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## An archaeological examination of ostrich eggshell beads in Botswana

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*Ostrich eggshell beads are common on archaeological sites of the last few thousand years in southern Africa. It is generally thought that the indigenous hunter-gatherers made these and occasionally traded them to Iron Age herders and farmers. But beads on hunter-gatherers' sites in Botswana are shown to be smaller than beads found on herders and farmers' sites. This suggests that herders and farmers may have made their own ostrich eggshell beads. In cases where identification is uncertain, bead sizes may now help distinguish a site occupants' culture and economy.*

This research concerns ostrich eggshell beads from Iron Age and Late Stone Age sites in Botswana. Studies in South Africa and Namibia have shown a significant size difference between ostrich eggshell beads found on herders' and hunters' sites. Hunters apparently made smaller ostrich eggshell beads than herders (Jacobson, 1987). The objective of the study is to find out if a similar pattern exists in Botswana. Ostrich eggshell beads have been found on both Iron Age (farmer-herder) and Stone Age (hunter) sites in Botswana. The aim of the study is to measure a sample of these beads in order to see if significant differences exist in sizes.

This study has implications for understanding Late Stone Age and Iron Age contact and relationships. It is generally thought that ostrich eggshell beads were made exclusively by hunter-gatherers. The ostrich eggshell beads on Iron Age sites are thought to have been obtained from hunter-gatherers as trade items (*cf. e.g., Silberbauer, 1981*). This first hypothesis implies that all ostrich eggshell beads from Late Stone Age and Iron Age sites should have similar size patterns. Alternatively, as a second hypothesis, it can be suggested that Late Stone Age people made their own beads and Iron Age people made theirs too. In that case we might find two different patterns of bead size distribution because they are manufactured by different people.

A large sample of 819 ostrich eggshell beads from eleven sites were measured and these produced three size patterns. This supports the second hypothesis which suggests that Late Stone Age people made their own beads whilst Iron Age people made theirs too. This is significant because it refutes Denbow's (1990) assertion that in the Toutswe hierarchy of sites, Bushmen clients occupied the settlements which he interpreted as cattle posts.

The results, however, are not unambiguous and a third hypothesis can also be proposed: that Stone Age people made beads of different sizes. Jacobson (1987) states that the San people made smaller beads for their own use and large beads for trade with Iron Age people. The same point was made by Andries (informant) in D'kar. She mentions that the Naro people make smaller beads for themselves and larger beads for sale. This hypothesis is testable. The test implication is that evidence for manufacture of beads should only be found on Late Stone Age (hunter) sites. The archaeological data, however, show that in both the Iron Age and Late Stone Age sites unfinished ostrich eggshell beads were found in the same levels with incomplete ostrich eggshell beads. The presence of unfinished beads is sufficient evidence for the manufacture of beads on both Late Stone Age and Iron Age sites.

Thus, overall, the second hypothesis, namely that both hunters and herders made their own beads, currently provides the best explanation for the available data. The results of the

study are preliminary as sample size is small. Changes through time have not been examined. A larger sample may indicate that the patterns of bead manufacture and distribution changed significantly during the last 1500 years during which Basarwa (Bushmen, hunters) have been in contact with Bantu speakers.

### Literature review

According to Yates and Smith (1993) and Smith (*et al.*, 1991) ostrich eggshell bead sizes are a distinctive cultural marker. At the southwestern Cape of South Africa during the last 2000 years, large ostrich eggshell beads were associated with herders' sites. Ostrich eggshell beads have been used to trace evolving relationships between the hunter-gatherers and the incoming pastoralists in the southwestern Cape of South Africa. The upper units of Kasteelberg, a herder site dated within the last 500 years, contain large ostrich eggshell beads. In the upper parts of Witklip, a hunter site from the same period, large beads indicate import of cultural material from the herder communities. The very small numbers of small beads on the herder sites suggest that this tended to be a one way exchange (Smith *et al.*, 1991).

Ostrich eggshell bead size differences might also reflect changing fashion through time. Jacobson's (1987) study of Namibian ostrich eggshell beads suggests a size difference between earlier and later central Namibian assemblages. If this was purely a question of time, the expectation would be that all later assemblages are larger in size. If this was not true one would conclude by saying that bead size is a stylistic variable, larger beads representing the herder sites and smaller beads being more common on hunter-gatherer's sites (Jacobson, 1987). It is noted by Jacobson (1987) that larger ostrich eggshell beads were to be found on Later Stone Age sites which also had ceramics and which he identified as herder sites. Among the artifacts found at Geduld in Namibia were 262 finished and unfinished ostrich eggshell beads. The ostrich eggshell beads showed a constant increase in mean external diameters and aperture width throughout the sequence (Smith & Jacobson, 1995). The change could thus be both a result of time and the occupants' economy.

Ostrich eggshell beads have been used as a line of evidence in reconstructing Iron Age and Late Stone Age relationships. From the excavations of Mbabane and eSinhlonhlweni shelters in the central Thukela basin, Mazel (1986) concludes that hunter-gatherer/herder relations were probably close and harmonious. Traditional hunter-gatherer items such as worked bone, stone artifacts and ostrich eggshell beads are found in farming community sites whilst farming community decorated pottery and iron implements have been recovered from hunter-gatherer sites (Mazel, 1986). This suggests trade and exchange between the two populations. Mazel (1989) associates ostrich eggshell beads found in the area of Thukela river with hunter-gatherers. According to Mazel (1989) the ostrich eggshell beads recovered from early farmers' sites were probably produced by hunter-gatherers. This is because no evidence of manufacture of beads was found with farmers' sites, therefore these items must have been imported as finished products (Mazel, 1986).

Bead production is attested at some of the Thukela Late Stone Age sites. From the excavations of Kwa Thwaleyakhe shelter in the central Thukela basin, ostrich eggshell beads were recovered. At Nkupe, another Late Stone Age site in the area, ostrich eggshell beads and ostrich eggshell pieces occur in the 2000-400 BP deposit. At Sikhanyisweni, a Late Stone Age site, there is evidence of ostrich eggshell beads and pieces are more abundant than at any other site (Mazel, 1993). All this shows that ostrich eggshell beads were manufactured by Late Stone Age populations (hunters) in this area.

From the Msuluzi confluence, not far from the Thukela basin, several Iron Age sites dated from AD 300 to 1000 were excavated (Maggs, 1980). A total of 52 river shell disc

beads and only three of ostrich eggshell were found. Interaction between hunters and herders is shown by the bone arrow heads and the grooved stone that may have been used for making shell beads and straightening arrow shafts (Maggs, 1980). The above data has been interpreted as evidence for herders and hunters' interaction in the Msuluzi confluence area.

In Botswana, Denbow's (1983) excavations at Taukome, an Iron Age site dated to the 8th century AD, yielded a large collection of ostrich eggshell beads ranging from 2 to 6 mm in diameter. Similar beads made from large land snail shell were also recovered. Beads in all stages of manufacture were recovered including rough blanks and partially drilled specimens indicating that many of these beads were made on site (Denbow, 1983). At Toutswe, another Iron Age site from 8th century AD, a total of 222 beads were recovered from the excavations, all made of locally available materials including ostrich eggshells, *Achatina* shells and river shells (Denbow, 1983). Ostrich eggshell beads have also been found in Lose and Mokgware Iron Age sites dated between the 9th and the 15th centuries AD (Segobye, 1994). A pot containing over 2500 glass beads, 5000 ostrich eggshell beads and 50 cm wound wire necklace on the floor of Kgaswe B55, an Iron Age site dating to around AD 1000, suggest that ostrich eggshell beads were an important trade item. The Botswana evidence so far suggests that ostrich eggshell beads were made on Iron Age sites as well as on Late Stone Age sites.

In Zimbabwe, the art of ostrich eggshell manufacture is associated with the hunters in the Matopo hills area in sites dated from 11,000 to 8000 years BP (Walker, 1995). Walker suggests that bead production was on a massive scale among the Matopo's Late Stone Age groups. He points out that there is size variation in beads.

Overall, current evidence suggests that in some parts of southern Africa during the last 2000 years, ostrich eggshell bead sizes were a marker of ethnic and economic identity (southwestern Cape and Namibia). In some parts bead sizes may have increased in time as fashions changed (Namibia). Elsewhere, ostrich eggshell beads seem to have been exclusively produced by Late Stone Age hunters and traded to Iron Age herders (Natal). In other parts ostrich eggshell beads may have been important trade items produced by both hunters and herders (Botswana). In some places bead sizes changed but the significance and meaning of the change remains enigmatic (Zimbabwe).

It should be understood that the Later Stone Age (LSA) is a technological unit. According to Yellen (1985), the LSA phenomenon first appeared in southern Africa at least 40,000 years ago and in some areas it continued into early historic times. Typologically, the LSA is mainly characterized by the appearance of microlithic tools which were hafted into handles or shafts for use. The LSA people made use of ostrich eggshell beads which are similar to the ones used by present day Basarwa, and those found at a site known as Border Cave in South Africa were dated to at least 38,000 years ago. Items characteristic of the LSA are rock art and items of personal adornment, for example decorated ostrich eggshells, decorated bone tools and beads, pendants and amulets of ostrich eggshell and marine and freshwater shells (Deacon, 1984). There was formal burial of the dead in graves sometimes covered with painted stones, grindstones or unmodified cobbles and boulders, and sometimes accompanied by grave goods (Deacon, 1984). There is also the presence of formal stone tools designed for making other artifacts, for example borers for making beads, reamers for making bored stones, adzes for woodworking and grooved stones for smoothing beads and straightening arrows.

In the southern African context, the term Iron Age means the appearance of new technologies including iron smelting and forging, introduction of new subsistence techniques based on the utilization of domesticated plants and animals, and distinct forms

of village social organization (Maggs, 1984; Yellen, 1985). Authors like Huffman (1982) have argued that within central and southern Africa, the term Iron Age can be used to refer to people of Bantu speaking origins. From about AD 800 some Iron Age communities are characterized by hilltop settlements, stone walling, long distance trading links and the association of political power and wealth in cattle (Maggs, 1984). Among the trade items were glass beads and Chinese porcelain and these were probably exchanged for gold. The main archaeological markers of Iron Age sites are semi permanent villages. The activities people carried out included ceramic working, metals, crops and domestic animals. Most of the Iron Age sites are said to have been occupied by Bantu speaking people (Maggs, 1984). Iron Age economies were based on subsistence farming. Some Iron Age people specialized in metallurgy, particularly iron working. Most Iron Age villages are characterized by deep refuse middens and the preserved remains of domesticated plants and animals. All these point to a more settled way of life when compared to that of LSA foragers and herders (Denbow, 1986). In this essay I have used the term agropastoralist to refer to large Iron Age sites such as Mosu I, Kaitsho, BPS 52 and Phate Hill. The term herders has been used for smaller Iron Age sites, that is A78 and A68. As for the rest of the Late Stone Age, they have been described as hunter-gatherer sites.

### **Ethnographic study**

To understand ostrich eggshell beads better, interviews were conducted with the bead makers of D'kar settlement. D'kar is located 30 km north of Ghanzi, on the road to Maun. This settlement is one of the few in Botswana where people depend on the production of ostrich eggshell beads and other crafts for a living. The interviews were mainly aimed at getting information on the contemporary process of manufacturing ostrich eggshell beads. At D'kar the whole process of Ostrich eggshell bead manufacture was observed. A total of 12 people were interviewed and these were mainly adults aged between 24 and 70 years of age. The aim was to investigate whether and why the people at D'kar make ostrich eggshell beads of different sizes.

At D'kar, ostrich eggshell beads are made by the Naro, Baherero and Bakgalagadi. Both Bakgalagadi and Baherero claim that ostrich eggshell bead manufacture is a Naro (Basarwa) technology (Kaambuka, informant). It was observed that almost all the people who manufacture ostrich eggshell beads, whether Baherero or Bakgalagadi, spoke the Naro language fluently. This shows that the people have acquired both the ostrich eggshell bead technology and language from the Naro people. The ostrich eggshell beads together with other crafts from D'kar are sold to the Kuru Development Trust which is a non-governmental organization formed to help the Basarwa communities retain their culture (Brown, informant). Basarwa have been making ostrich eggshell beads for a long time but after Botswana's independence they were prohibited by the government authorities from collecting ostrich eggs. The Kuru Development Trust now buys eggshells from ostrich farms in different parts of Botswana and then sells these to the bead makers with a little profit (Bob, informant).

All the ostrich eggshell bead makers claim that the art of manufacturing ostrich eggshell beads is something they inherited from their parents. It was observed that whilst the elder people are making beads, the young children also participate. According to one of the informants (Mohalose Xhase) males do not make beads because ostrich eggshell bead manufacture is regarded as a female craft. Males make items such as spears or arrows. The people of D'kar do not measure the size of their ostrich eggshell beads. It was observed that their bead sizes range from 5 mm to 10 mm. Very large ostrich eggshell discs are used as

buttons. The main difference between buttons and the beads is that buttons have more than one hole.

According to the people of D'kar, ostrich eggshell beads possess some healing power. Ostrich eggshells are ground and mixed with drinking water. This mixture is said to stop all kinds of pain (Chirutuwa, informant). There is also a belief that ostrich eggshell beads put on a child's waist or around the neck helps the child to grow faster. Many children under the age of five years in D'kar settlement were observed to have ostrich eggshell beads around their waists or necks. Ostrich eggshell beads are used for bracelets, necklaces and headbands. They are also used for decorating female aprons, male loin cloth and dancing skirts for women. Some are sewn on bags, cosmetic containers or tortoise shells (Mothibi, informant).

The process of ostrich eggshell bead making involves breaking the ostrich eggshells into small pieces using fingers, teeth or even pincers. A hole is then drilled in the center of the piece by turning a hand drill between the hands. The hand drill consists of a wooden handle, and a sharp tip made of wire. This drill is used nearly the whole way through the piece, and the awl is used to finish up the hole. The drill can not be used the whole way through because the ostrich eggshell pieces would break (Andries, informant). After drilling the holes, the rough edges of the ostrich eggshell pieces are ground by using the sharp corner of a stone or an impala horn. These shells are worked on one by one until they are nearly round. They are then strung on twisted sinew. The advantage of sinew is that it is soft and strong. Whilst the beads are being strung, some plant fibers from a root are put in between each bead. This is to keep the ostrich eggshell beads tightly packed together while they are being ground to make them round and smooth. After being smoothed the ostrich eggshell beads are now ready to be used as necklaces or sewn to clothing.

It was observed that ostrich eggshell beads on clothing had rougher edges than those on necklaces. Ostrich eggshell beads used as necklaces are much more smooth. The reason for this could be that these beads rub against the wearer's skin whilst those on clothing are stationary (Brown, informant). Overall, it appears that bead size is not consciously selected by the manufacturers. Duration and method of wear could affect bead size: long utilized necklaces might contain worn down and therefore smaller beads than beads sewn onto clothing or headbands. However, the informants did mention that they make smaller, finer beads for their own use than they do for export. The reason is that finer, smaller beads require more work and are uneconomical for export.

### Archaeological beads

Ostrich eggshell beads from different archaeological sites in Botswana were examined (Fig. 1). The Stone Age sites were Toteng (Campbell, 1992; Reid & Segobye, 2000), Thamaga I (Robbins, 1986) and Radiepolong rock shelter (Sadr, in press). The Iron Age sites comprised Phate Hill, BPS 52 (Segobye, 1994), BPT 2 and Moralane (Reid, 1996).

Toteng was recorded by Campbell in 1988 whilst undertaking salvage work for the building of the proposed Southern Okavango Dam near Toteng (Campbell, 1992). The village of Toteng is located in the Ngamiland district, 69 km southwest of Maun. Toteng is found near a mound of a late 19th century European store (Stromboom's store). Reid's excavations recovered 67 ostrich eggshell beads.

The Thamaga rockshelter is located outside the village of Thamaga on the southeastern hardveld about 50 km west of Gaborone. Nearby is the Metsemotlhabe river. The inner part of the rockshelter contained 70 cm of ashy grey deposits which are rich in Late Stone Age artifacts and there was a date of 1190±90 AD (Robbins, 1986). Fourteen ostrich eggshell

beads were obtained from Thamaga rockshelter. From the 1996 excavations conducted by Sadr (in press) at the nearby site of Radiepolong, 33 ostrich eggshell beads were collected.

Both Kaitsho and Mosu I are located in the Sowa Pan area. These pans are the remains of a palaeolake system that has existed periodically over the last 50,000 years (Thomas & Shaw, 1991; Reid & Segobye, 2000). Along the eastern edge of the Sowa Pan rises a steep rocky escarpment up to 100 m above the pan margins. On the edge of the escarpment, which forms a ragged line along the edge of the pan, a number of archaeological sites have been found. These can be broadly associated with cultural traditions of the last 1200 years (Main, 1996; Reid & Segobye, 2000). Through the 1997 excavations conducted by both Dr. Reid and Dr. Segobye, 281 ostrich eggshell beads were obtained from the Kaitsho site. From Mosu I, 89 ostrich eggshell beads were recovered. This area seems to have been a zone of interaction with pottery types from Zhizo, Leopard's Kopje, Great Zimbabwe, Khami and early Tswana traditions. These are all dated to between the 9th - 13th centuries AD (Reid & Segobye, 2000).

In the Mokgware hills sites, ostrich eggshell beads were recovered from excavated contexts in two Iron Age sites; BPS 52 and Phate Hill. BPS 52 is about 8 km north of the Mokgware range and 5 km north of Phate Hill (Segobye, 1994). A total of 63 ostrich eggshell beads were recovered through excavation. Phate Hill is 3 km north of the Mokgware range (Segobye, 1994). Two hundred and eighty one ostrich eggshell beads were collected from excavations. The Mokgware sites are dated between 9th - 15th centuries AD.

As part of Dr. Reid's mitigation work for the North-South water carrier, two sites were excavated. Site A68 is situated to the South of BPT I between Mmadinare and Palapye. This is a low lying site associated with the Toutswe tradition (Reid, 1996). Nineteen ostrich eggshell beads were obtained from site A68. Site A78 is located on a low rise and the main feature of this site is a circular area of a fine grey ashy soil around 30 m in diameter thought to represent an animal enclosure (Reid, 1996). Fifty seven ostrich eggshell beads were obtained here. These sites are radiocarbon dated to around the 11th century AD.

Some of the samples of ostrich eggshell beads were studied in the Archaeology Unit laboratory of the University of Botswana and others in the Botswana National Museum, Monuments and Art Gallery storeroom. These were beads from Toteng, Thamaga, Radiopolong rock shelter, Phate Hill site, BPS 52, BPT 2 and Moralane sites. Other beads were measured in the field (Kaitsho & Mosu I). All the measurements were done by the writer except for Radiepolong rock shelter ostrich eggshell beads which were measured by Dr. Sadr. All the ostrich eggshell beads were measured with vernier calipers. The external diameter and the diameter of the drilled hole were measured. All these were measured to a tenth of a millimeter and the results were plotted on graphs as scatter diagrams (Figs. 2, 3 & 4) and box and whisker plots (Fig. 5). All the whole ostrich eggshell beads were measured. Broken beads were measured wherever possible. Unfinished beads were counted but not measured. These were used to determine where ostrich eggshell manufacture took place.

Two main hypotheses are tested. First, the popular idea that ostrich eggshell beads were made exclusively by hunter-gatherers. This implies that ostrich eggshell beads on herder-farmer sites were obtained from hunter-gatherers through trade. If this is the case one might expect that all the measured ostrich eggshell beads from Late Stone Age and Iron Age sites should have similar size patterns because they would have been manufactured by one group of people, that is hunter-gatherers. One should also find evidence of bead manufacture only on hunters' sites.

The alternative hypothesis is that hunters and herders each made their own ostrich eggshell beads. Hunter-gatherers made small, and herders large ostrich eggshell beads. A

third hypothesis can be put forward as well: that hunter-gatherers made all the ostrich eggshell beads but larger ones for Iron Age people and smaller ones for their own use. This hypothesis implies that evidence of ostrich eggshell bead manufacture should only be found on hunter sites. There should be no evidence of manufacture on herder sites, even though beads on herder sites could be larger than those on hunter sites.

Hypotheses derived from research by others can also be tested. Denbow (1986) says that in the Toutswe hierarchy, hunter-gatherers lived in the smallest cattle post-type settlements. If this was the case we should find the beads on the smallest Toutswe sites to be in the size range of hunter sites (LSA) rather than in the size range of larger Toutswe sites occupied by Iron Age herders. Another potentially testable hypothesis is Huffman's (1994) assertion that the site of Toteng represents an Early Iron Age (rather than LSA) village. If so, the beads on this site should fall in the herder rather than the hunter size range.

On the basis of scatter plots (Figs. 2, 3 & 4) and box and whisker plots (Fig. 5) it is clear that ostrich eggshell bead sizes on hunter and herder sites differ significantly. An internal diameter of 2 mm and external diameter of 6 mm forms a boundary between hunter and herder ostrich eggshell beads. Ostrich eggshell beads from herder sites show a considerable range in size whereas ostrich eggshell beads from hunter sites have a much smaller range. No hunter site's ostrich eggshell beads are greater than 7.4 mm in external diameter and 2.2 mm in internal diameter. Overall three different patterns are discernible.

*Pattern 1:* this is a hunter's site ostrich eggshell bead pattern (Fig. 2). The external diameters range from 3.3 mm to 7.4 mm and the internal diameters range from 0.6 mm to 2.2 mm.

*Pattern 2:* this is a small herder site ostrich eggshell bead pattern (Fig. 3). The external diameters range from 6.1 mm to 13.6 mm and the internal diameters range from 1.1 mm to 3.1 mm. Patterns 1 and 2 are very nearly mutually exclusive. The herders and the hunters can be very clearly identified by size of beads. It is evident from the above patterns that *contra* Denbow (1986), small Toutswe sites such as A78 and A68 were not occupied by ex-hunter-gatherers. If these small sites had indeed been occupied by Bushmen acting as client herders their bead size should have fallen into the size range from hunter sites (pattern 1). Instead, they form a very distinct bead size pattern 2.

*Pattern 3:* these are large herder sites with bead size distribution covering both pattern 1 and pattern 2 (Fig. 4). External diameters range from 1.5 mm to 13.5 mm and the internal diameters range from 1.2 mm to 3.2 mm. Even though pattern 3 ostrich eggshell beads combine patterns 1 and 2, they always include relatively more pattern 2 (herder) beads than pattern 1 (hunter) beads. The above pattern could be due to interaction between herders and hunters. There is a possibility that these large herder villages could have been occupied by mixed populations (both Bantu speakers and Bushmen clients or servants), or the mixture in bead sizes could be due to trade. The herders on these sites could have been making their large beads but at the same time receiving small size beads from the hunter-gatherers in the surrounding countryside.

The Toteng Bambata level (Fig. 2) which according to Huffman (1994) belongs to the Iron Age, turns out to contain very typical hunter sized beads. In terms of ostrich eggshell bead size ranges then, Toteng is a Late Stone Age hunter site. As such the beads agree with other lines of evidence which tend to support the idea that Bambata is an LSA archaeological entity (Reid *et al.*, 1998). The above information suggests the possibility that hunters and herders in Botswana during the last 1500 years each made their own types of beads, thus signaling their stylistic and cultural differences. Hypothesis two, in other words (see introduction), is supported and hypothesis one is refuted.



There remains, however, a third hypothesis. The alternative for the above picture is that hunter-gatherers made all the ostrich eggshell beads but bigger ones for Iron Age people and smaller ones for their own use. This alternative hypothesis is supported by the ethnographic work in D'kar where one of the informants (Andries) indicated that the Naro people make smaller ones for their own personal use and that larger ostrich eggshell beads are specifically made for sale. Jacobson (1987) also states that the hunter-gatherers made smaller ostrich eggshell beads for their own use and the large beads for trade with Iron Age people. This hypothesis implies that evidence of ostrich eggshell bead manufacture should only be found on hunter sites. There should be no evidence of manufacture on herder sites because it is assumed that these people only received ostrich eggshell beads as finished products. This alternative explanation can be rejected if manufacturing evidence is found on both hunter sites and herder sites. Evidence of manufacture on herder sites would mean Iron Age, Bantu speakers were making their own beads differently to signal their stylistic and cultural distance from the Bushmen hunters.

Examination of the data for evidence of bead manufacture in the form of unfinished beads and grooved stones used for grinding and polishing the edges of strung beads, provided the following results. Radiepolong as an example of hunters' sites contains 25 unfinished and 32 finished beads. It also contains 3 grooved stones with groove widths matching bead diameter range: beads were clearly being produced here. Mosu I as an example of a herders' site contains 27 unfinished and 89 finished beads. Several grooved stones have been found on the site. These results confirm that herders and hunters made their own beads. Thus hypothesis two would remain the strongest explanation for the observed patterns.

### **Summary and conclusion**

This research has shown that there is a significant size difference between ostrich eggshell beads found on herders' and hunters' sites in Botswana. Late Stone Age people made smaller ostrich eggshell beads whilst Iron Age people made larger ostrich eggshell beads. From the measurement of a sample of 819 ostrich eggshell beads, three patterns of ostrich eggshell beads sizes were produced. The first pattern is of hunters' beads with external diameters ranging from 3.3 to 7.4 mm. The second pattern, which is almost mutually exclusive with pattern 1, is of small herders' sites. These have external diameters which range from 6.1 mm to 13.6 mm. The third pattern is for large herders' sites which show a pattern that covers the whole ostrich eggshell bead range. The external diameters range from 1.5 mm to 13.5 mm.

On the basis of distinct eggshell bead size ranges the first hypothesis, which says that ostrich eggshell beads were made exclusively by hunter-gatherers or Late Stone Age people, is rejected. The possibility that hunters exclusively made the beads but in two different size ranges is also rejected as evidence of manufacture is found on both hunters' and herders' sites. This contradicts hypothesis one as well because it implied that ostrich eggshell bead manufacture should only be evident on hunter sites. At this stage, therefore the second hypothesis is accepted because its test implications are met: hunters made their own beads and so did the herders.

The study has important implications for testing Denbow's (1986) hypothesis that the smallest Toutswe sites were occupied by ex-hunters. Beads from such small Toutswe sites are completely different from beads from hunter sites. It seems highly unlikely that their occupants were culturally identical. On the basis of ostrich eggshell beads, this study refutes Huffman's (1994) interpretation of the Bambata horizon at Toteng as being an Iron Age occupation. The ostrich eggshell bead size range of Bambata shows an LSA pattern.

There is a need for additional studies on ostrich eggshell beads in Botswana. Questions like why there are very low numbers of ostrich eggshell beads on hunter sites as compared to the high numbers of ostrich eggshell beads on herder sites need to be addressed. It would be helpful if chronological change in bead size could be measured, but currently there are too few samples available for that. The relationship between Late Stone Age people and Iron Age people is a subject of great importance for prehistoric studies and there is still much debate on this issue. Beads can help clarify the picture.

#### Notes

Mr. Milton Tapela is currently a school teacher in Shoshong. His thesis, supervised by Karim Sadr, was completed in 1998. Two illustrations were omitted and a few minor editorial corrections have been made to the original text.

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Ms. X. Mohalose, Naro aged 60, craftslady in D'kar, 30.07.97  
Mr. N. Tshabo, Naro aged 37, craftsman in D'kar, 31.07.97  
Ms. N. Mothibi, Naro aged 32, shop assistant in Ghanzi, 30.07.97  
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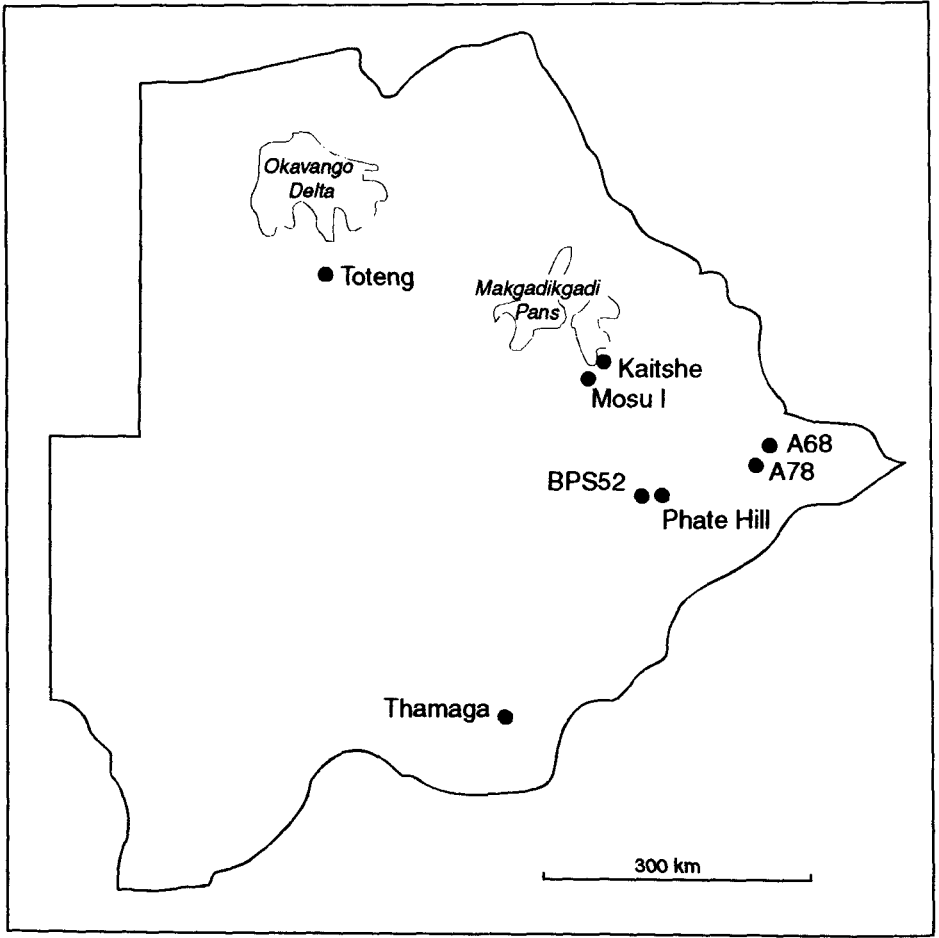


Fig. 1. The sites mentioned in the text.

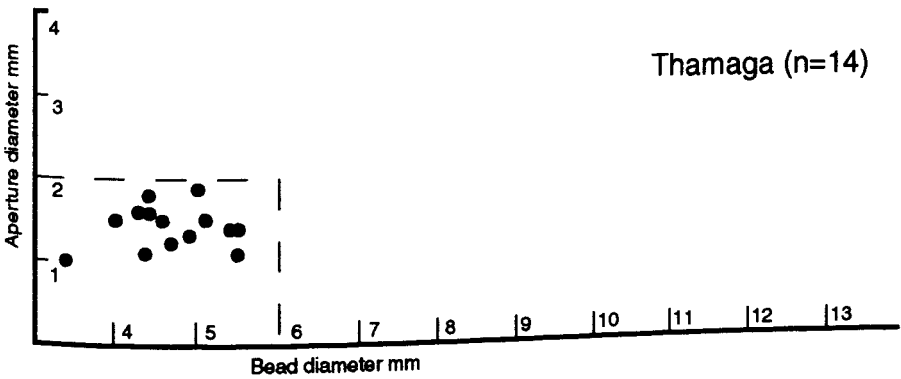
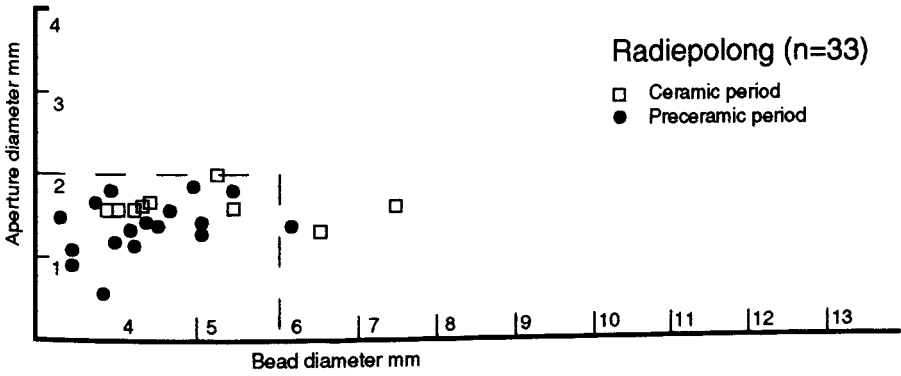
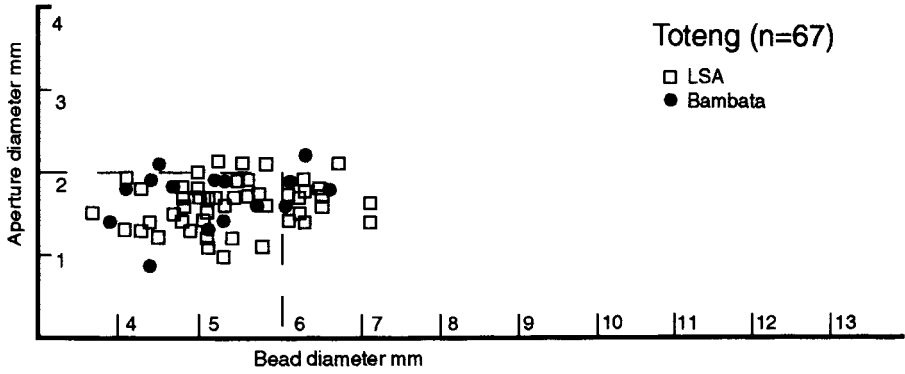
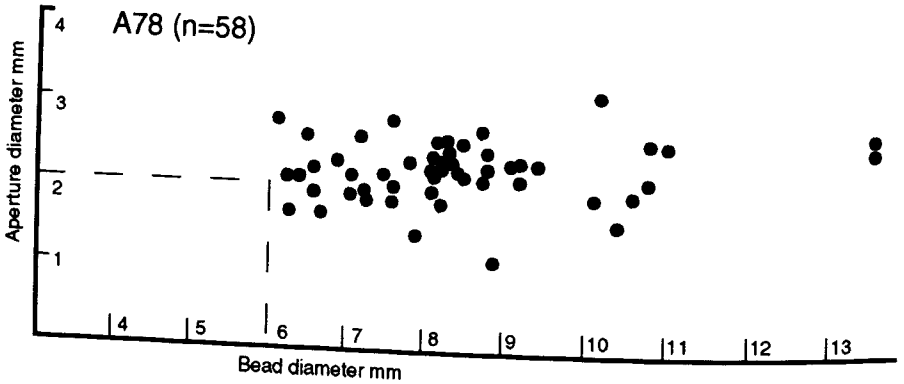
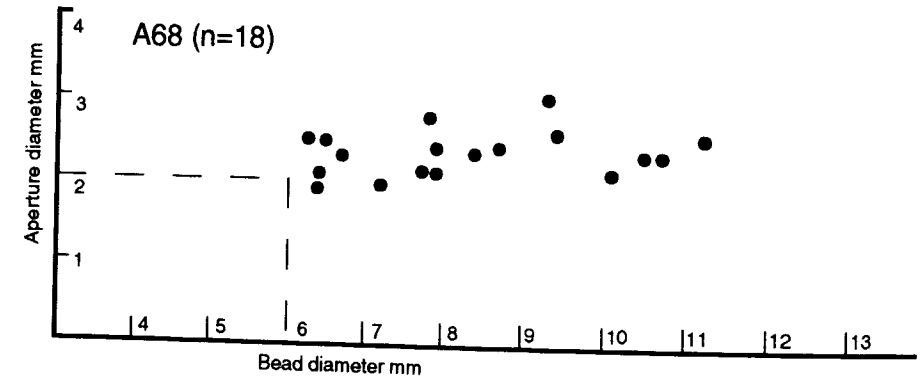


Fig. 2. Pattern 1: ostrich eggshell bead diameters on hunter sites.



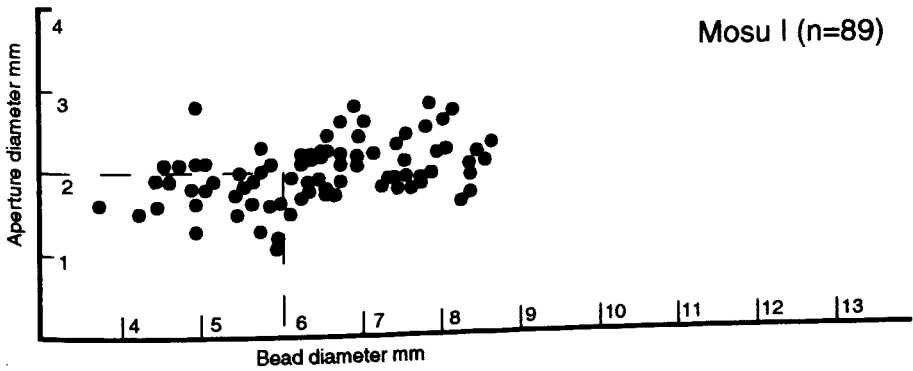
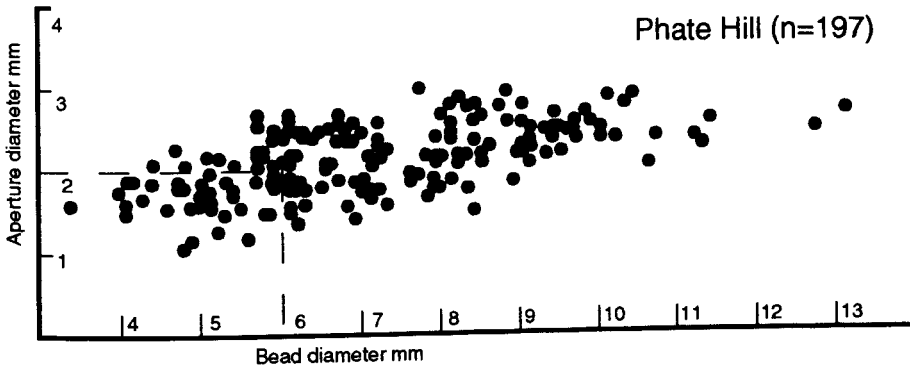
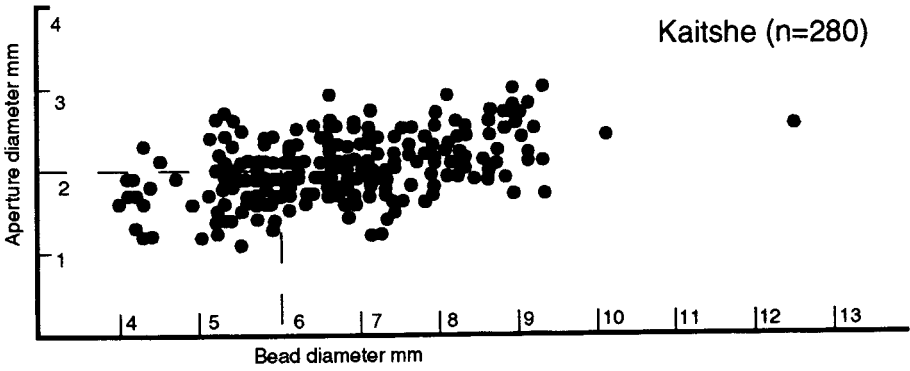


Fig. 4. Pattern 3: ostrich eggshell bead diameters on large herder sites.

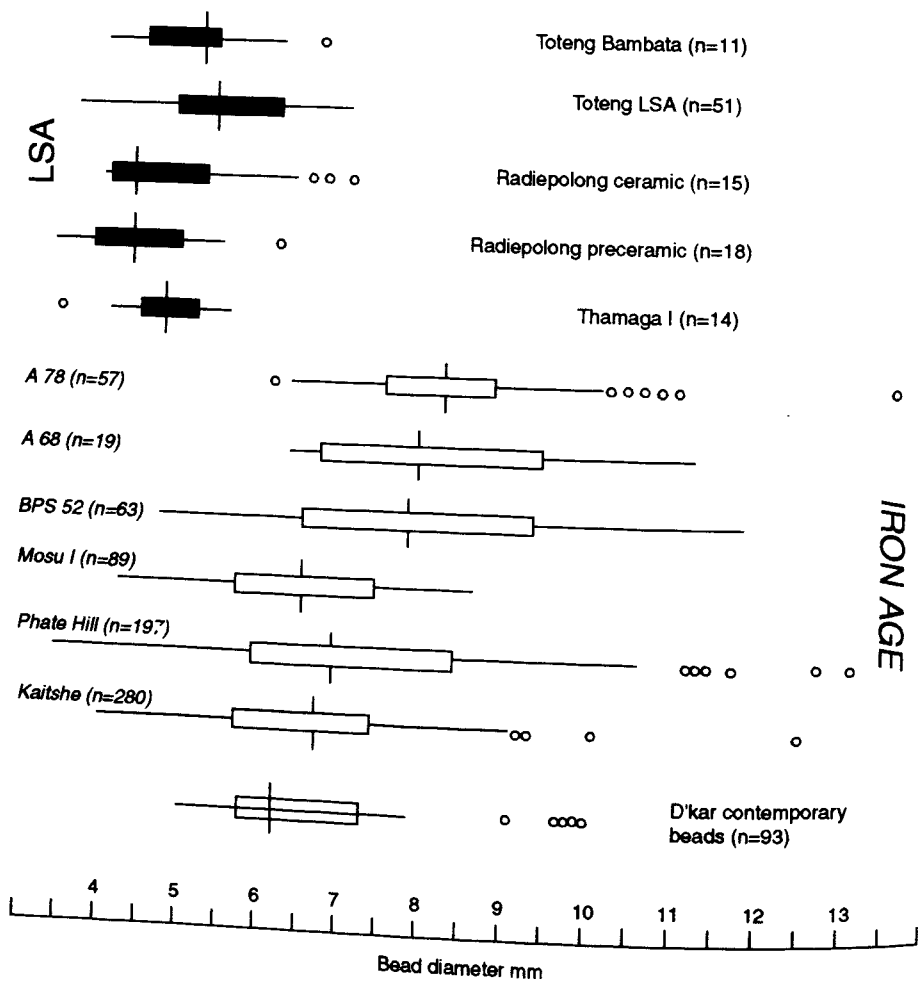


Fig. 5. Box and whisker diagram of archaeological and modern ostrich eggshell bead diameters.