Interconnections

Glass beads and trade in southern and eastern Africa
and the Indian Ocean – 7th to 16th centuries AD

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ABSTRACT

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Glass beads comprise the most frequently found evidence of trade between southern Africa and the greater Indian Ocean between the 7th and 16th centuries AD. In this thesis beads recovered from southern African archaeological sites are organized into series, based on morphology and chemical composition determined by LA-ICP-MS analysis. The results are used to interpret the trade patterns and partners that linked eastern Africa to the rest of the Indian Ocean world, as well as interconnections between southern Africa and East Africa. Comprehensive reports on bead assemblages from several archaeological sites are presented, including: Mapungubwe, K2 and Schroda in the Shashe-Limpopo Basin; Chibuene in southern Mozambique; Hlamba Mlonga in eastern Zimbabwe; Sibudu Cave in KwaZulu-Natal, Kaole Ruins in Tanzania and Mahilaka in northwest Madagascar. The conclusions reached show that trade relationships and socio-political development in the south were different from those on the East Coast and that changes in bead series in the south demonstrate it was fully integrated into the cycles of the Eurasian and African world-system.

Keywords: glass trade beads, glass analysis, LA-ICP-MS, 7th to 16th century Indian Ocean trade, southern Africa, East Africa, Mapungubwe, K2, Schroda, Chibuene, Hlamba Mlonga, Sibudu Cave, Kaole Ruins, Mahilaka.

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*To my ever supportive
children David, Jason & Lydia
and to my grandchildren,
Tristan, Echo and Quentin –
may your stars shine.*

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List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I Wood, M. 2011. A glass bead sequence for southern Africa from the 8th to the 16th century AD. *Journal of African Archaeology* 9 (1), 67–84.
- II Robertshaw, P., Wood, M., Melchiorre, E., Popelka-Filcoff, R.S., Glascock, M.D. 2010. Southern African glass beads: chemistry, glass sources and patterns of trade. *Journal of Archaeological Science* 30, 1898–1912.
- III Wood, M., Dussubieux, L. & Robertshaw, P. In review (*South African Archaeological Bulletin*). Glass finds from Chibuene, a 6th to 17th century AD port in southern Mozambique.
- IV Wood, M. 2009. The glass beads from Hlamba Mlonga, Zimbabwe: classification, context and interpretation. *Journal of African Archaeology* 7 (2), 219–238.
- V Wood, M., Dussubieux, L. and Wadley, L., 2009. A cache of ~5000 glass beads from the Sibudu Cave Iron Age occupation. *South African Humanities* 21, 239–261.
- VI Wood, M. 2011. The glass beads of Kaole Ruins. (After) 2002. The glass beads of Kaole. In Chami, F., Pwiti, G. & Radimilahy, C. (eds) *Southern Africa and the Swahili World*. Studies in the African Past 2, 50–65. Dar-es-Salaam: University Press.
- VII Robertshaw, P., Rasoarifetra, B., Wood, M., Melchiorre, E., Popelka-Filcoff, R., Glascock, M. 2006. Chemical analysis of glass beads from Madagascar. *Journal of African Archaeology* 4 (1), 91–109.

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1. INTRODUCTION

1.1. Overview of the thesis

This thesis takes a bead's eye view of eastern Africa and Indian Ocean trade, focusing particularly on the trade and trade networks that connected southern Africa to the rest of the world. It also examines how that trade affected communities across the region. The study is largely empirical, based on a detailed body of research that has resulted in the development of a glass bead series for southern Africa that covers the time period between the 7th and the 16th centuries AD. It includes both the morphological characteristics that define each series and the chemical compositions of the glasses from which the beads were made.

These data are then used to suggest which regions produced the various glasses. From this, trade relations and routes that interconnected eastern Africa and Indian Ocean commerce and how they changed over time can be reconstructed. Comparisons of assemblages are also used to explore interrelations between communities on the local level and to investigate the development of social hierarchies. On the regional level coastal trading systems on Africa's eastern seaboard are examined based on glass bead assemblages.

I begin with a synopsis of each of the papers that make up this volume. That is followed by a brief history of the southern African region under study, including an introduction to some of the archaeological sites discussed in the thesis.

The third section comprises a brief history of bead studies in southern Africa, beginning with the early days before radiocarbon dating had been developed, when it was hoped that glass beads could be used as temporal markers. The history concludes with more recent works based on chemical analysis undertaken to locate origins of the glasses from which the beads were made.

The fourth section discusses the dynamics of trade in the Indian Ocean, particularly in relation to trade with eastern Africa, during the various periods under study. In addition conditions in southern Africa are compared to those in East Africa during each of these periods. The final section looks at archaeological theory and how it can be used as a tool to better understand the social, political and economic changes that took place over the nine hundred years covered by this study, most particularly the rise of socio-political complexity and the formation of the first state in southern Africa.

1.2. Synopsis of the papers

The set of papers provides an examination of the glass beads found in southern African archaeological contexts between the 7th and 16th centuries AD, begin-

ning with cataloguing beads and separating them into series, based initially on morphological characteristics. Chemical analysis is then used to verify and refine the series and is used to search for the origins of the glasses used to make the beads. This knowledge is then used to examine and interpret bead assemblages from sites in a variety of locations and periods: Chibuene on the southern coast of Mozambique, Hlamba Mlonga in eastern Zimbabwe, Sibudu Cave in KwaZulu-Natal, Kaole Ruins in Tanzania and Mahilaka in northwest Madagascar. Together they provide a window on an important facet of Indian Ocean trade to eastern Africa that can be used to illuminate trade relations on a number of levels and to help explain socio-political changes that took place.

This study has been facilitated by the fact that there are a large number of well-excavated archaeological sites in southern Africa, dating from the 7th century onward, that have produced glass beads. And, unlike other regions, such as East Africa, only one bead type was used at a time, except of course for the brief periods when series changed during which the old and new ones overlapped.

Paper I (Wood 2011) lays the foundation for this study. It explains how glass beads are catalogued and describes and illustrates each of the six bead series found in southern Africa between the 8th and 16th centuries AD. It does not include the earliest series, the Chibuene series (which is described in *Paper III*), because it had not been recognized when this paper was published.

Paper II (Robertshaw et al. 2010) discusses the chemical compositions of each of the bead series found in southern Africa in the period under study (apart from the Chibuene series). The results are based on LA-ICP-MS analysis of 360 glass beads from 19 archaeological sites. Each series is grouped by glass type and variation. Then the likely origins of the glasses used to make the beads are identified. The results demonstrate that the origins of the bead series, and thus the trading circuits that carried them to southern Africa, changed significantly at different times.

Paper III (Wood et al. in review) describes the glass beads found in excavations at Chibuene, a 6th to 17th century port on the southern Mozambique coast. Between the 6th and mid 10th centuries Chibuene was the main port handling trade between Indian Ocean merchants and communities in the interior of southern Africa. The beads provide insights into the site's history as well as into Indian Ocean trade to eastern Africa in the late first millennium. The Chibuene bead series, first recognized in early deposits at the site, is described both morphologically and chemically. In addition the many hundreds of glass shards found at the site are described and discussed.

Paper IV (Wood 2009) describes and interprets the glass beads excavated at the 10th to 15th century eastern Zimbabwean commoner site of Hlamba Mlonga. Hlamba Mlonga is positioned on the route that would have connected Great Zimbabwe with the coast so it is not surprising its bead assemblage shows that the site became active in Indian Ocean trade only after Great Zimbabwe rose to power in the late 14th century. In the earlier periods glass beads were relatively

rare at Hlamba Mlonga, which would have been too far north to have benefited from the trade to the Shashe-Limpopo Basin.

Paper V (Wood et al. 2009) examines a large cache of beads from Iron Age occupation levels at Sibudu, a large rock shelter north of Durban, in KwaZulu-Natal, South Africa. Dating the cache was problematic in that radiocarbon dates and the associated pottery came from the 11th to 12th centuries AD but morphologically the beads appeared to belong to the Khami Indo-Pacific series, which is found in southern Africa between the late 15th and early 17th centuries. LA-ICP-MS analysis supports the morphological determination, indicating the beads may have been hidden in a pit in the cave floor, probably in the 16th or 17th century.

Paper VI, which examines beads from Chami's (2002) excavations at Kaole Ruins, near Bagamoyo, Tanzania, is based on an earlier publication (Wood 2002a). Because it is my only detailed study of glass beads from a multi-component site in East Africa, it has been slightly revised and updated. Kaole Ruins, which can be dated from about AD 1100 to 1800, produced 1189 glass beads. Some beads from upper levels are of interest since they are examples of the earliest European-made beads that were traded into eastern Africa. Also of note are small numbers of beads that can be identified as K2 I-P and Mapungubwe Oblate series beads. The assemblage is compared to other sites on the East Coast.

Paper VII (Robertshaw et al. 2006) examines the glass beads recovered in excavations at the 9th to 15th century site of Mahilaka, on the northwest coast of Madagascar. Chemical analysis of 29 beads, along with morphological characteristics of the larger collection, indicate that Mahilaka was more closely allied with Swahili trade to the East Coast rather than trade with southern Africa. Although the site has been dated back to the 9th century, the bead assemblage suggests that the trade carrying the beads became most active only in the later centuries. Results of chemical analysis of two glass beads from the 8th to 13th century site of Sandrakatsy in northeast Madagascar are also discussed, as well as the use of rare earth elements to determine glass origins.

2. BACKGROUND TO SOUTHERN AFRICAN ARCHAEOLOGICAL SITES

An introduction to some of the sites and farming communities in southern Africa that are mentioned in this work is given here for the benefit of readers who are not familiar with the region. The period up to the beginning of the 2nd millennium AD is usually referred to as the Early Iron Age (EIA) in South Africa¹. Farming communities, which were largely self-sufficient and kin-based with male hereditary leadership, lived in semi-permanent villages and were mostly organized according to what has been called the Central Cattle Pattern (CCP) (Kuper 1980; Denbow 1986; Huffman 1981, 1982, 1984a, 1986, 1993; Mitchell 2002; Mitchell & Whitelaw 2005). Cattle were central to the economic, social and ideological life of these patrilineal communities and cattle kraals were normally located in the centre of communities. Although significant evidence, in the form of glass beads (Paper I), shows that from the 7th century some of these communities participated in trade with the Indian Ocean, there is no visible evidence that this affected the worldviews of these early communities and social stratification occurred mainly on the basis of sex and age. In around AD 900 groups of these farmers settled in the Shashe-Limpopo Basin (see map Paper I p. 74), probably attracted by the large herds of elephants whose tusks were sought by Indian Ocean traders (Huffman 2000). Schroda (900–1020) became the largest settlement and the hundreds of glass beads found there, along with evidence of ivory working, bear testimony to trading activities (Hanisch 1980, 1981, 2002). Given al Mas'udi's mention in AD 915 that gold was coming out of southern Africa (Freeman-Grenville 1962, pp. 14–16), it is probable that gold, possibly alluvial, was part of this trade as well.

In about AD 1000 communities associated with Later Iron Age (LIA) [or Late Farming Community] lifeways settled in the Shashe-Limpopo region, probably attracted by the growing Indian Ocean trade. The site known as K2 (1030–1220) (Fouché 1937; Gardner 1963; Meyer 1998) became the capital and achieved substantial wealth from the trade carried on with the coast, as the tens of thousands of glass beads found there attest (Meyer 1998, Wood 2005). Evidence of vast herds of cattle is found as well. At its founding, K2 was organized according to CCP principles but in about 1150 the cattle kraal was removed from the centre of the settlement, signaling that significant changes were taking place in the political and ideological organization of society (Huffman 1996). The full extent of these changes materialized in about 1220 when K2 was abandoned and the population moved to nearby Mapungubwe (1220–1300) (Fouché 1937; Gardner

¹ In Mozambique the preferred term referring to this period is Early Farming Communities, while in eastern Africa it is known as Early Iron Working (EIW).

1963; Meyer 1998). There the ruler/king and entourage established themselves on top of Mapungubwe Hill while the elite settled on its slopes. In an ideological shift, the king became responsible for the fertility of the land and its inhabitants. Cattle were no longer kept in the capital although villages and homesteads were still organized according to the CCP. This new system has been called the Zimbabwe Culture Pattern (ZCP). Thus Mapungubwe became the site of southern Africa's first indigenous state based on a class system and socio-political inequality (Huffman 1981, 1982, 1984a, 1986, 1996, 2000 and see Mitchell & Whitelaw 2005 for a review).

After the collapse of Mapungubwe, power in the region shifted to Great Zimbabwe (1300–1450). There the ZCP continued, as did trade with the Indian Ocean; gold was surely the most important export. Similarly in about 1450 when Great Zimbabwe's rule ended, power in southern Zimbabwe shifted westward to the new capital, Khami (Robinson 1959) and the Mutapa kingdom came to power in northern Zimbabwe; the Zimbabwe Pattern continued to structure society.

Botswana also saw socio-political change over this period but it did not lead to state formation. Evidence of trade with the coast is present but less intense than that of its neighbours to the east. Wealth in cattle eventually led to social stratification (Denbow 1986) but cultural changes were less radical than in the Shashe-Limpopo and Zambezia regions.

3. A BRIEF HISTORY OF STUDIES OF BEADS IN SOUTHERN AFRICA

The archaeological study of beads in southern Africa began shortly after the discovery of the site of Mapungubwe in the northwest corner of South Africa in 1933. Excavations at that site and the related nearby site of K2 produced hundreds of thousands of glass beads. Many other sites in southern Africa produced glass beads as well and, in this period before the introduction of radiocarbon dating, it was hoped the beads could be used as temporal markers (Caton Thompson 1931; Beck 1931, 1937; Van Riet Lowe 1955; Schofield 1938, 1958). These hopes were not realized, however, because all but a small handful of the beads found were small and monochrome, making their identification through comparison with beads from distant sites with known temporal parameters all but impossible. These difficulties were compounded by a lack of well documented comparative material. After the introduction of radiocarbon dating, bead studies in southern Africa were largely abandoned until recently, with the exception of Claire Davison's work in the 1970s (1972, 1973, 1974, 1979)..

3.1. Beck

Beck, who developed a comprehensive system to define bead shapes (Beck 1928), was the world's leading bead expert in the early twentieth century so was asked to analyze beads from sites in Zimbabwe by Caton Thompson (Beck in Caton Thompson 1931) and from sites in northern South Africa for volume 1 of Mapungubwe (Beck in Fouché 1937). In both studies Beck included detailed comparisons of beads based on colour percentages without noting that the samples sent for analysis were not representative of overall assemblages. Both collections sent to Beck included beads from sites that we now know dated from as early as the 8th century AD up to the early 19th century. Unfortunately Beck lumped all beads from pre-European trade together, thereby essentially collapsing material from many centuries into a single unit. But he was able to identify many of the 17th to 19th century beads as European products and surmised that many of the older ones were similar to beads found in India.

3.2. Van Riet Lowe

Van Riet Lowe, Director of the Archaeological Survey, Union of South Africa, was deeply involved in excavations at Mapungubwe and K2 and spearheaded the

effort to learn more about archaeological glass beads in the hopes of using them to date southern African sites. In his monograph on the glass beads of Mapungubwe Van Riet Lowe (1955) objected that Beck's analysis was not rigorous enough and relied on "mere handling and unaided visual inspection" (ibid., p. 5). He felt that "exact physical, chemical and spectroscopic analysis" (ibid.) were essential in bead studies. Accordingly he reported on eight types of beads that were tested by spectroscopic analysis at Pretoria University, but ultimately the conclusions he reached about the age and origin of the beads were unrelated to those results.

In 1937 Van Riet Lowe travelled to Cairo where he examined beads in the museums and local bazaars. He also showed a selection of beads from K2 and Mapungubwe to the director of the Museum of Arab Art. These included two rare decorated beads from the elite area at Mapungubwe Hill. According to Van Riet Lowe, the museum director "was satisfied as I was that both 'A' and 'B' were typical pre-thirteenth century products of Arab-Egyptian glass works" (ibid., p. 8). The director also gave Van Riet Lowe a bead similar to 'B'² that had been excavated at Fustat (ancient Cairo) in association with Chinese porcelain dating to the Song Dynasty (AD 960–1279). Van Riet Lowe correctly linked the Song porcelain with similar ceramics excavated at Mapungubwe and used this evidence to suggest dates for Mapungubwe.

Since beads 'A' and 'B' could potentially have been made at Fustat, Van Riet Lowe – ignoring his advice about scientific rigour – jumped to the conclusion that the other Mapungubwe beads [my Mapungubwe Oblate series] must have been made there as well. This conclusion was reached even though few beads had been systematically excavated at Fustat and Van Riet Lowe had not found beads like the small Mapungubwe ones in any of the museums or bazaars of Cairo. His explanation for this absence was that trade beads "would be used in profusion in Africa, but not necessarily in the country of their origin" (Van Riet Lowe 1955, p. 6). During his Cairo stay, he bought a number of beads in the bazaars that were reportedly from Fustat but, as he admitted, "unfortunately too, one cannot be certain what precisely is meant when a dealer describes a 'lot' of beads as having come from Foustât" (ibid., p. 7).

Although Van Riet Lowe recognized differences in the beads found at Mapungubwe and K2 [my K2 Indo-Pacific series], he felt the two sites – and thus their bead assemblages – could not be separated in time leading to the conclusion that K2 beads came from Egypt as well.

3.3. Gardner

Gardner, who directed the 1936 to 1940 excavations at K2 and Mapungubwe, developed the most accurate bead series of the time for the Shashe-Limpopo region. He realized that the beads found at K2 and in the lowest levels on Mapungubwe Hill were the oldest at the sites and formed a unitary group. He also made the important observation that 11 of the 70 burials excavated at K2 were associated with pottery of the type found in the upper horizon at Mapungubwe and thus were intrusions at K2 (Gardner 1963, p. 32), and noted that these were the only burials that produced black and plum coloured beads. He further obser-

2 All three of these decorated beads are discussed and photographed in Paper II.

ved that these bead colours were not present in the habitation areas at K2³. These observations by Gardner proved critical to me in disentangling the K2 Indo-Pacific (K2 I-P) and East Coast Indo-Pacific (East Coast I-P) bead series from the Mapungubwe Oblate series. Remarkably, subsequent researchers, including Van Riet Lowe, largely ignored Gardner's observations.

3.4. Schofield

Schofield (1938, 1958) was a keen observer of beads but was blinkered by his belief that all of the glass beads in southern Africa, save perhaps the Zhizo types, came from European trade, between c. 1550 and 1830 (Schofield 1958, p. 220). He was well aware that early Portuguese traders reported they were forced to purchase beads from Cambay and Negapatam in India since peoples in the southern African interior would not accept European beads (*ibid.*, p. 183). However, Schofield insisted these early trade beads from India were made of clay or 'coloured earthenware' rather than glass, even though he acknowledged not a single bead of this type had been discovered in any archaeological site in the region. He was even convinced that glass beads did not become "the usual stock in trade for the east coast of Africa" until the mid-eighteenth century (*ibid.*, p. 185).

These ideas severely impacted Schofield's ability to interpret the Shashe-Limpopo bead assemblages. He realized K2 and Mapungubwe had different types of beads (*ibid.*, p. 211–212), but he conflated the two sites. Schofield thus suggested the differences in bead types could be explained by class distinction: royals at Mapungubwe reserved certain beads for themselves, leaving the other types for the commoners at K2. At other times, when bead types did not fit into his theories, discrepancies were "explained as being due to the dictates of fashion or put down to tribal or individual preference" (*ibid.*:199).

3.5. Robinson

Robinson (1958, 1961, 1963, 1966, 1985) was a keen observer of glass beads found at many sites in Zimbabwe. He developed fairly accurate ideas about which bead types were present in the various periods and once radiocarbon dates became available he could place them in time reasonably accurately (Robinson 1961). He also noted similarities between the bead assemblages at Zimbabwe and K2 and Mapungubwe. He did not realize, however, that the bead types changed entirely with each new series; he believed that some, such as brownish-red, yellow and green cylinders did not change through time and that they would have come from the same source over this long period. Although superficially similar beads of these colours did endure over a long period, they were being supplied by different beadmaking industries.

³ In actuality a few black beads were recovered in upper levels at K2, but were rare and are chemically distinct from Mapungubwe Oblate black beads.

3.6. Van der Sleen

Unlike Beck, who based his classification system on bead shape, Van der Sleen (1967) felt his system must answer two questions: the beads were found 'where' and 'when', after which he turned to their origins. He thus organized beads according to the country in which they were found, then by a chronological sequence beginning with the oldest.

Van der Sleen studied beads traded into East and southern Africa, as well as all around the Indian Ocean and beyond to Southeast and East Asia. He recognized that two types of monochrome glass beads (one drawn, the other multiple wound) were widespread both temporally and spatially over this entire region. He decided to call them Trade-wind beads (Van der Sleen 1956, p. 27) on the basis that they "could be found all around the Indian Ocean, just so far as the monsoon or trade-winds blow" (Van der Sleen 1967, p.13). Working with the imperfect archaeological information available to him, he thought that the wound beads were older and dated from AD 200 to 800 and the drawn beads from AD 800 to 1600. His research and chemical analyses of some beads (Tornati & Van der Sleen 1960) convinced him that all were made in India.

3.7. Davidson

In the 1970s, Davison (1972) undertook chemical analysis, using NAA and XRF, of ancient glass beads from all over Africa in the hope of tracing some of their origins. Her analyses included many beads from K2 and Mapungubwe as well as from Zimbabwe and the East Coast. She was able to determine that most of the eastern and southern African pre-European beads (and some from later centuries) are soda-lime-silica glasses. She divided the K2 and Mapungubwe beads into three subgroups:

1. M1 Chemical Group [my K2 Indo-Pacific (K2 I-P) series]
2. Trade Wind Bead Chemical Group (TWBCG) [my East Coast Indo-Pacific (East Coast I-P) series]
3. Mapungubwe Chemical Group [my Mapungubwe Oblate series]

Garden Roller beads were included in her M1 Chemical Group, confirming that Gardner (1963) and Van Riet Lowe (1955) were correct in claiming that large Garden Roller beads were made locally by reworking the small imported beads (Davison 1973).

Davidson found that her M1 and TWB chemical groups were closely related and thought they could even come from the same source. The Mapungubwe group, however, differed enough that she felt they must have a different origin. Results from recent analysis by Robertshaw et al. (Paper II) confirm these conclusions. But Davison's hopes to locate the origins of these glasses were hampered by two factors. First, the technology available to her was not capable of determining some important chemicals, especially trace elements and precise measurements of magnesia and potassium. Second, she had difficulty obtaining appropriate glass samples from India – and the Indian authorities would only permit her to use the non-destructive, but less useful, XRF analysis. Thus, Davison concluded that her

evidence could not determine whether the beads were made in India, China or elsewhere.

After publication of her thesis, Davison was able to obtain additional glass samples from India, some of which came from glass producing sites. Tests on this material showed matches for TWBCG beads from both Deccan (central) and Chola (south) India. But she was reluctant to make a definitive statement about the origins of the TWBCG, noting that her samples came only from Indian sites. Thus she concluded, “we cannot base a suggestion of origin on an objective impartial survey of factory sites. The present chemical evidence suggests India, but the present evidence is too skewed to be acceptable as final” (Davison & Clark 1974, p. 84).

3.8. Brill

After Davison's work, two decades would elapse before the next chemical studies of sub-Saharan African glasses were undertaken by Brill (1994), but those did not include samples from southern or eastern Africa. However, in his magnum opus (1999, vol. 2, pp. 407–18) Brill published the compositions of glasses from several sub-Saharan sites, including ones in eastern and southern Africa. All but a few were identified as soda-lime-silica glasses, some of which likely came from India.

3.9. Saitowitz

Saitowitz (1996; Saitowitz et al. 1996) was the first to use laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) to analyze glass beads from southern Africa. LA-ICP-MS has several advantages over earlier methods: it is minimally destructive and highly sensitive, being able to measure concentrations from major to trace elements. Using this and other technologies, Saitowitz sought to find the origins of the southern African glass beads. Comparing rare earth elements (REE) from her samples, she observed a pattern, characterized by a depletion in cerium, in some beads found in South Africa and in others reportedly from Fustat. This led her to conclude that the REE results “showed positively that some beads excavated in the northern and eastern Transvaal are identical to beads that were produced in Fustat a thousand years ago” (Saitowitz 1996, p. 2).

However, this conclusion is contradicted by her analyses of the major and minor elements (Saitowitz 1996, p. 144), which show that four different glass types using different glass-making recipes are represented in her samples (Robertshaw et al. 2010, p. 1900). In addition the five beads used as her standard for the REE results for Fustat glass (Saitowitz 1996, p. 157) include ones that Van Riet Lowe purchased in the bazaars of Cairo in 1937, so their actual origin is not secure. And the five beads from South Africa that displayed the ‘Fustat’ negative cerium anomaly differ significantly morphologically and include beads from four sites, one of which probably dates to European trade (Wood 2005., p. 19).

3.10. Kinahan

Although it does not fit the time period covered by this study, Jill Kinahan's (2000) work on glass beads recovered from 17th to early 20th century AD sites on the Namibian coast must be mentioned. Her insightful approach, which combined bead classification with multivariate statistics to assess seriation of bead assemblages, led to the recognition of three phases of social and economic change that could be identified with three distinct groups of beads. This method of recognizing patterns in bead assemblages over time has much potential and its use should be considered by researchers. Kinahan also prepared an unpublished report on the glass beads from the 1999 excavations at Chibuene which was useful in this study.

3.11. Recent studies

Recent studies by Wood (2000, 2002, 2005, 2009a, 2009b, 2011) and Robertshaw et al. (2003, 2006, 2010) have succeeded in developing a bead series, based on morphological and chemical properties, for southern Africa. They are the subject of this volume.

4. A BEAD HISTORY OF TRADE IN EASTERN AFRICA AND THE INDIAN OCEAN

4.1. The pre-Islamic period

This brief history of Indian Ocean trade is not intended to be comprehensive but rather a history based on – and relevant to – the glass bead trade on that ocean's western margin, in particular in southern Africa. It is based on archaeological evidence, written sources and analyses of political history. Unlike the Pacific and Atlantic Oceans, which inhibited contact between peoples on opposite shores, the Indian Ocean, particularly north of the equator, is graced with a system of monsoon winds and currents that facilitated trade and other interaction once they were discovered in about the 3rd century BC (Pouwels 2002, p. 391). Some of the earliest written accounts we have about this trade date back to the beginning of the 1st millennium AD in the form of the *Periplus Maris Erythraei* (mid-1st c. AD) and Ptolemy's *Geographia* (2nd c. AD). A good deal of East African-focused research and scholarship has gone into attempts to locate places named in these documents, as well as find concrete evidence of trade in this early period (see Sinclair 2006 for discussion).

Possible evidence of trade between Greco-Romans and East Africa, including glass beads, has been uncovered by Felix Chami at several East African sites (Chami 1999a, 1999b, 2004, 2006a). The challenges of using glass beads as temporal markers can be illustrated by looking at four beads Chami excavated at Mkukutu in the Rufiji Delta, Tanzania. Three came from “a sealed Early Iron Working [EIW] cultural horizon” with Limbo tradition pottery (1st c. BC to 4th c. AD) (Chami 1999:239) and one of these is a type known as a gold-glass (or silver-glass) segmented bead⁴. The three other beads are completely undiagnostic, all being blue; one is described as wound and the others as drawn – placing them in time or origin on the basis of morphology is all but impossible. Based on

4 Gold-glass beads were made by sandwiching a thin layer of gold or silver foil between two drawn glass tubes, the outer of which was slipped closely over the inner tube after it was covered with foil. The compound tube was next heated on a mandrel [rod] until malleable and then was either pinched into bead segments or rolled on a ribbed mould that created indentations, thus forming a row of connected beads. After cooling, the rows of beads were either cut or broken into individual beads or into units of two or more beads. The Mkukutu bead is made up of two bead units and is noted as being silver in colour with a golden tint.

site context, radiocarbon dates and research,⁵ the beads were initially suggested to be Greco-Roman (100 BC–400 AD). However, Chami's subsequent research revealed that gold-glass beads were made for over 1500 years and were produced well into the medieval period (Boon 1977; Spaer 1993). Finally, based on the position of the Mkukutu beads in the site, Chami concluded that they were 3rd century Roman. He also argued that they could not be post-Roman because no foreign objects were found in the younger Triangular Incised Ware (TIW) cultural layer that overlay the EIW one that produced the beads. As supporting evidence he noted that no TIW associated site in the region has produce a gold-glass bead.

Chami's argument is well thought out and his other evidence points to the likelihood of an early date for these beads but his conclusion cannot be considered definitive based on the existing evidence, especially since gold-glass beads are found in medieval contexts⁶ and the three other beads are impossible to place temporally based on morphology. In addition recent excavations undertaken by Edward Pollard at Kaole, near Bagamoyo in Tanzania, have produced two gold/silver-glass beads just like the one found by Chami. They came from near the base of a horizon characterized by TIW local pottery along with some imported ceramics: Sasanian-Islamic and Turquoise glaze pottery in the upper layers and white earthenware/Creamware at the base. Pollard (2007) has suggested dates of 7th to 11th century AD for the test pit and 8th century for the context in which the beads were found (pers. comm. July 2011). An EIA horizon containing Mwangia Phase and Kwale Ware pottery, probably dating to the 7th century AD, underlays the TIW horizon.

Fortunately any doubts about the age of these beads could readily be resolved. LA-ICP-MS testing, as described in this volume, could be used to analyze the glass. Although such tests can sometimes be inconclusive or difficult to interpret, in this case the results should be clear because Roman/Egyptian/ Byzantine glass that predates the 8th to 9th century was made with natron as a flux while after that time plant ash was used in its place (Henderson et al. 2004 and see Paper II p. 1902). If the Mkukutu beads are Roman their chemistry would provide irrefutable evidence.

Another study that posits pre-Islamic trade in glass beads comes from excavations by Juma at Unguja Ukuu on Zanzibar Island. Morphologically none of the beads described or illustrated in his volume (2004, pp. 127-128) can be definitively identified as pre-8th to 9th century even though this is very possible. Again, chemical analysis could prove beyond doubt whether these beads provide evidence of early trade. Further benefits of testing would include determining whether the beads all came from Middle East/North Africa beadmaking workshops, as is surely the case with the gold-glass beads (Spaer 1993), or whether some may testify to early trade with South Asia. Although Breen and Lane (2003) have noted that there was a marked hiatus in trading activity in East Africa from the 4th to the 8th or 9th centuries AD, the work being done by Chami (1994, 1999a, 1999b, 2004, 2006a), Juma (2004) and others is beginning to fill that void.

5 Chami's interpretations were based on radiocarbon tests from the Early Iron Working (EIW) levels that produced dates of 230 to 570 AD at two sigma, along with images in Dubin's volume, *The History of Beads from 30,000 BC to the Present*, (1987) and advice from Greco-Roman specialists at Uppsala University.

6 Callmer (1995:50-53) notes that gold- and silver-glass beads, especially silver ones, were widely traded after the collapse of the Sasanian Empire, particularly in the second half of the eighth century through the mid-9th century AD.

4.2. 7th to mid -10th centuries

4.2.1. *Southern Africa*

Moving forward brings us to the 7th century AD and the site of Chibuene in southern Mozambique (Sinclair 1982, 1987, Sinclair et al. 1993, Ekblom 2004). It is one of the earliest known ports in eastern Africa and is the furthest south. Recent research (Paper III) has uncovered a new bead series there, the Chibuene series, which appears to date to the 7th to 8th century. The only other location known to have examples of Chibuene series beads is Nqoma in western Botswana but they could be present at sites dating to this period in East Africa. This needs to be confirmed through careful examination of early assemblages from sites there. Based on chemical analysis Chibuene series beads probably came from the Middle East, east of the Euphrates (Paper II).

From the 8th to the mid 10th century Zhizo series beads arrived in southern Africa, through the port of Chibuene, in astonishing numbers. Nearly 2000 of them have been found at Chibuene and sites in the interior account for many hundreds more. The presence of these beads illustrates the breadth and depth of long-standing trading networks in the southern African interior: they have been found at numerous sites in present-day Zimbabwe, at sites in Botswana as far west as Tsodilo Hills (1500 km from Chibuene) and at sites in South Africa from the Shashe-Limpopo region to as far south and east as Natal. Like the preceding Chibuene series, the chemistry of the glass used to make Zhizo beads indicates it was made in the Middle East, east of the Euphrates (Paper II).

4.2.2. *East Africa*

From the 7th to mid-10th centuries glass beads were far less common in East Africa (Chittick 1974; Horton 1996; Horton & Middleton 2000) than in southern Africa (Wood 2000, p. 182). Those that are present in assemblages comprise diverse types, including wound and decorated beads, that probably came from several different bead making traditions. Zhizo beads are rare with only 11 having been recorded to date at Tumbe on Pemba Island and 1 at Shanga in the Lamu Archipelago. Horton and Middleton note that coastal towns traded only occasionally with Indian Ocean merchants and few exotic goods reached the interior. "There were not specialized trading communities, but villages content to trade whenever the opportunity presented itself" (Horton & Middleton 2000, p. 46).

4.2.3. *The Comoros and Madagascar*

Evidence of trade in the form of glass beads to the Comoros and Madagascar during this period is sparse. Wright (1984, pp. 47–48) listed only 18 glass beads recovered from the six 8th to 10th century sites he examined and one from Verin's excavations at M'Ro Deuoa (Verin 1983, p. 48). Two of the beads were small black drawn cylinders, the remainder were described as short minute 'granular blue-grey glass or paste' beads with one end heat rounded and the other cut and untreated. It is difficult from the description to place these beads into known series. But the rarity of glass beads suggests the Comoros either did not have great access to them or did not favour them. Glass fragments were also scarce but imported ceramics, mostly from the Near East, made up 4% of all sherds

indicating substantial contact with Indian Ocean traders. To date Madagascar has not produced glass beads that can be securely placed in this period (see below and Paper VII).

4.2.4. *The Middle East - Politics and power*

The rise of Islam, accompanied by political upheaval in the Middle East beginning in the 7th century had enormous implications for trade in the Indian Ocean. In 636 AD the Umayyid Caliphate, founded by Islamic Arabs based in Damascus, seized power from the Persian Sasanid Empire (Table 1). Byzantine power declined at this time as well. As Tampoe (1989, p. 101) points out this period of political instability caused a temporary disruption of long established trade patterns and they were not re-established until after the beginning of the 8th century. In 750 the Ummayyids were ousted by the Abbasids who transferred their capital to Baghdad. This shift in the seat of authority concentrated power in the Persian Gulf region which had dominated trade in the western Indian Ocean from the 3rd or 4th century AD (Pearson 2010). The early 9th c. saw the establishment of large scale trade between China and the Persian Gulf, driven by the wealth of Baghdad (Whitehouse & Williamson 1973, p. 48). This trade would surely have included goods from eastern Africa, which were in demand in China and India as well as Persia, and probably accounts for the increase in trade evident in Africa, especially in southern Africa, where it is most visible in the form of Zhizo beads.

The Abbasid Caliphate continued in name up to 1258 – and even beyond in some areas – but lost political control in 934 when the Buyid Dynasty came to power and moved the capital to Shiraz. This was the last period during which the Gulf enjoyed supremacy in western Indian Ocean trade. In 909 the Fatimid Caliphate rose in Tunisia and with its expansion and move to Fustat (ancient Cairo) in 969, Indian Ocean trade became more focused on the Red Sea. The final blow to Persian Gulf dominance came in 1055 when the Seljuq Turko-Persian Empire ousted the Buyids.

Period (AD)	Rulers	Comments	Capital
224–651	Sasanian Empire	Persian	Ctesiphon
661–750	Umayyid Caliphate	Arab/1st Islamic empire	Damascus
750– (1258)	Abbasid Caliphate	Sunni (with Shia support at first); Titular authority only after 934	Baghdad
934–1055	Buyid Dynasty	Shia Persians	Shiraz
1055–1194	Seljuq Empire	Sunni Turko-Persian	Baghdad
909–1171	Fatimid Caliphate	Shia Arabo-Berbers, did not recognize Abbasid Caliphate	969 to Cairo

Table 1. Main ruling dynasties in the Middle East and North Africa

4.2.5. *Ports from which beads might have been exported*

During Sasanian rule the Persian Gulf was the major trading power in the western Indian Ocean and in the period under discussion Ubulla, on the Tigris below

Basra, was the principal trading port (the more widely-known port of Siraf was a naval base at this time and not active in trade) (White & Williamson 1973, p. 33; Tampoe 1989, p. 98; Potter 2009, p. 63). It thus seems likely that Chibuene series beads arrived in southern Africa as a result of Sasanian Persian Gulf trade and that Ubulla should be looked to as the possible port of export. Furthermore it is likely that trade was conducted directly by Persian Gulf ships and merchants. Early accounts indicate that during this period ships from the major seafaring powers – Persia, India and Southeast Asia – traded directly with distant ports (long-haul voyages) more frequently than was the case after about 1000 AD, when use of zonal sailing and trade through entrepôts became more common (Chaudhuri 1985, p. 38; Tampoe 1989, pp. 121 & 124). Evidence of early direct trade includes accounts of Persian ships in Chinese harbours by 671 AD (Whitehouse & Williamson 1973, p. 43) and voyages directly to Qanbalu⁷ and Sofala⁸ are described by Mas'udi in the early 10th century (Freeman-Grenville 1962, pp. 14–16) but, as archaeological evidence at Chibuene suggests, occurred well before this time.

From the 8th century Sohar, in Oman near the mouth of the Gulf, was the dominant port in the region, a role that passed to Siraf in the mid-9th century, but Sohar continued to be an important trading entrepôt and victualling station up to about 965–971 when it was attacked by the Buyids (Pouwels 2002, p. 393). Sohar then became a stopping point for ships from Siraf up to the mid 11th century.

Siraf, which had been a naval base in Sasanian times, began its trading role in the second half of the 8th century, and became the dominant Gulf trading port from the mid 9th into the 10th century (Whitehouse & Williamson 1973, p. 33, Tampoe 1989, pp. 101–2). Tampoe has suggested that Siraf may have been a relative late comer to the Persian Gulf-Africa trade since pre-10th century sources mention only Oman in this role. But Siraf was engaged elsewhere, in about 850 Ibn al-Faqih reported that Siraf sent ships to India and China (Tampoe 1989, p. 102). Siraf's role as the main port in the Gulf began to decline after devastating earthquakes in 977, which resulted in many traders moving to Kish (Qais), an island some 110 km to the south. Trade was further exacerbated by the fall of the Buyid Dynast to the Saljuqs in 1055, an event that signalled the end of regional stability and resulted in a further exodus to Kish (Tampoe 1989, p.105).

This brief history of trading ports in the Gulf region between the 7th and mid-10th centuries suggests it would be constructive to look for evidence of Zhizo series beads at Sohar, whose timeline meshes well with that of the beads. Zhizo beads began arriving in southern Africa in the 8th century and continued as the only source of beads for that part of eastern Africa up to about the mid-10th century. Also of interest for future research is Tampoe's (1989, p. 106) observation that evidence of glass making was found at Sohar. Siraf is less likely to have been the key player in Zhizo bead trade since it would not have been a participant in the Africa trade in the early period, in addition Whitehouse does not believe Zhizo type beads were found at Siraf (pers. comm.).

Arab documents of the time help fill in the picture of trade and contact between eastern Africa and the rest of the Indian Ocean world. Al-Mas'udi, who

⁷ Qanbalu (or Kanbalu) is generally accepted to have been on Pemba Island (Trimingham 1975a, pp. 122 & 135; Chittick 1977, p. 192; Hourani 1995, p. 148; Horton & Middleton 2000, p. 66).

⁸ Sofala at this time referred not to a single port but to a region, roughly equivalent to present-day Mozambique.

travelled to most of the countries he wrote about, visited Qanbalu on a return visit from China and India in ~AD 916. He recorded that Sofala was the “furthest limit of the land and the end of the voyages made from Oman and Siraf on the sea of Zanj” (Freeman-Grenville 1962, pp. 14–16). He also mentioned that enormous ivory tusks came from Sofala as well as gold – this being the earliest reference we have to the gold trade out of southern Africa. Of note is Al-Mas’udi’s statement that the ships of Oman and Siraf made the voyage to Sofala and his itinerary indicates these ships were sailing directly to Qanbalu from the Persian Gulf, confirming that they were participating in direct long distance trade rather than segmented regional trade through African ports further north. Al Mas’udi also noted that an increased demand for luxury goods at the Buyid court in Shiraz encouraged Sirafi traders to undertake more and more voyages to Sofala (Tampoe 1989, p. 102). The disparity in volume of exotic trade goods, including the differences in glass bead assemblages, between the two ends of the east African coast in this early period fit with Mas’udi’s observation about Sofala’s importance in that trade.

Around the middle-to-late 10th century importation of Zhizo beads ceased and Chibuene’s role as a port serving Indian Ocean trade and the interior of southern Africa ended (Paper III). Several events that occurred around that time could have played a role in these changes. First, Sohar’s position as an important port ended after it was attacked in about 965–971 by the Buyids. If it had been the principal port trading in Zhizo beads, or more critically if it had been the source of the beads, supply would have been affected. Next, with the rise of the Fatimids, political power in the world of Islam shifted from the Gulf to North Africa (Pouwels 2002, p. 396). With the Fatimid move to Fustat in 969 trade became more focused on the Red Sea and the Mediterranean, and could have affected trade in Zhizo beads. Finally, Buzurg ibn Shahriyar’s account of Far Eastern Waq-Waq (Indonesian – see Paper III) raids on the eastern African coast in 945–946 could have been pivotal. It recorded attacks in which the villages and towns of Sofala were pillaged and conquered (Trimingham 1975a, p. 133). However, even though the Waq-Waq attacks might account for the demise of Chibuene, they would not explain the disappearance of the Zhizo bead series. These beads are also found at several sites in West Africa beginning in around the 8th century AD and they seem to vanish from trade there by the end of the first millennium as well, so their demise should probably be sought where they were produced.

4.3. Mid 10th to mid -13th Centuries

4.3.1. *Southern Africa*

In the mid-10th century dramatic changes took place in trade between southern Africa and Indian Ocean traders. Chibuene lost its position as the port of entry for goods to the interior and may have been abandoned for a period of several hundred years (Paper III). The source of glass beads for the southern African trade abruptly changed as well. Zhizo series beads disappeared, apart from those that were curated for some decades, and two new and closely related series appeared: the K2 Indo-Pacific (K2 I-P) series and the East Coast Indo-Pacific series (East Coast I-P). As Paper II demonstrates these beads were made of a soda-lime-silica glass with a mineral flux and elevated levels of alumina. This type of glass is re-

cognized as coming from South and Southeast Asia so we need to look there for sources of these beads and the trade that brought them.

The lack of first-hand Arabic documents describing Indian Ocean trade with eastern Africa in this period provides further evidence that Arab/Persian traders were less actively involved in this trade. At the same time the enormous numbers of glass beads found in a greatly expanded number of sites across southern Africa demonstrate that trade to the region increased dramatically (see Papers I and II). The port or ports on the Mozambique coast that were involved in this trade have not been located.

4.3.2. *East Africa*

Increased trade, beginning in the 11th century, is evident as well in the archaeological record across East Africa with glass beads arriving in substantial numbers for the first time (Chittick 1974; Horton 1996, 2004, p. 72). It appears that East African ports operated in a more diverse trading sphere than those in southern Africa. Evidence of trade coming through the Red Sea is present in the form of wound and decorated glass beads that were probably made in Egypt or other areas in the eastern Mediterranean. But trade with India shows the most dramatic increase and Horton (1996, p. 418) suggests that Indian artisanal communities were resident in East Africa. The main type of glass bead found in East Africa at this time, as well as in subsequent periods, was the East Coast I-P series, as were found in southern Africa. The main difference being that this series makes up only 10% of assemblages in southern Africa at this time whereas it makes up the majority of beads found on the East Coast. In addition a majority of these beads in the north are wound while only drawn beads occur in the south. Finally, the K2 I-P series which is ubiquitous in southern Africa is not common in East Africa and those I have managed to identify tend to come from more southerly sites such as Kaole (see Paper VI) and Sanje ya Kati in southern Tanzania.

These differences between bead assemblages found at sites in East Africa compared to southern Africa suggest that the two regions may have been receiving beads from different sources, possibly via different trade routes. The observation that large numbers of wound East Coast I-P beads are found in the north but they are almost nonexistent in the south might be explained by distribution of beads in India. Kanungo (2004, pp. 45 & 51) has noted that in India wound beads are mainly found at archaeological sites in the north, while small drawn beads are found in the south and in the Deccan. Thus it is possible that East Africa was receiving Indo-Pacific type beads from traders from northern India while those going to southern Africa were traded directly from southern India.

4.3.3. *The Comoros and Madagascar*

Wright's excavations at sites dating from the 11th to the 15th century in the Comoros apparently produced only 9 glass beads, they were found mainly in deposits that were fine-screened after flotation (Wright 1992, p. 105). They included one medium size dark opaque wound bead as well as 8 small drawn ones, 7 of which were black and one that was brownish-red. These are all probably East Coast I-P types, like the majority of glass beads from this period on the East Coast.

Shepherd (1982) has proposed that long before Kilwa took control of the So-

fala trade⁹, Nzwani, in the Comoros, “became the main entrepôt for an elaborate network of trading centres and alliances ... embracing Madagascar, the Comoros and the ‘Sufala Coast’ south of Cape Delgado” (Shepherd 1982, p. 145), and that it was this network that Kilwa took over “ready-made” when Kilwa came to control trade to the south coast. Although Shepherd’s proposal – that Indonesians used southern routes to “trade with the southern part of that coast for many centuries without leaving any substantial trace of the fact” (ibid.) – is in accordance with conclusions reached here about trade to southern Africa, the almost total lack of evidence of Comorian trade with the south coast in the form of glass beads in the Comoros makes his first proposal highly unlikely.

Apart from a group of 37 large yellow drawn cylindrical beads from the site of Sandrakatsy in north-eastern Madagascar (Wright & Fanony 1992, p. 25; Paper VII, p. 93), the only large number of glass beads from pre-European contexts on that great isle comes from the site of Mahilaka on the northwest coast. Radimilahy (1998) dated the site between the 9th and 15th centuries, separating the time span into four occupation units or phases. In total 2300 beads (Radimilahy 1998, p. 283; Rasoarifetra 2000) were recovered of which nearly 99% were glass; a sample of 180 was kindly provided for study by Rasoarifetra and Radimilahy. Unfortunately the site suffered from bioturbation caused by a combination of roots from trees and other vegetation as well as use of the land for agriculture, so beads along with other artefacts are frequently displaced (Radimilahy 1998, p. 282; Paper VII, p. 94). Thus even though beads were reported in Unit Ia (9th to 10th century), I was not able to identify any that would fit that time period based on the samples I examined or the reports and photos in Radimilahy (1998). Because this bioturbation affected all units, the assemblage will be discussed as a whole rather than by temporal unit.

Based on a combination of the chemical analyses reported in Paper VII, a detailed study of the sample of 180 beads examined and photos and descriptions in Radimilahy (1998) it appears that the earliest beads at Mahilaka are probably those that belong to the K2 I-P series (1020–1220). Beads belonging to the Mapungubwe Oblate and Zimbabwe series are present as well but only in small numbers. The bulk of the beads seem to belong to the East Coast I-P and Khami I-P series and about 9% of them are wound, the remainder being drawn. Thus the Mahilaka assemblage has more in common with assemblages on the East Coast than those in southern Africa, suggesting that Mahilaka was more closely articulated with trading networks to the north rather than the southwest.

4.3.4. Ports from which beads might have been exported

Changes in western Indian Ocean trade patterns in this period include the transfer of dominance away from the Gulf and toward India. Trade through the Red Sea was more evident in eastern Africa’s north than the south, while the later region may have seen trade from Southeast Asia and Sri Lanka. Unlike the previous period, in which it was possible to trace the histories of the various ports, between the mid 10th and mid 13th centuries there were too many ports that could potentially have been involved in the bead trade to eastern Africa to attempt

⁹ Trade out of southern Africa is often called the Sofala trade but it is an imprecise term – it does not necessarily mean the port of that name, which existed only in later periods. Early Arabic documents used the term to refer to the entire southern coast of eastern Africa, more-or-less equivalent to present-day Mozambique.

such an exercise. Therefore a more general discussion will be undertaken. Numerous ports could be found around the Indian coast that may have participated in this trade – all the way from Cambay in the northwest around to Negapatam in the southeast and potentially on to Bengal. Mantai in Sri Lanka, which was a major bead producer as well as an important entrepôt from the 2nd century BC, was winding down as an important port in the early 11th century and Tampoe (1989, p. 109) suggests that that trade may have moved to Negapatam, which was under Chola control at the time. Trade out of the Persian Gulf region would have been through Kish, while the main Red Sea ports important in the Africa trade were Aden and Hadhramawt (Pouwels 2002, p. 397).

Southeast Asia is frequently ignored as a potential source of voyaging and trading to the African coast but threads of evidence can be found. In AD 813 Java sent four seng-k'i (Zanj¹⁰) slaves to the Chinese emperor and a Javanese inscription dating to around AD 860 mentions jengi slaves (Trimingham 1975a, p. 133). In addition the participants in the Waq-Waq raids would have come from Southeast Asia, probably Java or Sumatra. Those raiders mentioned Zanj slaves as one of the items they were collecting to take back for their own country as well as for trade with China (ibid.)¹¹. Thus one cannot rule out a Southeast Asian origin for K2 I-P series beads.

4.4. Mid -13th to late 15th Centuries

4.4.1. *Southern Africa*

Another major shift in trading patterns in southern Africa can be seen in the mid 13th century with the arrival of Mapungubwe Oblate series beads. By the second quarter of the century K2 I-P series beads were not longer being imported and for a decade or two only East Coast I-P beads, mainly brownish-red and black ones, were arriving in the interior (Wood 2005). The Mapungubwe Oblate series appeared around the same time the capital was moved from K2 to Mapungubwe (~1250) and they soon became the only imported beads. They arrived in extraordinary numbers (one burial alone on Mapungubwe Hill contained over 26,000 beads). The chemical composition of these beads, which are made of a plant-ash glass with elevated alumina and low lime, indicates that a new bead source and new traders were now controlling trade into southern Africa. This is also the period in which Mapungubwe reached its short zenith of about a half century. Around the end of the 14th century the capital was abandoned and much of the population left the area; concurrently Great Zimbabwe rose to power. These changes were paralleled by a coincidental change in the bead series: the Mapungubwe Oblate series gave way to the Zimbabwe series. Colours, translucency and shapes of the beads altered slightly along with minor changes in glass chemistry (see Papers I & IV). The region where these two bead series were being produced is probably the same but the glassmaking location may have moved slightly or

10 Zanj, an Arabic term meaning 'Land of the Blacks', was used to refer to the East Coast from roughly present day Mogadishu to southern Tanzania. It also referred to Bantu-speaking Africans from the eastern coast of Africa, including those living south of Tanzania.

11 A 12th century Chinese document, which is not directly linked to Southeast Asia but could be related to trade through there, reported that most wealthy people in Kuang-chou (Canton) keep African slaves (Shen 1995, p. 355).

perhaps new glass recipes were developed. The glass of these two series is rare so locating its origins has been elusive. Other examples of this glass type are rare but a few have been found in Sumatra (see Paper II).

4.4.2. *East Africa*

In the mid to late 13th century, around the time southern Africa switched from the K2 I-P series to the Mapungubwe Oblate series, there was a shift in East Africa from Islamic to Chinese ceramics (Burke & Whitcomb in Patel 2004). This suggests that trade was coming from the East rather than the north. During this period Kilwa became the main trading entrepôt linking trade and traders from the south with markets to the north. It was the height of the gold trade from the southern African interior, spurred on by growing demand for gold in Europe. Trade between south and north seems to have been mainly segmented at this time with Kilwa acting as the fulcrum. Its prominent position may also have been due to direct trade arriving from southern India via the Maldives (Pouwels 2002, p. 400). After the late 14th century the focus of commercial activity began to shift northward to Mombasa, Malindi and Pate (Pouwels 2002, p. 397). Again bead assemblages in East Africa differ from those in the south. Mapungubwe Oblate and Zimbabwe series beads are found in northern assemblages (see Papers I & VI), but not in large numbers. A wide variety of bead types is present with East Coast I-P beads being the most common.

It is possible that these East Coast I-P beads were either being finished (that is imported glass tubes were being cut into beads and heat-rounded) or even manufactured between the 13th and 14th century at Mkokotoni, on Zanzibar Island (Horton 2004). Horton has estimated that several million beads still remain in deposits there and glassworking debris such as waste lumps of glass and waster beads are present as well. Given that Horton also notes that nearby Tumbatu produced a “high proportion of Indian pottery” in the same period (ibid., p. 72), it is possible that a community of South Asian beadmakers was resident. Horton has furthermore suggested that stone bead makers from India may have been residing on the East Coast (ibid.). The making of drawn Indo-Pacific beads, recognized as an Indian technology (Kock & Sode 1994; Francis 2002), is an even more technically skilled and complex task (Kock & Sode 1994; Callmer 1995, 2003, pp. 349 & 358; Lankton & Dussubieux 2006, p. 121) than drilling and polishing stone beads, so if glass beads were being made at Mkokotoni, it is more than likely that Indian beadmakers were present. These millions of beads must have been produced or imported for the northern market since during this period only Mapungubwe Oblate and Zimbabwe series beads are found in southern Africa.

4.4.3. *Ports from which beads might have been exported*

Determining the trade paths by which the Mapungubwe Oblate and Zimbabwe series beads reached southern Africa will not be possible until the source of the glass is found. They are unlikely to have been coming from the north in that the only probable source of a plant-ash glass with high alumina would be east of the Euphrates, but glass of this type – with low lime – is unknown in that region. In addition the Gulf region was excluded from the Africa and Red Sea trade during this period, it was instead trading mainly with India through the port of Hormuz while trade to Africa was carried out directly by Arab and Indian sailors (Tam-

poe 1989, p. 116). If the Mapungubwe Oblate and Zimbabwe series beads were coming from Southeast Asia, the trade could have been direct to the southern coast, but that remains conjectural at this stage.

Amongst the various types of beads that are found in East African assemblages one sort stands out. It consists of small wound beads, most of which are transparent-translucent ruby red and a few that are amber-coloured. They are distinctive not only because small wound beads are rare, but the colours are unusual as well. Several have been tested (but not yet published) showing the glass contains very high levels of lead (from 42% to 52%). Peter Francis Jr. (2002, p. 80) determined that this type of bead was made in China on the basis of the high lead levels but also because the Chinese were the only beadmakers known to have fashioned small wound beads at this time. The largest number of them was found at Kilwa's Husuni Kubwa where 33 ruby red examples were recovered (Chittick 1974b, p. 464). In addition I have identified one from Lamu, three from Shaka, one each from Chwaka and Kaole (see Paper VI), two from Mafia and eight from Songo Mnara (which is just south of Kilwa). The only example known from outside East Africa is one ruby red specimen that was found at Great Zimbabwe (Wood 2005). Eventually it became clear that all of these beads came from contexts dated to around the early 15th century, which coincides with visits to the East Coast by the Chinese fleets led by Admiral Zheng He in 1417–1419 and 1421–1422 (Wheatley 1975, p. 90). Not only the coincidence of timing suggests that these beads were brought by the Chinese ships, but they are found only during this period and from their scarcity it is clear they were not a standard trading commodity. In any case it would be unlikely that tiny (mostly 3 to 4.5mm in diameter) Chinese wound beads, which are time consuming and thus expensive to make, would have been able to compete with the small drawn Indian beads in the market. It is most likely that these unusual beads were gifts from the Chinese visitors. They would fit well into Horton's concept that exotic glass vessels and glazed ceramics, which are found mostly in port towns in quantities too small to be considered true trade commodities, represent "a gift exchange to cement relations between traders" (Horton 2004, p. 64).

4.5. Late 15th to Mid-17th Centuries

4.5.1. *Southern Africa*

The final bead series to enter southern Africa before European beads took over the market signalled yet another major switch in bead origins and thus in trade patterns. In the late 1400s there is a return to beads made in South Asia and this time we have Portuguese records that tell us the beads came from India. The glass used to make these Khami Indo-Pacific (Khami I-P) beads is once again a soda-lime-silica glass with a mineral flux and elevated alumina, similar to our earlier Indo-Pacific series, and once again they are the only bead type imported into the region in this period. Although the Portuguese attempted to introduce European beads, the local population would not accept them so they were obliged to buy beads from India for their African trade (see Paper V).

4.5.2. *East Africa*

For the first time bead assemblages from sites in East Africa are similar to those in southern Africa, both being dominated by Indo-Pacific beads, and the north may have been receiving beads in quantities equivalent to or even greater than the south. Wound beads are less common than in earlier periods but are still more frequent in northern assemblages, perhaps suggesting different preferences or sources.

4.5.3. *Ports from which beads might have been exported*

Paper V discusses Portuguese records that mention Indian ports from which beads were exported. These include Cambay, in the northwest, and Negapatam in the southeast. Other ports may well have been involved as well, such as Chaul (Dussubieux et al. 2008). It is possible that, when our ability to distinguish various glass recipes improves, we will find that beads coming from Negapatam are more common in southern Africa, having been brought by a direct southern route, and that those carried from ports in northwest India were more common in East Africa. It seems unlikely that all of the Indian beads were coming from a single glass industry since there is evidence of both glassmaking and beadmaking at numerous sites around that sub-continent (Kanungo 2004). It is also instructive that Kanungo (ibid., p. 45) reports that small drawn Indo-Pacific type beads are more frequently found in southern India and the Deccan while wound beads are more numerous in the north – a distribution similar to what is found in eastern Africa.

5. SOME ASPECTS OF THEORY AND ARCHAEOLOGICAL INTERPRETATION IN EASTERN AFRICA

At its core this study, which focuses on glass beads, is not really about the beads per se but about people and their interactions and relationships and about how these interactions helped shape their cultures. Rather than review the various theories, methods and paradigms that are used by Africanist archaeologists to explain their data¹², I will focus on a few that pertain to the work in this volume, particularly those concerned with the role of long-distance trade in the evolution of socio-political complexity and the place of southern Africa in the Indian Ocean trading system. Subjects that will be examined include the role of trade in exotic goods as a driver of social change seen largely through the lens of Renfrew's (1984) concept of 'central places', evidence of growing specialization in the southern African interior in terms of Earle's (1996) emphasis on the role specialization plays in the evolution of stratification, and Huffman's Zimbabwe Culture Pattern as related to Mapungubwe. Then I will examine the applicability of World-Systems Analysis in interpreting events in eastern Africa, including core-periphery relations and inequality, followed by the use of Friedman and Rowland's prestige goods model and how Beaujard's World-Systems economic cycles can illuminate events in eastern Africa.

Because exotic beads are the subject of this work and comprise the main archaeological evidence both of long distance trade and for studying the rise of social inequality in southern Africa, they will be the focus of this discussion. This does not, however, imply that other factors were not important in the social, political and economic changes that took place.

Of necessity physical numbers of beads will form an important part of this discussion but caution must be employed in interpreting data based solely on numbers. As Renfrew (1984) has observed, it is possible for high frequency in artefact retrieval to be a measure of the intensity of archaeological activity. This is particularly true with small glass beads whose retrieval is dependent on excavation techniques – particularly sieving with small-mesh screens – as much as their presence in a site. Intra-site comparisons should be made with as much detailed information as possible including site and excavation dimensions, itemized volume of deposit removed and context. It is clear that beads would most likely be found at larger excavations which were sieved with small-mesh screens rather than small or even large sites that were not sieved. In terms of context,

12 Reviews that focus on use of archaeological theory in eastern Africa include Sinclair 1987, Swan 2008, Oka & Kusimba 2008.

burials and hoards should be separated from finds from middens and habitation areas. The importance of this can be illustrated by the discovery of a pot containing over 2600 beads at the small commoner site of Kgaswe B-55 in north-eastern Botswana (Denbow 1986, p. 19; Wood 2005, p. 44). This cache accounts for more glass beads than all other pre-European sites in Botswana combined, but it cannot be taken as evidence that small commoner sites were flush with exotic imports. Rather, the cache is an anomaly that may represent, for example, a courier/trader meeting calamity while stopping in this village or even possibly a theft.

5.1 The rise of socio-political complexity in southern Africa

5.1.1. *Evidence of socio-political complexity before AD 1000*

Extensive inter-regional trade routes were well established in the southern African interior before exotic Indian Ocean imports began to arrive in the 7th century (or possibly before) (Pearson 1998, p. 85). This trade demonstrates that early farming communities were not static but were connected through a complex of exchange networks encompassing Zambezia and beyond – reaching from the Shashe-Limpopo Basin to the east coast, the Kalahari and Natal (Denbow 1984; Miller & Whitelaw 1994; Whitelaw 1994a; Mitchell 2002, p. 288). Evidence of this trade can be found in goods such as salt, fish, marine shells, ostrich eggshell and copper. In this period the Early Iron Age communities had a limited level of socio-political differentiation and are believed to have been organized as kin-based chiefdoms. Kin group leaders mediated spiritual as well as material affairs and would have been involved in the control of goods exchanges, but on a limited level. From the 7th century to about the mid 10th century the only extant evidence of imports from Indian Ocean trade in the southern African interior consists of glass beads. They are found at many locations (see Paper I) and all but a few belong to the Zhizo series.

Apart from the imported beads, few prestige goods were in evidence and comprised mainly small numbers of non-utilitarian metal ornaments with a restricted ownership and shell beads. Evidence of increasing long distance trade began to appear in the 10th century at the Shashe-Limpopo Valley site of Schroda (discussed below), where glass beads have been found in greater numbers than elsewhere and evidence of local use of ivory was found as well (Hanisch 1980; Voigt 1981). Elephant hunting and ivory working, along with possible panning for gold, could possibly suggest some form of specialization but we have no evidence these were more than pursuits undertaken in slack agricultural periods.

5.1.2. *Renfrew's theory of central places and the evolution of southern Africa's first state, AD 1000–1300*

Renfrew (1984) notes that trade is often the focus of archaeological research because it can be studied through finds of traded goods as well as their distribution patterns. In addition origins of civilizations (states) can be examined through the study of trade because human interactions, which in nonmarket economies include the transfer of knowledge, are implicit in trade. Apart from goods exchanged,

trade requires organization to conduct transactions and systems of measure and value. Levels of trade can also inform potential size and complexity of government because increases in trade volumes imply commensurate increases in social structures and administration.

Renfrew discusses a number of factors that can be useful in studying the origins of states, beginning with the observation that every civilization has a permanently functioning central place that is the focus of exchanges of goods and information (Renfrew 1984, p. 94). Thus the origins of states can be studied through the rise of central places. He also stresses that such permanently functioning central places can be distinguished from central places in chiefdoms because in the latter the location is used as a central place only periodically, generally once or twice a year, such as in first fruits ceremonies which were practiced annually in many eastern Bantu-speaking societies (Eiselen & Schapera 1946, p. 262; Krige 1950, p. 249) and centrally organized initiation schools as practiced by the Venda (Nettleton 2002, p. 96). It is also noted that in early civilizations several autonomous central places can function together; Renfrew calls these early state modules (ESMs). ESMs have restricted size ranges that vary depending on environmental and social conditions (but boundaries are normally within one or two day's march from the centre). Trade between ESMs would be reciprocal, taking place mainly between their central places (*ibid.*, p. 100). This trade would have been critical in forming and maintaining cultural uniformity, which would have been necessary if the units eventually developed into a unified state. Observation of a shift from reciprocal trade to redistribution would imply that a higher-order central place had emerged, indicating that the ESMs had unified to become a state. In this case unification is brought about through an increase in exchange which in turn leads to stratified organization. ESMs can also unify in the face of hostility as they band together in defence. Renfrew emphasizes that central places have central persons who organize and oversee exchange. As trading activity increases a hierarchy of specialized individuals develops and grows; such intensification may sometimes be observed archaeologically through accumulation of wealth and prestige (*ibid.*, p. 105).

Renfrew outlines six processes by which permanent central places may develop; usually more than one process is involved. Three are associated with endogenous growth and three with exogenous growth. Endogenous (internal) growth may occur when a place becomes a permanent centre for social and religious exchange with full-time specialists, or when a population increases to the point that specialization and central control become necessary, or when environmental and ecological diversity lead to development of redistributive centres. Exogenously (externally) stimulated growth can occur when a society interacts with an existing, more highly structured nearby civilization (*ibid.*, p. 112). The three circumstances described by Renfrew include urban imposition in which one civilization moves into another's territory (usually by force) and imposes its system on the other, implantation in which a colonial enclave is established in another's territory while maintaining active contact with its mother country, or emulation in which exotic prestige artefacts are traded in from a highly organized stratified society. Along with these prestige goods "comes information, a set of values and social procedures which are more readily adopted because of the sophistication of the source society's products and prestige in which they are held" (*ibid.*, p. 113).

The characteristics that Renfrew lists to identify a state include a highly structured and differentiated society with specialist production, a permanent

controlling organization that disposes of a significant proportion of the produce (government), a cognitive structure consisting of a developed and explicit set of shared beliefs, and (usually) a large population (*ibid.*, p. 114-5). Although here Renfrew examines the rise of states largely through trade, he makes it clear that reasons for change are not monocausal and that trade in early civilizations will be a force for change only “when the traded commodity achieves a value or importance in the social system, often in terms of prestige” (*ibid.*, p. 115). Practical goods do not have the same effect.

Several of Renfrew’s ideas can illuminate conditions in southern Africa around the time of the rise of its first state, which is widely accepted to have occurred in the Shashe-Limpopo region. Looking at central places and ESMs, it could be argued that the communities that were interconnected through exchange before Indian Ocean trade entered the system and up to the formation of the first state, could be regarded as ESMs. One excavated site in the Shashe-Limpopo Basin that could be considered an ESM central place is Schroda (Hanisch 1980, 1981). An Early Iron Age population settled there in about AD 900, probably drawn to the region to hunt elephant for the Indian Ocean ivory trade (Huffman 2000). Clay figurines of animals and stylized humans found in one area suggest that large ritual ceremonies involved with initiation, took place there occasionally (Hanisch & Maumela 2002; Huffman 2000; Nettleton 2002; Van Schalkwyk 2002; Wood 2002b). Use of the site for such periodic rituals would fit the pattern of an ESM central place. Schroda was occupied for a period of just over a century (900–1020) (Vogel 2000) and produced 1020 glass beads. The number of beads suggests that Schroda may have been a redistribution centre but not at a level that it could be identified with a state.

In contrast the nearby site of K2 [Bambandyanalo] (Fouché 1937; Gardner 1963; Meyer 1998), which succeeded Schroda and was occupied from about 1030 to 1220, produced tens of thousands of glass beads (Wood 2005), and provides some of the earliest evidence of social stratification in southern Africa (Huffman 1996, p. 188) in the form of differential access to these exotic beads. K2 was settled by Later Iron Age peoples and is widely recognized as the regional capital and the site where the development that gave rise to the first state in the region occurred (Huffman 1996, 2000). It is difficult to quantitatively compare overall bead numbers from the two sites, partially because actual numbers for K2 are not available, but a comparison from residential areas of both sites can be attempted. Working with an estimated volume of deposit from Hanisch’s (1980) residential Area 5 at Schroda, which produced the largest number of beads, and several of Meyer’s (1998, pp. 63–108) residential area units at K2 (Wood 2005, p. 107), one finds that Schroda produced about 5 glass beads per cubic meter of deposit while K2 produced between 27 and 101 (Table 2). It is clear that imports from Indian Ocean trade increased dramatically during the K2 period and the increase is large enough to demonstrate that K2 controlled access to these prestigious imports and was a permanent central place and redistributive centre for trade goods. Thus it can be argued that K2 fits Renfrew’s observation that a place that has more goods per capita can be identified as a central place. Renfrew also asserts that central places must have central persons, therefore a level of hierarchy and preferential access would be present at all central places, including K2. The vast numbers of glass beads at K2 provide clear evidence of Renfrew’s statement that intensification of trade activity, which leads to a growing hierarchy of specialists, can be seen archaeologically through the accumulation of wealth and prestige objects.

Much more about the development of stratified society in southern Africa could be learned by improving and extending this sort of intra-site comparison, including commoner sites of varying sizes, across the region¹³.

Area	Estimated m ³ of deposit excavated	# Glass beads	Glass beads per m ³
Ts3	46.8 m ³	1278	27
Ts3: top 5 layers	14.4 m ³	779	54
Rn2	10.8 m ³	339	31
Ts1	8.2 m ³	828	101
Ts2 & TR D4	12 m ³	467	39

Table 2: Numbers of beads recovered from K2 residential sites based on volume of deposit (Wood 2005:107).

5.1.3. *Earle and the role of specialization in social stratification*

Working from another viewpoint, Earle (1996) looks at the role specialization plays in identifying societies as they evolve from non-stratified to stratified entities. He focuses on how specialization increases economic efficiency, creates interdependence and increases control of elites over commoners. He recognizes two forms of specialization, one he calls independent (or adaptational) and the other attached (or political). Independent specialists can exist in both pre-state and state-level societies and can function outside of elite control. A good example of this would be iron smelters and smiths who worked in communities spread over the African countryside from the beginnings of the Early Iron Age (Swan 1994, 2008). Such specialization was neither a precondition for nor an outcome of complex society.

Attached specialists, on the other hand, were employed by and attached to the elite for whom they produced prestige goods, which were used by the elite to maintain and increase their political and economic dominance. Thus, attached specialists were a creation of the development of social stratification and large political institutions. A clear example of attached specialization was present at K2 in the form of glass workers who fashioned large Garden Roller beads from small imported ones (see Paper I). This sort of specialization at K2 clearly illustrates Earle's point that political complexity itself "causes the elaboration of specialization as a means to strengthen political and economic control" (Earle 1996, p. 171). Garden Roller beads, along with the imported types, were not an essential commodity but a special form of wealth that served the elite as a means of payment and as symbols of legitimate power and thus a means of controlling society economically and symbolically. Garden Roller beads can also be considered evidence of the knowledge transfer emphasized by Renfrew. Although pyrotechnology was well established in African iron-working communities, working with glass is very different from metalworking (Callmer 2003, pp. 349 & 358) and the process used to fashion the beads was complex. It seems probable that at least some

13 Sinclair (1984, p. 53) briefly explores assessing degrees of differential possession of trade goods by comparing numbers of glass beads found at several sites in Zimbabwe including Montevideo Ranch, Chivowa Hill and Great Zimbabwe. Actual bead numbers are not provided so comparisons cannot be approached here.

transfer of knowledge must have taken place and curiously was then lost again, for making Garden Rollers and reworking glass in any form took place only in the K2 period. Apart from the Shashe-Limpopo area, Garden Rollers are found in small numbers over a large landscape including sites in Botswana, Zimbabwe and even Isamu Pati in Zambia (Wood 2005, p. 49) highlighting Renfrew's assertion that high value/prestige goods will travel farther than other goods.

5.1.4. Huffman's Zimbabwe Culture Pattern and Mapungubwe

Following Renfrew's concept that evidence of an increase in imported goods can reflect an increase in the level of hierarchy needed to co-ordinate the trade, accompanied by an increase in the exchange of knowledge, we will now look at Mapungubwe. In about 1220 K2 was abandoned and the population moved to nearby Mapungubwe (Fouché 1937; Gardner 1963; Meyer 1998) where changes in settlement layout provide concrete evidence of the changes in worldview that had crystallized at K2. Huffman's (1996, 2000) model explaining these changes will be used as the background for this discussion because, although some are critical of his interpretation¹⁴, as Mitchell points out it is to date "the most ambitious and comprehensive effort at understanding Great Zimbabwe and similar settlements" (Mitchell 2002, p. 321). Physical evidence in terms of settlement layout that express the worldview changes that are evident at Mapungubwe include: cattle were no longer kept in the centre of the capital (as was the case as well at K2 after AD 1150) and the king, who had assumed sacred leadership status and was thus responsible for the fertility of both the land and people, no longer lived amongst the populace but resided with part of his retinue in seclusion on a limited-access hilltop, with hereditary elite living along the hill flanks in an area known as the Southern Terrace¹⁵. Mapungubwe also saw the first construction of stone walling, which was used to symbolically delineate elite spaces and became a defining feature of Great Zimbabwe's architecture. This model is known as the Zimbabwe Culture Pattern (Huffman 1996, 2000).

In addition to these worldview changes, Mapungubwe witnessed dramatic evidence of wealth accumulation amongst the elite. Gold objects are found for the first time in southern Africa in the form of gold foil covered bowls, sceptres, rhinoceroses and thousands of gold beads – all are evidence of a changed value system since gold had been traded from the region for several centuries but had not been used or highly valued locally. Evidence of extensive wealth accumulation in the form of glass beads is also found in the archaeological record (Wood 2005, p. 87). Hundreds of thousands of glass beads were encountered in the excavation of Mapungubwe Hill (Gardner 1963, p. 33 claimed millions) and in these early times many were simply thrown out with the deposit soil because it was too time consuming to recover them. One royal burial alone contained over 26,000 (Saitowitz 1996, p. 201) along with about 12,000 gold beads (Fouché 1937, pp. 125–6). It was reported that the "skeleton was surrounded by a large quantity of glass beads, as if it had been buried wearing bead garments or girdles" (ibid., 126).

To demonstrate the increased volume of trade in exotic goods, an attempt can again be made to estimate bead numbers based on cubic metres of deposit from

14 Critiques of Huffman's model and his reply can be found in the 1997 South African Archaeological Bulletin 52, pp. 125–43.

15 It should be noted that commoner settlements continued to be organized in traditional CCP layouts (Huffman 1984a).

residential areas. On Mapungubwe Hill Meyer excavated a residential area called MK1 (Meyer 1998, pp. 118–38). Based on his figures, squares A3, B3, B4 and B5 combined account for approximately 30m³ of deposit and produced 2030 glass beads (Wood 2005, p. 134) or 68 beads per cubic metre. In addition if only the top 8 levels – which account for Mapungubwe’s peak period and date from about 1250 to 1290 (Vogel 1998) – are considered, bead counts rise to 81 per cubic metre. In contrast, if the figures from K2 in Table 1 are combined the results show that on average those residential areas produced 40 beads per cubic metre. Although to be conclusive many other areas of both sites should be brought into the calculations, the results suggest that bead wealth increased substantially at Mapungubwe, indicating an increase in trade, and if we follow Renfrew, information exchange would have increased as well.

The altered attitudes toward gold are probably one result. Another would be the introduction of spinning and weaving, as evidenced by the presence of the first spindle whorls found in the region. This industry would possibly also provide an example of increased specialization, but an even clearer example would be the gold workers who produced status objects for the elite, although the techniques used to work the precious metal were the same that had been used traditionally with iron and copper (Miller 2001). Metals recovered from Mapungubwe included another example of increased exchange: bronze and brass, which Miller believes originated in southern India, were found in small quantities for the first time in southern Africa. Other exotic goods, which indicate that trade from distant regions made its way to the Shashe-Limpopo Basin, were found on Mapungubwe Hill as well, including a few fragments of Song celadon from China and three large decorated glass beads from Islamic workshops, perhaps Egyptian (Wood 2000, 2005, p. 57, Paper II).

Thus archaeological evidence from Schroda, K2 and Mapungubwe demonstrates that trade with the Indian Ocean system increased in both volume and types of goods imported throughout the period from around AD 900 to 1300, and resulted in increased wealth and power in the hands of the elite. The altered physical layout at Mapungubwe reflects cultural changes that were intertwined with a transfer of knowledge and adoption of new technologies along with altered concepts of value and ideology that culminated in the formation of southern Africa’s first state. It seems clear that the ability of the elite to gain and then use control of trade in glass beads and other exotic goods was a critical element in these developments.

With the demise of Mapungubwe at the end of the 13th century, Great Zimbabwe donned the mantle of regional capital (Huffman 2009). There the Zimbabwe Pattern came to full flower with monumental stone walling and architecture, supported largely by expanding trade, particularly in gold, with Indian Ocean commerce. But this represented a consolidation and elaboration of the move to statehood and social stratification that originated in the Shashe-Limpopo Basin.

Even though this evidence demonstrates that southern Africa’s participation in Indian Ocean commerce, accompanied by wealth accumulation by the elite, grew dramatically over the period under study, it is important to recognize that other factors played a role in the evolution from chiefdom to statehood. As Chapman (1991, p. 43) stressed in discussing such evolution, “... we cannot assume that change in any one trait is sufficient to define the transition from one type [of society] to another, or be sufficient to identify the presence of a particular type.” Many other factors were in place that contributed to the development of socio-

political complexity in southern Africa including a growth in population, which was enabled by floodplain agriculture in the Shashe-Limpopo Basin, increases in wealth in the form of cattle and changes in ideology (Huffman 2000, p. 27; Mitchell & Whitelaw 2005, p. 240).

5.2. World-systems analysis

World-systems¹⁶ theory (WST) was first developed by Wallerstein (1974, 2004) to analyze a European capitalist environment and was confined to examining the past 500 years. Archaeologists soon recognized its potential as a tool to examine much older societies and began to adapt it (see Hall & Chase-Dunn 1993 for a summary). The use of WST by archaeologists has been criticised by some “for being too economic, ignoring individual actors, and for using or importing modern analyses inappropriately into ancient settings” (Hall et al. 2010, p. 236). Although these can be problems, adaptations have been developed to address these and other issues. The adaptations are generally termed world-systems analysis (WSA) to distinguish them from Wallerstein’s theory. Hall et al. (2011, p. 237) point out that WSA “encompasses several competing theories, all of which emphasize interaction as central to cultural and social change.” These adapted forms can be used effectively in archaeology – in conjunction with other models – for comparative analysis and to pose empirical questions.

5.2.1. *Core-periphery relations*

One focus of WSA is on core-periphery relationships. It is not difficult to view the southern African interior as a peripheral region supplying raw goods in exchange for manufactured ones (glass beads and cloth) to a distant core that changed over time. In the early period the core would have been in the Persian Gulf, which most likely supplied Chibuene and Zhizo series beads, followed by South and/or Southeast Asia supplying K2 I-P and East Coast I-P beads. The core during the period in which Mapungubwe Oblate and Zimbabwe series beads were in circulation is not yet clear. Finally, when Khami I-P beads were current, the core shifted once again to South Asia. It also appears that at times southern Africa may have been linked to more than one core at a time. For example, it is generally accepted that in the 13th to 14th centuries Kilwa controlled the gold trade coming out of the south. But there is little evidence at Kilwa or elsewhere on the East Coast of the main product that provides evidence of that trade in the south – massive numbers of Mapungubwe Oblate and Zimbabwe series beads. The difficulty in reconciling these north–south differences in the archaeological record, suggest that the beads may have been part of a different trade circuit – possibly one that came directly across the southern ocean – and that the trade through Kilwa might have been supplying mainly cloth to the south. The Shashe-Limpopo Basin’s remote location, at the far southwest corner of Indian Ocean trade circuits, the difficulty of reaching that section of the coast from East Africa

16 The hyphenated form is used to indicate that ‘world system’ does not imply a global expanse but rather “interacting politico-economic units” (Hall et al. 2010, p. 236). Frank (1994) does not use the hyphen, believing the system was truly global (excluding the New World before the 16th century).

and the possibility of reaching it via southern routes that would completely bypass East Coast commerce and control, make this scenario a possibility.

5.2.2. *Inequality*

Discussions of core-periphery relations usually lead to questions of whether such exchanges were unequal and if they led to the underdevelopment of peripheries. Although WST sees these relationships as inherently unequal, Chase-Dunn and Hall (1991) have revised the concept to include situations where inequality is not apparent. In southern Africa it is likely that the presence and/or level of inequality in foreign trade changed over time. An important part of informing this discussion lies with a determination of value and depends on the value system used to frame the enquiry. In other words what value did the goods – both those being exported and imported – have to people living in the peripheries? This exercise invariably involves a subjective determination made by the interrogator who must try to recreate the values of the people being studied rather than imposing modern values on them.

One could argue that in the 8th to 11th centuries, the period in which trade in exotic goods grew to levels large enough to begin to affect socio-political organization of the region, ivory had little local value and gold even less. There is evidence that ivory was used for ornaments and arm shields for archers, but no evidence of gold use occurs¹⁷ until after the transition to statehood at Mapungubwe in the 13th century. On the other hand glass beads and cloth were exotic, beautiful and locally irreproducible. Such items could have been considered fair value in exchange for the local goods that played little part in the economy. The one trade commodity that would surely have been extractive and harmful to the community, however, was slaves¹⁸. The export of slaves is seldom discussed in terms of southern Africa but they are likely to have been part of commerce. Strong evidence is provided in the statement by the Waq-Waq raiders, who attacked villages along the southern coast in the mid 10th century, that they had undertaken the expedition

because they found ... products useful to their country and to China ... such as ivory, tortoiseshell, leopard skins, and ambergris, and because they sought Zanj owing to the ease with which they supported the state of slavery and their [strong] physique (Trimingham 1975a, p. 133).

Apart from slaves, it could be argued that in the early period exchange was not particularly unequal – both sides were trading goods with minimal local value for goods that were exotic in their cultures. However, this changed over time, and as control over trade became restricted, it allowed those in control to accumulate wealth and power. In turn these exotic goods became essential to the maintenance and augmentation of power, leading to a situation in which the elite became dependent on the trade. Thus over time it can be argued that external trade became increasingly unequal.

¹⁷ Gold was too soft to be used for tools or weapons. Iron and copper on the other hand were highly valued. Iron was used for tools and weapons while both iron and copper were used for making jewellery.

¹⁸ It would be difficult to determine whether most of the slaves were taken from coastal communities or whether some were brought from the interior.

5.2.3. *Others views about exotic trade and inequality in southern Africa*

It is not uncommon for authors who approach the question of inequality in relation to exotic trade in southern Africa to do so in a static manner. They often begin with the Portuguese records of their dealings with the Mutapa state and then project what can be extracted from those 16th to 17th century documents back almost a millennium across the region. For example, Pearson (1998) argues that exchange relations between pre-capitalist entities were mostly benign. He uses the Mutapa state as an example stating that both ivory hunting and gold extraction were discretionary activities that commoners undertook only when they needed beads or cloth. Pearson then assumed this condition persisted back through time.

Beaujard finds that Pearson and others who argue that exchange in exotic goods in eastern Africa was not unequal but beneficial to all

...wilfully ignore the mechanisms of exploitation, the size of the exchanges – in volume, space, and time – social stratifications produced by long-distance trade, and the existence of a sustained and prolonged slave trade (Beaujard & Fee 2005, pp. 442–443).

Beaujard argues that exchange values in the periphery remained low because of inefficiency in the extraction of surplus goods for trade and because the cores could “impose their products at their own prices or exchange rates” (2005, p. 440). Again this stance seems static since this may have been the case once a prestige goods economy was in place and the elite were dependent on imports to maintain power, but it would not necessarily have been the case before that.

Horton and Middleton also do not view long distance trade as benign, pointing out that the “...trading relationship between the coast and the interior has always been asymmetrical – one of exploitation of Africa by the outside world” (2000, p. 102).

Swan, being more specific, pointed out the dangers and hard labour involved in adit mining, so argued that “... if the labour invested by commoners in production is considered, straightforward exchange of surplus production from prestigious commodities is not convincing as a sufficient incentive” (Swan 2008, p. 27). This may indeed have been the case during the Mutapa dynasty on which she based her discussion but in the 10th to 12th centuries – the period during which the elite rose to primacy and changed the socio-political and ideological basis of society, and when initial resistance to such changes might have occurred – it is possible that much of the gold extraction was accomplished by the less dangerous and arduous method of panning rather than mining¹⁹.

Killick (2009) has criticized WST for being overly concerned with the exploration of underdevelopment and dependency as well for its emphasis on core-periphery relations and the insistence that such relations are inherently unequal, noting that some peripheries in antiquity did have agency. He also emphasized that WST pays too much attention to political economy and too little to the

19 However, a report by Buzurg ibn Shahriyar (c. AD 947) may indicate adit mining was being practiced at an early date. In describing the farthest point in the land of Zanj, his informant stated, “men dig for gold there, and excavated galleries like ants” (Freeman-Grenville 1981, p. 38).

transfer of knowledge. While accepting that world-systems theories do have some value in the concepts of core, semi-periphery and periphery, Killick, following Dietler (1995), proposed that these useful bits must be disengaged from the concepts of unequal exchange and dependency. He thus proposed scrapping most of WST and integrating material analysis with exchange of ideas. He then proceeded to examine just how much knowledge transfer did result from eastern Africa's Indian Ocean trade. The results were rather slim.

Killick disputed both Pearson's conclusion that Indian Ocean trade with Zambezia was benign and Martin Hall's (1990) conclusion that both sides were "partners in a mutually beneficial relationship, both exchanging trinkets of little value in their own economies that were important because of rarity" (*ibid.*, p. 102). Unlike Pearson, Killick does recognize that trade between the Portuguese and the Mutapa state would not have been the same as the earlier trade that involved stronger polities, but I believe his conclusions about the earlier trade require verification. Killick states that Zimbabwe was a strongly centralized tributary state and that K2 and Mapungubwe appear "to have held even tighter control over the distribution of imported glass beads" (Killick 2009, p. 12).

I do not believe this latter point has been adequately explored. The sort of detailed intra-site comparisons that have already been mentioned will be needed to verify such assumptions. For example, the commoner site of Pont Drift (Hahnisch 1980), 23 kilometres west of and contemporary to K2, produced 625 glass beads (including 16 Garden Rollers) in residential and midden deposits, as well as 64 additional beads from a child's burial (Wood 2005, p. 76–81). Based on the volume of deposit excavated (approximately 68 m³), the habitation areas of this small commoner site produced 9 beads per cubic metre – not disgraceful compared to the 40 beads per m³ at K2. In another example the commoner site of Skutwater (Van Ewyk 1987), which was contemporary with Mapungubwe and sits 18 kilometres to the east, produced 1250 beads from residential and midden deposits, as well as well over 1350 beads (many are missing) from burials. Approximately 214 m³ of deposit were excavated accounting for just under 6 beads per cubic metre. It is also noteworthy that all of the burial beads came from four graves in the cattle kraal, while four other burials situated outside the kraal produced no beads. These results might suggest that control over bead distribution increased over time but many further examples of this sort of work will be needed before informed conclusions about the strength of central control over exotic goods in any one period can be reached.

Thus, I do not believe the important questions of how closely the elite controlled external trade or how unequal the exchange was can adequately be answered with the data presently available for the entire time period under study. Results will surely show that conditions changed over time.

5.3. Prestige goods model

Another method for examining the emergence of hierarchical political systems is in terms of Friedman and Rowland's (1977) prestige goods model. It is especially attractive given the rarity of glass beads and other exotic goods in southern Africa and the opportunity those goods provided the elite to acquire and then maintain power. The premise behind this model is that political alliances and social reproduction are tied to the exchange and consumption of specific rare goods

that are obtainable only through foreign trade (Kardulias 1998). The underlying economic logic is that political advantage is gained through control over access to prestige foreign goods that are non-essential and non-utilitarian. Ultimately they become essential in social transactions and for payment of social debts (Frankenstein & Rowlands 1978, p. 76).

Thus, glass beads and their distribution in southern Africa would seem to fit the prestige goods model perfectly, in that they are non-essential, non-utilitarian foreign goods, but in an undated monograph available online (<http://www.wcfia.harvard.edu>) Mark Horton – in exploring the concept that Asiatic cultures and civilizations exploited eastern Africa, leaving it “impoverished over a period of some 2000 years” – reached a surprising conclusion. In discussing state development at Mapungubwe and Great Zimbabwe Horton reached the conclusion that “both sites are notable for the rarity of Indian Ocean materials, except for glass beads.” And that “While it is tempting to see a ‘prestige-good exchange system’ as one of the causes behind the emergence of these elites in the southern African interior, there remains a real shortage of Indian Ocean prestige goods anywhere in the archaeological record.” Perhaps Horton is unaware of the sheer volume of glass beads and their widespread presence across the landscape. Or perhaps he finds it difficult to imagine that they could be considered prestige items, even though they fit Frankenstein and Rowland’s definition. In his article Horton lists glazed ceramics, glassware and metal currency as prestige goods. These are items that might be accepted as prestigious today, giving the impression that a western value system is perhaps being projected onto Africa.

In a subsequent article, however, Horton reaches the insightful and useful conclusion that imported glazed ceramics and glassware were not direct trade items, but rather part of a gift exchange that cemented relations between traders, that they “were socially embedded commodities that have symbolic meanings about the prestige and status of the trading class” and that they “denote membership in a common Indian Ocean culture” (Horton 2004, pp. 64–5). He also noted that “actual exchange may have used less visible items, such as cloth ..., foodstuffs, or even coinage ...” (ibid.). Here glass beads are not mentioned even as trade goods, but Horton’s explanation for the presence of exotic ceramics and glass vessels on the eastern African coast seems reasonable given the limited quantities one finds (Horton & Middleton 2000). It would also explain why so few traces of them are found in the interior, whether north or south, where they obviously did not play a role in trade.

Pikirayi (2001) has objected that the prestige goods model does not explain how the elite distributed benefits from foreign trade to the lower ranks of society. In other words why did commoners allow themselves to be drawn into a system which permitted the emergence of an elite class that was able to accrue wealth and power? To explore possible reasons why commoners would allow themselves to be co-opted into the new system, we can again turn to the bead evidence, but should focus on the period in which the transition took place. The presence of these exotic imports at pre-transition commoner sites, such as Pont Drift, provides evidence that commoners had access to them before the transition and that the beads had become socially significant enough to be used in rituals such as burials. Thus by the time the elite was able to secure control over distribution of these exotic goods, they were already engrained in the economic, social and symbolic fabric of society and therefore in demand. Evidence at Skutwater then demonstrates that after the transition to state level society commoners were still

receiving exotic goods and it is likely they were transferred not only in exchange for goods and services but were used to garner and ensure support and to create obligations. Further detailed analysis of finds from additional sites dating to both before and after the move to Mapungubwe could bring far more insight into how the transition to statehood took place.

5.4. Beaujard and Fee's world-systems economic cycles

Recognizing that one must examine more than just the economics of trade networks, Beaujard and Fee (2005) take a holistic world-systems approach that ties together all aspects of the Eurasian and African world-system, including climate, ideology, trade, innovation, demographic trends and political systems, as well as interaction between the system as a whole and its constituent parts, and integrate them into a set of master world cycles that follow the rhythm of economic cycles as they rise and fall every few hundred years. Three major core areas are recognized by zone: China in the China Sea, India in the eastern Indian Ocean and alternately the Persian Gulf or the Red Sea and Egypt in the western Indian Ocean. Beaujard and Fee chart four major periods of cyclical pulsations in this system (all dates are AD):

1. 1st to 6th century
2. 6th to 10th century
3. 10th to 14th century
4. 15th to 16th century

The early part of each cycle is beneficial, as production, innovation and social complexity are rising, and after reaching a peak, decline and disorder set in. In a similar manner, Sinclair has developed a culture history chronology (1987, p. 120)²⁰ that defines the developmental phases of social change on the Zimbabwe plateau. It is divided into five phases:

Phase 1: early 1st millennium AD – sees the establishment of the first farming communities which exhibit little social differentiation, no external trade is evident.

Phase 2: mid 1st millennium – finds evidence of a wider range of subsistence activities, exotic goods (signs of external trade) appear along with evidence of the production of surpluses for trade.

Phase 3: 9th to mid 13th century – external trade has expanded, the Shashe-Limpopo Basin is integrated in external trading networks, prestige goods are pro-

²⁰ These phases are based on the ceramic sequence developed by Huffman (1971, 1974, 1978 & 2007).

duced at Schroda and K2, cattle herds increase and small state structures are developing.

Phase 4: mid 13th to mid 15th century – there is clear evidence of architectural differentiation, elite settlements are spread across the Zimbabwe plateau, long distance trade and cattle are controlled, prestige goods are circulated and tribute is extracted.

Phase 5: mid 15th century on – sees the demise of Great Zimbabwe and the rise of the Khami and Mutapa states, there are political and economic adjustments to the changed circumstances rather than structural transformations.

Using Beaujard and Fee's cycles as a template and Sinclair's phases as context, I will correlate world-systems events with the cultural phases and changing bead series that were found in southern Africa between the 6th and 16th centuries. It is only in Sinclair's Phase 2 – probably beginning in about the 7th century – that these two systems may be integrated. This is also the time when the first two bead series, the Chibuene and then the Zhizo series, appear in southern Africa. It is probably not surprising that this surge in trade and exchange occurs during the beneficial phase of the second Eurasian and African cycle, or that the demise of both the port of Chibuene and the Zhizo bead series take place as that cycle dies in the mid-10th century.

Sinclair's Phase 3 (9th to 13th c.) fits fairly closely to Beaujard and Fee's third cycle (10th to 14th c.). The changes in bead series during this time fit best with Beaujard and Fee's cycle in that the K2 I-P and East Coast I-P series (from South and/or Southeast Asia) appear in the late 10th to early 11th century, which would have been the beginning of that cycle. The shift to the Mapungubwe Oblate series in the early-mid 13th century and then to the related Zimbabwe series in the early 14th century cannot, as will be discussed below, be accounted for in the Eurasian and African world-system cycle. Finally, the shift to the last pre-European-trade bead series, the Khami I-P series, occurs in the upswing of Beaujard and Fee's 4th cycle (15th to 16th c.) and coincides with the beginning of Sinclair's Phase 5 (the mid 15th century).

As has been pointed out, there appears to be a disjuncture in the mid 14th century between Beaujard and Fee's 3rd world cycle and events in southern Africa. This was a dramatic time at the end of a prosperous four-hundred-year-long cycle in the Eurasian and African world-system. According to Abu-Lughod (1989) the period from 1250 to 1350 had been a golden age in which there was an efflorescence of cultural and artistic achievement and the entire 'world' engaged in exchange that was beneficial to all – including Europe for the first time in many centuries. It was also the high point, up to 1330, for Kilwa, which is generally accepted to have controlled the Sofala trade in that period. But this all came to a halt beginning in the 1330s with an unfortunate series of events that eventually included the Black Death (1348–1351), which decimated populations, particularly at trading ports, from China to Europe.

The disruption and downturn of the mid 14th century is clear in Kilwa's archaeological record and, if indeed all trade from the south was controlled by Kilwa, should have resulted in reduced exchange and perhaps a shift in trade patterns in southern Africa as well. Yet based on imported beads, trade to southern Africa continued, seemingly unaffected. In fact in the mid-14th century Great

Zimbabwe was at the peak of its power and affluence, and there is no evidence that its prosperity declined until much closer to that city's demise almost a century later (Huffman pers. comm. Aug. 2011)²¹. In addition Zimbabwe series beads continued to be imported without interruption from about 1300 to sometime slightly before 1450. This raises the question of why southern Africa seems not to have been affected by the traumatic 'world' events of the mid 14th century, especially if Kilwa had been controlling the trade.

Beaujard and Fee perhaps provide an explanation in their discussion of the unique position Southeast Asia held in the Indian Ocean trading system. They note that Southeast Asia was often asynchronous to the world system, enjoying relative stability throughout the ups and downs of cycles. This advantage was possibly partially due to favourable climatic conditions and the fact that spices, always in demand, came from there. But more important was its position between two major systems, China and India, and the fact that any trade moving between east and west passed by their shores. Southern India and Sri Lanka were also somewhat protected from cyclical fluctuations for the same reason – being “able to take advantage of the multiplicity commercial routes to which it was connected” (Beaujard & Fee 2005, p. 436). Thus in the mid 14th century, when China, West Asia, Egypt and Europe were in a devastating downward spiral, “trade between India and Southeast Asia continued with little change, and Mojopahit (Java) enjoyed great prosperity” (ibid., p. 435).

To return to southern Africa, could the prosperity enjoyed by Great Zimbabwe and Southeast Asia during this period of decline elsewhere be connected? It is in fact possible that Zimbabwe series beads were coming from Java or somewhere nearby via a southern route. One indication this may have been the case is that most of the very few known examples of ancient glass with chemistry related to the Zimbabwe series come from Sumatra (Paper II, pp.1902 & 1907; Paper VII, p. 101). Thus it is possible that, because of their particular locations south of much of the devastation the rest of the 'world' was experiencing, trade between Southeast Asia and southern Africa could have continued largely unaffected by the chaos around them. But this will remain only a hypothesis until the origins of these beads can be determined.

To recapitulate, southern Africa was intimately interconnected to the Eurasian and African cycles described by Beaujard and Fee. The first cycle in which southern Africa was a participant ended in the 10th century along with power in the Persian Gulf, the Zhizo bead series and the port of Chibuene. With little delay K2 I-P series beads began to arrive in the south suggesting that the South/Southeast Asian traders who brought them were poised to quickly take over the trade routes that had been dominated by Gulf and Omani traders for centuries. It is also probably no coincidence that the Later Iron Age Leopard's Kopje people, who founded K2, moved into the Shashe-Limpopo Basin at this time, likely attracted by the ivory (and probably gold) trade. K2 I-P and East Coast I-P beads dominated imports for the first two centuries of this cycle but, although both were products of South or Southeast Asia, they may have arrived by different trading circuits based on their differential presence at opposite ends of the coast. In addition K2 I-P beads arrived in southern Africa several decades before East Coast I-P ones and then disappeared from circulation several decades earlier

21 Beaujard (pers. comm. Nov 2011) links Great Zimbabwe's demise with a mid-15th century global climate change.

(Wood 2005). Although in 'world' terms this cycle continued until the end of the 14th century, bead evidence in southern Africa shows a shift in the core, and thus surely the traders supplying beads, a decade or two before the mid 13th century.

At that point Mapungubwe Oblate series beads began to arrive in the south in massive numbers, especially in Abu-Lughod's golden period beginning in about 1250. This was during Kilwa's peak as well and the question remains why beads of this series are so rare there and elsewhere on the East Coast. The relocation of the centre of power on the Zimbabwe Plateau, from Mapungubwe to Great Zimbabwe, in about 1300 seems to have been unrelated to 'world' events since long distance trade partners did not change. Although the Zimbabwe series replaced Mapungubwe Oblate beads at about this time, they are so closely related they must have been supplied by the same traders and come from the same core. The fall of Great Zimbabwe in the mid 15th century might again be related to events in the Eurasian and African cycle because it is accompanied, in the upswing of Beaujard and Fee's 4th cycle, by the introduction of the final pre-European-trade bead series, the Khami I-P series, which can be identified with India both on the basis of its chemical signature (Paper II) and Portuguese records of the 16th century (Paper V) that state the beads came from there.

The evocative correspondences between changes in bead series (and therefore the cores they came from and traders who carried them), socio-political change in greater Zambezia and the world-system cycles for Eurasia and Africa as described by Beaujard and Fee, provide evidence that southern Africa was not just an adjunct to Swahili trade or an isolated outpost at the far end of the Indian Ocean trading system, but was both active in and fully integrated into the world-system from at least the 7th century.

6. CONCLUSIONS

This study has made it clear that the northern and southern ends of Africa's east coast developed differently. In the north in the early period, from about the 7th century to the 11th century, foreign trade seems to have been conducted with traders not only from Oman and the Gulf but also the Red Sea. Trade volume was generally low and there is little evidence that much of it reached the interior. In discussing the development of hierarchical societies in the coastal areas of East Africa, including the Comoros and northwest Madagascar, Wright (1989) concluded that in the period up to the 11th century external trade was not a significant factor in social change. He found there is no evidence the trade was mediated by hierarchical political organizations because the communities were self-sufficient and exotic imports were used only as social display. Fundamental changes in the ideological basis of society and the organization of communities did not occur until the 11th to 13th centuries. Even then Horton (n.d.) concluded "the wealth of the Indian Ocean world did not move into the interior, and had little effect initiating state formation processes in Eastern Africa." Archaeological evidence indicates that when trade levels did increase significantly, beginning in the 11th century, India had become an important participant.

The influence of Islam began to make a significant impact on coastal communities, adding an essential element to the evolution of Swahili culture. Trade became a core element of coastal economies but still did not extensively impact hinterland communities and many export goods came from the coast, such as mangrove poles, tortoise shell and ambergris (although ivory and slaves would have come from the interior). Urbanization was driven by and dependent on Indian Ocean trade, which provided the wealth needed to construct elaborate stone architecture. The development of social hierarchies at the coast was not mirrored in the interior. Some urban centres became powerful enough to be considered city-states, but states did not develop. Pottery and lifestyle evidence from the Comoros and northwest Madagascar (Shepherd 1982), as well as foreign trade evidence from Mahilaka (Paper VII), demonstrates that these regions were more closely linked with trade circuits to the East Coast rather than southern Africa.

The south on the other hand was very different. Trade was important from an early date and from the beginning was focused mainly on goods that came from the interior. In the early period most imports appear to have come from the region of the Persian Gulf; there is little evidence of trade from the Red Sea. Trade reached the far regions of the interior and impacted many communities, especially those around the Shashe-Limpopo Basin and Zambezia, where control of exotic goods was an important element in the development of southern Africa's first states. Coastal towns in the south functioned as ports serving the interior but did not develop into sophisticated urban centres like those to the north. Islam also did not become ingrained enough to significantly affect society. Swahili traders surely participated in trade to the south in the later centuries but it is unlikely

they monopolized it and their culture did not take root there as it did elsewhere, such as in the Comoros and northern Madagascar.

Trade links in the south sometimes appear to have differed from those in the north in that the glass beads in the south frequently have little in common with those in the north. Only after the mid-15th century are beads from both ends of the coast significantly similar in type and source.

This detailed study of glass beads has shown that between the 7th and 16th centuries the southern Africa interior was not a remote appendix of Indian Ocean trade to East Africa but was an active and independent participant that was fully integrated into the Eurasian–African world-system. Even when Kilwa was considered to have controlled the gold trade out of southern Africa, the Mapungubwe Oblate and Zimbabwe series beads – the only bead types found in the south while being rare in the north – demonstrate that Kilwa's control would have been confined to trade passing through the north, which seems to have not included beads. The beads strongly suggest that another trading circuit that linked the southern coast directly to the southern part of the Indian sub-continent and/or Southeast Asia was also very active. The challenge now is to locate the sources of Mapungubwe Oblate and Zimbabwe series beads in order to recreate those trading circuits.

As Moira Tampoe has succinctly stated, the period from the 8th to the 15th century saw “the unfolding of a new order of commerce and civilization in the Indian Ocean region” (1989, p. 97). During this period in eastern Africa the lifeways of many populations were transformed, leading to increasing urbanism and the rise of socio-political differentiation. Although Islamic expansion was both an agent and catalyst behind this change in coastal East Africa, it played no discernable role in southern Africa. As has been discussed, change in the south was intertwined with rapidly increasing trade in exotic goods through the Indian Ocean network. This trade was driven by several factors including a rising demand in West Asia, South Asia, Southeast Asia, East Asia and eventually Europe for raw goods that were abundantly available in southern Africa, especially gold and ivory. And it was enabled by existing trade routes that had long interconnected communities across the southern end of the continent. Eventually the volume of this trade allowed those who came to control it to accumulate wealth and power to a degree that was not possible in a cattle economy. Although social transformation must be looked at holistically – recognizing that many factors contributed to the rise of socio-political complexity – it can be argued that such transformation in southern Africa would not have occurred without Indian Ocean trade.

7. FUTURE WORK

Much work remains to be done. The next stage in the chemical analysis project would be to locate and test samples of glass beads, and if possible glass making debris, from regions that may have been bead suppliers. This would include glass made in the greater Persian Gulf region from about the 6th through the 10th centuries, with special attention to the glass that is reported to have been made at Sohar in Oman. Also a study of the beads excavated at Siraf could clarify some questions about trade circuits.

Glass and bead making sites dating to the entire time span under study from all over the Indian sub-continent, including Sri Lanka, should be checked and attempts be made to differentiate between glass composition from different sites that produce glass of the same general chemistry. A similar wide ranging study of glass and beads from Southeast Asia should be undertaken. All of these will be long term projects, especially since few glassmaking sites have been located in any of these areas, but testing existing assemblages of beads and glass shards would be a start.

Work also needs to be done on glass bead assemblages in the Zambezi Basin as well as sites in northern Mozambique. Based on beads I have studied from burials at Ingombe Ilede and Isamu Pati, the region was receiving quite different bead types compared to their neighbours to the south.

Finally a great deal remains to be done with glass beads in East Africa. Assemblages from well-dated sites across the region should be examined, with samples being chemically analyzed, to determine more closely what bead types were in circulation at different times and to seek the origins of the beads to rebuild trade relations. In addition work could be conducted at the Mkokotoni site to determine whether Horton's proposal that beads were being made or at least finished there, is supported by archaeological evidence.

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