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CORBELLED BUILDINGS OF THE GREAT KAROO

Patricia Kramer

The corbelled buildings of the Karoo are stone buildings with dome-shaped roofs. 'Corbelling' refers to the roof, which is constructed by moving each successive row of flat stones slightly inwards, i.e. placing the stones on the centre of gravity of the stones below them. In this way the roof is gradually closed by a dome-shaped construction. Another term for corbelling is 'overhanging'. Corbelled buildings have been constructed for thousands of years and are found throughout the Mediterranean and the Middle East, as well as in the British Isles. Those found on Malta date to 4850 BC.

In 1960 the National Monuments Council asked James Walton to investigate some of the corbelled buildings that occurred in the Karoo. As a result of his report a number were declared National Monuments. He created an album of all the corbelled buildings visited by him, as well as a list of those he had heard about but not visited – a total of 55 buildings (Walton 1960). This list, together with information gleaned from farmers in the Loxton district, provided the foun-



Map showing the area where the majority of corbelled buildings are located.

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Interior view of a corbelled building roof. The builder has conformed to the required proportions of a domed roof building and the roof hole has been closed with a single stone.

dation on which to start a search for these iconic Karoo structures. In 2008 members of the Vernacular Architecture Society of South Africa started a project to locate as many of these buildings as possible. More than 100 corbelled structures were measured and mapped, while over 40 still need to be recorded.



The study led to the realisation that not all corbelled buildings are the same, there being a significant variation in style, size and function. Furthermore, it became apparent that this collection of buildings was an invaluable source of information about life in the Karoo in the 19th century, which is under-documented. Apart from some reports by officials and on commando activities, little has been written about the everyday lives of the earlier inhabitants of the region and certainly nothing about the corbelled buildings themselves. This makes an archaeological approach critical in order to flesh out the scanty historical and cultural records.

Treeless region

The majority of the corbelled buildings occur in a roughly rectangular area from Williston in the west to Carnarvon in the east, down to Loxton and then across to Fraserburg. A few corbelled structures lie outside this area. Two key environmental factors play a role in the presence of corbelled buildings in this area, namely a lack of trees and plenty of suitable stone. All the early travellers who made their way through this part of the Great Karoo mentioned the fact that, apart from a few spindly Karee trees in river gullies, there was no wood at all. Without wood, a house with a pitched roof or a 'brakdak' (a flat, claytopped roof), both of which require sturdy beams, could not be constructed. But with a plentiful supply of stone available, buildings could be made of stone from floor to roof. These buildings had the added advantage of being warm in winter and, most importantly, considering the occupants' dependence on the products of the fat-tailed sheep, such as tallow, candles and soap, cool in summer.

The corbelled buildings are located in areas that have stone with good building qualities. The entire area lies on the Karoo sequence, with the more southerly corbelled buildings situated on the Beaufort subgroup and the northerly buildings on the Ecca subgroup. Both these sequences were laid down under water and yield stone with a fine-grained texture, although Beaufort subgroup stone is smoother and easier to work with than the Ecca stone, which is more fissile and does not provide the huge slabs of rock required for doorway lintels.

To supplement his building material, one of the first things a settler did on his loan place was to plant a grove of fast-growing poplars to provide wood for the future. Many of the larger corbelled buildings in the more northerly areas of the Karee Mountains are thought to have been built late in the time frame, as they have stout wooden lintels.

Influences on corbelled buildings

Who were the people present in the area in the 19th century when corbelled buildings were constructed?

And could any of them possibly have played a part in influencing the type of structure with regard to the form, cultural influence and level of ability? The trekboers or early stock farmers included both whites (some born at the Cape, as well as new arrivals from Europe) and Basters (people of mixed race) who later moved north of the Orange River to form part of the Griqua people. The land onto which the trekboers moved was not 'empty', but was occupied by the San, with whom a brutal war of attrition raged for many years until commandos finally reduced them, killing men and taking women and children into labour.

In addition, apart from various small groups of Xhosa moving through the area, there were Xhosa settlements at Schietfontein (Carnarvon), Pramberg (Victoria West) and Prieska. There were also so-called 'Mantatees', Sotho and Tswana refugees from the Mfecane, who crossed the Vaal and entered the northern Cape. These groups came from an area with a stone building culture that had built corbelled structures in the pre-colonial period. And, of course, there were the Khoekhoen, who by this time had been totally subdued and were attached to the farmers as an invaluable, if badly treated, labour force. All of these groups could have made input into the corbelled building.

All of these groups played a part in a constantly shifting frontier – contact between groups that played out far beyond the official boundaries of the Cape. All the groups were caught up in the struggle for survival in a harsh environment and adopted successful traits from each other. Transhumance, the seasonal movement of stock between the high plateau and the warmer Karoo, is an example of stock farmers adopting a way of life from the Khoekhoen, as was their use of Khoekhoen matjies huts: light, easily transportable and weatherproof habitations.

The builders

Who built the corbelled buildings, who used them and how were they used? Taking all the influences mentioned above into account, we are still not able to give a definitive answer. Certainly they were built for the use of the trekboers, although, when the farmers had built more substantial homes, they were often used to house farm workers. Walton was of the opinion that 'the earliest Karroo buildings evince considerable building skill and one is forced to the conclusion that the first corbelled building in this area was erected by a craftsman from southern Europe who was already familiar with the technique' (1960:12). Indeed, one could transpose some of the Karoo corbelled buildings to Ireland and they would not be out of place there. At a later date he writes: 'the name of the builder of the first corbelled building in the Karoo is not known, but that is not surprising as such travelling builders and tradesmen were continually on the move among the trekboeren...' (1989:123).

Van der Waal-Braaksma and Ferreira take exception to this view of the local inhabitants and state that in their opinion the corbelled building was the natural progression from the rondawel with a reed roof, which was well known (1986:77). The trekboers were used to living in round matjieshuisies, so the round interior shape of the corbelled building would not have been strange to them. The possible presence in the area the Mantatees may also have played a role, although their buildings were much smaller compared to the corbelled buildings of the Karoo.

By the time we get to the construction of the later buildings around the 1870s, there are some oral records. T'kokoboos, for example, 'was apparently built by its original owner and a Coloured labourer in 15 days' (Walton 1960:7). It has a date of 1851 inscribed over the door. Vlieefontein was built by Gabriel Gehardus Krugel in about 1855 before his marriage (Shearing 1977 in Walton 1993) and the owners of Arbeidersfontein claimed that Schuinshoogte was built between 1860 and 1872 by two coloured men named Tiensjielings and Gedaanwerk (Van der Waal-Braaksma & Ferreira 1986:78). So it seems that some of the later buildings were built by 'Coloured' workers together with the farmer.



A large square-based corbelled building that was purpose-built as a house. The small extension on the left contains a hearth and was added at a later date.

The corbelled buildings era

When did the trekboers feel secure enough in their land holding to start investing in stone buildings? They started moving into the Nieuweveld area from about the 1750s. In the Roggeveld they initially practised transhumance farming. It was common for these farmers to live in their wagons, in matjieshuisies or harbeeshuisies. However, as they moved further inland, they began to acquire loan places in the area under discussion and transhumance was based more on moving seasonally within the same region in search of water and pasture. This meant that most people now had a 'home' or permanent farm, as well as additional farms, most of which were acquired as loan places with leases of typically 15 years and rent payable annually. In theory, only the 'opstal' could be sold as the land still belonged to the Dutch East India Company (VOC). But in practice this was largely ignored as sales prices clearly indicate that the entire loan place was being sold. By virtue of its tax on the transaction, the VOC was complicit in this informal arrangement.

What did this mean in terms of security and improvements on the land? Very few loan places were retracted, even if a farmer was years in arrears on his rent, and this provided a feeling of security. However, in 1813 the Cradock Proclamation changed the way people thought about the land. The proclamation declared that from then on land would be held in perpetual quitrent, i.e. the entire loan place could be sold or bequeathed. It now belonged to the loan holder as long as he paid his rent and on condition that he had his land surveyed and registered. At last the farmer had the legal permanency he required to invest in more permanent dwellings, such as stone corbelled buildings. This state of affairs is reinforced by the fact that William Burchell, an astute observer of the landscape, failed to mention any corbelled or beehiveshaped buildings when he travelled through the area in 1811 (Burchell 1922). So although we are still unable to pinpoint an exact date for the construction of the first corbelled buildings, we can say probably not before 1813.

The latest dates for their construction can be based on a variety of factors, namely oral records, dates and remarks on surveyor's diagrams, and the use of materials that can be dated, such as pieces of railway track used for door lintels. On this basis, the last corbelled buildings, including the famous provincial monument of Arbeidersfontein, were constructed in the 1870s. It appears, therefore, that the corbelled building tradition spanned a period of about 60 years.

Corbelled building construction

Corbelled buildings exhibit outer variability. In fact, no two corbelled buildings are the same in terms of either dimensions or style, and are thus true vernacular buildings. Construction of corbelled buildings is based on the same principles as the construction of a dome. There is a direct relationship between the floor diameter and the height of the building, which should form an equal-sided triangle, although the most successful dimensions are those in which the roof height is slightly greater than the floor diameter, with the roof slightly pointed instead of being a flattened semicircular shape.

The lower walls of the building are double stone walls with through stones linking the two layers for support. Unlike the dry-stone corbelled buildings of Europe, the South African structures have clay mortar between the stones. The curved roof, however, is constructed differently. The stones used in the construc-



The corbelled buildings at each end of this row were built first and the middle 'infill' building was built at a later date.

tion of the roof should be flat and evenly sized. Each row of stones is moved inwards by about a third so that it rests on the centre of gravity of the stone below. To keep these stones stable and prevent them from toppling inwards, a second outer layer (the revetment) is placed on them, sloping down slightly to form a counterweight and stabilise the roof. The hole at the peak of the roof is closed by a roof stone. A well-built building will have just one roof stone, but buildings without ideal proportions often need up to five stones to close the hole. Contrary to popular belief, the roof stones are not removed to allow smoke to exit the building; all cooking was done outside in a protective bush or stone 'skerm' or shelter.

A typology has been devised to categorise the buildings. This is based in the first instance on the base shape of the building, which is either square, round or oval (of the latter there is only one example), followed by subtypes based on dimensions considered to be defining, such as roof height or floor dimensions. In this way three main categories and seven subcategories have been created.

One of the subcategories is important as it defines the function of buildings. This is the size of the door. Half-door openings are only found in buildings that were constructed to be used as *kafhoks* or chaff store-rooms, while full-door openings are found in houses or store rooms. Buildings with half-door openings are usually associated with a *trapvloer* or threshing floor, and they do not have windows or other features associated with a house. Buildings with full-door openings that have windows, wall niches and stone shelves were built to be inhabited.

Buildings were altered over time as their function changed. So, for example, many *kafhoks* were converted to dwelling places for farm workers. Karel Schoeman writes: 'Die posisie van Februarie Baadjes op Gunstfontein het die voordeel ingehou dat hulle ten minste die vensterlose karbeelhut eenkant van die posta mog bewoon' (1986:129). One sure way to identify such a change in function is the enlargement of the door, which leaves the edge of the lower part of the doorway rough and uneven. The lack of windows, niches or shelves are further clues.

In a few cases, abandoned houses have been converted to *kafhoks* once the family had built another house. In this instance the doorstep (*drumpel*) is

raised by about 450 mm and this new wall is obvious to the naked eye. Other purposes for corbelled buildings are more difficult to identify, though those with a built-in soap-making pot were obviously soap houses. Others with no windows and none of the features attributed to a dwelling were probably storerooms for meat and fat-based products.

Conclusion

This kind of archaeology is based on direct observations – understanding how the buildings were constructed and unravelling the subsequent stratigraphy as changes were made over the years. Using these facts together with the location of the buildings, information on the historical background of the area and surviving local stories, this project on the corbelled buildings of the Great Karoo is beginning to yield interesting facts about the lives of the 19th century inhabitants of the area.



Stuurmansfontein, probably the most iconic of all the corbelled buildings. The interior height of the building in the forefront is 7 m. Subsequently a flat-roofed building was added and finally a pitched-roof extension, which contains a hearth.



The kafhok at Stuurmansfontein with its telltale half-door opening and the trapvloer wall.

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THE ORIGINS OF KHOEKHOEN CATTLE PASTORALISM

New insights from bone chemistry

Judith Sealy

From the late 15th century onwards, ships' log books, diaries of visitors to the Cape and similar sources described the Khoekhoen people who lived along the western and southern Cape coasts with their flocks of sheep and herds of cattle (Fig. 1). Men who had been on board ship for several months were eager for fresh mutton and beef, so a number of visitors commented on the presence (or absence) of local people with domestic stock, how many animals were seen and what items were most readily accepted in bartering for them. It is clear that cattle were a centrally important commodity in Khoekhoen society - milk was a staple food and men reckoned their wealth according to the sizes of their herds (which could number in the thousands). Cattle provided transport when moving camp (Fig. 2) and were ridden into battle. On special occasions, beasts were slaughtered for meat.

Archaeologists have long been puzzled by the discrepancy between the importance of cattle in the historical records and their rarity in archaeological sites. Over the past several decades there have been sustained programmes of research into herding societies by Andy Smith, Karim Sadr and others, but there continues to be a mismatch between the picture of Khoekhoen society seen in historical records and that shown by archaeological excavations. We have several sites with large numbers of sheep bones, but none with large numbers of cattle bones. Was this because herders with many cows had to move frequently to find sufficient grazing, so that domestic debris was thinly scattered and we cannot identify camp-sites? Or could it be that the sizes of Khoekhoen cattle herds increased substantially only after European sailors began to call regularly at the Cape, providing a new market? If this were the case, the historically documented pattern might simply have been too short-lived to be archaeologically visible.

Isotope analysis

In 2010 I published a paper in the *Journal of African Archaeology* that goes some way towards resolving this problem (Sealy 2010). It is based on stable carbon and nitrogen isotope analysis of human skeletons, which provides information on the type of food people ate in life. Food provides the raw material for our body tissues: we are literally what we eat. Stable isotope measurements of radiocarbon-dated skeletons enable us to trace changes in diet in archaeological populations over time, and of course

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Fig. 1: Seventeenth-century drawing of Khoekhoen people with sheep and cattle (from the South African Library, see Smith & Pfeiffer 1993)



Fig. 2: Early 19th century aquatint by Samuel Daniell of a Korah (Koranna) group near the Orange River preparing to move camp

we can also compare different regions. We are fortunate to have many human skeletons from the western and southern Cape coastal regions. Scientific study of these remains can provide invaluable information on life in the past, including many aspects, such as health and disease, that would otherwise be entirely unknown. Some skeletons come from archaeological excavations, but the vast majority were found by accident as shifting sand dunes expose ancient burials, or in the course of road-building, the digging of foundations for buildings or other disturbance of the ground.

'Stable isotope analysis' sounds intimidating, but the principles are really very simple. Chemical elements such as carbon and nitrogen occur naturally in several forms. To use carbon as an example, about 99 per cent of the carbon in the world is carbon-12. or 12 C. This means that the each atom has an atomic mass of 12, because its nucleus contains six protons and six neutrons, each 'weighing' one atomic mass unit. One per cent of the carbon in the world is carbon-13, or ¹³C, with six protons and seven neutrons. A very tiny proportion – one part in a million million – is ^{14}C , with six protons and eight neutrons. This configuration is unstable, so ¹⁴C undergoes radioactive decay, which is the basis of radiocarbon dating. ¹²C, ¹³C and ¹⁴C are all isotopes of carbon and the first two, which are not subject to radioactive decay, are stable isotopes.

As plants fix carbon dioxide during photosynthesis and animals convert food into body tissues, the larger, heavier ¹³C reacts slightly more slowly than ¹²C. As a result, ¹³C/¹²C ratios in plant and animal tissues are slightly different from those in atmospheric carbon dioxide or food consumed. Moreover, plants that employ different types or mechanisms of photosynthesis (different 'photosynthetic pathways') have different ¹³C/¹²C values. There are two main photosynthetic pathways. Most plants, including nearly all trees and bushes, use the Calvin-Benson or C_3 pathway, in which atmospheric carbon dioxide is converted initially into molecules containing three carbon atoms. C₃ photosynthesis strongly favours the lighter ${}^{12}C$, i.e. C_3 plants have low ${}^{\overline{13}}C/{}^{12}C$ ratios. Some plants, mainly grasses that evolved in tropical or subtropical parts of the world, use the C₄ pathway, where atmospheric carbon dioxide is converted initially into molecules containing four carbon atoms. C₄ photosynthesis also favours ¹²C over ¹³C, but selection for ${}^{12}C$ is not as strong as in the C₃ process.

A wealth of information

Along the southern Cape coast, where rain falls all year round, many (though not all) grasses use the C₄ photosynthetic pathway, while trees and bushes rely on the C₃ pathway. This means that grasses – and grazing animals – contain more ¹³C (higher ¹³C/¹²C ratios) than trees and bushes and browsing animals. We can, therefore, measure the ¹³C/¹²C ratio of an

animal bone, say an elephant, and determine the extent to which it ate grasses compared with trees and bushes. For humans, we may infer the proportions of C_3 and C_4 -based foods consumed either as plant foods or through animal intermediates.

Turning now to nitrogen isotopes, nitrogen-15 (¹⁵N) is more abundant in the ocean than on land. Measurement of the levels of nitrogen-14 and nitrogen-15 (¹⁵N/¹⁴N ratios) therefore enables us to ascertain the relative importance of marine and terrestrial foods in the diets of animals (and humans!) that eat both. Stable carbon and nitrogen isotope analysis of archaeological human skeletons can therefore yield a wealth of information about ancient diet. More important, in some instances we can use diet as a means of answering larger-scale questions, such as when cattle became important in herding societies at the Cape.

Fig. 3 shows carbon and nitrogen isotope measurements of human skeletons from the southern Cape coast between Cape Town and the Tsitsikamma. Each symbol represents a person. Triangles show people who died more than 2 000 years ago (determined by radiocarbon dating of the skeleton). At that time, everyone in South Africa lived by hunting and gathering, so the pattern of triangles shows the range of hunter-gatherer diets, from mostly terrestrial, strongly C₃-based at the bottom left-hand side of the graph, to mostly marine at the top right-hand side. There are no individuals who ate mostly terrestrial, strongly C₄-based diets because of the limited quantities of C₄ grass along the southern Cape coast.

Squares indicate people who died between 2 000 and 1 000 radiocarbon years ago. (Radiocarbon years are almost, but not quite the same as calendar years.) We know that by this time, people in the southern Cape were keeping herds of sheep. Some of the best herder sites, including Kasteelberg, Die Kelders and Boomplaas, have deposits that date largely to the first millennium CE. Note that the squares fall within the range of variation of the triangles, although none of these individuals relied as heavily on marine foods as some earlier hunter-gatherers. Although sheep were important, consumption of their milk and meat did not alter the skeletal isotope values of early herders because sheep had isotope values similar to the wild animals hunted by pre-2000 hunter-gatherers.

Consumption of more terrestrial foods

The pattern formed by the diamonds is, however, very different. These symbols represent people who died between 1 000 and 400 radiocarbon years ago, i.e. during the second millennium CE, but before European colonisation of South Africa. Some diamonds show values similar to those above, and these may indeed be hunter-gatherers who continued to share the landscape with pastoral people. Most of the diamonds, though, lie towards the right-hand side of the



Fig. 3: Stable carbon and nitrogen isotope measurements of human skeletons from the southern Cape coast between Cape Town and Tsitsikamma. Measurements are expressed as δ^{13} C and δ^{15} N values in units of parts per thousand (‰). See Sealy 2010 for full details. Triangles indicate skeletons with radiocarbon dates older than 2 000 radiocarbon years before present (BP), squares fall between 2 000 and 1 000 BP, and diamonds between 1 000 and 400 BP.

graph, indicating consumption of more terrestrial C_4 -based foods than in previous millennia. Isotope measurements alone cannot tell us whether these were animal or plant foods. It is possible that people in the second millennium CE began to harvest and consume the seeds of C_4 plants and/or that they altered their hunting strategies to focus on wild grazing antelope. There is, however, no evidence of either practice.

We do, on the other hand, have abundant historical evidence that by the time the first Portuguese explorers rounded the Cape, the historic Khoekhoen had a lifestyle that centred on one particular grazing animal: cattle. Cattle strongly prefer eating grass to bushes or shrubs, while sheep are much more flexible in their feeding habits. In an environment with C4 grasses, consumption of cattle meat and/or milk would increase the proportion of C₄-based foods, producing the pattern shown in Fig. 3. On balance of probability, the best explanation is surely that cattle pastoralism became important only in the second millennium CE occurring before European contact, and was therefore not an artefact of altered market forces caused by ships seeking fresh provisions. This would also explain why archaeological sites have yielded only a few cattle bones - we simply do not have good sites from the that period.

One implication is that the historically documented Khoekhoen way of life emerged about a thousand years ago, rather than extending back to the first appearance of domesticated animals in South Africa around 2 000 years ago. This fits well with suggestions made by Karim Sadr on the basis of changes in the types and frequencies of artefacts and food-waste in excavated archaeological sites. Sadr has pointed out that at several sites, quantities of sheep bone declined in the late first millennium CE and new items such as lugged pottery appeared, possibly signalling the emergence of the Khoekhoen (Sadr 1998, 2003, 2008). There are currently too few skeletons for us to be able to tell whether the shift in isotope values occurred at precisely the same time, but if additional skeletal remains are recovered and analysed in the future it should be possible to clarify this.

A link to the Khoekhoen?

Why did cattle become important? What were the contributory factors? The possible role of early farming communities is intriguing. Farmers were well established in the Eastern Cape by the second half of the first millennium CE, if not earlier. They grew grain crops such as millet and

sorghum, kept sheep and cattle, and smelted metals. Millet and sorghum need summer rainfall, so farmers did not spread farther west, but by that time there would have been several hundred years of contact between early farming communities and sheep herders with stone and bone-based toolkits. Archaeologists have different views on the importance of cattle at this time: whether the symbolic and ritual, as well as economic value of cattle familiar to us from recent southern African farmers extended back to the first millennium CE. Cattle were certainly centrally important among farming communities within the last thousand years, at the same time they became important to the Cape Khoekhoen. Is this merely coincidence, or was there a link? This would be a fascinating topic for further research.

As a final comment, this study emphasises once again the tremendous scientific and historical value of archaeological human remains held in museums and universities. Some of the skeletons analysed were recovered many decades ago, but new analytical approaches allow us to obtain new information from them. In this study, stable isotope analysis has enabled substantial progress towards solving an important archaeological and historical puzzle that could not have been answered using more conventional archaeological methods such as excavation. It is of the utmost importance for archaeology to care for these collections and to add to them where possible as additional unclaimed human remains are uncovered in the course of development.

For references, see page 16.

THE VERMEULEN ENGRAVINGS: BINDING SIX AFRIKANER GENERATIONS

Manie Opperman

The town of Orania is located 40 km from Hopetown in the Northern Cape Province. Orania was established in 1965 by the Department of Waterworks as a construction camp for the building of a canal system for the Orange River Scheme.

Numerous rock engravings dating from the Late Stone Age occur, alongside historical engravings and graffiti on the dolerite rocks of a range of hills stretching from east to west through the town. The graffiti is mostly the work of white visitors since 1762. They scratched their names, dates and interesting sayings on the rocks, sometimes using the same rock faces as the prehistoric artists, to the point of even vandalising the earlier work.

The first known owner of the farm Vluytjeskraal, on which Orania was later built, was Stephanus Ockert Vermeulen. He bought the farm in 1882 from his earnings as a transport driver and inscribed the record of the transaction in Dutch on a large rock overlooking the Orange River. He also started a separate annual calendar on another rock nearby.

Examination of Vermeulen's engravings reveals interesting aspects. The inscriptions on both stones are given below as they are testimony to the farmer's attachment to his farm.

S. Vermeulen het deze plaas Gekoop in het jaar 1882 voor de Zomme van 3952 – 4 – 5 (pounds) alle koste bei en was nog hier in 1892 en ook nog in 1902 """"1912 """"1922 """"1923 """"1923 """"1924 """"1924

(inscription by Babsie Vermeulen, a grandchild)

In 1922 Vermeulen changed his routine of making an engraving every tenth year. He returned in 1923 and mistakenly wrote 1922. He tried to change the '2' into a '3', but was not very successful. He returned in 1924 and again in 1925, the year in which he died. The dates of the last three years are lightly scratched and indistinct compared with those of the previous years. According to his descendants, his eyesight was very weak in his old age. His health was probably also failing and he sensed his end was near. His granddaughter recorded his death at the end of his last entry as 12 April 1925.

Following the tradition, Vermeulen's grandson, Douw Vermeulen, continued the inscriptions and wrote on the same stone in Afrikaans:

D. Vermeulen het die / Plaas gekoop in die / Jaar 1942 teen 1 – 10 /Per morg uit die / Boedel van sy Vader / P.R. Vermeulen



Vermeulen's record of his ownership of Vluytjeskraal

On the eastern side of the hill Stephanus Vermeulen engraved a stone with the following calendar.

S.O. Vermeulen 1881 1882 83 84 85 86 87 88 90 91 92 93 94 95 96 97 98 99 1900 1901 1902 1910

Apparently he already occupied the farm for a year before buying it in 1882. In the first two years of his occupation he recorded the year fully, while for the following years he used only the last two digits until 1900. The years of the South African War are written in full, but are indistinct compared to the deeply scratched earlier entries. After the war there is only one more date. At that time there was a huge logistics base for British military operations and a concentration camp at Orange River station some 20 km away. As can be expected, the war must have influenced the lives of the Vermeulen family profoundly.

Despite the family's attachment to Vluytjeskraal, the farm was sold in 1956. Eight years later the farm was dispossessed by the Department of Waterworks. In May 2011 the descendants of Philipus Vermeulen, one of Vermeulen's sons who inherited Vluytjeskraal, held a reunion in Orania. More than 100 descendants attended, including youngsters of the sixth generation. The family sees such rituals as important for the preservation of family ties.

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ROCK ART TELLS THE STORY OF THE SAN'S SPIRITUAL JOURNEY*

According to Professor David Lewis-Williams, the world's foremost authority on San rock art, researchers have only scratched the surface of this ancient form of expression and much still needs to be discovered about the symbolism hidden in the paintings. Although the 77-year old retired in 2000, he is still actively involved in research and is a Professor Emeritus in Wits' Rock Art Research Institute (RARI).

Lewis-Williams obtained his bachelor's degree at the University of Cape Town in 1955 and completed his honours degree at the University of South Africa ten years later. He enrolled for his Masters degree at the University of Natal and in 1975 was awarded a visiting fellowship to Cambridge University, where he studied San ethnographic resources and records. In 1976 his Masters degree was upgraded to a doctorate.

During his studies he came across the work of German-born linguist Wilhelm Bleek and his sister-inlaw Lucy Loyd, which eventually enabled him to unlock the symbolism used by the San in their rock art. Between 1870 and 1875 Bleek and Loyd interviewed a number of /Xam San who were imprisoned in the Breakwater Prison in Cape Town at the time. The then governor of the Cape Colony allowed the prisoners to live with the Bleek family, where they shared their life stories, the histories of their bands, as well as their mythological and spiritual beliefs. Bleek used phonetic script and transliteration to record the language of his visitors, while Loyd captured their narratives. Between the two of them they filled more than 12 000 pages with what Lewis-Williams describes as a 'mine of information and the key to unlocking the meaning of the symbolism used in San rock arť.

These interpretations, combined with Bleek and Loyd's work, his knowledge of social anthropology and his ethnographic studies on the San, convinced Lewis-Williams that there was more to the San's rock art than mere records of everyday life. His research led him to conclude that the drawings were in fact records of the San's spiritual experiences. 'Studying Bleek and Loyd's work enabled me to start working out the symbolic meanings of different animals, especially the importance of the eland, and their mythology about creation.'

The details hold the secrets

During his long and distinguished career, Lewis-Williams (photo) spent many hours copying and contemplating San rock art. This is a painstaking process, as some of the paintings are so faint that one literally has to spend days staring at them in an attempt to identify what they are. He firmly believes, however, that the details hold all the secrets. Another huge problem is that the paintings only provide clues to the symbolism. To know what it means one has to study the San's mythology. Lewis-Williams uses numerous sources to support his findings, including ethnographic studies.



Having established himself as the foremost expert on San rock art, Lewis-Williams decided in the 1980s to widen his research scope and increasingly began to focus on European and Palaeolithic art dating back 10 000 and 30 000 years. Most of the sites he has visited over the last ten years are in France. There are no ethnographic studies available for these paintings, which is what initially piqued his interest.

What fascinates Lewis-Williams most about these paintings is what could possibly have driven artists to crawl long distances deep underground through water and along narrow passages to small niches where they would with great difficulty turn on their backs to paint on the ceilings. According to him, the people of that time believed in an underground spirit world and these were their attempts to communicate with the spirits. His findings were published in his book, *The Mind in the Cave*.

If he had to pick a career highlight, says Lewis-Williams, one that is near the top of the list is his involvement in the design of the new coat of arms for South Africa in 2000. He was requested to translate the motto 'diverse people unite' into the extinct /Xam language. In /Xam the motto is *ke e: xarra ke*.

During his career, Lewis-Williams has authored or co-authored 14 books, many of which still appear on the top-selling lists and have been translated amongst other languages into French, Spanish and Czech. His latest book, *Deciphering Ancient Minds: The mystery of San Bushman rock art,* co-authored with RARI researcher Dr Sam Challis, has just been released. Lewis-Williams has received many awards and accolades for his research. One of the highest is without doubt his A1-rating by the National Research Foundation (NRF) in 2005.

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WORLD ARCHAEOLOGY

Llama muck drove Inca success

How could the inhospitable Andean highlands of Peru nurture the great Inca civilisation? The answer, unearthed in lake sediments high up in the Peruvian Andes, seems to be llama muck. South America's most important crop is maize. Its cultivation is what allowed people to stop being hunter-gatherers. If crops were good and grain silos bulged, they had time for mining metals, developing culture and fighting wars with their neighbours.

The switch to agriculture happened at different times in different places. Analysis of mud cores from the bed of a small lake close to the mountain fortress city of Ollantaytambo, Peru, reveals that, there at least, it happened very fast. A study by the French Institute of Andean Studies in Lima, Peru, shows that maize pollen suddenly appeared in lake-bed mud 2 700 years ago. Until then it seems that people mostly ate wild foods such as quinoa, which could not have sustained a large and thriving civilisation.

But what triggered the sudden emergence of this crop 3 350 m up in the Andes? A temporarily warmer climate probably helped, but so did llama dung. The mud cores revealed that around the same time as maize pollen became dominant, the remains of oribatid mites, soil-dwelling bugs that consume animal excrement, also increased. Llamas had been domesticated about 3 500 years ago. But around 2 700 years ago the extra mite remains in the mud suggest that the hills were suddenly alive with large numbers of llamas, indicating a bonanza of excrement for spreading on fields as fertiliser.

New Scientist, 22 May 2011

Ancient language dictionary finished

An ambitious project to identify, explain and provide citations for the words written in cuneiform on clay tablets and carved in stone by Babylonians, Assyrians and others in Mesopotamia between 2500 BC and AD 100 has been completed after 90 years of labour. The 21-volume Chicago Assyrian Dictionary (CAD) was produced by the Oriental Institute at the University of Chicago. The CAD is not simply a word list. By detailing the history and range of uses of each word, it is in essence a cultural encyclopaedia of Mesopotamian history, society, literature, law and religion.

Over the years, researchers filled out millions of index cards with references to the use of 28 000 words. The entries for each word denote various meanings and reference the contexts and ways in which it was used. *Eurekalert, 05/06/11*



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STONE TOOLS AND SHELLFISH Ancient shellfish harvesting on the former Transkei coast

Gareth Angelbeck

There are two reasons why historians know very little about the lifestyle of the various Khoesan groups that once inhabited South Africa's former Transkei coast (FTC). Firstly, most of the FTC Khoesan had been assimilated into Bantu-speaking tribes long before Europeans established contact with the region and, secondly, despite its wealth of archaeological sites, very little research has been undertaken there.

Of all the subsistence activities practised by the FTC Khoesan, shellfish harvesting must surely have been the most important. The coastline is littered with shell middens, some of them of considerable size. These middens are testament to the Khoesan people's dependence on marine resources. Some contemporary amaXhosa groups still practise shellfish harvesting, but mainly to supplement their maize-based diet. These groups probably harvest shellfish in very much the same way as their predecessors did.

Beginning in the 1970s, researchers like Bigalke (1973) and Hockey et al (1988) began a series of ethnographic studies on the Transkei inhabitants' 'past and present patterns of exploiting the intertidal resources of [the coast's] 260 km shoreline' (Claassen 1998:43). Cheryl Claassen would later describe this research as being 'the most extensive project undertaken to understand the human adaption to and utilisation of shellfish ...' (idem). Despite the invaluable ethnographic information that was gained from these studies we still know very little about how exactly shellfish were harvested in ancient times. It is this issue that I wish to explore here.

Systematic edge damage

In his book, *Shorelines Strandlopers and Shell Middens* (2006), Cape Town-based archaeologist John Parkington points out that 'most shells recovered [from shell middens] show very few signs of systematic damage during collection'. He goes on to explain that 'this must mean that limpets were removed from the rocks by a swift sideways jolt, probably with the hand or foot or a wooden stick, and perhaps when the animal was slightly elevated whilst feeding. Mussels, of course, could simply be wrenched off their rocky perch by hand' (Parkington 2007:33).

Parkington's theory on how shellfish may have been harvested by hand or foot is most likely correct. However, the limpet shells with 'few signs of systematic damage' described by him probably come from the south or west coast, where most of his research on shell middens was done. The limpet shells illustrated in Fig. 1 were found at two different midden sites on the southern FTC and both display what looks like systematic edge damage.



Fig. 1: Limpet shells from an FTC midden displaying systematic edge damage. Shells displaying a single chip (like the one on the left) seem to be the most common.

These neat, deliberate chips were most likely caused by tools, possibly a result of the limpets being levered off the rocks. Limpet shells displaying these distinct breaks or chips are quite common in FTC shell middens (further statistical analysis will provide a percentage of how many limpet shells display this characteristic edge damage). This leads to the question: Could stone tools have played an important role in shellfish harvesting during the Stone Age? And if they did, then why does it appear that east coast Khoesan used tools to harvest while their south and west coast contemporaries found it adequate to use a hand or foot as postulated by Parkington? Below I shall explain the possible reasons.

Limpet shell morphology

According to the archaeological record, the inhabitants of the Cape west coast favoured the limpets *Cymbula granatina* (granite limpet) and *Scutellastra granularis* (granular limpet) (Parkington: 2006:27). Spring tides also presented the opportunity to harvest *Scutellastra argenvillei* (Parkington 2006:31). In general, larger limpet species on the south and especially the west coast display noticeably higher pitched shells than those on the east coast (Fig. 2). This is because 'limpets that grow in huge densities (for instance the

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three species mentioned above) often display shells that are tall and domed because of crowding' (Branch 2010:168).



Fig. 2: The shell on the top is a Scutellastra granularis, particularly common in Cape west coast middens, while the one on the bottom is a Cymbula oculus, a favourite among FTC shellfish gatherers. Note the difference in shell pitch. (Images courtesy of Wikipedia.)

Because of a lack of phytoplankton and seaweeds that fuel more productive food chains, the east coast does not support impressive limpet populations like the south and west coasts do (Branch 2009:8). For this reason, limpet crowding is not common on the FTC and, even if it were, continuous harvesting by the amaXhosa would most likely keep the limpet population down. Larger limpets that are common on the east coast include, among others, *Cymbula miniata* (pink-rayed limpet) and *Cymbula oculus* (goat's eye limpet), which both display flat shells (Branch 2010: 168).

Earlier I mentioned Parkington's observation of how limpets in middens on the south and west coasts display very little evidence of systematic edge damage. This is likely due to the fact that because the majority of large limpets found there are more raised, removing them was not particularly difficult and it was therefore sufficient to use the hand or foot when harvesting. Because the east coast environment supports flatshelled limpets, the hand or foot harvesting method may have proved unsuccessful there. This is where tool-aided harvesting came into play.

Ethnographic comparisons

Even to this day, the amaXhosa who still harvest shellfish on the FTC use as their tool of choice a length of flat iron bar, called *ulugxa* in isiXhosa, to remove both limpets and mussels from the rocks. These tools are basic and are often made from recycled motor car springs. Would it not then be reasonable to suggest that their predecessors might also have made use of tools to aid harvesting? Unlike in ancient times, only two native groups are today known to exploit shellfish on a regular basis, namely the Topnaar people near Walvis Bay in Namibia and certain groups of the amaXhosa near the Qolora River mouth on the southern FTC (Deacon 1999:150). The amaXhosa prefer to use the *ulugxa*, but such tools are few and their use is often reserved for women and the occasional man. Teenagers and children collect mussels mainly by hand.

What is interesting though is that in spite of the strong linguistic and genetic relationship between the southern amaXhosa and the Khoesan (Mitchell 2002:293), no tradition of stone tool-aided harvesting has survived. One would think that because there usually are not enough *ulugxa* to go around, some amaXhosa would make use of stone tools. But taboos concerning shellfish consumption (Claassen 1998:43) coupled with the introduction of iron tools may have led to the extinction of stone tool-aided harvesting. As evidence of their past importance though, stone tools now litter many of the middens found along the FTC. Surely some of these tools were created for the purpose of shellfish harvesting?

Tools of the trade

A large number of shell middens on the former Transkei coast are covered over by either sand dunes, bush or coastal grass. Some however have been exposed either through the processes of erosion or as a result of illegal shingle mining. The stone tools common in these middens probably had many uses, from gutting fish to sharpening digging sticks. Could these stone tools also have been used to harvest shellfish?

It is quite possible, for as one can see in Fig. 3 there are some stone tools that seem to have been specifically manufactured for the purpose of shellfish harvesting. These tools are relatively large and flat with a lengthy edge that would have been ideal for removing shellfish from the rocks, especially mussels, which are more common here than limpets and are particularly difficult to harvest by hand.



Fig. 3: Three stone tools whose purpose might have been for shellfish harvesting. Tools like these are common in FTC shell middens.

Archaeologists like Hilary and Janette Deacon also see tool-aided harvesting as being possible. In their book, *Human Beginnings in South Africa: Uncovering the secrets of the Stone Age* (1999), they suggest that shellfish might have been removed '... using digging sticks or a stone tool to dislodge them from rocks in shallow water' (Deacon 1999:153). Parkington and the Deacons are thus not opposed to the possibility of tool-aided harvesting having been practised at some stage, especially during the Stone Age. However, this theory may require further evidence before the importance of the link between stone tools and shellfish can be appreciated.

Lithic analysis and experimental archaeology

Lithic analysis may be one way of obtaining the evidence needed to support the theory of stone toolaided shellfish harvesting. If a tool displaying a reasonable amount of shell residue along its working edge can be identified, then it would be safe to assume that the tool was used for (but not limited to) shellfish harvesting.

Another way of proving tool-aided harvesting would be through experimental archaeology. By making replicas of stone tools found in shell middens and then using them to harvest live limpets, it may be possible to recreate systematic edge damage that matches or is comparable to that found on limpet shells in middens. Studies like these should provide interesting results and I hope to be able to contribute to this in future.

Conclusion

The conclusions that can be deduced from the discussion above should support the possibility that during the Stone Age, on the FTC at least, stone tools played a vital role in shellfish harvesting.

Over the past decade, a renewed archaeological interest in ancient man's relationship with the sea has emerged, including new studies that link a marine-based diet with cognitive brain development (Parkington 2006:87). It has even been suggested that shell-fish harvesting coupled with geophyte exploitation was the main reason for mankind's survival during the glacial maxima or 'bottle-neck' period between about 195 000 and 123 000 years ago when unfavourable climatic conditions almost led to the extinction of the human race (Marean 2010:41).

In the light of this renewed interest it would be beneficial to see more research being undertaken on the FTC as this region has vast archaeological and anthropological potential. In particular, it would also be of interest to see more research being undertaken on ancient shellfish exploitation, including harvesting methods. Perhaps this article will spur further and indepth research.

Author's note

In this article mention is made of the former Transkei coast. Many people still refer to the region as the Transkei, but as this name no longer appears on most contemporary maps, I refer to it here as the former Transkei.

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WORLD ARCHAEOLOGY

Oldest mine in the Americas found

Archaeologists have discovered a 12 000-year-old iron oxide mine in Chile that marks the oldest evidence of organised mining ever found in the Americas.

According to a report in the June issue of *Current Anthropology*, a team of researchers from the University of Chile found the 40 m long trench near the coastal town of Taltal in northern Chile. It was dug by the Huentelauquen people, the first settlers in the region, who used iron oxide as pigment for painted stone and bone instruments, and probably also for clothing and body paint.

An estimated 2 000 t of rock were extracted from the mine. Carbon dates for charcoal and shells found in the mine suggest it was used continuously from around 12 000 years ago to 10 500 years ago, and then again around 4 300 years ago. The researchers also found more than 500 hammer stones dating back to the earliest use of the mine.

Before this find, a North American copper mine dated to between 4 500 and 2 600 years ago was the oldest known in the Americas. The extent of the operation and duration of mining illustrate the surprising cultural complexity of the Huentelauquen.

Eurekalert, 05/07/2011

KREEFBAAI SOUTH: A POORLY KNOWN, WEST COAST MEGAMIDDEN NEAR LAMBERTS BAY

Antonieta Jerardino

Pre-colonial shell middens dating to c. 3000 - 2000 BP are amongst the largest archaeological sites on South Africa's west coast, and perhaps the entire coastline. These massive sites are known among archaeologists as 'megamiddens' (Parkington 1976). At least two of these are known at Paternoster (Yates 2004), but the large majority are situated around Lamberts Bay and Elands Bay (Fig. 1) (Jerardino 2010, in press). The coming about of these unique sites have recently been explained by rising human population densities, longer residential permanence after 3500 years BP and successive reformulations of hunter-gatherer subsistence choices, which involved both marine and terrestrial ecosystems. For instance, isotopic studies conducted on West Coast human skeletal remains and zooarchaeological analyses strongly suggest that a substantial amount of forager diet was at this time derived from marine resources (Lee-Thorp et al. 1989).

More specifically, shellfish collection shifted from a lower caloric-yielding mix of limpets, whelks and black mussels before 3000 BP to the intensive collection of the latter from about 2600 BP, with localised impact on molluscan fauna at this time. When it came to the less consumed terrestrial resources, coastal huntergatherers also became much less reliant on large mobile game (e.g. eland) and more so on small, territorial bovids (e.g. steenbuck, grysbok or grey duiker) and tortoises after 3500 BP, with this subsistence behaviour most strongly emphasised during the 'megamidden millennium' (Jerardino in press).

Among the known megamiddens, Kreefbaai South (KFS) is the most poorly studied (Fig. 1), as only basic observations were gathered in 1986 by Royden Yates and Anthony Manhire (UCT, SARU database). Although no excavations and radiocarbon dating of KFS have ever been conducted, it is very likely that this site conforms to the chronological patterning observed for all other such large sites. The following is an account of a recent GPS-assisted survey of KFS and immediately adjacent areas.

Kreefbaai South

According to GPS fixes with an average of 4 m accuracy, KFS is 440 m long and 120 m wide. Aerial photographs allowed identification of the highest point at close to 9 m. Interestingly, when relying solely on



Fig. 1: The Lamberts Bay area showing the location of Kreefbaai South (KFS) and other megamiddens along this coastline. DS (Deurspring); LBD (Lambertsbay Dump midden); MKP (Malkoppan); GF (A-G) (Grootrif A-G complex; KFC (Kreefbaai C); and SBF (Steenbokfontein Cave) are shown for reference.

aerial photographs such as those available from Google Earth imagery, and following the apparent differences in surface texture, KFS size estimates appear to be much smaller, namely 190 m long and 54 m wide. KFS seems to be as large as Kreefbaai C (KFC), which is 500 m long and 50 m to 100 m wide, but its conservation state is better than most other known megamiddens, since little has been lost to farming activities and road building.

The most obvious evidence of disturbance and/or damage in KFS is the excavation of a shallow 15 m long basin in the middle and densest area of this site (32°13'29.76" S; 17°19'49.89" E) (Fig. 2). It appears that this feature was dug to create some protection from the wind: old beer bottles were found next to what appeared to be a fireplace. Evidence of further but moderate surface disturbance is a sand track running in a north–south direction and approximately

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along the middle and length of KFS. Other footpaths are also in evidence but all appear not to have been in use for several years at the time of the survey.

The contents and extent of this megamidden were assessed by visual inspection of the ground surface and dune mole rat heaps. The matrix of the KFS deposit is very dark, although very little charcoal is evident among the shell fragments. Shell density at KFS increases very quickly, reaching high density about 25 m from the northern edge, maintaining medium levels for at least 90 m south of the area around the dug-out basin. Shell density drops beyond this southern point and much of the archaeological material is distributed to the east of the sand track. The eastern edge of the site largely coincides with the extent of tall bush cover, where the material reaches very low density. The seaward margin of the site ends fairly abruptly as the site loses height before interfacing with lightly vegetated sand dunes behind a long sandy beach.

Black mussel (Choromytilus meridionalis) shells dominate the KFS site surface, although several limpet species (Cymbula granatina, Scutellastra granularis, S. barbara and S. argenvillei) are also present, but in much lower frequencies. Many of the unbroken black mussel prismatic bands, from which metrical observations can be derived (Buchanan 1988), are quite broad, suggesting that fairly large sizes of mussels were harvested during the occupation of this megamidden. Occasional whelks (Burnupena spp and Argobuccinum pustulosum) can also be recognised, and although white mussels (Donax serra) are also present in very low numbers, this might be the result of seagull feeding behaviour (Siegfried 1977). Bullia spp sand whelks can be seen in and around the dug-out basin, but are not as frequent elsewhere at this site, and Venerupis corrugatus (a type of Venus clam) fragments often appear mixed among the black mussel shells. Small, hand-sized beach pebbles are present around the northern end of the site and a few guartz split pebbles can be seen here and there. Not a single pre-colonial ceramic fragment was identified while visiting KFS.

Site on deflated dune

A site on a deflated dune (32°13'20.7"S; 18°20'E) was spotted north of KFS by following a sand track that runs to the east of KFS leading to KFC. Much of contents of this site consist of visible but thinly dispersed material on the west-sloping surface of a deflated, orange dune. This site is approximately 20 m square in area, showing a darker organic sandy matrix on the upslope. The surface extent of this site continues to the east on top of the abutting dune, but the bulk of the site spreads on the deflated west slope. Vegetation immediately to the west of it, consisting of very low, grey-green and prickly bush, is particularly distinct from that around other margins of the site. It is uncertain whether this feature is the result of human activity at this particular location or a product of microhabitat.

A roughly circular distribution of guartzite beach cobbles distributed over an area about 1 m in diameter appears to be remnants of a fireplace. A few stone artefacts are scattered around, namely quartz flakes, a silcrete core (gray-creamy with red veins) and a flake of the same material (deep red colour), and many manuports in the form of small quartzite cobbles (whole and split) and pebbles. Some of the latter were used as hammer stones. No pottery of indigenous manufacture appears to be present. Fauna is represented mainly by marine shell, such as black mussels (C. meridionalis), a few whole S. argenvillei limpet shells, and broken S. barbara and S. granularis, as well as whelks (Burnupena spp.). Given the state of preservation of the few faunal remains, this site is likely to be of late Holocene age.



Fig. 2: View of the Kreefbaai South megamidden from the north-east, with dug-out basin in the middle ground and Baboon Point (Elands Bay) in the background.

Large sand basin

There is a sparse artefact and faunal scatter within a sand basin measuring 40 x 20 m (32°13'09.4"S; 18°19'53.7"E). A small dune (hametjie) of coarse sand is situated at the centre of the basin. A few quartz pebbles are also present. Because of its sedimentary characteristics and location behind the coastal dune front, this basin is likely to have been a former late Holocene slack lagoon, similar to those identified by geoarchaeological studies in the Elands Bay area (Miller et al. 1993). Scattered artefacts consist of quartz manuports, quartz split pebbles and a small, broken quartzite slab, probably used as a grindstone. Fauna is represented by a steenbok/ grysbok skull and some marine shell, such as black mussels and limpets, with S. argenvillei most visible among the latter. A few 19th or 20th century blue transfer-printed ware fragments (A Malan, personal communication, 2011) are also present.

Conclusions

Other than the initial and small-scale sampling and dating of the KFC megamidden (Jerardino 2010), much remains to be learned about the archaeology of the Kreefbaai area. KFS is by far the best preserved of all the megamiddens and together with a few other such sites reflects a unique subsistence and settlement choice pursued by pre-colonial hunter-gatherers of the West Coast of South Africa. The relationship, if any, between these large sites and smaller peripheral occupations is also poorly understood. Ongoing farming, recreational, housing and other developments threaten the conservation and timely study of these rare sites. Archaeologists working both in research and heritage management institutions should work closely together to ensure conservation of and education about these magnificent sites.

Uitkomst 23, Paternoster, Saldanha Bay Municipality, Western Cape Province. Unpublished report prepared for Deon Van Zyl Consultants, Iziko South African Museums, Cape Town.

Khoekhoen cattle pastoralism (continued)

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A SHORT HISTORY OF BOKONI

Alex Schoeman and Peter Delius

The stonewalled and terraced sites dotted across the undulating landscape of Mpumalanga conjure up an epoch of productivity and prosperity. But the narratives of conflict and violence in the oral traditions that refer to this area and period paint a bleaker picture. For many decades this apparent contradiction was not interrogated as these sites remained cloaked in a shroud of scholarly neglect. In recent years, however, this indifference has given way to mounting interest as archaeologists and historians have embarked on joint research. Based on the insights available from both material and oral sources, they have developed a deeper understanding of the history of these stonewalled sites. The dialogue between these disciplines has delineated a fascinating world, and raised important new questions about how it operated and adapted (see Delius & Schoeman 2008; Maggs 2008).



Collaboration

This collaboration combined material from archaeological (e.g. Van Hoepen 1939; Mason 1968; Evers 1973, 1975; Marker & Evers 1976; Collett 1982; Maggs 1995) and historical sources (e.g. Berliner Missions Berichte; Merensky 1862; Winter 1912; Hunt

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1931; Mönnig 1963, 1967). All these sources have limitations, and reflect the period in which they were collected and/or published. Many of the recorded oral sources focussed on the history of the Pedi polity, only mentioning the people of Bokoni when they became entangled in the politics of the Pedi. A key exception was a 1930s University of Pretoria MA thesis on the Sekoni language by the linguist CW Prinsloo. In the thesis the history of Bokoni is used as background information for understanding elements of Sekoni. Prinsloo's Bokoni (the land of Bakoni) consisted of the area between Machadodorp, Lydenburg and Sabie.* This is the broad region in which the stonewalled terraced sites occur (see Delius & Schoeman 2008 for a more extensive discussion; Fig. 1).

The Bokoni sequence

The history of Bokoni can be divided into four phases. The first phase comprises the earliest era that is archaeologically visible, but on which oral traditions are mute. The second phase relates to the period during which the open-valley sites in the Elands, Crocodile and Sabie valleys constituted the core of Bokoni. During the third phase the people of Bokoni retreated into kloof sites, which were re-occupied in the fourth phase by hybrid communities. This sequence is explored in more detail below.

Phases 1 and 2

We do not as yet know when the tradition of building the stonewalled and terraced sites, which are so characteristic of Bokoni, started. However, we do know that communities have occupied Bokoni since at least the 17th century since the earliest collected Pedi tradition recalls that in approximately 1650 a group of



* Whilst we adopt Prinsloo's description of the region as 'Bokoni', we have not found convincing evidence that the 'Bakoni' formed a united, uniform ethnic group. In fact, at this stage the data is suggesting the opposite (see Delius & Schoeman 2008, 142-145).

Pedi ancestors encountered Koni groups when they crossed the Crocodile River (Merensky 1862: 328).

This account gives some insight into the geographical extent of Bokoni during the first phase. It clearly mentions the Crocodile valley, but does not speak about the stonewalled and terraced settlements in the Komati valley that mark the southernmost boundary of Bokoni. These sites most likely also date to the earliest phase of Bokoni, but it is also likely that this area was abandoned in the 1700s when the valley and other southern and south-eastern parts became unstable. While the reasons for this are far from clear at present, the impact of growing competition over the booming ivory trade, along with slave raiding and trading connected with Delagoa Bay, Inhambane and other east-coast commercial centres, may have been an important factor. Their impact was in all likelihood refracted through quickening processes of political centralisation and militarisation throughout the region. especially to the south-east of the most southerly Bokoni sites. The sites in the Komati River valley were not easily defendable, leading to their permanent abandonment. The absence of traditions about both this period and the settlements in the southern part of Bokoni is not surprising as there are no Pedi accounts about this area and the sites no longer formed part of Bokoni in the period recounted in the narratives recorded by Prinsloo (Delius & Schoeman 2008).

Prinsloo (1936) suggested that the oral traditions he recorded indicated that Moxomatsi near Belfast was the first occupation in Bokoni, but this settlement suffered so many attacks by the 'Mapono' ('Nguni' groups) that the main settlement was relocated to Mohlo-Pela, east of Machadodorp. Simultaneously, smaller chiefs started to develop new villages. Large stonewalled and terraced sites mark the areas Prinsloo associated with Moxomatsi and Mohlo-Pela. These are located on gently sloping hillsides and resemble the 'classic' phases 1 and 2 stonewalled settlements. These phases express an approach to space that does not relate to conflict or defence. Instead, the spatial configuration reflects agricultural success and cattle management.

The individual sites range from simple enclosures, which consist of two concentric stonewalled circles found in isolated small settlements, to complex sites with large central enclosures and smaller enclosures attached to their outer walls. Rock art in the region depicts the full range of settlement patterns (see Van Hoepen 1939; Maggs 1995; Mbewe 2007; Fig. 2). Research by the Bokoni team has shown that it is likely that both the complex and simple ruins are related to different stages in the developmental cycle of homesteads. A newly established homestead would have fewer people living in it and own fewer cattle than a homestead of a very senior member of society (Maggs & Schoeman, nd).

It is probable that new (simple) homesteads had to be established in new areas, or on the outskirts of villages. The villages and towns grew in tandem with stable homesteads and expanded as new homesteads were established on their periphery. Bokoni residential clusters reflect the full set of possibilities and ranged from small hamlets comprising of a few homesteads to complex towns that stretch for more than 4 km in length. Irrespective of size, the homestead clusters in open valleys have open or terraced garden space within the villages or towns. The settlements in the Dorps River valley might date to this period and could help to illustrate the scale of the Bokoni population. Marker & Evers (1976) estimated that between 19 000 and 57 000 people lived in the Dorps River valley if all the sites in the area were occupied contemporaneously.

Phase 3

The occupation of the open-valley sites probably continued until the expanding Pedi Kingdom started to place pressure on Bokoni. The first-recorded clash took place in the 1740s when the Maroteng fought with a Bokoni group, the Kgomane. More conflict followed in the mid-1700s during the regency of the Maroteng leader, Mampuru. At this time the Maroteng renewed their pressure on Koni groups and eventually managed to take control of Khutwaneng, which had been relocated from the less defendable open-valley site established at the time of Mohlo-Pela to an almost impenetrable kloof (Winter 1912:92; Hunt 1931:279-280; Delius & Schoeman 2008). This signalled the start of the third phase of occupation and of Maroteng political control over the people of Bokoni, who now paid tribute to the Pedi polity.

During the initial part of Phase 3, people probably used kloofs as refugia, while continuing their traditional open-valley occupations, but eventually escalating conflict made this impossible. This conflict stemmed from two sources, Maroteng succession battles and the expansion of aggressive states into this region from the south. The first Maroteng succession dispute involved Thulare and his brother Dikotope, who took refuge at Maepa, a Bokoni settlement near Ohrigstad. Later Thulare's son Makopole developed a formidable stronghold near Lydenburg, which was attacked by his brother (Delius & Schoeman 2008).

Following the resolution of the succession disputes, the region experienced even more destructive incursions from the south and east. These included the Ndwandwe under Zwide, the 'Ndebele' led by Mzilikazi, as well as armed groups under the authority of Sobhuza, Soshangane, Zwangendaba and Nxaba (see for example Bonner 1983; Delius 1983; Wright 2008). Initially people probably took refuge in the stonewalled and terraced kloof sites that had functioned as retreats in times of trouble. These, however, did not provide sustainable long-term refuge for the large Bokoni population and consequently people scattered. Many of the refugees did not leave archaeological or oral evidence, but oral accounts record that some joined the Ndzundza Ndebele at KwaMaza, while others took refuge in rugged areas such as the mountains in northern Bokoni where substantial terraced and stonewalled sites are found in deep, inaccessible kloofs.

Once the conflict subsided, a process of political regrouping began that culminated in the emergence of a new chiefdom led by a Bokoni commoner named Marangrang in the late 1820s. He soon embarked on an aggressive expansion of the area under his control from his base near Lydenburg. It is likely that this base was the earlier stronghold of Khutwaneng, which is marked by intensive residential terracing, Later Marangrang moved to the Dwars River, which contains several intensively terraced sites that probably date to the pre-Mfecane period. It is likely that Marangrang re-occupied one of these sites. His expansionist policies brought him into conflict with the re-established Pedi polity, now under the leadership of Sekwati. This conflict led to the final destruction of Bokoni, the final scattering of its people and the end of stonewalled settlements in the region (Delius & Schoeman 2008).

Phase 4

Some of the scattered people of Bokoni returned to their old homes when the troubles ended (Prinsloo 1936:12-13), but these occupations were mere shadows of Bokoni and the communities eventually had to accept Boer authority. Others were eventually absorbed into those societies that gave them refuge, while some remained on the margins and maintained a degree of autonomy from both sets of rulers (Delius 1983:24-29, 37-38, 90-91). One of the best known of these scattered Bokoni groups found refuge at the Berlin Mission station, Botšhabelo. Here they encountered Dinkwanyane, a Christian member of the Pedi royal family who played a key leadership role at Botšhabelo.

The Koni group were led by Chief Phassoane, who grew up in a Bokoni village located near the Elands River. When Dinkoanyane became dissatisfied with the political processes at Botšhabelo, Phassoane suggested that they move to his childhood home. The move was blocked by the Landdros, but Dinkwanyane still left the mission station and a community under his leadership established Mafolofolo at another Bokoni refuge site near the Spekboom River, north of Lydenburg (Delius 1983: 171-172; Delius & Schoeman 2008:155-156). Mafolofolo was a formidable fortress and one example of a much wider trend in the second half of the 19th century of stone walling techniques developed by the Koni influencing the development of large-scale and extremely effective mountain strongholds. These included the capitals of the Pedi, the Kopa, the Ndzundza Ndebele, the Pulana and other polities. They used a combination of natural features, stone walling and the acquisition of large numbers of rifles to create fortresses that filled attackers with dread and could only be taken with massive military

resources and heavy loss of life. They played a vital part in the history of the region in the 19th century.

Conclusion

The sequence outlined in this article shows that collaboration between archaeologists and historians has ensured that the limitations of oral and archaeological sources were taken into account, but were also transcended. By combining oral and archaeological sources the Bokoni team placed the stonewalled Mpumalanga sites in historical context and thereby opened new avenues for understanding site distribution, architecture and complexity.

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A DREAM DISAPPOINTED: THE CAVE OF HANDS

Paul Hubbard and Jono Waters

It is an unsettling feeling to see a cherished dream failing to live up to expectations. In September 2010, we set off in search of one of the most intriguing painted sites in Zimbabwe: the Cave of Hands near the southern town of Gwanda. Both of us had wanted to see this almost unique Zimbabwean rock art site since a very young age, inspired in part by Ransford and Steyn's (1975) travelogue, *Historic Rhodesia*. Their descriptions of an enigmatic site that seemed to surpass many other rock sites by virtue of its unique content (as they described it) made this a must-visit on our vague 'bucket-list'. It is not an easy site to find.

Both Cooke (1972) and Ransford and Steyn (1975) suggest asking at the District Commissioner's office (which no longer exists) for exact directions, or to rely on local knowledge. Forced by necessity to follow the latter course we were treated to an extended tour of the countryside, our repeated requests to visit Mchela Hill, Muchela Hill and Muchezi Hill (following Ransford & Steyn 1975, Cooke 1959, 1972) being met with complete ignorance. As it turned out, the hill is known locally by a totally different name – Tsere, meaning '(skin) rash' in isiNdebele, after the scabby orange lichen on the hilltop. The walk to the cave is an easy one, ambling across a vast, bare *dwala* before descending into a low valley.

The 'cave' itself consists of a long split in the rock and the space is divided into a series of chambers, each with a high roof. There are paintings and traces of paint in almost all of the chambers, although the finest remaining examples are in the south-eastern portion. The floor deposit is extensive and probably quite deep, judging from the depth of holes dug by local hunters into a horizontal crack at the back of the shelter. The hunters drape nets over every hole but one. Their dogs are then sent in to chase out sheltering hyraxes, hares and even porcupines, which are caught in the nets when trying to escape. Any unwanted holes are filled in with stones. leading to our initial and excited speculation that there were several graves in the shelter. In the southernmost section we noticed a hole in the rear wall of the cave that had been walled in using stones and cement. The wall is now partially broken down (Fig. 1). Thinking it to be a grave, we looked inside but could not see much except a few small bones. Our informant, Themba Nyathi, assured us that it was only a derelict beehive.

Checking the literature later we discovered that when

the site was officially 'rediscovered' and entered into the national sites database, this walled-in area was already there and contained a skeleton (Cooke 1964). Initially the remains were dismissed as being those of a large baboon, but later investigations revealed it to be a partially mummified female human with no grave goods other than 'a small piece of dry, cut wood and the remains of a small clay grain-bin of the type normally used for the storage of monkey-nuts' (Cooke 1964:41). Admirably, the authorities decided that 'because of possible tribal repercussions, the remains were left in situ and the opening walled up and lightly cemented in position' (Cooke 1964:41).



Fig. 1: The walled-in grave below the main painted area.



Fig. 2: Charcoal graffiti and pounding of the rock surface has badly damaged the painted surface.

As interesting as all of this was, we were there to see the rock art, most especially the defining features of the panels. In this we were to be extremely disappointed. Charcoal graffiti and the chipping and

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pounding of the rock surface have all but destroyed the paintings (Figs 2, 4). In fact, initially we could not accept that this was *the* Cave of Hands, thinking that we had been shown another site with handprints. It took many minutes of careful searching before we located an unmistakable scene consisting of white elephants surrounded by handprints that proved we were in the right place (Cooke 1959: 140).



Fig. 3: The handprints are clustered high up on the cave walls.



Fig. 4: The handprints are often placed over other paintings, suggesting most were a later addition to the art of the site.

It is difficult to describe the agony we felt upon surveying the devastation. The only small flicker of amusement was that much of the charcoal scribbling refers to 'MDC-M', the faction of the former opposition Movement for Democratic Change party, formerly led by robotics professor Arthur Mutambara. A handprint is the official symbol of the party, so it is perhaps inevitable that such an association would have been made, the vandals' destructive actions highlighting how people continue to interact with prehistoric sites in ways beyond the control of heritage managers.

Sadly, the large areas of damaged rock art are nothing new. Cooke (1964:41) states: 'The author's

tracing made about four years ago indicates that ... hammering is still being continued'. He claimed that the cave was used for rainmaking ceremonies during which the art would be hammered with cobbles. We speculate that this was done to attract the attention of the spirits by mimicking the sound of thunder.

Handprints are an uncommon feature of Zimbabwe's rock art in comparison to other areas in southern Africa, most notably the Western Cape (Manhire 1998). Few other sites of this nature are known in Zimbabwe and this makes the Cave of Hands an important site for Zimbabwean rock art studies. Literally hundreds of life-size handprints existed in the shelter. Some were made by dipping the hand in pigment and then pressing it against the rock surface, while others appear to be outline tracings of the artists' hands that were later filled in with paint (Figs 3, 4, 5). The prints are between 2 m and 3 m above the floor (Figs. 1, 2), negating any attempts to reconstruct the body height of the artists (Manhire 1998) and adding to suggestions of a spiritual basis for these paintings. One could follow the idea of Lewis-Williams (2002), who argued that the ancient artists needed to touch the rock walls, thereby accentuating and amplifying their contacts with the spirit world during their ceremonies.



Fig. 5: A close-up of one of the better-preserved handprints.

Many questions remain. For example, why are there so few sites with handprints in Zimbabwe rock art and why were so many made in this one place? As in the Western Cape, the identity of the authors of the paintings can be disputed. Is it possible that herders rather than hunter-gatherers created these images (Manhire 1998). Many of the handprints are placed over other paintings, suggesting they were the latest additions to the site. However, the southern and western areas of Zimbabwe have long been suspected as having been a 'refuge' for hunter-gatherers who did not wish to interact with the new agricultural lifestyle (Walker 1995), which suggests that these people were the artists. Excavations in the extensive deposit would go a long way to answering such queries and provide fascinating insights into the prehistory of an area long-neglected by researchers.

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ARCHAEOLOGY IN AFRICA

Brass rings found on the east coast

The rings in the photo below were shown to a friend of mine in the Kosi area of KwaZulu-Natal. The local fisherman said that they had come down the family from his grandfather and that they had been used to pay *lobola*, although the next day he said that he had dug them up.



The rings were sometimes called neck rings, but I don't know if they were ever used as such. They were a major trade item by European traders on the east coast of Africa. They are made of brass and were the basic form in which this metal arrived in the region. Brass is an alloy of copper and zinc. Zinc is highly volatile and therefore requires a special smelting technology that was not known in sub-Saharan Africa. For this reason all brass had to be imported. Yet brass, with its long-lasting gleam, was highly prized. For example, it was considered a royal metal in the Zulu kingdom. There were special smiths who reworked the imported metal into a series of special artefacts. The most famous and elaborate was the inxotha, a broad armband with decorated ridges that was awarded by the king (i.e. Shaka and Dingane) to senior men of the realm. All brass artefacts were

decorative rather than functional, but their significance lies really in their high status and even mystical values.

It is interesting but not really surprising that some of these rings should be found in the Kosi area since most would have been imported via Maputo. Shipwreck survivors of an English ship at Durban and the Dutch ship *Stavenisse* in 1687 lived very well off trading 'copper neck and arm rings' (probably brass) for food with the local people, who wanted only these rings and glass beads in the way of trade. (See *The Record* by D Moodie, entries under Stavenisse, Centaur, etc.) *Tim Maggs, Cape Town*

Giant Stone Age axes found in Lake Makgadigadi

The giant 66 000² km basin of Botswana's Lake Makgadikgadi has provided information about possible migration routes and hunting practices of humans in the Middle to Late Stone Age periods between 150 000 and 10 000 years ago. Researchers from the School of Geography and the Environment at Oxford University have found evidence that suggests the region was once both considerably drier and wetter than it is today. The thousands of stone tools found on the lake bed shed new light on how humans adapted to several substantial climate change events during the period that coincided with the last Ice Age in Europe.

Their research was prompted by the discovery of what are believed to be the world's largest stone tools on the bed of a lake. Four giant stone hand axes, measuring over 30 cm long but of uncertain age, were recovered in the 1990s in an area littered with tens of thousands of smaller stone-age tools and flakes. Many of the tools were found on the dry lake floor, not around its edge, indicating the congregation of animals and humans round watering holes on the lake bed. *Physorg.com, 2009*

TYRANTS WILL ALWAYS EXPLOIT ANCIENT TREASURES

For the past four months, I've been trying to access the ancient site of Leptis Magna, but geopolitics have rather got in the way. Seventy-five miles or so from Tripoli, Leptis has not seen any active conflict – yet. Still, it would have felt not a little self-indulgent for me to drift around the ancient monuments taking notes while all about was on fire.

Now I wish I'd travelled before the conflict began. Rebel forces in Libya reported this week [June] that Colonel Gaddafi is using the site as an archaeological shield. Missiles, launchers and troops are, they say, snuggled among the columns, corridors and archways. Nato forces – in Gaddafi's reckoning – won't bomb them, or his men. Clever. They won't. But if Gaddafi is holding explosives in this World Heritage Site, a single stray cigarette butt could kick-start a sequence that sends it all up in smoke.

The loss of Leptis would be unthinkable. Founded by Phoenician traders in the Bronze Age, the citycomplex has been a theatre of power and pleasure, of indulgence and intellect for more than 3 000 years. It is one of the best-preserved ancient sites in the Mediterranean. Ruled by Carthage for centuries, the Romans quickly conquered it. Recent discoveries include an eye-wateringly exquisite series of Romanperiod mosaics, where warriors hound animals and a spent gladiator lords it over the corpse of his sparring partner. It was a local boy, Septimius Severus, who in the 2nd century AD really made Leptis roar, rebuilding the forum and the port. As Roman emperor he promoted the city to the premier league. Leptis is a megalithic incarnation of this region's high-octane, personality-driven history.

Archaeological sites become significant in times of turmoil. The most recent, shocking example of monumental muscle-flexing has been Iraq. Apart from the wartime looting of 4 000 treasures (now a feature of Egypt and Syria too; tomb-raiding pits are pockmarking the sands around sites like Giza), while still in power Saddam Hussein crudely reconstructed the monuments of Babylon. Just as the original builder, King Nebuchadnezzar, had done 25 centuries before, he stamped bricks for the monument with: 'In the era of President Saddam Hussein, the protector of Great Iraq, reproducer of its awakening and the builder of its civilisation'. Fifteen years later, US forces positioned their camp over the ancient city, cutting across the foundations of the Tower of Babel. Stone and brickwork, pottery and human remains were bulldozed to dig anti-tank trenches. Despite their vandalism, US soldiers talked of the comfort of operating in the shadow of buildings that had endured millennia.

Gaddafi is playing an old game. While he might end up crushing his country's treasures, he is also styling himself as their saviour by placing his arms in their midst. The Khmer Rouge resolved to destroy every last wicker-basket's-worth of national culture, but left the giant palace complexes of Angkor Wat and Angkor Thom to stand proud. The Taliban announced they were preserving the purity of Afghanistan by dynamiting the 6th century monumental Buddhas of Bamiyan.

Occupying the corridors of bygone power is even more sinister, more telling than simply razing them to the ground. Last year I travelled to the steppes on the borders of Siberia and Kazakhstan where a new Bronze Age civilisation is being discovered. At least 40 lost cities are lying under the grasslands, and the startling thing is that they are all swastika shaped. The most fully excavated, Arkaim, has yielded pots and stonework also decorated with swastikas. There is a strong chance that this is the location of an early Aryan civilisation.

I found myself in extraordinary company there, with many trying to stake their claim to the discoveries, including Russian nationalists, a contingent of the reformed Cossack army plus a scattering of neofascist mystics. Russia's Putin and Medvedev have been photographed at the digs. The appeal is clear. As one Cossack told me: 'The Nazis were right to look for an Aryan master race, they were just searching in the wrong place. It is Arkaim that shows the master race is us.'

Safeguarding remains such as Leptis is vital not just because of their ancient delights but because they remind us of the scale of mankind's ambition, and of the blood, sweat and tears of ordinary folk who spent and lost their lives realising such monuments. The accumulated human back story of archaeological sites has great mass. It is why men like Gaddafi – who talk big but whose strength, in truth, is one -man small - have a love-hate relationship with the triumphs of the past. They either try to hide behind them or wipe them out of existence.

Article (edited) by Bettany Hughes in The Guardian, June 2011

ARCHAEOLOGY IN BRIEF

Marlborough Mound built in 2400 BC. A Wiltshire mound where the legendary wizard Merlin was purported to be buried has been found to date back to 2400 BC. Radiocarbon-dating tests were carried out on charcoal samples taken from mound. The 19 m high mound had previously mystified historians. Some believed it dated back to about 600 AD. Others have wondered whether it is Silbury's little sister. Silbury Hill, an artificial man-made mound about 8 km away, also dates back to 2400 BC. Marlborough Mound was reused as a castle and became an important fortress for the Norman and Plantagenet kings. It was also the scene for major political events. *BBC News, June 2011*

WORLD ARCHAEOLOGY

Excavated bomb suggests early start for artillery

Archaeologists in north-western Germany have discovered two projectiles from the 17th century that suggest exploding cannon balls have been around longer than thought. They appear to be the invention of Christoph Bernhard von Galen (1606-1678), who by dint of hard work and strict devotion to God managed to attain the rank of prince-bishop. The man liked to rub shoulders with generals and was fond of using gunpowder to lend authority to Jesus' words.

The Dutch in particular felt the wrath of this Catholic weapons fanatic from Münster. In 1672, Galen sent heavy mortars rolling north, which his artillerymen filled with hollow iron shot weighing over 70 kg. These odd explosives shot high into the sky with a mighty boom. One fell into a moat, where it extinguished. Nearly 350 years later, the bomb has come to light in the swampy soil of East Frisia during excavations at a defensive fortification near Dielen dating to 1580.

The object is larger than a medicine ball and is cast from iron, with sides 5 cm thick. It still contained some 7 kg of gunpowder and even the fuse was still present. Another shell, identical in its construction, surfaced at the site last year. Some researchers could hardly believe the news of the finds. Documents from 1326 do report the first instances of armies using gunpowder to sling stone cannonballs into the air, with the heaviest recorded projectile for cracking fortifications weighing 697 kg. Soon after came experiments in filling the cannons' barrels with lead shot, red-hot iron balls or leather hides filled with scrap metal.

But the history of artillery shells, intended to explode after reaching their targets with the help of a fuse, was one marked by false starts. Around 1450, craftsmen began filling hollow iron balls with gunpowder for use as shot. Often the technique failed. The cannoneers had to reach into the mortar's opening, light the fuse, then quickly fire the weapon. If their timing was off, the entire cannon would blow up before the projectile had left the barrel. They also often failed to calculate the projectile's trajectory correctly. The technology necessary for propelling bombs remained difficult to improve. During the American Civil War the two sides still shot at each other using solid iron balls.

Bishop Galen may well have been ahead of his time. The shells now discovered have an opening containing a wooden stake, drilled down the middle and containing gunpowder that reaches as far as the explosive charge inside the cannonball. Attached to the outside of the ball is netting made of thick cords that all connect to the wooden fuse. The cannonball was coated with bitumen and wrapped in rough cloth. The researcher surmises this signifies the metal ball self-ignited from the heat when it was fired and burned as it whizzed through the air. *Der Spiegel, 06/06/11*

The South African Archaeological Society

This is the society for members of the public and professionals who have an interest in archaeology and related fields such as palaeontology, geology and history. Four branches serve the interests of members. They arrange regular lectures and field excursions guided by experts, annual and occasional symposia, and longer southern African and international archaeological tours.

The Society was founded in 1945 to promote archaeology through research, education and publication. It is a non-profit organization – Registration No. 024-893-NPO.

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The Society produces the following publications:

- □ South African Archaeological Bulletin, a scientific publication of current research in southern Africa twice a year
- □ **The Digging Stick,** the Society's general interest magazine three issues a year
- □ Goodwin Series, an occasional publication on a specific field of archaeological interest

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