13	Roof	Charcoal and plant remains		Content vessel no. 54, mainly *V. unguiculata*	University Frankfurt	
1830	89	14	Floor	Metal object	Iron		Museum Ouagadougou	
1831	108b	7	Roof	Pottery	Fired clay		Gorom Gorom	
1832	108b	7	Roof	Faunal remains	Bone		University Frankfurt	
1833	104	12	Roof	Metal object	Iron		Museum Ouagadougou	
1834	109	12	Floor	Pottery	Fired clay	Pot lid	Gorom Gorom	6.17:21
1835	109	12	Floor	Faunal remains	Bone		University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1836	109	12	Floor	Charcoal			University Frankfurt	
1837	105	13	Floor	Charcoal			University Frankfurt	
1838							Not given	
1839	101	11	Floor	Pottery	Fired clay		Gorom Gorom	
1840	104	17	Roof	Clay object	Low fired clay	Weight (?), 43 gr.	Museum Ouagadougou	8.9:9
1841	105			Stone	Granite	Worked stone, function unknown	Gorom Gorom	
1842	104	17	Roof	Charcoal and plant remains		Few plant remains only	University Frankfurt	
1843	106			Pottery	Fired clay		Museum Ouagadougou	6.16:22
1844	106			Faunal remains	Bone		University Frankfurt	
1845	106			Charcoal			University Frankfurt	
1846	106			Pottery	Fired clay		Gorom Gorom	
1847	106			Faunal remains	Bone		University Frankfurt	
1848	106			Charcoal			University Frankfurt	
1849	105	13	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1850	105	13	Roof/floor	Faunal remains	Bone		University Frankfurt	
1851	105	13	Roof/floor	Charcoal			University Frankfurt	
1852	108b	7	Roof/floor	Pottery	Fired clay		Gorom Gorom	
1853	108b	7	Roof/floor	Faunal remains	Bone		University Frankfurt	
1854	108b	7	Roof/floor	Charcoal			University Frankfurt	
1855	109	12	Floor	Pottery	Fired clay		Gorom Gorom	
1856	109	12	Floor	Faunal remains	Bone		University Frankfurt	
1857	109	12	Floor	Charcoal			University Frankfurt	
1858	105	13	Floor	Charcoal		Ladder	University Frankfurt	
1859	105	13	Floor	Sediment sample			University Frankfurt	
1860	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1861	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1862	104	17	Roof	Charcoal			University Frankfurt	
1863	100	21	Floor	Pottery	Fired clay		Gorom Gorom	
1864	100	21	Floor	Faunal remains	Bone		University Frankfurt	
1865	100	21	Floor	Charcoal			University Frankfurt	
1866	110			Pottery	Fired clay		Gorom Gorom	
1867	110			Faunal remains	Bone		University Frankfurt	
1868	110			Charcoal			University Frankfurt	
1869	105	13	Floor	Coprolites			University Frankfurt	
1870	105	13	Roof	Charcoal and plant remains		Content vessel no. 58	University Frankfurt	
1871	105	13	Roof	Faunal remains	Bone	Content vessel no. 58	University Frankfurt	
1872	105	13	Roof	Charcoal		Content vessel no. 58	University Frankfurt	
1873	105	13	Roof	Pottery	Fired clay	Vessel no. 58	Gorom Gorom	
1874	100	21	Floor	Metal object	Iron	Knife or sickle blade, fragment	Museum Ouagadougou	8.10:2
1875	111			Pottery	Fired clay		Gorom Gorom	
1876	111			Faunal remains	Bone		University Frankfurt	
1877	111			Charcoal			University Frankfurt	
1878	89	14	Floor	Grinding stone	Quartzite	Pestle	Gorom Gorom	
1879	100	21	Floor	Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:14
1880	105	13	Roof	Charcoal and plant remains		Content vessel no. 52	University Frankfurt	
1881	105	13	Roof/floor	Charcoal			University Frankfurt	
1882	105	13	Roof	Pottery	Fired clay	Vessel no. 52	Gorom Gorom	
1883	110			Metal object	Iron	Clamp (?), fragment	Museum Ouagadougou	8.8:24
1884	104	17	Roof	Pottery	Fired clay	Vessel no. 60	Gorom Gorom	6.14:31
1885	104	17	Roof	Sediment sample		Content vessel no. 60	University Frankfurt	
1886	110			Metal object	Iron	Pin, fragment	Museum Ouagadougou	8.8:13
1887	110			Metal object	Iron	Ring, fragment	Museum Ouagadougou	8.9:4
1888	109	12	Floor	Grinding stone	Quartz or flint	Pestle	Gorom Gorom	
1889	110			Metal object	Iron	Arrowhead, fragment	Museum Ouagadougou	8.11:6
1890	106			Pottery	Fired clay		Gorom Gorom	
1891	106			Faunal remains	Bone		University Frankfurt	
1892	106			Charcoal			University Frankfurt	
1893	101	11	Floor	Pottery	Fired clay	Content vessel no. 8	Gorom Gorom	
1894	101	11	Floor	Charcoal		Content vessel no. 8, no plant remains	University Frankfurt	
1895	104	17	Floor	Pottery	Fired clay	Vessel no. 61I	Gorom Gorom	6.16:25
1896	104	17	Floor	Sediment sample			University Frankfurt	
1897	104	17	Roof/floor	Charcoal			University Frankfurt	
1898	104	17	Roof/floor	Faunal remains	Bone		University Frankfurt	
1899	101	11	Floor	Faunal remains	Bone	Content vessel no. 8	University Frankfurt	
1900	110			Pottery	Fired clay		Gorom Gorom	
1901	110			Faunal remains	Bone		University Frankfurt	
1902	110			Charcoal			University Frankfurt	
1903	109	12	Floor	Pottery	Fired clay		Gorom Gorom	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1904	109	12	Floor	Faunal remains	Bone		University Frankfurt	
1905	109	12	Floor	Charcoal			University Frankfurt	
1906	106			Pottery	Fired clay		Gorom Gorom	
1907	106			Faunal remains	Bone		University Frankfurt	
1908	106			Charcoal			University Frankfurt	
1909	106			Sediment sample		Around vessel no. 62	University Frankfurt	
1910	111			Pottery	Fired clay		Gorom Gorom	
1911	111			Faunal remains	Bone		University Frankfurt	
1912	111			Charcoal			University Frankfurt	
1913	104	17	Roof	Pottery	Fired clay		Gorom Gorom	
1914	104	17	Roof	Faunal remains	Bone		University Frankfurt	
1915	104	17	Roof	Charcoal		Dispersed wood	University Frankfurt	
1916	104	17	Roof/floor	Pottery	Fired clay	Vessel no. 61II and pot lid	Gorom Gorom	6.14:26; 6.17:18
1917	106			Pottery	Fired clay	Vessel no. 62	Gorom Gorom	6.14:32
1918	104	17	Roof	Pottery	Fired clay	Vessel no. 60	Gorom Gorom	
1919	101	11	Floor	Pottery	Fired clay	Content vessel no. 8	Gorom Gorom	
1920	101	11	Floor	Charcoal		Content vessel no. 8, no plant remains	University Frankfurt	
1921	104	17	Roof	Grinding stone	Granite	Pestle	Gorom Gorom	
1922	104	17	Roof	Pottery	Fired clay	Vessel no. 63	Gorom Gorom	6.16:39
1923	89	14	Floor	Pottery	Fired clay	Eroded fragments	Gorom Gorom	
1924	89	14	Floor	Pottery	Fired clay		Gorom Gorom	
1925	106			Faunal remains	Bone	Content vessel no. 62	University Frankfurt	
1926	104	17	Roof/floor	Charcoal		No plant remains	University Frankfurt	
1927	104	17	Roof	Grinding stone	Granite	Lower grinding stone	Gorom Gorom	
1928	106			Grinding stone	Granite,flint,sandstone	2x upper grinding stones, 1x pestle, 1x lower grinding stone	Gorom Gorom	
1929	104	17	Floor	Bead	Quartz		Museum Ouagadougou	8.13:12
1930	104	17	Floor	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:15
1931	112	13	Floor	Sediment sample			University Frankfurt	
1932	113	15	Floor	Sediment sample			University Frankfurt	
1933	114	23	Floor	Sediment sample			University Frankfurt	
1934	115	11	Floor	Sediment sample			University Frankfurt	
1935	116	27	Floor	Pottery	Fired clay		Gorom Gorom	
1936	116	27	Floor	Faunal remains	Bone		University Frankfurt	
1937	116	27	Floor	Charcoal			University Frankfurt	
1938	104	17	Roof	Pottery	Fired clay	Vessel no. 48	Gorom Gorom	
1939	104	17	Floor	Charcoal and plant remains		Around vessel no. 61, plant remains and plaited leafsheats	University Frankfurt	
1940a	104	17	Floor	Bead	Sandstone		Museum Ouagadougou	8.13:19
1940b	104	17	Floor	Bead	Ostrich shell		Museum Ouagadougou	8.13:4
1940c	104	17	Floor	Bead	Ostrich shell		Museum Ouagadougou	8.13:5
1940d	104	17	Floor	Bead	Ostrich shell		Museum Ouagadougou	8.13:6
1941	106			Pottery	Fired clay		Gorom Gorom	
1942	104	17	Floor	Pottery	Fired clay	Vessel no. 64	Museum Oursi	6.16:5
1943	104	17	Floor	Bead	Quartz		Museum Ouagadougou	8.13:12
1944	104	17	Roof/floor	Pottery	Fired clay	Vessel no. 66	Gorom Gorom	
1945							Not given	
1946	114	23	Floor	Pottery	Fired clay		Gorom Gorom	
1947	99	24	Floor	Pottery	Fired clay		Discarded	
1948	98	22	Floor	Pottery	Fired clay		Gorom Gorom	
1949	98	22	Floor	Pottery	Fired clay	Vessel no. 9	Gorom Gorom	6.11; 6.15:15
1950	98	22	Floor	Pottery	Fired clay	Vessel no. 11	Gorom Gorom	6.15:7
1951	98	22	Floor	Pottery	Fired clay	Vessel no. 65	Gorom Gorom	6.15:25
1952	98	22	Floor	Pottery	Fired clay	Vessel no. 14	Gorom Gorom	
1953	114	23	Floor	Pottery	Fired clay	Vessel no. 51	Gorom Gorom	
1954	114	23	Floor	Pottery	Fired clay	Vessel no. 18	Gorom Gorom	6.14:11
1955	114	23	Floor	Pottery	Fired clay	Vessel no. 10	Museum Oursi	
1956	114	23	Floor	Pottery	Fired clay	Vessel no. 68	Gorom Gorom	
1957	114	23	Floor	Sediment sample		Content vessel no. 51, few plant remains only	University Frankfurt	
1958	98	22	Floor	Sediment sample		Content vessel no. 9, few plant remains only	University Frankfurt	
1959	98	22	Floor	Charcoal		Content vessel no. 9	University Frankfurt	
1960	98	22	Floor	Charcoal		Under vessel no. 9	University Frankfurt	
1961	114	23	Floor	Grinding stone	Quartzite (?)	Upper grinding stone	University Frankfurt	
1962	99	24	Floor	Pottery	Fired clay	Vessel no. 19	Gorom Gorom	6.15:22
1963	99	24	Floor	Pottery	Fired clay	Vessel no. 20	Gorom Gorom	6.14:14
1964	99	24	Floor	Pottery	Fired clay	Vessel no. 22	Gorom Gorom	6.15:37
1965	99	24	Floor	Pottery	Fired clay	Vessel no. 23	Gorom Gorom	6.15:30
1966	99	24	Floor	Pottery	Fired clay	Vessel no. 21	Gorom Gorom	
1967	114	23	Floor	Faunal remains	Bone		University Frankfurt	

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
1968	98	22	Floor	Metal object	Iron		Museum Ouagadougou	
1969	117	18	Floor	Pottery	Fired clay	Vessel no. 33	Gorom Gorom	
1970	98	22	Floor	Sediment sample		Under vessel no. 11, charcoal, no plant remains	University Frankfurt	
1971	98	22	Floor	Charcoal		Content vessel no. 11	University Frankfurt	
1972	98	22	Floor	Sediment sample		Under vessel no. 9, charcoal, no plant remains	University Frankfurt	
1973	117	18	Floor	Pottery	Fired clay	Vessel no. 34	Gorom Gorom	6.15:13
1974	117	18	Floor	Pottery	Fired clay	Vessel no. 35	Gorom Gorom	
1975	98	22	Floor	Sediment sample		Content vessel no. 11, charcoal, no plant remains	University Frankfurt	
1976	117	18	Floor	Pottery	Fired clay	Vessel no. 36	Gorom Gorom	
1977	118	18	Floor	Sediment sample			University Frankfurt	
1978	118	18	Floor	Pottery	Fired clay	Vessel no. 38	Gorom Gorom	
1979	118	18	Floor	Pottery	Fired clay	Vessel no. 37	Gorom Gorom	6.10
1980	118	18	Floor	Pottery	Fired clay	Vessel no. 28	Gorom Gorom	6.15:11
1981	118	18	Floor	Pottery	Fired clay	Vessel no. 29	Gorom Gorom	
1982	118	18	Floor	Pottery	Fired clay	Vessel no. 30	Gorom Gorom	
1983	118	18	Floor	Pottery	Fired clay	Vessel no. 42	Museum Oursi	6.15:14
1984	118	18	Floor	Pottery	Fired clay	Vessel no. 27	Gorom Gorom	
1985	118	18	Floor	Pottery	Fired clay	Vessel no. 26	Gorom Gorom	6.15:8
1986	118	18	Floor	Pottery	Fired clay	Vessel no. 44	Gorom Gorom	
1987	118	18	Floor	Pottery	Fired clay	Vessel no. 43	Gorom Gorom	6.14:24
1988	114	23	Floor	Pottery	Fired clay	Pot lid, near vessel no. 18	Museum Oursi	6.17:5
1989	98	22	Floor	Sediment sample		Under vessel no. 65, few plant remains only, mainly charcoal	University Frankfurt	
1990	98	22	Floor	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:13
1991	98	22	Floor	Faunal remains	Bone	Under vessel no. 65	University Frankfurt	
1992	118	18	Floor	Pottery	Fired clay	Vessel no. 69	Gorom Gorom	6.15:10
1993	98	22	Floor	Sediment sample		Under vessel no. 13, few plant remains only, coprolites, modern material	University Frankfurt	
1994	119	16	Floor	Pottery	Fired clay	Vessel no. 41	Gorom Gorom	6.16:7
1995	86	16	Roof	Pottery	Fired clay	Vessel no. 45	Gorom Gorom	6.16:1
1996	119	16	Floor	Pottery	Fired clay	Vessel no. 32	Gorom Gorom	6.16:4
1997	98	22	Floor	Pottery	Fired clay	Vessel no. 13	Gorom Gorom	
1998	98	22	Floor	Grinding stone	Basalt or granite	Upper grinding stone	Gorom Gorom	
1999	98	22	Floor	Grinding stone	Granite	Pestle	Gorom Gorom	
2000	98	22	Floor	Grinding stone	Granite	1x pestle and 1x upper grinding stone	Gorom Gorom	
2001	98	22	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2002	98	22	Floor	Grinding stone		Lower grinding stone with traces of red ochre	Gorom Gorom	
2003	98	22	Floor	Grinding stone	Sandstone	Upper grinding stone	Gorom Gorom	
2004	98	22	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2005	98	22	Floor	Grinding stone	Basalt (?)	Pestle	Gorom Gorom	
2006	99	24	Floor	Sediment sample		Content and around vessel no. 22	University Frankfurt	
2007	114	23	Floor	Sediment sample		Content vessel no. 18, *P. glaucum* including involucri	University Frankfurt	
2008	114	23	Floor	Faunal remains	Bone		University Frankfurt	
2009	114	23	Floor	Pottery	Fired clay	Vessel no. 51	Gorom Gorom	6.14:30
2010	99	24	Floor	Pottery	Fired clay	Vessel no. 22	Gorom Gorom	
2011	99	24	Floor	Pottery	Fired clay		Gorom Gorom	
2012	118	18	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2013	118	18	Floor	Grinding stone	Basalt (?)	Upper grinding stone	Gorom Gorom	
2014	118	18	Floor	Grinding stone	Granite	Upper grinding stone, fragment	Gorom Gorom	
2015	70	4	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2016	112	13	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2017	115	11	Floor	Grinding stone	Granite (?)	Lower grinding stone, fragment	Gorom Gorom	
2018	99	24	Floor	Sediment sample		Under and content vessel no. 23, few plant remains only	University Frankfurt	
2019	114	23	Floor	Faunal remains	Bone		University Frankfurt	
2020	114	23	Floor	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:14
2021	115	11	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2022	115	11	Floor	Hearth stone		Not modified	Gorom Gorom	
2023	99	24	Floor	Sediment sample		Under vessel no. 21, modern material	University Frankfurt	
2024	99	24	Floor	Grinding stone	Granite (?)	Pestle	Gorom Gorom	
2025	106			Pottery	Fired clay	Pot lid	Gorom Gorom	6.17:20
2026	117	18	Floor	Pottery	Fired clay	Vessel no. 36	Gorom Gorom	6.15:21
2027	97	5	Floor	Pottery	Fired clay		Gorom Gorom	
2028	97	5	Floor	Faunal remains	Bone		University Frankfurt	
2029	112	13	Floor	Pottery	Fired clay		Gorom Gorom	
2030	113	15	Floor	Pottery	Fired clay	Pot lid	Museum Oursi	6.17:6
2031	113	15	Floor	Pottery	Fired clay		Gorom Gorom	
2032	113	15	Floor	Faunal remains	Bone		University Frankfurt	
2033	98	22	Floor	Charcoal		Content vessel no. 13	University Frankfurt	
2034	98	22	Floor	Faunal remains	Bone	Content vessel no. 13	University Frankfurt	
2035	113	15	Floor	Grinding stone	Basalt	Upper grinding stone, fragment	Gorom Gorom	
2036a	99	24	Floor	Pottery	Fired clay	Vessel no. 21II	Gorom Gorom	6.15:27

Bucketno.	Locus	Room	Provenance	Type	Material	Remarks	Stored in	Figure
2036b	99	24	Floor	Pottery	Fired clay	Vessel no. 21III	Gorom Gorom	6.16:36
2037	100	21	Floor	Grinding stone	Granite	Pestle with traces of red ochre	Gorom Gorom	
2038	100	21	Floor	Hearth stone	Granite	Not modified	Unlocated	
2039	96	10	Floor	Grinding stone	Granite	Lower grinding stone, fragment	Gorom Gorom	
2040	99	24	Floor	Pottery	Fired clay	Vessel no. 21IV	Gorom Gorom	6.14:16
2041	118	18	Floor	Faunal remains	Bone	Content vessel no. 37	University Frankfurt	
2042	117	18	Floor	Pottery	Fired clay		Gorom Gorom	
2043	117	18	Floor	Faunal remains	Bone		University Frankfurt	
2044	118	18	Floor	Pottery	Fired clay		Gorom Gorom	
2045	75	20	Floor	Pottery	Fired clay		Gorom Gorom	
2046	74	20	Floor	Pottery	Fired clay		Gorom Gorom	
2047	117	18	Floor	Stone	Granite	Not used	Gorom Gorom	
2048	117	18	Floor	Sediment sample		Content vessel no. 37, ashy material and plant remains	University Frankfurt	
2049	120	17	Floor	Faunal remains	Bone		University Frankfurt	
2050a	99	24	Floor	Pottery	Fired clay	Vessel no. 21I	Gorom Gorom	6.14:13
2050b	120	17	Floor	Pottery	Fired clay		Gorom Gorom	
2051	121	19	Floor	Pottery	Fired clay		Gorom Gorom	
2052	115	11	Floor	Pottery	Fired clay		Gorom Gorom	
2053	115	11	Floor	Charcoal		Wooden post	University Frankfurt	
2054	106			Pottery	Fireed clay		Gorom Gorom	
2055	106			Faunal remains	Bone		University Frankfurt	
2056	96	10	Floor	Faunal remains	Bone		University Frankfurt	
2057	76	3	Floor	Pottery	Fired clay		Gorom Gorom	
2058	96	10	Floor	Pottery	Fired clay		Gorom Gorom	
2059	70	4	Floor	Faunal remains	Bone		University Frankfurt	
2060	70	4	Floor	Pottery	Fired clay		Gorom Gorom	
2061	70	4	Floor	Grinding stone	Sandstone (?)	Upper grinding stone, fragment	Gorom Gorom	
2062	113	15	Floor	Charcoal			University Frankfurt	
2063	99	24	Floor	Sediment sample		Content vessel no. 20, modern material	University Frankfurt	
2064	99	24	Floor	Sediment sample		Content vessel no. 19, modern material	University Frankfurt	
2065	112	13	Floor	Charcoal			University Frankfurt	
2066	99	24	Floor	Faunal remains	Bone	Content vessel no. 20	University Frankfurt	
2067	118	18	Floor	Sediment sample		Content vessel no. 38, nearly no plant remains	University Frankfurt	
2068	118	18	Floor	Sediment sample		Content vessel no. 38	University Frankfurt	
2069	99	24	Floor	Charcoal		Under vessel no. 21	University Frankfurt	
2070	118	18	Floor	Pottery	Fired clay	Vessel no. 38	Gorom Gorom	6.14:10
2071	118	18	Floor	Pottery	Fired clay	Vessel no. 38	Gorom Gorom	6.14:10
2072	118	18	Floor	Pottery	Fired clay	Vessel no. 38	Gorom Gorom	6.14:10
2073	118	18	Floor	Pottery	Fired clay	Vessel no. 38	Gorom Gorom	6.14:10
2074	117	18	Floor	Pottery	Fired clay	Vessel no. 33	Gorom Gorom	6.16:26
2075	119	16	Floor	Grinding stone	Granite (?)	Upper grinding stone, fragment	Gorom Gorom	
2076	99	24	Floor	Pottery	Fired clay	Vessel no. 20	Gorom Gorom	
2077	118	18	Floor	Faunal remains	Bone	Content vessel no. 38	University Frankfurt	
2078	100	21	Floor	Pottery	Fired clay	Vessel no. 15	Gorom Gorom	6.15:9
2079	100	21	Floor	Sediment sample		Under vessel no. 15, few remains, badly preserved *P. glaucum*	University Frankfurt	
2080	118	18	Floor	Sediment sample		Content vessel no. 26, nearly no plant remains	University Frankfurt	
2081	119	16	Floor	Charcoal		Around vessel no. 41, no plant remains	University Frankfurt	
2082	118	18	Floor	Grinding stone	Granite	Upper grinding stone	Gorom Gorom	
2083	99	24	Floor	Stone	Granite (?)	Disc shaped stone, near vessel nos 20 and 19	Gorom Gorom	
2084	119	16	Floor	Pottery	Fired clay		Gorom Gorom	
2085	119	16	Floor	Faunal remains	Bone		University Frankfurt	
2086	118	18	Floor	Pottery	Fired clay	Vessel no. 27	Gorom Gorom	
2087	118	18	Floor	Pottery	Fired clay	Vessel no. 27	Museum Oursi	6.16:8
2088	118	18	Floor	Pottery	Fired clay	Vessel no. 27	Gorom Gorom	
2089	118	18	Floor	Pottery	Fired clay	Vessel no. 27	Gorom Gorom	
2090	118	18	Floor	Pottery	Fired clay	Vessel no. 37	Gorom Gorom	6.10; 6.15:5
2091	118	18	Floor	Pottery	Fired clay	Vessel no. 37	Museum Oursi	6.10
2092	118	18	Floor	Pottery	Fired clay	Vessel no. 44	Gorom Gorom	6.14:27
2093	117	18	Floor	Pottery	Fired clay		Gorom Gorom	
2094	118	18	Floor	Faunal remains	Bone		University Frankfurt	
2095	118	18	Floor	Pottery	Fired clay	Vessel no. 43	Gorom Gorom	
2096	118	18	Floor	Sediment sample		Content vessel no. 43, nearly no plant remains	University Frankfurt	
2097	99	24	Floor	Pottery	Fired clay	Vessel no. 20	Gorom Gorom	
2098	104	17	Floor	Sediment sample		Content vessel no. 64	University Frankfurt	
2099	118	18	Floor	Sediment sample		Content vessel no. 42, nearly no plant remains	University Frankfurt	
2100	104	17	Roof	Sediment sample		Content vessel no. 46	University Frankfurt	
2101	65	20	Roof	Grinding stone	Granite	Lower grinding stone	*In situ*	
2102	100	21	Floor	Grinding stone	Granite	Lower grinding stone	*In situ*	7.2
2103	76	3	Floor	Grinding stone	Granite	Lower grinding stone	*In situ*	

Appendix C

List of Plant Remains (Excluding Charcoal) and Examined Archaeobotanical Samples

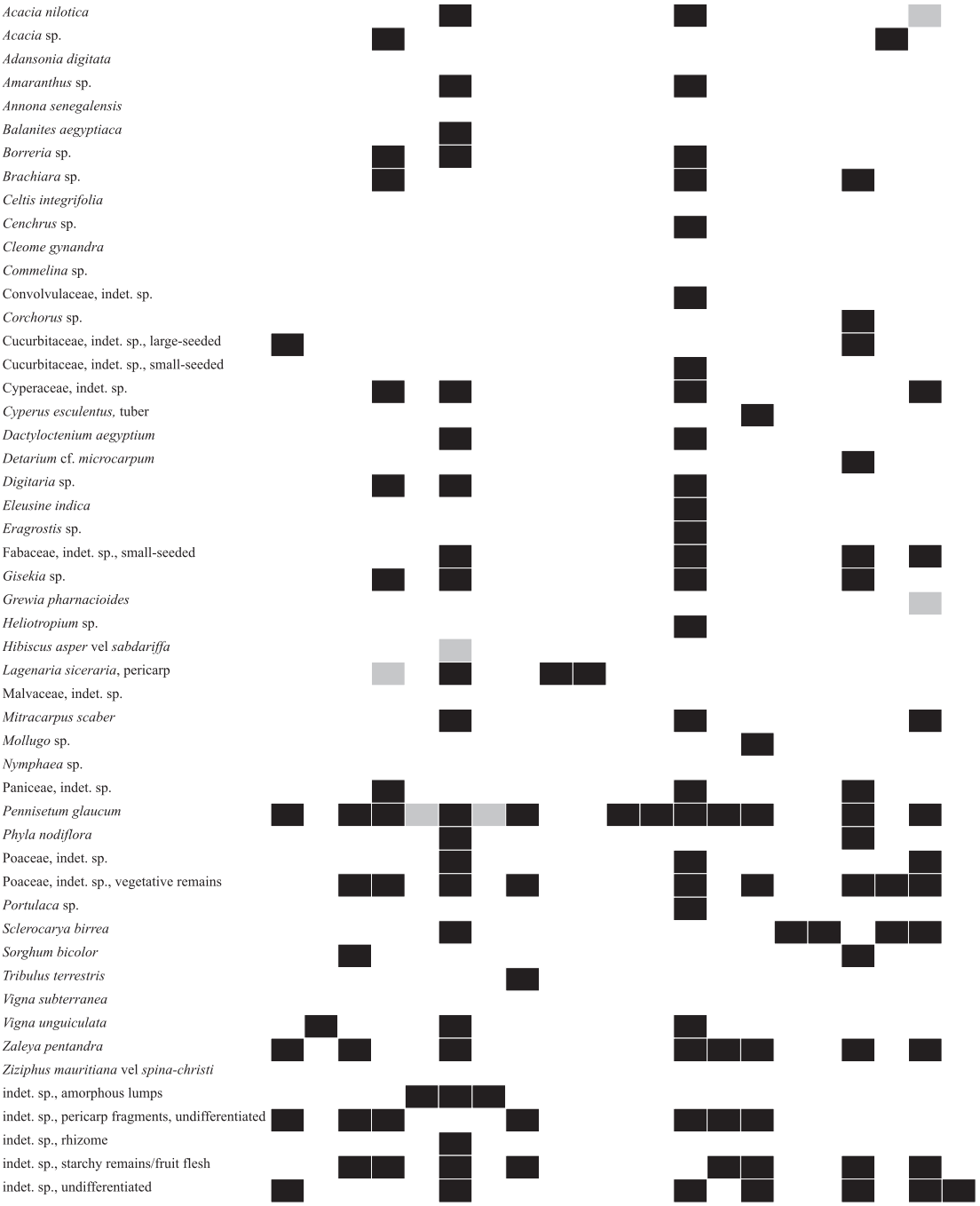
Stefanie Kahlheber

The samples are ordered by rooms. Taxa are represented by seeds or fruits unless otherwise noted.

Legend

present
present by cf.-identification
present in dung

Bucketnumber/sample	1028	1033	1041	1115	1119	1672	1706	1725	1726	1755	224	213	307	1051	1081	1149	1164	1180	1234	1263	1365
Room no.	3	3	4	4	4	4	4	5	5	5	7	7	7	9	9	9	9	9	9	9	9
Hand picked		X		X	X		X	X	X	X	X	X				X	X		X		X
Standard archaeobotanical sample (no.)	466		469			531		532					88,89	470	472			483		488	
Volume (l)	35,0		28,0			30,0		28,0					52,5	30,0	10,0			34,0		22,0	
Sorted		X			X		X		X	X		X				X	X	X	X		X
Screened or partly sorted			X	X		X		X			X		X	X	X					X	



Bucketnumber/sample	1609	1273	1271	1113	1189	1207	1208	1214	1215	1235	1236	1239	1758	1773	1774	1894	1920	1600	1809	1736	1794
Room no.	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	11	11	11	11	13	13
Hand picked	X	X	X			X	X	X		X	X	X	X	X		X	X			X	X
Standard archaeobotanical sample (no.)				477	484				485						535			521	539		
Volume (l)				18,0	1,5				38,0						25,0			20,0	28,0		
Sorted	X	X	X										X	X							
Screened or partly sorted				X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X

Acacia nilotica
Acacia sp.
Adansonia digitata
Amaranthus sp.
Annona senegalensis
Balanites aegyptiaca
Borreria sp.
Brachiara sp.
Celtis integrifolia
Cenchrus sp.
Cleome gynandra
Commelina sp.
Convolvulaceae, indet. sp.
Corchorus sp.
Cucurbitaceae, indet. sp., large-seeded
Cucurbitaceae, indet. sp., small-seeded
Cyperaceae, indet. sp.
Cyperus esculentus, tuber
Dactyloctenium aegyptium
Detarium cf. *microcarpum*
Digitaria sp.
Eleusine indica
Eragrostis sp.
Fabaceae, indet. sp., small-seeded
Gisekia sp.
Grewia pharnacioides
Heliotropium sp.
Hibiscus asper vel *sabdariffa*
Lagenaria siceraria, pericarp
Malvaceae, indet. sp.
Mitracarpus scaber
Mollugo sp.
Nymphaea sp.
Paniceae, indet. sp.
Pennisetum glaucum
Phyla nodiflora
Poaceae, indet. sp.
Poaceae, indet. sp., vegetative remains
Portulaca sp.
Sclerocarya birrea
Sorghum bicolor
Tribulus terrestris
Vigna subterranea
Vigna unguiculata
Zaleya pentandra
Ziziphus mauritiana vel *spina-christi*
indet. sp., amorphous lumps
indet. sp., pericarp fragments, undifferentiated
indet. sp., rhizome
indet. sp., starchy remains/fruit flesh
indet. sp., undifferentiated

Bucketnumber/sample	1822	1825	1829	1869	1870	1880	1778	1810	1476	1483	1488	1507	1510	1512	2081	1842	1939	74	77	280	194
Room no.	13	13	13	13	13	13	15	15	16	16	16	16	16	16	16	17	17	18	18	18	18
Hand picked	X		X	X	X	X				X		X			X	X	X	X		X	
Standard archaeobotanical sample (no.)		541					537	538	509		512		513	514							59,60
Volume (l)		6,0					28,0	30,0	36,0		21,0		30,0	9,0							15,0
Sorted		X	X	X	X	X						X			X	X		X	X	X	
Screened or partly sorted	X						X	X	X	X	X		X	X			X				X

Acacia nilotica
Acacia sp.
Adansonia digitata
Amaranthus sp.
Annona senegalensis
Balanites aegyptiaca
Borreria sp.
Brachiara sp.
Celtis integrifolia
Cenchrus sp.
Cleome gynandra
Commelina sp.
Convolvulaceae, indet. sp.
Corchorus sp.
Cucurbitaceae, indet. sp., large-seeded
Cucurbitaceae, indet. sp., small-seeded
Cyperaceae, indet. sp.
Cyperus esculentus, tuber
Dactyloctenium aegyptium
Detarium cf. *microcarpum*
Digitaria sp.
Eleusine indica
Eragrostis sp.
Fabaceae, indet. sp., small-seeded
Gisekia sp.
Grewia pharnacioides
Heliotropium sp.
Hibiscus asper vel *sabdariffa*
Lagenaria siceraria, pericarp
Malvaceae, indet. sp.
Mitracarpus scaber
Mollugo sp.
Nymphaea sp.
Paniceae, indet. sp.
Pennisetum glaucum
Phyla nodiflora
Poaceae, indet. sp.
Poaceae, indet. sp., vegetative remains
Portulaca sp.
Sclerocarya birrea
Sorghum bicolor
Tribulus terrestris
Vigna subterranea
Vigna unguiculata
Zaleya pentandra
Ziziphus mauritiana vel *spina-christi*
indet. sp., amorphous lumps
indet. sp., pericarp fragments, undifferentiated
indet. sp., rhizome
indet. sp., starchy remains/fruit flesh
indet. sp., undifferentiated

Bucketnumber/sample	2048	1300	1516	1520	2067	2080	2096	2099	125	128	134	136	271	1556	37	145	1057	1064	1065	1357	1611
Room no.	18	18	18	18	18	18	18	18	19	19	19	19	19	19	20	20	20	20	20	20	20
Hand picked		X								X	X			X			X		X		X
Standard archaeobotanical sample (no.)	561		515	517	562	565	567	568	37,38			41,42	79,80		13,14	43,44		471		492	
Volume (l)	14,0		58,0	50,0	15,0	3,0	9,0	1,0	45,0			30,0	15,0		30,0	42,0		8,0		30,0	
Sorted		X							X	X	X		X	X							X
Screened or partly sorted	X		X	X	X	X	X	X				X			X	X	X	X	X	X	

Acacia nilotica
Acacia sp.
Adansonia digitata
Amaranthus sp.
Annona senegalensis
Balanites aegyptiaca
Borreria sp.
Brachiara sp.
Celtis integrifolia
Cenchrus sp.
Cleome gynandra
Commelina sp.
Convolvulaceae, indet. sp.
Corchorus sp.
Cucurbitaceae, indet. sp., large-seeded
Cucurbitaceae, indet. sp., small-seeded
Cyperaceae, indet. sp.
Cyperus esculentus, tuber
Dactyloctenium aegyptium
Detarium cf. *microcarpum*
Digitaria sp.
Eleusine indica
Eragrostis sp.
Fabaceae, indet. sp., small-seeded
Gisekia sp.
Grewia pharnacioides
Heliotropium sp.
Hibiscus asper vel *sabdariffa*
Lagenaria siceraria, pericarp
Malvaceae, indet. sp.
Mitracarpus scaber
Mollugo sp.
Nymphaea sp.
Paniceae, indet. sp.
Pennisetum glaucum
Phyla nodiflora
Poaceae, indet. sp.
Poaceae, indet. sp., vegetative remains
Portulaca sp.
Sclerocarya birrea
Sorghum bicolor
Tribulus terrestris
Vigna subterranea
Vigna unguiculata
Zaleya pentandra
Ziziphus mauritiana vel *spina-christi*
indet. sp., amorphous lumps
indet. sp., pericarp fragments, undifferentiated
indet. sp., rhizome
indet. sp., starchy remains/fruit flesh
indet. sp., undifferentiated

Bucketnumber/sample	1637	112	156	164	167	174	178	182	221	1310	1926	1613	1634	1666	1667	2079	62	108	279	292	86
Room no.	20	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	22	22	22	22	22
Hand picked	X			X			X			X	X		X	X							
Standard archaeobotanical sample (no.)		35,36	47,48		52	S		53-56	67,68			523	525		526	566	19,20	31,32	81,82	85	27,28
Volume (l)		30,0	34,0		37,5			45,0	45,0			24,0	10,0		55,0	7,0	45,0	22,5	34,0	1,0	30,0
Sorted	X						X			X	X	X		X	X	X					
Screened or partly sorted		X	X	X	X	X		X	X				X				X	X	X	X	X

Acacia nilotica
Acacia sp.
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Amaranthus sp.
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Borreria sp.
Brachiara sp.
Celtis integrifolia
Cenchrus sp.
Cleome gynandra
Commelina sp.
Convolvulaceae, indet. sp.
Corchorus sp.
Cucurbitaceae, indet. sp., large-seeded
Cucurbitaceae, indet. sp., small-seeded
Cyperaceae, indet. sp.
Cyperus esculentus, tuber
Dactyloctenium aegyptium
Detarium cf. *microcarpum*
Digitaria sp.
Eleusine indica
Eragrostis sp.
Fabaceae, indet. sp., small-seeded
Gisekia sp.
Grewia pharnacioides
Heliotropium sp.
Hibiscus asper vel *sabdariffa*
Lagenaria siceraria, pericarp
Malvaceae, indet. sp.
Mitracarpus scaber
Mollugo sp.
Nymphaea sp.
Paniceae, indet. sp.
Pennisetum glaucum
Phyla nodiflora
Poaceae, indet. sp.
Poaceae, indet. sp., vegetative remains
Portulaca sp.
Sclerocarya birrea
Sorghum bicolor
Tribulus terrestris
Vigna subterranea
Vigna unguiculata
Zaleya pentandra
Ziziphus mauritiana vel *spina-christi*
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indet. sp., pericarp fragments, undifferentiated
indet. sp., rhizome
indet. sp., starchy remains/fruit flesh
indet. sp., undifferentiated

Bucketnumber/sample	1360	1958	1970	1972	1975	1989	1993	1325a	1957	2007	155	171	206	207	215	253	266	267	1251	2006	2018
Room no.	22	22	22	22	22	22	22	22	23	23	24	24	24	24	24	24	24	24	24	24	24
Hand picked	X							X			X	X	X					X			
Standard archaeobotanical sample (no.)		550	553	551	554	555	556		552	557				63	S	75,76	77,78		487	559	558
Volume (l)		7,0	8,0	3,0	4,0	5,0	7,0		1,0	16,0				30,0		60,0	37,5		25,0	7,0	8,0
Sorted	X	X				X						X									
Screened or partly sorted			X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X

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Acacia sp.
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Cenchrus sp.
Cleome gynandra
Commelina sp.
Convolvulaceae, indet. sp.
Corchorus sp.
Cucurbitaceae, indet. sp., large-seeded
Cucurbitaceae, indet. sp., small-seeded
Cyperaceae, indet. sp.
Cyperus esculentus, tuber
Dactyloctenium aegyptium
Detarium cf. *microcarpum*
Digitaria sp.
Eleusine indica
Eragrostis sp.
Fabaceae, indet. sp., small-seeded
Gisekia sp.
Grewia pharnacioides
Heliotropium sp.
Hibiscus asper vel *sabdariffa*
Lagenaria siceraria, pericarp
Malvaceae, indet. sp.
Mitracarpus scaber
Mollugo sp.
Nymphaea sp.
Paniceae, indet. sp.
Pennisetum glaucum
Phyla nodiflora
Poaceae, indet. sp.
Poaceae, indet. sp., vegetative remains
Portulaca sp.
Sclerocarya birrea
Sorghum bicolor
Tribulus terrestris
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Zaleya pentandra
Ziziphus mauritiana vel *spina-christi*
indet. sp., amorphous lumps
indet. sp., pericarp fragments, undifferentiated
indet. sp., rhizome
indet. sp., starchy remains/fruit flesh
indet. sp., undifferentiated

Bucketnumber/sample	**2023**	**2063**	**2064**	**310**	**311**	**314**	**317**	**321**	**326**	**328**	**329**	**340**	**91**	**83**	**1162**	**1590**	**1626**	**1642**	**1647**	**1680**	**1151**	**1187**
Room no.	24	24	24	24	24	24	24	24	24	24	24	24	19/24									
Hand picked					X		X			X		X		X			X		X		X	X
Standard archaeobotanical sample (no.)	560	563	564	S		90, 91		92	94,95		96,97		29,30		482	522		524		529		
Volume (l)	20,0	10,0	6,0			3,8		3,8	3,8		3,8		45,0		13,0	27,0		30,0		4,0		
Sorted						X					X						X		X		X	X
Screened or partly sorted	X	X	X	X	X		X	X	X	X		X	X	X	X	X		X		X		

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Cenchrus sp.
Cleome gynandra
Commelina sp.
Convolvulaceae, indet. sp.
Corchorus sp.
Cucurbitaceae, indet. sp., large-seeded
Cucurbitaceae, indet. sp., small-seeded
Cyperaceae, indet. sp.
Cyperus esculentus, tuber
Dactyloctenium aegyptium
Detarium cf. *microcarpum*
Digitaria sp.
Eleusine indica
Eragrostis sp.
Fabaceae, indet. sp., small-seeded
Gisekia sp.
Grewia pharnacioides
Heliotropium sp.
Hibiscus asper vel *sabdariffa*
Lagenaria siceraria, pericarp
Malvaceae, indet. sp.
Mitracarpus scaber
Mollugo sp.
Nymphaea sp.
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indet. sp., amorphous lumps
indet. sp., pericarp fragments, undifferentiated
indet. sp., rhizome
indet. sp., starchy remains/fruit flesh
indet. sp., undifferentiated

Appendix D

List of Animal Species

Veerle Linseele

The figures indicate number of identified specimens (NISP).

	Total N														
Room no.		1	3	3	3	4	4	4	5	5	7	7	7	9	9
Provenance		Topsoil	Floor	Roof	Floor/roof	Floor	Roof	Floor/roof	Floor	Roof	Floor	Roof	Floor/roof	Floor	Roof
Molluscs															
Chambardia sp./*Spathopsis* sp.	**11**	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Unidentified gastropod	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Burnt	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Fishes															
Lungfish (*Protopterus annectens*)	**3**	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Gymnarchus niloticus	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clariid catfish *(Clarias* sp.)	**78**	-	-	-	-	-	-	-	3	3	-	-	-	1	-
Nile perch (*Lates niloticus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified fish	**83**	0	0	0	0	0	0	0	4	3	0	1	0	0	0
Burnt	*5*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified fish	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**84**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**3**	**0**	**0**	**0**	**1**	**0**
Amphibians															
Frog or toad (Anura)	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reptiles															
Agama *(Agama* sp.)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitor lizard (*Varanus* sp.)	**2**	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Snake (Serpentes)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crocodile (*Crocodylus niloticus*)	**6**	-	-	-	-	-	-	-	1	4	-	-	-	-	
Sahelian giant tortoise (*Geochelone sulcata*)	**12**	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**2**
Burnt	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*
Birds															
Domestic chicken (*Gallus gallus* f. domestica)	**28**	-	-	-	-	-	-	-	1	1	-	1	-	3	-
Pigeon or dove (Columbidae)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified bird	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Burnt	*6*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*
Unidentified bird	**20**	0	0	0	0	0	0	0	0	0	0	1	0	2	0
Total	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**2**	**0**	**5**	**0**
Bird eggshell	-	-	-	P	-	P	-	-	-	-	-	-	-	-	-
Mammals															
White-tooted shrew (*Crocidura* sp.)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hare (*Lepus capensis/saxatilis*)	**6**	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Striped ground squirrel (*Euxerus erythropus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesser pouched rat (*Cricetomys gambianus*)	**1**	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Small rodents	**253**	-	-	-	-	1	-		11	1	-	-	-	91	-
Dog (*Canis lupus* f. familiaris)	**54**	-	1	6	-	-	2	-	1	5	2	-	-	1	-
Medium-sized carnivore	**11**	-	-	-	-	1	-	-	2	4	-	-	-	-	1
Slender mongoose (*Herpestes sanguineus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized genet or mongoose (viverrid)	**7**	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Caracal (*Felis caracal*) or serval (*Felis serval*)	**5**	-	-	-	-	-	-	-	2	3	-	-	-	-	-
Small carnivore	**3**	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Aardvark (*Orycteropus afer*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	3
African (savannah) elephant (*Loxodonta africana africana*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Warthog (cf. *Phacohoerus aethiopicus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Large antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep (*Ovis ammon* f. aries)	**67**	-	-	-	-	1	-	-	-	1	1	-	-	2	-
Goat (*Capra aegagrus* f. hircus)	**52**	1	-	1	-	1	-	-	5	4	1	-	-	-	1
Sheep (Ovis ammon f. aries) or goat (Capra aegagrus f. hircus)	**244**	1	-	13	-	4	2	-	17	8	5	-	-	6	2
Small bovid	**314**	5	-	6	-	3	2	-	6	10	4	-	-	9	5
Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*)	**70**	1	-	1	-	-	2	1	-	1	-	1	-	1	2
Large bovid	**45**	-	-	6	-	2	-	-	-	1	-	-	-	3	-
Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified mammal	**1148**	8	1	33	0	14	8	1	44	41	13	1	0	114	22
Burnt	*213*	*2*	*1*	*9*	*0*	*7*	*0*	*1*	*6*	*3*	*6*	*0*	*0*	*2*	*10*
Unidentified mammal	**6244**	30	0	271	4	69	73	12	116	177	116	6	1	90	65
Total	**7392**	**38**	**1**	**304**	**4**	**83**	**81**	**13**	**160**	**218**	**129**	**7**	**1**	**204**	**87**
Total identified	**1268**	8	1	33	0	14	8	1	50	49	13	1	0	115	24
Total unidentified	**6265**	30	0	271	4	69	73	12	116	177	116	7	1	92	65
Grand total	**7533**	38	1	304	4	83	81	13	166	226	129	8	1	207	89
Donkey (?) droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep or goat droppings	**F**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

P: present; F: frequent

	Total N															
Room no.		9	9	10	10	11	11	11	12	13	13	13	15	15	16
Provenance		Roof *		Floor	Roof	Floor	Floor **	Roof	Floor	Roof	Floor/roof	Floor/Roof ***	Floor	Roof	Floor
Molluscs																
Chambardia sp./*Spathopsis* sp.	**11**	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Unidentified gastropod	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Burnt	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Fishes															
Lungfish (*Protopterus annectens*)	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gymnarchus niloticus	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clariis catfish (*Clarias* sp.)	**78**	-	-	2	-	1	-	1	-	-	-	-	1	-	-
Nile perch (*Lates niloticus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified fish	**83**	0	0	2	0	1	0	1	0	0	0	0	1	0	0
Burnt	*5*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified fish	**1**	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	**84**	**0**	**0**	**4**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
Amphibians															
Frog or toad (Anura)	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reptiles															
Agama (*Agama* sp.)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitor lizard (*Varanus* sp.)	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Snake (Serpentes)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crocodile (*Crocodylus niloticus*)	**6**	-	-	-	-	-	-	1	-	-	-	-	-	-	
Sahelian giant tortoise (*Geochelone sulcata*)	**12**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**23**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Burnt	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Birds															
Domestic chicken (*Gallus gallus* f. domestica)	**28**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pigeon or dove (Columbidae)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified bird	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Burnt	*6*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*
Unidentified bird	**20**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
Bird eggshell	**-**	-	-	-	-	P	-	-	-	-	-	-	-	-	-
Mammals															
White-tooted shrew (*Crocidura* sp.)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hare (*Lepus capensis/saxatilis*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Striped ground squirrel (*Euxerus erythropus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesser pouched rat (*Cricetomys gambianus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small rodents	**253**	-	-	-	22	15	-	-	1	-	-	-	-	2	-
Dog (*Canis lupus* f. familiaris)	**54**	-	1	-	-	-	-	-	1	-	-	-	-	1	-
Medium-sized carnivore	**11**	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Slender mongoose (*Herpestes sanguineus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized genet or mongoose (viverrid)	**7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caracal (*Felis caracal*) or serval (*Felis serval*)	**5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small carnivore	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aardvark (*Orycteropus afer*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
African (savannah) elephant (*Loxodonta africana africana*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warthog (cf. *Phacohoerus aethiopicus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Large antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep (*Ovis ammon* f. aries)	**67**	-	-	-	1	-	-	1	-	-	-	-	-	2	-
Goat (*Capra aegagrus* f. hircus)	**52**	-	1	-	-	-	-	1	-	1	-	-	-	1	-
Sheep (Ovis ammon f. aries) or goat (Capra aegagrus f. hircus)	**244**	-	3	1	8	3	-	2	3	1	1	-	-	6	-
Small bovid	**314**	-	2	-	3	2	-	2	4	2	3	-	3	1	-
Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*)	**70**	-	4	2	1	-	-	1	1	-	-	-	1	1	-
Large bovid	**45**	-	-	-	1	2	-	-	-	1	-	-	1	2	-
Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)	**2**	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Identified mammal	**1148**	0	11	3	37	22	0	7	11	5	4	0	5	16	0
Burnt	*213*	*0*	*0*	*0*	*1*	*1*	*0*	*4*	*0*	*3*	*3*	*0*	*0*	*9*	*0*
Unidentified mammal	**6244**	1	56	31	207	111	1	28	190	62	139	1	46	103	1
Total	**7392**	**1**	**67**	**34**	**244**	**133**	**1**	**35**	**201**	**67**	**143**	**1**	**51**	**119**	**1**
Total identified	**1268**	0	11	5	37	23	0	9	12	5	4	0	6	16	0
Total unidentified	**6265**	1	56	31	207	112	1	28	190	62	139	1	46	103	1
Grand total	**7533**	1	67	36	244	135	1	37	202	67	143	1	52	119	1
Donkey (?) droppings	**1**	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Sheep or goat droppings	**F**	-	-	-	-	-	-	-	-	-	-	-	-	-	F
Unidentified droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

P: present; F: frequent; *: content vessel 2; **: content vessel 8; ***: content vessel 58

	Total N	16	16	16	16/18	17	17	17	17	18	18	18	18	18	19/24
Room no.															
Provenance		Roof	Floor/roof	Destr. debris	Roof	Floor	Roof	Roof *	Floor/roof **	Floor	Floor ***	Roof ****	Roof	Floor/roof	Floor
Molluscs															
Chambardia sp./*Spathopsis* sp.	**11**	2	-	-	-	-	3	-	-	1	-	-	1	-	-
Unidentified gastropode	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**12**	**2**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**
Burnt	*1*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Fishes															
Lungfish (*Protopterus annectens*)	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gymnarchus niloticus	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clariis catfish (*Clarias* sp.)	**78**	2	-	-	-	-	3	-	-	-	2	-	-	-	-
Nile perch (*Lates niloticus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified fish	**83**	2	0	0	0	0	3	0	0	0	2	0	0	0	0
Burnt	*5*	*0*	*0*	*0*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified fish	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**89**	**2**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**
Amphibians															
Frog or toad (Anura)	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reptiles															
Agama (*Agama* sp.)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitor lizard (*Varanus* sp.)	**2**	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Snake (Serpentes)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crocodile (*Crocodylus niloticus*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sahelian giant tortoise (*Geochelone sulcata*)	**12**	-	-	-	-	-	-	-	-	-	-	-	3	-	-
Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**23**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**
Burnt	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Birds															
Domestic chicken (*Gallus gallus* f. domestica)	**28**	-	1	-	-	-	-	1	1	1	-	-	-	-	-
Pigeon or dove (Columbidae)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified bird	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Burnt	*6*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified bird	**20**	2	0	0	1	0	0	0	0	2	1	0	0	1	0
Total	**50**	**2**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**3**	**1**	**0**	**0**	**1**	**0**
Bird eggshell	-	-	-	-	P	-	-	-	-	-	-	-	-	P	-
Mammals															
White-tooted shrew (*Crocidura* sp.)	**1**	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Hare (*Lepus capensis/saxatilis*)	**6**	1	-	-	-	-	1	-	-	-	-	-	-	-	-
Striped ground squirrel (*Euxerus erythropus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesser pouched rat (*Cricetomys gambianus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small rodents	**253**	-	-	-	-	-	1	-	-	-	-	-	-	1-	-
Dog (*Canis lupus* f. familiaris)	**54**	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Medium-sized carnivore	**11**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slender mongoose (*Herpestes sanguineus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized genet or mongoose (viverrid)	**7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caracal (*Felis caracal*) or serval (*Felis serval*)	**5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small carnivore	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aardvark (*Orycteropus afer*)	**6**	-	-	-	-	-	-	-	-	1	-	-	2	-	-
African (savanna) elephant (*Loxodonta africana africana*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warthog (cf. *Phacohoerus aethiopicus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized antelope	**1**	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Large antelope	**1**	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Sheep (*Ovis ammon* f. aries)	**67**	-	-	-	-	-	6	-	-	-	-	-	1	-	-
Goat (*Capra aegagrus* f. hircus)	**52**	-	-	1	-	-	6	-	-	1	-	-	1	-	2
Sheep (Ovis ammon f. aries) or goat (Capra aegagrus f. hircus)	**244**	3	2	-	2	-	13	-	-	3	-	-	6	-	1
Small bovid	**314**	5	3	-	-	-	5	-	-	10	-	-	14	3	-
Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*)	**70**	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Large bovid	**45**	1	-	-	-	-	1	-	-	-	-	-	1	1	-
Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified mammal	**1148**	11	5	1	4	0	34	0	0	15	0	0	27	5	3
Burnt	*213*	*4*	*4*	*0*	*0*	*0*	*16*	*0*	*0*	*6*	*0*	*0*	*4*	*0*	*1*
Unidentified mammal	**6244**	98	28	0	60	1	139	0	9	141	29	1	227	53	1
Total	**7392**	**109**	**33**	**1**	**64**	**1**	**173**	**0**	**9**	**156**	**29**	**1**	**254**	**58**	**4**
Total identified	**1268**	16	5	1	4	0	40	9	0	16	2	0	31	5	3
Total unidentified	**6265**	100	28	0	61	1	139	0	9	143	30	1	227	54	1
Grand total	**7533**	116	33	1	65	1	179	0	9	159	32	1	258	59	4
Donkey (?) droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep or goat droppings	**F**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

P: present; F: frequent; *: content vessel 46; **: around vessel 61; ***: content vessel 31; ****: content vessel 38

	Total N	19/24	19/24	20	20	21	21	21	21	21	22	22	22	22	22
Room no.															
Provenance		Floor *	Roof	Floor	Roof	Floor	Floor **	Roof	Roof mixed	Floor/roof	Floor	Floor ***	Floor ****	Roof	Roof Mixed
Molluscs															
Chambardia sp./*Spathopsis* sp.	**11**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified gastropode	**1**	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Total	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
Burnt	***1***	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Fishes															
Lungfish (*Protopterus annectens*)	**3**	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Gymnarchus niloticus	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clariid catfish (*Clarias* sp.)	**78**	-	-	-	9	1	-	-	-	1	-	-	-	-	-
Nile perch (*Lates niloticus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified fish	**83**	0	0	0	10	1	0	0	0	1	0	0	0	0	0
Burnt	***5***	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*
Unidentified fish	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**89**	**0**	**0**	**0**	**10**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**
Amphibians															
Frog or toad (Anura)	**1**	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Reptiles															
Agama (*Agama* sp.)	**1**	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Monitor lizard (*Varanus* sp.)	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Snake (Serpentes)	**1**	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Crocodile (cf. *Crocodylus niloticus*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sahelian giant tortoise (*Geochelone sulcata*)	**12**	-	-	-	7	-	-	-	-	-	-	-	-	-	-
Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**23**	**0**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Burnt	***2***	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Birds															
Domestic chicken (*Gallus gallus* f. domestica)	**28**	-	-	-	5	3	-	2	-	-	1	-	-	-	-
Pigeon or dove (Columbidae)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified bird	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Burnt	***6***	*0*	*0*	*0*	*1*	*2*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified bird	**20**	0	0	1	2	1	0	1	0	0	0	0	0	1	0
Total	**50**	**0**	**0**	**1**	**7**	**4**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**1**	**0**
Bird eggshell	**-**	-	-	-	P	P	-	-	-	-	-	-	-	-	-
Mammals															
White-tooted shrew (*Crocidura* sp.)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hare (*Lepus capensis/saxatilis*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Striped ground squirrel (*Euxerus erythropus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesser pouched rat (*Cricetomys gambianus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small rodents	**253**	-	-	3	97	3	-	-	-	-	-	-	-	1	-
Dog (*Canis lupus* f. familiaris)	**54**	-	-	7	8	4	1	-	-	-	-	-	-	3	-
Medium-sized carnivore	**11**	-	1	-	-	1	-	-	-	-	-	-	-	-	-
Slender mongoose (*Herpestes sanguineus*)	**1**	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Medium-sized genet or mongoose (viverrid)	**7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caracal (*Felis caracal*) or serval (*Felis serval*)	**5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small carnivore	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aardvark (*Orycteropus afer*)	**6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
African (savanna) elephant (*Loxodonta africana africana*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warthog (cf. *Phacohoerus aethiopicus*)	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Large antelope	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep (*Ovis ammon* f. aries)	**67**	-	-	1	3	9	-	4	-	1	1	-	-	-	-
Goat (*Capra aegagrus* f. hircus)	**52**	1	-	-	1	8	-	1	1	-	-	-	-	-	-
Sheep (Ovis ammon f. aries) or goat (Capra aegagrus f. hircus)	**244**	1	-	6	34	21	-	3	2	-	3	1	-	1	-
Small bovid	**314**	-	1	14	31	24	-	8	-	-	1	-	-	8	2
Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*)	**70**	-	-	9	9	8	-	-	-	-	1	-	-	1	-
Large bovid	**45**	-	-	2	5	4	-	-	-	-	-	-	-	1	-
Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)	**2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified mammal	**1148**	2	2	42	188	83	1	16	3	1	6	1	0	16	2
Burnt	***213***	*0*	*0*	*16*	*17*	*11*	*0*	*2*	*1*	*1*	*1*	*0*	*0*	*4*	*0*
Unidentified mammal	**6244**	10	52	143	745	307	1	39	26	13	33	5	1	165	62
Total	**7392**	**12**	**54**	**185**	**933**	**390**	**2**	**55**	**29**	**14**	**39**	**6**	**1**	**181**	**64**
Total identified	**1268**	2	2	42	208	84	1	16	3	2	7	1	0	16	2
Total unidentified	**6265**	10	52	144	747	308	1	40	26	13	33	5	1	166	62
Grand total	**7533**	12	54	186	955	392	2	56	29	15	40	6	1	182	64
Donkey (?) droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep or goat droppings	**F**	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Unidentified droppings	**1**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

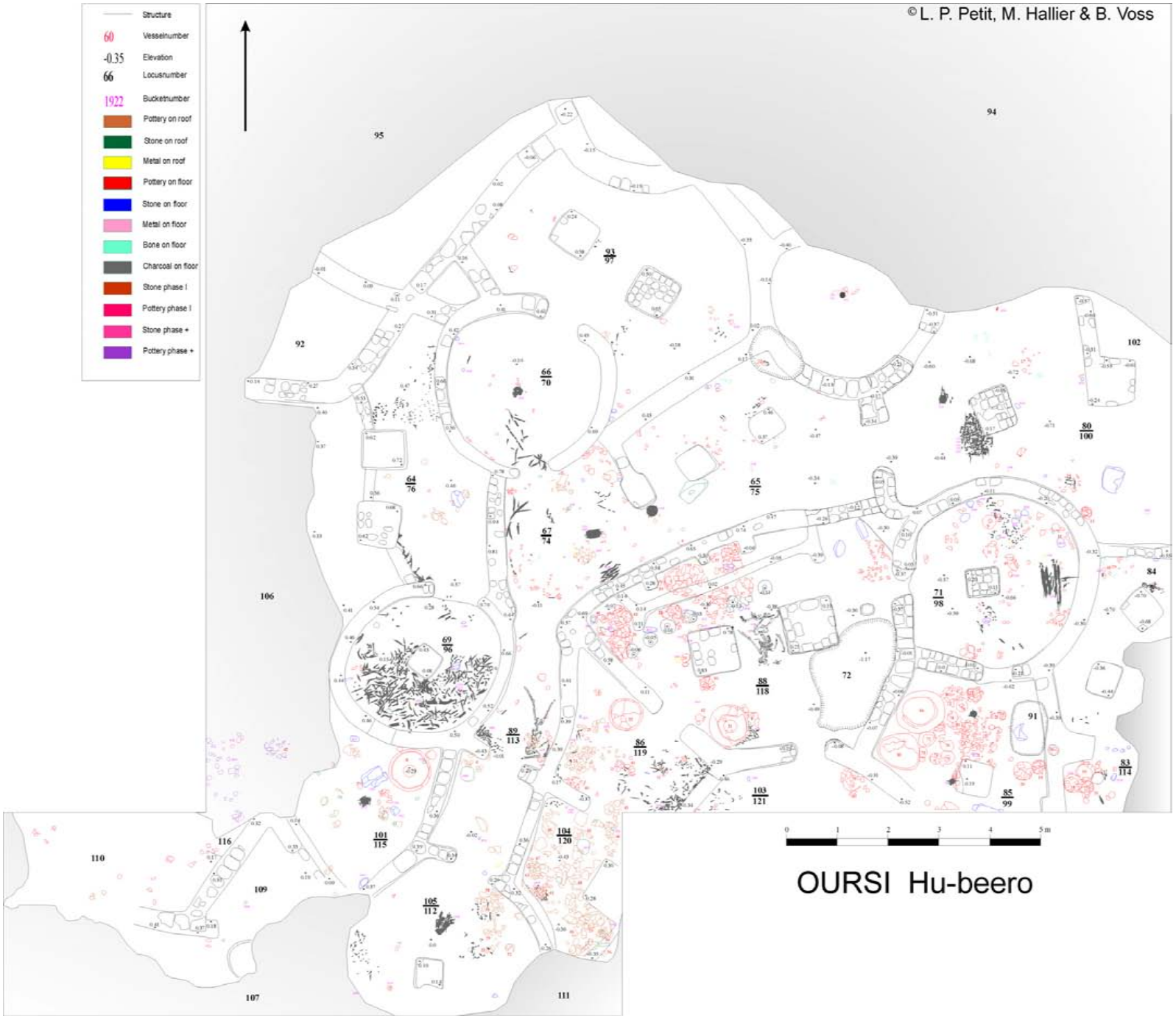
P: present; F: frequent; *: around vessel 10; **: content vessel 15; ***: content vessel 13; ****: under vessel 65

	Total N	Room no.	22	23	23	23	23	23	23	24	24	24	24	24	27	-
		Provenance	Destr. debris	Floor	Floor *	Floor **	Floor ***	Roof		Floor	Floor ****	Floor *****	Roof	Destr. debris	Topsoil	Erosion gully
Molluscs																
Chambardia sp./*Spathopsis* sp.	**11**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified gastropode	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**12**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Burnt	*1*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Fishes																
Lungfish (*Protopterus annectens*)	**3**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gymnarchus niloticus	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clariid catfish (*Clarias* sp.)	**78**		-	-	-	-	-	1	-	-	-	-	-	-	-	-
Nile perch (*Lates niloticus*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified fish	**83**		0	0	0	0	0	1	0	0	0	0	0	0	0	0
Burnt	*5*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified fish	**1**		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**89**		**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Amphibians																
Frog or toad (Anura)	**1**		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reptiles																
Agama (*Agama* sp.)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitor lizard (*Varanus* sp.)	**2**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Snake (Serpentes)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crocodile (cf. *Crocodylus niloticus*)	**6**		-	-	-	-	-	-	-	-	-	-	-	-	-	
Sahelian giant tortoise (*Geochelone sulcata*)	**12**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	**23**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Burnt	*2*		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Birds																
Domestic chicken (*Gallus gallus* f. domestica)	**28**		-	-	-	-	-	2	-	-	-	1	-	-	-	-
Pigeon or dove (Columbidae)	**1**		-	-	-	-	-	-	-	-	-	-	1	-	-	-
Identified bird	**1**		0	0	0	0	0	0	0	0	0	1	1	0	0	0
Burnt	*6*		*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified bird	**20**		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**50**		**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**
Bird eggshell	**-**		-	-	-	-	-	-	-	-	-	P	P	-	P	-
Mammals																
White-tooted shrew (*Crocidura* sp.)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hare (*Lepus capensis/saxatilis*)	**6**		-	1	-	-	-	-	-	-	-	-	-	-	-	-
Striped ground squirrel (*Euxerus erythropus*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lesser pouched rat (*Cricetomys gambianus*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small rodents	**253**		-	2	-	-	-	-	-	-	-	-	-	-	-	-
Dog (*Canis lupus* f. familiaris)	**54**		-	1	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized carnivore	**11**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slender mongoose (*Herpestes sanguineus*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized genet or mongoose (viverrid)	**7**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caracal (*Felis caracal*) or serval (*Felis serval*)	**5**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small carnivore	**3**		-	-	-	-	-	-	-	-	-	-	1	-	-	-
Aardvark (*Orycteropus afer*)	**6**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
African (savanna) elephant (*Loxodonta africana africana*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warthog (cf. *Phacohoerus aethiopicus*)	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Small antelope	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Medium-sized antelope	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Large antelope	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep (*Ovis ammon* f. aries)	**67**		-	7	3	-	-	8	-	-	1	-	2	-	1	-
Goat (*Capra aegagrus* f. hircus)	**52**		-	1	1	-	-	3	-	-	-	-	2	-	-	-
Sheep (Ovis ammon f. aries) or goat (Capra aegagrus f. hircus)	**244**		-	13	2	-	3	11	1	-	3	-	2	-	2	-
Small bovid	**314**		-	10	4	2	1	40	1	-	24	1	3	-	2	1
Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*)	**70**		-	5	3	-	-	5	-	-	-	-	-	-	-	-
Large bovid	**45**		-	-	1	-	-	3	-	-	-	-	-	-	1	-
Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)	**2**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Identified mammal	**1148**		0	40	14	2	4	70	2	0	28	1	10	0	6	1
Burnt	*213*		*0*	*14*	*0*	*0*	*0*	*21*	*0*	*0*	*9*	*0*	*1*	*0*	*0*	*0*
Unidentified mammal	**6244**		8	80	34	12	4	476	24	21	41	9	55	5	223	0
Total	**7392**		**8**	**120**	**48**	**14**	**8**	**546**	**26**	**21**	**69**	**10**	**65**	**5**	**229**	**1**
Total identified	**1268**		0	40	14	2	4	71	2	0	28	2	11	1	6	14
Total unidentified	**6265**		8	80	34	12	4	476	24	21	41	9	55	5	223	0
Grand total	**7533**		8	120	48	14	8	547	26	21	69	11	66	6	229	14
Donkey (?) droppings	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep or goat droppings	**F**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unidentified droppings	**1**		-	-	-	-	-	-	-	-	-	-	-	-	-	-

P: present; F: frequent; *: around vessel 68; **: content vessel 18; ***: content vessel 51; ****: content bin 1; *****: content vessel 20

	Total N	-	-	-	-	-	-
Room no.							
Provenance		Mixed	Older phase	Topsoil	Pitfill	Vessel 62	Hole *
Molluscs							
Chambardia sp./*Spathopsis* sp.	**11**	1	-	1	-	-	-
Unidentified gastropode	**1**	-	-	-	-	-	-
Total	**12**	**1**	**0**	**1**	**0**	**0**	**0**
Burnt	***1***	*0*	*0*	*0*	*0*	*0*	*0*
Fishes							
Lungfish (*Protopterus annectens*)	**3**	1	-	-	-	-	-
Gymnarchus niloticus	**1**	-	-	1	-	-	-
Clariid catfish (*Clarias* sp.)	**78**	1	2	1	-	-	-
Nile perch (*Lates niloticus*)	**1**	-	-	1	-	-	-
Identified fish	**83**	2	2	3	0	0	0
Burnt	***5***	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified fish	**1**	0	0	0	0	0	0
Total	**89**	**2**	**2**	**3**	**0**	**0**	**0**
Amphibians							
Frog or toad (Anura)	**1**	0	0	0	0	0	0
Reptiles							
Agama (*Agama* sp.)	**1**	-	-	-	-	-	-
Monitor lizard (*Varanus* sp.)	**2**	-	-	-	-	-	-
Snake (Serpentes)	**1**	-	-	-	-	-	-
Crocodile (cf. *Crocodylus niloticus*)	**6**	-	-	-	-	-	-
Sahelian giant tortoise (*Geochelone sulcata*)	**12**	-	-	-	-	-	-
Land tortoise (*Kinyxis*) or freshwater turtle (*Pelusios*)	**1**	1	-	-	-	-	-
Total	**23**	**1**	**0**	**0**	**0**	**0**	**0**
Burnt	***2***	*0*	*0*	*0*	*0*	*0*	*0*
Birds							
Domestic chicken (*Gallus gallus* f. domestica)	**28**	-	1	1	-	-	-
Pigeon or dove (Columbidae)	**1**	-	-	-	-	-	-
Identified bird	**1**	0	0	0	0	0	0
Burnt	***6***	*0*	*0*	*0*	*0*	*0*	*0*
Unidentified bird	**20**	2	0	2	0	0	0
Total	**50**	**4**	**1**	**3**	**0**	**0**	**0**
Bird eggshell	-	P	-	P	P	P	-
Mammals							
White-tooted shrew (*Crocidura* sp.)	**1**	-	-	-	-	-	-
Hare (*Lepus capensis/saxatilis*)	**6**	-	-	-	-	-	-
Striped ground squirrel (*Euxerus erythropus*)	**1**	1	-	-	-	-	-
Lesser pouched rat (*Cricetomys gambianus*)	**1**	-	-	-	-	-	-
Small rodents	**253**	-	-	-	-	-	-
Dog (*Canis lupus* f. familiaris)	**54**	4	1	3	-	-	-
Medium-sized carnivore	**11**	-	-	-	-	-	-
Slender mongoose (*Herpestes sanguineus*)	**1**	-	-	-	-	-	-
Medium-sized genet or mongoose (viverrid)	**7**	-	-	-	-	-	-
Caracal (*Felis caracal*) or serval (*Felis serval*)	**5**	-	-	-	-	-	-
Small carnivore	**3**	-	-	-	-	-	-
Aardvark (*Orycteropus afer*)	**6**	-	-	-	-	-	-
African (savanna) elephant (*Loxodonta africana africana*)	**1**	-	-	-	-	-	-
Warthog (cf. *Phacohoerus aethiopicus*)	**1**	1	-	-	-	-	-
Small antelope	**1**	-	-	-	1	-	-
Medium-sized antelope	**1**	-	-	-	-	-	-
Large antelope	**1**	-	-	-	-	-	-
Sheep (*Ovis ammon* f. aries)	**67**	2	1	5	1	-	-
Goat (*Capra aegagrus* f. hircus)	**52**	2	-	2	-	-	-
Sheep (Ovis ammon f. aries) or goat (Capra aegagrus f. hircus)	**244**	5	-	10	-	-	-
Small bovid	**314**	8	2	11	3	-	-
Cattle (*Bos primigenius* f. taurus) or buffalo (*Syncerus caffer*)	**70**	-	4	-	-	-	-
Large bovid	**45**	2	-	3	-	-	-
Horse (*Equus ferus* f. caballus) or donkey (*Equus africanus* f. asinus)	**2**	1	-	-	-	-	-
Identified mammal	**1148**	26	8	34	5	0	0
Burnt	***213***	*5*	*0*	*4*	*1*	*0*	*0*
Unidentified mammal	**6244**	126	12	605	40	3	2
Total	**7392**	**152**	**20**	**639**	**45**	**3**	**2**
Total identified	**1268**	30	10	38	5	0	0
Total unidentified	**6265**	128	12	607	40	3	2
Grand total	**7533**	158	22	645	45	3	2
Donkey (?) droppings	**1**	-	-	-	-	-	-
Sheep or goat droppings	**F**	-	-	-	-	-	-
Unidentified droppings	**1**	-	-	-	-	-	-

P: present; F: frequent; * hole in wall 68 between rooms no. 23 and 24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Structure
60 Vesselnumber
-0.35 Elevation
66 Locusnumber
1922 Bucketnumber
Pottery on roof
Stone on roof
Metal on roof
Pottery on floor
Stone on floor
Metal on floor
Bone on floor
Charcoal on floor
Stone phase I
Pottery phase I
Stone phase +
Pottery phase +
95
94
92
102
106
84
72
91
110
116
109
107
111
66/70
93/97
64/76
65/75
67/74
80/100
71/98
69/96
88/118
89/113
86/119
83/114
103/121
85/99
101/115
104/120
105/112
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OURSI Hu-beero

Oursi hu-beero

This final report describes the study of an exceptionally well-preserved Iron Age building discovered in northern Burkina Faso, West Africa. The site of Oursi hu-beero, meaning "the big house of Oursi" in the locally spoken Songhay language, was excavated in 2000 and 2001 by a scientific team from the universities of Frankfurt am Main and Ouagadougou. It is situated in the middle of a group of settlement mounds, nearby the modern village of Oursi. In the year 2000 deep erosion gullies were threatening the architectural remains on the surface, which were provisionally dated to the 10th century AD. Scholars from both universities saw the importance of this site and undertook immediate action. But even they were not prepared for what they uncovered under only one metre of destruction debris.

The rich diversity of incredible finds in the 25 different rooms rendered their exposure of enormous importance for the archaeology and history of Burkina Faso. Complete storage jars, metal equipment, wooden furniture, rope and textile fragments, grinding stones and charred botanical remains are only a fraction of the total assemblage of finds. Although we are dealing with the results of a single occupation phase and from one building only, the density of finds, the preservation of the architecture and the absence of later disturbances add considerably to our understanding of daily life in this part of West Africa. Up to now the limited contextual information about life in villages and towns prior to the historical periods has promoted divergent and weakly argued interpretations. This volume breaks open new grounds of investigation and calls for further study. Additionally, the editors hope that this report will stimulate and encourage the discussion between historians and archaeologists of the fascinating West African past.

The current volume presents an introduction to the expedition, an analysis of the site formation processes, the presentation of the architectural features, in-depth studies of the findings and a lively account of the heritage management project that resulted in an on-site museum. Nine authors contributed to this rich and multifaceted final report.

The account of the construction, intensive use, violent destruction and subsequent rediscovery of the building is the enthralling subject of this volume, which is richly illustrated with numerous coloured drawings, photographs, maps and reconstruction drawings. It melds archaeological, historical and environmental data into a thrilling story. A story that reads like a new Crime Scene Investigation episode, but happens to have been a real-life tragedy in the African Sahel almost 1000 years ago.

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