The Elemental Analysis of Glass Beads

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Chapter 14

Glass beads at Unguja Ukuu in the late 1st millennium CE: Results of the 2018 excavation in Zanzibar

Akshay Sarathi,1 Jonathan Walz2 and Laure Dussubieux3

1. Introduction

The site of Unguja Ukuu on the island of Zanzibar (Unguja) (Figure 14.1) was a substantial settlement. Located on the island’s southern coast, Unguja Ukuu was first systematically excavated and studied in the early 2000s, when its significance as a trading port with links both to the African interior and parts of the Indian Ocean World were archaeologically confirmed (Juma 2004). Abdurahman Juma was impelled to excavate the site due to the discovery of 8th century gold coins from the Islamic World at the site in 1866 and, secondly, Neville Chittick’s surface survey report of the site in which he suggested that Unguja Ukuu, along with Manda in contemporary Kenya, was one of the most significant Swahili settlements on the East African coast during the second half of the 1st millennium CE (Chittick 1966; Pearce 1967). Juma’s (2004) excavations revealed an occupation sequence that spanned the 6th to 9th centuries CE and a reoccupation in the 11th century. Lastly, the site again was reoccupied in the 15th and 16th centuries. A conclusive date for the beginning of the current occupation of the site was unclear.

Since Juma’s (2004) pioneering work at Unguja Ukuu, other archaeologists have explored various aspects of the site and its occupation history. The general emphasis has been on the site’s connections with the Indian Ocean World rather than the African continent. For example, an excavated artifact identified as an “incense burner” with traces of copal dated to the 8th century CE was interpreted to have belonged to a wealthy local/foreign merchant with links to other regions of the Indian Ocean World, given its non-African character (Crowther et al. 2015). Previous research that employed LA-ICP-MS to trace the original places of manufacture of glass beads found at Unguja Ukuu provided baseline data to reconstruct Unguja Ukuu’s international trade networks (Wood et al. 2017). The

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The results of that article are mostly confirmed by the data presented here. This chapter also preliminarily examines the roles of imported beads in relation to other beads and artifacts in the cultural context of use and meaning.

![Fig. 14.1: The location of Unguja Ukuu in Zanzibar, with other important archaeological and modern settlements identified.](image)

Other publications concerning Unguja Ukuu attempt to reconstruct the everyday lives of its inhabitants. The layout of the site’s earliest occupation sequences, the soil geochemistry of a daub house from the site, and common recovered artifacts have been studied in some detail (Fitton and Wynne-Jones 2017; Sulas et al. 2019). Other researchers have worked on the diet of the inhabitants but thus far have focused on the marine fauna of the zooarchaeological assemblage (Faulkner et al. 2018). A paper currently in preparation assesses all the faunal remains and animal-related products found at the site.

2. Context

Between February and May 2018, the lead author conducted excavations at Unguja Ukuu as part of his dissertation research funded by Fulbright-Hays and National Geographic. These excavations were designed to retrieve as many artifacts and ecofacts as possible within the sampling methodology. By sieving and subjecting to flotation all excavated matrix, the project recovered a representative sample of materials. The intensive excavation process paid dividends as evidenced by the overall assemblage size and uniqueness of individual artifacts discovered. To provide perspective on the types and quantities of select finds, consider the
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following records of finds. More than 11,000 (combined) ostrich eggshell and giant land snail shell beads were found from the occupation sequences dating between the 6th and 11th centuries CE. These consisted of blanks as well as completed and partial beads, suggesting extensive manufacture of these beads at the site (Sarathi 2020; see also Walz 2010). Furthermore, a rock crystal cabochon identified as a seal with the word \textit{lillah} inscribed was retrieved, in addition to carnelian and other stone beads comparable to those produced in the region at this time period. Also, the shattered remains of small glass bottles, or vials, like those reported by earlier excavators of the site (Juma 2004) were recovered in the thousands. Lastly, a total of 1,720 glass beads were discovered in the emphasized occupation sequence. In addition to beads and other ornaments, excavations yielded thousands of potsherds, both imported and domestic. Preliminarily, the imported potsherds consist primarily of Islamo-Sassanian sherds and the locally produced pottery consists mainly of sherds of Triangular Incised Ware/Tana Tradition (TIW/TT) (Sarathi 2020; see also Juma 2004).

The catalogue above enables us to place in some context the 1,720 glass beads and study them in relation to other local and imported beads of different materials used by the inhabitants of the site. One question that immediately arises is whether glass beads and other glass artifacts originate in the same places. Placed in the context of non-local artifacts as a whole, we were compelled to examine whether the trade pattern frequencies, networks, local uses of different kinds of imported objects resemble one another. In this paper, we modestly begin to reconstruct broader patterns of artifact relation and use linked to Unguja Ukuu. We examine the sourcing of glass beads with LA-ICP-MS and use what limited evidence is available to reconstruct possible ways in which these beads were deployed, used, and valued locally.

3. Method

The Unguja Ukuu glass beads described in this paper were retrieved exclusively by flotation and 100% screening (<1mm) of soil excavated from what was a midden. The beads were never found in associations that suggested possible stringing. The most common artifacts excavated from the midden were faunal remains and potsherds. Some iron and copper artifacts, iron slag, shell beads, and a single piece of gold wire were also recovered. The midden lies at the edge of the contemporary tidal zone. It was selected for excavation for this very reason; it is unlikely that the midden would have survived for more than a few more years with the rate of sea level rise and erosion observed at the maximum reaches of the daily high tide and especially the spring high tide.
Soil was preliminarily screened at the site of excavation and large artifacts removed. What remained in the screen was then bagged and labeled before transport to the field station out of which Sarathi operated. There, the bags of soil were subject to careful and controlled flotation. The entire matrix was subject to flotation, with no sampling. The recovered materials were sun-dried before being painstakingly sorted by hand. When the sorting was completed, Sarathi and Walz classified the beads according to a basic typology. The list of samples with details for both the typology for the glass beads developed by the authors (Figure S14.1) and the samples selected for LA-ICP-MS are in the Supplementary Materials (Table S14.1). At least one sample from each bead type was chosen for analysis. The beads were distributed fairly evenly among the seven strata (Table 14.1) encountered during the excavation, as can be seen in Figure 14.2 and Table S14.2. An overwhelming number of beads were manufactured using the drawn technique with a translucent blue glass. They represent 81% of the bead corpus. The chosen samples were analyzed with LA-ICP-MS at the Elemental Analysis Facility (Field Museum, Chicago) by Sarathi and Laure Dussubieux in August 2019.

<table>
<thead>
<tr>
<th>Layers</th>
<th>Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12th-16th (?) century CE</td>
</tr>
<tr>
<td>2</td>
<td>10th-12th century CE</td>
</tr>
<tr>
<td>3</td>
<td>8th-9th century CE</td>
</tr>
<tr>
<td>4</td>
<td>8th-9th century CE</td>
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<tr>
<td>5</td>
<td>8th-9th century CE</td>
</tr>
<tr>
<td>6</td>
<td>8th-9th century CE</td>
</tr>
<tr>
<td>7</td>
<td>6th-8th century CE</td>
</tr>
</tbody>
</table>

**Table 14.1:** Dating the broad contexts from which the beads were excavated. The dates derive from the excavations of Juma (2004), which took place only a few feet from Sarathi’s 2018.

**Fig. 14.2:** The total number of beads (of all types) per level.
4. Results

Seventy-four beads were analyzed (see Annex A for analytical protocol). One bead composition was eliminated, as it was corroded glass (Bead 84). Three beads were polychrome and the different colors that were part of them were analyzed. Seventy-six compositions are available (Table S14.2). Three glass types were identified (Table 14.2):

— 53 compositions belong to the mineral soda – high alumina (m-Na-Al) glass groups,
— 22 compositions revealed a high sodium plant ash recipe (v-Na-Ca),
— Bead 15 has a high lead composition.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>SD</th>
<th>Average</th>
<th>SD</th>
<th>Sample 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>67.3%</td>
<td>3.4%</td>
<td>69.0%</td>
<td>3.4%</td>
<td>24.5%</td>
</tr>
<tr>
<td>Na₂O</td>
<td>18.1%</td>
<td>2.2%</td>
<td>14.7%</td>
<td>1.2%</td>
<td>0.1%</td>
</tr>
<tr>
<td>MgO</td>
<td>0.5%</td>
<td>0.2%</td>
<td>3.3%</td>
<td>0.8%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>8.9%</td>
<td>1.5%</td>
<td>2.6%</td>
<td>0.9%</td>
<td>0.3%</td>
</tr>
<tr>
<td>K₂O</td>
<td>2.2%</td>
<td>0.8%</td>
<td>2.6%</td>
<td>0.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>CaO</td>
<td>3.1%</td>
<td>0.8%</td>
<td>7.4%</td>
<td>1.7%</td>
<td>0.5%</td>
</tr>
<tr>
<td>PbO</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>73.1%</td>
</tr>
</tbody>
</table>

*Table 14.2:* Average reduced compositions with standard deviation (SD) of the glass beads in the m-Na-Al group and the v-Na-Ca group and composition of the high lead glass bead.

4.1. m-Na-Al glass type

Close to 70% of the measured compositions belong to the mineral soda – high alumina (m-Na-Al) glass. From a general point of view, the m-Na-Al glass contains soda as the most abundant constituent after silica. The distinctive feature of this type of glass is its high alumina content, which varies from 5 to 15%. It also contains small amounts of potash and lime (2-3%) (Dussubieux 2001; Dussubieux and Gratuze 2003). Magnesia in this glass is rather low (lower than 1.5%), suggesting the use of soda taken from a mineral source (See Annex B). Table 14.2 shows the average reduced composition (calculated by only taking into account the oxides listed in the table) for the m-Na-Al glass samples found at Unguja Ukuu. Sample 70 was excluded from the average although it fits into the definition of the m-Na-Al glass. It is a black glass with higher concentrations of MgO, but also P₂O₅ and CaO. These constituents certainly were added (voluntarily or not) to the glass by wood or plant ashes within a reducing atmosphere that would have facilitated the black color of the glass.
The high alumina concentration in the glass is a marker of an Indian provenance. In this region glass was manufactured from a natural mix of immature sand and soda-rich efflorescence called in some part of India *reh* (Kock and Sode 1995; Brill 2003; Gill 2017). The m-Na-Al glass group was divided into five subgroups (m-Na-Al 1, 2, 3, 4 and 6) based on the variation of the concentrations of a number of constituents: Mg, Ca, Sr, Zr, Ba, Cs and U (Dussubieux et al. 2010; Dussubieux and Wood, 2021). Recently, additional groups were identified at the site of Indor in Rajasthan, dating from the 14th century CE and onward (Trivedi and Dussubieux, this volume; in preparation). For more details about the m-Na-Al glasses in general, see Annex B.

Figure 14.3 represents the principal components 1 and 2 calculated using the concentrations of MgO, CaO, Sr, Zr, Cs, Ba and U in the Unguja Ukuu m-Na-Al glass beads and in glass beads belonging to the five glass groups mentioned above. Most of the UU m-Na-Al glass beads have a m-Na-Al 1 composition. Two beads (11 and 25) fall in the area of the m-Na-Al 2 glass. Bead 19, with a lower Zr concentration than the ones found in the group m-Na-Al 2 was certainly made from a different sand. Two beads (27 and 70) belong to the m-Na-Al 6 group. Beads 36 and 81, with lower U levels and higher Cs levels than the levels in m-Na-Al 6 fall close but outside of this group. It is noteworthy that these two beads have extremely similar compositions with a relative difference for the concentrations of the same oxide or element of less than 10% for most of them. It is possible that samples 19, 36 and 81 are part of these newly discovered groups found at Indor in Rajasthan dating from the 14th century CE and onward (Trivedi and Dussubieux, this volume). More research is needed before further interpretation.

In South India and Sri Lanka, small drawn beads were made from a locally manufactured glass, called m-Na-Al 1. The 3rd century BCE – 2nd century CE settlement of Giribawa, located in the northwestern part of Sri Lanka is a possible production center for that glass group (Dussubieux et al. 2021). The same type of glass is also found in South India, suggesting that it might have been manufactured there as well. At this point, no primary glass manufacturing center has been excavated in South India, but preliminary evidence for glass bead making is available (see Abraham 2016). The small m-Na-Al 1 drawn beads from South India/Sri Lanka were quite likely exported as such to Southeast Asia starting around the 3rd or 2nd century BCE, becoming dominant in Southeast Asian glass bead assemblages after the 5th century CE (Dussubieux and Gratuze 2010) and until the 11th century CE (Dussubieux and Allen 2014). Although the m-Na-Al 1 glass beads were also traded westward, this glass type remains rare in Africa where the only place it is found in significant quantities is Unguja Ukuu (Wood et al. 2017).
Fig. 14.3: Principal components 1 and 2 were calculated using the concentrations of MgO, CaO, Sr, Zr, Cs, Ba and U for samples belonging to glass groups m-Na-Al 1 to 4 and 6 and the glass samples from UU. The m-Na-Al 1 glass samples are unpublished data from Sri Lanka and South India, the m-Na-Al 2 glass samples are beads from Chaul (Dussubieux et al. 2008), the m-Na-Al 3 glass samples are beads from Kopia (Dussubieux and Kanungo 2013), the m-Na-Al 4 glass samples are glass vessel fragments from Sumatra (Dussubieux 2009) and the m-Na-Al 6 glass samples are from the eastern coast of Africa (Dussubieux and Wood 2021).

M-Na-Al 2, the glass used for the manufacture of the Khami Indo-Pacific beads, has been identified at many sites dating from the 14th to the 19th centuries CE located in southern Africa (e.g., Robertshaw et al. 2010; Wood et al. 2009) and the east coast of Africa (Dussubieux et al. 2008). The site of Chaul, a port in Maharashtra, yielded m-Na-Al 2 glass beads and could have been a point of departure for these beads for distribution around the Indian Ocean. Bead production at Chaul is attested by evidence found at this site (Gogte et al. 2006) and by the mention of the production of beads at a site called “Chawle” by Venetian merchant named Caesar Frederick who travelled along the west coast of India (Federeci and Hickock, available online).

The m-Na-Al 6 is expected to have been manufactured in India although concrete archaeological evidence for that is still missing; however, the fairly high strontium isotope ratio measured for this glass (Seman et al. 2021) matches the strontium isotope signatures found in the east part of Uttar Pradesh. The m-Na-Al 6 glass was identified based on material found on the Eastern Coast of Africa where it was assigned a period ranging between the 9th century CE and the 13th century CE (Dussubieux and Wood 2021). The m-Na-Al 6 glass beads from the Eastern Coast of Africa have the same composition as the Indo-Pacific K2 and East Coast beads identified earlier (Robertshaw et al. 2010; Wood et al. 2009) and that belong to a slightly shorter time window (10th – 13th century CE). Our understanding of the diffusion of this glass is still partial due to its very recent discovery.
4.2. **Soda plant ash glass**

Close to 30% of the samples have composition high in soda with magnesia and potash concentrations > 1.5% that indicate the use of halophytic (salt-tolerant) plant ashes as a soda rich flux. In addition to soda, potash and magnesia, this ingredient generally contains a variable proportion of lime. It is mixed with rather pure silica obtained by crushing quartz pebbles or other silica rich material. This type of glass is the earliest known glass type. By the middle of the 2nd millennium BCE, production centers manufacturing such a glass operated in both Egypt (e.g., Rehren and Pusch 2005; Smirniou and Rehren 2011; Smirniou et al. 2018; Tite and Shortland 2003) and Mesopotamia (e.g., Degryse et al. 2010; Shortland et al. 2018). Starting around the 9th - 8th century BCE, soda from mineral deposits (e.g., natron) replaced soda plant ash in Egypt and in the Syro-Palestinian region. Toward the end of the 1st millennium CE the use of natron declined (Shortland et al. 2006) and a return to plant ash occurred. The soda plant ash glass tradition may have continued uninterrupted in Mesopotamia and Sasanian glassmakers produced such a glass from the 3rd to the 7th century CE (Mirti et al. 2008, 2009).

To understand the connection of the Unguja Ukuu soda plant ash beads with other soda plant ash glasses found in Sub-Saharan Africa, the compositions of the beads were compared with the compositions of some glass thought to be from Egypt, dating from the 14th century CE (Dussubieux 2017) and of three different v-Na-Ca glasses identified at Chibuene, Mozambique (Wood et al. 2012):

— **v-Na-Ca 1**: it is the most abundant v-Na-Ca glass type and was found similar in composition to Middle-Eastern glass such as can be found at the site of Nishapur. At Chibuene, it was associated with the 8th to 10th century CE period.

— **v-Na-Ca 2**: this glass type has significantly high amounts of chromium correlated with the presence of nickel. It was found in samples in the forms of glass sherd or wastes. At Chibuene, it was associated with the 8th to 10th century CE period.

— **v-Na-Ca 3**: this glass usually in the form of bluish or greenish drawn glass beads contains higher trace elements such as Rb, Ce, Cs, Ba, La and U. It was associated at Chibuene with the earliest context possibly ranging from the 7th to the 9th centuries CE.

Comparison was made using principal component analysis on the Unguja Ukuu v-Na-Ca glass samples taking into account the concentration of MgO, P$_2$O$_5$, CaO, Cr, Rb and La that were found useful to separate soda plant ashes found at the site of Chibuene (Wood et al. 2012) (Figure 14.4).
The Unguja Ukuu v-Na-Ca glass beads are distinct from groups v-Na-Ca 2, 3 and from the glass from Egypt. The compositions match the v-Na-Ca 1 glass with a few samples falling outside of this group, mostly due to an important variation of the phosphorus and other constituent concentrations suggesting maybe several source locations within the Middle East. Comparative data for beads from this region are scarce and limit our efforts for a more precise source location.

4.3. Lead glass

Finally, Bead 15 has 73.6% of lead and 24.5% of silica. All the other constituents present in this bead have concentrations below 1%. The color of this bead is “turquoise-green” certainly due to the presence of 0.32% of CuO detected in the glass. High lead compositions are common for glass with an emerald color found in different points of the Islamic word in contexts dating from the 9th to the 11th century CE. Although all those glasses have more than 50% of lead, the other constituents of the glass have concentrations that may vary suggesting that different workshops producing that kind of glass might have existed (Brill 1999, volume 2:182-183; Freestone 2020; Wypyski 2015).
5. Discussion

This new study reports results similar to those obtained by Wood et al. (2017) that found that close to 70% of the beads from Unguja Ukuu derived from South Asia and close to 30% from the Near/Middle East. In fact, the proportion of South Asian glass might even be more important. Among the beads recovered during the 2018 excavation, 81% of the beads were translucent blue drawn beads. We found that these beads belong to the m-Na-Al 1 glass type. This suggests that all these translucent blue drawn beads might have the same composition, and all come from South Asia.

![Fig. 14.5: Distribution of the glass types by contexts. UUA2-Lvl 2 was omitted as only one bead from this context was analyzed.](image)

Both glass types are associated with production dating from the end of the millennium CE in line with the dating of the site. Figure 14.5 indicates that the earliest glass might have been the m-Na-Al 1 glass, an observation also made by Wood et al. (2017). The presence of m-Na-Al 6 beads, dated from the 9th to 13th century CE, in the earliest levels of the excavations at Unguja Ukuu is surprising and cannot be explained. The only m-Na-Al 2 glass bead was found in level 1 (12th – 16th century CE), which agrees with the dating of that kind of glass (14th century CE and onward). The v-Na-Ca glass beads are present in the levels 1 to 4 that are dated from the 8th to 9th century CE (level 3 and 4), from the 10th to 12th century CE (level 2) and 12th to 16th century CE (level 1). The v-Na-Ca 1 glass is generally associated with contexts dating from the 8th to the 10th century CE and their presence in later contexts might be due to beads being passed down generations and disposed of at a later date than when they were produced. The high lead glass was found in level 2 (10th – 12th century CE) which agrees
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Glass beads at Unguja Ukuu in the late 1st millennium CE fairly well with the period for the manufacturing of that type of glass (9th to 11th century CE).

Beads 36 and 81 have m-Na-Al compositions that are slightly different from the other m-Na-Al glasses we analyzed but that are extremely similar to each other. Further, these beads do not present a smooth exterior under magnification. Instead, they appear cracked and riven with faults in which sand particles adhere (Figure 14.6). Their texture and the cracking suggest that they were produced by reheating crushed beads, but that the process did not achieve the smoothness of beads produced in the Middle East or South Asia because the beads were not heated to high enough temperatures. Melting crushed glass requires a temperature of about 1000 °C or a little less and can be achieved in an open fire (Schultz and Walder 2016). Producing beads from recycled glass was practiced in Sub-Saharan Africa in ancient times as well as more recently. Garden roller beads that can be found in the Southern part of Africa (10th - 12th century CE) were manufactured from crushed glass placed in a one-piece clay mould that was then broken to retrieve the bead (Robertshaw et al. 2010; Wood 2011). Wood (2016) notes reworking of beads in Gao and Chibuene.

Still today, colorful beads are produced in Western Africa from recycled glass crushed and placed in a mold that can accommodate several beads at a time (e.g., Agyei et al. 2012; Liu et al. 2001). It seems quite likely that beads 31 and 86 were shaped from the same batch of recycled glass. Were those beads produced at the
site of Unguja Ukuu itself? No archaeological evidence (e.g., mold) supports this hypothesis; the fact that the compositions of the beads are different from all the other m-Na-Al glass beads seems to make it unlikely that some of them were recycled on site into new beads. It does not seem either that the difference between the m-Na-Al compositions of beads 31 and 86 and the other beads could have been induced by the recycling process: no presence of residual colorants in the recycled glass or no specific increase of trace elements (some are more abundant, and some are not) are visible in the compositions of the two beads.

Although it is not possible to affirm that some glass beads were shaped on site, it is quite likely that glass beads were purely imported products. Shell blanks, partially formed beads and the presence of thousands of finished beads indicate that a thriving shell industry developed at Unguja Ukuu. Another consideration that this new bead study from Unguja Ukuu would like to explore is how imported glass beads were incorporated into a preexisting system of production and display of land snail shell and ostrich eggshell beads. More than 11,500 shell beads were excavated, roughly seven times the number of imported glass beads (N = 1,720). This suggests that glass beads were incorporated into robust bead-using culture and likely gained a new meaning in the process and throughout occupation.

The temporal distribution of the beads offers some insight into changing patterns in the trade bringing beads to Unguja Ukuu between the 6th and 12th century CE. As can be seen in Table S14.2, some patterning certainly is present, but assessing whether the limited presence of a single bead type in three or fewer layers is due to factors concerning taphonomy of excavation errors or due to genuine changes in the bead trade network is difficult. On the whole, it seems that the bead networks remained stable through the site’s occupation until its abandonment post-1100 CE.

Shell beads of the types and quantities mentioned above suggest, for instance, the presence of a regular supply of ostrich eggshells from the mainland or from other parts of the island if ostriches existed on Unguja at that time (Prendergast et al. 2016). No ostrich remains were identified in the Unguja Ukuu excavations. Alternatively, completed ostrich eggshell beads from the mainland may have been exchanged to inhabitants at Unguja Ukuu. Giant African land snails (Lissachatina spp.) were collected for bead production as well (see Walz 2010, 2017). Thus, the social deployment of glass beads must have taken place on the backdrop of shell beads. The glass beads came in different colors, while the shell beads were white or off-white. Without strong evidence one way or the other of how shell and glass beads were worn together or separately and what objects they were attached to, we are limited in our ability to further explore the relationship between and juxtaposed by the deployment of various bead types at Unguja Ukuu over time. Interestingly, the shell beads were found in various stages of manufacture: blanks,
finished beads, and partially finished beads were all found in significant quantities at the site (also see Walz 2010). Imported glass beads from distant regions could have served as symbols of status or identity, in which familiar objects were given greater value due to their foreignness or because they mimicked local materials of value.

The imported glass beads also must be placed in the context of other imported goods found at the site: glass vials/bottles and Islamo-Sassanian Ware in particular. Both of these types of objects were sourced to the Middle East and likely traveled the same routes as the beads that originated from this region. Islamo-Sassanian sherds were favored for use as bead-grinders for the manufacture of shell beads at Unguja Ukuu. Little evidence remains of how Islamo-Sassanian sherds, small imported bottles of eggshell-thin glass, and imported glass beads arrived or were deployed together. However, as the three major objects of importation during the entirety of the pre-Islamic occupation of the site, they were likely used together and gained value from association with each other. The use of Islamo-Sassanian sherds to make shell beads from local raw materials further indicates, we argue, the incorporation of imported materials in unique ways that helped to make local objects, such as beads worn on the body or in the hair.

6. Conclusion

This chapter examined the results of the analysis by LA-ICP-MS of a sample of excavated glass beads from the Swahili urban site of Unguja Ukuu in Zanzibar, Tanzania. Excavations revealed the extensive use of glass beads throughout the occupation sequence at the site, but especially in the later first millennium CE. Chemical tests indicate that the glass of most bead from Unguja Ukuu was made in South Asia. Such trade is evident at the site across different occupation sequences. Furthermore, the trade in, modification of, and use of glass beads at the site should be placed in a larger context of the assemblage recovered at the sites during this and previous excavations. Beads were not the only objects of glass that were imported to Unguja Ukuu and other East African sites. For instance, thin glass vessels, that are currently under study, were imported from the Middle East as well. These observations reveal that imported glass beads likely were prestige goods of not insignificant value that linked early Swahili sites to far-flung networks in the Indian Ocean World. While oceanic trade networks continued to operate and transcend local changes, an understanding of imported glass beads requires taking into consideration human expressions that impacted economies of scale and on-site practices. This paper primarily helps to reconstruct networks of glass bead origin and exchange – itineraries of beads – but also begins to raise
heretofore obscured questions about the relationships among (local and foreign) beads and other artifacts in an assemblage and their potential uses in this context.

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Glass beads at Unguja Ukuu in the late 1st millennium CE


