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Material taxonomies and beads on the East African coast, seventh-fifteenth centuries AD

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ABSTRACT

Beads found in assemblages from the coast of East Africa have received significant archaeological attention. Glass beads were imported in large numbers to coastal sites from Indian Ocean trade networks from at least the seventh century AD; they give an important indication of the volume and direction of trade. Beads produced locally from materials such as shell have normally been understood in the same ways, seen as objects of trade for partners within and beyond Africa. In this paper, bead evidence is instead considered as an index of local values and uses. Beads of different materials are reviewed and a more flexible approach to taxonomy is suggested, highlighting local categories of object that do not entirely align with archaeological taxonomies based on raw materials and technology. A set of skeuomorphic beads from the Tanzanian sites of Kilwa Kisiwani and Songo Mnara is considered as an example of how local categories might transcend materials-based taxonomic systems.

RÉSUMÉ

Les perles trouvées dans les assemblages de la côte de l'Afrique de l'Est ont fait l'objet d'études approfondies. Les perles de verre ont été importées en grand nombre vers les sites côtiers à travers les réseaux commerciaux de l'océan Indien depuis au moins le septième siècle; elles donnent une indication importante sur le volume et la direction des échanges. Les perles produites localement à partir de matériaux tels que les coquillages ont normalement été appréhendées de la même manière, considérées comme des objets d'échange destinés à des partenaires en Afrique et au-delà. Dans cet article, les données relatives aux perles sont considérées plutôt comme un indice des valeurs et usages locaux. Des perles de différents matériaux sont passées en revue et une approche taxonomique plus flexible est suggérée, mettant en évidence les catégories locales d'objets qui ne correspondent pas entièrement aux taxonomies archéologiques basées sur les matières premières et la technologie. Un ensemble de perles skeuomorphes provenant des sites de Kilwa Kisiwani et Songo Mnara en Tanzanie est considéré comme un exemple de la façon dont les catégories locales pourraient transcender les systèmes taxonomiques qui sont basés sur les matériaux.

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Introduction

This paper explores bead assemblages from the East African coast with a focus on the characteristics of beads that were valued. Specifically, I explore beads with shared qualities of shape, colour and usage across different materials of manufacture, suggesting that this gives a window into thinking about how beads were bound up into local practices in coastal settings. I attend to Babalola and Rehren's (2023) call to move bead studies beyond questions of 'when' and 'where' and to think seriously about materials and materiality. Their discussion focuses on glass and its qualities — such as colour and plasticity — directing attention to the skill and creativity of African craftspeople in harnessing those characteristics and creating new products and forms. Likewise, Moffett and Walz (2023) suggest that we need to think in novel ways about materials, agency and value in Africa. Their approach to the remaking, bundling and repurposing of beads and shells emphasises the ways in which objects were used and valued across inland networks, rather than focusing solely on trade and connectivity. This approach could also be applied to coastal assemblages themselves. In this paper I explore beads across material categories, advocating a new approach to bead taxonomies that emphasises the practices in which they were bound up (cf. biographies of practice; Wynne-Jones 2016).

The study of glass beads in African archaeology has moved on significantly in recent years. They have always been valued objects in archaeological assemblages, serving as markers of the quantity and direction of trade. Beads are also vehicles for expressing personal wealth and status; burials of individuals with many beads are often construed as symbolising their power and wealth. As it has become common practice to sieve excavation deposits with a 2-mm-wide mesh, the volume of beads available for study has increased, sometimes offering a whole new set of previously unrepresented material that can shift interpretations (e.g. Wood 2015). Over the last 20 years the greatest transformation has been wrought by the routine use of laser ablation inductively coupled plasma-mass spectrometry (LA-ICP-MS) to establish provenance and manufacturing technology (Dussubieux and Gratuze 2003; Robertshaw *et al.* 2010; Wood *et al.* 2012). It is now possible to compare glass bead assemblages from African contexts with those from the Mediterranean, Indian Ocean and Atlantic worlds, exploring technologies and connections. We now know that glass beads were imported from multiple origins across African trade routes (Wood 2023). They were reworked into new and different forms (Rødland 2023; Wood *et al.* 2023) and manufactured directly in some locations (Babalola *et al.* 2017; Munisi *et al.* this volume).

Beads of other materials have also received increased attention. Ostrich eggshell beads (Wilmsen 2015; Klehm 2017; Miller *et al.* 2018; Moffett *et al.* 2022; Mitchell *et al.* this volume; Munene *et al.* this volume) and marine shell beads have yielded significant insights into interactions between forager and farmer communities, and trade routes inland from the coast (Moffett and Walz 2023). On the East African coast, a recent study also explored the production and use of terracotta beads as indicative of non-élite practices of ornamentation (Rødland *et al.* 2020).

This paper starts to connect these different areas of study, exploring the record of beads in similar contexts made of different materials on the eastern African coast. Approaches to materials tend to stress the qualities or affordances of particular

substances as both inspiration and constraint for the finished product (Knappett 2004; Ingold 2007). Thus, as suggested above, the use of glass for beads gives particular opportunities for production technologies of reheating, winding, smoothing and melding. The aesthetic qualities of glass also offer new colours and a shiny appearance; sonorous and haptic qualities have been emphasised by recent anthropologies (Geurts 2018). Some of those qualities may not have been unique to glass. Scholarship that emphasises indigenous approaches to materiality stresses the need to think about ontological categories that make sense for the specific assemblage, so as to capture the ways that objects were experienced and valued (Bennett 2010; Conneller 2010). This inspires new taxonomies, such as that created by Maria Zedeño (2009) for Algonquian and Numic communities in North America, which positioned raw material alongside colour, workmanship, condition and shape. In Zedeño's study, particular *qualities* emerged as sources of potency across materials. For example, red paint/ochre applied to objects gave them potency and also put them into a new taxonomic category along with other objects with ochre applied. The raw material of the objects themselves was part of their value/power, but did not completely determine it (Zedeño 2009). This study sits within a set of approaches to the animacy of objects, inspired by engagement with indigenous ontologies from the Americas (Alberti and Marshall 2009).

This discussion of animacy opens up a new space in thinking through the ways that objects were valued, suggesting a more critical approach to archaeological taxonomy that takes into account local understandings of materials and object categories. It is part of a more general appreciation of perspectivism within archaeological reconstructions (Viveiros de Castro 1998). Building on this, I think through the category of bead across material taxonomies, including objects of different fabrics such as shell, stone or clay. The guiding principle is to explore patterns that may have been meaningful for past coastal communities, inspired by the possibility that the qualities of the material, while valued, were not paramount. They may have been substitutable with other materials in certain circumstances (cf. Moffett and Walz 2023). Following Zedeño (2009), I explore intersections between materials to highlight characteristics that might have been locally meaningful.

The ideas discussed here draw on and are inspired by my own excavations at Unguja Ukuu and Songo Mnara in Tanzania, as well as published data from other sites of the East African coast. It is to some extent a review of beads found at sites on the East African coast, but it seeks to incorporate the greater context available for these excavations and to take a different viewpoint from that previously advanced. In particular, the category of 'glass bead' seems not to have overlapped with other types of glass, even though the capacity to work that glass existed. Beads have their own taxonomies, which may not have been reliant on the categories of material we recognise as archaeologists, but were nonetheless shaped by the qualities of those materials, their shape, size, sound and colour, as well as their workability. In this, I repeatedly draw on evidence from the sites of Kilwa Kisiwani (and see also Munisi *et al.* this volume) and Songo Mnara. Here, we find a series of beads with the same forms yet made from different materials requiring very different forming techniques and technologies. It appears that — at least for these sites — the form of the beads was important and was recreated in different ways across materials. In the discussion, these beads are considered as skeuomorphs — the same forms recreated in different materials — and the results of that

recognition for archaeological interpretation are discussed since they illustrate the resonances across different materials that might have been part of local taxonomies.

Beads and the East African coast

The sites of Africa's eastern coast (Figure 1) have seen extensive archaeological exploration within which beads have loomed large. This coastline and its offshore islands have over the last 1500 years been the location for the development and florescence of the Swahili civilisation, of which trade has always been a defining characteristic (LaViolette and Wynne-Jones 2018). From at least the seventh century AD, locations along the coast were settled by mixed fishing and farming communities who created villages and later towns that exploited the coastal landscape. Throughout their long history, Swahili societies have been notable for their extraverted, cosmopolitan nature (LaViolette 2008); from the earliest settlement, inhabitants were engaging in overseas trade, importing goods from the Indian Ocean world and exporting local products including metals, timber, ivory and possibly captive people (Horton 1987; Crowther *et al.* 2014). From the eleventh century onwards, an acceleration in overseas trade was accompanied by urban growth at many locations along the coast (Kusimba 1999; Fleisher *et al.* 2015). The inhabitants of these sites began building using coral stone and lime mortar, creating a durable architecture that pays testament to a substantial urban population. This medium was used for the construction of mosques that testify to the majority conversion of coastal groups to Islam (although see Horton 1988, 1996; Fitton and Wynne-Jones 2017 for evidence of earlier Muslim communities) and tombs commemorating ancestors as well as ancestry: a lasting investment in these urban settings through the laying down of a lineage in a certain place (Allen and Wilson 1979). Throughout the second millennium these sites flourished and provided a home to a coastal society that was rightly famed throughout the world for its wealth and civilisation. Coastal communities are often described as middlemen, African communities who were deeply connected to local landscapes and peoples, as well as gatekeepers for merchants from the wider Islamic world (Kusimba 1999; Oka and Kusimba 2008).

Across this long history of external engagement, beads have featured heavily in archaeological narratives. They are important indicators of trading activity, as the indications are that they have always functioned as a very useful medium for exchange. Colonial administrators described beads as functioning like a currency (Pallaver 2009), a recognised medium of exchange for trade along caravans into the African interior in the eighteenth and nineteenth centuries. They complained of the fashions that governed what beads would be accepted inland, their own commercial ambitions frustrated by the 'whims' of African consumers. In fact, it is likely that such fashions have always governed the acquisition and consumption of beads and other imports in eastern Africa; the archaeological record gives a picture of changing geographies and itineraries of trade over the centuries, as well as of some very specific tastes in different areas. Horton (1987) charted this shifting geography in broad terms, with an early preponderance of connections with the Persian Gulf giving way to a broader network from the eleventh century, encompassing Red Sea goods and direct connections with South Asia. By the fifteenth century this may have included trade with China. These connections were

Figure 1. Map of the East African coast, showing the sites mentioned in text

also supported by a growing web of kinship and religious networks (Brielle *et al.* 2023) and by the movements of African traders in the ocean space (Vernet 2015).

The broad patterns seen in bead assemblages of different materials are laid out below. Beads are present throughout this history of coastal communities, although in varying quantities at different times. The earliest period from the seventh to tenth centuries saw the import to coastal sites of beads that did not come to rest only on the coast but also travelled far inland. This has been particularly clearly recognised in southern African contexts where glass beads derived from ocean trade became important in local processes of wealth accumulation and status signalling (Sinclair *et al.* 2012; Moffett and Chirikure 2016). Despite these regional dynamics of supply and demand, the numbers of imported beads were relatively small during those centuries, a factor that may have contributed to their value. The assemblages of many first-millennium coastal sites were instead dominated by marine shell beads or at least by evidence for their manufacture (Flexner *et al.* 2008). Like glass beads, these travelled inland where they coexisted with ostrich eggshell beads and those made of land snail (*Achatina achatina*) shell (Walz 2017; Moffett and Walz 2023). From the eleventh century, the record of coastal sites is dominated by much greater numbers of glass beads, although as discussed below these were always present together with those of other materials. As in earlier centuries, these beads travelled far and wide, and are found at sites across eastern and southern Africa (Denbow *et al.* 2015; Moffett and Chirikure 2016; Klehm 2017; Robertshaw 2020). Yet many of them were also worn in coastal sites themselves, and it is these contexts to which this paper refers. Beads are an important part of the material assemblage at coastal sites, representing practices of wealth accumulation and display and reflecting fashions and ideas concerning beauty. They also have an assumed association with women, which offers the archaeologist a rare glimpse into female spaces and materialities (Wynne-Jones 2013; Pauly and Ferrandis 2018). When Portuguese narrators first encountered the Swahili coast at the beginning of the sixteenth century, they wrote of the richly adorned women found in coastal towns: 'with much gold and silver in chains and bracelets, which they wear on their legs and arms, and many jewelled earrings in their ears' (Duarte Barbosa writing in 1505, cited in Freeman-Grenville 1962: 195). Many of the elements of this portrait are lost to us now — the gold in particular is rarely preserved on archaeological sites — but the beads found in Swahili towns still offer a glimpse into those embodied logics of display (Meier 2009).

Glass

Glass beads on coastal sites have been the subject of significant research which cannot be fully summarised here (Figure 2). The vast majority are imported, offering a proxy for understanding the direction and volume of trade. A detailed overview of the beads found at coastal sites (as well as connected sites of southern Africa) is provided in the work of Marilee Wood. She provides a 'bead's eye view' (Wood 2011: 13) of eastern Africa and the Indian Ocean trade, with what has become the established chrono-typology for these artefacts in the region. In very general terms, Wood outlines a shift from Middle Eastern wound bead types found in seventh- to tenth-century assemblages such as Unguja Ukuu (Wood *et al.* 2017), Tumbe (Fleisher and LaViolette 2013), Shanga (Horton 1996) and Chibuene (Wood *et al.* 2012) towards a more diverse

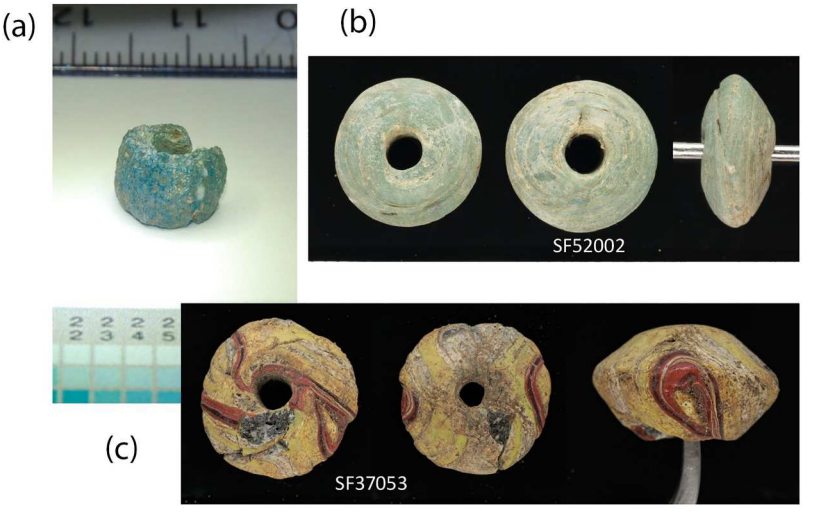

Figure 2. Glass beads from East African coastal sites: a) Zhizo bead from Unguja Ukuu; b) drawn beads from Songo Mnara (photograph: M. Wood); c) folded beads from Songo Mnara (photograph: M. Wood)

'Indo-Pacific' drawn bead assemblage from the eleventh century onwards (Robertshaw *et al.* 2010; Dussubieux and Wood 2021). Within this second-millennium Indo-Pacific category, diversity includes the recognition of several regional bead types and a possible north-south axis of variation. The incorporation of trace element chemistry into these discussions has created an appreciation of even greater variation, documenting a range of origin points for both southern African and east coast bead types (for a recent and comprehensive overview see contributions to Dussubieux and Walder 2022; Wood 2023).

Vessel glass is also ubiquitous at coastal sites and was also imported from trade across the Indian Ocean. In terms of its mobility, vessel glass seems to behave more like ceramics than like beads: objects such as beakers, bottles, phials and (at Gedi) a 'rosewater sprinkler' (Kirkman n.d.: 47) moved into coastal sites and were used there. They are found amongst the debris of domestic life. A recent study of vessel glass from Unguja Ukuu (Siu *et al.* 2023) developed a typology of vessels imported to the site during its eighth/ninth-century trading peak. These were also subjected to elemental analysis and the glass was found to originate in the eastern Mediterranean, coming from production centres like Raqqa in modern Syria (Henderson *et al.* 2004). This not only opens up new geographies of connection for first-millennium Zanzibar, but also suggests different aesthetics of consumption in the social world of the site and creates space between the categories of vessel and bead. The vessel glass does not seem to have been reworked into beads, implying that the qualities of the material were less important than the types of objects themselves (see also Blair 2016). This accords with findings at Chibuene, where large quantities of vessel glass, perhaps imported as cullet (broken glass intended for re-working into new forms), do not seem to have been reworked into beads at the site. This is despite the fact that the vessel glass was of the same glass grouping of plant ash glass (v-Na-1) as the Zhizo beads linked to Chibuene in this period, suggesting a similar origin. It is also in spite of the evidence for glass-working activity of some kind

at the site (Wood *et al.* 2012). At Chibuene, as elsewhere, vessel glass does not seem to have moved into the extensive interior networks the site supplied, although beads certainly moved in large numbers (see Fleisher 2010 for a similar situation in the village of Kaliwa on the island of Pemba). Vessel glass seems to have had a different set of uses — presumably often simply as vessels for consumption and storage — and a different set of distributive logics.

Yet glass beads definitely were reworked on the East African coast. At the eleventh- to fifteenth-century site of Mkokotoni, Zanzibar, Rødland (2023) has recovered evidence for significant manufacture of beads, using glass rods imported from Indian Ocean networks. The beads have not yet been subjected to LA-ICP-MS analysis, but it seems likely that the glass rods used will fit into the East Coast Indo-Pacific series seen elsewhere on the island. At the fourteenth/fifteenth-century site of Songo Mnara, excavations recovered an even more esoteric set of folded glass beads (Figure 2c), otherwise known only from Kilwa Kisiwani during the same period (Chittick 1974: 466–467; Wood *et al.* 2023). These beads seem to have been made from crushed glass paste, packed into a biconical shape and then heated to hold the material together, later decorated using melted glass tubes. The chemistry of these beads is mostly of a plant ash-high alumina (v-Na-Al) kind known from other bead types at the site and may be of Central Asian origin. Nevertheless, the folded beads also contained other glasses, suggesting that the makers at Kilwa and Songo Mnara 'used whatever coloured glass they had at hand' (Wood *et al.* 2023: 366).

Shell

Shell beads are ubiquitous on coastal sites, primarily those made from the shell of the marine bivalve genus *Anadara* (WORMS 2024). Ostrich eggshell beads are not common (or are unrecognised) on coastal sites, despite their prevalence inland. Disc-

Figure 3. Shell disc beads from Unguja Ukuu

shaped beads made of *Anadara* shell are one of the diagnostic artefacts of the late first millennium at coastal locations (Figure 3). They also seem to have been traded and are recognised at a handful of sites in the East African interior (Soper 1967; Walz 2017) and on the Comores (Pauly and Ferrandis 2018). At Harlaa, in the Ethiopian highlands, *Anadara* shells were imported directly from the Red Sea region and worked into beads on site (Insoll 2021). Morrison also describes marine shell beads as being in every level at the site of Siraf in the Persian Gulf, although making no judgement about their origin, whether African or local (Morrison 1984: 185). These shell disc beads are thought to have been manufactured directly within coastal sites; the evidence for this is found in the many dozens of 'bead grinders' associated with these assemblages. These objects, made of stone or fired clay, were used to smooth a pierced tube of shell into a cylinder before it was sliced into pieces to be worn as beads. They are frequently found in association with shell beads and unworked pieces of shell, as at Shanga (Horton 1996: 327) or Manda (Chittick 1984: 183). At Tumbe on Pemba, bead grinders are particularly numerous with 3615 recovered in excavation (Fleisher and LaViolette 2013: 1159). Strangely, however, not a single shell bead was recovered from the site, a pattern replicated at other sites on Pemba such as Kaliwa and Bandarikuu (Fleisher 2003), as well as at Pate in the Lamu Archipelago of Kenya (Wilson and Omar 1997). It may thus be that the beads do not preserve well in archaeological deposits or that large numbers were produced and traded beyond the coast; either would mean that available assemblages significantly under-represent past production. However, it may also be the case that bead grinders are not in fact associated with bead production after all (see Flexner *et al.* 2008 for a review of the evidence).

Numbers of shell beads also vary over time. The clearest concentration of shell beads is from late first-millennium sites and contexts dating to that time from longer-lived settlements. At Shanga, Manda, Pate, Unguja Ukuu and Kilwa shell beads are almost exclusively found in the first-millennium layers, becoming less numerous from the eleventh century, just as glass beads became more common. At sites dating after the eleventh century, there is a more mixed picture. For example, at Vumba Kuu no shell beads were found in deposits of the fourteenth and fifteenth centuries, while at Songo Mnara contexts of the same period produced only 537 shell discs compared to 3197 glass ones. At the twin sites of Tumbatu/Mkokotoni Rødland (2021: 152) found only 51 shell beads across both sites, compared to 36,104 glass beads, but this is an extreme example due to the scale of glass bead imports and probable local manufacture (Rødland 2023). Kirkman, however, recognised shell discs as being relatively common at Gedi. In the outer areas of the site explored by Pawlowicz (2019), shell outnumbered glass by 446 to 109. Kirkman recovered 3411 marine shell beads from the houses of Gedi, including recognising a single string of shell beads that he believed to have been intentionally deposited in the latrine pit of the House of the Double Court. It is a little unclear how this intentionality can be determined or how it might be distinguished from the well-side examples that he believed were lost when 'women bend over to draw water from the well' (Kirkman n.d.: 51). The Gedi examples are nevertheless interesting not only because shell beads can be clearly seen in use around the site in significant numbers, but also because a workshop for shell beads was identified next to the inner wall, with Pawlowicz (2019) identifying additional dispersed production across the outer part of the site; both suggesting continued production of these objects well into

the second millennium. The inner workshop was also dense with green glass beads, showing that the two were sold/traded/obtained through the same tradespeople.

Other categories of shell bead deserve mention here. Land snail shell beads are sometimes found, most notably at Gedi where 379 *Achatina* discs were recovered from excavations. Of these 366 were from a single context and may have formed a single thread. Land snail shell beads have been discussed as possible analogues for marine shell discs. In inland contexts they seem to have been produced and used in similar ways, suggesting an equivalency of materials (Moffett and Walz 2023). At Gedi, Kirkman considered them to have different qualities, notably in their acoustic properties, which he suggested were superior to marine shell equivalents. He suggested they may have been worn for the 'clanking' sound they produced (Kirkman, n.d.: 51). While this may be a fanciful interpretation, a consistent feature of Kirkman's work is his attention to the contexts and qualities of the material record and his attempts to produce human-scale explanations for the phenomena encountered in the archaeological record.

A final category of shell bead is that of aragonite (Figure 4). This is a substance derived from the shell of a giant clam, with a lustrous cream/white appearance. It would have been retrieved from the coral reef by divers and then worked into shape locally. One aragonite bead was present at Manda (Morrison 1984: 184) but they are only numerous at Kilwa and at Songo Mnara; there is no doubt that these formed part of a local industry in the Kilwa region. Chittick's report on his excavations at Kilwa notes the existence of aragonite beads and evidence for bead production, with waste material found — strangely — in the area of the Sake cemetery (Chittick 1974: 476). They are described as common from the fourteenth century onwards (Chittick's Period IIIa), being mostly of moderate size although with some very large examples. In one case, five large specimens with a diameter of 7 cm were found in one deposit, perhaps having formed a single string. Bicone shapes were 'most common' although lenticular forms were illustrated.

Figure 4. Aragonite beads from excavations at Songo Mnara (photograph: J. Fleisher)

This existence of an aragonite industry has come into focus with excavations at Songo Mnara, where aragonite beads are found across the site. As at Kilwa, they are mostly of average size, but some very large examples are found, including those from a structured deposit beneath the floor of one of the stone houses at the site. A location at which these beads were produced has also been excavated, within an earth and thatch structure in the western part of the town. Analysis of the debris here has shown that these beads were produced by stone knapping and then bored to create a bead (Neurock 2015). This was both a regional tradition of producing aragonite beads and a regional technology, paralleled in the production of small quartz tools for cutting coral elsewhere on the site (Wynne-Jones and Fleisher forthcoming).

Terracotta

Beads made of fired clay have been reported from many coastal sites but are often only a postscript to a much longer treatment of beads of other materials. This seems to be because they were rare, rather than because they were ignored. For example, Morrison (1984: 181) states that terracotta beads were 'occasionally used' at Manda; this is later backed up with the information that only five were found across all excavations (Morrison 1984: 184). Likewise, Horton (1996: 333) reports a 'few terracotta beads' at Shanga, referring to 12 beads in the assemblage from the largest trench at this site (Tr6-10). Wright *et al.* (1984: 47) report one ceramic bead at Dembeni on Mayotte, while Anderson (2021: 210) has four at Kingany, Madagascar. These are indeed small numbers. At other sites terracotta beads are not mentioned at all, presumably because they did not exist, given the detail in which the bead assemblages are recorded in those places (Radimilahy 1998; Juma 2004; Pawlowicz 2019; Rødland 2021; Kirkman, n.d.).

The main sites at which terracotta beads have been reported are Kilwa Kisiwani and Songo Mnara. As discussed above, these are also the only sites at which aragonite beads seem to have been common. This suggests an experimentation with materials here, possibly stemming from the types of materials available, but also suggesting a creative response to those materials and to the local demand for objects of adornment. The Kilwa area is also home to a tradition of terracotta spindle whorls (Figure 5). Although spindle whorls are common on the Swahili coast, they vary considerably between sites. In many locations, notably Gedi, Shanga, Tumbe/Chwaka and Unguja Ukuu, whorls were made from rubbed down imported sherds that had been shaped, smoothed and pierced for this purpose. In some locations, such as Mahilaka and Unguja Ukuu, biconical whorls of chlorite schist are found. At Kilwa, in contrast, whorls were custom-made from terracotta, formed into discs and often decorated with incised designs. Chittick (1974: 478) speculated on the possibility that these might have been used as beads, but the patterns of wear, the attachment of iron wire and the location of the decoration make this unlikely. Nevertheless, there is some considerable overlap between the category of whorl and the category of terracotta bead at Kilwa. The terracotta beads are mainly biconical (as with the glass beads and aragonite beads discussed above) and some spindle whorls were also made in that shape. For the purposes of a recent analysis of Songo Mnara's bead assemblage (Rødland *et al.* 2020), a classification was developed for the spindle whorls (DeVos 2017) that used a combination of bore hole, weight, symmetry and size

Figure 5. Terracotta spindle whorls from the Kilwa region

to distinguish whorls from beads. Both DeVos and the authors of the bead study acknowledged that there were fuzzy boundaries between the two.

Another notable characteristic of terracotta beads on the Swahili coast is their chronology. At all sites where they are recognised, terracotta beads occur after the eleventh century. Their proliferation therefore coincides with an upswing in the numbers of imported glass beads to the coast. It also accords with a growth in numbers of spindle whorls more generally at coastal sites. As noted, these are of many different materials so there is no direct correlation with the creation of terracotta bead types, but at Kilwa the corpus of terracotta beads can be seen in the context of the growing cloth industry and its associated artefacts.

Stone

The pattern of stone beads found at coastal sites is remarkably consistent across the region. Beads and necklaces of semi-precious stones are found at most locations, albeit in low quantities. At both Shanga (Horton 1996: 332) and Manda (Morrison 1984: 184), crystal-quartz or rock crystal beads were the most common stone beads, although it should be noted that at Manda this accounts for seven examples in an assemblage of only 15 stone beads. As well as being more common at Shanga, there is evidence at that site for the working of rock crystal, which may have been transiting the Lamu Archipelago for export from sources near the Kenya coast (Horton *et al.* 2017). Pradines (2013) discusses another possible source at Dembeni on Mayotte, but does not mention beads at the site, so the production of crystal beads may have been a local industry on the northern Kenyan coast.

Elsewhere, carnelian beads were the most abundant, probably imported from sources in Gujarat (Hawkes and Wynne-Jones 2015). They predominate at Gedi (N = 36), Kilwa (N = 32) and Songo Mnara (N = 17) and are mentioned at Unguja Ukuu and Mahilaka,

among others. At Songo Mnara, an entire string of carnelian beads (Figure 6) was found in a buried deposit beneath the floor of one of the houses, in the same context as a deposit of over 360 Kilwa coins (Perkins *et al.* 2014). One of the fascinating things about this find was the fact that this string of beads was found as part of a founding deposit, apparently representing a store of value in the foundations of the house. Here, then, beads are not just 'like a currency' in their function as a medium of exchange, but also in their ability to act as a store of value (Wynne-Jones and Fleisher 2012). Another founding deposit contained eight of the large aragonite beads discussed above in an equivalent situation beneath the floor of the room.

Discussion: beads as things and things as beads

The first point that emerges from this review of beads in coastal contexts is the great diversity of them to be found across time and space. Change over time in technologies, materials and fashions has long been recognised. We can also identify differences between sites, where different materials predominate and different qualities are valued. Gedi, for example, is an interesting site as it has large quantities of shell beads well into the second millennium. It is, in fact, a site with a close association with shell. Cowries have not been discussed in this paper; although they were undoubtedly used as beads along the coast they have often not been recorded as such. At Gedi there was a particular concentration of cowries, even leading to one of the houses being named the 'House of the Cowries'. Rather than discussing them with the beads from the site, Kirkman suggested that cowries may have formed a currency at Gedi, much as they did at sites in West Africa (Haour and Christie 2019; Haour and Moffett 2019). This puts the existence of shell beads into a new light, as part of an entanglement with shells and the qualities of shell that crosses between categories of thing.

Figure 6. String of carnelian beads from a buried deposit at Songo Mnara (photograph: J. Fleisher)

This plethora of materials, values and activities suggests that the interpretive potential of beads-as-things goes beyond their use as markers of trade or even of value. Interpretations of the uses of beads are surprisingly sparse. Kirkman (n.d.) offered several suggestions on how beads might have been used, imagining the smallest types being sewn onto clothes, and suggesting the ways that certain types would have been valued for their sonorous properties. Juma (2004: 129) imagines the imported beads at Unguja Ukuu as part of a 'culture of elegance'; that culture might presumably also have featured drinking from extraordinary glass vessels.

A recent project that has offered a fascinating insight into the uses and meaning of beads has been the excavations of 29 burials dating to the eleventh to thirteenth centuries at Antsikara Boira on Mayotte (Pauly and Ferrandis 2018). Here, the burials are accompanied by multiple grave goods that conjure up a compelling picture of a society in the early stages of Islamisation and their relationships with materials of different kinds. The burials are adorned with thousands of beads and, in most cases, it is possible to reconstruct the ways in which they were used. The vast majority of the buried individuals wore a beaded loincloth; different colours indicated differences of sex and age. Only women wore necklaces, which in many cases have been reconstructed. Those necklaces contained glass beads interspersed with shell beads in various patterns; in this context both are imported with the shell beads coming from the East African coastal sites, with the glass apparently entering the island from South Asia (Pauly 2022).

The fantastic data from Antsikara Boira conjure up a world of embodied meanings for the beads, as well as showing that elements such as colour were not peripheral, but instead central to the ways that beads were valued and used. Men wore exclusively black beaded loincloths, while women wore ones of white and red. Children had multicoloured versions. The burials also hint that object represented social categories of gender and age for the wearers. Five of the buried women also held terracotta spindle whorls in their hands, pointing to the ability for these to index other social categories linked to craftworking and skill. They also complicate the link between women and beads; although the necklaces were exclusively worn by women, these would be difficult to distinguish in the archaeological record from the beads that had made up the loincloths.

While haptic qualities may also have been important, it is more challenging to explore these, despite the ways that archaeologists have attempted to bring this into account. As we have seen, Kirkman (n.d.) alluded to the 'clanking' sound of *Achatina* beads and at Songo Mnara it was suggested that pierced coins worn as beads might have been valued for their sonorous qualities (Wynne-Jones and Fleisher 2012). Those coins worn as beads were also part of a repertoire of jewellery that would have had similar cadences, such as the copper ankle bracelet found in one house, which was set with copper bells that would have tinkled as the wearer moved around. Again, these qualities across objects and materials can alert us to some of the ways that objects were valued, following Zedeño's (2009) approach to the identification of potency in objects, which can transform the character of ordinary places and enhance human power.

The beads from Kilwa and Songo Mnara do offer one interpretive category, as it seems that shape was an important characteristic in local bead production and use. This is brought into focus by the skeuomorphic beads discussed, made of glass, aragonite and terracotta (Figure 7). Skeuomorphs are interesting because they disrupt archaeological

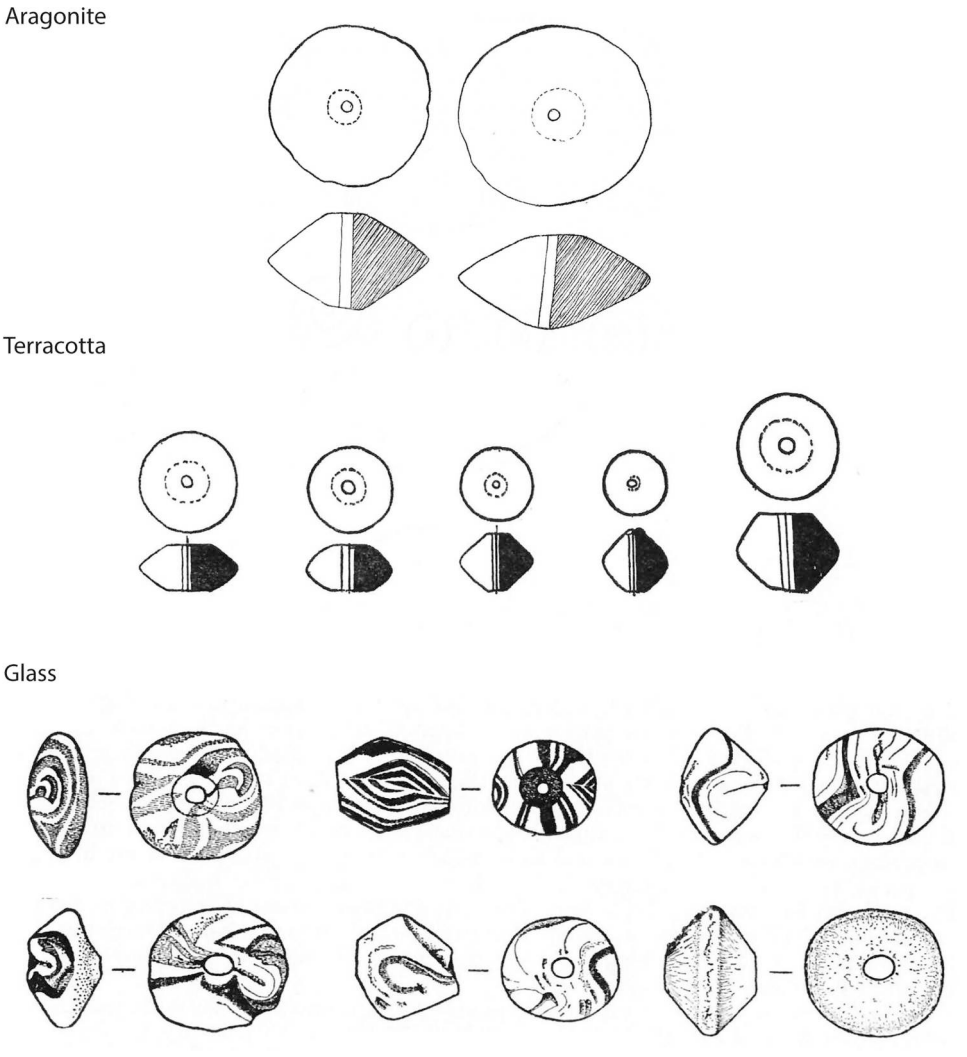

Figure 7. Comparison of skeuomorphs across material categories (created from illustrations in Chittick (1974)).

ideas about materials and technology. Considerations of skeuomorphs in the archaeological record have often described them as copies or as forms of emulation. This has been thought of as a way of passing off one material for another, either openly or as a form of deception, perhaps to increase an object's value (see for example Wengrow 2001; Knappett 2002). Archaeology's embrace of alternative ontologies and perspectivism has, however, led to a new appreciation of skeuomorphs with the realisation that differences between materials may not have been as significant to others as to ourselves (Frieman 2012; Conneller 2013). This positions skeuomorphs not as cheap imitations or attempts at deception, but as alternative components of a taxonomic category. As Conneller (2013: 130) argues, skeuomorph production makes explicit the relationship between different materials through a shared 'inner essence', which in her analysis is

the characteristic of lustre that can be found across material types. Here, we might think instead about terms of form and the haptic qualities that go with it (weight, movement, sound).

At Kilwa and Songo Mnara, we cannot know if one of the bead materials was more valuable. Was aragonite perhaps the most valuable and glass and terracotta were made in its image? Or were these simply different materials within a taxonomic group? Considering these as skeuomorphs instead enables a return to the idea of looking for qualities across materials in a way that might reflect local categories — the type of taxonomic thinking discussed above. The parallels in form across materials were not accidental. Creating this shape using knapping technology was not the same set of techniques as creating it using crushed glass paste or moulded terracotta. Instead, these shapes were consciously created, pointing to a role here for a very local form that occurred across materials.

This further leads us to consider the role of local production in the creation of object taxonomies. The biconical and lenticular beads of the Kilwa archipelago offer a regional fashion that would have been legible to local communities as part of their object worlds. The materials used were those with which coastal groups were intimately familiar: clay, shell and coral from the surrounding area, as well as glass brought in through overseas connections. Likewise, bead production at sites like Mkokotoni shows how materials were imported but also remade and created in a particular regional style.

Overall, then, the beads of coastal sites in East Africa have much to tell archaeologists, beyond the mapping of trade connections. In keeping with recent calls to rethink objects and materials in this region, this exploration of material taxonomies has attempted to uncover some of the ways that beads were valued and used, through attention to the qualities of the materials of which they were made, and the practices in which they were bound up. This can lead us to consider creativity and the creation of value across material categories and to work towards new taxonomies that might reflect some of the ways that people understood and used these objects in the past societies we seek to understand.

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