Archeological and Historical Reconstructions of the Foraging and Farming Communities of the Lower Zambezi: From the mid-Holocene to the second Millennium AD
Dissertation presented at Uppsala University to be publicly examined in Eng/2-0076, Uppsala, Wednesday, 2 December 2015 at 10:15 for the degree of Doctor of Philosophy. The examination will be conducted in English. Faculty examiner: Senior Lecturer Dr Munyaradzi Manyanga (Department of History, University of Zimbabwe).

Abstract

In this thesis I combine new archaeological surveys and excavations together with the historical and ethnographic sources, to construct a long term settlement history and historical ecology of the lower Zambezi River valley and delta region, in Mozambique. The evidence presented indicates that people have settled in the area since the Late Stone Age, in total eight new archaeological sites have been located in archaeological surveys. Two sites have been excavated in the course of this thesis work, Lumbi and Sena, each representing different chronological phases. Lumbi has a continuous settlement from the Late Stone Age (LSA) to Early Farming Communities (EFC). In this thesis I suggest that Lumbi represents a phase of consolidation which resulted in the amalgamation of LSA communities into the EFC complex around the first centuries AD. Meanwhile, Sena has evidence of both EFC and Late Farming Community (LFC) occupation. The research in Sena provides new evidence of trade and trade networks from the mid second millennium AD and also of the Afro-Portuguese interactions. With these investigations, it is now possible to better understand an area which for a long time has been neglected. The lower Zambesi River valley and delta presents a vast cultural and archaeological heritage which needs conservation work and extended programs of research.

Keywords: Mozambique, Zambezi Valley, Late Stone Age, Early Farming Communities, Long-distance trade, Afro-Portuguese, Written sources, Archaeology, Historical Ecology

Hilário Madiquida, Department of Archaeology and Ancient History, African and Comparative Archaeology, Box 626, Uppsala University, SE-75126 Uppsala, Sweden.

© Hilário Madiquida 2015

urn:nbn:se:uu:diva-265100 (http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-265100)
I have no words to manifest my gratitude for my supervisors. I am immensely grateful to Professor Paul Sinclair for his encouragement and support in the preparation of this thesis, as well as in creating the conditions making it possible. And to Dr Karl-Johan Lindholm I express my deepest gratitude for tireless reading and commenting, organisation and language correction. Without these two personalities this thesis would not be possible.

I would like to thank my best friend Professor Innocent Pikirayi for his valuable comments in the thesis, language correction and important considerations about my research at the delta of Zambezi River. I’m deeply grateful to Professor Kjel Knutsson for his help in the flake analyses.

A big thanks goes to my family, especially my wife Atalia da Felicidad Chingano and my children Francisco Kiassy Madiquida, Hilario Kiassy Madiquida and David Kinley Hilario, who always supported me and prayed for God to illumine my mind and supported the long months of my absence; to my brothers Francisco Kiassy Madiquida, Josepine Henrique Madiquida, Ernesto Kiassy Madiquida and Rafael Kiassy Madiquida for their moral support and encouragement for me to continue with this training.

To my parents, Kiassy Madiquida and Sartina Mwankongue, I can’t find appropriate words to express my gratitude for the support and for always being present to get me up when I'm dropped on the floor. I appreciate the freedom they gave me to explore the world alone, I thank you for your lap that is always available for me to wipe my tears when I'm sad. Thank you for everything you have done for me and for your teaching; you are my true heroes.

A special thanks goes to my colleagues and friends who have supported me directly or indirectly, in particular Margarida Inocêncio de Melo who always supported me and gave me joy in sad moments, to Professor Gerhard Liesegang, Professor Alexandre Mate, Dr. Ricardo Teixeira Duarte, Dr. Solange Macamo, Leonardo Adamowicz, Decio Muianga, Musa Raja, Albino Jopela, Omar Madime, Hamilton Matsimbe, Jossias Humbana, Marta Langa and Katia Filipe for their encouragement, and help in the organisation and support in lecturing, Professor Alexandre Mate for his support in bureaucratic matters and all departmental colleagues for their moral and practical support during my training.

Special thanks are due to Swedish colleagues, particularly Docent Anneli Ekblom and Dr Michel Notelid for reading, comments and correction of the text; on editorial work, illustrations and data analysis, and to Elisabet Green for logistical support.

I would also wish to thank the Joaquim Miguel for his aid in the excavations and topographical surveys; Francisco Sorte and Sansão Nhantumbo for drawings of the ceramics and maps, secretaries Dona Amelia Anta Profirio, Etelvina Covane, Claudina Cossa and deceased Alzira, drivers Jacinto Salvador Tovela and deceased Tomas Paulo Manjate.
I am deeply grateful to SIDA (Swedish International Development Agency), Swedish Embassy in Maputo and ISP for their support and funding the research and this publication. I also want to thank my institution, Eduardo Mondlane University, in particular Professor Carlos Lucas, Dean of Cooperation Office for their support.
# TABLE OF CONTENTS

1. INTRODUCTION ............................................................................................................................ 17
   1.1. The greater Zambezi drainage system ...................................................................................... 17
   1.2. Research objectives and thesis outline ....................................................................................... 17
   1.3. Research history ......................................................................................................................... 19
       1.3.1. Late Stone Age (LSA) ................................................................................................... ......... 20
       1.3.2 The Early Farming Communities (EFC) .................................................................................. 22
       1.3.3 The Late Farming Communities (LFC) ................................................................................... 24
       1.3.4. The formation of Archaeological research in Mozambique.................................................... 25
2. GEOGRAPHICAL BACKGROUND .............................................................................................. 29
   2.1. Environmental setting ................................................................................................................ 29
   2.2. Climate ....................................................................................................................................... 31
   2.3. The Drainage System of the Zambezi Basin .............................................................................. 34
   2.4. Geology and soils ....................................................................................................................... 36
   2.5. Vegetation .................................................................................................................................. 38
   2.6. Fauna .......................................................................................................................................... 41
   2.6. The agro-ecological zones ................................................................................................ ......... 43
   2.7. Conclusion ................................................................................................................................. 45
       Conclusão .......................................................................................................................................... 46
3. METHODOLOGY AND CONCEPTUAL FRAMES ...................................................................... 49
   3.1. Conceptual frames ........................................................................................................ ............. 49
       3.1.1. Historical ecology ................................................................................................................... 49
       3.1.2. Historical archaeology ............................................................................................................ 50
       3.1.3. Ethnoarchaeology ............................................................................................................... 52
   3.2. Methods................................................................................................................... ................... 53
       3.2.1. Archival research .................................................................................................................... 53
       3.2.2. Oral Sources ............................................................................................................................ 54
       3.2.3. Archaeology ............................................................................................................................ 54
           3.2.3.1. The archaeological survey ............................................................................................ ....... 54
           3.2.3.2. The Archaeological excavations .......................................................................................... 55
           3.2.3.3. Data collection ..................................................................................................................... 55
4. THE ZAMBEZI DELTA AND THE EAST AFRICAN COAST: WRITTEN AND ORAL SOURCES ....................................................................................................................... ..................... 57
   4.1. A general background to the written accounts ........................................................................... 57
   4.2. Ancient sources (c. 1st to 9th century AD) .............................................................................. 58
5. SURVEY RESULTS .......................................................................................................................... 77
  5.1. Geology and Soils .......................................................................................................................... 77
  5.2. Prospecting the Lower Zambezi River to the delta ................................................................. 78
    5.2.1. Chifumbaze Cave .................................................................................................................. 78
    5.2.2. Chinzenze ............................................................................................................................... 79
    5.2.3. Sena ...................................................................................................................................... 79
    5.2.4. Marromeu .............................................................................................................................. 85
    5.2.4.1. Lumbi ................................................................................................................................. 85
    5.2.4.2. Nensa ................................................................................................................................. 87
    5.2.5. Chinde .................................................................................................................................. 87
    5.2.5.1. Tanque ............................................................................................................................... 88
    5.2.5.2. Chituto ............................................................................................................................... 88
    5.2.5.3. Pambane ............................................................................................................................ 88
    5.2.5.4. Inhamiara .......................................................................................................................... 88
  5.3. Conclusion .................................................................................................................................. 90
  Conclusão ......................................................................................................................................... 90

6. LUMBI EXCAVATION ..................................................................................................................... 93
  6.1. Site description ........................................................................................................................... 93
    6.1.1 Geology .................................................................................................................................. 93
    6.1.3 Vegetation ............................................................................................................................... 95
  6.2. Excavation .................................................................................................................................. 97
  6.3. Chronology .................................................................................................................................. 104
  6.4. Data description ......................................................................................................................... 105
    6.4.1. Lithics .................................................................................................................................... 106
    6.4.1.1. Quartz fracture pattern analysis ....................................................................................... 107
    6.4.2. Pottery ................................................................................................................................... 112
    6.4.3. Iron artefacts ......................................................................................................................... 125
    6.4.4. Bone ..................................................................................................................................... 125
    6.4.5. Shells ..................................................................................................................................... 126
  6.5. Recovered data, overall review ................................................................................................ 127
  Conclusão ......................................................................................................................................... 129

7. SENA EXCAVATION ....................................................................................................................... 133
  7.2.1. Geology ................................................................................................................................... 133
  7.2.2 Soils ........................................................................................................................................ 133
  7.2.3. Vegetation ................................................................................................................................ 133
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3. Chronology</td>
<td>137</td>
</tr>
<tr>
<td>7.2.4. Excavation</td>
<td>133</td>
</tr>
<tr>
<td>7.2.5. Data description</td>
<td>138</td>
</tr>
<tr>
<td>7.2.5.1. Lithics</td>
<td>138</td>
</tr>
<tr>
<td>7.2.5.2. Pottery</td>
<td>138</td>
</tr>
<tr>
<td>7.2.5.3. Local beads</td>
<td>144</td>
</tr>
<tr>
<td>7.2.5.4. Imported wares</td>
<td>144</td>
</tr>
<tr>
<td>Porcelain</td>
<td>144</td>
</tr>
<tr>
<td>Glass bead analyses</td>
<td>151</td>
</tr>
<tr>
<td>7.2.5.5. Bone</td>
<td>152</td>
</tr>
<tr>
<td>7.2.5.6. Iron artefacts</td>
<td>152</td>
</tr>
<tr>
<td>7.3 Recovered data, overall review</td>
<td>153</td>
</tr>
<tr>
<td>Conclusão</td>
<td>154</td>
</tr>
<tr>
<td>8. THE LOWER ZAMBEZI FROM THE MID HOLOCENE TO THE EARLY SECOND MILLENNIUM AD</td>
<td>157</td>
</tr>
<tr>
<td>8.1. Late Holocene hunter-gatherers in the lower Zambesi</td>
<td>157</td>
</tr>
<tr>
<td>8.1.1. Social organisation</td>
<td>158</td>
</tr>
<tr>
<td>8.1.2. Resource use</td>
<td>159</td>
</tr>
<tr>
<td>8.2. EFC on the delta of the Zambezi</td>
<td>160</td>
</tr>
<tr>
<td>8.2.1. The origin of the EFC in Lumbi</td>
<td>160</td>
</tr>
<tr>
<td>8.2.2. Social organisation</td>
<td>161</td>
</tr>
<tr>
<td>8.2.4. Resource use</td>
<td>162</td>
</tr>
<tr>
<td>8.2.5. Regional and intra-regional trade</td>
<td>163</td>
</tr>
<tr>
<td>8.3. The LFC in the lower Zambezi</td>
<td>164</td>
</tr>
<tr>
<td>8.3.2. Social organisation</td>
<td>165</td>
</tr>
<tr>
<td>8.3.3 Agriculture</td>
<td>166</td>
</tr>
<tr>
<td>8.3.4. Domesticated animals</td>
<td>167</td>
</tr>
<tr>
<td>8.3.5. Regional contacts of exchange and long-distance trade in Sena</td>
<td>168</td>
</tr>
<tr>
<td>9. CONCLUDING DISCUSSION</td>
<td>169</td>
</tr>
<tr>
<td>Conclusão</td>
<td>171</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>175</td>
</tr>
<tr>
<td>APPENDIX: FINDTABLES AND STRATIGRAPHIES</td>
<td>189</td>
</tr>
<tr>
<td>Lumbi</td>
<td>189</td>
</tr>
<tr>
<td>Sena</td>
<td>196</td>
</tr>
</tbody>
</table>
LIST OF FIGURES AND TABLES

Figures

Fig. 1.1. Map of Africa showing some archaeological sites mentioned in the text. 22
Fig. 2.1. Map of the Lower Zambezi River showing main tributaries. 30
Fig. 2.2. Graph showing annual mean precipitation at the Zambezi River delta area (Anais Meteorológicos das colónias 1900–1979; INAM 1980–2009). 32
Fig. 2.3. Graph showing annual mean temperature at the Zambezi River delta area (Anais Meteorológicos das colónias 1900-1979; INAM 1980–2009). 32
Fig. 2.4. Map of precipitation of central Mozambique (Cumbe 2007: 29). 33
Fig. 2.5. Maps of mean annual temperatures and climates of central Mozambique (Cumbe 2007, p. 27; Barreto Soares 1972). 33
Fig. 2.6. Map of the drainage system of Mozambique (MINED 1986). 35
Fig. 2.7. Topographic map of the mouth of Zambezi River. 36
Fig. 2.8. Topographic map of the Zambezi Delta showing major distributary channels under current conditions (Beilfuss and dos Santos 2001, p. 172). 39
Fig. 2.9. Vegetation map of central Mozambique (Barreto Soares 1972). 40
Fig. 2.10. Map of land-use at the mouth of Zambezi River with percentages of suitability of the soils for rain fed agriculture (IGNFI-CENACARTA 1999). 44
Fig. 2.11. Map of land-use at the Sena area with percentages of suitability of the soils for suitability agriculture (IGNFI-CENACARTA 1999). 44
Fig. 2.12. Map of land-use at the Lumbi area with percentages of suitability of the soils for suitability agriculture (IGNFI-CENACARTA 1999). 45
Fig. 4.1. Al-Idrīsī’s map from 1154 AD showing the ports of the East African Coast (based on Chittick and Rotberg 1975, p. 138). 64
Fig. 4.2. Map of the East African Coast in the 10th to 15th century AD with some of the sites mentioned in the text. 67
Fig. 5.1. Map of the soils of Central Mozambique (INIA 1982; FAO 1988). 83
Fig. 5.2. A topographic map of the Sena area showing the location of the Sena site. 84
Fig. 5.3. Topographic map of the Lumbi with location of the Lumbi and Nensa sites. 86
Fig. 5.4. Topographic map of the mouth of the Zambezi River and located sites. 89
Fig. 6.1. A stratigraphic drawing of the three sections made in the Lumbi site. 94
Fig. 6.2. Sketch map over the excavation at the Lumbi site. 98
Fig. 6.3. Sketch map over the excavation at the Lumbi site drawn by Sansão Nhantumbo, UEM.

Fig. 6.4. Surface phosphate concentration as possible indicator of past human activity in the 2x2 km square.

Fig. 6.5. Map of the Lumbi site showing relief contours.

Fig 6.6. Digital elevation model made in Surfer 12 over the Lumbi site.

Fig 6.7a–b. Find frequency by test pit (1–8) and level from Lumbi site.

Fig. 6.8. The stratigraphy of test pits 1, 4, 7and 8.

Fig. 6.9. A chart showing the result of the $^{14}$C dates in Lumbi.

Fig. 6.10. Illustration of production of types of flakes and flake fragments.

Fig 6.11. Flake classification from the Lumbi site.

Fig. 6.12a–c. The decorative motifs of the pottery from the Lumbi site.

Fig 6.13. Pottery decorative motifs by category from Lumbi site.

Fig. 6.14a–f. Potsherds from Lumbi site showing different decorative motifs drawn by Sansão Nhantumbo, UEM.

Fig 6.15. Analyses of bones from Lumbi site.

Fig. 7.1. The Sena fortress showing the location of the test pits drawn by Sansão Nhantumbo, UEM

Fig. 7.2. The stratigraphy of test pits 1 and 2 in Sena.

Fig 7.3. Find frequency by test pit (1–2) and level from the Sena site.

Fig. 7.4. The decorative motifs of the pottery from the Sena site.

Fig. 7.5a–b. Potsherds from Sena site showing decorative motifs, drawn by Sansão Nhantumbo, UEM.

Fig. 7.6. The bead colour groups from Sena site.

Tables

Table 6.1. A calibration of Lumbi $^{14}$C dates from test pits 3, 4 and 6 using OxCal 4.2

Table 6.2. Classification of flakes and flake fragments.

Table 6.3. Flake classification from Lumbi site.

Table 6.4. A small flakes raw-materials frequency from Lumbi site.

Table 6.5. A Potsherds decorative motifs by category from Lumbi site.

Table 6.6. Potsherds shape categories from Lumbi site.

Table 6.7. The analyses of bones from Lumbi site.

Table 7.1. A calibration of the $^{14}$C date from Sena using OxCal 4.2 (Bronk Ramsey 2009).

Table 7.2. Pottery decorative motifs frequency by category from Sena site.

Table 7.3. Potsherds frequency by level from Sena site.

Table 7.4. The frequency of the beard colours by level from Sena site.
Table 7.5. The percentage of bead diameters from Sena site.  
Table 7.6. The analyses of bones from Sena site.  

**Plates**

Plate 5.1. The Chifumbazi Mountain and the location of the cave.  
Plate 5.2. Chifumbazi main cave.  
Plate 5.3. Chifumbazi cave rock paintings.  
Plate 5.4. Chifumbazi cave rock paintings.  
Plate 5.5. Chinzenze main shelter. A principal gruta de Chinzenze.  
Plate 5.6. A grinding stone from a few cm deep inside the shelter.  
Plate 6.1. An overview of the Lumbi site.  
Plate 6.2. Surface survey, prior to the excavation.  
Plate 6.3. Stratigraphy of TP 1 with funerary pot in situ.  
Plate 6.4. Flakes of different sizes and shapes, mainly triangular, from Lumbi site.  
Plate 6.5. The iron objects from Lumbi site.  
Plate 7.1. The main entrance to the historical fortress of Sena.  
Plate 7.2. Examples of potsherds from Sena site.  
Plate. 7.3a-e. The Chinese porcelain sherd from TP 1 and 2, Sena  
Plate 7.4a-b. The European porcelain sherd from TP 1 and 2, Sena site.  
Plate 7.5. The glass fragments from TP 1 and 2, Sena site  
Plate 7.6. The iron objects from Sena site.
1. INTRODUCTION

1.1. The greater Zambezi drainage system

The greater Zambezi drainage system forms one of the most extensive and complex riverine environments of sub-Saharan Africa. In the past, the Zambezi played a fundamental role in influencing human subsistence strategies, cultural contacts, and long-distance trading systems. The drainage system supports a wide variety of environments and resources which have been exploited by communities in the past, as well as in the present. Until recently the archaeology and history of the Zambezi River delta had not received any considerable attention. This is partly because of the general inaccessibility owing to thick vegetation, swamps and mangroves, which present significant obstacles for archaeological surveys. Archaeologists have also believed that these conditions were not favoured by the prehistoric communities and that the area was avoided in the past.

Based on notions concerned with the delta’s inaccessibility and unsuitability, previous archaeological research in the region was concentrated on the more easily accessible areas around the town of Tete. Meanwhile, the Zambezi River Delta was generally avoided (dos Santos Junior 1940, Saetarsdal 2004). However, archaeological data from the neighboring countries of Malawi and Zimbabwe, and recently recorded data in the Manica province immediately south of the town of Tete, has questioned the conventional views on early settlement in the delta (Pikirayi 1993; Juwayeyi 1993; Saetarsdal 2004; Macamo 2006). Instead, the newly retrieved evidence indicates that people had been active within the river delta since the early stages of the Stone Age. A developing interest in reconstructing models of human occupation in the prehistoric period and better understanding of socio-environmental interactions, has led me to view the Zambezi delta as a potential centre of social interactions owing to the abundance of the water, forest and faunal resources and this encouraged me to choose the lower Zambezi River as the focus of study of the present thesis.

In addition, historical and ethnographic information from the 16th century up until the early 20th century describes prolonged settlement in the delta (Friar João dos Santos [1609] 1999; Junod 1936). The new archaeological data, together with the historical and ethnographic information, justified the need for systematic archaeological research in the delta in order to better understand the settlement history of the area. This resulted in the SIDA/SAREC funded research project The Zambezi Valley: Identities and the handling of space, which was initiated in 2002 and followed by The Zambezi Valley and the Indian Coast: Changes in settlement patterns, trade and political power (0–1900 ad.) and this thesis presents the main results of the projects.

1.2. Research objectives and thesis outline

The main objectives of this thesis are to compile historical and ethnographical information related to the delta and to report on the pioneering archaeological works in the area. The latter activity can be considered an assessment of the character of the archaeological remains
within the Zambezi River Delta. The assessment was constituted as an integrated approach including literature reviews and the results from the previous and actual archaeological surveys and excavations within the Zambezi River Delta. The initial phase of the project was based on a systematic survey for archaeological sites in the area between the Chinde district and the town of Sena in the interior along the river (Macamó and Madiquida 2004). Already at this point it can be stated that the delta survey has resulted in a number of previously unknown archaeological sites and a better understanding of the archaeological character of the areas. The field surveys in the lower Zambezi resulted in a large number of archaeological sites which had not been recorded before. Chronologically the sites ranged from the hunter-gatherers to the Late Farming Communities (LFC). One hand-axe found on the Balamwana foothills in Sena can be associated with Acheulian stone technology, which indicates prolonged settlement within the delta, possibly going back to the Early Stone Age.

The second objective of the thesis is based on an evaluation of the scientific potential of the archaeological record for extended studies on the development of the settlement system and the land-use history of the delta. Two main questions guide the assessment: 1) is the recorded evidence sufficient for constructing and outlining a long-term settlement history of the Zambezi River Delta? 2) To what extent does the settlement history of the delta coincide with that of the wider region in terms of social and economic relations?

A third aim is to try, based on the archaeological data, to understand the contribution of the Zambezi delta to the development of the interior states. The importance of the external economy and local ideology in the transformations of the farming communities in southern Africa, the formation of states and the appearance of the trade centres on the coast are some of the points addressed.

The study will be presented through nine chapters: Chapter 1 presents the research objectives and outlines the structure of the thesis. Chapter 2 provides a general background to the research area; its environmental setting as well as the previously undertaken research. The first part of the chapter discusses the geography and environment of the lower Zambezi River, the mouth and the Delta. The aim here is to introduce the most important features of the environmental setting; geology, soils and vegetation and outlining agro-ecological zones. In doing this, I will also provide a synthesis of what is currently known about the geomorphological formation of the delta environment. The review will also provide insight into past human land-use and settlement history. In the second part of the chapter I discuss previous archaeological research in southern Africa, focusing on Mozambique, as well as outlining archaeological activities in the vicinity of the Zambezi. Chapter 3 provides a brief introduction of the research methodology and conceptual frames and discusses the field techniques used in the study. Since the delta area is characterized by swamps and thick mangroves, the selection of appropriate strategies and methodologies for fieldwork was important. As will be discussed, the research methodology of the project was based on an approach combining archaeology with archival and ethnographical research.

In the first part of Chapter 4, I review written sources describing the East African Coast (Maugham 1906; dos Santos [1609] 1999). These historical sources were produced by various navigators and geographers who visited the area and compiled information concerning trade, material culture objects and communities along the eastern African coast. I will argue that the information that can be retrieved from the historical records is also valuable for archaeological research along the coast, especially for providing information on the trade and about the people who participated in the trade networks. An additional objective of the archival research was to see whether it was possible to use documentary evidence for predicting past settlement locations. Unfortunately, the main settlements on the East African
Coast described in the Arabic sources could not be located owing to limited referential points in the texts. Still, it can be suggested that the coast south of Rovuma River would have had six centers of commerce: Jantama or Hantama, Dandama, Sayūna or Safīna, Bhūka, Jastama, Jasta or Jabasta Daghuta and that was the last of the towns of Sofala\(^1\) (following Trimingham 1975).

In Chapter 5, I present the results from the archaeological surveys. The study is structured according to the organisation of the fieldwork which was initiated in the inland and preceded downstream towards the delta. The archaeological sites that were identified in the survey were described in terms of their appearance in the landscape and the type of data that was retrieved. A number of significant characteristics of each site were noted, including site definition, the depth of the deposits, the diversity and density of artefacts categories and feature types present. Moreover, conditions of preservation of different materials, chronological indicators, land-use patterns and the surface cover were also recorded. This information served as the basis for determining the scientific potential of the site and for selecting sites for more detailed studies, such as excavation and for planning subsequent phases of fieldwork. An important aspect of the survey approach was to construct hypotheses concerned with the area’s settlement and land-use history.

Chapter 6 introduces the excavation results. I begin with presenting the two sites that were selected for excavation. The first site could be associated with the Later Farming Communities (LFC) in the lower Zambezi and the second having occupations from the Later Stone Age (LSA) and the Early Farming Communities (EFC). The fundamental aim of the excavations was to determine the depth of the archaeological deposits at the selected sites and to better understand site formation processes and the stratigraphies. Temporal indicators have been used for determining the chronology of human activities at these sites and to assess the relationship between surface and sub-surface densities of archaeological finds at each site. The data retrieved in this study and the associated \(^{14}\text{C}\) dates, indicates settlement activities during three main cultural periods in the Holocene: the LSA, EFC and LFC.

Chapter 7 provides a detailed examination of the three chronological phases. The analysis includes appearance, subsistence, social organisation, and exploitation of resources by communities of each time period. I also discuss the relationship between the LSA and EFC as manifested in the archaeological record of the delta.

Chapter 8 gives a general conclusion in which the main results of the study are discussed and recommendations for future works in the delta region of the Zambezi valley are presented. In chapter 9 I briefly relate the results to some of the current main issues discussed in southern Africa’s archaeological research.

1.3. Research history

Here, I will review previous archaeological research in southern Africa, Mozambique and in the area surrounding the delta. Over the last century, southern African archaeology has evolved as a research field, a process which has involved the development of new methodologies and the formulation of conceptual frameworks. The identification of archaeological cultures based on the appearance of the material culture can be considered as one of the main contributions of the so-called cultural-historical approach within the field (Phillipson 1968, 1976; Mitchell 1988; Huffman 1982, 1989; Chami 1994). This approach has identified a number of cultures or techno-complexes, based on differences in the material

\(^1\) Çokafa or Sočala is the Arab Sufālah “Low Land”. **
cultures, ways in using the environment and in the social organisation. In the coming discussion I will situate the archaeology of the lower Zambezi River valley and delta within a larger frame of reference and develop a series of ideas that will appear frequently in the dissertation. Our archaeological research in the Zambezi Valley was based on ecological characteristics that the area presents and considers that the area would not be avoided in the past because it has inexhaustible resources and the necessary conditions for human habitation (De Castro 1750). Briefly, I will present the necessary conditions for the establishment of settlements for each period.

1.3.1. Late Stone Age (LSA)

The presence of LSA lithic technologies in Southern Africa date back to around 40-20.000 years ago (Lombard et al. 2012, p. 125). The later expression of LSA is named the Wilton and is associated with the last phase of the LSA (8000 BC–1st millennium AD). Dr. John Hewitt (1921) was the first to describe the main features of the Wilton culture, such as the characteristic curved-backed microliths and thumbnail scrapers (Deacon 1995; Masao 1976, p. 271; Seitsonen 2004, p. 6). The name ‘Wilton’ was adopted by Burkitt, Goodwin and Van Riet Lowe in 1926, after the type site of Wilton rock shelter located in the Cape Province, South Africa, in order to classify what they perceived as a rather homogenous assemblage of lithic material culture (Masao 1976, p. 271). The Wilton culture has in turn been used for modelling hunter-gatherer communities from 20000 BP to 12th century AD or in some areas even later (Seitsonen 2004, p. 6). The socio-economic status of Stone Age hunter-gatherer groups is strongly connected with modern hunter-gatherers communities. In southern Africa, some scholars believed that the microlithic production of the LSA had been manufactured by the SAN living in South Africa today as hunter-gatherers (Crader 1984). That idea resulted in a perception that the microlithic artefacts were in fact comparatively recent chronologically. It is now known, through 14C dating, that the LSA extends back to 40.000 BC (Lombard et al. 2012, p. 125) associated more with significant intense hunting and gathering, as well as more effective lithic technologies. This economy typically disappears over time following the introduction of food production into a region. However, in some areas microliths were continued to be manufactured until a few centuries ago (Crader 1984, p. 3).

Nonetheless, from an early stage it became clear that the Wilton culture was not as homogenous as initially thought. Instead, it was possible to identify a large variety in the archaeological record of the Wilton industry. Phillipson (1976) suggested that the variation represented local innovations associated with several although contemporary groups of the LSA. Moreover, Deacon’s re-excavation (1969) of the Wilton shelter indicated that the first artefacts collected from the cave consisted of a mixed Wilton assemblage and that they probably represented four different stages of development within a single lithic tradition, covering some 6000 years of local prehistory (Sampson and Deacon 1976).

In addition, and relevant to the study presented here, another lithic industry has been identified north of the Zambesi. This has been associated with the Nachikufan Complex, found in south central Africa (Phillipson 1977; Clark 1950a; Muianga 2013). The distinction of geographically separate lithic industries has also been associated with a similar geographic division in rock art style. South of Zambesi, rock art associated to LSA is defined by the motifs of humans and animals. North of the Zambesi, LSA rock art motifs is dominated by geometrics, either red animals or red geometric motifs (see Plate 5.3 and 5.4) (Deacon and Deacon 1999; Smith 1997, 2006; Saetersdal 2004; Muianga 2013). These differences have led to the suggestion that there were two separate LSA ethnic groups; one located south of the Zambesi and another north of Zambesi and it has also been argued that the Zambesi River has provided a physical barrier against movements and interactions in the past. However, there
are still few investigations on lithic technology of the LSA to address this. The issue has also accentuated the importance of the analyses of lithic material presented here, as archaeological sites explored here are situated on the Zambesi River.

The discovery of the heterogeneity of the Wilton and the possible presence of two separate industries stresses the need of undertaking locally situated research which aims to understand local social and environmental circumstances that could be related to the diversity observed in the archaeological record. Based on this need, Adamowicz (1987) carried out extensive work in the Nampula region in northern Mozambique and suggested a new classification of lithics here that he named the CAVALA² microlith industries (c. 7000 BP). Adamowicz (1987) argued that the CAVALA industry should be considered as a local expression of LSA, without direct regional continuity to the Wilton Complex. The CAVALA industry, in Nampula province in the north of Mozambique, was made by hunter-gatherers who accessed this area 7,000 years and not later than c. 5,000 years ago (Adamowicz 1987). However, there were no findings of industries earlier than this in the region.

The microlithic industries in Mozambique are widely distributed, but still no detailed studies have been undertaken with the exception of the studies by Adamowicz (1987, in press). The number of studies related to hunter-gatherer communities in Mozambique is mainly focused on rock art sites (dos Santos Junior 1940; de Oliveira 1974; Saetersdal 2004). The excavation in Chifumabze cave (Fig. 1.1) in 1907, only focused on collection of pottery, which excluded microlithic artefacts, but which still can be seen on the surface of the main cave. In the colonial period, research was done on the rock art in Mozambique (Santos 1940; Castro 1956; de Oliveira 1974), although not much is known about hunters-gatherer communities (Sinclair et al. 1993). More archaeological research was done after the attainment of independence of Mozambique especially, in the South (Sinclair 1987; Morais 1988; Meneses 1988; 1991), north (Adamowicz 1985; 1987) and recently in the Centre of Mozambique (Saetersdal 2004). Research on hunter-gatherer communities’ microlithic industries has also been carried out in the south by Kohtamäki (2014). The study of archaeological evidence is associated with the cultural entity, the base of the economy and the livelihoods of prehistoric communities. The establishment of the hunter-gatherer communities in the delta of Zambezi River originated from the existence of water resources, forest, wildlife and the raw material for the manufacture of artefacts. These four elements are essential to determine the economic base and material culture of hunter-gatherer communities. Hence, a number of studies in southern Africa indicate that the LSA is constituted by a range of different regional cultures amongst hunter-gatherer communities. This demonstrate the importance of more studies to better understand innovation and technological development, which includes different stages of internal development in combination with other processes related to local exchange and long-distance trade. It can be suggested that these levels of social interaction, i.e. local circumstances and regional interaction, explains the variations within the LSA. This idea will be further developed later in the thesis, based on an analysis of small quartz flakes retrieved from the Lumbi site in the Zambezi River delta.

² CAVALA is the name of an archaeological site given in honour of King Cavala in Nampula province.
1.3.2 The Early Farming Communities (EFC)

The archaeological assemblages that have been associated with Early Farming Communities (EFC), are related also with domesticates, metallurgy, sedentary settlements and a farmers way of life. The farming communities in southern Africa probably begin with the expansion of farmers into the area. The earliest dates in this region are from southern Mozambique ranging from the last centuries BC and the beginning of the 1st century AD. Early BC dates were originally suggested by Sinclair et al. (1993) and have now been confirmed by Kohtamäki (2014, p. 108). The majority of the scholars agree to the division of the Farming Communities in two main periods: Early Farming Communities (EFC) and Later Farming Communities (LFC) (Adamowicz 1987; Morais 1978; Sinclair 1987; Chami 1994; Pwiti 1994, 1996a). Thomas Huffman (2007), however, considers three main periods of
developments within this period (Early, Middle and Later). The studies of iron slag of the EFC complex in the lacustrine zone suggest that these communities used advanced technologies and are even known to have produced steel (Schmidt 1997: 393; Chami 1994, p. 43; Phillipson 2005, p. 251). Dates of introduction of domestic stock have been retrieved in southern Zambia (Salumano A, dated to 2400–2300 BP, Situmpa dated to 2200 BP), Zimbabwe (Bambata dated to 2140 BP), and Northern Botswana (Toteng dated to 2000 BP). At the Cape, South Africa, the sheep was already domesticated from 2400–2100 BP (Spoegrivier) and at 1950 BP (Blombos) (Smith 2011, p. 7).

Phillipson (1968) first introduced the concept of the Early Iron Age for referring to the material culture of the earliest farming communities in southern Africa. Phillipson (1977) also introduced the term Chifumbazi Complex after the type site Chifumbazi, located in the Tete province, Mozambique (see Chapter 5.2.1). Phillipson (1977, p. 323) also suggested a subdivision of the Iron Age communities according to their supposed migratory route from the Great Lakes region into eastern and southern Africa, as well as differences in pottery, including shapes and decorative motifs. Based on this it is possible to distinguish an eastern and a western stream of migrating farming communities in the first millennium. At this point, to avoid confusion between archaeological and linguistic divisions, Huffman (1989) called the Early Iron Age (EIA) Eastern Steam the Urewe Tradition (with Kwaile and Nkope branches) and the Western Stream the Kalundu Tradition. Other designations have been suggested by different scholars: Sinclair et al. (1979), introduced the terms “Early Farming Communities” (EFC) and “Later Farming Communities” (LFC) and these terms were also used by Morais (1988); Chami (1994) used the term "Early Iron Working" and Pwiti (1994, 1996a) preferred the “Early Farming Communities” (EFC) and “Later Farming Communities” (LFC). Pwiti has pointed out that all these terms describe the populations by their livelihood rather than anything else and they can accommodate a mosaic of settlement patterns incorporating both foragers and farming. In this study, Early Farming Communities (EFC) will be used in favour of other terms.

The archaeology of the EFC, at the beginning of the first millennium AD in Mozambique, is the most studied and the best established chronology when compared with the LSA and later Late Farming Community complex (LFC) (Dos Santos Junior 1940; Duarte 1976; Martinez 1976; Smolla 1976; Cruz e Silva 1976, 1980; Sinclair 1982, 1985a-c, 1987; Adamowicz 1987; Morais 1978, 1988; Kohtamäki 2014). In Mozambique it is possible to distinguish three EFC traditions: Matola, Nampula and Monapo. In the 1970s, the Matola was identified in southern Mozambique by Teresa Cruz e Silva (1976) and named after the Matola type site. Matola is synonymous with Huffman’s (2007) classification Silver Leaves but here Matola will be used. Later, Adamowicz (1987) identified the Monapo and Nampula traditions in northern Mozambique. The Matota tradition is considered to represent the earliest expression of EFC in Mozambique. Nampula and Monapo can be attributed to the EFC without making any clear differentiation between them in terms of use of resources, socio-economy, material culture and identity (Kohtamäki 2014, p. 11). More information on land-use and settlement of EFC in Mozambique was provided by Morais (1988). For the EFC the existence of arable soils for agriculture is assumed to be the first priority for settlement at a certain location, following other resources such as water, forest, wildlife, raw materials (iron ore and clay mines). People grew three main cereals; finger millet (Eleusine coracana) sorghum (Sorghum bicolor) and pearl millet (Pennisetum glaucum) which required a certain temperature and not less rainfall than 3 mm/day (D’Ornellas 1901: 13; Morais 1978, p. 5; see also Huffman 1996). The delta of Zambezi River has all these requirements for EFC communities to settle here, as will be discussed in the coming chapters.
The first two important archaeological sites of the EFC were found in Mozambique; first in Tete, Chifumbaze in 1907 and then in Maputo, Matola, in the south of Mozambique. Before the discovery of the Matola site, Santos Junior, in 1946, located the Malessane site in the hillside of Gúruè during the fourth campaign of Anthropological Mission of Mozambique, from where he collected EFC potsherds, which only were published in 2006 by Maria dos Santos Rodrigues (2006). These discoveries promoted the study in the south and the north of Mozambique where a series of sites were located, duly recorded and studied. In the central region of Mozambique, due to many influencing factors (the greatest a 16 year long civil war), there were only very few surveys carried out culminating in the identification of Mavita site by Ricardo T. Duarte (Morais 1978). Duarte collected ceramic and slag samples on the surface and this was not followed by any further detailed study on the site (idem.). I must emphasize that there has always been willingness, individually or collectively, to extend archaeological study to central Mozambique, mainly in the lower Zambezi region. Despite logistic problems and war, Duarte discovered not only the Mavita but also the rock paintings of the Chimanimani (Morais 1988).

Apart from Mavita EFC Matola Tradition sites, other sites located close to the delta area of the Zambezi River were discovered and have already been studied: in Gurue, Malessane site by dos Santos Rodrigues (2006), Hola-Hola which is situated approximately 90 km from the mouth of the Save River (Sinclair 1987) and Mavita in Manica as has been introduced already (Morais 1978, 1988).

Morais (1978) argues that in Mozambique, most of the EFC sites are preferentially located along the coast, as in the case of Matola and Xai-Xai – near courses of permanent water sources reaching substantial dimensions of 40 ha. Alongside sub-tropical cereals (millet and sorghum), some of those villagers were practicing animal husbandry of small stock and also cattle (Morais 1978, p. 5; Sinclair 1991; Sinclair et al. 1993). My point of view is that the lack of findings of EFC sites in the interior is related to the absence of archaeological research inland. Accessibility and infrastructure around the main cities and along the coast allowed the location of several sites here. Today, important archaeological sites linked to EFC have been found in various parts of interior Mozambique; in Tete, Nampula, Zambezia and finally on the delta of Zambezi River.

1.3.3 The Late Farming Communities (LFC)

The LFC is defined by a shift in ceramic typology, formation of political and economic centres and a shift in settlement patterns where hilltop locations were favoured for centralized settlements. This was also accompanied by a shift in social organisation with the emergence of centralized leadership orientated around cattle, agriculture and long-distance trade. The centres shifted within a small area of about a few kilometres like Schroda, to the large centres as Mapungubwe (Pwiti 1991; Huffman 2007; Sinclair et al. 2012). However, concerning the material culture and specifically the ceramic production of LFC, it is a mistake to group all of them together in one single material tradition complex, given that these communities had developed a variety of ceramic and decoration techniques with a high improvement in the manufacture of pottery. The improvements in the pottery manufacture, I consider to be a result of local innovation in combination with cultural continuity. In Mozambique there are notable differences between LFC traditions. In the inland, the pottery at Manyikeni, Degue-Mufa, Songo consist of comb-stamped sherds with incised bands (Duarte and Macamo 1996; Macamo 2006). On the coast on the other hand, for example at the sites Lumbo, Sancul, Quissana Praia and Ibo, the incision is accompanied with impression and shell-stamping (Sinclair 1987; Madiquida 2007). In Mozambique it is possible to identify three main traditions of the LFC. In southern and central Mozambique, a Zimbabwe tradition with
ceramic traditions similar to that found in Great Zimbabwe dated between 12th-17th centuries (Macamo 2006). In the north, mainly on the coast; the traditions Lumbo, 14th century and Sancul 18th century can be found instead (Sinclair 1985a).

The dynamics of the changes taking place in LFC have been widely discussed (see review in Sinclair et al. 2012) and the importance of interregional interactions must be better understood. The Zambesi Valley may well be a clue in this regard. The Zambesi provides a pathway of exchange for trade goods and cultigens, at the same time as it is important land for agriculture and cattle grazing. The delta of Zambezi River is a navigable area throughout the year which makes this an excellent route to transport goods to the inland or from the inland to the coast, with extensive alluvial plains soils for cattle grazing and agriculture. It is an area with the highest concentration of resources – water, wildlife, forest and raw material for the manufacture of artefacts.

The later period of the LFC is elucidated also by written sources from the 16th century onwards. Based on these Portuguese historical documents, various works that can be characterised as historical archaeology were carried out in Mozambique. Amaro Monteiro (1966) used written historical documents and oral traditions in archaeological studies in the Cape Delgado coast concerning the trade between the Sultanate of Zanzibar and the coast. Christian Isendahl (2006) studied the origin of Angoche from oral history related to the 19th and 20th centuries; he reconstructed trade patterns in the 16th century through the Portuguese historical record, occupation, environment and strategies of survival based primarily on the historical record and on archaeological surveys in Angoche bay. On the coast of Cape Delgado and the north in general, various studies have been made (Sinclair 1987; Duarte 1993; Madiquida 2007) using approaches including historical archaeology that will be discussed further in Chapter 3. Liesegang (1972) also combined the excavation of several test pits from where he collected various archaeological objects, mainly from local communities, with written sources in the lower Zambesi. Together with Solange Macamo I also carried out surveys and excavations in the lower Zambezi, with the aim to study long-distance trade at the Sena site (Madiquida and Macamo 2004). Macamo (2006) also conducted excavations and surveys on Songo and Tete which are both historical sites in Mozambique, aiming to understand interaction between African polities and Afro-Portuguese interaction using archaeology. These studies have contributed to the understanding of interactions between different entities in the region and also the formation of specific mosaic cultures discussed further in Chapter 3.

1.3.4. The formation of Archaeological research in Mozambique

The development of modern archaeology in Mozambique was preceded by research in the neighbouring countries of Zambia, South Africa, Malawi, Tanzania and Zimbabwe (Clark 1942, 1950a–b, 1962; Clark and van Noten 1974; Phillipson 1968, 1971, 1975, 1985; Chittick and Rotberg 1975; Ehret and Posnansky 1982; Ehret 2002; Mitchell 2002; Huffman 2008). In these countries, very early on archaeological studies moved forward using rather sophisticated methodologies for the analyses of the evidence of Stone Age, EFC and LFC. Using archaeology in combination with linguistic reconstitution, the study of migratory movements became clearer. Ethnoarchaeology for comparative models was used in the analysis and interpretation of LFC pottery (Garlake 1967; Leakey and Walker 1976).

Archaeological research in Mozambique can be divided into two main periods: the colonial period and the post-independence period. The colonial period is characterized by few excavations and more descriptive works which began mainly with Missão Antropológica de Moçambique in the 1930s, headed by dos Santos Junior (1940). The members of the Missão
Antropológica de Moçambique were not always trained archaeologists, and Santos Junior himself was trained in medicine and anthropology. In 1936, Santos Júnior began to work on the prehistory of Mozambique, which culminated with the location of various rock art sites and other sites of the Stone Age in the Central Mozambique (dos Santos Junior 1940, 1961). Before this study was undertaken, the Chifumbazi cave in Tete was excavated in 1907 by the German archaeologist Carl Wiese. During the excavation, he collected pottery which later was related with the Chifumbazi Complex (Phillipson 1977). In 1941, dos Santos Junior excavated a cave/open-air site in Marissa which is also located in the Tete province from where he collected various artefacts, mainly hand-axes. In 1937 dos Santos Junior used oral tradition to describe the enclosure of the Zimbabwe of Songo, in Tete province. His study achieved relevant information about this Zimbabwe\(^3\). He did the first drawings and descriptions of the enclosure. Dos Santos Junior (1940) also made research on the rock paintings of Mwalaulembwe (Malembué) and these works allowed him to produce a sketch of the first prehistoric map of Mozambique.

After the Missão Antropológica de Moçambique ended, archaeological research continued in Mozambique. Soares de Castro (1956, 1961) studied the Prehistory and the rock art of Niassa and Amaro Monteiro (1966) and also excavated and studied Swahili settlements of Kiuya, Mbwezi and Quisiva in the Cape Delgado coast from where he collected evidence of long-distance trade. The material collected from these excavations is kept in Instituto de Investigação Científica Tropical of Lisbon in Portugal. In Central Mozambique, Dickinson excavated at the mouth of the river Save and at Sofala in 1969 and collected potsherds, porcelain and beads that are stored in the Department of Archaeology and Anthropology. Liesegang (1972) continued with excavations on this significant site, and the results of this study of mainly pottery were published in Azania.

In the south of Mozambique, the agronomist and engineer Lereno Barradas (1945, 1955b) studied the Quaternary and the Palaeolithic industries south of the Save River with the collection of several lithic artefacts. In the Massingir area on the Limpopo, archaeological investigations were carried out in the 1970s (Dias 1974). Various lithic artefacts were collected at the Massingir dam area and analyzed in detail. Besides lithic artefacts, pottery and glass beads associated with Later Farming Communities were found. Wieschoff (1941) excavated and studied the Zimbabwe of Niamara (Nyakangara) in Manica to understand the extension in the east of the Mutapa state in Mozambique. Here, he collected potsherds with Zimbabwe traditions (geometric) decorative motifs. Another important archaeological work in the colonial period was the result of the construction of Cahora Bassa's dam in 1972. In 1973, the geologist Miguel Ramos excavated the stonewalled site of Songo as part of a salvage archaeology initiative (Ramos 1973). In this work, he found lithic tools, pottery with geometric decoration and iron slag (Ramos 1979, 1980). Furthermore, during the 1970s, Rosa de Oliveira (1973, 1975) continued with the study of the stonewalled sites as well as the study of rock art in the Zambezi Valley, where he collected pottery with geometric decorations of the Zimbabwe Culture.

After the independence, Sena Martinez (1976) developed extensive archaeological research on the southern coast of Mozambique where a number of sites of the Early and Later Farming Communities were identified with Matola pottery. Tereza Cruz e Silva (1976) excavated and published the archaeological site of Matola IV, comparing it with Chifumbazi Complex pottery. In 1977, Paul Sinclair located and excavated the archaeological site of Chibuene from where a variety of evidence of early long-distance trade network was found connected to EFC in southern Africa. In 1978, Ramos and Rodrigues worked in Portuguese

\(^3\) Zimbabwe-dzimba-dza-mabwe, "large houses of stone".
establishments in Zumbo and Cachomba and other fortifications in the lower Zambezi. João Morais (1978) studied some socio-economic formations in Mozambique from 0–1500 AD. In these works, they collected local ceramics with various decorative motifs, glass sherds, and white Chinese porcelain with decoration design portraying landscape scenes, displaying various shades of blue colours and drawings of natural elements, beads and animal bones. One exceptional element is a Canton-type fragment showing a pagoda which represents the first ceramics of Chinese origin found in this area, prior to the 16th century AD. This material was not dated (Macamo 2006, p. 83).

From 1977, SAREC started to support Archaeological research in Mozambique and the conditions were created to reach new areas and various archaeological campaigns were organized. In 1979, a site museum was opened at Manyikeni after four seasons of fieldwork (Sinclair 1987; Morais 1988, p. 51). This support included training in cooperation with Sweden which culminated with the publication of several monographs. In the beginning of the 1980s, the archaeological research continued mainly in and around the big cities as well as on the coast, despite the fact that most of the area was impassable and severe logistic problems due to the destruction of infrastructures as a result of 16 years’ of civil war. In Nampula in the north of Mozambique, the CIPRIANA 1981/1985 project, which focused on the Stone Age and the Farming Communities, identified 117 archaeological sites, 60 of them were excavated and dated.

In the 1990s, archaeological research reached new areas and many sites are excavated and thoroughly examined (Adamowicz 1990; Duarte 1993; Sinclair 1990; Sinclair et al. 1993). Zimbabwe Tradition sites, the ruins of Swahili towns on the north coast of Mozambique, the Early Farming Communities in the South (Chibuene), were investigated in a more detailed way (Loforte 1990; Sinclair 1991; Sinclair et al. 1993; Duarte 1993; Duarte and Macamo 1996). In the second half of the 1990s, Solange Macamo (Duarte and Macamo 1996), continued with the research and archaeological excavations in the lower Zambezi Valley. Excavations in Degue-Mufa (Macamo 2006: 161) provided valuable information concerning the long-distance trade in the Zambezi Valley during the period of Portuguese colonization, including beads, Chinese porcelain and other glazed materials. Another significant research in the Zambezi valley is that of Tore Saetersdal (2004) on the rock art in Manica and Tete. He excavated 14 archaeological sites with rock paintings from which he collected various types of data, mainly lithic artefacts, ceramics, and charcoal samples for 14C dating. His contribution provided insights to our understanding about Later Stone Age communities in central Mozambique. From 2000 up to now, more and more research has reached previously unknown areas. For instance, the rock art sites in Central Mozambique have been excavated and studied by Saetersdal (2004). In his study, he included the relation of the art with myths and local traditions. For the first time in Mozambique, Saetersdal examined the rock art – not as an isolated phenomenon but contextualized within the local community’s ceremonies. The archaeology of the spread of the Zimbabwe Tradition in Mozambique and the Aringas in the Zambezi Valley (Macamo and Saetersdal 2004) are today well understood, thanks to Solange Macamo (2006). Archaeological research in the north of Mozambique about the Later Farming Communities on the coast of Cape Delgado (Madiquida 2007) provided new data in terms of settlement patterns, exploration and use of marine resources and long-distance trade. In Chibuene, southern Mozambique, the investigation work was continued with Ekblom (2004) examining the EFC and especially climatic alteration in the last 2000 years, and Wood (2012) studying the glass and glass beads. Research of the Middle Stone Age carried out by Mercader (2008a, 2008b, 2009) in Niassa allowed the identification of the processes of occupation of anatomically modern humans and their respective diet. These studies
contributed greatly to our understanding about the Mozambican past and had great impact not only in Mozambique but also in the regional context.

Over the last five decades, the delta area has been subject to the environmental impact studies as a result of the construction of the Kariba and Cahora Bassa dams (Walford et al. 2005; Cumbe 2007; Ronco et al. 2010). In these studies, archaeology and cultural heritage were not included prior to construction. Archaeological research in the Zambezi delta is in its initial stage, and it can be expected that future research will identify more sites considering what is currently known about the expansion of the Early Farming Communities of the Chifumbazi complex (Sinclair 1987; Morais 1978, 1988; Phillipson 2005; Mitchell 2005). The Zambezi Valley has another advantage – as the corridor of communication to the interior. The establishment of the communities may have occurred much earlier than we thought. The site of Lumbi, for example, described in more detail in the following chapters, present two different periods of occupation – the Later Stone Age as well as the Early Farming Communities (Macamo and Madiquida 2004). These two communities settled here in different periods following the existence of the natural resources. However, the study of regional contacts of the exchange systems in the hunter-gatherer communities in Mozambique is almost nonexistent. Adamowicz (1987, pp. 76–77) conducted bibliographical surveys on the coexistence and establishment of networks of exchange between hunter-gatherers and farmers, during the campaign CIPRIANA in Nampula Province. No further progress has since been made up to this date.

Available references about the hunter-gatherer communities and farming communities from neighbouring areas, mainly from Sofala and Tete (dos Santos Junior 1940; Chittick and Rotberg 1975; Freeman-Grenville 1975; Saetersdal 2004; Macamo 2006) show that the area of the Delta of Zambezi has been little studied in terms of Archaeology. Therefore, the choice of this area for this study is aimed to begin to correct this great imbalance and to direct attention to previously neglected areas in Mozambique in general. Research in Mozambique recognized that the EFC chose the areas of coastal plains for its expansion, exploiting the marine resources and occupying the dunes, as indicated in the data found in the south of Mozambique (Sinclair 1987; Morais 1978, 1988; Sinclair et al. 1993).
2. GEOGRAPHICAL BACKGROUND

The Zambezi River basin in Mozambique includes the whole of the Tete province and parts of the provinces of Zambezi, Manica and Sofala. The geographical region includes the main tributaries of the Zambezi; Ruia, Mazoe, Luenha, Arangua, Chire and Ruvubué (Fig. 2.1.). The Zambezi River delta constitutes a variable environment affected by hydrology, climate, geomorphology, soil depth and land-use. To understand the settlement history of the area it is necessary to first identify the main drivers behind the development of the Zambezi drainage system and outline the environmental setting of the research area (Ronco 2010). In the first part of this chapter, I outline the geography and environment of the lower Zambezi River to the delta. I will introduce the most relevant areas and features of the river delta and describe the environmental setting. I also provide a summary of what is currently known of the development of the delta environment. This includes an outline of the climate over the last hundred years, the geology, soils and vegetation and the main agro-ecological zones and also a review of paleoclimatological and environmental research. The discussion provides a geomorphologic and climatic background for the understanding of past human land-use and settlement history.

2.1. Environmental setting

The 2650 kilometer Zambezi River cuts across five African countries, stretching from Angola on Africa’s west coast to Mozambique on the east. Archaeological excavations of the river basin’s important empires, such as the Mutapa State and Great Zimbabwe (Pikirayi 1993), have revealed that the Zambezi has long supported hunting, farming and fishing, and for centuries served as a main trade and communication route linking interior zones of Africa with the coast.

One of the first explorers of the Zambezi, the Major Alexandre Alberto da Rocha de Serpa Pinto (1881, pp. 113–114) argued that the river was divided into three great sections that are clearly distinct from each other. There is an upper course, a middle course, and a lower course. The upper Zambezi comprises the river from its sources to the great cataract of Mozi-oa-Tunia⁴. The middle course extends from Mozi-oa-Tunia to the rapids of Cahora Bassa, and the lower Zambezi from that point to the Indian Ocean (Serpa Pinto 1881, pp. 113–114). The lower Zambezi, from Cahora Bassa to the sea, measures a length of 603 km, of which a few miles only are taken up by the Cahora Bassa falls, the rest of the course being navigable. In the dry season however, some areas are unnavigable owing to the reduced amount of water. From the confluence of the Shire to Tete, notwithstanding the adverse conditions, Serpa Pinto considered the Zambezi a great water-way on which all the trade with the Quilimane in the interior could be undertaken (Serpa Pinto 1881, pp. 113–114). However, this section of the river consists of several alignments. Normally the river bed is very wide extending up to 5–8 km, but in certain places the river narrows down to a width of only 200

⁴ Mozi-oa-Tunia means, in the local language, “The mist which thunders”.

29
m, which is the case at the Lupata Gorge. The Shire River joins the Zambezi River approximately 190 km away from the river mouth.

The Zambezi delta area is a complex system formed as a result of slow flowing waters producing various estuaries in a triangular shape, from Mopeia, the area where the extensive shallow alluvial flood plain starts approximately 120 km west of river. This results in a distributary channel network of the Zambezi delta, with the river branching into several smaller channels (Fig. 2.1), with very low sandy banks covered by reeds. Its surface area is approximately 1.2 million hectares, with a length of 200 km in the eastern part, along the coast of Indian Ocean, limited to the north by the Cuacua River, near the City of Quelimane and on the south by the Zuni River (Beilfuss and Santos 2001, p. 29). The Zambezi River continues to the southeast to the coast, joining the sea in a relatively small estuary in the Indian Ocean.

![Fig. 2.1. A map of the lower Zambezi River showing main tributaries. O mapa do Baixo Zambeze mostrando os principais afluentes.](image-url)
The delta comprises of several ecological micro-zones formed by alluvial plains. Normally
the area has been divided into two parts in terms of resource exploitation, but without great
geological differentiation: the north, in the province of Zambezia, has been labeled as an
inexhaustible reserve for agriculture in the alluvial plains; in the southern part the Marromeu
complex is located (were a Buffalo Special Reserve and four hunting concessions can be
found). The area hosts a great diversity of species, from large mammals (elephants, African
buffalos, lions, giraffe, etc.) to small animals, including birds, as well as aquatic animals such
as hippos, crocodiles and different species of freshwater fish.

The vegetation of the banks and the surrounding terrain are characterised by high and
thick trees of mangroves and swamps and constitute the most extensive mangrove and swamp
formation on the east African coast (see section 2.5). The channel network of the delta was
designated as the rivers of Cuama\(^5\) by the first European navigators (also Zuama, Çuama)
(Barbosa 1521, p. 14). Francisco Barreto, who was nominated governor and Captain General
in 1572, during his conquest expedition, recognized the tributaries of the mouth of the
Zambezi River as rivers of Cuama (Maughm 1906, p. 9).

Later at the end of the 16\(^{th}\) century, Friar João dos Santos (1999) also used the expression
the ‘Rivers of Cuama’ to refer all tributaries at the mouth of Zambezi, which he was able to
derive in considerable detail. Another word which was used from 18\(^{th}\) century to refer to
the same tributaries was the ‘Rivers of Senna’. The name was derived from the 12\(^{th}\) century
Senna Emporium located inland on the Zambezi River. At the time of the Portuguese
expansion, some of the tributaries of the delta were navigable: Cuacua River in the north,
which was the main entrance to the interior. In 1498, Vasco da Gama called this river “Rio de
dos sinais”\(^6\). The Chinde River is now the main entrance to the interior.

\(2.2.\) Climate

Based on the mean averages of temperature and precipitation, two main seasons can be
distinguished, separated by a short transition period; a rainy summer during which the
atmosphere is sub-humid and intensely hot and dry winter months characterised by a semi-
arid climate (MAE 2005, p. 1). The Zambezi delta area receives a mean annual precipitation
of 1.200 mm (Fig. 2.2). The duration of the rainy season varies according to the distance from
the sea averaging about six to seven months. Normally the rainy season begins in the end of
November and continues to May or June for the areas located closer to the coast, for example
Chinde, Luabo and Marromeu. The rainy season is shorter in areas located at some distance
from the sea (Tente, Chemba and Chinde) (MAE 2005, p. 1).

The temperature in the delta is high, with an annual mean of c. 25°C–26°C (Fig. 2.4). The
medium temperatures of the hottest and coolest months are respectively 27°C to 28°C
maximum and 20°C to 22°C minimum. The maximum average temperature varies during the
hottest months (November to December), between 34°C and 36°C, (Barreto Soares 1972;
MAE 2005, p. 1) (Fig. 2.3).

For a long time, climate fluctuations in Africa were correlated with the European
Glaciations (Wendorf et. al 2007, pp. 190–191). But, from the beginning of the 20\(^{th}\) century,
climatologists began to look to climate change in Africa in ways that departed from tying the
explanatory models to the climate sequences related to Europe. Sinclair et al. (1993: 13)

\(^5\) The name Cuama properly applied to an island in the delta and was later employed by the first European
navigators to designate the whole tract.

\(^6\) Rio de bons sinais – “River of good signs”, because Vasco da Gama was informed that some boats in the river
were from India.
noted that before the World War II, the first archaeological attempts of environmental reconstruction in Africa followed the sequence of the European glaciations. After the Second World War, it was possible to see a significant increase in the number of Africanist researchers and subsequently the climate research began to focus more on conditions specific to the African continent.

Fig. 2.2. Graph showing annual mean precipitation at the Zambezi River delta area (Anais Meteorológicos das colónias 1900–1979; INAM 1980–2009). Gráfico mostrando a precipitação média anual da área do delta do rio Zambeze.

Fig. 2.3. Graph showing annual mean temperature at the Zambezi River delta area (Anais Meteorológicos das colónias 1900–1979; INAM 1980–2009). Gráfico mostrando a temperatura média anual da área do delta do rio Zambeze.
Fig. 2.4. Map of precipitation of central Mozambique (Cumbe 2007: 29). O mapa de precipitação do centro de Moçambique.

Fig. 2.5. Left: A map of mean annual temperatures of central Mozambique (Cumbe 2007, p. 27). O mapa de temperatura do centro de Moçambique. Right: A map of climates of central Mozambique (Barreto Soares 1972). O Mapa do clima do centro de Moçambique.
Tyson and Lindesay (1992), summarising oxygen isotopes, foraminifera, palynology, micromammals and dendrochronology, show evidence of changes in temperature and they argue that the high temperatures were associated with high rainfall index. They noted at the end of the first millennium BC and early first millennium AD there was a climatic amelioration in the region of southern Africa, which gradually became more warm and wet. Several climate records from southern Africa also suggest warmer and wetter conditions between 800–1200 AD, with shorter dry spells (Tyson 1999; Lee-Thorp et al. 2001; Holmgren et al. 2003). These observations are supported by recent isotope records from Baobab trees in the Limpopo Valley (Woodborne et al. 2014). Isotope data from both Cold air cave, Makapansgat Valley South Africa and Pafuri in South Africa, indicate that a prolonged phase of dry conditions took place after 1600 AD lasting until 1800 AD, with the most severe period in 1700 AD (Lee-Thorp et al. 2001; Holmgren et al. 2003; Woodborne et al. 2014).

In Mozambique, climatic reconstruction established by Anneli Ekblom (2004, 2008) based on records from the Lake Nhaucati, in Vilanculo Bay in southern Mozambique, provides a reconstruction of climate change in coastal southern Mozambique over the last 1600 years. Her reconstruction suggests fluctuating levels of rainfall during the mid-first millennium, with high lake levels during the Medieval warming period and a subsequent reduction in lake levels after 1400–1600 AD.

Though we are still lacking palaeoclimatic information from the Zambezi valley itself, it is likely that Zambesi valley was affected by similar climatic changes as in the rest of the summer rainfall region. The villages of the first farming communities in southern Africa, dated between 200 and 600 AD, were favoured by more rainfall. According to climate data Tyson and Lindesay (1992) indicate that the temperature was warm and wetter in the time period 250–600 AD. As discussed in Chapter 1, this period is associated with the movement of the early Bantu-speaking farmers who moved to southern Africa living in villages in the open areas with alluvial and colluvial soils. They held herds of cattle, sheep, and goats and cultivated two species of millet (Pennisetum glaucum and Eleusine coracana) and sorghum (Sorghum bicolor) (Phillipson 1977; Huffman 1996). In these places and in this period the climate should be sufficiently warm and wet to allow the production of these cereals. These crops require a minimum annual precipitation of 500 mm and a night temperature higher than 15° C. Because of these crop requirements, the geographic locations of the farming communities’ sites can also provide indirect evidence of past climate (Huffman 1996, p. 55). The 14C dates of the Lumbi site (Chapter 6) fall into this interval period between 40–400 AD which chronologically places this site in the period of the favourable climatic conditions described by Tyson and Lindesay (1992) and in the habitat of the Early Farming Communities sites (Huffman 1996).

For the LFC period, the climatic amelioration with warmer and wetter conditions in the end of the 1st millennium and early 2nd millennium should have affected also the Zambesi. Holmgren and Öberg (2006: 188) also associate the climatic amelioration 800–1200 AD with the development of large centres of power and trade as discussed in Chapter 1. The period of low rainfall from 1600–1800 AD must have had severe effects also on the Zambesi Valley. A number of droughts are recorded in the written sources both from Zambesi valley and other parts (Pikirayi 2003; Ekblom 2004).

2.3. The Drainage System of the Zambezi Basin

The drainage system of Mozambique is predominantly externally oriented towards the Indian Ocean, linking the littoral with the highland plateaus of the interior. The drainage system
Fig. 2.7. A map of the drainage system of Mozambique (MINED 1986). O mapa do Sistema de drenagem de Moçambique.

confluence several rivers (Fig. 2.6) and after the main river Zambezi the most important of these are the Rovuma, Lugenda, Lurio, Save and Limpopo rivers which also constitute wide alluvial plains (Ferro and Bouman 1987). The Zambezi River is unique since it is navigable throughout the year while the other rivers mentioned above should be considered seasonal.

One of the particularities of the district of Chinde within the delta is the complex and dense hydrographical systems, formed by countless streams and arms of rivers (Fig. 2.7.), which support thick growth of high trees of mangroves, a unique forest at the entire mouth of the Zambezi River.

The area of Chinde, at the mouth of Zambezi River, is formed by alluvial sediments resulting from successive occasional changes in the watercourses of the rivers Chinde in the north, Zambezi in the south and on the east of the Indian Ocean. The area is somewhat elevated though it is formed by plains alluvium which makes them easily flooded with torrential rains falling in the area or when the two rivers overflow due to rain falling in the highlands of the interior and neighboring countries, as is the case of Zimbabwe, Namibia, Botswana, Zambia and Malawi. The region is surrounded by mangrove swamps, as I men-
tioned in the previous paragraph, leaving a dry strip of alluvial plains oriented from north to south with rich soils for agriculture. It is in this dry strip where I identified some archaeological sites of LFC, indicating a continued exploration of this area since the 1st millennium AD by the LFC who have moved to this island seeking for arable land for agriculture and for cattle grazing (Beilfuss and Santos 2001, p. 48; MAE 2005, p. 1).

2.4. Geology and soils

Geological studies are important for analysis of archaeological evidence, from the occupation levels, types of soils, sediments where the archaeological material is located, the soil texture, the composition of the raw material for the manufacture of the artefacts. The geological formations could also create conditions or spaces for human occupation in the past as quaternary terraces, shelters, caves, mainly limestone origin, or simply open air plains/plateaus. Cumbe (2007, p. 57) proposed methodologies of inventories concerning the character and evaluation of the geological heritage of Mozambique. Presented work is
therefore intended also to contribute to the national inventory of geological heritage, as few geological studies have been carried out in the central and lower Zambesi valley region.

In Zimbabwe, studies on the development of the Zambezi River have been carried out and information from these studies shed light on the development of the river delta in Mozambique (Thomas and Shaw 1988; Orpen et al. 1989; Nugent 1990; Dollar 1998; Davies et al. 2000; Catuneanu et al. 2005; Walford et al. 2005). Remarkably much geological research has been undertaken in the region and currently there are more sources covering the geology of central Mozambique available. Prospection of mineral resources and infrastructural development works has increased our understanding of the region’s geology. During the construction of the Cahora Bassa dam, a geological study was initiated for analyzing the impact of the dam in the delta area (Ronco et al. 2010). Moreover, Finnish researchers have undertaken research in Mozambique and the Zambezi valley (Pekkala et al. 2008).

Little is known about the lithology of the eastern part of the Zambezi River beyond what is published in the geological map of Mozambique (Orpen et al. 1989) and in Pekkala et al. (2008) who conducted geological surveys in Mozambique. The major contribution to geological studies in the lower Zambezi was based on assessing the impact of the main dams Cahora Bassa and Kariba in the river delta area (Cumbe 2007; Pekkala et al. 2008; Ronco et al. 2010). The formation and geological changes in Zambezi delta is well detailed and is today not an unfamiliar area in terms of its geological formation. The lower Zambezi River in Mozambique may be described as a complex physical system with four macro zones comprising narrow gorges, a transitional zone, braided reaches and a coastal tributary zone (Ronco et al. 2010). In the mountainous areas, the river channel is confined to a deep and strait valley gorge and steep slopes (Ronco et al. 2010) (Fig 2.9.). In the lower Zambezi, from Tambara to the delta (approximately 310 km away), the river runs primarily in quaternary alluvial deposits (Ronco et al. 2010). Downstream of this zone the valley-floor broadens to several kilometres. With further increases in the width of the valley floor and a reduction in river flow energy, large flood plains are constructed, and a braided sand-river bed dominates. With the progressive reduction in bed gradients, the interlaced stream gives way to a typically coastal tributary delta channel network where floodplain widths can reach several hundred kilometres (Ronco et al. 2010). All areas of the delta of the Zambezi River are characterized by alluvial marine-estuarine sediments near the coast, except some islands formed from quaternary sand dunes.

Geomorphologically the districts of Chinde, Marromeu and Caia are part of the vast sedimentary basin of alluvium in the delta plain of the Zambezi and marine-estuarine sediments close to the coast and through some isolated extracts of the platform of Mananga and post-Mananga intercalated with stains of sandy cover (Suttner and Dutta 1986, pp. 329–345). Geologically, the districts of Chinde, Marromeu and Caia comprise the following formations (Tucker 1982, p. 3–11):

- Cretaceous Formation of Sena and Grudja;
- Tertiary Formation of Chiringoma and Magamba;
- Quaternary Alluvial sands and dunes.

The first two formations are constituted by different rocks, sedimentary, metamorphic and igneous which make these formations very rich in raw materials of volcanic origin, like obsidian, flint, even quartz that were preferred in the prehistoric periods to manufacture lithic

---

7 Mananga is thick deposits of marine sediments of Pleistocene origins, located in relatively elevated areas.
artefacts. The extension of the Great Rift Valley cuts Zambezi River in the Caia area, in central Mozambique. The high plateaus of these areas are rich in water resources, abundant fauna and arable land with little risk of diseases, like diarrhoea and malaria or calamities such as flooding and storms. The third formation is the most recent and results from fluvial or marine systems of deposition, especially the district of Chinde and some areas of the district of Marromeu (Tucker 1982, p. 3–11). My archaeological research in the delta of Zambezi shows that the distribution of sites follows this geological configuration. The important sites were located in the slightly higher areas, near the alluvial plains, rich in fresh water, faunal resources, forest and raw materials. The Sena area was preferred by communities in the past, as well as today. The riverbanks, from Chinde to Sena, where the sites were located, have the greatest archaeological potential owing to the occurrence of raw material such as pebbles, conglomerates and clay for the manufacture of ceramics and offer rich alluvial plains of land for agriculture. The river margins also provide varied resources such as forest and fauna. At the river mouth sites are located in the sand dunes and these are mainly LFC sites with no evidence of trade.

2.5. Vegetation

Vegetation composition and structure is a function of climate, soil and landform. The vegetation of the delta is dominated by two elements: the Zambezian Domain and the Indian Ocean Coastal Belt. The Indian Ocean Coastal Belt extends from southern Somalia to South Africa and is mainly formed by approximately 40% of endemic species, i.e., species restricted to an area confined to this belt. Two regional mosaics are still possible to recognize: the Zanzibar-Inhambane and the Tongaland-Pondoland regional mosaics, divided one from the other by the Limpopo River (Moll and White 1978; Morais 1988, p. 17; Sinclair 1991, p. 181; Chami 1994, pp. 40–42; Kusimba 1999, pp. 71–4). In Mozambique, the Indian Ocean Coastal Belt width varies from 50 to 200 km and comprises of forest, woodland, bushland, thicket, savanna, and grassland, both aquatic and semi-aquatic species. The vegetation types from this region have been severely affected by human land-use, considering the fact that 75% of the present Mozambican population lives within approximately 50 km of the coast (Tinley 1971, p. 139). In the Zambezi mouth, two different types of forest of this mosaic were identified: forest dominated by the family Hirtella (in regions of 1200–1400 mm rainfall north and south of the Zambezi delta), and fringing forest in the alluvial plains. The woodland is mostly formed by Miombo Woodland (Morais 1988, p. 21).

Based on seasonal precipitation, rainfall gradients, and patterns of soil and climate, three major vegetation types have been defined. Vegetation types of relevance for the Zambezi and the coastal region are; moist-tropical Miombo woodland, dry-tropical Colophospermum mopane savanna or woodland, and warm-temperate and dry-tropical Acacia tree savanna and other mosaic vegetation (Morais 1988, p. 21; Fig. 2.10). The area under study corresponds to the Zambezian domain, the largest vegetation landscape in southern Africa. In the Chinde area of the delta, Marromeu and Sena, the prevailing vegetation is dry deciduous, savanna and grasslands, fringing forests with aquatic flora and locally transitory savanna trees with palms on poorly drained lowlands (Phoenix, Hyphaene and Borassus) (Maugham 1906, p. 47–48). Davidson and Jeppe (1981, p. 36–38) report the dominant species to be Sclerocarya birrea, Lannea sp, Kigelia africana, Afzelia quanzensis and other species of the family Fabaceae. Davidson and Jeppe (idem) also report that in areas of transitions between forests and marshy savannas different species of the family Fabaceae can be found, where the most common species are Acacia xanthophloea and Acacia robusta (Davidson and Jeppe 1981, p.
Fig. 2.9. Topographic map of the Zambezi delta showing major distributary channels under current conditions (Beilfuss and dos Santos 2001, p. 172). Mapa topográfico do delta do Zambeze mostrando os principais afluentes nas condições actuais.

36–38). In the delta area, mangroves form the main forest with swamps, surrounding vital parts of the islands. It is essential to note that from the earliest times, people in the riverine areas have always obtained their supplies from the forests. The forests also provide complementary foods, fruit, medicinal plants and wild game (dos Santos [1609] 1999; De Castro 1750; Maugham 1906). It is commonly considered that the early farmers located their settlements in the areas with forest resources. Detailed descriptions of plant species associated with the excavated sites will be made in Chapter 6, presenting the results of the research.
Fig. 2.10. Vegetation map of central Mozambique (Barreto Soares 1972). O mapa das florestas do centro de Moçambique.
2.6. Fauna

In addition to the diversity of the plant species, the delta environment contributes to a rich animal life including several of the well-known southern African vertebrates, reptiles and amphibians, birds and mammals (Dorst and Dandelot 1970). Below, I will present a number of animal species that can be associated with the delta ecosystems in the past and in many cases also in the present.

The study area is located in the game reserve of Marromeu, which is part of the national park of Gorongosa with a high diversity of faunal species. Historically, the fauna has suffered greatly from human activities, including poaching and alteration of their natural habitats through uncontrolled burning, deforestation and agriculture. The fauna is characterized by an abundance of tropical savanna species, and it is very diverse, ranging from elephants, rhinoceroses, buffaloes, giraffes to mid-sized and smaller animals such as gazelles, monkeys, birds and rodents. Owing to the importance of the fauna in the past and for current communities' diet, and obtaining raw material for trade and local use, I will describe species mentioned above in more detail using key studies by Travassos Santos Dias (1975); Smithers and Lobão Tello (1976), Maugham (1906) and Dorst and Dandelot (1970).

The African Elephant (Loxodonta africana) can be found in the Zambezi valley still today, although in reduced numbers. The reduction of the elephant population was a result of uncontrolled hunting for ivory tusks, which still took place until late 20th century (Maugham 1906, p. 124; Dias 1975, p. 107; Dorst and Dandelot 1970, p. 166). The geographic distribution of the elephant includes the Zambezi River to the river Sabie. Elephants can also be found in Cheringoma, in the dense forest of Chupanga (where the site of Lumbi is located) in the western area of Barué and in different areas in northern Mozambique.

Another animal that has suffered from the horn trade is the Black Rhinoceros (Diceros bicornis). In the past, Black Rhinoceros could be found in the whole of Eastern Africa, mainly inhabiting the mountains and rocky and dry areas. Maugham (1906, p. 149) reported that in the Shire river valley including the adjacent Malawi area, it was common to find substantial herds of rhinoceroses in the Zambezi. In the present, the rhinoceros seem to be extinct in the delta area. Our team did not observe a single rhino during fieldwork and the local people do not remember when they saw this animal the last time.

In the early 20th century, large herds of the African Buffalo could be seen in the region (Maugham 1906). Today the African Buffalo (Syncerus caffer) can be found in the low areas of the dense forest of Chupanga in considerable number of herds and Marromeu National Reserve has the largest concentration of African Buffalo in the world, with 13 million animals, as noted by the team from Eduardo Mondlane University. During the archaeological excavations some bones of Buffalo, mainly teeth, were recognized by the local residents assisting us with the fieldwork.

The lower Zambezi valley still has a significant population of the hippopotamus (Hippopotamus amphibius) (Dorst and Dandelot 1970, p. 171). Hippos usually live in a group which varies in size from five animals to 30. The hunt of those animals always constituted one of the local communities' activities (see Dos Santos [1609] 1999, p. 188). According to Maugham (1906, p. 162), in the area of the Lower Zambezi and their tributaries, it is dangerous to navigate in small boats and canoes owing to frequent attacks by these animals.

The bushpig (Potamochoerus porcus) is a small omnivore regularly hunted by the local population because its meat is much appreciated; however, today this species has only
reduced herds. Warthog (*Phacochoerus aethiopicus*) is also found in this area, but likewise in considerably reduced numbers. Burchell’s Zebra (*Equus burchelli*) previously existed in large numbers, but today zebras are rare in the study area. According to an interview done in this study, zebras can only be found in the low areas near the rivers which poachers have difficulty to reach (Dorst and Dandelot 1970).

The antelopes are broadly distributed in the study area today and can be seen frequently. The antelope meat is very much appreciated by the local communities. There are many species of different sizes, including Livingstone Eland of (*Oreas canna*), Cape Eland (*Taurotragus oryx*), Impalas (*Aepicerus melampus*), Forest antelopes (*Tragelaphus scriptus*), Roan antelope (*Hippotragus equinus*), Sabre antelope (*Hippotragus niger*), Common Waterbuck (*Kobus elliprispyrnum*), Southern Reedbuck (*Redunca arundinum*), Sassaby (*Damaliscus lunatus*), Lichtenstein’s Hartebeest (*Arcelaphus lichtensteinii*), Wildebeest (*Connochaetes taurinus*), Great Kudu (*Tragelaphus strepsiceros*), Nyala (*Tragelaphus angasi*), Grimm’s duiker (*Sylvicapra grimmia*), Blue duiker (*Cephalophus monticola*) and Red duiker (*Cephalophus natalensis*), Oribi (*Ourebia ourebia*), Klipspringer (*Oreotragus oreotragus*), Suni (*Nesotragus moschatus*) and Steenbok (*Raphicerus campestris*) (Dorst and Dandelot 1970, dos Santos [1609] 1999, p. 188). Other species of antelopes which can be found in this area, mainly in the open areas, are two genera of Gazelle Grant’s gazelle (*Nanger granti*) and Thomson’s gazelle (*Eudorcas thomsonii*). The meat is also very much appreciated by the local communities, which explains why gazelles are intensely hunted. However, owing to their rapid multiplication, they can be seen in substantial numbers in the open forest of Chupanga and in every area of the reservation of Marromeu.

Lions (*Panthera leo*) are important to mention as its presence in this area is fundamental in the ecosystem. The lions are unique predators capable of killing large herbivores such as elephants, giraffes, buffaloes and zebras. Reducing the herds of these large herbivores opens space for small, less dominant herbivores to find food. The lions and hyenas (*Crocuta crocuta*) usually attack older animals or those weakened by disease and the elimination of these sick animals or animals infected by parasites, maintains the health of the herd. Finally, the leopard (*Panthera pardus*) limits the number of small herbivores that owing to their rapid multiplication would destroy the ecosystem. African lynx (*Felis serval*) also limit the number of small herbivores (Dias 1975, p. 87–88).

In the area of Chupanga to Marromeu, there exist several species of primates, ranging from the small galagos group to the cercopithecus, such as thick tailed galago (*Galago crassicaudatus*), lesser galago (*Galago senegalensis*), yellow baboon (*Papio cynocephalus*), chacma baboon (*Papio ursinus*), blue monkey (*Cercopithecus mitis*), and samango monkey (*Cercopithecus albogularis*). Some people consume monkey meat, although it cannot be considered a staple food. Several other smaller animal species can be found in the study area, such as mongoose, rabbits, hares, genets, etc. (Dorst and Dandelot 1970).

In terms of birds diversity, the delta of Zambezi River has the highest numbers in Mozambique (more than 900 species) and include helmeted guineafowl (*Numida meleagris*), grey partridge (*Perdix perdix*), gray crown crane (*Balearica regulorum*), saddlebill storks (*Ephippiorhynchus senegalensis*), woolynecked Storks (*Ciconia episcopus*), goliath herons (*Ardea goliath*), african skimmers (*Rynchops flavirostris*), pelicans (*Pelecanus onocrotalus*), open billed stork (*Anastomus lamelligerus*), glossy ibis (*Plegadis falcinellus*) and white breasted cormorants (*Phalacrocorax lucidus*).

The Zambezi River has a wide range of species of the freshwater fish, including cichlids, Rainbow bream (*Sargochromis carlottae*), pink bream (*Sargochromis giardia*), deepcheek bream (*Sargochromis greenwoodi*), green bream (*Sargochromis codringtonii*), tiger fish
(Hydrocynus vittatus), yellowfish (Labeobarbus codringtonii), and bull shark (Carcharhinus leucas) species which were also found in the excavations that will be presented here.

In summary, the study areas have a rich fauna that contributed to the diet and to the base of the economy of the river delta communities that settled here from the Later Stone Age to the present. The need for meat and animal raw-materials such as ivory, antler and horn made the prehistoric communities settle near the faunal resources for the exploitation of elephant tusks, skins of animals and rhino horn. Later, with the introduction of the long-distance trade, these resources were used as goods for exchange and commanded all the trade activities in the Rivers of Sena (Barbosa 1521; Dos Santos [1609] 1999; De Castro 1750).

2.6. The agro-ecological zones

The delta of Zambezi River contains soil of high quality for agriculture. The fertile soils, especially alluvial plains from the mouth ranging towards to the interior, was one of the reasons that led us to considerer this as a prime zone for human occupation in the past. The study area comprises of three general zones in terms of ecological characteristics which were used for the different activities, settlement, agriculture, hunting and fishing (see Figs 2.11–2.13):

1. The area of the river mouth is extreme lowland, is mainly composed of mangroves and swamps, with bush and grass vegetation. The environment is not suitable for settlement. Still, the area is rich in underwater resources, and it can be suggested that the area was regularly visited in the past for fishing and exploitation of other resources;
2. The delta area is mainly composed of alluvial plains; typically marshy forest, bushes and thick grass on vertisols associated with low areas on the margins of the river beds. In the rainy season, the river beds are completely flooded. The river bed areas were, and still are, essential for agriculture and for obtaining riverine resources. Similar to the river mouth, they were in general not suitable for settlement in the past (dos Santos [1609] 1999, p. 180);
3. The terrace areas are located in more elevated terrain without danger of flooding. The Lower Zambezi is composed of plains or terraces of alluvium with slightly raised elevations which are not flooded, formed as a result of the fluvial deposition with savanna type forest. The presumption is that these zones were the main areas to be settled in the past.

On the alluvial plains of zone 2, suitable areas for maize and sorghum cultivation can be found. Areas on the highest altitude are reserved for cassava, yam, sorghum and maize (Madiquida 2003). Judged from historical records, the situation seems to have been somewhat different in the past, since the early farming communities preferred dry cereals like sorghum (Sorghum bicolor), millet (Eleusine coracana and Pennisetum glaucum) and tubers, like yam (Colocasia esculenta or Dioscorea alata) which were cultivated on the highlands. The zone 3 areas were located in close vicinity to various riverine biotopes. It was possible to undertake agriculture and keep livestock in these areas. This setting is also reflected in present day cultivation and land-use. On the mouth of the Zambezi River, the local inhabitants grow Asian rice (Oryza sativa) in the small lakes that form after floods, presenting favorable conditions for rice cultivation.
Fig. 2.11. A map of land-use at the mouth of Zambezi River with percentages of suitability of the soils for rainfed agriculture (IGNFI-CENACARTA 1999). O mapa do uso da terra da foz do rio Zambeze com as percentagens da capacidade dos solos para agricultura.

Fig. 2.12. A map of land-use at the Sena area with percentages of suitability of the soils for rainfed agriculture (IGNFI-CENACARTA 1999). O mapa do uso da terra da área da estação de Sena com as percentagens da capacidade dos solos para agricultura.
Fig. 2.13. A map of land-use at the Lumbi area with percentages of suitability of the soils for rainfed agriculture (IGNFI-CENACARTA 1999). O mapa do uso da terra da area da estação de Lumbi com as percentagens da capacidade dos solos para agricultura.

In general, all parts of the lower Zambezi are very fertile and it is possible to grow a wide variety of cereals.

Above I have discussed the main drivers behind the development of the Zambezi drainage system and outlined the main features of the environment of the research area. This included an outline of the climate over the last hundred years, the geology, soils and vegetation and a description of the main agro-ecological zones.

2.7. Conclusion

In this chapter I have provided a brief research background describing the physiography of the lower Zambezi to the mouth. As discussed, lower Zambezi consists of three distinct physiographic areas: 1) the lowlands and the river mouth with mangroves and swamps, possibly used for temporal use but not suitable for settlement; 2) the delta with marshy forests, shrubs and grasslands essential for agriculture today but not suitable for settlement in the past due to flooding; 3) the elevated river terraces suitable for settlement in the past.

In terms of fauna, the delta area had in the past one of the richest fauna in the world. In the 18th century, Francisco de Mello de Castro (1750) described numerous herds of elephants and rhinoceroses. This diversity of fauna attracted the prehistoric communities to settle in this area. Despite the reduced number it is still possible to find some herds of elephants, gazelles, monkeys and herds of African Buffalo in the Marromeu reserve, one of the largest reserves of buffalo in the world. The Zambezi delta played two roles in the past; as a natural barrier of migratory currents from north to south along the coast, as well as a corridor of communication between the coast and inland to the more developed communities with means of navigation. The lack of archaeological research in this area can result in innumerous
difficulties or misinterpretations of data found in several areas, mainly in the south of this valley.

The archaeological potential of the delta of the Zambezi River has not been assessed previously, as the area was avoided by the earlier research. The review of the previous research indicated that archaeological excavations were undertaken by the German archaeologist Carl Wiese as early as 1907 at the Chifumbazi cave, in the Tete province. The area was abandoned after the Anthropological Mission of Mozambique ended its activities in 1956. The rich environmental setting and the indications derived from the research undertaken in the first half of the twentieth century, as well as pilot studies undertaken by the author, justifies focused research in the Zambezi delta.

Conclusão

Neste capítulo apresento um breve cenário da pesquisa, descrevendo a fisiografia do baixo Zambeze até a foz. A análise estabelece que existem três áreas fisiográficas distintas:

1. A área da foz do rio é extremamente baixa com uma vegetação composta, principalmente, de mangais e pântanos com bosques e capim. O ambiente não é apropriado para a ocupação humana. Mesmo assim, a área é bastante rica em recursos marinhos e pode-se sugerir que ela era regularmente visitada para a pesca e exploração de outros recursos;

2. A área do delta é composta, principalmente, de planícies de aluviões com floresta pantanosa, bosques e capim denso nos vertisolos associados com áreas baixas nas margens do leito do rio. Na época chuvosa o leito do rio é completamente inundado. Essas áreas foram e continua sendo essenciais para agricultura e obtenção de recursos fluviais. Similar a foz do rio, essas zonas eram, em geral, não apropriadas para ocupação humana no passado;

3. As áreas dos terraços quaternários estão localizados nos terrenos mais elevados sem o perigo de inundação. O baixo Zambeze é composto por planícies ou terraços de aluviões com relevos pouco elevados formados como resultado de deposições fluviais sucessivas ao longo do tempo com a floresta de tipo savana que não ficam inundados. A presunção é de que estas regiões foram as principais áreas que tiveram a maior ocupação humana no passado.

Em termos da fauna, a área do delta tinha no passado a mais rica fauna do mundo. No século XVIII, Francisco de Mello de Castro descreveu numerosas manadas de elefantes e rinocerontes. Essa diversidade da fauna atraiu as comunidades pré-históricas para se instalarem nesta área. Apesar do número reduzido, ainda é possível encontrar algumas manadas de elefantes, gazelas, macacos e manadas de búfalos africanos da reserva de Marromeu, uma das reservas de búfalos mais extensas do mundo. O delta do Zambeze desempenhava dois papéis no passado como barreira natural para as correntes migratórias norte-sul, ao longo da costa e também como corredor de comunicação entre a costa e interior para as comunidades mais desenvolvidas com os meios da navegação. A falta das pesquisas arqueológicas nesta área pode resultar em numerosas dificuldades ou má interpretação dos dados encontrados em toda área da África Austral, principalmente no sul desse vale.

O potencial arqueológico do delta do rio Zambeze não foi avaliado previamente. A área foi evitada pelas pesquisas anteriores devido a vários factores: extensos pântanos com mangais, inundações cíclicas e problemas logísticos durante a Guerra civil. Não obstante, a análise das pesquisas anteriores indicam que as primeiras escavações arqueológicas feitas por
arqueólogo Alemão Carl Wiese em 1907 na caverna de Chifumbazi, foi na província de Tete, no baixo Zambeze. Apesar disso, a área foi abandonada depois da Missão Antropológica de Moçambique que terminou as suas atividades em 1956. O rico contexto ambiental e as indicações derivadas das pesquisas levadas a cabo na primeira metade do século XX assim como os estudos pilotos levados a cabo pelo autor justificam as pesquisas direcionadas ao delta do rio Zambeze.
3. METHODOLOGY AND CONCEPTUAL FRAMES

This thesis relates to several different fields of archaeological research, namely Historical Ecology, Historical Archaeology and Ethno-archaeology. I will define these fields below in the context of how these fields have been explored in the region of south-eastern Africa and Mozambique and, concomitantly, how they have inspired my own research.

3.1. Conceptual frames

3.1.1. Historical ecology

The landscape changes on earth are influenced by two factors: a) the evolution of the earth over time; b) human interaction in the environmental changes over time. The last phase of human society is characterized by the introduction of domestication, sedentary lifestyle and population growth which creates conditions for the start of environmental changes. In recent years, these changes have been more pronounced leading Deevey to introduce the term “Historical Ecology” in order to make a more detailed study of environmental change as a result of human action.

Historical ecology is defined as a concerned survey of the interaction over time between societies and environments and the consequences of those interactions in the formation of cultures and past and contemporary landscapes, habitats and landscapes (Balée 2006; Crumley 2007; Lane 2010). Meyer and Crumley (2010) define historical ecology as a cluster of concepts that offer a holistic and practical perspective to the study of environmental change. This includes, anthropology, cultural studies of ecology and sociobiology. Historical ecology offers a critique to cultural ecology, moving away from the focus on functionalist adaptation of human behaviour and specific environmental conditions and steady states of ecosystems, to instead look at the complexity of human and environmental interactions. Constanza et al. (2007) argue that the understanding of history in terms of how humans have interacted with the rest of nature can help clarify the options for handling our increasingly inter-connected global system of climate change in the present. The answers to these questions require new, more integrated transdisciplinary understanding of how humans interacted with the rest of nature in the past. For instance, historical ecology in the Amazon has contributed to a new understanding of how the inhabitants through engineering and the use of simple technology like fire, domesticated forest, savanna, soil and water of the Bolivian Amazon, a landscape transformation which had a profound implication on creating conditions for animals, plants, global biomass and regional biodiversity (Erickson 2006).

In eastern Africa, research on historical ecology is related to the elephants’ ivory trade that caused pronounced changes in the landscape, integrated into the HEAL project (Lane 2010). The focus of the research is on the ecological, environmental and socio-political consequences of the regional expansion of trade caravans in the 19th century. As in many similar studies in east Africa they draw upon a diverse range of evidence, including oral histories, archival records, photography and archaeological material. Another important study in the east African region was made by Davies (2010) in Pokot in north-western Kenya,
suggesting new directions of historical and archaeological interdisciplinary research. Davies here identifies an approach based on landscape viewing Historical Ecology as potentially useful and demonstrates its application with reference to the study of the Pokot area.

Much of the historical ecology studies in east Africa have avoided addressing ethnicity and origin of certain archaeological sites and traditions, often focusing instead on the operation of a particular human ecosystem – more in terms social dynamism, livelihoods, land-use, and more recently on ecological complexity and resilience. These studies mark a shift away from the neo-evolutionary archaeology of the 1970s and 1980s.

Similarly in southern Africa, there has been an interest in interdisciplinary studies as is exemplified by the study of Manyanga (2006) of landscape shifts through archaeology and osteology in the Shashi-Limpopo basin. Pikirayi (2003) also used written sources in combination with archaeology to discuss the influence of droughts and other disasters in the 17-19th century Zimbabwe. In South Africa, Huffman (2008) amongst others has similarly for decade’s connected archaeology with climate dynamics. In Mozambique there is a long tradition of interdisciplinary studies of landscapes and people interactions, beginning with Sinclair (1987) and continued with Morais (1988) and then also Ekblom (2004; Ekblom et al. 2011) and I wish to follow this tradition here.

As has been argued by Lane (2010), historical ecology has the potential to open new directions of research and new possibilities for interdisciplinary connections. With its interdisciplinary frame and its focus on landscape studies, through the interaction of humans and landscape processes, historical ecology is well suited as a frame for this study. The study of settlement patterns in the lower Zambezi, the interaction of societies with the environment over time, would help to understand the formation of contemporary and past cultures and landscape changes as a result of this interaction.

3.1.2. Historical archaeology

Historical Archaeology can be defined as the study of both material culture (archaeology) and documentary records, primarily written documents and oral tradition (Kinahan 2000, p. 6). Pikirayi (1993, p. 36) defines historical archaeology as a method for supporting historical interpretation of written sources, oral traditions and imported datable historical material. Moreover, historical archaeology can be reinforced by adding an anthropological component to it.

Historical archaeology as a discipline appears in the 1960s through pioneering works in North America and Europe. By this time, historical archaeology was understood as the archaeology of the global expansion of European societies since the 15th century and onwards, in order to understand the subsequent impact on indigenous peoples throughout the world (Deetz 1977 and 1991, cited by Kinahan 2000, p. 6). The importance of local cultures and their interaction with and influence on Europeans was usually neglected. In many cases, historical archaeology only focused on literate societies, which excluded many historical African nonliterate societies (Pikirayi 1993, p. 35).

In southern Africa, several historical archaeological studies were performed for reconstructing the expansion of the Dutch, English, Portuguese and the establishments of local communities. In South Africa, most of historical archaeological works in the Cape Province was made in the city of Cape (Pikirayi 1993, p. 37) to document the evolution of the settlement since the foundation of the colony in 1652. Between 1975 and 1980, excavations were also carried out in the Stellenbosch inland area to document the life of Dutch and English settlers between 1680 and 1850 (Posnansky and Decorse 1986, p. 7). The
archaeology of the first colonial settlement in the Cape region was important for understanding how the agrarian settlements were established and the development of the trade in the 17th and 18th centuries AD. The process resulted in the breakdown of the Khoisan society and the gradual European domination of Cape. Nevertheless, through historical sources it was possible to locate several Khoisan settlements in the southwest and the northeast coast of the Cape Province.

On the Namibian coast, the earliest descriptions of the indigenous population came from the first European explorers (Kinahan 2000, p. 12). Historical documents, paintings and maps helped to identify indigenous fishing and trade settlements in Sandwich harbour. Historical information from the coast of Namibia, along with a substantial archaeological material record, provided the necessary conditions for the study of contacts between colonizers and local communities (Kinahan 2000, p. 13).

In Madagascar, Chantal Radimilahy (1998, p. 26) compiled historical and oral tradition for studying and reconstructing the communities in northern Madagascar. According to Mayer (1912), cited by Radimilahy (1998, p. 26), the historical sources indicate settlements from the 18th century related to Islamized groups, often referred to as "Arab" in the historical sources. In the 19th century, Granddier (1885) also described the ruins of Ambariotelo in Ambavatoby bay, believed to be of Arab origin. At the same time, Mayer discussed a number of ruins which can be considered to belong to an earlier phase. The presence of an early phase was confirmed by Radimilahy (1998) and written sources were used in combination with archaeological finds to discuss the process of local formation and development of the archaeological site Mahilaka.

Pikirayi (1993) used different approaches to try to understand the state of Mutapa through examination of historical and archaeological evidence related to the Afro-Portuguese interaction. For Pikirayi’s study, the Portuguese historical documents, oral tradition and material culture played a crucial role in adopting a model which related regional factors. The formation of Mutapa state should be understood in the context of the role of elite in control of the branches of production and the Zimbabwe plateau (Pikirayi 1993, p. 41).

In Mozambique, the Anthropological Mission of Mozambique used oral tradition to contextualize material culture. Dos Santos Junior (1941) also used oral historical sources to describe the stone walled enclosure of Songo in Tete province. However, the main body of historical written documents and the documentation of oral traditions about the Mozambican coastal communities began already in the 15th century AD when the Portuguese arrived on the coast. Duarte Barbosa (1521) describes the dynamics of the gold trade between Monomotapa Empire, Sofala port and Angoche. In the late 16th century AD, João dos Santos ([1609] 1999), in turn documented local customs and oral traditions around the trading settlements on the coast as well as in the interior. Between the 18th and the 19th centuries several written sources appear. de Castro (1750), for example, provide descriptions of the rivers of Sena, and Serpa Pinto (1881) consecutively carried out ethnographic studies in the interior of Mozambique.

In Mozambique, a few researchers have combined written sources as a basis for interpretation of archaeological material. Dickinson (1969) conducted archaeological excavations in the Arabic and Portuguese settlements in Sofala in order to study trade on the coast and the interior states (Mutapa). Portuguese historical records (Silva 1846; Castilho 1889; Botelho 1936) and oral records from 19th and early 20th centuries AD, describes in detail the trade, the city layout of Sofala and the communities involved. These sources were used by Liesegang (1972), to interpret archaeological material (mainly local) from excavations of several test pits in Sofala and the lower Zambesi area. As mentioned in
Chapter 1, surveys and research related to historical archaeology in the Zambesi valley have also been carried out by me and Solange Macamo (Madiquida and Macamo 2004; Macamo 2006). The work here has been aimed at studying long-distance trade and community interactions at the sites Songo (a Zimbabwe tradition site) and Tete (known as an Afro-Portuguese settlement) presented by Macamo (2006), and Sena that will be presented in this thesis (Chapter 7).

In this dissertation, I will draw not only on Portuguese sources but also Graeco-Roman, Chinese and Arabic written sources as well as oral tradition to build a better understanding of the central Mozambique coastal region over time, as a background to the archaeological investigations.

3.1.3. Ethnoarchaeology

How can ethnographic research contribute to archaeological studies? Ethno-archaeology is a sub-discipline of archaeology which is gaining field increasingly in the interpretation of archaeological data and multidisciplinary research. This discipline is used for setting up hypotheses to be tested against the archaeological record using living societies (Stark 2003, p. 193; Phillipson 2005; Shrotriya 2007). In the beginning, as the field of ethno-archaeology developed, it was focused on hunter-gatherers. The reason for this focus was primarily because the Stone Age research demanded new hypothesis and methods. Later, similar methods were used for the Farming Communities, mainly to study production of some pottery traditions in the LFC (Phillipson 2005).

An ethnoarchaeological study is guided towards contemporary societies and their material culture application of archaeological possibilities (Stark 2003, p. 194; Phillipson 2005, p. 10). However, the use of ethnoarchaeological based interpretations may carry the hidden implications that the recent peoples studied in some way are backward or primitive. We must be watchful of such unintentional biases, in effect insulting those who have provided us inspiration and confidence as co-producers of knowledge (Lane 1994; Phillipson 2005, p. 10).

One of the main objectives of the archaeological research in the lower Zambezi presented here was to study settlement patterns and the human interaction with the environment. A presumption was that this objective could not be achieved without first understanding the ways the communities living in the area today is structured or organized; their economic basis, their use of natural resources and the related material culture. I have therefore expanded in detail on the geography and present day land-use of the landscape in previous chapter and have also used this knowledge as a way to locate archaeological sites in the landscape.

While carrying out field research it has also become clear that some of the present day traditions have been passed on from several generations. For example, during the fieldwork we met a woman in Inhamiara Island who produced household pottery by using knives and stamps made from wood for the decoration of the pots. Some of the decorative motifs used, for example incised cross-hatching lines, had in fact also been noted on some of the potsherds that I had retrieved from the LFC sites identified in the area. One of the ladies explained to me, that the decorative techniques they used were acquired from their ancestors, passed on to them by their parents and grandparents.

Another important thing which we noticed was the grinding of old potsherds to mix with the clays, and the potters explained that these additives (tempering materials) are used to make the clay more resistant, a practice which we have evidence of also in prehistory.
Among the archaeologically collected potsherds, we could also see that some of the clays were mixed with shells, indicating the same procedure as observed in the manufacture of pottery today. Additive material can help distinguish different pottery traditions. For instance, the coastal communities used more shell as tempering material while in the highlands of the interior the additive material came from old sherds. Potters are aware that poor quality clays require additives, to improve the quality of the clay and – even clays of higher quality must be tempered to reduce or avoid cracking (Costin 2000).

To give another example; a similar situation of continuous tradition could be found in the production of iron tools, though in the present day the communities use old iron rather than producing their own iron. Nevertheless, the ways these smiths work metals seems almost identical to the production in the past. Present smiths use a small hole dug in the earth, which bottom is covered by charcoal. Air is induced by using animal skins made in the form of a bag to which they connect a tube from where compressed air is expelled into the oven. The present system is similar to furnaces identified archaeologically (Collet 1993, p. 500). Many smiths stopped to produce iron owing to the competition of the manufactured products from Europe, which were cheaper (Mapunda 2003, p. 72). They continued, however, to produce tools by reworking scrap-iron. It should also be pointed out in this context, that the present day smiths of the delta area do not know where the iron mines are located. They only use reworked scrap-iron when smithing.

3.2. Methods

The research methods selected for this study include archival research, interviews on oral tradition, as well as archaeological surveying, excavation, processing and presentation of the data. As noted in the previous chapter, the delta area environment is characterized by swamps and thick mangroves, and this setting requires careful preparation and also an adaptation of the conventionally used methodologies in the fieldwork, especially the survey methodology.

3.2.1. Archival research

The archival research component was designed to explore the recorded settlement history of the delta and to see whether it was possible to find indications of historical settlement areas and the different natural resources used by the delta communities. The main questions addressed were: what historical sources are available, and how can they help in evaluating past land-use in the lower Zambezi?

Different archives and libraries both inside Mozambique and outside the country were visited. The library of the Department of Archaeology and Anthropology, Eduardo Mondlane University, Mozambique, provided both historical and more recent maps (mainly in the scales of 1:250,000 and 1:50,000) that became a valuable resource for the surveys. In addition, it was also probable to use early written accounts from the 16th century AD in the same library. An additional resource for the survey preparatory archival research was the library of the Chinde district, which contained a number of relevant historical documents from the Portuguese period (19th century–early 20th century) on the east African coast (Serpa Pinto 1881; D'ornellas 1901; Maugham 1906 and Godinho 1963). Two institutions were used to finalize the archival research: IICT (Instituto de Investigação Científica Tropical) of Lisbon library, in which I worked for two months. Here I retrieved previously unpublished material from early archaeological projects of the Missão Antropológica de Moçambique in the Zambezi Valley from the beginning of 20th century AD and again at the Department of Archaeology and Anthropology for the recent information.
In addition to these sources, I compiled a collection of aerial photographs and maps from the Ministry of Agriculture (MINAG), National Institute for Agronomic Investigation (INIA), National Directorate for Geography and Cadastre (DINAGECA), where relevant information about land-use and agriculture of the research area was obtained. The aerial photographs were also supplemented with remotely sensed data, mainly satellite images, in order to better characterise and understand the configuration of the delta area of the Zambezi River. The images gave me clear insights into the area, helping me to identify areas covered by my research, but also the general survey strategy since it was possible to identify pathways, accommodation areas and possible means of transport.

3.2.2. Oral Sources

In Mozambique, written sources appeared relatively recently, only a few centuries ago with Islamic travellers in the late of the first millennium AD. Historiography of the central Mozambique region is therefore mainly built on archaeological sources and oral tradition. In the delta of Zambezi, we collected different oral traditions and mythology about the first inhabitants before the settlements of the present day residents. The interviews were used to identify archaeological sites containing potsherds. Interviews were used as an archaeological survey tool in order to inquire whether the local residents were aware of scatters of antique potsherds. For this purpose I displayed antique potsherds to local residents. Secondly, we wanted to gain insights into local land-use and resource exploitation. For this intent we designed a questionnaire containing 19 questions, which aimed to address various subjects, including issues associated with early history and possible previous occupations of other groups.

3.2.3. Archaeology

3.2.3.1. The archaeological survey

The fieldwork was initiated by visiting villages in the research areas. In the villages, interviews were undertaken with local informants. During the interviews, samples of potsherds and lithic artefacts, and also photos from shelters and caves with rock paintings were displayed to the informants; with the aim of finding out if informants had seen or heard of such materials or places while moving in the landscape. Elsewhere in southern Africa, such an approach has been shown to be a successful archaeological survey tool (e.g. Lindholm 2006), but during this study almost every informant provided the same answer: they had never come across that material. Only in one case, in Chinde, were we able to locate a previously unknown archaeological site on the basis of information from local residents.

The delta area has few and deficient roads, so the survey was limited to some areas along the river. In these areas, we examined a number of river terraces situated on the sides of the roads, around the towns of Luabo, Sena, Marromeu and Chinde. However, owing to the difficulties of access, several of the places marked out on the map as potential settlement areas were never visited during the survey.

In the areas that could be approached, both systematic and random survey strategies were used. First, areas suspected to contain archaeological sites were visited. Surveyes were mainly done by foot along existing roads and pathways, using local guides. In some areas, mainly in Luabo, the survey was restricted to a few metres from the road because we had information that some parts still contained landmines. Wooded areas and cultivated fields were surveyed systematically by transect walks. The survey phase did not involve intrusive sampling methods, but surface samples were collected for the preliminary analysis. In
addition, the survey team of archaeologists from Eduardo Mondlane University visited a number of islands located at the river mouth. During surveys of the mouth of the Zambezi River, we used canoes in order to reach islands within the delta. The objectives of the archaeological surveys were to locate and map archaeological sites, but also to evaluate the potential for excavation. The surveys of the islands and along the lower Zambezi River resulted in the identification of 10 previously unknown archaeological sites presented in Chapter 5.

3.2.3.2. The Archaeological excavations

After the archaeological surveys were finished and the results analyzed, two sites were selected for more detailed analysis and excavation: Lumbi and Sena. The sites were selected according to their surface area coverage, the diversity of evidence found on the surface and the estimated period of occupation. As presented thesis is the first archaeological work in the region, establishing a chronostratigraphical framework was prioritised in the selection of sites. The two sites were selected for good understanding of the whole period from LSA-LFC to the Afro-Portuguese contact. The objective of the archaeological excavations was to identify the primary context of the sites and to understand the cultural depositional sequences. The excavations included continued collection of archaeological materials, stratigraphic analyses (Fagan 1969; Bicho 2006). For a better understanding of surface areas and possible identification of features, both one meter testpits and trenches (here also referred to as testpits) (2 x 2 – 5 x 5 metres) were excavated. The first two test pits of 2 x 2 metres at Lumbi site were excavated where surface finds were located during the survey. The aim was to establish if there were cultural layers and a stratigraphic resolution of cultural depositional sequences. During the excavation in Lumbi, samples were collected for phosphate analysis to determine which areas had high concentration of phosphates indicative of cultural activities and to assess the surface extension of the site.

The excavations allowed a first indication of the prehistoric settlement patterns in the lower Zambezi, to recognize past human activities and to assess environmental remains. The Lumbi site is transitional from hunter-gatherer communities to EFC and is located in the delta of the River, while Sena could be classified as a LFC site located in the lower Zambezi. Both of the sites are located in the alluvial terrace on the right bank of the Zambezi River, hence located in comparable settings, which provides information to preferred settlement locations in the delta over a long time-span. The general idea is that a careful examination of such characteristic sites could be helpful for future research in the delta.

3.2.3.3. Data collection

During the archaeological survey in the Zambezi valley, data was collected in two ways. Finds were collected from the surface of identified sites. The find locations were noted using a handheld GPS with an estimated position error less than 10 metres. Of the main sites that were later excavated, surface collections were only made in Lumbi because Sena is a contemporary village with very disturbed surface layers. Consequently, all the material from Sena comes from the excavations carried out at the front and in the interior of the fortress Forte de S. Marçal. In Lumbi, several ceramic objects, some microliths and pieces of iron slag were found on the surface prior to the vegetation clearances and the excavation.

Materials were also collected during the archaeological excavations. In the excavations, all deposits were sieved with a 5 mm mesh in order to collect the small fraction of material evidence. During the Sena excavation it was necessary to place a mosquito net in the sieve in order to retain smaller materials, such as beads that were numerous here. All collected material was put in properly labeled plastic bags for the subsequent analysis. Charcoal for
radiocarbon dating was collected in the testpits and six samples were sent to the radiocarbon laboratory in Uppsala.

Before I proceed to describe the results of archaeological surveys and excavations I will begin by describing the archival research that was undertaken in the initial preparatory phase of the study, a study that allowed me to initially identify survey areas. The chapter on written sources will be followed by Chapter 5 which is dedicated to the discussion of the survey results and in Chapters 6 and 7, I will report on the results of the archaeological excavations of Lumbi and Sena respectively.
4. THE ZAMBEZI DELTA AND THE EAST AFRICAN COAST: WRITTEN AND ORAL SOURCES

The purpose of the archival research was to identify and explore the recorded settlement history of the east African coast and to see whether it was possible to find information in the historical documents concerning historical settlement areas in the Zambesi delta. The general idea was that if it indeed was possible to identify prominent places in the historical sources, it should – at least theoretically – also be possible to locate them archaeologically. Such places could in the next step act as platforms for the continuing archaeological survey in the delta. Research elsewhere has highlighted how historical documents can be a valuable survey tool helping in locating archaeological sites (see e.g. Pikirayi 1993, on the Mutapa state). Indeed, authors have stressed that an understanding of the general framework of the African past may only be possible through the use of all available data from history, archaeology and oral tradition (Phillipson 2005, p. 10).

The main questions to be addressed in this chapter are: What historical sources are available? How can they contribute to evaluating past land-use in the lower Zambezi and, furthermore, to identify areas for the location of potential archaeological sites? An additional aim of the archival research was to identify different types of natural resources used by the communities in the delta and inland river valley. Subsequently, the chapter will answer the questions by a review of written sources from the beginning of the 1st century AD to the end of 19th century AD. The review will also provide a historical background on the east African coast more broadly and the Zambezi River valley in particular.

4.1. A general background to the written accounts

The Zambezi valley has from early times attracted people to settle on the river banks for trade and exchange (Chittick and Rotberg 1975, p. 8; Morais 1978, p. 8; Rita-Ferreira 1982, pp. 34–35; Phillipson 2005). As noted in Chapter 2, at least from the first half of the first millennium AD, Bantu-speaking peoples had settled in the interior of southern Africa with dispersed settlements along the east coast (Morais 1978; dos Santos Rodrigues 2006, p. 416). The settlement system stimulated exchange between the coast and the interior and it was in the coastal settlements initial contact with external traders, such as Indonesians, Arabs, Persians and Indians were made. The delta of the Zambezi is characterized by calm and easily navigable waters and has since the remotest times of travel and sailing served as an area of entrance to the interior. The river was the main communication route linking the inland to the coast of the Indian Ocean.

The main body of archival sources derives from various narrators, navigators and geographers who collected information from or even participated in the trade along the coast. Their accounts provide insights into the Indian Ocean trade networks over the two last millenia, and to the various items that were produced and exchanged in the trade. To some extent, the sources provide insights also into the lifeways and culture of the inhabitants of the region. Here, however, as always, it is important to acknowledge that many of the sources
express the preconceptions and prejudices of the people that wrote them. What is apparent is
that the introduction of exotic trade goods resulted in considerable transformations of the
indigenous population at the coast. The earliest sources from the beginning of the first
millennium AD point out that the coast by then were completely settled, and that the trade
networks were extended and included a variety of goods. From the later Portuguese sources it
is possible to see a gradual expansion from the coast to the interior, but also along the river
where some Portuguese built their residences and defensive systems. One significant theme
are the reports about the people living in the delta; how they appeared and what they drank
and ate, how they constructed their houses and organised their settlements, what tools,
implements and ornaments they made and used, the kinds of livestock they raised (Dos
Santos [1609] 1999; De Castro 1750; D’Ornellas 1901; Maugham 1906). Sometimes it is
possible to gain information of specific traditions associated with the lower Zambezi. The
Portuguese initiated formal ethnographic studies almost in every part of the Zambezi valley,
but never with direct references to archaeological sites in the delta area.

Below, the historical sources related with the east African coast will be reviewed in greater
detail. I begin with written sources by reviewing the accounts from the first exploratory
voyages or trade in this area, carried out by Greeks and Romans in the first centuries of the
first millennium AD. The review is structured according to the chronology of the sources:
Graeco-Roman, Islamic, Chinese and Portuguese sources.

4.2. Ancient sources (c. 1st to 9th century AD)

The Ancient written documents which relate to the east African coast are Graeco-Roman,
with primarily three documents, The Periplus of the Erythraean Sea (1st–2nd century AD),
Geography of Claudius Ptolemy (2nd century AD) and Cosmas Indicopleustes's Christian
Topography (6th century AD) providing the basis of interpretation by later historians. There is
also one Chinese document dating to this period, namely the account of Tuan Ch’eng Shih,
an author and scholar of the Tang Dynasty in China (9th century AD).

4.2.1. Graeco-Roman sources

One of the first documents providing highly summarised information about the east African
coast is The Periplus of the Erythraean Sea (Schoff 1912; Casson 1989). The account was
probably written in Alexandria around 100 AD (Freeman-Grenville 1975, p. 1; Mathew 1975,
p. 155). The text is considered a guide to harbours and trade centres belonging to a trade
network that linked Arabia, the east African coast, and India with the trading route to China.
If someone knew about the existence of the eastern part of the African coast, it could very
well be as a result of the testimony of Periplus. Mathew (1975, p. 154) argues from the
simplicity of the descriptions of the Periplus that the document could not have served as a
guidebook; but rather that the Periplus should be considered a brief report compiled by an
agent of the government of the Roman Empire (Casson 1989).

According to Periplus, the voyages along the east African coast followed the Monsoon
winds (Freeman-Grenville 1975) and it seems to have been an annual cycle, considering that
the text indicates that the voyages from Egypt to the distant town-markets were undertaken in
July. When the ships returned to Egypt, they brought products such as wheat, rice, butter,
sesame oil, cotton cloths, belts and honey. It is clear in these earlier documents that the
varieties of products marketed along the Red Sea and by the descriptions from those first
navigators, that they either had visited the east African coast and other Indian Ocean
settlements or received information from the primary sources. Even if the physical
characteristics of the people of Azania is not mentioned in detail, it is interesting to note in the descriptions that these early navigators perceived the people of Azania as men of great stature; thus it is likely that they were Bantu-speakers. The area was also later referred to as Zanj. ‘Zingis’ has been related with the Arabic word Zanj which has been taken as a reference to Bantu-speaking peoples. This has been considered an indication of Bantu-speaking people living at the coast earlier than conventionally thought and that the region was populated by both Cushitic and Bantu-speaking peoples (Ehret 2002).

The Periplus provides information on piracy along the whole coast and that each location had a leader who was subordinated to the Kingdom of Mouza in Arabia (Chittick 1975, p. 19). It is also known from these first documents that the people of Mouza sent small ships to the coast, with captains and crews who traded, and married the people of the coast, and that they were fluent in the local languages (Freeman-Grenville 1975, p. 2). Boats carried lances, swords, knives and a great variety of small vases of glass, which can be taken as an account of the scale of the trade. To some places, traders brought wine and wheat – not to sell but in order to win the goodwill of local communities. In exchange, traders obtained ivory, rhinoceros horns and coconut oil from the coast (Freeman-Grenville 1975, p. 2). In a still unconfirmed claim, Felix Chami (1999) argues that the geographical descriptions in the Periplus together with Roman beads found on the Rufiji delta on the Tanzanian coast are evidence that provides a clear link between the African coast and the account of Periplus. Concerning place-names, the Periplus mentions Rhapta, which is noted as a prominent metropolis emporium8 in the 1st century AD. Periplus locates Rhapta at some distance south of the Zanzibar Islands, and as one of the settlements located furthest to the south on the Azanian Coast.

A second Graeco-Roman account has been associated with Claudius Ptolemy, a Greco-Egyptian writer of Alexandria, compiled sometime in the middle part of the 2nd century AD. Ptolemy describes in his Geography that the river of Rhaptum (from which the name Rhapta seem to be derived from) and the Promontory9 Rhaptun is located more than a degree and a half further to the south than what is given by Periplus, which places Rhaptun in what is actually current Cape Delgado (Schoff 1912, p. 97). Ptolemy’s Geography contains no detailed information regarding the cultural geography of the east African coast but the text is still interesting because it gives references to places and the distances between them (Freeman-Grenville 1975, p. 3; Mathew 1975, p. 155).

An interesting part of the two accounts of Periplus and Ptolemy are the different references to the location of the place Rhapta/Rhaptum. Chami (2002, p. 20) considers the actual location of the Rhapta as unestablished. Huntingford (1976), on the other hand, identifies a number of different places along the coast as possible locations of Rhapta. Miller (1969) in turn considers Pemba as a probable location of Rhapta and bases this on finds of Roman coins located on the Pemba Island. William Vincent (1800, p. 162) considers the site Quitoa as the location of Rhapta. The site of Quitoa is situated on an island in a bay at the mouth of the River Goavo, with Cape Delgado located more than a degree to the south.

Notwithstanding these debates concerning the locations of the main places of the trade, it can be suggested that the east African coast was well known by the traders. Accounts of remote areas and places in inland regions are also available in the sources from the first centuries AD. The information about traded goods, inhabitants, cities and routes was widespread in this time. The general locations of the commercial trade settlements were known and it is possible to gain some insights into the inhabitants of the coast and the main

---

8 A large retail store selling a wide variety of goods.
9 Cape composed of elevated or crag rocks.
products of exchange. It is also achievable to gain some understanding into the routes that led to the interior, where the local communities obtained elephant ivory, rhino horn and gold.

In the 6th century AD Cosmas Indicopleustes, the Byzantine geographer, also compiled his Christian Topography. In his account he described the trade voyages he made to India and Ceylon in 525 AD. Although he did not visit the east African coast himself, he describes the commercial exchanges that took place between Axum and the Zingion coast. He states that the inhabitants of the east African coast did not know how to produce iron. In addition, according to the Alexandrian merchant, the main products they sought by the Axumites were salt, iron and oxen. These goods were exchanged for gold (Freeman-Grenville 1975, pp. 6–7; Phillipson 1985; Chami 1994).

4.2.2 Early Chinese sources

Chinese traders are also known to have visited the east African coast in the 9th century AD, and thus provided accounts of the east African coast. The first source is the account of Tuan Ch’eng Shih, which is dated to the 9th century AD. According to the author, the land of the Po-pa lies in the south-western part of the Indian Ocean. The Po-pa population did not eat cereals, but they consumed meat. Frequently, they perforated the vein of a cow for drawing blood which they mixed with milk and drank it raw. They used sheep hides as clothes. The main products produced by the Po-pa for the trade were ivory and gray amber. Tuan Ch’eng Shih considered Indonesians as the principal actors of the trade in the area (Freeman-Grenville 1975). It is also stated in the account, that the lands of the Po-pa had never been submitted to any external power. The Arab traders attacked them frequently, however, and in the disputes the Po-pa responded using bows and arrows and spears with tips made of elephant ivory, buffalo horns or ribs (Freeman-Grenville 1975).

The Chinese sources can be used for gaining some glimpses of the area’s ethnography. The narrative inferring that the Po-pa’s arrow and spear heads were made from ivory, antler and bone can for example be taken as an indication of that iron was not widely used in the area at the time (even if we can’t rule out that it could be a material of choice). Still, however, it is not clear which group of population the account describes. Seemingly, the people described did not practice agriculture; rather they seem to have been more orientated towards livestock production. To establish firm links between ethnicity and techno-economic packages is a risky enterprise, since such approaches deduce universalistic rules upon the complex dynamics of culture. Furthermore, there is a great risk of projecting recent ethnographic situations upon the past. Nevertheless, in the much more recent ethnographic sources concerned with the livestock herding Maasai people, the habit of mixing milk with blood, also accounted for by Tuan Ch’eng Shih, is a well-documented practice (Thomson 1885; Ehret 2002). The Maasai speak a Nilotic language and archaeolinguistics dates the spreading of Nilotic-speaking peoples on to the coast of Kenya to about 500 BC, approximately in the same period of the expansion of Bantu-speaking peoples towards the coast (Ehret 2002; Phillipson 2005, p. 252; Horton 1996). However, evidence of Nilotic-speaking people’s is only found in east Africa. Archaeologically, as reviewed in Chapter 1, the EFC has reached the region between 200–500 AD and established long-distance trade networks over the southern African region at the beginning of the second half of the first millennium AD. This implies that metal-using agro-pastoralists were settled on the coast earlier than the visits of the Chinese navigators. The ethnographic setting of the coast can be presumed to have been ethno-linguistically and economically diverse, including Khoi, Nilotic and Bantu-speakers. Based on these circumstances, Tuan Ch’eng Shih’s account should be taken as representative for one cultural setting, which cannot directly be projected on the whole of the region.
In summary, the ancient documents do not shed light on specific details or actual events about the first commercial connections between the coastal African inhabitants and the external traders. It is apparent, however, that the inhabitants of the east African coast participated in a complex, long-reaching trade network from the earlier part of the first millennium AD (Freeman-Grenville 1975). There are obvious problems involved in identifying many of the places referred to by the first navigators. Archaeology therefore has a great potential in providing the details of the east African trade in the first millennium AD through the material record. This is particularly relevant for Mozambique, as the early first millennium traders did not make any specific references to Mozambique (for instance of the Sofala coast or the Zambezi valley that is mentioned in later documents.) However, evidence of long-distance trade dated 700–1000 AD found in Chibuene provides a fixed point both geographically and temporally for the southern Mozambique coast (Sinclair 1987; Wood 2011). Later in this thesis, I will review evidence from the excavation at the Lumbi site, which indicates that the coastal area was occupied by metal-using agro-pastoralists in the early first millennium (see also Macamo and Madiquida 2004). Why then, are these activities not mentioned in the ancient Graeco-Roman or Chinese sources? It is possible that the written sources are limited to the Cape Delgado coast or Kenya and, consequently, that direct information from the southern stretch of the coast was missing in the early records. Nonetheless, deduced from evidence from Chibuene – the southern coast of Mozambique was indeed integrated in the Indian Ocean trade from 700 AD.

4.3. Mid-period Sources (c. 10th to 15th century AD)

The mid-period begins in the 10th century AD and lasts until the European expansion on the east African coast in the end of 15th century AD. This time-period is characterized by permanent contacts between the Persian Gulf, India and the east African coast. Almost all commercial activities were in control of Muslim traders, who had founded several trading centers first on the coast and later in the interior. A second fundamental feature of this time-period is the broader introduction of Islam which permeated the social networks of the trade. The Muslim traders settled not only on the coast but also established some commercial centers in the interior for the direct control of the production areas. From archaeological sources we know that these settlements evolved from the earlier EFC settlements into a mosaic culture that borrowed influence from the Muslim world, a culture which came to be referred to as Swahili (Horton and Mudida 1993; Chami 1994; Horton 1996; Juma 2004; Kusimba 1999; Sinclair and Håkansson 2000). Consequently, in the end of the first millennium AD the number of written sources has increased considerably and was also accompanied by maps illustrating the contemporary knowledge of the geography of the east African coast. These sources provide detailed descriptions of the east African coast, the inhabitants and the trade that was taking place at the time. Nevertheless, most of the places mentioned in these sources have not been confirmed archaeologically. Examples are the locations of Jantama or Hantama, Dandama, Sayūna or Safūna, Būkha, Jastama, Jasta or Jabasta and Daghūta situated south of the Rovuma River, and on Mozambican coast, mapped by the geographer Al-Idrīsī in the 12th century AD (Chittick and Rotberg 1975, p. 138; Morais 1978, p. 9; see Fig 4.1).

The mid-period sources are mainly from Muslim authors who visited the coast as sailors, slave-traders or traders and adventurers. It should be mentioned here, that some of the authors never visited the east African coast in person. Instead, their narratives were compiled on information from several sailors. One example of this is the account of Buzurg ibn Shahriyar of Ramhormuz from the middle of the 10th century AD (Freeman-Grenville 1981). He based
his narrative about the east African coast on a sailor, named Ismailawaih. Geographically, the area that is described in the text Buzurg is most probably the northern coast of present day Kenya (Freeman-Grenville 1975). One interesting account is the report of one of the kings on the Zanj coast, who was captured and traded in Baghdad as a slave. After his return back to Zanj, he declares that he would give a good amount of money to his owner in Baghdad if he had the possibility to visit him again (Freeman-Grenville 1975, p. 12). This suggests that coastal East Africa was integrated in the economic network of the Persian Gulf and its interior.

Al-Mas’udi at the beginning of the 10th century AD states Sofala as the farthest limit visited by people from Oman and Siraf, who traded with inhabitants of Sofala. “After Sofala is the land of the Waq-waq, which produces the gold and many other good things” (in Freeman-Grenville 1975). It seems like the Waq-waq occupied most of the distant parts of the coast of the Zanj after the harbour of Sofala (Freeman-Grenville 1975, p. 15; Chittick 1975, p. 23; Tringham 1975, p. 121). In the description, the Zanj at Sofala was organised in a city-state ruled by a King called Mfàlme. The King of Sofala had soldiers that rode on oxen because they had no horses, camels or donkeys. The accounts of cattle present in Sofala and Sena (D’ornellas 1901) show that cattle were intensely domesticated in this area. Moreover, Al-Mas’udi’s account provides indications that at least the southern part of the coast of Zanj, mainly the area around Sofala, was inhabited by Bantu-speaking peoples in the 10th century. The Sofala inhabitants traded gold, ivory, turtle shells, skins of leopards, and also cultivated sorghum (Sorghum bicolor), yam, finger millet (Eleusine coracana) and pearl millet (Pennisetum glaucum (Freeman-Grenville 1975, p. 15; Chittick 1975, pp. 25–26; Tringham 1975, p. 121). Sofala at this time, designated a land or country rather than a place, and the name was used in reference to the coast of the Mozambican Channel marked by its numerous coastal shoals (Tringham 1975, pp. 120–122; Morais 1978, p. 8). Hence, the entire coast after Rovuma southwards was known as the coast of Sofala or Ard of Sofala.

Another 10th century author, Abu al-Fida (in Freeman-Grenville 1975, pp. 23–24), gives the description that the “Land of Sofala” was composed of four cities; Batyna, Seruna, Leirama and Daghuta and that the king ruling the towns lived in Seruna, which was located at the mouth of the great river that is running from Komr.

In the 10th century AD, the author Hawqal states Zangbar (Zanzibar) was an island inhabited by coloured people who were of Muslim faith. Their agricultural lands were poor and there were on-going conflicts with the Muslim traders (Freeman-Grenville 1975, p. 18). Since the 10th century AD it is known that the entire of the east African coast, including the offshore islands, was settled by Bantu-speaking peoples. But it is possible that some of these communities had converted to the Muslim faith. Al-Idrīsī describes the inhabitants of the coast and the islands as active in the trade with iron, farming and livestock. Al-Idrīsī conveys, based on reports on the island of Djawaga, states that the Zanj did not construct boats. Instead they used vessels that were imported from Oman or other countries around the Persian Gulf. The merchants from the Persian Gulf sold their products in return for products from the east African coast. Several towns are located on the islands and the people owned plenty of livestock. In addition, inhabitants produced fruit, sorghum, rice, sugarcane, banana and camphor. The inhabitants of the islands are described as very dark and many traders visit them annually bringing goods for consumption and trade (Freeman-Grenville 1975, p. 20; Chami 1994). From these accounts it is possible to deduce that long-distance trade was completely established on the Mozambique coast by the 12th century AD. For instance, descriptions of towns and a plentitude of livestock in the Djawaga Island, and the increase of the long-distance trade activities as suggested both by written sources and archaeology, illustrates the development of LFC and the inclusion of metals as a trade item. As has been
argued by Phillipson (2005), for the Bantus peaking peoples iron was not just a trade product but their greatest source of income. In 1340 AD, Ibn al-Wardi (in (Rita-Ferreira 1982, p. 52) also mentions that iron was exported from Sofala to India, and that the export of iron increased the presence of foreign traders from the Persian Gulf in the Sofala port. Ibn al-Wardi emphasizes that the inhabitants of Sofala preferred copper ornaments and he also relates how the great nuggets of gold were traded.

Muhammad ibn Abdullah ibn Battuta, more often known as Ibn Battuta (in Freeman-Grenville 1975), noted that two populations were living on the coast at the 14th century AD. One was islamised and mainly occupied the islands and the coast. The second part of the population was the “heathen” Zanj, who settled in the interior. Judging from the Ibn Battuta account there were tensions between the two populations. The cities of Zeila and Mogadishu used domesticated camels and the inhabitants of the east African coast seem to have been incorporated in the Swahili cultural complex during this period. When describing the town of Kilwa, Ibn Battuta noted great prosperity, and furthermore considered the town to be one of the more beautiful and well-built cities of the world (Freeman-Grenville 1975, p. 32). In the 10th century AD, Abu al-Fida (in Freeman-Grenville 1975, pp. 23–24) noted that people in the coastal communities dressed in leopards’ skins (a symbol of pride and royalty?). 400 years later, Ibn Battuta, in turn, does not make reference to clothing at all which leads us to believe that the communities along the coast wore a dress similar to that of other Muslim communities.

Another account of east African coast at this period is the contribution from the Chinese author Chao Ju-Kua, who describes two areas along the Coast and adds information on the inhabitants who lived there at the time. The two areas were the island of Zanzibar, which he designates Zonguebar (Ts’ong-Pa), and the actual Coast which was referred to as the “barbaric coast” (or Pi-P’a-Lo) (Freeman-Grenville 1975). The most significant information is concerned with the religious beliefs of the islands’ inhabitants and on the main products of the trade which consisted of ivory, gold, gray amber and sandalwood. The coastal towns at Zanzibar sent ships annually to the east African coast with clothes of white cotton, porcelain, copper and red cotton for sale (see also Chami 1994; Juma 2004). Chao Ju-Kua, a Song dynasty official, describes four cities and a village which were fighting among each other for control of the long-distance trading activities. The inhabitants on the coast were in contrast to the inhabitants of Zanzibar not Muslims. Instead, he says, they worship the sky.

The Mid-period ends with the description of the Muslim Ahmad ibn Mājid al Sā-dī of the coast of Sofala. In his poem, “As-Sufaliyya”, dated approximately to 1470 AD (Khoury 1982), Ibn Mājid describes not only the coast of Sofala and Sofala port, but also all of the commercial trade settlements that were active at the time. Ibn Mājid also describes the city-states that existed on the east African coast and the periphery. Sofala is referred to as the “port of gold”; and it is said to be governed by the king of Kilwa (Khoury 1983, p. 79). Furthermore, the coast of Sofala is said to be inhabited by pagan peoples who did not have any type of religion. It was the same people who brought the gold from the interior to the coast. Additional trade products mentioned by ibn Mājid were domesticated plants and animals. The entrance to the harbour of Sofala was characterized by mountains of sand and coconut trees. According to the account of Ahmad ibn Mājid al Sā-di, Sofala maintained exchange contact with the town located on the mouth of the Kwama (Zambezi) River (Barbosa 1521; Khoury 1983). al-Sā-dī is, in fact, the first Arab navigator whose work has anything to say about the geographical location of the port of Sofala. As discussed above, from the 15th century, Sofala was a fixed point located on the mouth of Donda River, to where gold from Monomotapa Kingdom was shipped.
Fig. 4.1. Al-Idrīsī’s map from 1154 AD showing the ports of the east African coast (based on Chittick and Rotberg 1975, p. 138). O mapa de Idrīsī de 1154, a Costa Oriental Africana.
Before this date, as discussed above, the name Sofala most likely referred to a whole region, which may explain its absence as a fixed point in the al-Idrīsī map of 1155 (Barradas 1971; Chittick and Rotberg 1975, p. 138, see also discussion in Wood 2012; Sinclair et al. 2013). Ahmad Mājid al-Sa’di was thus the first author to locate the coordinates of Sofala as a fixed point, in his poem about Sofala (Barradas 1971; Khoury 1982). Thus, from the 15th century AD onwards the name Sofala is also used in reference to a fixed geographical point and as a trading port (see Fig 4.2).

From this brief review of the sources of the mid-time period it can be noted that the Mozambican coast south of the Rovuma River was settled and that different goods and cultural systems interacted and competed in terms of trade. The coast was integrated into complex systems of connections and communications, with information about distant lands and goods widely available. Al Idrīsī’s map shows fixed points for all seven cities located in the south of the Rovuma River. In addition, the mid-time period sources indicate the existence of a town at the mouth of the Zambezi River, where a great king lived and who controlled all trade in this region. Cities called ‘Sayuna’ appear with the same name on the same map: one at the mouth of the Rovuma and the other at the mouth of the Zambezi. Rita Ferreira (1982, p. 118) affirm that the name of Sena comes from a small commercial Muslim village that was located in the lower Zambezi, and the Arabic documents refer to it as Sayuna. The archaeological survey reported in this thesis reached only the north of the mouth and we were not able to visit the island of Inhanguere located at the mouth of the Micelo and Zambezi Rivers. Here it is assumed that a large town was located in the past. The middle and late sources about the east African coast describe the settlements along the Zambezi River since the early times, (Chittick and Rotberg 1975, p. 138; Khoury 1983; Barbosa 1521; dos Santos [1609] 1999; de Castro 1750).

4.4. Later Sources (c. 15th to 20th century)

At the end of the second half of the 15th century AD, the Portuguese arrived on the east African coast. This time period stand for a sharp shift in the history of the area. Many of the trade settlements described by earlier Arab geographers and sailors still existed. To impose their hegemony, the Portuguese destroyed some of the trade settlements and took control of others in the beginning of 16th century (D’Ornellas 1901; Dos Santos [1609] 1999). In general, the Muslem names of the trade settlements were replaced by Portuguese names (as Inhambane, Anogoche, Quelimane, Inhambane, and Ibo Island) and many trade settlements were fortified as was the case with Sofala (1505), Sena (1572), Mozambique Island (1558) and also Tete.

4.4.1. The Portuguese sources

The arrival of Europeans on the east African coast resulted in a different range of written sources as compared to the previous ones described above. The European sources provide more detailed accounts in terms of the trade, the indigenous inhabitants of the coast, the commercial trade settlements, the plants that were cultivated and the herding of domesticated animals.

It would probably not be difficult for archaeologists to find the old trade settlements that are mentioned in the Muslim sources, if the Portuguese had maintained the names or had referenced the geographical location of the places they visited. One example is the attribution of the name São Rafael to the mountains of Usambara and the coastal areas which was a result of the first journey of Vasco da Gama to India (Freeman-Grenville 1975, p. 51). It is
important to note here, that the main objective of the Portuguese was not, at least initially, to control the trade of the east African coast. Rather, the main objective was to find a way to India and sign commercial treaties with the governor of Calecute, the Samorim and establish the trade in spices as seen in the first journey of Vasco da Gama (Velho 2002, p. 34).

Only later with the return of Vasco da Gama 1500 AD did the king of Portugal begin to establish commercial contacts with the Swahili trading centres on the east African coast. The king of Portugal sent the armada of Pedro Cabral to India and Arabia in 1500 AD, aiming to stabilize the trade with the merchants at the Sofala Emporium. Accounts from the armada of Pedro Cabral indicate a large Indian and Muslim influence in the area south of Sofala (Rita-Ferreira 1982, p. 52). According to the author Álvaro Velho (2002, pp. 35–36), the whole coast and the islands were already inhabited by Afro-Islamic, Christian and Asian peoples. The second voyage of Vasco da Gama to India in 1502 AD signifies the beginning of the Portuguese conquest of the east African coast. This resulted in the submission of the richest city-states, as the king at Kilwa was forced to pay an annual tribute to the king of Portugal (Jayne 2004, p. 64).

In a letter to the king of Portugal, dated November 20, 1506, Diogo da Alcáçova wrote that Sofala was a trade centre for gold coming from the great Kingdom of Vealanga (synonym to Kalanga) in the interior. The Vealanga (probably synonymous with Kalanga kingdom) is said to have large towns and Sofala on the coast was located within the territory of the Vealanga kingdoms (Freeman-Grenville 1975, p. 121). The decrease of gold at the market in Sofala at this time was, according to Diogo da Alcáçova, owing to a war in the Vealanga Kingdom. He also provided an estimate that it took 20 days to journey from the coast to the mines in Zumubany (probably Zimbabwe).

Until the beginning of the 16th century, Muslim traders dominated the commercial activities in the Sofala region (Freeman-Grenville 1975, p. 121). There was a local king (or shiek) in Sofala (Zufé) and we are told that all men surrounding him were “Moors” (e.g. Muslims) (Barbosa 1521; Dos Santos 1609, p. 8). Some native Africans lived close to them, but not with them. There were two towns in Sofala with 400 inhabitants each. The first town was close to the sea, and the second was located approximately 5 km up the river, and it was in this town the sheik lived (Freeman-Grenville 1975; Rita-Ferreira 1982). Before the arrival of the Portuguese, Sofala, Kwama, Angoya (Angoche) and Mozambique, were subject to the king of Kilwa (Freeman-Grenville 1975, p. 121; Rita-Ferreira 1982, p. 52). However, in 1505, the Portuguese Pedro (or Pêro) da Anaia occupied Sofala and here he built a fortress and a trading station.

Duarte Barbosa (1521) explains the presence of Moors in Sofala as a result of the gold trade with the Kingdom of Benametapa (Mwenemutapa). They exchanged the gold without using scales for measuring weight. In return for the gold they gave small coloured beads, cotton cloths and products brought from the trading towns of Kilwa, Mombaça and Malinde in Zambucos. These trading towns also received goods which came by ships from the great Kingdom of Cambaya. Other important places in the trade, according to Duarte Barbosa (1995, pp. 8–9), was the large river Zuama (also Kwama or Cuama), e.g. the Zambesi River.

“In the mouth of this river there is a town of the Moors which has a king and it is called Mongalo. Much gold comes from Benametapa to this town of the Moors, by this river which makes another branch which falls at Angoya (Angoche)”.

We also have some information of the settlement of Angoche (or Angoya), located north of the Zambesi delta (Fig. 4.2). Angoya was a town of the Moors (Muslims) and they had their own sultanate and many merchants who traded gold and ivory in exchange for small amounts of beads and cloth and sorghum, rice and fresh fish. The name Angoya was originally used by
Duarte Barbosa (1521) (see above, p. 66) in confusion with Quelimane. The natives of Angoya were described by dos Santos ([1609] 1999) as black and “somewhat tawny”. Christian Isendahl (2002, p. 13) considers the proto-historic and early historic period of Angoche (c. 1450–1525 AD) as intimately linked with the gold production of the northern Zimbabwe plateau located in the interior. Hence, it may be possible to talk about an economic situation of dependency between the Mutapa State of the inland and the sultanate on Angoche on the coast. After Angoche, the Island of Mozambique served as a major harbour for the boats that moved up the coast from the towns of Kwama and Sofala. Mozambique Island was also a Muslim town and the inhabitants spoke Arabic and shared many characteristics with the population of Angoche.

Fig. 4.2. A map of the east African coast in the 10th to 15th century AD with some of the sites mentioned in the text. O mapa da Costa Oriental Africa no período tardio com algumas estações mencionadas.
The most systematic report on the inhabitants of the Zambesi River is the work by Friar João dos Santos ([1609] 1999) written at the end of the 16th century AD. J. dos Santos was a Father of the Dominican Church and a missionary, and the purpose of his journey to east Africa was to evangelize the local communities. His work is important because it was written while the encounter between African communities and the Portuguese was still new and the communities of the Zambezi Valley were described in a more open-minded way than what is perhaps the case with later written sources authored as part of a colonial conquest. Dos Santos stayed in Sofala several years and he described the populations of the Zambezi valley in detail. Friar João dos Santos ([1609] 1999, p. 90) described the town of Sofala as located in a swamp. He also described the Zambezi River as a great river which drained into the Indian Ocean through five estuaries, the first estuary being Luabo (Micelo), the second Kwama (Zambezi), the third Old Luabo (Inhamacara), the fourth Linde (Chinde) and the fifth is Quelimane (Cuacua). According to Dos Santos ([1609] 1999, p. 45):

“The island (Luabo) is completely populated by Moors and very kind Caffres almost vassals of the Captain of the Kwama Rivers, who often stay in the island. All merchandise from Mozambique Island in the big embankments (Pangaios) is unloaded in this island and later, the merchandise is transported in the small boats to the fortress of Sena. Two rivers are navigable during all the year, Luabo (Micelo) and Kwama (Zambezi), while Quelimane (Cuacua) River is navigable only in the winter with much water.”

Dos Santos and other authors also describe how in the late 16th century several larger polities designated as Karanga were established in present day Mozambique and Zimbabwe: Gwambe and Sedanda were found south of Zambesi, Monomotapa controlled the northern Zimbabwe plateaux and the interior goldmines, and Quiteve the region between Sofala and Manica. Meanwhile, the Barue and Manica polities, the identity of which is uncertain, controlled areas between the Zambesi plateaux and Zambesi. These polities had overrule over other polities and groups broadly referred to as Tonga south of the Zambesi River, and Mukua north of the Zambesi River, were distinguished from other groups mainly on the basis of language (Dos Santos ([1609] 1999); see summary Newitt 1995, p. 41, 62–64).

Market places were set up at several locations, usually in the periphery of the territories of polities, but they were also under taxation from various rulers. The residents of these settlements were usually of Muslem faith, even though they were also intermarried with the surrounding chiefly lineages. Muslim advisors were present in the courts of the paramount rulers, such as the Monomotapa. The inland river ports were called feiras, “market places”, by the Portuguese. Several trade routes went from the coast to interior – one of these took traders from Sena through Barue and Manica (Beach 1994, p. 105; Newitt 1995, pp. 52-52).

Based on written sources, Newitt (1995, p. 12, pp. 53–54) concludes that by the 1570s Sena had five Muslim families under a leader and ten Portuguese residents. By the end of the 16th century, Portuguese captaininies were established in both Tete and Sena. In the account of the expedition of Fransisco Barreto by Father Monclaro (“Company of Jesus”) in the year of 1569 (in Theal 1964, Vol. 3, p. 223), Sena is described as a small village of straw huts in a thicket. Sena was ruled by a Moor, the son of Mopango, who was a great chief but vassal to Monomotapa. Father Monclaro (in Theal 1964, Vol. 3) also provides information about the death of cattle in this country (probably related to the presence of tse-tse) but that the cattle were brought from the kingdom of Butua. As is clear from the Monclaro account, the Portuguese meddled in the internal affairs of both Sena and the succession of Monomotapa. From Father Monclaro we also know more about the social organization of the territory around Sena (in Theal 1964, Vol. 3, p. 227):

“The fumos near Sena are Kaffirs, natives of the country, and very often the lowest are elected to this dignity. Most of them are forced against their will to accept the office, for when one has cows, millet, or naqueny which he can give them and spend, they elect him fumo, and his dignity lasts as long as he has
anything to spend. When they have eaten up his property, they cast him out of the office, and pre-
eminence is the most that they give him […] They have great ceremonies among themselves, and no
council is held without the fumo, who is often kept rather for ceremony than for any substantial
obedience shown to him. The sons of these fumos are held in honour among them, though few care for
a dignity which entails such loss, but they are forced to take it by those who bestow it on them.”

Father Monclaro likewise describe how the Kalanga ruler the Monomotapa had overrule over
these Fumos and that his rule was similar to that of a king, by the obedience he demanded
from subjects and through the succession of his oldest son. The Monomotapa was described
as very powerful, with large territories and smaller kingdoms that were his vassals (including
Butoa and Manica). The paramount ruler was made powerful also through his vassals. One
vassal, the fumo Pango, could accordingly muster more than seventy thousand men into the
field. More information also comes on the dress practices around Sena, which is relevant for

“Generally they are are all dressed in pieces of cotto
n cloth, but are poorly covered. These cloths are
made on the other side of the river [Zambesi], and are woven on low looms, very slowly. I saw some at
work near Sena. These cloths are called machiras, and are about two varas and a half long and one and a
half wide. They gird these machiras round their bodies and cross them over the breast, and the rest of
the body is uncovered. They wear horns in their hair by way of finery, which are made of their own
locks strangely twisted. These horns are in general use in all Kaffraria, and they shelter the head very
well. […] The women wear upon their arms and legs many bracelets of copper drawn very fine, and
gold is also drawn very fine, and then made into bracelets.”

From this quote it is clear that there was a local production of textiles and also imports such
as copperbangles, probably imported from the Zimbabwe plateau. Father Monclaro (in Theal
1964, Vol. 3, p. 224) also describes the country of Sena in more detail:

“For the land yields only a little millet and Meixoeira, which is like the hemp-like seed in Portugal,
resembling that which is given to birds and which the negresses sell to children of Lisbon, like sesame
and other, and a few vegetables. There is another kind of grain, which they call nachenim, and the
negroes murume, which resembles mustard seed. They grind this by hand, by rubbing it between two
stones, and of the flour they make a paste which they eat. Of this also they make their wine, and it is
more plentiful than any other.”

Important contributions of Friar João dos Santos ([1609] 1999) work are also the descriptions
of indigenous resource use, especially of plants. Plants were used for many purposes,
including healing of wounds and treatment of certain common diseases. Dos Santos also
described indigenous hunting and provides detailed descriptions of the mechanisms used for
hunting and fishing and also of wildlife in general which was already referred to in Chapter 2.
His account also contributes to our knowledge of the agricultural activities. Friar João dos
Santos ([1609] 1999, p. 180) at the end of the 16th century wrote:

“When these embarkation's navigate in the river, the cafres, that inhabit many villages along the river,
come to them in their small canoes, loaded of fruits of the earth, rice, corn, vegetables, fresh fish and
dry, and a lot of chickens, which they sell cheaper to the passengers, for there being high abundance,
and fertility in these lands.”

Friar João dos Santos, Father Monclaro and other authors uncover two important questions:
what was the relationship between the trading settlements emerging in the 15th century and
the local communities? It is clear from the quotes above that there was both settlements and
trade when the Portuguese expanded in this area. It seems, from João dos Santos description,
that the local communities devoted themselves to agriculture, fishing and the raising of small
animals for sale. The rearing of chicken for sale clearly suggests that local agriculture were
already adapted to trade and the interaction with traders. This information does not leave any
doubt about the presence of farming communities along the river and around Sena and,
consequently, that there should be able to find archaeological sites along the river margins.
Later descriptions of the Sena by authors like Francisco de Melo de Castro in 1750, also describes the wealth of Sena and its rivers saying that:

“River Sena alone are made independent by the large hand that nature dealt with them everything necessary for the humane settlement and any other country could be rich from one foodstuff that is extracted here.”

At the end of the 15th century and early 16th century AD, a new set of inter-group relations was introduced as a result of the influx of mercantile capital. Subsequently, this resulted in violence and conflict in northern Zimbabwe, culminating in that the overrule of the Monomotapa State located on the Zimbabwe plateau was challenged. Portuguese captains also came to play the role of local warlords, which incited waves of violence in the Zambezi valley and had effects on neighbouring territories (Pikirayi 1993, p. 41). In the 17th century, a number of new entities also made war north of the Zambezi River; amongst these were the Maravi but also the Zimbas. A precursor of the Maravi invasions was experienced already in the 1570s with the attacks of the Mongas from north of the Zambezi River. These attacks were met by resistance from both Kalanga and Portuguese forces, but the Maravi expansion occurred also later in history at several occasions and Maravi later came to be associated with the Kalonga polity (Newitt 1995, pp. 62–64, 69, 71–72; see below). In 1635, Antonio Bocarro observed that the first Monarch Karonga Muzura maintained an army of 10 000 men spread out on an immense territory, extending to the Mozambique Island and the village of Quelimane (Pachai 1972). The extent of the Kingdom of Karonga reached the point to which Karonga was considered the owner of the territories populated by both the Makuas and so called Lomwe, and his empire could be compared with the size of the Kingdom of Monomotapa. In the areas covered by the expanding Kingdom of Karonga Muzura, the social organisation changed considerably. A new elite emerged which controlled long-distance trade and all the communities in the area were submissive to his power (Pachai 1972).

A central question when assessing the written sources is; where were the communities described by the Portuguese located in the past? The written sources from the 16th century onwards reports (as discussed above) of the existence of several settlements along the river. A later source by Serpa Pinto (1881) describes how the lower Zambezi was used for the transportation of merchandise in the famous zambucos, facilitating exchanges of plants and cultures among merchants and exporters from Asia, Europe and Africa. Other sources also tell us that products traded were elephant tusks and rhinoceros horns, as well as its aromatic resin and turtle shells known for their extraordinary thickness (De Castro 1750; D’Ornellas 1901; Morais 1978; Freeman-Grenville 1975). The descriptions of settlements and trade along the Zambezi River encouraged us to develop this research project in the lower Zambezi valley. We assumed, that the communities most likely used the terrace areas for settlement (see discussion in Chapter 2), which were rich in arable land, drinking-water, and in general safer and within easy walk to the river margins when they had products to sell. The archaeological site of Lumbi located in the Marromeu region, discussed in Chapter 6, seems to fulfill these requirements. It is located some 7 km from the Zambezi River and is a site of considerable dimensions and, as reported by the written documents, it should have been rich in resources.

Nonetheless, the problem is that we still have too little information for the delta region, and surveying here is difficult as there are very extensive floodplain widths which can reach several hundred kilometres (Davies et al. 2000). In the delta of the Zambezi River close to the mouth, it is unclear if there were any settlements. From dos Santos’ description above, one may also assume that the town mentioned in the Arab sources and earlier Portuguese documents may have been the island Luabo, considering they described no other populated island at the mouth of the Zambezi River. The information in the mid-period sources is clear,
in the sense that they describe the many different settlements located on the Mozambican coast, and at least three settlements located in the delta and at the mouth of the Zambezi River.

4.5 Influences of Prazos on the communities of the Lower Zambezi

Portuguese jurisdiction and acquisition of land began with the establishment of the trading fairs in Mashonaland in the second half of the 16th century AD (Newitt 1995, p. 217–225; Isaacman 1972; Pikirayi 1993). From this time, the Portuguese control of the Zambezi basin was based on grants of crown land; prazos da coroa. Land as private property became common first in the 17th century AD, when individual conquistadores, who had obtained concessions from the local chiefs in return for their help in local wars, sought official titles for their land from the Portuguese crown (Newitt 1995, p. 217–225).

Until a century ago, the Portuguese settlements along the banks of the Zambezi River represented the greatest manifestation of the prazos system. Although nominally under Portuguese rule from the 16th century AD, the inhabitants of the lower Zambezi valley have used the land for subsistence agriculture and continued to use the land as previously (Newitt 1995, p. 217–225).

The implementation of the Prazo system in the lower Zambezi broke up African societies (Isaacman 1972). Tribal organisations and language groups were fragmented and new types of institutions and social organisations developed as a result of a mixture of people from various tribes. In the lower Zambezi, from Tete to the Indian Ocean, there are four population groups, which seem to derive from this process: Chikunda, Nyunguès, Sena and Chuabo.

4.5. History, language groups and ethnicity in the Lower Zambezi

By tracking different ethnic groups it is possible to gain a better understanding of cultural interactions within the research area. The study of the language groups, of the lower Zambezi, is important to understand group movements and settlement patterns, as well as the use and management of natural resources with support of material culture from archaeological research of the LFC. The linguistic classification of Malcolm Guthrie (1948), (see also NELIMO 1989 and Ngunga 2004) shows three language groups of Bantu origin (N40, P30 and S10)10 in the area, and these in turn show a high degree of cultural interchange. In general, the people who inhabit the east African coast and southern Africa are all speakers of languages related with the eastern Bantu language family (Hammond-Tooke 2004). Evidence from archaeology and linguistics suggests that ancestors of Nguni and Sotho-Tswana speakers came from east Africa and moved into, and through, the north-eastern coastal lowveld south of the Limpopo River between around 1050 and 1350 AD (Hammond-Tooke 2004; Huffman 2004). But this north-eastern movement has been disputed by Liesegang (2014) who proposed that the formation of these groups should be sought inside the linguist and geographical area of the south eastern Bantu and south eastern Africa. Liesegang (2014) does acknowledge, however, that the Moloko tradition may have been shaped by a movement explained by the practice of transhumance. Ethnoarchaeological studies of the present days pottery from Zambia, Malawi, South Africa and Zimbabwe, show similarities with some facies of the LFC, as is the case of Moloko pottery which is associated with Sotho-Tswana speakers (Evers 1981; Mason 1986; Schofield 1948), Blackburn by

Nguni (Maggs 1980) and Luangwa tradition is also associated with Tonga people (Phillipson 1974, 1976).

The observation above is for recent communities. But we cannot say the same about the past, despite some microliths found on EFC sites, such as the case of the archaeological sites of Lumbi and Caimane. The appearance of these stone tools may suggest cohabitation between stone-using hunter-gatherers and iron-using farming communities (Morais 1978, p. 4; Adamowicz 1987, p. 76; Argyle 1995). Recently, Kohtamäki (2014) has also provided a conceptual frame for considering these interrelations.

The lower Zambezi contains many different ethnic groups, which can be related to several movements of settlement. The first movement is the expansion of Bantu-speaking peoples to southern Africa (3rd and 4th century) as discussed above. Archaeological evidence indicates that the ancestors of the Tonga people arrived in their present homeland nine centuries ago, if not earlier (Fagan and Phillipson 1965; Phillipson 1974). Gordon (2005), however, considers that the Tonga would have reached the region of the Kariba plateau areas and southern Zambia during the 12th century AD. Rita-Ferreira (1982) in turn suggests that the Tonga were not an ethnic group but a categorization of many groups that occupied a very extensive area of the Lower Zambezi in the 15th century AD. The area extended from the Pungue to the Zambezi and people spoke a language similar to Chisena and Chinhungue (Nyungwe). Archaeologically, material culture (ceramics) was associated with Luangwa tradition also found in Tete (Phillipson 1974, 1976). Phillipson (1974, 1976) suggests that this ceramic tradition is derived from the Chifumbazi Complex (Phillipson 2005, pp. 294–295). In my view, it is important to make detailed studies of the succession of the Luangwa tradition ceramics in Mozambique, because the evidence of the LFC from the north of Tete town found by Solange Macamo (2006) in Degue-Mufa site is completely different from Luangwa tradition, in terms of decorative motifs and arrangement and forms of the vessels. Lungua continues as Lumbo tradition on the Mozambican coast. Archaeological data suggest that a migration also took place from the interior to the coast between 1200 and 1400 AD. A presupposition is that the Mawudzu pottery dated to this time period coincides with the migration of the Chewa into the centre and the southern Malawi (Juwayeyi 1993).

Another movement of groups was related to the additional European expansion into the area in the 16th and 17th century with the establishment of the Prazo system (see above). Several communities settled here in order to work as peasants (mussenjes or tonga) on the farms, in the army, as domestic grown estates (prazos, slaves and later employees) on the plantations as the case of the Prazos like Caia and Chupanga. In the 19th century, around 1880–90 sugarcane plantations were also started which attracted additional communities to Zambezi valley. As discussed above, Chikunda, Nyungue, Sena and Chuabo are associated with the process of creolisation around the Prazos (Isaacman 1972). According to Isaacman (1972) the Chikunda was formed by warriors working for owners of Prazos. The Chikunda were formed sometime between 1650 and 1750 and extended to Zumbo in 1750–1850, from a wide number of elements from different communities of the lower Zambezi. In addition to their military function, they hunted large game such as elephants and played an important role in organizing and leading trade caravans into remote regions. The Chikunda mythology still contains a strong aspect of hunting magic. They were ‘invisible’ to elephants, and this made them the best hunters of elephants in the region of central and eastern Africa. A day before the departure to hunting, sexual relations was prohibited (Isaacman 2000). To identify a set of individuals from different ethnic groups is difficult archaeologically. However, during excavations at LFC sites linked to the Prazos northeast of Tete near Boroma, Solange Macamo (2006) recovered different objects being products of long-distance trade, mainly beads, porcelain and local pottery. This archaeological record can be related with long-
distance trade, which in turn may be associated to the Chikunda. For a long time, this group was not recognized as a distinct ethnic group, due to its mixture of people of different origins. Over time, however, the Chikunda communities became more homogenous in terms of language and culture; hence new forms of consolidated ethnic identities evolved around them.

Some authors confuse the identity of Nyungue with that of Chikunda but Isaacman (1972) made a comprehensive study of Nyungue ethnic group – on its origin, formation and history – and concluded that this ethnic group is formed by Shona and Marave. The Nyungue group was also formed recently in the lower Zambezi as a result of the Prazo system. Nyungwe group was composed of people from different origins, and its formation was shaped by the Prazo system and Portuguese activities in Tete (idem.). Given the late appearance of the Nyungue group however, it is difficult to associate them with a distinct archaeological culture. According to the local tradition, the Nyungue monarch would have come with his subjects from the lands of the left margin of the Zambezi River to the right margin. This tradition shows secure membership of the northern matrilocal peoples, although at present they are patriarchal and virililocal (Rita-Ferreira 1982). Some traditional ceremonies amongst the Nyungue show interaction of the different cultural elements that indicate a mixture of diverse ethnic groups. For instance, the predominance of the possession with the spirit of the lion, Mambo Mpondoro in the trance, is Shona origin. And the gifts and prayers by rain made for gibóia, tsato, indicate Marave origin (Isaacman 1972). From the 17th century AD onwards many Marave people, and especially the Manganja, also entered into the region where the Nyungue group was resident. This population movement resulted in the bulk of the Nyungue group populating the left margin of the Zambezi, extending to the district of Chikwawa in Malawi (Rita-Ferreira 1982, pp. 258–259).

From the Chemba districts downstream to the delta, Henri Junod (1996, pp. 304–307) noted a difference between the Sena of the lower Zambezi communities and the others of the Bantu-speaking peoples in the region. First, the Sena communities of the lower Zambezi constructed square houses, in contrast to circular ones which are generally more common in the region. Junod (idem.) interpreted this as a result of prolonged contacts with Asians or Swahili. In addition, the Sena communities built huts called Cete, in which unmarried boys and girls could interact freely. In the ethnographic bibliography, these huts or institutions are called gociro or nomi (Negrão 2001, p. 245). Marriage was only celebrated when the girl got pregnant. This custom is strikingly different compared with other Bantu customs of marriage in the region. It has been suggested that this is a cultural trait adopted by some Bantu-speaking peoples following contacts with other groups from Asia (idem.). The majority of the people interviewed in 2008 (see below) stated that the Sena came from Zimbabwe and when they arrived in the lower Zambezi they found Muslim traders, who were trading along the coast prior to the arrival of the Portuguese. Comparative studies of present and prehistoric pottery in the region, including the administrative post of Sena, show similarities in decoration. Both are decorated with incised cross-hatched motifs, which make clear that there is an earlier occupation than what is mentioned in the oral sources (see Chapter 5).

The population of Chinde District seems to derive from a mixture of various ethnic groups which settled here as workers in the plantations of sugarcane for the Sena Company in Luabo (Jessen 1994, pp. 8–9). Archaeological surveys made in Chinde provided ceramics decorated with incised cross-hatching and stamps. Typologically, all pottery was dated to the Later Farming Communities, which indicates a recent occupation of the site (see Chapter 5).

In the areas covered by the expanding Kingdom of Karonga Muzura, there are other traditions of movements. In oral tradition of the Marave, they come from the Luba area, in
Congo, and arrived in the region of the current Malawi under the direction of their head Karonga (Kalonga) (Pachai 1972). Some traditions from the interior are maintained on the coast – for example the place name of Maganja da Costa suggests a coastal settlement of the "Manganja" who came from the interior. Mask dances and the cult of rain (Mbona) derived from the interior, are still practiced in the coastal site of the Maganja da Costa (Pachai 1972). Several elements of the Marave have also been identified in the lower Chire, Marromeu and Chinde areas.

4.6. Local history in Oral Sources

From the interviews with local residents it is clear that oral histories in the region are very rich. However, the distribution of potsherd samples shown to local informants to aid identifying of archaeological sites, proved unsuccessful. People use ceramic pots in their homes today for cooking, but it is a different type from those found archaeologically. The majority of the people we interviewed answered that they had never seen the type of pottery that were shown to them. This is somewhat surprising, as our team observed several ancient potsherds scattered on tilled land. It is possible that this answer was given as the informants did not feel confident with us as interviewers and because they were not prepared for the interviews. Nevertheless, we believe that they had in fact not given notice to these ancient potsherds, or that they were not reflected upon, because even the people who live around the Lumbi site, where surface scatters of ancient ceramics are common, gave us the same answer.

One of the questions posed during the interview was about the early inhabitants recalled in tradition to have settled in the lower Zambezi. Our intention was to determine whether oral tradition could be used to locate archaeological sites or not.

Each interviewer recounted different histories. In the area of Lumbi in Marromeu, informants said that no one lived in the area at all and that their ancestors were the first to settle in the area, and they came from the west and used tools of wood or stone. The informants in the area of Sena in Caia said that when their ancestors arrived in the area from the north or Zimbabwe, they encountered people who did not practice agriculture, were homeless and lived in caves ‘like animals’ and carried very long spears. This tradition is identical to the one collected in Mueda plateau (12.11.1997), which confirmed the presence of such people in the northern Mozambique in the past (Madiquida 2007). This can be considered as accounts of early encounters between hunter-gatherers, or foragers, and the farming communities, which will be discussed in more detail in chapter 8.

Interviews in Sena, with Liva Bobo (04/08/2008), who is c. 90 years old and also Sábudo Kamanguira Coche (04/08/2008), who is c. 85 years old, affirmed that the people known as “Anapaches” lived in the area before these informants’ own ancestors' arrived in this area. Anapaches were homeless, and they lived in the caves around Balamwana foothills. They used the bow and the arrow for hunting, and did not practice agriculture. Agriculture was brought by the informants’ ancestors, who were cultivating millet, sorghum and yam. Domestic animals included goats, chickens, and pigs. During the interview we asked the old man Sábudo Kamanguira Coche (04/08/2008) to show us the cave or the area where the “Anapaches” lived in the past. Unfortunately, however, he did not know the location of the place, saying that he in turn heard this from his ancestors who never explained where these people actually lived.

According to the elder Mifina Martins (04/08/2008), who is approximately 90 years old, and living in Sena, the area was occupied by Muslims or Mwenyés before the 16th century. These Muslims or Mwenyés owned the land and traded with the coast. At the beginning, the
Mwenyés travelled to Sena by boats, and they bought tusks and stones which they exchanged with beads, clothes and other goods. Later they settled in Sena and most of the residents of Sena came from Zimbabwe to find work there, first with Arabs and later with Portuguese. In the area of Chupanga near the Nyamula kinglet, I interviewed elder António Gamboa (12/08/2008), approximately 86 years old, who also affirmed that he heard about “Anapaches” people and he knew where they lived. On the following day I visited the place referred to, but unfortunately I just found an abandoned army quarter of the old Prazo by the name of Chupanga. In terms of crops, António Gamboa said that his ancestors grew sorghum, millet and yam, and also consumed wild yam.

4.7. Conclusion

A review of historical sources addressing trade and livelihoods along the coast suggests a division into three main periods. The first or ancient period is associated with the first century of the first millennium AD, where the Graeco-Romans often visited the coast to the Rovuma River. This period does not tell us much about the Mozambican or Sofala coast. The only possible reference that appears in the Periplus is the Promontory Rhaptum trade settlements located somewhere on the coast of Cape Delgado; was it the Sayūna of al-Idrīsī? The Promontory Rhaptum has not yet been located archaeologically in northern Mozambique. Nonetheless, the second and the third period (Mid- and Late) are characterized by the production of large volumes of information on the coast of Sofala and especially the Zambezi delta. The information of these two periods is associated with the LFC. The long-distance trade and the coastal communities are described in more detail. Due to the foundation of the Muslim village in the interior (Sena) along the Zambezi River, before the arrival of the Portuguese in this area, the delta and the mouth of the river became the main center of entrance of products to the interior. The trade settlements at the mouth of the Zambezi River were main destinations of the products before they were transported in small boats to the inland. The choice of the delta of Zambezi River in our archaeological research had much to do with these sources, as we believed that the communities described in the lower Zambezi by the Arab’s have left their evidence of occupation. The analysis of written sources illustrate clearly that the lack of archaeological research is the fundamental cause for not having located the mentioned places. The general research of written sources, albeit mainly in the mid- and later sources, demonstrates that the information is sufficient to develop a project of archaeological research in the Zambezi delta. However, despite the Muslim descriptions of trading posts from the first millennium being involved in the long-distance trade, complemented with the Portuguese sources and ethnographic studies, there has never been a project directed to the Zambezi delta and the archaeological surveys of the Mozambique side of the Zambesi River has been limited. Therefore, this project could be very opportune.

Conclusão

A revisão das fontes históricas sobre o comércio e meios de subsistência ao longo da costa sugere a divisão em três principais períodos: o primeiro período ou o período antigo está associado com o primeiro século do primeiro milênio AD, onde os Greco-Romanos frequentemente visitavam a costa até o rio Rovuma. Este período não nos diz muita coisa sobre Moçambique ou a costa de Sofala. A única referência possível que aparece no Periplus é o Cabo Rhaptum entreposto comercial localizado algures na costa de Cabo Delgado, será essa Sayūna de al-Idrīsī? O Cabo Rhaptum ainda não foi localizado arqueologicamente no norte de Moçambique.
Contudo, o segundo e o terceiro período (médio e tardio) são caracterizados pela produção de grande volume de informação sobre a costa de Sofala e especialmente sobre o delta de Zambeze. A informação desses dois períodos está associada a Idade do Ferro Superior. O comércio a longa distância e as comunidades costeiras são descritas de forma mais detalhada. Devido a fundação da vila muçulmana no interior (Sena), ao longo do rio Zambeze, antes da penetração portuguesa nessa área, o delta e a foz do rio tornou-se o principal centro de entrada de produtos para o interior. Os entrepostos comerciais na foz do rio Zambeze eram os principais destinos dos produtos antes de serem transportados em pequenas embarcações para o interior. A escolha do delta do rio Zambeze para a nossa pesquisa arqueológica teve muito a ver com essas fontes porque nós acreditávamos que as comunidades descritas no baixo Zambeze com a penetração Árabe nessa região deixaram as suas evidências de ocupação. A análise das fontes escritas ilustra claramente que a falta de pesquisas arqueológicas é a causa fundamental de não localização dos locais mencionados. A pesquisa geral das fontes escritas mostra que a informação é suficiente para desenvolver um projecto de pesquisa arqueológica no delta de Zambeze, principalmente as fontes do segundo e o terceiro período. Contudo, apesar das descrições árabes dos entrepostos comerciais que desde o primeiro milénio stavam envolvidos no comércio a longa distância complementados com as fontes portuguesas e estudos etnográficos, aqui nunca houve um projecto de pesquisas arqueológicas direcionado ao delta do rio Zambeze e as pesquisas arqueológicas de lado a Moçambique do rio Zambeze tem sido limitada.
5. SURVEY RESULTS

The review of the historical sources undertaken in Chapter 4 justified an archaeological survey in the delta of the Zambezi River. The survey was carried out by a research team consisting of members of the Department of Archaeology and Anthropology from Eduardo Mondlane University, Maputo. The team was led by the author and the first survey was carried out from 2002 to 2003. The survey took place along the dirt roads in the lower Zambezi River valley, towards the mouth (Macamo and Madiquida 2004). The survey aimed to locate new archaeological sites and obtain surface finds of diagnostic artefacts. The team documented evidence of human occupation from various places in the provinces of Sofala and Zambeze in central Mozambique; from Chinde at the mouth of the river in the east, to Sena on the right margins of the Zambezi River in the northwest. The survey also included re-visits to earlier located sites in the north of Tete province.

The surveys and the fieldwork were carried out along the Zambezi River, from the inland towards the mouth. The aims of the archaeological survey was to provide a foundation for an assessment of the character of the archaeological remains and evaluate their scientific potential for extended fieldwork; including a better view of a variety of significant features of the sites, e.g. site definition, diversity and density of artefacts, and possible chronological indicators. This report served as a basis for selection of sites for excavations and for planning subsequent phases of the fieldwork, including the construction of testable hypotheses. In this chapter, I include descriptions of the located sites, how they appear in the landscape, the value for this study and what evidence we retrieved.

An important goal of the survey was to find stratified archaeological sites with diagnostic material culture. This did not seem unlikely considering that the area is rich in various natural resources. Elsewhere, the EFC chose coastal plains with high concentration of resources for their expansion (Sinclair 1987; Morais 1978, 1988; Sinclair et al. 1993). Sometimes they established large villages similar to the village that was found in Lumbi site in the chieftaincy of Nyamula, c. 33 km from Marromeu, prior to the establishment of the long-distance commercial contacts.

5.1. Geology and Soils

The area of Lower Zambezi is part of the Urema System, considered as an extension of the Great Rift Valley. The Urema system in this area is formed by alluvial deposits between the Beira and Quelimane, with about 200 km from the coast, and to the confluence of Chire more to upstream of the Zambezi River. The district of Chinde is covered with alluvial deposit soils and sand dunes. A soils study of the Lumbi area was carried out by the Instituto Nacional de Investigação Agronómica (INIA) and following the convention used by the Food and Agriculture Organisation (FAO). The area is characterized by extensive floodplains of the Zambezi River and its tributaries, with alluvial swamps, and hydromorphic depressions.

Three major physiographic units were distinguished in the delta plain, namely: (i) the coastal plain (area of influence of associated tides propitious for growth of mangroves); (ii) the alluvial plain (with hydromorphic characteristics) which is flooded seasonally and (iii) the
system of high terraces. Elevations between the delta plan and the coast vary between 5–20 meters. Residual terraces of the Pleistocene form islands in the delta plain and pre-estuarine dunes.

The geological study contributed to our study of the entire delta of Zambezi River. The allomorphic regions are characterized by the growth of the mangrove vegetation and very juvenile and completely immature soils (e.g. with a low influence of soil formation processes). This happens because the significant portion of the deposited material is saturated with water and strongly influenced by the alternation of the tides. The hydromorphic alluvial plains are flooded seasonally; the soils of the current alluvial plane are composed by finer texture, loamy, and are poorly drained. The alluvial soils of the higher areas have a medium texture of granulometry and the Quaternary sands are characteristic of the highest areas of the terraces.

In Marromeu, the soils are predominantly alluvial and colluvium deposits dating to the Holocene (QA1) (Oberholzer 1976). These soils are very deep fluvisols, rich in organic matter and having the good capacity of retention of water and nutrients, locally saline and sodic (the marine-estuarine soils) and some sandy soils have low capacity of retention of nutrients and water.

5.2. Prospecting the Lower Zambezi River to the delta

The archaeological survey of the lower Zambezi River to the delta was initiated after a careful examination of maps, satellite images and full bibliographic review of previous studies (Chapter 3 and 4), in order to determine areas with potential of archaeological sites. Despite the difficulty of access to the principal environmental features of the Zambezi River mouth, namely mangroves and swamps, the area was not a priori excluded from our archaeological survey. The early written sources revealed the existence of communities on the raised terraces in the river delta, and one of the centres of commerce was located at the mouth of the river (Maugham 1906; Khoury 1983; Barbosa 1995; dos Santos [1609] 1999, p. 180). The communities settled here were attracted by the diverse natural resources, apparently from early times, and developed exchange with the hinterland along the river.

The presence of quaternary dunes in Chinde, permanent water sources and abundant arable land usually indicates preferred settlement areas. These conditions led us to expect older archaeological sites than those previously reported (Morais 1978: 5; Jessen 1994). The prospection of the Zambezi River margins from the interior to the coast was also suggested to us by the descriptions of the first Portuguese, who sailed upstream and met a great agglomeration of people along the river margins. This area was very fertile and produced large quantities of agricultural goods (Maugham 1906; Khoury 1983; dos Santos 1999).

The archaeological survey on the lower Zambezi resulted in identification of 8 new archaeological sites and we visited one previously studied site. Chronologically, the sites span from the Late Stone Age to Late Farming Communities. Below I present each site Chifumbazi Cave (LSA/EFC), Chinzenze (LSA/EFC), Sena (LFC), Lumbi (LSA/EFC), Nensa (EFC), Tanque (LFC), Chituto (LFC), Pambane (LFC) and Inhamiara (LFC).

5.2.1. Chifumbazi Cave

Chifumbazi cave was reported around 1900 by Portuguese traders, when they were prospecting for gold in the area. The cave is located in the north of Tete province in the district of Chifuenda (Chiuta), in the mountainous forest of the same name at an altitude of 1,000 m, 14°21’16.0”S; 32°55’35.8”E. All of the area is above 1,000 m and is approximately
600 km from the Indian Ocean Coast. The cave is small, only 2 m in height at the entrance and 1 m inside. Most likely the occupants used the cave more during the night for sleeping and spent much of the day outside.

The first excavations in the cave were performed in 1907 by the German archaeologist Carl Wiese. Chifumbadze also became the type site of EFC pottery used by Phillipson (1977, 2005). My revisit to Chifumbazi aimed to continue the study both in the cave and its surroundings. The goal was to obtain comparative data for the Lumbi site, to update the geographic coordinates and to mark the paths of access, because at this point we have no precise information about its location. It was difficult to retrieve ceramics, owing to the quartz rubble and quartzite stones on the cave floor. The Chifumbazi cave has impressive naturalistic rock art paintings of zebra, buffalo and other figures painted in red colours. Some small quartz flakes can be found on the surface, which shows that the cave was occupied by stone-using communities, similar to Caimane as well as to some caves in Nampula (Adamowicz 1987; Morais 1978, 1984, 1988).

The side of the mountain was also surveyed but no archaeological sites were found. The Chifumbazi rock paintings have never been well-researched and the present study was carried out to better understand the hunter-gatherer communities who settled here in the Late Holocene, bearing in mind that almost all the archaeological occurrences of this time at least in Zimbabwe, are associated with caves (Walker 1995).

5.2.2. Chinzenze

Chinzenze is a small cave located approximately 1 km from the road from Mualazi administrative post to Tete 14°21'22.9”S; 32°55’25.1”E. The environment is characterized by tree savanna and grasslands. Despite the reduced size, the cave contains small quartz flakes scattered on the surface. Some flakes resemble those retrieved from Chifumbazi cave which may indicate the same technological tradition of hunter-gatherer communities. The cave is located 900 m above sea level. The cave was found during the archaeological survey in the Chifunde district. In addition to the small quartz flakes, a grinding stone was found. The cave was not excavated; further investigations will be needed to investigate the lower layers, whether or not they present any evidence of the EFC occupation. Also in terms of the hunter-gatherer communities, the area has significant data but is poorly studied.

5.2.3. Sena

Sena is situated on an elevated position on the bank of the lower Zambezi on the mountain slopes of Balamwana (17°2629.2S; 35°0158.6E). The site is outside the flood zone. It is located approximately 210 km from the coast. In 2003, we began with the survey of Sena, first in the fortress because the inhabitants of Sena believed that the name "Sena" comes from there. They consider the fortress as a divine stone brought by the gods to protect the local community from tribal conflicts with the Makombe (Old Lavo c. 80 years old, 26.11.2007). The local mythology claim that the name Sena is from Portuguese, because many times they removed the stone, but on the next day it was in the same position again. The Portuguese said: this is a “sena”.
Plate 5.1. The Chifumbazi Mountain and the location of the cave. O monte Chifumbazi e a localização da caverna.

Plate 5.2. Chifumbazi main cave. Chifumbazi, a caverna principal
Plate 5.3. Chifumbazi rock art. Pituras rupestres da caverna de Chifumbazi

Plate 5.5. Chinzenze main shelter. A principal gruta de Chinzenze.

Plate 5.6. A grinding stone found on a few cm depth inside the shelter. Mó e rebolo encontrados há poucos cm da profundidade no interior da gruta.
Fig. 5.1. A map of the soils of Central Mozambique (INIA 1982; FAO 1988). Mapa dos solos do centro de Moçambique

My bibliographic research confirmed that the fortress of Sena was built in 1572 by Francisco Barreto, then governor of Mozambique. The fortress consists of a wooden palisade (taipa in Portuguese) and the fortress is called Forte de S. Marçal. The fortress housed a chapel as well as a factory house (Montez 1969). The central objective of the Portuguese occupation of the interior was to control the trade of gold that was transported along the Zambezi River. After investigating the fortress, we surveyed throughout the village of Sena collecting archaeological evidence related to long-distance trade, as well as ceramics of local tradition. The study indicates that the whole village is an archaeological site, similar to Mozambique Island. After archaeological prospecting in Sena between November and December 2002, our team continued in the next year, in July 2003, with the study in Marromeu going downstream along the Zambezi River. The first reports on a commercial warehouse here come from Arabic sources concerned with Sayūna, which can be taken as a reference to Sena. In the al Idrīsī Map of 12th century of Eastern African Coast (Chittick and Rotberg 1975: 138) two cities appears with the same name; one at the mouth of the Rovuma River and another at the mouth of the Zambezi River.

Sources (for instance Barbosa 1521; dos Santos 1609; Castro 1750; Godinho 1963) suggest that Sena was a commercial warehouse in the past, and that a number of products were transported through Sena to the coast and vice versa. Some of the products were also sold immediately here. Some scholars (Rita-Ferreira 1982; Duarte 1987) argue that Sena would have been occupied by Arabs, who founded a small Muslim village and developed long-distance trade even before the Portuguese presence in the area. Sena was the principal starting point for Portuguese expansion in the interior of Mozambique. This may be indicated by evidence of long-distance trade which is found in abundance at the site, mainly glass
beads and porcelain fragments, known from Mozambique Island (Duarte and Meneses 1996; Madiquida and Miguel 2004).

Duarte (1987, p. 5) states that there exists a place, near the fortress of Sena, called “Nhacassena” which seems to pre-date the Portuguese presence in the region. Could this be
the small village where the Muslims lived, and to which Rita-Ferreira refers to? Clearly more prospecting work is required to assess the information Duarte provides.

The development of trade in Sena was related to the decline of the port of Sofala at the end of the 15th century and the intensification of trade by the alternative route Tete-Sena-Angoche. This created conditions for prosperity for Sena. The inhabitants of Tete traded their goods in Sena village (dos Santos [1609] 1999; D'Ornellas 1901; Rita-Ferreira 1982).

5.2.4. Marromeu

The district town of Marromeu is located in a marshy area, in the alluvial plain on the right bank of the Zambezi River, close to the sugarcane (*Saccharum officinarum*) cultivation of the Sena sugar factory. The ecological characteristics of this area are different from those of Sena. The Moarromeu village is intentionally located on the marshland for the plantation and the area floods easily in the rainy period. Our study began by visiting the village margins apparently higher compared to the rest, starting with the residential areas close to the landing strip. Despite the area being greatly disturbed, we expected a situation like that in Nampula where Adamowicz (1987) located some archaeological sites at the airport as well as in the city.

The next day, we began to prospect in the plantation areas, but, owing to inundation of the fields we did not find any archaeological data even after the sugarcane harvesting. We surveyed an area approximately 60 km from the village to the interior but nothing was found and the conditions were the same. After 4 days of survey around the village of Marromeu, we decided to prospect along the main road from Marromeu to Beira.

5.2.4.1. Lumbi

During our survey along the road Marromeu-Caia, we stopped at the area known as Lumbi attracted by many trucks carrying sand, which was extracted at the side of the lagoon of Lumbi. Some potsherds with features of the Matola tradition were scattered on the eroded surface of the quaternary terrace fringing the Zambezi alluvial floodplain, 18°07'33.6"S; 035°41'46.1"E. Initially it seemed to be a significant site. After a more detailed examination a small sample of diagnostic datable ceramics was collected from the surface (30 potsherds). A comparison with published data and the reference collections at the Eduardo Mondlane University in Maputo suggests that the samples included both the Matola Tradition (25 sherds), and the Lumbo Tradition (five sherds), belonging to the beginning of the first millennium AD and the first half of the second millennium AD respectively. The discovery of Matola pottery at Lumbi and Nensa (see below) is of particular interest, since it expands the known distribution of the earliest expression of farming and iron-using communities in southern Africa. Furthermore, this is a strong indication of EFC also being present in the delta of the Zambezi River. In fact, the archaeological data from this site is much richer and varied than usual, including sites in their primary contexts. The collected surface samples and the investigation carried out around the site led to additional finds of surface scatters of microlithics connected with hunter-gatherer communities. The presence of hunter-gatherer communities and EFC reveals a potentially complex situation of interaction and transformation.
Fig. 5.3. A topographic map of the Lumbi area showing the location of the Lumbi and Nensa sites. Mapa topográfico da área de Lumbi mostrando a localização das estações de Lumbi e Nensa.
5.2.4.2. Nensa

Nensa is a small administrative post created for the people settled in the low-lying areas which are prone to flooding. It is located approximately 28 km west of the town of Marromeu, on the south margin of the Zambezi River (coordinates 18°10'13.36"S; 35°43’39.01’’E). Nensa is located 5 kilometres from the archaeological site at Lumbi. The area was surveyed in two separate field seasons: the first survey was undertaken by Professor Paul Sinclair and Hilario Madiquida. This study resulted in the retrieval of fragmented potsherds of EFC, comparable to those found in Lumbi (Macamo and Madiquida 2004). The second survey in Nensa was carried out by the author, aimed to continue prospecting the surroundings.

The area is very rich in raw material for the manufacture of artefacts (sandstone conglomerate, clay and wood) and other resources. The sandstone conglomerate and sands are presently used for construction works in Marromeu. During the surveys, there was a misinterpretation of the archaeological excavations by local residents who expressed concerns that we were disinterring human bones. Further studies in this area, therefore, requires careful preparation with the collaboration with local people, but this exciting site should be the subject of future research.

5.2.5. Chinde

Chinde Island is formed as a triangle limited to the north, by an arm of the Zambezi River (river Chinde), to the south by the Zambezi River itself and to the east by the Indian Ocean (Jessen 1994). The Island is covered by mangroves with large swamps and the natural conditions bring about difficulties for conducting archaeological surveys.

Chinde is on an alluvial plain 3 meters above the sea level. Linear sand dunes run parallel to the coast. In addition to the cyclical floods, accelerated erosion affects the island. The major problems for archaeological research in Chinde are: a) access – the district does not have any means of transport, only small canoes; b) the road system, which is limited to the area of the district headquarters. Pathways in the dense mangroves provide limited access except to some islands. The use of small canoes is dangerous because they easily capsize in ocean waves. It is a very complex area for archaeological research. Despite the difficulties, our team surveyed all the Chinde area including the islands. The archaeological survey on Chinde began in the area of the administrative post of Luabo, located on the left bank of the Zambezi River on the alluvial terrace. Only the area close to the road was investigated because of the presence of landmines further away from the road. The land is very disturbed owing to the planting of sugarcane (Saccharum officinarum), and no archaeological evidence was found. Further work is needed, after the landmines are cleared (according to recent official sources, Mozambique should now be emptied of its landmines from the civil war).

The local library of Chinde is one of the most significant libraries in the area. The library contains Portuguese documents and literature about trade and Portuguese expansion towards the interior. Here I found old Portuguese written records referred to in Chapter 4 (Barbosa 1521; dos Santos [1609] 1999; De Castro 1750; Pinto 1881). The survey in the lower part of the town aimed to find shell middens with evidence of the occupation, as those found on the southern coast of Mozambique (Sinclair 1987; Morais 1978, 1988; Sinclair et al. 1993). During the fieldwork, the continuous consultation of maps was necessary because the area was completely unknown, and we used small canoes to cross the sea or tributaries to the islands, which are the appropriate means of transportation for those conditions.
However, the archaeological sites located in the Chinde district were very few. Only four sites of the LFC period (Tanque, Chituto and Pambane) and one site on the island of Inhamiara were found. The study in the area of the administrative posts of Micaúne and Matilde did not result in any archaeological evidence. It is also necessary to emphasize that in Chinde, no evidence for long-distance trade was recovered.

5.2.5.1. Tanque

Tanque is a site located a few minutes by car from the town of Chinde in the direction of the administrative post of Matilde, with geographic coordinates 18°37′64″S; 36°24′84″E. It is a sand dune which has been cultivated using a stone-mason system, and during the excavation the farmers have exposed various archaeological materials which can be visible even at a distance. It is an exciting site in terms of data, a significant amount of shells, mainly (*Fanthina prolongata*), and interesting ceramic sherds, and some samples we collected from this site were published in the African Archaeology Network (Macamo and Madiquida 2004). The ceramics had three main decorative features: incised with oblique parallel lines, single or cross-hatching lines; comb-stamped and red painted inside (Liesegang 1972; Adamowicz 1987; Duarte 1993). All the data found in this site can be associated to the LFC. These decoration motifs are similar to those recovered from the Degue-Mufa site (Macamo 2006).

5.2.5.2. Chituto

The archaeological site of Chituto is located approximately 40 km to the south in the district of Chinde, with geographic coordinates 18°40′37″S; 36°22′54″E. This site does not have a high quantity of finds. It seems to represent an isolated small farmer family site, located close to the fertile soil. Here, we have not collected any samples. But as there is no archaeological evidence without significance (Frédéric 1980) we marked the remains with geographic coordinates.

5.2.5.3. Pambane

At the site Pambane, the material was exposed by farmers in the cultivated areas similar to the Tanque. It does not present a high variety in terms of archaeological data. It is located approximately 30 km south of the Chinde toward the administrative post of Matilde 18°42′62″S; 36°21′11″E. In the excavated areas, some fragments of ceramics scattered on the surface can be noted, mostly undecorated. The surface area of the site is small and maybe only one family of the farmers lived there. No evidence of long-distance trade was found in Chinde. An analysis of the sites located in the district of Chinde in terms of material shows that the sites are all of the LFC.

5.2.5.4. Inhamiara

Inhamiara is an island located in the Chinde district a few km from the coast 18°30′75″S; 36°30′46″E. The island comprises of fine sand dunes and our survey located an archaeological site in a small dune which had been cleared repeatedly for the construction of dwellings. The site does not present a significant variety of material. Some potsherds and shells are scattered on the surface, mainly undecorated ceramics, but some of them are stamped with shells. The island itself is very small and my team covered all of it and no other evidence was recovered.
Fig. 5.4. A topographic map of the mouth of the Zambezi River showing the located sites. Mapa topográfico da foz do rio Zambeze mostrando as estações localizadas.
5.3. Conclusion

The Archaeological surveys in the delta of the Zambezi River to the mouth resulted in new archaeological data which indicates prolonged settlements in the delta and the importance of this area for human settlement in the past. The archaeological survey in the lower Zambezi to the mouth located 8 new archaeological sites (1 site of LSA, 1 site of LSA/EFC, 1 site of EFC, 1 site of EFC/LFC and 4 sites of LFC) and revisited the Chifumbazi type site. Our research did not cover the whole area, but was limited to the banks of the Zambezi and some open areas along the road. At the mouth of the Zambezi River, four new archaeological sites of the LFC were located (Tanque, Chiyuto, Pambane and Inhamiara Island). The sites were very disturbed because of flood protection measures. The four sites are small in area with no great diversity of material. The fifth site (Sena) of the EFC/LFC located in the lower Zambezi is considerably larger and includes a wide range of material, both local and exotic. This site is well-preserved; the material is still in its primary context. The sixth site (Lumbi) has the hunter-gatherer community and EFC occupations, located in the delta with a large amount and a wide variety of material which is well preserved in primary context. The same is likely to be the case in the seventh site (Nensa) but this is still to be confirmed. Finally the eighth site (Chinzenze) of the hunter-gatherer communities, which is a cave located in the lower Zambezi with reduced dimensions but with a considerable amount of material.

The area is very rich in terms of the presence of archaeological evidence of various periods of occupation. From the start assumed that there would be a presence of sites both with early hunter-gatherer and early farming community material, considering that the area is very rich in various natural resources. With the available archaeological data, we conclude that the occupation of the lower Zambezi begins at least from the LSA. The chronologies of the few archaeological sites located in the lower Zambezi and to the river mouth, cover a period of occupation ranging from hunter-gatherer communities to LFC with high diversity of archaeological materials. These archaeological sites have never been recorded before in this area.

The study was mostly focused on the lower Zambezi River, and some environmental factors such as the large alluvial plains with extensive marshlands in the area of the delta and mouth, as well as unsatisfactory roads, all contributed to low accessibility. It is possible that more archeological sites could have been located under better conditions, as is also suggested by the written sources reviewed in Chapter 4. I believe there are more sites to be located here and under better circumstances I hope they will be. But due to a very limited time frame combined with transportation difficulties, we were unable to cover the entire area of the inland and some parts of the river margins. These areas hold great archaeological potential, however, and should be examined in the future.

Conclusão

A prospecção arqueológica no delta do rio Zambeze até a foz resultou na descoberta de novos dados arqueológicos que indica uma ocupação prolongada nesta área e a sua importância para a ocupação humana no passado. As pesquisas arqueológicas no baixo Zambeze até a foz resultou na localização de 8 novas estações (1 Idade da Pedra Superior, 1 Idade da Pedra Superior/Idade do Ferro Inicial, 1 Idade do Ferro Inicial, 1 Idade do Ferro Inicial/Idade do Ferro Superior e 4 estações da Idade do Ferro Superior) e revisita uma estação representando uma área muito concorrida no passado. A nossa pesquisa não cobriu toda área, estava limitada nas margens do rio Zambeze e nas algumas zonas abertas ao longo da
Estrada. Na foz do rio Zambeze 4 novas estações arqueológicas da Idade do Ferro Superior foram localizadas (Tanque, Chiyuto, Pambane e a Ilha de Inhamiara). As 4 estações estavam muito perturbado devido o sistema de cultivo de canteiros para proteger as culturas da inundação. Essas estações são pequenas em termos da superfície que ocupam sem grande diversidade de material. A quinta estação (Sena) da Idade do Ferro Inferior e Idade do Ferro Superior localizada no baixo Zambeze é consideravelmente extensa com grande diversidade do material local e importado. Esta estação está bem preservada e o material ainda se encontra no seu contexto primário. A sexta estação (Lumbi) é da Idade da Pedra Superior e Idade do Ferro Inicial localizada no delta do Zambeze com grande quantidade e variedade do material que estão bem preservados no seu contexto primário. O mesmo parece ser o caso da sétima estação (Nensa), mas necessita de ser confirmado. Finalmente a oitava estação (Chinzenze) da Idade da Pedra Superior é uma gruta localizada no baixo Zambeze com dimensões reduzidas mas com uma quantidade considerável do material.

A área é bastante rica em termos da presença de evidências arqueológicas de vários períodos de ocupação. Esta área não estava desocupada como era previamente considerada. Desde o início, nós acreditávamos na presença de estações da ocupação dos caçadores recolectores e das primeiras comunidades agrícolas considerando que a área é bastante rica em vários recursos naturais. Com os dados arqueológicos disponíveis nós concluímos que a ocupação do baixo Zambeze começa desde os primeiros períodos da existência humana. As poucas estações arqueológicas localizadas no baixo Zambeze até a foz cobrem o período de ocupação que parte da Idade da Pedra Superior até a Idade do Ferro Superior com elevada diversidade do material. Esses achados foram primeiros a ser registados nesta área.

O estudo estava mais centrado no Baixo Zambeze e alguns factores, tais como, planícies de aluviões, extensos pântanos na área do delta e da foz e estradas deficientes contribuíram para a localização do número reduzido de estações arqueológicas localizadas mas com uma significativa variedade do material. Aqui deve haver mais estações arqueológicas e se eu tivesse recolhido mais amostras com estratégias mais detalhadas e centralizadas, poderia fazer alguma diferença, mas tive tempo limitado e associado a algumas dificuldades no transporte, o que levou a não cobrir toda área do interior e algumas partes das margens do rio. Essas áreas poderão conter importantes estações arqueológicas para serem examinadas e escavadas no futuro.
6. LUMBI EXCAVATION

In this chapter, I will present the excavation results from Lumbi. The purpose of the excavations was to determine the depth of the archaeological deposits and to examine site formation processes including soil and the stratigraphy. I tried to understand chronological aspects of human activities at the site and to evaluate the relationship between surfaces versus sub-surface densities of the archaeological record. The material excavated was crucial for the reconstruction of occupation, economy and resource use. The analyses of the data provided information on three main prehistoric phases: the hunter-gatherer communities, the EFC and also LFC. Find descriptions were based on which raw material was used for making the artefacts, and the process of use.

The artefacts from the site are very diverse. I found stone artefacts, iron instruments and slag, local and imported earthenware. A significant number of animal bones and some shells were excavated. Human skeletal remains were found inside a funerary pot. Most data consists of pottery which was obtained through surface collection and from excavation.

6.1. Site description

The location of the Lumbi site is described above in section 5.1.4. The name Lumbi designates a small river, which, in fact, passes c. 300 meters away, and a lagoon located 225 meters from the site. The Lumbi site covers an area of 50 ha with a dimension of 2 km of length, north-south direction along the slope of the right i.e. southern margin of the Zambezi River and 1 km of width, east to west.

The Lumbi site is positioned on a small terrace on the southern margins of the delta of Zambezi River, in an area of thick savanna forest with many different species of fauna and plants. The site is located at the limit of the seasonally flooded area. The dense forest provided and continues to provide raw materials for construction, cooking fires and medicines, in addition to providing fertile arable land for agriculture. The area has abundant permanent sweet water supplies from the Lumbi River and the lagoon retains water for almost the whole year. In the dry season, local residents use the flood plains for opening shallow wells to obtain water.

Rocky conglomerates from the river terrace supplied the raw-material for the production of lithic flakes and tools, mainly quartz, for the hunter-gatherer communities which dwelt in the Lumbi area. The presence of many resources in the Lumbi apparently encouraged the establishment of the first occupation of hunter-gatherer groups and later the EFC with a considerably bigger population/settlement size, which can be compared even with some recent large villages. The present day isolated families which live around the site are from low-lying zones prone to flooding.

6.1.1 Geology

The geological analyses were made by geologist Abdala Assane, from the Department of Geology, Eduardo Mondlane University, in July 2007. The stratigraphic descriptions are divided into three categories relating to the granulometry, texture and sedimentary structures.
The archaeological sites of Lumbi and Sena are located within a quaternary formation. All layers are sedimentary in origin and of current formations with the following units:

- Alluvial-sandy - siliceous sands with the small argillaceous fractions, yellowish red soils, light-coloured and permeable;
- Argillaceous-sandy alluvial soils;
- Below the previous unit a soil richer in clay minerals and iron oxide, resulting in red coloration and the soil carry characteristics from the gramineous dense stratum.

For stratigraphic analysis of excavated trenches, three sections were drawn using a leveling instrument. Section 1 is located in the north of the Lumbi site. Section 2 and 3 are located in the centre of the site. The deposits mainly comprise of light red-grey sands, conglomerates and clay, formed as alluvial deposits, similar to the deposits that are being formed along the Lumbi River today. The described sections have three different horizons. The uppermost horizon in section 2 had been eroded. The fluctuations of the thickness of the soil horizons are perhaps dependant on microclimatic and slope conditions in the area. The EFC evidence appeared in the two uppermost soil horizons with the highest concentration in the intermediate horizon. Some potsherds are found in the lowermost third horizon together with significant quantities of microlith flakes mixed with conglomerate.
6.1.3 Vegetation

A detailed description of the vegetation in the Lumbi area was made by biologist Ponda Nunes in 2007, and it is characterized primarily by a higher density of trees of tropical forests and a weak density of herbaceous plants. The environment at the site is distinguished by an elevated terrace and savanna environment with high trees and bush. In direct association to the site, there are many large marula trees (*Sclerocarya birrea*), also African Blackwood (*Dalbergia melanoxylon*) and different species of Acacias can be noted (Plate 6.1).

An identification of the species around the Lumbi site was made as part of this thesis with the assistance of biologist Ponda Nunes. Some species were identified in their natural habitat. However, most of the species were collected in the field, pressed and dried and then brought to the Herbarium in Department of Botany at the Eduardo Mondlane University.

The area consists of forests and savannas that are prone to waterlogging, species of the families *Poaceae* and *Palmae* are found in the transition areas. The wood forests possess little herbaceous stratum. The forest trees have morphological features characteristic of tropical areas with very hot summers; with small leaves, growth of waxen surfaces, and formation of hair for the reduction of the transpiration. It is significant to notice that in Lumbi the high predominance species are, apart from those mentioned above: *Kigelia africana*, *Acacia xanthophloea*, *Cardiogyne africana*, *Trichilla emethica*, *Hibiscus* sp., *Cordyla africana*, *Acacia rubusta*, *Xeroderis stuhlmannii*, *Cissus* sp., *Lannea* sp, *Tabetraemontana elegans*, *Vitex* sp. and *Ocna* sp. The species *Garcinia livingstonei*, *Strychnos madagascariensis*, *Pterocarpus angolensis*, *Ficus capeifolia*, *Catunaregam spinosa*, *Friesodielsia obovata*, *Trichoclados crinitus*, *Phyllanthus reticulatus*, *Cissampelas* sp., *Celosia* sp., *Erethia* sp., *Afzelia quanzensis* and *Indigofera* sp. present a moderate predominance and the last the
Plate 6.2. A surface survey, prior to the excavation. Recolha do material a superfície antes da escavação.

Plate 6.3. A stratigraphy of TP 1 with the funerary pot in situ prior to its removal. A estratigrafia da primeira sanja com o pote funerário in situ antes de ser removido.
This is typical scenery of a wooded pasture, characterized by alternations among species of the genus *Panicum*, *Eragrostis* and *Hyparrhenia* and of palm trees as *Hyphaene coriaceae* and *Phoenix reclinata*. The family *Poaceae* is represented by several species of which the species *Panicum schinzii*, *Panicum maximum*, *Hyparrhenia hirta* and *Eragrostis cilindrifolia* are dominant. The species *Eragrostis capensis*, *Brachiaria deflexa*, *Anthophora argantea*, species *Gardenia sp*, *Cucumis sp*, *Morus sp*, *Phylanthus sp*, *Acanthaceae*, *Flacourtiaceae* and *Asparagus sp* are of low predominance (Nunes, pers. communication). *Phragmites australis*, and *Eragrostis aethiopica* are also present at moderate numbers together with the species *Digitaria sanguinalis*, *Enneapogon cenchroides* and *Dactyloctenium geminatum*. In the family *Palmae* two species were found only occasionally, *Hyphaene coriacea* and *Phoenix reclinata* (Nunes, pers. communication). The study of the forest contributed to characterize the areas where the EFC sites are located, ecological features and landscape.

6.2. Excavation

The excavation and study strategy was discussed in Uppsala with Professor Paul Sinclair and implemented first at the site with the participation of Dr. Christian Isendahl in May 2006 after a traditional ceremony directed by chief Nyamula, who requested spiritual support from the ancestors for the excavations to ensure that no problems would arise in our work. Fieldwork included a surface sampling and prospection around the site conducted by Christian Isendahl and Hilário Madiquida. Preliminary examination of data recovered, illustrated an extensive archaeological site of 50 ha and great variety of archaeological material (Plate 6.2). The first two test pits (TP 1 and 2) were located on a gentle slope. Several small quartz flakes were recovered mixed with EFC ceramics in the same layer. As the lithic flakes appearing simultaneously with ceramics in the same level of occupation the site was prioritized, as this could indicate either social contacts between EFC and LSA groups through exchange and mutual coexistence, or that the farming communities used microlithic tools. But I was also cautious to the risk of mixing of material due to slope processes and erosion. However, the stratigraphies in the initial testpits revealed a well-defined stratigraphy and there was no indication of erosion and slope processes, why it was decided to expand excavations11.

In terms of archaeological data, the site of Lumbi presents a large number of flakes and a limited range of retouched microlithic artefacts, mainly of quartz but also some examples made from sandstone and obsidian. In addition, ceramics of the Matola Tradition of the EFC occur in association with animal bones, iron slag and instruments of iron and some marine shell in small amounts.

Based on the data found during my research and analyses, there are many points which need future attention. Possible residence structures which were not found during my excavations and finding such would be a priority in continued excavations. In addition, more osteological analyses and archaeobotanical analyses for the identification of the early domesticated plants on this significant archaeological site are needed.

Sampling for a phosphate analysis was made in the initial stage to identify areas of possible human activity. Human activities and occupation are known to be associated with increased phosphate content (Persson 1997). The samples were collected in a square measuring 300 x 300 meters extending west-east from the first test pit (TP 1). The samples were collected in a square measuring 300 x 300 meters extending east-west from the first test pit (TP 1). A second sampling was carried out measuring an area of 2 x 2 km. The samples

11 A preliminary report of this study was presented at the SAFA conference in Calgary, Canada in June 2006 and in the African Archaeology Network Meeting in Kampala, October 2006 (Madiquida 2006).
were analysed in Uppsala using a Reflectoquant. Samples were diluted in acid and then a phosphomolybdenum blue teststrip was immersed in the solution. The Reflectoquant gives a photometric reading of the intensity of colour (Persson 1997). The results are presented in Fig. 6.4. High concentration values were found at a distance of 200 meters east from TP 1, which may indicate the existence of a settlement area, or other human activities, which has not yet been located during our excavations.

Several targets were defined for the excavation. The primary target was to determine how deep the deposits were and whether they would yield datable materials. The second target was to define human activities taking place on the site. The third target was to provide methodological insights to be used for future archaeological research in the region. Fourthly, Lumbi provided the opportunity to study the transition between LSA and EFC and the formation of early EFC in the region. Finally, a fifth target was to achieve some understanding of resource use of this 1st millennium site.

The excavation was initiated after cleaning the grass and all surface finds within the excavation area were collected and mapped according to which the square they were found in (plate 6.2). The excavation area is located in a slope with declination from south to north. Testpits were laid out in transect roughly in a north–south and an east–west direction (Figs 6.2–6.6). The size of the excavation area was limited to 150 x 150 metres from the first test pit (TP 1). This is where the surface evidence of EFC pottery was found with a heap of potsherds found on the surface. The ambition was to find pottery also in a stratigraphic context. Overall 28 test pits were excavated. Five test pits had a dimension 5 x 5 m, two test pits measured 2 x 2 m metres and one test pit was opened up to 3 x 3 m metres. In addition, twenty test pits with the dimension of 1 x 1 m metres were excavated totaling 162 m².

![Fig. 6.2. A sketch map over the excavation at the Lumbi site showing the location of the test pits. Esboço do mapa da escavação da estação de Lumbi mostrando a localização das sanjas.](image-url)
Fig. 6.3. A sketch map of the Lumbi site showing the location of the test pits drawn by Sansão Nhantumbo, UEM. Esboço do mapa da estação de Lumbi mostrando a localização das sanjas desenhado por Sansão Nhantumbo, UEM.

Fig. 6.4. Surface phosphate concentration as possible indicator of past human activity in the 2x2 km square. A concentração do fosfato a superfície como indicador da actividade humana em área 2x2 km.
Fig. 6.5. Map of the Lumbi site showing relief contours and the location of the test pits. O mapa da curva de nível da estação de Lumbi mostrando a localização das sanjas.

Fig. 6.6. A digital elevation model made in Surfer 12 over the Lumbi site, showing the location of the test pits and phosphate sampling. O modelo topográfico digital da estação de Lumbi, elaborado com Surfer 12, mostrando a localização das sanjas e amostras de fosfato.
The excavation was discontinued after reaching sterile soils, where there were no archaeological artifacts and depths ranged from 80 cm to 150 cm. The excavation covered an area approximately 0.016% of the estimated extension of the site. There is great potential for a continuation with a large-scale archaeological investigation in the future.

The sediments in the elevated terrace consisted of well-drained alluvial soils with deposition of conglomerate. For a better understanding of the general soil stratigraphy a stratigraphic analysis of three sections was made down to 1.60 metres depth as has been discussed above (Fig. 6.1.). During excavation, the stratigraphy was defined on the basis of soil colour and lithology. Analysis of soil colour was performed in the first eight testpits. A comparative study of soil colour and texture assisted the overall analysis of site stratigraphy.

The lithology is defined by three layers and the stratigraphies of testpit 1–8 are shown in the Appendix (Fig. 1a–b). The basal layer is a yellowish red (5YR 5/8) fine sand with a gradually increasing clay content towards the base. This has a gradual transition to a reddish brown (5YR 5/4) fine sand layer. The uppermost layer also has a gradual transition and consists of a very dark grey (5YR 3/1) layer of fine sand. These three layers were represented in all testpits excavated. Only in TP 4 and TP 8 were there intermediate layers of very dark grey fine sand which should probably be interpreted as anthropogenically modified soils (Fig. 6.8.). However, these layers could only be discerned in the stratigraphy and were not visible while excavating. Features were not identified; however in TP 1 a pit extends from the uppermost layer explains the amount of surface sherds found in this area. A funerary pot containing human bones was also excavated in trench 1, at 100 cm depth with no visible feature around it. As stratigraphic visibility was low, it was decided to use artificial 10 cm spits as a basis of excavation and as units of recording the finds.

Find registration was done by square and every 10 cm layer. All sediments were sieved through a 5 mm mesh and occasionally with 1 mm. The excavation resulted in retrieval of 16,899 individual finds of which 161 were collected on the surface and 12,786 were collected in the testpits. The find categories included pottery, small quartz flakes, cores, metal objects, bones, iron slag and shells of the land snail (Achatina fulica) and brown mussel (Perna perna). Detailed find tables are presented in the Appendix (Table 1). In this chapter a summary of the finds are presented.

Finds were usually found down to 120-130 cm but not all testpits were dug to the same depth. The vertical distribution of finds appeared as follows: surface 161 finds (3.94%), 0–10 cm 1,224 finds (7.24%), 10–20 cm 1,414 finds (8.37%), 20–30 cm 1,743 finds (10.31%), 30–40 cm 3,122 finds (18.47%), 40–50 cm 2,784 finds (16.47%), 50–60 cm 2,725 finds (16.13%), 60–70 cm 1,421 finds (8.41%), 70–80 cm 529 finds (3.13%), 80–90 cm 311 finds (1.84%), 90–100 cm 326 finds (1.93%), 100–110 cm 394 finds (2.33%), 110–120 cm 216 finds (1.28%), 120–130 cm 24 finds (0.14%). Generally, ceramics were encountered from 0 to 70 cm depth and lithics from 40–120 cm. Bone and iron slag were found in the same layers as ceramics down to 70 cm (Fig. 6.7). Thus in many testpits there was a presence of lithics and ceramics together between 40 and 70 cm depth. In TP 2 and 5 ceramics were encountered all the way down to 130 and 120 cm depth. In both these cases, testpits were located in a steeper slope – thus it is possible here that ceramics may have been re-deposited in the lower levels due to slope processes (Fig. 6.6). There is a clear stratigraphic separation of finds in other testpits suggesting that secondary mixing due to slope process is specific to some areas only. As will be discussed below, 14C dates also suggest some degree of mixing in TP 3. However, the distribution of the finds in the stratigraphic layers corresponds in a general way to the settlement process.
Fig 6.7a. Find frequency by test pit (1‒4) and level from the Lumbi site. A frequência achados por sanja (1‒8) e nível da estação de Lumbi
Fig 6.7b. Find frequency by test pit (5–8) and level from the Lumbi site. A frequência achados por sanja (1–8) e nível da estação de Lumbi.
6.3. Chronology

Samples for dating were selected from well-defined cultural layers and in close proximity to archaeological artifacts of interest. Dating was carried out on charcoal samples and submitted to the Radiocarbon laboratory in Uppsala. The dates were calibrated using OxCal 4.2 (Bronk Ramsey 2013) and the southern atmospheric curve (SHCal13, Hogg et al. 2009). Though there may be substantial movement of soils in this region and dating on the basis of lithology therefore is complex (see discussion in Kohtamäki 2014, 106) the sample ages presented here are assumed to be representative dates of the stratigraphical layers and associated archaeological finds.

A layer in testpit 4 (20–30 cm depth) associated with EFC ceramics was dated to 443–632 AD (95.4 %). A lower layer in the same testpit (90–100 cm depth) associated with LSA lithics was dated to 976–811 BC (95.4 %) (Table 6.1, Fig. 6.9). Samples from testpit 6 were also selected for dating. A layer associated with a substantial amount of microlithics (70–80 cm depth) was dated to 48 BC–114 AD (95.4%). Another charcoal sample from a layer just above this, containing lithics together with a small amount of ceramics (60–70 cm depth), gave the date 54–235 AD (95.4%). This date may also date the transition of material culture use/production at the site, as lithics do not occur above 50–60 cm in this testpits. An additional charcoal sample was dated from testpit 3 at 50–60 cm depth, a layer that contains both lithics and ceramics. Also in this layer a transition between material culture use/production is suggested as lithics are few above this level. This layer was, however, dated to 728–381 BC (95.4%) which does suggest mixing of material, bringing ceramics down in the profile in this testpits.

The dates show that LSA communities were living in Lumbi before the Bantu-speaking peoples settled in the area. Though there is a degree of mixing of lithics and ceramics material, it is uncertain whether they are contemporary or the result of mixing. Shifts in material culture use/production can, however, be seen at 50–60 cm depth in most profiles (see Fig. 6.7). Though there is still very few dates available, the $^{14}$C charcoal date from testpit 6 places this transition tentatively at 54–235 AD.
<table>
<thead>
<tr>
<th>Lab number</th>
<th>Sample</th>
<th>δ¹³C‰ VPDB</th>
<th>¹⁴C age BP</th>
<th>¹⁴C age BC-AD (CAL) 68.2%</th>
<th>¹⁴C age BC-AD (CAL) 95.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ua-40067</td>
<td>TP4 20-30 cm</td>
<td>-26.1</td>
<td>1,558±30</td>
<td>526(68.2%) 596 AD</td>
<td>443(1.2%)451 AD 466(94.2%)632 AD</td>
</tr>
<tr>
<td>Ua-40068</td>
<td>TP4 90-100 cm</td>
<td>-25.6</td>
<td>2,784±30</td>
<td>914(68.2%)836 BC</td>
<td>976(95.4%)811BC</td>
</tr>
<tr>
<td>Ua-40069</td>
<td>TP3 50-60 cm</td>
<td>-26.4</td>
<td>2,409±30</td>
<td>487(68.2%)394BC</td>
<td>728(3.7%)694 BC 542(91.7%)381BC</td>
</tr>
<tr>
<td>Ua-40070</td>
<td>TP6 60-70 cm</td>
<td>-25.7</td>
<td>1,892±30</td>
<td>126(68.2%)206 AD</td>
<td>78(4.8%)100 AD 110(90.6%)239AD</td>
</tr>
<tr>
<td>Ua-40071</td>
<td>TP6 70-80 cm</td>
<td>-26.9</td>
<td>1,999±30</td>
<td>42(14.1%)20 BC 18(54.1%)74 AD</td>
<td>48 BC (95.4%)114 AD</td>
</tr>
</tbody>
</table>

Table 6.1. A calibration of Lumbi ¹⁴C dates from test pits 3, 4 and 6 using OxCal 4.2 (Bronk Ramsey 2009). A calibragem das datas ¹⁴C de Lumbi das sanjas 4, 3e 6 da estação de Lumbi usando OxCal 4.2 (Bronk Ramsey 2009).

Fig. 6.9. A chart showing the result of the ¹⁴C dates in Lumbi. O diagrama mostrando o resultado da datação com ¹⁴C de Lumbi. Michel will do

6.4. Data description

Lumbi contains different kind of archaeological source materials which generally can be divided to the hunter-gatherer communities and the EFC. The present description is divided into five groups: small quartz flakes and debitage, pottery, iron, bones and shells.
6.4.1. Lithics

The evidence of LSA communities found in Lumbi site is characterized by small quartz flakes of different sizes and shape. The major part of the small quartz flakes were found in the lower layers, mainly from 80 to 100 cm deep and in some cases down to 130 cm (Fig 6.7). The small flakes of the hunter-gatherer communities collected on Lumbi site, in lower Zambezi, are to 99% produced from quartz or quartzite. Other materials represented were rhyolite, obsidian and granite (Table 6.3). Such material is available in the conglomerate, which is a set of different stones that has been exposed through erosion, but also as pebbles in the rivers. The raw material for manufacture of small quartz flakes was obtained directly from the conglomerate deposited by the Zambezi River on its right margins.

Carefully analysed, this data can be compared with some fragments and flakes found in the sites of Nampula (Riane 1, Nakwaho 1, Chakota and Muse 1) dated around 5,000 to 1,000 BC (Adamowicz 1987; Sinclair 1991). Between 5,000 to 1,000 BC, southern Africa was populated by Khoisan speakers (Adamowicz 1987, Sinclair et al. 1993; but see also discussion in Chapter 1). It seems all the lithic production of quartz from the hunter-gatherer communities in Lumbi is part of the set of lithic industries in southern Africa (Madiquida 2006).

Quartz is a common raw material for making tools during the Stone Age and it has long been inadequately investigated in archaeological research (Knutsson 1998a). The value of quartz as raw material for tools has, nonetheless, been shown by the finds of and descriptions of large numbers of prehistoric quartz assemblages from all over the world, spanning from the first tool users up to present day.

The way quartz fracture when knapped makes the analysis of the flakes and tools very complex. It is true that the increased frequency of small artefacts produced from quartz in the LSA communities illustrate that prehistoric man appreciated the effectiveness of this raw material. But as a source material, quartz is also interesting from the perspective of LSA communities as it can be found with great frequency, being the second most abundant mineral on earth (approximately 12% vol.).

Recent developments within lithic analysis in Scandinavia (Knutsson 1988a; Callahan et al. 1992; Rankama 2002, pp. 79–108) have demonstrated, by reference to research in material science, that quartz naturally fractures during flaking in a structured and steered process through brittle solids, which disintegrate when subjected to mechanical stress. Concomitantly, when the quartz is broken with a stone hammer – fragments with formal tool qualities are obtained. These may then have been selected by prehistoric tool-makers- and users. The principle is the same for natural flaking as for human directed flaking; the quartz is shattered, it breaks up and splinters in smaller pieces and some of these have good-quality edges which can be used as tools without secondary treatment. However, a functional analysis of a few assemblages using the multivariate micro-wear approach developed by Knutsson (1988b) has shown that unmodified flakes seem to be the most common type in quartz assemblages.

Here, I will present an analysis of the quartz fragments specifically. The study was aimed at explaining the use and production of the quartz flakes or flake fragments, but also whether artefact forms were modified after the flake production by prehistoric communities.
<table>
<thead>
<tr>
<th>A-C. Fragments</th>
<th>D-E. Fragments continued</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Middle fragment</td>
<td>D1. Cone fragment</td>
</tr>
<tr>
<td>A2. Side fragment</td>
<td>D2. Middle fragment with remaining platform (middle fragment)</td>
</tr>
<tr>
<td>A3. Triangular distal end fragment of middle fragment</td>
<td>D3-D4 Distal end chips</td>
</tr>
<tr>
<td>A4. Middle fragment minus triangular distal end fragment</td>
<td>D5. Side fragment (flake with only a small oblique side fragment missing)</td>
</tr>
<tr>
<td>A5. Proximal end of side fragment</td>
<td>E1. Secondary high-speed fragment</td>
</tr>
<tr>
<td>A7. Distal end of side fragment</td>
<td></td>
</tr>
<tr>
<td>B1. Proximal end of split flake</td>
<td>F. Whole flake</td>
</tr>
<tr>
<td>B2. Medial part of split flake</td>
<td>F1. Proximal end of whole flake</td>
</tr>
<tr>
<td>B3. Distal end of split flake</td>
<td>F2. Medial part of whole flake</td>
</tr>
<tr>
<td>B4. Side chip</td>
<td>F3. Distal end of whole flake</td>
</tr>
<tr>
<td>B5. Split flake minus side chip</td>
<td></td>
</tr>
<tr>
<td>B6. Split flake</td>
<td>G. Bipolar flake (whole bipolar flake = F)</td>
</tr>
<tr>
<td>C1. Proximal end of middle fragment</td>
<td>G1. Bipolar flake with an oblique side fragment missing</td>
</tr>
<tr>
<td>C2. Medial part of middle fragment</td>
<td>G2. Bipolar side fragment/chip</td>
</tr>
<tr>
<td>C3. Distal end of middle fragment</td>
<td></td>
</tr>
</tbody>
</table>

6.4.1.1. Quartz fracture pattern analysis

Quartz is a mineral without cleavage, presenting a so-called conchoidal fracture – a quality that has been much used as a raw material in the Stone Age for the production of lithic artefacts, of which evidence may be found throughout the world. Despite this preference, quartz disintegrates and fragments more easily in small fragments during the flaking process than other minerals of volcanic or extrusive origin. It is therefore a difficult material to work with for a knapper, and it could also be difficult to interpret archaeologically.

Knutsson (1998a, p. 84), however, argues that the fractured quartz flakes should not be regarded automatically and simply as refuse, but rather as the starting-point of a meaningful production, categorization and utilization. Prehistoric humans did not necessarily view quartz as lacking these functional qualities. On the contrary, it is likely that the variation of form and functionality inherent in the fragments drew the attention of prehistoric human and led them to make use of these possibilities in a creative way.

It is necessary to note that there are many factors which contribute to the variability of the fragmentation of the quartz core that may be higher or lower in influence during the reduction and production of flakes. The factors which can be considered as significant are the high frequency of splitting, the relative thickness of produced flake, and the weight of the hammer and individual circumstances of a knapper (applied force, speed of the hammer and the right point of impact).
Fig. 6.10. Illustration of production of types of flakes and flake fragments (From Rankama 2002). Ilustração de lascas e fragmentos de lascas.

In a systematic study of quartz flaking, using three techniques – bipolar-on-anvil, platform-on-anvil and freehand platform – both Callahan (1987) and Knutsson (1988b) came to the conclusion that the fracture theories used to explain the use-wear traces were crucial also for the understanding of the fragmentation of quartz during knapping. However, the efficiency and variety of small tools produced from quartz may lead us to suggest that perhaps prehistoric humans had used some strategies of flaking calculating duly the points of impact of a hammer, the weight of the hammer and speed, hence avoiding the fragmentation and splintering related to the three techniques mentioned above.

During the study of the fracture mechanisms on the Lumbi lithics, it was possible to identify 7 different types of shattered flakes (A=7 flakes, B=6 flakes, C=3 flakes, D=5 flakes, E=3 flakes, F=3 flakes and G=2 flakes) (after Callahan et al. 1992; Knutsson 1998c; Rankama 2002). These 7 categories originate in 29 distinct and identifiable flake fragments that are produced regardless of the kind of tool that would be produced (Table 6.2, Fig. 6.10).

It is important in this distribution of flakes and flake fragments to identify which part of the core the splinter comes from. Even if the core is completely fragmented, the pieces are identifiable and can thus be associated to the core. It seems that the prehistoric humans knew perfectly the characteristics of quartz; the core was carefully prepared in order to produce defined flakes and to extract a determined flake to produce a particular tool, bearing in mind that the flakes after being produced were not modified secondarily (Knutsson 1988b). The study developed by Knutsson was not limited exclusively to the quartz, owing to its easy fragmentation, but also included two other minerals of volcanic origin – obsidian and flint –
material with the same crystalline characteristics and also widely used in the past as raw materials for the production of microlithic tools. The first analysis (Knutsson 1988a) using fracture pattern was done on flint artefacts, and later on the method was extended to study quartz assemblages.

My analysis of the flakes from Lumbi was carried out with the assistance of Professor Knutsson. The Lumbi flakes were divided in seven categories (A‒G) (Table 6.1.) based on fracture mechanisms, in turn related to flake production method as defined by Callahan et al. 1992 (see also Knutsson 1998c; Rankama 2002) and as explained above. These flakes were consecutively subdivided into up to seven subcategories based on shape, size, platform and fracture (Table 6.3, Plate 6.4). In general, whole flakes (F) dominate over flake fragments. The whole flakes detachment are not secondarily modified or retouched. Categories (A‒E) are fragmented pieces produced from the debitage process, but they can also have been used as tools. Flake fragments become relatively more common in the upper levels, though this is probably a matter of representation as total numbers here are low (Fig. 6.11).

The flakes from Lumbi ranged in size from less than 1 cm to 10–11 cm. Most flakes were in the size range of 1–2 to 2–3 cm and 1–2 cm in width. It was observed by Knutsson that the Lumbi flakes are larger than those from other sites in Mozambique, as is also indicated by the size of the cores. During the flakes analyses in Uppsala, Professor Knutsson also compared the Lumbi material with quartz flakes from Kuumbi Cave (Zanzibar) and a significant difference in terms of size was noted. The quartz flakes of Kuumbi were very small, and had no secondary modifications, which lead Knutsson (2007, pp. 12–14) to propose that these fine flakes were inserted in the hafts that served as edgetools. While the quartz flakes of Lumbi were a little larger, they could have been used without hafts. Three flakes were identified as having retouch. The presence of retouch indicates that they might have been used as microlithic tools.

As the application of flakes as edge-tools in the hafts makes them easier to use, it is likely the process was also applied in Lumbi. To reduce the impact of fragmentation, according to fracture patterns of quartz, some soft objects like an antler hammer were used to produce flakes with particular features (Knutsson 1988b). But evidence of fragmentation and production of very thin flakes were found also in Lumbi.

Undoubtedly, the analyses of characteristics of quartz flakes from Lumbi demonstrate that they were produced locally, using local raw materials, though there are some flakes produced from other raw-material. There are similarities with the material of Kuumbi Cave, (triangular splinters) but the appearance of flakes with platform remnants at Lumbi shows different production methods were used. In Kuumbi Cave a bipolar-on-anvil method was used in order to reduce the quartz core, while this does not seem to be the case in Lumbi. Many of the flake fragments are very small and difficult to hold if used as tools by themselves. With this study it is made clear that not all fragments found in the excavations were used as tools. As discussed above, as fragmentation is high during quartz core reduction, many flakes were probably abandoned as waste fragments during the process of its production.

As only few fragments have secondary modification, the study becomes more complicated. It makes it difficult to distinguish between a flake used as a tool and a simple waste material that is the result of fragmentation during knapping. For this reason, the quartz fracture pattern analysis must be complemented with the micro-wear analysis of the artefacts (Knutsson 1988–c; Callahan et al. 1992; Rankama 2002) in order to recognize which flakes were actually used as tools. I hope to complement this study with a micro-wear analysis in the future.
Table 6.3. Flake classification from the Lumbi site. A classificação de lascas da estação de Lumbi.

<table>
<thead>
<tr>
<th>Flake type/Level</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>70-80</th>
<th>80-90</th>
<th>90-100</th>
<th>100-110</th>
<th>110-120</th>
<th>120-130</th>
<th>TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>14</td>
<td>8</td>
<td>12</td>
<td>24</td>
<td>8</td>
<td>14</td>
<td>96</td>
<td>110</td>
<td>82</td>
</tr>
<tr>
<td>A2</td>
<td>1</td>
<td></td>
<td>4</td>
<td></td>
<td>2</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>2</td>
<td>22</td>
<td>26</td>
<td>23</td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td></td>
<td>13</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>A4</td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>A5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>31</td>
<td>23</td>
<td>61</td>
<td>20</td>
<td>13</td>
<td>5</td>
<td>171</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A7</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>B3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>B4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>B5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B6</td>
<td>2</td>
<td>1</td>
<td></td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td></td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>C3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>D1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>D2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>D3-D4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>D6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>E2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>44</td>
<td>88</td>
<td>70</td>
<td>120</td>
<td>90</td>
<td>35</td>
<td></td>
<td>468</td>
</tr>
<tr>
<td>F1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOT</td>
<td>2</td>
<td>7</td>
<td>24</td>
<td>37</td>
<td>79</td>
<td>167</td>
<td>137</td>
<td>307</td>
<td>269</td>
<td>133</td>
<td>18</td>
<td>1180</td>
</tr>
</tbody>
</table>
Plate 6.4. Flakes of different sizes and shapes, mainly triangular, from Lumbi site. As lascas de diferentes tamanhos e forma, principalmente triangular, da estação de Lumbi.

Table 6.4. A small flakes raw-materials frequency from Lumbi site. A frequência da matéria-prima das pequenas lascas da estação de Lumbi.

<table>
<thead>
<tr>
<th>Number/</th>
<th>rawmaterial</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
<th>80-90</th>
<th>90-100</th>
<th>100-110</th>
<th>110-120</th>
<th>120-130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartz</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>29</td>
<td>346</td>
<td>323</td>
<td>112</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Quartzite</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>14</td>
<td>27</td>
<td>37</td>
<td>82</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhyolite</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>13</td>
<td>9</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obsidian</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granite</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.4.2. Pottery

Most of the potsherds in Lumbi were found in the interval ranging from 0 cm to 50–60 cm depth (Fig 6.7). From 60 cm downwards there were still appearances of some fragments but in smaller numbers. TP 2 and 5 also had pottery in the lower levels but this is interpreted as secondary mixing, as discussed above. Ceramic fragments associated with the Matola tradition (Sinclair 1978, 1985; Morais 1988) are the most abundant, representing the presence of an extended village settlement with a substantial number of people of the EFC. During the archaeological excavations in Lumbi, no archaeological evidence of long-distance trade associated with the EFC was recovered. Techniques used in the decorative motifs of some ceramics (shell impression) and the presence of marine shells, illustrates a connection with the coast possibly for the exploitation of the shellfish resources and fishing.

All of the pottery from Lumbi is of the Chifumbazi Complex, dating typologically from the end of the first millennium BC to the earlier centuries of the first millennium AD (Table 6.4, Plate 6.11). Huffman (2007) acknowledge that the iron using communities could be subdivided into three main periods: 1) Early Iron Age (200–900 AD); 2) Middle Iron Age (900–1300 AD) and 3) Late Iron Age (1300–1840) and the date set for the Chifumbazi Complex from 200 AD to 900 AD. For Adamowicz (1985, pp. 4–5, 1987, p. 77) the EFC in Mozambique were dated from 295±110 to 1010±215, which means, between the 3rd and 13th centuries. An earlier date, c. 100–300 BC, in association with this pottery has been presented from southern Mozambique (Sinclair et al. 1993). New dates from the south of Mozambique, based on direct dating of pottery, also indicate the possibility of first millennium BC dates for EFC pottery (Kohtamäki 2014, p. 108).

12,947 sherds of pottery were collected in the excavation, many of them diagnostic. The sherds are of three colours: very dark grey (5YR3/1), dark reddish brown (5YR3/2) and yellowish red (5YR4/6) with different finishings on the surface – plain, undulated and
decorated. Some of the potsherds are tempered with groundup old sherds (chamotte). Many sherds had no tempering which demonstrates the high quality of the clay used as raw-material. No sherds tempered with sand or shells were found.

The pottery from the site of Lumbi is all “local” earthenwares but the pots, and decorative motifs are varied but exclusively associated with the EFC and the Chifumbazi complex (Robinson 1976; Phillipson 1977). Most of the vessels are bowls (Fig, 6.10), probably kitchen pots and also some large pots for storing water or cereals. In addition, a well preserved undecorated pot containing human bones was excavated in TP 1 (100 cm depth (Plate 6.3).

Archaeological evidence found in the levels of Lumbi site is characteristic of Kwale/Matola/Silver Leaves ceramics. They all belong to the Urewe tradition and the Kwale branch of ceramics that can be found along the coast and also south of the Limpopo (Huffman 2007). The vessels are mainly open bowls, hemispherical bowls and necked pots with in-turned or up-turned rims. Common decorative motifs are fluting, lines of punctates or incisions, cross-hatching, and thickened rims stood out of the assemblages as also blocks of perpendicular lines and space motifs (Huffman 2007; Fleisher and Wynne-Jones 2011; Pawlowicz 2013, Kohtamäki 2014, p. 89).

Huffman (2007), based on pottery from South Africa, subdivides the Matola (though he prefers Silver Leaves as a type site name) into two facies; the early Silver Leaves/Matola discussed above and a later Mzonjani facies 6th–10th centuries AD, in Mozambique previously referred to as Lydenburg (Morais 1988). The Mzonjani facies, according to Huffman (2007), is distinguished by line incisions and cross-hatching motifs and also everted rims and punctates on the rim. Felix Chami (1998) in turn, who has worked with pottery from the Tanzanian coast, identified three phases within EIW (EFC) without distinguishing big differences between them: the (1) first phase he identifies as Limbo, dated from the last centuries BC to the third century AD, the (2) second phase is Kwale from the third to the fifth centuries AD, and the last (3) phase he calls Mwangia from fifth to the sixth century AD (Chami 1998).

Focusing on the Lumbi pottery, my analyses is based on 1) vessel parts and shape category (categories 1-7) and 2) decoration motifs. But also location of decoration, rimshape and decoration of rims was considered (Table 6.4). The shape categories used are: 1) unknown form, 2) restricted jar or bowl, 3) restricted jar or bowl , 4) independent restricted jar, 5) dependent restricted jar, 6) constricted bowl, and 7) unrestricted bowl (after Sinclair 1987, p. 165). There is some variation in represented shape categories over time. Shape category 1 that is sherds from vessels with unknown form dominates the lower levels, even though it should be remembered that sample size here is very small (Fig 6.11). From 50–60 cm depth, category 7 unrestricted bowls becomes dominant with a high representation also of category 2 restricted jar or bowl and independent jar. In the uppermost layer of 0–10 cm, category 1 becomes more common again.

The result of the Lumbi pottery analyses demonstrates a great variation in shape and decoration (Fig 6.12–6.13). As mentioned above, overall bowls are most common together with jars from 50–60 cm depth. The decorative motifs consist of fluted rims, grooved necks, in some cases on the shoulders, comb- and shell-stamped, dentate, punctate and punctured, band of incisions of horizontal parallel lines, band of oblique parallel broad lines, double horizontal parallel lines, single lines, zig-zag lines, crisscross and cross-hatching, aplique and burnished with graphite. The rim shapes from Lumbi are varied and our analysis distinguished rounded, beveled, flattened, fluted, tapered and thickened rims. The hatched or grooved bands are placed largely on the shoulder of pots or just below the shoulder on bowls.
Hatched decoration is found between horizontal grooved or dentate lines, with the hatches almost always in a diagonal pattern; grooved bands are generally parallel and horizontal (compare with Fleisher and Wynne-Jones 2011).

Typologically compared, the Lumbi pottery fits well to the first Limbo phase and also the second Kwale phase of Chami’s classification in terms of pottery shape (necked pots and bowls with in-turned and up-turned rims) and decorative motifs (zigzag line of incision, comb-stamping and punctations vertical and slightly oblique bolded incisions)

The Lumbi pottery types are common in this region and can be said to be characteristic. Sites were similar pottery has been on the north is the Malessane (Zambeze) (dos Santos Rodrigues 2006) and Nkope (south-east of Malawi) (Robinson 1976) sites and also Mavita (Manica) on the west (Morais 1978) (see also extensive review of pottery traditions in northern Mozambique and Tanzania by Pawlowicz 2013). The hemispheric and open bowls and necked pots are common in these sites, but there is also considerable variation in the pottery shape. The shape of rims and decorations, however, do not present significant variations: characteristic rim forms are in-turned or up-turned rims, thickened and flat rims, thickened and rounded with a profile of the lips decorated in bevelling, grooving or channelling (Robinson 1976, p. 167; Adamowicz 1987, p. 77).
Table 6.5. Potsherds decorative motifs by category from the Lumbi site. Motivos decorativos dos cacos por categoria da estação de Lumbi.

<table>
<thead>
<tr>
<th>Decorative motifs/Category</th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 5</th>
<th>Cat. 6</th>
<th>Cat. 7</th>
<th>TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nº of Sherds by category</td>
<td>365</td>
<td>191</td>
<td>17</td>
<td>210</td>
<td>22</td>
<td>156</td>
<td>535</td>
<td>1496</td>
</tr>
<tr>
<td>Plain</td>
<td>294</td>
<td>47</td>
<td>115</td>
<td>6</td>
<td>66</td>
<td>220</td>
<td>748</td>
<td></td>
</tr>
<tr>
<td>Incised w/parallel oblique lines</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Comb stamped and incised w/parallel lines</td>
<td>13</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>25</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised with single lines</td>
<td>1</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Fluted</td>
<td>13</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>269</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td>Comb stamped</td>
<td>4</td>
<td>6</td>
<td>11</td>
<td>1</td>
<td>15</td>
<td>2</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Channeled</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Comb stamped and punctate</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Scared</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and incised w/zigzag lines</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Bevelled</td>
<td>33</td>
<td>1</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Incised with parallel lines</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Grooved</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Punctate</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Crisscross incised</td>
<td>2</td>
<td>18</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Crosshatching incised</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped</td>
<td>1</td>
<td>28</td>
<td>3</td>
<td>19</td>
<td>1</td>
<td>12</td>
<td>1</td>
<td>65</td>
</tr>
<tr>
<td>Fine line incised</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Incised w/single BLI</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and grooved</td>
<td>2</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and incised w/two lines</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Incised w/crisscross and zigzag lines</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Grooved and punctate</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Incised with zig-zag lines</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised w/parallel lines and Bevelled</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Channeled and Incised w/BLI</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised and channelled</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised with parallel lines, punctured and grooved</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Crisscross incised bevelled and grooved</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Shell stamped</td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Punctured</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and incised with double lines</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fluted and applique</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Fluted and painted with graphite</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Applique</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Crisscross incised and punctate</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Incised w/parallel BLI and grooved</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Thickened and bevelled</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Incised with oblique and horizontal lines</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Comb stamped, bevelled and incised w/zigzag BLI</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Comb stamped, incised w/zigzag line and applique</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and incised w/BLI</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and grooved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>grooved and punctured</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Dentate stamped and bevelled</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>365</td>
<td>191</td>
<td>17</td>
<td>210</td>
<td>22</td>
<td>156</td>
<td>535</td>
<td>1496</td>
</tr>
</tbody>
</table>
Table 6.6. Potsherd shape categories from the Lumbi site. Cacos por categorías da estação de Lumbi.

<table>
<thead>
<tr>
<th>cat.</th>
<th>Shape</th>
<th>form</th>
<th>vessel part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>unknown</td>
<td>unknown</td>
<td>Rim; Body/Base; Body; Base</td>
</tr>
<tr>
<td>2</td>
<td>jar/bowl</td>
<td>restricted vessel</td>
<td>Rim/Neck; Neck</td>
</tr>
<tr>
<td>3</td>
<td>jar/bowl</td>
<td>restricted vessel</td>
<td>Shoulder/Body/Base; Shoulder/Body; Shoulder</td>
</tr>
<tr>
<td>4</td>
<td>jar</td>
<td>independent restricted vessel</td>
<td>Rim/Neck/Shoulder/Body/Base; Rim/Neck/Shoulder/Body; Neck/Shoulder/B</td>
</tr>
<tr>
<td>5</td>
<td>jar</td>
<td>dependent restricted vessel</td>
<td>Rim/Neck/Body/Base; Rim/Neck/Body; Neck/Body/</td>
</tr>
<tr>
<td>6</td>
<td>Constricted bowl</td>
<td>restricted vessel with simple contour</td>
<td>Rim/Shoulder/Body/Base; Rim/Shoulder/Body/; Rim/Shoulder</td>
</tr>
<tr>
<td>7</td>
<td>bowl</td>
<td>Unrestricted vessel with simple contour</td>
<td>Rim/Body/Base; Rim/Body</td>
</tr>
</tbody>
</table>

Fig. 6.12a-b. The decorative motifs of the pottery from the Lumbi site. Os motivos decorativos da cerâmica da estação de Lumbi
17. Circular applique
18. Band of oblique broad lines incision bordered on the top by parallel horizontal lines
19. Oblique comb stamping bordered on the top by parallel horizontal lines
20. Band of oblique dentate

21. Groove and broad zig-zag incision bellow
22. Large oval punctate bordered above by horizontal line
23. Straw scraping
24. Band of oval punctate and dentate

25. Band of oblique BLI bordered on the top by groove, horizontal line of spherical punctate on the middle and oblique groove below
26. Square dentate stamping and triangle punctate
27. Scraping
28. Band of oblique broad line incision bordered on the top by horizontal lines and groove

29. Band of oblique BLI bordered on the top by horizontal line and parallel lines bellow
30. Cross-hatching
31. Band of oblique BLI and triangle punctate
32. Broad line crosshatching

33. Broad lines crisscross hatching
34. Large Crosshatching
35. Band of oblique scrape of the straw impression bordered above by horizontal line and broad zig-zag incision below
36. Band of oblique BLI and horizontal parallel lines

37. Large Square dentate bordered on the top by broad wavy lines and parallel zig-zag broad lines incision below
38. Band of square dentate
39. Band of scraping by unknown tool
40. Crosshatching bordered above by grooving and broad zig-zag incision below
Fig. 6.12c. The decorative motifs of the pottery from the Lumbi site. Os motivos decorativos da cerâmica da estação de Lumbi.

Shape category (%) by cm depth

Fig 6.13. Pottery decorative motifs by category from the Lumbi site. Motivos decorativos dos cacos por categoria da estação de Lumbi.
Fig. 6.14a. Potsherds from the Lumbi site showing different decorative motifs, drawn by Sansão Nhantumbo, UEM. Cacos da estação de Lumbi mostrando diferentes motivos decorativos, desenhados por Sansão Nhantumbo, UEM.

**Category 7:** 1–9) In-turned rounded fluted rim body; 10) In-turned rounded fluted rim body incised with zig-zag horizontal BL; 11) In-turned rounded rim body with applique on body; 12) Up-turned bevelled fluted rim body; 13) In-turned rounded fluted rim body with double vertical parallel applique; 14) Straight rounded fluted rim body incised with oblique parallel BL; **Category 2:** 15) Slightly up-turned rounded plain rim neck.
Fig. 6.14b. Potsherds from the Lumbi site showing different decorative motifs drawn by Sansão Nhantumbo, UEM. Cacos da estação de Lumbi mostrando diferentes motivos decorativos, desenhados por Sansão Nhantumbo, UEM.

**Category 7**: 16) In-turned beveled rim body incised with crisscross hatching; 17) In-turned rounded rim body stamped with shells; 18) Straight rounded plain rim body); **Category 4**: 19) Up-turned rounded fluted rim neck shoulder, comb stamped, punctate and channeled with double oblique parallel lines; 20) Neck shoulder comb stamped and punctured; 21) Neck shoulder comb stamped, punctate and channeled with double oblique parallel lines; 22) Neck shoulder comb stamped between horizontal line on the top and zig-zag line below); **Category 7**: 23) In-turned rounded rim body stamped with shells); 24) Ceramic tubes); **Category 4**: 25) Up-turned rounded plain rim neck shoulder; 26) Slightly up-turned rounded rim neck shoulder punctate); **Category 1**: 27) Body sherd incised with parallel vertical lines and zig-zag line below).
Fig. 6.14c. Potsherds from the Lumbi site showing different decorative motifs drawn by Sansão Nhantumbo, UEM. Cacos da estação de Lumbi mostrando diferentes motivos decorativos, desenhados por Sansão Nhantumbo, UEM.

**Category 4:** 28) Up-turned rounded rim neck shoulder grooved and punctured; 29) Up-turned rounded rim neck shoulder incised with band oblique broad lines between horizontal line on the top and zig-zag line in below; **Category 7:** 30) In-turned beveled rim body and incised with oblique lines; 31) Up-turned beveled rim body comb stamped and grooved with double channel on body) Category 4: 32) Up-turned rounded rim neck shoulder grooved on body and punctured); **Category 1:** 33) Scraped body sherd); **Category 4:** 34) In-turned rounded rim neck shoulder fluted and oblique comb stamped between horizontal line on the top and zig-zag line in below; **Category 1:** 35) Body sherd decorated with oblique crisscross hatching); **Category 4:** 36) Slightly up-turned rounded rim neck shoulder incised with band broad lines, bordered below with horizontal line; 37) Up-turned rounded scraped rim neck shoulder); **Category 7:** 39) In-turned rounded fluted rim body and grooved with double oblique channel on body).
Fig. 6.14d. Potsherds from the Lumbi site showing different decorative motifs drawn by Sansão Nhantumbo, UEM. Cacos da estação de Lumbi mostrando diferentes motivos decorativos, desenhados por Sansão Nhantumbo, UEM.

**Category 7:** 40) Straight rounded plain rim body; 41) In-turned rounded fluted rim body with applique on body; 42) In-turned beveled plain rim body; 43) In-turned beveled rim body and incised with left oblique parallel lines between horizontal line on the top and zig-zag line in below; 44) Straight rounded rim body incised with two parallel lines and comb stamped; 45) R-sloped rim body incised with a band of oblique broad lines; **Category 4:** 46) Neck shoulder incised with band broad lines and comb stamped; 47) Up-turned rounded rim neck shoulder and grooved on the neck; 48) Neck shoulder incised with crisscross hatching; **Category 2:** 49) Slightly in-turned rounded rim neck incised with band oblique broad lines; **Category 4:** 50) Neck shoulder grooved and punctured; 51) Slightly up-turned rim neck grooved and incised with crisscross hatching; 52) Up-turned rounded rim neck shoulder incised with a band of oblique broad lines; 53) Neck shoulder incised with curved broad lines and punctate).
Fig. 6.14e. Potsherds from the Lumbi site showing different decorative motifs drawn by Sansão Nhantumbo, UEM. Cacos da estação de Lumbi mostrando diferentes motivos decorativos, desenhados por Sansão Nhantumbo, UEM.

**Category 7:** 54) In-turned rounded plain rim body; 55) Up-turned beveled rim body incised with horizontal line and comb stamped; 56) In-turned rounded rim body with three vertical parallel applique; 57) In-turned beveled and fluted rim body incised with band of oblique lines; 58) In-turned rounded rim body incised with pars of curved broad lines; 59) In-turned rounded and fluted rim body); **Category 4:** 60) Up-turned rounded rim neck shoulder, grooved on the neck, incised with band of oblique broad lines, punctate and grooved on the shoulder with oblique parallel double channels); **Category 2:** 61) Slightly in-turned rounded plain rim neck); **Category 4:** 62) Up-turned rounded rim neck shoulder incised with band of vertical broad lines and oblique comb stamped; 63) Neck shoulder oblique comb stamped; 64); Up-turned rounded rim neck shoulder grooved on the neck, incised with crisscross hatching and zig-zag line below the hatching; 65) Up-turned rounded rim neck shoulder scraped with horizontal lines; 66) Neck shoulder incised with band of oblique zig-zag lines, square punctate in the middle and horizontal zig-zag broad line below).
Fig. 6.14f. Potsherds from the Lumbi site showing different decorative motifs drawn by Sansão Nhantumbo, UEM. Cacos da estação de Lumbi mostrando diferentes motivos decorativos, desenhados por Sansão Nhantumbo, UEM.

**Category 3:**
- 67) Shoulder body incised with horizontal single line
- 68) In-turned beveled rim body incised with oblique crisscross hatching
- 69) In-turned rounded plain rim body
- 70) In-turned rounded rim body shell stamped
- 71) Up-turned beveled fluted rim body

**Category 4:**
- 72) In-turned rounded rim neck shoulder grooved on the neck and punctate
- 73) Neck shoulder incised with band of oblique and horizontal broad lines
- 74) Slightly up-turned rim neck shoulder, oblique comb stamped and incised with zig-zag broad line below the stamp

**Category 3:**
- 75) Shoulder body decorated with double parallel curve applique and one vertical applique in the center of the curve

**Category 4:**
- 76) Up-turned rounded rim neck shoulder decorated with punctate on the neck
- 77) Neck shoulder incised with crosswise on the neck
- 78) Neck Shoulder dentate
- 79) Neck Shoulder Incised with band of vertical broad lines, comb stamped and punctate
- 80) Body sherd with circle applique
- 81) Slightly up-turned plain rim neck
- 82) Up-turned rim Neck and grooved on the neck.
6.4.3. Iron artefacts

Phillipson (2005, p. 215) considers that the significance of metal-working for African communities has extended far beyond the technological sphere – its cultural and social implications have been at least equally significant and must be given full weight in any considerations of early African metallurgy. This a view in which I agree and I hope to be able to look more into this in the future.

During the excavations at Lumbi site we also retrieved metallic artefacts, knives, arrowheads, a bangle earring (Plate 6.5) and a substantial amount of iron slag which are similar with objects found on other sites of the Chifumbazi complex.

The EFC in Lumbi knew how to smelt iron for the production of instruments, judging from the quantity of iron slag recovered, not only in the excavations as mentioned but also from the surface, which illustrates an intense iron producing and iron working activity. But as yet there is no evidence of the technology of metallurgy.

It is clear however, that the Lumbi communities produced iron instruments for different purposes, mainly knives, hoes, arrow heads and axes which were used to cut the trees for agriculture and for hunting.

Plate 6.5. The iron objects from the Lumbi site. Objectos do ferro da estação de Lumbi.

6.4.4. Bone

During the archaeological excavations in the Lumbi site, a significant amount of bones from several species provided information to the faunal resource base of the site. The bones from the excavations identified possible domesticated animals. However, when conducting interviews in Sena and Lumbi, my informants said that their ancestors never domesticated cattle. But, Arabs and Portuguese references show that cattlekeeping was a significant practice in the area of Sofala and Sena. Lumbi is the only site where I found cattle during my fieldwork. Perhaps the absence of cattle in the area today is due to the fact that the areas are now infested by tsetse fly, as Pwiti (1996b) points out.

The analysis of 201 bones from levels relating to the EFC illustrates that the fauna is very rich and diversified (Table 6.10) and despite the small number of bones the results are interesting. In particular the presence of possible domesticated cattle (cf. Bos taurus) is highy intriguing as is also the presence of domesticated, small animals like sheep/goats (Ovis/Capra). Different kinds of Bovidae (I, II, III, IV) that cannot be classified into species was also recognized. These are probably from wild cattle. Alongside these species, catfish (Clarias/Synodontis) was also found. Other species identified in the analyses are: possible
warthog (cf. Phacochoerus aethiops), possible oribi antelope (cf. Ourebia ourebi), lichtensteins hartebeest (Alcelaphus lichtensteinii), turtle (Cycloderma frenatums and Chelonia), and other mammals both of medium and large size. In general, possible domesticated species constituted only 3% of the total assemblage. Most of the bones (50%) were from wild cattle, but aquatic resources were also common (Fig 6.14).

![Animal categories, Lumbi site bone assemblage](image)

Fig 6.15. Analyses of bones from Lumbi site. A análise de ossos da estação de Lumbi.

### 6.4.5. Shells

The shells found in Lumbi are not derived from kitchen middens like in southern Mozambique (Sinclair 1987b; Morais 1988), but their discovery, though few, is valuable because it demonstrates the connection with the coast. At the Lumbi site we found no evidence of the long-distance trade network, despite contact with the coast. Even without the development of long-distance trade network, these findings affirm that the coastal and marine resources were part of their economic and subsistence. Archaeological excavations in Lumbi recovered other shells of mollusces, giant African snails (*Achatina fulica*) suggesting the exploitation of those resources by the EFC.

The shells of molluscs, mainly mussels (*Perna perna*), are common finds in the EFC sites on the coast of Mozambique, where shell middens clearly demonstrate the importance of these molluscs in the diet of the EFC. The shells were also used as stamps in the decorative motifs of the ceramics and can be found in almost all coastal sites of Mozambique, for example the ceramics of the EFC of Nampula, Matola and University Campus and the later farming community of Lumbo and Sancul (Sinclair 1985, 1986; Adamowicz 1987; Sinclair *et al.* 1993; Duarte 1993; Madiquida 2007). Some shell-stamped pottery occurs in the inland of central Mozambique, as in Lumbi and Sena (Macamo and Madiquida 2004). However, the mussel shells excavated in Lumbi do not have any decorative function, because they lack serrations or teeth that were used as motifs to stamp the pots. Mussels were probably eaten for food but perhaps the shells also had other uses; in some inland communities in northern Mozambique shells of mussels are used for eating cereal food or to rasp cucumber.
Table 6.7. The analyses of bones from Lumbi site. A análise de ossos da estação de Lumbi.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>English Name</th>
<th>Portuguese Name</th>
<th>Sena Name</th>
<th>Tot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phacochoerus aethiops</td>
<td>Warthog</td>
<td>Javali</td>
<td>N’gira</td>
<td>1</td>
</tr>
<tr>
<td>cf. Bos taurus</td>
<td>Possibly cattle</td>
<td>Possivelmente gado</td>
<td>Ng’ombe</td>
<td>5</td>
</tr>
<tr>
<td>cf. Bos/ Syncerus</td>
<td>Possibly cattle/buffalo</td>
<td>Possivelmente gado/búfalo</td>
<td>Nyiàti</td>
<td>2</td>
</tr>
<tr>
<td>cf. Ovis/ Capra</td>
<td>Possibly caprine</td>
<td>Possivelmente caprino</td>
<td>Mbudzi</td>
<td>1</td>
</tr>
<tr>
<td>Ourebia ourebi</td>
<td>Oribi</td>
<td>Oribi</td>
<td>Lundzwa</td>
<td>1</td>
</tr>
<tr>
<td>cf. Alcelaphus lichtensteinii</td>
<td>Possibly Lichtenstein's hartebeest</td>
<td>Vaca-do-mato</td>
<td>Ngoma</td>
<td>2</td>
</tr>
<tr>
<td>Bov I</td>
<td>Small bovidae</td>
<td>Bovino pequeno</td>
<td>Tung’ombe</td>
<td>1</td>
</tr>
<tr>
<td>Bov II</td>
<td>Medium bovidae</td>
<td>Bovino médio</td>
<td>Tumphulu</td>
<td>4</td>
</tr>
<tr>
<td>Bov II Non-Dom</td>
<td>Medium, non-domestic bovidae</td>
<td>Bovino médio não doméstico</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bov III</td>
<td>Large bovidae</td>
<td>Bovino grande</td>
<td>Ng’ombe Ikulu</td>
<td>88</td>
</tr>
<tr>
<td>Bov III Non-Dom</td>
<td>Large, non-domestic bovidae</td>
<td>Bovino grande não doméstico</td>
<td>Ng’ombe</td>
<td>2</td>
</tr>
<tr>
<td>Bov IV</td>
<td>Very large bovidae</td>
<td>Bovino muito grande</td>
<td>Midzombe</td>
<td>2</td>
</tr>
<tr>
<td>Mammal Medium</td>
<td>Medium mammal</td>
<td>Mamífero médio</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Mammal Large</td>
<td>Large Mammal</td>
<td>Mamífero grande</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Clarias/Synodontis</td>
<td>Catfish</td>
<td>Peixe barba</td>
<td>M’sopo, N’somba</td>
<td>30</td>
</tr>
<tr>
<td>Cycloderma frenatumus</td>
<td>Soft-shelled Zambezi terrapin</td>
<td>Tartaruga de água doce do rio Zambeze</td>
<td>Kamba</td>
<td>49</td>
</tr>
<tr>
<td>Chelonia</td>
<td>Tortoise, terrapin, turtle</td>
<td>Cágado, Tartaruga de água doce e tartaruga marinha</td>
<td>Kamba</td>
<td>9</td>
</tr>
</tbody>
</table>

6.5. Recovered data, overall review

The results from the Lumbi site clearly demonstrate Lumbi’s archaeological potential. A detailed surface inventory and phosphate analyses enabled us to target geographical areas of high interest, and excavated testpits yielded highly interesting material. Deposits were deep (down to 130 cm) and despite evidence of mixing in some areas, the archeological layers were distinct representing the occupational sequence. It is of high relevance in the future to obtain more dates from these layers to firmly date the different activities taking place here.

The site is of high significance due to the presence of LSA material culture together with ceramics. Even though these material assemblages occur together in all excavated testpits, it
cannot at this stage be ascertained if this is due to secondary mixing in the profile, in terms of downward movement of ceramics, or if the combination of material culture should be interpreted as the result of interaction between groups or even local innovation as a result of contacts between groups. More dates are necessary to establish this. The impression is, nonetheless, that the different material cultures do not represent a significant break in occupation and that Lumbi was occupied throughout the period of change. A shift in material culture use/production can be seen at 50–60 cm depth in most testpits. Though there are still very few dates available, the $^{14}$C charcoal dates from testpit 6 places this transition tentatively at 54–235 AD (cal.).

The discussion related to the second target of excavations which was to define, in general terms, the human activities taking place on the site. Lithic production and ceramic production is suggested from the material culture. Raw material for lithics (mainly quartz) is locally available and the analyses of flakes and production process propose that this was a local production. When it comes to ceramics it is at this stage not known if they were produced locally or traded. Ceramic analyses of clay raw material and production are necessary to establish this. Nevertheless, pots were made using chamotte which does suggest that pottery were already available to the pottery makers. Represented pottery styles, bowls with fluted rims, grooved necks (and sometimes shoulders), comb- and shell-stamping, dentates, punctates broad lines, etc are similar to those found on the coast, both to the south and north (Kwale/Matola/Silver Leaves). Whether the pottery was produced locally or not is difficult to say at this stage, but it is safe to say there were contacts with other regions.

When it comes to resource use, a significant amount of bones from several species provided information to the faunal resource base of the site. The bone analyses shows that people had domesticated animals like sheep/goats (Ovis/Capra) and also possibly domesticated cattle (cf. Bos taurus). In addition, wild animals were found in the bone analyses – such as wild cattle, warthog, oribi antelope, lichtensteins hartebeest, turtles and also catfish. Most bones (50%) were from wild cattle but aquatic resources were also common. Even though possible domestic animals were present in the archaeological record, they constituted only 3% of the total assemblage. Unfortunately there has been no retrieval of archaeobotanical data to allow a discussion on botanical resources.

The data found provided information regarding three main prehistoric periods of human occupation: the hunter-gatherer communities LSA, the EFC “Chifumbazi Complex” and LFC (Godinho 1963; Duarte 1993). In the hunter-gatherer communities, the economic base was hunting and gathering, EFC practiced agriculture, domesticated animals including cattle and worked iron, and LFC domesticated animals, even though the bone assemblage was dominated by wild fauna and also fish. Even if we have no direct evidence of long-distance trade networks, we can assume that Lumbi people during the EFC were connected with other settlements.

In the hunter-gatherer communities, people produced and processed food from hunting and gathering as daily activities. They also produced small quartz flakes from the quartz and other raw material which existed in the area of Lumbi, or was possibly imported from others places. Normally, people lived close to permanent water sources rich in hunting and other resources (Adamowicz 1987; Macamo and Madiquida 2004). The hunter-gatherer communities preferentially lived around caves, which were also used for rock paintings and ceremonies. But as shown in Lumbi they also lived in the open areas where accessibility of different resources was high. We can assume that livelihoods were based on a seasonal economy, mobility and with a low degree of social hierarchy (Morais 1978: 3; Adamowicz 1987: 73; Sveiby 2009: 13). However, as demonstrated in Lumbi, in the later phase there
were also interactions with the EFC complex and this will be discussed in more detail in Chapter 8.

The EFC lived in the open areas but sometimes also used caves. This period is characterised first by changing ecosystem and landscape due to the introduction of agriculture, as well as more advanced technology of production and use of iron, bowls and pots of clay (Adamowicz 1987; Sinclair 1987; Morais 1988; Mitchell 2002; Phillipson 2005; Huffman 2007). EFC communities lived in villages (Lumbi and Nensa) which were more than 50 hectares in size. There is no evidence of formal political structures, but the communities apparently kept contact with the coast, possibly for the exploration of marine resources, because we did not find evidence of long-distance trade in Lumbi. Deduced from information elsewhere it can be supposed that they cultivated cereals such as, sorghum (*Sorghum bicolor*), pearl millet (*Pennisetum glaucum*), Bambara bean (*Voandzeia subterranea*), cowpea (*Vigna unguiculata*), finger millet (*Eleusine coracana*) (Neumann 2003), cereals, which still grow today in Lumbi area even though in small quantities.

For the moment, the LFC sites in the lower Zambezi can be divided into two parts: those at the mouth, in the area of Chinde without evidence of long-distance trade and others in the lower area near the delta with evidence of long-distance trade, as in the case of Sena that will be discussed in the following chapter.

Conclusão

Os resultados da estação de Lumbi mostram que tem um grande potencial arqueológico. O inventário detalhado a superfície e as análises de fosfato permitiram-nos ter áreas geográficas de grande vantagem e as sanjas escavadas continham o material de maior interesse. Os depósitos iam até 130 cm de profundidade e apesar de evidências misturadas em algumas áreas, as camadas arqueológicas foram distintas representando a sequência ocupacional no seu contexto. É de grande relevância, no futuro, obter mais datas destas camadas, para, de forma segura, datar as diferentes actividades que tiveram lugar neste local.

A estação é de grande interesse devido a presença da cultura material da IPS com a cerâmica. Assim, essa colecção do material ocorrem juntamente em todas as sanjas escavadas e não se pode, neste momento, precisar se é por causa da mistura secundária no perfil em termos dos movimentos de afundamentos da cerâmica ou se a combinação da cultura material pode ser interpretado como interacção entre grupos ou mesmo uma inovação local como resultado do contacto entre eles. Mais dados são necessário para estabilizar estes pontos de vista. A impressão é, contudo, as diferentes culturas materiais não representam uma quebra significante na ocupação e que Lumbi foi ocupado em todo período da mudança. A substituição da cultura material uso/produção pode-se notar entre 50–60 cm de profundidade na maioria das sanjas. Deste modo, ainda são poucas datas viáveis, as datas do carvão com 

A discussão do segundo motivo das escavações estava relacionada com a definição, em geral, de termos das actividades humanas que tiveram lugar na estação. A produção dos artefactos líticos e a cerâmica sugere a cultura material. A matéria-prima para artefactos líticos (principalmente o quartzo) é disponível localmente e as análises de lascas e os processos de produção sugere que esse era o local de produção de artefactos líticos. Quanto a cerâmica neste período não se sabe se era produzida localmente ou comercializada. As análises da argila como a matéria-prima e a produção da cerâmica são necessárias para compreenderes este processo. Contudo, os potes eram fabricados usando aditivos dos antigos cacos bem queimados para aumentar a resistência da argila o que sugere a existência de
oleiros locais. Os estilos da cerâmica representada por tijelas com bordos canelados, pescoço com estría, alguns casos nos ombros, estampada com conchas e pentes, dentada, salpicada de pontos, linhas largas, etc. são similares com a cerâmica da costa, ambos no sul e no norte (Kwale/Matola/Silver Leaves). Assim, se a cerâmica foi produzida localmente ou não, certamente que havia contactos com outras regiões.

Em termos de uso de recursos, uma quantidade significante de ossos de várias espécies providenciou informação sobre a base de recursos faunísticos da estação. A análise de ossos mostra que as comunidades domesticavam animais como o carneiro/cabra (Ovis/Capra) e também, possivelmente, domesticavam o gado bovino (cf. Bos taurus). Além disso, animais selvagens também foram encontrados nas análises ósseas tais como gado selvagem, javali, oribi antílope, vaca-do-mato, tartarugas e também peixe-gato. A maior quantidade de ossos (50%) eram do gado selvagem, mas recursos aquáticos foram também comuns. Assim, possíveis animais domesticados identificados na análise dos ossos constituem apenas 3% do total da colecção de ossos. Infelizmente, não recuperamos dados arqueobotânicos que permitam a discussão sobre recursos botânicos.

Os estudos no Baixo Zambeze até a foz e os dados arqueológicos encontrados mostram que o homem pré-histórico não evitou a ocupação a esta zona. Foram identificados três períodos pré-históricos principais: IPS, IFI “o Complexo de Chifumbazi” e IFS. Esses três períodos tinham a base de economia bem diferenciada. Os caçadores-recolectores (a estação arqueológica de Lumbi) a base da economia era a caça e a recolecção; as primeiras comunidades agrícolas (as estações arqueológicas de Lumbi e Nensa) praticavam a agricultura, domestivam animais, incluindo o gado bovino e trabalhavam o ferro; por último, as últimas comunidades agrícolas (a estação arqueológica de Sena) que continuaram a praticar a agricultura, domesticavam animais e mantinham grandes manadas de gado bovino.

As evidências vindas de Lumbi mostram que as comunidades caçadoras recolectoras produziam e processavam a comida vida de caça e recoleção como actividade diária. Produziam lascas microlíticas de quartzo e da outra matéria-prima que existiam na área de Lumbi ou era importado de outros locais e normalmente, viviam perto das fontes permentes de água potável, rico em caça e outros recursos. As comunidades de caçadores recolectores viviam, preferencialmente, em cavernas que algumas delas eram decoradas com pinturas rupestres, mas algumas vezes viviam em bandas sem o poder político nas áreas abertas com maior acessibilidade de diferentes recursos, que significa uma economia de adaptação seazonal, como em Lumbi.

As primeiras comunidades agrícolas viviam nas áreas abertas, mas algumas vezes também usavam cavernas e são caracterizadas, primeiramente pela mudança de ecosistema e paisagem como resultado de introdução da agricultura e o uso da tecnologia mais avançada de produção e uso do ferro, tijelas e panelas de barro. Essas comunidades viviam em aldeias (Lumbi and Nensa) com mais de ±50 hectares de extensão. Não há evidências de estruturas políticas formais, mas as comunidades mantinham contactos com a costa, possivelmente para a exploração de recursos marinhos, porque nós não encontramos evidências do comércio a longa distância em Lumbi. Deduzindo a informação de outras partes da região pode-se supor que eles cultivavam cereais tais como o mapira (Sorghum bicolor), mexoeira (Pennisetum glaucum), feijão jugo (Voandzeia subterranea), feijão nhemba (Vigna unguiculata) e o milho-miúdo (Eleusine coracana) que são ainda cultivados na região de Lumbi apesar de reduzida quantidade. As estações das últimas comunidades agrícolas no baixo Zambeze podem ser subdivididas em duas partes, as estações da foz do Zambeze, principalmente na área de Chinde, sem evidências do comércio a longa distância e as estações do baixo
Zambeze com evidências do comércio a longa distância, como é o caso de que será discutido nos capítulos seguintes.
7. SENA EXCAVATION

The origins of the name Sena is still not known. In the old Portuguese documents two designations are used; Senna or Sena (Castro 1750; Dos Santos [1609] 1999; Maugham 1906). Some researchers (Morais 1978; Rita-Ferreira 1982) are of the view that Sayūna in the al-Idrīsī map of 1154 (Chittick and Rotberg 1975, p. 1389) refers to Sena. However, in the referred map, Sayūna is in fact located at the mouth of the Zambezi River, not in the interior.

Junod’s (1936) argument is that the name of Sena is not of Bantu origins and also, that the name was given by foreign traders owing to the very long occupation of the land by foreigners (Asians and Europeans), a land later adopted by local residents. The site is located on the lofty quaternary terrace beyond the danger of flooding, on the right bank of the Zambezi River.

7.2.1. Geology

Sena with its high relief (100–300 metres above sea level) has a different geomorphological formation compared to Chinde and Marromeu (Fig. 5.2). Besides being located in the alluvial terraces of the Zambezi River, Sena is also located on the foothills of the Balamwana Mountains and is part of the Sena and Grudja formation of Cretaceous age with the Stormberg series of basalts (Voortman and Spiers 1982).

7.2.2 Soils

The soils in the area of Sena are divided into two categories: a) the banks of the Zambezi River have alluvial soils deriving from successive depositions of materials transported by the Zambezi River. These are very dark, black soils rich in humus and in some areas recent light red gray alluvial sands, conglomerates and clays; b) the Balamwana Mountains’ slopes are colluvial soils accumulated through the action of hillwash. Other soils also occur that are so called chalk-earths.

7.2.3. Vegetation

The vegetation in Sena is approximately the same as that of Lumbi but highly impacted by agriculture and grazing. It is characterized primarily by Sclerocaria birrea, Lannea sp, Kigelia africana, Afzelia quanzensis and other species of the family Fabaceae.

Transition areas exist among the wood forests, with typical features of marsh savanna, dominated by Acacia xanthophloea and Acacia robusta (Davidson and Jeppe 1981, pp. 36–38). Sclerocaria birrea, Afzelia quanzensis and Adansonia digitata are also widespread in this area. The species of the families Poaceae and Palmae are found in the transition areas. In direct association to the site, there are many large baobab trees (Adansonia digitata), (Acacia robusta) and other species of acacias can be noted.

7.2.4. Excavation

The excavation in Sena was made both outside and inside the fortress of Sena, because according to some documents (Montez 1969), the Portuguese had built a fortress near an
ancient Muslim village and the early Portuguese factory and church was supposedly located inside the fortress (dos Santos 1609). However, since the inside had been transformed into a cemetery, it was impossible to excavate in the actual ruins of the factory itself that is still visible. Two trenches were therefore excavated near the fortress. Trench 1 (excavated in December 2007) was placed just outside the fortress, measured 4 x 4 m and reached to a depth of 150 cm. Trench 2 was excavated inside the fortress (in August 2008), and measured 3 x 3 m and reached a depth of 100 cm.

The sediments in the elevated terrace consisted of well-drained alluvial and colluvial soils with deposition of conglomerate rocks. During the excavation, three clear vertical layers with artifacts could be noticed (Fig. 7.2). But the soil stratigraphy does not show distinctive layers that can be connected with anthropogenically modified soils. Therefore, as in the Limbi excavations, artificial 10 cm spits were used for excavation, taking into account also natural layers on the basis of soil colour and texture.

The targets of the excavations were the same as for Lumbi: to determine how deep the cultural deposits were and whether they would yield datable materials. The second target was to define human activities taking place on the site. Targets specific to the Sena context were to explore the tradition of the LFC and possible social connections and interactions between Sena and other regions. A fourth target was to achieve some understanding of resource use of this 2nd millennium site.

The excavation was initiated after a traditional ceremony, performed in front of the main entrance (Plate 7.1, Fig. 7.1). The size of the excavation area was limited to 50 x 50 m from the first test pit outside of the fortress. Since the archaeological material was found to be in primary context, a more accurate registration of the surface finds was motivated. To achieve the expected results, 2 test pits were excavated. One 4 x 4 m test pit was excavated outside of fortress and another 3 x 3 m test pit was excavated inside the fortress, totalling 25 m². The first test pit was discontinued after reaching sterile soil at 150 cm depth. The second test pit inside the fortress reached a depth of 100 cm. With the 25 m² excavated only a fraction of the site has been excavated, the estimated size of the site permits a larger scale continuation of the archaeological investigations of Sena in the future.

The lithology of the excavation area is defined by three layers and the stratigraphies of the two test pits are shown in Appendix (Appendix Fig. 2). As in Lumbi, the basal layer is a yellowish red (5YR 5/8) fine sand with a gradually increasing clay content towards the base. This has a gradual transition to a reddish brown (5YR 5/4) fine sand layer (Fig 7.2). The uppermost layer also has a gradual transition and consists of a reddish grey layer (5YR 5/2) layer of fine sand. Thus the top soil here is not as dark in Lumbi. In TP 1 there is Reddish grey fine sand which may represent an anthropogenically modified soil. However, as in Lumbi, these layers could only be discerned in the stratigraphy and were not visible while excavating. No other features were identified in the soil profiles or during excavation. As stratigraphic visibility was low, it was decided to use artificial 10 cm spits as a basis of excavation and as units of recording of finds. All sediments were sieved through a 1 mm mesh as it was expected to find glassbeads.

The excavation resulted in 2,577 individual finds all collected in the trenches. A list of finds per test pit is presented in Appendix (Appendix, Table 2). The find categories included pottery, porcelain, glassbeads, one core, metal objects, bones, and shells of the brown mussel (*Perna perna*). A test pit was considered as completed after a 10 cm deep level was excavated without any finds.
Plate 7.1. The main entrance to the historical fortress of Sena. A principal entrada da histórica Fortaleza de Sena.

Fig. 7.1. The Sena fortress showing the location of the test pits, drawn by Sansão Nhantumbo, UEM. A Fortaleza de Sena com a localização das sanjas, desenhado por Sansão Nhantumbo, UEM.
Fig. 7.2. Section of the stratigraphies of TP 1 (west wall) and TP 2 (North wall) in the Sena site (note that stratigraphies are not in scale in relation to each other). A estratigrafia da sanjas 1 e 2 de Sena.

Fig. 7.3. Find frequency by test pit (1‒2) and level from the Sena site. A frequência achados por sanja (1‒2) e nível da estação de Sena.
The vertical distribution of finds appeared as follows: 0–10 cm 118 finds (4.54 %), 10–20 cm 296 finds (11.40 %), 20–30 cm 300 finds (11.55 %), 30–40 cm 248 finds (9.55 %), 40–50 cm 401 finds (15.44 %), 50–60 cm 474 finds (18.25 %), 60–70 cm 352 finds (13.55 %), 70–80 cm 91 finds (3.50 %), 80–90 cm 67 finds (2.58 %), 90–100 cm 80 finds (3.08 %), 100–110 cm 49 finds (1.89 %), 110–120 cm 51 finds (1.96 %), 120–130 cm 70 finds (2.70 %).

There was a clear stratigraphic layering of finds and, as in Lumbi; the pattern of distribution of the finds in the stratigraphic layers is believed to be representative of the overall settlement process (Fig. 7.3). In testpit 1, outside the fortress, ceramics were encountered between 10–20 cm in depth and between 40–140 cm in depth. In the lower levels of this testpit typical EFC type pottery wares with fluted rims was found, suggesting a long-term occupation of the area. Porcelain was found in the interval of 10–120 cm depth and beads between 10–80 cm depth with the highest concentrations at 60–70 cm depth and 80 cm depth respectively. The presence of archaeological material at lower depths and the typology of ceramics encountered suggest a long-term occupation of the area from EFC to LFC. In testpit 2, excavated inside the fortress, finds were more concentrated. Ceramics were encountered in between 1-80 cm depth with the highest concentration between 60–80 cm. Porcelain was found in the interval 20–90 cm depth and beads between 20–60 cm depth with the highest concentrations at 40–70 cm depth and 20–60 cm depth respectively.

The material gathered in Sena is very diverse. We found in these two trenches a substantial number of glass beads, fragments of bottles and porcelain, local pottery of both EFC and LFC type, metal objects, bones of animals and shell, indicating a continued occupation of this area.

6.3. Chronology

As much of the finds in Sena can be relatively well dated on the basis of typology, no $^{14}$C dates were made in the upper layers. One charcoal date was submitted for $^{14}$C dating from the lower levels of TP 1 (120–130 cm depth). This date was submitted in order to date the lower level of this testpit that contained EFC pottery. The sample was submitted to the Radiocarbon laboratory in Uppsala. The dates were calibrated using OxCal 4.2 (Bronk Ramsey 2013) and the southern atmospheric curve (SHCal13, Hogg et al. 2009). The result was a $^{14}$C date ranging between 1070–1266 AD (95.4 %). This is considerably later than expected on the basis of ceramic typology. It cannot be ruled out, therefore, that some secondary mixing has taken place in this testpit which also explains the presence of finds down to 130 cm depth. However, as discussed above, there is still a stratigraphic resolution when it comes to find distribution.

<table>
<thead>
<tr>
<th>Lab number</th>
<th>Sample</th>
<th>$\delta^{13}$C‰ VPDB</th>
<th>$^{14}$C age BP</th>
<th>$^{14}$C age BC-AD (CAL) 68.2 %</th>
<th>$^{14}$C age BC-AD (CAL) 95.4 %</th>
<th>$^{14}$C age BC-AD (CAL) 95.4 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ua-40066</td>
<td>TP 1 120-130 cm</td>
<td>-26.1</td>
<td>896±30</td>
<td>1162 (68.2%) 1220AD</td>
<td>1070 (1.1%) 1076 AD</td>
<td>1148 (94.3%) 1266 AD</td>
</tr>
</tbody>
</table>

Table 7.1. A calibration of the $^{14}$C date from Sena using OxCal 4.2 (Bronk Ramsey 2009). A calibragem das $^{14}$C data usando OxCal 4.2 (Bronk Ramsey 2009).
7.2.5. Data description

7.2.5.1. Lithics

The excavations conducted at the archaeological site of Sena found limited evidence of hunter-gatherer communities. In the first test pit (TP1), excavated outside the fortress, no stone flakes were recovered. This test pit was excavated to a depth of 150 cm. In the second test pit (TP2) located inside the fortress and near the Zambezi River, we found a core of quartz from which several flakes had been detached at 100 cm depth approximately. No small quartz flakes or fragments associated with the cores were found in the excavation of this trench. Some Acheulian hand-axes were found during the survey, on the mountain slopes of Balamwana.

7.2.5.2. Pottery

The ceramics of Sena is subdivided into two major groups: local earthenware characterized by the use of ground raw material for its production. This data can be accommodated within one of the traditions of the LFC of the north coast of Mozambique, as in the case of Lumbo (Sinclair 1985, 1986; Adamowicz 1987; Duarte 1993) or Mavudzu, one of the traditions found in southern Malawi (Juwayeyi 1993; Macamo 2006). The second group of ceramics is imported, mainly from China and Europe.

The ceramic assemblage of Sena is comprised of open bowls and necked globular or carinated kitchen pots with different decorative motifs, mainly comb-stamped and combined with the parallel incised lines or triangles bordered by parallel lines on the neck or shoulder (Tables 7.2–7.3, Figures 7.4–7.5). Some decorative motifs are very similar to those from Ibo Island in Cape Delgado (Sinclair 1987, pp. 40–42). Crisscross and cross-hatching lines also appear but in smaller amounts compared with what Macamo (2006) found in Degue Mufa.

The local pottery of Sena does not show such a significant diversity as was found in Lumbi, perhaps because in the LFC, the communities had already chosen what they wanted and had more advanced techniques producing a reduced number of items which would be used during a long time. However, in the TP 2 at 80 cm depth some fluted potsherds occurred indicating an earlier EFC occupation (Plate 7.2). Some potsherds found during our archaeological excavation seem to date to a transitional period between the EFC and LFC, because they contain potsherds similar to some potsherds found in Lumbi in the upper layers (Macamo and Madiquida 2004; see Chapter 6).

The LFC ceramics of Sena, date typologically between 11th–12th centuries AD and are similar to that of the site Mavudzu, in southern Malawi (Davison-Hirchmann 1984; Juwayeyi 1993). Some decorative elements are also very similar to ceramics from Kalambo Falls, described by Huffman (1989, pp. 174–176). Additionally, more than 50% of the Sena pottery includes both surface finishes with burnished red ochre and graphite and incised/punctated decorations (Plate 7.2). Red and graphite burnished bowls have been reported from coastal assemblages, including Chittick’s (1974) so-called Early Ware at Kilwa, associated with glassbeads. Most researchers have linked these wares to the Comoro Islands, where they constituted a substantial part of the local ceramic assemblages (Fleisher and Wynne-Jones 2011, p. 271).

For stamped ceramics, some elements are very similar to the ceramics of Lumbo tradition, from the coast of Nampula province near Mozambique Island (Sinclair 1987; Duarte 1993; Madiquida 2007). This ceramic tradition is often found in a series of archaeological sites.
Table 7.2. Pottery decorative motifs frequency by category from the Sena site. A frequência dos motivos decorativos dos cacos por categoria da estação de Sena

<table>
<thead>
<tr>
<th>Decorative motifs/ Category</th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 7</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO OF SHERDS</td>
<td>30</td>
<td>27</td>
<td>20</td>
<td>1</td>
<td>26</td>
<td>55</td>
</tr>
<tr>
<td>Plain</td>
<td>19</td>
<td>12</td>
<td>18</td>
<td>38</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Comb stamped and incised with parallel lines</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Comb stamped and incised with single line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incised with single line and painted with ochre</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incised with single line and painted with ochre and graphite</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrapped</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>incised with single line</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Painted with ochre</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluted</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Crisscross incision</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised with parallel lines</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Incised and painted with graphite and ochre intercalated</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Fluted and painted with graphite</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incised with irregular lines</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Incised with double lines and painted with ochre inside</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channelled</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Punctured and incised with single line</td>
<td>2</td>
<td>1</td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised with single line inside</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Incised with single line outside and painted with ochre inside</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incised with zig-zag single line and painted with ochre inside</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>27</td>
<td>20</td>
<td>1</td>
<td>26</td>
<td>55</td>
</tr>
</tbody>
</table>

Table 7.3. Potsherds frequency by level from the Sena site. A frequência de cacos por nível da estação de Sena.

<table>
<thead>
<tr>
<th>Level/ Category</th>
<th>Cat. 1</th>
<th>Cat. 2</th>
<th>Cat. 3</th>
<th>Cat. 4</th>
<th>Cat. 7</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>96</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>131</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>138</td>
<td>4</td>
<td>2</td>
<td>11</td>
<td>155</td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>144</td>
<td>4</td>
<td>4</td>
<td>7</td>
<td>159</td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>326</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>338</td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>290</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>219</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>234</td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td>145</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>151</td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td>59</td>
<td></td>
<td>2</td>
<td>2</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td>57</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td>42</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td>47</td>
<td></td>
<td>2</td>
<td>2</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td>55</td>
<td>1</td>
<td></td>
<td>7</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>1749</td>
<td>25</td>
<td>1</td>
<td>32</td>
<td>67</td>
<td>1874</td>
</tr>
</tbody>
</table>
throughout the north coast of Mozambique and dated between the 13th and 14th centuries AD (Sinclair 1985; Adamowicz 1987; Liesegang 1988; Duarte 1993; Duarte and Meneses 1996).

The appearance of Lumbo pottery on the coast of Mozambique, first in Nampula (Sinclair 1985), thereafter in Sofala (Liesegang 1972; Dickinson 1969) and now in Sena, may reflect trade contacts between the interior communities and those living along the coast. The local ceramics of Sena is well-fired with decorative motifs comprised of very well executed thin lines of incision and a higher hardness somewhat similar to porcelain, which indicates growth and specialization in production of the pottery.

Fig. 7.4. The decorative motifs of the pottery from the Sena site. Os motivos decorativos da cerâmica da estação de Sena
Category 2: 16) Slightly in-turned rounded rim neck dentate; 17) Straight plain neck; 18) Up-turned l-sloped plain rim neck; 19) Up-turned rounded plain rim neck; 20) Up-turned rounded rim neck incised with horizontal single line); Category 1: 21) Body sherd incised with single line; 22) Body sherd plain); Category 7: 23) Slightly in-turned rounded plain rim body; 24) Slightly in-turned rounded rim body incised with two parallel horizontal lines; 25) In-turned rounded plain rim body); Category 4: 26) Neck Shoulder, dentate on the neck; 27) Up-turned rounded rim neck shoulder incised with single line on the shoulder; 28) Slightly up-turned rounded plain rim neck shoulder; 29) Up-turned rounded rim neck shoulder incised with two parallel lines on the neck and crisscross on the shoulder; 30) Slightly up-turned rim neck shoulder incised with single line on the neck)
Plate 7.2. Examples of potsherds from the Sena site. Alguns cacos da olaria da estação de Sena. 1–7) potsherds from test pit 1 outside fortress, 40–100 cm depth burnished with graphite and red ochre between parallel horizontal lines, 8) Head of ox figurine, 9–12) early farming community type pottery recovered from test pit 2 inside fortress at 50–80 cm depth.
7.2.5.3- Local beads

Sena was connected to the long-distance trade from the beginning of the second millennium AD, the glass beads constituted one of the main products marketed and items of prestige (Rita-Ferreira 1982). In the excavations in Sena we found different kinds of beads made locally using bones or tusks. All the local beads have white colour and no other colours were found. Their shapes are mainly tube, oblate, cylinder and sphere (Wood 2012, p. 69).

The value of the beads for the local communities was so high that the beads made from this raw material are likely to be found today in Mozambique in almost all the archaeological sites linked to the long-distance trade network (Sinclair 1985, 1986; Adamowicz 1987; Morais 1988; Duarte 1993; Madiquida 2007; Macamo and Risberg 2007).

7.2.5.4. Imported wares

The excavations in Sena recovered a wide range of evidence of imported goods which show the importance of long-distance trade. In the two testpits, glass beads as well as fragments of porcelain and glasses were found. The glassware has not been analysed in detail but they are dominated by green glass (Plate 7.5). Contacts of the exchange and long-distance trade must be seen as a social phenomenon in which both the social relations and material cultures are mediated by symbolic structures which in turn are modified by the success or failure of the exchange of goods and experience (Wright 1993). It is in this context that the emergence of social inequalities and the development of a city-state depended very much on the success or failure of the exchange, the long-distance trade and of the marketed products (Pwiti 1996a).

Sena was the center where a variety of goods were exchanged, and the interaction with different cultures from various parts around the world was evident (Godinho 1963, p. 222).

Porcelain

The porcelain appears as an important product of trade with the European trade involvement. Prior to this, the porcelain was perhaps intended exclusively for the dominant class or for a few Asians established along the coast or in the inland, particularly in Sena. As was mentioned previously, Sena was one of the most significant commercial ports in the Zambezi valley where many products were exchanged. These products entered into the system of the long-distance trade network between the Indian Ocean coast and the inland and vice-versa. The porcelain was dominated by Chinese ware, blue and white with naturalistic decoration, which represented the nature, landscape, palaces alongside undecorated fragments. The dominant types can be placed with the Early Qing period (17th to 18th century) and the Late Qing period (18th to 19th century) (Plate 7.3). We also found a variety of European wares such as blue on white, blue and green on gray with a variety of motifs (Plate 7.4). Most of these wares can be dated typologically to the 20th century (Duarte 1993; Macamo 2006).

The appearance of Chinese porcelain in Sena helps to understand the chronology of trade activities and networks, indicating that these dates from the 17th -20th century, a time-span of 300 years. In the early phase of this trade, porcelain was dominated by Chinese wares which may be associated with the trade network of the time. Assumedly, Sena was in direct contact with the coastal long-distance trade. In the later period, European wares become more common, perhaps linked with a shift in trade patterns.
Plate. 7.3a. The porcelain sherds from TP 1 and 2, 40–90 cm depth, the Sena site. Fragmentos de porcelana das sanjas 1–2, entre 40 a 90 cm de profundidade, estação de Sena.

1–2, 5–6, 8, 9–12, 14, 16) Chinese porcelain Early Qing period (17th to 18th century); 3–4, 7, 13, 15, 17–18) Chinese porcelain Late Qing period (18th to 19th century). The decorative motifs are mainly naturalistic scenes (Identification by the author).
Plate 7.3b. The porcelain sherds from TP 1 and 2, 40–90 cm depth, Sena site. Fragmentos de porcelana das sanjas 1–2, entre 40 a 90 cm de profundidade, estação de Sena.

19-26) Chinese porcelain, Late Qing Period (19th to 20th century); 27, 31, 32, 40, 43, 45, 46) Chinese porcelain, Early Qing Period (17th to 18th century); 28–30, 33–39, 41–42, 44) Chinese porcelain, Late Qing Period (19th to 20th century). The decorative motifs are mainly naturalistic scenes (Identification by the author).
Plate 7.3c. The porcelain sherds from TP 1 and 2, 40 cm-90 cm depth, Sena site. Fragmentos de porcelana das sanjas 1–2, entre 40 a 90 cm de profundidade, estação de Sena.

47–50, 53, 56, 58, 65–70) Chinese porcelain, Early Qing Period (17th to 18th century); 51-52, 54-57, 59–64) Chinese porcelain, Late Qing Period (19th to 20th century). The decorative motifs are mainly naturalistic scenes (Identification by the author).
Plate 7.4a. The porcelain sherds from from TP 1 and 2, 40–90 cm depth, Sena site. Fragmentos de porcelana das sanjas 1–2, entre 40 a 90 cm de profundidade, estação de Sena.

Plate 7.4b. The porcelain sherds from TP 1 and 2, 40–90 cm depth, Sena site. Fragmentos de porcelana das sanjas 1–2, entre 40 a 90 cm de profundidade, estação de Sena.

Plate 7.5. The glass fragments from from TP 1 and 2, 40–90 cm depth, Sena site. Fragmentos de vidro das sanjas 1–2, entre 40 a 90 cm de profundidade, estação de Sena.

119) Green glass fragment with silver patination; 120) Green glass fragment with blue and silver patination; 121) Green glass fragment with blue and silver patination; 122) Green glass fragment with silver patination; 123) Green glass fragment with silver patination; 124) Green glass fragment with deteriorated silver patination; 125) Green glass fragment with deteriorated silver patination; 126) Green glass fragment with deteriorated silver patination; 127) Green glass fragment with deteriorated silver patination; 128) Green glass fragment with blue and silver patination; 129) Green glass fragment with deteriorated blue and silver patination; 130) Green glass fragment.

Plate 7.6. The iron objects from Sena site. Objectos do ferro da estação de Sena.
Glass bead analyses

Glassbeads were analysed using the classification and terminology presented by Wood (2012). 98.34% of the beads found in Sena excavations are glassbeads. Only 9 beads found were made from bone, or possibly ivory. Most glassbeads were small, drawn glassbeads and dominant colours were brownish red, blue-green and blue with a diameter of 2.5-4.5 mm (Table 7.4–7.5).

Some of the glassbeads were diagnostic of various time periods. They were made from about 1600 AD up to the mid-1830s as well as small white oblates and cylinders which appear in significant numbers in southern African assemblages in this period. Many of them were opaque brownish-red, cylinders and oblates (known as Indian red). The black, solid blue, yellow, green, orange and blue-green were Indo-Pacific beads made in India from about the 2nd century BC to the 17th Century AD (Wood 2011, paper VI, p. 13). These beads were also made in Sri Lanka between the 1st and 10th centuries AD and Southeast Asia from the 2nd century AD up to about AD 1200 (Wood 2012, paper VI, p. 13; Macamo 2006, p. 265). The opaque brownish-red on green (known as Indian red on green or Cornaline d'Allepo) also occurred. These compound, or two-layered, beads were made in Europe (Venice, early on in Holland and perhaps elsewhere) to replace Indian red beads, especially in the African trade.

![Sena Bead colour groups](image)

Fig. 7.6. The bead colour groups from the Sena site. Os grupos das cores das missangas da estação de Sena indicando contactos Indo-Pacificos.

Table 7.4. The frequency of the bead colours by level from the Sena site. A frequência da coloração das missangas por nível da estação de Sena.

<table>
<thead>
<tr>
<th>ID</th>
<th>Level (cm)</th>
<th>Green</th>
<th>Blue</th>
<th>Black</th>
<th>Yellow</th>
<th>Orange</th>
<th>Blue-green</th>
<th>Dark brown</th>
<th>White</th>
<th>Brownish-red</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0-10</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>10-20</td>
<td>12</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>20-30</td>
<td>15</td>
<td>31</td>
<td>3</td>
<td>4</td>
<td>22</td>
<td>2</td>
<td>4</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>30-40</td>
<td>6</td>
<td>22</td>
<td></td>
<td>2</td>
<td>5</td>
<td>13</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>40-50</td>
<td>7</td>
<td>43</td>
<td></td>
<td>2</td>
<td>35</td>
<td>28</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>50-60</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td></td>
<td>3</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>60-70</td>
<td>1</td>
<td>33</td>
<td>4</td>
<td>2</td>
<td>37</td>
<td>1</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>46</td>
<td>146</td>
<td>12</td>
<td>10</td>
<td>109</td>
<td>2</td>
<td>52</td>
<td>149</td>
<td></td>
</tr>
</tbody>
</table>
Indian red on green beads was made from about 1600 AD up to the mid-1830s as well as small white oblates and cylinders which appear in significant numbers in southern African assemblages in this period. In summary, the glassbead types represented can at first glance be interpreted generally as earlier than the time-span suggested by the porcelain. However, the Indo-Pacific beads were produced also in the 17th century, and as may be suggested from Sena perhaps later. The Indian red on green was also produced until 1830, as discussed here. The presence of Indian red beads does suggest another earlier trade as Indian red were largely replaced in course of the 17th–18th century AD as trade networks became gradually controlled by Europeans rather than by the coastal Swahili traders.

7.2.5.6. Iron artefacts

The metal objects found in excavations in Sena, essentially arrowheads and adornment articles, do not differ considerably from other objects found on LFC sites. These objects are practically identical with the arrowheads found in the chief’s grave in the LFC burial in the southern Lake Malawi area (Juwawyeyi 1991). But the lack of iron slag in Sena suggests that people bought, or rather, exchanged their products with iron which had already been produced. D’Ornellas (1901) also commented on that iron was imported. However, I found different iron objects indicating forging activity which may perhaps be linked with secondary reworking rather than production. Despite the lack of iron slag in Sena, it is likely to have existed smiths who engaged in some production of tools, judging from the arrow heads found during our excavations and from some unidentifiable metallic objects (Plate 7.6). In addition to arrowheads and knives, people also used swords, hoes and axes and also some objects of adornment made from iron.

7.2.5.5. Bone

The analysis of 27 bones made by Dr. Shaw Badenhorst demonstrates that the fauna is very rich and diversified, despite the small number of bones recovered. Possible domestication of cattle (*Bos taurus* cf.) and different kinds of Bovidae (I, III) were identified. Other species identified include: African wild cat (*Felis lybica*), plains zebra (*Equus quagga*) together with unidentified large mammal, bird and fish, as it is shown in the table below (Table 7.6.). According to Montez (1969, p. 41), when Francisco Barreto reached Sena on December 18, 1571, he saw cattle which were used to draw carts in the attack against the powerful King Mongás which was probably a precursor to the later Maravi invasions (Newitt 1995, p. 57).

It seems that the whole lower Zambezi was suitable for raising cattle as shown in the data from my excavations. Cattle which could be exchanged for high quality ceramics found in

<table>
<thead>
<tr>
<th>Level</th>
<th>Drawn</th>
<th>Moulded</th>
<th>Carved</th>
<th>Diameter &lt;2.5</th>
<th>Diameter 2.5-4.5</th>
<th>Diameter 4.5-8.0</th>
<th>Diameter &gt;8.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>1.86%</td>
<td></td>
<td></td>
<td>1.31%</td>
<td>5.22%</td>
<td>0.56%</td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>6.34%</td>
<td>0.74%</td>
<td></td>
<td>0.74%</td>
<td>17.72%</td>
<td>3.73%</td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>21.45%</td>
<td>0.74%</td>
<td></td>
<td>9.33%</td>
<td>22.20%</td>
<td>2.99%</td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>12.65%</td>
<td></td>
<td></td>
<td>0.20%</td>
<td>6.90%</td>
<td>1.31%</td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>25.74%</td>
<td>0.18%</td>
<td></td>
<td>20.90%</td>
<td>1.11%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>7.46%</td>
<td></td>
<td></td>
<td>1.66%</td>
<td>2.25%</td>
<td>82.84%</td>
<td>14.92%</td>
</tr>
<tr>
<td>60-70</td>
<td>22.84%</td>
<td></td>
<td></td>
<td>2.59%</td>
<td>12.31%</td>
<td>7.74%</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>98.34%</td>
<td>1.66%</td>
<td>2.25%</td>
<td>82.84%</td>
<td>14.92%</td>
<td>0.0</td>
<td></td>
</tr>
</tbody>
</table>
this fascinating archaeological site. The data found in Sena during my survey brought a new perspective, and it is proved that further excavations are needed considering the extensive area covered by archaeological evidence.

Table 7.6. The analyses of bones from the Sena site. A análise de ossos da estação de Sena.

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>English Name</th>
<th>Portuguese name</th>
<th>Sena name</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felis lybica</td>
<td>African wildcat</td>
<td>Gato-bravo-Africano</td>
<td>Mphakabonga</td>
<td>1</td>
</tr>
<tr>
<td>Equus quagga</td>
<td>Plains zebra</td>
<td>Zebra do planície</td>
<td>Mbidzi</td>
<td>1</td>
</tr>
<tr>
<td>Bos taurus</td>
<td>Cattle</td>
<td>Gado</td>
<td>Ng’ombe</td>
<td>6</td>
</tr>
<tr>
<td>Bov I</td>
<td>Small bovidae</td>
<td>Pequeno bovino</td>
<td>Tung’ombe</td>
<td>1</td>
</tr>
<tr>
<td>Bov III</td>
<td>Large bovidae</td>
<td>Grande bovino</td>
<td>Ng’ombe ikulu</td>
<td>14</td>
</tr>
<tr>
<td>Mammal Large</td>
<td>Large mammal</td>
<td>Grande mamifero</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Bird Medium</td>
<td>Medium Bird</td>
<td>Passarinho médio</td>
<td>Mbalame</td>
<td>2</td>
</tr>
<tr>
<td>Fish Large</td>
<td>Large fish</td>
<td>Grande peixe</td>
<td>Cintsomba</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>27</strong></td>
</tr>
</tbody>
</table>

7.3 Recovered data, overall review

One of the targets of the excavations was to ascertain how deep the cultural deposits were and whether they would yield datable materials. There was a clear stratigraphic layering of finds and, as in Lumbi; the pattern of distribution of the finds in the stratigraphic layers is believed to be representative of the overall settlement process. In the lower levels of one testpit, typical EFC type pottery was found (wares with fluted rims). The presence of archaeological material at lower depths and the typology of ceramics encountered, suggest a long-term occupation of the area from EFC to LFC. The early phase of occupation has not yet been dated by absolute dates. The one $^{14}$C date gave the age of which is later than expected. Typologically, the EFC type pottery should date to 200-600 AD, even if fluted wares can occur also in later periods.

The dominant material from the LFC period comprised of open bowls and necked globular or carinated kitchen pots with different decorative motifs, mainly comb-stamped and combined with the parallel incised lines or triangles bordered by parallel lines on the neck or shoulder dating date typologically to between 11th–12th centuries AD or later. A more detailed understanding of the ceramic typology can only be built on a better regional chronology of the LFC ceramic traditions.

Not surprisingly, Sena gave evidence of existence of trade activities and social networks through the presence of imports. The dominant types of porcelain can be placed within the Early Qing period (17th to 18th century) and the Late Qing period (18th to 19th century). We also found a variety of European wares most of which can be dated typologically to the 20th century. The glassbeads are classified as Indo-Pacific beads, produced until the 17th century, and as may be suggested from Sena, perhaps later. The Indian red on green produced until 1830 was also present.

As discussed above, the exotic goods may help us understand shifts in the trade networks of Sena. In the early phase of later 2nd millennium trade (1700 AD), porcelain trade was dominated by Chinese wares which suggest that Sena was in direct contact with the coastal long-distance Swahili trade. In the later period, European wares become more common, perhaps linked with a shift in trade patterns, now channeled through the Portuguese. The
presence of Indian red beads in part support this, as the Indian red beads were largely replaced in course of the 17th–18th century AD by European traders.

The fourth target of the Sena excavation was to achieve some understanding of resource use of this 2nd millennium site. Though bones were not numerous, the analyses by Dr. Shaw Badenhorst demonstrates that the variety of fauna is very rich and diversified. Possible domesticated cattle (*Bos taurus cf.*) (6) were identified alongside different kinds of wild cattle. Other species identified include: African wild cat, and plain zebra together with unidentified large mammal, bird and fish. This suggests a diversified economy also during the LFC.

From historical sources, the communities in the lower Zambezi appear to have been characterized by large herds of domesticated animals (De Castro 1750; D’Ornellas 1901) and the development of the long-distance trade (Duarte 1993; Macano and Madiquida 2004; Macano 2006; Madiquida 2007). The villages in the lower Zambezi were different from the larger centres on the east African coast, as they were small and lacked stone architecture. Furthermore, we have no evidence of the existence of city-states in the lower Zambezi and it seems to have a complete lack of centralized power. The number of inhabitants in Sena increased with the newcomers from the neighbouring areas coming to work in services in the Portuguese establishments, and after the alternative route (Tete-Sena-Angoche) has been established (Rita-Ferreira 1982). Considering all of the above it seems obvious that the archaeological research in lower Zambezi is in an initial stage. More research is needed and should include not only Archaeology but also Anthropology, Ethnology and Linguistic.

Conclusão

Um dos objectivos da escavação era para certificar qual a profundidade de depósitos culturais e se eles podiam conter materiais datáveis. Os achados estavam no contexto dos sedimentos estratigráficos bem definidos, e como em Lumbi, os padrões de distribuição dos achados nas camadas estratigráficas acredita-se ser representativo em todo o processo de ocupação. Nas camadas inferiores de uma sanja foi encontrado um tipo de cerâmica da IFI típico, são objectos com bordo em canelura. A presença do material arqueológico até a profundidade inferior e a tipologia da cerâmica encontrada sugere longo termo da ocupação desde a IFI até a IFS. A fase inicial da ocupação não foi ainda datada pela datação absoluta. Uma datação de 14C deu a idade mais recente que o período esperado. Tipologicamente o tipo da cerâmica da IFI pode ser datada entre 200-600 AD, contudo objectos canelados podem ocorrer nos períodos tardios.

O material dominante era do período da IFS compreendendo tijelas abertas e potes da cozinha globular com pescoço ou carenado com motivos decorativos diferentes, principalmente estampado com pentes e com linhas incisas paralelas combinadas ou triângulos limitados por linhas no pescoço ou no ombro, tipologicamente datada entre séculos 11-12 AD ou mais tarde. A compreensão mais detalhada da tipologia da cerâmica só pode ser construída numa melhor cronologia regional das tradições da cerâmica da IFS.

Não é surpreendente que Sena deu evidência da existência das actividades do comércio e redes sociais através dos produtos importados. Os tipos de porcelana dominantes podem ser datados no período Qing Inicial (séculos 17 e 18) e Qing final (séculos 18 e 19). Também encontramos objectos Europeus que a maioria deles podem ser datados tipologicamente para o século 20. As missangas vidradas são classificadas como Indo-Pacíficos produzidos até o século 17 e como sugerem as missangas de Sena talvez até mais tarde. As missangas vermelhas e verdes produzidas na India até 1830 também estavam presentes.
Como foi discutido em cima, os produtos exóticos podem-nos ajudar a compreender as mudanças nas redes da troca em Sena. Na fase inicial do final do segundo milénio (1700 AD) o comércio da porcelana estava dominado pelos objectos chineses que sugere que Sena encontrava-se em contacto directo com o comércio a longa distância Suaíli. Nos períodos tardios os objectos Europeus tornaram-se mais comuns, talvez ligados com a mudança nos padrões do comércio, agora canalizados através de Portugueses. A presença de missangas vermelhas indianas, em parte suporta esta teoria como as missangas vermelhas indianas foram mais vendidas pelos comerciantes Europeus entre séculos 17 e 18.

O quarto objectivo da escavação em Sena er a para chegar a alguma compreensão do uso de recursos nesta estação do segundo milénio AD. Contudo, os ossos não foram numerosos e as análises do Dr. Shaw Badenhorst mostram que a variedade da fauna é muito rica e diversificada com a possível domesticação do gado bovino (Bos taurus cf.) (6) foi identificada e diferentes tipos do gado selvagem. Outras espécies identificadas incluem: gato selvagem africano, zebras das planícies juntamente com grandes mamíferos não identificados, aves e peixe. Isso sugere uma economia diversificada também durante a IFS.

Partindo das fontes históricas, as comunidades do baixo Zambeze parecem ser caracterizados por possuir grandes manadas do gado bovino e o comércio a longa distância. As aldeias no baixo Zambeze, diferentemente dos grandes centros da costa de África Oriental, eram pequenas e sem arquitectura de alvaneria. Também não temos evidências de existências de cidades-estado no baixo Zambeze o que pode indicar uma ausência completa do poder centralizado. O número de habitantes em Sena aumentou com a chegada de novos habitants vindos das áreas vizinhas para trabalhar nos serviços dos estabelecimentos portugueses e depois da estabilização da rota alternativa (Tete-Sena-Angoche). Considerando tudo o que aqui foi exposto parece obviu que as pesquisas arqueológicas no baixo Zambeze estão no estádio inicial. São necessárias mais pesquisas que poderão incluir não apenas Arqueologia mas também Antropologia, Etnologia e Linguística.
8. THE LOWER ZAMBEZI FROM THE MID HOLOCENE TO THE EARLY SECOND MILLENNIUM AD

Based on the description of my excavations and data recovered in Lumbi and Sena, the data shows three main prehistoric periods of occupation in the Holocene: LSA hunter-gatherer communities and Early Farming Communities (EFC) are represented in Lumbi. In Sena both Early Farming Communities (EFC) (undated) and Late Farming Communities (LFC) are represented. In this chapter, I will use the chronological framework for outlining a synthesizing discussion concerned with the Foraging and Farming communities in the lower Zambezi valley and delta. Based on the available information, I will highlight aspects of the economy, settlement patterns and social organization over time.

8.1. Late Holocene hunter-gatherers in the lower Zambesi

The origins of early hunter-gatherer communities in Mozambique are still unresolved, mainly owing to the lack of research in different regions (Sinclair et al. 1993, pp. 413–417). Moreover, the archaeology of the hunter-gatherer communities in the Marromeu area and its vicinity is poorly studied, and most of the previous research in the lower Zambezi has been associated with farming communities. In recent years, efforts to document and research hunter-gatherer community sites have been undertaken (Saetersdal 2004), but with more emphasis given to the study of rock paintings rather than the lithic technology.

The few studies that have been carried out in Mozambique on LSA show that the Wilton industry in Mozambique can be dated to approximately between 8,000–5,000 years BP with more systematic and widened exploitation of natural resources (Morais 1978, p. 3; Adamowicz 1987, p. 72; Saetersdal 2004). Data from the northern area of Zimbabwe shows a significant change in the lithic industry at the end of the Pleistocene and at the beginning of the Holocene; from a non-microlithic tradition, between approximately 12,000–8,000 BC to a microlithic industry (Orton and Halkett 2010, p. 21). The appearance of microlithic industry in the Mid-Holocene with quartz as raw material, has led to the hypothesis that there was an eastward migration along the Zambezi River of people with microliths to the delta area (Mitchell 2002).

In addition, as reviewed in Chapter 1, a lithic industry different from the Nachikufan Complex, has been identified north of the Zambezi (Phillipson 1977; Clark 1950a; Muianga 2013) that has led to the suggestion that there were two LSA ethnic groups separated by the Zambezi River as a physical barrier.

The archaeological excavations at Lumbi resulted in the collection of different, small quartz flakes, the majority found in the levels of 70–120 cm and near the water sources and raw material occurrences. The spatial distribution is extensive given that layers with lithics were found in each excavated test pit. This can be taken as an indication of a site that has been used extensively, presumably over a long time period, or that it was a quarry site which has been used over a considerable amount of time; plenty of debris, but few formal tools were found. Some retouched tools were discovered and they imply tool production for other activities, such as hunting or gathering. The lithic flakes found during excavation at the
Lumbi site are probably from a late phase of the LSA. Research by Deacon (1972) highlights the importance of being cautious in the analysis of the quartz assemblages, such as the Lumbi stone materials, before attempting to make correlations or differences with technological complexes such as the Wilton or the Nachikufan. Thus, at this stage, the question of technological complexes must be left open for further inquiry.

The evidence of hunter-gatherers found in the lower Zambesis and the delta of Zambezi demonstrate that they did not exclusively live in caves; the evidence here points to open sites close to resources as has previously been reported by Macamo and Madiquida (2004). The lithic evidence in Mozambique indicates continued presence of hunter-gatherers in the historic period and they seemed to have occupied the terraces along the rivers (Morais 1978, p. 3). In future research, it is crucial to undertake research on the terminal Pleistocene for gaining a better understanding of the origin of the hunter-gatherers settled in Mozambique.

8.1.1. Social organisation

In general, the concentration of data – mainly small, quartz flakes found during my excavation – cannot be used to estimate the precise number of individuals who lived at the Lumbi site. But based on the number of quartz flakes (between 3 and 5 flakes each layer and found in all excavated test pits) it may have been a considerable number of individuals. The density of archaeological material suggests that the proximity to permanent water created the conditions for semi-permanent settlements in the dry season.

The initial occupation of Lumbi may be the result of migratory movements of hunter-gatherer communities along the south margin of the Zambezi River, as discussed above. First people settled in the highlands of the interior and gradually they moved to the lower part of the river closer to the delta, following the occurrence of various resources (Phillipson 2005). The Zambezi River may have been a natural barrier for these migratory movements, as raised in the discussion above. Lumbi may have attracted the aggregation of the pre-historic communities because of the availability of fresh water in the dry season. This was important also for the breeding of animals during the dry season, which facilitated hunting (Barnard 1983; Lindholm 2006). Possibly, the Lumbi sites were used for regular seasonal movements of the hunter-gatherer communities (Barnard 1983; Mitchell 2002; Sadr 2013).

A number of studies (Walker 1995; Ehret 2002; Sveiby 2009) stress that the hunter-gatherer bands assert strong egalitarian ideals; equality is repeatedly acted out and publicly demonstrated. The importance of sharing is emphasized and reinforced by daily peer pressure. Sharing of more valuable resources, such as meat or food, is regulated by strict rules, which ensure wide distribution. The similarity in the small quartz flakes found in Lumbi shows the sharing of knowledge in technology and possibly of the resources of the hunter-gatherer bands. In general, I surmise that the hunter-gatherer communities groups were rarely larger than 50 people and regularly dispersed into family units for the winter season, when food is less abundant. There were no leaders; instead there were many social codes regulating behaviour, among them the kinship system, guided by the elders’ rules with responsibility of the band. They, in fact, initiated and applied management practices to influence its functionality (Sveiby 2009, p. 13). The social organisation of the hunter-gatherer communities is less complex than the organisation which appeared in the farming communities. The bands were likely to have been grouped in linguistic clans, unified by births or marriages with a reduced number of individuals from some tens until they reach hundreds of individuals who gathered in an area which varies between 12 km²–8,000 km² (Walker 1995, pp. 242–243; Ehret 2002, p. 53; Sveiby 2009, p. 13).
Another important phenomenon is linked to particular rituals and ceremonies. In Lumbi, no evidence of this kind was found, perhaps because it is an open air site where ceremonies prior to hunting were carried out around a simple fire (Barnard 1983). In the neighbouring regions, such as Manica and Zimbabwe, the rock paintings show a clear set of magic rituals and ceremonies that were carried out before the departure for hunting, or simply portraying a dance (Garlake 1987, pp. 39–47; Saetersdal 2004).

8.1.2. Resource use

The Holocene industries are related with more systematic and widened exploitation of natural resources (Morais 1978, p. 3; Adamowicz 1987, p. 72; Saetersdal 2004). Hunting was complemented with vegetable gathering and fishing. The use of microlithic tools resulted in the increase of production of food owing to their easy handling and efficiency (the tools were slight and sharpened). In general, the common methods of subsistence of hunter-gatherer communities are mostly dependent on the food they gather daily in the forests (Musonda 1987). The Lumbi area has all the necessary resources for hunter-gatherer communities. Still in Marromeu today, the large concentration of herds of wild animals is notable in areas with permanent water sources, mainly in the lower areas along the rivers. As discussed above, this situation probably induced hunter-gatherer groups to settle in seasons near the places where the hunting and water was abundant, returning to join with other groups at the time when the herds move to other areas (Barnard 1983, p. 198).

The small quartz flakes found in Lumbi suggest that communities used the bow and the arrow. This technique, which appears at the end of the Pleistocene (Wadley 1993, p. 258), has contributed considerably to obtain better results in hunting. If the arrow head had been smeared with poison it kills the animal a few hours after darting (Smith et al. 1991, p. 81). We have no data from Lumbi which indicates the use of this technology, given as it is not visible or conserved. However, it is possible that it has been produced and used by the hunter-gatherer communities throughout the southern Africa region or much earlier, possibly already at the end of the Middle Stone Age, together with the introduction of the bow and the arrow (Wadley 1993, p.258). Hunting was probably carried out by men in organised groups; it is common to observe in the rock paintings of the hunter-gatherer communities the scenes of hunting conducted exclusively by men (Saetersdal 2004).

The diet of the hunter-gatherer communities in the Lumbi area was not only limited to the consumption of meat. In the Khoisan ethnography, it has been noted that larger part of the diet was based on plant foods, and meat was a complementary protein source. In a study made 20 years ago of San hunter-gatherers in the Kalahari, it was demonstrated that 70% of their diet derived from plant foods (Wadley 1993, pp. 259–260). The task of gathering was specifically reserved for women, the elderly and children (Adamowicz 1987, p. 75). Unfortunately, preservation of archaeobotanical material was poor, but in TP 7 in Lumbi I found broken fragments of seeds of marula (*Sclerocarya birrea*), a species that has also been found frequently in rockshelter/cave sites in South Africa (Wadley 1993, pp. 259–260; Walker 1995), which may indicate the consumption of the fruits of this plant. The site is today surrounded by giant marula trees and local residents say that the marula fruits are still consumed today; the kernel is pounded and serves to temper cooked meat or leaves. Apart from this fruit, there are wild yams (*Dioscorea*), which are consumed when there is a famine in the country. As has been discussed here, the Lumbi site is located in an area very rich in fauna, forest- and mineral resources to the production of microlithic artefacts. The variety of fruit plants, tubers and other consumable roots, were probably central resources that maintained the communities that dwelt here in the past. However, the availability of such plants depended on the different environments and climatic conditions. In future studies,
pollen analysis is important to determine the environment of the hunter-gatherer communities and to reconstruct the constituents of the forest of this area in the past.

8.2. EFC on the delta of the Zambezi

This study has resulted in new data concerning the Early Farming Communities in the Zambezi delta. It seems likely that the EFC settled here as a result of variable resources. It is necessary to consider that prior to this study no research had been carried out in the Lower Zambezi resulting in the identification of new sites. As a result, this region was regarded as unpopulated during this period. However, findings from neighbouring countries such as Zimbabwe, Malawi and Zambia (Robinson 1976; Phillipson 1977; Huffman 1989; Juwayeyi 1993; Pikirayi 1993), in combination with the wide range of resources (faunal, water and forestry), rich soils for agriculture (alluvial plains) and raw-materials (clay and stones) available in the Zambeis delta region, led me to the hypothesis that there would indeed be a presence of EFC also in the lower Zambezi.

8.2.1. The origin of the EFC in Lumbi

Represented pottery styles, bowls with fluted rims, grooved necks, some cases on the shoulders, comb- and shell-stamped, dentates, punctates broad lines, etc are similar to those found on the coast, both to the south and north (Kwale/Matola/Silver Leaves), showing also some similarity with the Nkope pottery from Malawi (Robinson 1976).

The presence of ceramics of the Matola Tradition in Lumbi, makes it clear that the communities who settled in this area came from the coastal plains and that they belonged to the “Eastern Stream” traditions (Phillipson 1977) of eastern Africa. The Lumbi pottery is a part of the "Chifumbaze Complex", which seem to have originated in the western part of the Lake Victoria during the middle of the first millennium BC. The use and making of pottery expanded along the coast line to reach southern Africa at the end of the first millennium BC (Huffman 1989; Chami 2006, pp. 120‒125; Kohtamäki 2014, p. 108). Throughout this region pottery has similar characteristics in the decoration and shape as that of the great lakes region, Central Africa.

The rapid expansion of the “Chifumbaze Complex” communities should not be seen as a simple migratory population movement. Instead, there may have been many other dynamics involved. It has been suggested that the transition between hunting and gathering and farming took place as a frontier movement with different phases (Alexander 1984; Lane 2004; Barham and Mitchell (2008, pp. 404‒405). The possibility of innovation and creolisation amongst LSA communities has also been discussed by Marjaana Kohtamäki (2014) but here I prefer to build on the moving frontier model as defined by Paul Lane (2004) and Barham and Mitchell (2008, pp. 404‒405). In the pioneering phase, farmers bring domesticates and new technologies. Relationships between hunter and gatherers are based on co-operation. In the substituation phase there may be some competition, but eventually hunter- and gatherers become incorporated into farming communities. The last phase is one of consolidation when communities intensify agricultural activities and remaining hunter- and gatherers are marginalized. The first phases have been suggested to be a moving frontier in the sense that new landscapes are being settled (Lane 2004). Lumbi, which has a continuous settlement from the LSA to EFC, has the potential to add to our understanding of this process. As shown in Chapter 6 there is some degree of overlap between lithic material and ceramics. In Chapter 6, I have also argued that there is evidence of a secondary movement only in a few test pits. Concomitantly, on a general level, the mix in material cannot be explained by movements related to secondary soil processes. Thus I conclude that the archaeological assemblage at
Lumbi does not suggest a break in settlement. Nonetheless, a definite shift in material culture use/production can be seen at 50–60 cm depth in most of the Lumbi test pits. Though there still are very few dates available, one $^{14}$C charcoal date places this transition tentatively at 54–235 AD (cal.). Above this depth there are only few lithics found and this may suggest that stone tool makers that had not been assimilated into the farming communities were marginalised into new areas.

The spread of ceramics covered more than 3,000 km in less than two centuries (Phillipson 2005, p. 252). Moreover, it could very well be linked to new navigation techniques which enabled the crossings of the large hydrographical basins in the expansion area. As discussed in Chapter 1, the Zambezi Valley during the LSA is considered as a physical barrier between different cultures of rock art, and possibly also technologies. If this was indeed the case remains to be explored. But during the EFC this barrier was evidently crossed and there is no longer a division of traditions and technologies – at least not from the viewpoint of the ceramics. Breen and Lane (2003, p. 273) have discussed, on the basis of the findings of LSA lithics on off-shore islands of Tanzania, that people during the LSA had boats. Klapwijk (1974) has also suggested that the manufacturers of “Chifumbaze Complex” pottery reached the southern Africa by ships or boats. For the Zambezi delta it is evident that some method of navigation would have been used to cross the large rivers and seas to settle on some islands. To reach Lumbi from the north has only been possible crossing the river using some sort of floating vessel.

The innovations related to the “Chifumbaze Complex” were not limited to ceramics but also to other innovations such as agriculture and the raising of animals, metal production, as well as regional exchange and long-distance trade networks (Pwiti 1991, Swan 1994, pp. 71–72). It is very reasonable to assume that a new social organization followed with these innovations.

8.2.2. Social organisation

It has been suggested that the first agricultural communities in southern Africa were organised as small village communities with low social stratification, corresponding to the type that Friedman and Rowlands (1977) have designated “tribal” societies. Huffman (2001, 2007) suggest a particular settlement organisation (Central Cattle Pattern) and traces this from recent time to the settlement organization of EFC-sites in southern Africa. The settlement organisation is characterised by a central kraal in which high-status individuals are buried. Pwiti (1996a, p. 150, 1996b) propose that the spatial separation of villages during the EFC and the settlement organisation of sites, from where we do have evidence of such, indicate that each village was composed of farmers/peasants with relatively equal status.

The archaeological evidence at Lumbi suggests a permanent settlement in the area that was settled relatively densely. If this suggested pattern is true for also the large region it means that there was a substantial increase in the number of inhabitants. This in turn demanded a social organisation with a more well-defined political structure. However, such social structures are quite likely to have differed considerably from the political structures of later LFC, which was based on accumulation of wealth that was not present during the EFC. At Lumbi, such social structures could have been a simple council of elders or a hereditary chief (see discussion in Greenfield and Schalkwyk 2003). No evidence of hierarchy was found in our excavations and it seems likely that the social organisation of Lumbi were governed by kinship groups, where the oldest person of the group was considered as the head (see Pwiti 1996b). Still today, this situation can be noted in different ethnic groups of Mozambique (Madiquida 2007). However, the social organisation also depended upon
subsistence and production activities carried out by individuals in the groups and the social roles this carried.

During the excavations at Lumbi one of the test pits contained a funerary pot with human bones. This funeral is the first evidence of its kind in this area to be associated to the EFC. It is not known which individual was buried in the pot or what this individual’s social status was. The bones inside the pot did not have any kind of objects associated with them.

Lumbi was not an isolated settlement. In the area of Nensa, located approximately 5 km southeast of Lumbi, Professor Paul Sinclair accompanied by the author, located ceramics similar to those of Lumbi. This might add credibility to the arguments that the communities of “Chifumbaze Complex” were organized in clan societies or tribal units (Greenfield and van Schalkwyk 2003, p. 121; Greenfield and Miller 2004, p. 1511). The units comprised of a few related villages separated by short distances from one another, perhaps under the hegemony of a hereditary chief, although this must be explored on the basis of more archaeological data.

8.2.4. Resource use

The location of the Lumbi site on the alluvial plains of the right bank of Zambezi River and indicates that the site was associated with good farming conditions. So far no pollen analysis has been undertaken and there was no archaeobotanical material retrieved at the Lumbi site, hence it is not possible to estimate the timing for beginnings of cultivation at the site or the variety of crops planted. The excavations in Lumbi show that these communities used iron tools. We did not find hoes during our excavations, but for the amount of iron slag and high variety of objects, including those of adornment, it is probable that they also produced hoes, knives and axes for agriculture.

Some archaeologists in southern Africa (Huffman 1982; Morais 1988, p. 130; Chami 1994a: 45; Pwiti 1996a, pp. 149–150; Plug 1997, p. 85; Phillipson 2005, p. 260) argue that in the EFC the number of herds of the cattle was substantially reduced as result of the tsetse fly. Pwiti (1996a, p. 149) states categorically that because of the tsetse the middle Zambezi valley is not an area suitable for domesticated cattle and that hunting was the most significant method for obtaining meat. Today there is however a considerable number of cattle present in the area. Bones, resembling domesticated cow and also sheep/goat, were found in the EFC layers at Lumbi which may suggest the presence of pastoralism in the lower Zambezi in the early first millennium. This possibility needs to be explored in future research. The chronology of livestock herding in the Zambesi is in general an area of research that requires further research.

The excavations in Lumbi revealed a considerable quantity of bones of several wild animals and this is not surprising as the area even today is a wealthy region in terms of faunal resources. The metal arrow heads and spear points may suggest that the practice of hunting was a way of obtaining complementary food supplies and meat. In addition to hunting, fishing was an important activity and many fish bones were recovered from Lumbi. As an alternative to agriculture and hunting the occupants of Lumbi resorted to gathering wild plants, roots and tubers and probably also larvae commonly found in rotten tree trunks, and which are consumed by the people living around Lumbi today. Shells of giant African land snails (Achatina fulica) found during excavations points in the same direction.

Any reduction in cattle would probably have induced the communities in the EFC to intensify hunting. In some areas these communities were specialized in hunting one particular species. To give one example, at the EFC site Kadzi in northern Zimbabwe, bone
assemblages were dominated by buffaloes. There are only a few remains from domesticated cattle, and Plug (1997) suggests that these particular cattle were kept for milk, blood and ceremonial purposes. In Lumbi, the category large bovidae (*Bov III*) dominates, thus the same pattern of hunting and cattle keeping as suggested by Plug for Lumbi may be relevant also for Lumbi.

The discovery of marine shells in Lumbi, despite the small number, shows evidently that Lumbi residents visited the sea coast. In the EFC sites of the coastal zone, especially at Chibuene and Xai-Xai beach, there are midden accumulations of large quantities of shells which show an intensive exploitation of these resources (Sinclair 1987; Morais 1978, 1988). So far there is no additional evidence of the contact with other communities and exploitation of marine resources, but this may change with more extended research in the future. The communities could also have exploited other resources of the Zambezi basin that we so far have no evidence of in the archaeological assemblage. Given the location of the site, hunting of both hippopotamus (*Hippopotamus amphibius*) and crocodile are to be expected, though there is no archaeological evidence of this at the moment.

The current inhabitants of Lumbi settled here sometime between the end of the 19th century and the early 20th century AD, as a result of the creation of the prazos de Chupanga (Rita-Ferreira 1982). It is interesting to note, that the local oral tradition indicates that the ancestors of the present population were the first to settle in the Lumbi area. In this tradition, it is said, that they used tools of wood and stone in the agriculture and that they never domesticated cattle.

8.2.5. Regional and intra-regional trade

The analysis of regional and intra-regional trade focused on internal systems of exchange between the local communities and on retrieving evidence of long-distance trade networks. So far no exotic, imported goods have been found in Lumbi associated with the EFC. It is possible that the products of exchange between local communities were animal products, cereals, iron implements and pottery. The villages seem to be self-sustained in terms of resources as well as raw materials. However, the need for some resources made the inhabitants of Lumbi enter into the world system of exchange, perhaps exchanging salt with other products or even raw material for the production of instruments.

The growth of the mercantile economy began with an exchange system redistributing goods between families of the local community (Duarte 1987, 1993). Fagan (1969) have identified two different circles of exchange, 1) between the hunter-gatherers themselves (ochre vs food); 2) between the EFC themselves (iron ore, copper and salt). The demand for salt has implied a connection with the coast and subsequent entry into a long-distance trade network. The data in the interior regions of southern Africa associated with EFC (Pwiti 1991; Swan 1994, pp. 71–72), is contemporary with that on the coastal areas of Mozambique, in particular Chibuene (Sinclair 1987) where the first connections were established with Asia in the mid-first millennium AD (Sinclair 1987; Wood 2012).

The presence of ceramics with different decorative motifs and manufacture may indicate contacts with different cultural groups. Some decorative elements from the delta area of Zambezi River are similar to motifs of pottery from the Malessane foothill in Gurue (dos Snatos Rodrigues 2006, p. 426-430) and from north Zimbabwe (Pikirai 1994, pp. 124–125). These similarities may suggest interaction between different groups through trade contacts or exchange.
8.3. The LFC in the lower Zambezi

Though Lumbi also contain LFC ceramics in the upper layers, I will now shift my focus to the results and context of Sena and the lower Zambezi. The research on LFC of the Sena area and in the entire lower Zambezi is somewhat complicated, considering the lack of previous research. This is despite the fact that Sena has been considered as one of the main commercial centres in the Zambezi Valley in the past (Dos Santos [1609] 1999; De Castro 1750; Chittick 1975; Freeman-Grenville 1975; Trimmingham 1975; Morais 1978; Rita-Ferreira 1982). The Sena site was selected for more detailed research following up on Arab and Portuguese accounts and information also from other LFC sites in the larger region. As explained in Chapter 5, during the archaeological survey the mountain slopes of Balamwana were examined and also the Zambezi River margin toward the Chemba district. The evidence of the LFC was very widespread, even on the mountain slopes.

One of the overall aims of the excavations at Sena was to explore the origin of the LFC in Sena. This research was made in two phases: first, I studied the communities which settled here before the European expansion in this area; secondly, I analysed the crafts practised by the population settled in the area, after the Portuguese occupation and the introduction of the Prazo system in the 16th century AD (Rita-Ferreira 1982). Through the excavations of Sena, though limited in scale, we now know that the occupation of Sena dates back to the beginning of the second millennium AD. There is also an even earlier component with EFC pottery (similar to that of Lumbi) that has not yet been dated by absolute dates.

The dominant material was from the LFC period comprised of open bowls and necked globular or carinated kitchen pots with different decorative motifs, mainly comb-stamped and combined with the parallel incised lines or triangles bordered by parallel lines on the neck or shoulder, dating typologically to between 11th–12th centuries AD or later. One charcoal sample taken from the vicinity of a vessel was dated 1070-1266 AD (95.4 %). The LFC ceramics of Sena are similar to that of the site Mavudzu, in southern Malawi (Davison-Hirchmann 1984; Juwayeyi 1993) and also to ceramics from Kalambo Falls (Huffman 1989, pp. 174–176). The red and graphite burnished bowls are similar to those reported by Chittick’s (1974) and are found also on the Comoro Islands (Fleisher and Wynne-Jones 2011, p. 271). The stamped decoration motives are also very akin to the ceramics of the Lumbo tradition (Sinclair 1987; Duarte 1993; Madiquida 2007). This ceramic tradition is often found in a series of archaeological sites throughout the north coast of Mozambique, dated between the 13th and 14th centuries AD (Sinclair 1985; Adamowicz 1987; Liesegang 1988; Duarte 1993; Duarte and Meneses 1996). Thus, the ceramics suggest an occupation of Sena earlier than the Portuguese expansion.

The changes which occurred at the end of the first millennium and the beginning of the second millennium AD, which resulted in the emergence of the LFC, were based on a mosaic of cultural interaction and activities. Hunting and gathering continued to be practiced but was supplemented by livestock herding and agriculture (Stahl 2004; LaViolette and Fleisher 2005). The emergence of the LFC communities was accompanied by several changes such as an increase of the number of cattle and improved agriculture and intensified long-distance connections and trade. The link between the rise of hierarchical societies and livestock production makes it likely that the area of Sena was important in this regard, as it had ample areas for grazing and this may explain its emergence as a trade centre. Still today, in all of the lower Zambezi area, Sena is the only place where the domesticated cattle introduced in the pre-colonial period still persists, which in turn suggests the suitability of the landscape for livestock production (Duarte 1987). Cattle and sheep were probably obtained through
exchange for gold coming from the interior. The communities were also involved in agriculture, in local exchange, regional and long-distance trade systems.

The question concerning the exact date of the appearance of the early inhabitants and the integration of Sena in the international network system of trade has a long history (Junod 1936; Rita-Ferreira 1982; Duarte 1987. As shown by the archaeological material presented here there was a settlement at Sena that dates back already to the EFC and early LFC. Furthermore, as discussed in Chapter 4, when the Portuguese arrived to Sena there was a resident Muslim community with traders and Sena was integrated in the trade network of the interior and the larger region (Father Monclaro 1569 in Theal 1964, Vol. 3, pp. 202–253) De Castro 1750; Montez 1969, p. 41; Newitt 1995, p. 12, pp. 53–54). Sena appears to have been subject to the polities in the interior, but as far as we know today Sena had no local, centralised urban society equal to the eastern Africa Swahili towns or the Zimbabwes in the interior (Morais 1988; Pwiti 1996a; Sinclair and Håkansson 2000; Pikirayi 1993, 2001; Macamo 2006). Most likely, the Portuguese occupation of Sena in the 16th century made the further development of political power in Sena possible and through this the long-distance trade network intensified.

The quest for control of gold routes from the Zimbabwe plateau led the Portuguese to construct the S. Marçal fortress, which is the first Portuguese defensive system in the inland of Mozambique. Sena acted as the basis for the opening of the country of the Monomotapa State, and was also the key access point to the Zambezi, the primary route of trade between the coast and the inland. Between the 17th and 18th centuries, Sena was, truly, the heart of the Portuguese establishment on the Eastern African Coast (De Castro 1750; D'ornellas 1901; Montez 1969, p. 47). The occupation in Sena attracted groups of people from the inland to work in services, such as farms, transport and even in the army against insurgent African states (Rita-Ferreira 1982). Manufactured ceramics and precious metals laid the basis for the development of long-distance trade.

8.3.2. Social organisation

The period between 11th and 13th centuries AD witnessed deep changes in the social organisation and in the ideological base. Fundamental productive methods were slightly changed and a hierarchical organisation within and between settlement became prominent with larger central settlements being built in stone (Kusimba 1999; Kessy 2003; Stahl 2004). The elite maintained an association with power, ancestral cults, territory and rainmaking (Huffman 2008). In addition to the trade of exotic goods, cattle played an eminent role for the emergence of hierarchical societies based primarily on keeping and exchanging livestock, making way for the later trade in other products (Pwiti 1991; Sinclair et al. 1993; Huffman 2008; Pikirayi 2007; Sinclair et al. 2012). According to Pwiti (1991), the cattle herds had greater value for some societies of the LFC in southern Africa than in the preceding EFC. The remains of fauna in large archaeological sites, such as Mapungubwe, Great Zimbabwe and in Moor Park (Huffman 2004, p. 89) demonstrates how the cattle were a dominant social capital and helped to structure social differentiation and power relations, where some individuals who had large herds, commanded the society (Pwiti 1991). The LFC period also shows a shift in settlement patterns; the majority of the people lived in the more open valleys while chiefs and nobles lived at easily defensible elevated places in the landscape, such as on the top of mountains and hills (Maggs 1995). These different levels of occupation reflect distinctive positions of power and political status (Huffman 2008). This pattern of location can also be observed in the area where the archaeological site of Sena is located, as it is placed on an elevated area on the slopes of Balamwana Mountain overlooking the landscape.
Over time, the cities were more orientated to market activities and the formation of city-states (Sinclair and Håkansson 2000). In Sena, the local community transformed familiar subsistence economies to trade economies based on surpluses with production of marketable goods, such as: ivory, iron, gold and skins of animals (Duarte 1987, p. 7). However, we know little of the settlement organization of Sena before the 16th century. The archaeological study of Sena presented here shows evidence for heaps of ceramics on the surface in different areas of the site, which suggest that settlement was dispersed and so far there is no evidence of a centralised settlement similar to those on the interior or the coast. In the end of the the 16th century, the small village that existed at Sena had five Muslem families under a Muslem ruler who was vassal to Monomotapa (Father Monclaro in Theal 1964, Vol. 3, pp. 202–253). The traders were intermarried with the families of the Karanga rulers of the interior, and also with the families of the traders on the coast (Newitt 1995, p. 12). Written sources do not discuss in detail the organisation of other communities but the larger centralised settlements (or towns) were organized according to the following societal strata: the leaders and the rich lived in the town, the smallhold farmers and the poor lived around the town (Dos Santos 1609; De Castro 1750; Pikirayi 1993; Macamo 2006). From Father Monclaro (in Theal 1964, Vol. 3) we also know that there were several smaller chiefdoms under local rulers, Fumos, where the political organisation appears to have been fluid. Possibly, this is also how Sena was organised in earlier times.

By the 16th century, or earlier, traders with their families and many other residents in Sena had taken on the Muslem faith. The growing numbers of settlements and towns have contributed to increased instability and sometimes to tensions and conflicts over resources, which may have encouraged converting into Islam as a way of establishment of relations of the parties, traders and competing elites (Wright 1993; Newitt 1995, p. 12; LaViolette and Fleisher 2005). The mosque at Sena is still in use and there is also a Muslim funeral area, but so far no burial has been dated archaeologically.

Some researchers (Rita-Ferreira 1982; D'Ornellas 1901) have suggested that Sena was once the capital of a great empire that controlled all trade in Sofala, and in addition that this was the place where a paramount ruler resided. So far, the survey and excavations in Sena did not result in any evidence of a royal capital, and later written sources suggest that Sena was under the paramount rule of the interior polities as Monomotapa, as discussed above. The 16th century sources mentions several polities alongside Monomotapa, Barue and Manica and Quiteve – all of which controlled areas along the lower Zambezi River, and the latter also the Zambezi River mouth (see Chapter 4). In the map of al-Idrīsī from 1154 AD, the city of Sayūna is displayed at the mouth of Zambezi River, but this has not yet been located archaeologically. Furthermore, at this stage the suggestion that Sena was an independent polity is not supported archaeologically. Still doubtless, Sena was a major centre of trade as indicated in the vast amount and variety of evidence found in the excavations – and this is also clearly what attracted the Portuguese to Sena. Despite 16th and 17th century attacks by the Mongas and Maravi (Branco 2007, p. 5; Newitt 1995, pp. 62–64, 69, 71–72), Sena continued to act as an independent area, developing and maintaining the local, regional and long-distance trade system until and also after the occupation by the Portuguese.

8.3.3 Agriculture

Sena is located in an area rich in permanent water sources and two types of arable soils: the alluvial plains of Zambezi River and the colluvial soils of the Balamwana foothills. Such landscapes are ideal for LFC settlements and similar environments characterise most LFC sites in southern Africa (Pwiti 1996b; Phillipson 2005; Pikirayi 2007). The LFC seem to have emerged as the result of internal developments in the EFC. The agriculture of LFC was
initially based on African cereals, introduced during the EFC period. As related in the 16th century written documents presented in Chapter 4, the Sena communities grew nachenim, referred to by Father Monclaro (see chapter 4, p. 68) to either pearl millet (Pennisetum glaucum) or finger millet (Eleusine coracana), even though the land was not fertile for crops as sorghum (Sorghum bicolor). It is probable that also yams (Colocasia esculenta) were cultivated at this time (Phillipson 2005, p. 297). During the LFC period new crops were also introduced from outside Africa; first from Asia and later from America (Fuller 2003). Owing to the entry of plants from Asia, mainly Asian rice (Oryza sativa) and/or indigenous African rice (Oryza glaberrima), rice as a crop increased in importance. With the European expansion, American plants such as maize (Zea mays), bean (Phaseolus vulgaris), groundnut (Arachis hypogaea) and sweet-potato (Ipomoea batatas) were introduced (Dos Santos [1609] 1999). Ahmad ibn Majid al-Sa'di (discussed in Chapter 4) noted the presence of large coconut trees as the main sign when approaching the entrance of Sofala in 1470. This can be taken as an indication that this plant was used in the Zambezi valley even before the Portuguese came to this area (Khoury 1983, p. 19).

Though new species were introduced, the African plants were never completely abandoned, owing to their resistance to the sudden climatic changes if compared to the foreign plants. Indigenous species continued to be grown and were important, especially when there was a low production of maize. In addition to cultivated plants, gathering and hunting continued to play a leading role in the diet of communities in Sena in the LFC period. The Sena area, as was mentioned in a previous paragraph, was also very rich in faunal resources. For this reason, the livestock herding was complemented by hunting. In the excavations in front of and inside the fortress we found different animal bones, fish-bones and iron arrow heads confirming that hunting and fishing was a part of people’s livelihood.

8.3.4. Domesticated animals

The people at Sena possessed several herds of domesticated cattle and other animals and some of them were brought from India or North Africa, for instance camels, donkeys and horses. In the expeditions of Francisco Barreto (1572) to Sena and the interior, donkeys, camels and the force of cavalry as well as the 25 carts pulled by oxen were used (see discussion in Branco 2007, p. 5). The suitability of Sena as a cattle country may have varied significantly over time as some written sources do account for cattle deaths, probably associated with the tse-tse (see Chapter 4). As discussed in Chapter 8, Pwiti (1996a, p. 149) has argued that the middle Zambezi valley is not an area suitable for domesticated cattle. However, today there are a considerable number of cattle present in the area. Instead, it could very well be a reason why cattle at times was kept locally, but at other times cattle was imported, as was related to Father Monclaro in 1569 (Chapter 4, p. 68).

Sena had extensive areas for pasture and abundant water sources including the Zambezi River which passes only a few meters from the village. In various written sources, e.g. the Arab (Freeman-Grenville 1975, p. 15; Khoury 1983) and in the Portuguese (Duarte Barbosa 1518; dos Santos [1609] 1999; de Castro 1750; D’Ornellas 1901) several herds in Sena and Sofala are described indicating that livestock herding was very developed in this area. According to Al-Ma'sudi, the king of Sofala ruled a force of thousands of men mounted on oxen because they didn’t know camels, horses or donkeys (Freeman-Grenville 1975, p. 15).

When the Portuguese reached Sena (D’Ornellas 1901: 14), there was still trade of animals in exchange for gold and some animals were kept, but there were also animals obtained through exchange. The cattle in Sena were most likely kept for exchange (D’Ornellas 1901, p.
There was probably a significant difference in how the cattle were valued in Sena compared with other parts of southern Africa, where the cattle were considered the most significant wealth and thus acted as the basis of all social distinctions, as discussed above. In the lower Zambezi River valley and delta cattle probably did not play the same role, as the main products for exchange here were gold and ivory, and all exotic products were obtained through trade in these items. The accumulation of wealth in Sena depended mostly on gold and imported exotic goods along with imports of meat, salt and iron.

8.3.5. Regional contacts of exchange and long-distance trade in Sena

The local exchange systems were extended at a regional level already at the early first millennium. In the study area, the system of local exchange and redistribution was advanced and continued for a number of generations before caravans were organized from the inland to the coast and vice-versa (Hallet 1974; Duarte 1993; Wright 1993). At this time there are substantial evidence of trade between the coast of Indian Ocean and the inland. The settlements had seen a considerable expansion during the 9th and 10th centuries, and the production of iron implements and beads involved specialised local craftsmen (Wood 2012). In almost all areas, on the coast as well as in the interior, the communities were deeply involved in the long-distance trade, exporting products such as metal objects, gold, ivory, horn and animal furs. In exchange, they obtained beads, cloth, porcelain and other items of adornment (Kusimba 1999; Kessy 2003). The regional exchange, particular in market places like Sena, played an important part in linking the gold miners and dealers with traders with goods from Asia. Obtaining the gold was not an easy task. The mines were usually located in areas very difficult to access (Branco 2007, p. 5) and not everybody participated in the mining. Therefore, as discussed by Newitt (1995), the establishments of market places (or feiras) were crucial both for buyers and sellers.

Some of the glassbeads found in the Sena excavations, in particular the Indian red and Indo-Pacific beads, were made until the 17th Century AD and from about the 1st century AD until 1200 AD. This is a clear evidence of an early trade in this area. Most other imports were, however, dominated by porcelain that dates to a later period – Early Qing period (17th to 18th century) and the Late Qing period (18th to 19th century) but also later European ware. In Chapter 7, I have discussed how a possible shift in imported ware and origins of imports can be linked with a shift in trade patterns around 1700 AD when the Portuguese became increasingly involved in the trade.

In the 16th century, trade was under taxation of the interior polities and this was most likely the case also during earlier times. Thus, polities organized in a similar fashion as city-states controlled import through tributary rule and taxation, and it seems like they possessed considerable amount of different goods which were used in exchange (Pwiti 1996; LaViolette and Fleisher 2005). But in the late historic period, trade was carried out directly between the Muslim traders and other local communities. D’Ornellas (1901, p. 14) describes how the Muslim traders put up their products for sale, meat, salt and iron on the floor and residents brought the gold nuggets in return, if the trader were satisfied with the gold a deal was made. D’Ornellas (1901) also claimed that the inhabitants of Sena did not produce iron; instead they bought the iron which they exchanged for gold from the outside. In the excavations only secondarily prepared metal was found, so this statement is perhaps supported by the archeological excavations.
9. CONCLUDING DISCUSSION

Above I have highlighted and discussed the main results of archaeological works in the lower Zambesi River and Zambesi delta. In this section I will briefly relate the results to some of the current main issues discussed in southern Africa’s archaeological research.

My study has contributed with new archeological and historical insights into an area that has been poorly researched archaeologically. The general understanding of the long-distance trade networks and the expansion of the Monomotapa State depended mainly on information from Zimbabwe and Malawi and to a lesser degree from Mozambique (Robinson 1976; Davison 1991; Juwayeyi 1991, 1993; Pwiti 1996a, 1996b; Plug 1997; Pikirayi 1993, 2001, 2007).

The new archaeological data presented in this study, together with the historical and ethnographic information and my subsequent evaluation of the scientific potential of these records, has allowed the construction of a general long-term settlement history and historical ecology of the lower Zambezi River and delta region, with comparative outlooks on the broader region. The evidence presented in the previous chapters indicates that people have been settled the lower Zambesi River Valley and delta, since the Late Stone Age.

Moreover, the gathered information shows that the delta contained active communities that were part of the general historical developments of the sub-continent and much of the data coincide with what is currently known of social and economic relations of the wider region. My study demonstrates that the delta is not a marginal environment, on the contrary. The settlements had an abundance of water, forest and faunal resources. The presented data may suggest that the area was well-placed, situated strategically between various socio-economic spheres and political centres in the East, West, North and to the South. This is to some extent confirmed by historical and ethnographic information from the 16th century up until the early 20th century which describes prolonged settlement in the delta. Still, it should be noted, there is a need for extended studies on the development of the settlement system and the land-use history of the lower Zambesi.

Today, the question of social and economic interaction between stone-using hunter-gatherer communities and the early farmers designated EFC, is insufficiently investigated in southern Africa. The data from the neighbouring countries suggest two alternatives of expansion of hunter-gatherer communities in the Lumbi area – from the north, crossing the Zambezi River, or from the west along the Zambezi River. The settlements in the area of Lumbi were owing to many factors, e.g. presence of faunal and water resources, forest, and raw material. Located seven kilometers from the Zambezi River, the site of Lumbi benefitted in the dry season from the availability of water.

Lumbi, with a continuous settlement from the LSA to EFC, has the potential to add to our understanding of the process of transformation between the LSA and EFC. I have suggested that Lumbi represents a phase of consolidation which resulted in the amalgamation of LSA communities into the EFC complex around 54–235 AD. Concerning the introduction of the later EFC Matola tradition pottery, it is probable that it occurred through the southward expansion of communities along the Indian Ocean Coast to the south of Zambezi River. Thus,
we can conclude, that the EFC communities which dwelt in Lumbi indeed were able to cross the great rivers, bearing in mind the extensive area of expansion in a few decades. The presence of various decorative elements and different modes of production of ceramics may have been the result of the interaction of different external elements resulting from contacts, trade or day-to-day exchange between local communities. These communities maintained the contact with the coast, as illustrated by the sea shells and the appearance of ceramic with shell-stamping retrieved during the excavation. With this data, I can infer that the Early Farming Communities increasingly populated the coast, and almost simultaneously, the hillsides and plateaus of the interior.

There is no archaeological evidence of forms of social organisation at Lumbi, but it has been suggested that the structure of the community was non-hierarchical. Despite a considerable number of bones from the excavations, the main diet of the hunter-gatherer communities and EFC was likely to have been based on the consumption of vegetables and cereals, with fish and meat as a complementary diet. Findings of domesticated animals are few.

Two EFC farming community ceramic traditions were found in the area from the delta of Zambezi River and its mouth, and thus included in the present study: a) the Matola tradition was located on the delta of Zambezi River (Lumbi and Nensa); b) the Lumbo tradition was located on the coast, in Chinde, on the mouth and in the site located in the lower Zambezi River (Sena), which can be considered to reflect contacts between the coast and interior. Some potsherds retrieved in Sena reveal characteristics of graphite burnished pottery of the Zimbabwe or Swahili Tradition, which in turn can be seen as indicating direct or indirect influence in this area from the Zimbabwe plateau.

Another important observation of this research is linked to the archaeological site of Sena. When I first started my research in Sena, I was convinced that the data from here would be limited to the Late Farming Communities, but during the excavations typical EFC pottery was found and also one core of quartz. The research in Sena thus provides new evidence of trade and trade networks. It has been suggested that Sena was the centre of a large pre-colonial empire but so far there is no archaeological support for such claims. The social organisation was in the early first millennium probably based on family groups or small chiefdoms, with a loose political organisation. Through involvement of coastal traders the area was islamised and muslem families’ later settled here. In the historical period (16th century), Sena appears to have been under the overruling of Monomotapa.

With these investigations, it is now possible to better understand an area which for a long time has been neglected. The lower Zambesi River valley and delta presents a vast cultural and archaeological heritage which needs additional work on heritage managment and continued extended programs of archaeological research. This study has also demonstrated interesting links between different landscape components that will be useful for further surveys. In the Lower Zambezi, we observed that the sites were located in the areas without danger of flooding. For example, the study done on the mouth area within mangroves and swamps and the flooded areas, no significant sites were found, indicating that the prehistoric people avoided the alluvial plains. But in the third area (elevated terraces) a transitional site from Late Stone Age to the Early Farming Communities was found. In the light of our present discussion, it is considered that extended investigations along the Lower Zambezi to the delta may have a substantial potential for unearthing a set of unique data when it comes to questions of strategies of land-use over the past three millennia.

An extended program of multidisciplinary research will need to invest significant efforts, not only in the archaeological excavations, but also in a systematic interdisciplinary study,
including archaeology, archaeobotany and vegetation history, geomorphology, ethnological research and also studies of current approaches of land-use. The discovery of a valuable cultural and archaeological heritage is, I argue, of great importance for the country as well as for the local communities. I hope that these studies will continue in the area and that presented work will facilitate this process.

Conclusão

Em cima realcei e discuti os resultados principais do trabalho arqueológico no baixo e no delta do rio Zambeze. Neste capítulo irei, de forma resumida, apresentar o resultado de algumas questões correntes importantes discutidos nas pesquisas arqueológicas na África Austral.


Os novos dados arqueológicos apresentados neste estudo, juntamente com a informação histórica e etnográfica e a minha subsequente avaliação do potencial científico desses registos, permitiu a construção da história geral da ocupação do longo termo e a Ecologia Histórica do baixo do rio Zambeze e a região do delta com uma perspectiva comparativa na região. As evidências apresentadas nos capítulos anteriores indicam que as comunidades ocuparam o vale do baixo do rio Zambeze e o delta desde a Idade da Pedra Superior.

Além disso, a informação recolhida mostra que o delta continha comunidades muito ativas que era parte do desenvolvimento histórico geral do subcontinente e muitos dados coincidem com o que é conhecido correntemente das relações económicas e sociais da vasta região subsaariana. O meu estudo demonstra que o delta não é um ambiente marginal, ao contrário. A fixação das comunidades tinha a ver com a abundância da água, floresta e recursos faunísticos. Os dados apresentados podem sugerir que a área estava bem localizada, situando-se estrategicamente entre várias esferas socioeconómicas e centros políticos no Este, Oeste, Norte e Sul. Essa extensão é confirmada pela informação histórica e etnográfica a partir do século 16 até início do século 20 que descrevem fixações proladgadas no delta. Ainda pode-se notar que há necessidade de estudos mais extensivos sobre o desenvolvimento de sistemas de fixações e História do uso da terra do Baixo Zambeze.

Hoje, a questão económica e social da interacção entre as comunidades caçadoras e recolectoras e as primeiras comunidades agrícolas, denominadas por IFI, é insuficientemente investigada na África Austral. Os dados dos países vizinhos sugerem duas alternativas da expansão das comunidades caçadoras recolectoras na área de Lumbi-vindas do norte, atravessando o rio Zambeze ou vidas do oeste ao longo do rio Zambeze. A ocupação na área de Lumbi foi devido a muitos factores, i.e., a presença de recursos hídricos, faunísticos, florestais e a matéria-prima. Localizada a 7 km do rio Zambeze, a estação arqueológica de Lumbi beneficiava-se de poços de onde obtinham água na época seca.

Lumbi, com a ocupação contínua desde a IPS atá a IFI tem um grande pontencial para aumentar a nossa compreensão dos processos de transformação entre a IPS e IFI. Sugerir que Lumbi representa a fase de consolidação que resultou na amalgamação das comunidades da IPS para o complexo IFI por volta de 54-235 AD. Relativo a introdução da ceramica da IFI da tradição Matola superior, é provável que tenha ocorrido a partir da expansão das comunidades para o sul.
ao longo da costa de Oceano Índico para o sul do rio Zambeze. Assim, podemos concluir que as comunidades da IFI que habitaram em Lumbi de facto tinham capacidade de atravessar grandes rios, tomando em consideração a extensa área da expansão em poucas décadas. A presença de vários elementos decorativos e diferentes modelos de produção da cerâmica pode ter sido o resultado da interacção dos diferentes elementos externos resultantes dos contactos, comércio ou trocas diárias entre comunidades locais. Essas comunidades mantinham o contacto com a costa como ilustram as conchas marinhas e o aparecimento da cerâmica estampada com conchas encontrada nas escavações. Com esses dados, posso inferir que as Primeiras Comunidades Agrícolas, cada vez mais ocupavam a costa e quase simultaneamente nas encostas montanhosas e nos planaltos do interior.

Não há evidências arqueológicas de forma de organização social em Lumbi, mas foi sugerido que a estrutura da comunidade não era hierárquica. Apesar do número considerável de ossos vindos da escavação, a principal dieta dos caçadores recolectores e as comunidades da IFI era, provavelmente, baseada no consumo de vegetais e cereais, peixe e carne como dieta complementar. Achados de animais domesticados são poucos.

Duas tradições de cerâmica das comunidades agrícolas foram achadas na área do delta do rio Zambeze e a sua foz, e assim inclui no presente estudo: a) a tradição Matola localizada no delta do rio Zambeze (Lumbi e Nensa); b) a tradição Lumbo foi localizada na costa, em Chinde, na foz e na estação localizada no baixo do rio Zambeze (Sena) o que pode ser considerado reflectir contactos entre a costa e o interior. Alguns cacos encontrados em Sena revelam características da cerâmica polida com grafite de tradição Zimbabwe ou Suáli, que na interpretação pode ser vista como indicando influência directa ou indirecta do planalto de Zimbabwe.

Outra observação importante desta pesquisa esta ligada com a estação arqueológica de Sena. Quando comecei a minha pesquisa em Sena, estava convencido que os dados aqui estariam limitados para as últimas comunidades agrícolas, mas durante a escavação foi encontrada cerâmica típica das primeiras comunidades agrícolas e também um núcleo de quartzo. As pesquisas em Sena, assim, providenciam novas evidências do comércio e redes comerciais. Foi sugerido que Sena era o centro do grande império pré-colonial mas não há suporte arqueológico para esta afirmação. A organização social era, no início do primeiro milénio, baseada, provavelmente, nos grupos familiares ou em pequenos chefaturas, com uma organização política livre. Através de envolvimentos de comerciantes da costa a área foi islamizada e as famílias muçulmanas mais tarde fixaram-se aqui. No período histórico (século 16) Sena parece estar sob domínio de Monomotapa.

Com essas pesquisas, é possível agora compreender melhor a área que durante muito tempo estava negligenciada. O vale do rio do baixo Zambeze e o delta apresentam um vasto património cultural e arqueológico que necessita de um trabalho de conservação e um programa extensivo de pesquisa. Este estudo, também demonstrou uma ligação interessante entre diferentes componentes da paisagem que serão úteis para mais pesquisa. No baixo Zambeze nós observamos que as estações estavam localizadas nas áreas sem o perigo de inundações. Por exemplo, o estudo feito na área da foz, entre mangais, pântanos e áreas de inundação, não foram localizadas estações significativas indicando que as populações pré-históricas evitavam as planícies de aluviões. Mas na terceira área (terraços elevados) a estação de transição entre Idade da Pedra Superior e as Primeiras Comunidades Agrícolas foi localizada. Em compreensão da nossa presente discussão, é considerado que uma investigação mais extensiva ao longo de baixo Zambeze para o delta pode ter um substancial potencial para desenterrar o conjunto de dados únicos quando queremos saber sobre estratégias do uso da terra nos últimos 3 mil anos.
Um programa extensivo da pesquisa multidisciplinar irá necessitar de investir esforços significantes, não apenas nas escavações arqueológicas, mas também no estudo sistemático multidisciplinar, incluindo Arqueologia, Arqueobotânica e História da vegetação, Geomorfologia, pesquisas etno-ecológicas e também estudos das abordagens correntes sobre o uso da terra. A descoberta do valioso patrimônio arqueológico e cultural é, como argumento, de grande importância para o país como também para as comunidades locais. Espero que esses estudos venham continuar nesta área e este trabalho venha facilitar este processo.
REFERENCES

Anais Meteorológicos das colónias 1900-1979. Lissabon: D.G.C.,


177


- 1996. Archaeological evidence for climatic change during the last 2000 Years in southern Africa. *Quaternary International* 33, 55–60.


Kinahan, J. Cattle for Beads: the Archaeology of Historical Contact and Trade on the Namib Coast. Uppsala, Uppsala University.
Kusimba C. M. 1999. The Rise and Fall of Swahili States. Walnut Creek, California: AltaMira Press.


Mercader, J., Bennett, T. & Raja, M. 2008a. Middle Stone Age starch acquisition in the Niassa Rift, Mozambique, *Quaternary Research* 70, 283–300.


_Zambezia_ 18 (2), 119-129.


- 1940. _Pré-história de Moçambique._ Lisboa : Instituto de Antropologia da Universidade de Porto.


APPENDIX: FINDTABLES AND STRATIGRAPHIES

Lumbi

Below detailed information about finds in the Lumbi testpits 1-8 is listed. This is followed by stratigraphies of all the test åit walls. More detailed information on the Lumbi excavation methodology and results can be found in Chapter 6.

Table 1. The Frequencies of evidence from 8 test pits of Lumbi site with high diversity of the material. A frequência de evidências das 8 sanjas da estação de Lumbi, com maior diversidade do material.

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Core</th>
<th>Bone</th>
<th>Iron Slag (g)</th>
<th>Shells</th>
<th>Crumble(g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18°07'33.6&quot;S</td>
<td>Surf.</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°41'46.1&quot;E</td>
<td>00-10</td>
<td>281</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>600</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>213</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>550</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20-30</td>
<td>227</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>315</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-40</td>
<td>148</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
<td>265</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-50</td>
<td>133</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>220</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50-60</td>
<td>304</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td>650</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60-70</td>
<td>120</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70-80</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>80-90</td>
<td></td>
<td></td>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90-100</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100-110</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>110-120</td>
<td></td>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>1,451</td>
<td>72</td>
<td>2</td>
<td>22</td>
<td></td>
<td>2,65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP2-2X2 m</td>
<td>Coordinates</td>
<td>Level (cm)</td>
<td>Ceramics</td>
<td>Lithics</td>
<td>Metal</td>
<td>Core</td>
<td>Bone</td>
<td>Iron Slag (g)</td>
<td>Shells</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>-----------</td>
<td>----------</td>
<td>---------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td>18°07'34.212&quot;S 35°41'45.5&quot;E Surf.</td>
<td>00-10</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20-30</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-40</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>40-50</td>
<td>102</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50-60</td>
<td>147</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>105</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60-70</td>
<td>313</td>
<td>3</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70-80</td>
<td>221</td>
<td>5</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80-90</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90-100</td>
<td>26</td>
<td>7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100-110</td>
<td>27</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>110-120</td>
<td>37</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>120-130</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>1,106</td>
<td>38</td>
<td>2</td>
<td>11</td>
<td></td>
<td></td>
<td>575</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TP3-5X5 m</th>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Core</th>
<th>Bone</th>
<th>Iron Slag (g)</th>
<th>Shells</th>
<th>Crumble(g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18°07'33.312&quot;S 35°41'46.0&quot;E Surf.</td>
<td>00-10</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>450</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>510</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20-30</td>
<td>814</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>325</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30-40</td>
<td>1076</td>
<td>2</td>
<td></td>
<td>15</td>
<td>110</td>
<td></td>
<td>550</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-50</td>
<td>1072</td>
<td>7</td>
<td></td>
<td>10</td>
<td>350</td>
<td></td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50-60</td>
<td>263</td>
<td>7</td>
<td>11</td>
<td>115</td>
<td></td>
<td></td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60-70</td>
<td>147</td>
<td>8</td>
<td></td>
<td>5</td>
<td>50</td>
<td></td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70-80</td>
<td>34</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80-90</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90-100</td>
<td>2</td>
<td>80</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100-110</td>
<td>2</td>
<td>55</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>110-120</td>
<td></td>
<td></td>
<td></td>
<td>35</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>3,928</td>
<td>302</td>
<td>6</td>
<td>52</td>
<td>625</td>
<td></td>
<td>2,235</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TP4-5X5 m

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Core</th>
<th>Bone</th>
<th>Iron Slag (g)</th>
<th>Shells</th>
<th>Crumble(g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18°07'33.696&quot;S Surf.</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°41'48.7&quot;E 00-10</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>76</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>21</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>73</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75</td>
</tr>
<tr>
<td>40-50</td>
<td>722</td>
<td>6</td>
<td></td>
<td></td>
<td>11</td>
<td>50</td>
<td>1,775</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>384</td>
<td>6</td>
<td></td>
<td></td>
<td>4</td>
<td>10</td>
<td>1,3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>124</td>
<td>9</td>
<td></td>
<td></td>
<td>1</td>
<td>5</td>
<td>350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td>53</td>
<td>14</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>80-90</td>
<td>17</td>
<td>27</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>90-100</td>
<td>7</td>
<td>37</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td>16</td>
<td>94</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td>6</td>
<td>29</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,512</strong></td>
<td><strong>226</strong></td>
<td><strong>6</strong></td>
<td><strong>25</strong></td>
<td><strong>65</strong></td>
<td></td>
<td><strong>3,555</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TP5-5X5 m

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Core</th>
<th>Bone</th>
<th>Iron Slag (g)</th>
<th>Shells</th>
<th>Crumble(g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18°07'38.496&quot;S Surf.</td>
<td>15</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°41'50.3&quot;E 00-10</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>136</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>150</td>
<td>2</td>
<td></td>
<td></td>
<td>5</td>
<td>130</td>
<td>450</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>229</td>
<td>3</td>
<td></td>
<td></td>
<td>15</td>
<td>250</td>
<td>530</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td>108</td>
<td>24</td>
<td></td>
<td></td>
<td>1</td>
<td>3</td>
<td>350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td>75</td>
<td>38</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td>31</td>
<td>21</td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td>13</td>
<td>23</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td>19</td>
<td>16</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>980</strong></td>
<td><strong>130</strong></td>
<td><strong>6</strong></td>
<td><strong>26</strong></td>
<td><strong>1,08</strong></td>
<td></td>
<td><strong>2,25</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TP6-5X5 m

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Core</th>
<th>Bone</th>
<th>Iron Slag (g)</th>
<th>Shells</th>
<th>Crumble (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18°07'36.912&quot;S Surf.</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°41'48.3E</td>
<td>00-10</td>
<td>398</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>126</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>901</td>
<td>2</td>
<td>5</td>
<td>40</td>
<td>1,35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>516</td>
<td></td>
<td>3</td>
<td>78</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>318</td>
<td></td>
<td>2</td>
<td>10</td>
<td>450</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>24</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td></td>
<td></td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td></td>
<td>25</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td></td>
<td>35</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td></td>
<td>27</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>2,433</td>
<td>125</td>
<td>2</td>
<td>4</td>
<td>13</td>
<td>128</td>
<td>3,55</td>
</tr>
</tbody>
</table>

### TP7-5X5 m

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Core</th>
<th>Bone</th>
<th>Iron Slag (g)</th>
<th>Shells</th>
<th>Crumble (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18°07'38.388&quot;S Surf.</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°41'49.6&quot;E</td>
<td>00-10</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>35</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>219</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>200</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>296</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>140</td>
<td>2,2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>87</td>
<td>5</td>
<td></td>
<td>1</td>
<td>60</td>
<td>250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td></td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td></td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td></td>
<td>33</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td></td>
<td>41</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>688</td>
<td>127</td>
<td>3</td>
<td>3</td>
<td>14</td>
<td>400</td>
<td>3,725</td>
<td></td>
</tr>
<tr>
<td>Coordinates</td>
<td>Level (cm)</td>
<td>Ceramics</td>
<td>Lithics</td>
<td>Metal</td>
<td>Core</td>
<td>Bone</td>
<td>Iron Slag (g)</td>
<td>Shells</td>
<td>Crumble(g)</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>----------</td>
<td>---------</td>
<td>-------</td>
<td>------</td>
<td>------</td>
<td>---------------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>18°07'38.496&quot;S</td>
<td>Surf.</td>
<td>35</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35°41'45.9E</td>
<td>00-10</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-20</td>
<td>16</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20-30</td>
<td>28</td>
<td>1</td>
<td>3</td>
<td>105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40-50</td>
<td>149</td>
<td>2</td>
<td>10</td>
<td>60</td>
<td>14 Achatina fulica</td>
<td></td>
<td>700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50-60</td>
<td>515</td>
<td>4</td>
<td>15</td>
<td>20</td>
<td>30 Perna perna</td>
<td></td>
<td>1,4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60-70</td>
<td>96</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td>9</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td>24</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td>70</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td>39</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>849</td>
<td>165</td>
<td>5</td>
<td>38</td>
<td>185</td>
<td>44</td>
<td>2,3</td>
<td></td>
</tr>
</tbody>
</table>
Fig. 1.a. The stratigraphies of the Lumbi site, test pits 1–5 (note that stratigraphies are not in scale in relation to each other). A estratigrafia da estação de Lumbi.
Fig. 1.b. The stratigraphies of the Lumbi site, test pits 6–8 (note that stratigraphies are not in scale in relation to each other). A estratigrafia da estação de Lumbi.
Sena

Below detailed information about finds in the Sena testpits 1–2 is listed. This is followed by stratigraphies of all the test åit walls. More detailed information on the Sena excavation methodology and results can be found in Chapter 7.

Table 2. The Frequencies of evidence from 2 test pits of the Sena site with considerable diversity of the material. A frequência de evidências das 2 sanjas da estação de Sena, com uma diversidade considerável do material.

<table>
<thead>
<tr>
<th>Coordinates</th>
<th>Level (cm)</th>
<th>Ceramics</th>
<th>Lithics</th>
<th>Metal</th>
<th>Shells</th>
<th>Bone</th>
<th>Porcelain</th>
<th>Beads</th>
<th>Crumble (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17°26'28.98&quot;S3 Surf.</td>
<td>00-10</td>
<td>102</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>10</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5°01'57.68E 10-20</td>
<td>314</td>
<td>4</td>
<td>15</td>
<td>28</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>129</td>
<td>1</td>
<td>10</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>101</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>0.10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-50</td>
<td>314</td>
<td>4</td>
<td>15</td>
<td>38</td>
<td>0.350</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-60</td>
<td>299</td>
<td>20</td>
<td>1</td>
<td>16</td>
<td>0.250</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-70</td>
<td>127</td>
<td>1</td>
<td>2</td>
<td>16</td>
<td>122</td>
<td>0.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-80</td>
<td>73</td>
<td>1</td>
<td>1</td>
<td>15</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td>61</td>
<td>4</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td>76</td>
<td>1</td>
<td>3</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-110</td>
<td>48</td>
<td>1</td>
<td>0.210</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td>51</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td>63</td>
<td>7</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130-140</td>
<td>140-150</td>
<td>1,576</td>
<td>2</td>
<td>20</td>
<td>102</td>
<td>268</td>
<td>1.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinates</td>
<td>Level (cm)</td>
<td>Ceramics</td>
<td>Lithics</td>
<td>Metal</td>
<td>Shells</td>
<td>Bone</td>
<td>Porcelain</td>
<td>Beads</td>
<td>Crumble (kg)</td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>----------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
<td>------</td>
<td>-----------</td>
<td>-------</td>
<td>--------------</td>
</tr>
<tr>
<td>17°26'28.87&quot;S/35°01'58.16E Surf.</td>
<td>00-10</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>20-30</td>
<td>23</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>86</td>
</tr>
<tr>
<td>30-40</td>
<td>58</td>
<td></td>
<td>3</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>40-50</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>50-60</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>60-70</td>
<td>107</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>70-80</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90-100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>100-110</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110-120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120-130</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130-140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>140-150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>298</td>
<td>1</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>25</td>
<td></td>
<td>278</td>
</tr>
</tbody>
</table>
Fig. 2. Section of the stratigraphy of the Sena site, test pits 1 and 2 (note that stratigraphy is not in scale in relation to each other). A estratigrafía da estação de Sena, sanjas 1–2.