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Stringing Together Cowrie Shells in the African Archaeological Record with Special Reference to Southern Africa

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Abstract

Archaeological explorations of the meaning of 'trade objects', such as glass beads and cowrie shells, remain hampered by theoretical and methodological limitations in both their analyses and interpretations. In this paper, we develop a methodology for critically engaging in multi-scalar questions of the circulation, exchange, and value of cowrie shells in African archaeological contexts. Species, size, dorsal modifications, and depositional contexts were compared across five sites from South Africa dating between 750 and 1350 CE. These results were positioned within a review of cowries from archaeological sites in the region and compared to the documented distribution of cowries from wider African archaeological contexts. *Monetaria annulus* were the prevalent cowrie species in southern African archaeological contexts over the last 2000 years, with a notable absence of *Monetaria moneta*, prevalent at contemporaneous sites in West Africa, as well as a variety of endemic southern African species. Breakage patterns on the dorsal surface correspond to different modification techniques, such as chipping and grinding. Combined analyses of modification, use-wear, and depositional patterns show variation, revealing a diversity in the biographies of individual cowries. While a comparison of the distribution of cowries across the continent confirms the circulation of cowries through known trade routes, such as the trans-Saharan trade network and the European mercantile network, they also reveal new pathways for exchange that highlight the need for further exploration of intra African networks. Finally, the breadth of the results of this study demonstrates the value of a focus on a specific artefact to address a wide range of themes, from exchange to the archaeology of everyday life.

Keywords Cowries · Value · Trade and exchange · Object biographies · Itineraries · Africa

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Introduction

Cowries are some of the most widely used and exchanged shells in human history. The shells belong to marine gastropods of the family Cypraeidae (Lorenz & Hubert, 2000). There are over 200 species of cowries. However, two species of cowrie shells in particular, *Monetaria moneta* and *Monetaria annulus* (formally classified as *Cypraea moneta* and *Cypraea annulus*) are of particular prominence due to the circulation and use of their shells across vast regions of the world (Johnson, 1970). Human modification and use of the shells of these two cowrie species dates back over 10 000 years, with evidence of cowrie use in the Neolithic period of many regions of the Levant and Europe (Bar-Yosef Mayer, 1997; Alarashi *et al.*, 2018), in predynastic Egypt (Golani, 2014; Hogendorn & Johnson, 1986) and from as early as 3000 BCE in China (Gupta, 2018; Peng & Zhu, 1995; Yang, 2011). Analyses of the varied contexts from which cowries have been recovered have revealed the diverse values of the shell through time and the multifarious ontological frameworks within which these meanings were made (Bascom, 1980; Einzig, 1966; Hogendorn & Johnson, 1986; Johnson, 1970; Kay, 1985; Leslie, 2007; Moffett & Hall, 2020; Ogundiran, 2002; Quiggin, 1949; Trubitt, 2003; Yang, 2011).

Despite their prolific use through time, the origins, harvesting and exchange of cowries still remain poorly understood in some regions. Both species, *M. moneta* and *M. annulus,* occur naturally in the Indo-Pacific region and are found living in warm water, inter-tidal zones (Burgess, 1970; Dance, 1974; Lorenz & Hubert, 2000). While both species occur in similar geographical zones, certain species are dominant in particular regions. For example, *M. annulus* cowries are the dominant of the two species in many regions of the East African coastline, while *M. moneta* are dominant along the shores of the Maldives (Christie & Haour, 2018a, 2018b; Hogendorn & Johnson, 1986). Species distribution and size may also vary within microenvironments in the intertidal zone.

While cowries were collected and used directly by coastal communities through time, evidence of their distribution indicates that they were also exchanged over long distances, facilitating their circulation and use in far flung regions of the globe. For example, *M. moneta* cowries reached discrete inland regions in northern India and Southeast Asia from the 1st millennium BCE (Chew, 2018; Gupta, 2018). Evidence of the intense harvesting and trade of *M. moneta* cowries from the Maldives for circulation in Indian Ocean trade networks was documented by Al-Mas'udi in the tenth century CE and Ibn Battuta in the fourteenth century CE (Hiskett, 1966; Johnson, 1970). Recent research by Haour and Christie (2019) has significantly opened up our understanding of the distribution of cowries in West Africa. Their analyses of archaeological cowries from the region confirmed that the *M. moneta* from the Maldives Islands reached West Africa via trans-Saharan trade routes by the terminal first millennium CE. From the sixteenth century, European traders brought large quantities of cowrie shells via oceanic routes from the Maldives to West Africa for the acquisition and enslavement of people. This led to the infamous coining of cowries as the 'shell money of the slave trade' (Heath, 2017; Hogendorn & Johnson, 1986).

Research into the exchange, use and role of cowries in other regions of the continent has been relatively neglected. In particular, in global reviews of the use of cowries southern, central and East Africa rarely feature (Hogendorn & Johnson, 1986; Quiggin, 1949). This dearth of cowrie research is partly compounded by the unsystematic and undetailed recording of these shells from archaeological contexts. In southern African archaeological literature, cowries are often listed in faunal reports without much discussion, or alternatively inserted as one of the 'trade goods' in the description of archaeological finds (for example, Denbow, 1990; Denbow *et al*., 2008; Plug, 2000; Voigt, 1983). Classification of cowries from archaeological contexts in Africa is usually restricted to the genus level. This masks potentially important information including regional distribution and consumption patterns of the *M. moneta* and *M. annulus* cowrie species. Isolated finds of cowries from late first and early second millennium CE contexts in inland Central Africa are described as 'wealth' or 'exotic' items (de Maret, 1977; Giblin *et al*., 2010). In contrast, in East African archaeological contexts, cowries are often assumed to be of little value, due to their proximity to the assumed source, and are rarely mentioned. Some historical sources from the eighteenth century indicate that *M. annulus* cowries were harvested and exported from areas of East Africa, such as Zanzibar, to supplement the export of Maldivian *M. moneta* cowries to West Africa (Vernet, 2005, 2015). While earlier writers (Wilding, 1987) suggested that this may have a longer historical precedence, little research has been done to address this. In southern Africa, the few existing discussions of cowries in the archaeological record have focused on their presence in archaeological contexts from the eighth to fourteenth centuries CE, a period associated with increased evidence of long-distance trade objects such as glass beads from the wider Indian Ocean rim. In this period, the association between cowries and other trade items has led various authors to ascribe them the value of 'prestige', 'exotic' or 'trade' goods (Denbow, 1990; Denbow *et al*., 2008; Klehm, 2017; Plug, 2000; Voigt, 1983; Wilmsen, 2017).

While it is likely that cowries embodied or denoted value in different use contexts, value assumptions based on economic considerations such as rarity or proximity to source are problematic (Appadurai, 1986; Dietler, 2010; Graeber, 2001; Mullins, 2011; Thomas, 1991). Careful contextual analyses of the value of 'exotica' have revealed that in many cases, assumptions around rarity and prestige are not corroborated, and reanalyses of evidence of use suggest a complex myriad of factors affecting the ways in which value is made (Moffett & Chirikure, 2016; Prestholdt, 2004; Stahl, 2004; Wynne-Jones, 2010). One exemplary case is Ogundiran's (2002) seminal study of cowries in Yorubaland. *Moneta* cowries were the dominant import into the Yorubaland region of the Bight of Benin between the sixteenth and nineteenth centuries. Their close association with European mercantile networks has resulted almost exclusively in analyses of their commercial impact as monetary currency. Adopting a biographical perspective, and drawing on a variety of sources that included both archaeological evidence and oral traditions, Ogundiran exposed how within Yorubaland cowries were stripped of their commercial associations, with their meaning and value reconstituted in Yoruba cultural traditions. Although cowries had been used in pre-Atlantic Yorubaland, their use had been limited to ritual and religious purposes, while glass beads played important roles as objects of social

distinction and in creating and mediating political power. In the recontextualisation of cowries within Yorubaland in the Atlantic era, cowries replaced many of the symbolic and social functions glass beads had in pre-sixteenth-century Yorubaland contexts, with their exchange and use facilitating new forms of wealth and self-realisation in the political economy.

More recently, researchers working on the contextual value of objects have emphasised the utility of studying an object's 'itinerary' (Joyce and Gillespie, 2015; Stahl, 2017). The concept of object itineraries, as opposed to biographies, takes cognisance of the material and ontological turns, emphasising the relational meaning of things in the archaeological record. In a similar way to approaching objects as parts of 'assemblages' or 'bundles', a focus on an object's itinerary is used to emphasise the multiple narratives of an object's life that are embedded in relation not only to transaction and use but also to environmental factors, thoughts and emotions (Pauketat, 2013; Hamilakis and Jones, 2017; Fowler, 2017). Working from the premise that the properties of things and beings are not fixed, but are rather 'vibrant' and changing, further opens up the possibility of exploring the sensory and emotive affect of things and beings within different ontological frameworks (Alberti, 2016; Brück, 2019).

However, as Antczak and Beaudry (2019) recently noted, approaches to object studies emphasising relationality often lack a methodological bridge between theory and data. This can make teasing out scalar nuances related to context difficult to achieve in practice. In this paper, we explore methodologies to bridge this gap in relation to the study of small finds such as cowrie shells. In our methodology we combine a novel range of analyses to the study of cowrie shells from southern Africa. These include analyses of origin, distribution, depositional context, modification and use-wear patterns in combination with considerations of the materiality of cowries and the construction of value in the inter-artefactual, environmental and social domains. Our analyses focus on collections from five archaeological sites in South Africa: KwaGandaganda, Schroda, K2, Mapungubwe and Shankare, dating between 750 and 1350 CE. In addition to the methodological challenges outlined, the lack of detailed research on cowries in Africa, and southern Africa in particular, provided further impetus for this study. In combination with a comparison of the results from southern Africa with research undertaken on cowries in West Africa (Haour & Christie, 2019) and other parts of the continent, this study demonstrates the potential of our methodology for addressing multi-scalar research questions, from broad circulation patterns to the articulation of value in everyday life.

Background: Cowries in the Southern Africa Archaeological Record

The distribution and use of cowries in historical and archaeological contexts in southern Africa is poorly understood. Within the more recent past, cowries were used in divination practices and ritual contexts, a practice documented in different regions of southern Africa over the late nineteenth and twentieth centuries (Moffett & Hall, 2020). The antiquity of this practice is attested to archaeologically at 'Historic cave', in northern South Africa, occupied by members of the Kekana chiefdom

in 1864 (Esterhuysen 2010). Fragments of cowrie shells were recovered in a bundle along with other items, such as phalanges, indicative of their use as part of a divination kit (Esterhuysen, 2006: 121–122).

A review of published and 'grey' archaeological research indicates the longer use of cowries in the southern African region. The earliest documented cowries in southern Africa are associated with 'Iron Age' agriculturalist farming communities, who occupied regions of southern Africa alongside and at times intermixed with hunter-gather and herding communities from 200 CE (Huffman, 2007; Maggs & Whitelaw, 1991). Two cowries identified as *Cypraea annulus* were recovered from a domestic midden context at Broederstroom (350 to 600 CE) (Fig. 1) (Mason, 1981, no further details). A small number of cowries have also been recorded at sites from similar time periods in other regions of southern Africa, such as at the site of Kadzi (400–750 CE) in northern Zimbabwe and Nqoma (660–1090 CE) in northern Botswana (Mason, 1981; Plug, 1989; Pwiti, 1996; Voigt & Driesch, 1984).

Cowries are recorded more frequently and in larger numbers from 700 CE (Maggs, 1980; Maggs & Whitelaw, 1991; Plug, 1989, 2000; Voigt & Driesch, 1984; Whitelaw, 1993; Wilmsen, 2011). This period is characterised by a marked increase in settlement visibility on the landscape in southern Africa, along with accumulative evidence of settlement expansion, economic diversity and evidence of the exchange of goods such as copper and ivory, along with 'imported' items such as glass beads from the Indian Ocean rim. Two sites from this time period formed part of the current study: the sites of KwaGandaganda and Schroda. The site of KwaGandaganda, a large 'village' type agriculturalist settlement located in the Umgeni River Valley in the Kwa-Zulu Natal Province of South Africa, was occupied between the eighth and early tenth centuries CE (Whitelaw, 1994). Schroda, located in the northern

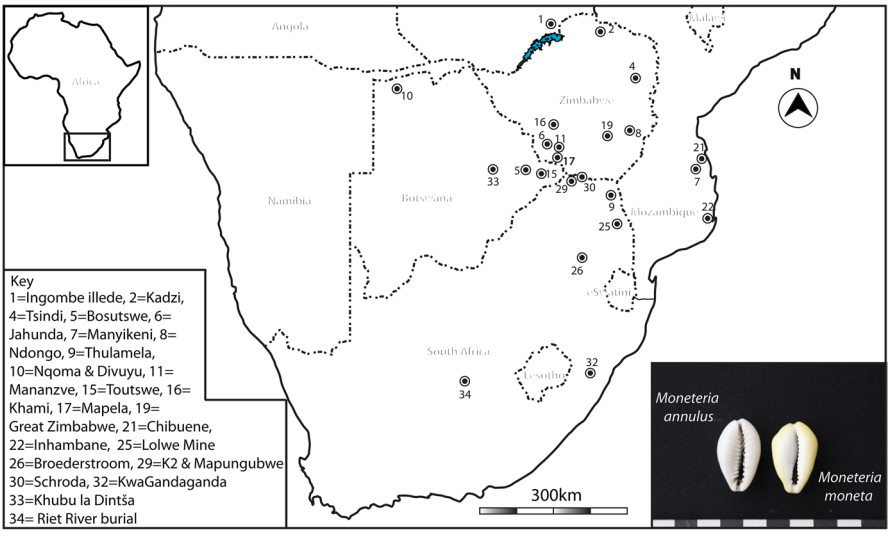


Fig. 1 Map of southern Africa, with well-known sites and sites mentioned in the text, and image of two prevalent species of cowries

Limpopo Province of South Africa, was occupied between the tenth and eleventh centuries CE (Hanisch, 1980; Raath-Antonites, 2014). It is one of the largest documented settlements in southern Africa from this period.

In the early second millennium CE, increasingly large settlements are found alongside a new form of settlement pattern characterised by the presence of coursed stone enclosures on the slopes and hilltops of granitic hills (Chirikure *et al*., 2016; Pikirayi, 2001; van Waarden, 2011). While these stone-walled settlements occur widely across eastern Botswana, central and southern Zimbabwe and northern South Africa, some of the most notable are Mapungubwe (1200–1300 CE), Bosutswe (700–1700 CE), Mapela (1030–1400 CE), Chumnungwa (1200–1600 CE) and Great Zimbabwe (1000–1700 CE). Collections of cowrie shells from two well-known sites from this period, K2 (1000–1200 CE) and Mapungubwe (1200–1300 CE), form part of this study. Along with Schroda, these sites are well known in regional scholarship and have been the subject of considerable focus in relation to the development of complex societies and the role of long-distance trade in the political economy of early polities in southern Africa (Calabrese, 2000; Chirikure *et al*., 2014, 2016; Huffman, 2009; Sinclair *et al*., 2012).

Despite the conventional association between cowries and 'elite' sites in this period, cowries have been recovered from a diversity of contexts at sites dating to the late first and early second millennium CE (Hall, 1905; Garlake, 1973; Welbourne, 1975; Rudd, 1984; Plug, 2000; Chirikure & Pikirayi, 2008; Klehm, 2017; Nyamushosho, 2017). The fifth collection of cowries under study was recovered from recent excavations at the site of Shankare, just outside of the modern-day town of Phalaborwa, in Limpopo, South Africa. A discrete settlement at the base of Shankare hill occupied between the tenth and thirteenth centuries CE consisted of a community of independent copper working specialists who exploited the nearby copper ores at Lolwe Hill (Moffett, 2017; Moffett *et al*., 2020).

While cowrie shells appear in greater quantities at agriculturalist Iron Age sites in the first and second millennium CE, they do feature in sites associated with pastoralists and hunter-gatherers. At Rose Cottage Cave, a perforated cowrie (*Monetaria* sp.) was recovered from a context associated with the first millennium CE (Wadley, 1992). Mitchell (1996:46) noted the recovery of a *M. moneta* found on the surface at Sehonghong shelter, and cowries (3 of these recorded as *Cypraea annulus*, the rest not identified to species level) were found as associated grave goods in four of the Riet River burials, which are associated with the Riet River settlements in the Northern Cape belonging to pastoralist communities (Humphreys and TM, 1970). These burials likely date to the second millennium CE.

Cowries occur frequently, although in small numbers, at agriculturalist, hunter-gatherer and herder sites dating to the last 500 years in southern Africa. *M. annulus* have been documented at a range of stone walled agriculturalist sites in the interior of South Africa that were occupied by agriculturalist groups in the last 500 years (Laidler & Dart, 1935; Maggs, 1976; Mason, 1973; Plug & Badenhorst, 2006). In contrast, a large numbers of *M. moneta* have been found along South African coastlines in association with seventeenth- and eighteenth-century Portuguese shipwrecks, thought to be destined for use in West Africa (Auret & Maggs, 1982). Their use by southern African communities however appears to have been limited (Tiley

& Burger, 2002), although they do appear in ethnographic objects collected from southern Africa, such as the eighteenth-century cowrie 'crowns' housed in the British museum. Cowries, likely *M. moneta*, may have transited through the Cape on route to West Africa, with some exchanged locally in the eighteenth to nineteenth centuries. Small numbers of *M. moneta* cowries have also been recovered from burial contexts in Cape Town and in building remains at the old Slave Lodge and may have been grave goods associated with the burials of enslaved people (Malan pers. comm 2019). These may have been personal possessions, in a similar way to the cowries recovered in association with sites of slavery in North America (Heath, 2017).

Materials and Analyses

Collections labelled cowrie shells from five archaeological sites in South Africa, KwaGandaganda, Schroda, K2, Mapungubwe and Shankare, were chosen for this study. These sites date to between 750 and 1350 CE and span a period of time associated with the increased visibility and 'complexity' of agriculturalist communities in the interior southern African region (Table 1). However, each site differs in terms of size, location, time period and regional prominence. Shells from the above sites were targeted for analyses based on these factors, as well as existing documentation of cowries and accessibility to the archives within which they are housed. However, not all shells documented in the original excavation records were present in the museum archives for analysis (Table 2). This was particularly so for the sites of K2 and Mapungubwe, which have been subjected to over 80 years of research and various levels of recording and documentation (Plug, 2000; Tiley, 2004; Tiley-Nel, 2018; Voigt, 1983; Wood, 2000). Archival material related to the provenance of specimens also varied but could be supplemented with other information. For example, 15 of the 18 cowrie shells from K2 and Mapungubwe analysed as part of the current study retained the original labels from their first accession into a museum archive. The associated dates on the labels ranged between 1934 and 1940 (Fig. 2). Given this time span, these cowrie specimens were likely excavated by Guy Gardner and Leo Fouché (Fouché, 1937; Gardner, 1963). Three additional cowries were labelled with different museum accession information, and although no date of recovery was recorded, the accession numbers indicate that they likely date to Meyer's later excavations during the 1970s and 1980s (Meyer, 2000).

To actualise this study required developing a methodology that could address the various components of an object's itinerary during use. The analysis of itinerary was broadly broken down and clustered under four sub-themes: origin, distribution, use and value. To address these varying aspects of the itinerary, a range of analyses were required. The origin of cowries is notably difficult to ascertain, particularly given the widespread distribution of the same species across the Indo-Pacific region (Burgess, 1970). Few comprehensive morphometric or isotopic studies have isolated attributes of *M. annulus* and *M. moneta* to different geographical regions. However, differences between the prevalence of particular species may be indicative of origin. *M. annulus* cowries are the dominant of the two species in many regions of the East

Table 1 Documented distribution of cowries from first millennium to mid 2nd millennium sites in southern Africa (sites under study not included)

Archaeological site	Species*	No of shells	Context	Modification	References
Nanda (Zimbabwe)	*Cypraea annulus*	4	Midden	Dorsal surface removed	Maggs & Whitelaw, 1991
Msuluzi Confluence (South Africa)	*Cypraea annulus*	1	Midden	Dorsal surface removed	Maggs, 1980
Ndondondwane (South Africa)	*Cypraea* sp.	Unspecified	Midden	Unspecified	Voigt & Driesch, 1984
Broederstroom (South Africa)	*Cypraea annulus*	2	Midden with burials	Unspecified	Mason, 1981
Kadzi (Zimbabwe)	*Cypraea* sp.	1	Midden encompassing Trench III	Unspecified	Pwiti, 1996; Plug, 1997
Nqoma (Botswana)	*Cypraea annulus*	2	Midden with burials	Dorsal surface removed	Wilmsen, 2011
Chibuene (Mozambique)	*Cypraea annulus*	Unspecified	Unspecified	Unspecified	Badenhorst *et al*., 2011
Diamant (South Africa)	*Cypraea* sp.	Unspecified	Unspecified	Unspecified	Plug, 2000
Sentinal Ranch (Zimbabwe)	*Cypraea* sp.	Unspecified	Unspecified	Unspecified	Plug, 2000
Commando Kop (Zimbabwe)	*Cypraea* sp.	Unspecified	Unspecified	Unspecified	Plug, 2000
Toutswemogala (Botswana)	*Cypraea* sp.	3	Midden with burials	Dorsal surface removed	Welbourne, 1975
Bosutswe (Botswana)	*Cypraea* sp.	Unspecified	Unspecified	Unspecified	Denbow *et al*., 2008
Khubu la Dintša (Botswana)	'Cowries'	2	Midden	Fragments, broken lengthways	Klehm, 2017
Mananzve (Zimbabwe)	*Cypraea annulus*	1	Midden	Dorsal surface removed	Nyamushosho, 2017
Great Zimbabwe (Zimbabwe)	*Cypraea* sp.	Unknown	Render's Ruin	Unspecified	Hall, 1905, Garlake, 1973
Tsindi (Zimbabwe)	Unspecified	1	Midden	Dorsal surface removed	Rudd, 1984
Mosu (Zimbabwe)	Unspecified	Unspecified	Unspecified	Unspecified	Rudd, 1984
Khami (Zimbabwe)	*Cypraea annulus*	1	*Dhaka* platform	Unspecified	Robinson, 1959
Moritsane (Botswana)	Unspecified	1	Burial	Unspecified	Campbell & Main, 2003
Manyikeni (Mozambique)	Unspecified	Unspecified	Midden	Unspecified	Garlake, 1976
Mutamba (South Africa)	*Cypraea* sp.	3	Features	Dorsal surface removed	Antonites, 2019
Murahwa (Zimbabwe)	*Cypraea* sp.	2+	Midden	Unspecified	Shenjere, 2006
Ndongo (Zimbabwe)	*Cypraea* sp.	1	Midden	Dorsal surface removed	Shenjere-Nyabezi 2006
Charumani (Zimbabwe)	*Cypraea* sp.	1	Midden	Dorsal surface removed	Shenjere-Nyabezi, 2006
Thulamela (South Africa)	Unspecified	2	Midden	Dorsal surface removed	Küsel, 1992
Rose Cottage Cave (South Africa)	*Monetaria* sp.	1		Unspecified	Wadley, 1992

Table 1 (continued)

Archaeological site	Species*	No of shells	Context	Modification	References
Riet River Burial Site, Koffifontein (South Africa)	*Cypraea* sp. *and Cypraea annulus*	3	Burials	Unspecified	Humphreys, 1970

*Note: original classifications have been used (hence the presence of '*Cypraea*')

Table 2 List of cowrie specimens documented and analysed from the five sites under study

Site	Museum repository	Total *Monetaria* sp. recorded	Total *Monetaria* sp. analysed	References
KwaGandaganda	KwaZulu-Natal Museum	65	65	Whitelaw, 1994; Beukes, 2000
Schroda	Ditsong Cultural History Museum	17	12	Hanisch, 1980; Raath-Antonites, 2014
K2	University of Pretoria Museums	49	11	Voigt, 1983
Mapungubwe	University of Pretoria Museums	3	7*	Voigt, 1983
Shankare	University of Cape Town Archaeology Department	19	19	Moffett, 2017

*Due to the history of research and different excavations at Mapungubwe, not all cowrie shells from the site were formally recorded

Fig. 2 Cowrie shells from Mapungubwe with original labels

African coastline, while *M. moneta* are dominant along the shores of the Maldives (Christie & Haour, 2018a, 2018b; Hogendorn & Johnson, 1986). Recent research in West Africa has revealed a dominance of *M. moneta* cowrie shells from archaeological contexts in the region. The likely origin for these shells, which do not occur along the West African shoreline, was from the Maldives (Haour & Christie, 2019). While not definitively indicative of origin, the identification of the species of cowries found in southern Africa may be indicative of either a similar origin or a potential different source.

Species identification was based largely on shell morphology and was assessed with the assistance of comparative collections of modern samples. In addition, conchological literature was examined (Burgess, 1970, 1985; Liltved, 2000), and malacologists at the University of Cape Town and the Kwa-Zulu Natal Museum were consulted. Analyses of cowrie shells from the above sites involved visual and microscopic assessment, the latter with the aid of an Olympus SZ stereo microscope with an attached camera and a portable DinoLite Edge 3.0 microscope. A range of metric and diagnostic attributes were further recorded. Following Christie *et al*. (2019), the length, width and height of each shell were measured with digital callipers (Fig. 3). The condition of the shell, referring to unintentional/intentional breaks occurring along the vertical or horizontal axis of the shell, was also assessed and recorded.

Archaeological reconstructions of exchange networks often rely on provenance studies to determine origin. However, this approach often overlooks the complex networks of interactions that link people and objects in different regions. To complement studies

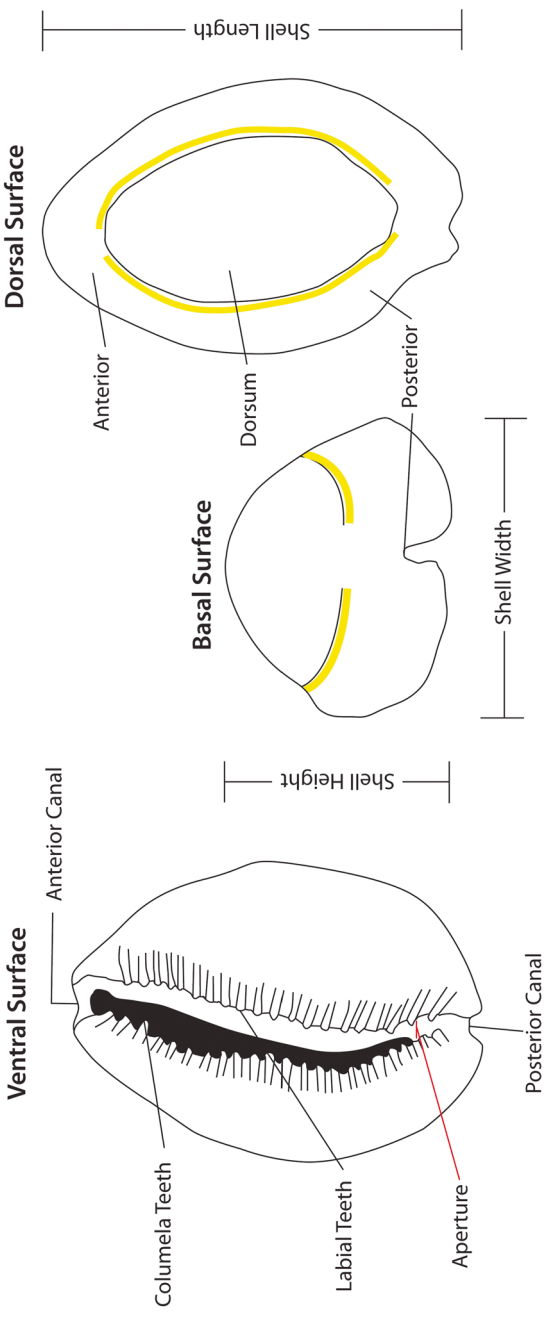


Fig. 3 Dorsal and ventral surface of *Monetaria annulus* and indication of measurements taken

of origin, we explored distribution patterns in southern Africa and the wider continent. Our analyses of distribution drew on a regional survey of cowries from archaeological contexts in southern Africa, as well as an assessment of the distribution patterns of cowries in relation to other items of local and non-local manufacture and exchange (Moffett & Chirikure, 2016).

To address aspects of use, we analysed evidence of the modification and use of each cowrie shell. Modification, referring to intentional breakage or shaping and perforation on the dorsal surface of the shell, was recorded for each shell. The methodology used to analyse modification and use-wear patterns on cowrie shells was developed by drawing on previous research on archaeological shell specimens, bodily adornments and cowrie shells. Studies of modification and wear patterns on objects can reveal a plethora of information related to the biographies and itineraries of individual objects (Falci *et al*., 2019; Joy, 2009).

Previous studies of cowries from archaeological contexts have demonstrated the relevance of studying the dorsal perforation of cowrie shells in order to assess the methods of manufacture and the use of shells by past populations (Bar-Yosef Mayer, 1997; Heath, 2017; Alarashi *et al*., 2018; Christie *et al*., 2019). The analysis of use-wear on shells in southern African archaeology is limited, but reference was made to the use-wear analysis conducted by Henshilwood *et al*. (2004) and d'Errico *et al*. (2005) on *Nassarius kraussianus* shells (see also Steele *et al*., 2019). These analyses indicated particular traces related to the deliberate perforation and the use of string in the attachment of shells. Recent research on use-wear studies of ornaments in ethnographic collections (Falci *et al*., 2019) has also highlighted a range of potential markers of use. Following these studies, metrics for assessing the treatment of the dorsum, including the relative coarseness of the break and scratch and polish marks on the break, were recorded for each specimen. In addition to analyses of the modification of the dorsal perforation, other modifications on the dorsal or ventral surface of the shell, such as wear on ventral columellar/labial teeth, charring of the shell and excessive calcification were also described. Additional modifications, possibly relating to intentional or post-depositional processes, such as charring, were noted for each specimen.

Addressing the value of cowries in the collections under study required a focus on the above analyses in combination with a range of factors. Information relating to the context of recovery and associated materials and site descriptions contributed further to addressing questions related to contextual value that may have been constructed in dialogue with other objects, environments and beings. The combination of the analyses of the origin and distribution, use evidence and contextual data provided the basis for exploring the various values cowries embodied, enacted or articulated within their complex itineraries.

Results

Species

Of particular interest in relation to species was the differentiation of *M. annulus* and *M. moneta* species in the current study. Size, teeth and morphological features

indicated that all except for two of the analysed specimens were *M. annulus* (Fig. 4). Along with morphometric traits, many of the shells retained a faint yellow ring on the dorsal surface, characteristic of *M. annulus*. Two larger cowrie shells from KwaGandaganda were identified as *Mauritia arabica* (Whitelaw, 1994). These occur naturally along the East African coastline and up into the Red Sea. No endemic cowrie species were identified from the sites under study. This is of particular relevance to the site of KwaGandaganda, which occurs in relative proximity (20 km) to the KwaZulu-Natal coastline, host to a range of endemic cowrie species (Liltved, 2000).

Size

The size of 55 of the 63 M. *annulus* shells analysed could be determined from KwaGandaganda, 11 of the 12 from Schroda, all 11 from K2, all 7 from Mapungubwe and 14 of the 19 from Shankare. Following Christie and Haour (2018a, 2018b: 134;

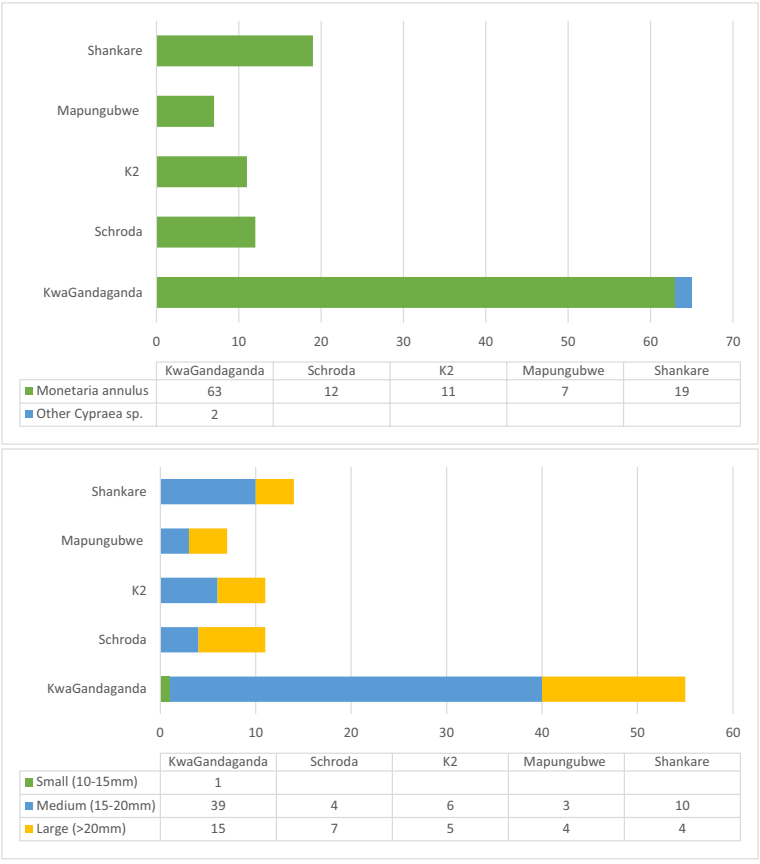


Fig. 4 Species of cowries from sites under study (top) and size groupings of *M. annulus* from the sites under study (bottom)

Fig. 23) and Christie *et al*., (2019:499), we used the following size categories: extra small (< 10 mm long), small (10.01–15 mm), medium (15.01–20 mm) and large (> 20 mm).

The majority of cowries fell into the medium-large size range, with only one shell from KwaGandaganda falling into a small size range (Fig. 4). The size ranges documented in this study are closely comparable to those documented from East African archaeological sites. Christie and Haour show that *Monetaria* species (predominantly *M. moneta*) from the Maldives consist largely of small-medium shell sizes, while *Monetaria* species from East African coastal Tanzanian sites (predominantly *M. annulus*) consist of medium-large cowries (Christie *et al*., 2019: 500). While further comparable research is required to assess cowrie size ranges from other regions globally, as well as intra-regionally, the preliminary indication from the size ranges documented by Christie *et al*., 2019 and in the current study is that archaeological cowrie specimens from South Africa are more similar in size to those from East Africa than to Maldivian samples.

Modification

Previous experimental and analytical studies have established a range of methods by which the dorsal modifications on cowries were made (Alarashi *et al*., 2018; Christie *et al*., 2019; Francis, 1989; Heath, 2017; York, 1972). Prominent methods for removing the dorsum involve a combination of chipping and grinding. Recently, Christie *et al*., (2019:494) identified a further method, called 'popping the cap'.

The first method, 'chipping' the dorsum, involves the removal of the dorsum using a hard tool to break it away (York, 1972: 100; Heath, 2017:62–64). This may involve hammering the dorsum through direct or indirect percussion to form a perforation (Alarashi *et al*., 2018: 106). This form of modification has also been referred to as 'progressive perforation' (Christie *et al*., 2019: 493). There are different stages in progressive perforation/chipping: from when the dorsum is only partly removed to when the dorsum is very flat. Chipping leaves a rugged and uneven dorsal perforation that may also be scalloped in places (Fig. 5a). Evidence of scalloped edges differentiate small anthropogenic perforations from natural perforations.

'Popping the cap' involves the removal of the dorsum by making a single small perforation, through which the dorsum can be levered off. This method results in the bevelling of the shell edge inwards, along with an often diagnostic notch at the top of the dorsal hole, which results in a keyhole-shaped break, or a notch at the posterior end (Christie *et al*., 2019:496). However, evidence of this method may often be destroyed through subsequent grinding of the dorsal surface.

The third method of removal of the dorsum is grinding. This involves grinding down the dorsum using an abrasive stone or surface. In contrast to chipping or popping the cap, shells that are ground down generally have a flat, not bevelled, or rugged, dorsal break (Fig 5b). The shell will typically be flattened evenly across the dorsal break, which does not happen in other removal processes (Christie *et al*., 2019: 496–497). Striations from grinding may also be visible microscopically on the surface of the dorsal break.

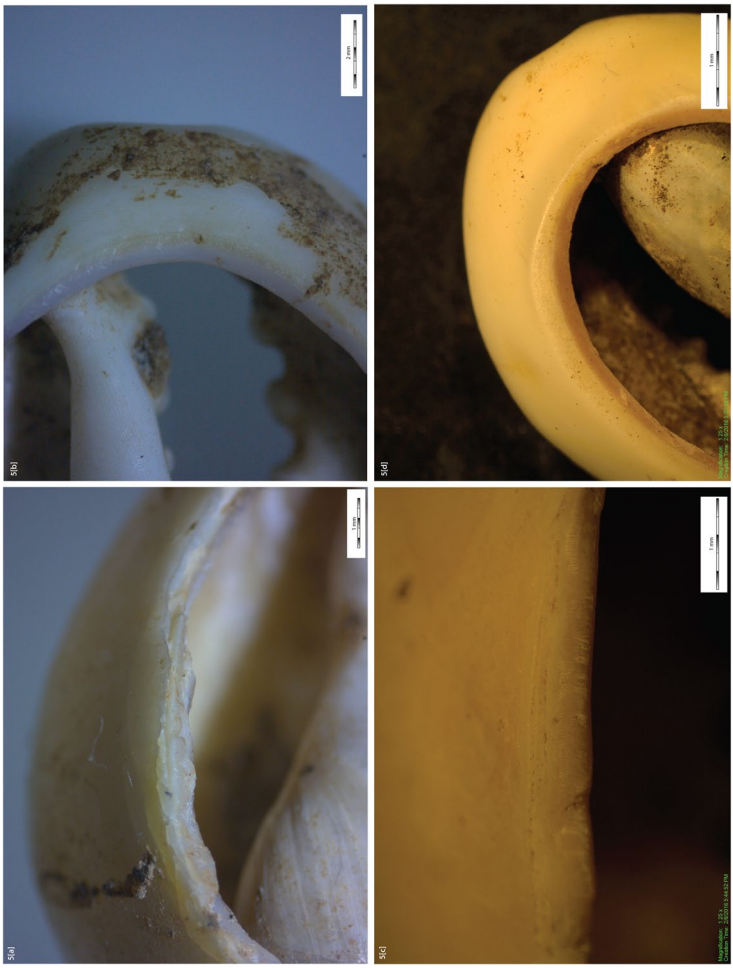


Fig. 5 **a** Photomicrograph of a coarse chipped dorsal break; **b** photomicrograph of a section of a smooth, ground break (cowries from KwaGandaganda); **c** photomicrograph of striations on dorsal break; **d** photomicrograph of polish on dorsal break (cowries from Shankare)

A combination of these methods can also be used together. Both chipped and 'capped' dorsum's leave a very rugged and uneven break. This could then be further ground flat using an abrasive rock/surface. Finally, another type of modification identified, evident through microscopic analyses, was wear on the dorsal perforation (Alarashi *et al*., 2018:106–108). The dominant wear pattern observable is polish and striations on the perforation (Fig. 5c and 5d). Combining the analyses of the shape of the dorsal perforation, the relative height or levelness of the dorsal break, evidence of 'chipped' or 'smooth' breaks and the presence or absence of polish and striations on the dorsal surface, nine categories were derived (Table 3; see also Fig. 6).

Types 2–5 of the current study resemble methods of 'chipping' and 'progressive preformation', without any evidence of wear. While type 2 cowries have a very small break, suggestive of an initial attempt to chip off the dorsum, types 3 and 4 appear to have been progressively chipped into an oval shape, with type 5 in a shape suitable for further use, but without any evidence of wear. These types appear to be points along a trajectory indicative of an operational sequence. This is particularly so given the fact that none of types 2–5 have evidence of wear. However, it is possible that they were also the intended stages of modification for a variety of different uses that may not have involved wear.

Types 6–8 have perforations with evidence of having been chipped, or progressively perforated, as well as use-wear in the form of polish on the perforations. Type 6 refers to perforations with only partial evidence of wear and polish. Type 7 is similar to type 6, with partial evidence of polish, but has dorsal breaks that are concave. Type 8 dorsal breaks are fairly flat, with an even shape and height, and evidence of polish and wear across the dorsal surface. However, the break is bevelled, and not flat, and may be slightly higher on the posterior extremities, or what Alarashi *et al*., (2018:103) refers to as 'in relief'. The presence of polish on types 6, 7 and 8 suggests some chipped cowries were then worn. This pattern of use was also noted by Christie *et al*., (2019: 494).

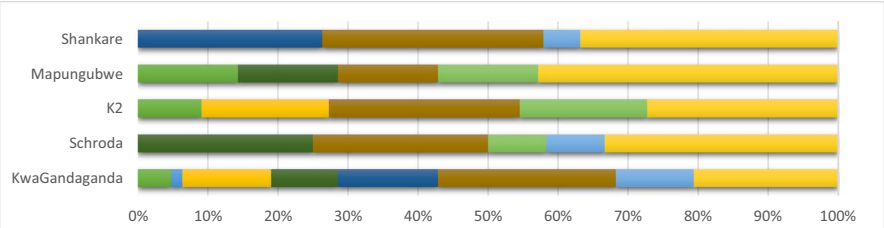
The final type, type 9, has a completely flat dorsal break, with no bevelling, and has evidence of use through the presence of polish along the surface of the perforation. Evidence of grinding, in the form of striations with polish, were found on a large portion of the cowries in this category. This suggests that this shape and wear pattern were created by grinding. No clear evidence of the technique of 'popping the cap' was recovered. However, some types 4, 5 and 6 did have slightly irregular shaped breaks that may correspond to this method. Type 9 cowries may have been subject to chipping or 'popping the cap', but this evidence would have been removed through subsequent grinding.

Across all the collections, the highest number of cowries in each assemblage was type 9 (Fig. 7). This modification and wear pattern is typical of grinding of the dorsal surface. Evidence of this methodology of perforation and shell preparation was recovered from every site. The second most prevalent type of dorsal modification was type 6. This type represents cowries with dorsal modifications that have been perforated, using chipping, and show evidence of polish on sections of the break. At K2, type 9 and type 6 were equally dominant. The dominance of these two modification types (chipping and grinding), both with evidence of use-wear, suggests that

Table 3 Categories of dorsal break modifications derived in the current study. *Small refers to a break above the natural yellow ring on the dorsal surface, large refers to a break below the natural yellow ring, and very large refers to a break that is concave in profile

Category	Description
1	Complete shell (no dorsal break)
2	Small dorsal break, uneven shape, roughly chipped
3	Small semi-oval shaped dorsal break, roughly chipped
4	Large dorsal break, uneven shape and height profile, roughly chipped. May be bevelled in parts
5	Large flat dorsal break, fairly oval shape, and level height profile, roughly chipped, may be bevelled in parts
6	Large flat dorsal break, fairly oval shape, and level height profile, smooth in parts and roughly chipped, may be bevelled
7	Very large flat oval shaped dorsal break, that is below the height of the dorsal posterior end. The break has a mixture of polish and rough chipped surfaces
8	Large flat oval shaped dorsal break, level height profile, high polish with bevelled edge
9	Large flat oval shaped dorsal break, level height profile, smooth and flat break with high polish (grinding)

Fig. 6 Images of the different types of modifications of the dorsum



	KwaGandaganda	Schroda	K2	Mapungubwe	Shankare
Type 1	5	0	9	14	0
Type 2	2	0	0	0	0
Type 3	13	0	18	0	0
Type 4	10	25	0	14	0
Type 5	14	0	0	0	26
Type 6	25	25	27	14	32
Type 7	0	8	18	14	0
Type 8	11	8	0	0	5
Type 9	21	33	27	43	37

Fig. 7 Distribution of the types of dorsal modifications identified across the sites under study. Totals given as percentages

both modification methods resulted in a perforation that was acceptable for further use as evidenced by the polish.

Condition

Condition referred to the overall shape and breakage of the shell. Breakage is differentiated from modification (see Christie *et al*., 2019) and refers to intentional/unintentional breakages along the length or width of a shell. Shells were recorded according to five categories (Table 4; see also Fig. 3).

Complete cowries with their dorsal surfaces removed dominated assemblages from the sites of KwaGandaganda, K2, Mapungubwe and Shankare (Fig. 8). In contrast, shells broken medially dominated the Schroda assemblage. No cowries with

Table 4 Different forms of breakages identified in the current study

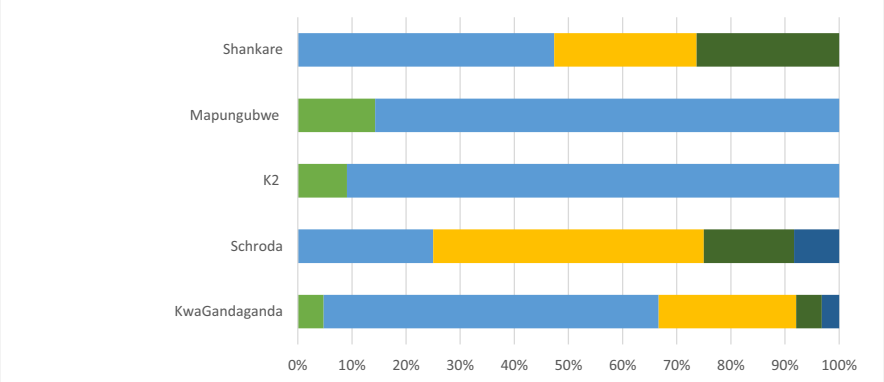
Category	Description
Complete shell	The shell had no breakage on the either the dorsal or ventral surface
Complete, dorsum removed	The shell was complete, but the dorsum had been removed
Broken in half medially	The shell was broken lengthways, and the dorsum was removed
Broken in half medially and laterally	The shell was broken lengthways and widthways and the dorsum was removed
Broken in half medially with portion of columellar/labium side still intact	The shell was broken lengthways but with a small part of the other half still attached. The dorsum was removed

medial or lateral breaks were recorded in the K2 and Mapungubwe collections. However, this may be a factor of an excavation or curatorial bias towards complete shells. Given the high density of materials recovered from these sites, early excavators were known to have discarded materials that were broken or small (Calabrese, 2007). It is possible that partial shells may have fallen into this category. Alternatively, given the fragmented nature of the archives from these sites, these materials may be present in other collections.

Depositional Patterns

The contexts of deposition from which cowries in the current study were recovered was also compared (Table 5). Given that this information required analyses of excavation records and previously published materials, we chose to include information on the depositional contexts of cowries previously recovered from these sites. This offered an opportunity to expand the sample size under analysis. However, given the partial records from many of these sites, not all depositional contexts could be ascertained.

The majority of the cowries at KwaGandaganda came from a large midden (Square 5), which was the centre of the settlement during the main occupation of the site (650–780 CE) (Whitelaw, 1994:33, 52). This midden, approximately 40 m^2 and 90 cm in depth, contained evidence of a partial cattle enclosure, metal working remains, two burials and abundant other materials. This included iron and copper beads, worked bone, a canine tooth, 3659.7 g of ivory shavings and ten fragments of



	KwaGandaganda	Schroda	K2	Mapungubwe	Shankare
Complete shell (anterior and posterior)	5	0	9	14	0
Complete anterior	62	25	91	86	47
Broken in half medially	25	50	0	0	26
Broken in half medially and laterally	5	17	0	0	26
Broken in half medially with portion of columellar/labium side still intact	3	8	0	0	0

Fig. 8 Distribution of the types of breakages identified across the sites under study. Totals given as percentages

Table 5 Depositional information relating to cowries from the sites under study

Context of recovery	Burial	Central/large Midden	Smaller/ domestic midden	House floor	Unknown	Other
KwaGandaganda		52*	13*			
Schroda	1**	10* (13**)	2* (4**)			
K2	3**	10*				1* (6**) animal 'burial'
Mapungubwe	2**			6*	1*	
Shankare		18*	1*			

*Specimens analysed for the current study

**Specimens analysed or recorded by earlier researchers but not available for study. Further details for K2 (27) could not be retrieved

ivory bracelets, bone beads, ivory and bone copies of the canine tooth, *Achatina* sp. and ostrich eggshell (OES) beads and fragments in different states of manufacture, and marine shells. Worked marine shells included *Nassarius kraussianus* (26), *Oliva caroliniana* (2), *Nassarius arcularius plicatus* (1), *Polinices tumidus* (10), *Polinices didyma* (4), *Pinctada capensis* (1) and *Perna perna* (2) (Whitelaw, 1994).

At the site of Schroda, three of the cowries came from Zhizo deposits (tenth century CE), while 14 came from Leokwe deposits (eleventh century CE) (Raath-Antonites, 2014: 201). The majority (13 of the 14 Leokwe period cowries) from the Leokwe phase were recovered from TRS6. This excavation area is thought to mark the centre of the settlement in this period. In this area evidence for numerous crafting activities, evident in the recovery of slag, ivory fragments, bone awls and hide working tools and glass beads were recovered, along with a large number of ceramic figurines (Hanisch, 1980; Raath-Antonites, 2014: 302). This area has been variously interpreted as a meeting/ritual centre or the central area of the settlement. While *Achatina* sp. shells were present at Schroda, both as beads and in their full form, along with freshwater mussels *(Unionidae)* and freshwater clams *(Corbicula africana),* few other marine shell species besides the cowries were documented at the site (Raath-Antonites, 2014: 207).

In addition to their recovery from midden contexts, cowries were also recovered from burial contexts at Schroda. Of the 25 burials recovered from Schroda, the majority of which were infants, one burial of an infant below 6 months was recovered with a cowrie shell. This was the only grave good and was not part of the cowries documented in this or earlier studies (Antonites, 2016: 21). This burial was recovered from the large central area discussed above.

A large portion of the cowries (9 of the 11) from K2 analysed as part of this study came from the southern part of the central midden area at the site. This area was excavated between 1936 and 1938 by Gardner (Gardner, 1963). Two additional cowries came from site surveys. The central midden area at K2 consisted of a large ash midden. However partial evidence of a cattle enclosure and house floors in some areas of the midden suggests that the spatiality of the site

Fig. 9 Additional modifications of cowries noted from the current study ▶

changed somewhat through time (Meyer, 1980: 7; Hattingh & Hall, 2009: 304). An excavation of this central midden conducted by Gardner in the first half of the twentieth century was one of the largest excavations at the site and was the locus of the recovery of numerous remains, including evidence of ivory working, cotton spinning, hide production, bead making, glass melting and shaping, animal remains, human remains, metal objects and evidence of metal working (Meyer, 1998). The density of the midden deposits and the accumulation of the deposits over a 200-year time period is indicative of a high population and dynamic domestic economy.

In three juvenile burials at K2, recovered from the midden area and excavated by Gardner, three separate cowries were associated grave goods (Gardner, 1963; Steyn & Nienaber, 2000; 114). In burial T.S. 2.G.3/UP20, of a 7–8-year-old juvenile, a cowrie shell was recovered in the pelvic area. Other grave goods included a 'garden roller' glass bead and three ceramic vessels, including a ceramic jar and beaker. Hattingh and Hall (2009: 321) documented Gardner's observations relating to the burial, in which he wrote; 'Note that the jar is broken and stacked below the feet and backside as though the individual is 'seated'/coming out of the jar. Equally, beaker around the head encloses the head in ceramics'. Burial K.S. 43/A1744, of a young child of 4 or younger, contained two beakers, and an *M. annulus* shell (position not discussed) (Hattingh and Hall, 2009). No details of the third burial containing a cowrie shell are available (Steyn & Nienaber, 2000).

Another cowrie specimen recovered from K2 by Gardner was labelled as coming from a 'beast burial'. This specimen was complete, without the dorsal surface removed. Re-examination of the remains of the beast burials indicates that they were likely animal bone debris in a midden context (Hutten 2005). The cowries associated with these remains may be part of midden debris or may have been displaced from other burial contexts. Voigt (1983:121) noted that a group of 8 cowries associated with the 'beast' burials 'were covered with a dark brown to black crust' (1983: 121). These specimens were not available for study. However, cowries with dark brown crusts, possibly as a result of coating with some ferrous substance, were recorded at the sites of Mapungubwe Hill and KwaGandaganda (Fig. 9).

While a range of terrestrial shells were used by the inhabitants of K2, marine shells were not commonly reported in the deposits at the site. Two seashells (*Natica*) were also interned in a burial of a young child (18–24 months) (Hattingh & Hall, 2009:319). Complete land snail shells, *Achatina* sp. were also found in 2 burials, one of a juvenile and one of an infant, and *Achatina* beads and shells were found widely in midden deposits.

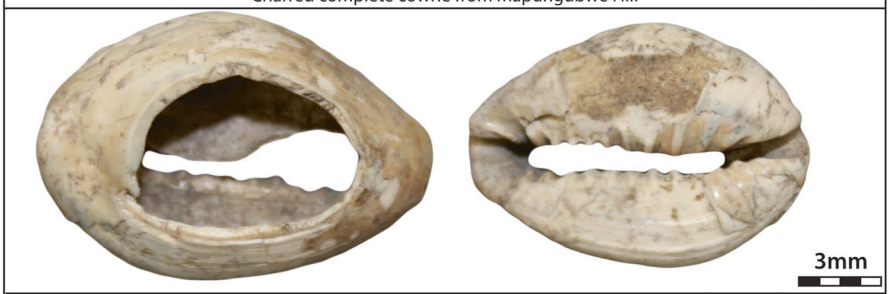
Cowrie shells from Mapungubwe analysed as part of this current study retained the original paper tags with inked details of the area of recovery and date of recovery. These labels referred to areas detailed in Gardner's (1963: diagram 5) map of the Mapungubwe summit. Six of the cowries were recovered from the 'hut complex' area. These included a complete charred cowrie (Fig. 9)

Charred complete cowrie from Mapungubwe Hill

Charred cowrie from Kwagandaganda

Cowrie with teeth missing and ochre/ferrous coating from Mapungubwe Hill

Charred complete cowrie from Mapungubwe Hill



Ferrous encrusted cowrie, from Kwagandaganda

and cowries in different stages of modification. While burnt shells may be a result of post-depositional processes, the light charring with an overall finish suggests it may have been intentional. Another cowrie recovered from the hut area was very corroded, and coated in a red, possibly ferrous, substance (Fig. 9).

Cowries were also recovered from one of the 23 burials excavated on the hill-top. One of the three burials with gold artefacts originally discovered by Fouché in 1934 was buried with two 'pierced cowries' (Steyn, 2007:142). These were recovered, along with gold beads, in the pelvis area, and were thought to have come from a broken necklace. The burial also contained a large number of gold beads, a gold sceptre, fragments of a gold rhino and two large flat black (burnished) Mapungubwe bowls.

The burials and settlement area on the top of Mapungubwe hill are commonly interpreted as the settlement of the Mapungubwe elite, who lived and were buried here from 1220 to 1300 CE (Huffman, 2009). In contrast, the southern terrace, below the hill, which was occupied coevally, is thought to have been inhabited by 'commoners' (although see Chirikure *et al*. (2018) for a discussion about class in this period). The recovery of cowries in the domestic area and as part of grave goods on the hill is thought to reflect the importance of 'trade goods' in the status of the elite at Mapungubwe (Meyer, 1998). However, like many of the objects recovered from the hill, detailed studies of how these objects materialised values related to ancestry, fertility or power are lacking (Chirikure *et al*., 2015).

Additional Modification/Post-Depositional Processes

Additional observations relating to intentional modification or post-depositional processes were recorded. Two cowries in the current study were charred, and two cowries were coated with a ferrous substance (Fig. 9). A further modification noted on a number of specimens was the removal of some of the columellar/labial teeth on the ventral surface of the cowrie (Fig. 9). This modification, referred to by Christie as 'columellar gapping' (Christie pers comm.), also appears on cowries in East African archaeological contexts. This did not correspond to a particular dorsal modification, although no complete cowries had their teeth chipped or removed. While further experimental work is needed to understand the process that caused such a modification pattern, a tentative suggestion is that this may be evidence of the stringing of cowries through the front aperture as opposed to (or in addition to) through the posterior or anterior canal. Two cowries also had small discrete perforations on the ventral surface of the shell. These may be the result of natural perforation processes due to predation, with molluscivorous fish and octopods being some of the primary predators (Liltved, 2000:42; Light, 2017: 356). These breakages are generally small, 0.5–1.5 mm, finely bored holes. Such holes may have been further utilised for stringing shells. Finally, some cowries had a flaky, chalky shell, likely the result of deposition in acidic soils. A small number of specimens had irregular wear on the shell surfaces (Fig. 9).

Discussion

Theoretical and methodological limitations in the analyses of cowries and other items of 'trade' from archaeological contexts are evident in the lack of engagement with cowries beyond species identification and the designation of cowries as 'trade' or 'exotic' goods. In this study we sought to develop a novel approach to studying cowries that could address the intersecting issues of valuation, circulation and use on multiple scales. Collections of cowries from five archaeological sites in South Africa formed the basis for an in-depth analysis of the itineraries of cowrie shells within these assemblages. Although overlapping, we use the themes of origin, distribution, use and value to guide the discussion of our results.

Origin and Distribution of Cowries

To address questions of origin, we draw on species identification and distribution. The current study of cowries from southern African collections revealed the dominance of *M. annulus* species from the archaeological sites under study. *M. annulus* are found living along the East African shoreline as far south as the northern KwaZulu-Natal coastline in South Africa (Liltveld, 2000; Branch *et al*., 2016). The natural distribution of *M. annulus* shells suggests that they could have been collected directly by some southern African communities. In particular, occupants of the site of KwaGandaganda, located approximately 20 km from the KwaZulu Natal coastline, may have collected them while also utilising other marine resources available. The collection under study from KwaGandaganda revealed the highest diversity of modification types. The variation in modification and breakage patterns suggests that the inhabitants of the site were experimenting in their preparation and use of the shells. This may have included harvesting and collecting cowries. Evidence of the processing and use of other types of marine shells, including ones that are perforated and those that were likely used for food (such as *Perna perna*), indicates that communities at KwaGandaganda did exploit marine resources (Maggs, 1984; Plug & Voigt, 1985; Whitelaw, 1994; Mitchell, 2002).

However, no cowrie species endemic to the KwaZulu-Natal coastline were recovered, and no cowries from the collection showed evidence of beach wash (erosion and wear of the shell). This suggests that the *M. annulus* species present in the collections were collected whilst alive. Such a collection practice would have required a trained eye for differentiating this species in its live state (Burgess, 1970; Hogendorn & Johnson, 1986). In addition, non-endemic shell species, such as a fragment of the abalone *Haliotis midae*, which occurs naturally over 250 km away, were also recovered from KwaGandaganda (Coutu *et al*., 2016; Whitelaw, 1994). Along with these finds were ostrich eggshell fragments and beads, likely coming from the more arid regions of the interior (Maggs, 1989; Mitchell, 1996), ivory from diverse southern African biomes (Coutu *et al*., 2016) and copper and glass beads, both of which were not locally sourced. Similar evidence of the movement of items through extensive trade networks in the first millennium CE comes from other sites in southern Africa

(Pwiti, 1996; Denbow *et al*., 2015; Coutu *et al*., 2016; Wood *et al*., 2017; Stephens *et al*., 2020). Indeed, recent research on copper provenancing suggests that copper from central Africa reached southern Africa in the terminal first millennium CE, indicating the extent to which items travelled across the continent (Stephens *et al*., 2020). Given this, it is likely that *M. annulus* cowries recovered from KwaGandaganda may have been sourced from elsewhere. Alternatively, the *M. annulus* shells from the site may have been made up of a combination of locally sourced and traded cowries.

If cowries were not collected by the residents of coastal sites, and in the case of inland first millennium CE sites, where were they coming from? The correlation in the timing and appearance of *M. annulus* cowries and Zhizo/Chibuene series glass beads that came from North Africa/the Middle East via Indian Ocean trade networks has led to the assumption that cowries were sourced and arrived into the southern African interior via 'long distance trade networks', in a similar manner to glass beads, in the first millennium CE. Interestingly, while cowries and Zhizo/Chibuene series glass beads do appear together at many sites in the interior, cowries have not been recorded from the early levels of Chibuene (700–1000 CE), presumed to have been the earliest port of trade along the southern East African coastline (Sinclair *et al*., 2012).

The possibility of cowries being sourced from other sites along the East African coastline, and distributed in more dispersed networks, has not been explored. The East African coastal shelf, from Mozambique in the south to Somalia in the north, is dominated by coral reefs and mangroves, offering a more ideal environment for the growth of larger numbers of *M. annulus* than the cooler waters of KwaZulu-Natal (Lane & Breen, 2018; Pollard, 2018). On many coastal islands in Mozambique, Kenya and Tanzania *M. annulus* cowries occur abundantly and today are collected largely for use in the tourist curio trade (Alati *et al*, 2020; Prins *et al*., 2003). Very little research into the archaeology of cowrie harvesting or exchange has been conducted along the East African coastline. Preliminary work by Duarte (1993) documented and surveyed a number of sites in northern Mozambique that were located in areas with evidence of contemporary cowrie shell exploitation (Duarte, 1993). Of particular interest was the site of Somana island, in northern Mozambique (Fig. 10). Here Duarte noted that a large part of the archaeological assemblage on the island consisted of cowrie shells. Although not dated, relative dates from pottery on Somana estimate it was occupied in the thirteenth and fourteenth centuries (Duarte, 1993: 67).

Historical records of trade in the East African region do not mention cowries until the mid-eighteenth century (Hogendorn & Johnson, 1986: 69, 144; Vernet, 2005: 466). In the mid-eighteenth century, English and French merchants seeking to expand their purchase of cowries from regions beyond the Maldives began to export cowries from East Africa, obtained from the Lamu and Zanzibar archipelagos. These were then shipped to Bengal, and many re-exported to West Africa (Vernet, 2005: 466). Wilding, in archaeological surveys of small sites on the mainland of the Lamu Archipelago and on the northern mainland up to the Somali border, noted the large amounts of cowries (*M. annulus*) and conus shells with perforated flattened ends (Wilding, 1973: 34). Wilding (1987:147) suggested that an early regional trade in *M. annulus* from the

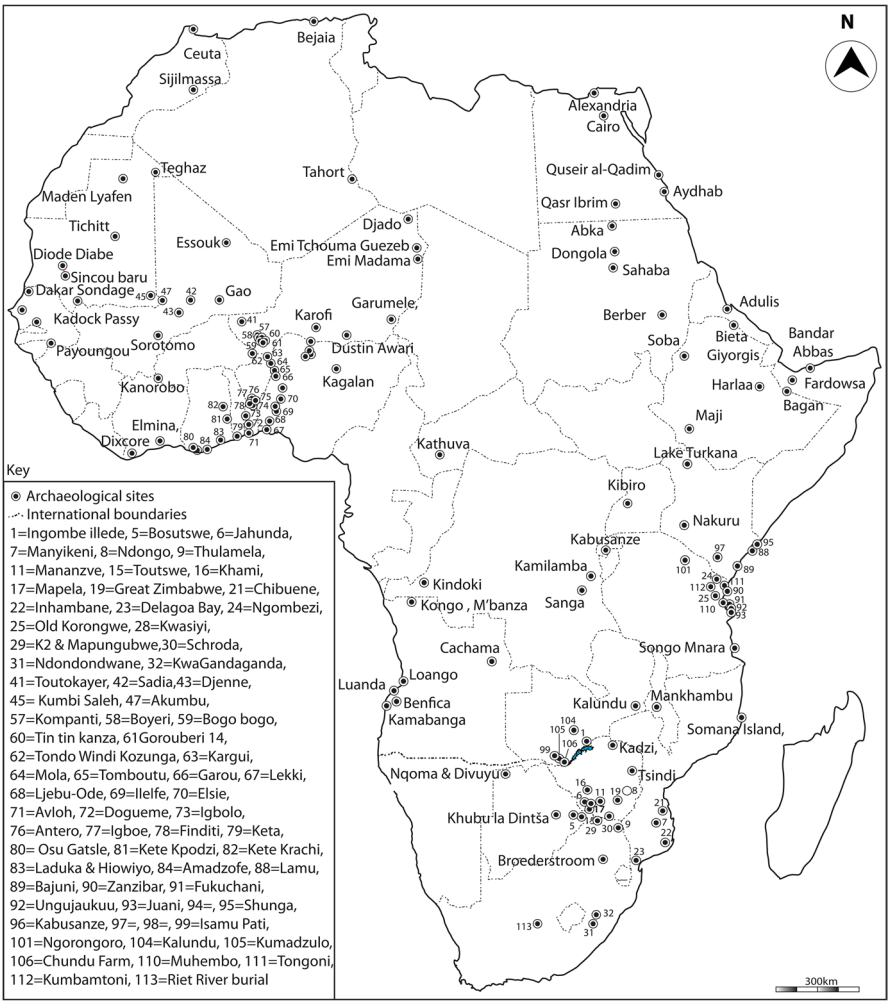


Fig. 10 Map depicting some well-known archaeological sites with cowries (*M. annulus/M. moneta*) from the last two millennia CE in Africa. Note that the map is not a complete record of all archaeological occurrences of cowries (map based on Phillipson, 1968; Fagan, 1967b; de Maret, 1977; Rudd, 1984; Maggs & Whitelaw, 1991; Pwiti, 1996; Plug, 1997; Plug, 2000; Denbow *et al*., 2008; Giblin *et al*., 2010; Walz, 2010; Badenhorst *et al*., 2011; Mumford, 2012; Boivin *et al*., 2013; Then-Obłuska, 2015; Shenjere-Nyabezi 2006; Klehm, 2017; Moffett, 2017; Nyamushosho, 2017; Biginagwa and Ichumbaki 2018; Faulkner *et al*., 2018; Christie *et al*., 2019; Haour & Christie, 2019; Juwayeyi 2020; Insoll, 2021)

coast to the interior may have been eclipsed by the large-scale trade in cowries by the Portuguese and European merchants from the fifteenth century.

Although poorly documented in regional scholarship, cowries, largely *M. annulus*, occur in a range of archaeological sites dating to the late first millennium and second millennium CE along the East African coastline (Faulkner *et al*., 2018). In

addition, two cowrie 'hoards' have been variously documented at the iconic Swahili sites of Songo Mnara (Tanzania) and at Shanga (Kenya) (Haour & Christie, 2019; Horton *et al*., 1996) (Fig. 10). Given the proximity to source, cowries have often been overlooked in archaeological research in East African 'Swahili' sites as objects that may have held little significance or value to Swahili communities. However, their presence at coastal and interior sites suggests that this assumption may need to be revisited.

Archaeological evidence from the interior of East Africa indicates the early exchange of cowries into the interior. One *M. annulus* was documented at the site of Kabusanze in southern Rwanda, as part of grave goods in a burial dated to 400 CE (Giblin *et al*., 2010). Cowries are documented in other archaeological contexts in the Great Lakes region and Central Africa from the late first millennium and second millennium. Wright (2005:113) documented a cowrie from Kathuva (420–653 CE) in the Tsavo National Park, Kenya. These early dates, which predate evidence of contact with wider Indian Ocean trading networks, provide a strong indication that coastal East African communities were exploiting and exchanging cowries inland. *M. annulus* cowries continue to be found at inland sites in east Africa up until the recent past. Walz (2010) recovered modified *M. annulus* cowries from sites in the lower Pangani Basin (inland Tanzania) dating to between 750 and 1250 CE. Biginagwa's (2012; Biginagwa and Ichumbaki 2018) research in Korogwe, inland Tanzania, documented the long history of regional trade from the coast to the interior from the fourteenth century until the nineteenth century (Biginagwa and Ichumbaki 2018: 67). This included the exchange of cowries (*M. annulus*) through the different occupation phases.

Further south, Fagan noted the recovery of three cowries (*M. annulus*) at the mid-first millennium CE sites of Kalundu and Gundu on the Batoka Plateau in southern Zambia (Fagan *et al*., 1967a). Fagan (Fagan *et al*., 1967b: 86) also noted two cowries from Isamu Pati (600–1200 CE). Both were *M. annulus* with their backs removed. Cowries (*M. annulus)* were recovered from different areas at Ingombe Ilede (1300–1500 CE) in southern Zambia. 'In addition, 37 specimens were found with a pair of lion teeth deposited in 2 vessels in level 4 (Cutting SC)' (Fagan, 1967b: 138). The dorsal surfaces of the cowries were all removed. Further inland, in Central Africa, cowries (species unspecified) were found in tenth- to twelfth-century contexts at Sanga in the Democratic Republic of Congo (de Maret, 1977:324–325). These findings indicate the extensive geographical range within which cowries circulated in inland regions.

The presence of cowries at a wide range of interior sites in East, central and southern Africa from as early as 400 CE gives precedence to the possibility that coastal communities in East Africa were exploiting cowries for exchange in regional networks that linked the coast to interior and different regions of the interior to each other. In fact, this shows a remarkable degree of continuity, under changed circumstances, from the mid-Holocene, when hunter-gather communities in southern Africa were exchanging sea shells with inland communities before the advent of farming (Mitchell, 1996). Although incomplete, our review of the distribution of cowries from first-mid second millennium CE sites in Africa (Fig. 10) gives strong support to the suggestion that cowries were distributed through a variety of different, dispersed mechanisms rather than through exclusive 'long distance trade networks'.

Similar dispersed evidence of the circulation and consumption of ivory, iron and copper suggests that pre-colonial communities in southern, central and east Africa were linked via extensive nonlinear networks (Moffett & Chirikure, 2016).

In contrast, the distribution and dominance of *M. moneta* cowries (not endemic to the region) in West Africa indicate variations in the sourcing and circulation of cowries across the continent. The species variation between West and southern Africa suggests possible differences in the origin, exchange or demand for cowries in these two regions of the continent (Fig. 10). *Moneta* cowries found in West Africa likely came from the Maldives and were traded into the region via North Africa (Haour & Christie, 2019). Coastal ports in North Africa, along the Red Sea, were possible routes through which cowries from the Maldives transited through. Indeed, trading ports in the Red Sea region linked traders from the Mediterranean to East Africa, South East Asia and China. Tantalising evidence for the trade in cowries through Red Sea ports comes from Medieval written documents. A letter written by one Nahray b Allan in 1141 CE from the port of Aydhab, located on the Red Sea coast (Fig. 10), documents amongst the goods sent to Fustat (Cairo) 'two bales of cowrie shells' (Goitein 1974). Research into Medieval graves in Nubia and Egypt further revealed that *M. annulus* and *M. moneta* cowries were used as burial goods and in adornment in this region too (Then-Obłuska, 2015). However, these cowries, as with those found in Ethiopia, may also have been sourced from the Red Sea (Then-Obłuska 2015; Insoll, 2021).

Combining Origin, Distribution, Use and Value

In African archaeology, research on metals, glass beads and other prominent finds have often been focused on questions of origin, composition and to a lesser extent distribution (see, for example, Robertshaw *et al*., 2010; Wood, 2012; McIntosh *et al*., 2020; Then-Obłuska and Dussubieux 2021). As a result, inferences about use and value are often drawn from values closely linked to origin, such as distance and rarity, and provenance studies have widely drawn upon economic theories of value. Less attention has been given to exploring the contextual use and value of objects, and particularly in relation to combining evidence of modification, use-wear with depositional contexts. This is true of cowrie shells, items often described as 'trade items' or 'exotica'. However, cowries have received even less even less research attention than glass beads and metals.

In this study we sought to combine new metrics in the analysis of an understudied artefact. Our analyses combined an assessment of the contextual use and value of objects, and particularly in relation to combining evidence of modification, use-wear with depositional contexts, origin and distribution. The results from our analyses of the modification patterns on the five South African collections reveal that the majority of cowries (96%) were modified, with their dorsal surfaces removed. All the collections showed some variability in the range of modification types. Evidence of different stages of modification suggests that cowries were at least partially modified at the sites under study. However, the small number of complete cowries ($n = 4$, 4%) and only partially modified cowries with a small dorsal break (types 2 and 3)

($n=11$, 10%), along with the absence of any evidence of dorsal debitage, suggests that the cowries may potentially have been brought into the site with their dorsal surfaces already partially modified. This is further supported by the high number of cowries with either flat but uneven dorsal breaks, types 2–5, ($n=34$, 30%) or cowries with fairly horizontal dorsal breaks (types 6–9) ($n=72$, 64%). In contrast, recent research in Ethiopia by Insoll (2021) documented a cowrie 'workshop site'. Of particular prominence was the high recovery of broken dorsal 'backs' at the site.

The highest category of modification of the dorsal break was type 9 ($n=30$), which accounted for 27% of cowries from the assemblages. This modification pattern was a result of the process of grinding. Evidence of the grinding process was visible macroscopically on dorsal breaks, with striations observed. Cowries with dorsal breaks ground down also showed evidence of polish in combination with striations from grinding. The second highest modification type, type 6 ($n=29$, 26%), reflected a process of a near completely removed dorsum through chipping. Type 6 cowries also showed evidence of use with the presence of polish on the dorsal break.

Grinding and chipping of the dorsal surface likely facilitated the attachment of cowries in which a flat dorsal surface was attached to material and sewn on with a string that looped through the apertures of the shell in a style similar to that depicted in Fig. 11. The polish visible on the dorsal break of both types was likely caused by constant rubbing against the material to which the shell was attached, such as leather or cloth. Polish was also visible on cowries with type 6–8 modifications, suggesting that cowries with dorsal surfaces that had been chipped fairly flat were also strung or attached to softer materials too.

Type 6–9 modifications were dominant in all five collections. This indicates that the majority of cowries in the collections under study were at some point in their itineraries attached to materials or other substances. Materials may have included substances such as cloth or leather. Evidence for the processing of leather hides and the technology of cotton spinning has been documented from the sites of Schroda, K2, Mapungubwe and

Fig. 11 Cowrie shells (*M. annulus*) attached to leather belt. Pitt Rivers Museum ethnographic collections

Shankare. Alternatively, cowries could have been attached to the body or hair or onto composite items such as wooden structures.

It is tempting to read some modification types, particularly types 2–5, which document progressively larger perforations without any evidence of use-wear, as stages in an operational sequence/*chaine operatoire*. However, it is possible that they were also the intended stages of modification for a variety of different uses that may not have involved wear. Small perforations without any evidence of use-wear may also have been used for stringing or threading cowries for shorter periods of time, such as these images from cowrie 'currency' strings in the Pitt Rivers collection (Fig. 12). Further experimental work and our ongoing research on cowries in ethnographic collections (*cf* Falci *et al*., 2019) is aimed at addressing differences in use-wear patterns on cowries in further detail. It is also important to keep in mind that some of the stages of use and experimentation on cowries may also been erased, as cowries may have been subject to reuse. This is particularly the case in relation to type 9 cowries, the dominant type, which were subject to grinding. This process would likely erase any evidence of earlier modifications.

While types 6 and 9 dominated, the diversity of modification types evident across the collections does indicate a degree of experimentation in the preparation and use of cowries across the sites and through time. Differences in the types of modifications noted across the collections may be as a result of the modification of cowries in dialogue with other beaded items already available at the sites of use, such as OES and Achatina shell beads. Achatina and OES beads were common shell beads on agriculturalist sites of this period and were noted at all five sites under study. These beads were made through various techniques that included chipping, grinding and perforation. Some of these techniques were also used on cowrie shells. Given that these objects were sometimes used together and have been recovered together from burial contexts, it is likely that the 'inter-artefactual domain' in which cowries were part of shaped their modification, use and value. Indeed, like glass beads and cowries in Yorubaland discussed by Ogundiran (2002), the earlier use of shell beads and other shell types may have shaped the meaning of newly introduced objects such as cowries.

Fig. 12 'Strings of cowrie shells (*M. annulus*) "currency" from Uganda. Pitt Rivers Museum ethnographic collections. Note the small perforations on the dorsal surfaces

The diversity of modification types, coupled with the distribution and deposition of cowries under study, warns against the use of singular narratives to describe the use and value of cowries in southern African archaeological contexts. Furthermore, a review of the distribution of cowries shows they are not limited to 'elite' sites in the time periods under study. Variations in the modifications and deposition contexts point to articulation of a range of meanings, uses and values of cowries in space and time. Various properties of cowries, from their origin in the water, their white colour, shiny, hard shell and unique shape, in combination with their contexts of use and affect, may likely have shaped their valuation. In more recent periods, cowrie use in southern Africa has been largely restricted to their use in divination practices and as items of adornment for healers (Moffett & Hall, 2020). In this context, the origin of cowries from the sea and the animate properties of the colour white contributed strongly to a symbolic link with ancestry, facilitating this restricted use. In contrast to biographies of 'far away objects' that correlate distance with rarity or power (cf. Helms, 1988), cowries in divination carried a particularly biographical ontology, linking distance to the ancestral realm.

While these meanings and values likely shifted through time, they provide impetus to exploring the epistemological and ontological possibilities related to the use and value of cowries. For example, at the site of Khami (1300–1650 CE) in southwestern Zimbabwe, a single *M. annulus* cowrie was recovered along with a cache of objects, including ivory divining dices and two small ivory carvings of felines, three ivory pallets and the head of an ivory staff (Robinson, 1959: 53). In contrast, little to no material remains were recovered from other surveyed and excavated hut floors at Khami, and few cowries were found at the site, indicating that this cache was unique. As part of a composite item, the meaning of this cowries may have been 'bundled' within space and time. Evidence of the repeated bundling of particular things, such as that noted by Stahl (2017) in relation to glass and carnelian beads, vertebrae from pythons and iron objects in West African shrine assemblages, indicates how bundles of things became sources of new 'habits and concepts' (Stahl, 2017: 225). The materials recovered and the depositional context associated with the front entrance of the house on the hill platform indicate that these items may have had a bundled meaning, possibly linked to healing and divination (Chirikure & Moffett, 2017).

At the site of K2, individual cowries were placed in the burials of two juveniles, alongside other items, including translucent blue glass beads and ostrich eggshell beads, and covered with broken jars and bowls placed carefully over the head and pelvic region (Gardner, 1963: 39–53). Similarly, in the famous 'gold burial' of an adult male on Mapungubwe hill, a cowrie shell was found alongside gold beads and is thought to have been part of a necklace that adorned the body. The placement of items in these burial contexts, of both adults and juveniles, suggests that cowries may have been part of a range of items active in the manifestation of personhood (*cf.* Joyce, 2005; Fowler, 2011). In particular, the range of items in the juvenile burials suggests the objects may have been active in the materialisation of the personhood of individuals who suffered an untimely death (Hattingh & Hall, 2009).

Further research into the contextual usage and modification patterns on cowries will continue to reveal additional narratives embedded in the personal and every day. Changes in the distribution and deposition pattern of cowries from the first to second

millennium CE in southern Africa suggest broader, regional shift in the circulation and use of cowries. While cowries show evidence of use as adornment in personal contexts in the first and early second millennium, by the mid-second millennium CE, cowries appear to have a more restricted use and are found in small numbers. The recovery of cowries in bundles from Khami and from ritual contexts at Historic Cave suggests that cowries may have been used in divination practices from the eighteenth century onwards. Similarly, the appearance of *M. moneta* cowries on southern African sites from the sixteenth century reflects broader regional changes, signalling the advent of European mercantile endeavours in the region. Additional research into this the second millennium period, as well as collections from other parts of the continent, will help to further unravel these patterns.

Conclusion

The proliferation of *M. annulus* and *M. moneta* cowrie shells in global exchange networks through vast regions and time periods clearly indicates the widespread values these shells had within different communities of people through time. Although often described as a commodity, likened to currency, cowries clearly enabled and transformed a myriad of social engagements, between the living and the dead, neighbours and distant communities, in space and time. Engaging with the multiple ways with which the circulation and use of objects acquired and affected meaning requires a research methodology that can address multi-scalar questions, from the local, regional to the global. In this study, we demonstrated the utility of an in-depth, multi-pronged analysis of cowrie shells for addressing such multi-tiered research questions. Through our study, we explored how globally exchanged commodities like cowries interact with and create meaning in the everyday life of communities in southern Africa, how they circulated through regional exchange networks and how these interfaced with continental-wide connections. Within southern Africa, cowries appear in the archaeological record from the early first millennium CE and were used in varying ways until the present. Their presence throughout such a long time period does not necessarily reflect a continuity in use and value. Changes in the distribution, deposition and modification patterns of cowries through time suggest that their meaning and value shifted, from intimate expressions of personhood to animate objects affecting ancestral connections. The range of modification and uses suggests a degree of innovation and experimentation at the scale of the user, reflecting the ability of individuals and communities to make and remake an object's meaning.

While the origins of cowries in southern Africa remain difficult to provenance, evidence of the circulation and use of *M. annulus* cowries in the interior of east and central Africa from the early first millennium CE gives strong precedence to the likelihood that cowries were collected from the East African coastline, where they occur naturally in abundance, and exchanged inland. The locations and means of collecting will require further research. Similarly, a review of the distribution of cowries through time indicates that their circulation varied in tempo and space through the last two millennia. However, some clear patterns do emerge. In particular, the circulation of cowries from the mid first millennium CE onwards appears to

have been widespread across the southern African region. This suggests that cowries were circulated via exchange networks that facilitated the movement of other goods, such as copper, iron, ivory, glass beads, salt, animals and plants and a range of other perishable items. In combination, these findings serve as a pertinent reminder that an overemphasis on the origin of objects, a topic that is often at the centre of archaeological interest in relation to traded items, may distort the diverse and complex ways in which objects, ideas and technologies moved across landscapes in the past.

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Declarations

Conflict to Interest The authors declare no competing interests.

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