Faculty of Humanities
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An archaeological study of two Early Farming sites in the southern Kruger National Park, South Africa

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A dissertation submitted in fulfilment of the requirements for the degree

Magister Artium

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Abstract

This dissertation reports on investigations carried out on two Early Farming Community (AD 250-1000) sites in the eastern Lowveld of South Africa, more specifically the Kruger National Park. During the past 50 years, much has been learnt about the farming societies of the first millennium. Large-scale research in KwaZulu-Natal and, in earlier years, certain parts of the Lowveld and the interior of South Africa, has led to initial formative studies on the spread and movement of Early Farming Communities (EFC) into southern Africa. The archaeological work undertaken in KwaZulu-Natal led to the creation of strong culture-historical sequences based on ceramic assemblages subjected to radiocarbon dating. It was therefore possible to extrapolate the movement of communities in the region. However, such understandings of EFC communities, their movement and socio-political organisation did not expand beyond this region. Throughout the 1970s and most of the 1980s, an archaeological reconnaissance project that was conducted in the Kruger National Park (KNP) led the formulation of culture-historical sequences of the Farming Communities of the region by Andrie Meyer, whose research was intended to serve as a foundation for further research in the area. However, EFC archaeological research in the KNP region was neglected over the years as the focus of research shifted to heritage and later farming societies. This project aims to connect EFC research conducted in regions such as KwaZulu-Natal with EFC sites located in the KNP region. Further research was conducted at two sites, TSH1 and SK17, which were initially identified by Meyer. Typological and compositional studies were conducted on the ceramic material found at the sites and new radiocarbon dates were obtained for these sites. This research made it possible to identify the ceramic sequences at said sites, and consequently to situate the sites within the larger EFC South African chronology.

Key words: Early Farming Communities (EFC), Kruger National Park, Lowveld, ceramics, South Africa, first millennium, compositional analysis, SK17, TSH1

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Chapter 1
Introduction

1.1. Overview

Archaeological research in the eastern Lowveld of South Africa, and specifically in the Kruger National Park (KNP), has been underrepresented, with only a few research projects conducted over the past 40 years (Küsel, 1992: Meyer, 1986: Plug, 1988: Van Vollenhoven & Pelser, 1998, 2000). The archaeological studies that were undertaken were predominantly focused on Late Farming Communities and the Historical Period (Küsel, 1992), with the emphasis on stone-walled complexes, trade relations and heritage issues, such as demonstrated at the site of Thulamela in northern Kruger National Park (Küsel, 1992; Meskell, 2007, 2012).

Interest in the prehistory of the region started with the excavation of the Makahane ruins in the northern part of the Park (Eloff & De Vaal, 1965; Eloff *et al.,* 2012). This project sparked further interest in the archaeology of this particular area and led to an archaeo-ethnological research project at the Masorini Late Farming site in the Phalaborwa area (Meyer, 1986:177; Verhoef, 1986:149). Involvement in the Masorini project led to an extensive archaeological reconnaissance of the southern bank of the Letaba Valley (Verhoef 1986). This reconnaissance confirmed the prolonged occupation of the region over centuries (Verhoef, 1986; Eloff, 1977a, 1977b, 1978, 1979, 1980a, 1980b and 1981). Furthermore, it was realised that additional research was needed to understand the past inhabitants of the region. Once the potential for archaeological research had been noted, it was decided to register a new research project that was not part of the Masorini project. This new project was undertaken over a period of more than a decade, from 1977 until 1988, and the body of data collected during that time provided material for two doctoral theses, those of Andrie Meyer (1986) and Ina Plug (1988).

Meyer's research for his PhD was focused mainly on identifying and creating a culture-historical sequence of Farming Communities within the Kruger National Park (Meyer, 1986). In total, he identified 313 Farming Community sites, of which 35% (n=110) could be associated with specific farming communities (through ceramic markers) (Meyer, 1986:302). Only 10% of the 313 identified sites were deemed relevant for further research and excavations were therefore conducted at only 3% of those sites (Meyer, 1986: viii). However, Meyer's research did identify a substantial number of Early Farming Community (EFC) sites and he was able to excavate at 11 of those EFC sites (Meyer, 1986).

The inference drawn by Meyer (1986) and Plug (1988, 1989a, 1989b) was that all but one of the excavated EFC sites were single-occupation sites (Meyer, 1986; Plug, 1989a). They furthermore concluded that these occupations had lasted for relatively short periods of no more than a decade. This inference was based on the sizes and depths of the ash heaps at the sites and the shallow deposits of material (Meyer, 1986; Plug, 1989a). Based on these findings, Meyer (1986) and Plug (1989a: 63) believed that this region was a marginal zone during prehistoric periods, due to the presence of animal diseases such as *nagana*, malignant catarrhal fever, foot and mouth, and African horse sickness. Such diseases would have significantly restricted the herding of domesticated animals. The marginality of the area was further substantiated by a lack of cattle remains at the majority of the sites (many of which yielded no cattle remains). Meyer (1984:217) argued that the abundance of farming communities in this 'hostile environment' could be explained by socio-political conditions. Population growth and tension among communities in more favourable environments had probably caused the dispersion of people to less favourable regions, such as the Kruger National Park (Meyer, 1984:217).

Unfortunately, these results were poorly disseminated, with little to no focus on specific sites or an understanding of the finer nuances of the way of life of particular communities. The excavated material was not analysed in its totality, which caused further gaps in our knowledge of EFC settlements in the region. This need for more in-depth research on the KNP material (which is stored at the University of Pretoria) led to a research project undertaken by honours students on ceramic material from two EFC sites in the Park (Jordaan, 2011). The results shed light on the utilitarian and functional attributes of the pottery vessels used by EFCs in the region, and also explored networks of exchange and interaction between groups. What was evident from this preliminary study was the potential for further archaeological research on specific sites in the Kruger National Park.

This dissertation aims to add to our knowledge of first-millennium farmers in the eastern Lowveld of South Africa by providing a deeper understanding of Early Farming Communities through the analysis of ceramic sherds (Whitelaw, 1994/5:37).

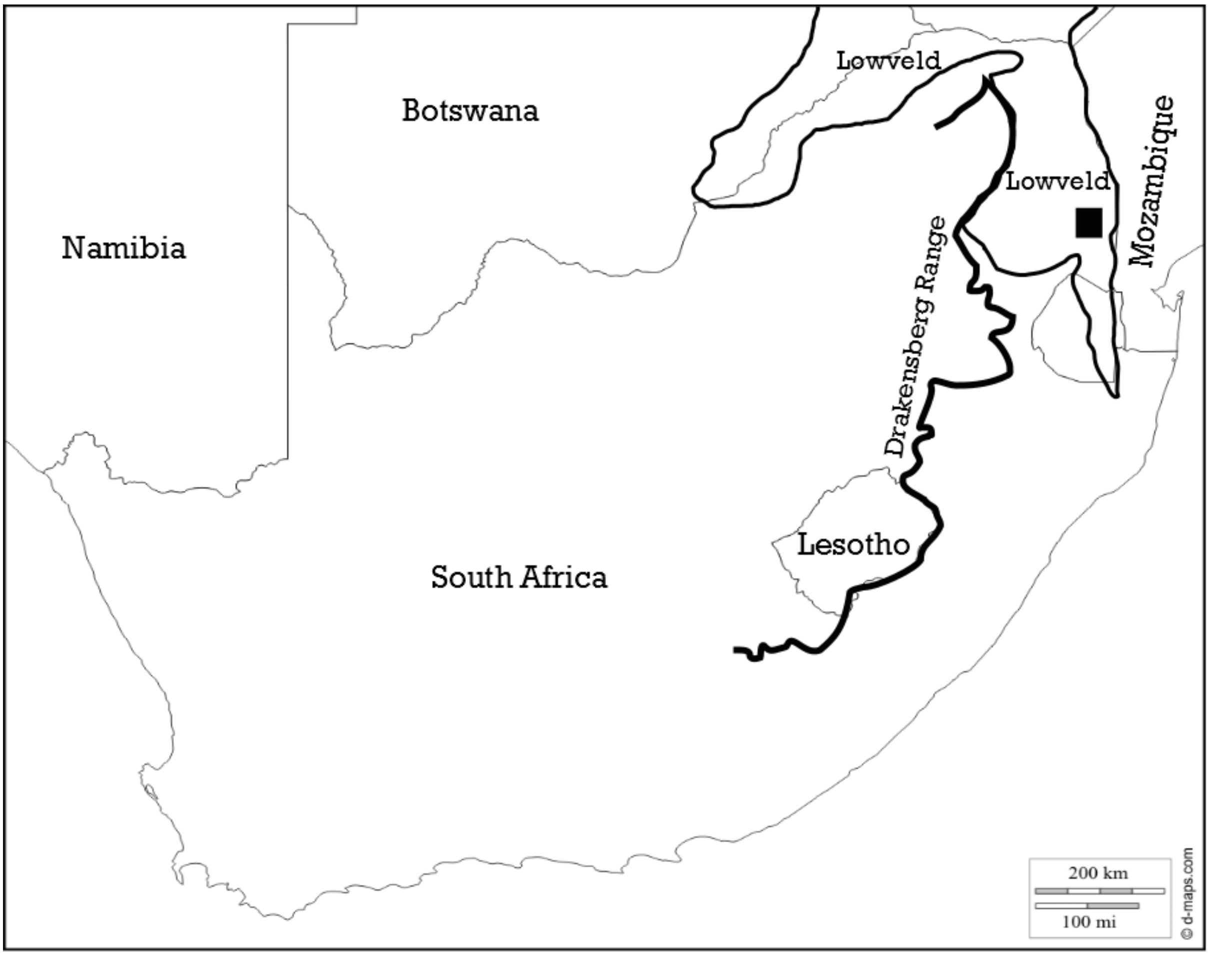


Figure 1.1 Map with research area highlighted (square), including the Lowveld of South Africa and the Drakensberg mountain range

This chapter will provide an overview of past farming communities in the Kruger National Park region. Initially the focus will be specificaly on the archaeological evidence of the existence of these farming communities in the southern Kruger National Park during the first millennium. This will be followed by a brief discussion of previous archaeological research conducted at TSH1 and SK17, which are the sites on which this project focused (see Chapters 2 and 3 for a more detailed discussion). The term Iron Age will then be defined and concerns regarding this term will be dealt with. A discussion of the critical role of ceramic analysis in archaeological interpretations follows, highlighting its relevance in southern African archaeology. Finally, the questions that directed the research undertaken for this dissertation will be presented.

1.2 The Farming Communities of the Kruger National Park

The first-millennium Farming Communities of the Eastern Lowveld, like other past southern African Farming Communities, are classified within the southern African Iron Age. This period, better known as the Early Iron Age (EIA), falls between AD 200 and AD 900 (Huffman, 2007). It is believed by many that EIA communities arrived in southern Africa as a social and economic ‘package’ (Huffman, 2005; Phillipson, 2005), defined by their use of ceramic technology, a mixed-farming economy, and metal-working knowledge (Greenfield & Van Schalkwyk, 2009:121). These communities were grouped in small sedentary villages along river valleys, organised into loose regional political entities, located a few km apart under the hegemony of a hereditary chief’ (Greenfield & Van Schalkwyk, 2009:121; Hall, 1987; Mitchell, 2002; Phillipson, 2005; Van Schalkwyk, 1994/5; Whitelaw, 1993).

The term Iron Age is somewhat ambiguous as it commits people from a particular period to a static ‘impersonal and subjective status in history’ (Maggs, 1992:131) and archaeologically pigeonholes these communities (Maggs, 1992:131). Many of the communities in question were farmers who did not use only iron, but also utilised stone objects and organic and non-organic materials (Hall, 1987:9-10, 1984, 1986; Maggs, 1992; Sadr, 2008; Pwiti, 1996). Simon Hall (1992:12) critiqued the use of this term in a southern African context as was originally derived from the European sequence, with its Copper and Bronze Ages, and therefore yields a different connotation. Instead, the terms Early Farming Communities (EFC) and First-millennium Agropastoralists[1] will be used in this dissertation.

In the late 1960s and the 1970s, archaeologists became interested in the origins and presence of first-millennium agropastoral communities in southern Africa. During these early years, it became possible to place these sites within a first-millennium temporal framework (in conjunction with radiocarbon dates from Transvaal[2] and KwaZulu-Natal) (Maggs, 1993:71. See Chapter 2). As Maggs (1993:72) states: '[t]he penny dropped: South Africa had an Early Iron Age'. From this point forward research changed from the mere identification of Early Farming Communities to the formulation of a culture-historical sequence based on ceramic assemblages. This change naturally led to a debate on the nature and origins of these first-millennium agropastoral societies, as associations between the ceramic material from southern Africa and assemblages north of the Limpopo River were evident (Huffman, 1970; Maggs, 1994/5; Maggs & Whitelaw, 1991; Mitchell & Whitelaw, 2005). Therefore, it would seem that, based on these similarities, a cultural link between eastern, south-central and southern Africa could be inferred (Clark, 1962; Huffman, 1970; Phillipson, 1975).

Due to this sequential link, the occurrence of Early Farming Communities in southern Africa could be unequivocally tied to the spread of Bantu-speaking communities from sub-equatorial Africa (Maggs, 1993:73; Huffman, 1970, 2006, 2007; Inskeep, 1978; Phillipson, 1975, 2005).

Linguistic and archaeological evidence suggests that the spread of Bantu-speaking groups from sub-equatorial Africa into southern Africa occurred through what is broadly known as the Chifumbaze Complex (Phillipson, 1977). This movement stemmed from two traditions (i.e. archaeological cultures identified through ceramic styles (Huffman, 1980, 2007)), namely the Kalundu (western stream) and Urewe (eastern stream). Within the Urewe tradition, two branches, Nkope and Kwale, are noted (Huffman, 2007). This will be discussed in more detail in Chapter 2. Ceramic assemblages found within these streams formed an intricate part of our understanding

[1] Wilson (1986) noted that the orthography of the word is unstable and that is should actually be agripastoralists, but according to Maggs (1992:131), this comment is nonsensical as both words mean the same thing: soil or/and field herder.

[2] The Transvaal province was divided into four provinces after 1994 and Northern Transvaal became Limpopo, Pretoria-Witwatersrand-Vereeniging became Gauteng and the old Eastern Transvaal became Mpumalanga, with part of it included in the North-West province.

of the origins of first-millennium farming societies and their movement into and within southern Africa (Huffman, 2007:335; Huffman, 1982, 2006, 2007; Whitelaw, 1993, 1994, 1996). Ceramics from the Kalundu and Urewe traditions are divided into various ceramic phases, referred to by Pikirayi (2007:287) as 'the time segment of a tradition', and both traditions are relevant to this dissertation. Within the Kwale Phase, three ceramic facies, defined by (Pikirayi, 2007:287) as 'the geographical area occupied by an archaeological culture', are recognised, namely Silver Leaves, Mzonjani and Garonga. Silver Leaves is regarded as the first ceramic facie within southern Africa and is presumed to be the facie from which Mzonjani is derived, with only small typological variations noted between the two facies (Klapwijk & Huffman, 1996:90-91). The similarities between the two assemblages are emphasised by the fact that until recent times these facies were conflated under the term Matola (Maggs, 1980a; Whitelaw & Moon, 1996), originally identified close to Maputo in Mozambique (Cruz e Silva, 1976; Senna-Martinez, 1976; Sinclair *et al.,* 1987).

Within the Kalundu tradition, three relevant ceramic facies were identified in southern Africa and were mostly found in KwaZulu-Natal. These facies are Msuluzi, Ndondondwane and Ntshekane (Maggs, 1980b, 1984a: Maggs & Michael, 1976; Whitelaw, 1994).

Continual research in KwaZulu-Natal made it possible to create strong diachronic sequences which, through ceramic typologies, provided evidence of the presence of various Early Farming Communities (Evers, 1988:79; Whitelaw, 1996). Research advanced to the stage where strongly dated sequences could be established in KwaZulu-Natal, and to some extent in the interior of the country (Maggs & Whitelaw, 1991:11). Further research in especially KwaZulu-Natal led to cultural sequences being re-evaluated and other avenues being investigated. These avenues included the development of knowledge in the socio-political organisation and cosmologies of EFC societies (Mitchell & Whitelaw, 2005; Binneman, 1996; Binneman & Webly, 1992; Fowler *et al.,* 2000; Greenfield, 2006; Greenfield & Fowler, 2009; Greenfield & Van Schalkwyk, 2003; Greenfield *et al.,* 2000; Maggs, 1984a; Maggs & Ward, 1984, 1988; Nogwaza, 1994; Prins & Granger, 1993; Van Schalkwyk, 1994; Whitelaw, 1993, 1994).

However, in the Transvaal region, especially in the Lowveld[3], a different theory about the presence of EFC was developing due to the emergence of multi-component sites (Maggs, 1993) and sporadic research in the region. Research nevertheless continued in some parts of Transvaal with the re-evaluation of Broederstroom (Huffman, 1991; 1993) and the Lydenburg Heads sites (Whitelaw, 1996). A new EFC ceramic sequence, Garonga, was also identified near Mica in the Lowveld of the Limpopo province (Burrett 2007). The Garonga assemblage seemed to be an amalgamation of ceramic styles indicating a 'subtle merging of identities' (Burrett, 2007:164). Unfortunately, the ceramic assemblage is based on surface collections, which deter accurate inferences (Burrett, 2007). Huffman (2007:131) suggests that the Garonga facie is also present at SK17, an EFC site in the Kruger National Park (KNP).

However, even with research projects established in the interior of South Africa, there are still substantial gaps in our understanding of the way of life and movement of first-millennium farming communities of the Lowveld. This was first noted in 1988 when Evers stated that the clear dichotomy of ceramic sequences seen in Kwazulu-Natal is absent in the Mpumalanga sequence (1988:78-79). Whitelaw (1996) further notes that the ceramic assemblages of some multi-occupational sites had been conflated, which contributed to our inadequate knowledge of the first-millennium communities that lived in the Lowveld region. One particular area where archaeological research on EFC is lacking is in the eastern part of the Lowveld that forms part of the Kruger National Park.

1.2. Ceramics: an integral part of EFC archaeology

Ceramics are an integral part of archaeological inquiry, and since ceramic material is found at archaeological sites all across the globe, it is an indispensable material for archaeologists (Rice, 2015). Ceramics are almost non-perishable and can survive for thousands of years in vastly different environmental situations (Rice, 2015:1).

[3] The Lowveld of South Africa falls within two provinces, Limpopo and Mpumalanga. The Limpopo Lowveld extends southwards, east of the Drakensberg escarpment through the Mpumalanga province and into Swaziland. The southern section of the Lowveld is situated between the boundary with Mozambique to the east and the north-eastern part of the Drakensberg to the west.

Furtermore, pottery is the product of various steps: from the acquisition of suitable clay to production, which involves the shaping and decorating of vessels by the potter. Archaeologists are able to gain un understanding of some of these steps to provide insight into the human behaviour behind pottery manufacture (Arnold, 1985, 1991, 2000; Gosselain, 1995, 2000, 2008; Fowler, 2008, 2011, 2014, 2015).

These considerations hold true for the study of southern African archaeological contexts, where sites are littered with the ceramic material (Fowler 2002; Maggs, 1980a, 1980b, 1984a; Whitelaw, 1993, 1994). Furthermore, the richness of ethnography and present-day communities can allow a rare glimpse of possible human behaviour behind the pottery. Understandably research, especially within farming archaeology, is understood within a ceramic framework (Fowler, 2015; Huffman, 1980, 1982, 2007).

Ceramics studies play a significant role in southern African EFC interpretations. Typological studies have been used to create a relative dating sequence to identify the origins and spread of Bantu-speaking culture into southern Africa (Huffman, 2007). Morphological and technological aspects of ceramic vessels can also contribute to an understanding of the way of life and socio-political structures of communities (Ashley, 2010; Henrickson & McDonald, 1983; Lindahl & Pikirayi, 2010). Ceramic studies can also reveal finer temporal issues, such as how settlements were established, their growth, and the subsequent abandonment of sites (Fowler & Greenfield, 2009:345), as well as the identification of depositional areas from various accumulation activities (Fowler, 2011b). Ceramic studies therefore provide a particularly significant means for understanding the spread, settlement history and use, as well as the socio-political organisation of EFC.

1.3. Research questions

This research will focus on two specific sites in the southern KNP (TSH1 and SK17) (Figure 1.1), which were identified and excavated by Meyer during his major research undertaken in the Kruger National Park during the 1980s (1986). This research project is part analysis and part reanalysis of the material collected, but not previously discussed by Meyer, supplemented with finds from new excavations at TSH1 and SK17. Re-excavation is necessary as the previous excavations were not explicit with regard to the stratigraphic control of the excavation, which led to the conflation of ceramic material in certain instances. Furthermore, new radiocarbon dates will be introduced to support the chronological sequence of the ceramic assemblage.

Therefore, the main research questions are:

- What are the ceramic sequences of the two sites?

A better understanding of the ceramic sequence of the two sites will be obtained through a stylistic analysis of the ceramic assemblages, as well as by incorporating technological ceramic analysis, which provides a more comprehensive view of the people who created the ceramics. Lindahl and Pikirayi (2010:134) maintain that a focus on only stylistic attributes 'ignores the value of ceramic technology in understanding change over time'. Therefore, in addition to stylistic analysis, X-ray fluorescence (XRF) fabric analysis will be conducted. In combination with this, new radiocarbon dates will be sought to address the following question:

- How do these sites fit into our broader understanding of regional EFC?

All other material culture at the two sites will also be analysed as 'a major limitation with African Farming archaeology, in general, is the treatment of pottery as if it is the only evidence found on site, and yet ceramics are only meaningful within a given cultural context' (Pikirayi, 2007:288). Therefore, by also analysing the stone artefacts, shell beads and faunal material, the likelihood of being able to formulate a comprehensive understanding of the communities who once inhabited the TSH1 and SK17 sites will be increased.

1.4. Dissertation outline

This dissertation consists of twelve chapters. **Chapter 2** provides a literature review of EFC archaeology in southern Africa, as well as an introduction to the background of TSH1 and SK17 in the KNP. In **Chapter 3**, a conceptual framework is presented that highlights past and present theoretical ideas on Early Farming Communities in southern Africa, as well as a critique of the research that has been conducted. This chapter also deals with issues regarding the use of certain frameworks, such as the typological ceramic models, ceramic technology and ceramic function. These two chapters form the basis for the discussion of the methods used in this research project. **Chapter 4** presents the research methods used, and in **Chapters 5** to **10** the analysed material culture from both past and recent excavations at TSH1 and SK17 are discussed. These chapters will include a discussion of the ceramic material (XRF and fabric analysis) and the shell beads, stone artefacts and faunal material collected during the recent excavations only. Brief discussions of the results of each analysis are also provided. In **Chapter 11**, further interpretations are made, and the findings from TSH1 and SK17 are contextualised. In **Chapter 12,** final conclusions are drawn and the research outputs are discussed.

Chapter 2

The archaeology of Early Farming Communities in southern Africa

2.1. Overview

Archaeological interest in first-millennium farming societies is a relatively recent phenomenon. Curiosity about the way of life of these communities was first expressed in the 1930s, but real archaeological interest only became evident in the 1950s (Mason, 1952; Hall, 1984b). During this period, a substantial amount of empirical data was presented and various theoretical stances were taken on the origins and spread of EFC.

Collingwood (1939:132, cited in Trigger, 2005:1) states that 'no historical problem should be studied without studying the history of historical thought about it'. This chapter therefore aims to review the evidence of the presence of agropastoralists in southern Africa during the First Millennium, with a particular focus on the Lowveld of South Africa, which is the study area of this dissertation.

2.2. Introduction

Throughout the past century, dialogue on the origins and spread of Farming Communities in southern Africa has been ongoing (Fredriksen & Chirikure, 2015; Huffman, 1970, 1982, 2006, 2007; Oliver, 1966; Phillipson, 1975, 1977, 2005; Posnansky, 1968). Such dialogues have led to the development of varied discourses addressing questions about these past societies (Huffman, 1970, 1980, 1982, 2006, 2007; Phillipson, 1968, 1977). In this section of the chapter, I discuss some of these dialogues.

2.3. History of farming archaeology

The study of farming communities in Southern Africa has been plagued by political and racial issues (Hall, 1984a, 1984b). For instance, the term 'Bantu Period' was used by Caton-Thompson to describe the period between the Stone Age and the colonial period in Zimbabwe (Hall, 1990:64). This term was gradually replaced by the term 'Iron Age', which was first applied within a southern African context by Wells (1933), and later by Schofield (1948), who used it to describe a time sequence during a rock art study. It was only formally put in place during the 1950s by Mason (1952:70) when he suggested that this period should be termed the 'southern African Iron Age'. He saw this period as being 'subsequent to the introduction of iron-working, but prior to the appearance of European metal artefacts'. The term refers to the three European age systems, where chronological subdivisions were created based on the development of technological material types (stone, bronze and iron) (Trigger, 2007:123). However, in southern Africa, the Stone Age was directly followed by the Iron Age (Mason, 1952:70).

2.4. The dark and savage past: farming archaeology governed by colonialism

Throughout the nineteenth and early twentieth centuries, people writing about Africa proclaimed African communities to be savage and unchanging, with a short history (Hall, 1981, 1984a). This understanding was further justified by Victorian evolutionary theories of civilisation (Stahl, 1993). Such sentiments regarding African populations further justified the cultural and racial hierarchy in which Europeans ranked themselves near the top and Africans at the bottom on the ladder of civilisation (Hall, 1984a:263).

Archaeology in Africa as a discipline, and previously as a practice, is rooted in colonialism (Sheppard, 2002:192). Before the fall of colonialism in Africa, the relationship between colonial ideologies and the development of archaeology could not have been more direct, as many of the archaeologists working in Africa were employees of the colonial state (Sheppard, 2002:193). The same applies to southern

Africa, where colonial rhetoric dictated the growth of agropastoralists archaeology (see Hall (1984b) and Hall and Neal's (1972) comments on early ideas of origin at Great Zimbabwe).

The suggestion that Great Zimbabwe did not have local origins was challenged by archaeologists such as MacIver and Caton-Thompson (Hall, 1987). Caton-Thompson's research was among the first to create a ceramic sequence and make use of aerial photography (Hall, 1984a:458, 1990:7) and inspired other archaeologists (Schofield, 1938, 1940) to conduct systematic research in an area believed by many to be without history (Hall, 1987, 1990). However, even after having completed substantial work at Great Zimbabwe amongst shifting political paradigms, Caton-Thompson espoused an early twentieth-century colonial conclusion to her understanding of the site, expressing the belief that African communities were still in many ways backwards and technologically disadvantaged (Steele, 2001:48). This kind of thinking, termed the 'settler paradigm' by Garlake (1982), allows for southern African ceramics and cultures to be cast in the shadow of certain racial and cultural perceptions (Hall, 1984a:263). These ideas were only challenged in the 1950s, after the National Museum of Southern Rhodesia had instigated a survey in the area in 1947, by combining Caton-Thompson and Schofield's work (Summers, 1970:95). This led to new, detailed research in the region in order to challenge such paradigms, and from such an agenda emerged the term Iron Age. Further research countered the idea that Africa was not technologically advanced (Summers, 1970).

The term Iron Age only gained traction much later in South African archaeology, as during the 1950s there were no archaeologists in South Africa who were trained in this field or were investigating sites that fell within this category (Maggs, 1993:70). It was only later, during his research on Transvaal archaeology, that Mason introduced the use of the term Iron Age within a South African context. In the 1960s and 1970s, he was able to identify a substantial number of farming sites in the Transvaal region, which contributed to more in-depth research in this area (Mason, 1962, 1965, 1976). The 1970s saw substantial changes for EFC archaeology as interest in the period surged, leading to further research (Derricourt, 1977; Inskeep, 1971a, 1971b, 1978; Phillipson, 1977; Mason *et al.*, 1973; Van der Merwe & Huffman, 1979). This research was to form the basis for new theoretical approaches in the 1980s (see Chapter 3) (Maggs, 1993). During this period, which is known as the formative years of EFC research, detailed culture-historical sequences were created through a combination of ceramic assemblages and radiocarbon dating. What became abundantly clear during this period was the role of ceramics in the creation and understanding of archaeological culture-historical sequences for EFC.

2.5. The culture-historical sequence of southern African Farming Communities

In southern Africa, the application of culture-historical sequences for Farming Communities is expressed through ceramic assemblages in combination with radiocarbon dating, which enables the establishment of a regional chronology of units (Huffman, 2007; Maggs, 1980a, 1984a; Mason, 1952; Summers, 1970). However, this sequence for EFC has not gone uncontested (Hall, 1987). From the 1950s onward, many different approaches have had an impact on how we view EFC archaeology. Two different approaches, known as the British and North American approaches, are commonly viewed as playing a significant role in our understanding of EFC archaeology (Hall, 1990).

Hall's (1984) British culture model borrows from Gordon Childe's constructs of culture (Hall, 1984, 1990). In this model, archaeological culture is viewed based on certain kits (ceramics, house forms, implements, ornaments, etc.) re-occurring together. This polythetic view of culture places these re-occurring traits into cultural groups, and through the use of seriation and stratigraphy it is possible to distinguish between different cultural groups. Therefore, in the traditional sense, the present is translated into the past by collecting material cultures (artefacts and other archaeological objects) and dividing them into groups, termed archaeological cultures.

In contrast with the so-called British approach, Huffman (1970, 1971, 1980), introduced the idea of ceramic traditions – an approach well established in North America (Hall, 1983, 1984; Dunnell, 1971). Ceramic traditions are archaeological cultures defined through ceramic styles. By identifying ceramic traditions, it becomes possible to trace ceramic attributes through successive generations based on the stylistic attributes (Huffman, 1970, 1980, 2006, 2007), and therefore it is possible to identify not merely the object, but to also determine group identity through material objects (Huffman, 2007: 111). According to this approach, style becomes a marker of group identity.

2.6. Style the way forward

The decorations used on material culture is an intricate and important part of the community from which a good deal of information can be inferred (David *et al., 1988;* Plog, 1983; Weissner, 1983, 1984, 1985; Wobst, 1977, 1978, 1999). This will be further discussed in Chapter 3. Throughout the years, many archaeologists around the world have acknowledged the importance of decoration on objects. It serves to signify the identity of a person or group (David *et al.,* 1988; Huffman, 2007). Furthermore, decoration is not just random patterns placed on objects; they carry messages about social organisation and daily life. For instance, red bands on Venda initiation figurines can indicate an unmarried woman (Blacking, 1969; Huffman, 2007). In order to understand the stylistic symbols on archaeological material, archaeologists draw from present ethnographic studies, termed ethnographic cultures (Huffman, 1979:123). Therefore, a stylistic model is based on correlations between ethnographic cultures and archaeological material culture (archaeological cultures) (Huffman, 1980:121).

Ethnographic cultures can be identified on various levels and can be classified broadly according to their socio-political backgrounds; for instance, certain groups could be called hunter-gatherers, while others were known as farming communities. However, on a more closely defined level, these groups can be identified and set apart from each other by 'behavioural patterns' that are not limited to their socio-political affiliations, or even to a particular habitat (Huffman, 1979:124). It is believed that even though different groups of people have many similar attributes, they have evolved in ways that make them different from one another. For instance, the Pedi and Venda are subsistence agriculturalists who create and use pottery and participate in initiation ceremonies, yet each group has developed specific forms of these objects and customs that make them unique (Huffman, 1980:124). One way in which to identify this difference is through the study of discrete patterns in the material culture (Huffman, 1980).

However, not all material culture can be used to infer community identity. Huffman (1980) clearly states that for material culture to be used to identify archaeological entities, it should meet three criteria: first, the material must display stylistic variables; second, the variables need to consist of multiple alternatives so that they are unlikely to occur in various groups by chance alone; and third, the object must occur commonly (Huffman, 1980:124-125). According to Huffman (1980), the only category of material culture that meets these criteria is pottery. Huffman identifies three different variables that can be used to determine ceramic styles and, flowing from this, group identity. These three variables are vessel profile, decoration layout and motif type (Huffman, 2007, 1980).

This multidimensional method introduced by Huffman (1980) offers an empirical way to measure archaeological identity through ceramic traditions (assemblages). Huffman (1980) and many other southern African Iron Age archaeologists (Evers, 1988; Van Schalkwyk, 1994b; Whitelaw, 1993, 1994, 1996, 2012, 2013) believe that through the use of this method it is possible to equate ceramic stylistic attributes to group identity. Furthermore, the multidimensional method has been applied across research on farming communities in southern Africa with rewarding results (Huffman, 1989; Klapwijk & Huffman, 1996; Loubser, 1993; Prins & Granger, 1993; Van Schalkwyk, 1994a, 1994b; Whitelaw, 1993; 1994; 1996).

2.7. Critique on the use of ‘style’ in southern Africa Farming archaeology

However, the multidimensional model has been widely criticised. Specifically, critiques have been aimed at the equating of ceramic vessels to group identity and the manner in which ethnographic sources are applied in such approaches.

Hall (1983) believes that the direct link between current and past groups within the multidimensional model is problematic. It creates a static representation of past groups, where groups are locked in form through time as a ’cultural package’ (Hall, 1984:268). This reasoning echoes ideas in the settlers’ paradigm (the tribalism model) (Hall, 1984). These cultural packages are applied automatically and spatiotemporally in the archaeological record (Hall, 1983, 1984; Mitchell, 2002; Pikirayi, 1997, 1999, 2007). By actuating ceramics to people, archaeologists are ’pigeonholing past societies into moulds based on modern ethnic groups’ (Karega-Mũnene (2003:31) in Ashley, 2010:137]. As Lane (2004:246) argues, stylistic differences become ’ethnic markers wherein these ethnicities are regarded as both primordial and essentially fixed’, which has hampered the interpretation of the archaeological record. Other studies show that group identity is not fixed in time and space, and can be fluid and changing (Ashley, 2010; Jones, 1997; Gosselain, 2000; Stark, 1998; Pikirayi & Lindahl, 2013). Furthermore, certain problems arise with regard to how cultural units are defined (Delius & Schoeman, 2010a, 2010b; Wright, 2010a, 2010b), as explained by Wright (2010a:231):

> In its focus on defining cultural units, it is an archaeology that proceeds by highlighting cultural boundaries between groupings whose internal cohesion it takes for granted. It underplays their internal political and social dynamics, and thus finds it difficult to explain historical change except in generalised social evolutionist terms.

From this perspective, groups are not only represented as static, but also as lacking internal agency. These are some of the problems that exist with regard to stylistic ceramic studies and have led some archaeologists viewing farming community archaeology as beyond typological models and group identity. Hall (1984:270) argues that archaeological research should move forward, as is the case with African Stone Age studies where the functional hypothesis is being tested. Ceramic studies should also focus on issues such as cultural change and the role of the environment in the past, rather than on group identity (Pikirayi, 1999:187).

Nevertheless, stylistic studies remain prevalent in southern African farming community archaeology and Whitelaw (2012:131) rightly states that ‘it is indisputable that people used and still use material-cultural style to express identity’. Questions remain ‘around how style should be characterised and the kind of identity it expresses, but somehow archaeologists must make the shift from a fragmentary material culture to people (Whitelaw, 2012:131). One way of doing this is by using stylistic attributes on ceramic assemblages. Despite the above-mentioned limitations, typological studies have been successful in defining and describing ceramic assemblages in southern Africa (Pikirayi, 1999:187).

2.8. The spread of first-millennium farming communities into southern Africa

During the 1960s and 1970s, it became evident that a chronological link existed between the Early Iron Age dimple-based ceramics originally located in eastern and south-central Africa (Clark, 1962, 1967; Maggs, 1994/5) and the 'channel-decorated pottery' found in southern Africa that dated back to the first millennium (Huffman, 1970, 1976; Robinson *et al.,* 1963; Maggs, 1994/5). Once this similarity had become apparent, efforts were made to trace the origins of first-millennium Farming Communities and their spread into southern Africa. It is suggested that the movement of farming communities from eastern Africa to southern Africa can be seen by tracing shared attributes in ceramic assemblages (Huffman, 1989, 2006, 2007; Phillipson, 1977, 2005). This movement of communities is further substantiated by linguistic evidence.

More than one-third of Africans speak a similar dialect belonging to a single language family called Bantu (Vansina, 1979:287). Bantu languages are spoken throughout eastern and southern Africa and, depending on how dialects are counted and recognised, there are between 300 and 800 different Bantu languages (Huffman, 2006:98). Significance was placed on similarities between these languages, which would mean that most of the Bantu languages originated from a common ancestral language. A common 'ancestral language meant a common ancestral community, a 'people' (Vansina, 1979:295). Thus, a common dialect means that there is a common tree from which all African communities descend.

This notion that all language in Africa originated from a central source meant that variations in language needed to be explained, with migration viewed as a suitable explanation. The focus on migration, rather than diffusion, was based on the speed at, and extent to which people seemed to have spread across the continent (Huffman, 1970:3). It was for this reason that the term 'Bantu migration' was preferred.

Archaeologists used linguistic data as a source for explaining the origins of Early Farming Communities in southern Africa. Oliver confirms this when he states: 'our primary source of evidence about the origins and early history of the Bantu is, of course, the linguistic one' (1966:23). While some researchers believe that the migration of Bantu-speaking people occurred by way of three different streams into the subcontinent (Huffman, 1982:135), others (Phillipson, 1975:336) are of the opinion that this migration only occurred in two streams.

This migration of first-millennium communities into southern Africa is believed to be visible through shared stylistic attributes that are evident in different ceramic assemblages (Huffman, 2007:331; Posnansky, 1961). These assemblages became known as the Chifumbaze Complex (Phillipson, 1977). Phillipson believes that the spread of early farming communities consisted of one tradition, namely the Urewe tradition, which can be divided into two streams, the Kwale and Nkope (Phillipson, 2005). Huffman adds a third tradition to Phillipson's traditions by introducing the Kalundu tradition (Huffman, 1989, 2006, 2007). Seeing that Huffman's stance is more relevant to this dissertation, my focus will be placed on his groupings of ceramic assemblages. While there is more information regarding the migration model, this brief account is sufficient for the following discussion (for further consideration of the model, see Huffman, 1970, 1982, 2006, 2007; Oliver, 1966; Phillipson, 1975, 1977, 2005; Vansina, 1979, For a critique of the model, see Eggert, 2005; Robertson & Bradley, 2000; Pikirayi, 1999, 2007). In the following section, the EFC archaeology of the KNP will be discussed on the basis of Meyer's (1986) synopsis of the ceramic material, followed by an introduction to the study area.

2.9. Early farming community archaeology in the Kruger National Park

As mentioned in the previous chapter, Meyer (1986: vii) identified a substantial number of EFC sites in the Kruger National Park. The ceramic material from these sites was divided into nine distinct traditions, which implies the movement of different groups into the region (Meyer, 1986; Maggs & Whitelaw, 1991). According to Meyer (1986:219), EFC communities moved into the KNP between AD 200 and AD 400. At the time they had nowhere else to settle in an already occupied Transvaal and KwaZulu-Natal. Only two of the nine traditions identified by Meyer will be discussed here, as the rest are not relevant to this study. These two traditions are the Mutlumuvi complex and the Sabie complex.

2.9.1. The Mutlumuvi complex

The ceramics from this complex have characteristic everted rims, with thick horizontal incised lines on the neck and triangular decoration. Sites from this complex originated close to streams and rivers. The sites were characterised by ash heaps (as well as small ash-filled holes) and concentrations of bone and ceramic sherds (Meyer, 1986: 222).

The sites associated with this complex are TSH 1, Mal 10 and St 6. Radiocarbon dates were only obtained from TSH 1 and date to between AD 510 and ± AD 550 (Pta-3825). According to Meyer, the Mutlumuvi complex is part of a much larger industry that is found in Transvaal, KwaZulu-Natal and Mozambique. This complex dates to between AD 350 and AD 600, and is closely related to the Broederstroom industry (Mason, 1981) and sites related to the Lydenburg (Evers 1982), Mzonjani and Enkwazini sites (Maggs, 1980a, 1980b), and the Matola sites in Mozambique (Meyer, 1986:222; Cruz e Silva, 1976). Meyer's (1986) interpretation of the ceramic sequence is somewhat controversial and has not been adopted by other archaeologists. For example, Evers (1988) lumps the KNP EFC sites into either the Western or Eastern stream; thereby colligating Meyer's (1986) multiple migrations into the two already established streams (Maggs & Whitelaw, 1991:16).

2.9.2. The Sabie complex

The ceramics from the Sabie complex mostly relate to those of the Lydenburg tradition. However, some of the ceramics show characteristics similar to those of Ndondondwane in the Tugela Basin (KwaZulu-Natal) (Maggs, 1980b). A single site relating to this complex was identified by Meyer, namely SK17. This complex is in some ways interesting as the typological characteristics are not homogenous (Meyer, 1986:225). Seeing that this complex shows many similarities to the Lydenburg sites, as well as the Ndondondwane sites in KwaZulu-Natal, this suggests that it belongs to an industry that stretches over a vast region across Mpumalanga and KwaZulu-Natal.

2.10. TSH1 and SK17

2.10.1. Study area

Tshokwane (TSH) 1 and Skukuza (SK) 17 are located in the southern part of the Kruger National Park, close to the Skukuza main camp. The area is mostly flat, with isolated rocky outcrops (Plug, 1989a: 6). The annual rainfall is between 400 and 500 mm, with most of the rain falling in the summer months between October and April (Plug, 1989a: 62). The sites are 230 m above sea level and were first identified by Meyer for his doctoral thesis.

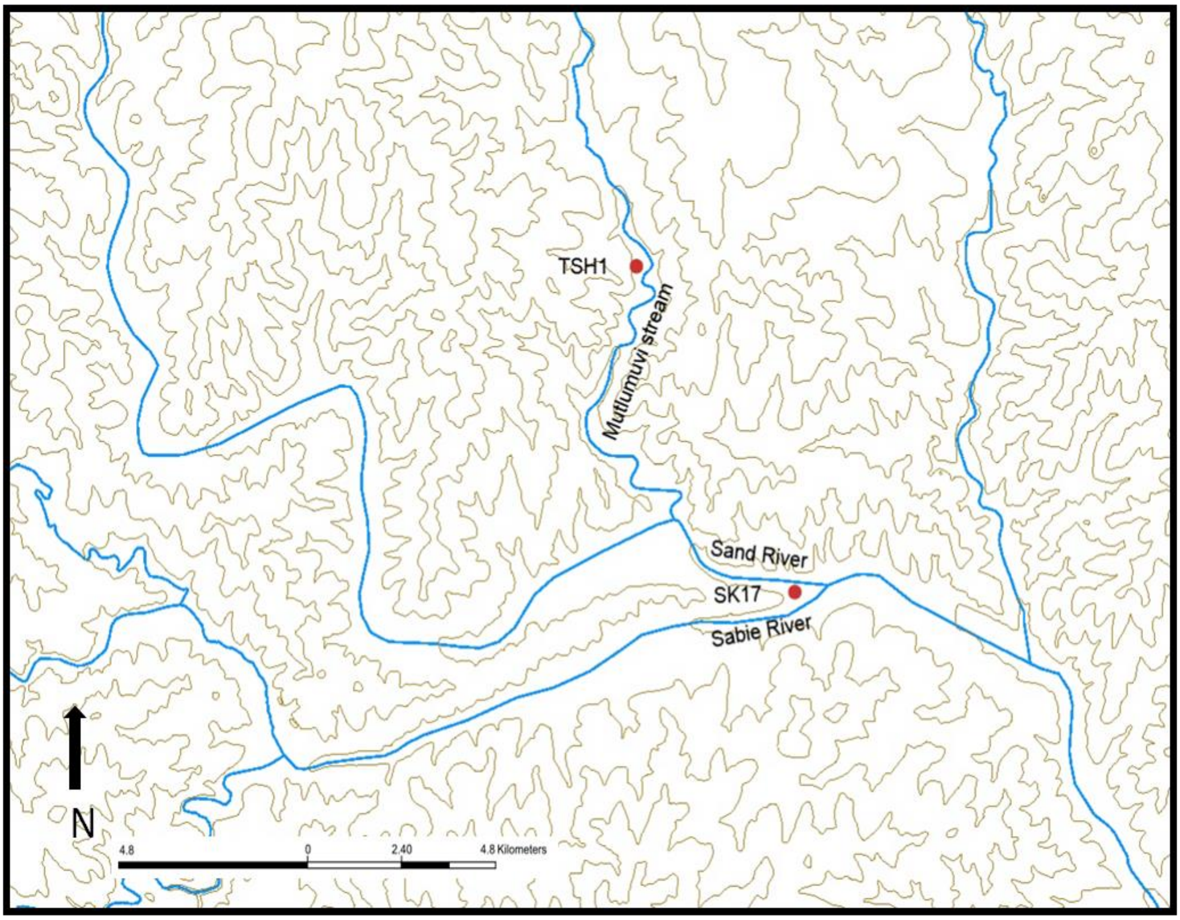


Figure 2.1 The study area, with sites TSH1 and SK17 highlighted

2.10.1.1. Tshokwane (TSH) 1

TSH 1 is situated on the western banks of the Mutlumuvi stream (which originates from the Sand River) in the Tshokwane district, close to Rhino Walking Safaris and Skukuza Main Camp. The site is 269 m above sea level and is characterised by mixed Combretum woodlands (Plug, 1988:45). Due to its proximity to free-flowing water, it is covered with a layer of alluvial soil (Plug, 1988:220) and is susceptible to annual flooding. The site, located next to a road, stretching eastwards to the Mutlumuvi stream, was first identified by Meyer during an archaeological reconnaissance in the 1980s (Meyer, 1986). No active erosion was visible on the surface of the site (Plug, 1988). A large number of small middens, similar to those at the Garonga site, were visible throughout the site (Burrett, 2007). Test excavations were carried out on a few of these ash-heaps by Meyer (1986). The most extensive of these excavations was conducted on TSH 1.1 and covered an area of 10.5x2 m, with eleven arbitrary spits of 13 cm each (Meyer, 1986).

Figure 2.2 TSH1 (winter)

During a reconnaissance visit in February 2013, the site was rediscovered. It was noted that it was in good condition and that no erosion or human disturbances had occurred since the excavations in the 1980s. The site was covered with scrubs and grass after heavy rains during this period, but the middens were still visible and had not been disturbed. Meyer (1986:222) classified the ceramics from the site to the Mzonjani facie. Other material culture discovered on this site includes an ivory bracelet and evidence of metal working (Meyer, 1986).

Figure 2.3 TSH1 (summer)

2.10.1.2. Skukuza (SK) 17

SK 17 is located 233 m above sea level and is situated on the northern banks of the Sabie River in the Sabie and Sand River concession area (which is so named as it is the area in which the junction of the two rivers occurs). The site falls in the same landscape as TSH 1. During a visit to the site in February 2013, It was noted that alluvial soil had covered a substantial part of the site due to recurring floods in the region. A road running through the site had been the main reason for Meyer's initial identification and excavation of the site (1986). During a reconnaissance visit in 2013, ash deposits were visible. The site was rather overgrown during the 2013 visit (during summer rain season) (see Figure 2.4). Meyer's excavations consisted of five test pits, i.e. SK 17.1-17.5.

The ceramic tradition was identified as part of the Ndondondwane and Mzonjani facies (Meyer, 1986; Huffman, 2007). However, Huffman placed the ceramic assemblages from SK17 in the Garonga facie (Burrett, 2007; Huffman, 2007).

Figure 2.4 SK 17 (Note the dense bush cover due to floods in January 2013.)

2.9. Ceramic traditions relevant to the project

This project encompasses the Kwale stream within the Urewe tradition, as well as the Kalundu tradition (Figure 2.5)**.** Throughout this dissertation, Huffman's stance on the spread of ceramic assemblages will be used as it has been shown to be the most accurate and pertinent for formulating an understanding of the prehistory of southern African. In the next section, I will focus on the ceramic sequences that are relevant to this study. To answer the research questions stated in Chapter 1, a clear understanding of the ceramic traditions from which ceramic sequences are established is needed. I will now turn to the stylistic attributes of the Urewe and Kalundu traditions.

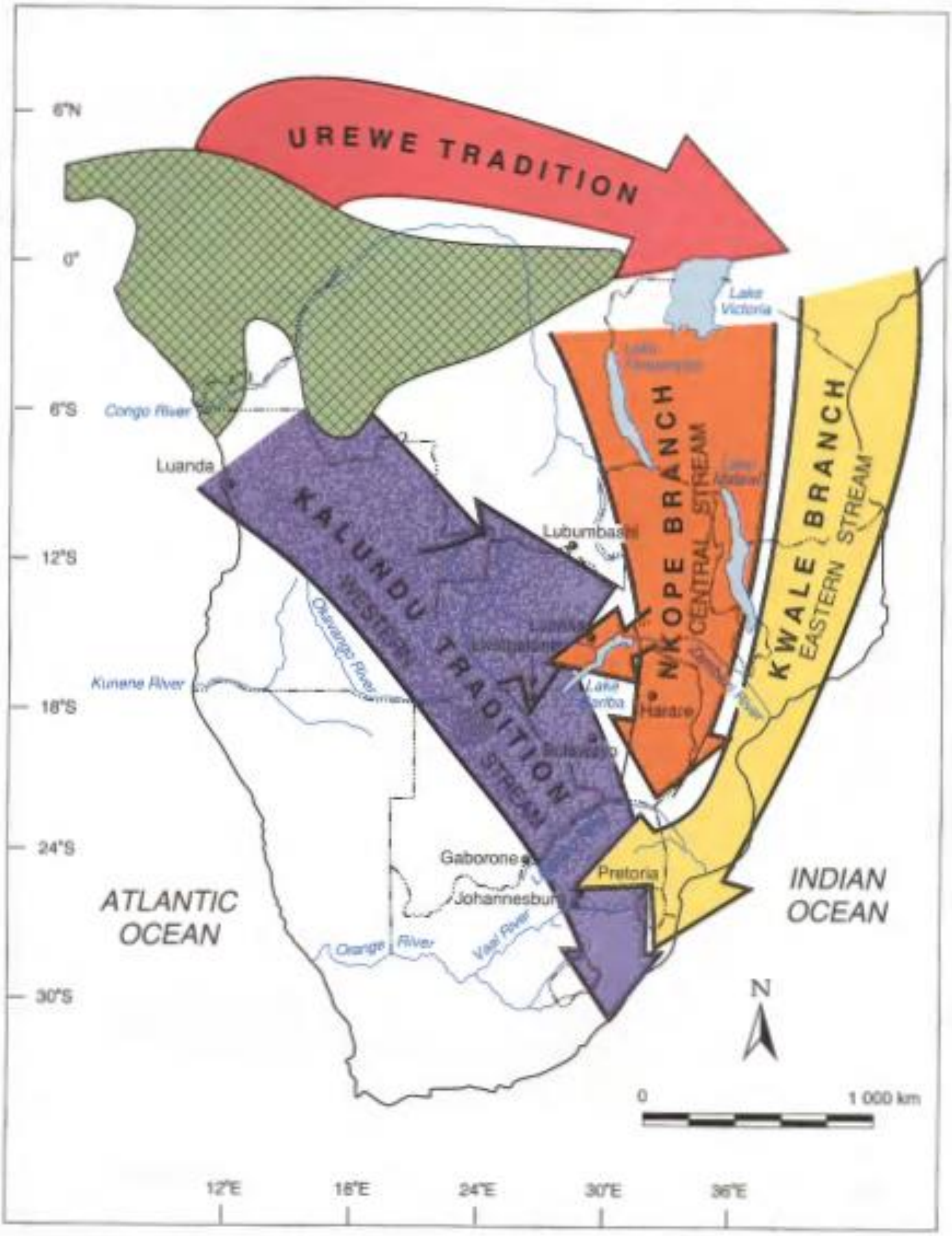


Figure 2.5 The spread of Bantu-speaking communities into the subcontinent

Source: Huffman (2007:336)

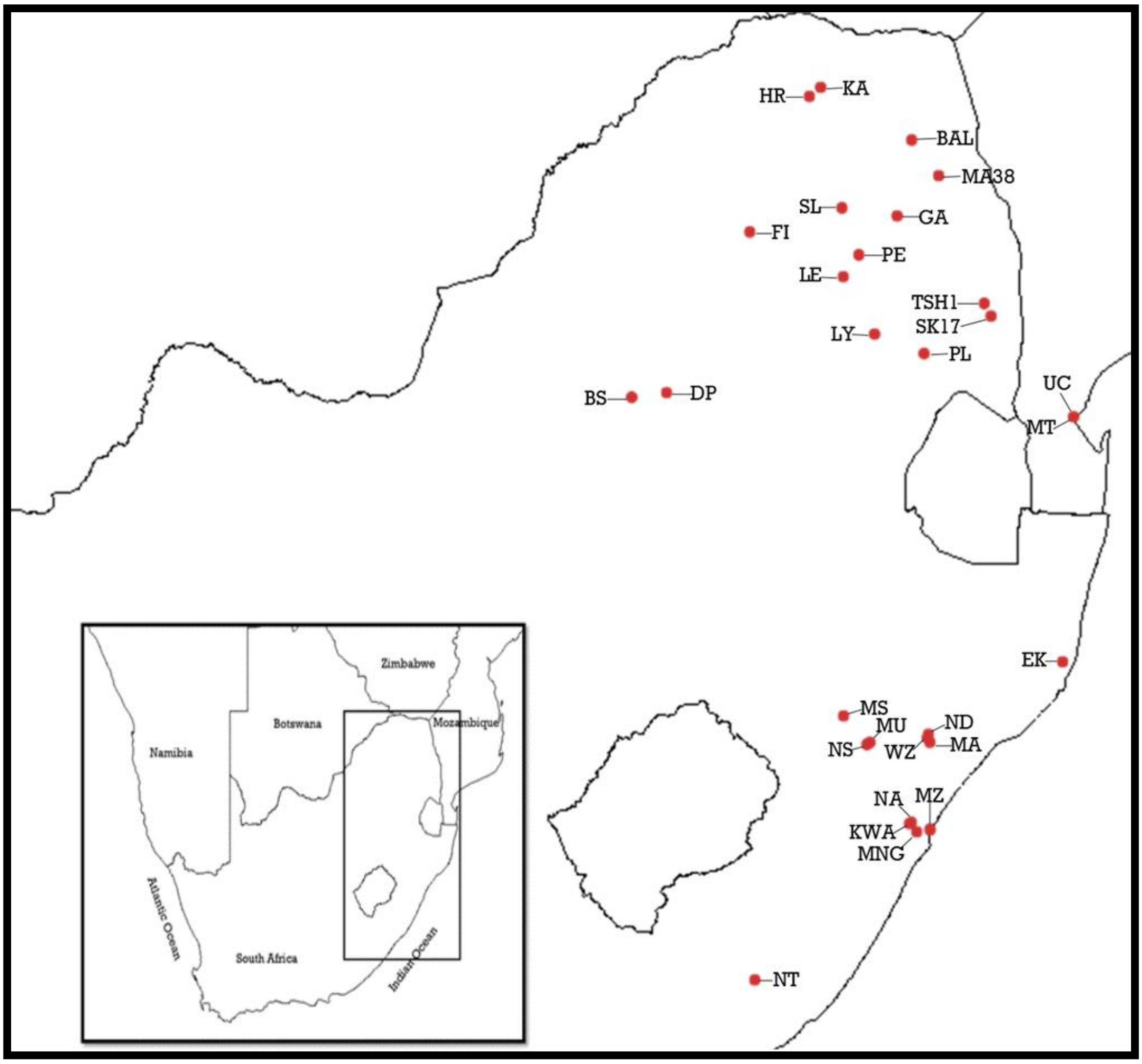


Figure 2.6 Map highlighting EFFC sites mentioned in this chapter, i.e. HR(Happy Rest), KA(Klein Africa), BAL(Baleni),MA38,SL(Silver Leaves), GA(Garonga), FI(Ficus), PE(Penge), Le(Lebalelo), LY(Lydenburg), PL(Plaston), TSH1, SK17, BS(Broederstroom, DP)Derdepoort), MS(Msuluzi), MU(Muden sites), NS(Ntsitsana), WZ(Wozi), ND(Ndondondwane, MA(Mamba), Na(Nanda), MZ(Mzonjani), KWA(KwaGandaganda), MNG(Mngeni sites) and (NT(Ntshekane)

2.11. Urewe tradition

Within the Urewe tradition, only the Kwale stream will be discussed as the Nkope stream is not relevant to this project. In southern Africa, the Kwale branch can be divided into three different phases, namely Silver Leaves, Mzonjani and Garonga (Huffman, 2007).

2.9.2. Silver Leaves

The earliest emergence of EFC in southern Africa (Mitchell & Whitelaw, 2005) is accounted for by the appearance of the Silver Leaves facies, including Matola (see Chapter 1), dated to AD 280 and AD 450 (Huffman, 2007). The first expression of Silver Leaves was identified in Mozambique at Matola (Cruz e Silva, 1976) and University Campus (close to Maputo) (Sinclair *et al*., 1987; Morias, 1988). Examples of Silver Leaves ceramics were also found in Swaziland (Dart & Beaumont, 1969). In South Africa, at the site Silver Leaves at the foothills of the Drakensberg close to Tzaneen, ceramics similar to those found at Matola were excavated (Klapwijk, 1974; Klapwijk & Huffman, 1996), which led to this type of ceramics becoming known as Silver Leaves. Evidence of a Silver Leaves tradition was also discovered at Bhuwa in Zimbabwe (Huffman, 1978) and in the Kruger National Park, at Ma38 (Meyer, 1986).

Silver Leaves ceramic finds are characterised by jars with bevelled rims, with some vessels displaying straight necks (Klapwijk, 1974). The decorative motifs are elementary and the rims show either one or two bevels with a lower border of broad line incisions or dentate stamp impressions, which are usually located on the necks/shoulders of the pots (Klapwijk, 1974:19). When Klapwijk and Huffman (1996) reanalysed the material from Silver Leaves, they found evidence of domestic plant impressions in one of the ceramic vessels, as well as proof of metal-working and bead production.

2.11.1. Mzonjani

A different phase of the Kwale Branch is termed Mzonjani (Huffman, 2007; Mitchell, 2002). Dating to between AD 450 and AD 750, this facie shows a design layout and profile shapes similar to those of Silver Leaves, but lacks bevels and flutes. Therefore, Mzonjani is seen as forming a new facie in the Kwale Branch (Klapwijk & Huffman, 1996). Key features of this facie consist of fairly straight everted rims with well-defined points of inflexion. Decorations are placed mostly along the entire rim of the vessel and include oblique incised lines with or without punctuates (Maggs, 1980a; Hall, 1980). Discontinuous spaced motifs are also found and consist of triangular shapes or parallelograms. Sites that have produced examples of this facies are found throughout a large part of southern Africa. The Mzonjani ceramic assemblages are an integral component of this project; therefore the different sites where this ceramic type occurs will be discussed per region, with a focus on the Lowveld (the region of study).

2.11.1.1. KwaZulu-Natal

The Mzonjani facie was first identified in KwaZulu-Natal (Hall, 1980; Maggs 1980a) and excavated by Maggs in the 1970s as part of a rescue excavation. The ceramic material retrieved clearly dated to the Early Farming period and was the first assemblage from this period discovered south of the Tugela River (Maggs, 1980a:71). On analysis of the ceramic artefacts, it became apparent that they form part of what is now known as the Mzonjani facie. In the 1970s, Hall (1980) identified a similar site, called Enkwazini. Even though the sample size was considerably smaller than Maggs's sample (1980a), the assemblage was similar and was therefore placed within the Mzonjani facie (see Figure 2.6).

Because these two sites were the only sites in KwaZulu-Natal that contained ceramics of these types, they were not initially placed in the Mzonjani facie. Maggs believed that the ceramics from Mzonjani and Enkwazini showed close similarities to Matola (Cruz e Silva, 1976), Silver Leaves (Klapwijk, 1974; Klapwijk & Huffman, 1996) and Plaston in Transvaal (Evers, 1977). Therefore, Maggs classified the ceramics from Mzonjani and Enkwazini as Matola (Silver Leaves) facie (Maggs, 1980a:92-93). However, as more EFC sites were excavated it became apparent that Silver Leaves (Matola) and Mzonjani could be placed in the same Urewe tradition as related facies (Huffman, 2007). The main difference between the two was the absence of bevelling and the more complex decorative motifs in Mzonjani assemblages (Huffman, 2007). After this initial research, four more Mzonjani sites were excavated close to Durban along the Mngeni valley (Whitelaw & Moon, 1996), and one of the sites, Nanda, was identified by Whitelaw (1993) as a multi-occupational site.

2.11.1.2. South African interior

On the foothills of the Magaliesberg Mountains in the North-West Province, Mason (1981) excavated the site Broederstroom, covering an area of more than 25 hectares (Mason, 1981:401). At Broederstroom it became possible to identify the presence of a Mzonjani facie in the ceramic assemblage. However, it was evident that this site was also a multi-occupational settlement consisting of multiple discrete ceramic assemblages. Evidence of human burials and hut structures was also found (Mason, 1981). This site became a particularly important example of the socio-political organisation of EFC (Huffman, 1991; 1993) (see Chapter 3).

Another Mzonjani-type site identified in this region was Derdepoort, located close to Broederstroom, north of Pretoria (Nienaber *et al.,* 1997).

In the area of Mokopane (formerly Potgietersrus) in the Makapan Valley, an EFC site was excavated as part of a master's research project (Moore, 1981). This site, Ficus, turned out to be a multi-occupational settlement, with its first occupation being attributed to the Mzonjani facies dating to between AD 400 and AD 500 (Moore, 1981). Three more occupation phases were noted at the site, the first from AD 800 to AD 900, another around the AD 1400, and the third around AD 1900 (Moore, 1981: i).

2.11.1.3. The Lowveld of South Africa

The Lydenburg Heads site is located on the escarpment in Mpumalanga. The site was first identified in 1962 by L. von Bezing, who collected remains of terracotta heads, ceramics, shell, copper and iron beads, as well as fragments of worked bone and ivory (Evers, 1982:16; Evers, 1975; Evers, 1977a; Marker & Evers, 1976). An initial study was done on the terracotta heads (Von Bezing & Inskeep, 1966; Inskeep & Maggs, 1975) and a late fifth century AD date was obtained from a radiocarbon sample associated with the ceramics (Inskeep, 1971). Further excavations placed the heads in context, and additional material was obtained for dating purposes (Evers, 1982:16). Originally Evers (1982) postulated that the ceramics were similar to the Msuluzi facies (Evers, 1982:30). However, he later stated that some of the ceramic vessels were analogous to those found at Matola (Evers, 1982:30). The site has become an important part of EFC archaeology in southern Africa, due to the terracotta heads that were found there and the fact that the ceramic assemblage from the site plays an integral part in our understanding of agropastoral communities in southern Africa (Whitelaw, 1996:75). However, Whitelaw re-examined the ceramic assemblage from the site and concluded that it had been occupied at least twice - once during the seventh century AD by an Urewe tradition (Mzonjani), and again between the ninth and eleventh centuries AD by a Kalundu tradition (1996:75).

In the same region, the site Plaston was excavated and ceramics were uncovered that were similar to those found at the Lydenburg Heads site, but not to those excavated at Silver Leaves or Matola (Evers, 1977a:178). However, Plaston ceramics are now considered part of the Mzonjani facies (Huffman, 2007:127).

Further Mzonjani-type sites were identified at the salt-production settlement of Baleni in the north-eastern Lowveld (Antonites, 2005, 2013). The Mzonjani ceramics identified were limited to only jar-shaped vessels. The decorative motifs are less complex than those from all the other Mzonjani-type sites previously mentioned, with motifs consisting mostly of horizontal punctuates on the rim, with only a few jars showing spaced motifs on the body (Antonites, 2013: 110). Antonites (2013:110) ascribes this simplification of design to the fact that these vessels had a limited lifespan (also see David, 1972). Another Mzonjani-type site in the Lowveld region recently identified is Lebalelo, near Burgersfort (Huffman & Schoeman, 2011). The ceramic assemblage was small and although only four vessels could be reconstructed (Huffman & Schoeman, 2011:163) it was still possible to place the ceramics in the Mzonjani facies.

2.11.2. Garonga facie

Garonga, the third facie of the Kwale branch, was only recently defined, with only one site identified close to Phalaborwa in the northern Lowveld. According to Huffman (2007:126), SK 17 in the KNP forms part of this facie, but further research, falling within the scope of this current project, is needed to substantiate this claim. This facie dates back to between AD 750 and AD 900 (Huffman, 2007). Its key features include Mzonjani jar shapes with punctates on the rim and multiple bands in the neck (Burrett, 2007; Huffman, 2007). It therefore seems that stylistically this facie is a mixture of Mzonjani (Urewe tradition) and Happy Rest (Kalundu tradition). Burrett (2007) concludes that because the majority of the ceramics showed Mzonjani elements, but not all of those showed Kalundu elements, it could point to the introduction of new ideas for decoration to Mzonjani communities (Burrett, 2007:163). I now turn to the other ceramic tradition that occurs in the study region.

2.12. Kalundu tradition

Maggs (1984a) and Morias (1988) suggest that ceramic entities found in the region south-east of southern Africa are descended from Silver Leaves and Mzonjani (Mitchell, 2002). Further inspection showed that this is unlikely, and that a better conclusion would be that the EFC ceramic sequences in the KwaZulu-Natal area were probably a later version of Huffman’s (2007) Kalundu tradition.

2.12.1. Relevant Kalundu facies in KwaZulu-Natal and further south

The majority of Kalundu ceramics that are relevant to this project originated in KwaZulu-Natal. As highlighted is this chapter, as well as in Chapter 1, extensive research has been undertaken on EFC communities in this region. Here I will discuss three facies, namely Msuluzi, Ndondondwane and Ntshekane.

The Msuluzi facie dates back to between AD 650 and AD 750 (Huffman, 2007; Maggs, 1980b; Whitelaw, 1993, 1994) and was identified at the site after which it was named by Maggs in 1977 (Maggs, 1980b). The site is located just west of the Tugela and Msuluzi Rivers (Maggs, 1980b:111). The key ceramic features include broad cross-hatching and blocks of lines on rims, and elaborate decorations on the necks and shoulders of the vessels (Huffman, 2007). Two other sites were identified in the Muden area, which is also in the Tugela Basin. The sites Magogo and Mhlopeni (referred to as the Muden sites) also contained Msuluzi ceramics. However, Maggs and Ward (1984) note that both these sites were multi-occupation settlements. Other sites where Msuluzi ceramics were found are Wosi, Mamba I and Mamba II (Van Schalkwyk, 1994a, 1994b), and Ntsitsana (Prins & Granger, 1993). At all these sites, evidence of metalworking was present (Van Schalkwyk, 1994a). Two important sites representing this facie are Nanda (Whitelaw, 1993) and KwaGandaganda (Whitelaw, 1994). Nanda, a single Msuluzi occupation, shows evidence of dental alterations from adult burials, as well as proof of at least one cattle byre (Whitelaw, 1993:47). To date KwaGandaganda is one of the largest excavated EFC sites in South Africa. Due to the extent of the excavations, it was possible to determine that the site had been occupied continually from the seventh to the early eleventh century AD (Whitelaw, 1994:1). The occupational horizons can also be seen in the ceramic facies present, with the early occupation characterised by Msuluzi ceramics (Whitelaw, 1994). The large-scale excavations revealed many features, the remains of houses, raised granaries and pits, as well as a cattle byre in the centre of the settlement area (Whitelaw, 1994:1). The most southern EFC settlement in South Africa, Kulubele, was identified in the Eastern Cape, upstream from the Great Kei River. This site also showed evidence of multiple occupations, one of which was categorised as a Msuluzi assemblage (Binneman, 1996; Steele, 2011).

The second ceramic facie from the Kalundu tradition in KZN is Ndondondwane, which dates back to between AD 750 and AD 950 (Huffman, 2007). This facie is also found mostly in KwaZulu-Natal, but there is evidence that it also occurred inland at the Lydenburg Head sites (Whitelaw, 1996). To date the only Msuluzi and/or

Ndondondwane ceramic assemblages identified outside KwaZulu-Natal were discovered the Lydenburg Heads site. The difference between Msuluzi and Ndondondwane assemblages is that the decorative motifs are less complex in the latter, and while in the case of the vessels found at Msuluzi the whole of the rim was decorated, it seems that in the Ndondondwane assemblage the decoration occurred lower on the necks of vessels (Maggs, 1984a). The decorative motif at both sites consists of cross-hatched incised lines and herringbone motifs with spaced discontinuous motifs in the form of a ladder on the body of the vessel (Maggs, 1984a: 80). At both Msuluzi and Ndondondwane, there is a lack of everted jars with a well-defined point of inflexion, which is extremely common in the Mzonjani assemblages of the Urewe tradition. Punctate motifs used on their own or in combination with incised continuous motifs are also uncommon in Kalundu ceramic assemblages.

Much research has focused on the Msuluzi facies, particularly at the type site, which has helped to resolve issues relating to spatial layout, social and economic worldviews, as well as the use of metal-working in EIA communities (see Chapter 3) (Fowler, 2002; Greenfield & Van Schalkwyk, 2000, 2003; Greenfield *et al*., 2000; Greenfield & Fowler, 2009; Whitelaw, 1994). Other sites that fall within this facie include the two Muden sites (Maggs & Ward, 1984), KwaGandaganda (Whitelaw, 1994), Wozi (Van Schalkwyk, 1994a), Mamba (Van Schalkwyk, 1994b), Ntsitsana (Prins & Granger, 1993), Kulubele (Binneman, 1996; Binneman, *et al.,* 1992) and Canasta Place, in the Eastern Cape (Nogwaz, 1994).

2.12.2. Kalundu sites outside of KwaZulu-Natal

Happy Rest is the earliest Kalundu facie in South Africa. It dates back to between AD 500 and AD 750, and consists of ceramics with thickened rims, multiple bands of mixed decoration techniques, and ladder stamping (Huffman, 2007:221). Happy Rest sites are found in the northern parts of South Africa and in eastern Botswana (Huffman, 1989; Prinsloo, 1974), as well as at Klein Afrika near Happy Rest.

A Kalundu facie from a later period is Doornkop, which dates back to between AD 750 and AD 1000 (Huffman, 2007:276) and was previously known as the Lydenburg facie (Huffman, 2007:275). The key stylistic markers on the ceramics found there are herringbone motifs on the necks of vessels (Huffman, 2007:277), which are common to numerous sites across South Africa. One of these is Penge, a Doornkop site located in the Steelpoort region of the Limpopo Province (Antonites *et al.,* 2011:177). This ceramic assemblage was also present at Ficus (Moore, 1981), where Mzonjani- type ceramics were found. Huffman and Schoeman (2011:164-165) recently suggested that since Mzonjani precedes the Doornkop facie, which is the northern region facies' equivalent to Happy Rest, the interaction between the Happy Rest and Mzonjani communities most likely led to the creation of the Doornkop facie. Evidence of this can be seen at Lydenburg (Whitelaw, 1996) as well as at Mototolong, located just north of Lebalelo (Van Schalkwyk, 2007), where both Mzonjani and Doornkop ceramics were uncovered.

This chapter highlighted some of the past (and present) approaches in EFC archaeology in southern Africa. It is evident is that relatively little archaeological research has been conducted on first-millennium farming societies in the Lowveld region. In the following chapter, the theoretical framework for this study will be discussed.

Chapter 3

Worldview of Early Farming Communities in southern Africa

The aim of this chapter is to address the theoretical issues briefly touched upon in Chapter 2. I begin with an introduction to and review of the relevant conceptual frameworks. This chapter will be divided into two sections. First, I shall discuss the theoretical framework within which ceramic analysis is carried out in southern Africa. As seen in Chapters 1 and 2, ceramic material plays a crucial role in our understanding of Early Farming Communities and is used to identify past farming groups and trace their dissemination into and across southern Africa (Huffman, 1982, 2006, 2007). In this chapter I will therefore present a more detailed discussion of ideas surrounding style, function and technological approaches in archaeological ceramics. In the second section of the chapter, I shall discuss the cosmology of Early Farming Communities. The EFC sites, mentioned in Chapter 2, will be discussed in their regional socio-political contexts. However, central to all these topics is the role of ethnoarchaeology and analogy in southern African Farming archaeology.

3.1. Ethnoarchaeology and analogy

Ingold states that the 'problem for archaeologists, it appears, is that they are always too late' (1999: ix). This statement captures the ironic limitation experienced by archaeologists. How do archaeologists address this limitation? Archaeological interpretations, in general, depend upon analogy, which suggests that if something is similar to something else in some respects, they are most likely related (David & Kramer 2001:1). Analogical reasoning occurs when information is transported from a source to a subject, and a comparison is drawn to see whether the source and subject are similar/dissimilar or unrelated (Wylie, 1985:93). The use of analogies has been widely critiqued by many scholars (Gould, 1980; Lane, 1994/5; Wylie, 1982, 1985;

Wobst, 1978). The critique will not be discussed in this section, but some aspects thereof will be considered when the cosmology of EFC is discussed at a later stage.

During the 1950s, a new theoretical model was being developed in North America, where instead of just placing artefacts in cultural chronologies (Willey & Phillips, 1958), archaeologists were interested in understanding the communities and recreating past environments and human behaviour. They realised that common-knowledge, ethnographic and historical information alone could not be used to infer analogical reasoning as this information was too limited to create analogical understandings of communities that had lived in a time long forgotten (David & Kramer 2001:1). This limitation led to the creation of a new sub-discipline called ethnoarchaeology, which is 'the ethnographic study of living cultures from an archaeological perspective' (David & Kramer, 2001:2).

Analogy and ethnoarchaeology have been widely used to explain the socio-political organisation of EFCs in southern Africa (Huffman, 1980, 1982; Whitelaw, 1993, 1994) and therefore play a significant role in how we understand ceramic assemblages.

3.2. Style, function and technology

In the past, material culture was divided into three discrete expressions: style, function and technology (Dietler & Herbich, 1998:236-237). In this section, I will discuss each aspect of these expressions. However, the discussion will focus on style as it has been the prevalent manner of assessing archaeological frameworks in southern African Farming Community contexts.

3.2.1 Style

In archaeology, and especially in ethnoarchaeology, style has been studied in great detail throughout the twentieth century, with many different definitions of style suggested by archaeologists. (For further discussions on style, see Conkey & Hastorff, 1990; David & Kramer, 2001; David *et al.,* 1988; Hodder, 1982, 1990; Lechtmen 1977; Sackett, 1977, 1982, 1990; Wiessner, 1983; Wobst, 1977.) A selection of these different concepts of style will be now be discussed.

Style is an intriguing concept that is used mostly in the disciplines of art and literature, where it has two primary meanings, i.e. a manner or mode of expression and the peculiarity of and characteristics of that expression (Price, 2005:244). However, in archaeology and anthropology, definitions of style refer to communication and information transfer (Wiessner, 1983; Wobst, 1977). Style can be considered as a visual representation that is specific to a particular context, time and place, and transmits information about the identity of the society that produced the style, as well as about the situation or location from where it appears (Price, 2005:244). David *et al.* (1988: 365) describe style 'as an aspect of form either adjunct to that required by utilitarian function or representing a choice, conscious or capable of being raised to the level of consciousness, between equally viable functional alternatives'. This archaeological definition of style is based on an implicit interaction theory and an explicit information-exchange theory (David *et al.,* 1988:365), where stylistic attributes on objects are functional as they become messages that can be read by the larger group (David *et al.,* 1988:365). In a similar statement, Wobst explained that style serves a function and communicates information (Wobst, 1977). He wanted to counter the viewpoint that style has no function (Wobst 1999). He had studied people and their different 'stylistic' attributes in Yugoslavia, where he saw that different attire reflected social affiliation (Wobst, 1999:120). Wobst saw that style is a way of doing that reflects maker and individual attributes, even invisible attributes, e.g. velvet on the inside of a hat communicates something about the wearer, even if other people cannot see it (Wobst, 1999:120). An insider can thus read the intricacies of society, in other words, style serves a function, it communicates. Furthermore, stylistic attributes across material culture can be a tool for subjugation or a tool for liberation and empowerment. An example can be drawn from the uniforms introduced in schools in 1998 in the United States of America in an attempt to remove messages of wealth, poverty, ethnicity, or access to the drug culture (Wobst, 1999:120). However, by making minor adjustments to the uniform, such as the lowering of pants (males) or hacking up their skirts a bit (females), uniforms became vehicles for messages of resistance (Wobst, 1999:120). This can be seen as 'emblemic' style, 'formal variation in material culture that has a distinct referent and transmits a clear message to a defined target population ... about conscious affiliation of identity' (Wiessner, 1983:454). Style can also be assertive if the message carried is intended for the individual and is not expressed outwardly (Wiessner, 1983:258). The uniforms worn in American schools do display a clear message: they communicate rebellion. The idea that style serves a function is critical to interpretations made by many archaeologists. David *et al.* (1988) approach this by drawing an analogy between decorations on pots and the ornamentation of a person, which to them is another transformation of culture. They show that decorations on pots are similar to decorations on people and represent humans and spirits (David *et al.,* 1988:365). Similar ideas are expressed by Evers and Huffman (1988), who suggest that stylistic attributes found on ceramic vessels made by Bantu-speakers in southern Africa also carry a message. They give the example of the Karanga-speakers in Zimbabwe, where pots are an important symbol of the relationship between husband and wife. The way in which the husband treats his wife's ceramic vessels conveys his attitude towards her, and careless handling and neglect of her pots can lead to her refusing him conjugal rights. She demonstrates her intention by placing the pot upside down (Evers & Huffman, 1988:739). Style also plays an important role in identity and ethnicity (see Chapter 2 and Davis, 1990; David *et al.,* 1991; Hodder, 1982). Therefore, material culture, in particular the way in which pots are decorated, can be viewed as a more active form of symbolism through which, over time, space and socio-political circumstances, individuals (as well as communities) can express specific elements of their broader structural code in order to make specific statements (Burrett, 2007:162; Hodder, 1982). However, many archaeologists disagree with this statement and believe that function and style are two different elements and should be treated separately.

Some archaeologists regard function as form related to the processing of material and energy (Wobst, 1999:118). In other words, function is an object's outward appearance that makes it possible for it to perform an action. The purpose for which an object was created is its function. Dunell (1978) sees style and function as incompatible. Style does not have a function, as function is a mechanism that explains invention (Dunell, 1978, 2001; O'Brien & Leonard, 2001). Style, therefore, has no explanatory weight in archaeological frameworks.

Even though some archaeologists believe that style carries no function, many others believe that style does indeed *do* something, and therefore serves a function (Hegmon, 1998:265). Even technological attributes can be categorised according to style (Dietler & Herbich, 1998; Gosselain, 1998, 2000; Hegmon, 1998).

However, style, technology or function should not be seen as the only way in which archaeologists can infer the identity, ethnicity or social boundaries of communities. These three aspects reflect different considerations by the potter; therefore, all are significant to the understanding of past human behaviour and should not be viewed in isolation (Dietler & Herbich, 1998:236-237). In the following section, I will discuss some of the technological aspects of ceramic material.

3.3. Technological aspects of ceramic studies

As stated by Barnett (1953:181, in Rice 1999:1), '[n]o innovation springs full-blown out of nothing; it must have antecedents, and these are always traceable'. Archaeologists are not only interested in the finished ceramic vessels, but also in their origins (Rice, 2005). How were the vessels made? This is a question asked by ethnoarchaeologists. Where did the potters find the clay, why did they choose that specific clay source, and what type of non-plastics (inclusions) were added to the paste? The answers to these questions can promote our understanding of socio-political and economic factors of past communities, such as trade links, social organisation and regional interaction.

From around the 1950s there has been a steady shift in ceramic studies, which have moved away from the study of the stylistic attributes of vessels to a 'ceramic ecology' (Kramer, 1985:78). This marked a shift in focus to ceramic manufacture and production, and the broader socio-economic implications of these activities (Kramer 1985:78; Rice, 1996a, 1999, 2005). This approach has been of particular importance to ethnoarchaeologists, who have placed a great deal of focus on understanding the origins and provenience of ceramic vessels (Arnold, 1985, 2000; Buko, 1984; Kramer, 1985; Rice, 1996a, 1996b, 1999, 2005; Stark, 2003; Sullivan, 2008; Underhill, 2003). Furthermore, by isolating different aspects of material, such as stylistic attributes, cultural interpretations become reified, with further questions regarding human behaviour and material culture left unanswered (Dietler & Herbich, 1998:260).

Material culture should therefore rather be seen as one entity from which it becomes possible to untangle the contextual meaning and social significance of material culture (Dietler & Herbich, 1998; Gosselain, 1998). One way in which this can be approached is through the study of the ceramic *chaînes opératoires,* or production sequence (Fowler, 2011:174). The aim with reviewing and studying the *chaînes opératoires* process is to understand the human behaviour behind the steps of production, i.e. the technical and social factors that influenced the potter (Fowler, 2011:174). This method has shown that the technological process can also be a locus of stylistic expression (Gosselain, 1992:559), and that ceramic styles are not necessarily governed by current linguistic or ethnic boundaries (Gosselain, 2000:209). To make these observations about the manufacturing processes more relevant to the archaeological past, various analytical techniques (e.g. fabric analysis, X-ray fluorescence (XRF), petrography and typological analysis) can be used to obtain quantitative data (Fowler, 2011:174). While these studies have been an active part of the research agenda in western and central Africa (Fowler, 2008), they have not, until recently, enjoyed much attention in southern Africa. Research has shown two trends: on the one hand we have the technological aspects of ceramic vessels in the archaeological record, and on the other hand the stylistic attributes of these objects (Sadr, 2008). These two aspects are on opposite ends of the spectrum and many researchers focus on either the one or the other, but not on both. However, having said this, it should be added that there has been an increase in research on the technological aspects of ceramics, as well as an incorporation of both 'trends' identified by Sadr (2008).

Over the past decade many studies have been undertaken on the ethnoarchaeological front. Fowler's (2008, 2011) studies on Zulu potters in the Thukela Basin of KwaZulu-Natal sheds light on the production process (*chaînes opératoires)* of these potters. Viewed from this perspective, it is then possible to examine the social parameters that affect ceramic manufacture. It also became possible to ascertain why Zulu potters made certain choices with regard to ceramic styles (2011). Fowler (2011:119) was able to deduce that the stylistic code displayed on pots reflected the potters' economic situation, as the way in which the clay was prepared and fired was influenced by local and regional networks, and also that the fashioning process was strongly influenced by identity, gender and kinship. A similar study was conducted in Zimbabwe and South Africa, where Pikirayi and Lindahl (2013) combined ethnohistorical data and archaeological examples to formulate a contextual social understanding of ceramic assemblages.

3.4. Function and use

Functional studies as a subarea of ceramics studies is continuously expanding (Rice, 1996:138). For many archaeologists, studies that focus on the functions and uses of ceramic articles are becoming more important, as can be confirmed by the number of publications on this topic (Antonites, 2014; Ashley, 2010; Henrickson & McDonald, 1983; Sinopoli, 1991: Rice, 1996a, 1996b, 2005; Orton *et al.,* 1993).

This changing trend makes sense, and Skibo (1992:4) explains that ‘archaeologists place a heavy inferential burden on ceramics (in terms of reproducing household size, prehistoric diet, trade patterns, learning networks, change, etc.) and it is difficult to investigate these issues until we better understand how pottery was employed in daily life’. We cannot formulate and understand research outputs if we do not first understand how ceramics were used in everyday life. The possible functional value of archaeological ceramic vessels can be ascertained by applying ethnoarchaeology. A study conducted by Henrickson & McDonald (1983) linked vessel function to morphology, in other words, the morphology of the vessel is determined by functional attributes. This model has been applied by Ashley (2010:135) to ceramics from the Great Lake area. In another study by Ndoro (1996) the placement of decorations and the types of decoration used are related to functional use.

3.5. An Early Iron Age worldview

Throughout the past 55 years, archaeology dealing with first-millennium farming societies has moved from the classification of EFC ceramic entities to broader hypotheses regarding ecology and socio-political and economic organisation (Whitelaw, 1994:37). The next component of this chapter will contain a discussion of the worldview of Early Farming Communities. Huffman (2001:21) defines worldview as 'an aggregate of symbols that give meaning and expression to social organisation, a series of rules to govern behaviour, and a set of values to guide choice'. There are two dominant models of EFC worldview, which will both be discussed.

Hall (1987a; 1987b) introduced a primitive/household or domestic Mode of Production to explain the use of space during the EFC. He argues that villages were arranged based on balanced reciprocal relationships without any possibility of accumulating social or political power (Hall, 1987a:4; Badenhorst, 2009a, 2009b, 2010; Greenfield & Van Schalkwyk, 2003, 2008). These villages were self-sufficient, but because of ecological instability, reduction of available resources and the possibility of resource failure, they had to create and sustain reciprocal relationships (Hall, 1987a:7). In addition to the social and economic relationships that existed within the village, wider connections were created to supplement resources in times of instability (Hall, 1987a). Hall believes that those wider connections can be seen in the similarities noted in ceramic decorations. These similar decorations show that ceramic material might have carried a symbolic code that was used to indicate the nature of the power relations between communities (Hodder, 1982; Wiessner 1982, 1983). He believes that ceramic entities should not be used to supplement only group identity, culture and ethnicity (Hall, 1987a).

In contrast Huffman (1993, 2010, 2012), Whitelaw (1993, 1994, 1994/5, 2012, 2013) and Denbow (1986) argue for a more community-wide ethnographically based model (Greenfield *et al*., 1997). Kuper (1982) was the first to suggest that the Nguni and Sotho-Tswana organised their settlements into socio-politically defined spaces, and the archaeological model for this is the central cattle pattern (CCP). Huffman (2001) believes that the internal structure and settlement layout is a result of socio-political constructs. The CCP is based on the realisation that cattle constitute an integral part of as community's social life and are owned by men who use them for important socio-political transactions and relations, such as bride-wealth payments (lobola).

Archaeologically this model has been identified in southern Africa through the presence of central open spaces (with evidence of faunal activity) and the remains of houses around the central area. Burials are noted next to or in the central byre, often with the body in a seated position (Antonites, 2006; Huffman, 1986, 1990). Evidence of this settlement layout has also been noted at the EFC sites Broederstroom (Huffman, 1990, 1993, 1998), Kgaswe (Denbow, 1986), KwaGandaganda (Whitelaw, 1994) and Nanda (Whitelaw, 1993). At Broederstroom evidence for this spatial pattern has been identified through re-excavations. Dung-lined storage pits associated with metal-working and at least four different cattle kraals with human burials were uncovered in the central area of the residential unit on the site (Huffman, 1993). At Nanda and KwaGandaganda, Whitelaw (1993, 1994) discovered evidence of several pits, human remains with dental alteration, cattle byres and the remains of raised granaries. Residential zones were also identified at KwaGandaganda (Whitelaw, 1994). The presence of these, according to Huffman (2001:30), provides evidence of the CCP at EFC sites, and that this spatial organisation was already a feature of those communities when they moved into southern Africa (Huffman, 2001:30). He believes that this evidence strongly counters Hall's Domestic Modes of Production model, as well as the notion that the use of cattle as bride-wealth only evolved long after the first EFC communities moved into the area (Hall, 1986, 1987, 1988; Huffman, 1990, 1993).

Reoccupation of sites, as well as poor preservation, has made the verification of the CCP at EFC sites problematic (Hall, 1986; Huffman, 1990, 1993, 2001). Multi-component sites are quite common in the southern African EFC (Maggs & Ward, 1984; Whitelaw, 1994, 1996). This can be problematic, especially when trying to determine settlement layout, as the chronological sequence is not consistent. Greenfield and Van Schalkwyk (2003) do not believe that the CCP can be applied to multi-component EFC sites as this can blur the nature and extent of diagnostic activity areas/zones. Furthermore, poor faunal preservation at Broederstroom has caused some doubt about the applicability of the CCP (Huffman, 1993, 2001). At this site the remains of 42 small livestock were found, but the remains of only one cow were identified (Huffman, 2001). However, as noted earlier, evidence of four cattle enclosures was found, as well as pits smeared with cattle dung in two different central zones (Huffman, 2001). Therefore, faunal remains at EFC sites should not be seen as the only grounds for an argument in favour of or against the existence of a CCP (Huffman, 1993, 2001).

Even though evidence of the existence of CCPs at first-millennium sites has been found at Nanda, KwaGandaganda (Whitelaw, 1993, 1994) and Broederstroom (1993), some archaeologists (Badenhorst, 2009a, b, 2010; Hall, 1986, 1987; Lane, 1994/1995; Maggs, 1994/1995) believe that these communities were not organised in such a manner, but rather that a different worldview should be adopted to understand these communities. Lane (1994/5) is doubtful about the possibility that any meaningful statements can be made on spatial patterning when areas as small as the one at Broederstroom are excavated. He also highlights the absence of cattle remains at these sites as evidence of a different worldview during the first millennium (ibid). Hall (1986) argues that the absence of cattle remains in the archaeological record of EFC sites is evidence that Late Stone Age (LSA) hunter-gatherers and EFC communities shared many similarities in their mode of production, until a natural increase of cattle occurred in the Lowveld around AD 800. He adds that before AD 800 cattle were not dominant because the environment was unsuitable for cattle farming. Herding only expanded after AD 800 once the tsetse flies and slash-and-burn techniques had made the environment more suitable (Hall, 1986; Huffman, 1990). Huffman maintains that slash-and-burn techniques were not in place and that during the EFC, before AD 800, the Lowveld had consisted of open woodland. This conclusion is based on faunal remains from archaeological sites in the area (TSH 1, SK 17 and OL 20, all in the Kruger National Park). The faunal remains show that the undentified animals were grazers and therefore lived in open woodland areas (Huffman, 1990).

Another critique of the CCP is presented by Badenhorst (2008, 2009a, 2009b, 2010), who believes that EFC communities were organised along matrilineal, rather than patrilineal lines. He does not believe that the CCP can be traced back to the first millennium, as there are too many differences between Early and the Late Farming Communities. Significant changes in the political and social organisation, as well as the economy, can be seen in the last two millennia of farming communities (Badenhorst, 2010a:90). Badenhorst believes that the EFC worldview based on matrilineal societies can be seen in the faunal remains from across EFC sites in southern Africa (2010). Anthropological and historical data has shown that there is a link between caprine herding and matrilineal societies. Since most of the faunal remains from EIA sites, such as TSH 1, SK 17, Broederstroom and KwaGandaganda, came from goats and sheep, Badenhorst (2010) believes that this confirms that EFC communities were based on matrilineal ideas and became patrilineal during the second millennium AD.

Over the past five years, an ongoing collaborative initiative by southern African archaeologists and historians has led to two publications, *Five Hundred years Rediscovered (FYI)* (2008) and a special issue of the journal *African Studies* (2010). The contributors to these volumes take in critical positions with regard to the role of archaeology. In particular, the critique is directed at the use of anthropological models and approaches, and specifically their application in settlement pattern studies (Whitelaw, 2012: 127). The authors (Bonner *et al*., 2008; Delius & Schoeman, 2010; Wright, 2010) believe that such an approach fails to shed light on any social dynamics of the past and presents the past in a static ahistorical light (Whitelaw, 2012). Whitelaw (2012:128) suggests that this is not the case, since in order to construct a dynamic understanding of pre-colonial societies, anthropological models are needed.

All researchers classify the material they collect in order to draw controlled and relevant conclusions (Whitelaw, 2012). An archaeological example of this is the use of classification models, for example Huffman's multidimensional typological model (1980), which is used to infer group identity in the prehistory of southern Africa. The critique on anthropological models cannot be wholly justified as ceramic classifications are not preceded by assumptions of homogeneous social entities. The ceramic samples used for Huffman's multidimensional model include examples obtained from South African museums and university collections and three different chiefdoms in Zimbabwe (Whitelaw, 2012:132). The style of the material culture of the ceramics from the Tsonga chiefdoms in the Zambezi valley is shared with eight other groups. Therefore, group homogeneity does not support multidimensional analysis, and synchronic and diachronic heterogeneity can be seen from analysis through the interaction between style and context (Whitelaw, 2012). Ceramic studies do not emphasise static cultural boundaries, as has been suggested by Bonner (2008), but rather, as suggested by Hodder (1982), style boundaries shift through a spatial-temporal framework (Huffman, 2012:238). Once cultural units have been defined through ceramic entities, it will be possible to extrapolate socio-political dynamism through the varying and overlapping juxtaposition of these cultural units (Whitelaw, 2012). Culturally complex units which, according to Bonner *et al.* (2008), are extremely homogenous, can show variability and interchange between cultural groups. It is expected that larger communities will show evidence of non-local communities, thereby revealing the greater political structure in southern Africa within networks of interaction (Whitelaw, 2012; Huffman, 2012; Evers & Hammond-Took, 1986).

The FYI and the *African Studies* volume point out considerable problems with regard to the use of structuralism to explain the settlement organisation of pre-colonial societies (Bonner *et al*., 2008; Delius & Schoeman, 2010). Contrary to the belief that settlement models such as the CCP are not concerned with numeric oppositions and their mediations, Whitelaw (2012:135) suggests that the CCP is more interested in structures than in giving meaning to norms and behavioural rules. Homestead layout frames the way people go about their daily life through material features (Whitelaw, 2012: 135). An accurate way in which to discuss the importance of spatial organisation, but also changes and variations and interaction of material culture, is to apply Ingold's (2000) 'sphere of nurture'. This sphere is made up of the relationship between people and things, with people developing within these spheres. In other words, people develop and change within the network and interact with other people and things. Connections and interactions occur between and within age, gender and kinship groups, as well with the ancestral world and their anticipated futures. Because of the continual interaction between people and things, the sphere of nurture contains the possibility of change. Change is difficult, especially when some things that have been done for many years seem to work and are simple (Whitelaw, 2012). Change requires new relationships and interactions. This can explain why transitions in peoples' lives are so ritualised –they do not just show change and transition within an individual, but also establish different and new relationships with other individuals and objects (Whitelaw, 2012:136). Relationships offer opportunities for transitions and change, but such opportunities are often met with resistance and acceptance. Therefore change, as we know it, is a social phenomenon (Whitelaw, 2012; Burrett, 2007; Hodder, 1982).

Homesteads and spatial organisations can also be viewed in the light of Ingold's sphere of nurture, since people spend much time within the homestead, and the arrangement of features in a community draws attention to the relationship between individuals and their objects (Whitelaw, 2012). Burrett (2007) suggest that similar interactions and relationships between individuals and objects can help to explain Garonga ceramic facies. A different take on the use of the CCP and the importance of understanding the worldviews of EFC communities can be seen in the work of Greenfield and Van Schalkwyk (2003, 2006, 2008).

The work undertaken by Greenfield and Van Schalkwyk (1997, 2000, 2003, 2006, and 2008) at Ndondondwane, an EIA site in KwaZulu-Natal, shed light on the spatial organisation at single-occupation sites in southern Africa. They focused on understanding social-political organisation through more in-depth excavation techniques, which had not been previously used at this site, or actually at any other EFC site in the area (Greenfield & Van Schalkwyk, 2006; Greenfield & Fowler, 2009). The ceramic assemblage at Ndondondwane appears to indicate a relatively short-term occupation (between 50 and100 years) and therefore offers the potential to reveal a great deal about the spatial organisation and intra-site spatial dynamics of EFC communities (Greenfield & Van Schalkwyk, 2006: 61). Through rigorous testing, this project at the site demonstrated that the community consisted of two major areas of occupation, i.e. a central area, which included a byre, large huts, ritual objects and iron forges, and a second area, the peripheral zone, which consisted of a series of domestic complexes (Greenfield & Van Schalkwyk, 2006:61).

Greenfield and Van Schalkwyk concluded that the spatial layout of this site in some ways supported the CCP. However, some important differences were observed, such as the absence of any evidence of grain storage in the central zone. This study at Ndondondwane highlights the fact that it is difficult and sometimes dangerous to prescribe one specific model for the understanding of pre-colonial societies' worldviews, especially those of the EFC, and that ethnographic data should be used with caution. It would seem that evidence for the CCP can be seen in EFC communities, but archaeological studies throughout the past forty years have also shown that more research is needed to understand the socio-political organisation of these communities. The socio-political organisation of EFC communities is also inferred from the presence of trade objects, as well as stone and bone tools. For instance, the presence of bone points and stone artefacts (both indicative of Late Stone Age communities) could be an indication of interaction between EFC and Late Stone Age communities (Maggs, 1984a; Whitelaw, 1994).

Evidence of trade goods, including ivory (which was found in large quantities at KwaGandaganda), could suggest political importance. The reason for this is that in the past ivory was utilised by political leaders who controlled its distribution (Shaw, 1974; Whitelaw, 1994). Ivory, or rather the absence thereof, is one of the main reasons why KNP sites are termed peripheral sites, as only one site showed evidence of ivory working, which suggests that the majority of KNP sites were not part of the broader economic exchange. In contrast, KwaGandaganda is viewed by Whitelaw (1994) as a political centre. A major reason for this is the quantity of 'foreign' objects found at the site. These include ostrich eggshell beads (OES), which can be seen as an indication of trade between hunter-gathers and these communities (Maggs, 1980, 1984; Mazel, 1989). At many EFC sites across southern Africa, the quantities of OES beads found were much larger than those of *Achatina sp.* (Maggs, 1984a; Maggs & Ward, 1984; Whitelaw, 1993, 1994). Whitelaw (1994) argues that this could be considered to indicate the intensity of trade between communities. Supporting this belief is the fact that ostriches were not endemic to many regions in KwaZulu-Natal, as they prefer savannah, open grasslands and thornveld fringe (Maggs, 1980; Clancy, 1964).

Many different methods have been used to draw inferences from the archaeological past, as seen in the first section of this chapter. The aim of this chapter was to highlight the way in which archaeologists view and draw conclusions about first- millennium agriculturalists on the subcontinent. The different ways in which archaeologists view the stylistic and technological aspects of ceramic assemblages separately were also pointed out, as well as the recent shift towards archaeological research that combines both these aspects. In the previous section (and also in Chapter 2), the discussion focused on different ideas with regard to how material culture (especially ceramics) is employed to make inferences about the behaviour of past communities. In the following chapter, the methodological framework used for this project will be discussed.

Chapter 4
Methodological framework

The chapter is structured into three parts. The first section presents the pre-excavation methods, including the desktop study and identification of the sites. The second discusses the excavation techniques used at TSH1 and SK17, and the third presents the methods used for material analysis, which include the various typological and compositional methods applied to the collected ceramics. This section also contains a discussion of the method used to analyse the bead, stone and faunal assemblages.

4.1. Pre-excavation methods

4.1.1. Desktop study

Previous work undertaken in the Kruger National Park was reviewed in order to identify relevant EFC sites for further study. These sources included Meyer (1986), Plug (1988), Eloff (1977a, 1977b 1978, 1979, 1980,1981) and Weitz (2000).

Meyer (1986) and Plug (1988) provided the primary sources used to identify EFC sites that justified additional research. Meyer (1986) identified a significant number of EFC sites (21 in total) in the KNP, based on a material examination at each identified site. Many of the sites discovered by Meyer were not well researched as they were not part of his research agenda. The majority of EFC sites were found in the central and southern parts of the Kruger Park, which was therefore identifies as a possible area for further study. The central and southern regions of the park extend southwards from Letaba, past Skukuza to Malelane. Possible sites for this study were therefore limited to PR1 (PR-Pretoriuskop), MAL10 (MAL-Malelane, TSH1 (TSH-Tshokwane), OL1 (OL-Olifants) and (OL) 10, as well as SK17 (Skukuza) (see Figure 4.1).

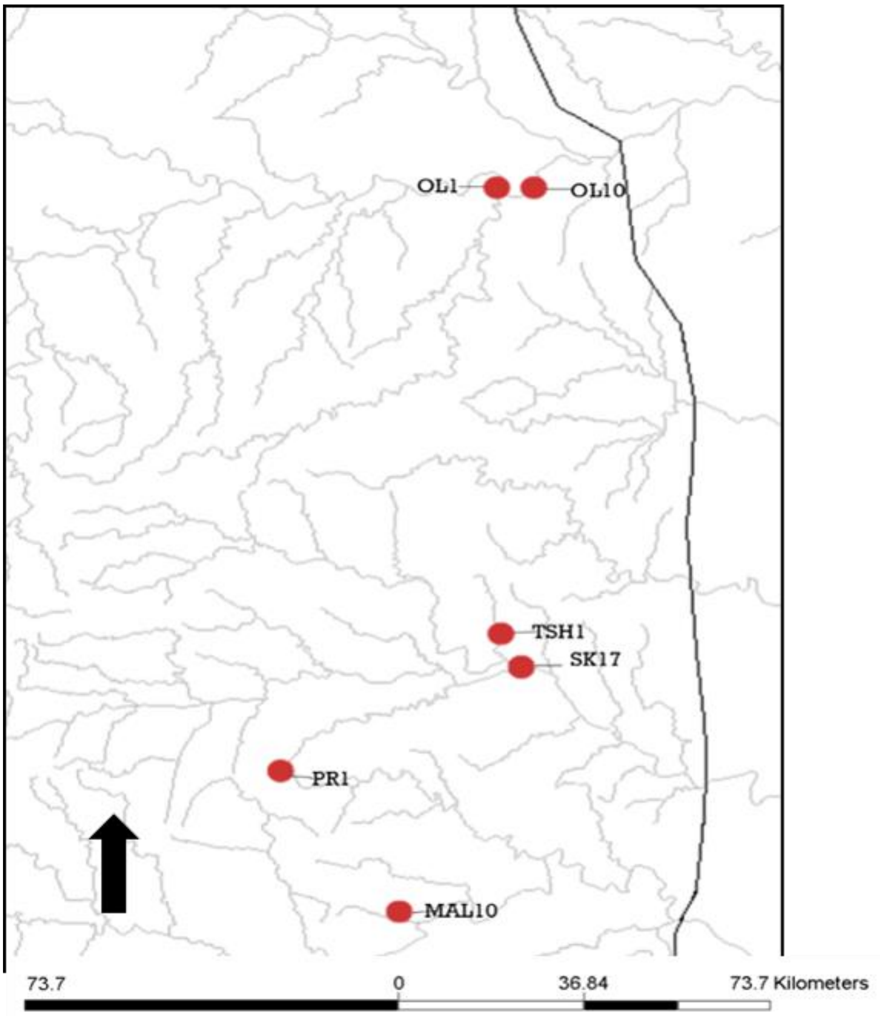


Figure 4.1 EFC sites in the Kruger National Park related to the research project

4.1.2. The survey and identification of sites

Once the relevant sites had been identified in the literature, they had to be located on the ground in order to assess their potential relevance for further research. Surveys were undertaken in November 2012 and 2013 to determine the current state of each site and its potential for further research.

Site locations were mostly indicated on paper maps since they had been recorded before the mainstream use of GPS technology. After several expeditions, it became apparent that many of the sites would be difficult to relocate as they were covered with dense vegetation and their locations had been inaccurately mapped. Even with these limitations, it was possible to identify six sites with potential for further research. These were recorded by means of a GPS and surface finds were photographed and described.

Not all the sites identified by Meyer (1986) could be visited due to time and financial constraints, as well as infrastructure damage caused by widespread floods in 2013. Following discussions with Meyer in 2013, it was decided to narrow the focus of the study area to the Skukuza and Tshokwane areas in the southern part of the Park. Once all the potential sites in these areas had been surveyed, TSH1 and SK17 were identified as the most promising candidates for this project.

4.2. Excavations at SK17 and TSH1

Excavations at these sites were conducted over a two-week period in June 2013, by a team of between four and six people, almost all of whom were graduate students of archaeology from the University of Pretoria.

4.2.1. Site SK17

Excavations on both sites incorporated the use of the grid system created by Meyer. By using Meyer's pre-existing grid system, it was possible to locate the previous excavation areas and also place the new excavation in relation to his work at the site. Meyer used a grid system divided into 30x30 m blocks, which were then subdivided into blocks of 10 m (see Figure 4.2).

A pedestrian survey and auger testing were used to identify areas for excavation. The southern side furthest from the confluence of the Sabie and Sand Rivers was chosen for the location of a new excavation unit, due to a high concentration of artefacts (see Figure 4.3) and as no previous excavations had been conducted in the vicinity of the site. The pedestrian survey was conducted from west to east and all identified artefacts were recorded. The area with the highest density of material culture was deemed relevant for further investigation. A pedestrian survey was necessary, as not many areas are missed while on foot this technique made it possible to identify critical areas (Burke & Smith, 2004; Drewett, 1999).

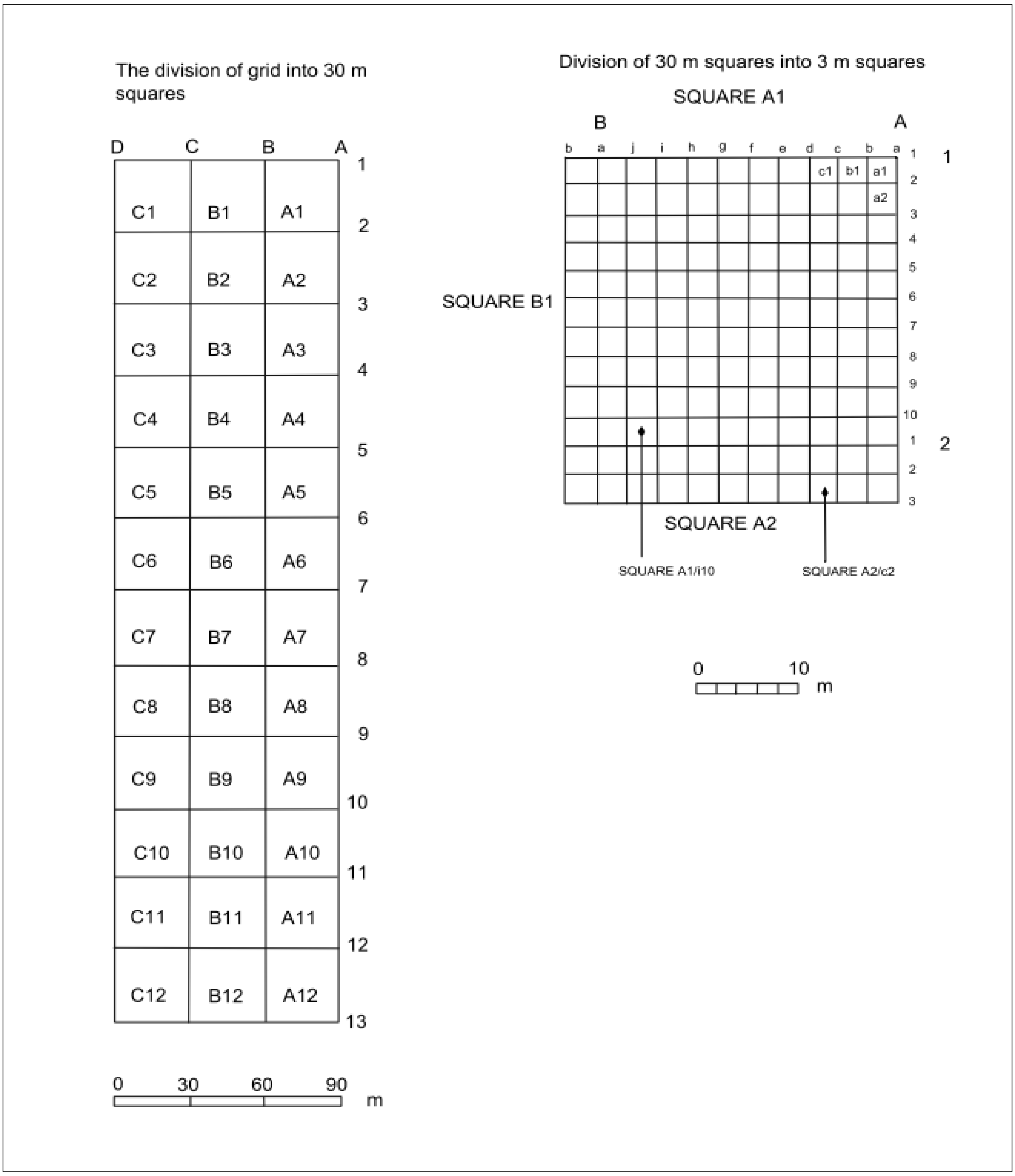


Figure 4.2 Grid system

Source: Adapted from Meyer 1986:165

Auger testing was conducted at 5 m intervals, running from west to east. Auguring allowed a glimpse of the soil and possible material culture to be found in the sampled areas. This was necessary as many EFC sites in southern Africa do not display surface material culture and it is only when ground is broken that sites can be identified (Hall, 1980; Maggs, 1980a, 1980b; Whitelaw, 1994). This technique also shows what soil types are present allows for the identification of possible middens (Drewett, 1999). All material culture found during the auger testing was bagged and the metadata recorded and taken back to the University of Pretoria. The coring survey led to the location of the excavation unit in a spot where the coring revealed ashy deposits and substantial material culture.

The excavation unit at SK17 was named SK17A to provide continuity with Meyer's research, but with an 'A' added to differentiate between this new excavation and Meyer's (1986) past excavations. SK17A was a 2x2 m excavation trench that followed natural soil changes so that stratigraphic layers, rather than arbitrary spits, could be identified, and also because for this research project it was necessary to understand the stratigraphy and chronology of the site in more detail (see Chapter 1 for research outputs). The move from one stratigraphic unit to the next was made based on the compaction (sediment strength) of the layer and the colour of the soil (Muncell colour samples of each stratigraphic unit were also taken). The composition of the soil, as well as the inclusions, disturbances and limitations of that specific layer, was taken into account (Archaeological Site Manual 1994). If any changes were noted in these variables a new stratigraphic unit was started.

All soil removed was placed into 20-litre buckets used to calculate the volume and was sieved using a three-layer sieve. The initial sieve (30 mm), which captured rocks and compact soil, was followed by a 10 mm, and then 3 mm sieve. Each stratigraphic layer was sieved as a single unit and all cultural material was sorted separately per layer. Using a 3 mm sieve ensured that all small finds, such as shell beads, were included in the sampling process. All the sorted material was then placed into labelled brown paper bags and taken to the University of Pretoria for further analysis. All layers were photographed and the depth of each layer, taken at five different points, was recorded. Each corner of the unit, as well as the central point, was measured. Any material culture that were clustered together or required that the exact position be established, was point provenienced (PP) (Burke & Smith, 2004). This was done specifically for carbon samples in order to determine where and at what depth the samples were found. All depth measurements were taken from the datum point.

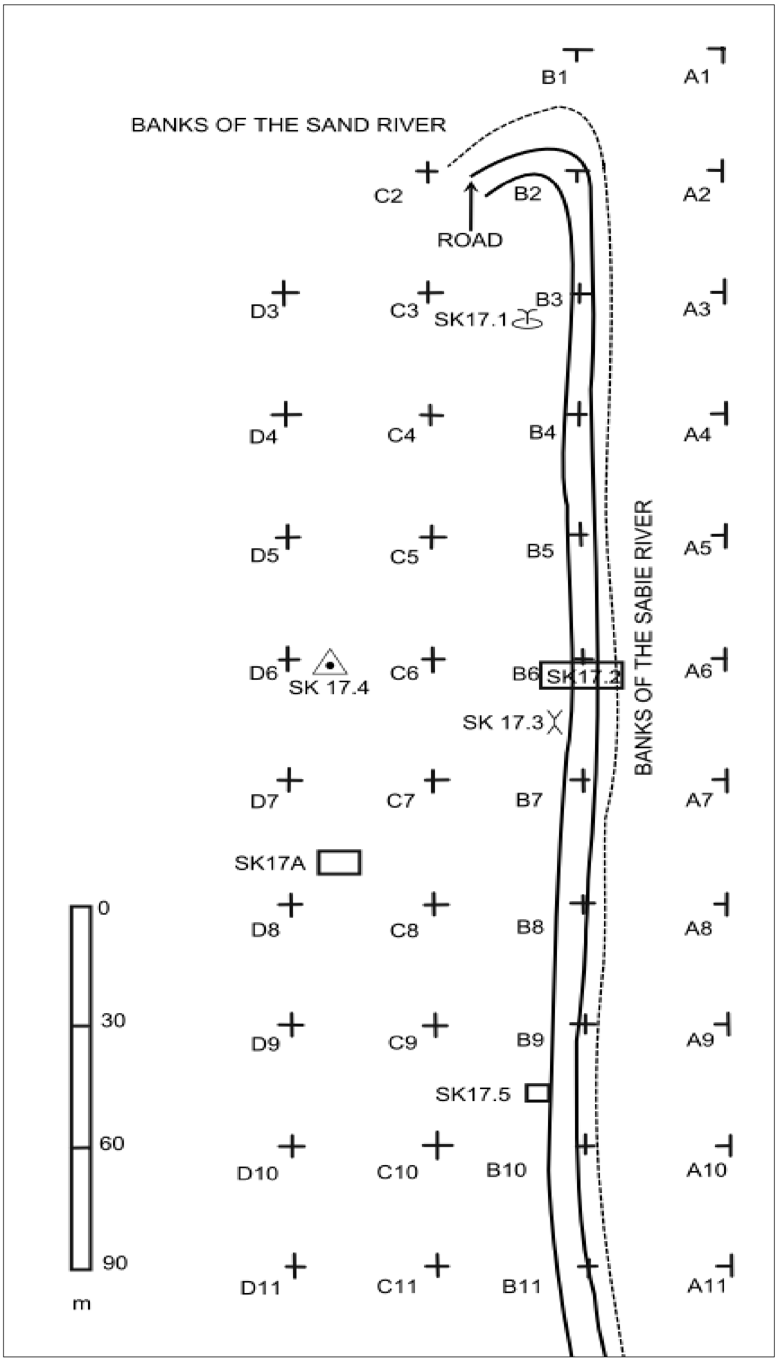


Figure 4.3 Grid system placed over SK17, showing old excavation trenches and where the new excavation unit will be placed

Source: Meyer (1986)

4.2.2. Site TSH1

TSH1 showed the presence of several mounds across the site, which is located next to the Mutlumuvi Stream (see Figure 4.5). Meyer (1986) excavated two of these mounds in the 1980s and it was decided to place a new excavation unit in one of the unexcavated mounds (see Figure 4.5). Meyer (1986) also used a grid system for this site, placing cement blocks every 10 metres from the road, down to the Mutlumuvi Stream (see Figure 4.4). The new excavation was tied to this existing grid reference.

Figure 4.4 One of the cement blocks located at TSH1

Auger surveys were done on the mounds to identify suitable areas for excavation. One 2x2 m trench was opened – referred to as TSH1A – to provide continuity with Meyer's research, but the letter 'A' was added to differentiate between this new excavation and Meyer's (1986) excavations. Excavations followed stratigraphic layers instead of arbitrary spits. The material was sifted, following the same procedure as described above for SK17. All material recovered from the site was taken to the University of Pretoria for further analysis and final storage.

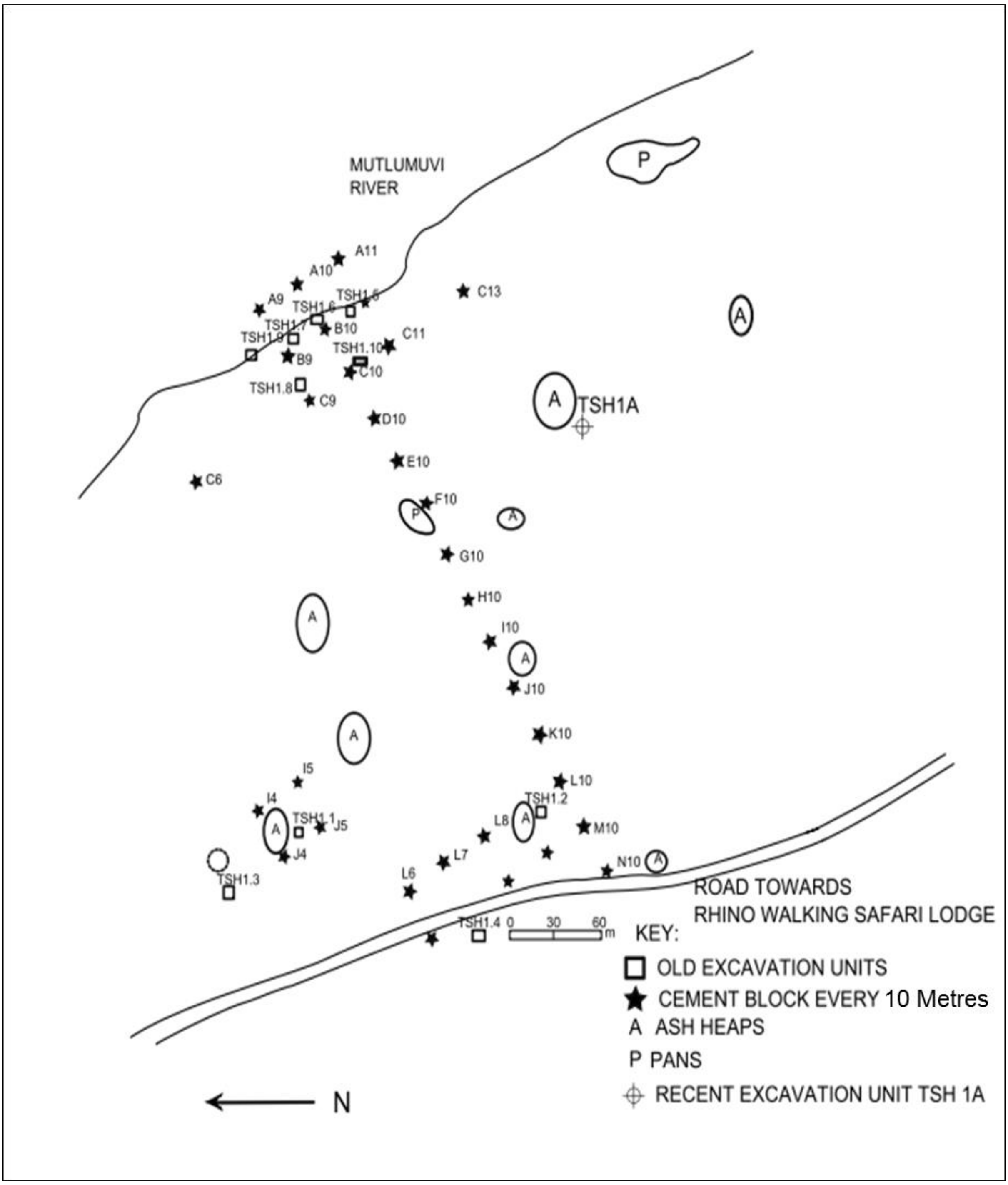


Figure 4.5 Site drawing of TSH1 showing new excavation unit

Source: Adapted from Meyer, 1986

4.3. Methodologies for the analysis of material

4.3.1. Ceramic analysis

The material found during the excavations (SK17A and TSH1A) is supplemented by Meyer's excavated ceramic material (1986), which also increased the overall size of the sample collected from the site. Since the ceramic materials from the past collections were larger and had more diagnostic attributes, they were given priority when the ceramic typology for this project was created. This typology was then applied to the excavated material and linked to relevant published ceramic typologies.

4.3.1.1. Analysis of ceramic material from SK17 & SK17A

The first step in studying any archaeological material is to place the objects into a classificatory system (Sinopoli, 1991:43; Cowgill, 1964; Matson, 1965; Rouse, 1960; Whallon, 1982). Regardless of the size of the assemblage, ceramics alone cannot tell us a great deal about the producers and users of the vessels (Sinopoli, 1991:43). Therefore, a typological model needed to be created for the ceramic material from each of the two sites. Vessels were grouped together according to similar features, with a single example illustrated and representing all those in the group (Orton *et al*., 1993:153). By using a multidimensional model within the typology (Huffman, 1980) three stylistic attributes were analysed: vessel shape, placement of decoration and decorative motifs. Also, attributes referring to the functional use of the vessels were analysed, which included orifice diameter. To create the new typology, the possible ceramic types likely to be identified in the ceramic collection needed to be assessed. Through prior analysis of the past collections, as well as consulting reports on past work done on the sites (Evers, 1988; Meyer, 1986; Huffman, 2007; Plug, 1986), it was possible to identify the possible ceramic types for each site. Many different typologies[4]

[4] Binneman, 1996; Burrett, 2007; Evers, 1975, 1977, 1981,1988; Fowler *et al*., 2000; Hall. 1980; Huffman, 1990, 1993; Prins & Ganger, 1993; Loubser 1993; Maggs, 1980a, 1980b, 1984; Maggs &

were consulted to create a new ceramic typology for both collections. The new typology was created to suit the attributes and research objectives of this project.

Where possible, ceramics were refitted. Once that had been done, the sherds were sorted into three categories, namely Grade A, Grade B and Grade C. Grade A sherds were smaller than 2 cm in diameter. Sherds larger than 2 cm, but lacking all three diagnostic attributes, were included in Grade B. If it was possible to determine vessel shape, the placement of decorations and decorative motif, sherds were classed as Grade C.

All the sherds were counted and weighed (according to grade and layer), regardless of their grades. The decoration types of Grade A were not quantified as these sherds were too small for an accurate classification of variables. The sherds classified as Grade B and C were analysed in more detail. The Grade B ceramic samples were counted and weighed. Further analysis was done if a piece was decorated. The decorative motifs were identified based on multiple variables. The first variable to be identified was decoration type, i.e. whether it consisted of continuous motifs (motifs that covered the entire vessel), or whether the motifs were discontinuous (were found only on certain parts of the vessel). The second variable taken into account was the locations of motifs. Further analysis of Grade B sherds was not possible, as their size made it was possible to determine their profiles. A reason for a further analysis of Grade B sherds would be that it could contribute to the quantifiable data (Hall, 1980; Huffman & Schoeman, 2011). In the next section, all the variables that were considered for the Grade C ceramics are discussed.

4.3.1.2. Vessel shapes

The shape of a ceramic vessel is an important variable when studying EFC sites in southern Africa as it can provide a good deal of information. This variable can assist with the placement of the ceramics in a chronology of the site and can inform us on the manufacturing techniques and production distribution (Huffman, 1980; Maggs,

Ward, 1991; Mason, 1981; Meyer, 1986; Nienaber *et al*. 1997; Van Schalkwyk, 1994; Van Schalkwyk *et al*. 1997; Whitelaw, 1993, 1994, 1996; Whitelaw & Moon, 1996)

1980; Mason, 1981; Prehistoric Ceramics Research Group 2010:16; Whitelaw, 2013). Functional attributes can also be determined by vessel shape (Rice, 1996). The two main vessel shapes in the ceramic collection can be broadly described as bowls and jars, as identified in comparable Mzonjani, Garonga and Msuluzi/Ndondondwane (Kalundu) typologies.

The four bowl types and five jar types identified were applied to both TSH1/TSH1A and SK17/SK17A in order to create a typology that would not further complicate the data and would allow for the identification of discernible patterns. Therefore, a typology was created that was suitable for both sites, with the result that I was able to compare attributes across the various ceramic traditions. The typology also allowed for possible verification of SK17 as a multi-occupational site consisting of both Urewe and Kalundu ceramic assemblages (pers. Comm. Whitelaw, 2013). Therefore, the vessel types identified at the two sites are presented here. Following this, the links between these types and known relevant published typologies will be discussed.

The five jar types (see Figure 4.6) are:

1.1 Straight-necked jar

1.2 Everted jar with a well-defined point of inflection

1.3 Slightly everted jar with a slight point of inflection

1.4 Slightly recurved jar

1.5 Well-defined recurved /S-shaped jar

The four different bowl types (Figure 4.7) are:

2.1 Open bowls

2.2 Sub-carinated

2.3 Carinated bowls

2.4 Inturned bowl

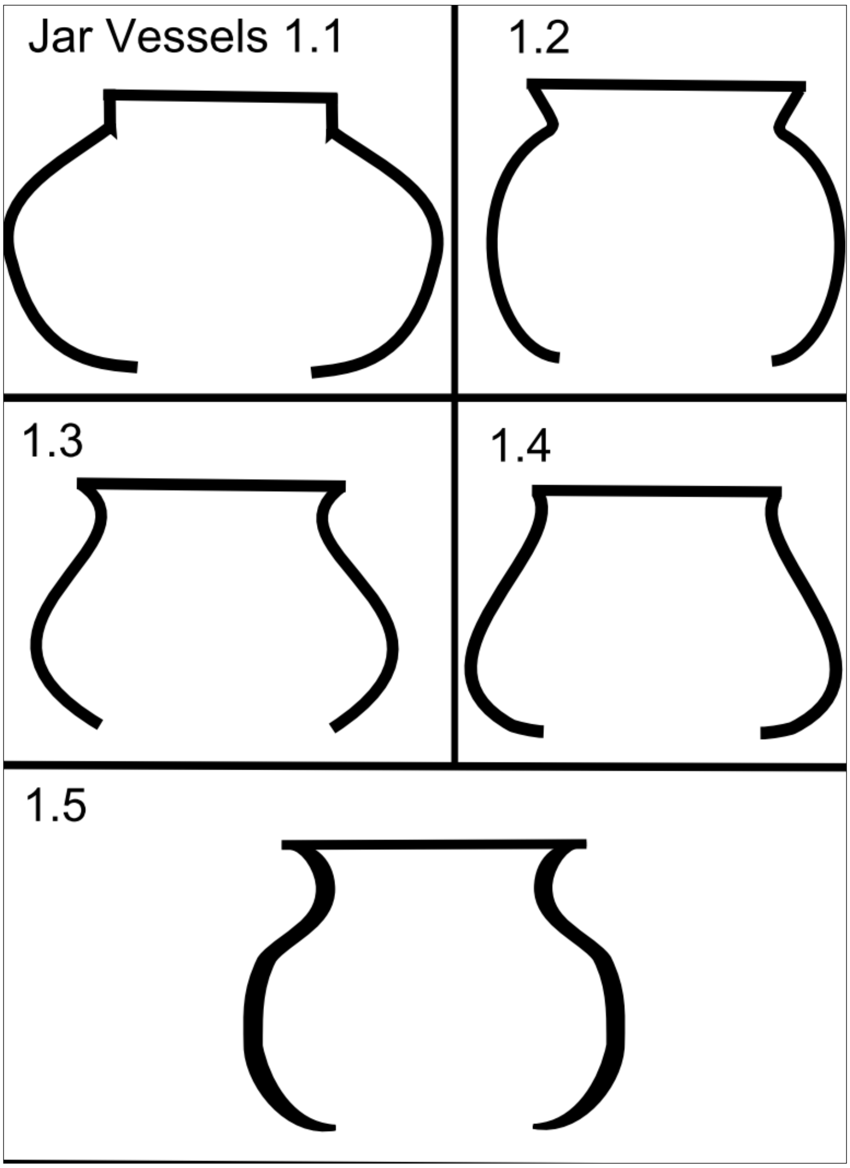


Figure 4.6 Jar vessel types for SK17 and TSH1

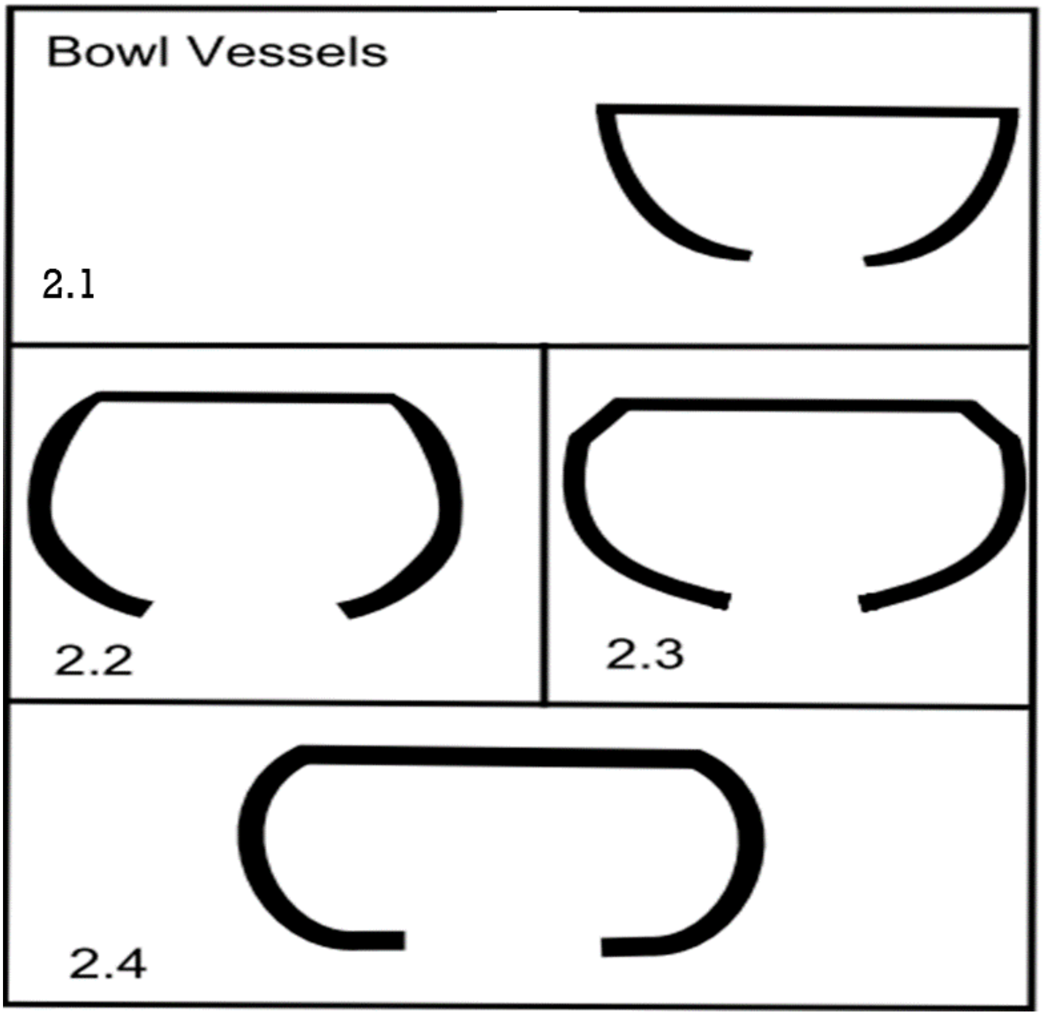


Figure 4.7 Bowl vessel types for SK17 and TSH1

4.3.1.2.1. Link between created types and relevant published vessel types

All of the shape types discussed in the previous section can be related to published Urewe and Kalundu ceramic assemblages. The straight-necked jar (Jar Type 1.1) can be related to Maggs' Mzonjani Ceramic Class 1 – 'a pot with a relatively straight neck' (1980a:76) (Figure 4.8).

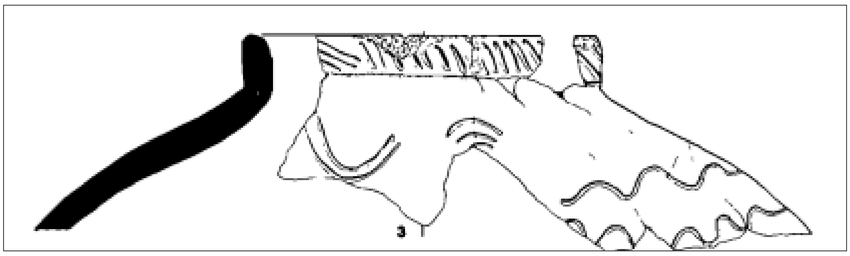


Figure 4.8 Straight-necked jar

Source: Maggs, 1980a:76

Jar type 1.2, an everted jar with a well-defined point of inflexion is similar to Maggs (1980a) and Hall's (1980) Mzonjani Ceramic Class 1 – 'a pot with a relatively straight everted neck and a well-defined point of inflexion' (1980a:76). Another link with this ceramic class is with Mason's Broederstroom Ceramic Classes 4 and 5 – vessels with a 'very narrow' or a 'wide everted rim' (1981: 408). In these comparisons, it is clear to note the well-defined point of inflexion on the rim of the vessels (Figures 4.9 and Figure 4.10).

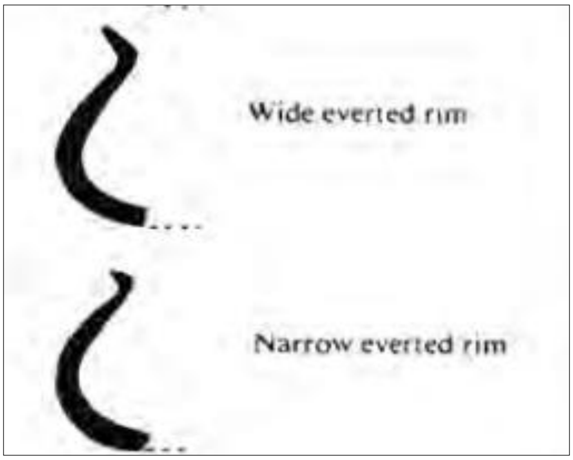


Figure 4.9 Vessel type 4 and 5 – note the well-defined point of inflexion
Source: Mason 1981:408

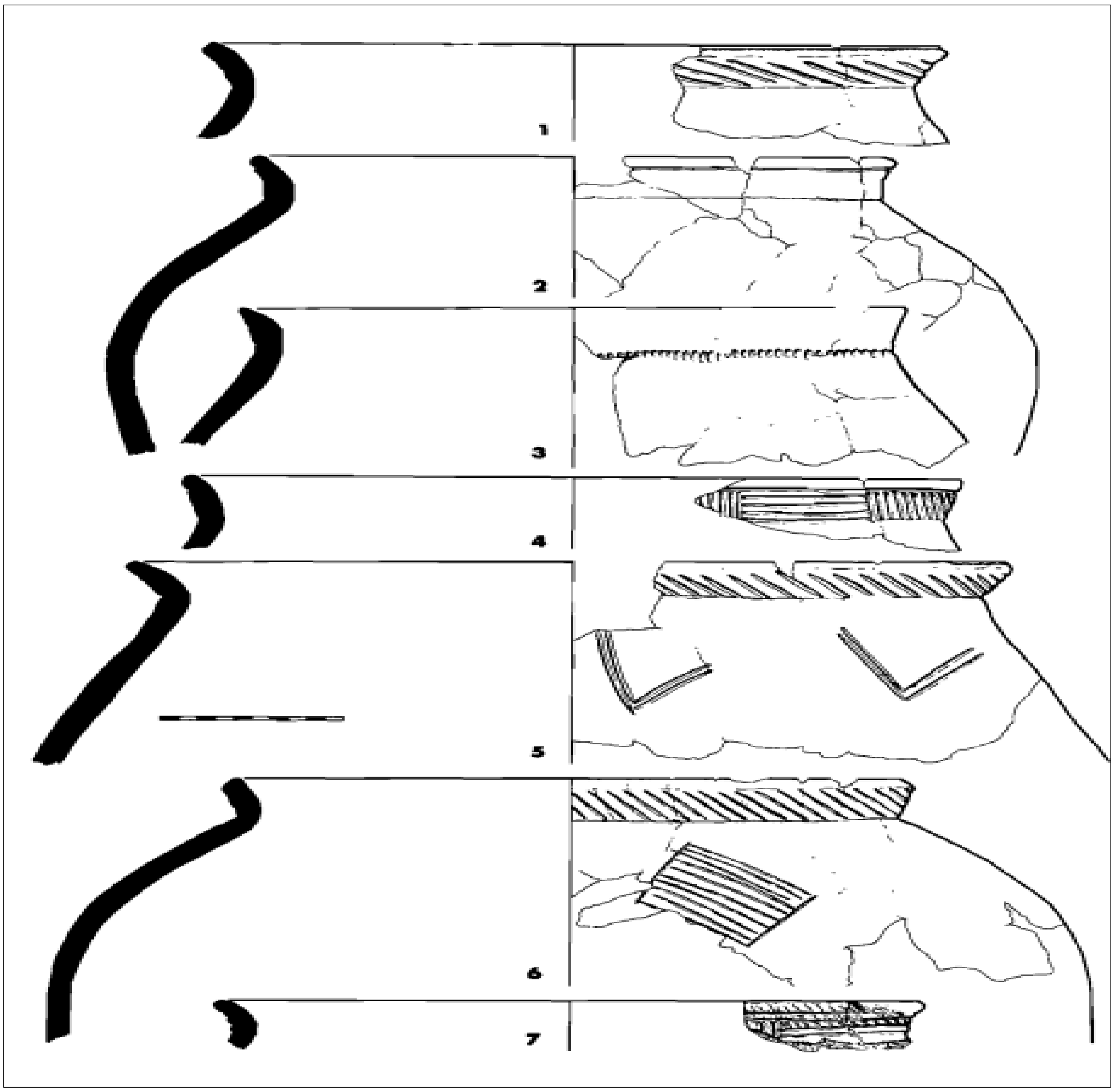


Figure 4.10 Everted jar vessels – note the well-defined point of inflexion

Source: Maggs, 1980a:80

Jar Type 1.3, identified at TSH1 and SK17, is a slightly everted jar with a slight point of inflexion or no inflexion. It can be compared to Maggs's (1984a:78) Ndondondwane Ceramic Class 2 – 'pot with a curved, everted neck', and Burrett's Garonga Ceramic Type 2 recurved jars (2007:155) (Figure 4.11 and 4.12). Other published shapes that are similar are Evert's (1988:68) Ceramic Class 15; Whitelaw's (1996:78) Lydenburg Ceramic Class 1, and Whitelaw and Moon's (1996:61) Inanda Quarry Class 4.

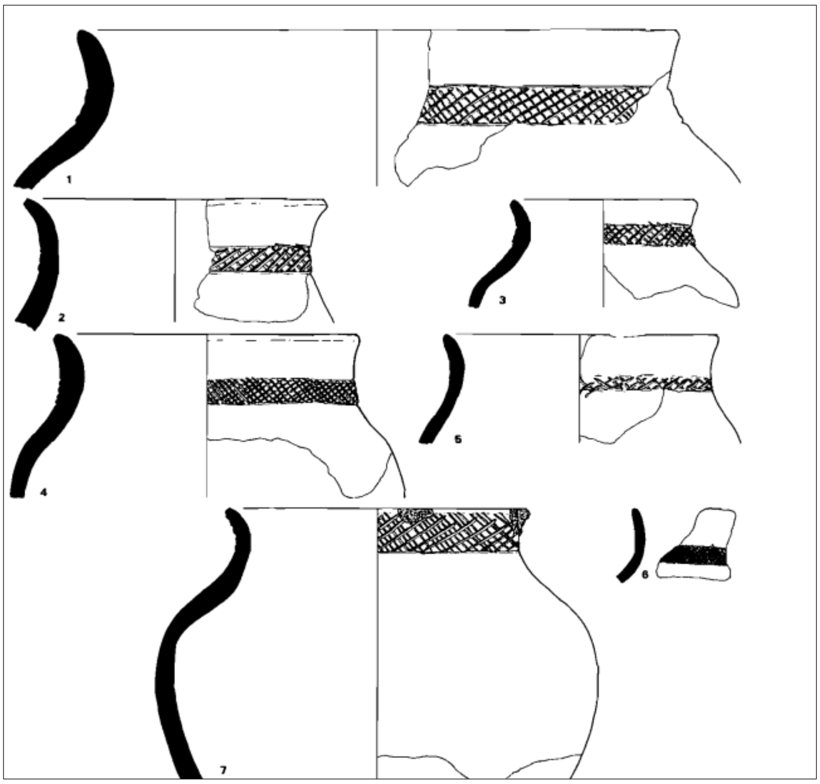


Figure 4.11 Vessel shape from Ndondondwane

Source: Maggs, 1984a:81

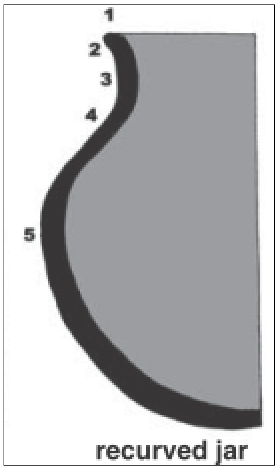


Figure 4.12 Vessel shape from Garonga

Source: Burrett, 2007:155

Jar Type 1.4 (slightly recurved jar) shows similarities with Maggs's (1984a:78) Ndondondwane Ceramic Class 2 – 'pot with curved, everted neck,' as well as his pot with upright neck (1984a:78) (Figure 4.13).

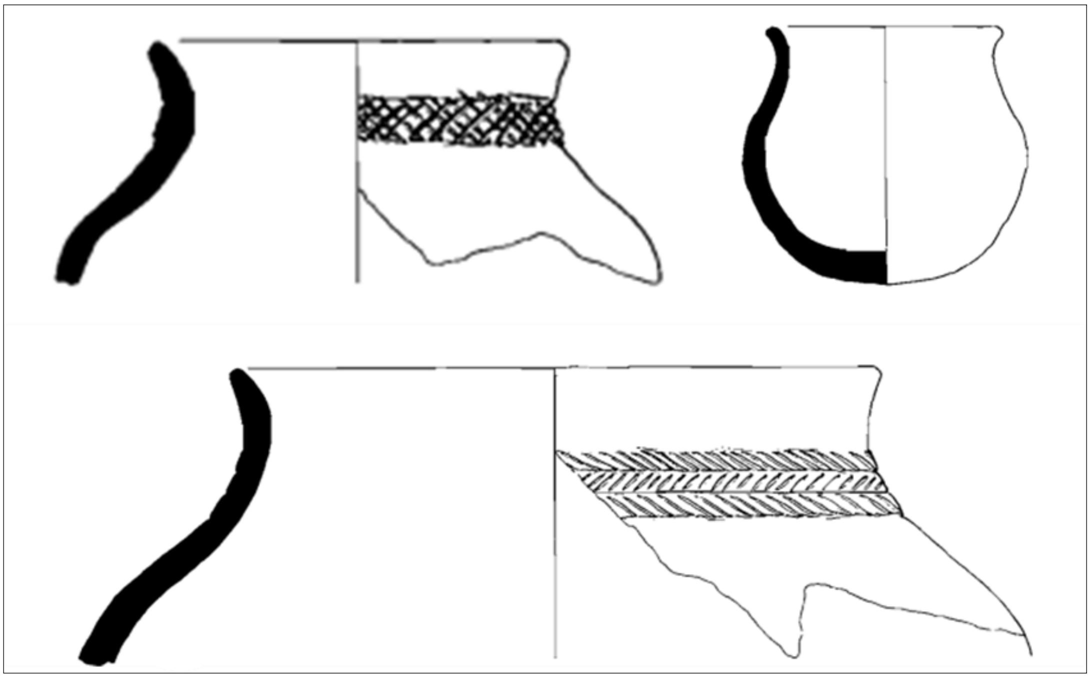


Figure 4.13 Ndondondwane vessels

Source: Maggs, 1984a:84

Jar Type 1.5 corresponds with Maggs's (1980b) Msuluzi Ceramic Class 2 – 'pot with curved, everted neck' (1980b:122).

Figure 4.14 Msuluzi vessels

Source: Maggs, 1980b:122

The bowl shapes could also be compared to known Urewe and Kalundu ceramic assemblages. Bowl shape 2.1 (open bowl) can be compared to Burrett's vessel type 6 – 'open bowl' (2007:158) (Figure 4.15).

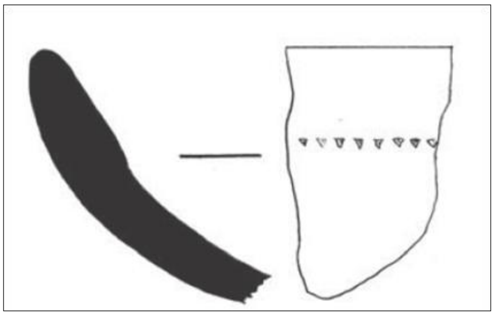


Figure 4.15 Ceramic shape 6 from Garonga
Source: Burrett, 2007:158

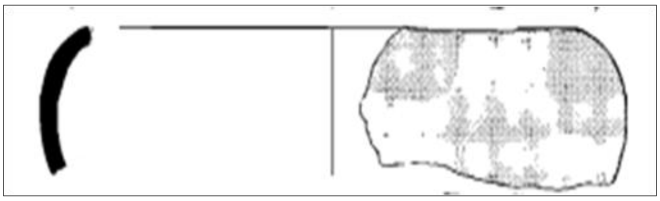


Figure 4.16 Bowl shape 2 from Ndondondwane
Source: Maggs, 1984a:86

Bowl type 2.2 (subcarinated/inturned bowl) is similar to Maggs's (1984a) Ndondondwane bowl type, with bowl shape 2.3 (subcarinated) also showing similarities with Ndondondwane bowl shape 4 (hemispherical bowl) (Figure 4.16).

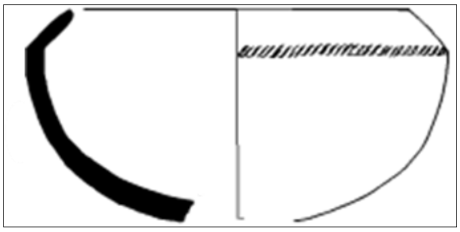


Figure 4.17 Bowl shape 4 from Ndondondwane
Source: Maggs, 1984a:86

Bowl shape 2.3 (an inturned bowl) is comparable to Ndondondwane subspherical bowls (Maggs, 1984a:86) (Figure 4.18).

Figure 4.18 Subspherical bowl
Source: Maggs, 1984a:86

4.3.1.3. Placement of decoration

The places on the vessel where decorations occur are different depending on the type of vessel. The analysis of the placement of decorations was done in such a way that when certain portions of the ceramic vessel were not available, it was noted. For instance, if the rim of the vessel was visible and was decorated, it was noted, but if the neck of the vessel was absent, it was recoded as ‘NA’ (not available). This was done to ensure consistency and to indicate the limitations within the ceramic assemblage. Even if it was customary to decorate a specific part of a vessel, it is of course impossible to tell whether that part was indeed decorated if it was not found.

The decoration positions (see Figure 4.19) are:

P1: On the lip of the vessel, same as TSH1

P2: This position is located on the top part of the rim.

P3: The position is located only at the bottom of the vessel’s rim.

P4: This position is reserved for decorative motifs that are found on the entire rim of the vessel.

P5: This position is located on the neck of the vessel, just below the rim.

P6: This position is located just below the shoulder and continues downward onto the upper body of the vessel.

P7: The last position is the lower body and base of the vessel

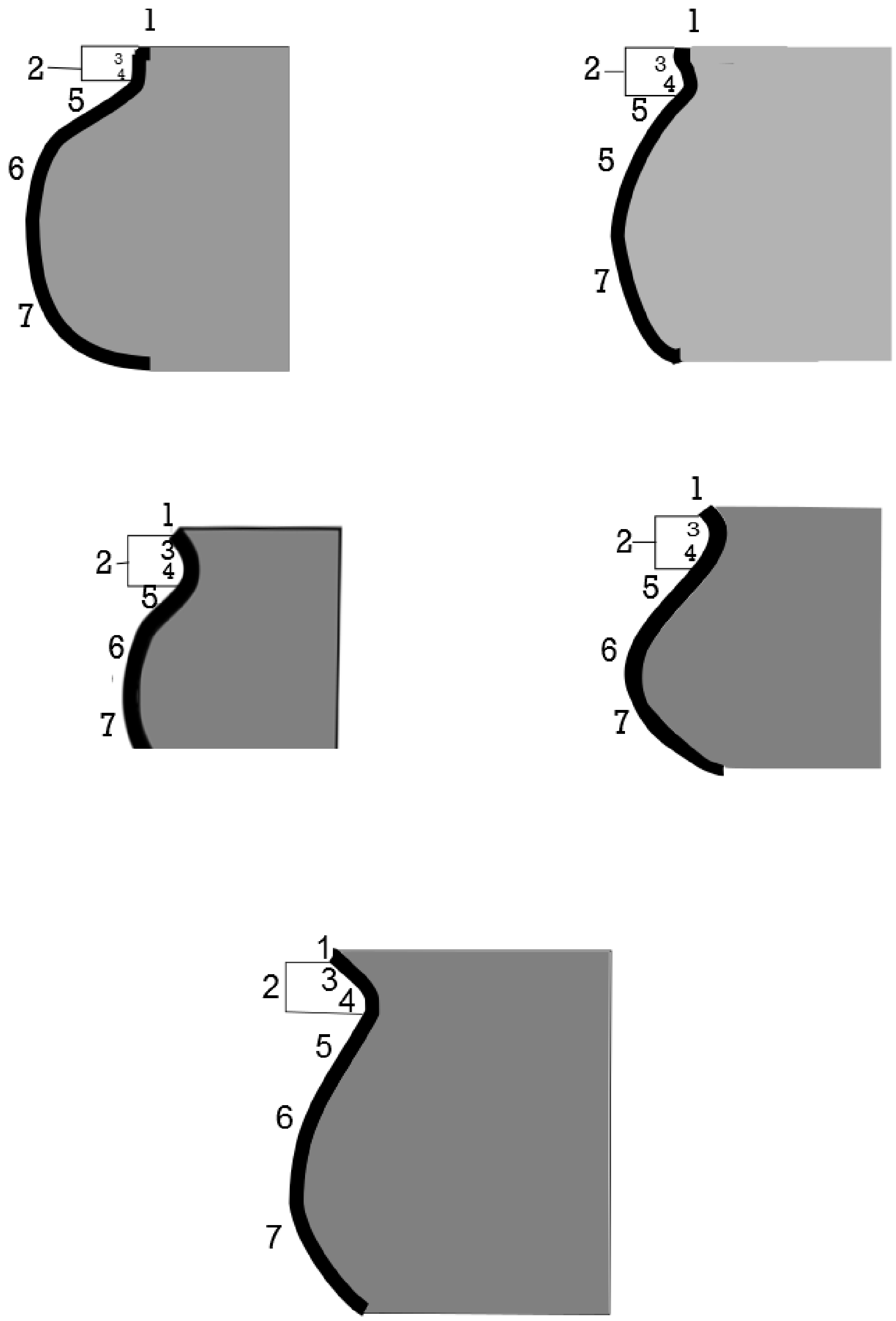


Figure 4.19 Placement of decorations on jars found at TSH1 and SK17

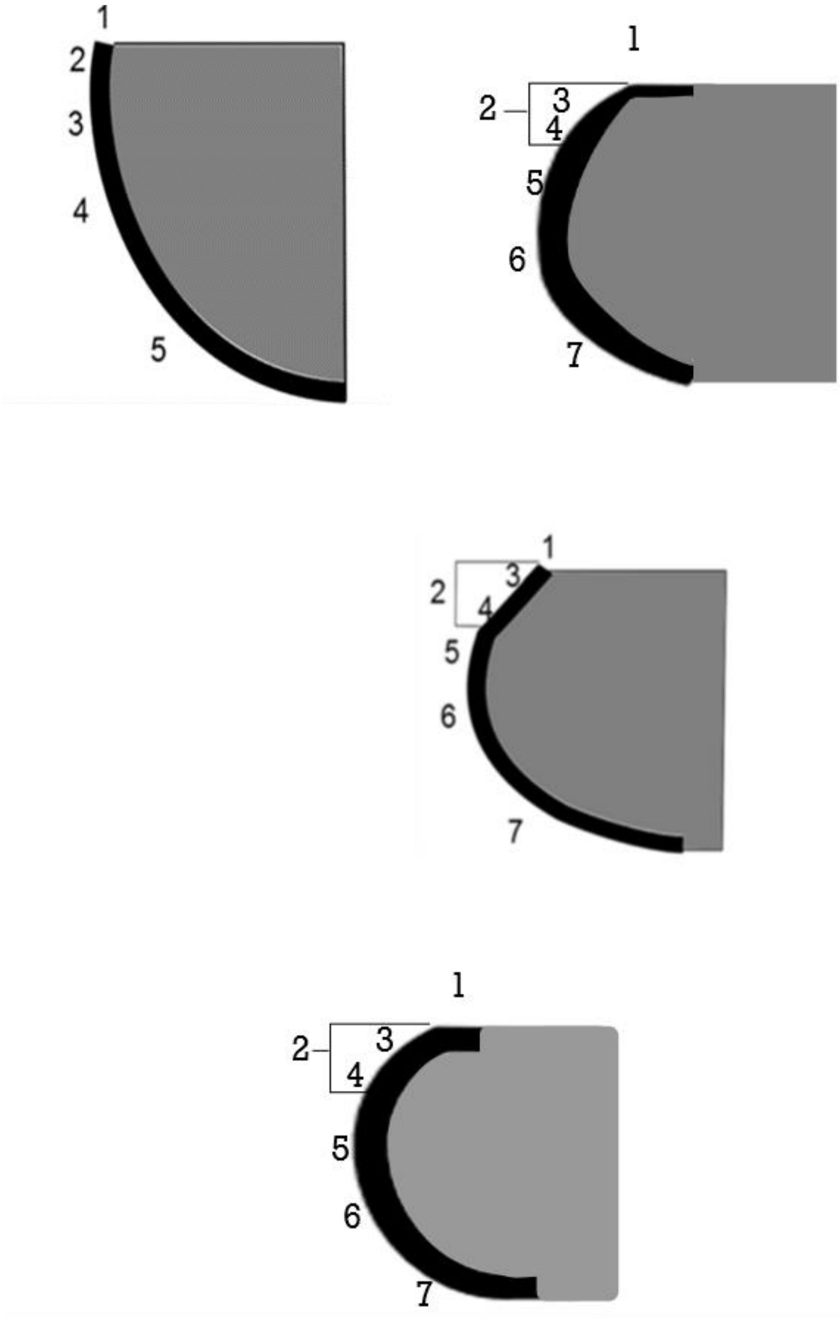


Figure 4.20 Placement of decoration on bowls found at TSH1 and SK17

4.3.1.4. Decorative motifs

Two types of techniques used for decorating were recorded:

Incisions: The surface of the vessel is slashed away/incised with a tool while the surface is still wet (Orton *et al*., 1993).

Punctates: These occur when the clay is punctured while it is still wet and normally leave small circular holes on the pottery (Orton *et al*., 1993; Rice, 2005).

Five possible decoration types were identified. The first type included continuous motifs. Forty-two subtypes of continuous motifs were identified within this type. This was done so that minor differences could be identified. For instance, if a motif consisted of obliquely hatched lines pointing from right to left on one vessel, and from left to right on the next, this difference it was noted and placed in a subgroup of that specific motif.

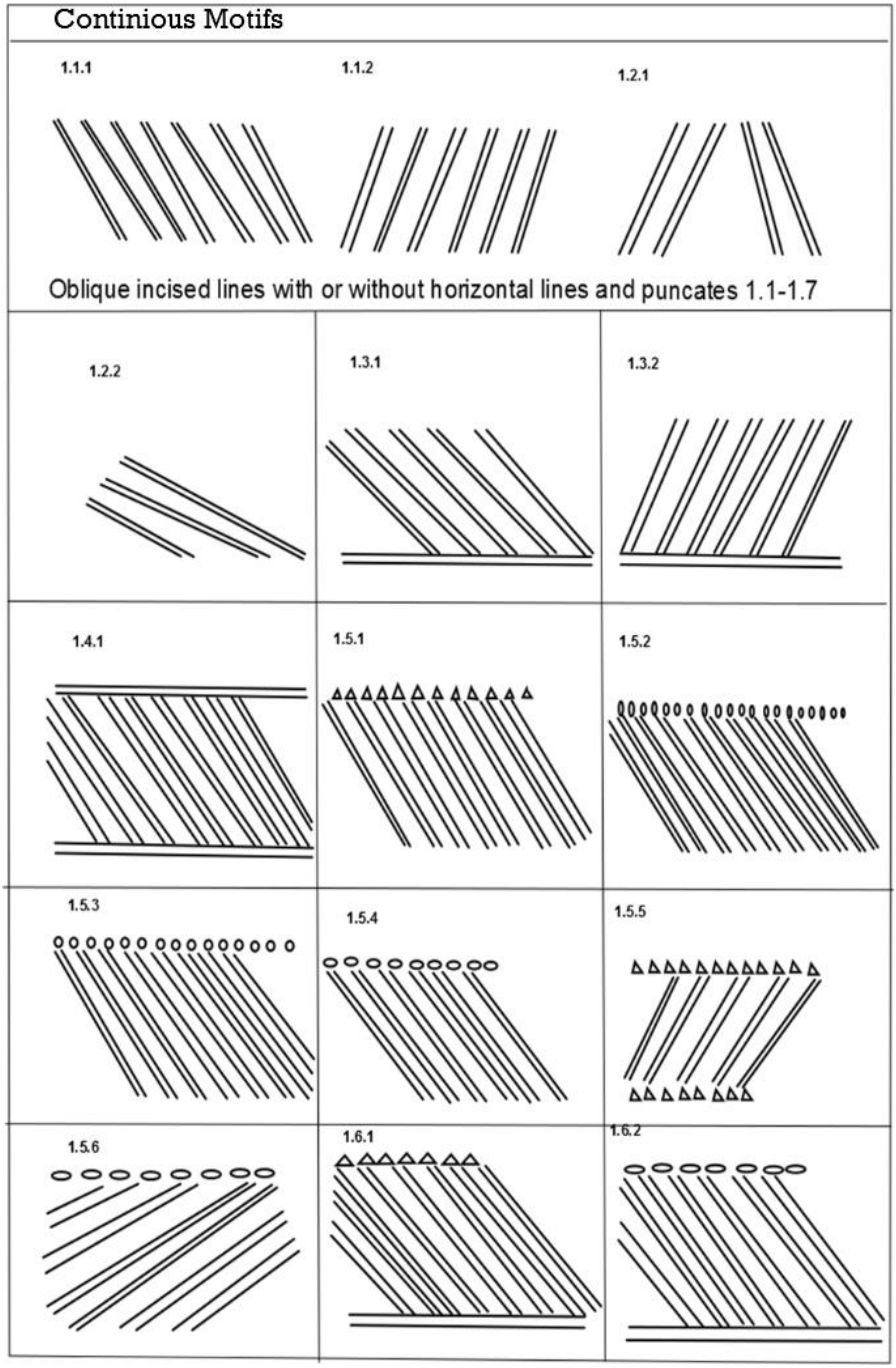
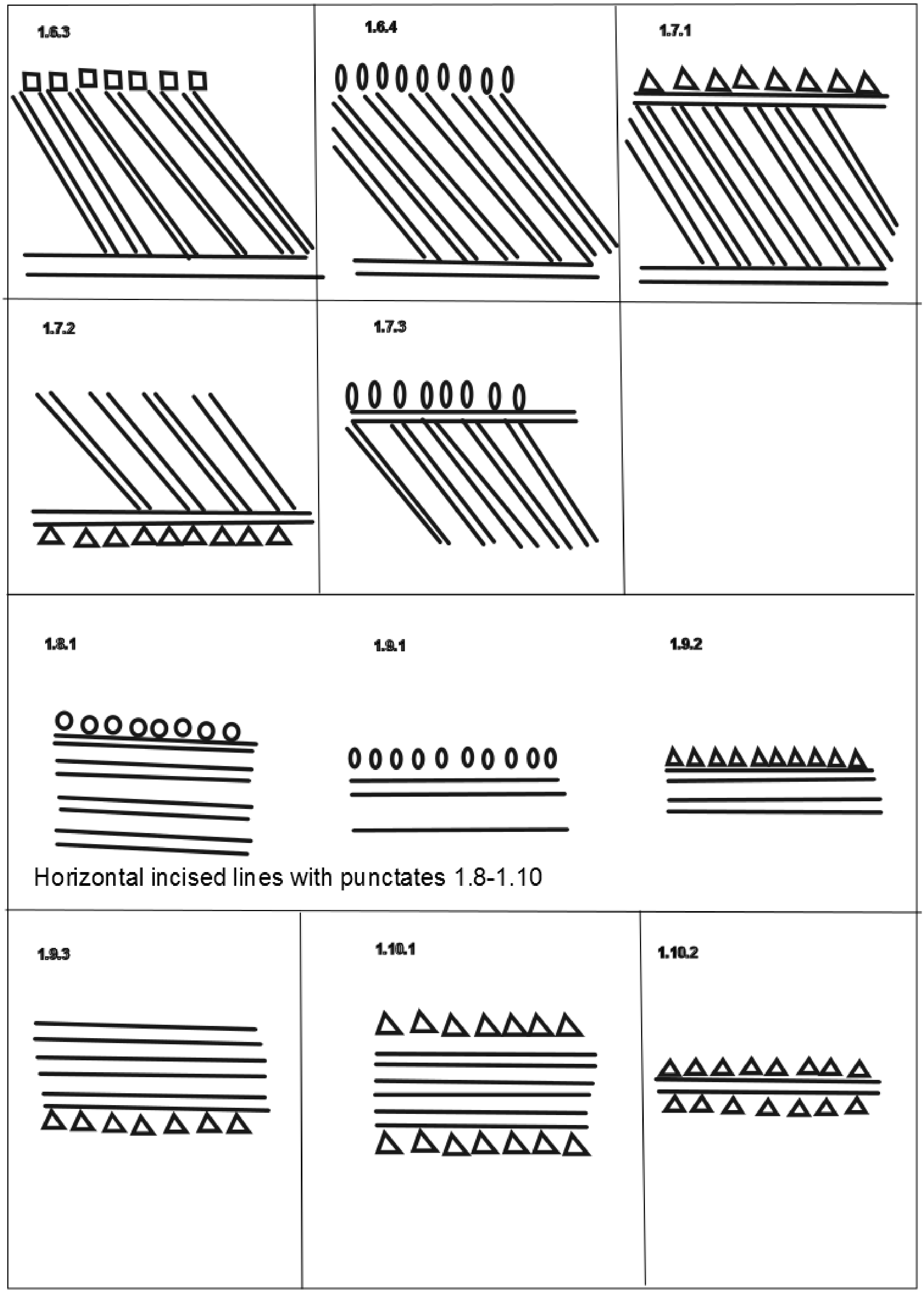
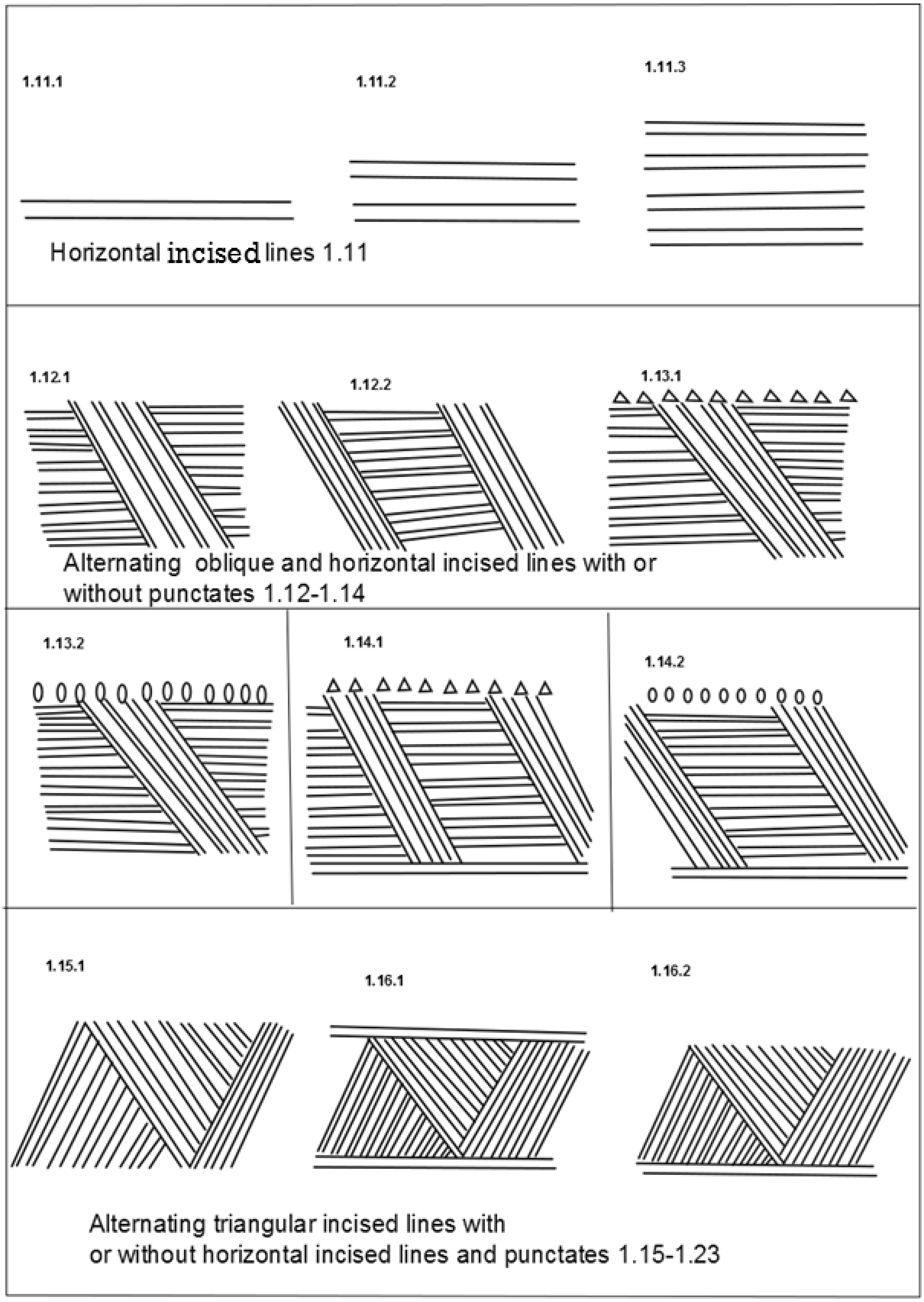
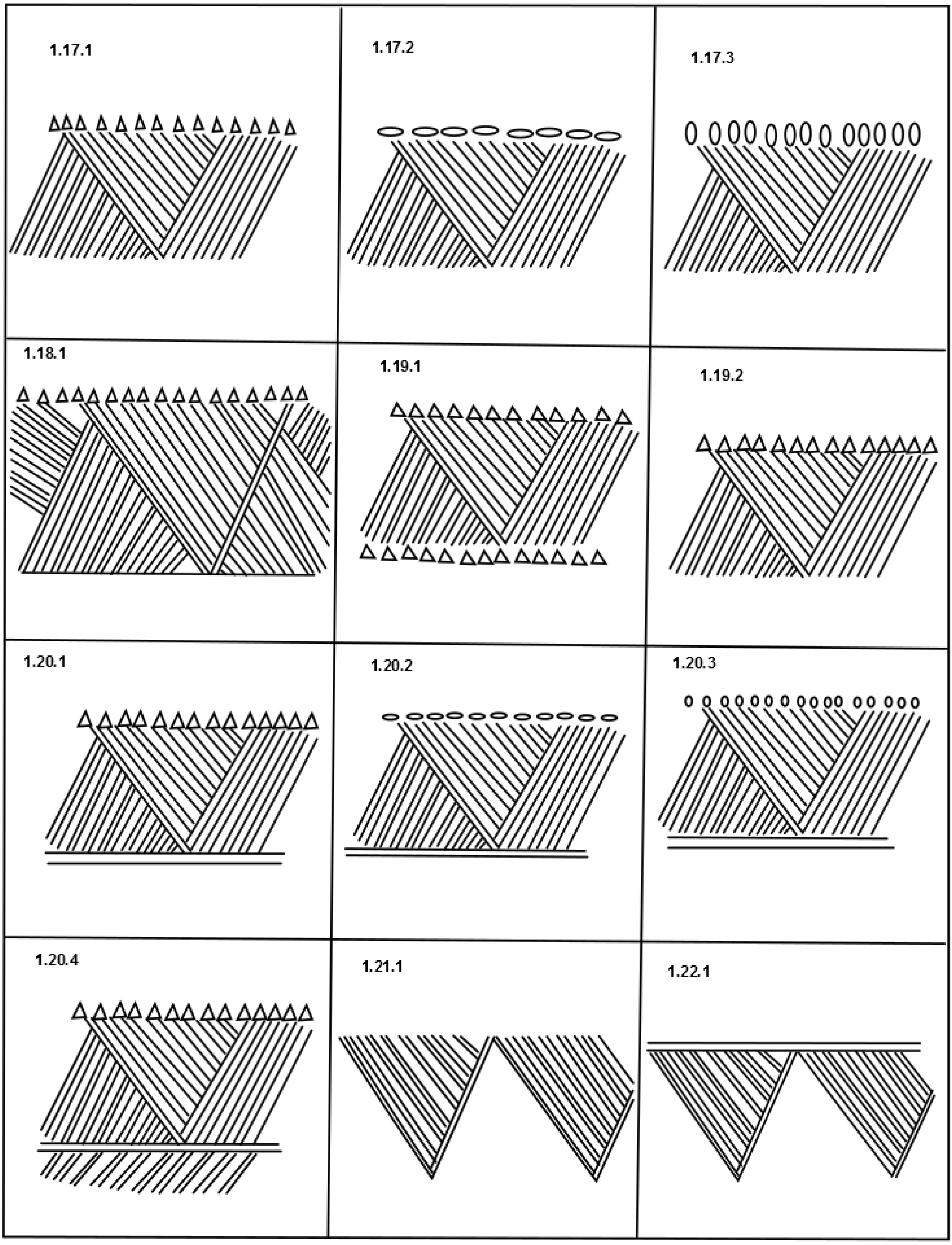
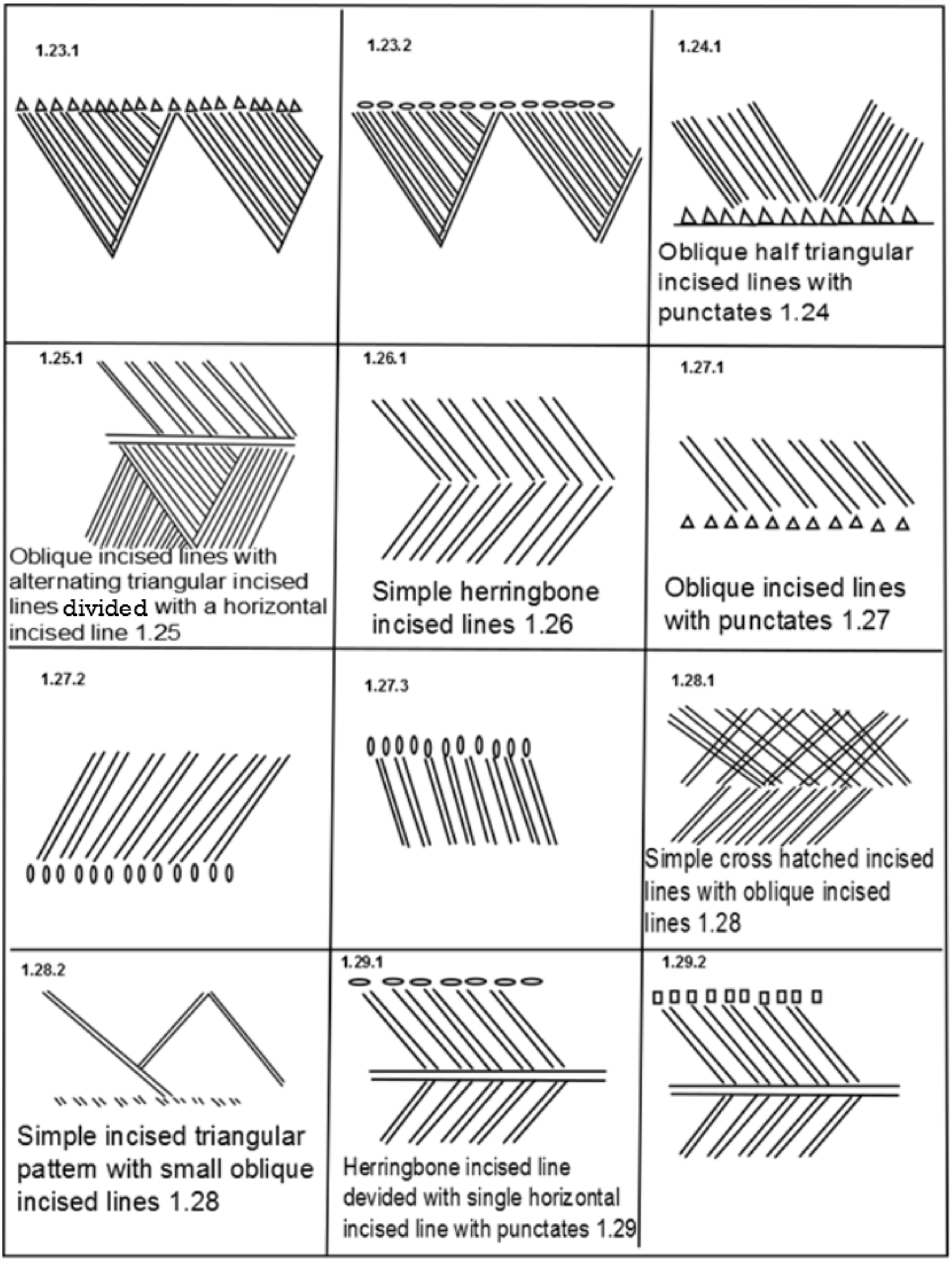


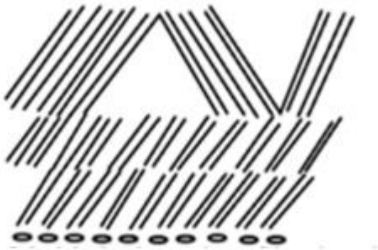
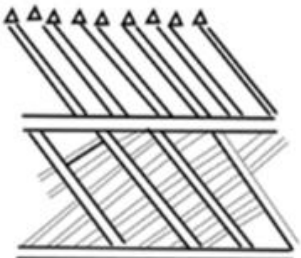
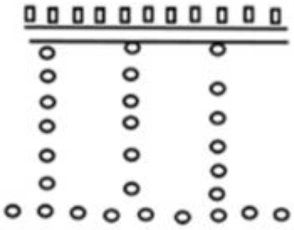
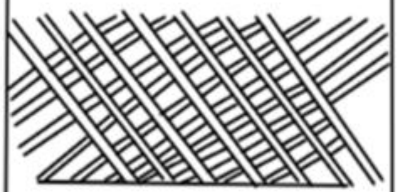
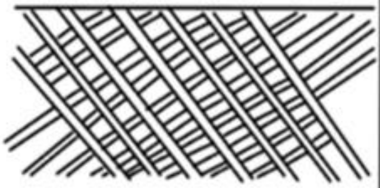
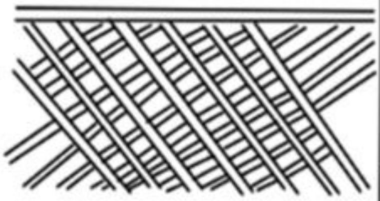
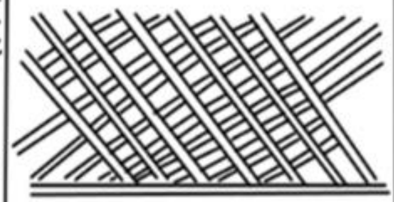
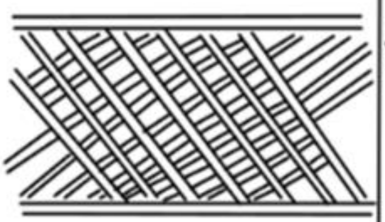
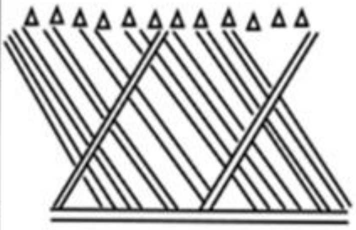
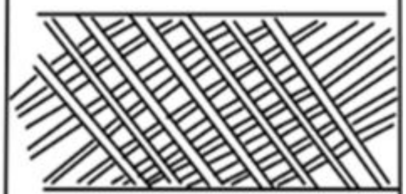
Figure 4.21 Continuous decoration motifs from both TSH1 and SK17

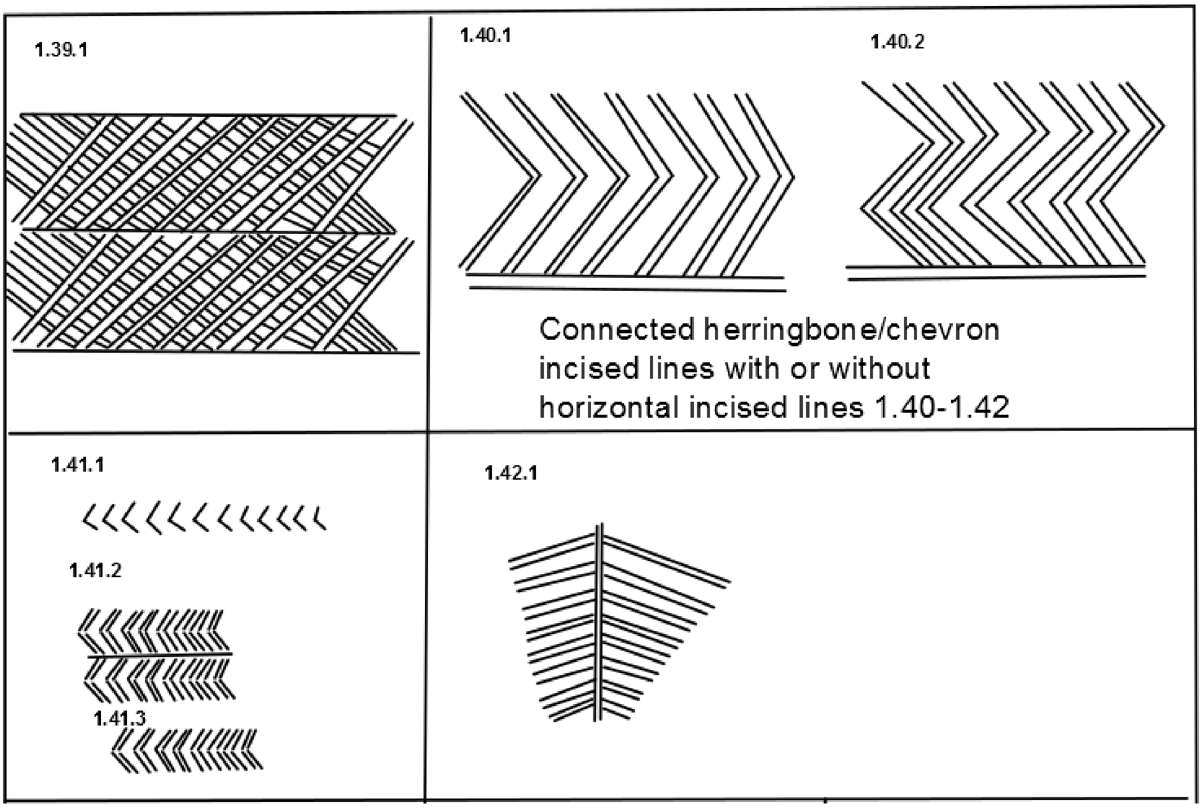

1.6.3
1.6.4
1.7.1
1.7.2
1.7.3
1.8.1
1.9.1
1.9.2
Horizontal incised lines with punctates 1.8-1.10
1.9.3
1.10.1
1.10.2


1.11.1
1.11.2
1.11.3
Horizontal incised lines 1.11
1.12.1
1.12.2
1.13.1
Alternating oblique and horizontal incised lines with or without punctates 1.12-1.14
1.13.2
1.14.1
1.14.2
1.15.1
1.16.1
1.16.2
Alternating triangular incised lines with or without horizontal incised lines and punctates 1.15-1.23


1.17.1
1.17.2
1.17.3
1.18.1
1.19.1
1.19.2
1.20.1
1.20.2
1.20.3
1.20.4
1.21.1
1.22.1


1.23.1
1.23.2
1.24.1
Oblique half triangular incised lines with punctates 1.24
1.25.1
Oblique incised lines with alternating triangular incised lines divided with a horizontal incised line 1.25
1.26.1
Simple herringbone incised lines 1.26
1.27.1
Oblique incised lines with punctates 1.27
1.27.2
1.27.3
1.28.1
Simple cross hatched incised lines with oblique incised lines 1.28
1.28.2
Simple incised triangular pattern with small oblique incised lines 1.28
1.29.1
Herringbone incised line devided with single horizontal incised line with punctates 1.29
1.29.2

1.30.1  Multiple bands of incised oblique lines with puncates 1.30	1.31.1  Multiple bands of incised oblique lines and cross hatched lines with punctates 1.31	1.32.1  Single horizontal incised line with multiple punctates 1.32
1.33.1  Multiple spaced triangular incisions with horizontal incised lines 1.33	1.35.1  Single and multiple cross hatched lines with or without horizontal incised lines 1.35-1.39	1.35.2 
1.35.3 	1.35.4 	1.35.5 
1.35.6 	1.36.1 	1.38.1 



The second type of motifs consisted of continuous punctates (Figure 4.22). Two different groupings were observed, one for single punctates and one for multiple punctates. In both groups, sub-groups were created.

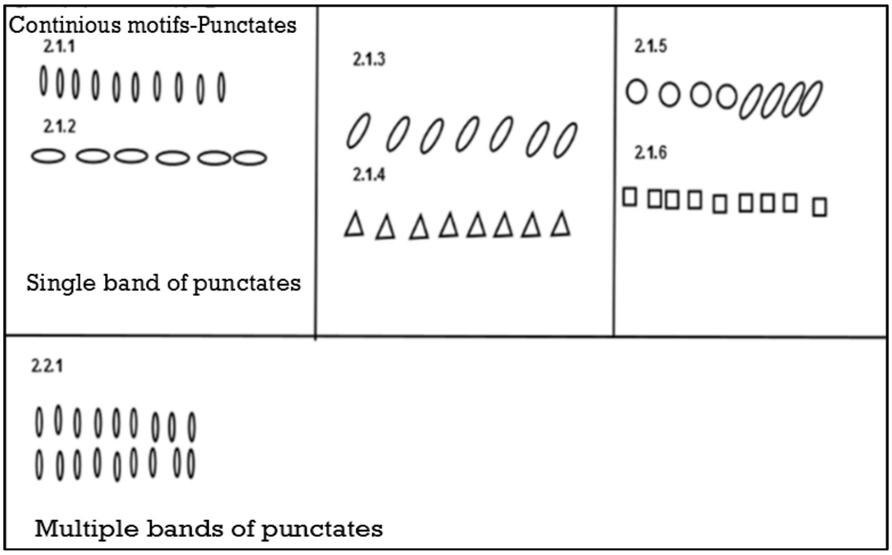
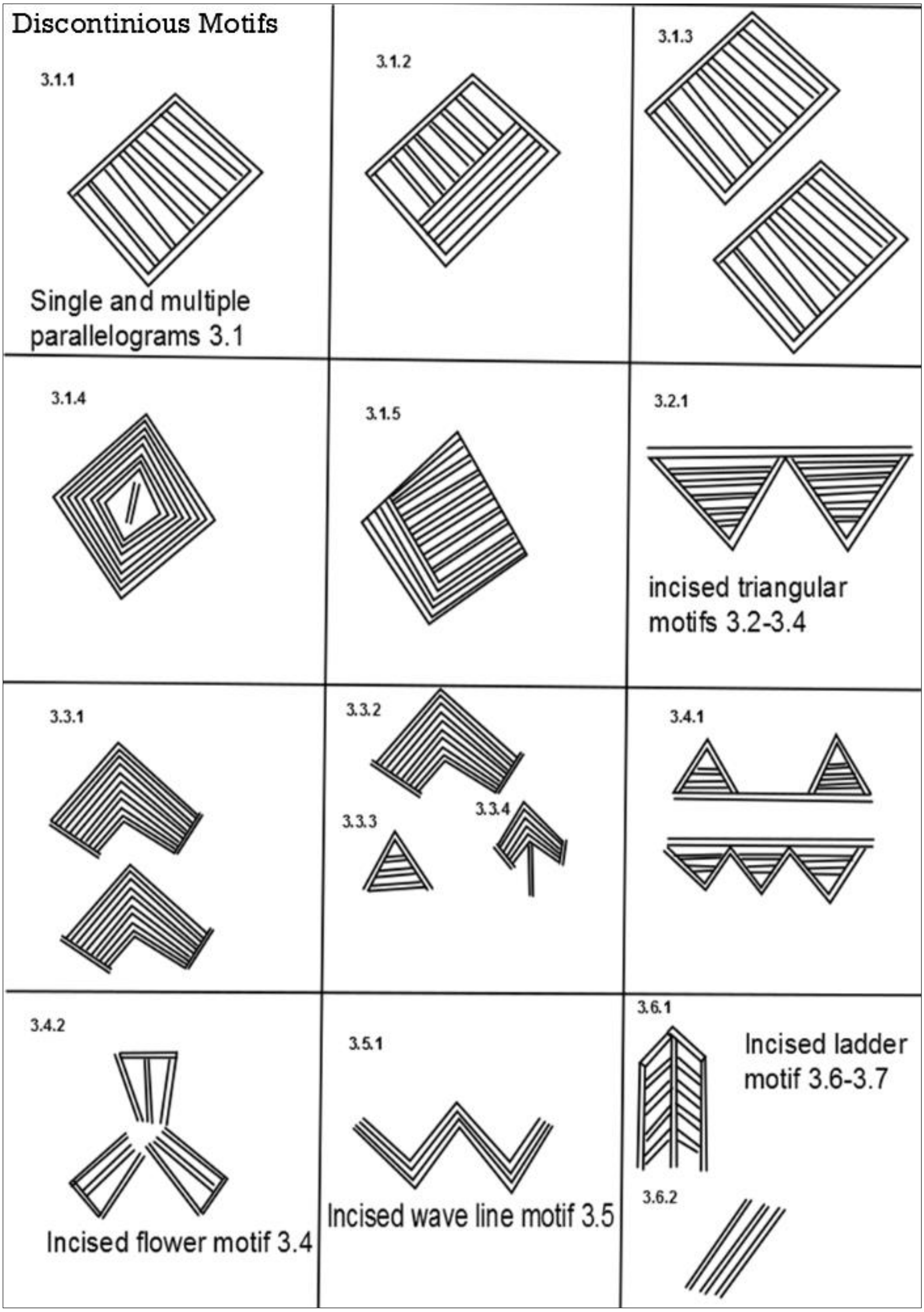


Figure 4.22 Continuous punctate motifs from TSH1 and SK17

The third type contained all discontinuous motifs. Nine different discontinuous motifs were identified. Sub-groups were also created for this category (Figure 4.23).



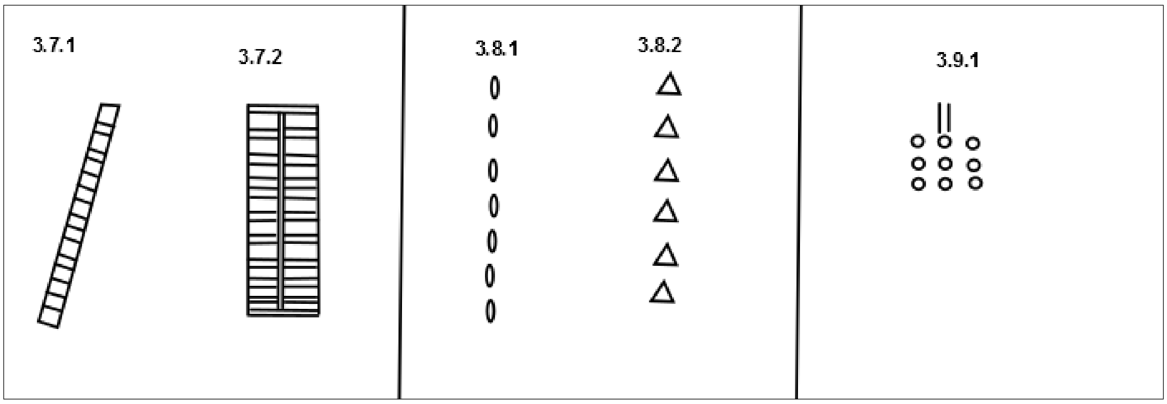


Figure 4.23 Discontinuous decorative motifs from TSH1 and SK17

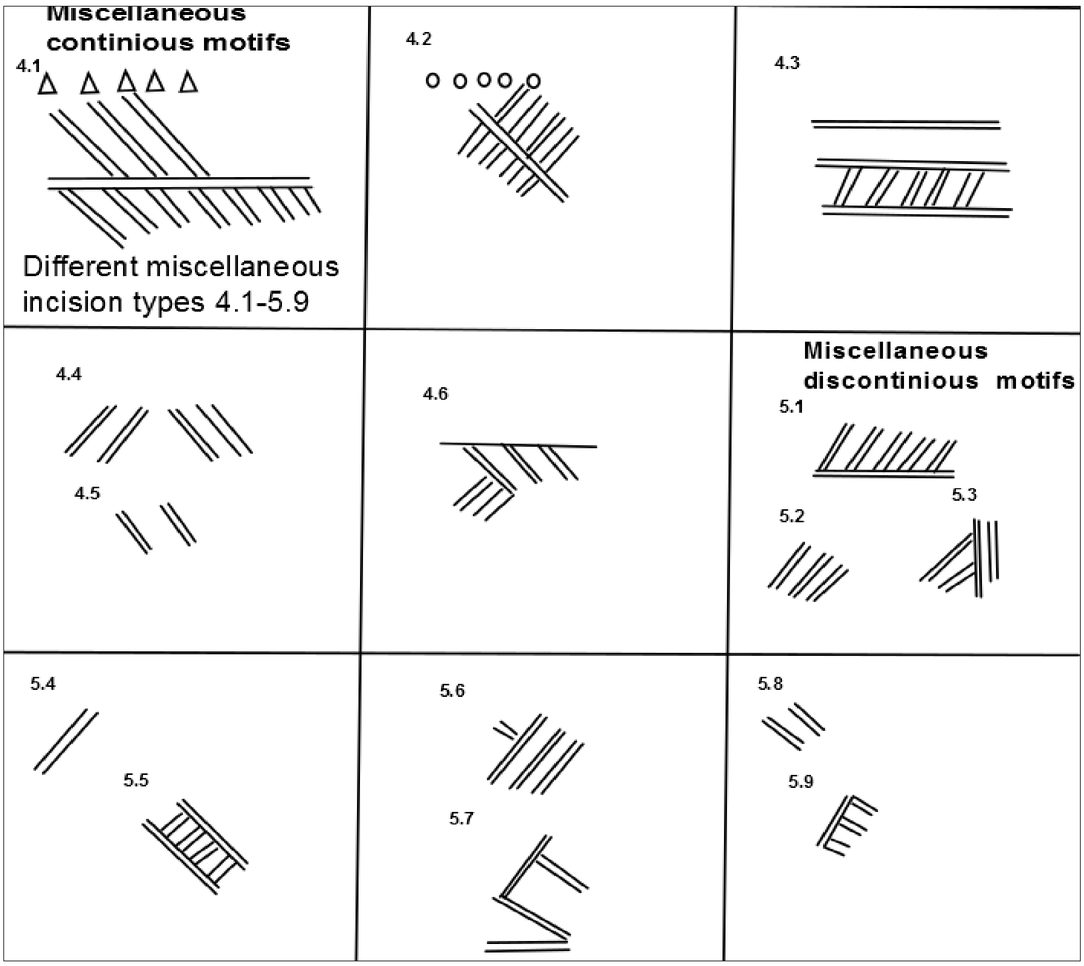


Figure 4.24 Miscellaneous continuous and discontinuous decorative motifs

Types 4 and 5 consist of different motifs (Figure 4.24). Miscellaneous motifs were defined as motifs that cannot be completely identified due to the fragment being incomplete. Group 4 (continuous miscellaneous motifs) and Group 5 (discontinuous motifs) both contained motifs that could not be wholly identified.

4.3.1.5. Rim types

Five possible rim types were recorded: tapered, rounded, flattened/bevelled, and thickened (Figure 4.25).

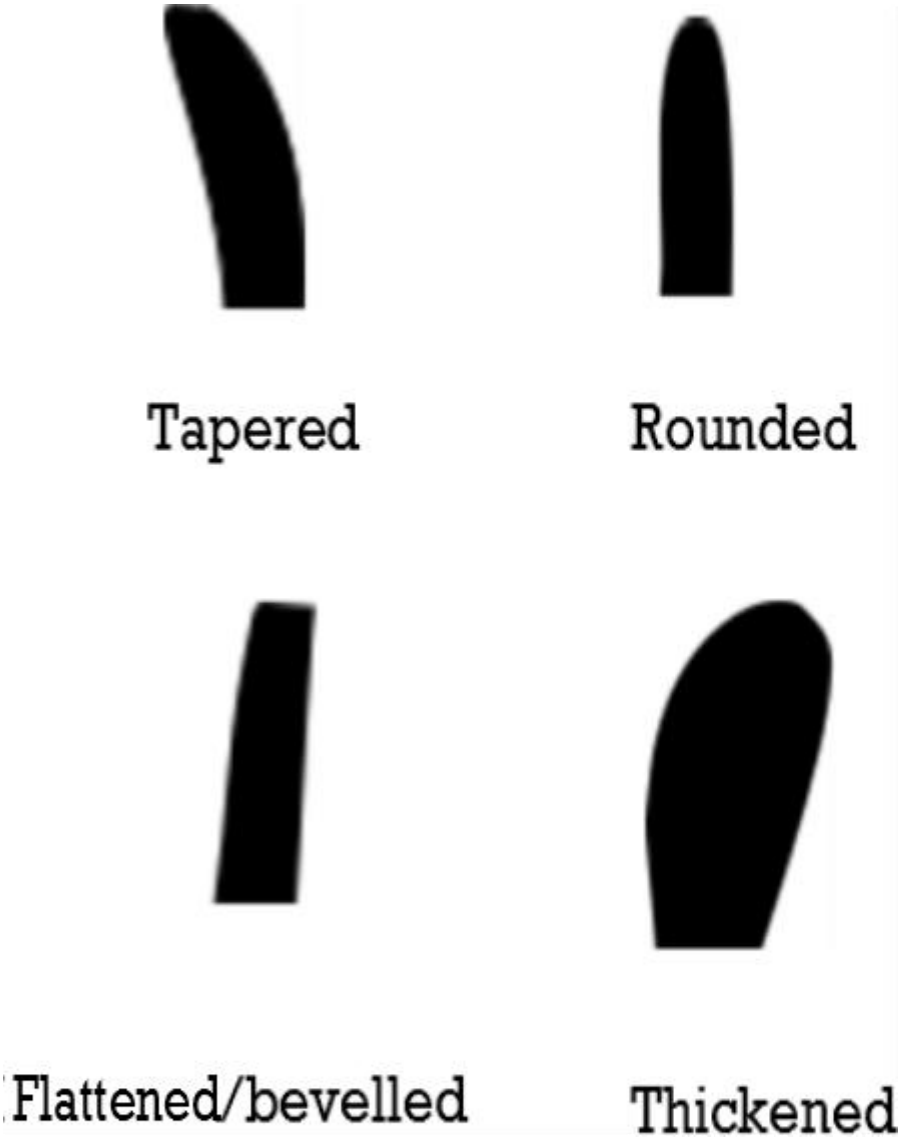


Figure 4.25 Rim types found TSH1 and SK17

4.3.1.6. Orifice diameter

To determine the actual orifice size of a vessel, the curve of sherds from the rim were fitted to a standard vessel diameter chart (Orton *et al*., 1993; Rice, 2005). If an accurate reading could not be taken because the vessel was too small or was broken, it was left out and the term N/A (not applicable) was assigned to it. Orifice diameter is an important feature of any ceramic vessel as it is the space through which material passes into or out of the vessel and relates to the function and use of the vessel (Hendrickson & McDonald, 1983).

4.3.1.7. Fabric analysis

A typology was created for the fabric analysis of all the ceramic sherds from SK17A and TSH1A. Fabric analysis was done on all the recently excavated ceramic material, but X-ray fluorescence (XRF) spectroscopy analysis was completed on only a representative sample. The ceramic material from Meyer's excavations was not included in the fabric analysis since no permit authorising the destruction of samples from the South African Heritage Resources Agency (SAHRA) was obtained for earlier collections.

Fabric analysis was used in this study to understand the characterisation of the raw material from which the ceramics had been made (Prehistoric Ceramics Research Group, 2010:16; Orton *et al.,* 1993). This process makes it possible to form an understanding of the provenience, technological aspects, manufacturing, chronology and function of a ceramic vessels (Peacock, 1970; Pillay *et al.,* 2000; Orton *et al.,* 1993; Wilmsen *et al*., 2009) (Figure 4.26).

This typology was created by combining different sources, which included Rice (2005), Sinopoli (1991), Skibo (1999), Orten *et al.* (1993) and the Prehistoric Ceramics Research Group's *Guide on Ceramics* (2010). The ceramics used for the fabric analysis were also used for X-ray fluorescence (XRF) spectroscopy analysis, which will be discussed below.

A hand-held magnifying glass was used to analyse the fabric of the sherds. It is not always possible to see fabric variation on ceramic sherds that do not have a fresh break or have not been polished. Therefore, after the initial analysis, samples that had a fresh break or had been polished were used. For the fabric analysis, three variables were taken into account: density/frequency of inclusion among the sherds, the sorting of the sediments/inclusions and size.

The density/frequency of the inclusion among the sherds was divided into six different groups: 1) rare frequency (very low) and was quantified to between 1 and 2%; 2) sparse density was between 3 and 7%; 3) moderate density was between 10 and 15%; 4) common density was between 20 and 25%, and very common density was 30%.

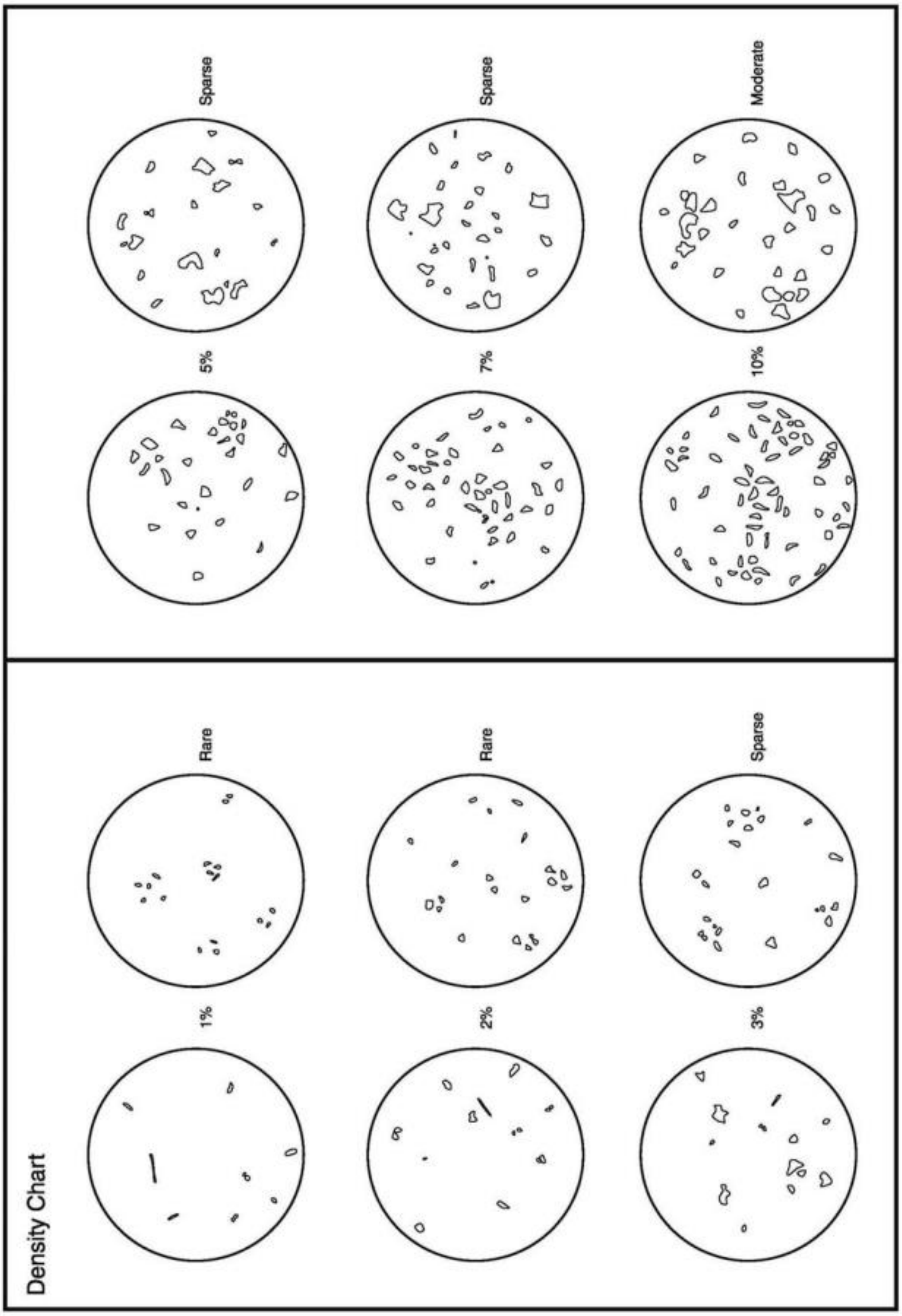
The last grouping on the density chart included sherds that fell under 'abundant frequency', with a density percentage of 40-50% (Figure 4.27).

Variable	Nature of deposits	Chronology	Manufacture technology	Production distribution	Function & use	Settlement organisation	Social/cultural expression
Fabric type	*	*	*	*	*	*	
Form type	*	*	*	*	*	*	*
Vessel Type		*	*	*	*	*	*
Extent of form	*	*			*	*	
No. of sherds	*	*	*	*	*	*	*
Weight of sherds	*	*	*	*	*	*	*
Diameter of rim			*		*	*	
% of Rim	*						
Diameter of base		*	*		*	*	
Wall thickness	*		*		*	*	
Height			*		*	*	
Girth/shoulder			*		*	*	
Surface treatment	*	*	*	*	*	*	*
Decoration	*	*	*	*	*	*	*
Manufacturing technique		*	*	*		*	*
Residues				*	*	*	
Perforation type			*	*	*	*	
Firing conditions			*	*		*	*
Condition	*	*			*	*	
Colour			*		*		
Re-use				*	*	*	
Cross-context joins	*						

Figure 4.26 List of different variables and how they can inform various research outputs

Source: Prehistoric Ceramics Research Group, 2010:16

The second variable was the sorting of sediments/inclusions. Well-sorted sherds contained inclusions that were similar in size, but more variation within the sorting could be noted. Moderately sorted sediments contained sediments that were fairly similar in size, but a greater variation in size was noted than in the case of well-sorted sediments. Poorly sorted sediments contained vessels with very poorly sorted inclusions of different sizes (see Figure 4.28).


Density Chart
1%
Rare
2%
Rare
3%
Sparse
5%
Sparse
7%
Sparse
10%
Moderate

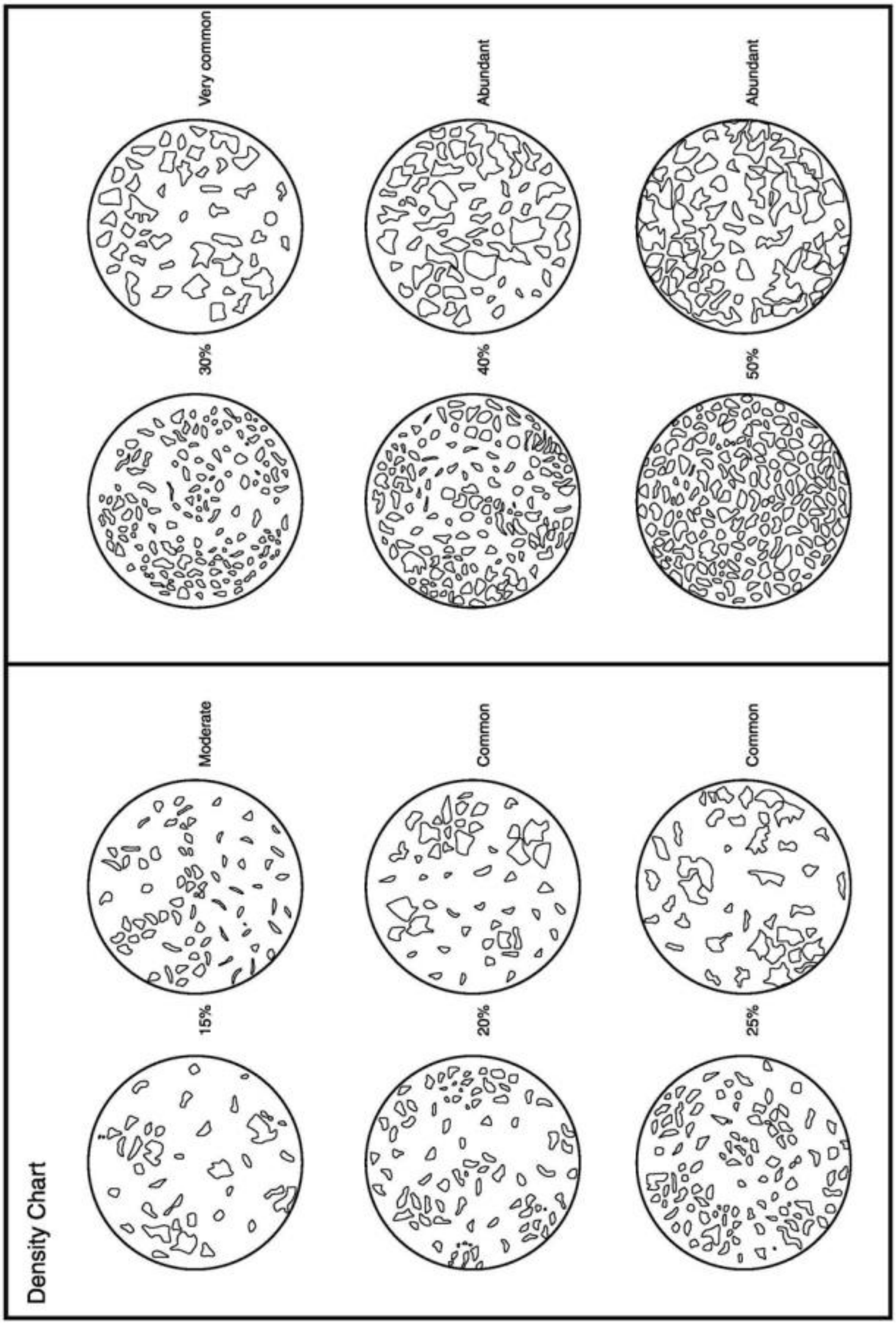


Figure 4.27 Fabric Density Chart

Source: Prehistoric Ceramics Group, 2010:48-49

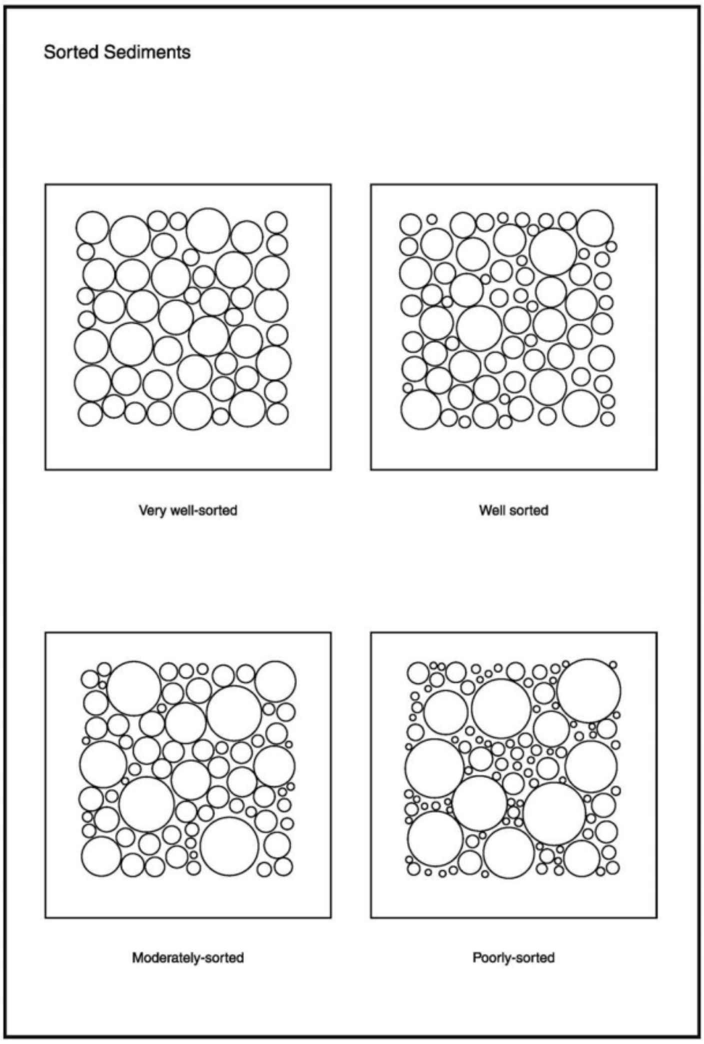


Figure 4.28 Sediments sorted according to these groupings

Source: Prehistoric Ceramics Group, 2010:50

The sizes of inclusions were measured in millimetres by using a digital calliper and a magnifying glass. Five groups were classified for the analysis: 1) very fine, silt inclusions that were up to 0.1 mm in size; 2) fine inclusions with a range of 0.1 to 0.25 mm; 3) medium inclusions of between 0.25 and 1.0 mm; 4) coarse inclusions of between 1.0 and 3.00 mm; and 5) very coarse inclusions that were larger than 3.0 mm (Figure 4.29).

VF	very fine, silt	up to 0.1mm
F	fine	0.1 to 0.25mm
M	medium	0.25 to 1.0mm
C	coarse	1.0 - 3.0mm
VC	very coarse	larger than 3.0mm

Figure 4.29 Different inclusion size groupings

Source: Prehistoric Ceramics Group, 2010:26

4.3.1.8. X-ray fluorescence (XRF) spectroscopy analysis

XRF spectroscopy is a non-destructive method used to analyse the chemical compositions of samples (Jacobson *et al.,* 1994; Lamm & Lindahl, 2014; Punyadeera, *et al.,* 1997). Since every ceramic vessel carries a chemical composition pattern or 'fingerprint' that is identical to the clay constituents of the vessel, it is possible to trace a certain vessel to a clay source, which makes it possible to determine whether ceramics were introduced into an area from elsewhere, or were sourced at the particular location (Pillay *et al*., 2000: 54).

The selection of samples for XRF analysis was based on their fabric composition (the inclusion types, size, how they were sorted and the density). A sample from each layer that showed different fabric types, if there were any, was analysed in order to generate a representative sample set (as discussed above).

A thermal scientific portable (hand-held) XRF analyser (h-XRF), Niton XL3, was used for the analysis. This method has been shown to be highly accurate for the detection of major elements (Lamm & Lindahl, 2014). One limitation of the h-XRF is that elements in the Sodium (Na) and lighter range cannot be detected (Lamm & Lindahl, 2014). The h-XRF was chosen to ensure that a large sample set that was representative of the material found at both sites could be studied.

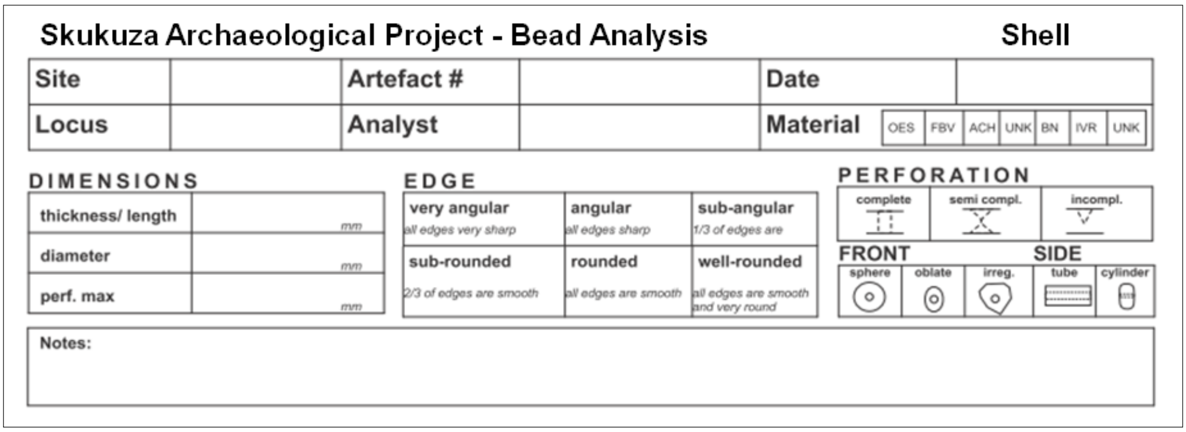
All the analyses of samples were performed on polished cross-sections of the sherds. Polished cross-section sherds are sherds containing a part that is slightly ground down and flattened. The main reason for polishing and grinding part of the sherds is to lessen the contamination caused by the use of the vessel, as well as post-depositional constituents. The second reason is to create a flat, stable surface from which the XRF sample could be analysed, which makes polished samples more accurate than those that have not been polished (Lindahl, personal conversation, 2013). Each sample was analysed three times for 360 seconds along three different. This period was chosen as the element detection also depends on the duration of the analysis, and a higher accuracy was noted if the sample was analysed for a longer period. The longer time range is especially important for elements with a lighter range, such as Mg, Al, Si, P, S, CL, K and Ca (Lamm & Lindahl, 2014). The analysis could also be inaccurate if the sample was run only once, for example, the h-XRF could identify only a piece of quartz, excluding the surrounding clay, which would make the reading inaccurate. All samples were calculated in parts per million (ppm). The 16 most common elements found in the ceramic material were chosen. These elements included potassium (K), calcium (Ce), titanium (Ti), iron (Fe), aluminum (Al), silica (Si), phosphorus (P), magnesium (Mg), neodymium (Nd), cerium (Ce), copper (Cu), nickel (Ni), zinc (Zi), thorium (Th), rubidium (Rb) and niobium (Nb). Only the elements that had a strong correlation with each other (i.e. Al and Rb) or had a high or low concentration in parts per million (ppm) were taken into account and tabulated. Elements that are associated with clay (Fe, Si, Al and Mg), including some minor components (Zn and Ni) and trace elements (Rb, Th and Nb) were also taken into account.

Once the samples had been analysed, the data was transferred to the Niton Data Transfer PC software. It was then tabulated on an Excel spreadsheet showing both ppm and the error ± values. From here the data was calculated using the statistical software package IBM SPPs Statistics Version 2.1.

Some disadvantages of the h-XRF are that even if more than a hundred different parts are scanned by way of the XRF analysis, it will still not be completely representative of the ceramic vessel (Jacobson, 1985, 2005) due to the large number of elements and minerals that are present in ceramic vessels (Garcia-Heras, *et al.,* 1997). Another problem that has been noted is that in the majority of the cases the ceramic vessels do not enter the archaeological record as complete vessels, but rather as numerous sherds, which can complicate analysis (Jacobson, 1985, 1994). However, the use of XRF analysis can undoubtedly contribute to and complement ceramic typologies (see Chapter 3).

4.3.2. Bead analysis

The bead analysis was based on a combination of different shell-bead classification systems adopted by Kandel and Conrad (2005), Orton (2008), Plug (1982b), Ward and Maggs (1988), and A. Antonites (2012). By using these different systems, it was possible to create a simple classification system for both SK17 and TSH1 (Figure 4.30).



Skukuza Archaeological Project - Bead Analysis — Shell

Site		Artefact #		Date	
Locus		Analyst		Material	OES / FBV / ACH / UNK / BN / IVR / UNK

DIMENSIONS

thickness/ length	mm
diameter	mm
perf. max	mm

EDGE

very angular all edges very sharp	angular all edges sharp	sub-angular 1/3 of edges are
sub-rounded 2/3 of edges are smooth	rounded all edges are smooth	well-rounded all edges are smooth and very round

PERFORATION

complete	semi compl.	incompl.

FRONT: sphere / oblate / irreg.

SIDE: tube / cylinder

Notes:

Figure 4.30 Shell bead recording form

Source: Antonites, 2012

The system was divided into five parts:

3.2.1 The *material* from which the shell bead was made was identified. The different classes that were taken into account were ostrich eggshell, freshwater bivalve, Achatinidae, ivory and unknown species.

3.2.2 The *dimensions*, i.e. thickness, length diameter and maximum perforation, were measured of all the shell beads were measured (in millimetres).

3.2.3 The edges of the bead were analysed and recorded on the shell bead analysis form. It was noted whether the edges were very angular, angular, subrounded, rounded or well-rounded (see Figure 4.30)

3.2.4 The *perforation* of each bead was calculated and quantified as either being completely, semi-completely or incompletely perforated.

3.2.5 The front view of each bead was also analysed visually to determine whether it was spherical, oblate or irregular in shape. Lastly, it was noted whether the beads were burnt or not.

4.3.3. Stone artefacts

The stone artefact assemblage was analysed based on a typology created by Deacon (1984) and adapted by Forssman (2014). The purpose of this typology was to place all Late Stone Age (LSA) material into two different categories: 1) waste/ debitage, which includes chips (<10 mm in length), chunks and cores; 2) formal tools, including backed tools and scrapers; and 3) other tools such as adze, groove stones and hammer stones. All stone artefacts were also categorised based on the raw materials form which they had been fashioned.

4.3.4. Faunal material

The faunal collection from SK17A and TSH1A was analysed by Karin Scott, an independent analyst. All the material was sorted into identifiable and non-identifiable fragments. The identifiable material was analysed by using the comparative faunal collection held at the Ditsong Cultural Museum in Pretoria. This analysis was conducted as per the guidelines provided by the international standards of the International Council for Archaeozoology (ICAZ). Scott provided an interpretation report for both sites based on the sorting of the faunal samples into identifiable and non-identifiable, species list, taphonomy, mortality profile, sex and pathology of the samples. The age class identification was made based on methods described by Plug (1988) and Von den Driesch (1976). The results are presented in Appendix I.

4.4. Conclusion

In this chapter all the different methods that were applied to this project were discussed, i.e. the pre-excavation programme, which included a desktop study, a site visit and a survey, followed by the excavation and analysis methods. In the next six chapters, the analysis of the data collected from SK17 and TSH1 will be presented. The data from each site will be presented in three chapters per site, starting with the excavation data from TSH1.

Chapter 5
TSH1 excavation data

In this chapter, the excavation data from TSH1 will be presented. The chapter is divided into three sections in which the following will be discussed: first, the excavation data from the past collection; second, the more recent excavation from TSH1A; and third, the new radiocarbon dates.

5.1. Data from TSH1

Excavations at TSH1 were conducted by Meyer (1986) in 1984. Eleven different areas across the site were deemed relevant for research (see Figure 5.1 to 5.4 and Table 5.1 for a map of these areas). Meyer named these areas TSH1.1 through to TSH1.11. However, excavations were not carried out in all eleven areas. At some of them (TSH1.2, 1.4 and 1.9) material that was visible on the surface was collected. In other areas (TSH1.6 and 1.8), the surface was exposed and left in situ (these areas were rock features). Systematic excavations were undertaken in the other areas (see Table 5.1 and Figure 5.2), with only a single radiocarbon date obtained from TSH1.1, Layer 9 (the radiocarbon samples will be discussed later in the chapter).

The majority of the materials removed during the excavation were ceramics. However, other material culture, which included stone artefacts, faunal material (which was analysed by Plug (1988)), shell beads and slag, was also identified. Meyer (1986) discussed only the ceramic material. The stone artefacts, shell beads and slag were recorded but not analysed. For this project all the material culture will be discussed in the following chapters.

Table 5.1 Excavation units, stratigraphy and methods used by Meyer

Site Number	*Unit Size*	*Stratigraphy*	*Method*
TSH1.1	10.5x2 m	TSH1.1 is an ash-heap about 1.2 m in depth. Contains ceramic material, faunal remains, burnt seeds and wood (see Figure1).	The unit was partially excavated in arbitrary layers, each 13 cm thick.
TSH1.2	11x1 m	Ash heap consisting of ceramics, faunal remains and other material culture	The top part of the deposit was partially excavated in arbitrary layers of 15 cm each.
TSH1.3		A small concentration of ceramics on the surface.	All material culture was collected.
TSH1.4		A concentration of ceramics and faunal remains exposed in the motorway	All material was collected.
TSH1.5	22 m	A dense concentration of ceramics and faunal remains, partially exposed by water erosion	The concentration was further exposed and the material culture was excavated/removed .
TSH1.6	2.5x2.5 m	A few small rocks found in a bowl-shaped hole in the ground	Expose and left in situ
TSH1.7	A small square of 2x2 m situated in a larger rectangle of 5x3 m.	Part of a concentration of ceramic and faunal material, which has been partially washed open.	Feature was further exposed and material culture was collected
TSH1.8	4x1.5 m	A few rocks packed in a bowl-shaped hole in the ground. Some ceramic sherds were also found in the vicinity.	Circular feature was exposed and left in situ
TSH1.9	3x3 m	Small concentration of metal slag found on the surface (inside an area of 3x3 m square)	No excavation. A total of 171 slag pieces were collected.
TSH1.10	28x0.5 m	A few ceramic sherds were found in this area at a depth of 15-30 cm beneath the surface.	Exposed and removed
TSH1.11			No metadata was recorded for this feature. The material, however, was found in the collection at the University of Pretoria. It was therefore also recorded and analysed with the rest of the material.

Source: Adapted from Meyer, 1986:107

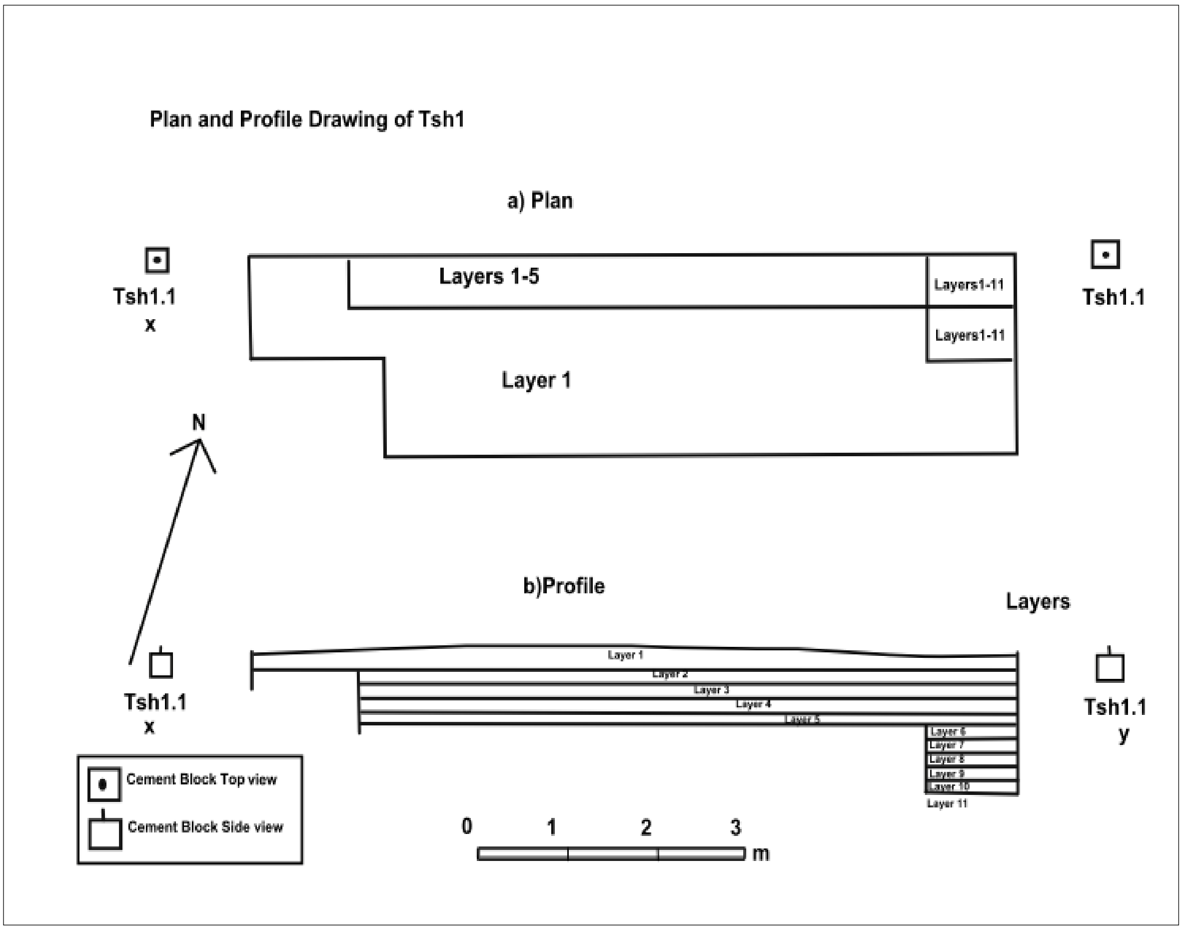


Figure 5.1 Plan and profile drawing of TSH1.1 showing where Layers 1-5 were excavated – excavation was continued to Layer 11 in the eastern corner only

Source: Adapted from Meyer, 1986:163

Figure 5.2 Excavation unit TSH1.7

Source: Meyer, 1986

Figure 5.3 Excavation unit TSH1.8

Source: Meyer, 1986

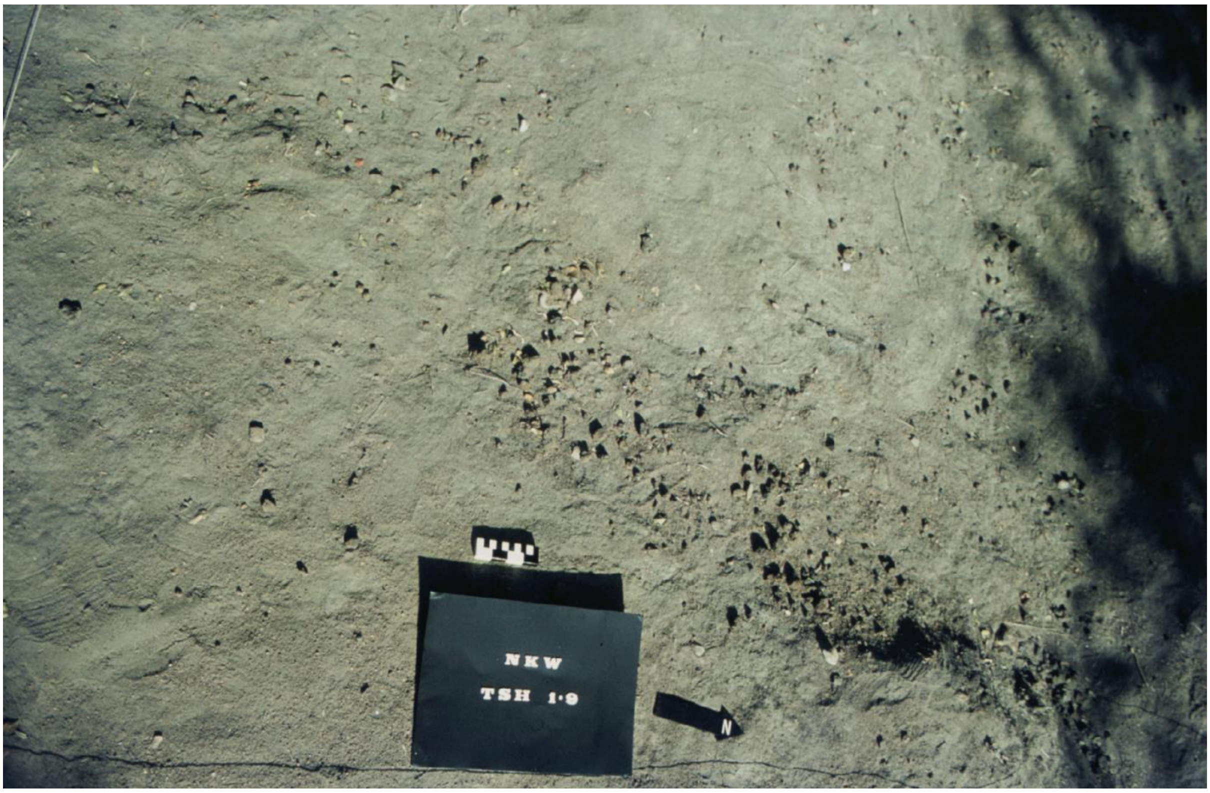


Figure 5.4 Collection of slag at feature TSH1.9

Source: Meyer, 1986

5.2. Data from TSH1A

Before excavations, auger test pits were dug to locate the most promising area for excavation. Six coring samples were taken and from those an area of excavation was identified. A 2x1 m excavation unit was placed over this area and was named TSH1A so as to avoid confusion with past excavations at the site (Figure 5.5).

Figure 5.5 Mound where excavation unit TSH1A was opened

5.2.1. Excavation summary

The excavation at TSH1A was guided by natural changes in the stratigraphy. Deposits were removed in five layers. From those five layers, 1 488 litres (1.071 m³) of excavated deposit was removed, which yielded a total 481 ceramic sherds. A further 61 were recovered from the survey and coring samples. Other material culture retrieved from the unit included 27 shell beads and two stone artefacts, as well as faunal material.

Three charcoal samples were also taken from TSH1A and were sent for radiocarbon dating. These samples were taken from Layers 4 and 5/2 (see Figure 5.6 and Figure 5.7) and will be discussed later in this chapter.

Figure 5.6 Excavation at TSH1A

5.2.2. Stratigraphy of TSH1A

The stratigraphy of the unit showed minimal changes. The soil was extremely hard and compact, which made the extraction of material difficult and left the faunal material in a fragmented state. The majority of the material culture was removed from Layer 2 (compact clay) and Layer 5 (soft clay with ash deposit) (Figure 5.8).

Figure 5.7 Stratigraphy of TSH1A

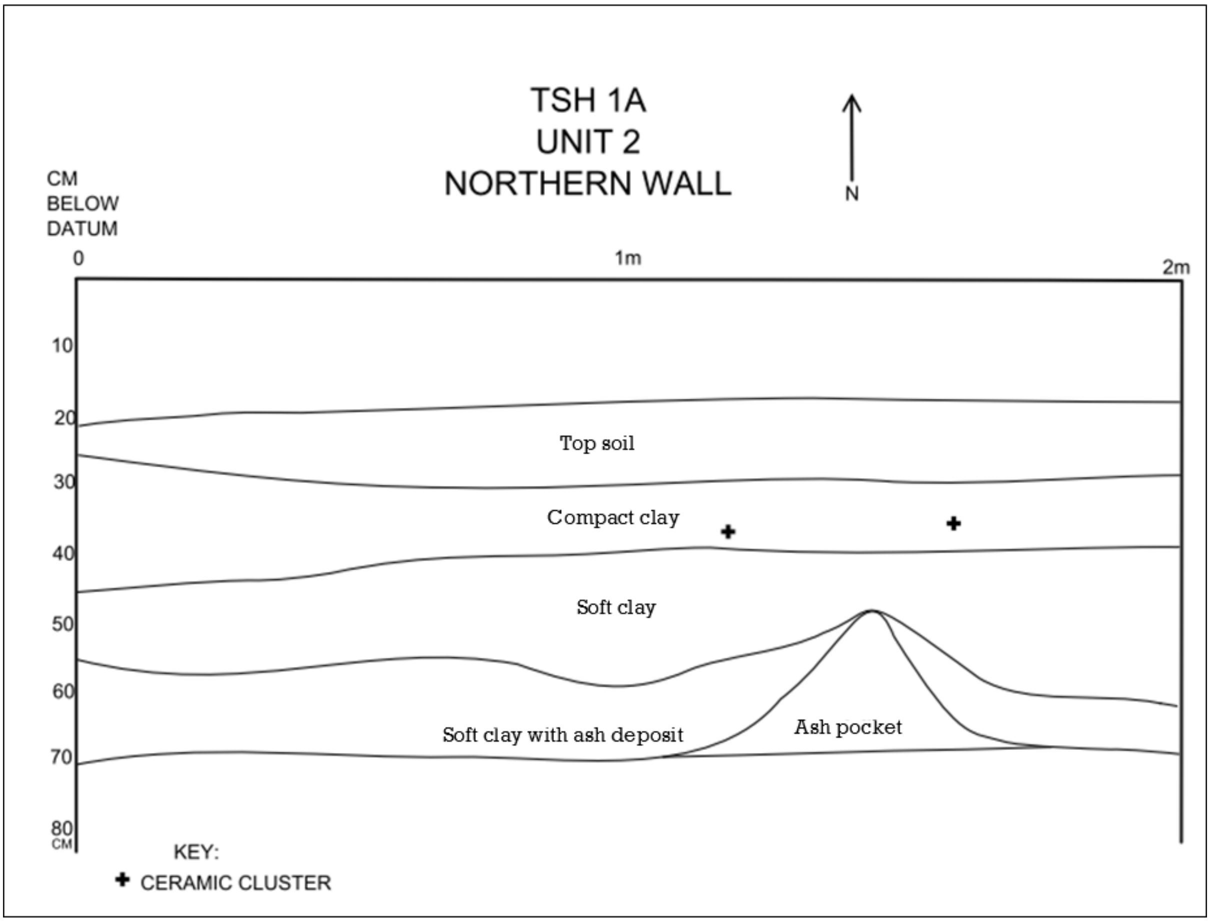


Figure 5.8 Stratigraphy of the northern wall at TSH1A

In Table 5.2 the different stratigraphic layers are presented and the soil colour and texture are discussed, and each layer and its depth beneath the datum point is described. The position from where the carbon samples were taken is also highlighted.

The layers were similar in colour and texture. However, small changes in the lower layers (where the colour became greyer and the texture less compact) were identified.

Table 5.2 Excavation information per layer

LAYER	*NAME*	*SOIL TEXTURE*	*SOIL COLOUR*	*Description/Notes*	*DEPTH (Below datum)*
1	Topsoil	Soil was a light clay texture	Black	Layer consisted of dark compact clay soil with many plant roots. Few inclusions noted in soil. Only a few pieces of calcite. Few artefacts found. Work on new layer commenced once all topsoil had been cleared.	27 cm
2-3	Compact clay	Soil a light clay texture	Very dark grey	Uniform, compact clay soil throughout the layer. Soil became less compact than in the previous layer. Termite activity noted. More material culture present. Carbon samples were collected. The deeper the layer, the more material was found.	45 cm
4	Soft Clay	Clay texture	Very dark grey	The soil is less compact and uniform throughout. Very few inclusions are noted, still some grass roots present. More material culture located, carbon samples are collected. Radiocarbon Sample TSH1A03 (D-AMS 004217) taken at a depth of 52cm.	54 cm
5	Soft clay with ash deposit	Clay texture	Dark grey	Slight colour changes in the soil. Less compact and greyer in colour. Minimal disturbances recorded. A larger quantity of material culture (beads, fauna and ceramics) was found.	68 cm
5/2	Ash pocket	Clay texture	Grey	A small (10x15 cm) ash pocket in the north-east corner of the unit. Grey in colour. Consisted mostly of ash. No material culture was removed, but a substantial quantity of carbon was removed. Two radiocarbon samples were taken from TSH1A01 (D-AMS 004215) and TSH1A02(D-AMS 004216) at a depth of 70 cm.	70cm

5.3. Radiocarbon dates

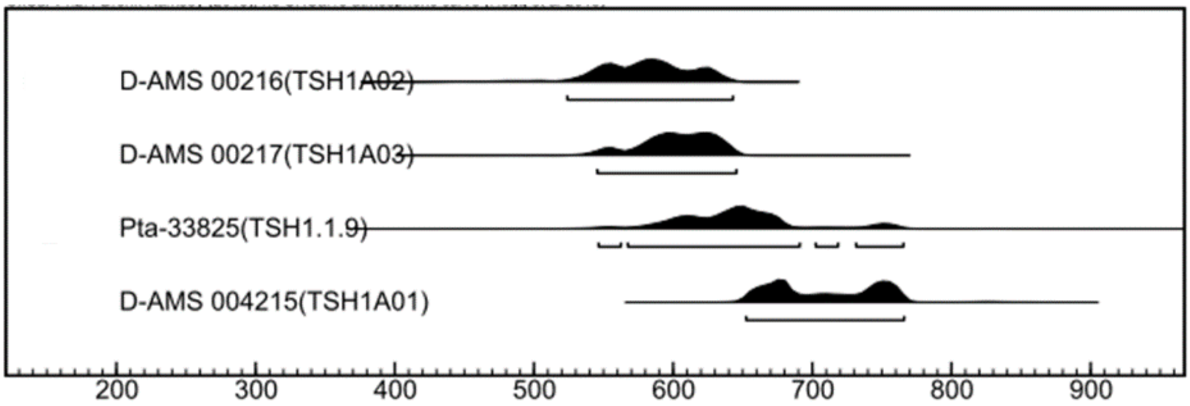
5.3.1. Chronology

Three wood charcoal samples were submitted for radiocarbon dating to Direct AMS Radiocarbon Dating Services. These three samples and the single sample obtained by Meyer (1986) were analysed and calibrated by using the Oxford Radiocarbon Accelerator Unit radiocarbon software Oxcal Version 4.2 (Bronk Ramsey, 2009, 2013). All the samples were plotted on the southern hemisphere calibration curve (Hogg *et al.,* 2013) and were calibrated to the two sigma range (Figure 5.9 and Table 5.3).

Table 5.3 Radiocarbon samples from TSH1

LAB CODE	SAMPLE NAME	C14 DATE	RANGE	LAYER	DESCRIPTION	CALIBRATED DATE RANGE AT 1 AND 2 SIGMA(AD)
D-AMS 004215	TSH1A01	1368	31	4	Wood charcoal sample found at a depth of 52 cm in clay soil	654 to 764 (Sigma 1) 652 to 766 (Sigma 2)
D-AMS 004216	TSH1A02	1535	29	5.2	Wood charcoal from ash pocket at a depth of 70 cm, removed from soft clay soil	545 to 629 (Sigma 1) 529 to 641 (Sigma 2)
D-AMS 004217	TSH1A03	1510	28	5.2	Wood charcoal from ash pocket at a depth of 70 cm, removed from soft clay soil	584 to 634 (Sigma 1) 545 to 645 (Sigma 2)
PTA-3825	TSH1.1.9	1440	50	9	Wood charcoal removed from a depth of 107 to 114 cm. Sample obtained by Meyer (1986)	601 to 676 (Sigma 1) 546 to 765 (Sigma 2)

Figure 5.9 Radiocarbon samples from TSH1 plotted to Sigma 2 (Oxcal v4.2.3) (Bronk Ramsey 2013) r5 SHCal04 atmospheric curve



Source: Hogg *et al*., 2013

Sample D-AMS-004215 was taken from Layer 4 at a depth of 52 cm. The calibrated date ranges suggest occupation from between AD 640 and AD 720 to around AD 750.

Samples D-AMS 004216 and D-AMS 004217 were both taken from an ash pocket in Layer 5.2 at a depth of 72 cm below datum. The calibrated dates for both charcoal samples fall between AD 530 and AD 660.

A single wood charcoal sample (Pta-3825) was collected by Meyer (1986:324) at a depth of 104-119 cm. The calibrated radiocarbon dates suggest occupation from AD 550 to around AD 730.

All four samples (Figure 5.8) show a strong correlation with each other. TSH1 seems to have been occupied anywhere between AD 530 and AD 670. The fact that the dates follow sequentially, with significant overlaps between the dates taken from TSH1A (D-AMS 00215-00217) and the earlier date taken by Meyer (Pta-3825) points to a single continuous occupation at TSH1.These results will be discussed in greater detail in the following chapter when the ceramic material is introduced.

5.4. Concluding remarks

This chapter presented the excavation data from TSH1. Both the past excavations conducted by Meyer (1986) and the new excavation unit at TSH1A were discussed. The radiocarbon samples from both excavations were also presented and a date range for the occupation of the site was identified, falling between AD 530 and AD 670. In the following chapter, the ceramic material will be discussed.

Chapter 6

Analysis of ceramics found at TSH1

The majority of the research questions dealt with in this dissertation relate to the ceramic material found at TSH1, which constituted a major part of this study. This chapter is divided into three sections. The first will deal with stylistic attributes of the ceramic assemblage and the chronological and typological sequences of TSH1 will be discussed, after which I will focus briefly on contextualising this data. Second, the morphological aspects of the assemblage will be presented. This will include fabric and XRF analysis. Third, the data will be contextualised in a discussion of the radiocarbon dates obtained from objects found at the site, which have already been mentioned, and with reference to associated southern African Early Farming sites.

6.1. Ceramic material from TSH1 and TSH1A

In total 1 745 ceramic sherds from both excavations, weighing just over 28 kg, were analysed. Of these sherds, 542 came from TSH1A, while the rest were from the earlier excavations. As can be seen in Table 5.3, the sherds were divided into three categories, which were discussed in detail in Chapter 4 (Table 6.1).

Table 6.1 Ceramic material from TSH1 and TSH1A

Column heading	***n***	***%***	***Weight (g)***	***Decorated***	***%***	***Undecorated***	***%***
Sherds smaller than 2 cm (Grade A)	509	29	1763.6	0	0	509	100
Larger than 2 cm (Grade B)	975	56	18517.6	195	20	780	80
Vessels with complete attributes (Grade C)	261	15	8490	248	95	13	5
Total	1745	100	28771.2	443		1302	

The first category (Grade A) did not allow for quantitative data, and was therefore only counted and weighed. This sample was underrepresented in the earlier collection (TSH1) as only 212 Grade A sherds were identified. A total of 975 sherds were larger than 2x2 cm (Grade B), but not large enough to show all the relevant attributes.

Most of the Grade B sherds (80%, *n=780)* were not decorated, but where present, decorative motifs were identified and analysed.

The Grade C ceramic sherds found totalled 261, of which 95% (*n=248)* showed some type of decoration, while only 5% (*n=13)*) were undecorated (Table 6.1). Within Grade C, it was possible to identify the majority of the attributes (vessel shape, decoration placement and motif). However, some of the samples were too fragmented and it was therefore not possible to identify all the attributes. The limitations of using fragmented samples were noted and taken into consideration, seeing that complete or near-complete ceramic vessels are the most reliable sources for determining ceramic types (Maggs, 1980a, 1980b; Maggs & Michael, 1976). However, more recent research has shown that even ceramic sherds with only some attributes present (only part of the design layout) are useful for chronological analysis (Fowler & Greenfield, 2009:353). For example, it may not be possible to identify the shape of the vessel or the location of the motif, but the attributes that are present can still be diagnostic (Fowler & Greenfield, 2009:353). Therefore, by focusing on the quantitative (Huffman, 2000) and qualitative aspects, it is possible to form a detailed typology from which discernible patterns and links can be drawn. The problems posed by a fragmented collection can also be limited by focusing on variables other than shape, layout and motifs. These variables include rim types and orifice diameter, which can contribute to a more holistic understanding of the collections (Rice, 1996a, 1996b; Orton, 1993; Sinopoli, 1991).

The design layout (vessel shape, placement of decoration and type of decorative motif) of the Grade C ceramics will be presented and discussed, followed by a discussion of the decorative motifs on Grade B sherds.

6.2. Vessel types

The identification of ceramic vessel types is based on their shapes, decorative motifs and the placement of decorations (Huffman, 1980). These three attributes comprise the criteria for the typological model at TSH1 and will be discussed in the following section.

6.2.1. Vessel shapes

Six different vessel shapes were identified at TSH1 (three jar-type and three bowl-type vessels). Only 98 (43%) of the 229 vessels (from Grade C) were large enough to establish vessel shape. The different vessel shapes are presented in Table 6.2.

Table 6.2 Vessel shapes found at TSH1, including vessels for which no types (NA) could be established

VESSEL SHAPES	N	%
1.1	9	3.5
1.2	57	22
1.3	17	6.5
2.1	10	4
2.2	18	7
2.3	6	2
NA	144	55
TOTAL	261	100

Once the shapes of the vessels from TSH1 had been quantified, the ceramics from which no shape could be determined were removed from the equation (Figure 6.1). The majority of the jar-shaped vessels (49%, *n=57)* were classified as slightly everted jars with a well-divided point of inflexion (Shape 1.2). This shape corresponds with the only jar shape identified by Meyer at TSH1 (1986:198), which he classified as a 'pot with a straight lip which hangs over the vessel' (1986:196). The second most prominent type was subcarinated bowls (15%, *n=18)*, also identified by Meyer (1986:196) in his second group. Everted jars with a slight point of inflexion (1.3, 14.5%, *n*=17) also occurred in relatively high numbers. All other forms constituted 19% of the assemblage (Figure 6.1 and Table 6.2). The 19% can be divided between jars with a straight neck (1.1), open bowls (2.1) and carinated bowls (2.3).

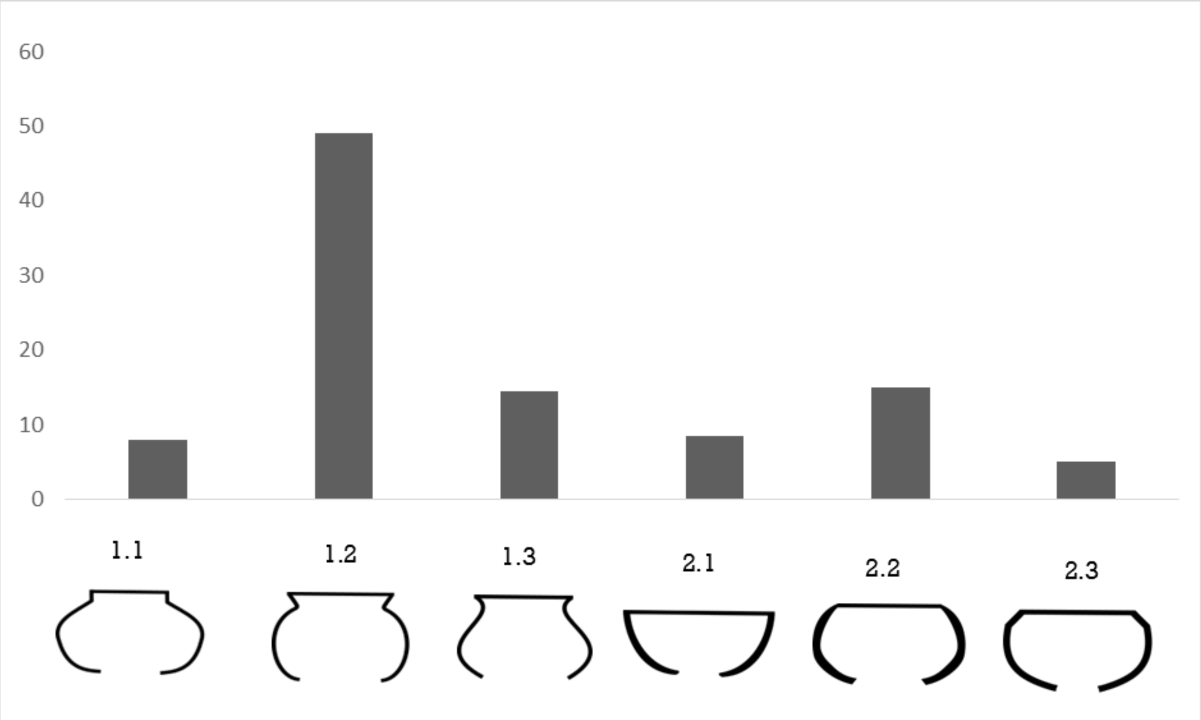


Figure 6.1 Different vessel shapes found at TSG1, expressed in percentages

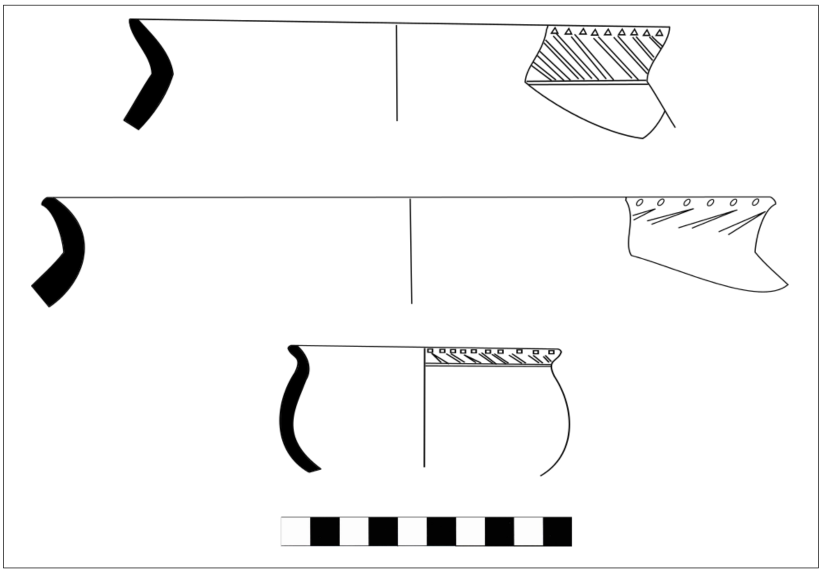


Figure 6.2 Jar-shaped vessels from TSH1

When compared to other EFC typology, the vessel shapes identified at TSH1 show a strong correlation with those found at Mzonjani sites.

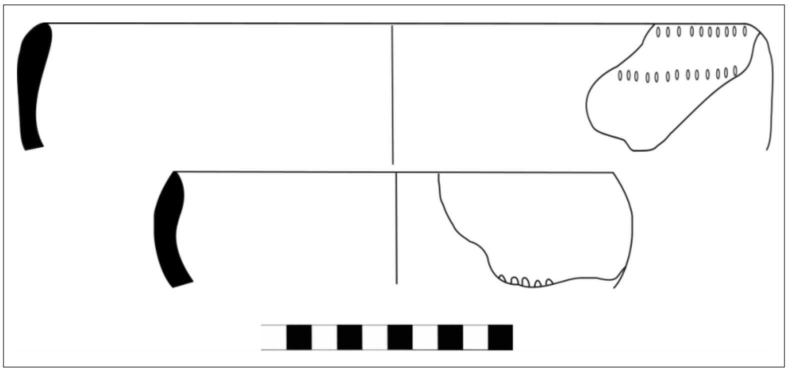


Figure 6.3 Bowl shapes from TSH1

The majority of the jar-shaped vessels found at Mzonjani have relatively straight everted necks with well-defined points of inflexion (Maggs, 1980a:76). At Broederstroom and Baleni (both Mzonjani sites), vessels with everted rims and well-defined points of inflexion are also prominent (Antonites, 2006; Mason, 1981) (Figure 6.4).

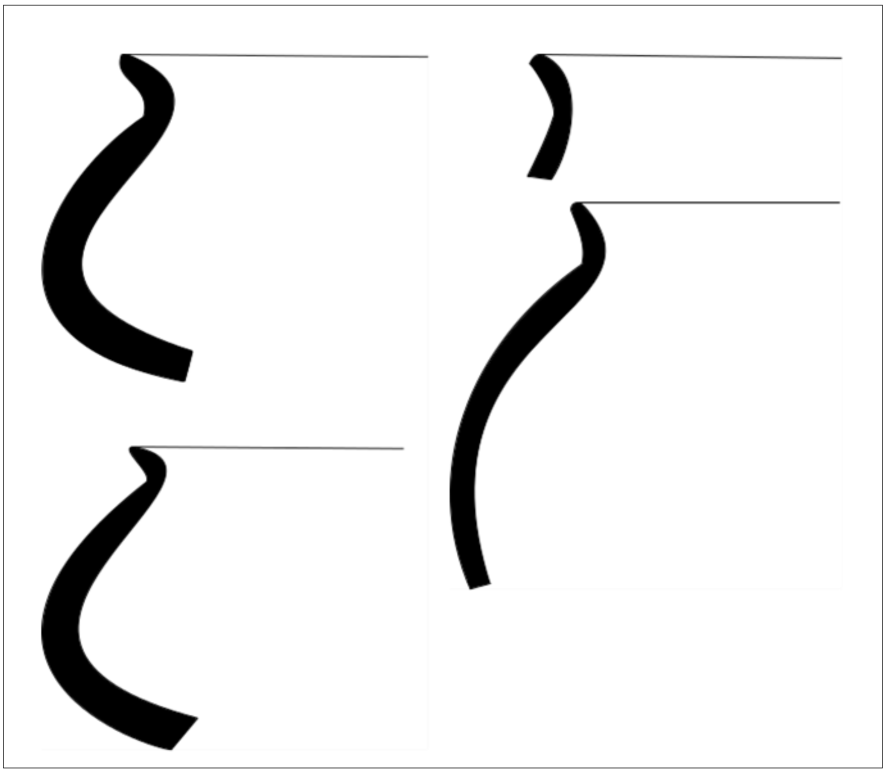


Figure 6.4 Jar shapes from Broederstroom (Mason 1981) and Mzonjani (Maggs 1980a)

6.2.2. Placement of decorations at TSH1 and TSH1A

A comparison between different decorative motifs and their placement was based on five possible positions on the vessels (see Chapter 4 for further details on positions). Vessels from which a position could not be determined (not available N/A) were not considered for analysis and undecorated vessels were recorded as ‘0’.

Decorations were mostly confined to the rims of vessels (P2) and only 10% (*n*=26) of the rims were undecorated (Figure 6.5 and 6.6, Table 6.3), where the lip (P1) of the rim had a negligible amount of decoration.

The absence of visible decorations on the lower shoulders/upper bodies (P4) and lower bodies (P5) of the vessels could possibly be ascribed to the fragmented nature of the assemblage (Table 6.3).

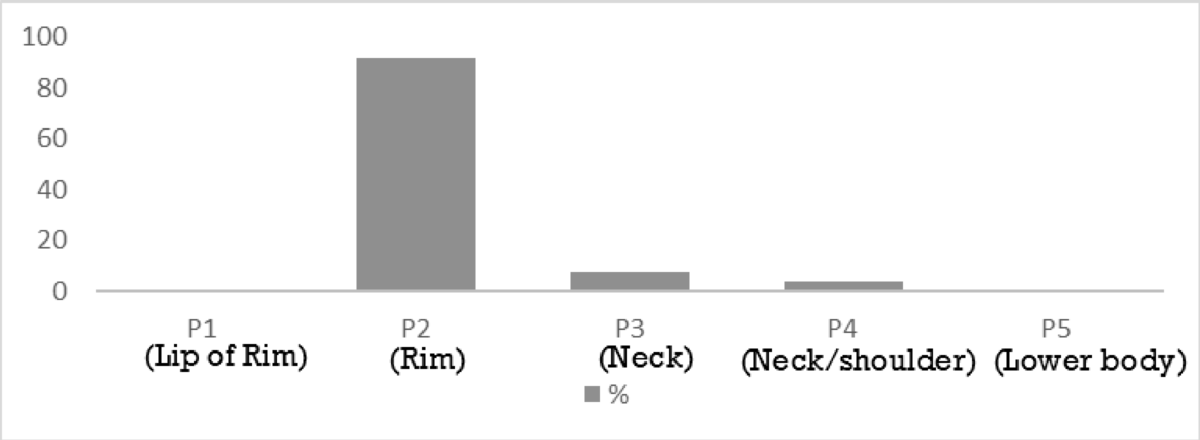


Figure 6.5 Placement of decorations across TSH1, expressed in percentages

Table 6.3 Undecorated ceramics (0) and ceramics that show no clear traces of any decoration (N/A)

	P1 *n*	***%***	**P2 *n***	***%***	**P3 *n***	***%***	**P4 *n***	***%***	**P5 *n***	***%***
0	252	97	26	10	89	34	17	6.5	1	0.5
N/A	8	2.5	1	0.5	151	57	232	89	260	99.5
Total	252	99.5	27	10.5	211	91	249	95	261	100

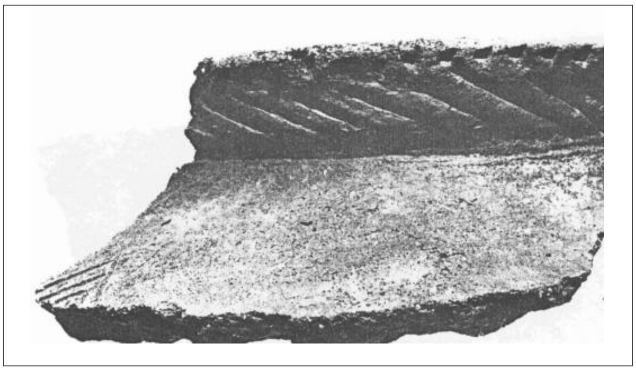


Figure 6.6 Photograph displaying the position of the decoration on vessels at TSH1

Source: Meyer, 1986

Meyer (1986) did not discuss the position of decorations on the vessels from TSH1. A subsequent analysis of this material and material from the recent excavations showed that the majority of the decorations are located on the rims of the vessels, with some examples showing decorations on the upper bodies.

6.2.3. Decorative motifs

Decorative motifs were identified on both Grade B and Grade C sherds. Therefore, the 975 sherds from the assemblage that were larger than 2x2 cm (Grade B) were analysed to see whether any motifs could be discerned. The majority of sherds (80% *n=780)* were undecorated, but this absence of decoration is most likely due to the fragmented nature of the sherds. However, it was possible to identify motifs in 20% (*n=195)* of the sherds. The majority could be identified as discontinuous motifs (56%, *n=110),* which consisted mainly of incised lines.

The rest of the motifs identified were continuous motifs and were dominated by oblique incised lines (56%, *n=48).* Other continuous motifs that occurred were alternating incised triangles with line motifs, and triangular incised lines with horizontal motifs.

A negative aspect of this quantification of ceramic vessels is that it is possible that sherds with different motifs could belong to the same vessel; therefore, the number of decoration types could be inaccurate. This method has nevertheless been shown to be a successful way to quantify a smaller collection and to help with the identification of ceramic traditions (Hall, 1980).

6.2.3.1. Decorative motifs on Grade C shards

Figure 6.7 and Table 6.4 show the predominance of continuous oblique incised lines with or without punctate (53%, *n=130*) and alternating oblique hatched triangles with or without punctate (13%, *n*=34), where continuous punctates and discontinuous motifs show relatively small numbers.

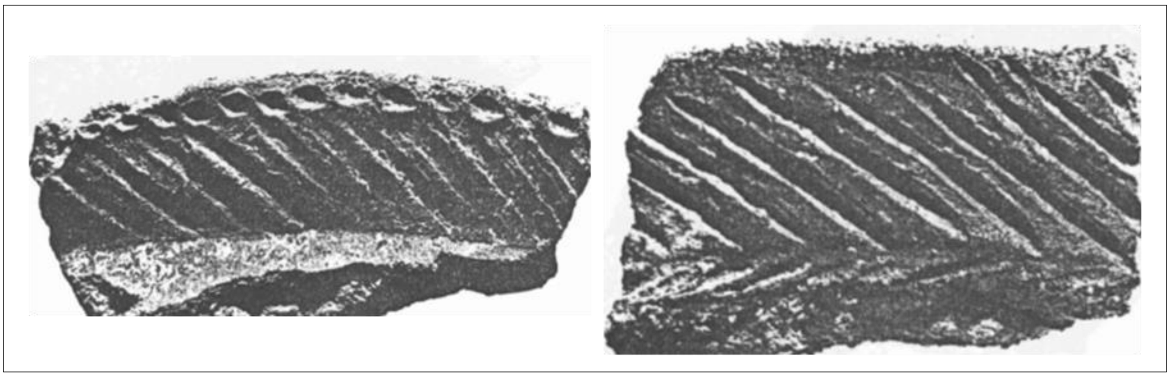


Figure 6.7 Photograph illustrating the style and placement of decorations on ceramic vessels found at TSH1

Source: Meyer, 1986

Table 6.4 Decorative motifs from TSH1 ceramic assemblage, expressed in numerical value and percentages

DECORATIVE MOTIF	*N*	%
OBLIQUE INCISED LINES (1.1-1.7)	144	54
HORIZONTAL INCISED LINES (ONLY 1.10-1.11)	5	1
ALTERNATING OBLIQUE/HORIZONTAL LINES	10	4
ALTERNATING OBLIQUE INCISED TRIANGLES, WITH/WITHOUT PUNCTATES (1.15-1.20)	34	13
INCISED TRIANGULAR PATTERNS (1.21-1.25)	12	5
CHEVRON PATTERNS (1.26-1.29)	16	6
CROSS-HATCHING (1.35)	3	1
CONNECTED HERRINGBONE/CHEVRON INCISED LINES (1.41)	1	0.5
SINGLE BAND OF CONTINUOUS PUNCTATES (2.1)	16	6
MULTIPLE BANDS OF CONTINUOUS PUNCTATES3 (2.2)	1	0.5
DISCONTINUOUS INCISED PARALLELOGRAMS (3.1)	3	1
DISCONTINUOUS INCISED TRIANGULAR MOTIFS (3.2-3.3)	6	2.5
DISCONTINUOUS INCISED WAVE MOTIFS (3.5)	1	1
DISCONTINUOUS INCISED LADDER MOTIF (3.6)	1	1
DISCONTINUOUS VERTICAL PUNCTATES (3.8)	1	1
MISCELLANEOUS CONTINUOUS MOTIFS (4.4-4.5)	2	1
MISCELLANEOUS DISCONTINUOUS MOTIFS (5.2-5.7)	11	4
TOTAL	267	100

The majority of the vessels from Grade C contain decorative motifs, with only a small number of the vessels being undecorated (Figure 6.8). This pattern is present in the majority of ceramic assemblages of EFC sites in southern Africa (Huffman, 2007; Maggs, 1980a, 1980b, 1984a; Whitelaw, 1993, 1994, 1996).

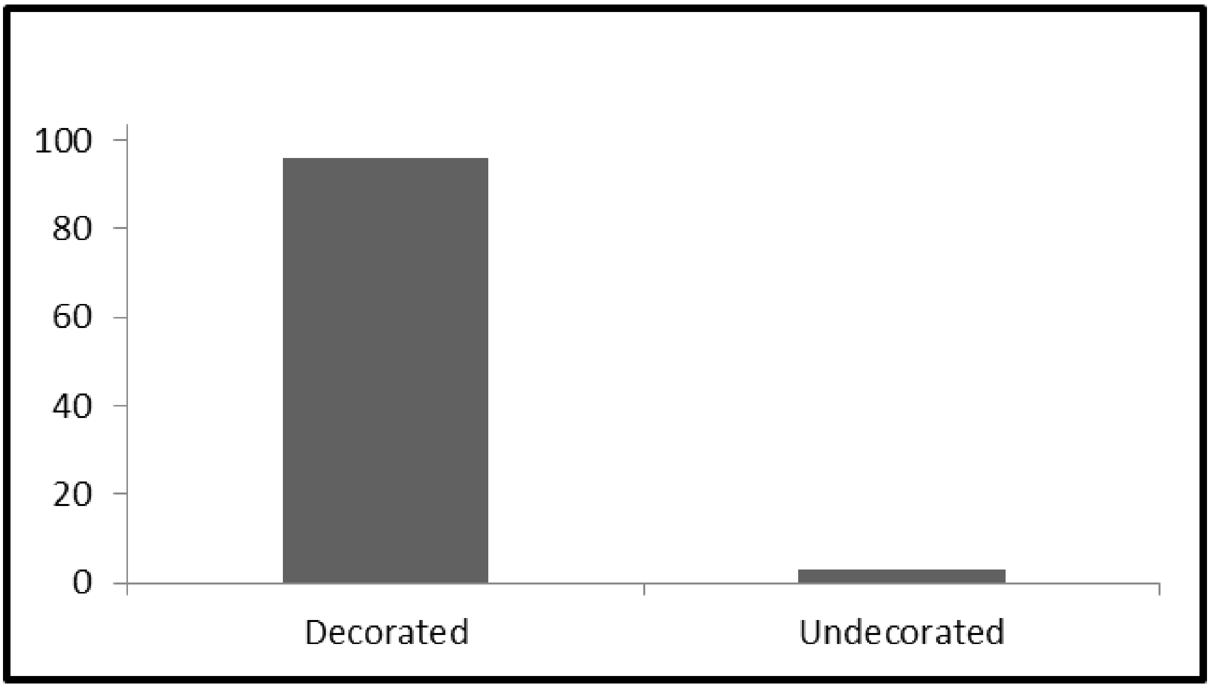


Figure 6.8 Decorated compared to undecorated vessels at TSH1, expressed in percentages

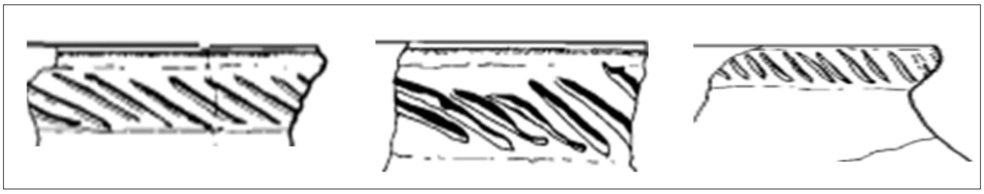


Figure 6.9 Decorative motifs and their placement on vessels at Enkwazini
Source: Hall, 1980:103

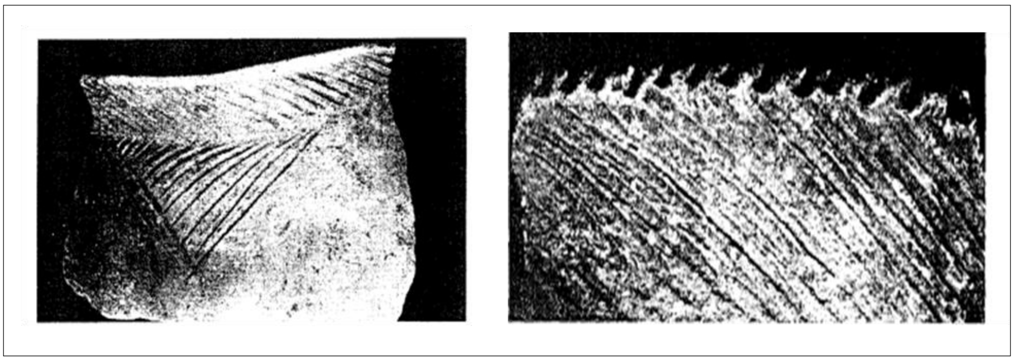


Figure 6.10 Decorative motifs and their placement on vessels from Derdepoort

Source: Nienaber *et al*., 1997:19

6.3. Rim types

Of the four rim types that were identified, 88% (*n*=201) were tapered rims (Figure 6.11).

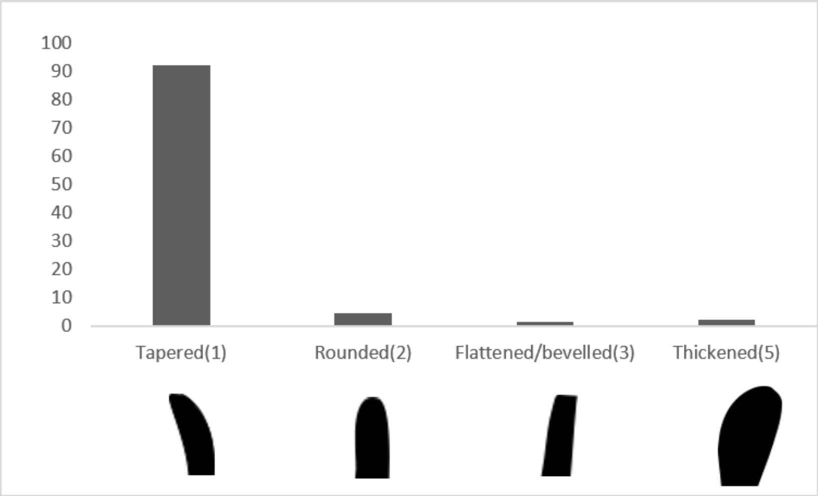
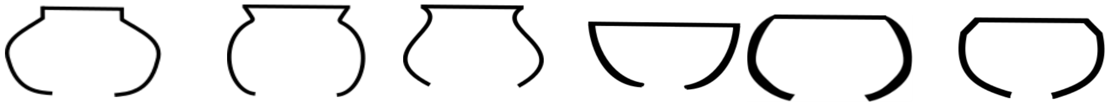
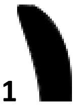


Figure 6.11 Various rim types found in ceramic assemblage from TSH1, expressed in percentage

Most of the vessel shapes had tapered rims (Table 6.5) with the bowl shapes showing a similar pattern.

Table 6.5 Counts of rim types compared to vessel shapes found at TSH1

Rim Types	Vessel shapes					
						
	1.1	1.2	1.3	2.1	2.2	2.3
1 	9	52	14	5	15	6
2 	0	3	1	1	1	0
3 	0	1	1	1	1	1
5 	0	0	0	0	0	0
N/A	0	1	1	2	0	0
Total	9	57	17	9	17	7

6.4. Vessel shapes, decorative motifs and placement of decorations (matrix of vessel attributes)

In the following section, the individual attributes (vessel form, decorative motifs and the placement of decorations) will be presented as a collection in a presence/absences matrix (Orton *et al.,* 1993; Maggs, 1980a, 1980b, 1984). The variables were numbered from 1 to 32, which made it possible to note any patterns that occurred together. The variables that were taken into account are as follows:

Vessel shape:

1. Straight-necked jar
2. Everted jar with a well-defined point of inflexion
3. Slightly everted jar with a slight point of inflexion or no inflexion
4. Straight-necked/open bowls
5. Sub-carinated/Inturned bowls
6. Carinated bowls

Rim types:

7. Tapered
8. Rounded
9. Flattened/bevelled
10. Thickened

Placement of decoration:

11. At the top of the lip of the vessel
12. On the rim of the vessel, just below the lip
13. On the neck of the vessel
14. On the neck/shoulder junction and further down on the upper part of the body of the vessel

15. On the lower body and base of the vessel

Decorative motifs:

16. Oblique incised lines
17. Horizontal incised lines
18. Alternating oblique/horizontal lines
19. Alternating oblique incised triangles, with/without punctates
20. Incised triangular patterns
21. Chevron patterns
22. Cross-hatching
23. Connected herringbone/chevron incised lines
24. Single band of continuous punctates
25. Multiple bands of continuous punctates
26. Discontinuous incised parallelograms
27. Discontinuous incised triangular motifs
28. Discontinuous incised wave motifs
29. Discontinuous incised ladder motif
30. Discontinuous vertical punctates
31. Miscellaneous continuous motifs
32. Miscellaneous discontinuous motifs

Table 6.6 Presence/absence matrix for TSH1 showing all stylistic attributes (vessel shapes (Nos 1-6), rim types (Nos 7-10), placement of decoration (Nos 11-15) and decorative motifs (Nos 16-32). All scores are expressed in numerical values.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	_																															
2	_	_																														
3	_	_	_																													
4	_	_	_	_																												
5	_	_	_	_	_																											
6	_	_	_	_		_																										
7	7	50	14	7	17	5	_																									
8	_	3	1	_	_		_	_																								
9	1	2	1	1	1	1	_	_	_																							
10	_	2	_	_	_		_	_	_	_																						
11	_	_	_	1	_		_	_	_	_	_																					
12	_	_	1	_	_	5	_	_	_	_	_	_																				
13	8	54	17	4	10	2	_	_	_	_	_	_	_																			
14	1	8	2	1	4	_	_	_	_	_	_	_	_	_																		
15	1	3	1	1	1	_	_	_	_	_	_	_	_	_	_																	
16	4	40	13	_	_	1	150	7	4	3	1	145	1	_	_	_																
17	_	1	_	1	_	_	4	_	_	_	_	5	_	_	_	_	_															
18	_	3	3	_	_	_	10	2	_	_	_	10	_	_	_	_	_	_														
19	2	2	_	_	2	1	41	2	_	_	_	36	2	_	_	_	_	_	_													
20	_	_	2	1	1	_	7	_	_	_	_	6	2	1	_	_	_	_	_	_												
21	1	1	_	_	1	1	14	_	_	_	_	9	7	_	_	_	_	_	_	_	_											
22	_	_	_	_	_	_	3	_	_	_	_	3	_	_	_	_	_	_	_	_	_	_										
23	_	_	_	_	1	_	1	2	_	_	_	1	_	_	_	_	_	_	_	_	_	_	_									
24	1	_	_	4	6	3	17	_	1	_	_	10	5	1	_	_	_	_	_	1	_	_	_	_								
25	_	_	_	_	1	_	_	_	_	_	_	1	_	_	_	_	1	_	_	_	_	_	_	_	_							
26	1	_	_	_	_	_	2	_	_	_	_	1	_	1	_	1	1	_	_	_	_	_	_	_	_	_						
27	_	1	1	_	_	_	2	_	1	_	_	1	1	4	_	3	1	_	_	_	_	_	_	_	_	_	_					
28	_	_	_	_	_	1	_	_	1	_	_	1	_	_	_	_	_	_	1	_	_	_	_	_	_	_	_	_				
29	_	1	_	_	_	_	4	_	_	_	_	_	_	1	_	1	_	_	_	_	_	_	_	_	_	_	_	_	_			
30	_	_	1	_	_	_	3	_	_	_	_	_	_	1	_	1	_	_	_	_	_	_	_	_	_	_	_	_	_	_		
31	_	1	_	_	_	_	2	_	_	_	_	11	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	
32	_	3	1	_	1	_	10	_	_	1	_	6	3	2	_	2	_	_	1	_	_	_	_	_	_	_	_	_	_	_	_	_

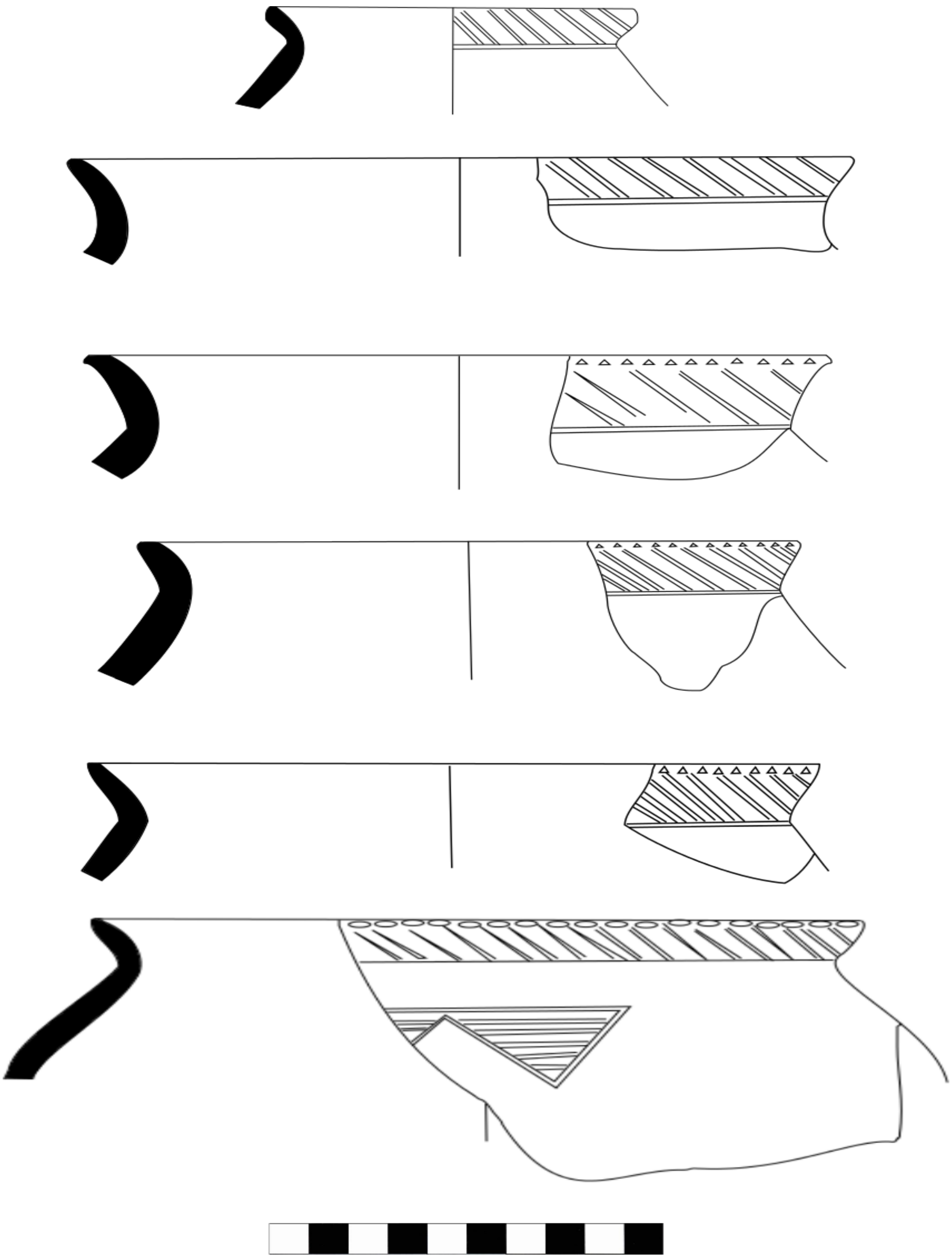


Figure 6.12 Examples from the TSH1 ceramic assemblage, displaying all attributes together

In Table 6.6, all 32 attributes are represented to determine the presence and absence of each attribute in relation to the others. Table 6.8 shows that everted jars with well-defined points of inflexion (No. 2), tapered rims (No. 13) and oblique incised lines (No. 16) on the rim (No. 12) dominated the ceramic assemblage at TSH1. Some of these samples also contained discontinuous motifs on the lower neck/upper body of the vessels (No. 14) (Figure 6.12).

The dominant bowl vessels identified were subcarinated/inturned bowls (No. 5) with tapered rims (No. 7) and punctates (Nos 24 and 25) on the rims (No. 12), or undecorated vessels (Figure 6.13).

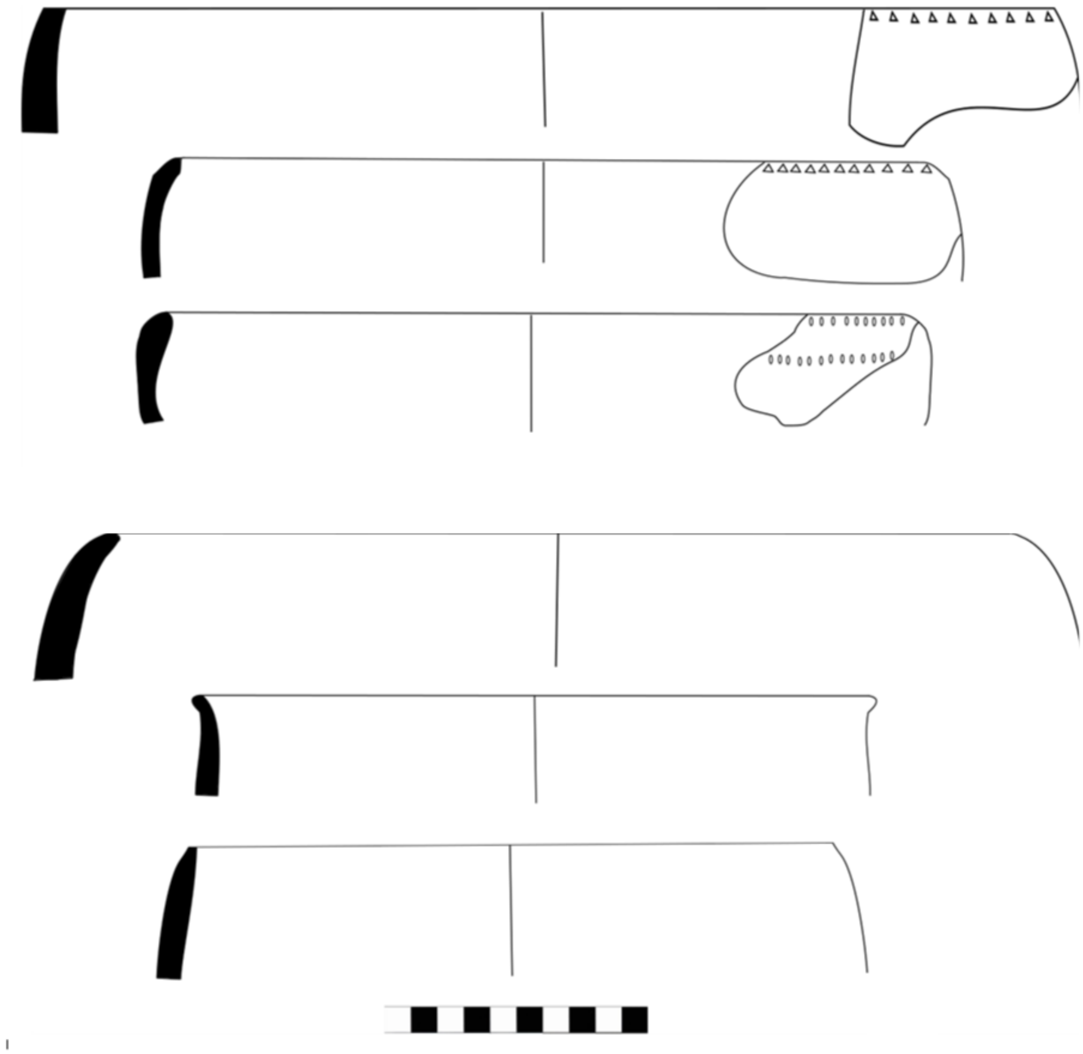


Figure 6.13 Examples of bowl-shaped vessels found at TSH1

6.5. Typology and regional context of ceramic sherds obtained from TSH1

In order to understand the typological and regional sequence of the ceramics from TSH1, a multidimensional model was used (Huffman, 1980). As discussed earlier, three variables (vessel shape, decoration type and placement of decorations) of the ceramic classes are used to create set classes (Huffman, 1980). The use of the model has been shown to assist in the classification of EFC ceramic assemblages and it is widely used by EFC archaeologists in southern Africa (Antonites *et al.,* 2014; Evers, 1982; Evers & Van der Merwe, 1987; Loubser, 1993; Whitelaw, 1993, 1994, 1996; Whitelaw & Moon, 1996). This model can also accurately identify possible variations between the ceramics from TSH1 and those from other known Mzonjani sites in KwaZulu-Natal and Mpumalanga (Whitelaw, 1996).

The following ceramic classes were identified at TSH1 and TSH1A (Figure 6.14, Nos 1-12 indicating ceramic classes):

1. Pot with an everted/recurved rim and a decorative band on the rim
2. Pot with an everted rim and a decorative band on the rim, with spaced discontinuous motifs on the shoulder/body of the vessel
3. Pot with everted rim and a decorative band on the rim, as well as continuous oblique triangles on the neck/shoulder junction
4. Pot with an everted rim and a decorative band on the rim and upper neck, as well as discontinuous decorative motifs on the lower shoulder
5. Open/necked bowl with no decoration.
6. Inturned bowl with no decoration
7. Inturned bowl with decorated rim
8. Carinated bowl with discontinuous hatched alternating triangles with triangular punctates on the neck/shoulder
9. Carinated bowl with a line of punctates below the lip/on the rim
10. Pot with an everted, undecorated rim
11. Open bowl with a decorative band on the rim
12. Inturned bowl with a decorative band on the lower neck

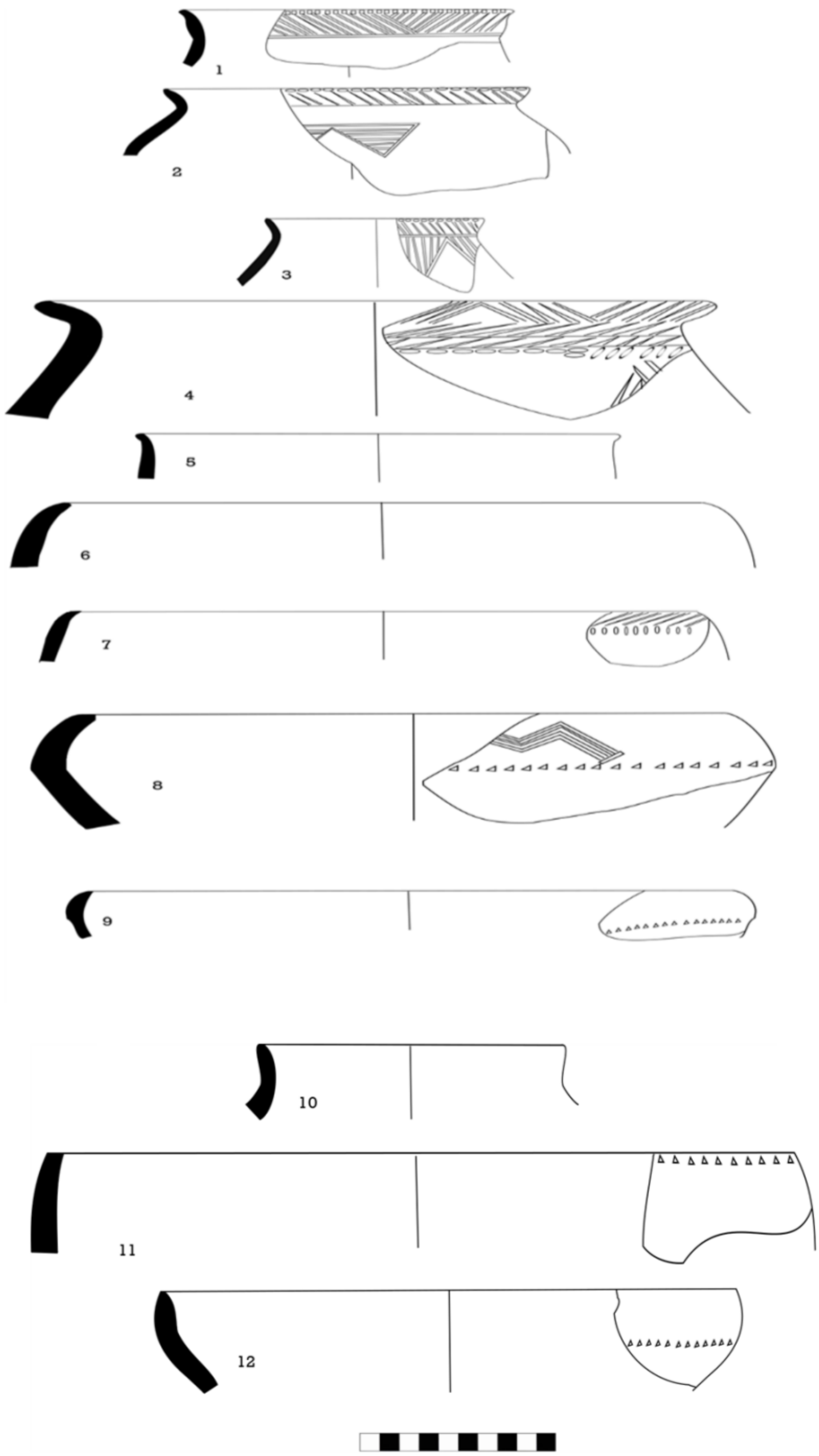


Figure 6.14 TSH1 ceramic classes (Nos 1-12 indicate different ceramic classes.)

These ceramic classes were then compared to the ceramics found at multiple Mzonjani sites in a presence/absence table. The ceramic classes that were used for the comparison were from KwaZulu-Natal EFC sites, including Mzonjani (Maggs, 1980a), Enkwazini (Hall, 1980) and four Mngeni Valley sites (Whitelaw & Moon, 1996). EFC sites closer to TSH1 were also used for comparison and included Plaston (Evers, 1977a, 1988), that Baleni salt-production site (Antonites, 2005; 2013), Lydenburg Heads (Whitelaw, 1996) and Garonga (Burrett, 2007) (see Table 6.7).

As can be seen in Table 6.8, all the scores were fairly similar, possibly because of the inclusion of bowl vessel classes, which in some cases are underrepresented. However, patterns seem to emerge in Table 6.8, with high similarity scores shown between TSH1-KwaZulu-Natal Mzonjani sites and TSH1-Plaston (Table 6.8). Some similarities were noted between TSH1 and Garonga, which indicates the presence of the Mzonjani attributes found at Garonga (Burrett, 2007).

When bowl classes are excluded (Table 6.9) from the similarity scores, a clearer pattern emerges, which shows a further correlation between TSH1 and the KwaZulu-Natal Mzonjani sites, as well as between TSH1 and Plaston. Interestingly enough no strong correlation was noted between TSH1 and the Lydenburg Heads sites. These results will be further discussed in Chapter 11.

Table 6.7 Distribution of ceramic classes at TSH1 and the KwaZulu-Natal (KZN), Lydenburg Heads (LY), Plaston (PL), Garonga (GA) and Baleni (BA) sites

Ceramic classes	**TSH**	**KZN**	**LY(G1)**	**PL**	**GA**	**BA**
Pot with an everted rim with a decorative band on the rim and isolated spaced motifs followed by a band on the shoulder			X	X		
Pot with an everted rim with decorative band on the rim and a band on the lower shoulder	X	X	X	X	X	
Pot with an everted rim with a decorative band on the rim and spaced motifs on the shoulder	X	X	X	X		X
Pot with an everted rim with a decorative band on the rim	X	X	X	X	X	X
Pot with an everted rim with isolated spaced motifs on the shoulder			X			
Pot with an everted rim with a single decorative band on the neck		X				
Pot with an everted rim with diagonal incisions on the lip						X
Pot with an everted, undecorated rim	X	X				X
Pot with an everted rim and a single horizontal decorative band on the rim						
Pot with an everted rim, with a wide decorative band covering the entire rim and neck		X		X	X	
Pot with an everted or recurved rim with a complex combination of decoration types that extend from the bevelled lip down to the shoulder					X	
Pot with an everted rim with a decorative band on the rim and upper neck, followed by discontinuous decorations on the lower shoulder	X			X		
S-shaped jar with a single decorative band on the body				X		
Pot with everted bevelled rim and decorated with either a band of incised lines below the lip or incised lines below the lip and on the rim base						X
Open, shallow undecorated bowls	X	X			X	
Open bowl with a decorative band on the shoulder	X			X		
Inturned subcarinated bowl with discontinuous decoration and a single continuous decorative band	X					
Interned bowl with a decorative band below the lip/on the rim and a single line of decoration below	X	X	X		X	
Inturned carinated bowl with a decorative band below lip/on the rim, as well as on the neck	X		X	X		
Inturned bowl with no decoration	X	X				
Necked bowl	X				X	
Total	12	9	7	10	7	5

Table 6.8 Similarity scores for TSH1 and the KwaZulu-Natal Mzonjani (KZN), Lydenburg Heads (LY), Plaston (PL), Garonga (GA) and Baleni (BA) sites, expressed in percentages

	TSH1	KZN	LY	PL	GA	BA
TSH1	_					
KZN	67	_				
LY(G1)	53	50	_			
PL	55	42	59	_		
GA	53	63	43	35	_	
BA	35	43	33	27	17	_

Table 6.9 Similarity scores for TSH1 and the KwaZulu-Natal Mzonjani (KZN), Lydenburg Heads (LY), Plaston (PL), Garonga (GA) and Baleni (BA) sites, excluding bowl classes, expressed in percentages

	TSH1	KZN	LY	PL	GA	BA
TSH1	_					
KZN	72	_				
LY	60	55	_			
PL	62	57	62	_		
GA	44	60	44	50	_	
BA	50	55	31	31	22	_

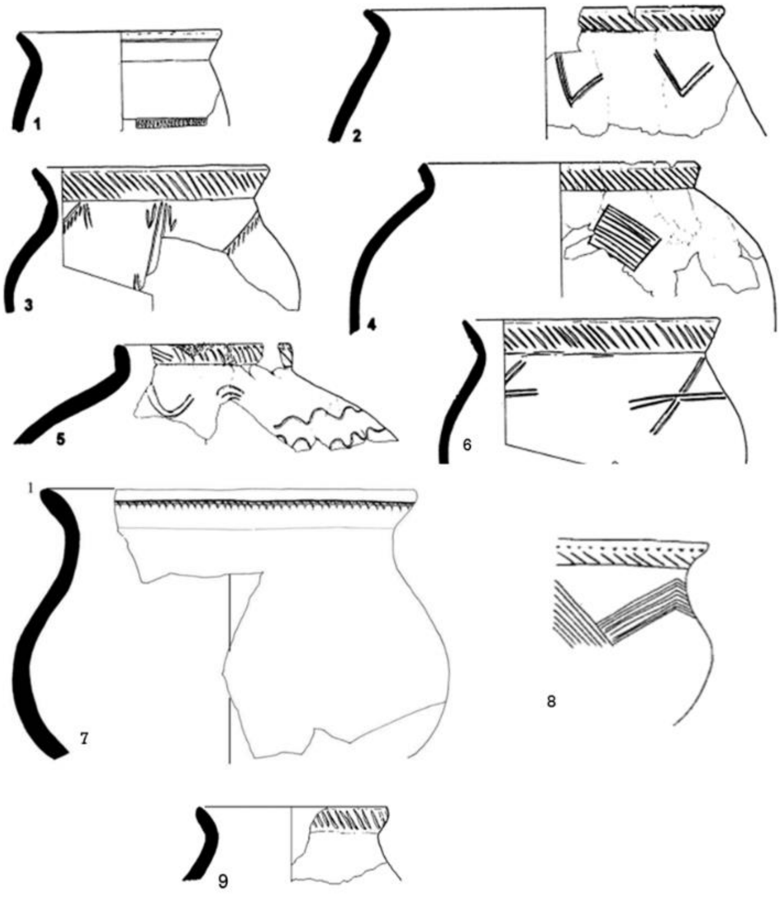


Figure 6.15 Mzonjani-type ceramics, 1-6. Mzonjani, 7. Baleni, 8. Broederstroom and 9. Enkwazini
Source: Antonites, 2006; Hall 1980; Mason, 1981; Whitelaw, 1996

6.6. Dating of the TSH1 ceramic assemblage

The ceramic assemblage from TSH1 and TSH1A has been shown to be associated with Mzonjani. The four dates for TSH1 and TSH1A were also introduced and it is evident that TSH1 and TSH1A date from AD 530 to around AD 630. Both these sites therefore fall within the accepted range for Mzonjani assemblages (Figure 6.16). What is also evident is that, owing to the homogeneity of TSH1 and TSH1A ceramics as indicated by the radiocarbon dating, these two areas constitute a single occupation site.

Therefore Figure 6.16 demonstrates that TSH1 and TSH1A are from the same general period as the Mzonjani assemblages, but can be placed later in the sequence of Mzonjani sites (dating back to more or less the same time as Riverside (Pta-7591), Lydenburg (Pta-328), Burgersfort (Pta-8949), Plaston (Pta-1635) and Broederstroom upper level (KN-2641). These similarities are also confirmed by the stylistic attributes of TSH1 and TSH1A when compared with other Mzonjani ceramic assemblages

What is notable regarding the radiocarbon dates obtained for TSH1 (as well as other Mzonjani sites) and the similarity scores is the correlation between TSH1 and Lydenburg (Group 1). It would seem from the above data that TSH1 was occupied by a Mzonjani ceramic-producing community.

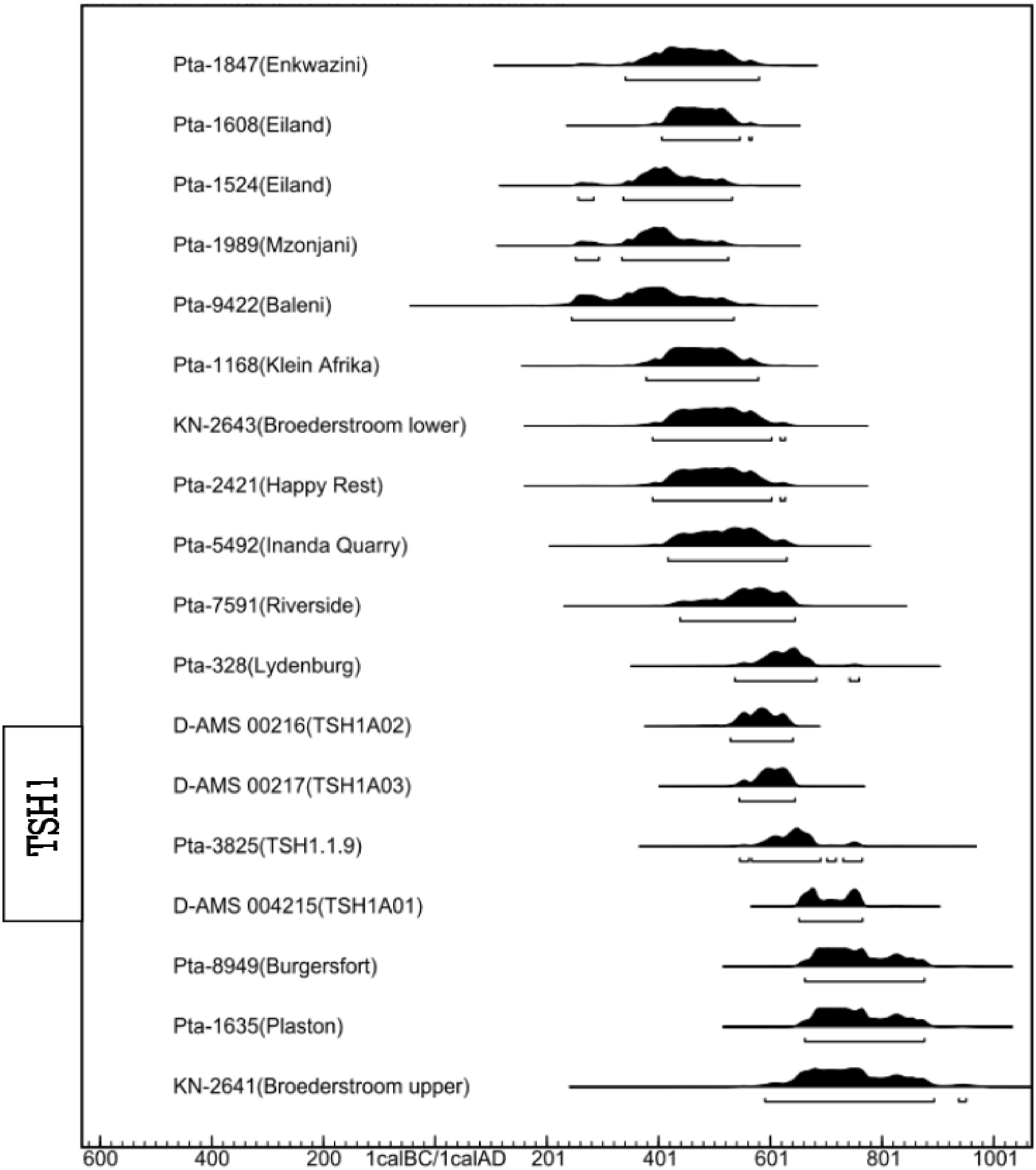


Figure 6.16 Radiocarbon dates obtained for Mzonjani assemblages across South Africa – Oxcal v4.2.3 and r5 SHCal04 atmospheric curve

Sources: Bronk Ramsey 2013; Hogg *et al*., 2013

6.7. Orifice size of vessels

The 229 vessels analysed included 105 (40%) vessels for which the diameters could not be established; however, from the rest of the sample it was possible to ascertain that the mean score was 25 cm, with the diameter of the smallest vessel in the collection being 7 cm and that of the largest exceeding 40 cm.

Table 6.10 Diameters of vessel orifices given in cm (including ceramic vessels for which orifice diameters could not be determined – N/A)

N/A	*MEAN*	*MIN*	*MAX*
105	25	7	40+

6.7.1. Comparison between mean orifice size and vessel forms

The average minimum and maximum orifice sizes of the vessels from TSH1 and TSH1A, when compared to vessel shape, shows that the mean range of orifice size falls between 21 cm and 28 cm for all jar-shaped vessels. Straight-necked jars (1.1) had the widest orifice diameters of all jar types with a 26.5 cm average. Bowls were slightly larger with a mean between 30 and 36 cm. Carinated bowls had the greatest mean average diameter of 31.7 cm (Table 6.11).

Table 6.11 Vessel shapes with orifice diameters given in cm

VESSEL SHAPE	MEAN	MAX	MIN
1.1	26.5	40	8
1.2	24.5	38	7
1.3	21.5	26	17
2.1	30.5	37	10
2.2	36	40	12
2.3	31.7	40	19

6.8. Fabric analysis of ceramics from TSH1A

In total 102 sherds were analysed. However, because the analysis was done on fragmented polished sherds (see Chapter 4 for a discussion of the methodology followed for sample selection) and not on vessels from which any stylistic knowledge could be gained, the stylistic and functional attributes could not be compared with the results of the technological analysis.

The eight attributes that were taken into were chosen based on their frequency of the inclusions (1. Rare/sparse; 2. Moderate; 3. Common), how the inclusions were sorted (4. Well; 5. Moderate), and the size of the inclusions; 6. Fine; 7. Medium; 8. Coarse). These attributes were then depicted in a presence/absence matrix in which they were combined and from which three discrete fabric groups were identified (Figure 6.20 and Table 6.12).

Density

1. Rare and sparse inclusions
2. Moderate inclusions
3. Common inclusions

Sorting

4. Very well and well sorted
5. Moderate

Inclusion size

6. Very fine to fine
7. Medium
8. Coarse to very coarse

Table 6.12 Presence/absence matrix of fabric groupings from TSH1. Scores are expressed in numerical values.

	1	2	3	4	5	6	7	8
1	_							
2	_	_						
3	_	_	_					
4	18	60	18	_				
5	3	1	2	_	_			
6	1	_	_	1	_	_		
7	14	30	7	52	_	_	_	
8	6	31	14	43	6	_	_	_

6.8.1. Fine fabrics

The fine fabric type is characterised by inclusions (non-plastics) of up to 0.25 mm in size (Figure 6.17). The inclusions were well sorted and those present in this fabric type occurred in quantities of less than 3%. Only one of the sherds from the collection belonged to this group.

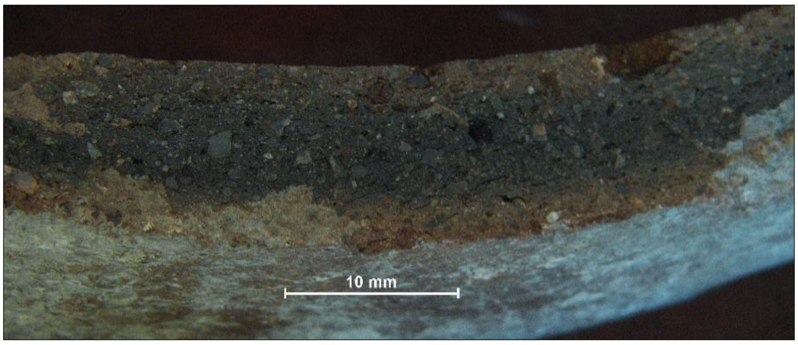


Figure 6.17 Example of fine fabric from TSH1A

6.8.2. Medium fabrics

The medium fabrics are characterised by inclusions ranging between >0.25 and 1.00 mm (Figure 6.18). The frequency of occurrence of these inclusions within this group is sparse (3-9%) to moderate (10-19%), with the majority of the sherds consisting of well-sorted inclusions.

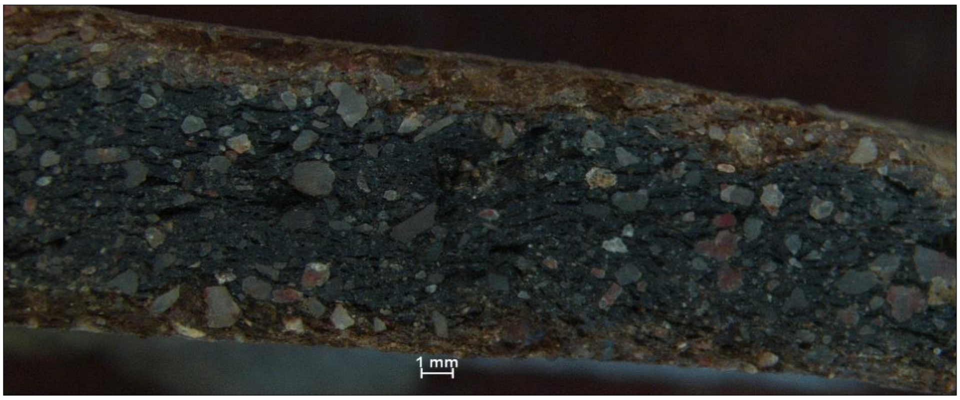


Figure 6.18 Example of medium fabric from TSH1A

6.8.3. Coarse fabrics

The coarse fabrics show inclusions of >1.00 to 3.00 mm. The inclusions are moderate (10-19%) to common (20-30%) and the majority of the inclusions were well sorted (see Figure 6.19).

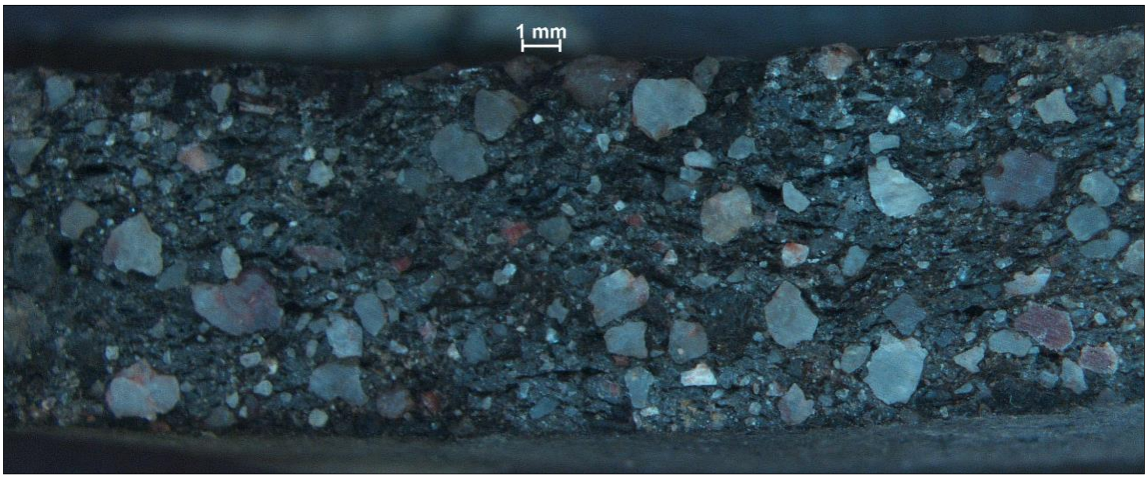


Figure 6.19 Example of coarse fabric from TSH1A

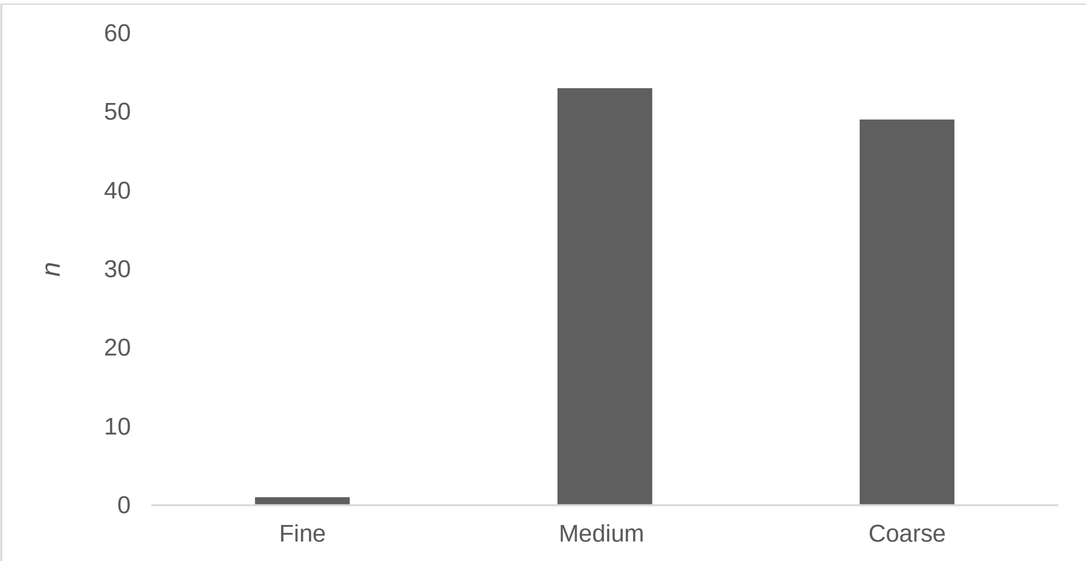


Figure 6.20 Three discrete fabric groupings from TSH1A expressed in numerical value

6.9. Compositional results (XRF) from TSH1A

Altogether 54 samples were selected for XRF analysis from the five excavated layers. The XRF data from TSH1A is presented and discussed in this section, as the aim of the compositional analysis is to supplement the results of the fabric analysis, but also to identify variations in the chemical fingerprints of the sherds.

Only the following major and trace elements were chosen for analysis: K, Ca, Ti, Fe, Al, Si, P, Mg, Nd, Ce, Cu, Ni, Zn, Th, Rb and Nb. These elements (major and trace elements) are expressed in parts per million (ppm) and the error rate of each relevant element is also presented in the appendix.

Elements that show a strong correlation with each other, such as Rb and Ce, and Al and Si, are shown in Figure 6.21 and Figure 6.22. A principal component analysis (PCA) of all 54 samples is presented in Figure 6.23.

In an initial comparison of the samples from the different layers, Silica (Si) and Aluminium (Al), which are the major elements found in clay and therefore by default in ceramics, are compared in a two-dimensional plot (Figure 6.21). The plot shows how the majority of the samples are concentrated together (Cluster 3). However, three minor groupings (Clusters 1, 2 and 4) are displayed in this plot. The samples from Clusters 1 and 2 (samples 23, 33, 36, 41, 45 and 46) consisted of larger quantities of Si than of Al. The opposite is noted in Cluster 4, where the three samples (12, 27 and 44) show low quantities of Si and Al. Two outliers were also noted, both receding from Layer 3 (24 and 29). Sample 24 consists of less Si around Cluster 3, with elevated amounts of Al. Sample 29, however, contains low levels of both Si and Al.

The strong co-efficiency between Si and Al (two main elements in ceramics) shows that the ceramics from TSH1A had most likely been quarried from the same deposit (see the correlation matrix). However, the samples that deviated from the main cluster need to be discussed.

High concentrations of silica constituents (which was noted in Clusters 1 and 2) are normal as silica is the main component in clay (Rice, 2005; Shepard, 1980). Another reason for the presence of higher amounts of silica could be the type and amount of temper. As seen in the fabric data from both sites, the majority of the sherds contained a fair quantity of temper. If crushed rocks such as limestone are used as temper, the silica content will be high as it is a primary constituent of limestone (O'Malley & Blustain, 1983; Rice, 2005). Therefore the anomaly of a higher amount of silica in Clusters 1 and 2 could be due to a slight differentiation of the clay type used, or a change in the amount and type of temper. The same could be said about the variation in the Al, as it is also a common constituent of clay, as well as of the temper.

The two trace elements Rubidium (Rb) and Cerium (Ce) normally show good co-efficiency in a plot. Figure 6.22 identifies two main clusters (3 and 4) from which the majority of the samples can be plotted. However, the degree of variation is greater between Rb and Ce than between Si and Al. Cluster 3 in Figure 6.25 consists of higher amounts of Rb. Four outliers were also identified (36, 43 and 53), with two of the outliers (both from Layer 4) consisting of elevated amounts of rubidium while sample 53 (Layer 5) had lower levels of Rb, but elevated amounts of Ce.

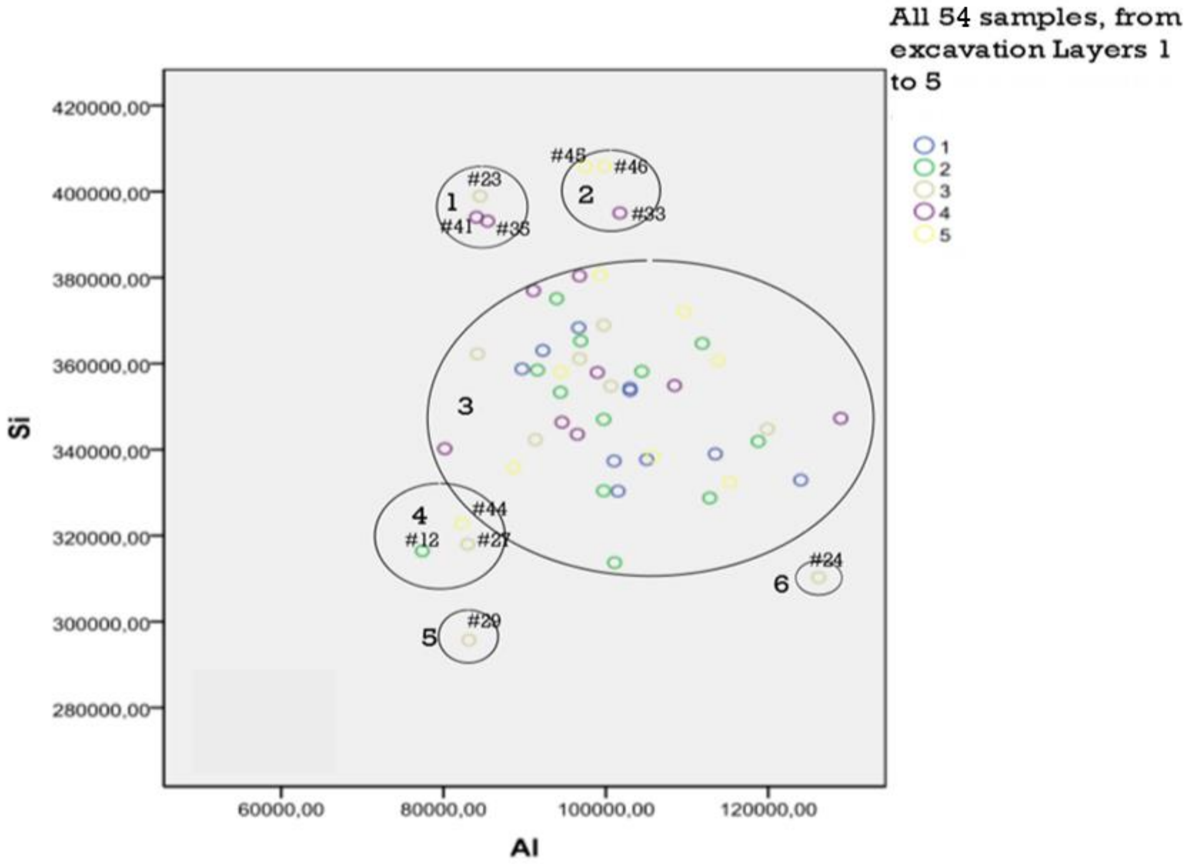


Figure 6.21 Two-dimensional graphs showing Si and Al from TSH1A

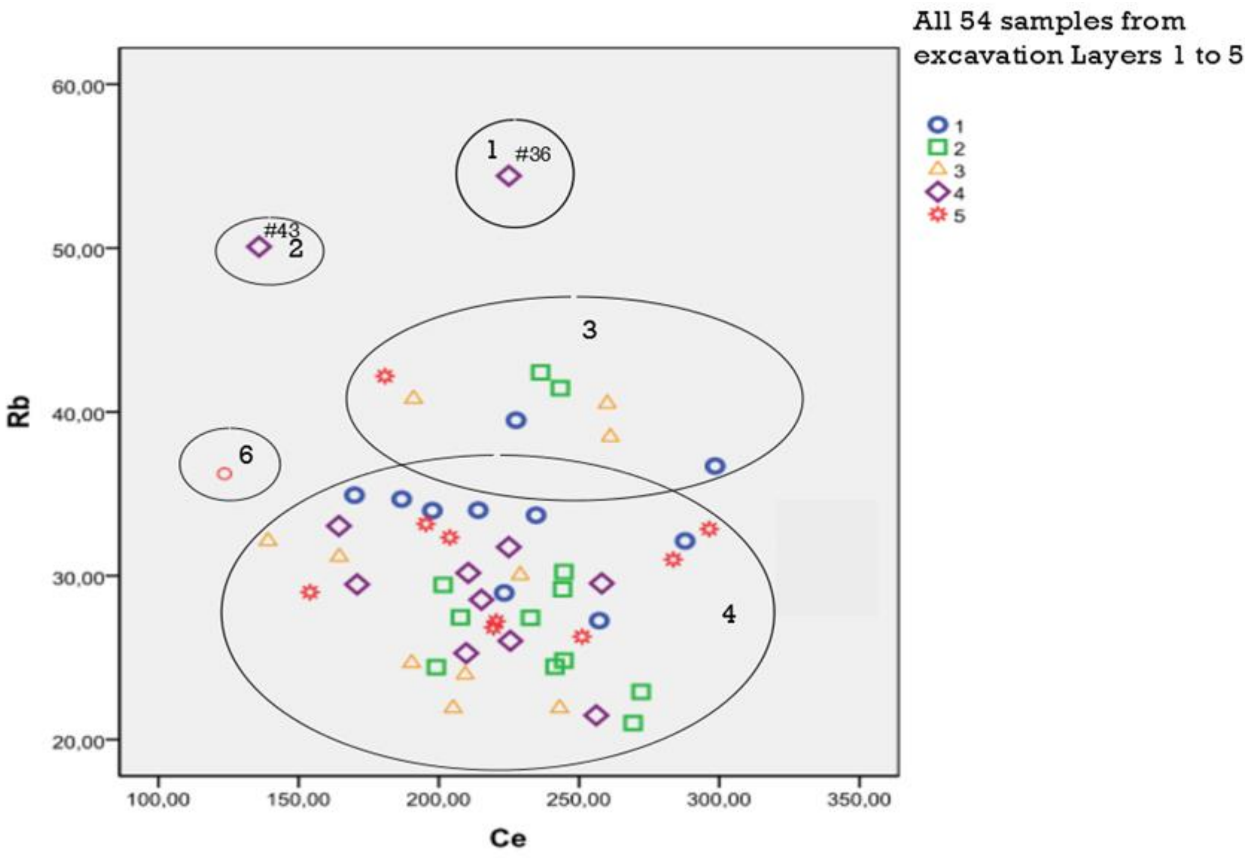


Figure 6.22 Two-dimensional graphs showing Rb and Ce from TSH1A

The element variation noted in some of the samples (Figure 6.23) is most likely due to some anomalies in the clay and temper used for the ceramics. It is also possible that the function of a vessel could have affected the quantity and type of temper used (Shepard, 1980; Rice, 2005), or the use of multiple clay sources in a similar area to create the right consistency (Fowler, 2008).

In order to obtain a more comprehensive statistical evaluation of the 54 samples, all the elements were analysed by using a principal component analysis (PCA). A statistical software programme (IBM SPSS Statistics version 21) was used for this purpose.

Principal component analysis highlights all relevant variables and expresses them in a quantitative manner. The variables will express strong correlations when the variables that are present are noted and respond to the same underlying subject (Drennam, 2009:300). It is therefore possible to combine more variables, which can be utilised without the results becoming misconstrued. The PCA identified three clusters (Figure 6.21), highlighting a greater spread of the elements from the samples taken from Layers 3, 4 and 5 than from Layers 1 and 2, which can be seen in Clusters 1 and 2.

In the first cluster, some co-variation is noted between the samples from Layers 3 and 4. The samples from Layer 3 in this cluster show a lower Fe, Ca and K content and elevated amounts of P. The samples from Layer 4 contain higher amounts of Fe, Ca and Al. Just outside the main cluster (Cluster 3), four samples are present. They are grouped just outside the main cluster as they contain lower amounts of Fe, Ca, K and Al. Greater variability is noted in the samples from Layer 5, as indicated in Cluster 2. This variation is due to elevated amounts of Mg, P and Al, with lower amounts of Ca.

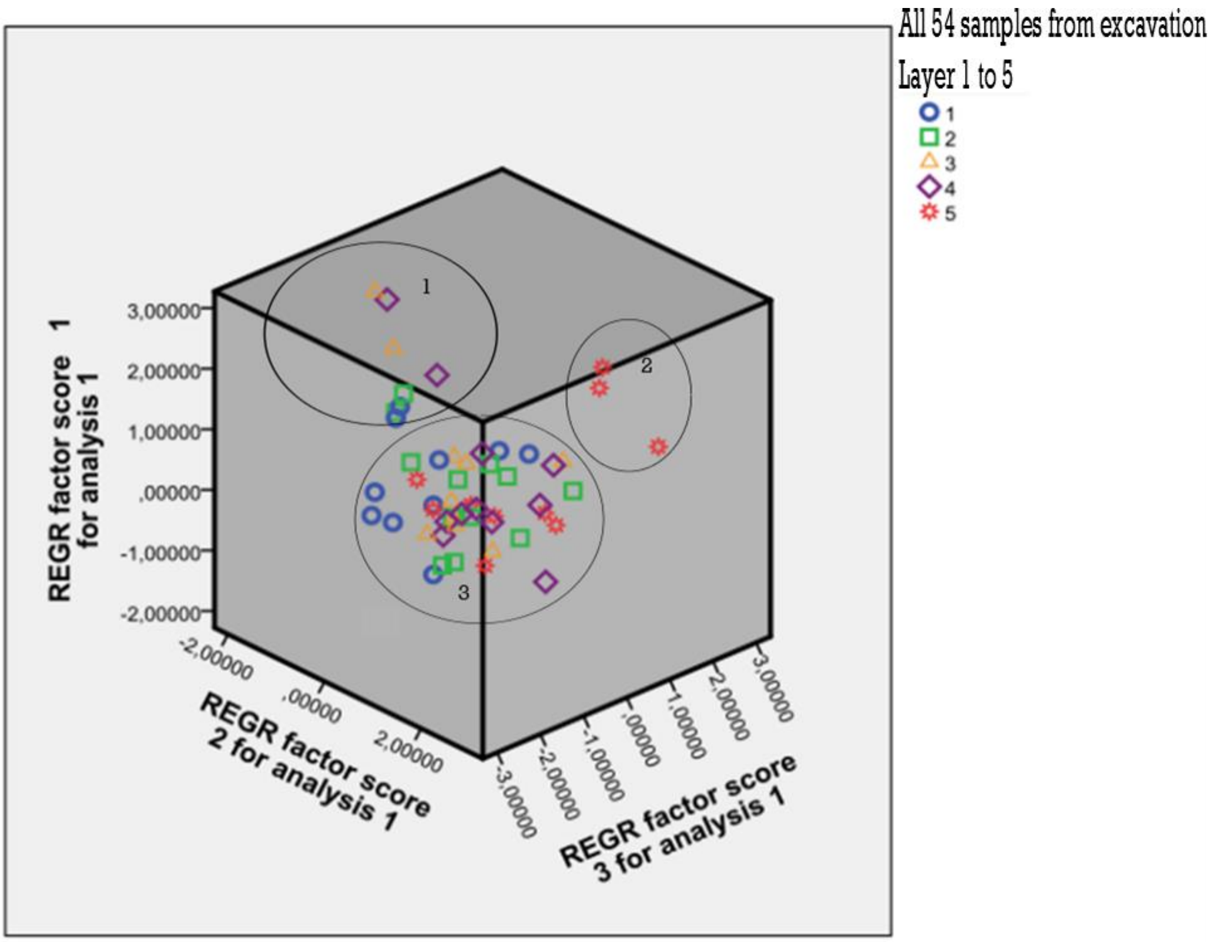


Figure 6.23 Principal component analysis of XRF samples from TSH1A

The large amounts of calcium present in the samples could be the result of either calcareous clay or a calcium-rich temper, such as limestone or shell (Shepard, 1980; Rice, 2005). Caution should be taken not to overemphasise the importance and presence of calcium in the sample, since calcium can also be a post-depositional formation as the soil, which is calcareous in nature, can form a layer on the vessel (Tiley-Nel, 2014). Calcium is also the main ingredient of most clay types, and a high range of calcium could be the result of burial conditions and the saturation of the vessel with water, which would result in the presence of higher amounts of calcium (Tiley-Nel 2014).

6.10. Concluding remarks

The material culture discussed in this chapter highlighted many different attributes of TSH1. By way of analysis, it was possible to establish that the ceramics found on the site formed part of the late Mzonjani ceramic assemblage, and that TSH1 was most likely occupied for a single period. Further compositional analysis (fabric and XRF) revealed that the clay deposits used for the ceramic material were probably locally sourced. This became more apparent in the XRF data, where a central cluster was noted. However, some outliers were also present and the implications of these and other results will be discussed in Chapter 11.

Chapter 7

Other material from TSH1

This chapter will focus on all the other material analysed for the purpose of this study. The shell beads, stone artefacts and metal-working objects recorded by Meyer (1986) and Plug (1988) had not been previously analysed in detail or combined with the ceramic assemblage to provide a comprehensive analysis of TSH1. The faunal material discussed here comprises of only TSH1A material as the faunal material from the earlier excavations had already been analysed in detail by Plug (1988).

7.1. Beads from TSH1

In total 443 shell beads from TSH1 and TSH1A were analysed. The majority (90%, *n=398)* of the beads were made from *Achatina sp.* land snail shell (ACH). Only one example of freshwater bivalve (FBV) was found and one bead could not be identified (Figure 7.1 and Figure 7.2 and Table 7.1).

Figure 7.1 Example of a freshwater bivalve shell bead (FBV) from TSH1A

Figure 7.2 Examples of Achatina (left) and OES (right) shell beads from TSH1A

Table 7.1 Different shell bead types found at TSH1 and TSH1A

TYPE	*N*	%
OES	42	9
FBV	2	1
ACH	398	90
IVR	0	0
UNKNOWN	1	0
TOTAL	443	100

The beads found at TSH1 came mainly from excavation unit TSH1.1 (*n*= 402, 97%), where most of the beads were removed from Layer 5 (*n*=99), with Layer 4 (*n*=79) and Layer 3 (*n*=69) also containing substantial percentages of the total number of beads excavated (Table 7.2). Only 12 beads from other excavation units (TSH1.5, 1.7 and 1.11) could be identified. Most of the beads found at TSH1A were from Layer 3 (Table 7.3).

Table 7.2 Distribution of different shell beads at TSH1, including ostrich, eggshell (OES), freshwater bivalve (FBV), unknown and ivory beads

SITE	LAYER	OES (*N*)	FBV (*N*)	ARCH(*N*)	UNKNOWN(*N*)	IVR (*N*)	TOTAL PER LAYER (*N*)
TSH1.1	N/A	3	0	22	0	0	25
	1	1	0	36	0	0	37
	2	8	0	27	0	0	35
	3	5	0	64	0	0	69
	4	8	0	71	0	0	79
	5	8	1	89	1	0	99
	6	3	0	12	0	0	15
	7	0	0	3	0	0	3
	8	1	0	19	0	0	20
	9	1	0	18	0	0	19
	10	0	0	1	0	0	1
TSH1.5	N/A	0	0	3	0	0	3
TSH1.7	N/A	0	0	1	0	0	1
TSH1.11	2	0	0	3	0	0	3
	3	1	0	6	0	0	7
TOTAL		39	1	375	1	0	416

Table 7.3 Distribution of different shell beads at TSH1A, including ostrich eggshell (OES), freshwater bivalve (FBV), unknown and ivory beads

SITE	LAYER	OES (*N*)	FBV (*N*)	ARCH (*N*)	UNKNOWN(*N*)	IVORY (*N*)	TOTAL PER LAYER (*N*)
TSH1A	N/A	1	0	3	0	0	4
	1	0	0	4	0	0	4
	2	1	0	4	0	0	5
	3	1	0	8	0	0	9
	4	0	1	0	0	0	1
	5	0	0	4	0	0	4
TOTAL		3	1	23	0	0	27

Other attributes taken into account were the edge shapes of the beads, which can help to determine whether the beads were made on site or were imported (Kandel & Conrad, 2005; Orton, 2008; Plug, 1982b; Ward & Maggs, 1988).

The majority of the beads analysed have well-rounded edges (49%, *n=216),* followed by beads with rounded (25%, *n=113)* and sub-rounded 19 % (*n=83)* edges. Very few were angular (1%, *n=5)* or even sub-angular (4%, *n=19) (*Table 7.4). This data is important as it indicates the production stage in which the beads were, which in turn can provide information on the manufacturing process. The angular and sub-rounded beads were still being processed. In this case the majority of the beads were well-rounded and therefore already in their final form.

Table 7.4 Shapes of beads from TSH1

EDGE SHAPE	*N*	%
VERY ANGULAR	5	1
ANGULAR	7	2
SUB-ANGULAR	19	4
SUB-ROUND	83	19
ROUND	113	25
WELL-ROUNDED	216	49
TOTAL	443	100

Figure 7.3 Examples of shell beads from TSH1

The majority (99%, *n=440* of the shell beads found were completely perforated (bead completely punctured, with only 1% (*n*=*3)* having an incomplete perforation (perforation started but not completed all the way through) as can be seen in Figure 7.3 above. No beads from this collection were semi-complete (perforation completed all the way through, but not enlarged) (see Chapter 4, for a discussion of the terminology) (Table 7.5).

The frontal shapes of the beads were also examined and it was found that 81% (*n=362)* were spherical, 12% (*n*=52) oblate and only 7% (*n=29)* irregular (Table 7.5-7.9).

Table 7.5 Perforation and frontal shape of shell beads from TSH1

PERFORATION	*N*	%	FRONT SHAPE	*N*	%
COMPLETE	440	99	Spherical	362	81
SEMI	0	0	Oblate	52	12
INCOMPLETE	3	1	Irregular	29	7
TOTAL	443	100	Total	446	100

Table 7.6 Dimensions of shell beads from TSH1, given in mm

DIMENSIONS	MEAN	MAX	MIN
THICKNESS/LENGTH	1.02	2.34	0.68
DIAMETER	5.73	14.62	3.06
PERF.MAX	1.5	2.92	0.75

Table 7.7 Maximum and minimum diameter, thickness/length and perforation size of different shell beads from TSH1

	DIAMETER (MEAN)	MAX	MIN	THICKNESS/LENGTH (MEAN)	MAX	MIN	PERF. MAX (MEAN)	MAX	MIN
ACHATINA SP.	5,75	11	3,08	0,96	2.34	0.55	1,46	2,47	0.68
OES	6.77	14.62	4.18	1.57	2.08	0.91	1.96	2.92	1.45
FBV	8	8	8	1.63	1.63	1.63	1.59	1.59	1.59

Table 7.8 Identification of different shell beads from TSH1

SITE AND LAYER

SPECIES	*TSH1.1-N/A*	*TSH1.1 -1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*TSH1.5-N/A*	*TSH1.7-N/A*	*TSH1.11-2*	*3*
UNKNOWN	6	9	6	18	17	23	4	0	7	5	1	1	0	1	2
ACHATINA SP.	16	27	21	46	54	67	8	3	12	13	0	2	1	2	4
OES	3	1	8	5	8	8	3	0	1	1	0	0	0	0	1
FBV	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
TOTAL	25	37	35	69	79	99	15	3	20	19	1	3	1	3	7

Table 7.9 Identification of different shell beads from TSH1A

SPECIES	***SITE AND LAYER***					
	TSH1A-N/A	*1*	*2*	*3*	*4*	*5*
UNKNOWN	0	1	1	1	0	1
ACHATINA SP.	3	3	3	7	0	3
OES	1	0	1	1	0	0
FBV	0	0	0	2	1	0
TOTAL	4	4	5	9	1	4

The Achatinidae beads found had a mean diameter of 5.75 mm and ranged from 3.08 to 11.03 mm in diameter, whereas the OES beads had an average diameter of 6.83 mm and ranged from 4.18 to 14.62 mm in diameter. The majority of the beads were made from Achatina *sp.* shell, rather than from ostrich egg shell, which is not unusual as other EFC sites across southern Africa show similar patterns (see Table 7.10).

Table 7.10 Comparison between shell beads from TSH1 and different shell beads from EFC sites across South Africa

SITE	TYPE	*N*
MUDEN	*Achatinidae*	367
	OES	27
NTSHEKANE	*Achatinidae*	?
	OES	2(possibly)
TSH1	*Achatinidae*	398
	OES	42
WOSI	OES	236
	Achatinidae	1035
MAMBA	*Achatinidae*	47
NDONDONDWANE	*Achatinidae*	439
	OES	44
MSULUZI	*Achatinidae*	49
	OES	3
KWAGANDAGANDA	*Achatinidae*	3530
	OES	453
BROEDERSTROOM	Other shell beads	572
	OES	1045

The fact that most of the beads were finished products could indicate that they had been produced elsewhere. This possibility will be discussed in more detail in Chapter 11.

7.2. Stone artefacts

Only 13 stone artefacts were found in the assemblage. The analysis showed that 55% (*n=6)* of these artefacts were upper grindstones and 27% (*n=3)* were grooved stones. Only one hammer stone and one lower grindstone were recorded (Table 7.11 Stone artefacts from TSH1).

Table 7.11 Stone artefacts from TSH1

STONE ARTEFACTS	*N*	%
UPPER GRINDSTONE	6	55
HAMMER STONE	1	9
GROOVED STONE	3	27
LOWER GRINDSTONE	1	9
TOTAL	11	100

Only 36% (*n=4)* of the stone artefacts came from surface collections, and 55% (*n=6)* came from TSH1.1 and TSH1.7 Figure 7.4 and Figure 7.5, and Table 7.12).

Figure 7.4 Lower and upper grindstones from TSH1

The only stone tools recorded came from Layer 2 at TSH1A. One of these was a backed tool produced from cryptocrystalline (CCS), while the other was a waste chunk piece (an angular core with relatively few flake scars) produced from dolerite (Figure 7.6 and Table 7.12).

Figure 7.5 Grooved stones from TSH1, most likely used for the production of shell beads

Table 7.12 Distribution of stone artefacts

SITE	LAYER	TYPE
TSH1		Upper grindstone
TSH1	SURFACE	Hammer stone
TSH1	SURFACE	Grooved stone
TSH1	SURFACE	Upper grindstone
TSH1.1	SURFACE	Upper grindstone
TSH1.1	1	Grooved Stone
TSH1.1	7	Upper grindstone
TSH1.7	1	Grooved stone
TSH1.7	1	Upper grindstone
TSH1.7	1	Lower grindstone
TSH1.7	1	Upper grindstone

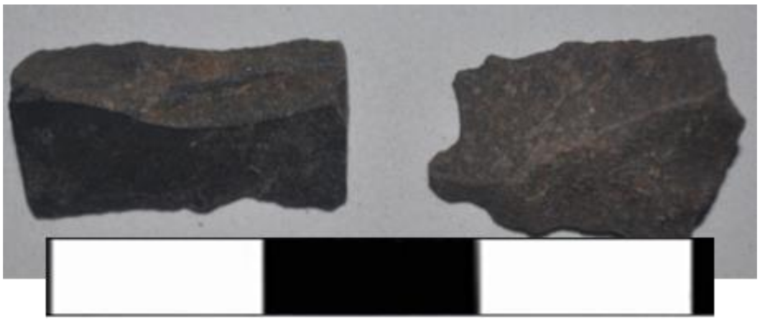


Figure 7.6 Two LSA stone tools from TSH1 (Layer 2) - backed tool (left) and chunk piece - both produced from CCS

A small number of Late Stone Age (LSA) artefacts were recovered from TSH1A. The fact that LSA stone tools were found only there could suggest that stone tools had been found during earlier excavations, but had not been deemed important and had therefore not been collected. The LSA artefacts were uncovered, which could point to interaction between hunters and farmers (Forssman, 2014; Maggs, 1980b). However, the small number of the stone artefacts makes it difficult to infer this without further research.

The presence of upper and lower grindstones, as well as hammer stones, provides strong evidence of food production at TSH1 (Maggs, 1980; Mason, 1981; Whitelaw, 1994). The fact that all the upper and lower grindstones were excavated at two units (TSH1.1 and 1.7) could suggest that these areas were possible locations of food preparation at the site.

The presence of grooved stones at TSH1 can be explained in conjunction with the production of shell beads. During shell-bead manufacturing, beads are shaped and perforated (Orton, 2008:1770). Once the beads have been perforated and a spherical basic shape has been obtained, they are ground to produce the finished product (Orton, 2008) (see Figure 7.7). Small grooved stones have been found on some archaeological sites and it has been suggested that they were used either for straightening arrows (Orton, 2008; Deacon, 1984) or for grinding beads (Deacon, 1984; Wendt, 1972). Therefore the presence of grooved stones could indicate the possible production of beads at TSH1.

Figure 7.7 Examples of grooved stones

Source: Orton, 2008:1 770

7.3. Slag

A total of 184 pieces of slag weighing 1.25 kg were found within the assemblage (Figure 7.8 and Table 7.13). Not all the units across TSH1 contained slag pieces. Most of the slag (93%, *n=171)* was found at TSH1.9 and was collected as the surface material. No slag material was recovered from TSH1A.

Table 7.13 Slag recovered at TSH1 (in grams)

SITE	LAYER	AMOUNT	WEIGHT(G)
TSH1.1	1	6	500
TSH1.1	6	6	4
TSH1.9	SURFACE	171	700
TSH1.10	1	1	46
TOTAL		184	1250

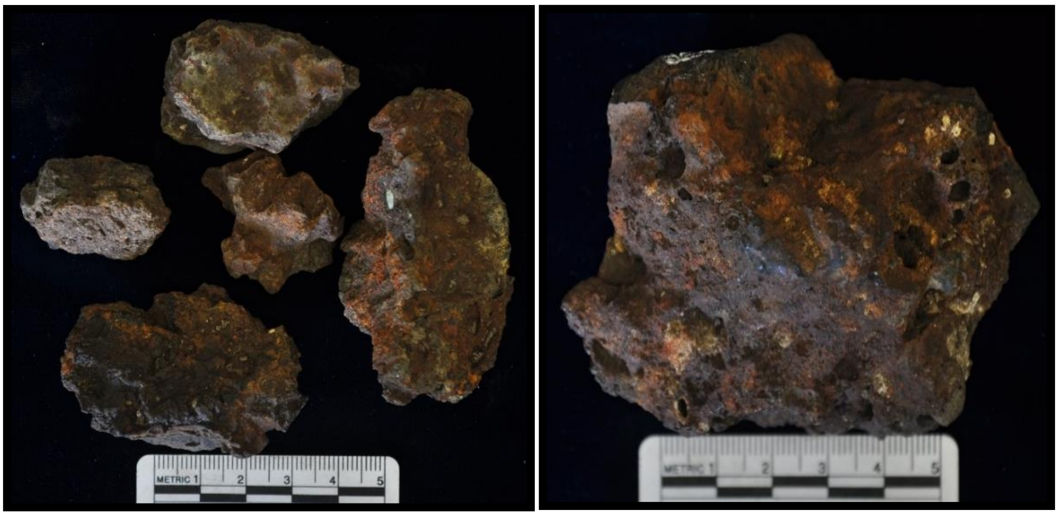


Figure 7.8 Slag from TSH1

This amount of slag is small compared to that found at other EFC sites, especially in the Thukela Basin and at the Broederstroom site. Van Schalkwyk (1994) concluded that during the ninth and tenth centuries AD, there were an increasing number of smaller, less densely settled residential locales that were connected to a few larger, specialist villages/political centres. This conclusion was based on the fact that many of these smaller sites showed no evidence of iron smelting, which suggests that they received their iron from an outside source. Therefore any evidence of iron smelting, regardless of how small the quantity of slag, needs to be addressed in more detail.

7.4. Faunal remains

A mass of 1079.4g (*n*=884) of faunal remains was recovered from TSH1A. The sample included the coring (6 and 7) and survey units that were taken on site. Of this total mass, 609.5 g (*n*=666) of bones could not be identified, while the identifiable remains constituted of 467.9 g (*n*=218). Among the identifiable specimens present (NISP), the most common were *Achatina sp* (giant land snail), Bovid III, Bovid II and *Bos Tarus (*cattle) (Scott, 2014) (Table 7.14 and

Table 7.15). The complete lists of faunal remains and reports are presented in Appendix 1.

Table 7.14 NISP of faunal material from TSH1A

Species	***NISP***
Bov II	18
Bov III	31
Bos Taurus	14
Med Rodent	1
Achatina sp	137
Tortoise	6
Bi-valve	3
Ovis aries	4
Poss worked bone	1
Small to medium non-bovid	1
Aepyceros melampus	2
Total	218

Table 7.15 Faunal species per layer excavated

Species	***L1***	***L2***	***L3***	***L4***	***L5***	***Survey 1***	***Coring 6***	***Coring 7***
Bov II	0	9	1	3	5	0	0	0
Bov III	0	1	3	6	20	1	0	0
Bos taurus	2	1	1	6	3	0	0	1
Med Rodent	1	0	0	0	0	0	0	0
Achatina sp	20	43	36	17	21	0	0	0
Tortoise	0	1	4	0	1	0	0	0
Bi-valve	0	2	1	0	0	0	0	0
Ovis aries	0	0	2	0	2	0	0	0
Possible worked bone	0	0	1	0	0	0	0	0
Small to medium non-bovid	0	0	0	1	0	0	0	0
Aepyceros melampus	0	0	0	0	0	0	2	0
Total	23	57	49	33	52	1	2	1

The faunal material from TSH1, which was analysed by Plug (1988) for her PhD, showed that small-stock herding of Ovi caprines was important, but that they relied mainly on hunting to satisfy their dietary needs (Plug, 1988:219). These results were further substantiated by the absence of cattle remains at TSH1.

The faunal material from TSH1A confirmed that the community had indeed relied on hunting and herding. However, during the excavation of TSH1A, a substantial amount of the faunal material was identified as the remains of cattle. Worked bone consisting mainly of bone needles was also found during this excavation, which could suggest that the site was inhabited for a longer period than previously suggested by Meyer (1986) and Plug (1988; 1989). This theory could be strengthened by the fact that the preparation and sewing together of animal skins takes a fairly long time (Scott, 2014; Meyer, 1986; Plug, 1988; 1989a).

7.5. Concluding remarks

The shell beads from the site shows evidence that production occurred elsewhere, as the majority of the beads analysed were already rounded and perforated (completed). The stone artefacts that were found (grindstones and hammer stones) point to food production, while evidence of metal-working was also present. What was of interest was that the faunal material from TSH1A provided evidence of the presence of cattle, while earlier collections contained no cattle remains.

These factors will be further discussed in Chapter 11, when all the data will be drawn together for further interpretation. The next chapter is similar in structure to Chapters 5 to 7, but deals with the data from SK17.

Chapter 8

Excavation data for SK17

This and the following two chapters will deal with the data analysis of the material collected at SK17. The excavation background from both SK17 (past excavation), as well as from the new excavation at site SK17A, will be presented, followed by a discussion of the radiocarbon dates provided for both excavations.

8.1. Previous excavation of SK17

The excavations at SK17 were conducted by Meyer (1986) in 1983. Across the site, five units in total were investigated (see Figure 8.1 and Table 8.1) and were numbered SK17.1 to SK17.5.

A large test trench (6.5x0.5x1.8 m) dug at SK17.1 exposed substantial amounts of ceramic and faunal material. Two features (ash pits 1 and 2) were also exposed (see Figure 8.2). The material found at a depth of 35-60 cm in ash pit 1 was collected together as part of one spit (Layer 1).

At SK17.2, a large concentration of ceramic and faunal material was exposed and partially collected as Layer 2. The material from this feature consisted of the majority of the material culture collected at SK17. The material was collected as a single spit, with little to no focus on stratigraphic knowledge of the feature. A part of SK17.2 that was exposed protruded onto the road (see Figure 8.3-8.6) and a single radiocarbon date was obtained for it (bone collagen) (Meyer, 1986).

Table 8.1 List of excavation units at SK17

Source: Meyer, 1986

SITE NR	UNITE SIZE	STRATIGRAPHY	METHOD
SK17.1	6.5x0.5 m/1.8 m	1. Large concentration of fauna and ceramics visible beneath the surface at 35-50 cm	1. Exposed and removed partially as Layer 2
		2. Ash pit (Pit 1)	2. Exposed partially to determine the scope of the pit
		3. Bowl shape ash pit (Pit 2) 60 cm beneath the surface. The opening of the pit is 100 cm wide and 55 cm deep. Hardly any objects were found (see Figure 6.1).	
SK17.2	N/A	High concentration of fauna and ceramics found 30 cm beneath the surface	3. Exposed and collected partially as a single-spit (Layer 2)
SK17.4	9.8x0.5 m	1. A bowl-shaped midden (Pit1) found. The opening of midden 100 cm wide and 45 cm deep. Found 60 cm beneath the surface. Covered in ash, a few bone fragments and ceramics. Also contained burnt seeds	1. Exposed the midden and collected all material
		2. Ash pocket (Pit 2): 60 cm wide and 10 cm thick. A few bone fragments and ceramics found	
			2. Exposed the ash pocket (Pit 2) and collected all material
SK17.5		Ceramic vessel in situ	Exposed and collected

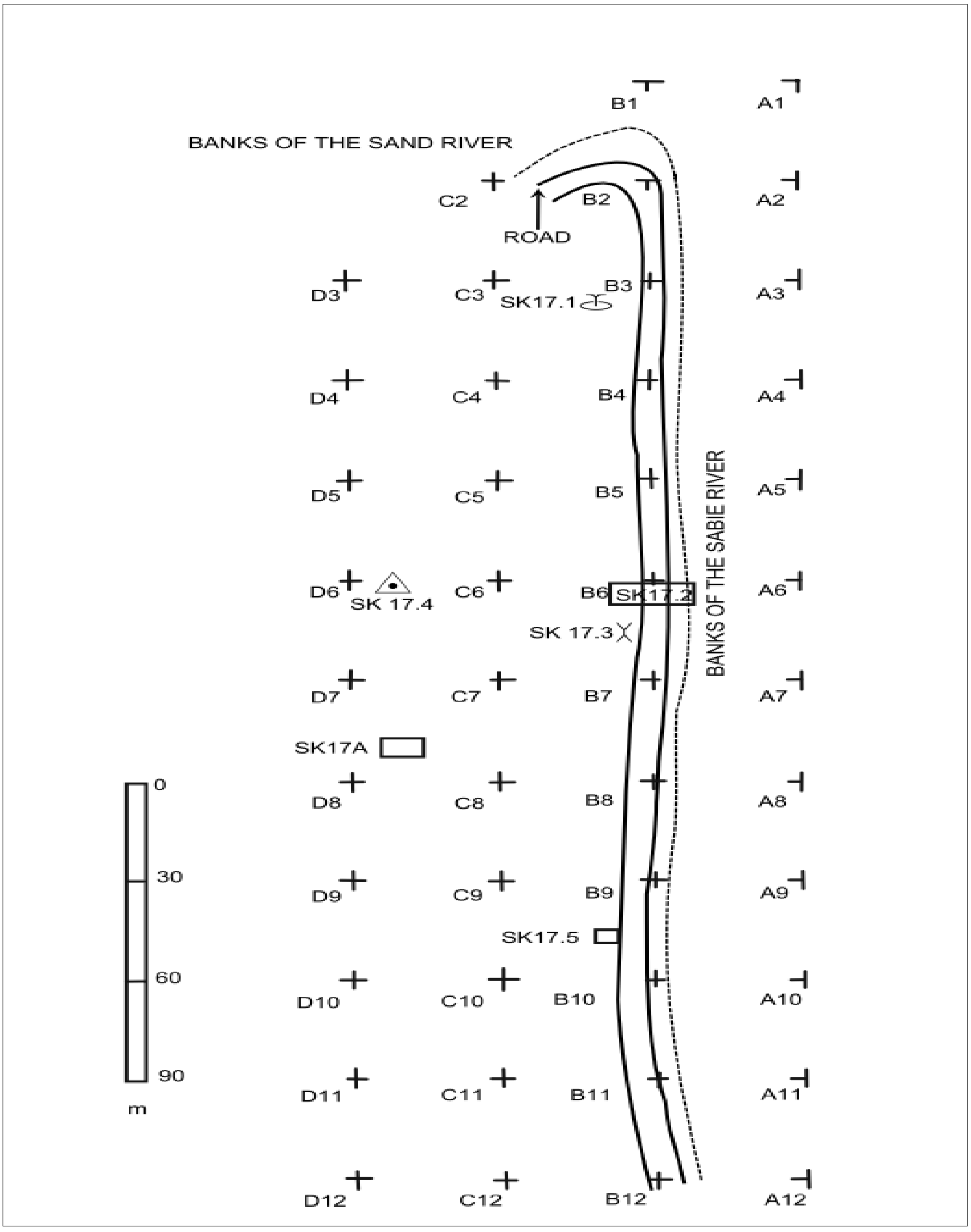


Figure 8.1 Grid system showing excavation units dug by Meyer (1986) – note the location of the more recent excavation unit SK17A

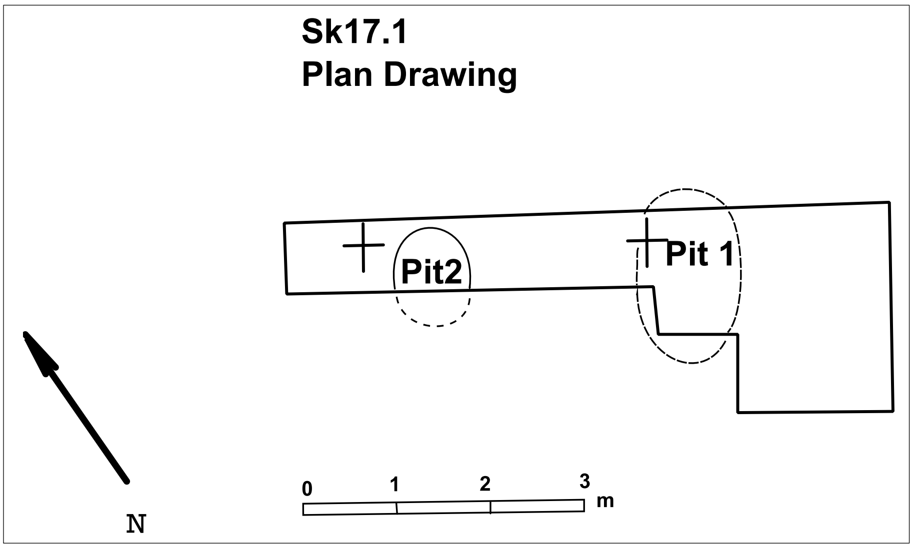


Figure 8.2 SK17.1 excavation plan

Source: Meyer, 1986:166

Figure 8.3 Excavation conducted by Meyer (1986) at feature SK17.2 – note that the excavation unit extended into the road

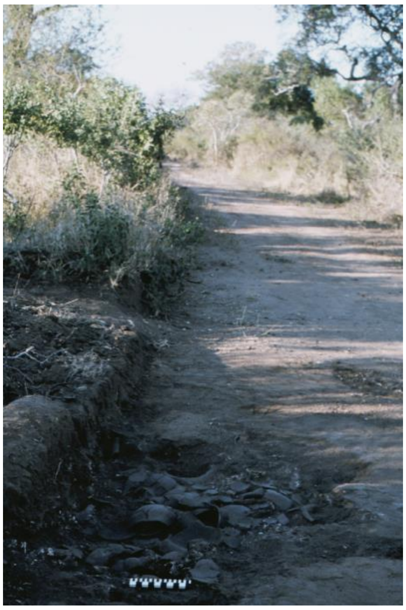


Figure 8.4 Feature SK17.2, exposed by Meyer (1986)

Figure 8.5 Ceramic and faunal material exposed at SK17.2 by Meyer (1986)

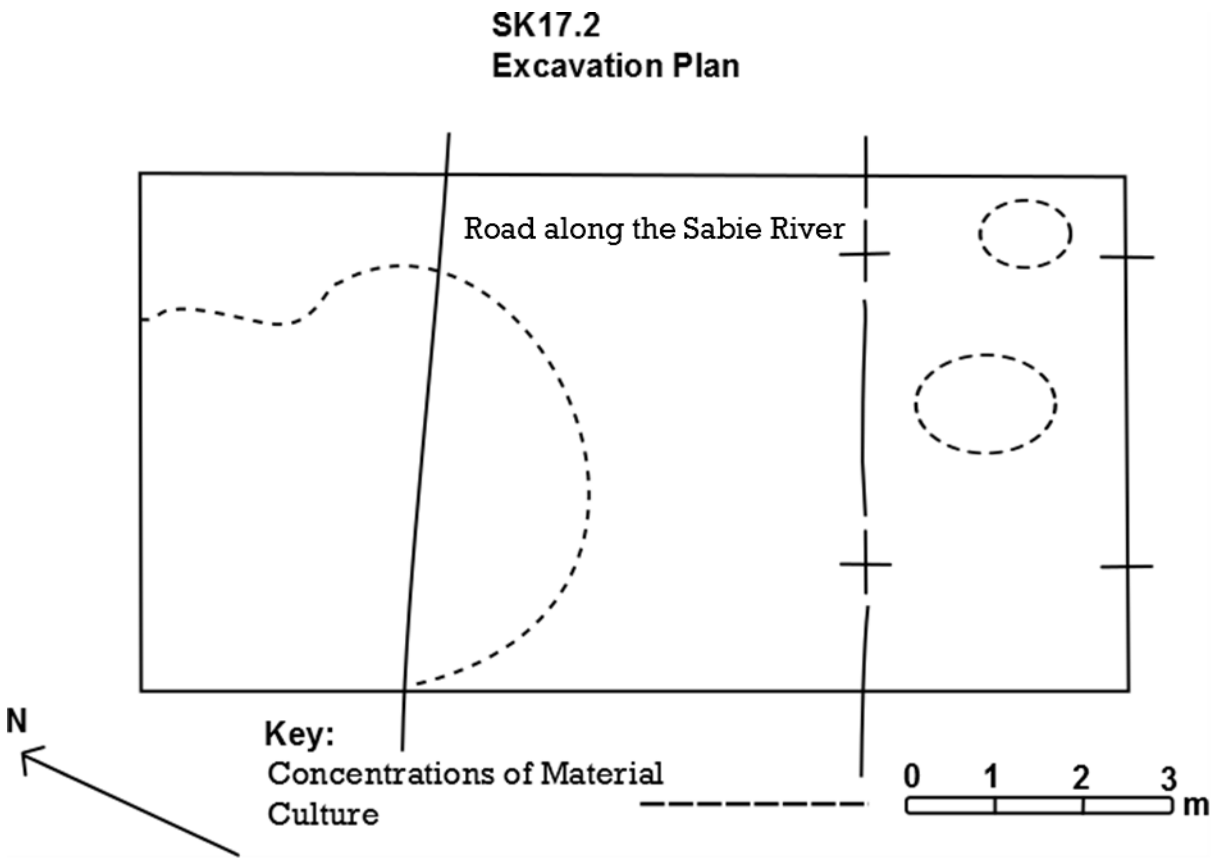


Figure 8.6 Meyer's (1986:171) excavation plan for SK17.2

SK17.3 consisted of a minor concentration of animal teeth and bones 10-20 cm below the surface, which was exposed when the road was ploughed. The material was collected, but no excavations were undertaken.

At SK17.4, two features were exposed. The first consisted of a midden 60 cm beneath the surface from which a few bone fragments and ceramic sherds were removed. At the second feature, some faunal and ceramic material was collected from a 60x10 cm ash pocket (see Figure 8.7-8.8).

At SK17.5 a single ceramic vessel was exposed and collected for further analysis (Figure 8.9).

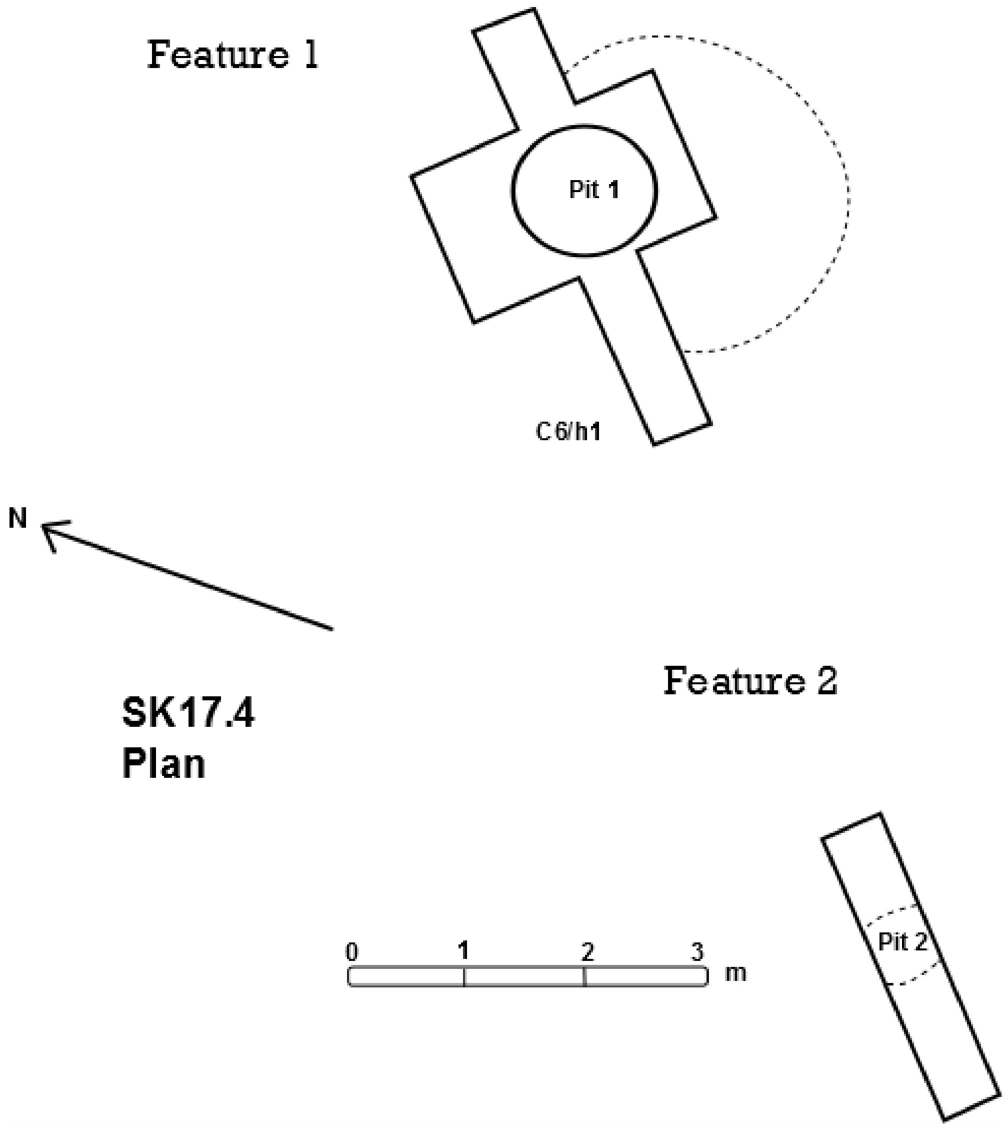


Figure 8.7 Excavation plan of feature SK17.4

Source: Meyer, 1986

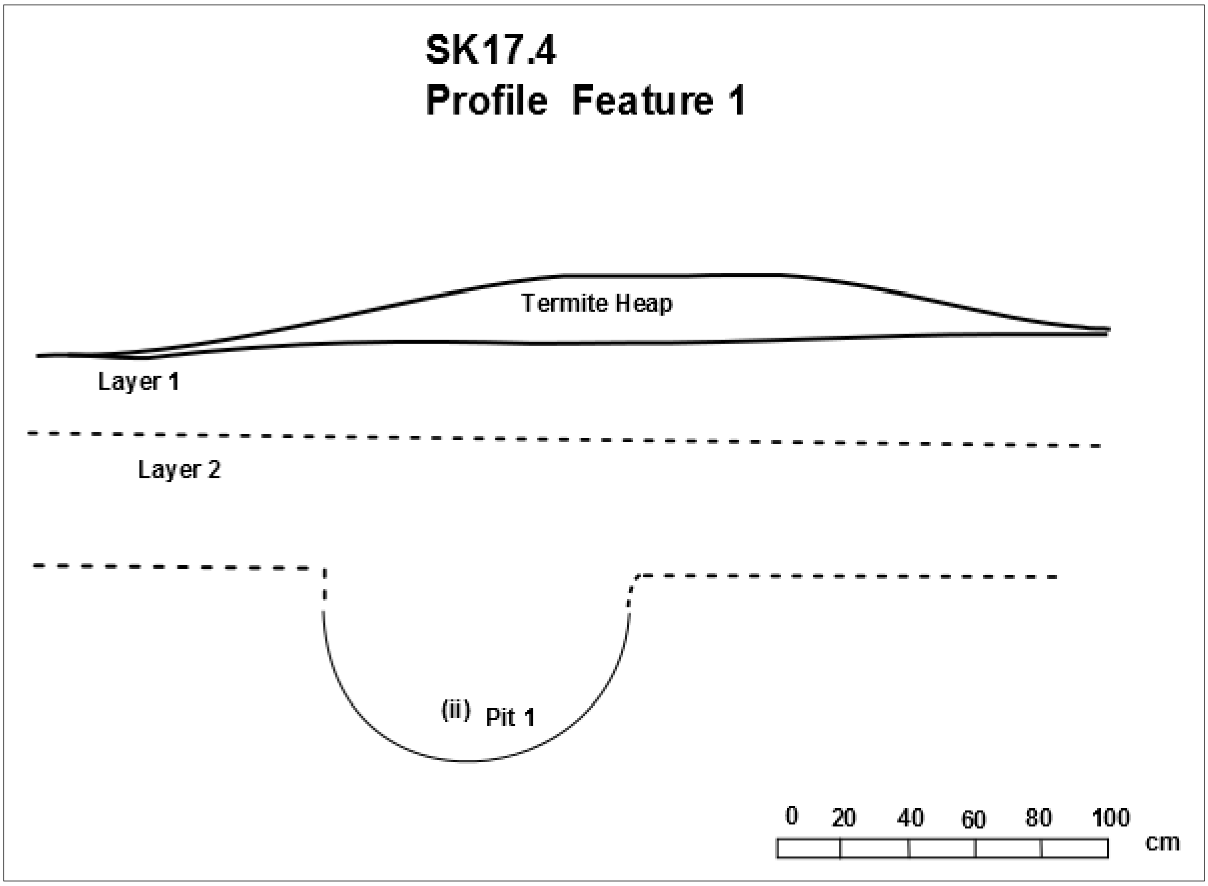


Figure 8.8. A profile drawing of SK17.4

Source: Meyer, 1986

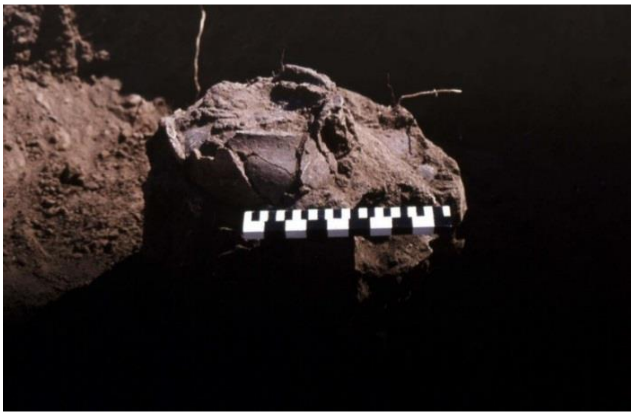


Figure 8.9 Pot exposed in situ at feature SK17.5

Source: Meyer, 1986

8.2. Data from SK17A

8.2.1. Survey

A survey of the southern side of SK17 was first conducted to determine where the excavations unit should be placed (see Chapter 4). It was decided to make use of coring samples to determine the best location for the placement of the unit. In total 25 coring samples were taken at 5 m intervals. At Coring Unit 5 (SK17/5) substantial material culture was exposed, the soil became less compact and the colour changed from a dark red to a greyer ashy colour. It was therefore deided to place a 2x2 m unit (SK17A) next to SK17/5. Material culture from all the other coring samples was sterile, except that from SK17/6, where a few ceramic sherds and faunal material were present.

8.2.2. Excavation summary

The unit was called SK17A to distinguish it from previous excavations at the site (Figure 8.10 and Figure 8.11). The layers were excavated based on natural changes in the stratigraphy (see Chapter 4 for a full account of excavation methodology). Four different layers were removed. The first three layers were excavated as a 2x2 m unit, with the last layer removed as a 2x1 m unit, due to time constraints that were intensified by the hard, compact nature of the soil. A total of 1 206 litres of deposit were removed from the four layers, with most of the deposit recovered from Layers 4 and 1, which yielded a total of 613 ceramic sherds, 30 pieces of slag, seven stone artefacts, one bullet shell casing and faunal remains. Two charcoal samples were sent for radiocarbon dating. The samples were taken from Layers 2 and 3 and the results will be discussed at a later stage in this chapter.

Figure 8.10 SK17A before excavation commenced – unit located next to coring sample SK17/5

Figure 8.11 Excavation unit SK17A, which was originally 2x2 m, but was reduced to 2x1 m due to time constraints and the compactness of the soil.

8.2.3. Stratigraphic sequences of SK17A

Four different layers were identified (Figure 8.12-8.14). The layers were:

1) Compact topsoil with a light loam texture and dark brown in colour 27 cm below the datum (starting depth of 14 cm). Initially soft soil was noted, but it soon became more compact. No changes in texture or soil colour were observed. Inclusions noted

consisted of roots and quartz pieces. Some disturbances were noted, which included ant activity and other insect burrows. Hardly any material culture was found, but the site yielded some ceramic material and a bullet casing.

2) The second layer comprised of compact dark brown soil with the same texture as Layer 1 and the soil colour became just a bit darker 29 cm below the datum. The layer was still dense and compact, which made excavation difficult and led to some fragmentation of the material. Inclusions that included rocks were noted. Disturbances in the form of termite activity and plant roots were visible and more material culture, including ceramics and faunal material was found. A carbon sample was taken at a depth of 29 cm (D-AMS 004213-SK17A01).

3) The third layer was made up of compact, very dark brown loamy sand 33 cm below the datum and was still dense and compact. The inclusions that were found contained quartz and showed disturbances that were similar to those found in the previous layer. A steep increase in material culture was noted in this layer (Figure 8.10). A radiocarbon sample was collected at a depth of 31 cm (D-AMS 002414-SK17A02).

4) The last layer excavated consisted of sterile, loamy dark brown soil 49 cm below the datum. It was extremely compact and dense with some insect activity and plant roots. Hardly any material culture was recovered.

Figure 8.12 Stratigraphy of unit SK17A. Note the homogeneity of layers, with a single layer showing the majority of material culture (a radiocarbon sample was also taken from this layer).

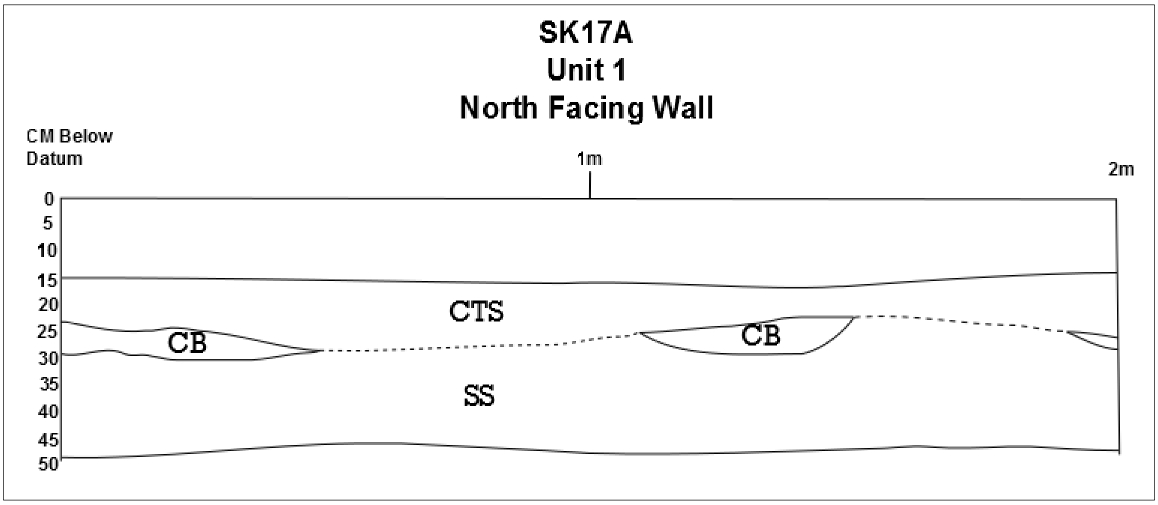


Figure 8.13 Stratigraphy of north-facing wall at unit SK17A

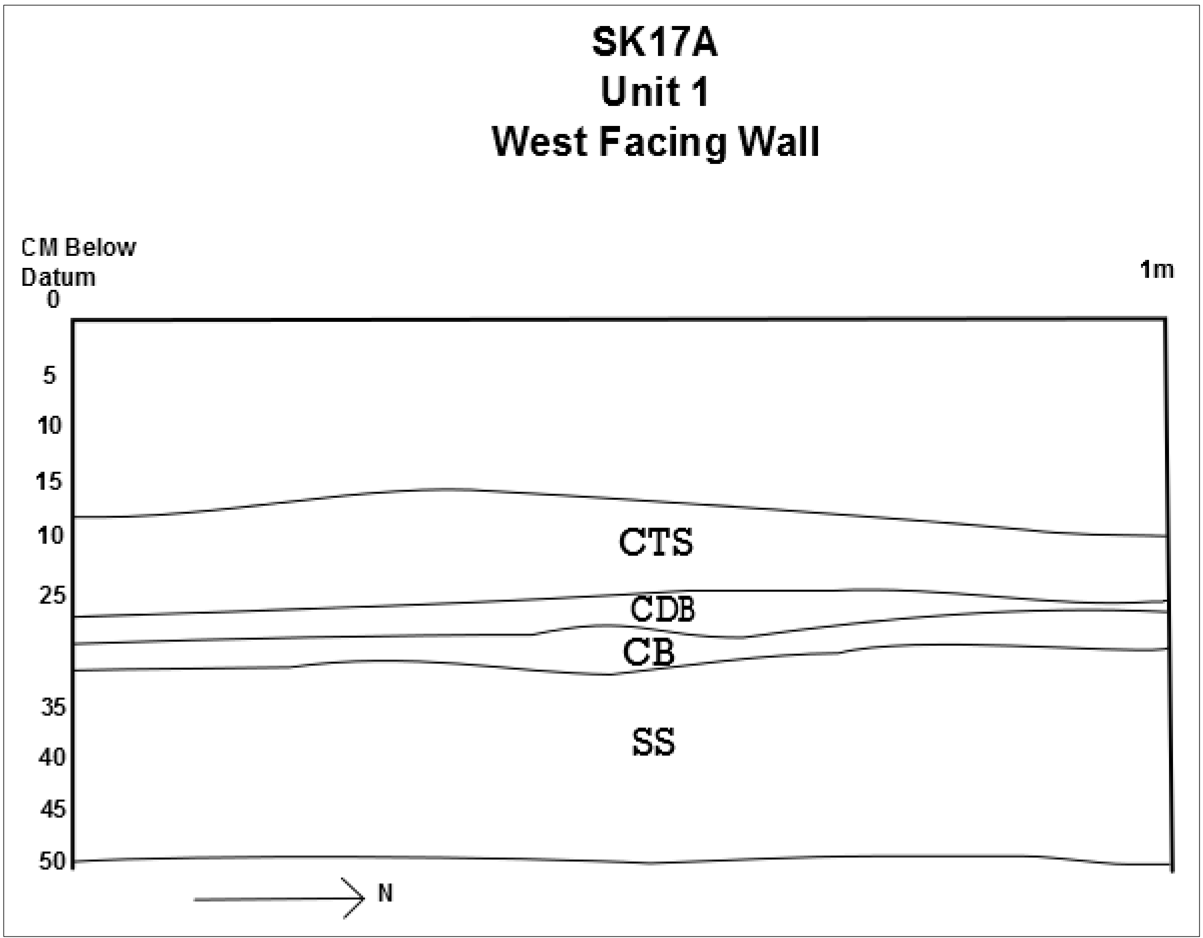


Figure 8.14 Stratigraphy of west-facing wall at unit SK17A

8.3. Chronology

Two wood charcoal samples were sent to Direct AMS Radiocarbon Dating Services for radiocarbon dating (Table 8.2). The analysis and calibration were done by using the Oxford Radiocarbon Accelerator Unit radiocarbon software Oxcal Version 4.2 (Bronk Ramsey, 2009, 2013). All the samples were plotted on the southern hemisphere calibration curve (Hogg *et al.*, 2013) and were calibrated to the two-sigma range.

Table 8.2 Radiocarbon samples calibrated to Sigma 1 and Sigma 2 from both the earlier and recent excavations at SK17 plotted on the southern hemisphere calibration curve

Source: Hogg *et al*., 2013; Oxcal Version 4.2; Bronk Ramsey, 2009; 2013

LABCODE	SAMPLE NAME	C14 DATE	RANGE	LAYER	DESCRIPTION	CALIBRATED DATE RANGE AT 1 AND 2 SIGMA (AD)
D-AMS 004213	SK17A01	1335	28	2	Wood charcoal sample at a depth of 29 cm, taken from light loam soil.	AD 660 to AD 833 (Sigma 1), AD 651 to AD 864 (Sigma 2)
D-AMS 004214	Sk17A02	1284	27	3	Wood charcoal from ash pocket at 31 cm, from loamy sand.	AD 684 to AD 880 (Sigma 1), AD 679 to AD 886 (Sigma2)
PTA-3507	SK17.2	1210	50	2	Collagen from bone at a depth of 15 to 30 cm.	AD 693 to AD 992 (Sigma 1), AD 681 to AD 1019 (Sigma 2)

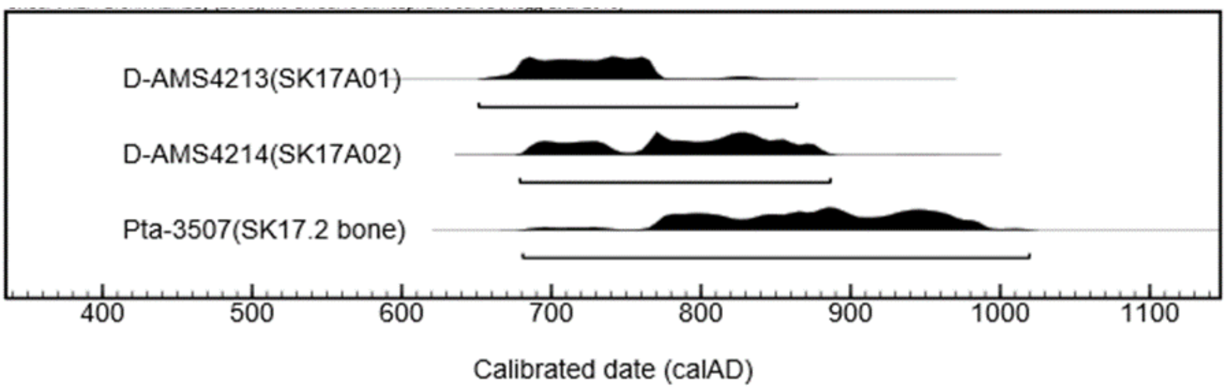


Figure 8.15 Calibrated dates of SK17

Source: Oxcal v4.2.3; Bronk Ramsey, 2013; r5 SHCal04 atmospheric Curve, Hogg *et al*., 2013

Sample D-AMS4213 was taken from Layer 2 at a depth of 29 cm below datum. The calibrated range falls between AD 651 and AD 864 (Sigma 2) (Figure 8.15). The second sample, D-AMS4214, was taken from a depth of 31 cm in Layer 3. The calibrated dates fall between AD 679 and AD 886 (Sigma 2) (Figure 8.15).

One bone collagen sample (Pta-3507), collected at a depth of 15-30 cm, was submitted by Meyer (1986). This sample has a calibrated range of between AD 681 and AD 1019 (Sigma 2) (Figure 8.15). The larger probability range for this sample could be due to two factors, the first of which is that contamination of the sample is more likely when it is taken from bone collagen than when taken from wood charcoal (Maspero *et al.,* 2011). Due to natural processes that occur in bone samples, which affect the preservation of the collagen, the dates obtained could have been affected (Maspero *et al.,* 2011:2020). However, with this noted it is also possible that the dates are accurate, which could imply that the site may have been occupied well into the tenth century AD. The dates will be discussed in Chapter 10 when the radiocarbon dates from SK17 are compared with other associated EFC dates.

Chapter 9

Ceramic material from SK17

In this chapter, the ceramic data from SK17 is presented by way of a discussion of the stylistic typology, compositional analysis and contextualisation of the ceramic data by using the radiocarbon dates.

9.1. Ceramic material from SK17 and SK17 A

In total 480 ceramic sherds weighing 22.45 kg were collected during earlier excavations at SK17 (Table 9.1-9.3) and 613 sherds weighing 7.23kg from SK17A were analysed. The material from SK17A was highly fragmented due to the compactness of the soil and Grade A sherds made up 40% (*n*=434) of the assemblage. Since during the earlier excavation Meyer (1986:109) had not collected all sherd sizes, but only diagnostic pieces, a lack of Grade A sherds was noted. During the excavation of SK17A all ceramic sherds were collected.

Table 9.1 Ceramic sherds smaller than 2x2 cm collected from SK17

SHERDS SMALLER THAN 2X2 CM (GRADE A)	*N*	*%*	*WEIGHT(G)*	*DECORATED*	*%*	*UNDECORATED*	*%*
SK17	57	13	101,5	0	0	57	13
SK17.2 (LAYER 2)	30	7	91,6	0	0	30	7
SK17A (LAYER 1)	3	1	8,1	0	0	3	1
SK17A (LAYER 2)	23	5	58,3	0	0	23	5
SK17A (LAYER 3)	270	62	772,5	0	0	270	62
SK17A (LAYER 4)	51	12	120,9	0	0	51	12
TOTAL	434	100	1152,9	0	0	434	100

The second grouping of sherds was Grade B (Table 9.2) and consisted of ceramic sherds larger than 2 cm, but of limited diagnostic value. These comprised 50% (*n=544)* of all the ceramic material. The ceramics from Grade B were counted and weighed, but were also examined for traces of decorative motifs. Such motifs could only be discerned on 9% (*n=51),* with 91% (*n=273)* showing no visible decoration*.* The majority of the sherds from Grade B were from SK17.2, Layer 2 (*n*=289, 53%) and SK17A, Layer 3 (*n*=189, 35%).

Table 9.2 Ceramic sherds larger than 2x2 cm from SK17

SHERDS LARGER THAN 2X3 CM (GRADE B)	*N*	*%*	*WEIGHT (G)*	*DECORATED*	*%*	*UNDECORATED*	*%*
SK17 (SURFACE)	2	0.5	131,6	1	2	1	0,25
SK17.1 (LAYER1)	2	0.5	500	2	4	0	0
SK17.2 (LAYER2)	289	53	17188,1	26	51	263	53
SK17.3 (SURFACE)	2	0,5	77,8	1	2	1	0,25
SK17.4 (LAYER2)	8	1	54,7	0	0	8	2
SK17.5	1	0,25	20,7	1	2	0	0
SK17A (LAYER1)	1	0,25	25,2	0	0	1	0,25
SK17A (LAYER2)	10	2	76,5	1	2	9	2
SK17A (LAYER3)	189	35	3107,8	17	33	172	34,25
SK17A (LAYER4)	40	7	571,6	2	4	38	8
TOTAL	544	100	21754	51	100	493	100

Grade C contributed 10% (*n=115)* of all the sherds from the assemblage. In this group 81% (*n=93)* were decorated, with only 19% (*n=22)* undecorated (see Table 9.3). Grade C ceramics were dominant in SK17.2, Layer 2 (*n*=69, 60%), as well as in SK17A, Layer 3 (*n*=22.5, 18.5%).

Table 9.3 Grade C ceramics from SK17 per layer, expressed in numerical values and percentages

VESSELS WITH COMPLETE ATTRIBUTES (GRADE C)	*N*	*%*	*WEIGHT(G)*	*DECORATED*	*%*	*UNDECORATED*	*%*
SK17 (SURFACE)	7	6	432,7	5	5	2	9
SK17.1 (SURFACE)	1	1	57,3	0	0	1	4,5
SK17.1 (LAYER1)	9	8	1030	9	10	0	0
SK17.2 (LAYER2)	69	60	2793,1	60	65	9	41
SK17.4 (LAYER2)	2	2	48,4	2	2	0	0
SK17.5	1	1	29,9	0	0	1	4,5
SK17A(LAYER1)	0	0	0	0	0	0	0
SK17A (LAYER2)	1	1	93	0	0	1	4,5
SK17A (LAYER3)	22	18,5	2311,6	15	16	7	32
SK17A(LAYER4)	3	2,5	86,4	2	2	1	4,5
TOTAL	115	100	6882,4	93	100	22	100

9.1.1. Vessel shapes found at SK17

It was possible to attribute a vessel shape to 73% (*n=84)* of the Grade C ceramic sherds. Seven different vessel forms were identified, which included five jars and three bowl types (Table 9.4).

Table 9.4 Vessel shapes from SK17, expressed in numerical value and percentages

SK17	VESSELS SHAPES	*N*	*%*
	1.2	9	7
	1.3	10	9
	1.4	23	20
	1.5	10	9
	2.1	7	6
	2.2	9	8
	2.3	16	14
	NA	31	27
TOTAL		115	100

.

The vessel shapes varied substantially across SK17. Figure 9.1 highlights the wide variety of shapes found at SK17. Carinated bowls (19%, *n=16)* and slightly recurved jars (27%, n=*23)* were the most common.

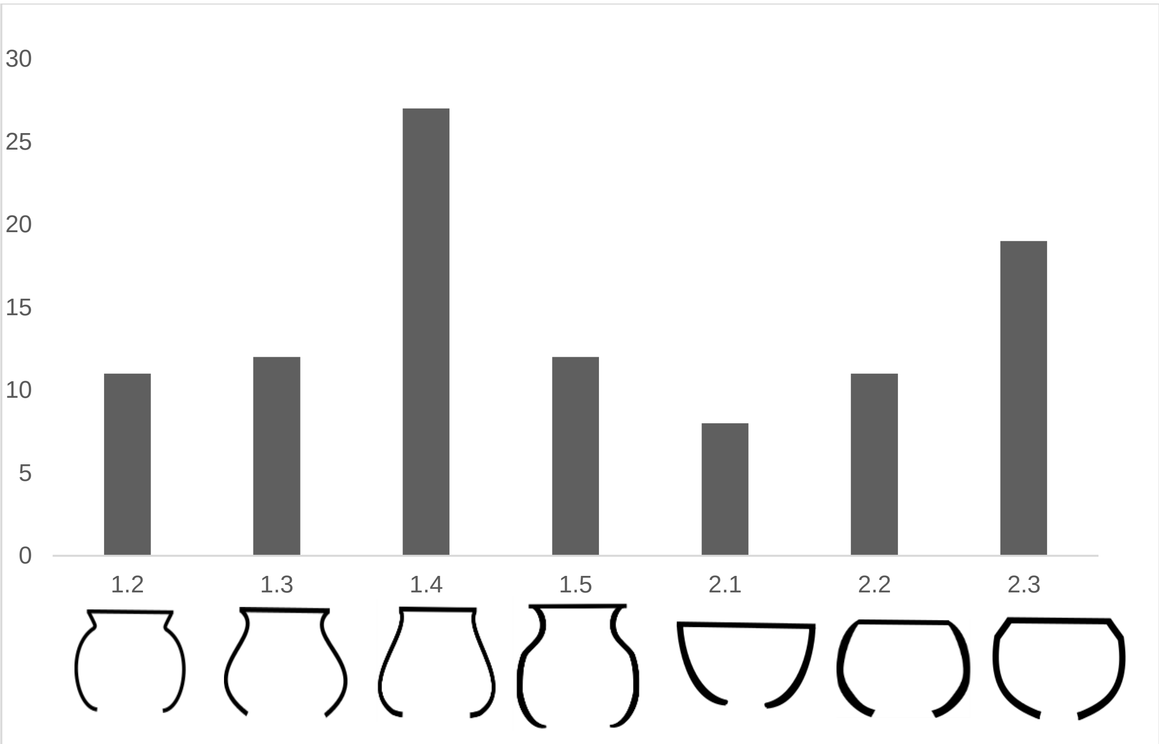


Figure 9.1 Vessel shapes found at SK17, expressed in percentages

9.1.1.1. Synopsis of vessel shapes

Meyer identified only straight or everted jar shapes and open or inturned bowls (1986:198). However, he did note that the vessel types (which included vessel shapes) were similar to those found at Ndondondwane (part of the Kalundu tradition) and the Lydenburg Heads site.

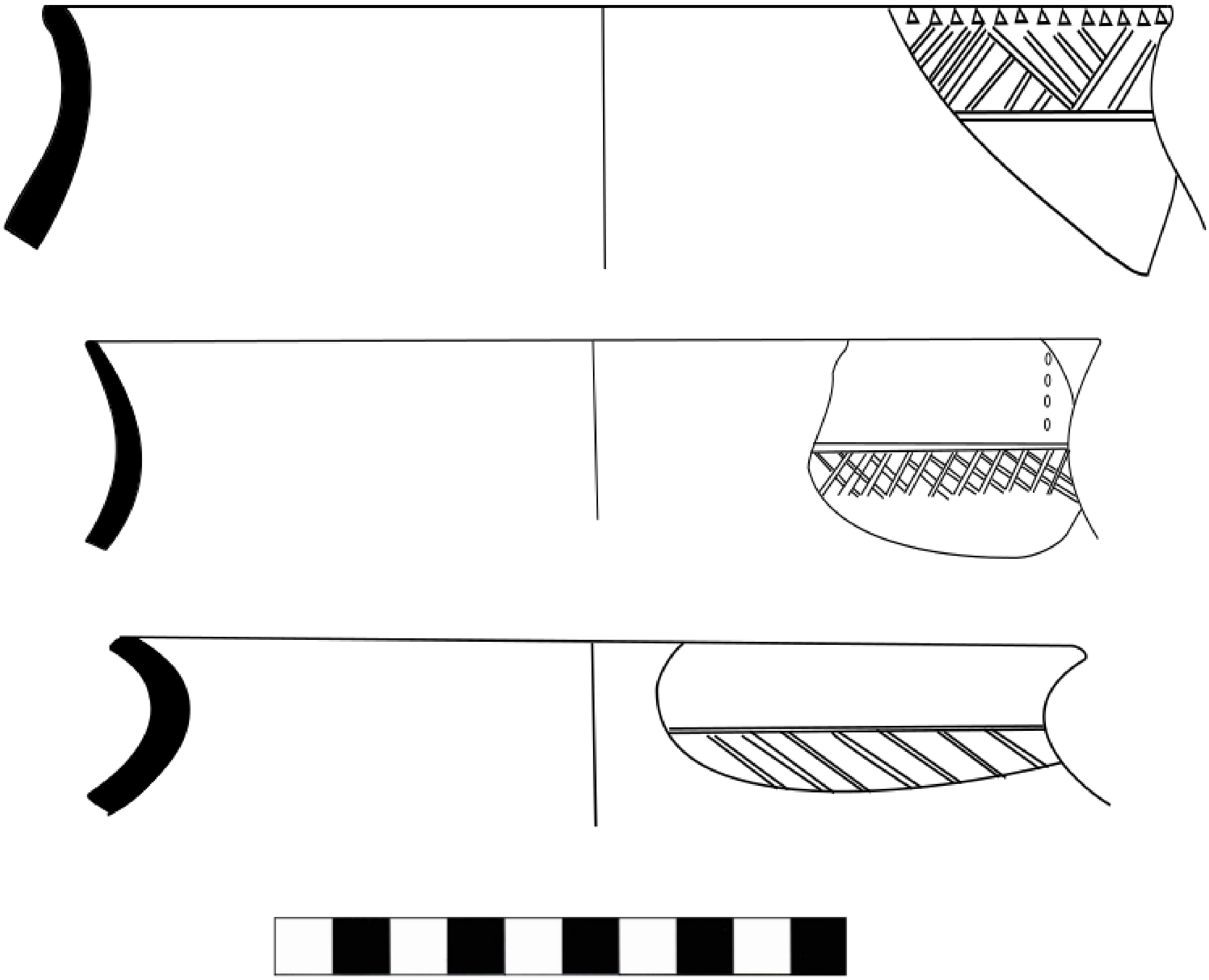


Figure 9.2 Examples of jar vessels with no point of inflexion from SK17

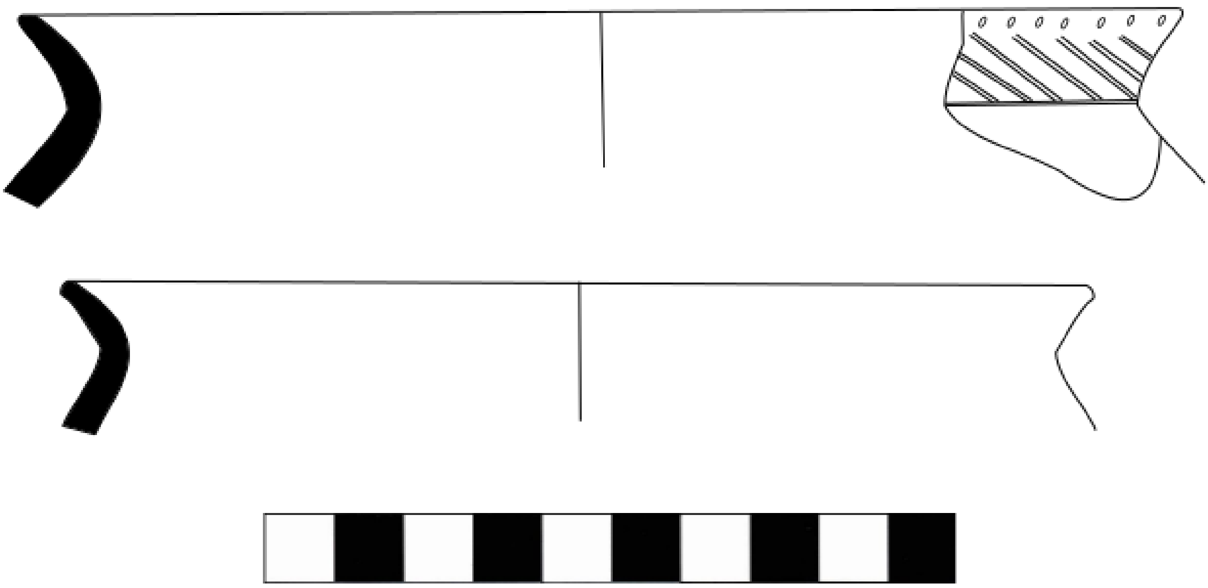


Figure 9.3 Jar vessels with a well-defined point of inflexion

A reanalysis of the material clearly indicated that the assemblage was not dominated by any spesific vessel shape (as was the case at TSH1), but rather displayed substantially more variation than was initially suggested by Meyer.

The most common vessel shapes found at SK17 were everted jar vessels with no point of inflexion (1.3 and 1.4), and recurved/s-shaped jars (1.5). These types of vessels are mostly present in Msuluzi- and Ndondondwane-type assemblages (Figure 9.2).

However, everted jars with a well-defined point of inflexion, which have been shown to be more common among Mzonjani assemblages (Figure 9.3), as discussed in Chapter 5, were also frequently found in the SK17 assemblage (Figure 9.3),.

The presence many vessel shapes in fairly equal numbers at SK17 (see Figure 9.4) could suggest multiple occupations of the site (Burrett, 2007; Maggs 1984a).

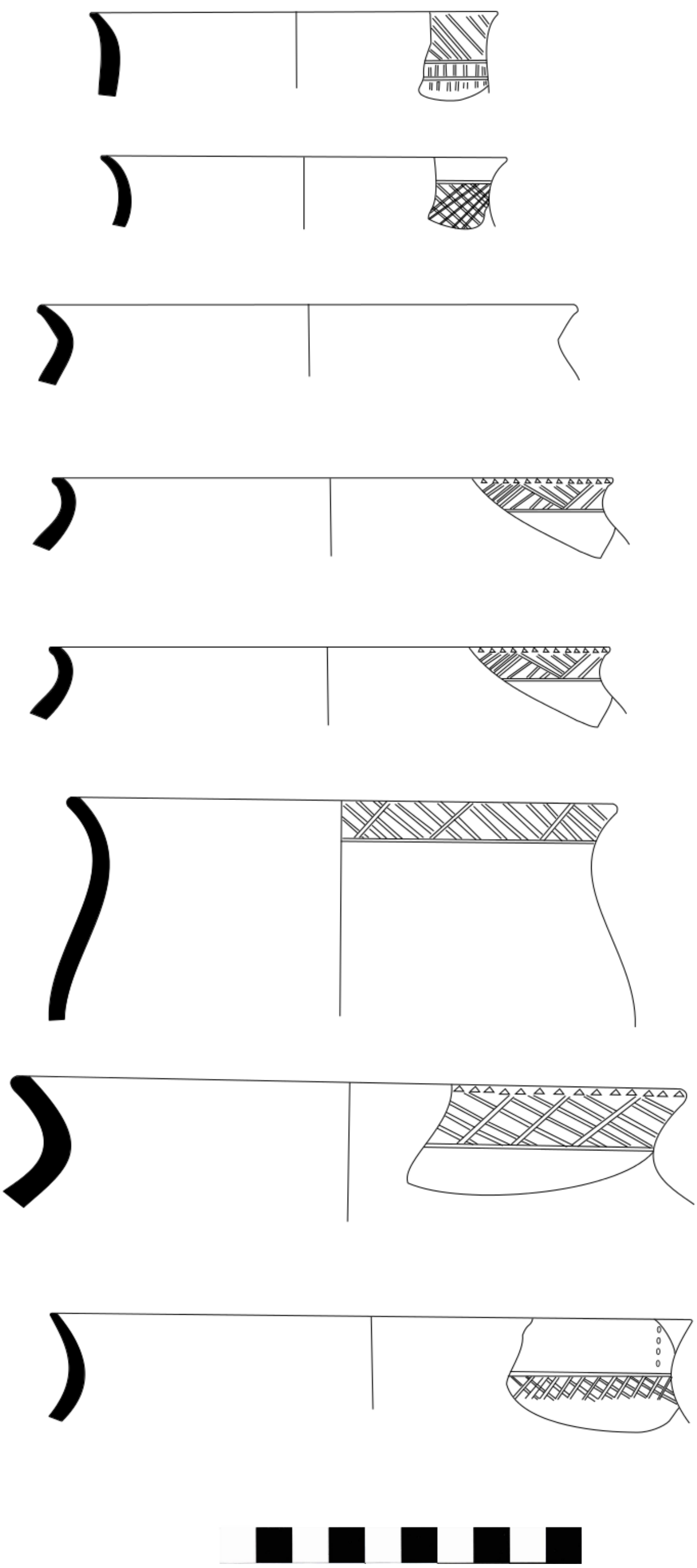


Figure 9.4 Examples of vessel shapes from SK17

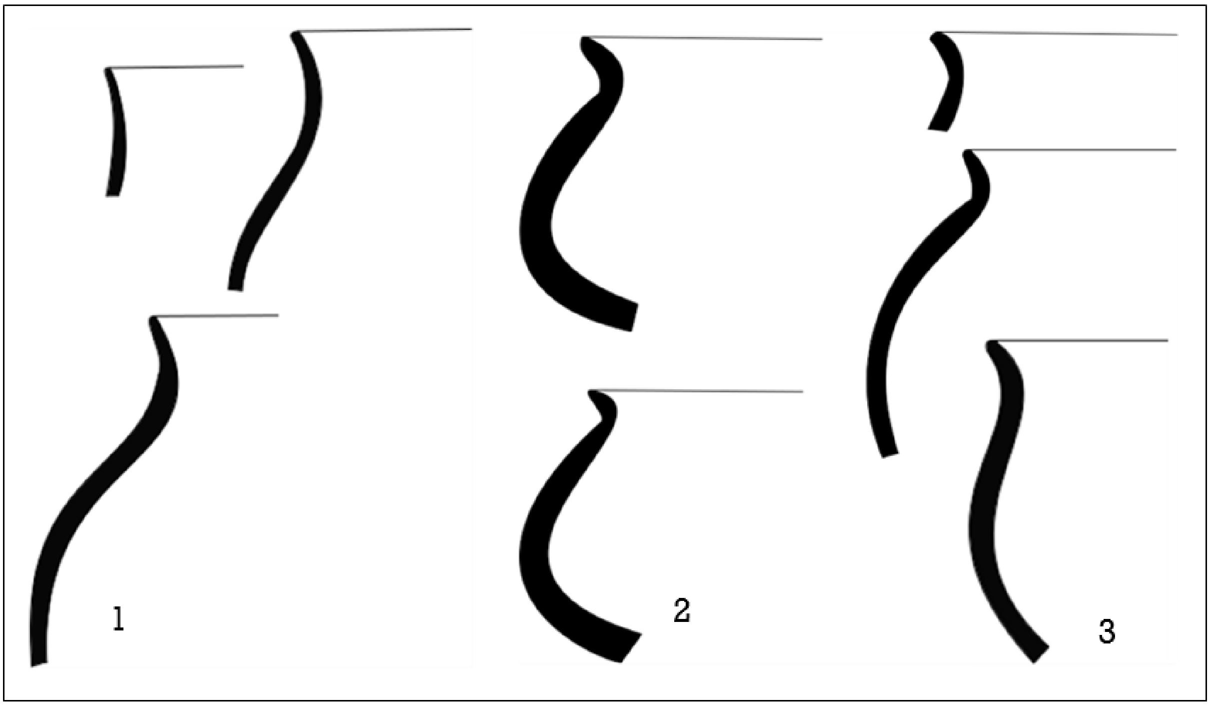


Figure 9.5.Jar shapes from 1) Ndondondwane (Maggs, 1984), 2) Broederstroom (Mason, 1981) and 3) Mzonjani (Maggs, 1980a)

9.1.1.1.1. Bowl shapes

Three bowl shapes were identified at SK17 (Figure 9.6). Two of these shapes – open and subcarinated – were also identified by Meyer (1986). However, the reanalysis showed that the carinated bowls were the type that was best represented, which is common at many of the Ndondondwane-type sites across southern Africa (Figure 9.7) (Maggs, 1984a; Whitelaw, 1996). The presence of a substantial number of bowl-shaped vessels points to cooking and serving/eating practices at the site (Henrickson & McDonald, 1987).

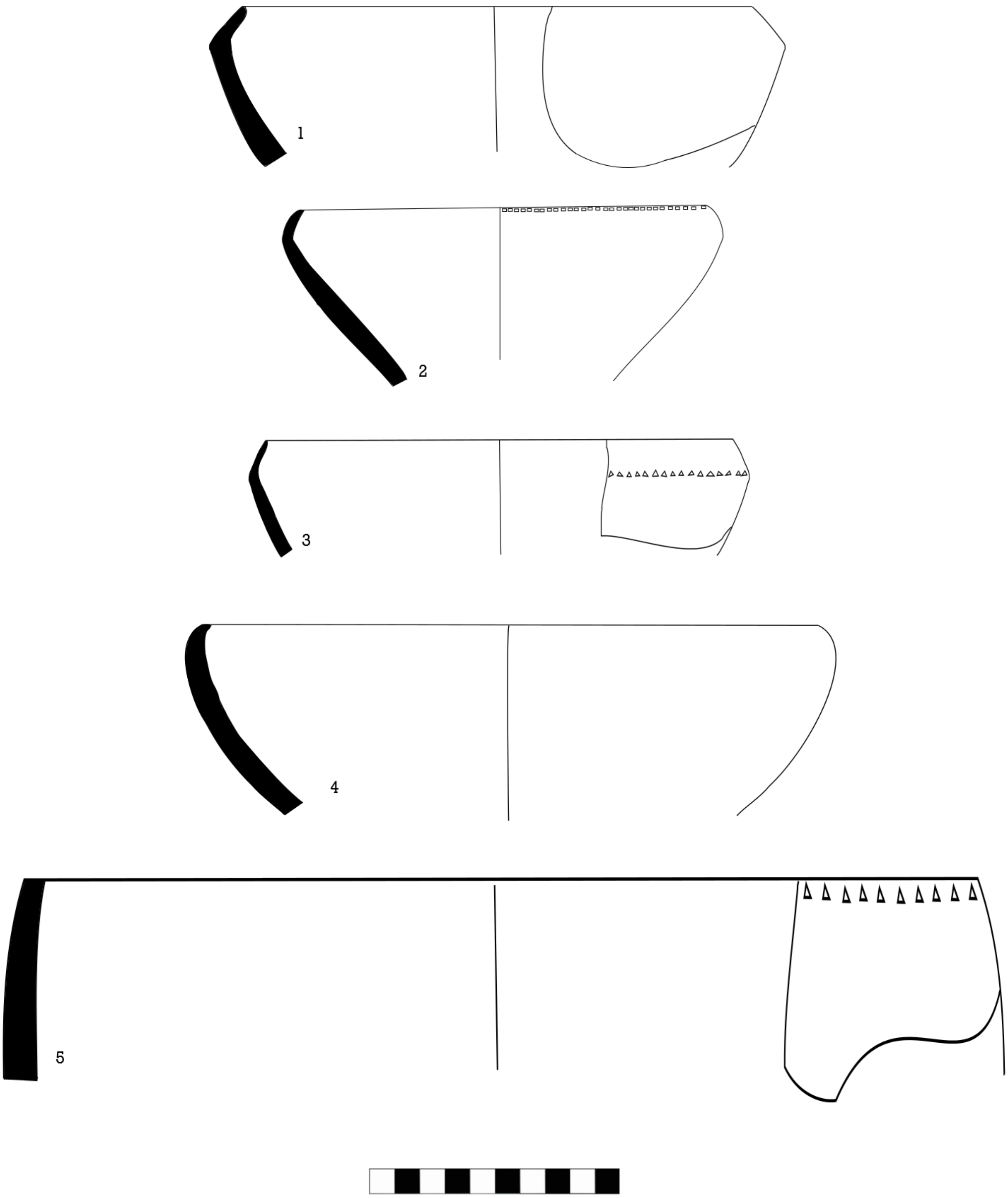


Figure 9.6 Examples of bowl shapes from SK17: 1-3) Carinated bowls, 4) Subcarinated/interned bowl and 5) Open bowl

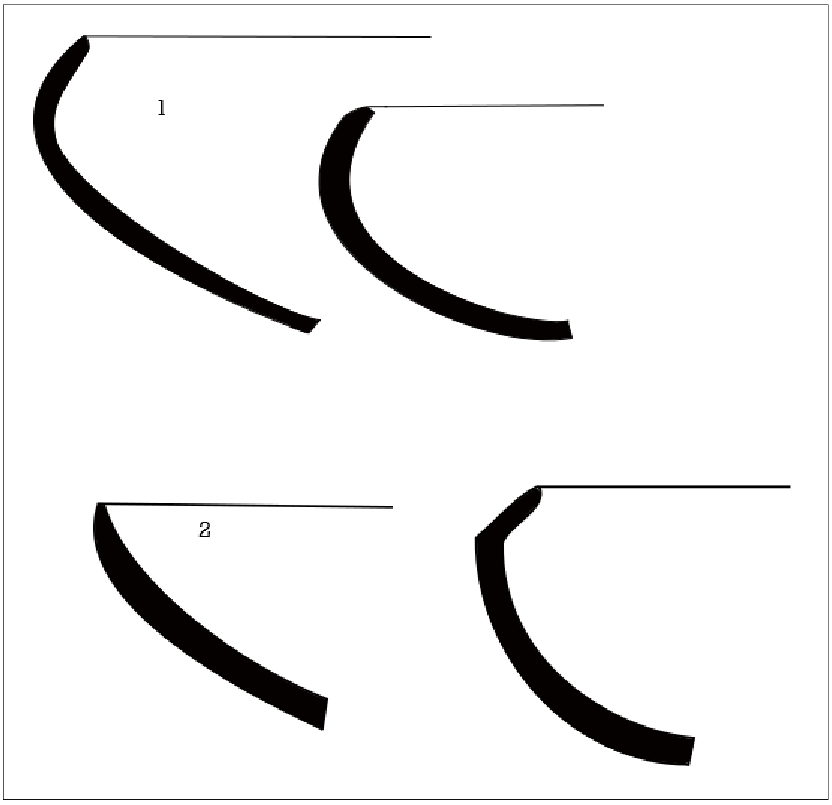


Figure 9.7 Bowl-shaped vessels from 1) KwaGandaganda (Whitelaw, 1994), 2) Ndondondwane (Maggs, 1984)

9.1.1.2. Placement of decorations at SK17

Seven possible positions for the placement of decorative motifs have been identified (see Chapter 4). In order to obtain a representative sample, all ceramic material from which it was not possible to determine the position where decorations had been applied was taken into account (indicated as N/A), as well as ceramic sherds that were undecorated (assigned a 0).

Figure 9.8 highlights the location of the decoration on the vessel (P4) and shows that 42% (*n*= 48) of the decorative motifs were placed on the rim, with a substantial amount of decoration also visible on the shoulder and upper body of the vessel (P6). It has to be noted that the numbers given for decoration at this position are not completely representative as 65% (*n*=75) of the vessels did not have a lower shoulder/body.

Decorations were also present on the upper (P2) and lower (P3) parts of the rims, with no visible decorations on the lips of the rims (P1) or the lower bodies of the vessels (P7). The absence of decorations on the lower bodies could, however, be due to the fact that samples from those positions were lacking.

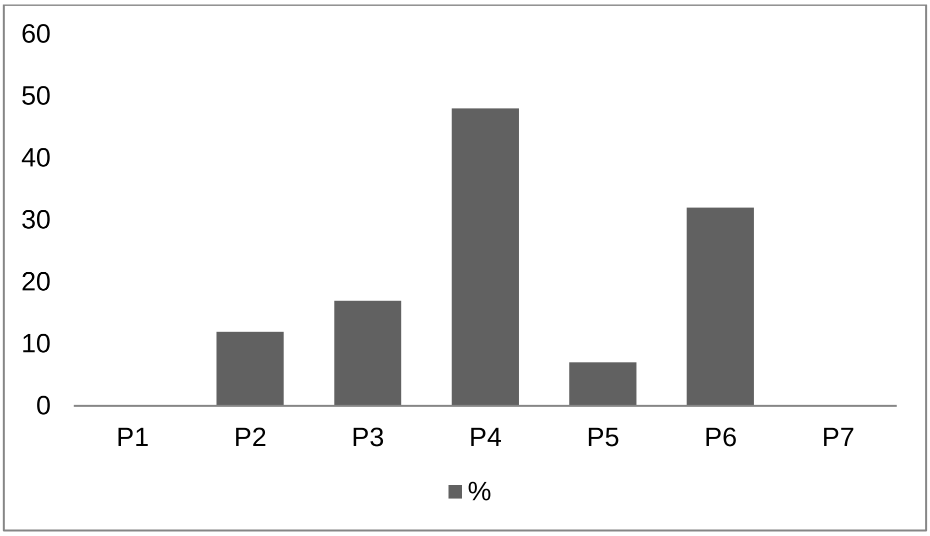


Figure 9.8 Placement of decorations across ceramic assemblage at SK17, expressed in percentages

Meyer (1986) does not discuss the placement of decorations in much detail. However, he does mention that decorations are found on the rims of vessels. Further analysis revealed that other parts of vessels were also decorated. There seemed to be variations in the positions of decorations on the rims (Figure 9.9) and decorations were also present on the upper bodies of vessels, which showed a similarity to the placement of decorations in the Ndondondwane assemblages (where many of the vessels were decorated on the lower part of the rim/upper neck), while the decoration on the rim was similar to that seen in Mzonjani ceramics. However, the decoration placement needs to be discussed in relation to the type of decoration that was found.

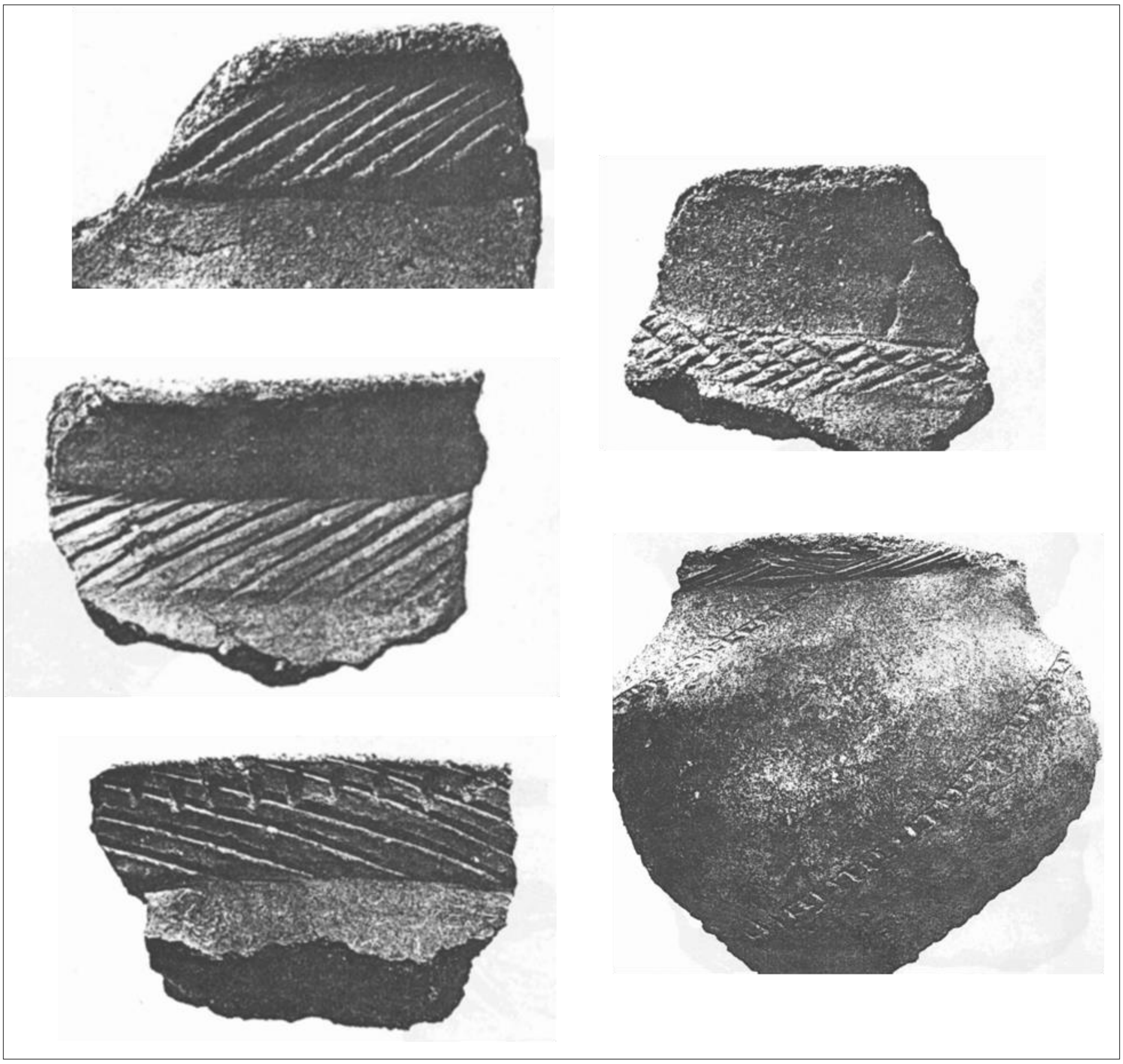


Figure 9.9 Different examples of the placement of decorations found in the ceramic assemblage of SK17

Source: Meyer 1986

9.1.1.3. Decorative motifs

Decorative motifs from both Grades B and C were analysed. In Grade B, the majority (91%) of sherds showed no visible decoration and it was only possible to identify motifs in 9% *(n*=51). In instances were decorations were visible, 94% (*n=48)* consisted of continuous motifs, with only 6% (*n*=2) showing discontinuous motifs. The majority of the continuous motifs were cross-hatched or horizontal motifs (35%, *n=17),* and all discontinuous decoration types consisted of triangular motifs (*n=2).*

Three decorative motifs were dominant in the Grade C ceramic assemblage (Table 9.5). Oblique incised lines with or without punctates (1.1-1.7) made up 21% (*n=24)*, while cross-hatched motifs (1.35-1.39) comprised 20% (*n=21).* Horizontal lines with or without punctates (1.8-1.11) also showed relatively high numbers at 14.5% (*n=17*) (Figure 9.10-9.12).

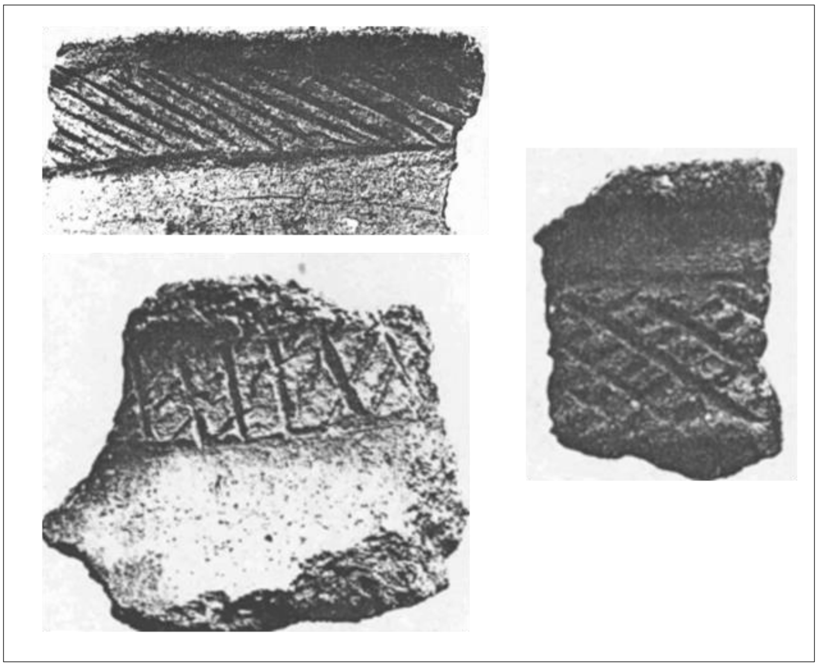


Figure 9.10 Examples of decorative motifs from SK17

Source: Meyer (1986)

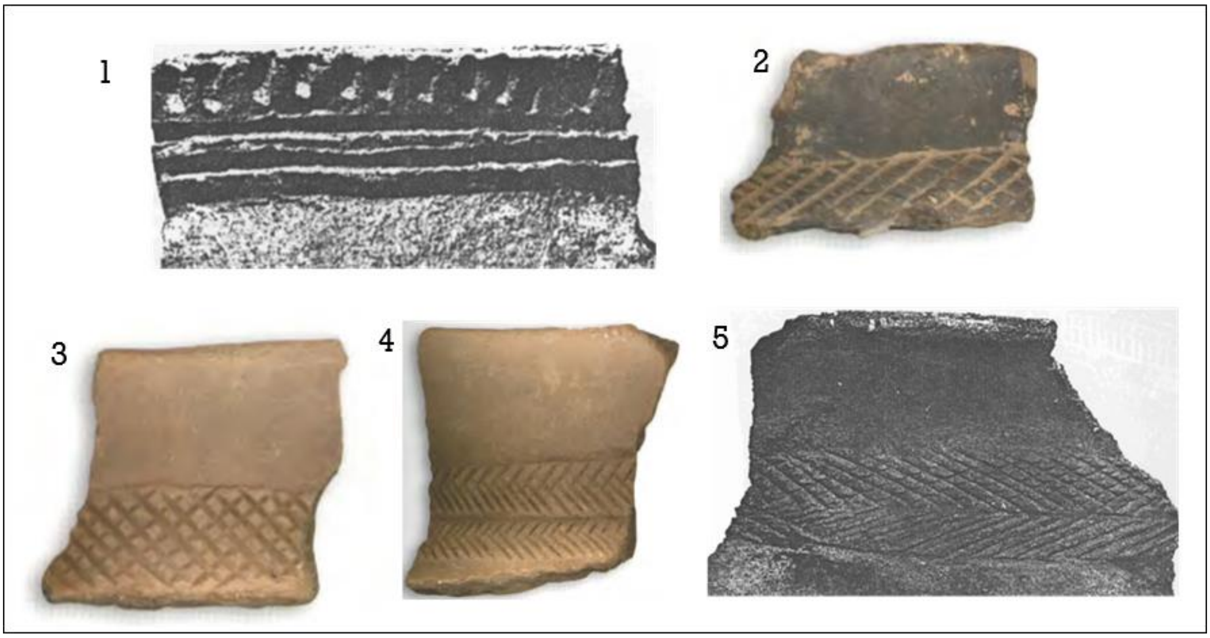


Figure 9.11 Examples of the placement of decorations and decorative motifs from Ndondondwane assemblages, SK17 Nos 1 and 5

Source: Meyer (1986:390) and 2-4 Huffman (2007:311)

Figure 9.12 Example of decoration motif and placement from Mzonjani assemblage

Source: Huffman (2007:129)

Table 9.5 Decorative motifs from SK17, expressed in numerical values and percentages

DECORATION MOTIF	*N*	*%*
OBLIQUE INCISED LINES (1.1-1.7)	24	21
HORIZONTAL INCISED LINES (1,8-1.11)	17	14,5
ALTERNATING OBLIQUE/HORIZONTAL LINES(1.12-1.14)	2	2
ALTERNATING OBLIQUE INCISED TRIANGLES, WITH/WITHOUT PUNCTATES (1.15-1.20)	4	3
CHEVRON PATTERNS (1.26-1.29)	2	2
HORIZONTAL INCISED LINES WITH MULTIPLE PUNCTATES (1,32)	1	1
CROSS-HATCHING (1,35-1,39)	22	20
HERRINGBONE/CHEVRON PATTERNS (1,40-1,42)	6	5
SINGLE BAND OF CONTINUOUS PUNCTATES (2.1)	19	16,5
MULTIPLE BANDS OF CONTINUOUS PUNCTATES (2.2)	1	1
DISCONTINUOUS INCISED PARALLELOGRAMS (3.1)	1	1
DISCONTINUOUS VERTICAL PUNCTATES/LADDER MOTIF (3.7-3,9)	10	9
MISCELLANEOUS CONTINUOUS MOTIFS (4)	2	2
MISCELLANEOUS DISCONTINUOUS MOTIFS (5)	2	2
TOTAL	113	100

The three decorative motifs present at SK17 provided further details to assist with the identification of the ceramic assemblage. The oblique incised lines with or without punctates are commonly seen on Mzonjani assemblages (Huffman, 2007:129) (Figure 6.20), whereas the cross-hatching motifs are similar to those seen in the Ndondondwane facies (Huffman, 2007:311). Maggs (1984:80) noted that the 'most characteristic pots have one or two or three bands of decoration on the lower half of the neck ending at the body-neck junction, with a broad undecorated band above it. Most common motifs are cross-hatching'. Similar decorative motifs were also noted at other Ndondondwane assemblages (Prins & Granger, 1993; Van Schalkwyk, 1994; Whitelaw, 1994). It should also be noted that cross-hatched lines also occur at Msuluzi facies, but are not as common. The horizontal lines with or without punctates found at SK17 are also found at both Mzonjani and Ndondondwane assemblages (Figure 9.13).

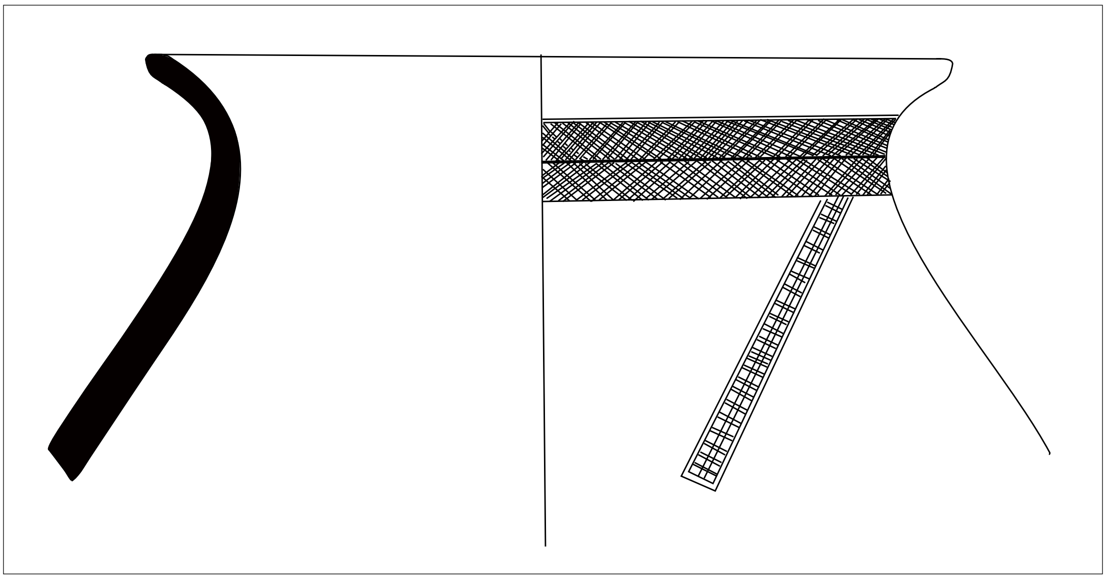


Figure 9.13 Example of the ceramic vessel from SK17 (note the ladder motif, which is commonly seen in Ndondondwane assemblages)

9.1.2. Rim types

Of the four rim types identified at SK17, tapered rims were the most prominent (74%, n=*85)* (Figure 9.14).

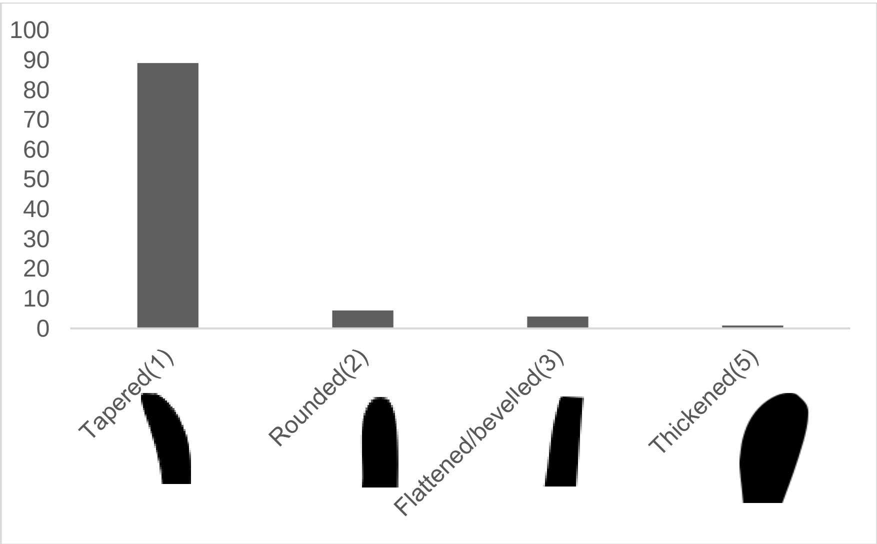
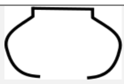
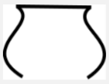
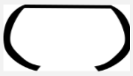
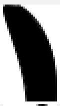


Figure 9.14 Rim types found at SK17, expressed in percentages

A comparison between vessel types and rim types revealed that the rims of jar-type vessels were mostly tapered, and that only the carinated bowls had flattened/bevelled rims (Table 9.6).

Table 9.6 Rim types compared to vessel shapes from SK17, expressed in numerical values

RIM TYPE	VESSEL SHAPE							
								
	7	6	4	7	17	2	1	9
	0	0	0	0	0	0	0	0
	0	0	0	1	0	1	0	2
	1	0	0	0	0	0	0	0
NA	1	3	1	2	2	0	3	3
TOTAL	9	9	5	8	17	3	4	14

9.1.3. Orifice size compared to vessel form

The maximum and minimum diameters of each vessel were measured in centimetres. It was possible to determine the maximum diameter of 77% (*n=76)* of the vessels. When the average minimum and maximum diameters were compared with the vessel shapes, it was found that the vessel jars had an average diameter of between 21 and 35.5 cm, while the diameters of the bowl vessels all exceeded 30 cm (Table 9.7).

Table 9.7 Comparison between vessel types and maximum diameters (in cm)

VESSEL TYPES	MEAN	MAX	MIN
1.1	21	34	10
1.2	24	31	21
1.3	22	33	7
1.4	24	40	12
1.5	35,5	40	23
2.1	26	40	16
2.2	29	40	14
2.3	30	40	23

9.1.4. Combined stylistic attributes of ceramic vessels from SK17

To identify the different vessels present at SK17, a presence/absence matrix was put into place that was based on the system first devised by Maggs and Michael (1976) for EFC sites in KwaZulu-Natal.

The different variables are listed below:

1. Straight-necked jar
2. Everted jar with a well-defined point of inflexion
3. Slightly everted jar with a slight point of inflexion or no inflexion
4. Slightly recurved jar
5. Well-defined recurved /s-shaped jar
6. Straight-necked/open bowls
7. Subcarinated/Inturned bowls
8. Carinated bowls

Rim types:

9. Tapered
10. Rounded
11. Flattened/bevelled
12. Thickened

Placement of decoration:

13. Lip of the vessel
14. Upper rim
15. Lower rim
16. Whole rim
17. Neck of the vessel, just below the rim
18. Below the shoulder, running down onto the upper body of the vessel
19. Lower body and base of the vessel

Decorative motifs:

20. Oblique incised lines
21. Horizontal incised lines
22. Alternating oblique/horizontal lines
23. Alternating oblique incised triangles, with/without punctates
24. Chevron patterns
25. Horizontal incised lines with multiple punctates

26. Cross-hatching

27. Connected herringbone

28. Single/multiple bands of continuous punctates

29. Discontinuous incised parallelograms

30. Discontinuous vertical punctates/ladder motifs

31. Miscellaneous continuous motifs

32. Miscellaneous discontinuous motifs

Table 9.8 highlights the attributes of the SK17 assemblage. Three patterns were identified among the jar vessels of the assemblage. First, there was a substantial number of slightly recurved jars (No. 4) with tapered rims (No. 9) and oblique incised lines (No. 20) on the whole of the rim (No. 16). However, there were some variations of this, where the incised lines were also found in the lower part of the rim, with a broad undecorated band above (Maggs, 1984:80). Variations of the motifs were noted on slightly recurved jars, and some also included horizontal incised lines (No. 21), or cross-hatched incised lines (No. 26) (Figure 9.15 and Figure 916).

The second noticeable pattern was the presence of equal numbers of everted jars with a well-defined point of inflexion (No. 2) and well-defined recurved jars (No. 5). The motifs on everted jars consisted mostly of incised oblique lines or alternating oblique/horizontal lines, both with or without punctates. These motifs were predominantly found on the entire rim (Figure 9.17), while the recurved jars had cross-hatched incised lines on the lower part of the rim or the whole rim. Discontinuous ladder motifs (No. 30) were found on the body of the vessel (Figure 9.18).

Table 9.8 A matrix displaying all the stylistic ceramic attributes (vessel shape, decorative motif and placement of decoration) from SK17

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	_																															
2		_																														
3	_	_	_																													
4	_	_	_	_																												
5	_	_	_	_	_																											
6	_	_	_	_	_	_																										
7	_	_	_	_	_	_	_																									
8	_	_	_	_	_	_	_	_																								
9		7	6	22	7	5	8	3	_																							
10	_	_	_	1	_	_	_	6	_	_																						
11	_	_	1	_	_	_	_	2	_	_	_																					
12	_	_	_	1	_	_	_	_	_	_	_	_																				
13	_	_	_	_	_	_	_	_	_	_	_	_	_																			
14	_	_	1	1	_	1	1	5	_	_	_	_	_	_																		
15		1	1	4	3	1	1	1	_	_	_	_	_	_	_																	
16		5	10	16	3	_	1	_	_	_	_	_	_	_	_	_																
17		2	2	5	2	1	_	1	_	_	_	_	_	_	_	_	_															
18		1	2	3	1	_	_	_	_	_	_	_	_	_	_	_	_	_														
19		1	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_													
20		2	3	5	1	_	1	1	19	_	_	_	_	1	2	_	2	_	_	_												
21		_	1	11	_	_	_	_	17	_	_	_	_	1	3	15	1	_	_	_	_											
22		1	_	_	_	_	_	_	6	_	_	_	_	_	_	3	_	_	_	_	_	_										
23		_	1	_	1	_	_	_	2	_	_	_	_	_	_	3	_	_	_	_	_	_	_									
24		_	1	_	1	1	_	_	3	_	_	_	_	_	_	2	2	_	_	_	_	_	_	_								
25		_	_	_		_	_	_	2	_	_	_	_	_	_	1	1	_	_	_	_	_	_	_	_							
26		2	_	5	4	_	_	_	13	_	1	_	_	_	7	9	3	_	_	1	_	_	_	_	_	_						
27		1	2	2	_	_	_	_	14	4	2	_	_	_		3	1	1	_	_	_	_	_	_	_	_	_					
28		_	1	8	_	_	2	6	_	_	_	_	_	10	3	3	3	1	_	_	_	_	_	_	_	_	_	_				
29		_	_	_	_	_	1	_	8	_	_	_	_	_			2	_	_	_	_	_	_	_	_	_	_	_	_			
30		_	2	_	2	1	_	1	2	_	_	_	_	_	1	1	3	4	_	_	_	_	_	1	_	_	_	_	_	_		
31		_	_	2	_	_	_	_	2	_	_	_	_	_	1	_	1	_	_	_	_	_	_	_	_	_	_	_	_	_	_	
32		1	_	_	_	1	_	_		_	_	_	_	_	1	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_

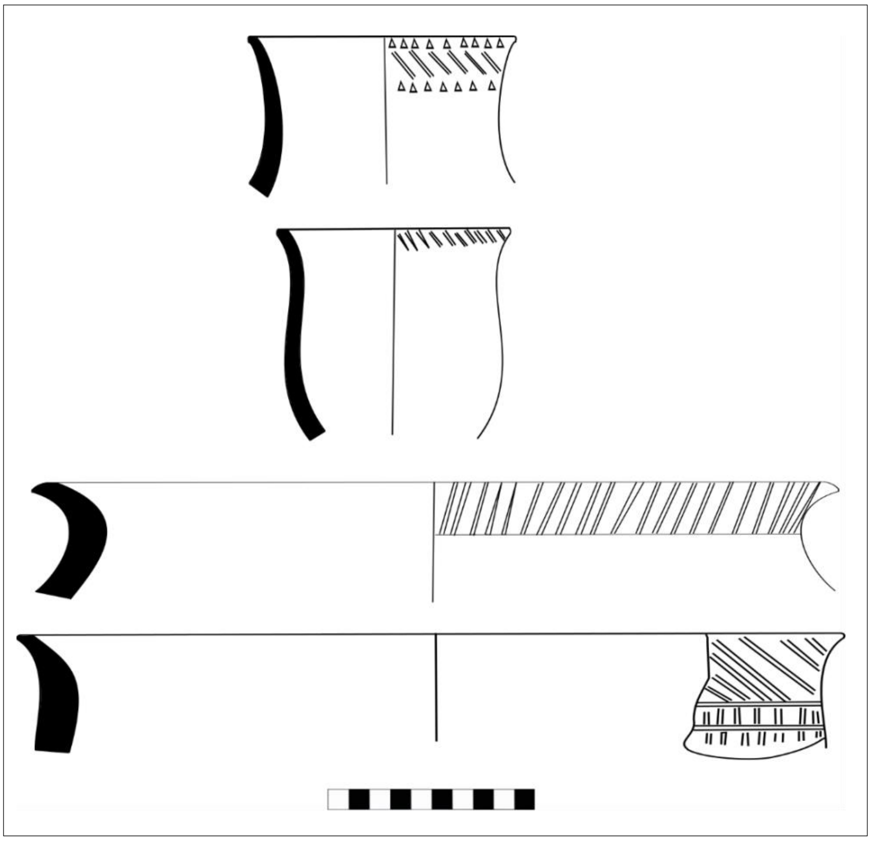


Figure 9.15 Jar vessels from SK17 (The four examples all highlight jars with everted rims and no visible point of inflexion visible, with decoration on the rims.)

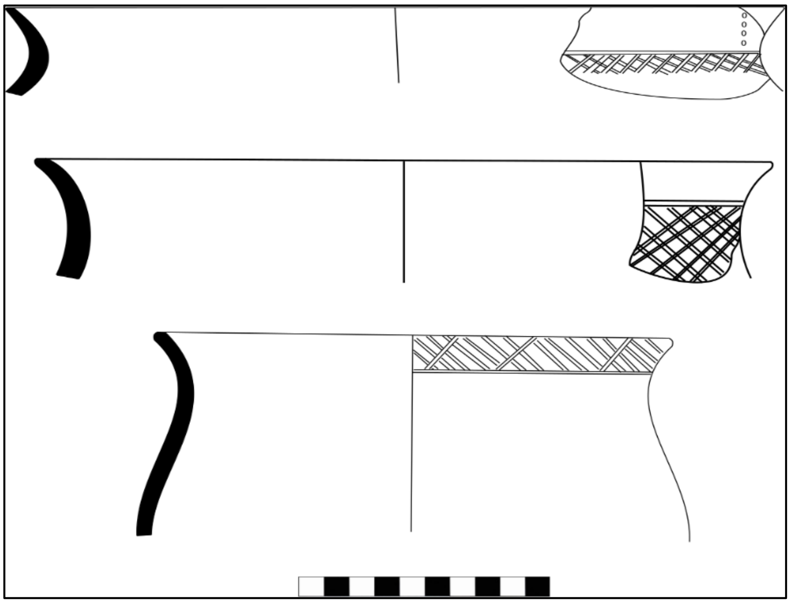


Figure 9.16 Examples of recurved jars found at SK17

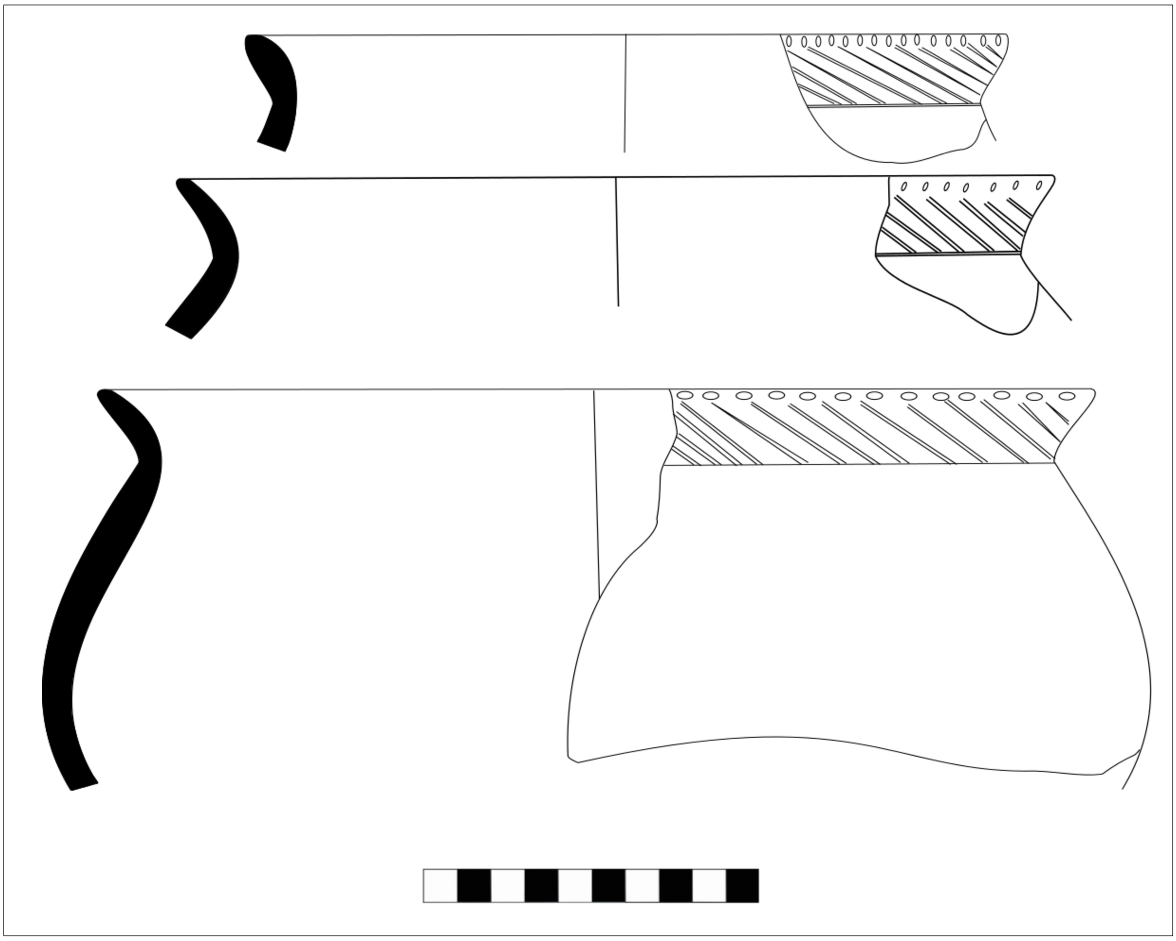


Figure 9.17 Jars with a well-defined point of inflexion from SK17

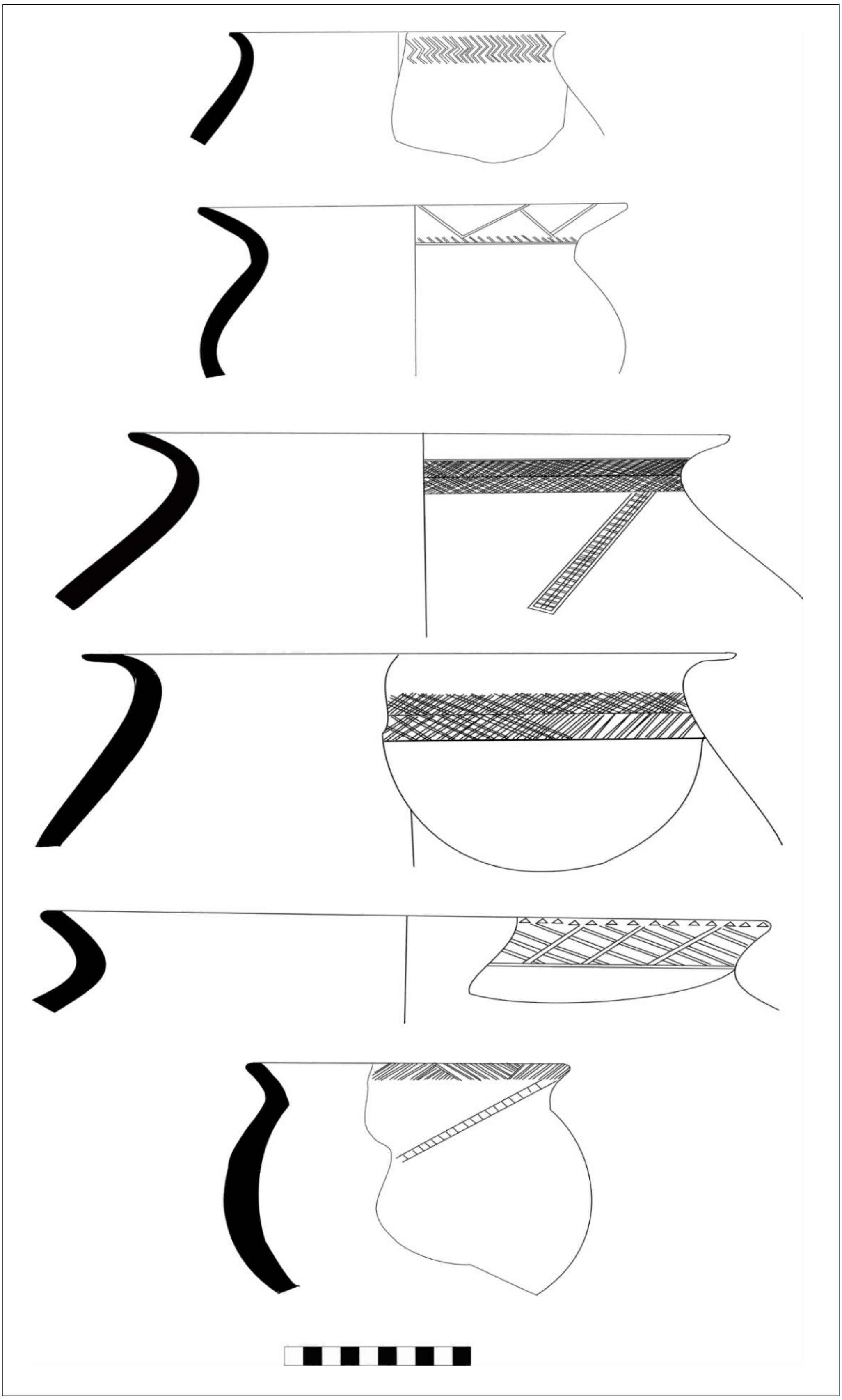


Figure 9.18 Examples of ceramic vessels from SK17 (Note the discontinuous ladder motifs on two of the vessels.)

9.1.5. Bowl-shaped vessels

The bowl-shaped vessels from the assemblage were dominated by carinated bowls (No. 8) with continuous punctates (No. 28) on the top part of the rim (No. 15). There was some variation in the rims of the carinated vessels, but most of the rims were rounded (No. 10). Subcarinated (inturned bowls (No. 7) types were also prominent, but were mostly undecorated (Figure 9.19).

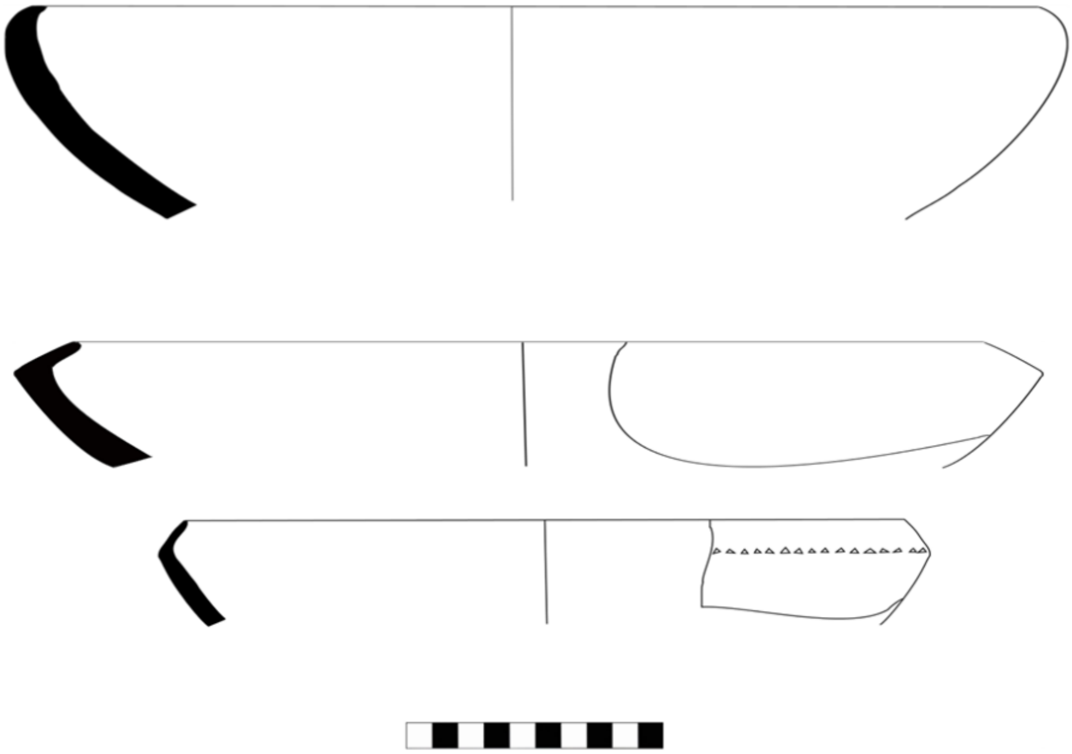


Figure 9.19 Carinated bowl vessels found at SK17

9.1.6. Ceramic classes of SK17

In total 17 different ceramic classes were identified at SK17. These classes were then compared to ceramics found at other relevant sites to determine whether SK17 is indeed a multi-occupation site, and where the site regionally fits into the chronology of other related EFC sites.

The jar vessel classes from SK17 are (numbers correspond with numbers in Figure 9.20):

1. Pot with an everted rim, with a band of decoration on the rim, followed by spaced discontinuous motifs on the lower shoulder/body of the vessel
2. Pot with an everted rim with a band of decoration on the rim and continuous motifs on the neck/shoulder
3. Pot with an everted rim and a band of decoration on the rim
4. Pot with a slightly everted rim with a single line of punctates on the upper rim and spaced discontinuous vertical punctates on the body of the vessel
5. Pot with an everted rim with a band of decoration on the upper neck of the vessel
6. Pot with a recurved rim with multiple bands of cross-hatched lines on the upper neck/shoulder
7. Pot with a recurved rim, multiple bands (cross-hatching) of decoration on the lower neck and spaced motifs on the lower neck /shoulder (ladder motif)
8. Undecorated pot with an everted neck (Figure 9.20.8)
9. Pot with a slightly everted neck, spaced motifs on the rim and multiple bands of punctates directly below an extending onto the shoulder of the vessel
10. Pot with an everted rim, a band of decoration on the lower rim and continuous motifs on the neck/shoulder and body of the vessel (only one example)

The bowl vessel classes from SK17 A (numbers correspond with numbers in Figure 9.21):

1. Open bowl with no decoration
2. Open bowl with a single line of decoration on the upper rim
3. Inturned bowl with no decoration
4. Carinated bowl with no decoration
5. Carinated bowl with decoration on the rim
6. Carinated bowl with a single band of punctates below the carination on the shoulder
7. Necked bowl with a single decorative band on the rim. This class is added to allow for comparison with the Garonga ceramic classes (Burrett, 2007), as this ceramic vessel could also be classified at a jar vessel.

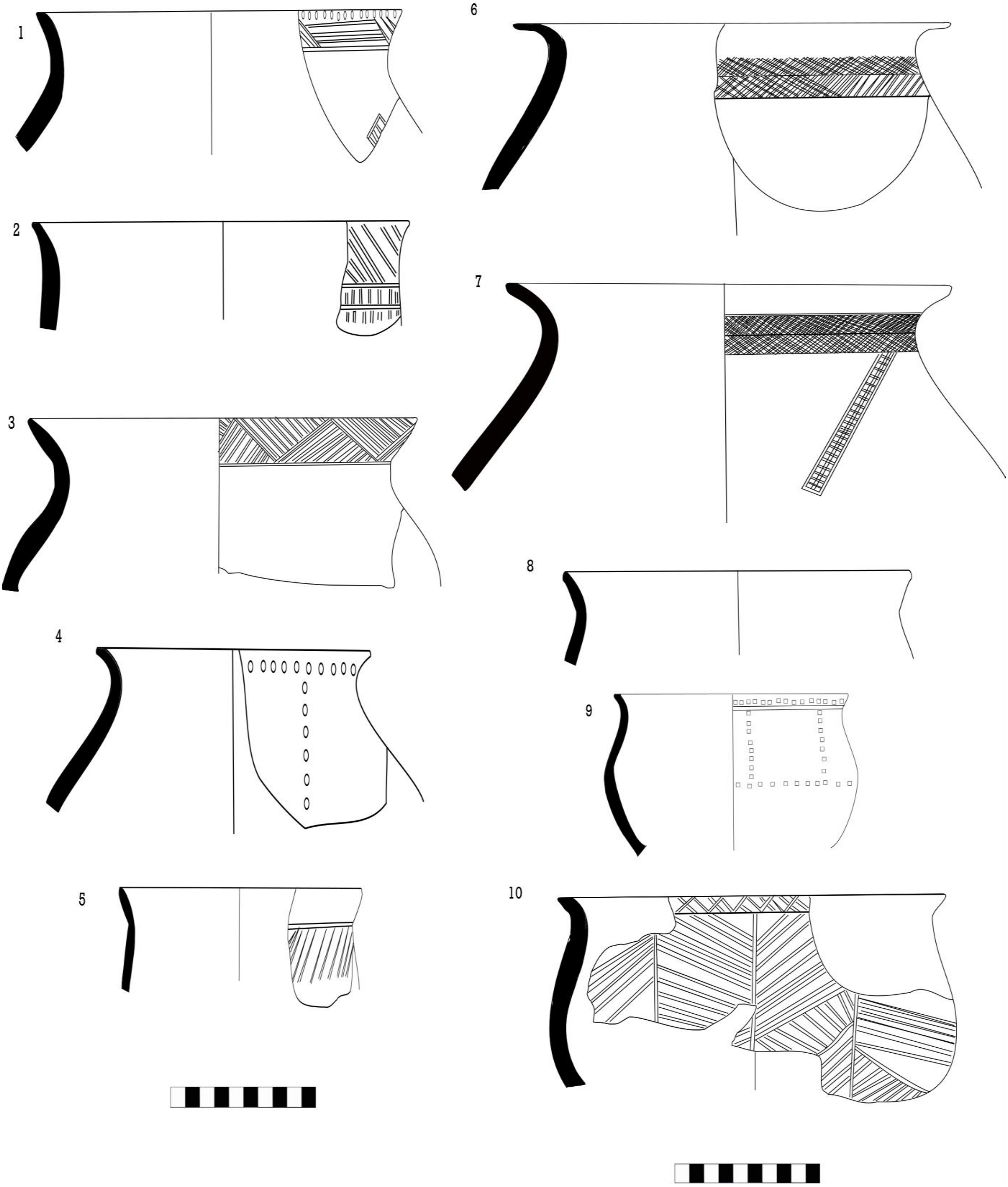


Figure 9.20 Ceramic vessel classes found at SK17 (numbers indicate class types)

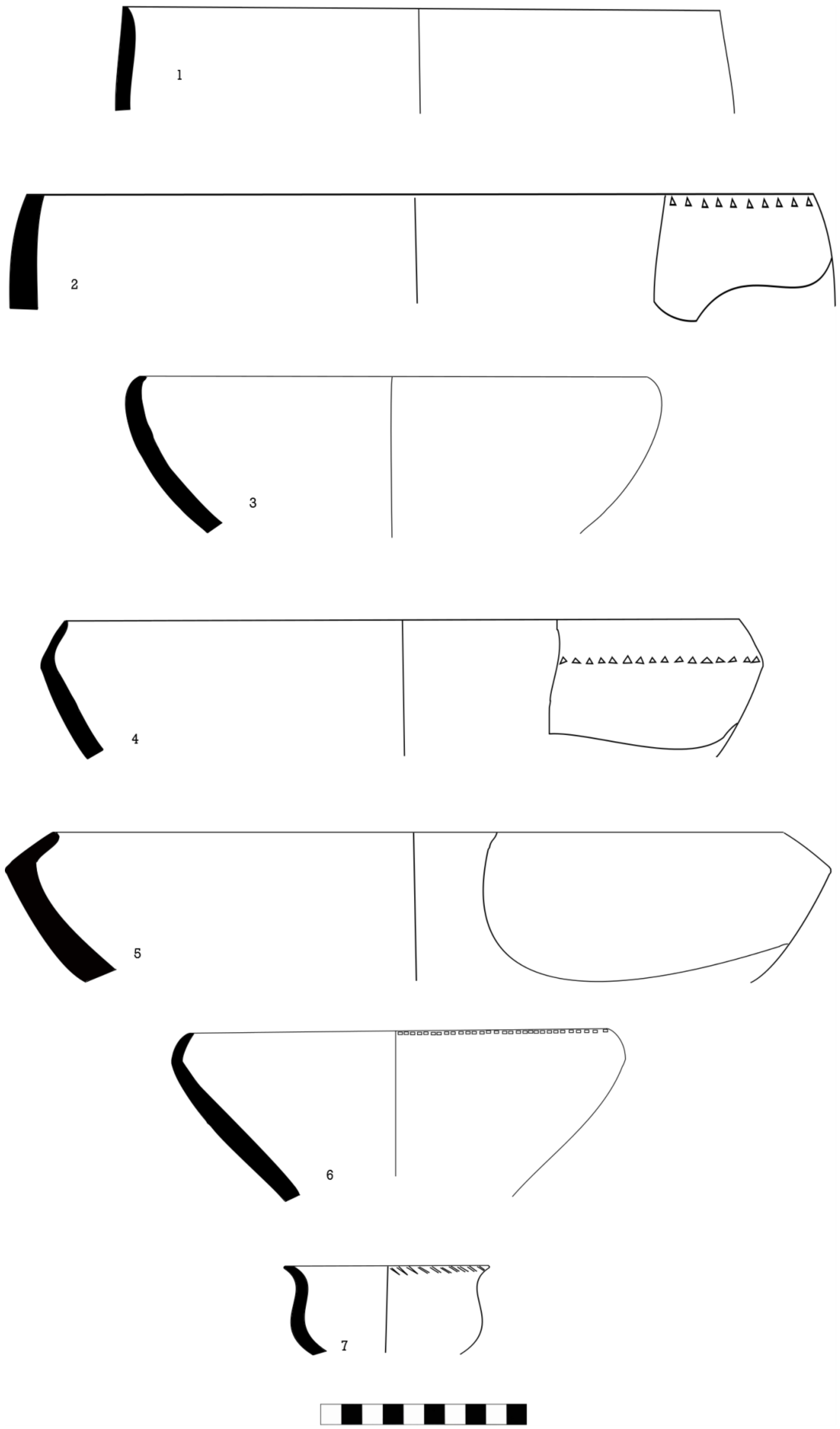


Figure 9.21.Bowl vessel classes from SK17 (numbers indicate ceramic classes)

The above-mentioned ceramic classes were compared to those found at other relevant EFC sites in South Africa (Table 9.9). These sites included Ndondondwane (name site) Msuluzi and Mzonjani (Maggs, 1980a, 1980b, 1984), Garonga (Burrett, 2007), TSH1 and Lydenburg (Whitelaw, 1996) (Kalundu phase). The analysis closely followed that of Whitelaw's (1996) reanalysis of the Lydenburg Heads site, in which he assigned membership to a facies. All ceramic classes are listed to note similarities and variables. A numerical total is presented at the end of each site to show to how many of the included classes it relates (Table 9.9). The sites are then compared with the percentages (Table 9.10 and Table 9.11).

Table 9.9 Distribution of ceramic classes at TSH1 (TSH) and the Garonga (GA), Mzonjani (MZ), Msuluzi (MS), SK17(SK) and Lydenburg Heads sites, Group 2 (LY(G2), with the total for each site expressed in numerical values at the end of the table

Ceramic classes	TSH	GA	MZ	MS	ND	SK	LY (G2)
Pot with an everted rim and a band of decoration on the rim, followed by spaced discontinuous motifs on the lower shoulder/body of vessel	X		X	X		X	
Pot with an everted rim, a band of decoration on the rim and continuous motifs on the neck/shoulder	X	X	X	X		X	
Pot with an everted rim and a band of decoration on the rim	X	X	X	X	X	X	X
Pot with a slightly everted rim, a single line of punctates on the upper rim and spaced discontinuous vertical punctates on the body of vessel						X	
Pot with an everted rim and a band of decoration on the upper neck of the vessel			X	X	X	X	X
Pot with a recurved rim and multiple bands of cross-hatched lines on the upper neck/shoulder				X	X	X	X
Pot with a recurved rim, multiple bands (cross-hatching) of decoration on the lower neck and spaced motifs on the lower neck/shoulder (ladder motif)				X	X	X	
Undecorated pot with an everted neck	X					X	
Pot with an everted rim, a band of decoration on the lower rim and continuous motifs on neck/shoulder and body of vessel		X		X	X	X	
Pot with a slightly everted neck, spaced motifs on the rim (vertical punctates) and multiple bands of punctates directly below and extending onto the shoulder of the vessel						X	
Pot with an everted rim and a band of decoration on the rim, multiple bands on the neck and pendant motifs on the upper shoulder, followed by a band on the lower shoulder				X			

Pot with an everted rim and a band of decoration on the rim, a single band on the neck and pendant triangles on the shoulder				X	X		X
Pot with a recurved/everted rim and a band of decoration on the lip and rim	X						
Pot with an everted rim and a band of decoration on the lower rim, with continuous motifs on the neck/shoulder and body of the vessel (only one example)						X	
Pot with an everted rim and a single band of spaced decoration, followed by multiple bands of decoration		X					
Pot with an everted rim and a band of decoration on rim, multiple bands on the neck and a band on the shoulder				X			
Open bowl with no decoration	X	X				X	
Open bowl with a band of decoration on the rim				X	X	X	
Open bowl with a pendant motif below the lip				X			
Open bowl with a band of chevron motifs on the shoulder/body	X						
Inturned, carinated bowl with a band of decoration on the upper shoulder, a band on the lower shoulder and another below the carination				X	X		
Inturned bowl with a band of decoration on the upper shoulder	X			X	X		
Inturned, carinated bowl with arcade decoration on the shoulder and a band below the carination				X	X		
Inturned, carinated bowl with a band of decoration on the upper shoulder and another below the carination				X			
Inturned bowl with pendant motifs on the upper shoulder					X		
Inturned bowl with a band of decoration on the rim	X	X					
Inturned bowl with no decoration	X					X	
Carinated bowl with no decoration						X	
Carinated bowl with decoration on the rim	X					X	
Carinated bowl with a single band of punctates below the carination on the shoulder			X	X		X	
Inturned carinated bowl with discontinuous hatched alternating triangles and triangular punctates on the neck/shoulder	X			X			
Open bowl with a band of decoration on the lower lip/rim and spaced motifs on the shoulder							
Necked bowls		X				X	
Inturned bowl with decoration below carination					X		
Total	12	7	5	18	13	17	4

Table 9.10 Similarity scores for TSH1 (TSH), Garonga (GA), Mzonjani (MZ), Msuluzi (MS), SK17(SK) and Lydenburg Heads Site Group 2(LY)(G2), expressed in percentages

	TSH1	GA	MZ	MS	ND	SK	LY(G2)
TSH1	_						
GA	42	_					
MZ	35	50	_				
MS	33	16	43	_			
ND	16	20	22	65	_		
SK	55	42	40	46	33	_	
LY(G2)	13	36	44	33	47	29	_

Table 9.11 Similarity scores for the TSH1 (TSH), Garonga (GA), Mzonjani (MZ), Msuluzi (MS), SK17 (SK) and Lydenburg Heads sites, Group 2 (LY(G2)), excluding bowl classes, expressed in percentages

	TSH1	GA	MZ	MS	ND	SK	LY(G2)
TSH1	_						
GA	44	_					
MZ	67	50	_				
MS	40	43	29	_			
ND	18	40	40	75	_		
SK	50	40	25	67	59	_	
LY(G2)	22	25	50	57	80	40	_

The similarity scores for SK17, TSH1, Garonga (GA), Mzonjani (MZ) and Msuluzi (MS) show equal similarity scores. Where a lower score between SK17 and Ndondondwane (ND), as well the Lydenburg Heads site (LY (G2)) is noted, those variations are most likely due to an underrepresentation of bowl classes. Therefore, the bowl classes were excluded in a second calculation as there was a possibility that the lack of bowl classes could produce inaccurate results.

The results of the second calculation (Table 9.11) were somewhat different when compared with the results from Table 9.10 (Table 9.11). Although there still seems to be an average correlation between SK17, TSH1 and Garonga, scores between SK17, Msuluzi and Ndondondwane show an increase in similarity when bowl classes are not included. The low score between SK17 and Mzonjani could be due to the large number of bowl classes at SK17 (six classes) compared to Mzonjani (only one bowl class). A further interpretation of these results will be discussed in Chapter 11.

From the ceramic classes and similarity scores, three possible ceramic assemblages were identified at SK17, namely Mzonjani (Urewe tradition), Msuluzi and Ndondondwane (both part of the Kalundu tradition). An amalgamation of Urewe and Kalundu attributes could also be noted at SK17, i.e. the Garonga facies (Figure 9.22).

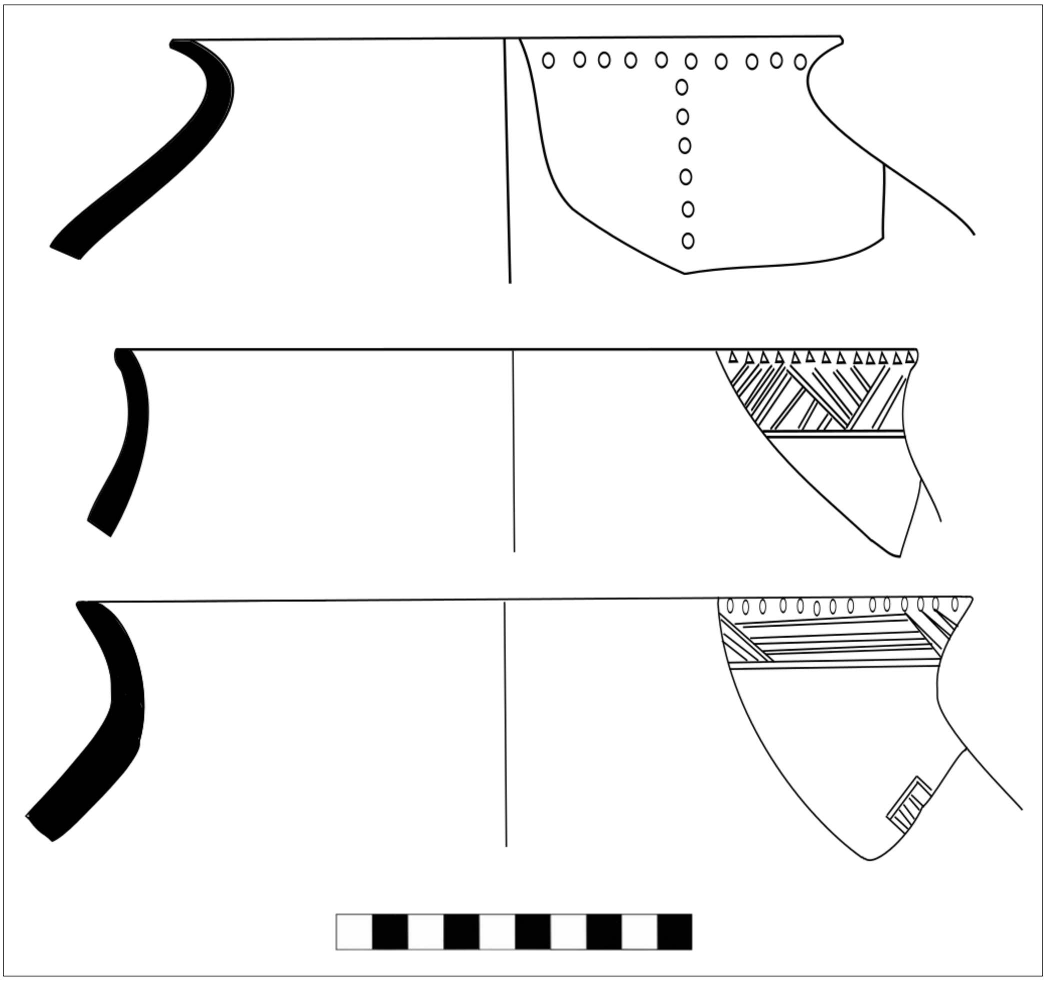


Figure 9.22 Examples from SK17 showing a mix of Urewe and Kalundu elements – a recurved vessel with oblique incised lines and punctates on the rim

The evidence for Mzonjani ceramics is based on the decorative motif and the shape of the vessel. As seen in Figure 9.17, some of the jar-shaped vessels from SK17 have everted rims with a well-defined point of inflection and oblique incised lines with punctates, which are typical features of the Mzonjani facies (see Chapter 5; Hall, 1980; Huffman, 2007:127; Maggs, 1980a; Nienaber *et al.,* 1997; Whitelaw, 1993, 1996; Whitelaw & Moon, 1996).

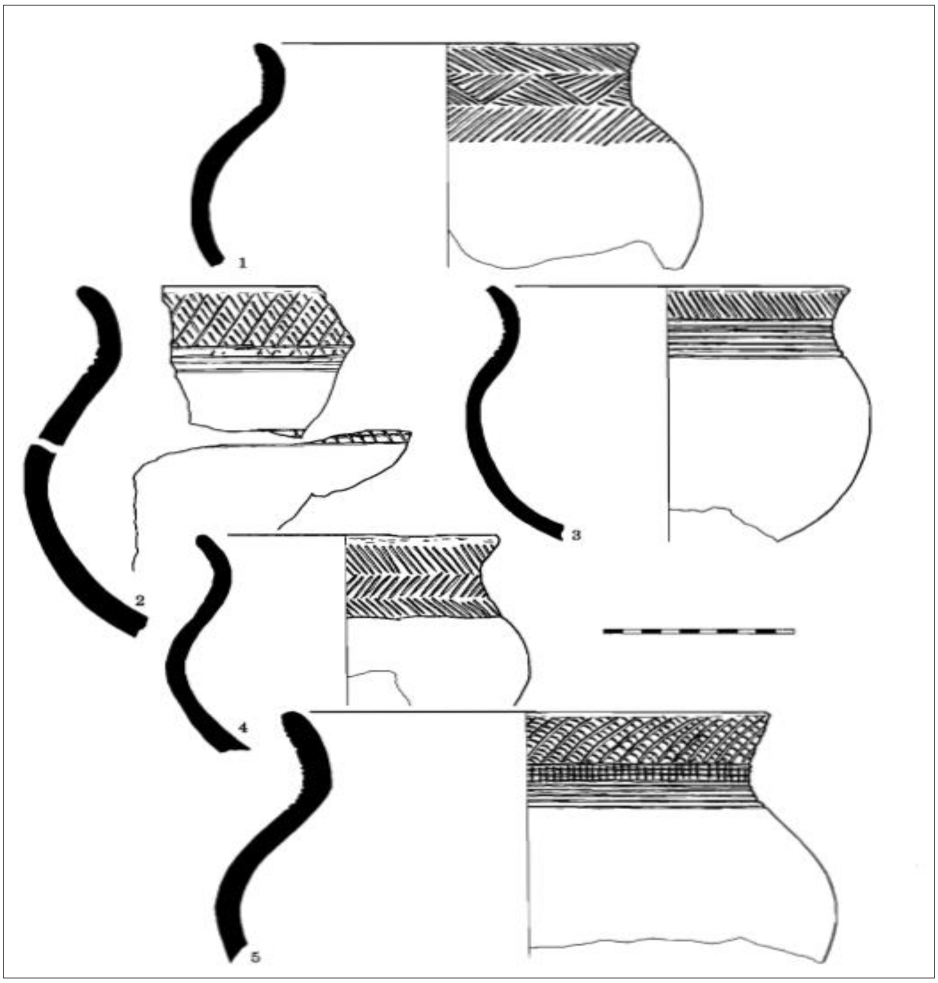


Figure 9.23 Examples of the Msuluzi ceramic assemblage

Source: Maggs (1980b:127)

Evidence for Msuluzi facies ceramics includes S-shaped jars (see Figure 9.23) and decoration on the entire rim, occasionally with complex decoration on the rest of the body (a single example of this was noted at SK17). The decorative motifs tend to be herringbone or cross-hatched lines (Maggs, 1980b; Maggs & Ward, 1984; Prins & Granger, 1993; Van Schalkwyk, 1994a, 1994b; Whitelaw, 1993, 1994).

However, the transition from Msuluzi to Ndondondwane is somewhat difficult to define, since all Ndondondwane ceramic classes at KwaGandaganda also occurred in the Msuluzi classes (Whitelaw, 1994:17). They can be distinguished by looking at the less frequent occurrence of decoration on the whole of the rim in Ndondondwane ceramics (Whitelaw, 1994: 17), where the decorative motifs become less complex, continue to the bottom of the rim (Maggs, 1980b) and consist mostly of herringbone or cross-hatched incised lines. The discontinuous motifs that occur on the body of the vessels are also less complex than those seen on examples from of Msuluzi and mostly consist of ladder motifs. The shape of the jars is also recurved (1.5) (Figures 9.22 and 9.23).

A limitation regarding the analysis of the ceramic assemblage of SK17 (both the earlier and the recent excavations) is a lack of stratigraphic detail and assemblage size, which makes it difficult to identify a change in pottery style over time. All the other multi-occupation sites with both Msuluzi and Ndondondwane ceramics in KwaZulu-Natal showed a detailed and well-established stratigraphy (Van Schalkwyk, 1994a; Whitelaw, 1993, 1994). Despite the lack of stratigraphy and small sample size, it was possible to establish a chronological sequence at SK17, and therefore it was still feasible to compare the ceramic assemblage from SK17 to other Msuluzi, Ndondondwane and Mzonjani assemblages in order to see where the strongest correlation could be found.

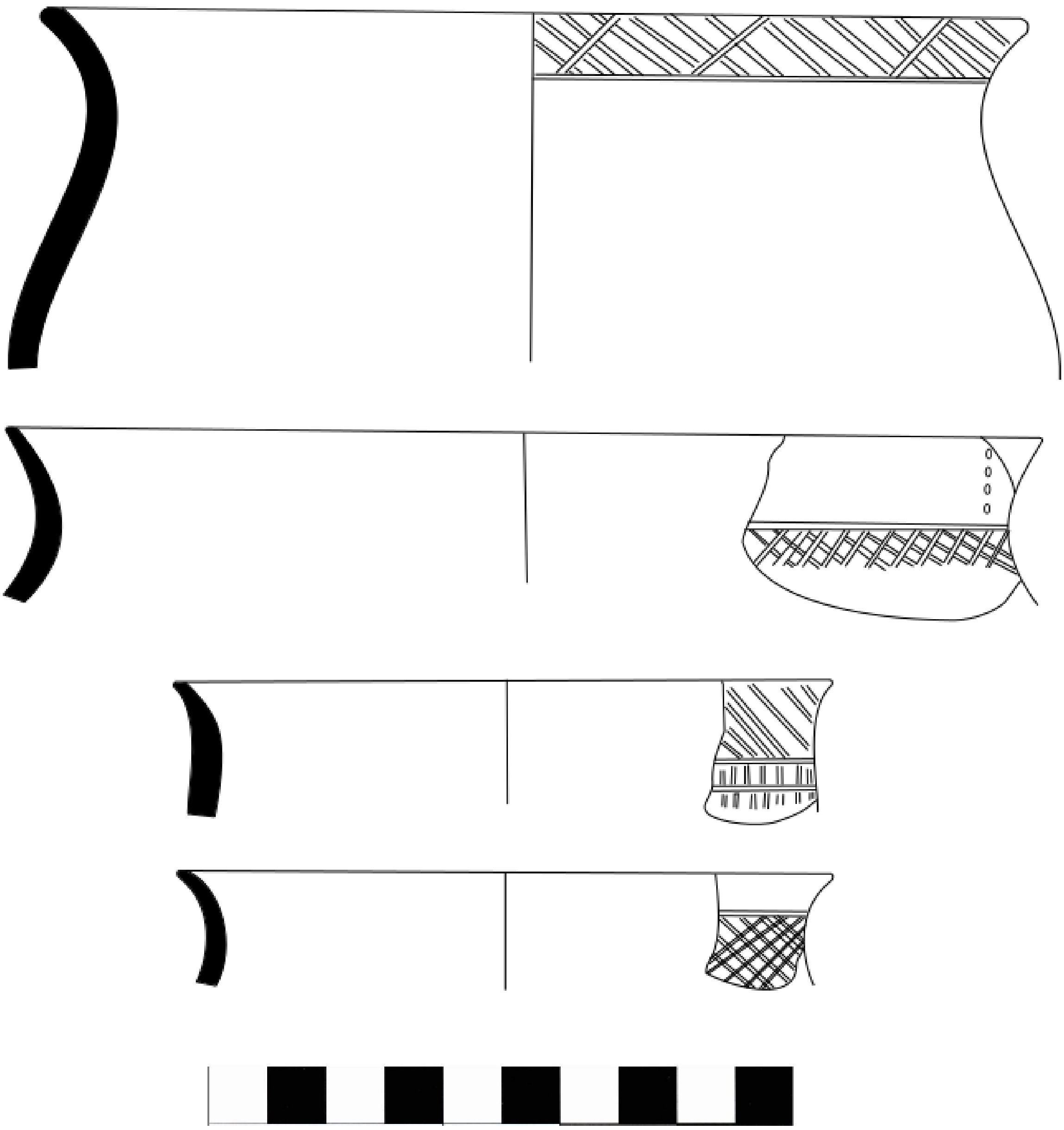


Figure 9.24 Ceramics from SK17 that show Msuluzi features

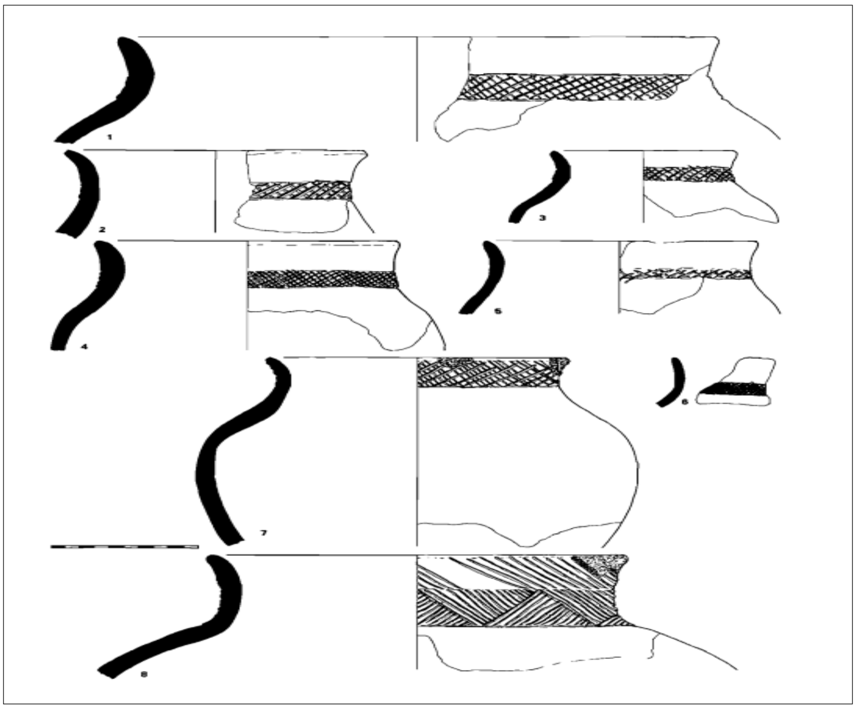


Figure 9.25 Ceramics from Ndondondwane showing a common decorative motif, which includes cross-hatching on the neck of the vessel

Source: Maggs (1984a:82)

9.2. Radiocarbon dates determined for other relevant EFC sites compared to dates for SK17

Figure 9.26 places the radiocarbon dates for SK17 in context with regional Mzonjani, Msuluzi and Ndondondwane assemblages. Given the significant overlap between the dates, it is not possible to separate the assemblages based on radiocarbon dates alone. As a result, stylistic and stratigraphic evidence must be used.

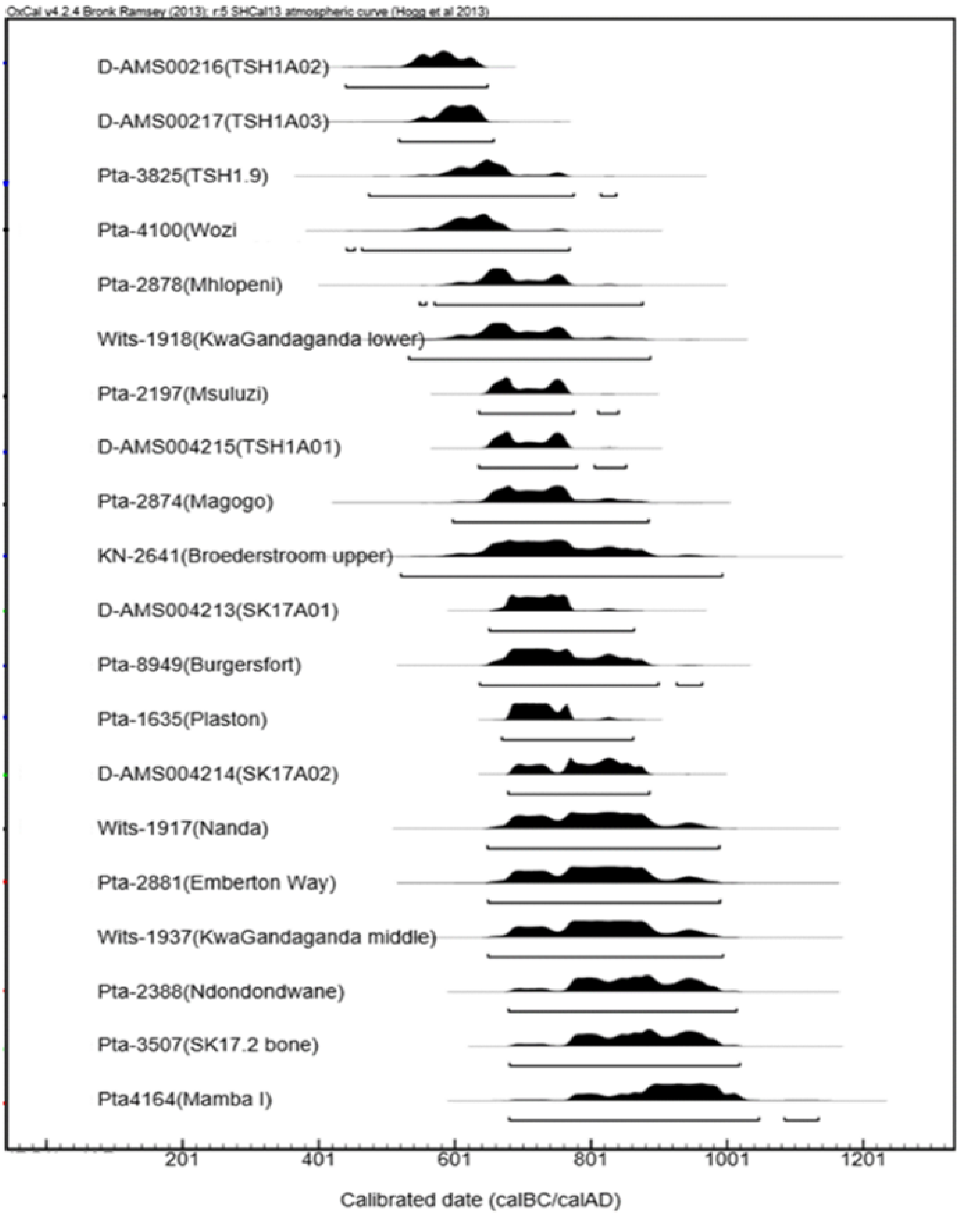


Figure 9.26 Calibrated dates from different Urewe and Kalundu ceramic assemblages compared to SK17, Oxcal v4.2.3 (Bronk Ramsey 2013) r5 SHCal04 atmospheric Curve (Hogg et al. 2013)

9.3. Fabric analysis of SK17

The nine variables that were considered were based on the density, sorting and size of the inclusions of the fabric. These attributes were then placed in a presence/absence matrix (Table 9.12).

Density:

1. Rare and sparse inclusions
2. Moderate inclusions
3. Common inclusions

Sorting:

4. Very well sorted
5. Moderately sorted
6. Poorly sorted

Inclusion size:

7. Very fine to fine
8. Medium
9. Coarse to very coarse

Table 9.12 Matrix comparing the attributes density (1-3), sorting (4-6) and inclusion size (7-9) of ceramic fabric from SK17A

	1	2	3	4	5	6	7	8	9
1	_								
2	_	_							
3	_	_	_						
4	13	40	25	_					
5	3	8	5		_				
6	_	1	1	_	_	_			
7	3	_	_	3	_		_		
8	7	23	14	43	3	_	_	_	
9	6	26	17	32	13	2	_	_	_

9.3.1. Fine fabrics

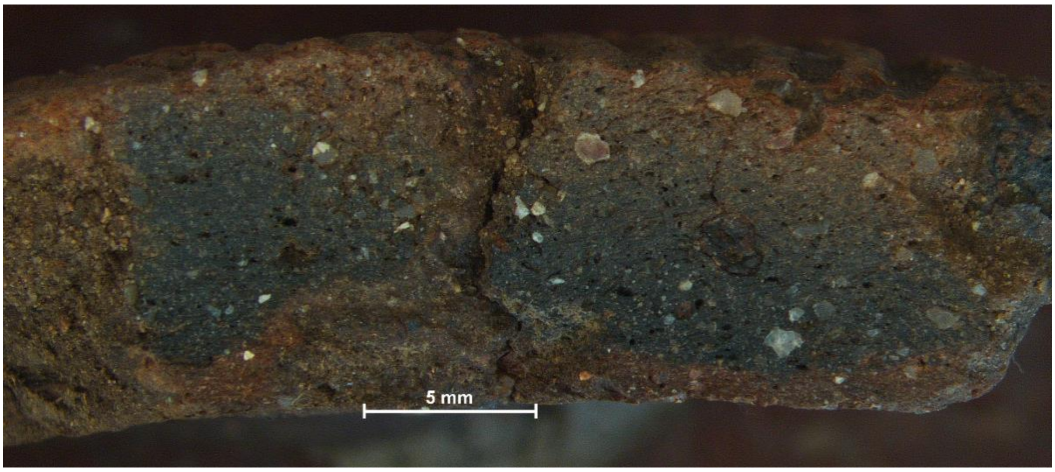


Figure 9.27 Example of a fine-fabric ceramic sherd from SK17A

This group consists of ceramics with fine (0.01 to 0.25 mm) inclusions. The inclusions were all well sorted and occurred in small quantities of less than 3% (Figure 9.27).

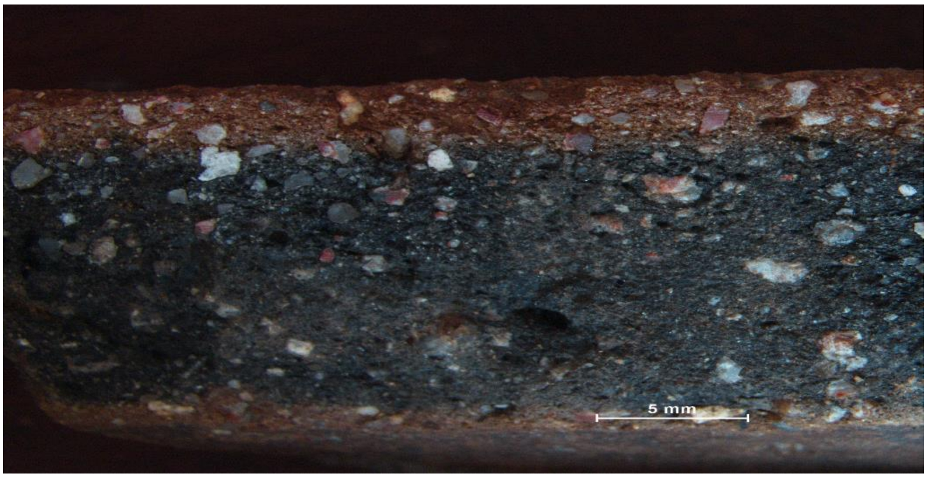


Figure 9.28 Example of a medium-fabric ceramic sherd from SK17A

9.3.2. Medium fabrics

Medium fabric sherds form SK17 are characterised by inclusions of between >0.25 and 1.00 mm. The frequency of these inclusions range from sparse (3-9%) to common (20-30%), but the majority of the sherds are moderately present or common and the inclusions are moderately sorted with a few being well sorted (Figure 9.28).

Figure 9.29 Example a coarse-fabric ceramic sherd from SK17A

9.3.3. Coarse fabrics

The coarse fabrics have inclusions of between >1.00 and 3.00 mm, with the majority of the sample being moderate (10-19%) to common (20-30%) and most of the inclusions in the clay matrix being well to moderately sorted (Figure 9.29).

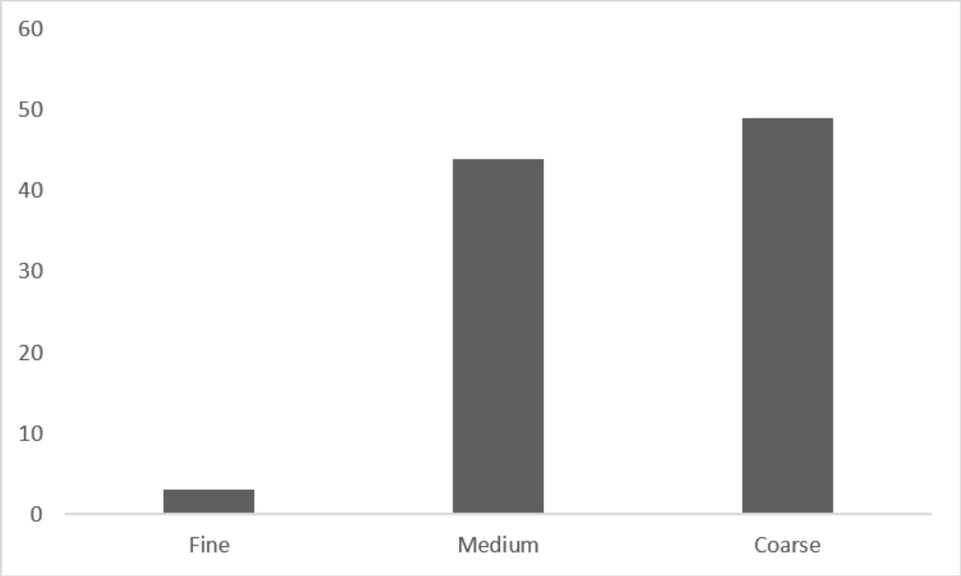


Figure 9.30 Discrete fabric groupings at SK17A, expressed in percentages

Two groupings (medium and course) were dominant in the SK17A assemblage. However, variation exists as fine fabric is also present. The variation point to different clay sources being used in a similar general area. These ideas will be discussed in more detail when the XRF data is presented.

9.4. Compositional results (XRF) from SK17A

In total, 60 samples were selected for analysis. The results are presented based on individual sherds in order to identify small variations within the chemical fingerprints of the sherds. Due to a lack of sherds and the small number of sherds removed from Layers 1 and 2, more samples from specific provenience points were taken from Layer 3 (see Figure 9.31). Appendix I show a complete list of all the elements analysed.

Figure 9.31 Example of ceramic sherds with point provenience obtained from SK17A

The PCA results indicated a cluster of the sample composition. As a result, no two-dimensional plots were deemed necessary at SK17A (No. 1 in Figure 9.32). However, three outliers were present (Nos 2, 3 and 4 in Figure 9.32), as presented in Figures 9.33-9.35 (Nos 2, 3 and 4). The first outlier (No. 2 in Figure 9.33, sample No. 46) showed elevated amounts of Mg, Al, Ca, Ti, and Fe. The fabric of this sample was also different from that of the majority of samples from SK17A. It could be placed into the fine-fabrics group, and consisted of well-sorted inclusions. This sample had substantially fewer visible inclusions than the rest of the samples. It was also possible to identify horizontal incised lines. No rim was present and decoration was most likely at the neck/shoulder junction.

Outlier 3 (Sample 50) (Figure 9.34) came from Layer 3.5 (only one ceramic sample came from this cluster). This sample contained elevated quantities of Mg, P, Al and K, and the fabric obtained from it was poorly sorted and could be classifed as being coarse. It was also possible to determine that it came from a recurved/s-shaped jar with a tapered rim and incised chevron lines on the neck/shoulder junction (see Figure 9.31). The last outlier (No. 4, Sample 30) (Figure 9.35) was taken from Layer 3.3 and was similar to No. 3, with elevated Mg, Al, Ca, and Fe contents. The fabric of the sherd is similar to that of many other samples from SK17A, and it can be placed in the medium-fabric grouping.

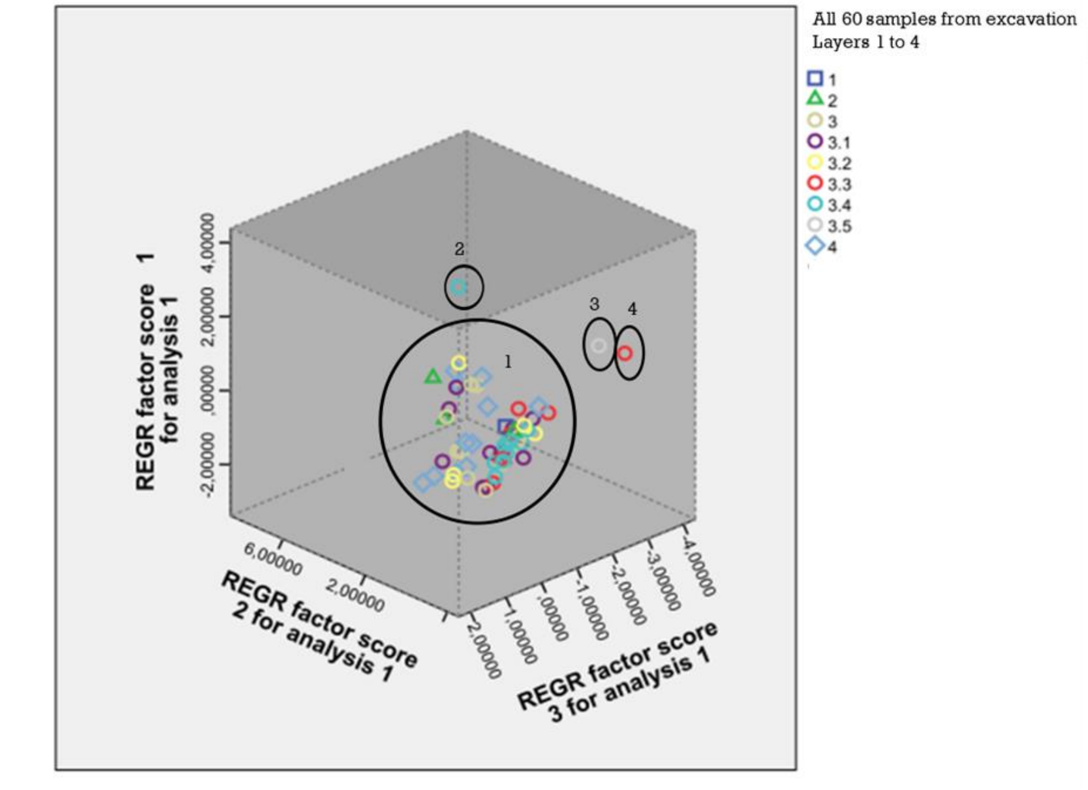


Figure 9.32 Principal component analysis showing the main cluster (No. 1) of the ceramic sherds and the outliers (Nos 2-4)

Figure 9.33 Outlier 1 (No. 2) from the ceramic sherds found at SK17A

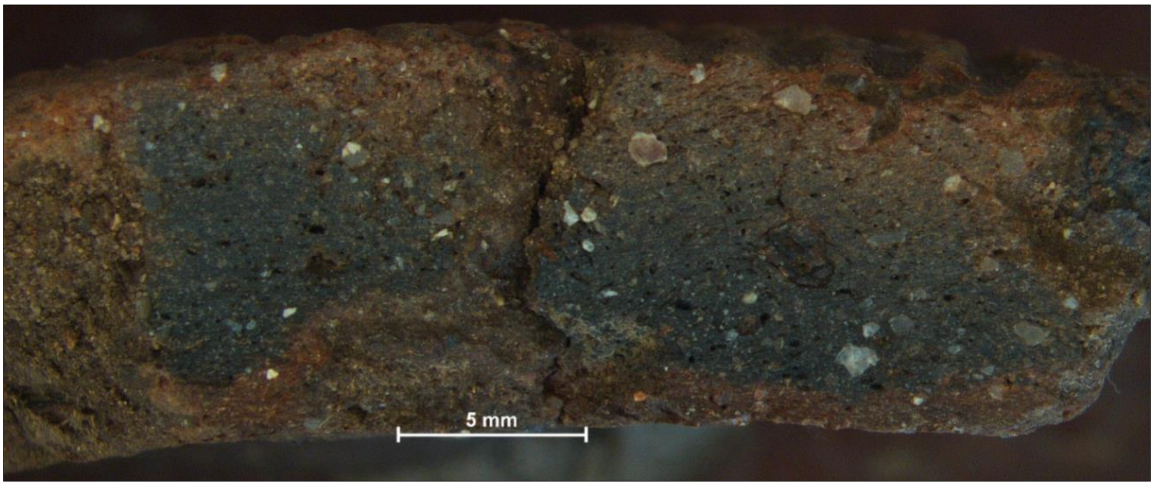


Figure 9.34 Outlier 2 (No. 3) from ceramic sherds found at SK17A

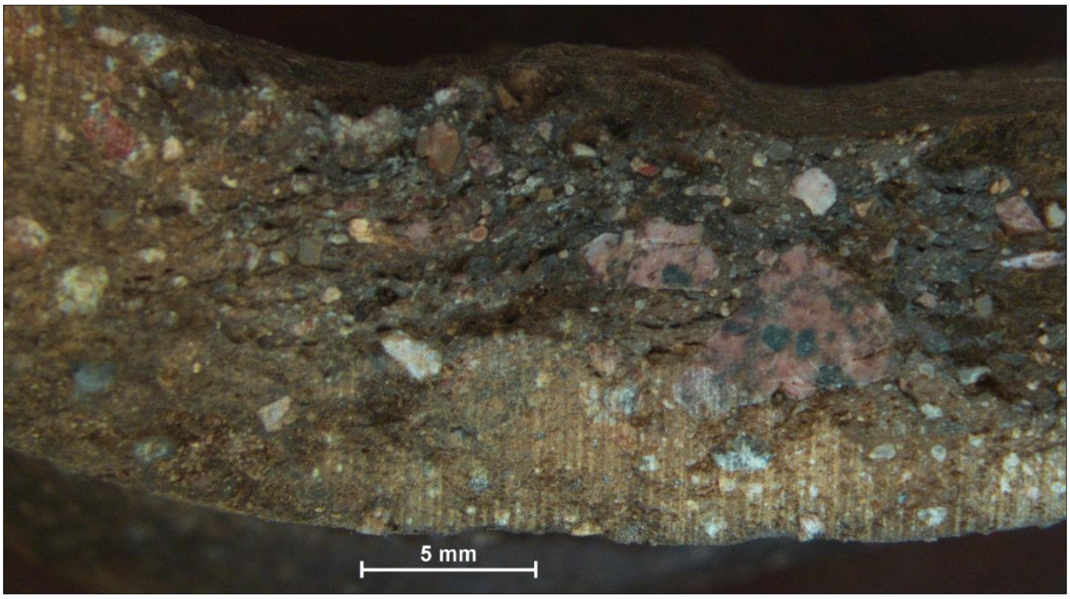


Figure 9.35 Outlier 3 (No. 4) from ceramic sherds found at SK17A

The 60 samples showed a strong correlation. Many of the samples from different parts of the third layer formed a tight cluster, with some co-variation noted, which could be due to cross-contamination, in other words, multiple samples were taken from one ceramic vessel. Even though the sample selection was carried out with the utmost care to make sure that this would not occur, it is possible that this might have happened due to the lack of diagnostic attributes, such as rims and decorations, in the sample assemblage. Nevertheless, it is still likely that the homogeneity of the sherds points to similar clay deposits having been used to produce them. The three outliers show elevated quantities of Mg, Al, K and Ca, which could be due to small variations in either the clay or the inclusions. Bigger quantities of calcium could be due to calcareous clay or a calcium-rich temper, such as limestone or shell (Shepard, 1980; Rice, 2005). However, elevated calcium levels could also be due to post-depositional formation from the soil (Tiley-Nel, 2014:118), whereas a higher presence of magnesium could point to higher temperatures during the firing process (Pollard & Heron, 2008:116), or the fact that the inclusions used for the ceramics were composed of silicates (Tiley-Nel, 2014:118; Rice, 2005). When ceramic products are high in aluminium (Al), it is often because they were produced from kaolinite clay. Further conclusions will be drawn in Chapter 11.

9.5. Concluding remarks

SK17 consisted of multiple occupation horizons, as indicated by the presence of the many ceramic assemblages from both the Kalundu (Msuluzi, Ndondondwane and Ntshekane) and the Urewe (Mzonjani) traditions; the identification of possible Garonga facies; and the newly acquired date range for the radiocarbon samples. However, even though there is a strong possibility that SK17 was occupied during multiple periods, the lack of stratigraphic information and the depth of horizons are problematic.

Variation within the discrete fabric groupings of the ceramics from SK17A highlights the variations in the stylistic attributes of the assemblage. However, the XRF analysis showed homogeneity among the different samples.

Chapter 10

Other material from SK17

This chapter is a continuation of Chapter 9 and contains a discussion of the analysis of all the other material culture collected from SK17. The discussion will focus first on the beads found during both the earlier and the recent excavations, and then on the stone artefacts, the metal objects and faunal material, and finally on other miscellaneous material.

10.1. Beads from SK17

Only 17 shell beads from SK17 were recorded, with no beads retrieved from SK17A. Most (94%, *n=16)* of these beads were Achatinidae shell beads, with only one remaining unknown (Table 10.1). Twelve of the beads came from SK17.1 (Layer 1), including the single unknown bead, with a further four beads retrieved from SK17.4 (Layer 1) and one from SK17.2.

Table 10.1 Shell bead types from SK17, including ostrich egg shell (OES), freshwater bivalve (FBV), Achatina sp. (ARCH), ivory (IVR) and unknown (UNK)

TYPE	*N*	%
OES	0	0
FBV	0	0
ARCH	16	94
IVR	0	0
UNK	1	6
TOTAL	17	100

The majority (70.5%, *n=12)* of the shell beads are well rounded, 17.5% *(n=3)* are sub-rounded and another 12% (*n=2)* are rounded (Table 10.2). The frontal shapes of the beads are all spherical, where the perforations show that 88% (*n=15)* were completely perforated and only 12% (*n=2)* were incomplete (Table 10.3).

Table 10.2 Edge shapes of beads from SK17

Edge Shape	***n***	***%***
VERY ANGULAR	0	0
ANGULAR	0	0
SUB-ANGULAR	0	0
SUB-ROUNDED	3	17.5
ROUNDED	2	12
WELL ROUNDED	12	70.5
Total	17	100

Table 10.3 Shapes and perforations of shell beads from SK17

Perforation	***n***	***%***	***Front Shape***	***n***	***%***
Complete	15	88	**Spherical**	17	100
Semi	0	0	**Oblate**	0	0
Incomplete	2	12	**Irregular**	0	0
Total	17	100	**Total**	17	100

The mean, maximum and minimum diameters (all given in millimetres) are shown in Table 10.4, and the single weathered blue glass bead from SK17.2 is can be seen in Figure 10.1.

Table 10.4 Dimensions of shell beads from SK17 (in mm)

Dimensions	***Mean***	***Max***	***Min***
THICKNESS/LENGTH	1.17	1.93	0.74
DIAMETER	5.84	7.77	0.62
PERF.MAX	1.67	2.7	1.39

Figure 10.1 The single glass bead from SK17

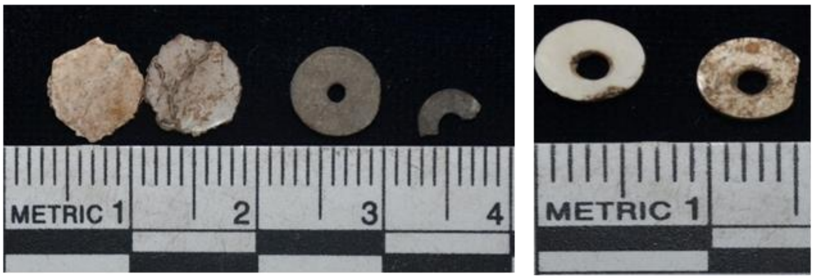


Figure 10.2 Examples of shell beads (note the two unperforated OES beads from SK17)

The absence of beads at SK17 and SK17A is noteworthy and highlights certain points. The majority of the beads are complete, with only two appearing to be incomplete, which indicates that they had possibly been made on site. The lack of shell beads is unusual, seeing that the majority of other EFC sites in southern Africa yielded large quantities of such beads (Maggs & Ward, 1988; Mason, 1981). However, this lack of shell beads will be discussed in the following chapter.

The presence of a glass bead at SK17 suggests that the community was connected with long-distance trade routes, mostly likely with the Indian Ocean trade (Whitelaw, 1994; Wood, 2005).

10.2. Stone artefacts

The seven stone artefacts found at SK17A included two upper grindstones and five stone tools. Two chips made from crypto-crystalline (CCS) were found in Layer 3. Two waste chunk pieces made from dolerite (an angular core with relatively few flake scars) (Forssman, 2014:439) were found – one in Layer 3 (3.4) and the other in Layer 4. One broken-back tool (backed-blade tool) produced from dolerite was found in Layer 3 (Figure 10.3: LSA-related stone artefacts from SK17A – two waste chunks (left) and two chips The two upper grindstones also came from Layer 3.

From SK17 rendered four grooved stones (one from the surface, two from SK17.2 (Layer 2) and one from SK17.1) (Figures 10.5 and 10.6). Three upper grindstones (two from Sk17.2 (Layer 2) and one from Sk17.1), as well as one backed tool, were found on the surface (Figure 10.4).

Evidence of LSA artefacts was recovered from both SK17 and SK17A. Since only one LSA artefact was retrieved from SK17, it is possible that artefacts of these types were not collected. There are two possible explanations for the presence of stone artefacts. The first suggests interaction between LSA and EFC communities, as Maggs and Ward (1984:136) believe that not only LSA stone tools, but also the presence of grooved stones and bone points indicate some kind of interaction, and both were found at SK17. The second possibility is that the LSA stone tools, bone points and grooved stones can be viewed as hunting tools. The stone tools and bone points would have been used as skin-dressing tools, and the grooved stone for shaping bone arrows for hunting (Maggs & Ward, 1980:136). Therefore, it is possible that the community at SK17 used LSA technologies for hunting. The grooved stones found at SK17 could also have been used in the production of shell beads, or for sharpening bone or iron points (Maggs, 1980b: 133).

The presence of upper grindstones can be seen as evidence of food processing, since Meyer also identified sorghum seeds at SK17. What is noteworthy is that *Sorghum sp.,* which is indigenous to the KNP, belongs to the types *sorghum verticiliflorum* and *sorghum halepense*; however, the sorghum identified at SK17 was ‘grain sorghum', which must have been introduced into the area as it did not naturally occur there (Meyer, 1986; Du Plessis, 1986:347).

Figure 10.3: LSA-related stone artefacts from SK17A – two waste chunks (left) and two chips

Figure 10.4 Stone tool and upper grindstone from SK17

Figure 10.5 Grooved stones from SK17

Figure 10.6 Upper grindstone and grooved stone from SK17

10.3. Slag

Evidence of metal-working was found only at SK17A, in the form of 30 slag pieces weighing 102.2 g (Table 10.5).

Table 10.5 Slag with weight (in grams) from SK17A

Layer	*Amount*	*Weight (g)*
1	2	16,3
2	2	2,2
3	11	44,4
3,1	9	17
3,3	3	15,9
4	3	6,4
Total	30	102,2

10.4. Faunal remains

The 301 individual specimens found at SK17A had a total weight of 1 147.5 g. All the species listed in Table 10.6 are found in the region. The species found most commonly at SK17 include wild Bov II, *Bos tarus* (cattle), *Ovis Aries* (sheep) and *Equus Burchlli* (zebra). Also present at the site were carnivore bones, which included remains of a lion. A substantial quantity of worked bone was also found at the site.

Table 10.6 Faunal species from SK17A

Species	*NISP*
Bov I/II	1
Bov II	40
Bov III	118
Bos Taurus	37
Achatina sp	7
Tortoise	5
Bi-valve	0
Ovis aries	29
Worked bone	13
Aepyceros melampus	14
Equus Burchlli	34
Carnivore	1
Carnivore med	1
Panthera leo	1
Total	301

Table 10.7 Species list and distribution of faunal remains found at SK17A

Species	*L1*	*L2*	*L3*	*Coring SK5*	*Coring SK6*	*Total*
Bov I/II	0	1	0	0	0	1
Bov II	0	3	34	1	2	40
Bov III	0	2	116	0	0	118
Bos taurus	0	3	34	0	0	37
Achatina sp	0	0	0	7	0	7
Tortoise	0	0	2	2	1	5
Bi-valve	0	0	0	0	0	0
Ovis aries	0	0	26	3	0	29
Worked bone	0	2	11	0	0	13
Aepyceros melampus	1	4	9	0	0	14
Equus Burchlli	0	0	34	0	0	34

The faunal remains, which included most of the cattle remains found at the site, were found mainly in Layer 3. No *Achatina sp.* was present in the excavation unit only from the coring sample. No freshwater bivalves or pieces of ostrich eggshell were recovered.

The faunal remains from SK17A show that even though domesticated animals were present, hunting was preferred for the provision of meat. The lack of freshwater bivalve, *Achatina sp.* and ostrich eggshell links to the lack of shell beads from at SK17 and SK17A. Therefore, the presence of grooved stones at SK17 could imply that they were used for sharpening bone or iron points. Further evidence for this is the substantial quantities of bone tools recovered from SK17A.

10.5. Other material culture

Other material found includes one bullet casing found in Layer 1 of SK17A. This bullet casing is of recent origin and was most likely washed into the area during one of the floods that occurred in the region throughout the years.

10.6. Concluding remarks

In this chapter all the shell beads, stone artefacts, faunal remains and slag retrieved from SK17 were discussed. The lack of shell beads is perplexing and will be addressed further in the next chapter, in which the data for both TSH1 and SK17 will be discussed in detail and further conclusions will be drawn.

Chapter 11

Discussion of SK17 and TSH1

Research on EFC in southern Africa has decreased significantly over the past ten years, with the focus shifting to contact between hunters-gather communities, or to later farming settlements. In recent times, only a handful of articles dealing with early farming communities have been published (Antonites, 2013; Antonites *et al.,* 2014; Badenhorst, 2009a, 2009b; 2010; Huffman, 2010; Whitelaw, 2013). The majority of these publications focus on EFC sites in the Tugela Basin, specifically on Ndondondwane (Fowler, 2002, 2011b; Greenfield *et al.,* 1997, 2000, 2005; Van Schalkwyk *et al.,* 1997; Greenfield & Van Schalkwyk, 2003; Greenfield & Miller, 2004). More importantly, no EFC research has been undertaken within the Kruger National Park or its surroundings in the past 15 years (see Chapter 2).

Past studies in the KNP region have left key gaps in our understanding of southern African early farming communities. The aim of this dissertation is to narrow the research focus to two specific EFC sites located in the KNP region. Through this research, I was able to identify the ceramic sequence at these two sites by using a combination of new radiocarbon dates and stratigraphy. These site ceramic sequences could also be aligned with other comparable EFC assemblages, thus further contributing to our understanding of the regional ceramic sequence for EFC. Furthermore, the presence of a rather understudied and poorly understood ceramic facie, known as Garonga, was identified at SK17. The technological aspects of the assemblage were also discussed, which was a first for ceramic material from this region. However, the integration of all the material culture collected from these two sites also allowed for a better understanding of the socio-political aspects of EFC sites in the KNP.

Meyer (1984; 1986) and Plug's (1988, 1989) research in the KNP led to certain conclusions being made regarding the socio-political organisation and way of life of the communities that had lived in the region during the first millennium (see Chapter 1). These conclusions were supported by the results of an analysis of the ceramic assemblages. The majority of first millennium sites (including SK17 and TSH1) were single-occupation settlements that had been briefly occupied for periods of not more than ten years (Plug, 1989:63). However, such findings now seem to have been a bit premature, as shown by this research.

11.1. Results from TSH1

11.1.1. Ceramic assemblage of TSH1

The excavations on both sites were focused on ceramic material as the material culture from Early Farming settlements consisted predominantly of ceramics (Maggs, 1980a, 1980b, 1984; Whitelaw, 1993, 1994). The analysis of the ceramic assemblage was tentatively identified by Meyer (1986) as being similar to that for Broederstroom, Enkwazini and Mzonjani. Huffman (2007:127) also categorised the ceramics from TSH1 as part of the Mzonjani facies in the Urewe tradition. However, since no full-scale typological analysis of the ceramic assemblage had been completed, no confident pronouncement could be made regarding the ceramic sequence to which the TSH1 assemblage belongs. It was also argued that TSH1 is a single-occupation site (Meyer, 1986; Plug, 1989; Whitelaw, 1996). This proposition needed to be tested as many of the EFC sites in South Africa are multi-occupation sites. The excavation at TSHH1 led to the identification of one distinct ceramic facies

The stylistic attributes of the ceramics suggest that the assemblage from TSH1 is part of the Kwale branch of the larger Urewe ceramic tradition (Huffman, 2007, Chapters 2 and 3). The absence of everted rims with bevelled features and well-defined points of inflexion, oblique incised lines with or without punctates on the rims of ceramics found at TSH1 (see Chapter 5) suggests a closer association with Mzonjani.

Four radiocarbon dates were associated with the assemblage. The calibrated ranges of these samples were from AD 529 to AD 766 (calibrated to Sigma 2 range). These dates also fall within the range of Mzonjani-type sites. Therefore it became apparent through the application of a stylistic typology of the assemblage, combined with the four radiocarbon dates, that TSH1 undoubtedly formed part of the Mzonjani- type assemblage.

The stylistic attributes of the assemblage also made it possible to discuss the validity of TSH1 as a single-occupation site and further defined the site's place within the regional chronology of EFC, thus contributing to our knowledge of first-millennium farming societies in the northeastern part of the Lowveld.

Maggs (1994/5:175) highlighted the fact that the duration of the occupation of EFC sites affects the way in which the data is interpreted. During earlier stages of research on first-millennium farming societies, it was implicitly assumed that these sites had generally been occupied for only short periods of around a decade, but at most for 60 to 70 years (Maggs, 1994/5:175). However, during the 1980s and 1990s, much time and considerable effort was spent on large-scale excavations on EFC sites in KwaZulu-Natal (Greenfield *et al.,* 1997; Loubser, 1993; Van Schalkwyk, 1991; Whitelaw, 1993; 1994). From those excavations it became evident that many of the sites contained ceramics from multiple ceramic phases (Maggs, 1994/5:175), which proved that prolonged or repeated occupation of EFC sites was normal during the first millennium. This argument was further substantiated by the excavations at KwaGandaganda (Whitelaw, 1994; 1994/5). Whitelaw argued that because the layout of the village did not change considerably throughout the three different ceramic phases, the site must have been occupied continually over a period of some three centuries (Maggs, 1994/5:175).

Even though ceramic variation on a larger scale could not be noted at TSH1, it was important to note variations between the TSH1 assemblage and other contemporary settlements. The results highlighted the fact that the ceramic assemblage from TSH1 contained a larger variety of ceramic classes than the KwaZulu-Natal sites. A stronger correlation was noted with TSH1 and the Lydenburg and Plaston sites than with the KwaZulu sites. Regionally TSH1 forms part of the final stage of the Mzonjani assemblage and mirrors the occupation sequence of Lowveld communities that produced Mzonjani-phase ceramics. It has been suggested that the Mzonjani phase in the southern and central sections of the Lowveld was succeeded by the Garonga phase (Burrett, 2007; Huffman, 2007:131). However, this ceramic phase has not yet been dated, but most likely falls between the eighth and tenth century AD.

The ceramic sequence at TSH1 and the new radiocarbon dates create a different picture than the one suggested by other researchers. According to these new dates, it would seem that the communities that produced Mzonjani ceramics in the southern KNP were active during the same period as similar communities further west (Lydenburg, Plaston and Broederstroom) and possibly even longer than some of them. The similarities noted between these ceramic classes and those of the KwaZulu-Natal (KZN) assemblages could point to a closer link between the settlements in both these regions, highlighting the need for further research on Early Farming Communities in the Kruger National Park. Such research could shed light on our understanding of the spread of these first-millennium farming communities throughout southern Africa.

11.1.2. Technological elements of the TSH1 ceramic assemblage

As highlighted in Chapter 3, a great deal can be gained from a technological analysis of ceramic vessels. This project therefore aimed to combine the stylistic and technological attributes of the ceramic assemblages from both sites. Technological analysis, such as fabric and XRF analysis, has not been previously conducted on material from this region. Previous studies (Pillay *et al.,* 2000*;* Punyadeera *et al.,* 1997) have demonstrated that chemical characterisation of first-millennium ceramics, when linked to the predetermined stylistic factors, allows a greater understanding of the socio-political organisation of a community. The fabric and XRF analysis certainly led to a better understanding of TSH1.

The fact that only two predominant fabric groupings could be identified at TSH1 points to the availability of clay and the selection of clay types by potters. As discussed earlier, the source of the clay used to produce pots is of the utmost importance. The clay, in the end, will determine how useful and durable the pot will be. Potters also need knowledge of the clay that is used as they would not want to waste their time obtaining clay that is of inferior quality (Rice, 2005), and in many cases the clay deposit is one of the main factors that determine where a community will settle (Rice, 2005:114; Nicklin, 1979). The source of clay can be closed, restricted or open. For example, in the Tugela Basin in KwaZulu-Natal the clay source in Masinga is neither owned nor controlled by any one family (Fowler, 2011: 182), but in other cases knowledge of the location of the source is ‘owned’ by a family and is passed on from generation to generation (Rice, 2005). In Malawi, for instance, two modern-day potters from the small village of Kanzimbi stated that they only use clay from a nearby termite mound from which their ancestors had also obtained their clay, and that the clay from the gardens does not have the right texture for production. The choice of clay is therefore both functional and social (Wentink, 2006:45).

In many cases it is important to alter the clay to make sure that the vessels made from it will be suitable for their respective uses (Rice, 2005:118). At times, multiple clay sources are used to create the right consistency (Fowler, 2008; 2011). In the case of the fabric from the ceramics found at TSH1A, it is evident that two fabric types (medium and coarse) were favoured by the potters. The reason for adding such inclusions could be to counteract shrinkage and facilitate uniform drying, thereby reducing the risk of cracks appearing in the vessels (Shepard, 1980:25). Another reason could have been that the potters did not find the right type of clay and had to add non-plastics to make it suitable for use.

It is most likely that the ceramics were manufactured locally. First, the relative homogeneity of the fabric suggests that the clay was sourced from a general area. Ceramic fabrics greatly depend on the natural variability of the clay matrix, which is primarily dependent on the geology of the area (Tiley-Nel, 2014; Bishop, 1992). Therefore, since the KNP is a complex and wide geological region, it supports the fabric results that suggest that the ceramics were locally produced (Chinoda *et al.,* 2009; Gertenbach, 1983).

The inference that could be drawn from the technological ceramic data (see Chapter 6) for TSH1 complements the stylistic data discussed earlier. The PCA of the ceramic sherds across TSH1A highlights one large group where the majority of the sherds are clustered. However, as seen in Chapter 6, two other small clusters were also present. This does not necessarily mean that the ceramics were imported, but could indicate a wider variety in the composition of the clays used (Punyadeera *et al.,* 1997:251), or different types and amounts of temper. This mostly applies to the sherds found at TSH1A. For a more accurate inference, and to determine the chemical fingerprint of the vessels from TSH1, the ceramics needed to be compared to those from another similar site (Punyadeera *et al.,* 1997:251). This will be further discussed when I contrast the XRF data from TSH1A with that from SK17A.

The small clusters and outliers that are visible in the XRF graphs could also point to post-depositional contamination, or to the type and amount of temper used (Bollong *et al.,* 1993). The main cluster in all the graphs points to the homogeneity of the ceramics from the site. This is further substantiated by the fabric groupings, stylistic attributes and radiocarbon dates. Past studies (Pillay *et al.,* 2000; Punyadeera *et al.,* 1997) show that the Mzonjani name site, which is a single-occupation site (Maggs, 1980) consisted of one or two tight clusters. The same can be seen at this Mzonjani-type site.

11.1.3. Production of goods and interaction

Shell disc beads from first-millennium farming societies have been studied mostly on sites in the Tugela Basin of KwaZulu-Natal (Maggs, 1984; Maggs & Ward, 1984; Van Schalkwyk, 1994; Whitelaw, 1993, 1994). The disc beads from the interior of the country, especially from the Lowveld, have received less attention, although references have been made to the beads found (Evers, 1982; Mason, 1981). The majority of the shell disc beads from TSH1 comprised of *Achatina* shell (see Chapter 7). Ostrich egg-shell beads were also recovered, albeit in much smaller numbers. Some inferences can be drawn from this. First, the fact that 99% of the *Achatina* beads were already in the completed stage of production does not necessarily mean that the beads were imported. However, at EFC sites, especially in KwaZulu-Natal, *Achatina* beads were in different stages of production, which led archaeologists to believe that they were made locally (Maggs & Ward, 1984; Van Schalkwyk, 1994). The fact that the majority of the *Achatina* beads from TSH1 were completed, with only two examples of incomplete beads recovered, could indicate the possibility that the beads had been produced elsewhere.

The presence of OES beads on EFC sites in KZN has been used to substantiate interaction between foragers and farmers (Maggs, 1980b, 1984; Maggs & Ward, 1984; Whitelaw, 1994). Only a small number of OES beads were found at TSH1 and the same has been noted at other EFC sites, especially in KZN (see Chapter 5). The possibility that OES beads were an essential commodity can be further substantiated by the presence of other LSA objects (stone tools, bone points and grooved stones) at TSH1. All except one of the OES beads at TSH1 were in a completed stage of production; again this suggests that the beads were made somewhere else. One possibility is that trade could have occurred between LSA communities, such as the one found at SK4 (located close to TSH1) (Meyer, 1986; Plug, 1988) and the farming community of TSH1. Ceramics found at SK4 during excavations can be related to the Mzonjani phase, according to Meyer. Plug (1988, 1989b) also found substantial numbers of ostrich egg shell and evidence of bead production on site. It is therefore possible that interaction did occur between foragers and farmers in the KNP. However, it should be noted that these results are still tentative and should be substantiated by further research.

11.1.4. Stone objects and slag

Upper and lower grindstones recovered from TSH1 are characteristic of EFC, with the lower grindstone showing elliptical grooves (Maggs, 1980b, 1984; Maggs & Ward, 1984; Van Schalkwyk, 1994; Whitelaw, 1993, 1994). It has been suggested that these elliptical grooves on the lower grindstones made them suitable for grinding small-grained millet or sorghum, as was the case at Ndondondwane and Broederstroom (Huffman, 1993, 2006; Prins & Granger, 1993:168; Maggs, 1984b). Therefore, the grindstones at TSH1 can be seen as indirectly evidence of the cultivation of millet and or sorghum.

The presence of stone artefacts at TSH1A could indicate interaction between farmers and foragers, and/or that the community was using stone tools for processing skins (Whitelaw, 1993:68). LSA stone artefacts are commonly found at many other EFC sites (Evers, 1982; Prins & Granger, 1993; Maggs, 1980b, 1984a; Maggs & Ward, 1984; Mason, 1981; Van Schalkwyk, 1994; Whitelaw, 1993, 1994). It is not necessarily a fact that interaction occurred between foragers and farmers, as some ethnographic accounts have shown that the tools used by Xhosa-speaking people until recent times included stone flakes (Prins & Granger, 1993: 168; Shaw & Van Warmelo, 1974, 1981). A simpler explanation for the presence of stone artefacts at TSH1 could be a shortage of iron tools, as was noted at Ntsitsana in KZN (Prins & Granger, 1993:168). This point is further substantiated by the small amount of slag found at TSH1.

The presence of slag fragments provided evidence of iron smelting at TSH1. However, the slag amounts recovered were very small (see Chapter 7) when compared to finds at other EFC sites, such as the Broederstroom (Mason, 1981) and Lydenburg Heads sites (Evers, 1982). The small amount of slag could mean small-scale that iron smelting was indeed undertaken on site, which would link to the presence of stone artefacts. Van Schalkwyk (1994) has shown that that little to no iron smelting occurred at the 'small'-scale EFC sites in KwaZulu-Natal, which could be an indication of the involvement of these sites in a larger trade network.

11.1.5. Faunal remains

Since the contribution of faunal material to this study is not very important (see Chapter 7), its significance will only be briefly discussed here. The absence of cattle (*Bos Taurus)* at TSH1 was noted by Plug (1988). This lack of cattle remains in conjunction with faunal material at other EFC sites in southern Africa (Badenhorst, 2008; Plug, 2000; Plug & Voigt, 1985) has been used as evidence that the CCP was not present during the first millennium (see Chapter 3). Plug (1988, 1989a) also stated that due to the low numbers of domesticates, especially cattle, first-millennium agricultural sites in the KNP were not occupied for long periods as the environment was not suitable for large-scale herding. However, the faunal material from TSH1A showed the presence of a higher number of cattle (NISP=14; MNI=5) than previously accounted for at a single unit. The small number of cattle at TSH1A does not necessarily mean that they were not important. The remains could be underrepresented due to cultural patterns of discard, and that in order for cattle to reproduce, each cattle count in the archaeological record could represent the presence of at least a 100 heads of cattle at that time (Huffman, 2001:30; Huffman 1990, 1993, 2010).

The presence of bone points could be interpreted in two ways: first, they could have been used during the processing of animal skins, which would suggest that the site was occupied for a longer period than previously thought (see Chapter 7). Another possibility is that the bone points were part of an LSA tool kit, which would suggest interaction between foragers and farmers (Maggs, 1980a, 1980b, 1984a; Maggs & Ward, 1984; Van Schalkwyk, 1994; Whitelaw, 1993, 1994).

Plug's (1988) suggestion that hunting contributed more to the diet of first-millennium communities in the KNP and the 'low' importance attached to these sites cannot be accepted. It has been shown at other EFC sites in the Lowveld that the presence of wild animals in the archaeological record could point to the vast food sources available (Antonites *et al.,* 2014:191), rather than to the fact that the community at TSH1 was hunting because the environment was not favourable for herding and the keeping of livestock.

11.2. Results from SK17

11.2.1. Ceramic assemblage of SK17

Meyer (1986:270) tentatively likens the ceramic assemblage of SK17 to that of the Lydenburg Heads site (Evers, 1982; Whitelaw, 1996) and Ndondondwane in KZN (Maggs, 1984a). Huffman (2007:131) regards SK17 as belonging to the Garonga ceramic phase which, as discussed earlier, is a relatively new phase that is as yet undated, but seems to consist of a mix between Urewe and Kalundu stylistic attributes (Burrett, 2007; Huffman, 2007:131).

Based on the ceramic data, it was initially believed that SK17 was a single-occupation site (Meyer, 1986). However, reanalysis of the material led to the re-categorisation of the site as a multi-occupation site (see Chapter 9). The data and evidence for this were discussed in detail in Chapter 9 and will not be repeated here. Rather, the more important contribution that the findings have made to our knowledge of first-millennium farming societies will be discussed.

The presence of at least three different ceramic phases was noted, one belonging to the Urewe tradition (Eastern Stream) and two from the Kalundu tradition (Western stream). It would seem that SK17 was occupied by multiple communities and that groups that produced Mzonjani ceramics were followed by communities that produced Msuluzi and/or Ndondondwane ceramics (see Chapter 9 for stylistic evidence).

As described in Chapter 9, stylistic evidence exists that two different traditions were conflated at SK17. It was noted that stylistic attributes that are characteristic of Urewe tradition ceramics, such as punctates with oblique incised lines on the rims of vessels, were combined with characteristics of the Kalundu tradition, such as the S-shaped/recurved jar vessels found at SK17. There are also examples of jars with the characteristic Urewe rims (well-defined points of inflexion) and decorative motifs on the lower parts of the rims or on the necks of vessels, with undecorated bands on the upper rims. Another example included a Mzonjani profile, with incised lines on the rim and a spaced ladder motif, which is characteristic of the Kalundu tradition. These conflated attributes were also noted by Burrett (2007:164) at Garonga and led Huffman (2007) to believe that the SK17 assemblage forms part of the Garonga phase, which is part of the Urewe tradition.

Three radiocarbon samples fall within the same period expected for these varying ceramic facies, which supports the identification of the different ceramic facies and furthermore questions the length of period during the site was occupied. Meyer (1986:325) initially obtained a single radiocarbon date (Pta-3507) from bone collagen. The calibrated date range of this sample, from AD 679 to AD 1019 (Sigma 2), placed the site within the Mzonjani, Msuluzi and Ndondondwane ceramic phases (Meyer, 1986:207). The two additional radiocarbon dates, when calibrated, fall between AD 651 and AD 886 (Sigma 2). These calibrated dates suggest that the site could have been occupied at any time between the seventh and early eleventh centuries AD, and could thus have overlapped with the final stage of the Mzonjani and Msuluzi, and/or Ndondondwane, and possibly Ntshekane facies.

11.2.2. Regional comparison of SK17

The data obtained from the ceramics from SK17 shows that had a Mzonjani occupation (all five Mzonjani ceramic classes were present at SK17), as well as Msuluzi and Ndondondwane occupations (see Chapter 9). Three of the four classes identified as part of Group 2 of the Lydenburg Heads site, which Whitelaw (1996) showed was part of the Kalundu tradition ceramic phase, were also present at SK17. This not only further supports a. This not only supports the idea of occupation by

Kalundu between the ninth an eleventh centuries but also further establishes the presence of these communities at SK17.

What is interesting about the regional comparison is the evidence of a Garonga facies at SK17, as four of the seven ceramic classes identified by Burrett (2007:155-158) were also present within the ceramic assemblage of SK17. This also provides a strong link between the ceramic assemblages of SK17 and TSH1, as seven of the fourteen ceramic classes at TSH1 were present at SK17.

Four important implications stem from these findings. First, even though the radiocarbon dates do not identify it concisely, he ceramic sequences identified at SK17 show clear evidence of multiple occupations, as in the case of many EFC sites, especially in the Tugela Basin (Maggs, 1994/5:175). Second, a link between some of the ceramic assemblage at SK17 and that of TSH1 can be noted. This leads to the third important implication, namely the presence of a Garonga ceramic phase at SK17.

The merging and blending of ceramic styles is not a unique phenomenon and has been documented in the past. Loubser (1991) noted a blending of Khami (Shona) and Moloko (Sotho) ceramic styles, which formed a new ceramic phase called Tavhatshena. This phase marked the introduction of the Venda to northern South Africa (Burrett, 2007:164). It would therefore seem that some blending or merging occurred at SK17, between the community producing Mzonjani ceramics at the site and groups producing Kalundu ceramics (Burrett, 2007). Change is never easy, especially when things have been done a certain way for many years and the methods have produced consistent results (Whitelaw, 2012:135). Change requires new relationships and interaction and is a social phenomenon (Whitelaw, 2012:135). Therefore, the presence of Garonga ceramics at SK17 could have gone hand in hand with a major socio-political change in the region during this period. During the mid-nineteenth century AD, large parts of the northern Lowveld were depopulated during a series of raids by Gaza armies (Antonites 2013: 117), leading to a major shift in the socio-political paradigm of the region. Similar unrest could also have resulted in changes in the polity of this region during the first millennium. The presence of a 'mixed' ceramic entity contributes to our knowledge of communities during the first millennium and changes the way in which we view the organisation and spread of agro-pastoralists in the greater region. The fact that discrete ceramic phases were noted should also be taken into account, and since this site was occupied multiple times, it will be difficult to discern the presence of Garonga ceramics. Burrett (2007:165) notes similar limitations at Garonga and believes that further research, with large-scale excavations, is needed to isolate the different occupations present. I agree with Burrett that further research is needed at SK17.

The last implication is the possible relationship between the ceramic classes from SK17 and those of Group 2 (Kalundu tradition) at the Lydenburg Heads site (Whitelaw, 1996). In the past, Evers (1988) noted that the clear changes over time that are evident in the KwaZulu-Natal ceramic sequences are absent in the Lowveld sequences (Whitelaw, 1996:82). Whitelaw believes that this is because three different ceramic phases were classed as part of the same earlier phase. This conflation of styles had a major impact on the way in which cultural history sequences were constructed. His reanalysis of the Lydenburg Heads site identified multiple ceramic sequences, which helped archaeologists to establish better occupation ranges and dates at EFC sites in the region (Whitelaw, 1996:82). Therefore, the reanalysis of the SK17 ceramic assemblage contributes further to our understanding of a regional EFC sequence.

11.2.3. Shell beads from SK17

As was highlighted in Chapter 10, only a small amount of shell disc beads were recovered from SK17. The lack of shell disc beads is also noted at some of the EFC sites across South Africa (Antonites *et al.,* 2014; Maggs, 1980b; Van Schalkwyk, 1994; Whitelaw, 1993). I my opinion this could be due to two reasons. First the lack of shell beads could be due to the size of the community as smaller communities (i.e. communities with small numbers of inhabitants when compared to some other EFC sites) might have displayed fewer shell beads. Large EFC sites, such as Ndondondwane (Maggs, 1984; Loubser, 1993), KwaGandaganda (Whitelaw, 1994), and Broederstroom (Mason, 1981), yielded substantial amounts of disc beads. At KwaGandaganda, for instance, a total of 3 975 shell beads were recovered (Whitelaw, 1994:42). Second, it is possible that the beads were not recovered due to the excavation method used. The shell beads from SK17 were all produced from *Achatina* shell. Two blank beads were also recovered, which would suggest that the beads were produced on site. The lack of OES beads could be due to a lack of trade with forager communities, but further research is needed on this topic to support this idea.

The one glass bead recovered from SK17 could indicate that Indian Ocean trade played some role at SK17 (Whitelaw, 1994:38). This particular bead from SK17 is also the earliest found in the KNP to date (Meyer, 1986). The presence of a glass bead could hold valuable information with regard to our understanding of trade relations between first-millennium farming societies. Such a trade link could also mean that Early Farming Societies in the southern KNP were more lucrative and complex than previously suggested. The possibility that Indian Ocean trade occurred so early during the first millennium is an avenue that needs further research.

11.2.4. Stone objects and slag from SK17

The presence of LSA stone artefacts could, as seen at TSH1, infer interaction with forager communities (see Chapter 10), but these artefacts could also have been produced and used by the community. This option seems more likely, as there is a lack of evidence of iron-smelting activities at SK17 (only 102 g of slag was recovered at SK17 and none at SK17A) and it would therefore seem that the communities would have used stone, rather than iron artefacts.

Only upper grindstones were recovered, but Meyer identified sorghum seeds in the collection, which suggests that local cultivation did occur (see the previous section on stone objects at TSH1 and Chapter 10). The grooved stones, as noted in Chapter 10, were used either for bead making or for sharpening bone points.

11.2.5. Faunal assemblage from SK17A

Cattle remains were also recovered at SK17A (NISP=37), once again suggesting that cattle might have played a more important role than previously suggested. From the carnivore remains that were found, such as the identified lion, it can be assumed that animals were possibly killed for their skins, and maybe for other body parts. The importance of carnivore skins is well documented in the ethnographic records (Antonites *et al.,* 2014:191; Krige, 1950; Mönning, 1967). Plug (1989a:67) notes that trade in animal skins, horns and meat most likely did occur during the first millennium in the KNP. Carnivore skins could also have been used to protect crops, or for medicinal purposes (Whitelaw, 1993:69). Even though in the ethnographic record the consumption of carnivore meat is off limits (Antonites *et al.,* 2014:191), it seems that this was not always the case and that some of these Early Farming Communities did consume carnivore meat, as seen at Penge (Antonites *et al.,* 2014:191), where deep cut marks on the pelvis of some of the carnivores were noted, which indicated that the meat was also used. The substantial amount of bone points found (Scott, 2014) there also ties in well with the presence of carnivore remains in the assemblage, as they could have been used to work and prepare the skins. The grooved stones found at SK17 could have been used to sharpen the bone tools (Maggs, 1980b).

The data shows that SK 17 was a multi-occupational site, and was mostly likely occupied for longer than previously thought. It also suggests a possible link between SK17 and TSH1. In the following section, the XRF data from the two sites will be compared.

11.3. Comparison between XRF results for TSH1 and SK17

The overlap of radiocarbon dates and the presence of Mzonjani ceramics on SK17 and TSH1 suggest that the communities who inhabited them may have been related. To further investigate this relationship, XRF data from both sites were compared. In the past, the application of XRF data to known stylistic ceramic assemblages has yielded new insights into archaeological interpretation, as well as the origins of ceramic material (Bollong *et al.,* 1993; Pillay *et al.,* 2000; Punyadeera, 1997).

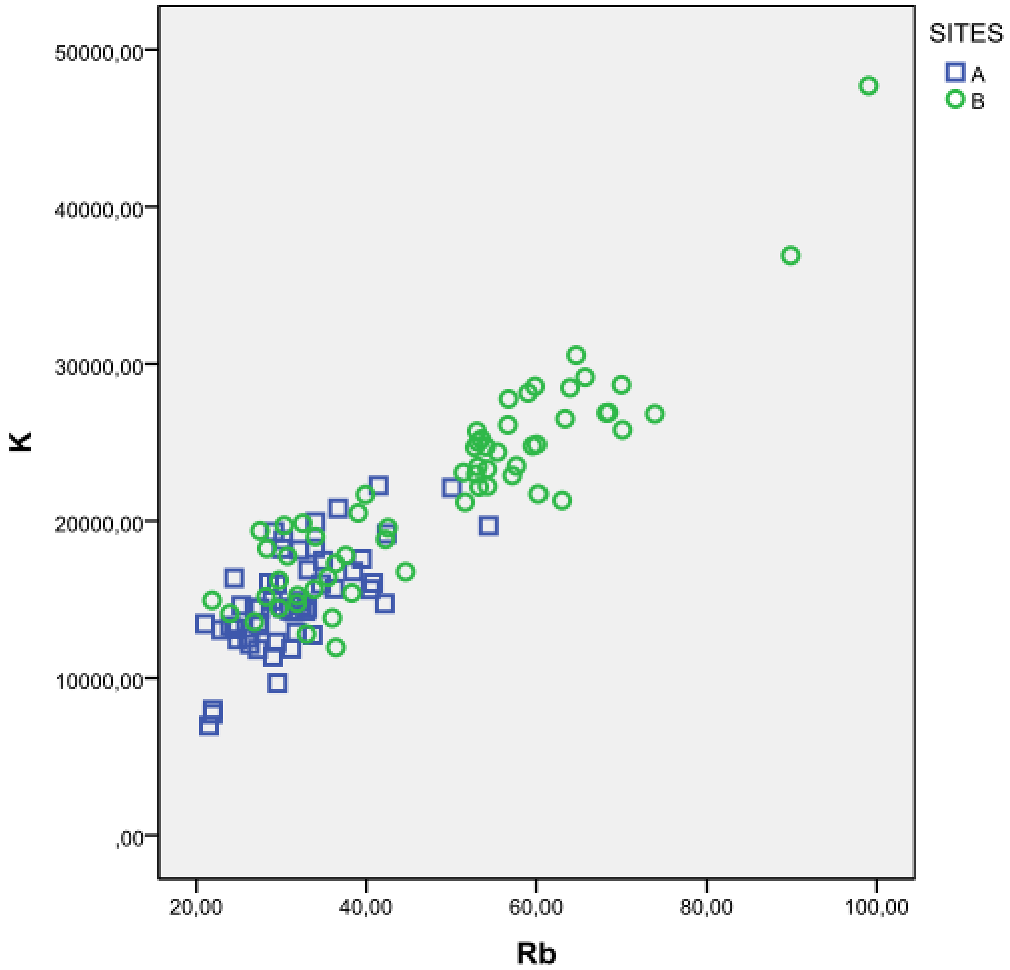


Figure 11.1 XRF data from TSH1 (Site A) compared to that of SK17 (Site B) in ppm

The results show that, although the two sites mostly cluster as two distinct groups, some ceramics do overlap (Figure 11.1–11.3), for which there could be many reasons. First, the ceramics at SK17 appear to have been produced from more than one clay source, which is evident from the two clusters forming at SK17. The cluster that overlaps with TSH1 could point to these communities using similar clay sources. This is not surprising, since the two sites are only 8 km apart. However, it has been noted by Gosselain and Livingstone Smith (2005: no page number) that potters in Africa do not normally go further than 3 km to obtain clay. The overlapping of the TSH1 and one of the SK17 clusters could also indicate interaction between these communities.

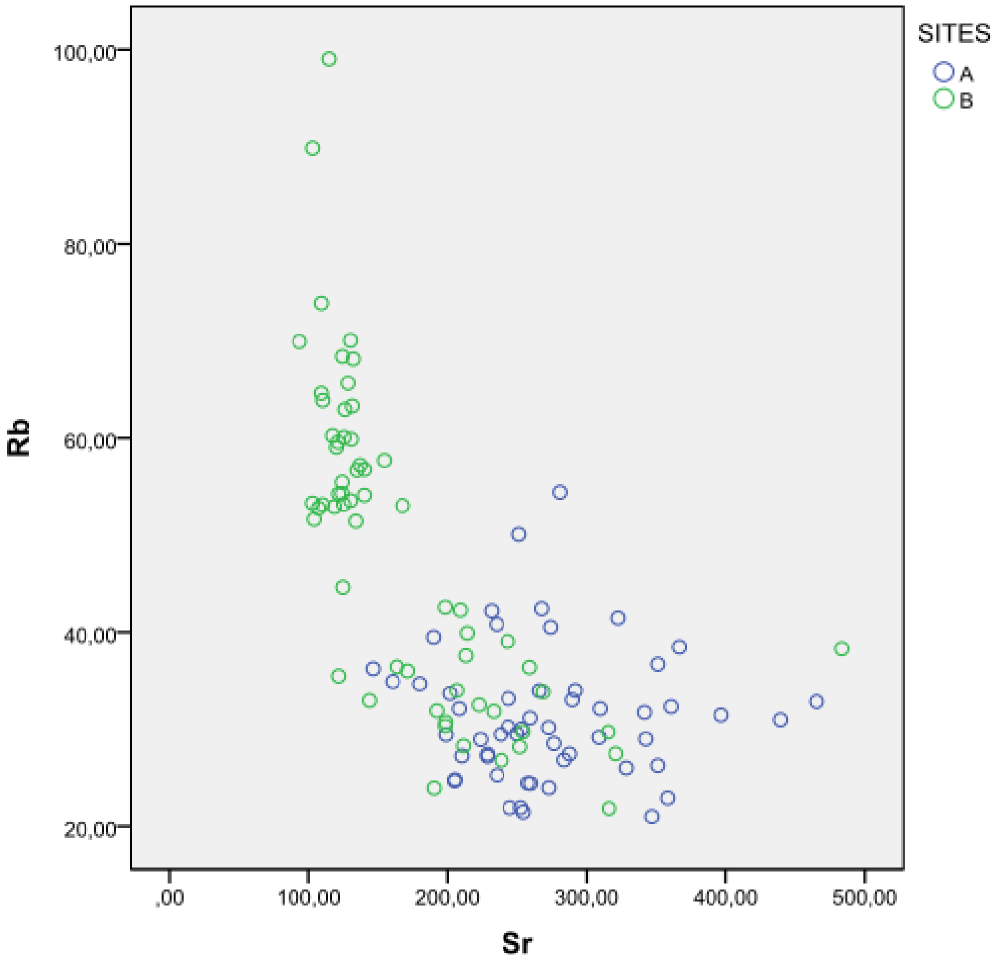


Figure 11.2 Rb and Sr at TSH1 and SK17 in ppm

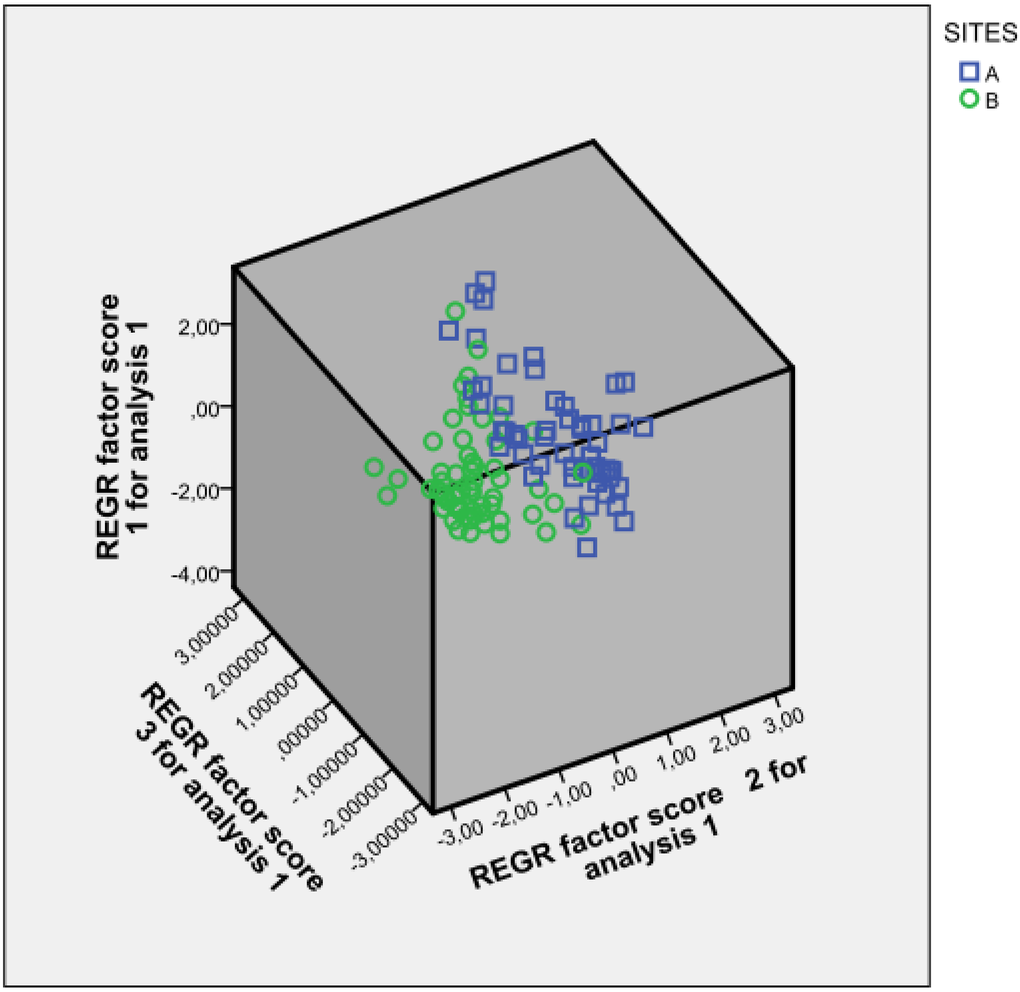


Figure 11.3 Principal component analysis (PCA) of the XRF data from TSH1 and SK17 in ppm

11.4. Concluding remarks

In this chapter, the data presented in Chapter 5 to 10 was interpreted and the interpretations were contextualised within our larger understanding of first-millennium farming societies in southern Africa, but more specifically in the Lowveld. The data showed that TSH1 was occupied only once, while SK17 provided evidence of multiple occupations. In the following chapter, final conclusions will be drawn, the research questions will be addressed and recommendations will be made regarding further research at the two sites.

Chapter 12

Conclusion and possible avenues for further research

This study has shed light on our understanding of first-millennium farming societies in the Lowveld of South Africa. As seen throughout this dissertation, research on early farming communities has been undertaken in many regions of southern Africa, but research projects in the Kruger National Park have been few and far between.

The aim of this project was to clarify the ceramic sequence of SK17 and TSH1. This led to more conclusive formulations of the ceramic sequences and the identification of multiple occupation events at SK17. Care must be taken not to conflate multiple ceramic assemblages from one site, as this will greatly distort our understanding of these communities.

Further excavations yielded new radiocarbon dates that not only played a vital role in determining the periods during which the site had been occupied, but also grounded the ceramic sequences at both sites. Fabric and XRF analyses had never before been applied to material culture from this region, and by combining the use of technological aspects and not using only the stylistic attributes of ceramic assemblages, more versatile results were obtained. However, multiple limitations were evident during this study. The lack of stratigraphic knowledge, especially from SK17, made it difficult to untangle the results and the problems encountered were similar to those faced by Burrett (2007:164) in his attempt to establish ceramic sequences. Therefore, further research is needed at both SK17 and TSH1.

12.1. Possible future research at TSH1 and SK17

What became evident from this project was the need for further research at both these sites. Some possible further research topics will now be discussed. One theme that was evident throughout this research project was the need for large-scale excavations at both TSH1 and SK17. Although this study did touch upon the socio-political organisation of the sites, large-scale excavations with concrete research questions are necessary to ascertain the socio-political constructs, cosmology and mode of production employed at the sites in order to be able to trace the movement of first-millennium communities throughout southern Africa. The inference made by Meyer (1984; 1986) and Plug (1988; 1989a, 1989b) that the first- millennium farming communities were peripheral to regional centres needs to be addressed. A site cannot be described as peripheral unless the centre has been identified (Antonites, 2014). Sites like Broederstroom (Mason, 1981; Huffman, 1990, 1991, 1993), KwaGandaganda and Ndondondwane (Fowler *et al.,* 2000; Greenfield & Van Schalkwyk, 2003; Greenfield *et al.,* 2000; Loubser, 1993; Maggs, 1984; Prins & Granger, 1993; Van Schalkwyk, 1994a; Van Schalkwyk *et al.,* 1997; Whitelaw. 1994) are examples of places where it was possible to form a better idea of the socio-political organisation of the communities that had occupied them. According to Whitelaw (1994), KwaGandaganda can be seen as a political centre, due to the size, and lengthy occupation of one area. Evidence of trade goods, such as ivory (which was found in large quantities at KwaGandaganda), could suggest political importance. What these sites all have in common is that they were extensively excavated and researched. Therefore, systematic large-scale excavations could help researchers to draw reliable conclusions regarding the socio-political organisation at these sites, and possibly establish a link to large-scale EFC sites in southern Africa.

Another topic for future study is the possible connection between TSH1 and SK17. Further research at these two sites would greatly contribute to our knowledge of the communities that occupied this region during the first millennium. The presence of Garonga ceramics at SK17 requires further research to provide concrete proof of this site’s position within the ceramic sequences of southern Africa. This can only be done through systematic excavations at SK17. Further research could also be conducted to substantiate the link between foragers and farmers in the Kruger National Park during the first millennium.

List of references

Arnold, D.E. 1985. *Ceramic Theory and Cultural Process*. New York: Cambridge University Press.

Arnold, D.E. 2000. Does the standardization of ceramic pastes really mean specialization? *Journal of Archaeological Method and Theory,* 7:333-375.

Antonites, A. 2005. *The salt of Baleni: an investigation into the organisation of salt production during the Early Iron Age of South Africa*. Unpublished MA dissertation. Pretoria: University of Pretoria.

Antonites, A. 2012. *Political and economic interaction in the hinterland of the Mapungubwe polity, c. AD 1200-1300, South Africa*. Unpublished PhD dissertation. Yale University.

Antonites, A. 2013. Archaeological salt production at the Baleni Spring, Northeastern South Africa. *South African Archaeological Bulletin,* 68(198):105-118.

Antonites, A., Antonites, A. R., Kruger, N. & Roodt, F. 2014. Report on excavations at Penge, a first-millennium Doornkop settlement. *Southern African Humanities,* 26:177-192.

Appadurai, A. 1981. Gastro-politics in Hindu South Asia. *American Ethnologist* 8(3):494-511.

Arnold, D.E. 1985*. Ceramic theory and cultural process.* Cambridge: Cambridge University Press.

Ashley, C. 2010. Towards a socialised archaeology of ceramics in Great Lakes Africa. *African Archaeological Review*, 27:135-163.

Atalay, S. & Hastorf, C.A. 2006. Food, meals, and daily activities: food habitus at Neolithic Çatalhöyük. *American Antiquity,* 71:283-319.

Badenhorst, S. 2008. Subsistence change among farming communities in southern Africa during the last two millennia: a search for potential causes. In: Badenhorst, S. Mitchell, P. & Driver, J. C. (eds) *Animals and people: archaeozoological papers in honour of Ina Plug.* Oxford: British Archaeological Series 1849:215-218.

Badenhorst, S. 2009a. Phytoliths and livestock dung at Early Iron Age sites in southern Africa. *South African Archaeological Bulletin,* 64(189):45-50.

Badenhorst, S. 2009b. The central cattle pattern during the Iron Age of southern Africa: a critique of its spatial features. *South African Archaeological Bulletin,* 64(190):148-55.

Badenhorst, S. 2010. Descent of Iron Age farmers in southern Africa during the last 2000 years. *African Archaeological Review,* 27(2):87-106.

Binneman, J. 1996. Preliminary report on the investigations at Kulubele, an Early Iron

Age farming settlement in the Great Kei River Valley, Eastern Cape. *Southern African Field Archaeology,* 5:28-35.

Bishop, R.L. 1992. Comments on Section II: Variation. In: Neff, H. (ed) *Chemical characterization of ceramic pastes in Archaeology*. (*Monographs in World Archaeology*, 7:167-170). Madison, WI: Prehistory Press.

Blacking, J. 1969. Songs, dances, mimes and symbolism of Venda girls' initiation schools. Part 1: Vhusha. Part 2: Milayo. Part 3: Domba. Part 4: The great Domba song. *African Studies* 28:28-35, 69-118, 149-199, 215-266.

Bollong, C.A., Vogel, J.C., Jacobson, L., Van der Westhuizen, W.A. & Sampson, C. G. 1993. Direct dating and identify of fibre temper in pre-contact Bushman (Basarwa) pottery. *Journal of Archaeological Science,* 211(1):41-56.

Bonner, P. 2008. Swazi oral traditions and Northern Nguni historical archaeology. In: *Five hundred years rediscovered: Southern African precedents and prospects.* Johannesburg: Witwatersrand University Press. 239-255.

Bonner, P.L., Esterhuysen, A.B., Schoeman, M.H., Swanepoel, N.J. & Wright, J.B. 2008. Introduction. In: *Five hundred years rediscovered: Southern African precedents and prospects.* Johannesburg: Witwatersrand University Press.1-19.

Bronk Ramsey, Christopher. 2009. Bayesian analysis of radiocarbon dates. *Radiocarbon,* 51(1):337-60.

Bronk Ramsey, Christopher. 2012. OxCal. Oxford: Oxford Radiocarbon Accelerator Unit.

Burke, H. & Smith, C. 2004. *The archaeologist's field handbook*. Australia: Allen & Unwin.

Buko, A. 1984. Problems and research prospects in the determination of the provenance of pottery. *World Archaeology*, 15(3):348-365.

Burrett, R. 2007. The Garonga ceramic assemblage. *Southern African Humanities*, 19:153-166.

Carruthers, E.J. & Pienaar, U. de V. 2012. Early years: The Sabie and Shingwedzi reserves and the Kruger National Park 1900-1946, The early evolution of the Sabie Game Reserve (1900-1926) and the proclamation of the Kruger National Park. In: Pienaar, U. De V. (ed) *A cameo from the past.* Hatfield: Protea Book House. 444-469.

Caton-Thompson, G. 1931. *Zimbabwe culture*. Oxford: Clarendon Press.

Chinoda, G., Moyce, W., Matura, N. & Owen, R. 2009*. Baseline report on the geology of the Limpopo Basin area*. Harare: University of Zimbabwe Mineral Resources Centre.

Chrikure, S. & Pwiti, G. 2008. Community involvement in archaeology and cultural heritage management: an assessment from case studies in Southern Africa and elsewhere. *Current Anthropology*, 49(3):467-85.

Clancy, P. A. 1964. *The birds of Natal and Zululand*. Edinburgh: Oliver & Boyd.

Clark, J.D. 1962. The spread of food production in Sub-Saharan Africa. *The Journal of African History*, 3(2):211-228.

Clark, J.D. 1967. A record of early agriculture and metallurgy in Africa from archaeological sources. In: Gabel & Bennett (eds) *Reconstructing African culture history*. Boston: Boston University Press.

Cruze Silva, T. 1976. A preliminary report on an Early Iron Age site Matola IV 1/68. In: Marais, J. (ed) *Iron Age research in Mocambique: collected preliminary reports*. Maputo: Centro de Estudos Africanos, Universidade Eduardo Mondlane.

Cowgill, G.L. 1964. The selection of samples from large sherd collections. *American Antiquity* 29:467-473.

Dart, R.A. & Beaumont, P.B. 1969. Iron Age radiocarbon dates from western Swaziland. *South African Archaeological Bulletin,* 24:71.

David, N. 1972. On the life span of pottery, type frequencies, and archaeological inference. *American Antiquity,* 37(1):141-142.

David, N. & Kramer, C. 2001. *Ethnoarchaeology in action*. Cambridge: Cambridge University Press.

David, N., Sterner, J, & Gavua, K. 1988. Why pots are decorated. *Current Anthropology,* 29(3):365-389.

Deacon, J. 1984. The Later Stone Age of southernmost Africa. Oxford: British Archaeological Reports International Series 213.

Delius, P. & Schoeman, M. 2010a. Introduction. *African Studies,* 69(2):207-12.

Delius, P. & Schoeman, M. 2010b. Reading the Rocks and Reviewing Red Herrings. *African Studies,* 69(2):235-54.

Denbow, J.R. 1986. A new look at the later prehistory of the Kalahari. *Journal of African History,* 27:3-29.

De Toit, A.P. 1968. *Die plek van die materiële skeppinge van die BaPhalaborwa in hul kultuur.* Unpublished PhD dissertation. Pretoria: University of Pretoria.

Dietler, M. & Herbich, I. 1989. Tich Matek: The technology of Luo pottery production and the definition of ceramic style. *World Archaeology*, 21(1):148-164.

Dietler, M. & Herbich, I. 1998. Habitus, techniques, style: an integrated approach to the social understanding of material culture boundaries. In: Stark, M. (ed) T*he archaeology of social boundaries*. Washington: Smithsonian Institute Press. 232-263

Drennen, R.D. 2009. *Statistics for Archaeologists: a commonsense approach. 2nd ed.* London: Springer.

Drewett, P. 1999. *Field archaeology: an introduction*. London: UCL Press.

Dunnell, R.C. 1978. Style and function: a fundamental dichotomy*. American Antiquity* 43(2):192-202.

Eggert, M. 2005. The Bantu problem and African archaeology. In: Stahl, A.B. (ed) *African archaeology: a critical introduction*. London: Blackwell Publishers.

Ekblom, A. & Gillson, L. 2010a. Fire history and fire ecology of northern Kruger (KNP) and Limpopo National Park (PNL), Southern Africa. *Holocene* 20:1063-1077.

Ekblom, A. & Gillson, L. 2010b. Using dung fungi spores as indicators of past herbivore abundance, Kruger and Limpopo National Park. *Journal of Palaeogeography, Palaeolimnology and Palaehydrology* 296:14-27.

Ekblom, A., Gillson, L. & Notelid, M. 2011. A historical ecology of the Limpopo and the Kruger National Parks and Lower Limpopo Valley. *Journal of Archaeology and Ancient History,* 1: 2-29.

Eloff, J.F. 1977a. *Samevattende verslag oor argeologiese navorsing in die Nasionale Krugerwildtuin gedurende Junie en Julie 1977.* University of Pretoria: Unpublished field notes. Digitised by University of Pretoria Library Services in 2013.

Eloff, J.F. 1977b. *Samevattende verslag oor argeologiese navorsing in die Nasionale Krugerwildtuin gedurende Junie en Julie 1977.* University of Pretoria: Unpublished field notes. Digitised by University of Pretoria Library Services in 2013.

Eloff, J.F. 1978. *Samevattende verslag oor argeologiese navorsing in die Nasionale Krugerwildtuin gedurende Junie en Julie 1977.* University of Pretoria: Unpublished field notes. Digitised by University of Pretoria Library Services in 2013.

Eloff, J.F. 1979. *Samevattende verslag oor argeologiese navorsing in die Nasionale Krugerwildtuin gedurende Junie en Julie 1977.* University of Pretoria: Unpublished field notes. Digitised by University of Pretoria Library Services in 2013.

Eloff, J.F. 1980a. *Samevattende verslag oor argeologiese navorsing in die Nasionale Krugerwildtuin gedurende Junie en Julie 1977.* University of Pretoria: Unpublished field notes. Digitised by University of Pretoria Library Services in 2013.

Eloff, J.F. 1980b. Prehistoric people in the Kruger National Park, Part III. *Custos* 9(2):21-25*.*

Eloff, J.F. 1981. *Samevattende verslag oor argeologiese navorsing in die Nasionale Krugerwildtuin gedurende Junie en Julie 1977.* University of Pretoria: Unpublished field notes. Digitised by University of Pretoria Library Services in 2013.

Eloff, J.F. & De Vaal, J.B. 1965. Makahane. *Koedoe,* 8:68-74.

Eloff, J.F., Miller, S., De Vaal, J.B. 2012. A new order. The stone-wall culture of the Makahane and Vhalembethu. In: U. De V. Pienaar (ed) *A cameo from the past: the prehistory and early history of the Kruger National Park.* Hatfield: Protea Book House. 44-89.

Evers, T.M. 1975. Recent Iron Age research in the eastern Transvaal. *South African Archaeological Bulletin* 30:71-83.

Evers, T. 1977. Plaston Early Iron Age site, White River District, eastern Transvaal, South Africa. *South African Archaeological Bulletin,* 32:170-178.

Evers, T. 1979. Salt and soapstone bowl factories at Harmony, Letaba District, North-eastern Transvaal. *Goodwin Series* (3):94-107.

Evers, T. 1981. The Iron Age in the eastern Transvaal. In: Voight, E.A. (ed) *Guide to archaeological sites in the Northern and Eastern Transvaal*. Pretoria: Transvaal Museum. 65-109.

Evers, T. 1982. Two later Iron Age sites on Mabete, Hans Merensky Nature Reserve, Letaba District, NE Transvaal. *The South African Archaeological Bulletin*, 37(136):63–67.

Evers, T. 1988. *The recognition of groups in the Iron Age of southern Africa*. Unpublished PhD dissertation. Johannesburg: University of the Witwatersrand.

Evers, T.M. & Hammond-Tooke, D. 1986. The emergence of South African chiefdoms: an archaeological perspective. *African Studies* 45:37-42.

Evers, T.M. & Van der Merwe, N.J. 1987. Iron Age ceramics from Phalaborwa north eastern Transvaal lowveld. *South African Archaeological Bulletin,* 46:87-106.

Fredriksen, P.D. & Chirikure, S. 2015. Beyond static models: an evaluation of present status and future prospects for Iron Age research in southern Africa. *Cambridge Archaeological Journal,* 25:597-614.

Forssman, T. 2014. *The spaces between places: a landscape study of foragers on the greater Mapungubwe landscape.* Unpublished PhD dissertation. Oxford: University of Oxford.

Foster, G.M. 1960. Life-expectancy of utilitarian pottery in Tzintzuntzan, Michoacan, Mexico*. American Antiquity,* 25:606-609.

Fowler, K.D. 2002. Early Iron Age community organization in southern Africa: social and symbolic dimensions of ceramic production, use and discard at Ndondondwane. PhD dissertation, University of Alberta, Edmonton.

Fowler, K.D. 2006. Classification and collapse: the ethnohistory of Zulu ceramic use. *Southern African Humanities,* 18:93-117.

Fowler, K.D. 2008. Zulu pottery production in the Lower Thukela Basin, KwaZulu-Natal, South Africa. *Southern African Humanities*, 20:477-511.

Fowler, K.D. 2011. The Zulu ceramic tradition in Msinga, South Africa. *Southern African Humanities,* 23:173-202.

Fowler, K.D. 2011. Ceramic discard and the use of space at Early Iron Age Ndondondwane, South Africa. *Journal of Field Archaeology,* 36:151-166.

Fowler, K.D. 2014. Ceramic production in Swaziland. *Anthropos,* 109:411-28.

Fowler, K.D. 2015. Zulu pottery technology and group identity in the Phongolo Basin, South Africa. *Southern African Humanities,* 27:81-111.

Fowler, K.D., Greenfield, H.J. & Van Schalkwyk, L. 2000. The identification and significance of ceramic ecofacts from Early Iron Age Ndondondwane, South Africa. *Southern African Field Archaeology,* 9: 32-42.

Garcia-Heras, M., Fernandez-Ruiz, R. & Tornero, J.D. 1997. Analysis of archaeological ceramics by TXRF and contrasted with NAA. *Journal of Archaeological Science*, 24:1003-1014.

Gertenbach, W.P.D. 1983. Landscapes of the Kruger National Park. *Koedoe,* 26:9-121.

Gosselain, O.P. 1992. The bonfire of enquiries – pottery firing temperature in archaeology: What for? *Journal of Archaeological Science,* 19:243-259.

Gosselain, O.P. 1998. Social and technical identity in a clay crystal ball. In: Stark, M. T. (ed) *The Archaeology of Social Boundaries.* Washington DC: Smithsonian Institution Press. 78-106.

Gosselain, O.P. 2000. Materializing identities: an African perspective. *Journal of Archaeological Method and Theory*, 7(3):187-217.

Gosselain, O.P. 2008. Mother Bella was not a Bella: inherited and transformed traditions in southwestern Niger. In: Startk, M.T., Bowser, B.J. & Horne, I. (eds) *Cultural transmission and material culture: breaking down boundaries*. Tucson: University of Arizona Press. 151–77.

Gosselain, O. & Smith, A.L. 2005. The source. Clay selection and processing practices in sub-Saharan Africa. *Pottery Manufacturing Processes: Reconstruction and Interpretation*, 33-47.

Greenfield, H.J. 2006. On the nature of daga houses, kraals, metallurgy and intra-settlements spatial organization of EIA settlements in southern Africa: a response to Whitelaw. *Azania XLI:*167-180.

Greenfield, H.J. & Miller, D. 2004. Spatial patterning of Early Iron Age metal production at Ndondondwane, South Africa: the question of cultural continuity between the Early and Late Iron Ages. Journal of Archaeological Science 31(11): 1511-1132.

Greenfield, H.J., & Fowler, K.D. 2009. Unravelling settlement history at Ndondondwane, South Africa: a micro-chronological analysis. *Southern African Humanities,* 21:345-393.

Greenfield, H.J. & Van Schalkwyk, L.O. 2003. Intra-settlement social and economic organisation of Early Iron Age farming communities in southern Africa: view from Ndondondwane. *Azania,* 38:121-137.

Greenfield, H.J. & Van Schalkwyk, L.O. 2006. Spatial models of intrasettlement spatial organization in the EIA of Southern Africa: a view from Ndondondwane on the Central Cattle Pattern. In: *Space and Spatial Analysis in Archaeology.* 61-68.

Greenfield, H.J. & Van Schalkwyk L.O. 2008. Early Iron Age regional settlement and demographic patterns along the Eastern Seaboard of South Africa: a view from the Lower Thukela River Valley. In: Badenhorst, S., Mitchell, P. & Driver, J.C. (eds) *Animals and people: archaeozoological papers in honour of Ina Plug.* Oxford: British Archaeological Series 1849:131-151.

Greenfield, H.J., Van Schalkwyk, L.O. & Jongsma, T.L. 1997. Ndondondwane: preliminary report on the 1995 survey and excavations. *Nyame Akuma,* 47:42-52.

Greenfield, H.J., Van Schalkwyk, L.O. & Jongsma, T.L. 2000. Surface and subsurface reconnaissance at Ndondondwane: preliminary results of the 1995-97 field seasons. *Southern African Field Archaeology,* 9:5-16.

Hall, M. 1980. Enkwazini: fourth-century Iron Age site on the Zululand coast. *Annals of the Natal Museum*, 24(1):97-109.

Hall, M., 1983. Tribes, Traditions and Numbers: The American Model in Southern African Iron Age Ceramic Studies. *The South African Archaeological Bulletin*, 38(138), 51–57.

Hall, M. 1984a. The burden of tribalism: The social context of Southern African Iron Age Studies. *American Antiquity,* 49(3):455-467.

Hall, M. 1984b. Pots and politics: ceramic interpretations in southern Africa.*World Archaeology*, 15(3):262-273.

Hall, M. 1986. The role of cattle in southern African agropastoral societies: more than bones alone can tell. *Goodwin Series. Prehistoric Pastoralism in Southern Africa,* 5:83-87.

Hall, M. 1987a. Archaeology and modes of production in pre-colonial southern Africa. *Journal of southern African studies,* 14(1):1-17.

Hall, M. 1987b. *The Changing Past: Farmers, Kings and Traders in Southern Africa*. Cape Town: David Philip.

Hall, M. 1990. Hidden history: Iron Age archaeology in Southern Africa. In: Robertshaw, P.A. (ed) *History of African Archaeology.* London: James Curry. 59-77.

Hall, S. 1992. The first South Africans. *The Phoenix* 5(1):11-19.

Hall, M. & Vogel, J.C. 1978. Enkwazini, fourth-century Iron Age site on the Zululand coast. *South African Journal of Science,* 74:70-71.

Hall, R.N. & Neal, W.G. 1972. *The ancient ruins of Rhodesia.* Bulawayo: Books of Rhodesia.

Henrickson, E. & McDonald, M. 1983. Ceramic form and function: an ethnographic search and an archaeological application. *American Anthropologist*, 85(3):630-643.

Herbert, R.K. 1993. Linguistic studies in southern Africa, an introduction. In: Herbert, R.K. (ed) *Foundations in Southern African Linguistics.* Johannesburg: WITS University Press. vii-xv.

Hodder, I. 1982. *Symbols in action.* Cambridge: Cambridge University Press.

Hogg, A.G., Hua, Q., Blackwell, P.G., Niu, M., Buck, C.E., Guilderson, T.P., Heaton, T.J., Palmer, J.G., Reimer P.J., Reimer, R.W., Turney, C.S.M. & Zimmerman, S.R.H. 2013. SHCal13 southern hemisphere calibration, 0–50 000 years cal BP. *Radiocarbon* 55:1889-1903.

Huffman, T.N. 1970. The Early Iron Age and spread of the Bantu. *South African Archaeological Bulletin,* 25:3-21.

Huffman, T.N. 1971. A guide to the Iron Age of Mashonaland. *Occasional Papers of the National Museum of Rhodesia, 4*(1A):20-44.

Huffman, T.N. 1974. *The Leopard's Kopje Tradition* (Museum Memoir 6). Salisbury: National Museums and Monuments of Rhodesia.

Huffman, T.N. 1980. Ceramics, classification and Iron Age entities. *African Studies* 39(2):123-174.

Huffman, T.N. 1982. Archaeology and ethnohistory of the African Iron Age. *Annual Review of Anthropology,* 11:133-150.

Huffman, T.N. 1986. Archaeological evidence and conventional explanations of Southern Bantu settlement patterns. *Africa* 56:280-298.

Huffman, T.N. 1989. Ceramics, settlements and Late Iron Age migrations. *African Archaeological Review* 7:155-182.

Huffman, T.N. 1990. Broederstroom and the origins of cattle-keeping in southern Africa. *African Studies* 49(2):l-12.

Huffman, T.N. 1993. Broederstroom and the Central Cattle Pattern. *South African Journal of Science,* 89:220-226.

Huffman, T.N. 1998. The antiquity of lobola. *South African Archaeological Bulletin,* 53:57-62.

Huffman, T.N. 2001. The Central Cattle Pattern and interpreting the past. *Southern African Humanities,* 13:19-35.

Huffman, T.N. 2002. Regionality in the Iron Age: the case of the Sotho-Tswana. *Southern African Humanities,* 14:1-22.

Huffman, T.N. 2006a. Bantu migrations in southern Africa. In: Soodyall, H. (ed) *The Prehistory of Africa.* Jeppestown: Jonathan Ball Publishers. 97-108.

Huffman, T.N. 2006b. Maize grindstones, Madikwe pottery and ochre mining in precolonial South Africa. *Southern African Humanities,* 18:51-70.

Huffman, T.N. 2007. *Handbook to the Iron Age: the Archaeology of Pre-colonial Farming Communities in Southern Africa*. Scottsville: University of KwaZulu-Natal Press.

Huffman, T.N. 2010. Debating the Central Cattle Pattern: a reply to Badenhorst. *South African Archaeological Bulletin,* 65:164-74.

Huffman, T.N. 2012. Debating the 500 year initiative: history, anthropology or both? *South African Archaeological Bulletin,* 67(196):231-243.

Huffman, T.N. & Klapwijk, M. 1996. Excavations at Silver Leaves: a final report. *South African Archaeological Bulletin,* 51(164):84-93.

Ingold, T. 2000. *The perception of the environment: essays on livelihood, dwelling and skill.* London: Routledge.

Inskeep, R.R. 1971. Letter to the editor. *South African Journal of Science,* 67:492-493.

Inskeep, R.R. 1978. *The peopling of Southern Africa*. Cape Town: David Phillip.

Inskeep, R.R. & Maggs, T. 1975. Unique art objects in the Iron Age of the Transvaal, South Africa. *South African Archaeological Bulletin,* 30:114-138.

Jacobson, L. 1985. X-Ray analytical techniques and archaeological materials. *The South African Archaeological Bulletin,* 40(142):112.

Jacobson, L. 2005. *The application of compositional analysis to provenance studies of archaeological pottery in southern Africa: a geochemical perspective using XRF spectroscopy*. Unpublished PhD dissertation, Bloemfontein: University of the Free State.

Jacobson, L., Van der Westhuizen, W.A. & De Bruiyn, H. 1994. Recent archaeological XRF research in southern Africa*. Nyame Akuma*, 41:55-61.

Johnson, M. 2008. *Archaeological theory: an introduction.* Oxford: Blackwell Publishing.

Jones, S. 1997. *The archaeology of ethnicity: constructing identities in the past and present*. London: Routledge.

Jordaan, G. 2011. Letaba: Between spaces; reanalysis of Early Farming Settlements on the Letaba Confluence. Unpublished honours dissertation. Pretoria: University of Pretoria.

Kandel, A. W. & Conrad, N.J. 2005. Production sequence of ostrich eggshell beads and settlement dynamics in the Geelbek Dunes of the Western Cape, South Africa. *Journal of Archaeological Science,* 32:1711-1721.

Klapwijk, M. 1974. A preliminary report on pottery from the north-east Transvaal, South Africa. *South African Archaeological Bulletin,* 29:19-23.

Klapwijk, M. & Huffman, T. 1996. Excavations at Silver Leaves: a final report. *South African Archaeological Bulletin,* 51:84·-93.

Kramer, C. 1985. Ceramic ethnoarchaeology. *Annual Review of Anthropology,* 14: 77-102.

Krige, E.J. 1950. *The social system of the Zulus.* Pietermaritzburg: Shuter & Shooter.

Kuper, A. 1982. *Wives for cattle: bridewealth and marriage in southern Africa*. London: Routledge and Kegan Paul.

Küsel, M.M. 1992. A preliminary report on settlement layout and gold melting at Tula-Mela, a Late Iron Age site in the Kruger National Park. *Koedoe, 35(1):*55-64.

Lamm, J. P. & Lindahl, A. 2014. A recent excavated medieval brick kiln at Saltsjö Boo, Sweden and the Hxrf analysis of its products. Fresh approaches to the brick production and use in the Middle Ages. *British Archaeological Reports - International Series* p.81-92

Lane, P. 1994/95. The use and abuse of ethnography in Iron Age studies of southern Africa. *Azania,* 29/30: 51-64.

Lane, P. 2004. The 'moving frontier' and the transition to food production in Kenya. *Azania*, XXXIV:243-264.

Lechtman, H. 1977. Style in technology: some early thoughts. In: Lechtman, H. & Merrill, R. (eds) *Material culture: style, organization, and dynamics of technology.* , New York and St Paul: West Publishing. 3-20.

Lindahl, A. & Pikirayi, I. 2010. Ceramics and change: an overview of pottery production techniques in northern South Africa and eastern Zimbabwe during the first and second millennium AD. *Archaeological and Anthropological Sciences*, 2(3): 133-149.

Loubser, J.H.N. 1991. The ethnoarchaeology of Venda-speakers in Southern Africa. *Navorsinge van die Nasionale Museum Bloemfontein,* 7(8):145-464.

Loubser, J.N. 1993. Ndondondwane: the significance of features and finds from a ninth century site on the lower Thukela River, Natal. *Natal Museum Journal of Humanities,* 5:109-151.

Maggs, T. 1980a. Mzonjani and the beginning of the Iron Age in Natal. *Annals of the Natal Museum*, 24(1):71-96.

Maggs, T. 1980b. Msuluzi confluence: a seventh-century Early Iron Age site on the Tugela River. *Annals of the Natal Museum*, 24(1):111-145.

Maggs, T. 1984a. Early Iron Age sites in the Muden area of Natal. *Annals of the Natal Museum*, 26(1):105-140.

Maggs, T. 1984b. The Iron Age south of the Zambezi. In: Klein, R.G. (ed) *Southern African prehistory and paleoenvironments*. Rotterdam: A.A. Balkema. 329-360.

Maggs, T. 1992. Name calling in the Iron Age. *South African Archaeological Bulletin,* 47(156):131.

Maggs, T. 1993. Three decades of Iron Age research in South Africa: some personal reflections. *The South African Archaeological Bulletin*, 48(158):70-76 .

Maggs, T.M. 1994/95. The Early Iron Age in the extreme south: some patterns and problems. *Azania,* 29/30:171-178.

Maggs, T. & Davison, P. 1981. The Lydenberg Heads. *African Arts,* 14:28-33.

Maggs, T.M. & Michael, M.A. 1976. Ntshekane: an Early Iron Age site in the Tugela Basin, Natal. *Annals of the Natal Museum*, 22:705-740.

Maggs, T. & Ward, V. 1984. Early Iron Age sites in the Muden area of Natal. *Annals Natal Museum,* 26(1):105-140.

Maggs, T. & Whitelaw, G. 1991. A review of recent archaeological research on food producing communities in southern Africa. *Journal of African History* 32(1):3-24.

Maspero, F., Sala, S., Fedi, M.E., Martini, M. & Papagni, A. 2011. A new procedure for extraction of collagen from modern and archaeological bones for C14 dating. *Annual Bioanal Chem,* 401:2019-2023.

Mason, R.J. 1951. Excavation of four caves near Johannesburg. *South African Archaeological Bulletin,* 6:71-79.

Mason, R.J. 1952. South African Iron Age pottery from the southern Transvaal. *South African Archaeological Bulletin,* 7(26):70-79.

Mason, R.J. 1962. *The prehistory of the Transvaal.* Johannesburg: Witwatersrand University Press.

Mason, R.J. 1968. Transvaal and Natal Iron Age settlements revealed by aerial photography and excavation. *African Studies* 27:167-180.

Mason, R.J. 1981. Early Iron Age settlement at Broederstroom 24/73, Transvaal, South Africa. *South African Journal of Science*, 77(September):401-416.

Mason, R.J. 1986. *Origins of Black People of Johannesburg and the Southern Western Central Transvaal AD 350-1880*. (Occasional Paper 16). Johannesburg: University of the Witwatersrand Archaeological Research Unit.

Matson, F.R. 1965. *Ceramics and man.* New York: Aldine Publishing Company.

Mazel, A.D. 1986. Mgede shelter: a mid- and late Holocene observation in the western Biggarsberg, Thukela Basin, Natal, South Africa. *Annals of the Natal Museum,* 27:357-388.

Mazel, A.D. 1989. Changing social relations in the Thukela Basin, Natal 7000-2000 B.P. *South African Archaeological Society Goodwin Series,* 6:33-41.

Meyer, A. 1984. A profile of the Iron Age in the Kruger National Park, South Africa. In: Hall, M., Avery, G., Avery, D.M., Wilson, M.L. & Humphreys, A.J. (eds) *Frontiers: Southern African archaeology today.* Cambridge Monographs in African Archaeology 10: BAR International Series 207.

Meyer, A. 1986*. 'n Kultuurhistoriese interpretasie van die ystertydperk in die Nasionale Krugerwildtuin.* Unpublished PhD dissertation. Pretoria: University of Pretoria.

Meskell, L. 2005. Recognition, restitution and the potentials of postcolonial liberalism for South African heritage. *South African Archaeological Bulletin*, 60(182):72-78.

Meskell, L. 2007. Falling walls and mending fences: archaeological ethnography in the Limpopo. *Journal of Southern African Studies,* 33(2):383-400.

Meskell, L. 2012. *The Nature of Heritage: The New South Africa.* West Sussex: Wiley-Blackwell.

Miller, S. 2012. A new order. The gold smelters of Thulamela. In: U. De V. Pienaar (ed) *A cameo from the past: the prehistory and early history of the Kruger National Park.* Hatfield: Protea Book House. 48-55.

Miller, D., Killick, D. & Van der Merwe, N.J. 2001. Metal working in the northern Lowveld, South Africa, AD 1000-1890*. Journal of Field Archaeology,* 28:401-417.

Mitchell, P. 2002. *The archaeology of Southern Africa*. Cambridge: Cambridge University Press.

Mitchell, P. & Whitelaw, G. 2005. The archaeology of southernmost Africa from c. 200 BP to the Early 1800s: a review of recent research. *Journal of African History,* 46(2):209-241.

Mönnig, H.O. 1967. *The Pedi.* Pretoria: Van Schaik.

Moody, J., Lewis Robinson, H., Franics, J., Nixon, L. & Wilson, L. 2003. Ceramic fabric analysis and survey archaeology: the Sphakia Survey. *The Annual of British School at Athens,* 98:37-105.

Moore, M.P.J. 1981. *The Iron Age of the Makapan Valley area, central Transvaal*. Master's dissertation. Johannesburg: University of the Witwatersrand.

Morais, J.M. 1988. *The Early Farming Communities of Southern Mozambique*. Studies in African Archaeology 3. Stockholm, Sweden: Central Board of National Antiquities.

Museum of London. 1994*. Archaeological Site Manual*. London: Museum of London.

Nicklin, K. 1979. The location of pottery manufacture. *Man,* 14(3):436-458.

Nienaber, W.C., Prinsloo, H.P. & Pistorius, J.C.C. 1997. Derdepoort: 'n Vroeë Ystertydperkterrein noord van die Magaliesberg. *South African Journal of Ethnology,* 20:15-22.

Nemaheni, T. S. 2003. *A cultural heritage resource management plan for Thulamela heritage site.* Unpublished master's dissertation. Pretoria: University of Pretoria.

Ndoro, W. 1996. Towards the meaning and symbolism of archaeological pottery assemblages. In: Pwiti, G. & Soper, R. (eds) *Aspects of African Archaeology*, 773-779. University of Zimbabwe Publications

Oliver, R. 1966. The problem of the Bantu expansion. *Journal of African History,* 7(3):361-76.

O'Malley, N. & Blustain, M.S. 1983. Technological examination of Fayette thick ceramics: a petrographic analysis and review. *Southeastern Archaeology,* 2(2):145-154.

Orton C., Tyers, P. & Vince, A. 1993. *Pottery in Archaeology, Cambridge Manuals in Archaeology.* Cambridge: Cambridge University Press

Orton, J. 2008. Later Stone Age ostrich eggshell bead manufacture in the Northern Cape, South Africa. *Journal of Archaeological Science,* 35(7):1765-1775.

Oudemans, T.F.M. 2007. Applying organic residue analysis in ceramic studies – a functional approach. *Leiden Journal of Pottery Studies,* 23:5-20.

Peacock, D.P.S. 1970. The scientific analysis of ancient ceramics: a review. *World Archaeology,* 1(3):75-89.

Phillipson, D.W. 1968. The Early Iron Age in Zambia – regional variants and some tentative conclusions. *The Journal of African History,* 9(2):191-211.

Phillipson D.W. 1974. Iron Age history and archaeology in Zambia. *Journal of African*

History, 15:1-25.

Phillipson, D.W. 1975. The chronology of the Iron Age in Bantu Africa. *Journal of African History*, 16:321-342.

Phillipson, D.W. 1977. *The Later Prehistory of Eastern and Southern Africa*. London: Heinemann.

Phillipson, D.W. 2005. *African Archaeology. 3rd ed.* Cambridge: Cambridge University Press.

Pikirayi, I. 1997. Pots, people and culture: an overview of ceramic studies in Zimbabwe. In: Pwiti, G. (ed) *Caves, monuments and text: Zimbabwean archaeology today, Studies in African Archaeology 14:69-87*. Uppsala: Societas Archaeologica Uppsaliensis.

Pikirayi, I. 1999. Taking Southern African ceramic studies into the twenty-first century: a Zimbabwean perspective. *The African Archaeological Review*, 16(3):185-189.

Pikirayi, *I. 2007.* Ceramic and group identities: towards a social archaeology in southern African ceramic studies. *Journal of Social Archaeology,* 7(3):286-301*.*

Pikirayi, I. & Lindahl, A. 2013. Ceramics, ethnohistory, and ethnography: locating meaning in Southern African Iron Age ceramic assemblages. *African Archaeological Review*, 30:455-473.

Pillay, A.E., Punyadeera, C., Jacobson, L. & Eriksen, J. 2000. Analysis of ancient pottery and ceramic objects using X-ray fluorescence spectrometry. *X-ray spectrometry,* 29:53-62.

Du Plessis, E.J. 1986. Verslag oor plantreste. In: '*n Kultuurhistoriese interpretasie van die ystertydperk in die Nasionale Krugerwildtuin.* Unpublished PhD dissertation. Pretoria: University of Pretoria.

Plog, S. 1983. Analysis of style in artifacts. *Annual Review of Anthropology*, 12:125-142.

Plug, I. 1982a. The faunal remains from Iron Age Sites in the Mahlangeni District, Kruger National Park. Rep. of the Department of Archaeozoology, Transvaal Museum, Pretoria (Unpublished).

Plug, I. 1982b. Bone tools and shell, bone and ostrich eggshell beads from Bushman rock shelter (BRS), eastern Transvaal. *South African Archaeological Bulletin,* 37:57-62.

Plug, I. 1984. The faunal remains from Le6, an Early Iron Age site on the Letaba River. Department of Archaeozoology, Transvaal Museum. Unpublished report.

Plug, I. 1988. Hunters and Herders: An archaeozoological study of some prehistoric communities in the Kruger National Park*.* Unpublished PhD dissertation. Pretoria: University of Pretoria*.*

Plug, I. 1989a. Aspects of life in the Kruger National Park during the Early Iron Age. *Goodwin Series 6:*62-68.

Plug, I. 1989b. Notes on distribution and relative abundance of some animal species, and on climate in the Kruger National Park during prehistoric times. *Koedoe,* 32(1), 101-119.

Plug, I. & Badenhorst, S. 2001. The distribution of macromammals in southern Africa over the past 30 000 years as reflected in animal remains from archaeological sites. Transvaal Museum Monograph No. 12, Transvaal Museum, Pretoria.

Plug, I. & Skelton, P. 1991. Fish and other faunal remains from a Late Iron Age site on the Letaba River, Kruger National Park. *Koedoe,* 34:1-6.

Plug, I. & Voigt, E. 1985. Archaeozoological studies of Iron Age communities in southern Africa. In: Wander, F. & Close, A.E. (eds) *Advances in World Archaeology* 4. New York: Academic Press. 189- 238.

Pollard, M. & Heron, C. 2008. *Archaeological Chemistry. 2nd ed.* Cambridge: The Royal Society of Chemistry.

Posnansky, M. 1961. Dimple-base pottery from Uganda. *Man* 61 (art. 168).

Posnansky, M. 1968. Bantu Genesis-archaeological reflexions. *The Journal of African History,* 9(1):1-11.

Prehistoric Ceramics Research Group. 2010. *The study of later prehistoric pottery: general policies and guidelines for analysis and publication*. 3rd ed (PCRG). Occasional Papers Nos 1 and 2.

Prins, F.E. & Granger, J.E. *1993.* Early farming communities in northern Transkei: the evidence from Ntsitsana and adjacent areas*. Natal Museum Journal of Humanities 5:153-174.*

Prinsloo, H. 1974. Early Iron Age site at Klein Afrika*. South African Journal of Science,* 70:271-273*.*

Punyadeera, C.,.Pillay, A.E., Jacobson, L., Whitelaw, G., 1997. Application of XRF and correspondence analysis to provenance studies of coastal and inland archaeological pottery from the Mngeni River Area, South Africa. *X-ray Spectrometry*, 26,249-256.

Pwiti, G. 1996. Settlement and subsistence of prehistoric farming communities in the mid-Zambezi Valley, northern Zimbabwe. *The South African Archaeological Bulletin*, *51(163):3-6.*

Raath, A. 2014. *An archaeological investigation of Zhizo/Leokwe foodways at Schroda and Pont Drift, Limpopo Valley, South Africa*. Unpublished PhD dissertation. Yale University.

Reid, A. & Segobye, A. 2000. Politics, society and trade on the eastern margins of the Kalahari. *Goodwin Series* 8:58-68.

Renfrew, C. 1974. Preface. In: Renfrew, C. (ed) *British Prehistory: a new outline*. Liverpool: Duckworth.

Rice, P. 1996a. Recent ceramic analysis: 1. Function, style, and origins. *Journal of Archaeological Research,* 4(3).

Rice, *P. 1996b.* Recent ceramic analysis: 2. Composition, production, and theory. *Journal of Archaeological Research,* 4(3).

Rice, P. 1999. On the origins of pottery. *Journal of archaeological method and theory*, 6(1):1-54.

Rice, P.M. 2005. *Pottery analysis: a sourcebook.* London: The University of Chicago Press.

Rice, P.M. 2015. *Pottery Analysis: a sourcebook*. 2nd ed. Chicago and London: University of Chicago Press.

Robinson, K.R. 1966. The Leopard's Kopje culture: its place in the Iron Age of southern Rhodesia, *South African Archaeological Bulletin,* 21:5-51.

Robertson, J.H, & Bradley, R. 2000. A new paradigm: the African Early Iron Age without Bantu migrations. *History in Africa*, 27:287-323.

Rouse, I. 1960. The classification of artifacts in archaeology. *American Antiquity,* 25:313-323.

Sackett, J.R. 1977. The meaning of style in archaeology: a general model. *American Antiquity 42:369-80.*

Sadr, K. 2008. An ageless view of first millennium AD southern African ceramics. *Journal of African Archaeology, 6:103-129.*

Senna-Martinez, JC. 1976. A preliminary report on two Early Iron Age pottery traditions from southern Mocambique coastal plain. In Iron Age Research in Mozambique: Collected Preliminary Reports. Maputo: Centro de Estudos Africanos, Universidade Eduardo Mondlane, Instituto de Investigacao Cientifica de Mocambique.

Scott, K. 2014. Faunal Report on TSH and SK. Unpublished. Pretoria: University of Pretoria.

Shaw. M. 1974. Material culture. In: Hammond-Tooke, W.D. (ed) *The Bantu-speaking peoples of southern Africa.* London: Routledge & Kegan Paul. 85-131.

Shepard, A.O. 1980. *Ceramics for the Archaeologist.* Washington, D.C.: Carnegie Institute of Washington.

Shepherd, N. 2002. The politics of African archaeology. *Annual Review of Anthropology*, 31:189-209.

Smith, J.M. 2005. *Climate change and agropastoral sustainability in the Shashe/Limpopo River basin from AD 900*. PhD dissertation. Johannesburg: University of the Witwatersrand.

Sinclair, P., Nydolf, N-G. & Wickman-Nydolf, G. 1987*. Excavations at the University Campus, Maputo, Mozambique 1984-85.* (Studies in African archaeology 1). Stockholm, Sweden: Central Board of National Antiquities.

Sinopoli, C.M. 1991. *Approaches to archaeological ceramics* New York and London: Plenum Press.

Skibo, J.M. 1999. Pottery and people. In: Skibo, J.M. & Feinman, G.M. (eds) *Pottery and people: a dynamic interaction.* Salt Lake City: University of Utah Press. 1-9.

Stahl, A.B. 1993. Concepts of time and approaches to analogical reasoning in historical perspective. *American Antiquity,* 58:235-260.

Stark, M.T. 1998. *The archaeology of social boundaries*. Washington, DC: Smithsonian Institution Press.

Stark, M.T. 2003. Current issues in ceramic ethnoarchaeology. *Journal of Archaeological Research*, 11(3):193-242.

Steyn, M., Miller, S., Nienaber, W.C. & Loots, M. 1998. Late Iron Age gold burials from Thulamela (Pafuri Region, Kruger National Park). *The South African Archaeological Bulletin*, 53(168):73-85.

Sullivan, A.P. 2008. Ethnoarchaeology and archaeological perspectives on ceramic vessels and annual accumulation rates of sherds. *American Antiquity,* 73(1):121-135.

Summers, R. 1950. Iron Age cultures in Southern Rhodesia. *South African Journal of Science,* 47:95-107.

Summers, R. 1970. Forty years' progress in Iron Age studies in Rhodesia, 1929-69. *The South African Archaeological Bulletin*, 25(99/100):95-103

Swanepoel, N., Esterhuysen, A. & Bonner, P. (eds) 2008. *Five hundred years rediscovered: Southern African precedents and prospects.* Johannesburg: Witwatersrand University Press.

Tapela, M. 2001. An archaeological examination of ostrich eggshell beads in Botswana. *Pula: Botswana Journal of African Studies,* 15(1):60-74.

Tiley-Nel, S. 2013. *A technological study and manufacturing of ceramic vessels from K2 and Mapungubwe Hill, South Africa.* Unpublished master's dissertation. Pretoria: University of Pretoria.

Trigger, B.G. 2007. *A history of archaeological thought. 2nd ed. Cape Town:* Cambridge University Press.

Underhill, A.P. 2003. Investigating variation in organization of ceramic production: an ethnoarchaeological study in Guizhou, China. *Journal of Archaeological Method and Theory*, 10(3):203-275.

Van der Merwe, N.J. & Scully, R.T.K. 1971. The Phalaborwa story: archaeological and enthnographic investigation of a South African iron age group. *World Archaeology*, 3(2):178-196.

Van Schalkwyk, L.O. 1994a. Wosi: an Early Iron Age village in the lower Thukela Basin, Natal. *Natal Museum Journal of Humanities,* 6:65-117.

Van Schalkwyk, L.O. 1994b. Mamba confluence: a preliminary report on an Early Iron Age industrial centre in the lower Thukela Basin, Natal. *Natal Museum Journal of Humanities,* 6:119-152.

Van Schalkwyk, L.O., Greenfield, H.J. & Jongsma, T.L. 1997. The Early Iron Age site of Ndondondwane, KwaZulu-Natal, South Africa: Preliminary report on the 1995 excavations. *Southern African Field Archaeology,* 6:61-77.

Vassina, J. 1979. Bantu in the Crystal Ball I. *History in Africa*, 6:287-333.

Van Bruggen, A.C. 1966a. The terrestrial mollusca of the Kruger National Park: a contribution to the malacology of the Eastern Transvaal. *Annals of the Natal Museum*, 18(2):315-399.

Van Bruggen, A.C. 1966b. Notes on non-marine molluscs from Mozambique and Bechuanaland, with a checklist of Bechuanaland species. *Annals of the Transvaal Museum*, 25(6):99-116.

Van Bruggen, A.C. 1966c. Studies on the land Molluscs of Zululand with notes on the distribution of land molluscs in Southern Africa. *Zoologische verhandelingen* 103.

Van Vollenhoven, A.C., Pelser, A.J. & Van den Bos, J.W. 1998. A historical-archaeological investigation of an Anglo-Boer War British outpost in the Kruger National Park. *Koedoe* 41/2: 113-120

Van Vollenhoven, A.C. & Pelser, A.J. 2009. The re-assessment of the Albasini Ruins, Kruger National Park, South Africa. *Tydskrif vir Kultuurgeskiedenis* November, 23(2).

Verhoef, J. 1982. *Die oprigting en ingebruikneming van die Masorini-terreinmuseum in die Nasionale Krugerwildtuin.* Dissertation, Postgraduate Diploma in Museology. Pretoria: University of Pretoria.

Verhoef, J. 1986. Notes on archaeology and prehistoric mining in the Kruger National Park. *Koedoe,* 29:149-156.

Von den Driesch, A. 1976. *A guide to the measurements of animal bones from archaeological sites.* Peabody Museum Bulletin 1. Massachusetts: Harvard University.

Ward, V. & Maggs, T.M. 1988. The slipped disc: a guide to the identification of shell disc-beads. *Annual Natal Museum,* 29(2):407-416.

Weitz, A. 2000. *Die verkenning van kultuurhulpbronne van die Skukuza-veldwagtersafdeling*. Unpublished honours dissertation. Pretoria: University of Pretoria.

Wendt, W.E. 1972. Preliminary report on an archaeological research programme in South West Africa. *Cimbebasia,* (B)2:1-61.

Wentink, K. 2006. An interview with potters in the southernmost part of Malawi. *Leiden Journal of Pottery Studies,* 22:45-49.

Wiessner, P. 1983. Style and social information in Kalahari San projectile points. *American Antiquity,* 48:253-76,

Wiessner, P. 1984. Reconsidering the behavioral basis for style: a case study among the Kalahari San. *Journal of Anthropological Archaeology,* 3:190-234.

Wiessner, P. 1985. Style or isochrestic variation? A reply to Sackett. *American Antiquity*, 50(1):160-166.

Whallon, R. 1982. Essays on archaeological typology. Center for American Archeology Press.

Whitelaw, G. 1993. Customs and settlement patterns in the first millennium AD: evidence from Nanda, an Early Iron Age in the Mngeni Valley, Natal. *Southern African Humanities*, 5:47-81.

Whitelaw, G. 1994. KwaGandaganda: settlement patterns in the Natal Early Iron Age. *Southern African Humanities*, 6:1-64.

Whitelaw, G. 1994/95. Towards an Early Iron Age worldview: some ideas from KwaZulu-Natal*. Azania,* 29/30:37- 50.

Whitelaw, G., 1996. Lydenburg revisited: another look at the Mpumalanga Early Iron Age sequence. South African Archaeological Bulletin 51: 75- 83.

Whitelaw, G. 2012. Anthropology and history in the southern African Iron Age. *African Studies,* 71:127-44.

Whitelaw, G. 2013. Pollution concepts and the marriage for the Southern African Iron Age. *Cambridge Archaeological Journal,* 23(2):203-225.

Whitelaw, G. & Moon, M. 1996. The ceramics and distribution of pioneer agriculturists in KwaZulu-Natal. *Natal Museum Journal of Humanities*, 8:53-79.

Wilmsen, E.N., Killick, D., Rosenstein, D.D., Thebe, P.C. & Denbow, J.R. 2009. The social geography of pottery in Botswana as reconstructed by optical petrography. *Journal of African Archaeology,* 7(1):3-39.

Wilson, M.L. 1986. The origins of the Khoikhoi and of domestic stock in southern Africa. *South African Archaeological Bulletin,* 41:95.

Wright, J. 2010a. 'Putting Bokoni on the Historian's Map'. *African Studies* 69(2):229-233.

Wright, J. 2010b. Turbulent times: political transformations in the North and East, 1760s-1830s. In: Hamilton, C., Mbenga, B.K. & Ross, R. (eds) *The Cambridge History of South Africa. Volume1*: *From Early Times to 1885.* Cambridge: Cambridge University Press.

Wobst, M. 1977. Stylistic behaviour and information exchange. In: Cleland, C. (ed) *Papers for the Director: research essays in honor of James B. Griffin*. Michigan Anthropological Papers 61. Ann Arbor: Museum of Anthropology, University of Michigan. 317-42.

Wobst, M. 1978. The archaeo-ethnology of hunter-gatherers or the tyranny of the ethnographic record in archaeology. *American Antiquity, 43:303-309.*

Wobst, H.M. 1999. Style in archaeology or archaeologists in style. In: Chilton, E. (ed) *Material Meanings. Critical Approaches to the Interpretation of Material Culture.* Salt Lake City: University of Utah Press. 118-32.

Wood, M. 2005. *Glass beads and pre-European trade in the Shashi-Limpopo region*. Unpublished master's dissertation. Johannesburg: University of the Witwatersrand.

Appendix I

Faunal report

Faunal Report on TSH and SK

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Introduction

Please refer to Mr Jordaan's report where the cultural artefacts found are discussed in detail.

Excavation methods and methods used in faunal analysis

A mesh size of 5 mm was used at the excavations.

The faunal material was sorted into identifiable and non-identifiable fragments; the analysis of the identifiable material was done with the help of the Transvaal Museum's Archaeozoology Department and the author's private skeletal collection. The analysis was done in accordance with international standards, as promoted by ICAZ (International Council of Archaeozoology)

Where applicable, age class determination was done according to Voigt (1983) and Plug (1988). The quantification methods MNI, NISP and QSP used were applied as set out by Plug (1988).

Complete bones and worked bones were measured using a calliper with an accuracy of 0.1mm as part of the standard archaeological analytical methodology; these measurements are not included here, but are being kept on file. The measurements were taken using the standard points of measurements described by Von den Driesch (1976) and Peters (1986)

Weathering was estimated by way of comparison to the rest of the sample analysed.

Faunal sample

Unidentifiable

The total sample of bones that could not be identified numbered 7 155 and had a mass of 5 108 g.

Identifiable

The total sample bones that could be identified numbered 518 and had a mass of 1 615.4 g. All the species that were identified occur and did occur in the region.

A variety of 10 species were identified. Most commonly found was *Bos taurus* (cattle), followed by *Ovis aries* (sheep) and *Aepyceros melampus* (impala). Species like *Equus burchelli* (zebra) and *Achatina* sp (giant land snail) did yield higher numbers of identifiable fragments, but due to the fragmentation value of the teeth in the case of the *Equus* and the shell of the *Achatina* sp it would be inaccurate to list them among the most commonly found.

The excavation that produced the largest identifiable sample (285 specimens) was SK17A C7D10, Unit 1. TSH 1 A, Unit 2, produced the largest variety of species – eight in all.

Age classes identified

Juvenile individuals were identified throughout the site.

Taphonomy

Of the total number of unidentifiable specimens found, a total of 338 bones were burnt, one was weathered and 15 displayed cut marks.

Of the total number of identifiable specimens, 19 bones were burnt, three were weathered and seven displayed cut marks.

Worked bone

A total number of 14 worked bones were identified:

One in TSH 1 A Unit 2 L3

Two in SK17A C7D10 Unit 1 L2/1 Bone Cluster Provenance

Four in SK17A C7D10 Unit 1 L3

Five in SK17A C7D10 Unit 1 L3 2013/06/17

Two in SK17A C7D10 Unit 1 L3/1

For full measurements and descriptions, please refer to the measurements document attached.

Sex and pathology

None of the bones presented for analysis exhibit any pathology of any kind. One pubis fragment in TSH 1 A Unit 2 L 5 of a cf *Ovis aries* could be identified as male.

Discussions and conclusions

Although a relatively small faunal collection was presented for analysis, some conclusions can be drawn from the material. It appears that domestic animals were the main source of protein. The presence of impala indicates that hunting was practised on the site. As no other *Bov* III species were identified, it can be safely assumed that the remains that could only be identified to this size class originated from cattle. The limited species list could point to a short-term occupation of the terrain, but also to the choice of sites for excavation. The amount of worked bone originating mainly from bone needles point to a long-term occupation as the processing of animal skins and the preparation required before they can be sewn into clothes or utility items is a lengthy process.

The solitary first phalanx of the lion identified in SK17A C7D10 Unit 1 L3 is somewhat confusing as lions were not normally hunted or eaten. No explanation for its presence can be offered. As it is an isolated bone, any conclusions that could be drawn would be speculative at best. The same holds true for the single bi-valve identified.

The large number of fresh breaks, chop and cut marks on the identifiable and non-identifiable material is worrying, as many of the breaks could not be refitted. The fresh breaks on the identifiable material are even more confusing as this indicates that the elements were probably complete at the time of excavation. Many of the identifiable bones could not be reconstructed from the non-identified material presented for analysis. This indicates that the excavation, sieving, sorting and retrieval of skeletal material from the excavation units were problematic.

The presence of one solitary rodent bone in TSH 1 A Unit 2 could normally indicate an environmental problem during the time when the site was occupied. Taking into account the 5 mm sieves used and the relatively large pieces of bone presented for analysis it again points to a problem with the excavation, sieving, sorting and retrieval of the skeletal material from the excavation units.

In the light of the above two paragraphs it seems likely that small animals of Bov 1 size and smaller would have been lost. It is also possible that the smaller complete and fragmented skeletal elements from the identified species were lost. This might also hold true for the missing pieces which, if reconstructed, might have provided complete bones and teeth for analysis.

Acknowledgements

I wish to thank Mr Jordaan for the opportunity to analyse this terrain.

Reference list

Meester, W., Rautenbach, I.L. & Dippenaar, N.S. 1986. *Classification of southern African mammals*. Transvaal Museum monograph No 5, Pretoria.

Smithers, R.H.N. 1983. *The mammals of the Sub-Saharan Africa*. University of Pretoria.

Von den Driesch, A. 1976. *A guide to the measurements of animal bones from archaeological sites.* Peabody Museum Bulletin 1. Massachusetts: Harvard University.

Appendix II: Radiocarbon report

DirectAMS | Radiocarbon Dating Services

Dr. Ugo Zoppi
Director, Accelerator Mass Spectrometry Lab

07 December 2013

Gerhard Jordaan
University of Pretoria
NO 188 Botanica 122 Pitts Ave
Weavind Park, Pretoria 184
South Africa

Dear Gerhard,

Your samples submitted for radiocarbon dating have been processed and measured by AMS. Following results were obtained:

DirectAMS code	Submitter ID	δ(^{13}C)	Fraction of modern		Radiocarbon age	
		per mil	pMC	1σ error	BP	1σ error
D-AMS 004213	SK17A01	-20.4	84.69	0.30	1335	28
D-AMS 004214	SK17A02	-24.0	85.23	0.29	1284	27
D-AMS 004215	TSH1A01	-25.8	84.34	0.33	1368	31
D-AMS 004216	TSH1A02	-19.5	82.61	0.30	1535	29
D-AMS 004217	TSH1A03	-20.2	82.86	0.29	1510	28

All results have been corrected for isotopic fractionation with δ^{13}C values measured on the prepared graphite using the AMS spectrometer. These can differ from δ^{13}C values of the original material, if fractionation occurred during sample graphitization or AMS measurement.

Best regards,

Ugo Zoppi

550 17th Avenue, Suite 550, Seattle WA 98122
Tel (206) 258-8857 – Fax (206) 281-5916 – www.directAMS.net

Appendix III: XRF Results from TSH1A

Sample #	Location	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
1	Layer 1	604,05	68,65	214,05	42,04	5,08	1	10,27	3,1	34	1,03	43,02	4,72	37,67	7,75	39,16	15,77	41255,37	341,56	4898,84	698,37	16653,38	249,12	19929,88	231,07	89682,29	1044,79	1804,97	132,4	358763,09	1440,72	6588,7	1810,74
2	Layer 1	624,13	71,02	234,68	43,45	5,75	1	11,11	3,08	33,69	1,04	47,09	4,94	21,41	7,69	39,64	16,33	58657,26	389,52	4025,29	726,17	16339,49	261,29	1274,1	202,92	101500,14	1123,94	1525,96	124,117	330343,81	1380,57	7603,14	1824,83
3	Layer 1	485,22	68,81	186,75	42,47	6,55	1	11,37	3,05	34,67	1,03	29,75	4,54	17,94	7,67	27,24	25,24	36098,28	315,82	2536,19	552,32	11513,55	198,05	15973,53	195,5	92239,5	1033,69	1290,32	129,52	363046,09	1399,53	5312,75	1721,79
4	Layer 1	563,08	73,31	197,69	44,81	3,2	1	10,34	3,24	33,97	1,06	42,58	5,01	17,07	11,82	158,58	18,33	44208,78	348,59	2827,99	640,54	14361,09	234,75	18254,2	221,85	124020,58	1314	2041,29	130,49	332925,99	1353,48	8968,66	1892,33
5	Layer 1	661,9	72,59	257,2	44,53	6,3	1	12,32	3,14	27,26	1	50,01	5,03	21,85	7,89	84,36	17,13	59990,65	385,23	4182,12	77,32	16117,77	262,59	13518,14	211,04	113489,74	1238,31	1928,73	130,39	338990,77	1383,05	7141,95	1899,83
6	Layer 1	567,47	67,69	227,54	41,74	9,08	1	11,78	3,02	39,49	1,06	49,31	4,82	15,11	7,37	<LOD	35,03	42765,97	323,78	2995,66	556,22	9880,2	184,57	17579,68	201,81	101014,04	1060,28	1987,13	123,21	337354,89	1285,33	4329,24	1644,65
7	Layer 1	532,81	67,77	223,32	41,98	5,75	1	13,82	3,13	28,95	1	46,05	4,77	25,25	7,53	51,25	18,39	43745,58	328,13	3288,07	611,75	9580,38	188,35	14920,09	196,36	96662,43	1055,16	1648,59	129,16	368327,03	1415,93	6349,36	1702,88
8	Layer 1	477,36	66,09	169,94	40,6	3,32	1	10,46	2,91	34,91	1,01	27,94	4,31	19,61	7,35	36,69	20,63	45495,21	321,07	2356,17	603,89	10547,94	200,76	17470,28	211,53	102968,79	1103,29	1590,5	127,69	35312,97	1338,4	5534,83	1722,76

Sample #	Location	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
9	Layer 1	752,61	76,73	298,52	47,14	11,48	1,04	17,36	3,55	36,69	1,13	64,74	5,56	47,01	8,68	122,88	18,18	61157,82	436,97	8419,94	978,41	22032,6	329,52	20794,54	275,95	102988,5	1305,94	3298,19	151,67	353728,32	1584,2	12973,17	2306,06
10	Layer 1	754,13	79,69	287,8	48,75	12,11	1,06	17,28	3,57	32,12	1,09	61,66	5,63	55,13	9,05	77,13	18,21	6614,45	456,14	8399,6	1023,85	18907,58	312,43	18157,94	270	105036,54	1302,43	2926,15	146,05	337680,86	1584,41	8100,33	2216,5
11	Layer 2	699,14	73,1	272,1	44,91	7	1	14,93	3,43	22,91	1	51,95	5,2	59,39	8,58	51,31	16,84	56897,53	421,17	7699,01	928,59	25244,27	342,763	13067,34	221,35	111883,56	1344,34	2971,77	149,59	364691,04	1654,56	10985,44	2181,77
12	Layer 2	541,53	69,22	199,1	42,45	3,71	1	11,17	3,09	24,42	1	35,25	4,59	19,83	7,56	63,42	16,18	40843,2	345,16	4762,59	695,9	15028,76	227,81	13176,04	189,08	77397,34	938,29	1917,86	120,28	316446,11	1376,59	4806,75	2339,54
13	Layer 2	552,37	68,22	244,61	42,31	6,32	1	14,42	3,19	30,23	1	45,75	4,84	21,27	7,57	54,24	21,06	43097,04	336,79	3015,12	611,01	9294,02	186,38	18783,5	220,45	96902,28	1062,36	1492,68	129,12	365273,74	1449,87	4208,79	1700,08
14	Layer 2	559,76	68,52	241,39	42,31	5,1	1	11,26	3,17	24,45	1	46,73	4,86	24,87	7,58	27,5	15,81	42980,98	334,04	3199,1	657,68	11634,81	211,7	16358,82	209,87	93937,07	1051,12	1169,38	131,21	375081,59	1443,96	3818,7	1719,31
15	Layer 2	616,78	70,7	236,29	43,38	11,52	1	14,26	3,22	42,41	1,13	55,93	5,1	31,92	7,86	54,47	16,42	50983,09	377,2	6288,79	816,85	16690,62	265,35	19176,12	243,77	94406,13	1116,16	2027,96	135,92	353327,39	1468,77	6491,9	1922,19
16	Layer 2	549,26	66,94	207,69	41,09	4,8	1	8,48	3,05	27,46	1	36,37	4,56	17,89	7,35	35,1	18,19	38970,1	336,79	4514,85	675,66	1519,07	237,3	14444,36	194,76	91581,56	1041,16	18868,88	130,63	358486,14	1452,65	7412,83	1754,45

Sample #	Location	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
17	Layer 2	616,68	75,68	232,68	46,35	6,17	1	10,57	3,27	27,43	1,03	56,46	5,38	35,25	8,43	57,68	17,57	76251,07	448,07	4810,55	909,15	19059,87	309,03	13328,06	229,04	112799,66	1294,64	1647,37	131,33	328747,82	1407,1	9987,4	2099,83
18	Layer 2	661,56	71,67	243,31	43,73	7,3	1	11,26	3,3	41,45	1,15	46,69	4,95	26,03	7,89	102,53	17,17	49639,76	375,17	4975,04	768,7	14963,33	249,24	22250,48	254,92	104430,78	1189,65	2447,46	138,03	358188,39	1479,2	6404,72	1915,68
19	Layer 2	593,04	67,28	201,56	41	4,28	1	10,29	2,98	29,44	1	32,65	4,48	44,49	7,86	40,15	18,38	52018,88	343,15	3561,77	703,05	13812,1	233,32	12270,9	191,06	99733,53	1097,18	2119,36	126,58	330407,32	1311,84	7430,93	1781,22
20	Layer 2	518,06	67,6	244,09	41,84	5,9	1	13,29	3,23	29,17	1	44,09	4,76	28,07	7,64	60,05	16,16	42698,1	337,12	3200,35	690,69	19117,64	270,05	19302,42	228,09	99737,27	1133,68	1599,1	132,09	347024,48	1374,12	5800,62	1857,76
21	Layer 2	736,21	85,17	269,25	51,89	8,5	1	16,16	3,75	21	1	59,42	5,82	38,34	9,24	119,21	22,66	66687,39	505,67	9471,43	1068,52	21934,41	339,35	13451,23	243,75	101084,18	1277,05	3093,87	142,75	313727,01	1648,68	9243,33	2242,37
22	Layer 2	711,33	76,58	244,6	46,63	5,85	1	12,61	3,28	24,82	1	60,89	5,45	46,15	8,6	94,78	17,85	71346,88	437,02	4540,33	849,9	19012,83	304,45	12456,73	218,71	118771,06	1356,43	1862,82	137,39	341904,53	1450,86	8285,89	2105,84
23	Layer 3	513,18	64,02	190,3	39,33	3,62	1	8,76	2,86	24,67	1	22,69	4,1	17,4	7,1	52,19	15,32	32603	311,77	3865,88	612,92	12186,74	198,63	13127,52	178,47	84500,91	980,08	1281,93	135,607	398911,71	1552,13	6025,68	1690,11
24	Layer 3	793,34	82,83	243,06	50,03	4,9	1	9,9	3,47	21,92	1	71,25	6,06	68,2	9,68	150,13	19,96	98903,65	516,89	5699,62	1055,46	28970,96	405,33	7983,3	211,94	126214,12	1510,21	1618,95	135,38	310265,02	1371,72	13118,84	2436,34
25	Layer 3	669,61	76,18	205,11	46,11	3,95	1	8,59	3,29	21,92	1	54,01	5,4	37,04	8,55	76,47	17,95	82003,46	476,22	5189,57	955,05	25387,29	363,67	7716,6	196,27	119887,12	1412,67	1427,08	138,3	344782,06	1489,08	12759,53	2268,03
26	Layer 3	519,04	69,43	190,99	42,51	11,85	1	10,36	3,12	40,8	1,11	43,69	4,78	29,35	7,85	115,82	17,03	43430,91	352,56	5345,25	733,93	12161,62	214,17	16047,15	212,32	84202,35	986,02	1491,23	130,42	362245,09	1476,59	4576,76	2018,06

Sample #	Location	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
27	Layer 3	578,37	67,78	209,41	41,54	3,39	1	8,93	3,06	23,96	1	31,09	4,45	22,13	7,55	84,09	16,36	39022,89	336,29	4679,77	680,87	15613,46	232,22	13313,29	187,2	82990,82	952,93	1846,46	120,86	318001,16	1363,95	7345,08	1682,21
28	Layer 3	486,96	65,14	229,02	40,38	5,83	1	13,6	1,1	30,03	1	42,18	4,64	14,38	7,21	60,4	15,74	35934,36	320,92	2679,15	626,8	12199,63	207,94	18233,76	214,45	99747,62	1090,25	1547,75	130,7	368924,36	1486,85	6153,34	1720,15
29	Layer 4	482,9	66,86	164,51	40,95	4,72	1	13,41	3,1	31,16	1	33,67	4,49	14,58	10,21	46,84	15,9	39278,45	331,91	3414,31	600,03	10072,95	181,86	11860,75	172,16	83128,24	901,5	1023,68	108,89	295706,77	1317,03	4019,77	1765,17
30	Layer 5	652,53	71,78	260,07	44,1	10,91	1	12,31	3,24	40,5	1,12	49,55	5,02	40,03	8,04	45,47	16,45	53222,03	374,02	6325,53	884,89	16569,26	271,28	15648,75	230,73	100628,65	1186,54	1963,34	138,56	354749,77	1474,21	7715,36	1984
31	Layer 6	671,23	73,71	261,13	45,15	9,58	1	15,89	3,48	38,47	1,12	55,77	5,28	72,34	8,87	67,12	17,17	5641,89	437,31	7872,28	939,56	26978,84	361,41	16789,6	245,64	96764,42	1244,39	2909,47	150,61	361098,08	1634,78	12062,51	2249,59
32	Layer 7	418,92	62,27	139,1	38,1	3,58	1	11,39	2,88	32,12	1	25,94	4,15	11,57	8,8		22,78	30659,78	299,86	2232,69	528,52	18599,42	234,14	14884,79	178,81	91309,26	955,79	1716,55	124,13	342297,83	1349,85	5457,14	1631,48
33	Layer 8	535,12	65,43	215,2	40,22	3,31	1	12,27	3,04	28,53	1	27,51	4,31	15,54	7,24	66,02	15,8	34203	317,74	3991,69	663,52	13539,29	215,83	16050,26	201,06	96755,9	1085,29	1829,33	136,57	380383,55	1486,33	5617,55	1750,47
34	Layer 9	365,98	63,58	164,37	39,36	7,91	1	14,55	3,14	33,04	1	44,75	4,64	16,8	7,21	41,26	15,38	27682,1	307,29	3796,39	618,46	12211,37	194,48	14434,64	183,99	80160,56	897,94	1149,72	118,85	340215,66	1432,2	4866,77	1544,87
35	Layer 10	496,58	63,54	170,86	38,82	3,14	1	9,57	2,91	29,47	1	25,89	4,2	15,81	10,62	49,21	15,38	35619,49	311,56	2433,04	588,41	10491,12	187,27	15952,58	192,64	85432,83	954,54	1168,36	129,64	393112,97	1466,61	4398,83	1616,85
36	Layer 11	625,02	70,99	224,96	43,25	10,15	1	14,3	3,26	54,41	1,26	49,33	4,97	25,14	7,84	85,16	16,88	47425,87	372,01	5788,28	825,02	13868,62	240,27	19695,59	246,23	96489,04	1110,94	1727,06	131,16	343557,31	1477,24	4962,09	1840,84

Sample #	Location	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
37	Layer 4	578,8	69,88	225,5	42,79	5,7	1	14,42	3,27	26,02	1	41,8	4,81	34,28	7,89	43,12	16,27	47667,44	380,64	5956,36	840,26	16816,95	264,88	12547,39	206,12	101730,91	1213,31	1935,98	147,68	395018,62	1697,58	8079,59	1993,59
38	Layer 4	605,44	71,9	224,94	43,89	5,94	1	15,01	3,33	31,75	1	41,06	4,84	29,25	7,98	134,17	17,5	52149,75	381	4148,29	783	17809,47	271,14	12901,64	203,81	94598,59	1102,37	2740,04	135,08	346352,93	1466,75	8196,21	1887,26
39	Layer 4	805,63	81,35	256,15	49,16	4,62	1	9,88	3,43	21,48	1	66,88	5,88	60,62	9,38	125,51	19,25	93779,01	547,35	6441,78	1092,09	28117,01	405,48	6974,82	207,73	128938,46	1565,37	1438,51	144,08	347268,94	1596,7	15230,88	2498,26
40	Layer 4	550,52	65,55	210,5	40,15	3,59	1	11,41	3,02	30,17	1	4,33	4,33	16,75	8,37	52,25	18,06	36806,09	325,92	3549,42	654,55	12451,78	207,08	14485,1	192,28	91078,74	1022,25	1669,95	132,12	376949,03	1511,37	5004,07	1689,89
41	Layer 4	590,65	66,06	209,77	40,34	2,75	1	9,87	2,96	25,27	1	4,25	4,25	14,26	9,99	47,4	15,57	31437,57	315,24	4185,11	626,84	12309,54	198,77	1413,37	187,23	84064,49	982,32	1434,41	135,63	394038,69	1534,59	6661,76	1719,14
42	Layer 4	679,17	74,24	258,09	45,34	5,79	1	10,21	3,18	29,53	1	5,13	5,13	35,71	8,17	108,29	17,48	62425,96	415,28	4319,67	850,28	23528	328,07	9679,96	194,08	108464,16	1281,57	1782,28	139,33	354895,43	1523,7	11575,36	2113,61
43	Layer 4	410,96	62,3	1435,91	38,11	3,72	1	11,12	2,93	50,08	1,14	4,07	4,07		9,58		24,9	28210,54	292,83	2099,25	522,66	14803,77	211,86	22113,05	214,87	98958,48	1070,17	2192,55	130,98	357940,69	1354,35	5061,53	1685,01
44	Layer 5	470,86	66,84	154,09	40,74	4,16	1	12,99	3,17	28,99	1	4,51	4,51	13,09	8,62	113,27	16,59	37063,19	325,14	3433,66	631,91	11334,42	191,1	11348,59	169,32	82236,83	900,6	2402,9	119,73	322837,43	1350,12		2272,26
45	Layer 5	542,44	66,42	219,48	40,88	4,15	1	11,4	3,07	26,84	1	4,37	4,37	25,18	7,49	59	15,88	37642,61	337,02	4665,82	708,06	14601,95	229,51	14449,55	199,53	97477,11	1136,59	1421,75	143,33	405747,16	1634,48	8710,09	1885,61
46	Layer 5	460,44	64,51	195,42	39,87	5,37	1	15,28	3,04	33,16	1	4,53	4,53	20,95	7,21	39,25	20,01	31269,1	304,34	3455,14	613,18	10487,56	184,127	16890,34	198,78	99812,61	1095,25	1483,52	138,58	405943,19	1497,27	5277,95	1718,72

Sample #	Location	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
47	Layer 5	563,21	67,59	203,94	41,38	4,09	1	13,73	3,19	32,33	1,05	32,16	4,47	16,71	16,71	38,96	21,27	37472,58	330,84	4286,9	648,82	14942,35	222,37	14609,1	190,23	94470,15	1051,87	1731,79	129,34	358068,71	1455,03	6082,3	1720,15
48	Layer 5	752,77	78,24	296,41	47,75	11,13	1,07	21,39	3,79	32,85	1,12	70,23	5,57	58,08	58,08	112,1	18,41	65951,04	480,42	9573,01	1124,37	28348,3	392,71	14260,64	252,31	113868,49	1454,77	3633,14	159,36	360758,4	1739,22	14292,71	2459,43
49	Layer 5	533,82	68,41	220,42	42,31	3,69	1	12,42	3,08	27,21	1	29,23	4,47	19,24	19,24	100,24	16,73	38365,42	341,43	4298,27	629,56	11296,8	194,25	11830,23	175,65	88659,45	964,21	1302,35	118,04	335738,32	1443,62	5965,38	1587,79
50	Layer 5	761,47	79,85	283,57	48,7	11,6	1,09	18,51	3,81	30,98	1,11	73,45	5,97	105,78	105,78	130,35	19,12	74427,4	504,44	9580,05	1137,04	29871,15	408,44	14294,44	255,74	115269,22	1450,64	3174,16	149,17	332391,3	1611,14	15929,88	2465,71
51	Layer 5	495,33	63,47	180,81	38,94	4,68	1	12,11	2,97	42,18	1,06	31,72	4,34	18,42	18,42	50,56	15,41	37446,6	309,08	2330,97	577,31	12207,87	203,46	14747,85	188,18	99344,18	1086,48	1253,61	131,86	380588,2	1428,91	7147,45	1732,9
52	Layer 5	624,25	70,55	251,07	43,27	5,39	1	17,98	3,35	26,28	1	46,21	4,91	32,47	32,47	52,74	16,42	50552,88	371,89	5590,98	816,75	15131,99	245,18	12152,67	199,77	109658,96	1226,91	2294,71	139,93	372104,28	1514,35	7380,6	1901,37
53	Layer 5	833,56	81,91	331,97	50,09	11,24	1,1	18,14	3,79	31,47	1,12	76,38	6,08	101,26	101,26	144,87	19,4	76796,12	490,19	9800,21	1147,35	33932,63	428,28	14217,92	252,49	105792,16	1410,54	3662,29	155,39	338473,73	1542,75	18709,95	2612,59

Appendix IV: XRF Results from SK17A

Sample #	LOCATION	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
1	Layer1	523,67	63,47	176,85	38,9	6,34	1	11,21	2,87	53,03	1,15	24,67	4,15	24,71	9,68		21,8	27843,95	289,94	1971,75	464,22	6130,9	144,16	25711,01	231,69	93788,67	985,76	5896,94	136,58	337099,1	1287,96	3827,12	1825,54
2	Layer2	528,3	69,69	210,12	43,07	8,54	1	15,48	3,26	28,19	1	40,21	4,82	39,54	8,1	63,18	16,65	51406,01	372,49	5851,96	798,02	14325,97	241,87	15180,41	218,29	104348,4	1189,18	13942,62	185,43	345224,9	1429,52	5625,07	1949,39
3	Layer2	420,93	62,65	176,44	38,92	6,7	1	11,54	2,82	60,23	1,21	28,56	4,21	46,57	8,2	42,05	21,82	33284,06	289,98	2134,85	503,15	7059,38	158,41	21717,77	218,43	105176,5	1066,9	7542,24	138,22	306414,2	1198,37	7261,16	1625,26
4	Layer2	691,94	76,43	278,24	47,23	8,78	1	15,18	3,53	29,72	1,07	55,76	5,44	49,19	8,88	127,64	18,56	68446,59	464,14	9533,15	1001,59	20956,19	320,44	14438,46	240,4	87112,76	1109,22	5026,7	140,55	290571,4	1431,6	12999,2	2126,96
5	Layer3	464,56	62,59	176,72	38,64	4,21	1	9,3	2,81	65,65	1,26	20,8	4,08	41,49	8,99		21,61	28980,78	290,91	1695,57	463,72	6140,38	148,51	29150,49	250,63	91224,26	956,79	12255,44	156,37	305965,7	1200,88	2660,29	1838,02
6	Layer3	464,56	62,59	176,72	38,64	4,21	1	9,3	2,81	65,65	1,26	20,8	4,08	41,49	8,99		21,61	28980,8	290,91	1695,58	463,72	6140,38	148,51	29150,5	250,63	91224,3	956,79	12255,4	156,37	305966	1200,88	2660,3	1838,03
7	Layer3	512,36	66,83	175,3	41,01	4,51	1	11,68	2,99	30,73	1,03	29,38	4,36	11,5	12,11	78,22	16,16	41763,4	319,85	2885,26	576,91	9585,49	187,06	17767,1	208,75	99568,5	1084,91	8417,82	154,78	354433	1336,05	5220,63	2029,02
8	Layer3	434,26	61,09	172,54	37,83	4,32	1	10,85	2,78	44,63	1,06	24,39	4,09		10,88		23,87	27822,9	280,12	1784,56	433,58	6688,13	140,51	16762,9	179,48	85244,3	859,37	6364,17	125,19	303767	1193,6	3090,68	1613,52

Sample#	LOCATION	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
9	Layer3	462,34	60,69	184,26	37,55	5,65	1	10,59	2,79	63,3	1,23	22,4	4,02		11,53	49,08	18,95	25007,6	278,28	1731	441,76	6942,47	149,04	26502,1	231,22	97942	1053,24	9401	157,18	359556	1316,11	5824,12	1706,61
10	Layer3	417,52	60,99	153,9	37,69	5,38	1	10	2,74	53,13	1,13	22,14	4,02	53,85	9,58		24,22	25619,7	279,05	1750,32	457,55	6199,87	144,9	23455,3	221,91	97941	1034,57	10432,7	159,17	354021	1339,41	4566,22	1631,25
11	Layer3	474,72	64,81	184,38	39,94	9,92	1	10,77	3,08	32,51	1	37,15	4,55	57,01	8,03	62,88	15,91	41298,6	340,43	6214,83	771,91	11437,3	210,75	19855	238,53	95262,2	1116,64	15919,3	195,96	342980	1440,78	4528,72	1913,98
12	Layer3	568,65	74,82	210,69	45,89	9,26	1,02	8,85	3,26	39,04	1,12	41,36	4,98	20,54	8,14	64,29	17,4	50900,3	384,96	5300,19	766,83	11078,5	217,41	20505,5	248,42	104591	1193,58	8059,23	155,98	314905	1388,93	6125,02	1953,6
13	Layer3	369,3	60,49	130,91	37,4	4,84	1	8,81	2,78	53,54	1,15	16,5	3,89		10,76		22,28	26727,3	282,26	1822,43	467,91	6741,38	148,86	25216,2	228,57	95866,3	1014,48	13409,3	168,37	337408	1270,83	3907,88	1634,49
14	Layer3	462,97	62,96	183,74	38,92	6,41	1	8,85	2,96	30,33	1	25,56	4,19	15,47	12,15		31,01	33975	318,17	3351,27	571,61	8248,17	170,56	19710,8	218,09	103126	1106,18	7486,6	151,88	354080	1464,95	5383,46	1706,8
15	Layer3	640,77	74,04	244,13	45,51	7,39	1	12,68	3,21	31,91	1,06	44,49	5,03	50,9	8,55	74,9	17,3	65003,9	414,44	3988,6	800,8	17882,4	285,8	15244,7	229	111726	1276,06	13141,9	180,26	313757	1343,78	8187,49	2082,88
16	Layer3-1	477,33	60,7	171,67	37,41	4,73	1	9,09	2,76	52,91	1,13	20,91	4,02	33,59	9,85		23,13	27506,3	283,92	2174,09	462,81	6921,24	151,05	22978,9	219,28	93240,2	976,63	6646,82	137,37	331251	1288,18	5220,83	1570,15
17	Layer3-1	437,54	59,56	158,49	36,77	3,36	1	8,85	2,72	35,48	1	18,05	3,9		13,26		20,72	22398,2	273,74	1938,62	413,31	6120,23	129,98	16416,3	173,13	80088,9	865,94	9094,89	151,48	378321	1375,32	2935,47	1714,17
18	Layer3-1	516,97	64,29	180,14	39,47	7,09	1	10,2	2,99	28,29	1	23,28	4,16	19,14	8,3		22,44	33265,4	314,64	3176,83	574,39	7717,33	165,97	18249,2	212,4	96795,7	1052,25	11531,4	168,58	356349	1474,62	5154,3	1957,65

Sample#	LOCATION	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
19	Layer3-1	637,13	71,49	238,41	43,94	10,38	1	12,06	3,25	36,37	1	39,64	4,84	39,2	8,15	78,11	16,98	58955,4	404,04	6556,55	847,57	15180	259,15	17292,3	239,41	105005	1199,64	9216,68	161,13	319153	1419,35	6460,72	1967,4
20	Layer3-1	656,46	71,01	247,35	43,6	5,26	1	11,69	3,17	26,8	1	38,26	4,78	49,07	8,3	144,38	17,58	58042,4	382,72	3423,52	697,14	13740,4	242,09	13571,2	204,87	99199	1146,67	11672,8	173,16	352262	1397,03	9848,24	1975,84
21	Layer3-1	446,82	61,73	161,36	38,07	4,25	1	9,87	2,78	59,05	1	16,84	3,93		11,65	25,6	19,87	26375,4	281,18	1624	424,86	5514,93	138,05	28147,5	238,59	89464,8	952,27	9746,27	151,33	343063	1254,91	3745,42	1579,73
22	Layer3-1	383,58	59,25	134,85	36,61	4,57	1	9,39	2,71	64,6	1	17,04	3,86		9,3	62	18,61	24735,9	271,88	1625,57	420,36	5470,11	137,38	30553,9	248,89	97379,7	1010,15	5091,84	135,96	359362	1306,77	4777,53	1585,29
23	Layer3-1	523,97	62,58	216,39	38,73	5,74	1	9,08	2,78	62,94	1	36,49	4,36		11,56	26,63	24	33026,2	292,91	1886,86	490,11	7220,69	157,19	21300,2	213,62	109736	1115,3	12153	160,51	327368	1245,41	9428,59	1688,1
24	Layer3-1	410,71	60,85	154,31	37,63	4,91	1	8,58	2,75	53,17	1,13	17,43	3,9		12,62		20,93	25483	277,7	1726,27	447,7	6395,72	144,45	25021,7	224,3	88043,3	949,12	11382,4	159,65	346922	1278,3	4170,72	1844,1
25	Layer3-1	444,84	60,41	175,59	37,43	3,82	1	9,11	2,7	53,28	1,12	14,74	3,82		10,65		20,75	23741	271,35	1647,11	411,09	5722,41	133,23	22156,9	204,89	84520,2	918	5857,55	140,443	366809	1332,34	3830,62	1550,36
26	Layer3-1	457,91	62,79	190,12	38,91	6	1	11,02	2,81	68,4	1,28	26,69	4,16	15,24	8,47		21,53	29852,8	288,83	2105,82	482,71	7382,96	159,91	26901,2	239,86	106876	1113,21	10242,9	157,13	340457	1263,98	6634,41	1708,44
27	Layer3-2	407,81	62,28	155,05	38,55	8,08	1	12,52	2,92	36	1	43,86	4,56		10,38		21,85	39291,5	310,73	3187,16	563,47	8541,87	168,86	13822	180,73	87624,1	913,18	7497,12	133,34	294324	1222,94	3299,12	1733,92
28	Layer3-2	464,51	62	172,48	38,29	7,25	1	13,21	2,87	32,96	1	43,87	4,54	15,15	9,09	64,19	19,71	36996,1	302,6	2954,62	531,88	7630,15	157,31	12802,4	170,82	85216,3	890,4	5524,89	128,02	323950	1275,74	3575,68	1464,92

Sample#	LOCATION	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
29	Layer3-2	443,86	62,78	177,73	38,87	5,85	1	8,66	2,74	69,93	1,29	26,35	4,15		9,74	55,79	15,28	27711,7	284,78	1706,84	442,68	5020,35	137,94	28667	249,3	101183	1072,21	6139,05	143,95	366198	1353,25	8343,73	1696,69
30	Layer3-3	676,05	72,26	248,42	44,26	10,64	1	16,22	3,42	27,49	1	41,32	4,93	39,75	8,25	61,84	16,96	56396,9	391,12	6362,19	837,18	14116,4	250,87	19372,3	250,46	111612	1308,59	9990,83	175,53	359167	1485,78	8827,25	2130,28
31	Layer3-3	463,41	61,91	207,87	38,54	5,43	1	10,32	2,81	68,14	1,28	25,39	4,11	20,1	7,86	37,82	19,2	26832	286,71	2186,78	476,66	7964,19	162,01	26879,2	240,39	96113,6	1025,17	9050,37	149,09	319910	1268,67	6105,8	1657,42
32	Layer3-3	499,91	62,97	203,52	38,95	6,76	1	12,47	2,88	57,68	1,2	31,45	4,27	14,17	10,96	31,17	22,32	34310,5	298,61	2053,14	529,73	9056,63	178,23	23504,7	231,24	115968	1187,31	11450,2	161,32	324767	1263	6892,52	1744,05
33	Layer3-3	522,36	64,32	198,18	39,6	4,66	1	8,28	2,77	99,05	1,53	27,5	4,23	17,28	9,3		23,59	27708,6	293,88	1516,46	452,33	5369,26	153,24	47698,2	340,86	117258	1233,18	7006,38	146,52	327997	1257,99	7548,16	1835,98
34	Layer3-3	346,33	60,3	144,91	37,5	5,87	1	10,02	2,8	57,19	1,18	28,47	4,15	17,98	8,67		21,01	30207,9	285,47	2069,4	470,59	8147,59	163,12	22890,2	218,99	105663	1076,92	8090,07	143,84	329450	1253,76	7034,24	1632,75
35	Layer3-3	468,32	62,15	151,65	38,13	5,34	1	10,32	2,81	56,68	1,17	19,5	4,02		11,32	23,7	19,13	27092,5	283,8	1680,55	461,18	6848,57	152	26113,8	233,55	99453,3	1057,26	12250,2	167,83	358738	1318,15	3760,4	1679,86
36	Layer3-3	451,99	62,18	167,35	38,34	5,8	1	10,28	2,78	73,85	1,33	31,01	4,27	15,99	8,78		25,82	31449,5	290,78	1866,97	487,79	6759,38	157,52	26815,8	243,17	117525	1185,83	7062,91	143,08	334912	1275,75	8597,78	1710,68
37	Layer3-3	443,2	61,82	174,75	38,27	5,22	1	10,79	2,76	51,63	1,12	28,54	4,16		12,75		22,85	30936,2	287,17	2027,87	469,09	6533,58	148,61	21190,4	211,13	102831	1047,5	7304,71	141,63	339379	1283,15	5121,08	1591,29
38	Layer3-3	448,59	61,83	169,17	38,13	4,45	1	11,47	2,81	54,28	1,15	21,41	4,02		9,93	48,28	15,11	26901,3	283,36	1750,23	459,64	6870,23	147,43	22205,5	211,56	96417,5	1010,57	15521,5	175,19	341291	1271,81	5348,51	1632,86

Sample#	LOCATION	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
39	Layer3-3	477,33	61,84	172,54	38,08	767	1	11,72	2,8	54,25	1,16	27,28	4,18	14,77	8,94		23,12	32903,9	293,88	2034,4	486,95	6690,77	154,61	23296,7	226,51	100499	1032,1	6211,48	137,18	338034	1290,51	4684,61	1591,43
40	Layer3-4	451,58	62,33	174,14	38,53	4,31	1	7,11	2,79	56,75	1,18	18,34	3,99	15,27	8,1		24,07	28531,8	286,75	1995,69	479,4	7990,48	165,91	27765,8	244,06	91356,8	977,65	9415,74	148,27	315756	1210,49	4348,9	1620,35
41	Layer3-4	455,89	63,25	171,14	39,1	6,13	1	10,34	2,85	59,57	1,22	27,51	4,24	28,07	9,26		24,35	29418,3	292,98	2215,92	479,44	6342,46	149,49	24778,8	231,94	93576	993,66	8340,79	148,09	346124	1300,91	3642,71	1605,38
42	Layer3-4	403,61	59,83	146,47	37,01	4,82	1	7,52	2,69	52,78	1,12	20,39	3,94	27,6	8,8		20,59	25984,9	274,33	1566,8	408,49	7195,54	148,37	24686,9	219,41	82436,9	899,81	5304,23	134,92	348619	1294,36	3920,41	1544,06
43	Layer3-4	474,45	63,25	170,9	39	4,32	1	9,2	2,79	63,87	1,25	28,4	4,22	47,47	10,5	38,66	17,54	29216,4	289,34	1858,7	441,24	5261,23	137,62	28477,6	244,23	96814,9	1000,73	7393,94	140,44	335652	1263,88	4397,05	1581,78
44	Layer3-4	466,52	60,97	165,94	37,61	4,3	1	9,19	2,76	55,44	1,16	22,12	4,03	35,07	7,94		20,89	27658,2	281,74	1865,7	449,4	7642,71	156,78	24380	222,98	95474,7	1005,23	7182,62	143,61	343896	1275,73	4416,7	1605,19
45	Layer3-4	417,83	62,03	140,06	38,18	3,83	1	8,89	2,8	54,1	1,15	20,23	4,01	19,96	12,51		24,65	30631,4	294,86	2128,79	511,06	7911,46	166,49	24720,6	237,77	94772,6	1010,17	9482,2	151,41	323591	1302,06	3624,56	1623,91
46	Layer3-4	814,57	83,69	319,18	51,31	10,59	1	18,67	3,72	21,84	1,01	66,64	5,88	58,56	9,42	144,52	19,64	81872,3	510,78	10961	1205,56	19815,4	333,98	14941,6	269,03	121385	1484,99	9846,78	178,2	31788,2	1535,62	9145,44	2426,7
47	Layer3-4	449,82	61,3	182,21	38,02	5,23	1	14,44	2,85	51,43	1,12	20,21	3,98	39,1	9,01	27,79	22,85	29226,9	284,63	1880,91	471,95	7693,36	158,78	23082,7	220,5	102668	1079,72	8831,13	154,2	358022	1331,8	5300,8	1673,54
48	Layer3-4	380,35	61,09	139,56	37,83	4,58	1	9,41	2,81	60,06	1,21	21,87	4,08	17,63	7,06	33,79	20,09	30297,7	287,83	2022,48	487,48	8177,53	165,87	24871,1	231,06	100078	1056,51	10684,4	157,05	327793	1249,02	5363,99	1676,56

Sample#	LOCATION	Nd	Nd Error	Ce	Ce Error	Nb	Nb Error	Th	Th Error	Rb	Rb Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Al	Al Error	P	P Error	Si	Si Error	Mg	Mg Error
49	Layer3-4	450,29	62,33	161,13	38,41	4,76	1	11,67	2,85	59,87	1,21	24,3	4,15		10,16	44,15	15,2	27261,9	286,3	1592,29	445,17	6663,09	153,2	28568	249,39	103213	1101,7	7906,15	155,23	376847	1365,58	5255,02	1719,42
50	Layer3-5	515,8	64,5	195,82	39,72	6,64	1	13	2,84	89,86	1,47	33,6	4,36	24,94	7,28	67,62	19,95	35390,7	302,14	1745,09	522,81	6171,78	164,67	36896,5	300,6	124753	1314,53	12161,8	168,95	329905	1253,27	12778,7	1954,81
51	Layer4	514,51	64,72	158,52	39,57	4,55	1	6,68	2,87	23,93	1	17,76	4,01	21,74	7,24	26,63	21,93	35878,5	310,41	3581,25	601,36	9945,72	182,82	14107,1	185,13	97445,7	1022,94	11126,3	156,61	320449	1286,45	4597,32	1626,85
52	Layer4	688,75	71,7	245,59	43,87	10,44	1	13,89	3,28	33,86	1,05	56,54	5,17	68,89	8,61	61,89	16,72	56512,3	406,97	7514,05	875,36	18928,2	290,34	15647,7	231,58	96417,9	1170,4	7666,68	161,5	343890	1502,95	8990,97	2060,61
53	Layer4	474,58	61,83	182,54	38,16	6,19	1	12,69	2,84	70,05	1,3	29,95	4,23	43,48	9,16		28,51	29080,2	290,09	1965,36	479,21	8144,16	164,97	25795,9	235,11	104924	1090,76	6785,8	140,98	330154	1268,57	8119,92	1682,55
54	Layer4	612,45	71,68	241,23	44,11	10,11	1	9,5	3,17	29,73	1,01	47,76	4,96	21,31	7,75	67,22	16,67	52957,6	388,03	5205,8	777,5	11799,2	223,6	16226,5	226,72	109833	1205,59	7340,65	152,24	332602	1465,16	5792,23	1864,86
55	Layer4	497,37	66,46	161,36	40,68	5,96	1	11,83	3,03	42,26	1,09	27,53	4,31	40,76	9,32		35,3	34869,1	310,11	2529,38	532,67	9703,94	179,61	179,61	18830,3	96382,9	1009,75	14618,6	167,26	286160	1197,38	3088,19	1623,72
56	Layer4	472,37	61,94	161,08	38	2,35	1	7,8	2,81	34	1	21,45	4	20,14	8,45		21,1	25777,3	282,89	1760,31	440,74	9033,75	160,94	160,94	18996,5	93913,8	953,39	5510,26	130,03	330206	1273,16	4046,42	1483,41
57	Layer4	636,35	73,48	275,79	45,48	7,13	1	15,79	3,28	31,86	1,04	42,68	4,95	50,31	8,45	60,14	16,92	51598,8	376,45	3780,86	729,82	16198,9	259,86	259,86	14757,7	114755	1270,52	9400,52	163,71	331891	1409,87	7346,51	1958,46
58	Layer4	460,63	61,66	188,01	38,21	10,13	1	11,03	2,87	36,43	1	34,87	4,34	14,32	6,96		22,02	30917,7	291,85	2583,59	498,02	9224,18	164,57	164,57	11944,9	92581,3	970,54	4821,56	133,1	346848	1350,2	4598,79	1791,17
59	Layer4	526,19	64,28	207,7	39,67	7,76	1	14,09	3,04	39,9	1,05	40,66	4,56	42,98	12,43	42,92	28,86	34856,3	304,77	2723,61	552,21	10389,7	189,38	189,38	21682,2	100718	1055	3590,91	127,5	328503	1292,58	6017,09	1643,49
60	Layer4	425,02	63,38	159,48	39,17	7,61	1	13,37	3	37,58	1,01	39,18	4,48	35,64	8,41		24,87	34564,6	300,35	2987,55	557,1	10578,1	187,97	187,97	17802,4	102532	1061,55	3872,28	128,48	330237	1301,09	5995,69	1625,91