

**AN ETHNOGRAPHIC STUDY OF POTTERY PRODUCTION,
DECORATIVE STYLES AND FUNCTIONS IN RELATION TO
PREHISTORIC POTTERY FROM MUMBWA CAVES**

BY

BITCHES CHINYANA

**A dissertation submitted to the University of Zambia in fulfillment of the
requirements for the Degree of Master of Arts in Historical and Archaeological
Studies**

UNIVERSITY OF ZAMBIA

LUSAKA

2017

DECLARATION

This dissertation is my original work and has not been presented for a degree in any other University. Where information has been derived from other sources, I confirm that this has been indicated in the dissertation.

Signed :.....

Date :.....

COPYRIGHT

All rights reserved. No part of this dissertation may be reproduced or stored in any form or by means without prior permission in writing from the author or the University of Zambia.

APPROVAL

This dissertation by Bitches Chinyana has been approved as fulfilling the partial requirements for the award of the degree of Master of Arts in Historical and Archaeological Studies by the University of Zambia.

EXAMINERS

- | | | |
|----------------|------------------|-------------|
| 1. Name: | Signature: | Date: |
| 2. Name: | Signature: | Date: |
| 3. Name: | Signature: | Date: |

ABSTRACT

The focus of this study is on production, function and motifs of modern pottery from communities of Mumbwa area. It revolves around selected villages of Mukwasha, Lutuna, Shapole, Kansonso, Chibongwe, Kapeta, Kasalu, Kutemba, Mukwiza, Chooba and Sipati. An ethnographic study of pottery making process was done involving female potters with a view to understand pottery production, function and decorative motifs for purposes of interpreting prehistoric ceramics from Mumbwa caves. Previous studies of Mumbwa caves pottery had played the role of time marker and cultural identifier, being utilised in culture-historical reconstruction. While typological and chronological investigations have dominated pottery analysis, these studies did not examine the meaning and significance of motifs /decoration.

The study revealed the technical choices associated with the manufacture of ceramics, namely, selection and procurement of raw materials, processes of clay, vessel formation, decoration, drying and firing. Analysis of contemporary pottery revealed functional attributes that are defined based on vessel morphology, technology of manufacture and use-alteration while decorative styles reflect social conventions and symbolic meanings.

The study further showed that there was a strong correlation between prehistoric ceramics from Mumbwa caves and contemporary pottery in the Mumbwa communities in such pottery attributes as decorative techniques and motifs, vessel wall thickness, vessel forms, rim profiles, basal shapes, neck form, orifice size, surface treatment, surface colour, sooting, pitting and chipping wear patterns, clay texture and method of manufacture. Thus, the study showed that pottery industries in the Mumbwa area are indicative of a cultural continuum in terms of production, function and meaning of motifs from prehistoric times to the recent period.

DEDICATION

This dissertation is dedicated to my loving wife, Naomi Chinyana for her support, patience and encouragement in the course of study.

This work is also dedicated to my parents, Mr. Maxwell Chinyana and Mrs. Dorcus Chinyana for their prayers and for having been a great source of inspiration and encouragement.

ACKNOWLEDGEMENT

The research presented in this dissertation would not have been possible without the guidance and encouragement of many individuals that have supported directly and indirectly to its completion. I would like to thank foremost, Professor Francis B. Musonda, my supervisor for his unstinting support, guidance, suggestions, accessibility and frank criticisms that led to the writing of this dissertation. He patiently read and reread various drafts of this work providing detailed feedback, exhaustively commenting both on the language and context of this dissertation. Professor Musonda has been a great teacher and a true mentor for me in this research voyage.

At the Livingstone national museum, I would like to thank the executive director, Mr. George Mudenda for granting me permission to access all pottery collections excavated from Mumbwa caves. I wish to thank my informants from Mumbwa area for their understanding, hospitality and assistance which enabled me to collect the data. I am sincerely compelled to express my gratitude to my wife, Naomi Chinyana and my children who have sacrificed valuable family time and shared this long journey with me unconditionally. Also to my parents, Mr. Maxwell Chinyana and Dorcus Chinyana, for their progress and for having been a great source of inspiration and encouragement. Above all, I am grateful to God for providing an opportunity for me to undertake this study.

Table of Contents

DECLARATION.....	i
COPYRIGHT.....	ii
APPROVAL	iii
ABSTRACT.....	iv
DEDICATION.....	v
ACKNOWLEDGEMENT.....	vi
LIST OF FIGURES	xi
LIST OF TABLES	xiii
LIST OF PLATES	xiv
LIST OF MAPS.....	xv
OPERATIONAL DEFINITIONS OF TERMS	xvi
ACRONYMS AND ABBREVIATIONS.....	xix
CHAPTER ONE	1
INTRODUCTION AND HISTORICAL BACKGROUND.....	1
1.1. Introduction	1
1.2. Historical Background.....	1
1.3. The Study Area.....	2
1.4. Environment	3
1.5. Statement of a Problem	5
1.6. Objectives of the study.....	5
1.7. Rationale of the study.....	5
1.8. Review of related literature	6
1.9. Theoretical Framework	13
1.10. Organisation of the Study.....	15
1.11. Research Methodology.....	15
CHAPTER TWO	16
POTTERY DESCRIPTION FROM MUMBWA CAVES.....	16

2.1. Introduction	16
2.2. A History of research at Mumbwa caves	16
2.3. Prehistoric pottery from Mumbwa caves	19
2.3.1. Ceramic paste or fabric	20
2.3.2. Vessel colour	20
2.3.3. Surface treatment or Finish	20
2.3.4. Vessel wall thickness	21
2.3.5. Vessel form	21
2.3.6. Use-wear or use-alteration	22
2.3.7. Decorative attributes	22
2.3.7.1. Decoration placement	23
2.3.7.2. Decoration motif.....	23
2.3.7.3. Decoration technique:.....	23
2.4. Conclusion.....	27
CHAPTER THREE	28
CONTEMPORARY POTTERY MANUFACTURE IN THE MUMBWA AREA AND ITS TECHNOLOGICAL MAKE UP	28
3.1. Introduction	28
3.2. Technological stages of pottery production	28
3.2.1. Raw material Selection and Procurement	28
3.2.2. Processing of Clay.....	30
3.2.3. Forming and Shaping	34
3.1.4. Decoration	42
3.2.5. Drying.....	44
3.2.6. Firing	44
3.3. Conclusion.....	48
CHAPTER FOUR.....	49
MORPHOLOGY AND FUNCTION OF CONTEMPORARY POTTERY	49

4.1. Introduction	49
4.2. Functional attributes of contemporary pottery	49
4.2.1. Technological Attributes	50
4.2.1.1. Temper.....	50
4.2.1.2. Vessel Wall Thickness.....	51
4.2.1.3. Surface Treatment.....	52
4.2.2. Morphological Attributes	53
4.2.2.1. Rim Shape.....	53
4.2.2.2. Basal Shape	54
4.2.2.3. Neck Shape	54
4.2.2.4. Mouth or Orifice Shape	55
4.2.2.5. Vessel Form.....	56
4.2.3. Attributes of Use-alteration.....	58
4.2.3.1. Sooting.....	58
4.2.3.2. Pitting.....	59
4.2.3.3. Chipping	60
4.3. Conclusion.....	61
CHAPTER FIVE	62
POTTERY MOTIFS AND THEIR MEANINGS	62
5.1. Introduction	62
5.2. Meaning of motifs on pottery in Mumbwa area.....	62
5.3. Conclusion.....	68
CHAPTER SIX	69
COMPARISONS BETWEEN ETHNOGRAPHIC AND PREHISTORIC POTTERY IN MUMBWA AREA	69
6.1. Introduction	69
6.2. Relationship between ethnographic and prehistoric pottery	69
6.3. Conclusion.....	80

CHAPTER SEVEN.....	81
CONCLUSION	81
BIBLIOGRAPHY	87
APPENDICES	96
Appendix 1 : Interview Guide.....	96
Appendix 2: List of Informants.....	98
Appendix 3: Observation Sheet.....	99

LIST OF FIGURES

Figure 2.1a-c: use wear potsherds from Mumbwa caves.....	25
Figure 2.2a-w: Pottery from Mumbwa caves.....	26
Figure 3.1: Showing clay stored in a pot	30
Figure 3.2: Stone tablet used for grinding clay.....	33
Figure 3.3: A wooden mortar with a wooden pestle.....	33
Figure 3.4: Sieve used for sieving clay.....	33
Figure 3.5a: a potter with her tool box.....	35
Figure 3.5b: a potter with her tools in a bucket of water.....	35
Figure 3.5c: a lump of kneaded clay.....	36
Figure 3.5d: a lump of the first coil for the start of the vessel.....	36
Figure 3.5e: adding the second coil and pulling up the side of the pot.....	37
Figure 3.5f: shaping the neck of the pot.....	38
Figure 3.5g: shaping the rims of the vessel.....	39
Figure 3.5h: smoothing the rims	40
Figure 3.5i: complete constructed vessels.....	41
Figure 3.6: Pebble used for smoothing the vessel surface.....	41
Figure 3.7: Incision decorations	42
Figure 3.8: Comb stamping decorations.....	43
Figure 3.9: Single impressions.....	43
Figure 3.10: Bowl.....	44
Figure 3.11: Shallow pit used for firing vessels.....	46
Figure 3.12: Flat ground used for firing vessels.....	47

Figure 5.1a-c: Pottery decoration techniques.....	66
Figure 5.2: Traditional beaded attire.....	67
Figure 6.1: Examples of (a) contemporary Mumbwa pottery and (b) pottery from Mumbwa caves with sooting pattern.....	76
Figure 6.2: Examples of (a) ethnographic and (b) ceramics from Mumbwa caves with chipped rims.....	77
Figure 6.3: Examples of (a) modern and (b) Mumbwa caves pottery with use-wear patterns of pitting.....	77
Figure 6.4: Vessel shapes and decorations on pottery from Mumbwa caves.....	78
Figures 6.5 : Contemporary vessel forms and decorations from Mumbwa area.....	79

LIST OF TABLES

Table 2.1: A summary of potsherds from five levels at Mumbwa caves.....	19
Table 2.2: A summary of vessel forms from Mumbwa caves.....	21
Table 2.3: Summary of decoration types and placement on pottery from Mumbwa Caves.....	23

LIST OF PLATES

Plate 4.1 : Examples of variables relating to vessel morphology and technology.....	50
Plate 4.2 a,b,c: Necked pots.....	57
Plate 4.3: An open bowl.....	57
Plate 4.4: Pot with soot patterns.....	59
Plate 4.5: Pot with pitted use-wear patterns.....	60
Plate 4.6: Pot with chipped rims.....	61

LIST OF MAPS

Map 1.1: Map of Zambia showing the study area (Mumbwa).....	4
Map 1.2: Map showing village sites in Mumbwa area.....	4

OPERATIONAL DEFINITIONS OF TERMS

Definitions of certain terms as used in this study (Sharer and Ashmore,2003; Kabangi,2013; Gibson and Woods,1990) are given as below:

Anology :	A process of reasoning in which similarity between two Entities in some characteristics as well are presented.
Ancient or prehistoric pottery:	pottery associated with the ancient or prehistoric past.
Assemblage:	Refers to the artifacts in a Layer or archaeological Occurrence
Attributes:	Vessel characteristics that include surface finish, vessel shape (form), decoration (style) and function.
Black core:	The dark zone that sometimes occur in the middle of sherds found in many open-fired pots, and which is the result of incomplete oxidation of the carbonaceous matter present in the clay; the latter is an indicator of short firing (as there has been insufficient time to burn out this material) and therefore, frequently, of pit or open firing.
Bowl :	A vessel whose diameter exceeds its height.
Burnish:	The smooth, sometimes faceted, effect on the surface of a vessel produced by rubbing leather-hard clay with a rounded tool to create a shiny and polished surface.
Burnishing:	Finishing technique, rubbing a leather-hard vessel with hard tool, such as a stone or potsherd, to produce a glossy surface, with irregular lustre and polishing marks. Burnishing and polishing both fall under the same general category of ‘finishing’.
Ceramics:	High fired pottery ware, made out of clay.
Clay :	A fine - grained earth material that develops plasticity when mixed with water.

Coiling:	Hand-building technique, involves forming and joining narrow coil of clay to build up vessel walls
Comb stamping :	A decorative technique executed by a linear multi toothed stamp into the wet clay.
Contemporary Mumbwa pottery:	Pottery of the present time in Mumbwa
Decoration:	Any intentional, primary non – functional elaboration of the surface of the vessel wall involving designs.
Ethnographic pottery:	Pottery of the present time.
Fabric :	Fabric or total composition of the ceramic, including clay, inclusions and pores. Also referred to as ceramic paste or ceramic substrate
Firing:	“Baking” clay items to make them attain a certain degree of permanence.
Form attributes:	Form involves pottery shapes, for example, vessel rim, neck, base.
Function attributes:	This involves uses to which pottery vessels were /are put.
Inclusions :	The term used to describe all non-clay or non-plastic materials present or visible in the ceramic fabric (clay body) for example mineral grains, rock fragments or aggregates temper or crushed shells.
Incision:	A decorative technique by the use of a sharp pointed instruments dragged on a damp clay vessel.
Level:	This is the smallest arbitrary or mechanically excavated unit.
Neck :	Part of a restricted vessel between body and rim, marked by construction and change in orientation of vessel walls.
Pot :	A vessel whose height exceeds its maximum diameter.

Pottery:	Vessel forms made out of clay.
Pit firing:	Firing technique in which fuel and vessel are placed together in an excavated pit, sometimes covered with stones or earth.
Oxidized :	Oxidized means having been fired in an atmosphere in which the amount of oxygen is more than required to combust the fuel.
Restricted:	A vessel in which parts of the body are of greater diameter than the mouth.
Rim:	Upper part of vessel at mouth or orifice.
Round base:	These are shapes whose bases tend to take a circular form.
Single impressions:	Small rounded impression made with an instrument that has a pointed end.
Surface treatment:	A technological, decorative or function method used to alter the surface of the vessel.
Technological attributes:	Pottery technology includes the acquisition and preparation of raw materials such as clays, tempers, shaping, decoration and the firing process.
Temper :	Substance added to the clay to make it more resistant to firing, for example, crushed sherd, ash and sand.
Unrestricted :	Vessel form or profile characterized by an open form with no narrowing or constrictions between base and rim.
Use-wear:	Traces on vessel form as a result of use, i.e. pitting, chipping and sooting.
Variable :	A property, characteristic, feature, or attribute of a vessel.

ACRONYMS AND ABBREVIATIONS

ESA:	Early Stone Age
EIA:	Early Iron Age
LSA:	Later Stone Age
LIA:	Later Iron Age
MSA:	Middle Stone Age
MIA:	Middle Iron Age
NAZ:	National Archives of Zambia
NHCC:	National Heritage Conservation Commission

CHAPTER ONE

INTRODUCTION AND HISTORICAL BACKGROUND

1.1. Introduction

This study aimed to discover some of the meanings of motifs found on pottery from Mumbwa caves through ethnographic studies of ceramics among rural communities in the Mumbwa area of Central Province, Zambia. It was through the study of contemporary pottery production that would provide a better understanding of pottery in archaeological record. It was assumed that pottery carried with it attributes that could tell us more about how it was made, used and meanings attached to decorative motifs. Owing to this, pottery fragments in the archaeological record were considered to be the end result of the interaction between raw materials, culture and technology by which archaeologists were able to recognize culture of those who formed the archaeological record (Shrotriya, 2007). Archaeological potsherds could also provide a clue about manufacturing behavior of pottery such as raw materials and firing process (Renfrew and Bahn, 2008), function of pots (Arthur, 2002), diet (Fagan, 1975; Arthur, 2002), socio-cultural interaction (Fagan, 1975; Rice, 1987), group identity (i.e. decoration) (Miller, 2007) of those who were responsible for the formation of the archaeological record.

Archaeologists (Pikirayi and Lindahl, 2013) conducting the study of ceramics attempted to understand the meaning of decorations to societies that they studied and this was done by considering the broader socio-economic circumstances in which production took place and the influence of this process on the final product. From this perspective, pottery appeared to be created and manipulated by actors as part of social strategy (Hegmon, 1995 : 25) and gained meaning within the historical and cultural moments in which they were produced and used (Gijanto, 2011 : 258).

The study took the form of observations and oral interviews between June and August 2013 in which fourteen potters and two non-potters were sampled from eleven villages in Mumbwa area. Only women between the ages of 49 and 91 were found actively involved in pottery production.

1.2. Historical Background

Since the first excavations were conducted at Mumbwa caves in 1925 (Macrae, 1926), the site yielded large quantities of pottery from subsequent investigations (Dart and Del Grande 1931; Clark 1942; Savage 1983 and Barham 1993, 1996). These pioneer studies were by and large,

interested in the stone age assemblages and tracing the stages of early man (Macrae 1926; Dart and Del Grande 1931; Clark 1942; Savage 1983 and Barham 1993, 1996) than mundane ceramics. However, alongside these endeavours, there were other researchers who examined ceramics from Mumbwa caves housed at Livingstone museum to develop typologies and cultural sequences within and outside Zambia (Wells 1939; Derricourt 1985; Fagan 1967; Bishop and Clark 1967; Phillipson 1970 and Fagan et al 1969). Ceramics in this case became valuable tools for dating and defining stylistic patterns and change, which had also been used to define human group identities (Pikirayi, 2007). The same pottery was also treated as 'meaningless' by previous researchers (Pikirayi, 1999) hence little is known about how it was produced, used and the meaning given to motifs. This study therefore, aims to address this knowledge gap in archaeology by examining the technology of contemporary pottery manufacture, vessel morphology and function and meaning of pottery motifs in selected communities in Mumbwa area in order to attempt to interpret the meaning of prehistoric ceramics from the Mumbwa caves.

1.3. The Study Area

The Study area (Fig.1.1) is situated in the Mumbwa district, west of Lusaka. It was selected for study because ethnographic and prehistoric pottery materials were available and could be used as basis for understanding ceramic production, function and meaning of decorative styles. The area was also selected for study because it was where Mumbwa caves which were first excavated in 1925 (Macrae, 1926) were found to yield large quantities of ceramics that needed to be sufficiently studied to establish their meanings in the modern context. The area was also chosen for the current study because there had been continuity of traditional pottery production. From this location, eleven villages were purposefully sampled as the localities of the study (fig.1.2). Besides, accessibility was another criterion that was employed to select the potting villages. In addition, I was familiar with the language of the community. Indeed, it helped me to easily communicate with potters and to document available information.

The environmental setting of Mumbwa area was another motivating factor for the selection of the study area. The environment provided raw materials such as clay, water, vegetation and wood products which were essential in the process of pottery production as well as to human habitation. Besides, environment had also an effect in the production of pottery in relation to climate and weather. Weather had an important effect on the scheduling of pottery making which determined when raw materials could be gathered, the length of time it would take to make a pot, drying, and firing conditions.

1.4.Environment

The environment consists of soil, climate and vegetation which provide the natural resources to facilitate the traditional potting industry. In the northern parts of the district, the dominant vegetation cover is “miombo” woodlands, a semi-deciduous tree cover dominated by small trees of the brachystegia and jubernadia family (Fanshwe, 1962: 1). Along the edges of dambos, vegetation is thick consisting of a large variety of trees and shrubs. In general the ground is covered with short grass; anthills are a noticeable characteristic of the landscape. In the southern part of the district, the vegetation is typical savannah forming a wide plain with varied and diverse trees and grass species. It also includes anthill vegetation with mixed shrubs and small tree species (Smith and Dale, 1968:13).

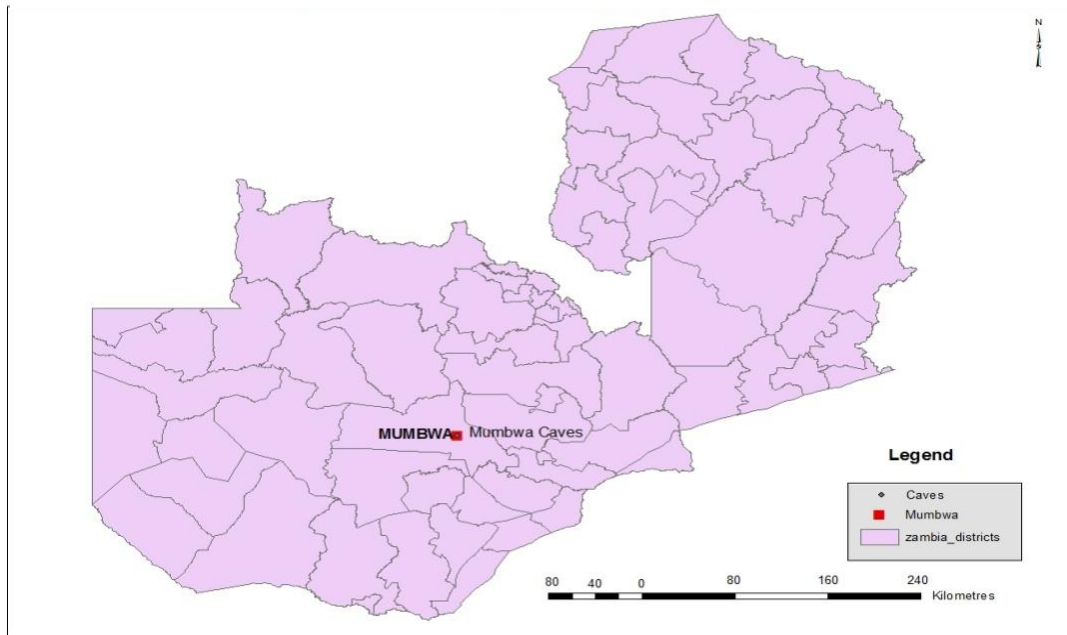
The land is a monotonous plateau with an average elevation of 1,202 metres above sea level. However, there are a few hills which rose up to 1,800 metres, the highest of which are the Nambala hills found in the south-west part of the district. The people who inhabit these well wooded hills have the advantage of this diversified and interesting scenery (Smith and Dale, 1968:13).

The land is also drained by a number of small rivers such as Chibile, Lutale, Lukanga and Nansenga which are tributaries of Kafue River (Mwanabayek, 2013:18). Besides, there are also scores of streams namely, Chooba, Butinti and Myooyo. Villages that are making pottery clustered near these rivers and streams for easy access to clay and water.

The climate of Mumbwa area is broadly divided into two major seasons, the wet season and the dry season. Wet season runs from November to March. This is characterized by heavy rains in January, February and March giving a mean annual rainfall of 1,184mm (Muchinda, 1985:33). The dry season starts in April and runs up to October which is the main pottery season among the rural communities. As pottery production continues throughout the year, it considerably reduces during the rain seasons when drying and firing of pots becomes difficult. For example, the uses of pits as firing structures during the wet ground do not permit the firing of pots especially in the absence of kilns.

The soils in the study area consist of black, red and yellow (Smith and Dale, 1968:13). These black, reddish and yellowish sediments are distinctive and probably provide potters with clay to make their pots.

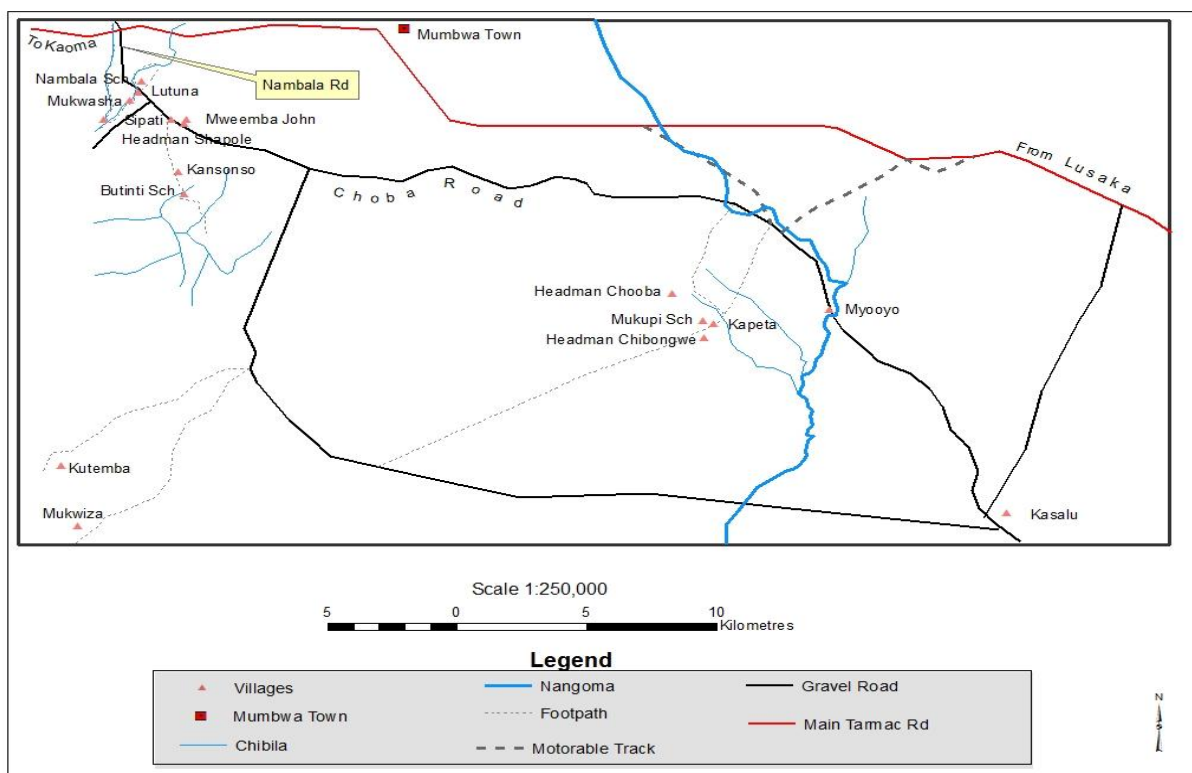
Fig 1.1: Map of Zambia showing the location of the study area (Mumbwa)



Source:

Cartography Section, Geography Department, University of Zambia, Lusaka, 2014

Map 2.1 : Map of Mumbwa area showing the location of contemporary potting Village Sites.



Source: Cartography section, University of Zambia, Lusaka, 2014.

1.5.Statement of a Problem

Archaeologists working on excavated pottery often sought meaning of decorative motifs through the use of a contextual approach (Hodder, 1986). This approach did not allow archaeologists to situate their interpretations of decorations on pottery in relation to ethnographic studies of living pottery-making communities.

The lack of correlation between interpretations of decorative motifs on excavated pottery and meanings derived from ethnographic studies of pottery-making tended to create a dichotomy in the understanding of pottery. The middle range theory (Binford, 1967) would attempt to address this problem. It aims at bridging the gap between the present and past interpretations of ethnographically and archaeologically derived cultural materials and offers a solution to lack of a clear approach to seeking a clear meaning of motifs on excavated pottery.

1.6.Objectives of the study

The aim of this study was to establish the meaning of pottery motifs on pottery from Mumbwa caves through ethnographic studies of pottery from modern communities surrounding the archaeological site.

The specific objectives of the research are:

- To find out the production process in pottery making
- To determine pottery function
- To analyse the meaning of decorative motifs on pottery
- To establish the relationship between ethnographic and prehistoric pottery from Mumbwa Caves and Mumbwa area.

1.7. Rationale of the study

This study is expected to contribute to our understanding of the meaning of motifs on pottery in archaeological context. Archaeologists have often been confronted with difficult situations relating to interpretation of cultural materials when they are unable to decipher the meaning of motifs on pottery. This approach to the study of pottery is therefore expected to create a link between decorative motifs on archaeological pottery and modern forms of pottery whose meaning and function are known. This would enhance interpretation of technical choices that potters make in the art of pottery making and vessel morphological categories that ultimately affected vessel function.

1.8. Review of related literature

The purpose of this literature review is to scrutinize other studies that are related to the topic under investigation. In this study, the literature is purposely searched and selected on the basis of relevance to pottery technology, function and meaning of pottery motifs.

The study by Gosselain (1992) provides valuable information for the current study. Basing on the ethno-archaeological survey he carried out among the Bafia potters of Cameroon, he observed the entire process of pottery manufacture from the extraction of the clays to the firing of the pots. He concluded that pottery technology can be justified in its own right to be a locus of stylistic expression apart from decoration and morphology.

The studies by Smith and Dale (1968) are very significant to the current study as they present a study of pottery among the Ila speaking people of Northern Rhodesia (Zambia). They reported on the process of pottery manufacture. They also discussed the relationship between local vessel names and their functions.

Also significant to the current study is the work by Schofield (1948) who was the first to make references to technology and ceramic manufacture in Southern Africa. He elaborates on pottery making by alluding to the method of manufacture and production which begins from sourcing of clay, preparation of body, drying and firing techniques.

The studies by Sillar and Tite (2000) are very influential in framing the present study on technological choices involved in ceramic production as they provide an explicit connection between the variations of ceramic attributes, the choices made by the makers and the behavior of the manufacturers of ceramics. Within this broad context five main areas of such choices are identified:

- Raw materials from which the ceramic is made (Clay, temper, water);
- Tools used to shape the raw materials;
- Energy sources used to transform the raw materials (i.e fuels, fire, sun-baked);
- Techniques used to organise the raw materials, tools and energy (to collect and process clay, to form a pot, surface treatment) and ;
- The sequences (or chaine operatoire) in which these factors are linked together to transform raw materials (Clay source) into an end product (vessel).

Stark and Bentley (1999) are other vital sources of information to the present study on pottery production since they present pottery production sequence which developed in an ethnographic setting with similar choices or steps as follows:

- Materials procurement
- Materials preparation
- Primary forming techniques
- Secondary forming techniques
- Decoration forming techniques
- Drying and firing
- Post-firing techniques

Fowler's (2006) study on vessel manufacture and use is vital to our current study. He examined the Zulu ceramic functional repertoire based on vessel shape and size. He developed four functional classes comprising food preparation; serving and drinking; storage and transport; medicinal and ritual use. He also discussed the relationship between surface treatment and vessel function. In another study, Fowler (2008) reports on the aspects of the process of pottery production in the lower Thukela Basin of Kwa-Zulu Natal. He demonstrates that these aspects are carried out in six general stages, including (1) raw material procurement, (2) clay processing or preparation, (3) fashioning or shaping, (4) decoration forming, (5) firing and (6) post firing treatments. He also suggested that most decorations found on Zulu pottery have symbolic meanings.

The study by Woodhouse (1971) is a very important source to the study of pottery in Mumbwa area. In his account on pottery technology and manufacture, he argues that researchers must be concerned with the clay from which the pot is made, the manner in which the clay has been built up, the degree of firing and methods of making pots.

Reynold's (1968) study is another important source to our current research on pottery production and functions. He discusses the steps of manufacturing which begin from sourcing of clay, preparation, shaping of the vessel, decoration techniques, drying and firing techniques as well as names of pots based on their functions.

Ellert's (1984) study is instrumental to our current study on pottery production and function. By discussing the production, functions and types of pottery among the Shona ethnic groups, he discusses the various ethnographic collections that make up the material culture of

Zimbabwe. From the various vessels he explored, the author concluded that shape was instrumental in determining the use of domestic pots.

Waane (1981) presents a study of pottery among the Kisi of Tanzania. In his work, he reports that most of Ukisi is rich in potting clay and the Kisi make a variety of pots for water, grain storage and cooking. He also reports that almost all the pots are made by the lump and coil method. The body is made with two types of clay, one type for the main body and the other for finishing. From his study, Waane established that there are two distinct, but probably related traditions of Kisi pottery, Southern and Northern. The Southern tradition pottery has “Iron Age” type of incised, stamped, hatched and herring bone decorations. In comparison, Northern Kisi pottery does not have ‘Iron Age types’ of decorations. The results from Waane’s study showed that the shapes of all Iron Age and present day Northern Kisi pottery are similar, however.

Lindahl and Matenga (1995) carried out an ethno-archaeological study in Buhera district in south-eastern Zimbabwe. They based their research on traditional methods for the study of vessel shape and ornamentation whereby they employed both petrographic studies and ethnographic surveys. Through petrographic studies they discovered that similar clay was still used to manufacture pots like in the archaeological record, an aspect which was also confirmed by ethnographic observations which in overall pointed to continuity in terms of raw material use. On vessel function the authors discovered two basic classes of pottery. These included the *shangwa* used for cooking food stuffs like sweet potatoes, the *hadyana* and *chimbira* respectively is used for preparing relish as well as children’s porridge. The *shambakodzi* specifically used to cook *sadza* and lastly the *chishangwa* used to cook groundnuts. On the other hand the second class was composed of vessels for storage purposes. This included the *gambe* and the *gate* used for storing beer as well as the *nyengero* and *chipfuko* used for serving beer and lastly the *shangwa* and *chirongo* used for storing dried food and carrying water respectively.

Lindahl and Pikirayi (2010) further stated what had been previously covered by Lindahl and Matenga (1995) hence they presented ceramics as part and parcel of a technological process. Like the previous research their area of study included Buhera district and extended into Dande lowland, Murehwa, Gutu, Mutoko north east and Masvingo area near Great Zimbabwe as well as the Mashamba area of the Limpopo province in South Africa. Through merging petrographic and ethnographic studies they managed to differentiate Early Iron Age (EIA) pottery from Late Iron Age (LIA) as well as establishing continuity and change in vessel

forming techniques as they discovered that the modeling technique is still prevalent among the Shona of today.

Arthur (2002) carried out a two year ethno-archaeological study of ceramics among the Gamo people of south western Ethiopia with the goal to provide archaeologists an analogy to understand diet and socio-economic complexity as well as ceramic function through deciphering one form of use-alteration and surface attrition. The study focused on the lifecycle of pottery exploring how pots move through different social and economic contexts from the time they produced them to their eventual discard .He discovered that Gamo women were largely responsible for pottery production whereby larger vessels especially jars served as storage facilities whilst smaller vessels were used for cooking food stuffs. The surface attrition analysis also demonstrated pottery as a contributor to better understanding of household wealthy variables within a society whereby in the case of the Gamo large vessels were associated with the wealthy since wealthier households had surplus grains they could use to prepare beer as well as enough resources to acquire large vessels such as beer jars unlike the poor. The study also provided models to archaeologists in understanding why beer vessels were mostly prone to interior surface attrition as compared to food vessels. Thus he discovered that the most contributing factor to surface attrition especially to beer vessels was fermenting of beer that eroded the vessels walls. At the same time the study also clarified why the life span of large vessels was twice as much as that of smaller vessels were largely prone to heaths and continued movements which could end up in breakages unlike large vessels which eventually broke as a result of surface attrition.

Rice's (1996a) study is an important source to the current study on pottery function. He examines the relationship between ceramic manufacture and use. He focuses on understanding how potters designed their vessels to meet the performance characteristics associated with cooking, storing water, transport and other functions related to the use of pottery. In another study, Rice (1987) provides the current study information on vessel morphology and function. He discusses four primary performance characteristics that affect vessel function, namely, capacity, stability, accessibility and transportability. He also examines technological choices that may influence the performance of ceramic vessels in various use. He mentions firing atmosphere, along with variables such as clay composition and temper which influence the strength, porosity and other characteristics of finished vessels that affect ceramic performance.

Shepard (1956) is another vital source of information to the current study on a direct relationship between ceramic vessel form and function. He presents a study on morphological

attributes which affect performance requirements such as orifice size, rim modification, base modification and the presence or absence of a neck.

A study by Henrickson and McDonald (1983) is a very important study on pottery function. They used the ethnographic data from different cultures in their research to exemplify the relationship of vessel form to function. They noted that the function and morphology of ceramic vessels are related by definite physical properties and that vessels within a functional class are designed and made according to a specifiable set of morphological boundary conditions.

Skibo's (1992) study is instrumental to our current study on pottery function because he argued that the research on pottery function could be broadly divided on the study of intended vessel function and the study of actual vessel function. He discusses the intended vessel function through the study of vessel attributes such as morphology (Size and shape), paste composition, wall thickness, and surface treatment which can be manipulated during manufacture so that the vessel was better suited for a particular function. He examined the actual vessel function through the study of vessel use alteration. According to him, use-alteration comes in two basic forms: deposits on vessels such as soot or food residue and vessel attrition such as pitting or abrasion. He suggests that sooting on vessel surfaces is commonly used to show that a vessel was used for cooking and the orientation of soot can indicate the position of a pot on the fire. He argues that surface attrition had the potential to provide evidence for any type of pottery use.

Braun's (1983) article on "Pots as tools" was another vital source of information to the current study of pottery function. He argued that ceramic vessels are conditioned by their mode of manufacture, paste composition, shape and size to fulfill a set of utilitarian roles. For Braun, an understanding of these mechanical performance characteristics, as he termed them, was essential for determining pottery function.

The studies by Hally (1983a, 1986) provided firsthand information to our current study of pottery function as he employed use-alteration to formulate inferences about pottery use. His analysis of the Barnett phase ceramics demonstrated how many sources of information, including morphology, performance characteristics, ethnographic information, context of recovery, and use-alteration can be combined to interpret a vessel function. According to him, soot and oxidation patterns reflected how vessels were positioned in relation to the fire.

A further informative study performed by Skibo and Schiffer (2008) analysed seed jar examples from the prayer Rock caves collection for use-alteration traces. They observed soot and several carbon patterns in the interior of these vessels. From these traces the authors were able to demonstrate that the vessels were used for cooking, moreover, the patterns of traces exhibited suggested that the mode of cooking included boiling, simmering and roasting.

Building on the work of Skibo and Schiffer (2008), Kooiman (2012) conducted a use-alteration trace analysis of ceramic sherds from two sites in the upper peninsula of Michigan : Naomikong point and sand point, which date to the middle and late woodland periods. The importance of this study was her ability to make inferences based on sherds rather than whole pots as in Skibo and Schiffer's (2008) study. Using use-alteration traces such as carbonization, attrition and residue traces Kooiman's (2012) results directly connected pottery to use over a fire.

The study by Wobst (1977) on the information exchange model provides insights into the interpretation of pottery motifs in Mumbwa area. He argued that style can send messages relating to emotional state, identification, of authorship and ownership, religions and political affiliation, and ethnic affiliation. He further argued that Pottery motif 'messaging was not only to display social group membership, but also to demonstrate a willingness to conform to the norms and ideology associated with a given group. He observed that style 'affixed' messages to [pottery designs] through style giving it a higher "cost of emission" than other modes of communication. According to him, the deployment of style required a commitment and a general interest in the longevity of the social signal. He concluded that style was effective in communicating social boundaries.

Wiessner' (1983) took Wobst's communicative style model as a much more dynamic approach to social identity and intragroup relations. Wiessner (1983), like Wobst, stressed the active nature of style. She observed that style has a specific social reference and expresses information about social group identities and boundaries. She applied her assertive style when referring to expressions of individuality and skills. According to her, both emblematic and assertive styles contain information about the existence of groups and boundaries, rates of interaction, the nature of social relationships and the balance between expressions of personal and social identity through time.

A particularly important insight to the means of pottery decoration in the current study are the studies by David et al (1988) who interpret Mafa and Bulahay pottery decoration in terms of

the symbolic parallels between pots and people. In their elegant article, “why pots are decorated,” they asserted that decoration can depict or express the structures and themes upon which culture is built. They argued that decoration provides protection from dangerous power and also reinforces social relations by triggering symbolic associations deep within the viewer’s psyche.

Braithwaite’s (1982) study is also important to the current study on the meaning of pottery decorations. He demonstrated that amongst the Azande of Sudan decorated pots are used in areas and actions of symbolic ambiguity and concern; for example, those involved in transformative processes, such as from raw to cooked or those which involve interaction between men and women. He linked the use of decoration to the maintenance of wider structures within Azande society, principally the maintenance of gender roles, arguing that it is only used in areas where such relationships may become contested.

Hodder’s (1991 a) ethnographic research among the Iichamus of the Baringo district of Kenya is another important source to the current study on the meaning of pottery motifs. He examined the nature of decoration on women’s Calabash milk containers. His analysis included a discussion of the symbolic associations of calabashes, milk, cattle, children, men and women. He suggested that calabash decorations may serve as woman’s silent protest in a society where elder men mute women’s voices in public. He explored the role of decoration on calabashes in the course of daily practices and their symbolic and structural associations. He also considered tension between men and women and issues of power in Iichamus society and how that may be played out in their material culture.

Evers et al (1988) tried to answer the question why archaeological pots were decorated the way they were. Considering previous researches and their personal experiences, they considered a number of reasons ranging from symbolism, group identity and aesthetic beauty. In terms of symbolism the trio suggested the reasons to be enshrined within philosophies and ideologies of different social systems that produced them. On the aspect of group identity they agreed with previous scholarly work that advocated for the notion that some decorations were an extension of designs on human bodies and other forms of material culture hence qualified it as useful in tracing group identity even though one had to be cautious. However they disagreed with the idea of differentiating the social systems that produced these using differences in decorations motifs and techniques since changes in these aspects was not always a pointer to culture change but rather changes in style and decorations within similar time and space. Lastly they disputed the concept of attributing meanings of decorations along parameters of aesthetic

beauty since they discovered that consumers were less interested in decorations but rather the ability of a pot to serve its functions. In overall the trio only ended up giving reasons on why pots were decorated rather than stating the exact reasons. However credit must be given to their work since they managed to state symbolism as one of the reasons why pottery is decorated a phenomenon which is going to be explored by this research.

Ndoro (1996) also carried out a similar study on the Karanga but focusing on the possible meanings and symbols associated with Gokomere pottery. He explored this by comparing the assemblage with modern Karanga pottery however paying particular attention to its decoration and use. Overall he got encouraging results on some variables of pottery like soot which was discovered to be difficult to conclude considering function since pottery uses varied with time and need. Thus he encouraged a continuous dialogue between archaeology and ethnography which believed could help in shedding light on the meanings and symbolism of ceramics.

1.9.Theoretical Framework

This study was guided by Binford's (1967) middle range theory and Lero-Gourhan's (1964) theory of *Chaine operationelle*. According to Fagan (1987), middle range theory was a body of ideas that provided a link between the dynamic living systems of today and the static archaeological record of the past. Binford's (1977:6) definition of middle range theory was: a) how we get from contemporary facts to statements about the past, and b) how we convert the observationally static facts of the archaeological record to statements of dynamics. Therefore, middle range theory attempts to link artifacts to past processes. Two methods that employ middle range theory in this study are ethnoarchaeology and ethnographic analogy. Ethnoarchaeology was defined as the direct observation field study of the form, manufacture, distribution, meaning and use of artifacts and their institutional setting and social unit correlates among living, non-industrial peoples for the purpose of constructing better explanatory models to aid archaeological analogy and inference (Stanislawski, 1974). Kramer (1985) defined ethnoarchaeology as an ethnographic study of pottery to appreciate the interaction between human behavior and variation of material cultures among contemporary societies with intent to archaeological interpretation. According to Arnold (1985), this correlation between material remains and contemporary human life strongly requires identification of the process of production activities that potters could share, in the past and present. On the other hand, ethnographic analogy was defined as ethnographic information that can be employed in interpreting archaeological data with the use of analogy (Stanislawski, 1978). Analogy is transportation of information from one subject to another on the basis of

some relation of comparability between them (Wylie, 1980). According to Johnson (1999), ethnographic analogy could be used in situations where there is a direct historical continuity between existing and prehistoric culture or in environments and situations where the cultures under consideration exhibit similar technological levels. It assumes that if objects have some similar attributes, they share other similarities as well. It involves using a known identifiable phenomenon to identify unknown ones of a broadly similar type. Sharer and Ashmore (2003) argued that meaning could be recognized by observing modern production procedures and matching them with similar features on prehistoric pottery.

According to Lero-Gourhan (1964), *Chaine Operatoire* assumes that individuals are socially knowledgeable agents whose technological choices in making or processing material objects are primarily social choices learned as members of a social community. In particular, this involves the examination of how contemporary pottery is made in a desired form and function from raw materials acquisition through manufacturing techniques, shaping, decorating, drying, firing and mode of use. Lemonnier's (1986, 1992) work has expanded on the theory by highlighting the importance of studying the operational sequences or *Chaine Operatoires* of production. Lemonnier (1992) prescribed that we study the nature of raw materials, techniques that transform them into products, the physical movements (gestures) involved in fashioning products, and the knowledge that this process required. He argued that through an examination of the *chaine operatoire*, we could more fully appreciate the articulation of society and technology and better understand the construction of pottery. Lemonnier (1986 : 149) argued that *Chaine Operatoire* as a pottery production process consists of a series of steps were determined not only by environmental and functional constraints but also by the technological choices the potters make throughout the production process. According to Dobres and Hoffman (1994: 214), it was only through the use of the *Chaine Operatoires* that a more comprehensive understanding of the production, function and the interpretation of the meaning of motifs on prehistoric pottery vessels can emerge.

The current study has utilized the tools of middle range theory and the rubric of the *Chaine Operatoire* in order to explore Mumbwa pottery production, function and the meaning of motifs. They were helpful in addressing the gap between interpretations given to decorative motifs on pottery from Mumbwa caves and the meanings derived from ethnographic studies of pottery making in Mumbwa area.

1.10. Organisation of the Study

This dissertation is made up of seven chapters. The first Chapter is presents historical background to the study. Chapter two discusses prehistoric pottery from Mumbwa caves. Chapter three focuses on contemporary pottery in the Mumbwa area and its technological makeup. Chapter four examines morphology and function of contemporary pottery. Chapter five discusses pottery motifs and their meanings. Chapter six looks at the Comparisons between ethnographic and prehistoric pottery in Mumbwa area. Chapter seven is the Conclusion.

1.11. Research Methodology

The study utilized qualitative methods based on primary and secondary sources. Primary data took the form of observations and oral interviews with fourteen Female potters between the ages of 49 and 91 and two Male non-potters from eleven communities in the Mumbwa area between June and August 2013 (see Appendix 2). The selection of these two non-potters was based on the fact that they were the only ones who had an idea on some of the meanings of motifs. Interviews had structured and open ended questions (see Appendix 1).An observation sheet (see Appendix 3) was used to enter data. The interviews and observations with the potters revealed information on aspects of pottery production such as the selection and procurement of raw materials, processing of clay, shaping formation, decoration, drying and firing. Photographs were also taken of the contemporary pottery manufacture process. Oral interviews with potters and non-potters provided information on the meaning of motifs on pottery. Interview and observations with potters further revealed information on attributes of vessel form such as rim form, shape form, neck form, base form, orifice size, surface treatment, wall thickness, temper, use-alteration and how these influenced functions of ceramic vessels.

Secondary sources of data were gathered from published and unpublished written documents. The University of Zambia main library provided access to books, journal articles and dissertations. This allowed me to acquire information on the background of the study area, on the description of prehistoric pottery from Mumbwa caves and about the general understanding of pottery studies. Livingstone National Museum was another important source for the current study. It offered access to potsherds from Mumbwa caves which were largely based on decorative motifs. These potsherds were also photographed. This was intended to establish linkages between prehistoric and ethnographic meanings of motifs on pottery from the study area.

CHAPTER TWO

POTTERY DESCRIPTION FROM MUMBWA CAVES

2.1. Introduction

This chapter provides a detailed review of archaeological researches done at Mumbwa caves on prehistoric pottery. It aims at examining the attributes of pottery in order to ascertain their meanings in correlation to the modern ware. The present study is based on the field work conducted by the writer in 2013 on archaeological potsherds housed in Livingstone national museum, accession numbers 9313 and 9314. The study builds on the previous works conducted at Mumbwa caves by Macrae (1926), Dart and Del Grande (1931), Clark (1942), Savage (1983) and Barham (1996).

2.2. A History of research at Mumbwa caves

Excavations at Mumbwa caves were first conducted in 1925 by Macrae (1926) an amateur archaeologist who worked in the office of the colonial administration as a magistrate. This site was a group of three caves. He excavated the largest of the three caves by a trial trench in front of the western entrance. His aim was to set up a Stone Age cultural sequence and to provide information for comparison with emerging typological sequences in Europe and southern Africa (Derricourt in Savage, 1983). According to Derricourt (in Savage, 1983:431), Macrae's work distinguished a top layer of black soil, one foot (30 cms) in thickness, with "evidence of recent habitation", by which was meant potsherds, animal bones, and some human skeletal material. In this case pottery was associated with rare stone artifacts in the top layer. This pottery was convincingly argued not to be attributed to the later Stone Age, instead being a product of trade or other contacts with Early Iron Age communities (Macrae, 1939). Macrae's conclusion was that until about the beginning of the century the cave had been used as an occasional refuge by local Africans (Derricourt in Savage, 1983).

Following investigations by Macrae in 1925, Dart and Del Grande (1931) excavated the two largest caves of the site in 1930. According to Wells (1939), the excavations by Dart and Del Grande revealed that while fragments of pottery occurred most abundantly in the upper most level of the deposit, they were found in smaller quantities as low down as the very base of the Later Stone Age stratum, at a depth of approximately two meters. Some of these potsherds were taken to Witwatersrand University for study and others were taken to the Livingstone museum for preservation (Wells, 1939). Dart and Del Grande were largely concerned with what they believed to be the presence of the oldest Iron smelting industry intercalculated between

two Stone Age strata (Derricourt, 1973). Later analysis of the so called slag disproved their theory and the large collection of Stone Age material was only briefly mentioned and subsequently lost.

Although Dart and Del Grande did not study pottery, they mentioned that pottery was an integral part of culture of the site and that it was made by hunter gatherers of the Later Stone Age communities (Wells, 1939). However, this was disputed and received with varying interpretations by Phillipson (1976), Walker (1983) and Musonda (1987).

Phillipson (1976:196-7) has suggested that Iron Age pottery in rock shelters was probably acquired by hunter-gatherers through exchange with the farmers. His argument is based on the fact that Early Iron Age pottery from rock-shelters closely resembled that found in early Iron Age sites. Phillipson (1976:196) concluded that the most satisfactory interpretation of the Makwe Later Stone Age industry and Iron Age interaction was that of a temporary client relationship. Similar conclusions were made by Walker (1983: 90) working at Bambata cave in Zimbabwe where Iron Age Bambata pottery was found in Later Stone Age contexts. He attributed the Bambata pottery to food producers rather than hunter-gatherers because its appearance in Later Stone Age contexts did not seem to have affected the life-styles of hunter gathers. The Bambata cave sequence demonstrated continuity in lithic technology, exploitation of wild animals and exchange of pottery and domestic stock.

The exchange relationship proposed by Phillipson had recently been challenged by Musonda (1987:155) who suggested that pottery found in Later Stone Age context was obtained by hunter gatherers collecting vessel fragments left behind at sites inhabited by farmers. He concluded that the support to this argument was demonstrated by a tendency of Later Stone Age people to possess early Iron Age pottery several centuries after Early Iron Age people had discontinued the tradition. When compared to the evidence presented above (Phillipson 1976; Musonda, 1987; Walker 1983), the Mumbwa pottery research has produced similar conclusion.

In 1939, Clark (1942) re-excavated portions of both cave entrances at Mumbwa which were explored by Dart and Del Grande in 1930. The aim of these excavations was to set up an stratigraphic sequence. He determined an Iron Age, Wilton and Still bay sequence in two main cave earth strata. Clark (1942:141) recognized the stratigraphy of a ceramic Late Stone Age overlain by an upper level of Iron Age pottery and tools mixed with quartz artifacts in both caves. The excavations in cave 1 revealed that the top 6 inches of loose dark brown to black soil contained pottery, Iron, a few micro-lithic stones, faunal remains and burnt clay. From 6

inches to 1 foot the pottery and Iron decreased, only a few sherds being found below the one foot level (Clark, 1942 : 141). Clark (1942) noted that the presence of Wilton material mixed with pottery material need not therefore, imply their contemporaneity. According to Derricourt (1973), it was difficult for Clark to study his excavated pottery assemblage because methods of C14 dating had not been developed at that time. He further argued that there was not still adequate analysis, nor dates to compare with recent work being undertaken in other parts of Zambia.

In 1973, Savage (1983) excavated Mumbwa caves with the aim of providing a better documented definition of the Zambian Wilton Industry and to examine the long-standing distinctions between the Zambian Wilton and the Nachikufan in the South Central Africa. She reported the existence of the top grey-brown soil in which pottery, quartz flakes, Iron artifacts, shells, glass beads and bones were found (Savage, 1981: 433). She further observed that the brown-red level below this contained mainly LSA quartz material but included some pottery similar to the upper and a lower (red-gritty) level which contained a ceramic Stone Age deposit (Savage, 1983: 433). Savage did not study her excavated pottery assemblage but instead requested Robin Derricourt, the secretary / inspector of the National Monuments of Commission, now NHCC to study and classify it.

Between 1993 and 1994, Barham (1996) re-excavated Mumbwa caves to provide new dates for the MSA by modern techniques but also yielding important new evidence about the nature and sequence of Middle Stone Age adaptations in Zambia and its paleo- environmental context. The 1993 excavations revealed radial cores, levallois cores, large scrapers, awls, spheroids, quartz flakes and other ferric minerals. The sample sizes were too small to make comparisons with other MSA industries in the region (Barham, 1996:192). The excavation of the surviving pedestal in 1994 revealed a consolidated deposit of ash, burnt bone, quartz debitage and five blocks of burnt lime stone (Barham, 1996). He also reported the ash deposits which formed a large oval of 90 cm by 70cm with a depth of 5 - 7 cm to the ash and the extent of the ash indicated that the feature was not another tomb as suggested by Clark (1942 : 137) but simply a large stone lined MSA hearth (Barham, 1996 : 195).

2.3. Prehistoric pottery from Mumbwa caves

According to Derricourt (1985:239), a total of 1651 sherds were recovered from the site. This collection was based on the excavations of 1925, 1930, 1939 and 1973. Body sherds constituted 239 decorated pieces or 14.5 % of the sample, while undecorated rims totaled 1412. When placed into the five cultural levels, a clear picture emerged as shown in table 2.1

Table 2.1: A summary of potsherds from five levels at Mumbwa caves (Derricourt, 1985).

Levels	No of potsherds
I	609
II	755
III	189
IV	10
V	2

The pottery was analysed based on culture-historic approach using typology through the attributes of ceramic paste, vessel colour, surface finish, vessel form and decoration to develop relative chronology, define group identities and tracing regional movements of people (Huffman,2007).However, the present study has diverted from the pursuits of typology and culture-history to inquiry centering on information that can help in the recreation of technological thoughts and actions behind production of prehistoric pottery , function and meanings attached to prehistoric ceramics. Ethnographic studies have confirmed that the attributes of vessel form, surface finish, vessel wall thickness, colour, fabric and decoration are powerful tools for interpreting vessel function, especially when supported by other forms of data such as use-related alteration of vessel surfaces (Braun,1980; Hally,1986;).With this newfound, the following attributes of ceramics from Mumbwa caves were given closer attention. These included ceramic paste or fabric, vessel colour, surface finish, vessel wall thickness, vessel form, decoration and use-alteration.

2.3.1. Ceramic paste or fabric

The analysis of the paste or fabric enabled the characterization of the raw materials used in ceramic manufacture. The fabric type usually consisted of the clay matrix and inclusions found in the matrix (Rice, 1987). According to Machiridza (2012:73), Fabric was defined as the clay to temper ratio in the ceramic paste. The choice of clay and especially the tempering material were usually indicative of the natural environment, in which the potters lived and therefore indicated the nature of the available raw materials (Arnold, 1985). Temper and its grain size influences or determines the prospective use of the vessels and many ethnographic studies proved the point (Shepard, 1956; Rice, 1987). In this respect, the paste or fabric of the sherds from Mumbwa caves showed a biscuity appearance and also contained fine grey to black clay with the inclusion of grit which acted as temper (Derricourt, 1985; Wells, 1939). Grit temper was identified by the presence of crushed igneous rock fragments (Kotwasinoki, 2011).

2.3.2. Vessel colour

Apart from the composition of raw materials, the colour of the vessel surface was also attributed to firing temperature and conditions (Shepard, 1956). Firing condition can result in either an oxidized or reduced atmosphere (Rice, 1987). When pottery is fired in an environment with free air circulation and ample oxygen to bind with the elements the atmosphere is oxidized. While reducing atmosphere develops when a kiln atmosphere does not have enough oxygen in it to completely consume the fuel as it burns (Shepard, 1956:81). An oxidized firing produces even or uniform red, buff and light brown colours, whereas a reduced firing produces dark brown, black and uneven patches of black and red colours (Steadman, 1995). The colour on the surface of the potsherds from Mumbwa ranged from buff to red with a few having black sections on their surfaces and the vessels were believed to be well fired (Derricourt, 1985).

2.3.3. Surface treatment or Finish

Surface finish has been undertaken because it is one of the technological attributes that provides valuable insight into method of pottery manufacture and function (Rice, 1987). As regards surface finish, most of the vessels from Mumbwa caves showed a smooth surface, burnish on both inside and outside and one or two appeared to be polished. Ochre burnish was also present on part of the rims of two of the fifty-four vessels defined by rim sherds (Derricourt, 1985).

2.3.4. Vessel wall thickness

Vessel wall thickness is significant here, as it influences a vessel's performance in fulfilling its intended function (Rice, 1987). The thickness of the vessel wall also determines the size and shape of the ceramic since the walls serve as structural supports. In the case of sherds from Mumbwa caves, the thickness of the body ranged from 8-16mm, of which the average being about 10-12mm (Wells, 1939:63). Some sherds observed showed coil fractures or voids suggesting that they were made by the coiling method. The vessels were mainly cracked horizontally on the rims along the plane of weakness. The fractures themselves were relatively smooth and rounded, with the interior surface of a coil generally concave while the superior surface was convex.

2.3.5. Vessel form

Vessel form generally refers to classification of the ceramic form according to its shape and size. Derricourt (1985) developed a scheme that recognizes two main vessel forms on potsherds from Mumbwa caves. These were pots and bowls (fig. 2.2a-w). Pots were more abundant than bowls. Pots were divided into globular pots 28 (52 %), necked pots 6 (11 %) and straight necked pots 6 (11 %). Bowls were divided into open bowls (20%) and inturned bows (4%) as shown in table 2.2 below. This included also the unclear 1 (2 %). The size and shape of vessels was pursued in this study in order to define what function the vessels would have had. Morphological attributes such as rim form, neck form, orifice shape and base form have proven to be general predictors of patterns of use in ethnographic studies (Rye, 1976 ;Rice,1987 ; Hally, 1986).

Table 2.2: A summary of vessel forms from Mumbwa caves.

Vessel forms	Number of potsherds	Frequency in percentages
Globular pots	28	52%
Necked Pots	6	11%
Straight necked pots	6	11%
Open bowls	11	20%
Inturned bowls	2	4%
Unclear	1	2%

With regard to rim forms, necked pot rim profiles were everted while bowl rim profiles were inverted. Globular pot rim profiles were round and straight and these were the most prevalent (Derricourt,1985) (fig.2.2a-w). On the basis of basal shape, Mumbwa ware exhibited round

bases as shown in the images in fig.2.2a-w. In terms of neck shape, pots were characterized by the presence of necks and bowls without necks (fig.2.2a-w). With respect to vessel orifice or mouth, pots were represented by restricted or narrow mouth and bowls by unrestricted or wide mouths (fig.2.2a-w).

2.3.6. Use-wear or use-alteration

Use-wear or use-alteration refers to any forms of changes that occur to the “surface or subsurface of pots as a result of use “(Skibo, 1990:81). Use-wear or the use-alteration analysis provides rewarding information for reconstructing how vessels were actually used in the past (Schiffer and Skibo, 1989; Skibo 1990, 1992) and the social group that used them (Fuller, 2005). In this study, use-wear categories identified follow those defined by Schiffer and Skibo (1989). Three forms of ceramics use-alteration were observed at Mumbwa caves namely, soot patterns, pitting and chipped rims. Soot was identified on the exterior surface of some of the vessels from Mumbwa caves as shown in fig.2.1a suggesting specific functions pottery served. There was also evidence for extensive use-wear, as pitted surface marks were visible on the concave base of some vessels from Mumbwa caves as represented in fig.2.1c. It was further observed that the rims of some of the vessels showed use-wear traces as illustrated in fig.2.1b. It was abraded or chipped indicating the use and possible function of the ceramic.

2.3.7. Decorative attributes

Decoration within pottery consist of the entire additions to the outside of a vessel after its production and their application do not change the original design of the vessel (Marufu, 2008). Decoration refers to the art executed on the vessel for functional and non-functional reasons (Chikure et al. 2002). Decoration attributes were differentiated following their location, patterns produced and the instrument used. As a result, these were categorized into 3 respective classes which are decorative placement, decoration motif and decoration technique. Huffman (1989) notes that integration of these attributes into the multidimensional analysis approach greatly helps in establishing group identity. However, recent works have favoured to infer social messages conveyed by these decorations. For example, works by Pikirayi (2007) and Huffman (2007) reported that decoration in ceramics studies communicate social messages to the entire group of which the maker was a member. On the other hand Ndoro (1996) believes decoration on a vessel can help us to understand more about its use as well as symbols attached to it.

2.3.7.1. Decoration placement: This was the actual location on which the decoration was situated on a vessel (Nyamushosho, 2013). Most decorations were exerted on the rim and neck or waist when it came to ceramics from Mumbwa caves. The frequency of the decoration placement is illustrated in Table 2.3.

2.3.7.2. Decoration motif: This involved the full pattern that was portrayed by the decorations. The motifs were classified basing on the dominant techniques that were used to produce them and finally presented using illustrations (Nyamushosho, 2013).

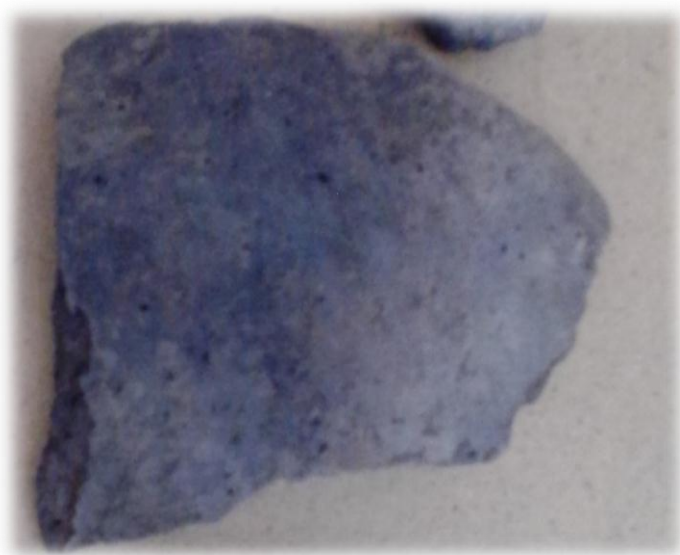
2.3.7.3. Decoration technique: This was defined on the basis of the tool or method of applying designs or motifs on different parts of a vessel (Nyamushosho, 2013).

According to Derricourt (1985), decoration on the excavated ceramics was largely homogeneous. The most dominant was comb stamping consisting of horizontal or chevron single line, delineated oblique band, a horizontal band of herringbone, zigzag band delineated by horizontal comb-stamped line, horizontal areal comb-stamping, oblique areal comb stamping with overlapping comb stamped lines and pendants or loops. Minor motifs were broad line incision consisting of horizontal grooves, grooves in lattice, and horizontal bands of deep wide slashes separated by grooves; incisions made up of light dragged lines, horizontal bands of notches or slashes, oblique incisions, crosshatching, wavy-lines, block of short incisions as well as individual stamped impressions, consisting of horizontal lines of wedge-shaped impressions and various impressions combined with incisions. These decoration types are shown in figure 2.2a-w and summarized in table 2.3.

Table 2.3: displays a summary of decoration types and placement on 54 potsherds from Mumbwa caves (Derricourt, 1985).

Decoration types / motifs	Decoration placement	Number of sherds	Frequency in percentage
Line comb stamping	Below rim band	11	20
	Lower than rim	2	4
	Up to rim	2	4
	Waist	1	2
Area comb stamping	Below rim band	18	33
	Up to rim	1	2
	On inturned rim	2	4

Comb stamping and grooving	Below rim band	1	2
Impressions	Below rim band	3	6
	Lower than rim band	1	2
Incisions	Below rim band	5	9
	Lower than rim	1	2
	up to rim	2	4
Incision and Impression	Below rim band	1	2
Undecorated	Up to rim	1	2
		5	9



(a)



(b)



(c)

Figure 2.1a-c: Use-wear Potsherds from Mumbwa caves :(a) sooting (b) chipping and (c) pitting (Livingstone National Museum,2013).

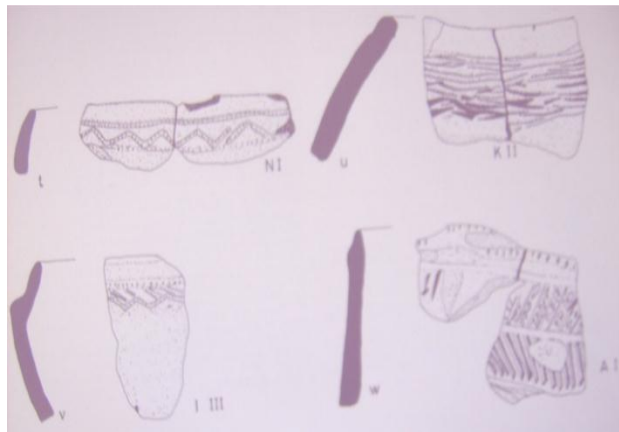
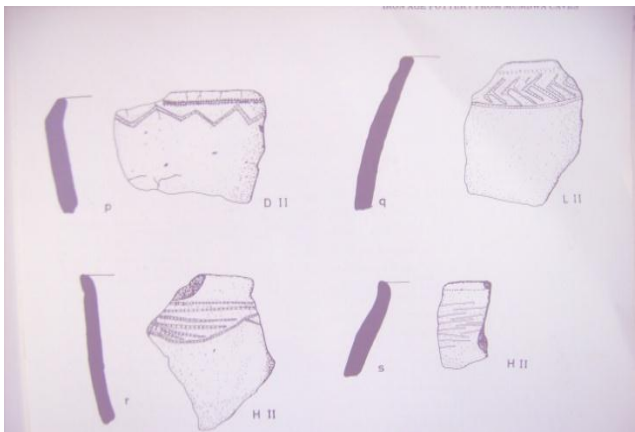
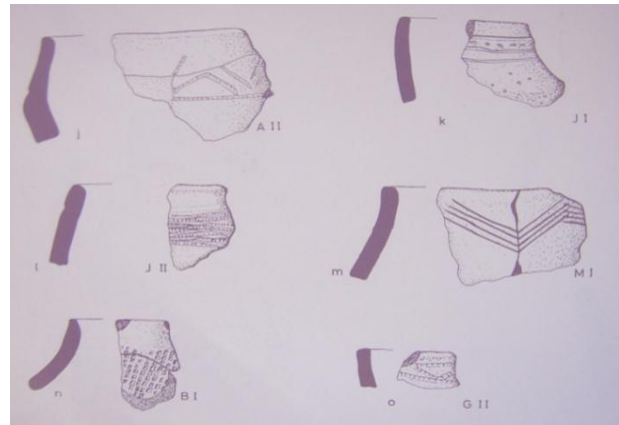
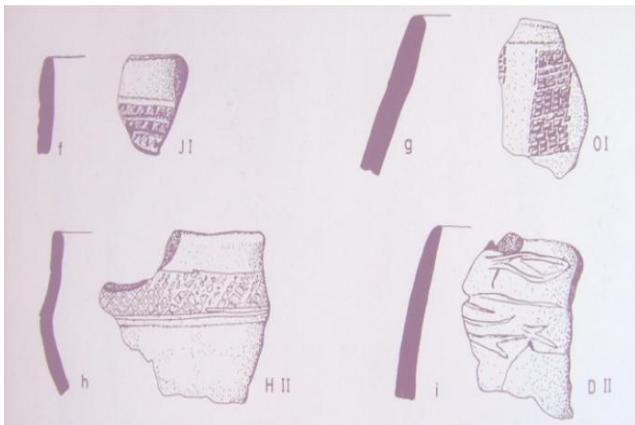
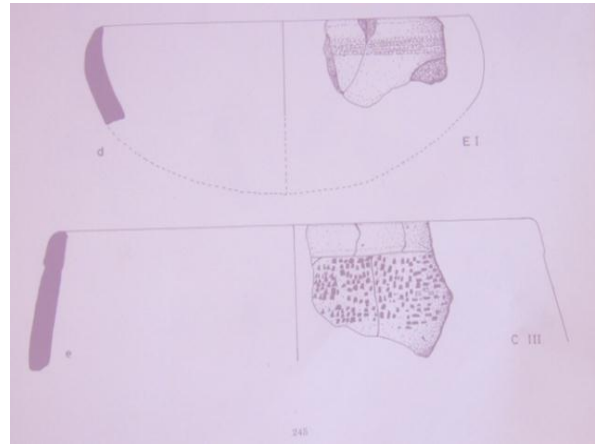
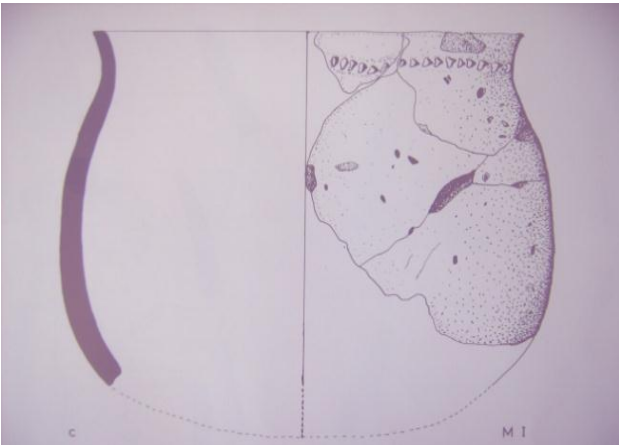
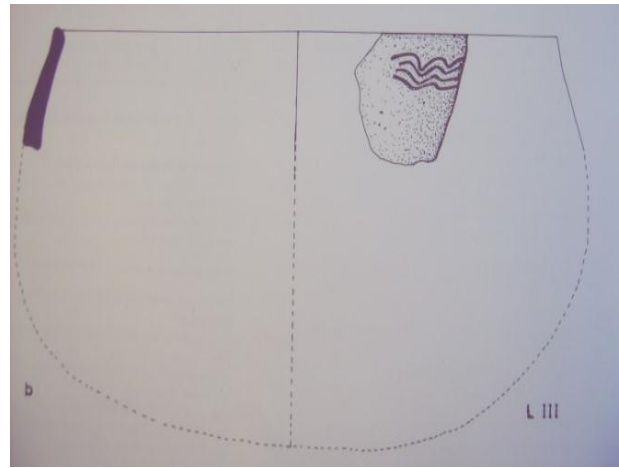
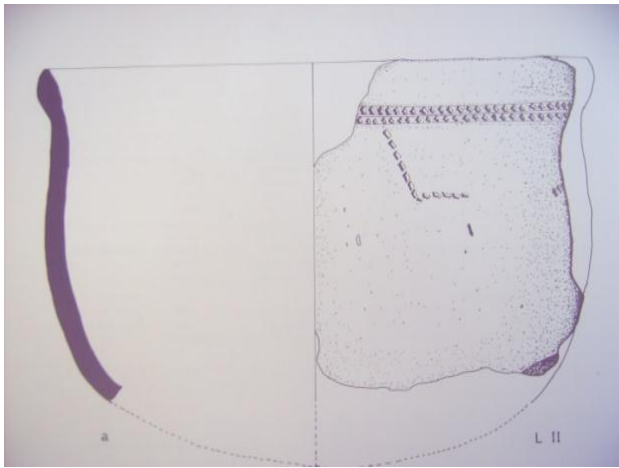


Figure 2.2a – w : Pottery from Mumbwa caves (From Derricourt, 1985)

2.4. Conclusion

This chapter showed that ceramic vessels from Mumbwa caves were well elaborated in terms of decorative motifs. Decoration was mainly dominated by comb stamping. This was applied horizontally, obliquely or in an overlapping fashion. Occasionally single zig-zag lines as well as herringbone patterns were found. This was followed by stamped impressions, incision and a combination of two or more of the mentioned motifs. The decoration was usually confined to the neck or below the rim. On the basis of ceramic paste, the study showed that the sherds were well fired, had a biscuity appearance and also contained fine grey to black clay with inclusion of grit which acted as temper. The findings revealed that the colour on the surface of the potsherds ranged from buff to red with a few having black sections on their surfaces. In terms of surface treatment, most sherds showed a smooth surface, burnish and one or two appeared to be polished. The study found out that necked pot rim profiles were mainly everted while bowl rim profiles were inverted. Globular pot rim profiles were round and straight which were the most prevalent. It further pointed out that vessel forms were characterized by pots and bowls which were subdivided into necked pots, globular pots, necked pots, open bowls and inturned bowls. Besides, Mumbwa ware was characterized by round bases. In addition, some sherds showed the presence of necks, sooting patterns, chipped rims, and pitted exterior bases.

CHAPTER THREE

CONTEMPORARY POTTERY MANUFACTURE IN THE MUMBWA AREA AND ITS TECHNOLOGICAL MAKE UP

3.1. Introduction

This chapter examines pottery production and technology among modern rural communities in Mumbwa area. It underlines the value of pottery technology in addressing broader aspects of production during the prehistoric past which were embedded with meanings. It focuses on technical choices involved in selection, procurement and processing of raw materials, vessel shaping, decoration, drying and firing. This is important because every stage in the pottery production process has some social significance and exists in continuation with the past (Michelaki, 2007:150). Michelaki et al (2014:3) noted that a technical act in pottery making is a social act because it takes place in the context of a community with preexisting history, traditions, preferences and memories that are tacit and corporeal as much as they are conceptual and social.

The data contained in this chapter as mentioned in chapter one was collected in June and August of 2013 from eighteen potters in eleven villages in the Mumbwa area. The villages included Mukwasha, Lutuna, Shapole, Kansonso, Chibongwe, Kapeta, Kasalu, Kutemba, Mukwiza, Chooba and Sipati. This involved interviewing and observing modern potters of Mumbwa area.

3.2. Technological stages of pottery production

The manufacture of pottery in Mumbwa area was performed through the following stages: selection and procurement of raw materials, processing of clay, forming the vessels, decoration, drying and firing.

3.2.1. Raw material Selection and Procurement

The first stage in the ceramic production process involved the selection and procurement of raw materials, acquisition of tools for mining clay, portage and preparation of clay. The essential raw materials of a pottery product were clay, water, fuel and tempering ingredients. What was critical at this stage was proper assessment of the qualities of clay by determining specific composition and properties. Additionally, taking much trouble to get the right clay in relation to the construction techniques they used. According to my observation, the Mumbwa potters determined quality of clay by its colour, texture and location where it appeared as raw clay. They selected clay that responded favorably to their forming technology. Potters

identified the texture size by pressing a pea-sized piece of clay between their fingers. Those clay materials that did not respond well to this process were modified to increase their workability. This was done by the addition of temper.

Field observations revealed that Mumbwa potters selected paste composition with the right physical properties in line with what Schiffer and Skibo (1997:40) termed as six primary performance characteristics which had a socially homogenous behavioral chain:

- Paste workability - paste was sufficiently workable to enable the potter form a vessel of suitable shape and size.
- Vessel dryability-ensured that the pot was capable of drying without warping, excessively shrinking or cracking.
- Vessel firebility - ensured that the vessel survived firing without cracking badly or exploding.
- Resistance to disintegration - made the pot to hold liquid without decomposing into its constituent raw materials.
- Thermal shock resistance - helped the vessel to survive repeated heating without shattering, cracking or spilling badly.
- Cooking effectiveness -made the pot capable of achieving an internal heating regime appropriate for cooking its content.

Despite that clay was obtained from different sources wherever it was available, these performance characteristics were carefully adhered to. For example, potters from Kansonso village collected black clay from Chaana stream that had high plasticity requiring no temper. Accordingly, this clay sample from the deposits they explored contained a certain amount of sand that served as a natural temper. Whereas black clay from Chibongwe village produced friable pots that would flake or crack after firing. To prevent this, black clay was mixed with sand and organic rich yellowish clay as sand contained silica that prevented cracking or bursting at the time of firing. Potters at Kapeta village faced a similar challenge when they used black clay as it produced vessels that were not strong. To counteract this, they mixed it with temper in order to increase its plasticity. Elsewhere, similar measures were taken to ensure that plasticity was maintained in order to prevent the pots from cracking after firing. Procurement of raw materials for pottery making was largely a female activity. Potters made journeys on foot to collect clay and employed simple tools such as hoes and pick axes to extract the raw materials at distances ranging between one to seven kilometers from their villages.

3.2.2. Processing of Clay

The second stage in the ceramic production process involved the processing of clay. The preparation of clay was done either in the courtyard or outside the house in an open space. Four basic techniques were used in the processing of clay namely, pretreatment, screening, conditioning and tempering.

Pretreatment involved leaving the raw clay to dry for a few days, or weeks or even months. When stored in this way, bacteria would break down organic matter releasing amino acids which flocculated the mineral particles. Flocculated particles were attracted to one another and this gave the clay strength (Hamer and Hamer, 2004: 345). The longer the clay was stored, the stronger the attraction between particles became. However, Mumbwa potters began clay processing by drying it for three days or more. According to my observation, potters, in Kapeta, Kutemba and Sipati store their clay in metal drums while elsewhere in the study area, potters store their clay in old pots such as the one shown in (fig.3.1) which was intended to increase workability by allowing water to fully permeate the body of the clay. After three or more days or when the potter was satisfied that the clay had sufficiently dried, water was added to humidify it for another three days and then the clay paste would be covered with plastic bags or damp sacks. This prevented dehydration and maintained the moisture content of the clay, thus, allowing proper consistency.



Figure 3.1: Showing clay stored in a pot.

Screening was done by the removal of inclusions and impurities through physical exclusion based on particle size and the size of the openings in a screen. Screening was performed on either dry or wet clay after it had been crushed or ground to fine powder. According to Mumbwa potters, hand sorting was the first form of screening and it involved removing impurities such as stones, roots or leaves. It was observed at Kansonso village that clay was pounded using a stick while at Chibongwe village it was prepared on a grinding stone (Fig.3.2). Elsewhere, at villages Shapole, Sipati, Kasalu, Kapeta and Kutemba, it was pulverized by pounding it in a wooden mortar (Fig.3.3). Both pounding and grinding techniques were used effectively to produce finer clay powder. Sieving the clay was done with a fine wire screen known as a sieve (Fig.3.4).



Fig 3.2: Stone tablet (Grinding Stone) used for grinding clay



Figure 3.3 : A wooden mortar with a wooden pestle used for pounding clay grains



Figure 3.4: Sieve used for sieving clay

Once the clay had been sieved, tempering material was separately crushed, grounded and winnowed or sieved before it was added to the clay. I observed that sand, potsherds and ashes were used as temper materials by Mumbwa potters. These were added and evenly distributed throughout the clay until the paste acquired the right texture. Temper lowered the natural fluxes present in clays which helped to prevent cracking and spalling during firing. Thus, contributing to more desirable performance characteristics in the finished product.

Conditioning involved a systematic manipulation of the clay material to ensure homogeneity. Potters manually kneaded clay while mixing it with water and folded over until it reached the proper consistency. Large inclusions were removed by hand. Kneading was used to remove air bubbles, unwanted materials like stones, root debris and other roughages, thus making the clay as plastic as possible until it is fully homogenised, allowing it to be molded into a shape as the pot was being formed. Conditioning was considered essential as it improved workability of the clay by ensuring that the material was made uniform in terms of water content and impurities, thus attaining the proper consistency.

3.2.3. Forming and Shaping

The third stage in ceramic production process involved the forming of the vessel. Once the clay was processed to a sufficiently plastic and workable state, the potter would begin to form the vessel. In the Mumbwa case, potters employed hand forming using the coiling technique. Coiling was a process of rolling out long coils of clay like a rope and building rings one on top of the other, then manipulating the rings to form one uniform-looking piece and smoothing clay over the joints. The tools used at this stage were pieces of calabash, a smooth pebble, knife and a piece of moist cloth (fig .3.5a). Some potters acquired these tools by themselves while others inherited them from their mothers. In constructing the pot, potters sat on the floor with legs astride and then set the base of the vessel on the floor sprinkled with fine sand to provide a smooth base during construction. At Kansonso and Chibongwe villages, potters sat on sacks while the rest of the Mumbwa potters sat on reed mats as they were shaping the vessels. The potters would first take a small handful of clay which they would knead between their fingers, removing coarser inclusions, roll it between the palms of their hands, until they obtained a coil of about thirty centimeters long and about five centimeters thick. The potters would then begin by forming the bottom of the pot.

More coils were then added to build the walls or body of the pot along the clay base, in a circular pattern, consolidating them by pinching, leveling and smoothing. During the construction process, the potters would at a pot stand bend or move around vessel depending on the size and design of the ceramic. At this stage, no one was allowed to enter the room or ply the space or the area occupied by the potter in order not to distract her focus of attention. This was intended to avoid disturbances as the potting process required a steady hand, focused eye and mind. A piece of calabash (fig. 3.5a) and a pebble (fig.3.6) were used to smoothen both inside and outside of the pot while the construction was in progress. As the potting advanced, the coils were closed up to provide the smoothing pebble neck. Smoothening was

constantly done on the interior and exterior surfaces with a calabash or twig to provide the desired outlook. When the neck stage was reached, an everted rim was produced with the coil of clay and pressed to fix the neck of pots (fig.3.5f). Bowls were fitted with inverted rims at the neck. Once the process was completed, water was sprinkled on the vessel and a wet piece of cloth was used to smoothen the rim to make it fine and nice.



Fig.3.5a: A potter with her tool box ready to begin shaping



Fig.3.5b: A potter with her tools in a bucket of water during vessel forming.



Fig.3.5c : A lump of kneaded clay ready to be used for shaping



Fig.3.5d: A lump of the first coil for the start of the vessel.



Fig.3.5e : Adding the second coil and pulling up the side of the pot.



Fig.3.5f : Shaping the neck of the pot



Figure 3,5g: Shaping the rims of the vessel with piece of maize cob



Figure 3,5 h: Smoothing the rims



Figure 3.5i: Showing a complete constructed vessels



Figure 3.6: Pebble used for smoothing the surface of the pot inside and outside.

3.1.4. Decoration

The decoration on pots was the fourth stage in the ceramic production process. According to my observation, this was done before firing whilst the clay was wet. Three techniques of decorations were applied which included, incision, comb stamping and single stamp impression.

Incision was made by cutting lines into the wet surface of a vessel with sharp pointed instruments. The tools used were reeds, bicycle spokes, knives and sharpened twigs. This type of decoration was executed below the neck and was done on pots that were made for cooking Nshima (fig.3.7).



Figure 3.7: Incision decorations

Comb stamping was made by the using a linear multi toothed stamp into the wet clay (Fig .3.8). This included the notched edge of fragment of calabash, knife and a maize cob as stamps. This motif type was executed in the area between the neck and the shoulder of pots. It was done on pots that were made for storing beer, milk, water and grains.



Figure 3.8: Comb stamping decorations

Single stamp impression was executed using sticks, grass-stalk, bicycle spoke, knife and maize stalk or by rolling a twig over the wet surface of the vessel in the form of horizontal rows of dots (fig.3.9). This form of motif was executed below the rim and was done on pots that were made for cooking relish. However, bowls were not decorated but just burnished (fig.3.10).



Figure 3.9: Single stamp impressions



Figure 3.10 : Bowl

3.2.5. Drying

The fifth stage in ceramic production process involved the drying of the vessel. After decorations were done and prior to firing, the finished vessels were dried before they could be fired, to remove most of the water from the clay and to prevent cracking. The drying periods varied according to the prevailing weather conditions. During the hot dry periods, drying was done by keeping the vessel under a shade away from direct sunlight for about four to six days while in colder or rainy seasons, this took a longer time of not less than three weeks. Once the vessels were dried to a leather – hard state and their colours changed to whitish grey, they were considered ready for firing.

3.2.6. Firing

Firing was the last and critical stage in the manufacturing process of pottery. This observation was also supported by Shepard (1956) who argued that firing was the inevitable and relentless test to which the potter should subject the product of her skill and patience. In Mumbwa area, pottery was fired in an open fire. This was done away from the buildings within the homestead. Potters of Kasonso village fired their vessels on the flat ground (fig.3.12) while with the rest of

the Mumbwa area, firing was done in a shallow pit (fig.3.11). Pits were dug into a rocky substrate or in the sand in which pots laid like eggs in a nest covered with small bark chip to the depth of 50 to 100cm and could be 100 to 150 cm wide. They were placed about 30m to 60m away from the potter's residence or homestead, in an area surrounded by trees and bushes that acted as a windbreaker. Each potter had her own firing place.

Dried cow dung or a few strips of bark were spread in pits after being dug before tree barks, dry grass, sorghum stalks, maize stalks and twigs. The thoroughly dried leaves and branches were placed on them. Pots were then laid on them carefully to prevent damage. Larger ones were put in the centre and smaller ones on the sides leaning against them. Firing took place only in the early mornings or the late evening so as to conserve heat and ensure adequate firing of the vessel.

Firing lasted between 30 minutes to one hour depending on the size, number or thickness of the vessels being fired. Potters reported that it took about 30 minutes to fire well dried vessels, while a relatively wet vessel was fired for at least one hour. When pots were fired within the required firing schedule, they were reduced to red glowing cinders. The potters could use the vivid red colour of the vessels to determine when the firing was completed. Interview with potters from the study area revealed that the red colour was achieved by firing in an oxidized atmosphere. This implied that all carbonaceous material had been burned off and iron had been completely oxidized. Cores that were dark, brown or patches of black cores that were observed on some pots suggested incomplete oxidation, caused by either the short firing time, low temperature or an atmosphere with insufficient oxygen. It was further argued that a sharp boundary between the dark core and the red or the red brown edges could suggest a brief period of oxidation or perhaps the vessel was cooled quickly after being removed from the fire. Controlling temperature in open fires was a challenge but potters possessed the knowledge and experience to determine the temperature based on the fuel type, firing schedule, colour type and function of a vessel so as to avoid extreme temperature variations which could cause the vessels to crack during firing. A short time of firing would have made the vessel unstable or prone to damage, while a long time of firing would have made them too brittle. In agreement with this, Rye (1981) suggested that a minimum temperature of 500 - 700 degrees celsius would be required to produce a successful open pit firing. After firing was completed, the vessels were removed from the fire using long sticks which acted as tongs. The vessels were then allowed to cool in open air. From there the pots were put into use.



Figure 3.11: shallow pit usually used for firing vessels



Figure 3.12: Flat ground used for firing vessels

3.3. Conclusion

This chapter found that pottery had a large number of production related attributes embedded with meanings in its manufacture process. According to the result of this study, the stages of pottery production generally involved the selection and processing clay, vessel shaping, decoration, drying and firing. It was observed that Mumbwa potters determined the quality of clay by its color, texture and location where it appeared as raw material. Accordingly, clay was rarely used without modification because it was extremely fine or course-grained in texture. Potters interviewed reported that they decided to add modifiers to make the raw material suitable to manufacture vessels. For example, some potters mixed different clays to make suitable ceramics since different clays had different properties. While others added temper inclusions to clay to improve the workability and to achieve desired effects in fired vessels. These tempering materials included, sand, ash and fired potsherds (grog). Besides, potters from Kansonso village used clay that had high plasticity which did not require the addition of any temper. The findings showed that potters used decorative techniques that were made using local tools from their environments and were also compatible to the function of the vessels. Incision decorations were executed below the neck and on pots used for cooking Nshima using thorns, sharp sticks and knife blades. Single stamp impressions were done on pots that were made for cooking relish. This motif was executed below the rim using sticks, grass stalk, reed stem and knife. Comb stamped motifs were done on pots that were made to store milk, beer and dry food stuffs. This motif was executed in the area between the neck and the shoulder. However, all vessels used for serving and ritual activities were not decorated but only burnished. The study also established that during the firing process, potters possessed the knowledge needed to determine the temperature, atmosphere, duration and vessel colour without the use of measuring instrument. The potters could use the red colour to determine when the firing was complete and the fire was put out as soon as the surfaces of the vessels obtained their characteristic red lustre. Informants also claimed that pots could get black or dark brown if there was lack of enough firing duration.

CHAPTER FOUR

MORPHOLOGY AND FUNCTION OF CONTEMPORARY POTTERY

4.1. Introduction

This chapter discusses pottery morphology and its function among rural communities in Mumbwa area. It focuses on the attributes that formed the physical materiality of vessel morphology that correspond to pottery function. These attributes are derived from the decisions potters make with regards to the technology of ceramic manufacture, morphology and use-alteration. It argues that potters understand the precise attributes possessed by the vessels they create and how well each element of the piece is suited for certain tasks.

Recent studies of pottery have revealed that function was tied to form (Rice, 1987: 211) leading to the assumption that similarities in morphological attributes between contemporary pottery and prehistoric pottery would suggest similar functions. Based on these characteristics, the study provides useful insights into the functions of prehistoric ceramics from Mumbwa caves. This study involved interviewing modern potters of Mumbwa area and observing pottery shapes, technology, motifs, use-wear and how these enhanced functions of ceramic vessels.

4.2. Functional attributes of contemporary pottery

With respect to pottery function, ethnographic studies of contemporary ceramics from Mumbwa area revealed that during pottery manufacture, potters made decisions regarding the choices of attributes that were associated with the function of the vessels. Such attributes included technological, morphological and corresponding frequencies of use alteration.

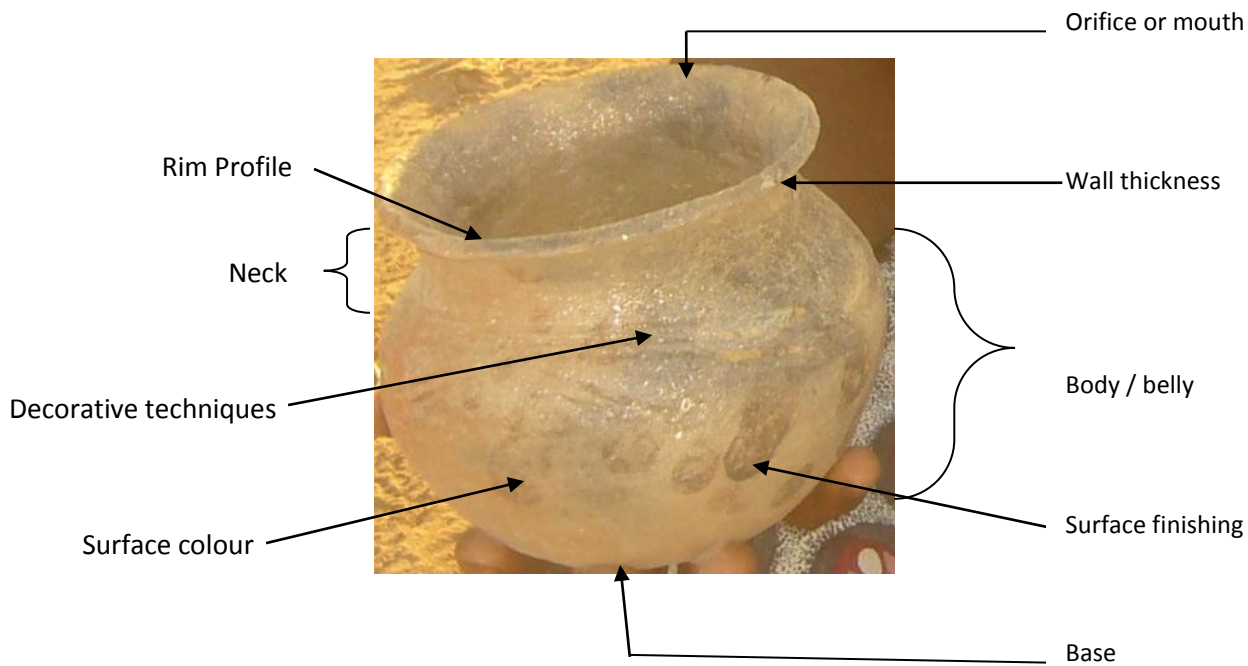


Plate 4. 1: Examples of variables relating to vessel morphology and techn

4.2.1. Technological Attributes

According to my observation, during the course of pottery manufacture, potters chose certain technological attributes which in turn affected vessel functionality. These included temper, wall thickness and surface treatment.

4.2.1.1. Temper

The first attribute that was considered by potters which would relate technology to the intended function of the vessel involved tempering the clay. Temper was defined as non-plastic inclusions added to the clay during vessel manufacture (Rice, 1987 : 407 - 408). According to Shepard (1980:28), the presence of temper in the clay would either be natural clay or an internally added mineral to raw clay. In chapter 3, it was stated that ashes, sand and potsherds were tempering materials utilised by the present Mumbwa potters. Interviews with Mumbwa potters revealed that adding temper to raw clay prevented shrinkage and cracking during drying and firing of the vessels. Potters also responded that adding temper would help to improve a vessel's thermal shock resistance, a highly desirable performance characteristic for cooking pots that were subjected to frequent heating and cooling over a fire. They argued that the presence of temper in the paste would enhance vessel strength, hardness and durability. It was also believed that temper would make ceramic vessels less permeable and more resistant to

wear and tear during use. Another advantage of temper to the vessel function was that it promoted thermal conductivity. This involved the efficient and quick transfer of heat by bringing contents into more direct contact with the source of heat. In interview with potters from Kasonso and Sipati villages, it was reported that temper enhanced cooling effectiveness by promoting an even evaporation of moisture contained in the clay.

4.2.1.2. Vessel Wall Thickness

The second attribute that was considered by potters which would relate technology to the intended function of the vessel was vessel wall thickness. What i observed in the field was that at Chibongwe, Mukwasa and Lutuna in Mumbwa area, potters made vessels whose walls were thick while the rest of the potters in the study area preferred to make ceramics with thin walls. According to informants, Munanganza, Chilonda, Shakale from villages of Chibongwe, Mukwasa and Lutuna respectively, ceramics were made with thick walls to increase strength to the vessel's overall form. This was intended to facilitate the vessel's ability to resist breakage and deformation upon impact and under tension and compression. The same informants reported that the wall of the vessel would deliberately be made thick to serve as structural support to a heavy clay body. They further stated that vessels were made with thick walls to provide stability, add weight and keep moisture in or out, thus ensuring that the vessel was able to retain liquids. Accordingly, the walls of storage pots were made thick to increase impermeability. On the other hand, interview with potters at Kansonso, Shapole, Kasalu, Kapeta and Sipati revealed that vessels which were made with thin walls were intended to increase resistance to thermal shock. Resistance to thermal shock was defined as the ability of a pot to withstand sustained exposure to heat as well as rapid heating and cooling, all without spalling and cracking (Hawsey, 2015: 50). Thermal shock resistance was produced by the reduced thermal gradient between the inner and outer surface of the vessel. The potters of Kutemba and Lituna villages believed that thin walls were intended to facilitate the conduction of heat. This involved the quick and efficient heat transfer by bringing contents into more direct contact with the source of heat. One of the potters of Kansonso village within Mumbwa area explained that the walls of cooking pots were made thin to decrease cooking time and save fuel. In addition to increasing thermal conductivity, the walls of storage pots were also made thin to enhance the cooling effectiveness by allowing fast evaporation so as to keep the food cool. Apart from cooking and storage, pots that were made with thin walls were also considered easy to transport due to reduced weight that made them to be lighter and more portable.

4.2.1.3. Surface Treatment

The third variable that was considered by potters which linked technology to pottery use was surface treatment. According to Fowler (2006: 109), surface treatment was defined as any purposeful modification made to the surface of a vessel that altered its visual or tactile property. According to my observation, surface finishing that was applied on Mumbwa pottery involved sequential processes of smoothing, polishing and burnishing. Smoothing was done using a mussel shell, a piece of calabash, a piece of hosepipe, a maize cob, pebble, potsherd, cloth or by hand both on the inside and outside of the ceramic vessel while the construction was in progress. The vessels were subjected to smoothing in order to provide the desired outlook by creating a finer, uniform and more regular surface. Accordingly, smoothing served to smoothen out the irregularities left during construction and joined the different parts to alter the appearance of the vessel and thus, created walls of even thickness. In interview with potters of Shapole and Mukwiza villages, it was reported that the smoothening of the vessel would compress the pot surface by sealing the fine holes in vessel walls. This was intended to make the vessel surface denser, less porous and more resistant to wear and tear. An informant, Shakale, responded that smoothening the surface of the vessel reduced permeability. After the smoothening of the vessel had been completed, the ceramic vessel thereafter was left to dry until it had reached a leather hard state. The surface was then polished prior to decorating the vessel.

Polishing was applied on a dry surface, with uniform luster and without parallel facets . With regards to polishing, I observed that Mumbwa potters were using a pebble and a mussel shell with water to polish a leather hard vessel surface. In interview with potters of Kapeta and Chibongwe villages, it was reported that polishing was intended to compact and make the surface even by providing a lustrous gloss. This improved the smoothness and density of the surface of the vessel. Potters of Kansonso village responded that they polished surfaces of their vessels in order to decrease permeability of storage and cooking pots. They further explained that less permeable walls would influence the flow of fluids and the transfer of heat and thereby, increasing the heating effectiveness of the vessel and reducing its susceptibility to thermal spalling and cracking. Burnishing was applied on vessels after decorations. Burnishing was done with a hard tool, like a pebble, bone or sherd in order to compact and reorients the fine clay particles of the vessel surface, which was evidenced by parallel strokes on the surface

of the pot: if it was typically done when leather hard or dry. Mumbwa potters used a pebble, sherd and mussel shell with the addition of water to burnish the vessels when they were leather harder. According to informants, Beene, Kashika, Kutemba and Chilonda, burnishing was intended to compact and reorient the clay particles giving the surface a lustrous finish. This resulted in making the vessel surface harder and more resistant to abrasion. Informants also believed that this process would reduce the permeability of the vessel walls. In addition, Potters of Kasalu and Mukwasha villages deliberately burnished the surface of their vessels in order to improve thermal shock resistance as well as thermal conductivity.

4.2.2. Morphological Attributes

Apart from technological variables of ceramic manufacture, morphological attributes were also manipulated during manufacture so that the vessel would be better suited for a particular function. These attributes included rim shape, orifice size, neck form, base shape and vessel form.

4.2.2.1. Rim Shape

One of the morphological categories that potters internally considered during ceramic manufacture with regard to the intended function of the vessel was rim shape. The rim was defined as the whole of the portion of a vessel above the shoulder and by rim form was meant the manner of curvature and flexure of the wall (Vogel, 1980: 43). According to Phillipson (1976: 22), rim referred to that part of the vessel wall immediately adjacent to the lip. Two categories of rim profiles were observed on contemporary Mumbwa pottery. These were everted and inverted rims. Everted rim was formed by folding or turning the rim outwards (Clark, 1974: 33) to varying degrees, characterized by a distinct break between the lower rim margin and the vessel neck. According to my observation, contemporary Mumbwa pots were characterized by the presence of everted rims. These included cooking, storage and transport pots (plate 4.2a, b and c). Pots were made with everted rims to serve as handles that facilitated the carrying or lifting of the vessel with the finger tips. Interview with potters, Kashika, Mweemba and Maingaila indicated that cooking pots displayed everted rims to prevent the content from boiling over as well as reducing evaporation during cooking. They argued that storage pots were characterized by everted rims to restrict frequent access to content that was desired for long term storage. In this regard potters responded that everted rims would enable contents to be accessed through pouring, scooping and dipping. They further explained that transport pots displayed everted rims to securely hold the contents and prevent spillage during transportation. Everted rims also helped to close the mouth in order to fit a lid so as to prevent

spillage and keep out pests and dampness. Inverted rim was defined as the rim that was turned inwards (Clark, 1974: 33). I observed that open bowls with inverted rim profile made up the majority of serving and eating vessels of Mumbwa community. This was evident in plate 4.3. Informants from Kasalu and Kansonso villages reported that open bowls were made with inverted rim to facilitate easy access and manipulation of the food. According to the same potters, this morphological attribute provided a grip for lifting or tilting the bowls, especially when hands were slippery. Inverted rims were strategically bent over inwards in order to provide a practical inner edge that prevented the contents from spilling during eating and serving.

4.2.2.2. Basal Shape

In terms of basal shape, it was observed that contemporary Mumbwa pottery was characterized by round bases (plate 4.2a, b, c and plate 4.3). Interview with Mumbwa potters revealed that round bottom was one of the key morphological categories that they selected in relation to the intended function of the vessel. In this regard, potters responded that they made vessels with round bases to provide an opportunity for balance and stability by helping vessels to sit upright on the ground, in fire or on the carrier's head without some kind of support. They argued that round base would also enhance vessel strength. They further explained that the base of cooking pots were made round for efficient heat transfer. According to informants Kaseke and Maingaila, round based pots allowed for maximum surface area exposure to heat sources and even distribution of heat to vessel contents during cooking over the traditional three stone hearth. Besides, vessels were made with round bases to facilitate easy stirring of content. Accordingly, round based pots were also suited to increasing thermal shock resistance. This was due to the minimization of thermal gradient that this shape afforded. Thus, prevented the potential of the vessel to breakage during constant use over fire during cooking.

4.2.2.3. Neck Shape

Another morphological attribute which potters considered during pottery production with regard to the intended function of the vessel was the neck shape. A neck was defined as the portion of the pot that extends out from the main vessel body and served to extend or restrict the pot orifice (Lavine, 1996: 55). According to my observation, present Mumbwa pots were characterized with necks (plate 4.2a, b, and c) and bowls were made without necks (plate 4.3). According to potters of Kasalu and Kapeta, during the manufacturing process of pots, necks were made separately and inserted into the body of the vessel to serve as handle for carrying or lifting on and off the vessels with finger tips during and after use. Interview with

potters, Beene, Kashika and Munangaza revealed that cooking pots were made with low necks for boiling liquids for long periods of time. This was so because the neck would help in heat retention, reduce spillage, prevent boiling over and reduce evaporation during prolonged cooking. Besides, potters from Sipati, Shapole and Kasalu villages suggested that storage pots were made with necks to restrict frequent access to contents, securely hold the content and prevent spillage during use. This implied that the necks were to provide access to contents through pouring, scooping and dipping. It was further reported that transport pots displayed necks to prevent spillage when carried from place to place. In addition, the neck helped to close the mouth in order to fit a lid to prevent spillage and keep out pests and dampness.

4.2.2.4. Mouth or Orifice Shape

The vessel orifice shape was another morphological valuable that potters considered during pottery production to determine the effectiveness of the vessel for function or use. According to Hawsey (2015:18), an orifice was defined as the opening at the top of the vessel. Two form of orifice categories were recognized on Mumbwa Pottery, restricted and unrestricted orifices. The restricted vessel orifice was defined as the opening which was less than the maximum diameter of the vessel (Shepard, 1956: 228). According to informant, Maingaila, storage pots were made with narrow mouths to restrict frequent access to contents, securely hold the contents and prevent spillage during use (plate 4.2b and c). She further stated that the small opening would help to close the mouth in order to fit a lid which would consolidate the securing of the vessel content. This was intended to keep out pests that might consume or spoil stored food. Besides, small mouthed vessels were intended to facilitate the pouring of contents. Accordingly, transport pots were made with restricted mouths for mobility in order to prevent spillage of content and help for lifting on and off during use (plate 4.2b and c). The unrestricted vessel orifice was defined as a vessel that has its maximum diameter at the orifice (Shepard, 1956: 228). Modern Mumbwa bowls (plate 4.3) and cooking pots (plate 4.2a) were characterized by wide mouths. According to informants from the villages of Kasalu, Chibongwe, Kansonso, Sipati, Kutemba and Shapole, potters made vessels with unrestricted openings reflecting a greater concern with ease of access to vessel contents. They reported that cooking pots were made with wide mouths to allow easy access for stirring of content and for removing food. On the other hand, they suggested that serving and eating bowls displayed wide mouths for easy access and manipulation of the food.

4.2.2.5.Vessel Form

Regarding the form, Mumbwa pottery repertoire consisted of two categories, namely, pots and bowls. A pot (plate 4.2a,b,c) was defined as a vessel whose height exceeded its maximum diameter (Phillipson, 1976: 21). Pots that were observed in Mumbwa area were characterized by necks. Necked vessels were defined as pots with rounded shoulders, externally concave necks and a slightly aversion above the neck. Their maximum diameter was at or slightly below the shoulder (Phillipson, 1976: 22). Necked pots were made in a wide range of sizes and were put to a variety of functions which were associated with their individual names. The smaller version was used to cook meat, fish, cereals and vegetables or any other delicacies eaten with the main dish and was known as *Munkomba* (plate 4.2a). The larger version was used to cook Nshima or porridge and was known as *Ibia*. *Intesho* was a necked pot used to store or transport water, milk or beer to work parties in the field or homestead (plate 4.2b). *Italo* was a necked pot used in brewing (Fermenting) beer (plate 4.2c). *Italo* was also a multipurpose pot used for storage of dry food stuffs such as maize, beans and groundnuts as well. A bowl (plate 4.3) was a vessel whose diameter exceeded its height (Phillipson, 1976: 21). With regards to bowls, I observed that they were all Open bowls. These bowls were characterized by approximately vertical sides close to the rim; the maximum diameter was found at the rim. The profile lacked concavity or carination (Phillipson, 1976: 22). The general name used for an open bowl was *Insulu*. It functioned as serving and eating vessel. It was mainly used for serving meat, fish, Nshima, porridge, dry food stuffs, cereals and vegetable staples.

It was also observed that pots and bowls were used for other purposes other than intended. They were used in shrines to contain sacrifices and offering made to ancestors and other protection spirits. They were also used in marriage ceremonies as a spiritual tie. Pots and bowls were also traded for money and food.

(a)



(b)



(c)

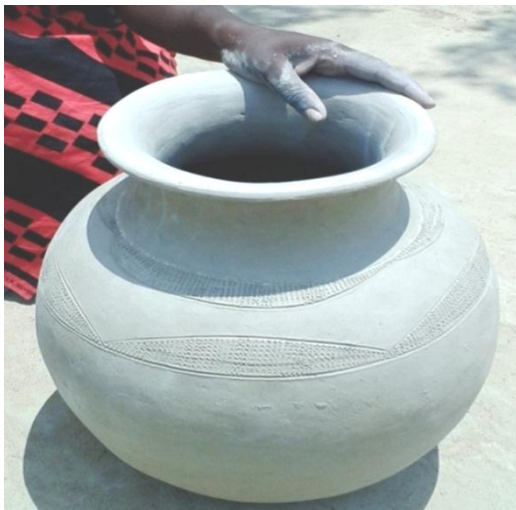


Plate 4.2a,b,c: Necked pots



Plate 4.3: An open bowl

4.2.3. Attributes of Use-alteration

Apart from the vessel attributes that revealed the intended function of pottery, my field observations showed that the actual use of pottery in Mumbwa area resulted in certain form of use-alteration on both interior and exterior vessel surfaces. Pottery use-alteration was defined as any chemical or physical change that occurred to the surfaces or substances of ceramics as a result of use (Skibo, 1992: 42 - 45). Accordingly, three basic forms of use alteration were identified on Mumbwa pottery, namely sooting, pitting and chipping.

4.2.3.1. Sooting

Soot (plate 4.4) or carbon was deposited on ceramic vessel exteriors from the burning wood in the hearth during cooking. One type of sooting was recognized on modern Mumbwa pottery: dull soot. Dull soot covered the entire exterior body from base to the rims. It was black in colour and had a lustrous quality. Interview with potters, Munangaza and Beene, revealed that during cooking Nshima or thick porridge, vegetable and meat, soot occurred on the entire exterior surface of the vessel resulting from frequent placing of the vessel directly in fire in an upright position on a bed of ash exposed to close proximity to flames. This source of soot occurred when airborne resin emitted during wood combustion adhered to a comparatively cool surface. In line with this, Skibo (2013) explained that when organic material was burned, carbonized matter became airborne which became imbedded in the ceramic body and left it black leading to carbonized resin that manifested itself in various ways on moisture conditions and porosity of the pot. Because airborne particles would travel upward, vessels that were situated on or over fires generally exhibited sooting in a pattern extending up the vessel profile to the point of greater diameter. This sooting was released from the combustion of flames of the fuels and deposited on the exterior of vessels. Accordingly, soot on the exterior of a vessel was the direct evidence that the vessel was positioned over an open fire during use. The distribution of soot deposits on vessels could also show how the pots were positioned in relation to the fire during use. According to informants from Kansonso and Chibongwe villages, some cooking pots with soot deposits over both base and sides were probably suspended over the fire and used for simmering or flying.



Plate 4.4: Pot with soot patterns

4.2.3.2. Pitting

Pitting (plate 4.5) was a form of attrition or abrasion that resulted from an impact between the pottery surface and a relatively hard implement at a roughly 90° angle (Skibo, 1992: 115). This blow would crush the clay matrix and dislodge the temper inclusions at the point of impact resulting in a shallow depression called pit. Potters of Kansonso and Kapeta villages in Mumbwa area responded that pitting on the base of the vessel resulted from placing a vessel over rocky hearth during use. This implied that the vessel that was used for cooking in an open fire would exhibit a high frequency of thermal alteration. Potters further reported that pitting would result from physical abrasion during washing soot on the exterior surface of a vessel using a metal spoon in a vigorous manner. Besides, the presence of pits on a vessel was interpreted as caused by accidentally bumping the exterior surface on a rocky stone or dragging the vessel across a rocky stone.



Plate 4.5: Pot with pitted use- wear patterns.

4.2.3.3. Chipping

Chipping (plate 4.6) was another form of use alteration that was observed on some of the contemporary pots. According to Potters of Kapeta, Sipati and Kansonso villages in Mumbwa area, chipping on vessel rims was caused by frequent carrying of pots using rims within the house or to the washing spots. This caused abrasion or damages on rims. They added that constant cleaning vessel rims with a metal or wood piece caused damages on rims, subsequently resulting into chipped rims. Potters of Kansonso village reported that damages on rims were sometimes caused when frequent stirring of content with a wood or metal spoon during cooking or heating the substances. Informants from Kapeta village responded that abrasion on vessel rims was created as the vessels came in contact with the concrete or rocky surface of the earth as they were being rotated during washing. It was further stated that pots that were covered with metal lids, and occasionally the lids dropped on the rims, they would result into chipped rims.



Plate 4.6: Pot with chipped rims.

4.3. Conclusion

This chapter showed that attributes of pottery manufacture and form were deliberately selected by Mumbwa potters to influence the performance of the vessel in use. The presence of orifice, rim and neck categories were intended to affect access and containment to vessel content. The characteristic of round bottom on vessels facilitated the stability of a vessel to sit upright during use. Temper was intended to prevent cracking and breaking of the vessel during firing. Vessel wall thickness provided strength so as to avoid vessel breakage during use. Thinner walls offered advantages in terms of resistance to thermal stress, thermal conductivity and heating efficiency. Surface treatment was intended to increase thermal shock resistance, permeability, abrasion resistance and heating effectiveness. The study further showed that vessels used for cooking purposes exhibited use-alteration traces which included sooting, pitting and chipping.

CHAPTER FIVE

POTTERY MOTIFS AND THEIR MEANINGS

5.1. Introduction

This chapter discusses the meanings that are derived from the study of motifs on pottery. In the past, motifs were used as chronological and identity markers to determine typological sequence and recognize groups of people in cultural sequences of Iron Age communities (Huffman 1974, 1980; Pikirayi 1999). Despite the fact that typological approaches remained dominant world wide, little attention was paid to answer the question on why prehistoric pots were decorated the way they were or to what was actually meant by the symbolism of individual motifs (Hegmon 1992; Pikirayi 1999, 2007). The study involved conducting oral interviews and observations with contemporary potters and non-potters of Mumbwa area to establish meanings that were attached to motifs on ceramics.

5.2. Meaning of motifs on pottery in Mumbwa area

During the study of ceramic manufacture in eleven villages in the Mumbwa area, substantial information was revealed by potters on the meaning of different pottery motifs that were placed on vessels that they were making. It was established that decoration on pots had meaning that was enshrined in its use and symbolism. One of the reasons why potters decorated their pottery vessels was to enhance the beauty of the vessels. When fourteen potters from Mumbwa area were asked in interviews why they decorated their vessels, ten of the potters reported that it was to make their pots more beautiful or attractive. One potter from Kasalu village in Mumbwa area responded that no one would buy an undecorated pot because it was not beautiful. The same potter noted that decorations could display who they were. In line with this, informants from Mukwasha village explained that decorations signified the beauty of the pots to ensure their market worthiness or value.

Motifs were applied on pots for identification of ownership and authorship of individual pots. According to Potters of Chibongwe village in Mumbwa area, decoration depicted the hand writing of the potter, her trade mark, while those of Kasalu village reported that decorations on pots were trademarks that reflected the ownership of a design. However, those of Lutuna village believed that decorations represented a potter's stamp. Potters in Kapeta, Kansonso and Shapole villages in Mumbwa area interpreted decorations on pots as the potter's signature. This implied that motifs on pots were intended by the Mumbwa potters as their own markers of identity varying from one potter to another. In this regard potters would decorate their pots to

identify or distinguish them from others during transportation, storage and sale. Potters would also want to identify their works as a way of distinguishing their technology, culture and ethnicity from others.

The presence of motifs on individual pots suggested the potter's desire for ethnic identity. According to Mweemba, the advisor to chief Moono, decorations on pots depicted the identity of the Ila ethnic group from Kaonde and other tribes within Mumbwa area. He was not a potter himself but one of his wives was. He suggested that ethnic identity was intended to maintain the Ila ethnic unity, in a Multicultural environment, by emphasizing its distinctive cultural identity which played a key role in their survival and prosperity. Besides, ethnic identity was used to express belonging to the particular community and to make borders with other tribes.

The motifs were placed on pots for political affiliation and identity of traditional institution. In interview with Mweemba, the same advisor to chief Moono in Mumbwa area, it was reported in Moono's chieftdom that decorations on pots were used as a token of a direct political descent from the founding ancestors and as a symbol of land ownership. He further argued that a chieftdom's political status was evaluated by how many high ranking decorated pots it owned, which in turn represented strength of economic resources. For example, Headman Kansonso stated that in chief Moono's area, the palace had six decorated pots on the apex of the hut roof. Each senior village headman had three decorated pots on the apex of the hut roof while the other village headmen had two decorated pots on the apex of the roof of each hut. Mweemba suggested that chief Moono's palace was named after pottery, locally known as 'Mabia'. To signify a Chieftdom's Political history and social relations with its founding ancestors and neighbours in order to regenerate its present and anticipated social, economic, spiritual and political resources and power in exchange networks and thus to ensure its prosperity for generations to come. The decorated pots were therefore, recognized as authenticating objects proclaiming rights to the land. Lacking such an authenticating objects, new comers would be received by others as people without any right to land and people without proper protection from the ancestors in which case, they were unable to establish themselves in the chieftdom.

The decorations on pots were also believed to relate to the practices of the body markings of the women of Mumbwa area as was the practice also in other parts of Zambia. This was represented as incised patterns on pots as shown in figure 5.1a. According to potters in Shapole, Mukwasha, Sipati, Chooba and Makwiza villages of Mumbwa area, female body marks took on three forms, namely, scarifications, tattoos and tooth chipping.

Scarification involved making small incision into human skin using a sharp tool such as a knife, a needle and a razor. These marks would range from tiny cuts on the cheek or series of cuts at the corners of the mouth. They were made also on the abdomen, to several long gashes placed diagonally across the face. Some of such marks were made on the napes of the neck, forehead, waist, chest, around the navels, arms and at the joints. Various reasons contributed to scars that were created on the bodies of women in the study area. The women of Mumbwa area practiced body scarification for identification purposes. For instance, an informant, Kashika from Kansonso village reported that the scars were applied on the forehead of the Baila women for ethnic identification. In interview with potters, Nyundu, Munangaza and Kashika, it was reported that scars were executed on the cheeks of the Kaonde women as a means of identifying themselves. These makings were meant to differentiate a particular ethnic group or clan from other groups or families. This would help to identify those of the same clan or those of other tribes from inter-marrying. Another reason in which the body was sometimes marked was during sickness. According to informants, Beene, Banda, Chilonda and Maingaila, small cuts were made at specific parts of the body and herbal preparations were applied to the cuts as a form of protections. Apart from marks being created on the human skin for medicinal purposes, they were also done for beautification and for erotic purposes as the scarred flesh would be sensitive when touched by a man and provide a tactile sensation to the one who was touching. This emphasized the woman's state of her tribal and ethnic beauty. Potters of Chooba and Mukwasha villages explained that scars were used for indication of social status and to signify sexual pleasure.

According to potters in Kutemba and Kasalu villages in Mumbwa area, scarifications were also indications of life cycle stage. These were used as part of initiation roles. The life cycle stage was applied by women in a gradual process and commencing when the child is six years old and proceeding until puberty. It was also believed that the women's ability to tolerate the pain of scarring was an indication of her emotional maturity and readiness to bear children. Such marks simply showed eligibility for marriage.

Tattoos were marks created on any part of the human skin using a razor or a needle. Reasons for tattooing varied. Tattoos were said to be carried out on parts of the body for medicinal purposes. According to potters, Kamima, Kaseke and Shakabale, during sickness herbal medicines mostly in powdered forms could be rubbed in the cuts as a form of protection or cure. Medicine for severe headache would be put into three cuts in the forehead. Other informants, Kansonso, Shakale, Kutemba and Kashika reported that medicine to prevent

snakebite would be put in an incision under the left ankle: it was recommended to be renewed after the person had killed the snake. Potters from Mukwasha and Chibongwe villages stated that the medicine to protect one from the destructive invocation of another person would be inserted in a cut in front of the patient's ear. They further explained that medicines used to make a curse would be rubbed into a cut below the lower lip, so that when the individual wished to curse he would lick his lower lip and whatever he said would come to pass. These medicines used in most instances were responsible for leaving scars or projections on the human skin that would give the effects which were classified as ethnic markings. According to Kamima, Mweemba and Shakabale, tattoos were created on human body for self-expression, peer pressure, beautification, attraction and identification purposes.

Tooth chipping was the other form of human body marking that involved the removal of teeth. In interview with potters from Kansonso and Shapole villages, it was reported that incision on pots symbolised the Baila women custom of knocking out of the four incisor teeth and sometimes the two canines as well. Tooth chipping was said to be used to denote Ila ethnic affiliation. Accordingly, tooth chipping was intended to preserve the unique characteristics of their cultural identity. Thus creating the borders of their tribal territory.

The decorations on pots represented the beads which were worn by women of Mumbwa area as part of their body adornment. This was represented as single stamp impression on pots as shown in figure 5.1b. Interview with potters, Chilonda, Shakabale, Shakale and Ngosa, indicated that women wore beads around their chest, necks, waist, wrist and even on the head as part of their traditional initiation attire. This was evident in figure 5.2. Beads were said to be worn on human body for various reasons. One potter from Mukwiza village reported that women wore beads around the waist through their puberty into adulthood as part of expressing beauty. According to potters, Kutemba, Mweemba, Beene and Kamima, beads defined the concept of a human's beauty by providing a well-defined shape with protruding buttocks and hips. Other informants, Chilonda, Shakabale, Shakale and Kaseke responded that waist beads were intended to give the waist a round and oval shape. Apart from the sensitive touch, some men derived from touching the waist beads of women. Waist beads were worn by females to beacon suitors for marriage in order to arouse the sexual feelings of the partner during love making. In addition, it was believed that waist beads were worn by females to check their weight. For example, potters of Kasalu and Kansonso villages explained that women wore beads around their waist and any time the beads became tight, it suggested that they had gained more weight and that their body had become bigger. On the other hand if they realised that the

beads were slipping off, it would mean that the women were losing weight and had to do something about it.

(a)



(b)



(c)



Figure 5.1a – c: Pottery decoration techniques: a) Incision motif; b) Impression and c) Comb stamping decoration.



Figure 5.2: Traditional beaded attire (Livingstone National Museum).

5.3. Conclusion

This study highlighted some of the meanings that were attached to pottery motifs. It observed that potters made decorations to enhance the beauty of their vessels. It was further noted that motifs were applied on pots to suggest the identity and ownership of the markers. The study showed that motifs were made on pots for political identity and as a sign of land ownership. Besides, decorations on pots were believed to relate to the practices of body scarification of the women of Mumbwa area. This was represented as incised patterns on ceramic vessels. Furthermore, it was stated that impression designs on ceramics replicated the beads which were worn by Mumbwa females as part of their body adornments.

CHAPTER SIX

COMPARISONS BETWEEN ETHNOGRAPHIC AND PREHISTORIC POTTERY IN MUMBWA AREA

6.1. Introduction

This Chapter attempts to correlate the meaning of pottery from Mumbwa Caves to those of modern pottery whose meaning is known. It focuses on observing pottery shapes, motifs, technology, use-wear and how these enhanced the functions of ceramic vessels. These attributes would help determine whether there is similarity and continuity in the technology of pottery manufacture, function and meaning of motifs from the prehistoric era to the ethnographic present.

6.2. Relationship between ethnographic and prehistoric pottery

In comparing the prehistoric and contemporary pottery, the writer looked at the following attributes: paste and temper, surface colour, surface finish, decorative techniques, vessel wall thickness, neck form, rim form, orifice size, basal form, vessel form, sooting patterns, pitting and chipping wear patterns.

There were no significant differences in paste and temper between the potsherds from Mumbwa caves and ethnographic pottery among Mumbwa communities. In contemporary Mumbwa, pottery was made of black clay, tempered with fine sand, ash and potsherds (grog). The prehistoric pottery was characterized by moderately fine clay tempered with grit (Derricourt, 1985). Ethnographic sources from Mumbwa area showed that potters used temper to determine the effectiveness of the vessel for function. In interview with potters, it was explained that temper was added to raw clay to prevent shrinkage and cracking during drying and firing of the vessels. Potters also reported that temper was intended to enhance vessel strength, increase resistance to thermal shock and heat conduction. Perhaps these findings would serve as explanations for the presence of temper in the clay paste of the prehistoric ceramics excavated at Mumbwa caves. The results of the study would also provide some insight into technological processes and practices that took place at Mumbwa caves in relation to the choice of inclusions, clay selection and particular fabrics. Such evidence could be used to support the view that the potters understood physical properties of clay fabrics as an important aspect in the manufacture of vessels in relation to the desired pottery function. Since ethnographic and prehistoric pottery consisted of similar fabric it would be likely that all pottery was locally made. Although a definite conclusion on this matter would require

petrographic studies. Local ceramic manufacture therefore implied that the immediate environment provided the ideal conditions for natural clay sources. The use of similar fabric in Mumbwa area would perhaps leads to assumption that both wares were manufactured by the same technique. Since the study revealed the use of coil method on modern Mumbwa pottery, it would likely suggest the use of coil method on prehistoric Mumbwa pottery as well. This was supported by the fact that coil fractures were observed on Mumbwa caves pottery.

On the basis of surface colour, there were some similarities between the prehistoric Mumbwa potsherds and contemporary Mumbwa pottery. In contemporary Mumbwa, the colour of the pottery was red with a few having black section on their surface. While the colour of potsherds from Mumbwa caves ranged from buff to red with a few having black sections on their surface (Derricourt, 1985).Ethnographic sources from Mumbwa area reported that the surface colours within the ceramic matrix were indicators of the firing conditions for the vessels. According to Mumbwa potters, red and buff colours were achieved by firing ceramic materials in an open fire in an oxidized atmosphere either on the flat ground or in a shallow pit. This suggested that all carbonaceous material had been burned off and iron had been completely oxidized. On the other hand, the dark cores or patches of black cores that were observed on both wares were explained by Mumbwa potters to suggesting incomplete oxidization, caused by the short firing time, low temperature or an atmosphere with insufficient oxygen.

There were similarities in surface treatment between prehistoric and contemporary pottery of Mumbwa area. The surface treatment technique on modern Mumbwa ware involved sequential processes of smoothing, polishing and burnishing. Most of the vessels from Mumbwa caves showed a smooth surface, burnished on the vessels on both inside and outside and one or two appeared to be polished (Wells, 1930; Derricourt, 1985).Ethnographic sources from Mumbwa area revealed that surface finishing was applied on the vessel because it influenced a vessel's performance in fulfilling its function. Interview with Mumbwa potters showed that smoothing was applied on vessels to create a finer, uniform and more regular surface. Besides, smoothening the vessel surface was intended to reduce permeability and to facilitate vessel strength. Potters explained that this form of treatment was done while vessel construction was in progress and was performed by a mussel shell, a piece of calabash, a piece of hose pipe, a maize cob, a pebble, potsherd, cloth or by hand. On the basis of polishing, I observed that this method of finishing was done with a pebble and mussel shell prior to decorating the vessel in order to compact and make the surface even by providing a lustrous gloss.

According to Mumbwa potters, polishing the surface of the vessel was intended to reduce permeability. In terms of burnishing, it was observed that this method of finishing was applied after decorations and using a pebble, potsherd and mussel shell in order to compact and reorient the clay particles giving the surface a lustrous finish. Informants from Mumbwa area responded that burnishing was applied on vessels to reduce permeability, improve thermal shock resistance as well as thermal conductivity. Given the similarity in surface treatment, it is likely that the prehistoric and contemporary vessels were produced in a similar context.

Modern Mumbwa pottery showed strong affinities to those of Mumbwa prehistoric potsherds in terms of wall thickness. In contemporary Mumbwa, ceramic vessels were characterized by thick walls (fig.6.1a) and thin walls (fig.6.5a,b,c,d,e). Prehistoric pottery from Mumbwa caves was generally thick walled with general thickness ranging from 8-16mm, of which the average being about 10-12mm (Wells, 1930). Ethnographic sources from Mumbwa area revealed that vessels were deliberately made with thick walls to serve the intended function of the vessels. In interview with Mumbwa potters, it was reported that wall thickness was considered during vessel construction to increase strength, reduce permeability, increase thermal shock resistance and to facilitate the conduction of heat. These findings would lead to assumptions that just like in the modern interpretation, prehistoric potters would have considered wall thickness in the production of their pottery to determine the desired function of the vessel.

The decorative motifs found on modern Mumbwa pots resembled some of the decorations found on the prehistoric pottery from Mumbwa caves. The most common decorative techniques were incision, single impression and comb stamping. Ethnographic sources from Mumbwa area revealed that the decorations on pots were made before firing whilst the clay was wet. In terms of incision decorations, I observed that they were made by cutting lines into wet surface of a vessel using reeds, bicycle spokes, knife and sharpened twigs. This form of motif was executed below the neck and was done on pots used for cooking Nshima. Figure 6.4m shows the incision design that was applied on pottery from Mumbwa caves. The same type was retained on ethnographic Mumbwa pottery as shown in figures 6.1a and 6.5a. On the basis of single stamp impressions, it was observed that they were executed below the rim and was done on pots that were made for cooking relish. The tools used included sticks, grass-stalk, bicycle spoke, knife and maize stalk or by rolling a twig over the wet surface of the vessel. Figure 6.5e shows the single stamp impression that was applied on modern Mumbwa pot. Similarly, single stamp impressions also occurred on pottery recovered from Mumbwa caves (fig.6.4c). Comb stamping was also present on contemporary Mumbwa pottery (figure 6.5c)

and on pottery from Mumbwa caves (figures 6.4d,e,g,h,j,m,o,p,r,s,t,u,v). The study showed that comb stamping was made by the use of a linear multi toothed stamp into the wet clay. The tools used included notched edge of fragment of calabash, knife and a maize cob as stamps. This motif type was executed in the area between the neck and the shoulder on pots used for storing beer, milk, water and grains.

Apart from decorations on pots revealing the technology of pottery production, ethnographic studies from Mumbwa area also showed that the intent behind the reproduction of specific motifs on pots signified that meaning was attributed to them making them functionally symbolic. According to potters, they decorated their pots in order to enhance the beauty of the vessels. They argued that the motifs on pots suggested the identity of the potters. They further explained that motifs reflected the political identity of traditional institutions. Besides, incisions on pots were believed to relate to female body markings. On the other hand, the study revealed that single stamp impression on pottery depicted beaded ornaments which women wore around their chests, necks, wrists and their waists as part of their traditional initiation attire. Based on the evidence presented on meanings of decorative motifs, it can be inferred that the decorative designs on Mumbwa caves pottery could have had similar interpretation as in the modern context.

There was correlation between the prehistoric Mumbwa pottery and the modern Mumbwa pottery in terms of the orifice or mouth shape. In contemporary Mumbwa, pottery was characterized by the restricted and unrestricted orifices. These two forms of vessel orifice were the same as those observed on prehistoric Mumbwa pottery. In terms of the restricted orifices or narrow mouths, contemporary Mumbwa pots are evident in figure 6.4a,b,c,e. Narrow mouthed pots(fig.6.4c,n,m,v) also occurred in archaeological context. Ethnographic sources from Mumbwa area revealed that pots were made with restricted orifices to determine the intended function of the vessel. Interview with Mumbwa potters showed that storage pots were made with narrow mouths to restrict frequent access to contents, securely hold the contents and prevent spillage during use. Potters also responded that pots were made with narrow mouths for mobility so as to prevent spillage of content and also help for lifting on and off during use. They further explained that the restricted orifice of the vessel was preferred to facilitate the pouring of the contents. Accordingly, it was found that the restricted mouth of the vessel was intended to fit the mouth with a lid which would eventually consolidate the security of the vessel content and help to keep out pests that might consume or spoil stored food. These

findings could serve as similar explanations in the production of narrow mouthed vessels at Mumbwa caves.

On the basis of the unrestricted orifices or wide mouths, I observed that in contemporary Mumbwa, bowls and cooking pots were characterized by wide mouths as shown in figure 6.5a, e and d .respectively. Similarly, vessels from Mumbwa caves (fig.6.4a, b, d, e, f, g ,h ,I, j ,k ,l ,o ,p ,r ,t ,u, w,) were also made with wide mouths. Ethnographic sources from Mumbwa area showed that ceramic vessels were made with wide mouths to determine the intended use of the vessel. According to Mumbwa potters, cooking pots were made with a wide mouth to allow easy access for stirring and for removing food. On the other hand, it was reported that serving and eating bowls were made with wide mouths for easy access and manipulation of the food. These findings could serve as similar explanations in the production of wide mouthed ceramics at Mumbwa caves.

Another similarity that was observed on both prehistoric Mumbwa pottery and contemporary Mumbwa pottery was the presence of a neck form. In contemporary Mumbwa, pots were characterized by the presence of a neck. This is evident in figure 6.5 a, b ,c. e. This morphological category was also present on prehistoric pots excavated at Mumbwa caves. This is illustrated in figure 6.4 c, n. Ethnographic sources from Mumbwa area revealed that during the manufacturing process of ceramic vessels, pots were made with necks to serve the desired function of the vessel. Interview with Mumbwa potters showed that pots were made with necks to serve as handles for carrying or lifting on and off the vessel. Besides, it was reported that cooking pots were made with necks to help in heat retention, to reduce spillage, prevent boiling over and reduce evaporation. Potters also explained that storage pots were made with necks to restrict frequent access to contents, securely hold the contents and prevent spillage during use. This implied that the necks were made to provide access to contents through pouring, scooping and dipping. The study further suggested that the necks were intentionally made by potters to facilitate the use of a lid to close the mouth of the vessel so as to prevent spillage and keep out pests and dampness. These findings could serve as similar explanations in the production of ceramics with necks at Mumbwa caves.

There was resemblance in rim profiles between the prehistoric Mumbwa potsherds and contemporary Mumbwa pottery. According to my observation, in contemporary Mumbwa, pot rim profiles were everted (fig.6.5a,b,c,e) while bowl rim profiles were inverted (fig.6.5d). These rim profiles were of the same general form as those of the prehistoric Mumbwa pottery. The prehistoric everted rimmed pots are shown in figure 6.4c,a,m and the inverted rimmed

bowls are evident in figure 6.4d,t. Ethnographic sources from Mumbwa area revealed that ceramic vessels were made with specific rim profiles to serve the intended function of the vessel. On the basis of the everted rim profiles, informants from Mumbwa area responded that they were made to serve as handles for carrying or lifting the pots with finger tips. They argued that cooking pots displayed everted rims to prevent the content from over boiling as well as reducing evaporation during cooking. They further explained that storage pots were made with everted rims to restrict frequent access to contents. The study showed that transport pots were made with everted rims to securely hold the contents and prevent spillage during movements. Besides, it pointed out that pots were made with everted rims to facilitate the pouring, scooping and the dipping of the content. These findings could serve as similar explanations in the production of ceramics with everted rims at Mumbwa caves. In terms of inverted rims, interview with potters revealed that they were placed on open bowls to facilitate easy access and manipulation of food. Potters further suggested that inverted rims were used as handles for lifting or tilting the bowls, especially when hands were slippery. The study showed that the inverted rims were made with a practical inner edge to prevent the contents from spilling during eating and serving. These findings could serve as similar explanations in the production of ceramics with inverted rims at Mumbwa caves.

In terms of basal shape, it was observed that there were similarities between the prehistoric and contemporary wares in Mumbwa area. In contemporary Mumbwa, ceramic vessels were characterized by round bases. This is evident in figure 6.5 a,b,c,d. Similarly, prehistoric vessels were made with round bases (fig. 6.4a-w). Ethnographic sources from Mumbwa area revealed that potters made vessels with round bases to serve the intended function of the vessel. In interview with potters, it was reported that ceramic vessels were made with round bases to provide an opportunity for balance and stability by helping vessels to sit upright on the ground or in fire without some kind of support. In addition, potters explained that round bottoms were intended to enhance vessel strength. Besides, the study showed that vessels were made with round bottoms for efficient heat transfer and to increase thermal shock resistance. These findings led to assumptions that just like modern Mumbwa pottery, prehistoric pottery would have been made with round bases to serve similar functions as in the modern context.

According to my observation, contemporary Mumbwa pottery had vessel shapes similar to that of prehistoric Mumbwa pottery. Two vessel forms were identified on both wares. These were pots and bowls. Regarding the pots, contemporary Mumbwa was characterized by necked pots (fig.6.5 a,b,c). The necked pots of the same type were also observed on prehistoric ware from

Mumbwa caves (fig. 6.4c,n). Ethnographic sources from Mumbwa area revealed that the necked pots were made with a wide range of sizes and were put to a variety of functions in relation to the local name given. The study found out that the smaller version was used to cook meat, fish, cereals and vegetables or any other delicacies eaten with the main dish and was known as *Munkomba* (fig. 6.5a). This vessel form bears close resemblance to Mumbwa caves vessel type as shown in figure 6.4c. It showed that the larger version was used to cook Nshima or porridge and was known as *ibia* (fig. 6.1a). Informants responded that *Intesho* was used to store and transport water, milk or beer to work parties in the field or homestead (fig. 6.5b). Figure 6.4n of the Mumbwa caves vessel types bears resemblance to the so called *intesho* of modern types. Besides, it was explained that *Italo* was a multipurpose necked pot used in beer brewing and for storage of dry food stuffs such as maize, beans and groundnuts as well (fig. 6.5). These findings could serve as similar explanations in the production of necked pots at Mumbwa caves as well.

In terms of bowls, contemporary Mumbwa was dominated by open bowls. This is evident in figure 6.5d. Open bowls of the same type were also found on prehistoric ware from Mumbwa caves (fig. 6.4d,t). I observed that an open bowl was locally named as *insulu* and was used as a serving and eating vessel. The findings revealed that open bowls were used for serving meat, fish, Nshima, porridge, dry food stuffs, cereals and vegetables. The results of this study could serve as similar explanation in the production of open bowls at Mumbwa caves. Interview with Mumbwa potters showed that ceramic vessels were also used for other purposes other than the intended. Potters further explained that ceramic vessels were used as part of shrines to contain sacrifices and offering as well as in marriage ceremonies. The study pointed out that ceramic vessels were also traded for money or food. Based on the similarities of vessel forms of both wares, it is likely that Mumbwa prehistoric pottery could have been used to serve other purposes other than the intended as well.

Another shared feature between the prehistoric and ethnographic Mumbwa pottery was the presence of sooting patterns. In contemporary Mumbwa, soot was observed on the exterior surfaces of some ceramic vessels (fig. 6.1a). Similarly, sooting patterns were also observed on prehistoric pottery from Mumbwa caves (fig. 6.1b). According to informants, sooting that covered the entire exterior surface of the vessel resulted from frequent placing of the vessel directly in fire in an upright position on a bed of ash exposed to close proximity to flames. The study revealed that some of the cooking pots with soot deposits over both the base and sides

were probably suspended over the fire and used for simmering or frying. Perhaps, the presence of sooting patterns on both wares would suggest that they were used as cooking vessels.

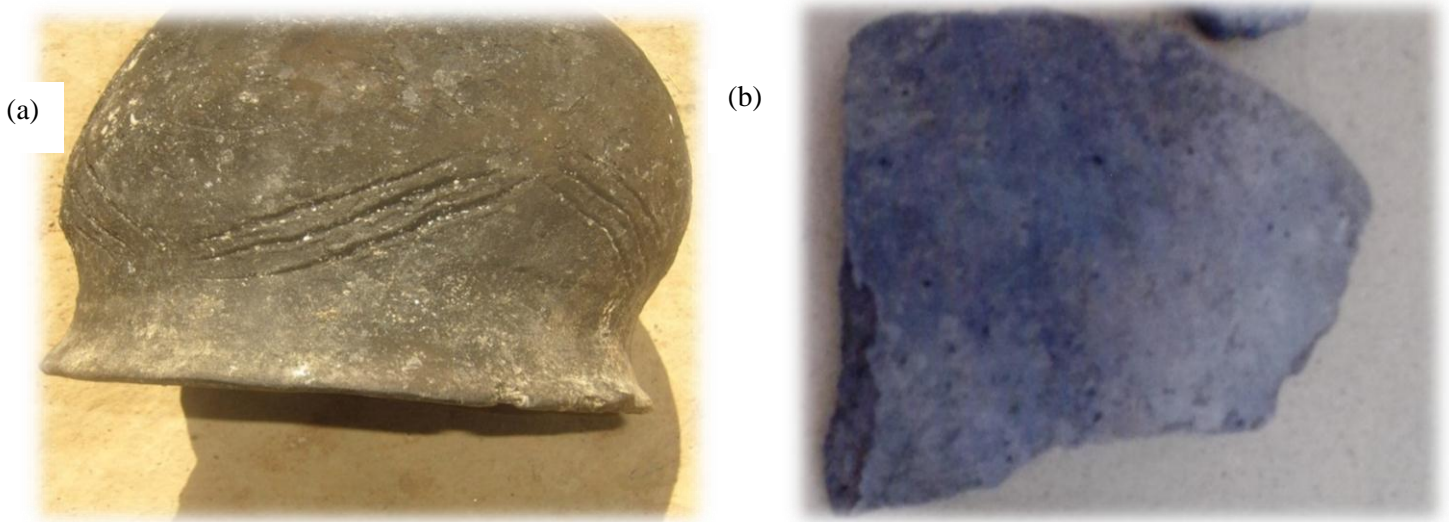


Figure 6.1: Examples of (a) contemporary Mumbwa pottery and (b) pottery from Mumbwa caves with sooting patterns.

On the bases of chipping as evidence of use-wear, I observed that there were similarities between the prehistoric Mumbwa ware and modern Mumbwa ware. In contemporary Mumbwa, figure 6.2 a is a representation of a vessel with chipped rims. The prehistoric evidence of chipped rimmed vessel is shown in figure 6.2b. Ethnographic sources from Mumbwa area showed that chipping on vessel rims occurred by frequent carrying of pots using rims within the house or to the washing spot. According to potters, the constant cleaning of the vessel rims with a metal or wood piece would cause damages on the rims, subsequently resulting into chipped rims. They further reported that the pots that were covered with metal lids, and occasionally the lids dropped on the rims, would result into chipped rims. Besides, it was observed that abrasion on vessel rims was created as the vessels came into contact with the concrete or rocky of the earth as they were being rotated during washing. The study showed that damages on rims were sometimes caused when frequent stirring of content with a wood or metal spoon during cooking or heating the substances. These findings could serve as similar explanations for the presence of chipped rims on prehistoric pottery at Mumbwa caves, suggests that the vessels could have been used for cooking, storage and transportation as well.

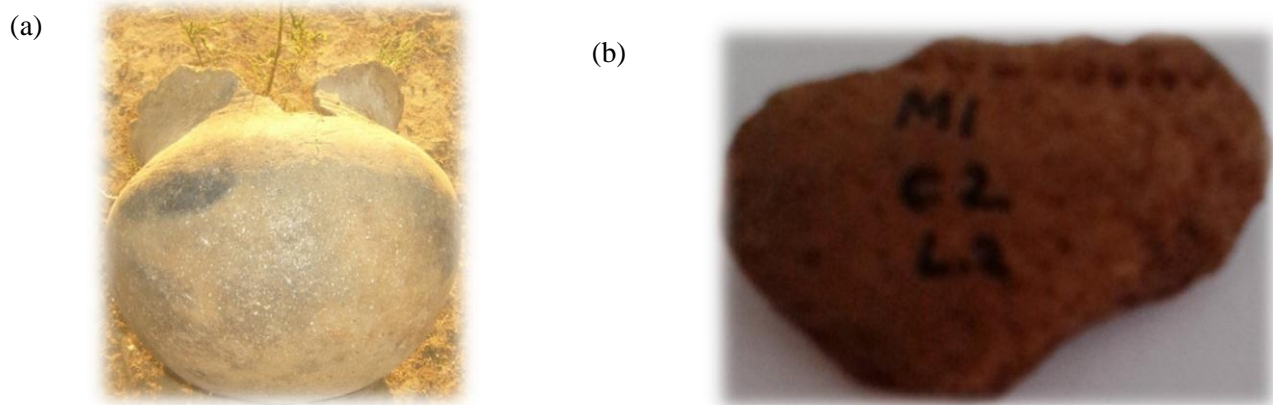


Figure 6.2: Examples of (a) ethnographic and (b) ceramics from Mumbwa caves with chipped rims.

In terms of pitting as evidence of use-wear, it was observed that there were some resemblance between prehistoric Mumbwa potsherds and contemporary Mumbwa pottery. In contemporary Mumbwa, some of the vessels observed showed pitted surface marks on the concave base (fig.6.3a). A similar pattern occurred on prehistoric pottery (fig.6.3b) as well. Ethnographic sources from Mumbwa area showed that pitting on the base of the vessel resulted from placing a vessel over rocky hearth during use. The study found out that pitting resulted from physical abrasion during washing soot on the exterior surface of a vessel using a metal spoon in a vigorous manner. It explained that the presence of pit on a vessel resulted from dragging the vessel across a rocky stone. Evidence of pitting on both ethnographic and prehistoric pottery suggested that like in the modern context, pottery from Mumbwa caves could have been used for cooking or involved in washing.

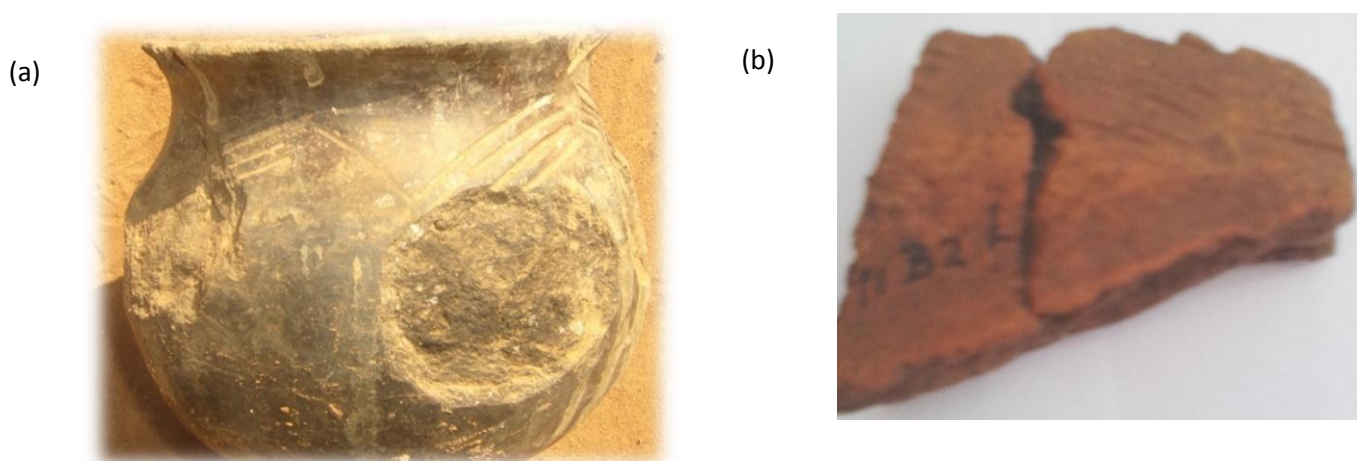


Figure 6.3: Examples of (a) modern Mumbwa pottery and (b) Mumbwa caves pottery with use-wear patterns of pitting.

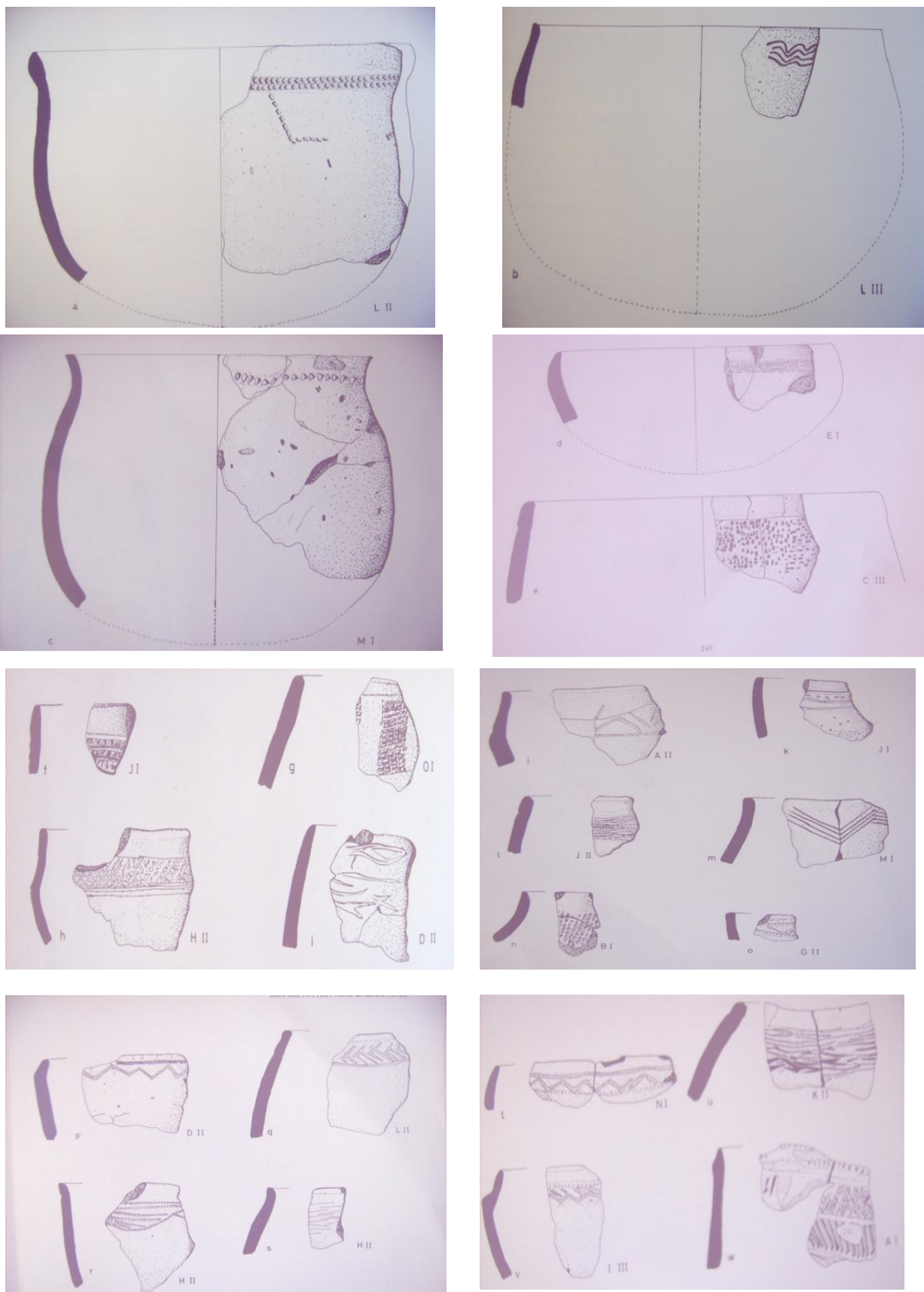


Figure 6.4 a - w: Vessel shapes and decorations on pottery from Mumbwa caves (From Derricourt, 1985).

(a)



(b)



(c)



(d)



(e)



Figure 6.5 a - e : Contemporary vessel shapes and decorations from Mumbwa area.

6.3. Conclusion

The findings of this study revealed a correlation in meaning between the prehistoric and contemporary Mumbwa pottery. The study revealed that there were similarities between modern and prehistory pottery in Mumbwa area in terms of temper, wall thickness, surface treatment, colour, decorative techniques, rim form, neck form, orifice size, base form, vessel form, sooting patterns, pitting and Chipping. On the basis of similarity in attributes, the study showed a high degree of continuity in pottery manufacturing, function and meaning of motifs from the prehistoric potters to the present occupants of Mumbwa area.

CHAPTER SEVEN

CONCLUSION

The aim of this study was to examine the production, function and motifs on modern pottery from Mumbwa area in order to establish some relationships of these variables with excavated pottery from Mumbwa caves. Various conclusions have been drawn.

The first objective was aimed at finding out the production process in modern pottery making in order to understand stages involved in the manufacture of ceramics from Mumbwa caves. According to my observation, the process of pottery production in Mumbwa area involved selection, procurement and processing of raw materials, vessel shaping, decoration, drying and firing. It was reported that the raw materials used in the manufacture of vessels in Mumbwa were clay, water and fuel and were derived locally. It was further stated that Mumbwa potters selected a clay deposit whose properties responded favourably to the manufacture of vessels. For example, some potters used clay deposits that contained natural temper, while other potters mixed different clays to make suitable ceramics since clays have different properties. Most potters added temper to their clays to improve the workability and to achieve desired effects in fired vessels. These included, sand, ash and potsherds (grog). The study established that potters processed their raw clay before use and that clay was dried for four days or more. Clay was then grounded into an extremely fine powder by pounding it in a wooden mortar or on a grinding stone in order to increase workability by allowing water to fully permeate the body of the clay. The powdered clay was further refined by removing impurities such as stones, roots or leaves. This was done by hand sorting, sieving or winnowing. Temper was also grounded into fire powder and later added to clay.

On the bases of the present findings, it would appear that pottery manufacture in the Mumbwa area, both in the prehistoric past and recent times now and in the past was the work of women who employed a coiling technique in molding clay. This would perhaps suggest that the art of pottery making in Mumbwa was hereditary. According to my observation, decorative motifs on pottery were applied before firing whilst the clay was wet. Three techniques of decoration were identified namely, incision, impression and comb stamping and were compatible to the specific function of the vessels. It was also observed that potters dried their vessels under a shade during day time for a period of about four to six days in the dry season and during the rainy season, vessels would be stored inside the kitchen around a fire place for not less than three weeks before firing. It was discovered that potters used the open firing method to fire their vessels in oxidized atmosphere either on the flat ground or in a shallow pit. As a result of

firing, pots could get one or more than one colour. Interviews with potters revealed that the red colour of the vessels was achieved by firing ceramic materials in the oxidized atmosphere while black cores or dark brown colours suggested incomplete oxidation, caused by either the short firing time, low temperature or a reduction environment, one that prevented oxygen from reaching the vessels during firing. These findings were in support of the writer's hypothesis that the process of pottery production observed in the ethnographic present was a continued practice from the prehistoric past.

The second objective was to determine pottery function through the study of modern vessel morphology in order to understand the functions of prehistoric ceramics from Mumbwa area. According to the result of this study, Mumbwa potters were aware of the particular attributes of vessel form that were linked to its function namely, technological, morphological and use-alteration. The attributes that were derived from the technology of ceramic production which influenced the intended use of the vessel included temper, surface treatment and wall thickness. With regards to tempering the clay, interview with Mumbwa potters revealed that tempering materials such as ashes, sand and potsherds were internally added to raw clay to prevent the pots from cracking or shrinking during drying and firing. Potters also responded that adding temper to clay paste would enhance vessel strength, hardness and durability. They further reported that adding temper was intended to improve vessel thermal shock resistance, a highly desirable performance characteristic for cooking pots that were subjected to frequent heating and cooling over fire. Besides, tempering the clay helped to reduce vessel permeability and to increase heating conduction. On the basis of surface treatment, the study showed that it was applied on pots to reduce permeability, to make the surface uniform, increase abrasion resistance, increase thermal shock resistance, heating effectiveness as well as cooling effectiveness. According to my observation, surface treatment on Mumbwa pottery involved a sequential process of smoothing, polishing and burnishing. In terms of vessel wall thickness, it was observed that at Chibongwe, Mukwasa and Lutuna in Mumbwa, potters made vessels whose walls were thick while the rest of the potters in the Mumbwa area had their ceramics made with thin walls. According to potters from villages of Chibongwe, Mukwasa and Lutuna, ceramics were made with thick walls to increase strength to the vessel's overall form. The same potters responded that vessels were made with thick walls to provide stability and to increase impermeability during use. This regard, vessels were more stronger and less prone to cracking and breaking during use. On the other hand, the study established that those vessels that were deliberately made with thin walls were intended to increase thermal conductivity and thermal shock resistance.

According to my observation, morphological attributes were deliberately selected by potters to influence the intended vessel function namely, orifice size, rim form, neck form, base form and vessel shape. Regarding the rim form, the study established two forms of rim morphology namely, everted and inverted rims. It showed that everted rims were strategically placed on pots to serve as handles when carrying or lifting the vessels. Besides, everted rims were intended to protect contents from spillage during transporting of contents and also facilitate pouring of contents. On the other hand the study found out that inverted rims were intended to act as handles on open bowls when carrying or lifting the vessels as well as to facilitate access to vessel content and pouring of content.

According to the result of this study, two forms of orifice diameter were observed on modern Mumbwa pottery namely, restricted and unrestricted orifice. Storage pots were made with narrow mouths to restrict frequent access to contents, securely hold the contents and prevent spillage during use. The small opening was also needed to fit a lid which would consolidate the securing of the vessel content. This was intended to keep out pests that might consume or spoil stored food. Besides, small mouthed vessels were intended to facilitate lifting and the pouring of contents. Accordingly, transport pots were made with restricted mouths for mobility in order to prevent spillage of content. The study further observed that unrestricted orifice on serving and eating bowls was meant for easy access of content. It also revealed that cooking pots were made with wide mouths to allow easy access for stirring of content and for removing food.

On the basis of necks the study established that they were placed on cooking pots to prevent the contents from boiling over as well as reducing evaporation. The narrow necks on carrying pots were designed to prevent spillage of the liquid contents during transport. Besides, storage pots were made with necks to restrict frequent access to contents, securely hold the contents and prevent spillage during use. This implied that the necks were designed to provide access to contents through pouring, scooping and dipping. In addition, the neck served as a handle for carrying or lifting on and off the vessels with finger tips during and after use. In terms of basal shape, the study showed that contemporary Mumbwa pottery was made with round bottoms. Potters. According to potters, vessel were made with round base to provide an opportunity for balance and stability by helping vessels to sit upright on the ground, in fire or the carrier's head without some kind of support.

The study further established two categories of vessel forms, namely necked pots and open bowls. It revealed different sizes of necked pots that were named after the specific function of each vessel. In interview with potters, it was reported that the *Munkomba* was used to cook meat, fish, cereals and vegetables. The *ibia* was used to cook Nshima or porridge. It was

further suggested that *Intesho* was used to store and transport water, milk and beer to work parties in the field or homestead. Besides, the *Intasho* was a multipurpose pot used for storage of dry food stuffs such as maize, beans and groundnuts as well. On the other hand informants responded that an open bowl, the *insulu* was used for serving meat, fish, Nshima, porridge, dry food stuffs, cereals and vegetable staples. However, the study found out that the pots and bowls were also used in other functions such as in sacrifices and offerings, in marriage ceremonies and also traded for food and money. According to my observation, three basic form of use-alteration were identified on Mumbwa pottery namely, soots, pitting and chipping. The study revealed that pots have soot, adhering to exterior surfaces, suggesting that the vessels were frequently used for cooking over fire. It stated that some of the major pitting on the base of the vessel suggest that bottom of the vessel was placed directly in rocky heaths during cooking. It further suggested that chipped rims resulted from the use of utensils for stirring, eating, grinding, scraping cleaning. These findings were in support of the writer's hypothesis that the technological, morphological and use-wear attributes were selected by modern Mumbwa potters in order to determine the function of the vessels as probably could be the case in the past.

The third objective was aimed at analysing the meaning of motifs on pottery. In accomplishing this objective, the study established that decorative motif had meaning that was enshrined in its use and symbolism and not just a decorative technique. According to potters, decorative motifs on pots were viewed as their own markers of identity varying from one potter to another. They reported that the presence of motifs on pots was suggestive of the potter's desire for ethnic identity, in a multicultural environment by emphasizing its distinctive cultural identity which played a key role in their survival and prosperity. They further explained that motifs on pots represented the political affiliation and identity of traditional institution. For example, in chief Moono's area, decorated pots were used as a token of a direct political descent from the founding ancestors and as a symbol of land ownership. Therefore, the study revealed that chief Moono's palace in Mumbwa area was named after pottery, locally known as 'Mabia'. The study also showed that decorations on pots depicted female body marking of Mumbwa area. Female body marks took on three forms namely, scarification, tattoos and tooth chipping. This was represented as incised patterns on pots. Besides, motifs replicated beads which were worn by women around their chest, neck, wrist and waist as part of their adornment. It was believed that beads were worn by women to give the waist a round and oval shape. This was intended to beacon suitors for marriage to arouse the sexual feelings of the partner during love making. In addition, waist beads were worn by females to check their

weight. The writer concludes that the motifs which were applied on modern Mumbwa pots were also practiced in the past, suggesting continuity in the meanings attached to motifs.

The fourth objective was to establish the relationship between the ethnographic Mumbwa pottery and prehistoric Mumbwa pottery. This was achieved by comparing the attributes of prehistoric Mumbwa pottery and ethnographic Mumbwa pottery. Some of the attributes studied were: temper, surface colour, surface finish, decorative techniques, vessel wall thickness, neck form, rim form, orifice size, basal form, vessel form, sooting patterns, pitting patterns and chipping wear patterns. The study showed that the contemporary pottery attributes were in agreement with those found on sherds from Mumbwa caves. According to my observation, there were some considerable levels of continuity from the prehistoric past to the ethnographic present as evidenced by the selection and processing of clay. The findings revealed that temper was used in the clay paste of both prehistoric and contemporary pottery to improve the workability of the potting clay in the construction of a vessel, to prevent the vessels from cracking and shrinking during firing and use. In terms of decoration techniques and motifs continuity was also evidential. It was observed that in decorating their vessels, contemporary Mumbwa potters retained to date the prehistoric methods of single stamp impression, comb stamping and incision. Ethnographic sources revealed that single stamp impression was executed using sticks, grass stalk, bicycle spoke, knife and maize stalk over the wet surface of the vessel. This form of motif was applied below the rim and was done on pots that were made for cooking relish. According to potters, this decorative motif represented the beads which were worn by women of Mumbwa area as part of their body adornment. Besides, incision was made by cutting lines into the wet surface of a vessel with sharp pointed instruments just below the neck. This form of motif was executed using reeds, bicycle spokes, knives and was done on pots that were made for cooking Nshima. Incision decoration was said to represent the practices of the body markings of the women of Mumbwa area. Comb stamping was made by the use of a linear multi toothed stamp into the wet clay. This motif type was executed in an area between the neck and the shoulder of the pots and was done on pots meant for storing, beer, milk, water and grains. On the other hand decorations on pots were interpreted by the Mumbwa potters with a view to enhance the beauty of the vessels, to depict the identity of the potters and to relate to political affiliation and identity of traditional institutions. The study further found out that open firing which was still practiced by contemporary potters in Mumbwa was also practiced in the past. Due to firing treatments, the vessels generally exhibited red, buff or cores of black colours on their surfaces. The findings showed that red and buff colours were achieved by firing in oxidized atmosphere on the flat ground or in a

shallow pit. While cores of black colour was achieved by an incomplete oxidization, caused by either the short firing time, low temperature or an atmosphere with insufficient oxygen. According to the result of the study, there was a remarkable link from the prehistoric past to the ethnographic present as revealed by the levels of surface treatments from both wares. It showed that both the prehistoric and contemporary potters applied finishing on their vessels to create a uniform surface, reduce permeability and increase thermal shock resistance. This included smoothing, polishing and burnishing. In terms of vessel wall thickness high levels of continuity were noticeable from the prehistoric past to the ethnographic present. The study showed that wall thickness was selected on both prehistoric and modern Mumbwa pottery to increase vessel strength, heat conduction and thermal shock resistance. On the other hand, the morphological attributes that were observed on contemporary Mumbwa pottery owed their origins to the cultural past. These attributes included the neck form, rim form, base form, orifice profile and vessel form. The study found out that both now and in past vessels were made with round bottoms for strength, heat conduction, balance and stability. It also revealed that both now and in the past pots were made with necks, everted rims and restricted mouths to serve as handles, to reduce spillage, to prevent boiling over, to restrict frequent access to contents and for heat retention. The study further showed that both prehistoric and modern open bowls were made with wide mouths and inverted rims to serve as serving and eating bowls for easy access and visibility of the food. According to my observation, the presence of soot on both prehistoric and modern Mumbwa ware suggested that vessels were used for cooking. Interview with Mumbwa potters revealed that the presence of pit on both wares resulted from placing vessels over rocky hearth during use, suggesting that the vessels were used in cooking. Potters also responded that chipped rims the were observed on modern Mumbwa pottery and sherds from Mumbwa caves were caused by frequent carrying of pots using rims. The writer concludes that both ethnographic and prehistoric vessels were made with the same technology and were intended for the same use.

The general picture on the available evidence was that the makers of pottery from Mumbwa caves were living within Mumbwa area. The writer therefore concludes that the pottery industry in Mumbwa was a cultural continuum. The results of the study are thus in support of the writer's hypothesis that meaning correlation exist between Mumbwa prehistoric pottery and Mumbwa ethnographic pottery.

BIBLIOGRAPHY

1.0 Primary Sources

1.1 Oral Interviews and Observations

Banda, Rosemary. Lutuna Village, Mumbwa District, 02/07/2013.

Beene, Dorophina. Kansonso Village, Mumbwa District, 26/07/2013.

Chilonda, Justinah. Mukwasha Village, Mumbwa District, 05/07/2013.

Kamima, Ester. Sipati Village, Mumbwa District, 08/07/2013.

Kansonso, Aaron: Headman: Kansonso Village, Mumbwa District, Interviewed on 26/07/2013.

Kaseke, Villet. Kasalu Village, Mumbwa District, 02/08/2013.

Kashika, Bessie. Kansonso Village, Mumbwa District, 27/07/2013.

Kutemba, Rhoda. Kutemba Village, Mumbwa District, 25/08/2013.

Maingaila, Angela. Kapeta Village, Mumbwa District, 14/08/2013.

Munanganza, Ester. Chibongwe Village, Mumbwa District, 10/08/2013.

Mweemba, John: An advisor to chief Moono: Shapole Village, Mumbwa District, Interviewed on 25/07/2013.

Mweemba, Monica. Shapole Village, Mumbwa District, 25/07/2013.

Ngosa, Lofinah. Chooba Village, Mumbwa District, 20/08/2013.

Nyundu, Elizabeth. Kapeta Village, Mumbwa District, 15/08/2013.

Shakabala, Annah. Mukwiza Village, Mumbwa District, 28/08/2013.

Shakale, Mable. Lutuna Village, Mumbwa District, 03/07/2013.

2.0 Secondary Sources

2.1 Books, Chapters in Books, Journal Articles, Unpublished Thesis and Dissertations

Adepegba, Cornelius. "A survey of Nigerian Body markings and their relationship to other Nigerian Arts," Ph.D thesis, University of Indiana, 1976.

Arnold,D. *Ceramic Theory and Cultural process*. Cambridge: Cambridge University press, 1985.

Arthur,J.W.” Pottery use-Alteration as an indicator of socioeconomic status: An Ethnoarchaeological study of the Gamo of Ethiopia”, *Journal of Archaeological method and theory*, 9, 4 (2002), pp. 331-355.

Aronson, L. “African women in the visual Arts”,*Signs*, 16, 3(1991), PP. 550 – 574.

Barham, L. S. “Preliminary results from the Mumbwa caves, Central Zambia,” *South Afri. Field. Archaeol.*2, (1993) ,pp. 108 – 110.

Barham, L.S. “Recent research on the middle Stone Age at Mumbwa Caves, Central Zambia,” G. Pwiti, and R. Soper, R (eds.). *Aspects of African Archaeology: papers from the 10th congress of the pan African Association for prehistory and Related studies.*. Harare: University of Zimbabwe Publications, 1996.

Barley, N. *Smashing pots: Feats of clay from Africa*. London: British Museum Press, 1994.

Berns, Marla. “Ga’anda Scarification: A model for Art and Identity,” Joanne B. Eicher; Sandra L. Everson and Hazel A. Lutz (eds.). *The Visible Self*. New York: Fair child, 2000.

Binford, L. R. “Smudge pits and Hide Smoking: The use of Analogy in Archaeological Reasoning,” *American Antiquity*, 32, 1(1967), pp.1 – 12.

Binford, L. R. “General Introduction,” L. R. Binford (ed.).*Theory Building in Archaeology*. New York: Academic press, 1977.

Bishop, W.W and Clark, J. D (eds.). *Background to evolution in Africa*. Chicago: Chicago University Press, 1967.

Braun, D.P. “Pots as Tools”,A. Keane and J.Moore (eds.).*Archaeological Hammers and Theories*. New York: Academic Press, 1983.

Chikure, S; Pikirayi, I and Pwiti, G.” A Comparative study of khami pottery,Zimbabwe.”In F. A. Chami and G. Pwiti (eds.), *South Africa and the Swahili World*, Dar es Salaam: University of Dar es Salaam press, 2012.

Clark, J.D. “Further excavations (1939) at Mumbwa caves, Northern Rhodesia, “*Trans. Royal Soc. S. Africa*. 29(1942), pp. 133 – 201.

Clark, J. D. *Stone Age Culture of Northern Rhodesia*. Claremont, Cape: South Africa, 1950.

Clark, J.D. *Kalambo Falls Prehistoric Site: Vol II*. Cambridge: Cambridge University Press, 1974.

Dart, R.A and Del Granda, N. "The Ancient Iron Smelting Cavern at Mumbwa, Northern Rhodesia," *Trans Royal Soc. S. Afr*, 19 (1931), pp.379 – 427.

David, N; Sterner, J.A and Gavila, K.B. "Why pots are decorated", *Current Anthropology*,29 (1988), pp. 365 – 89.

Derricourt, Robin. "An occasional Newsletter of Zambian Archaeology", *In Archaeological Zambia*, Livingstone: National Monuments Commission, 1973.

Derricourt, Robin. *Man on the Kafue : The Archaeology and History of the Itezhi-tezhi Area of Zambia*. London: Ethnographica, 1985.

Ellert, H. *Material Culture of Zimbabwe*.Harare:Longmans, 1984.

Evers, M; Huffman, T. N and Wandibba, S. "On why pots are decorated the way they are",*Current Anthropolgy*,29,5(1988),pp.739-741.

Fagan, B.M. *Iron Age Cultures in Zambia, Vol. I (Kalomo and Kangila)*. London: Chatto and Windus, 1967.

Fagan, B.M; Phillipson, D.W and Daniels, S.G.H . *Iron Age cultures in Zambia, Vol II (Dambwa, Ingombe Ilede and Tonga)*. London: Chatto and Windus, 1969.

Fagan, B. M. *In the beginning: An Introduction to Archaeology* (2nd edition). New York: Boston, Little Brown Company, 1975.

Fagan, B. M. *In the Beginning: An Introduction to Archaeology*. London: Scott, Foreman and Company,1987.

Fanshwe, D. B. *Fifty Common Trees of Northern Rhodesia*. Lusaka: Government Printers, 1962.

Fowler, K. D. "Classification and Collapse: the Ethnohistory of Zulu Ceramic use, South Africa", *Southern African Humanities*, 18,2 (2006), pp. 93 – 117.

Fowler, K. D. "Zulu Pottery production in the lower Thukela Basin, Kwa-zulu-Natal, South Africa", *Southern Africa Humanities*, 20 (2008), pp. 477 – 511.

Fuller, D. Q. "Ceramics Seeds and Culinary Change in Prehistoric India," *Antiquity*, 79 (2005), pp.761-777.

Gosselain, O.P. "Technology and style: potters and pottery among Bafia of Cameroon," *Man*, 27(1992), pp. 559- 86.

Gosselain, O. P. "Materializing Identities: An African Perspective", *Journal Of Archeological Method and Theory*, 7,3 (2000),pp.187-217.

Gibson, A and Woods, A. *Prehistoric Pottery For the Archaeologist* (1st Edition).London: Leicester University press, 1990.

Gijanto, Lisa." Socio-economic Interaction and Ceramic Aesthetic: Understanding West African Ceramic Production and Use in Context," *Azania: Archaeological Research in Africa* ,46, 93 (2011),pp. 250-258.

Hally, D.J. "The Identification of vessel function: A case study from Northwest Georgia", *American Antiquity*, 51, 2(1986),pp. 267 – 295.

Hally, David. "Use Alteration of Pottery Vessel Surface: Important Source of Evidence for the Identification of vessel function", *North American Anthropologist*, 4, 1 (1983), pp. 3 – 25.

Hawsey, K. L. "Vessel Morphology and Function in the West Jefferson Phase of the Black Warrior Valley, Alabama," M. A. Dissertation, University of Alabama, 2015.

Hegmon, M. "Archeological Research on Style", *Annual Review of Archeological*, 21(1992),pp. 517-536 .

Hegmon, M. *The Social dynamics of pottery style in the early puebloan Southwest*. Tucson: Crow canyon archaeological centre, 1995.

Hendrickson, E.F and M.M.A McDonald. "Ceramic Form and Function: An ethnographic search and an Archeological Application." *America Anthropologist*, 85(1983), pp. 630-643.

Hodder, I. *Symbols in Action ; Ethnarchaeological studies of material culture*. London : University of Cambridge , 1982.

Hodder, Ian. *Reading The Past*. Cambridge: Cambridge University press,1986.

Hodder, Ian. "The Decoration of Containers: An Ethnographic and Historic Study." W. Longacre (ed.).*Ceramic Ethnoarchaeology*. Santa Fe :University Arizona press,1991.

Huffman, T. "The Linguistic affinities of the Iron Age in Rhodesia", *Arnoldia*, 7,7(1974),pp. 1-12.

Huffman, T. "The Origins of the Leopards Koppe tradition: On 11th Century difaquane." *Arnoldia*, 8, 23 (1978), pp.1 -12.

Huffman, T.N." Ceramics, Classification and Iron Age entities" *African Studies*,29,2 (1980),pp.123-174.

Huffman, T.N." Ceramics Settlements and Later Iron Age Migrations," *African Archaeological Review*,7 (1989),pp.155-182.

Huffman, T.N. *Hand book to the Iron Age: The Archaeology of pre-colonial Farming societies in Southern Africa*. Southville: University of Kwa-Zulu Natal press, 2007.

Johnson, Mathew. *Archaeological Theory : An Introduction*. Massachuttes : Blackwell Publishing,1999.

Kabangi, R. W. "An Ethno archaeological Study of Pottery in Evurore Division, Mbeere North District, Embu Country, Kenya," M. A. Dissertation, University of Kenyatta, 2013.

Kotwasinoski, M. J. "Understanding Use and Function: an Intrasite Comparative Analysis of the 2011 Uwm Aztalan Ceramic Assemblage," MS Dissertation of Wisconsin-Milwaukee, 2014.

Kramer, C. "Ceramic Ethnoarchaeology," *Annual Review of Anthropology*, 14(1985), PP.72-102.

Lavine, Marc Nathaniel. "Ceramic Change and Continuity in the lower Rio verde Region of Oaxaca, Mexico: The Late Formative to Early Terminal Formative Transition," M.A. Dissertation, University of Michigan,1996.

Lemonnier, P. *The Study of material culture today : towards an Anthropology of Technical systems*, *Journal of Anthropological Archaeology*,(1986),pp. 147 – 186.

Leroi-Gourhan, A. *Les religions de la prehistoire*. Paris: Albin Michel, 1964.

Lindahl, A and Matenga, E. *Present and Past: Ceramics and homesteads. An Ethno archaeological study in the Buhera district, Zimbabwe*. Studies in African Archaeology 11.Uppsala:University of Uppsala,1995.

- Lindahl, A and Pikirayl, I. Ceramics and Change: A overview of pottery production techniques in Northern South Africa and Eastern Zimbabwe during the first and second millennium A D. *Archaeol. Anthropol. sci.*2 (2010), pp. 133-149.
- Linton, Ralph. "North American cooking Pots," *American Antiquity*, 9, 4 (1944), pp. 369 -380.
- Machiridza, Lesley." Material culture and dialectics of identity and power: Towards a Historical Archaeology of the Rozwi in South-Western Zimbabwe," MA Dissertation, University of Pretoria, 2012.
- Macrae, F. B. "The Stone Age in Northern Rhodesia", *Nada*, 4,1926. pp. 67 - 8.
- Macrae, F. B. "Pottery from Mumbwa caves, Northern Zambia,"*Man*,39, article 166(1939).
- Maniatis, Y. "The emergency of ceramic technology and of evolution as revealed with the of scientific techniques," A.J. Shortland ; I.C. Freestone and T Rehren (eds.). *From mine to microscope advances in the Study of Ancient Technologies*. Oxford: Oxford books, 2009.
- Marufu, H." A Comparative study of the material culture from settlement and mortuary contexts in northern Zimbabwe," MA Dissertation, University of Dar-es-Salaam, 2008.
- Mckinnon, Susan. "The Tanimbanese Tavv: The Ideology and Growth and the material configurations of Houses and Hierachy in the Indonesian Society," R. A. Joyce and S. D. Gillspie (eds.).*Beyond Kingship: Social and material Reproduction in House Societies*. Philadelphia: University of Pennsylvavania press, 2000.
- Michelaki, Kostalena. "More than Meets the Eye: Reconsidering Variability in Iroquoian",*Canadian Journal of Archaeology*,31(2007),pp.144-170.
- Michelaki, Kostalena; Braun, Gregory and Hancock, Ronald. "Local Clay Sources as Histories of Human- Landscape Interaction: A Ceramic Task Scape Perspective," *Journal of Archeological Method Theory*, 3(2014), pp.1-45.
- Miller, H. *Archaeological Approaches to Technology*. Toronto: University of Toronto, 2007.
- Muchinda, M.R. *Agricultural Climates of Zambia Agro metrological Report No. 9*, Lusaka: Metrological Department, 1985.
- Musonda, F.B. "The Significance of pottery in Zambia Later Stone Age contexts", *African Archaeological Review*, 5 (1987), pp.147 – 158.

- Mwanabayeke, Boyd. "Ethnic Construction in Central Province of Zambia: A Case study of the Kaonde-Ila people of Mumbwa District," M. A. Dissertation, University of Zambia, 2013.
- Ndoro, W. "Towards the meaning and symbolism of archaeological pottery assemblage," G. Pwiti and R. Soper (eds.). *Aspects of African Archaeology: Papers from the 10th pan African Association for prehistory and Related Studies*. Harare: University of Zimbabwe, 1996.
- Nyamushosho, R. T. "An Ethno-archaeological study of pottery vessels from the Saunyama Territory in North Eastern Zimbabwe," BAH Degree, Midlands State University, 2013.
- Phillipson, D.W. "Excavations at Twickenham Road, Lusaka", *Azania*, 5(1970), pp. 77 -118.
- Phillipson, D.W. *The Prehistory of Eastern Zambia*. Nairobi : British Institute in Eastern Africa, 1976.
- Pikirayi, I. "Taking Southern African Ceramic Studies Into twenty first century: A Zimbabwean perspective", *African Archeological Review*, 16,3(1999), pp. 185-189.
- Pikirayi, I. "Ceramics and Group Identities: towards a Social Archeology in southern African Iron Age Ceramics studies", *Journal of Social Archeology*, 7,2007, pp. 286.
- Pikirayi, I and Lindahl, A. "Ceramics, Ethnohistory, and Ethnography: Locating Meaning in Southern African Iron Age Ceramic Assemblages", *African Archaeological Review*, 30(2013), pp.455-473.
- Renfrew, C and Bahn , P. *Archaeology: The Key Concepts*. London and New York: Routledge, Taylor and Francis Group, 2005.
- Reynolds, Barrie. *The materials culture of the people of the Gwembe valley*. Manchester: Manchester University Press, 1968.
- Rice, P.M. *Pottery Analysis: A sourcebook*. Chicago: University of Chicago, 1987.
- Rice, P. M. "Recent Ceramic analysis: 1.Function, Style and Origin", *Journal of Archaeological Research*, 4, 3 (1996a), pp.133-163.
- Rye, Owen. "Keeping your temper under cowfrol : Materials and the manufacture of Papillion pottery," *Archaeology and physical Anthropology in Oceania*, 2,1976, pp. 106 – 137.
- Rye, S.O. *Pottery Technology: Principles and Reconstruction*. Washington D.C: Taraxacum Inc, 1981.

Savage, D.K. "Identifying Industries in South Central Africa: The Zambian Wilton Example," Ph.D Thesis, University of California, 1983.

Schiffer, M.B and Skibo, J.M. "The Explanation of Artifact Variability", *American Antiquity*, 62, 1(1997), pp.27-50.

Schiffer, M. B and Skibo, J. M. "A Provisional theory of Ceramic abrasion." *American Anthropologist*, 91,1 (1989), pp.101-115.

Schofield, J.F. *Primitive Pottery: An introduction to the South Africa ceramics, Prehistoric and protohistoric*. Cape Town: South Africa Archaeological Society, 1948.

Sharer, J. R and Ashmore, W. *Archaeology: Discovering our past*. New York: McGraw-Hill Companies,2003.

Shepard, Anna. *Ceramics for the Archaeologist*. Washington D.C : Carnegie Institute of Washington,1956.

Shepard, Anna. *Ceramics for the archaeologist*, Washington, DC : Carnegie institute of Washington,1980.

Shrotriya, A. "Ceramic Ethnoarchaeology and its application," *Anistoriton Journal, Art History*, 10, 3 (2007),pp.1-10.

Sillar, B and Tite, M. S. "The Challenge of technological choices for materials science approaches in Archaeology", *Archaeometry*, 42(2000), pp. 2 – 20.

Skibo, James M. and Michael B. Schiffer. *People and things : A behavioral Approach to Material culture*. New York: Springer, 2008.

Skibo, J. M. "Use-alteration of pottery: An ethno archaeological and experimental study," ph.D thesis, University of Arizona, 1990.

Skibo, James. *Pottery Function : A use Alteration perspective*. New York: Plenum Press,1992.

Smith, Edwin and Dale, Andrew. *The Ila-Speaking People of Northern Rhodesia*, vol 1.New York: University Books, 1968.

Stanislawsky, M. B. "The Relationships of Ethnoarchaeology, Traditional and Systems in Archaeology," C. B. Donnan and C.W. Clewlow (eds.). *Ethnoarchaeology*. Monographic iv, Institute of Archaeology, UCLA, 1974.

- Stanislawsky, M. B. "If Pots were Mortal," R. A. Gould (ed.). *Explorations in Ethnoarchaeology*. Albuquerque: University of New Mexico Press, 1978.
- Stark, M. T and Bentley, R. A. *Pottery Economics during the Early Historic Period in the Mekong Delta. Paper presented at the 98th Annual meeting of the American Anthropological Association. Chicago, I.L : American Anthropology Association Techniques*. Philadelphia: University of Pennsylvania Press, 1999.
- Steadman, Lee. "Excavations at Camatra: an early ceramic chronology for the western Titicaca Basin, Peru," ph.D thesis, University of California, 1995.
- Waane, S. A. "The distribution of Iron Age Pottery in East Africa: An Ethno archaeological approach," Ph.D Thesis, University of Illinois, 1981.
- Walker, N.J. "The Significance of a Early Date for pottery and sheep in Zimbabwe," *South African Archaeology Bulletin*, 38(1983), pp.88 – 92.
- Wells, L.H. "A study of the Ceramics from the Deeper levels at the Mumbwa Cave, Northern Rhodesia", *Man*, 39 (1939), pp.63-75.
- Wiessner, Polly. "Style and Social Information in Kalahari San Projectile points", *American Antiquity*, 48, 2 (1983), pp. 253 – 276.
- Wobst, H. Martin. Stylistic behavior and Information exchange. C. Cleland (ed.). *For the director : Research essays in Honor of James B, Griffin*. Ann Arbor: University of Michigan, 1977.
- Woodhouse, H.E. *Archaeology in South Africa*. Cape Town: Purrell and Sons, 1971.
- Wylie, M. A. *Analogical Inference in Archaeology, Paper Presented at the Society for American Archaeological conference*, Philadelphia, 1980.
- Vogel, J.O. "The Iron Age pottery of the victoria falls region", *Zambian Museum journal*, 5(1980), pp. 41-77.

APPENDICES

Appendix 1 : Interview Guide

- 1) Name
- 2) Age
- 3) Village
- 4) Gender
- 5) What raw materials are used to manufacture ceramic vessels ?
- 6) What are the sources of these raw materials ?
- 7) How do you choose raw materials ? What are the selection criteria ?
- 8) How are clay and other raw materials processed before the actual construction of the vessels?
- 9) (a) Do you mix the clay with any temper?
(b) Why do you add the temper?
- 10) What method is used in constructing the vessels?
- 11) What are the necessary tools used for pot making?
- 12) What decorative motifs do you use on your pots ? How are the designs made?
- 13) When do you decorate the pots?
 - (a) When the pots are still soft?
 - (b) When the pots are leather dry?
 - (c) After pots are fired?
- 14) Are the decorations or motifs put:
 - (a) Outside?
 - (b) Inside and outside ?
 - (c) On the body?
 - (d) On the shoulders ?
 - (e) Below the rims?
 - (f) On the lips?
- 15) Why are decorations made on pots ? Do decorative treatments of pots have any function or symbolic meanings?
- 16) What are the methods of surface treatment or finishing of pottery?
- 17) How is pottery dried and why?
- 18) (a) How is firing done?
 - (b) What materials are used in firing pottery wares?
 - (c) How long does the firing take?

- 19) Is there any relationship between the technological attribute of pottery manufacture and its function ? If yes ,What performance characteristics are considered ? Explain based on the following :
- (a)Vessel thickness /thinness
 - (b) Temper or paste
 - (c)Surface treatment
- 20) Is there any morphological attributes of pottery and its function ? If yes, What are the performance characteristics considered by the potter and why? Explain based on the following :
- (a) Vessel mouth or
 - (b) Rim form
 - (c) Neck form
 - (d) Base form
- 21) How do the following forms of use alteration occur on pots ?
- (a) Soot
 - (b) Pit
 - (c) Rim chip
- 22) What attributes are similar and /or different between Mumbwa and contemporary pottery ? Is there any correlation between the wares?
- 23) Would you say there is continuity or change between the pots situated at Mumbwa caves and the pots that are produced and used today by the modern Mumbwa potters? Explain.

\

Appendix 2: List of Informants

NAME	AGE	VLLAGE /Locality
ROSEMARY BANDA	55	LITUNA
MABLE SHAKALE	51	LITUNA
DOROPHINE BEENE	51	KANSONSO
BESSIE KASHIKA	71	KANSONSO
AaRON KANSONSO	54	KANSONSO
JUSTINAH CHILONDA	63	MUKWASHA
ESTER KAMIMA	70	SIPATI
VIOLET KASEKE	91	KASALU
RHODA KUTEMBA	59	KULEMBA
ANGELA MAINGAILA	54	KAPETA
ELIZABETH NYUNDU	83	KAPETA
ESTER MUNANGANZA	75	CHIBONGWE
JOHN MWEEMBA	83	SHAPOLE
MONICA MWEEMBA	54	SHAPOLE
LOFINAH NGOSA	49	CHOOBA
ANNAH SHAKABALE	71	MUKWIZA

Appendix 3: Observation Sheet

LOCALITY	POTTERRY MANUFACTUR ING PROCESS	TECHNOLOGIC AL ATTRIBUTES	FORM ATTRIBUTES	USE ALTERATION ATTRIBUTES
LITUNA				
KANSONSO				
MUKWASHA				
SIPATI				
KASALU				
KUTEMBA				
KAPETA				
CHIBONGWE				
SHAPOLE				
CHOOBA				
MUKWIZA				