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GOING FULL CIRCLE ON KHOEKHOE ORIGINS

Alan G Morris

In November 2006, Karim Sadr, head of the School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand, and Francois-Xavier Fauvelle-Aymar, senior research fellow in African History and Archaeology at TRACES (CNRS), University of Toulouse, France, hosted a four-day workshop at a wine estate in Paarl for over a dozen experts to discuss the Khoekhoe and the arrival of pastoralism in the Cape. The delegates' expertise leaned heavily toward archaeology and linguistics, but ethnology was also represented, as was genetics and physical anthropology. The object of this gathering was to summarise the state of knowledge and current debate about the nature of pastoralism and the process of its introduction to southern Africa (Sadr & Fauvelle-Aymar 2008).

A form of consensus was reached at the end of the four days that really did represent the state of knowledge as it stood in the last months of 2006. Although there had been much debate and disagreement, everyone accepted that the living Khoekhoe such as the Nama represented the descendants of native Kalahari peoples who had adopted pastoralism from migrants originally from further north and east. The model suggested a diffusion of ideas rather than people.

Some time around 2000 years ago, pastoralists bringing domestic stock had entered the margins of the northern Kalahari where they met at least one group of foragers who spoke a proto-Khoe-Kwadi language. Some of these people made the psychological and socio-economic leap required to transform from foragers to herders, and their descendants spread south from the Kalahari in the form of the historic Khoe-speaking ethnic groups that we know as the Khoekhoe. Their neighbours did not subscribe to the new economic regime and their descendants remained in the central Kalahari as 'Bushman' groups speaking Khoe-Kwadi (or Central San) languages. Key to this consensus was the idea that San and Khoe peoples, although they are divided linguistically and economically, are all the descendants of one common pool of Khoesan people whose roots went deep into southern African prehistory.

Alan Morris is Professor in the Department of Human Biology at the University of Cape Town. Alan.Morris@uct.ac.za

An early 18th century illustration of a Khoekhoe family travelling with their domestic stock (from Smith & Pheiffer 1992)

The 2006 consensus ended a long debate going back over a century among linguists, archaeologists and physical anthropologists. It had started with a very different model in which the Khoekhoe were seen as foreign invaders who had moved down from the Middle East. Early historical reports of Semitic-like elements in Cape Hottentot languages, the presence of fat-tailed sheep in the flocks of the Khoekhoe and

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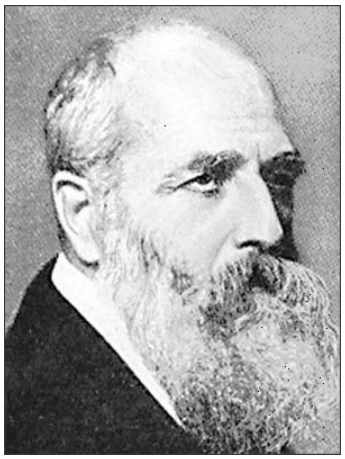
other cultural attributes suggested a North African or even Arabian origin for the living Khoekhoe. This 'Hamitic Hypothesis' was strengthened by the physical anthropology reports of the German anthropologist Felix von Luschan who had linked the physical features of the Khoekhoe with ancient Egypt. The model was perhaps best described by Schapera, who said that the Hottentots 'sprung out of a mixture of the old Bushman population of East Africa with an early immigration there of Hamites, who gave them their cattle and those peculiarities of language by which they are distinguished from the modern Bushman' (Schapera 1930: 43).



Felix von Luschan, director of the Museum für Volkerkunde in Berlin, was a major proponent of the 'Hamitic Hypothesis' and argued that the living Hottentots of South Africa have strong anatomical links to the people of Egypt

But not everyone in these early years bought into the 'Hamitic Hypothesis'. At nearly the same time that von Luschan was publishing his model, Louis Peringuey at the South African Museum in Cape Town had begun to gather skeletons from a range of archaeological sites in the Cape Province. His large collection suggested an alternative model of Khoekhoe origins. Peringuey promoted the idea that 'Bushmen (the hunter-gatherers), Hottentots (the pastoralists) and Strandlopers (people who gathered sea food on the coast)' were all Khoesan and that there was no Hamitic influence. His proposed model considered the origin of the Khoekhoe as the result of mixing with local Bantu-speaking people who arrived in the region as part of the Bantu Expansion.

The two competing theories sat side by side through the 1940s and into the 1950s. The tide began to turn in the 1960s as the approach to physical anthropology changed from the study of racial types to the study of dynamic populations. Although researchers remained interested in the differences between people, the focus shifted to the processes of change rather than the 'description' of variation. Rigid racial definitions of ethnic groups started to fall away. It was recognised that populations overlapped in physical features and that distinctive features could be explained in terms of adaptation and gene flow rather than discrete ancestry. Studies that could explore this new approach required an understanding of genetics rather than anatomical features and the research agenda was filled by the study of differences in the proteins of the blood – something that is controlled very tightly by genetics.

Perhaps the most important paper indicating the shift in vision away from the Khoekhoe's Hamitic racial characteristics was the 1963 work by Singer and Weiner. Originally presented at a symposium on the biology of modern populations in Chicago in 1962, the paper is a brief summary of the biological differences and similarities between 'Bushmen', 'Hottentots' and 'Bantu'. A special focus was on the origin of the Khoekhoe and the authors dealt in particular with the set of serogenetic (blood genetics) data that was still new at the time. In particular, the authors rejected a non-African origin for the Khoekhoe and suggested that it was not necessary to look beyond the African context to understand the biological history of the region. Writing in 1978, Singer accepted the differences between Khoekhoe and San as '…what one expects in populations that derive from common ancestral stocks and that, after periods of separation and isolation, come together at various times to remingle their genes' (Singer 1978: 119).

The 2006 consensus was more or less a version of this line of thought, which had been developing for several decades. Although there was substantial argument about which group was responsible for bringing pastoralism from East Africa to the Kalahari, the consensus agreed that it was NOT some form of foreign Hamites. The model was one of cultural diffusion in which pastoralism was independent of the biology of the people who practised it. The model talked about a 'bow wave' in which Bantu or Nilotic pastoralists penetrated the central regions of Africa. In the process they pushed the aboriginals ahead of them, some of whom were transformed into pastoralists themselves as they learned to keep domestic stock. 'Foreign' genetic elements in the Khoekhoe were seen as a result of gene flow from neighbouring Bantu-speaking groups either on the margins of the Kalahari or in more recent times in South Africa and Namibia. There was plenty of historical evidence of this intermixing: between the Nama and the Dama in Namibia; between the !Ora and the Tswana along the Orange River; and between the Gona and the Xhosa in the Eastern Cape.

But changes in the model were occurring even as the papers from the 2006 conference were being edited for publication. Research on blood types was giving way to the new field of DNA sequence comparison. The first of these papers, published in 1987, suggested that the genetic root of all modern humanity was in Africa. This research was done on mitochondrial DNA and tracked lineage down the female ancestral line. Researchers began to talk about an 'African Eve' who lived either in East or South Africa some 150 000 years ago. The San now became the central focus of genetic studies in the search for these roots.

The Khoekhoe were not at first the central topic of these papers. Far more importance was placed on the relationship between the East African click-speaking Hadza and Sandwe, and the South African Khoesan. Linguists had clumped all these people into a single Khoesan language family, but as early as 2003 genetic evidence suggested that the last time the two regional groups had shared an ancestor was over 80 000 years ago. A more recent study has downgraded the separation to 58 000 years, but this is still far back in time. Physical anthropologists had previously noted that the two groups had little in common morphologically and it was only the tenuous link of clicks in their languages that held them together in terms of classification.

All of these studies were based on recording the variations in mitochondrial DNA (the female line) and Y-chromosome DNA (the male line). The genetic differences were valid, but only one lineage for each sex was tracked and the picture of the relationships between populations was not entirely clear. The key to understanding these relationships would be found by studying the San of the greater Kalahari region rather than their distant relatives in Tanzania.

The foragers of the Kalahari speak a cluster of languages that can be divided into three distinct language families: northern (Tuu), central (Khoe-Kwadi) and southern (Kx'a). It is the central group that interests us because it contains both the Nama Khoekhoe language and several other similar Khoe-Kwadi languages spoken by hunter-gatherers in the central Kalahari. Our assumption was that the people speaking these languages represented the cousins of the Nama who had not become pastoralists. Then a group of geneticists published something very strange about the Y chromosomes in a group of Khoe-Kwadi speakers that had not been studied before. Henn et al (2008) found a rare Y-chromosome variant in the Khoe-Kwadi that was common in East Africa, but not amongst Bantu-speakers. The researchers suggested that this was evidence of the movement of a small number of men from a Nilotic-speaking group into the San around 2 000 years ago. Here was 'smoking gun' evidence of the migratory event that must have been responsible for bringing sheep and cattle to the Cape.

What was needed was a really thorough summary of all of the genetic data on the Khoesan, and this has recently been provided by the South African geneticists Carina Schlebusch and Himla Soodyall. In two papers in 2012 and 2013 based on Schlebusch's PhD work, they drew in all the genetic evidence not just for lineage tracking but also for a large number of nuclear genes that are ignored in mitochondrial and Y-chromosome studies. They reviewed all the lineage data and showed conclusively that the northern San people were very different from their central and southern neighbours. The large number of gene mutations they found in the nuclear genome suggested that the separation had occurred somewhere between 25 000 and 43 000 years ago. The people who spoke the central and southern San language clusters were more similar to each other and the Nama sample fitted nicely into the genetic range of the other central San speakers, but there were some differences. Not only was there substantial evidence of gene flow from Bantu-speakers, but there were hints of something else in the genetics of the Nama.

Estimates of the proportion of west Eurasian ancestry in southern African populations according to language families (adapted from Pickrell, 2014)

Ethnic group	Language family	% Eurasian ancestry
Nama	Khoe-Kwadi	14,0
Shua	Khoe-Kwadi	5,4
Haikom	Khoe-Kwadi	5,2
Khwe	Khoe-Kwadi	4,0
Tshwa	Khoe-Kwadi	3,0
Naro	Khoe-Kwadi	2,2
Gjui	Khoe-Kwadi	2,0
Taa	Northern San	1,9
Gkana	Khoe-Kwadi	1,6
!Xuun	Southern San	1,2
‡Hoan	Southern San	1,5
Damara	Khoe-Kwadi	1,3
Kgalagadi	Bantu	1,1
Juj'hoan	Southern San	1,0
Taa	Southern San	0,4
Himba	Bantu	0,1
Tswana	Bantu	0,0
Wambo	Bantu	0,0

Up to this point the new genetic data could still be used to support the 2006 consensus. There was something weird happening in the genes of the Khoekhoe, but it could theoretically still be explained by gene flow from a few rare males of East African origin. Perhaps the arrival of pastoralism was not entirely cultural. But then about three months ago a new genetics paper dropped a bombshell. Pickrell (2014) and his team published a paper entitled 'Ancient west Eurasian ancestry in southern and eastern Africa'. Like Schlebusch and Soodyall, they had looked in detail at the genes in the nucleus of the cell and catalogued over 500 000 possible variations, but they had also used a different system of analysis which enabled them to see an admixture between populations very clearly. The new method identified 14 per cent of genes in the Nama to be of Eurasian origin (see table). This in itself was no surprise as we know that the Nama have absorbed many newcomers in the last 200 years or so, but the data from Pickrell indicates that a substantial portion of these non-African genes had entered the Nama genome somewhere around 1 800 years ago (give or take a century or two).

Another early 18th century illustration showing the Khoekhoe milking technique of blowing into the vagina to trigger milk flow. This is a technique found amongst other African pastoralists, including the Nuer and the Fulani (from Smith & Pheiffer 1992).

Admixture from Eurasia also appeared in the neighbouring central San Khoe-Kwadi speakers at the same time, which indicates that there was no mistake in the analysis. But even more important was that the pattern of Eurasian admixture was also found in the highlands of Ethiopia. It was possible to date the Ethiopian admixture by calculating back how many generations had passed since the genes first entered the East African samples. The genes reached Ethiopia between 500 and 1 000 years earlier than they reached the Kalahari. Pickrell and his team were specific: 'We conclude that the West Eurasian ancestry in southern Africa was likely brought by a migration of an already admixed population from Eastern Africa'. They speculated that the ultimate source of the genes was from people speaking an Ethiosemitic language that could be South Arabian in origin.

The paper by Pickrell has confirmed the genetic hints about non-Bantu-speaking foreigners entering the Kalahari bringing pastoralism, and has indicated a possible migration all the way from Arabia to the mountains of the Cape. This is suspiciously close to the old 19th century idea of an Hamitic origin for the Hottentots. This new research, only published a few months ago, has finally broken the 2006 consensus and has, in a sense, brought us full circle back to ideas originally suggested in the 1890s. We have always known that the introduction of cattle and sheep to Africa from the Middle East was a long process going back at least 6 000 years, but thanks to genetics we now have evidence of a specific migration event that entered Eastern Africa around 2 500 to 3 000 years ago and then continued on to reach Southern Africa somewhere around 2 000 years ago.

We know they intermixed with the native peoples of East and South Africa, but not what their relationship to them was. Did they merge with the native peoples, or was this a case of only men entering the region and taking local brides as they travelled? Did they enter South Africa as a separate cultural entity or had they already fused with the African natives before they arrived here? So many questions and so few answers, but there is a new phase of genetic research that could answer these unknowns. At least four separate projects have been launched in the last few months to tackle the technically difficult analysis of ancient DNA. Ours is not an ideal climate for ancient DNA work. The cold of the high Asian and European latitudes preserves DNA better, but the prize in southern Africa is worth the effort. If we can tease DNA sequences out of the ancient bone and teeth, then we will be in a perfect position to ask about the ancestors of our living people.

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LIVINGSTONE'S LANDS: AN ARCHAEO-HISTORICAL TOUR OF NORTHERN AND EASTERN ZAMBIA, 2014

Paul Hubbard

In January 2014, led by a good friend of mine, Jono Waters, I undertook a trip into northern and eastern Zambia with the aim of visiting archaeological and historical sites in a part of the country neither of us had seen. Many of the site names – Nachikufu, Kalambo, Nsalu – were familiar to me from my archaeological undergraduate days, although I had little idea where these places actually were before this trip. Crossing into Zambia at Chirundu, much patience is needed to navigate this 'one-stop' border post. It is worth the aggravation though, for a short distance beyond lies the **Chirundu Fossil Forest Reserve**. What places this accumulation of fossil plants into a class of its own is the existence of large tree trunks. Some that we saw were over 6 m long, all lying on the surface. The main species are *Dadyoxlon sp.* and *Rhexoxylon africanum*, although these are difficult to distinguish with the naked eye. Dating from the Karoo period, over 150 million years of history lies at your feet.

Fossilised tree trunks

Broken Hill Man is commemorated in the sleepy ex-mining town of Kabwe with a squat, whitewashed monolith. An outdated plaque records the discovery of the skull of Broken Hill Man and other fossil remains. Pleasingly – and this is a consistent trend in Zambia – the plaque is in English and one of the local languages. Searching for metal ore deposits in the limestone caves in 1921, Swiss miner Tom Zwiglaar was shown the skull and is thus credited with finding the first early human fossil ever to be discovered in Africa. The specimen was assigned to a new species, *Homo rhodesiensis*. Today, it is regarded as being *H. heidelbergensis*. This skull is one of the oldest known to have tooth cavities and the individual may have died from an infection related to dental disease or from a chronic ear infection. The original skull is in the Natural History Museum in London; Zambia has formally asked for it to be returned.

A lifelong dream was fulfilled when we arrived at **David Livingstone's Memorial**. In some respects, the place where Livingstone died is a forlorn place, with an avenue of trees leading you to an obelisk built on the spot where they buried his heart and entrails. Perhaps this feeling stems from how Livingstone died: away from his family for over seven years, short of supplies and wracked with disease. For a man who had traversed Africa on foot it is sad to think that Livingstone had to be carried by his faithful followers in a litter for several days before he died; he was to weak to walk or even raise his arms.

Livingstone's Memorial

His faithful servants, Sussi and Chuma, found his body in a kneeling posture next to his bed, as if in prayer. They faced the terrible choice of what do. Amazingly and despite potential charges of witchcraft that carried an automatic death penalty, they chose to return Livingstone's body to his home across the sea. Thus began one of the most incredible journeys Africa has ever witnessed. They removed Livingstone's heart and viscera and

Nsalu

Paul Hubbard is Associate Researcher of the Monuments and Antiquities Department, Natural History Museum of Zimbabwe in Bulawayo. hubcapzw@gmail.com

buried these in a tin box beneath an mbola plum (mvula tree, *Parinari curatellifolia*). The rest of the body they dried and salted for a fortnight, the traditional period of mourning. Aided initially by Chief Chitambo, whose descendants still rule in the area, Sussi and Chuma made the 1 500 km journey to the coast and delivered the body to British officials at Bagamoyo (the name means 'Lay down your heart') in February 1874. Livingstone's body was later formally buried in Westminster Abbey, his heart still in the continent he changed irrevocably.

The original mvula tree was cut down by Robert Codrington who had been sent by British Commissioner Alfred Sharpe to prepare the way for a permanent memorial. He made a clearing in the forest and had a commemorative carving removed and sent to the Royal Geographic Society in London. The memorial was constructed in 1902 by Owen Stroud who built an obelisk around 6 m high and attached two brass plaques sent from London. These were replaced around 1935 by spare copies and in the 1950s by bronze replicas. Four brick and wooden posts with iron and wooden rails set up around the base were replaced in the early 1950s by iron chains. When the top of the obelisk was damaged, a bronze cross was placed on top.

Regrettably, the monument has recently again been changed and a comparison with old photos seems to indicates that the work is not an improvement. The simple whitewashed stone monument has been clad in comparatively ugly black granite applied imperfectly to the surface. There is a plaque marking the exact spot where Livingstone died a short distance from where they buried his heart. A corroded marker located to the side of the obelisk celebrates the courage and loyalty of Susi and Chuma. This was erected by adventurer Kingsley Holgate.

Zambia should be more famous for the innumerable waterfalls which break the flow of its many rivers. January is as close to a perfect time to see these spectacles of nature in full flow. We chose to visit **Kundalila Falls**, a National Monument, set in an area of great scenic beauty. The Kaombe River falls some 65 m in twin veils of water. The river floor is surrounded by wild flowers, creating an idyllic scene (Allen et al. 2005)

Our visit to **Nsalu Cave** was a delightful surprise since we had heard reports of extensive graffiti covering all the rock paintings. The cave has indeed been defaced by charcoal and chalk graffiti, but thankfully much of it has faded. The paintings are more extensive and detailed than the terms 'schematic' or 'geometric' suggest. Set in a quartzite hill, the cave is semicircular and has a jagged appearance. There is considerable deposit and excavations by Desmond Clark in 1949 revealed a common sequence in Zambian caves: Middle then Late Stone Age material gradually being replaced by Iron Age occupation (Katanekwa 2011: 126). Both BaTwa and farmer art are in the cave, though the latter dominates the panel. There is a thick yellowish line running across the top to the painted area with just a few red paintings located above it. An interpretive display board in the cave outlines the sequence of painting styles, but I found the proposed progression difficult to follow. The views from the cave are magnificent.

Nachikufu Cave, arguably still the 'type site' for the Zambian Late Stone Age, was a pleasure to visit because of its importance in creating a secure chronology and typology at a time when scientific dating methods were in their infancy at best. Clark (1950a) and Miller (1971) studied the complex microlithic stone tool industry. A massive stench from bat guano assails your nostrils as you enter the cave. The original displays created in 1982 look tired, although the stone tools held my interest longer than the search for rock paintings. The rock paintings are a disappointment as they are faded and damaged. Several greasy-looking off-white figures may be seen behind the museum display on rock art, although they are difficult to see in the half-light in the cave.


Nachikufu

Shiwa N'gandu, also known as Africa House, is an approximation of an English Manor House built by Stewart Gore-Browne. Inspired by the beauty of the area, Gore-Browne was determined to establish a utopian state in the midst of Africa and in his hands Shiwa grew into a vast enterprise, employing 1 800 local people. He ruled with a benevolent paternalism and engaged in many agricultural experiments. His house was his passion and it is solidly built, with handmade roof tiles and bricks. The floor plan is rather eccentric and produces occasional feelings of claustrophobia. Many of the artefacts on display in the house range from West African (Benin) bronzes to Oriental China and English pewter ware watched over by African hunting trophies.

Gore-Browne was a key figure in the lead to Zambia's Independence and mentored Kenneth Kaunda, the first president of Zambia. He was made a Grand Officer of the Companion of the Order of Freedom, the

A personal highlight of the road to the north was being offered specimens of Termitomyces titanicus*, the largest edible mushroom in the world. It can grow to over 1 m in diameter.*

first such honour awarded in the country. He died in 1967 and is perhaps the only white man in Africa to be given a state funeral. Kaunda said at his funeral that he 'was born an Englishman and died a Zambian' (McIntyre 2008). After Gore-Browne's death the house and estate fell into a period of benign neglect although his descendants continue to own the property. Today the manor house and surrounding farm have been revived by the Harveys, grandchildren to Gore-Browne.

On the main road, lying in splendid neglect, is a steam traction engine that is a National Relic. It is one of a kind, an unsuccessful prototype for superheating steam engines to gain extra power for less fuel. For an unknown reason it was not deemed to be successful and no more were built. The engine was bought by BSACo for use at the Chambeshi rubber factory. It took 18 months to drive it through the jungle, creating part of the route that we know today as the Great North Road. The engine was sold to Gore-Browne who used it for the production of essential oils from his citrus estates. In one year he made £12 000 from limes alone, but a virus destroyed the plants and the engine has been allowed to slide into benign decay.

Von Lettow-Vorbeck's memorial on the banks of the Chambeshi River is technically where the First World War ended, not in the railway carriage at Compiègne. General von Lettow-Vorbeck, commander of the German army in East Africa, had led an extraordinary campaign against the Allied forces led by Jan Smuts. Von Lettow-Vorbeck tied up with his guerrilla operations at one time or another perhaps 300 000 British, colonial, South African, Belgian and Portuguese troops who might have seen service elsewhere. The estimated cost to the Allies was 60 000 lives and £72 million (Koenig 1970). This diversion allowed the German government to concentrate more manpower on their campaign in Western Europe. Von Lettow-Vorbeck's exploits in the campaign are described 'as the greatest single guerrilla operation in history, and the most successful' (Hoyt 1981); he never lost a battle.

Marching into the heart of Zambia, Von Lettow-Vorbeck did not realise the war in Europe was over until he was met by the local District Commissioner, Hector Croad, on November 14 and handed a telegram outlining the details of the Kaiser's surrender. The German surrender called for the 'unconditional evacuation of all German forces from East Africa'. The Germans agreed to march back to Fort Abercorn (now Mbala) and there become prisoners of the British. Von Lettow-Vorbeck's remaining army then consisted of just 30 German officers, 125 German non-commissioned officers and other enlisted ranks, 1 168 Askaris and some 3 500 porters.

The monument, which thus marks the cessation of hostilities, not the surrender, was built in 1953 but, contrary to popular myth, it is not on the wrong side of the river. Gore-Brown (1954) quotes Croad's own notes of the meeting, which confirm that the historic occasion took place on the north bank, after Von Lettow-Vorbeck had attacked and machine-gunned the nearby rubber factory. A plaque in the Bemba language on the site ends with the words: 'Twapela umuchinshi kuli bonse abashipa abalwile mu nkondo iyi', which means 'we honour all brave soldiers in this war'.

A broken cluster of granite hills located near the town of Kasama is the site of the **Mwela rock paintings**, which are on the Tentative List for World Heritage Status. Over 700 sites have been recorded across the landscape. Lion Cave, located on Sumina Hill, is worth the climb to see a depiction interpreted as the soul of a lion entering the body of the hunter in a trance. One rock shelter at Mwela Rocks has been excavated and yielded remains of a Late Stone Age industry similar to that from Nachikufu, as well as signs of Early Iron Age occupation. Strong religious beliefs involving rain-making and burial rites fostered by the Mwela rocks landscape, continue to play an important role in contemporary communities.

At 221 m, **Kalambo Falls** are the second highest waterfalls in Africa and twelfth in the world. They have a most dramatic setting. At the bottom of a huge ravine the Kalambo River forms the border with Tanzania. Together with UNESCO, the Zambian government has almost completed a K2,3 million investment in new walkway and safety barriers that make it much easier to scramble around the site. A new road is under construction and will be tarred in the future, another project being funded entirely by the Zambian government to provide access to a spectacular tourist site. What this will mean for the long-term beauty and pleasant under-utilisation of the site remains to be seen. One hopes an impact assessment has been done.

In a decade of archaeological excavation (1956 to

The magnificent Africa House

1966), Desmond Clark showed that the Kalambo deposits ranged from the late Acheulean period about 300 000 years ago to the historical present. His digs produced many thousands of artefacts that were meticulously analysed and published in three ground-breaking volumes (Clark 1969, 1974, 2001). As a result of the archaeological work done at Kalambo over the years, UNESCO accepts that the site has an almost continuous record stretching from about 60 000 years to the present day. Recent research at the site (Barham et al. 2008) promises to reveal even more of consequence.

Mwela

The ruined church at **Niamkolo** was built in 1895/6 by the London Missionary Society. It is the oldest surviving stone-built church in Zambia. Its 15 m tower has for long been a landmark for boats using the port of Mpulungu. The task of building the church was undertaken by Adam Purves. The walls, about 750 cm in thickness, comprise two thin skins of roughly-dressed sandstone bonded with clay mined from anthills. The gap between the skins was filled with rubble. The whole building was roofed with thatch. The mission was abandoned in 1908 because of the high incidence of sleeping sickness. The building was burned to the ground after this and the structure fell into decay. Repairs were made in 1962 but the building remains unroofed although the walls have been restored to their full height with cement pointing and capping (McIntyre 2008).

A simple pile of stones marks **Zwangendaba's Grave**. He ended the Torwa-Rozvi hegemony on the Zimbabwe plateau (Phiri 1982; Thompson 1981). His legend was cemented in Zambia because on the day he crossed the Zambezi River a full solar eclipse presaged the bloody and difficult change he was to bring. Zwangendaba died in northern Zambia in 1848 from wounds received while on a raid against the Thonga people. He was buried in a seated position and his grave was covered with huge stones and logs (Katanekwa 2011; Phiri 1982). His kingdom did not survive him and factionalism created the various Ngoni Kingdoms in Zambia and Malawi (see Thompson 1981).

Northern Zambia has an incredible wealth of archaeological and historical sites of regional and international significance. That the government values this heritage is evident considering the investment at major sites such as Kalambo Falls, Mwela Rock Paintings and David Livingstone's Memorial, although there is a need to revise the high entrance fees. Nevertheless, the land Livingstone loved is waiting for those willing to undertake a 4 000 km road trip. Believe me, it is worth every second of the journey.

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AN ARCHAEOLOGICAL INVESTIGATION IN THE MASEBE NATURE RESERVE, LIMPOPO PROVINCE

Cherene de Bruyn

The Waterberg is an area covered in savannah vegetation and is characterised by layered sandstone hills, some volcanic intrusions and mountains (De Klerk 2003: 27). The region is rich in cultural history and archaeology stretching back to the Early Stone Age. Makapansgat, which lies 40 km to the south-east of the Waterberg, provides evidence of early human ancestors (Taylor *et al*. 2003: 36), while Stone Age sites are found at Goudwater and rock art and Iron Age (IA) sites at Goudrivier, the Lapalala Wilderness and the Masebe Nature Reserve (Taylor *et al*. 2003: 36–38).

Masebe Nature Reserve is situated in the south-west of Limpopo Province (Boonzaaier 2012: 3). Thabana ya Kgosi, which means 'Mountain of the Chief' in Northern Sotho, is the name the local community gave to the small hill found in the reserve on which an IA site is located. The site is covered by stone walls, terraces, grinding stones and shards. An archaeologically investigation was carried out at the site as part of an Honours project at the University of Pretoria. The project was funded by a Kent Bequest grant of the SA Archaeological Society.

The aim of the project was to construct a settlement chronology of the site from the archaeology found at the site in combination with oral histories, historic reports and other published work. As part of this the stone walls were surveyed and mapped, and the ceramics found on the terraces was recorded. The information gathered will contribute to the larger body of knowledge on the movement of people though the Waterberg, with specific focus on how this fits into the wider settlement phases as identified by Aukema (1989) and Loubser (1981).

Occupation of the Waterberg

Two occupational models exist to explain the settlement of people in the Waterberg. In 1989 Aukema identified three phases of occupation (Aukema 1989; Boeyens & Küsel 1992: 3). The first is characterised by ceramics of the Eiland tradition with rim notching, hatched chevrons, arcades and herringbone, which dates to AD 1000–1300. The second phase is represented by undecorated ceramics. Such shards are found at stone-wall sites that were generally occupied by the Northern Ndebele residing on the top of the Waterberg between the 16th and 17th centuries. The third and last phase contains Moloko type ceramics of the Sotho-Tswana from the 18th and early 19th centuries. These Moloko ceramics are decorated with multi-chrome, red and black decoration (Huffman 2007: 183-207).

The second occupational model is given by Loubser in his master's thesis. He identified three discrete groups of stone-wall sites in the Polokwane area and identified three ceramic styles found at these settlements. His first group of walling, Group I, is characterised by sites that are situated on the peaks of hills and that comprise multiple broken walls forming terraces that surround an area of relatively large circular stone inclusions in the centre (Loubser 1989: 21). Group I sites correlate to Aukema's Eiland-type ceramics phase (Loubser 1981: 156). Group II sites are located at the bases of hills or on a gradual rises within valleys and generally face north. They have an outer wall around a passage that leads to a central enclosure that is surrounded by smaller walls (Loubser 1981: 21). The walls are constructed mainly of quartzite blocks and consist of neatly packed double stone walls filled with debris (Loubser 1981: 21-22). Group II sites are associated with Aukema's Moloko ceramics phase dating to the mid-17th century AD (Loubser 1981:157-158). Each site comprises a number of orderly arranged stone-circle units (Loubser 1981: 21). The last group of walling, Group III, is a collapsed version of Group II. Villages are also situated at the bases of hills or on gradual rises between valleys (Loubser 1981: 22). Letaba ceramics dating from AD 1600 to 1840 are characteristic of Group III sites (Loubser 1981: 22).

The southern and northern Transvaal Ndebele

Through the use of initiation cycles, genealogies and recorded histories by Jackson (1982) and Van Warmelo (1930) it is possible to determine that the Ndebele migrated from Natal to the central and northern regions of South-Africa between 1630 and 1670 before the Zulu Kingdom rose to power (Huffman 2004: 95; Skohosana 2009: 20, 24-25). The changing and dry climatic conditions of the 1700 AD was also part of the reason for the migration (Huffman 2004: 96; Tyson *et al* 2000: 129-133). The Ndebele split into the northern Transvaal and southern Transvaal Ndebele, and then divided into smaller groups (Skohosana 2009: 20). Both the Southern and Northern Transvaal Ndebele moved through and settled in parts of the Waterberg. The southern Transvaal Ndebele who claim Musi as their legendary chief are divided into two main groups: the Ndzundza and the Manala (Delius 1989). This divide is a result of a struggle for leadership between Musi's six sons (Delius 1989). Manala moved to Walmannsthal while

Cherene de Bruyn completed her Honours degree at the University of Pretoria in 2013. cherene.debruyn@yahoo.com

Nzundza and his brother Mthombeni moved east to KwaSimkhulu, near Belfast (Skhosana 2009: 25). Mthombeni then broke away from his brother to settle at Zebediela near Mokopane where he established himself as the Kekana chief (Skhosana 2009: 25). The Ndzunzda settlements found in the Waterberg region are usually on the top of the hills and follow the Central Cattle Pattern (CCP) with beehive huts and stone walling for defensive purposes. An example is the settlement at Melora Hill in the Lephalala Basin to the west of the Waterberg (Huffman 2007: 448). Moor Park ceramics were found on Melora Hill and are characterised by punctates, rim notching, appliqué and a single horizontal line of jabs (Huffman 2007: 161).

The Northern Transvaal Ndebele meanwhile, encompasses the Langa Ndebele who claim their descent from Hlubi (Jackson 1982: 3; Skohosana 2009: 26). The Langa Ndebele migrated from eNgungunglovu (Pietermaritzburg) through Swaziland (Jackson 1982: 3). In 1836 by which time the Langa Ndebele had migrated and settled in the Waterberg, Mankopane claimed his rightful place as their chief (Jackson 1982: 11). They built stone walls on the lower slopes of hills and followed a variation of the CCP (Huffman 2004: 97, Jackson 1982: 11). In September of 1854 the Kekana Ndebele of Mokopane and the Langa Ndebele of Mankopane murdered Hermanus Potgieter and 27 other Voortrekkers at Moorddrif and Fothane Hill (Jackson 1982: 14). After the attack, Mankopane and his people retreated to the area of the current Masebe Nature Reserve. While the chief stayed at Thabana ya Kgosi, his people were located on the Magagamatala hill to the south (Boonzaaier), where they were attacked by the Boers in 1858 (Jackson 1982: 16). However, Mankopane escaped the attack and fled to Thutlwane Hill (Jackson 1982: 18). It is evident from both the archaeology and oral history that there has been a relatively long history of occupation by various cultural groups in the Waterberg and Masebe in particular. It is this history of occupation which this project seeks to enhance through a study of the site of Thabana ya Kgosi.

Stone walls and terraces

To fully understand the research area, three field trips were undertaken as part of the project during 2013. A foot survey of the area helped to identify the stone-wall features and ceramic types on the surface of the site. Multiple stone walls and rough terraces were found spread around the foot of the hill next to Thabana ya Kgosi, particularly on the north-facing side. Eighteen semi-circular broken and discontinuous walls were documented, with the walls forming seven rough terraces on the upper part of the site. The stone walls that form the boundary of terraces are low and collapsed (Fig. 1). The stones used to build the walls are of unequal size and appear to have been stacked on each other in no particular order or form. The builders of Eiland settlements seem to have incorporated the walls into the natural landscape of the site, with equal-size granite blocks or a single line of overturned boulders being used (Loubser 1981:21). This is also the case at Masebe where various walls, especially on the upper terraces, were built by combining the boulders of the natural environment.

Fig.1: Terrace on upper part of the site and stone wall

Undecorated and decorated shards and other archaeological material remains such as grinding stones were found on the site. They were distributed across the site but appeared to be concentrated more on the upper terraces. A total of 631 shards were identified and of these several IA decoration types were identified, including pottery of the Eiland, the Moloko, the Moor Park and a historical facies (Fig. 2).

The earliest ceramic tradition found on site is of the Eiland facies as identified by Huffman (2007). A total of 22 diagnostic Eiland shards associated with Group I walling of Loubser (1989:21) were found scattered on the surface. Both Aukema and Loubser identify Eiland pottery as the first ceramic phase in the Waterberg. Their models do not, however, explain what type of ceramics replaced the Eiland ceramics directly around AD 1300. Both the undecorated and the Moloko-type shards found at Masebe could thus reflect this change, as has been argued by Van der Ryst (1998: 44). Undecorated shards occur on all terraces and, in fact, 576 of the 631 shards found were undecorated and 13 were of the Moloko type.

It is well known that Moloko-type ceramics were made by Sotho-Tswana-speaking people from around 1350 and replaced the Eiland ceramics in the Limpopo Province and in Botswana (Boeyens 2003: 64; Huffman 2007: 183-207; Loubser 1981: 82). This takeover indicates the movements of Sotho-Tswana people into South Africa during the second millennium

(Boeyens 2003: 64). Van der Ryst (1998: 38) further states that the presence of undecorated shards in the Waterberg is consistent with a more recent occupation of the area by Sotho-Tswana or Northern Ndebele groups. It is therefore possible that undecorated and Moloko-type ceramics found on the site indicate contact between the Sotho-Tswana and northern Ndebele who migrated to the Waterberg. Through Langa Ndebele history, for example, it is known that they intermingled with Sotho-Tswana speakers and that various Sotho-Tswana groups were incorporated into the Langa Ndebele tribe (Jackson 1982: 9). As an integrated group, both ceramic styles would be expected to feature at the same time in the archaeological record and it thus it appears that Sotho-Tswana and Langa Ndebele might have occupied the site at the same time.

Moor Park shards found on site were also probably made by the Langa Ndebele. Aspects of the settlement also suggest a layout similar to the Moor Park style, since the settlement is built on hilltop in a defensive position (Huffman 2007: 33). The layout was probably in response to high levels of conflict in the 19th century both between indigenous peoples themselves and with white settlers.

The last ceramic facies found on the site consists of a historical-type ceramic. No date can be given for these shards, but it is suggested that they are indicative of a more recent occupational phase of the site since the shards are decorated with a single band of hatching or arcades. According to Loubser (1981: 22), Group III sites were inhabited by Shangaan and Ndebele people. The historical ceramics found on the site are believed to have been deposited after Mankopane fled to Thultwana Hill in 1854 (Loubser 1981: 18). Following the rinderpest epidemic in the 1890s, Tsonga and Shangaan people migrated into the Makapan Valley (Esterhuysen 2005: 6) and may therefore be responsible for this ceramic phase.

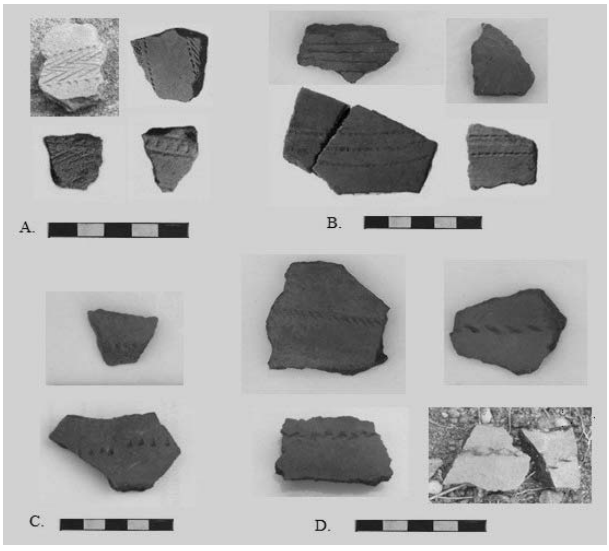

Fig. 2: Ceramics found on site. A – Eiland; B – Moloko; C – Moor Park; D – Historical.

Conclusion

The information gathered as part of this project will contribute to the larger body of literature that focuses on the multiple phases of occupation and reoccupation of the Waterberg from the Early Iron Age onwards. The site in the Masebe Nature Reserve is a direct reflection of the changing landscape of the Waterberg as different groups moved through or settled in the area. It clearly shows how during numerous periods of occupation and reoccupation each group adapted the site to its own needs and produced its own distinctive ceramics.

Acknowledgements

I would like to thank the Masebe Nature Reserve, the African Ivory Route, Prof. Chris Boonzaaier, Rufus Malasela of Telekishi Ramasobana Hospitality for providing information and access to the site and providing accommodation during the field work. This project would not have been possible without the generous financial assistance of the South African Archaeological Society's Kent Bequest. Lastly I would like to thank my supervisor, Dr Ceri Ashely, and the third-year students of the University of Pretoria who assisted with the research and fieldwork.

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ARCHAEOLOGY IN AFRICA

Back-to-Africa gene flow to southern Africa

A new study published in the *Proceedings of the National Academy of Sciences* reveals a back-to-Africa gene flow in which the genes from west Eurasia spread into southern African populations. The research team led by Harvard Medical School's David Reich examined several southern African Khoesan populations and compared the DNA to a dataset that included 1 040 people from 75 population groups worldwide. They uncovered evidence of two events, one which took place around 3 000 years ago in which there was gene flow from European or Middle Eastern populations to eastern African populations, and the other which traced back to about 1 300 years ago in which gene flow spread from an already mixed east African population to southern Africans.

'The most striking inference from this analysis is the presence of west Eurasian ancestry in southern Africa,' said Reich. 'Several lines of evidence suggest that the population that brought this ancestry to southern Africa was an already admixed population from eastern Africa.' Co-author Joseph Pickrell said that hints of ancestry from individuals resembling present-day populations in Italy in southern and eastern African populations had been found. This apparent mixing, likely through an intermediate population in eastern African, underscored the effect of uncharacterised back-to-Africa gene flow. The ultimate source of this west-Eurasian ancestry is still an 'open question'.

While the archaeological record from that timeframe is limited, the researchers said that architecture in Ethiopia from this time period bears a strong resemblance to that of southern Arabia and the timing broadly coincides with the introduction of Ethiosemitic languages to Africa. Pulling together the genetic, archaeological and linguistic data, Reich has proposed that people from west Eurasia moved into Ethiopia some 3 000 years ago. *Ancient Origins, 04/02/2014*

Ancient spider rock art

A rock panel containing the only known example of spider rock art in Egypt has come to light. The panel, now in two pieces, was found in a shallow wadi 175 km west of Luxor. The identification of the creatures as spiders is tentative and the date uncertain, but could be 4000 BC or earlier. The main panel shows what appear to be a few spiders, with a 'star' that is possibly a web. There are also comb-like drawings that could be insects trapped by the spiders, plants or even silken spider tubes. *Sahara/LiveScience, 20/12/13*

A COMPLETE POT FROM NORTHERN BUSHMANLAND

Jayson Orton and Lita Webley

During recent fieldwork about 40 km north-east of Pofadder in the Northern Cape Province, we visited the farm Klein Zwart Modder on which a complete pot had been found. We are describing this rare find and its context for the record, since the vast majority of archaeological sites produce only small fragments of pottery from which little information on shape and size can be gleaned.

The farmer told us that the pot was found eroding from a sandbank on the edge of a stream at the eastern foot of a granite mountain in the area following heavy rains. An approximate GPS co-ordinate for the area indicated by him is S 28 48' 12" E 19 41' 40". Our survey in the adjoining granite hills yielded a few archaeological sites, generally with pottery and indicating prehistoric use of the area within the last 2 000 years. Among the stone artefacts seen the rock types varied widely, but cobble cortex indicates that much of the rock was probably brought from the Orange River to the north. Some bedrock grinding hollows were also noted in places.

Fig. 1: The side of the vessel showing the two bosses.

The pot was found in a few pieces that have subsequently been glued back together. Only a small fragment from the lip of the vessel is missing. The slightly asymmetrical opening varies between 140 mm and 150 mm in diameter, and the base-to-rim height of the pot is 245 mm. There is a very slight point at the base of the pot that is not prominent enough to be referred to as a nipple. The circumference of the narrowest part of the neck is 440 mm, while that at the widest part of the body is 575 mm. The rim orientation is flared and the lip form simple round. Two bosses were placed opposite one another 90 mm below the rim of the vessel. The clay is grit-tempered and the walls appear to be thin (<10 mm) throughout. The pot is entirely undecorated, but its exterior surface has been burnished.

Figs 1 to 3 show different views of the vessel. It closely resembles a pot from Vuurdood, 140 km to the west near Goodhouse, also in the Northern Cape, described in 1982 by J Rudner in an unpublished manuscript entitled 'Khoisan and Dama pottery from the inland areas of Southern Africa'.

Fig. 2: The lower part of the pot showing the basal protrusion.

Fig. 3: Top-down view of the pot showing the asymmetrical opening.

Both authors are practising archaeologists with ACO Associates cc in Cape Town.

ARCHAEOLOGY IN BRIEF

One million-year-old settlement found in Britain. Discoveries in Happisburgh, Norfolk, including one million-year-old artefacts and fossilised animal remains, are the oldest ever found in the UK. Researchers now believe the site to be one of the first settlements of early hominids such as Homo erectus in Britain. They would have been able to walk to mainland Europe as one million years ago Kent was connected to Germany. *Ancient Origins, 13/01/2014*

LETTER TO THE EDITOR

From Ione Rudner, Cape Town, 03 February 2014: The articles on 'Public archaeology' in *The Digging Stick* of December 2013 take me back to when the very few professional archaeologists such as AJH Goodwin, Roger Summers and C van Riet Lowe (the latter had been an 'amateur' privately trained by Goodwin) encouraged the participation of serious amateurs in archaeology. In fact, the Archaeological Society had been established inter alia 'to help the amateur'. Then came an attitude (I quote verbatim): 'Let's face it, the amateur is a ruddy nuisance'. Amateur workers were estranged and sidelined; those in the Transvaal Branch of the Society were especially outraged. Your contributors to the articles should read, 'The end of an era – a discussion' in *The Bulletin* 28(109-110): 13–26, of 1973.

ARCHAEOLOGY IN BRIEF

4 000-year-old British burial. Some 4 000 years ago a young woman's cremated bones – charred scraps of her shroud and the charcoal from her funeral pyre still clinging to them – was carefully wrapped in a fur along with her most valuable possessions, packed into a basket and carried up to one of the highest and most exposed spots on Dartmoor where they were buried in a small stone box covered by a mound of peat. The bundle contained a treasury of unique objects: a tin bead and 34 tin studs, which are the earliest evidence of metal-working in the south-west; textiles, including a unique nettle fibre belt with a leather fringe; jewellery, including amber from the Baltic and shale; and wooden ear studs, the earliest examples of wood-turning in Britain. The survival of so much organic material has generated British, Danish and American interest. Concerning the tin objects, there is no evidence of smelting from such an early date. The large tin bead was made from part of an ingot beaten flat and then rolled. *The Guardian, 9/03/2014*

Oldest cancer example is 3 200 year-old skeleton. Archaeologists have discovered that the ancient remains of a man found in a tomb 750 km downstream from the Sudanese capital of Khartoum had a spreading form of cancer, the disease's oldest example so far. Analysis of the 25 to 35 year-old man showed evidence of metastatic carcinoma, a malignant soft-tumour cancer. Tests provided clear imaging of the lesions on the bones, with cancer metastases on the collar bones, shoulder blades, upper arms, vertebrae, ribs, pelvis and thigh bones. Cancer is generally associated with modern lifestyle and is extremely rare in ancient skeletons. Until now, there has only been one example of metastatic cancer predating the first millennium BC in human remains. *Ancient Origins, 18/03/2014*

African cattle first domesticated in Middle East. Geneticists and anthropologists previously believed that Africans domesticated cattle native to the African continent nearly 10 000 years ago. Now, University of Missouri researchers have completed the genetic history of 134 cattle breeds from around the world and in the process established that domesticated African cattle originated in the Fertile Crescent. The genetics of African cattle breeds are similar to those of cattle first domesticated in the Middle East nearly 10 000 years ago, proving that those cattle were brought to Africa as farmers migrated south. Those cattle then interbred with aurochs, which were native to the region, and changed their genetic makeup enough to confuse geneticists. *PLOS Genetics/Eurekalert, 28/03/2014*

Earliest human footprints outside Africa found in Britain. Footprints left by hominids 800 000 years ago have been found in Britain. The footprints of adults and children were left in ancient estuary mud at Happisburgh in Norfolk. The only older footprints to date are at Laetoli in Tanzania, at about 3,5 million years old, and at Ileret and Koobi Fora in Kenya at about 1,5 million years old. The British footprints have been dated on the basis of the site's geological position beneath glacial deposits and the age of associated mammoth and horse fossils. The ancient humans that left their footprints may have been *Homo antecessor*, a species that became extinct in Europe around 600 000 years ago. *AFP, 07/02/2014*

POINTING PRESERVATION IN THE RIGHT DIRECTION

Preserving K2 and Mapungubwe bone-tool and ivory assemblages

Sian Tiley-Nel

The US Ambassador's Fund for Cultural Preservation (AFCP) in association with the US Embassy in Pretoria has made a generous financial grant to the University of Pretoria Museums to preserve the bone tools and ivory artefacts in the K2 and Mapungubwe collection. In addition, as part of the fund's student skills development and experiential learning programme, a post-graduate MA archaeology student, Kefilwe Rammutloua, has been appointed to serve as the project's research assistant. The AFCP awards are granted to developing countries to fund a diversity of cultural heritage projects, including the protection of archaeological sites, objects and collections; the performing of needs assessments; and the conservation of museum collections. The grant has enabled the Museum to commence with an intensive 12-month preservation programme of 14 ivory artefacts and 361 bone tools that are in a sensitive and poor state of preservation.

The first bone tools were recovered by Neville Jones on the first Mapungubwe field expedition in 1934 (Fouché 1936). Between 1934 and 1940, Guy Gardner (1963) further recovered hundreds of bone tools and several fragments of ivory. Most of the bone tools and all ivory is from K2; no ivory was recovered from Mapungubwe Hill. Elizabeth Voigt (1983), an archaeozoologist from the Transvaal Museum (now the Ditsong Museum of Natural History) in Pretoria undertook an in-depth study in the 1970s of these faunal remains. The ivory and bone tools included in the current project derive from the earliest excavations and from those recovered during the Eloff and Meyer excavations (1981).

In comparison to their Stone Age counterparts (see. d'Errico et al. 2012; Blackwell et al. 2008; Bradfield & Lombard 2011), bone-tool assemblages from Iron Age communities remain poorly researched. There has been even less research with regard to archaeological ivory (see Reid & Segobye 2000). Until now, no archaeological conservation-based research has been, conducted on any bone tools or ivory in South Africa. The research will also cover the analysis of the existing collections and address the problem of improving these archaeological collections in storage. The project will be beneficial in many respects in that it will generate further research, revise an outdated bone-tool typology, provide more effective storage, assesses their condition and prioritise them for display or further analysis, A preservation plan for both assemblages will also be drawn up.

The Mapungubwe Collection contains diverse artefacts and a range of materials, including ceramics, figurines, gold, iron, copper and glass, and organic material types less frequently represented in collections, such as wood, fibres, shell, bone and ivory. The survival of the latter from the Iron Age is relatively rare and they are difficult to conserve – they deteriorate because of the inherent nature of the materials, their age, burial conditions, excavation, and treatment during handling and storage. Bone and ivory are also highly susceptible to light, relative humidity, temperature, water and other environmental contaminants. Furthermore, the majority of the bone and ivory objects are in a poor state because they suffered damage from being cleaned on site, washed upon excavation, dried in sunlight and improper packaging. Earlier 'repairs' were poorly done with Bostik and surfaces were treated with acetone, other glues and hardeners Such treatment was common practice at the time, with little consideration being given to the long-term effects on the artefacts or future analytical techniques.

For example, the physical and chemical effects of consolidation affect future preservation and limit the amount of technical analysis. The earlier bone tools recovered in the 1930s are in fact, in a relatively better condition than newer ones since their surfaces were not treated and therefore not contaminated. The conservation investigation currently being undertaken is an integral element of the project and identifies prior treatments and materials used in previous research. These findings will have to be documented to give insight into changing research approaches to bone and ivory assemblages over the past few decades.

Conservation approach and aims

Archaeological conservation is essentially concerned with the preservation of organic materials, how they survive in burial and excavation environments and how they can best be stored and stabilised for future public display and research. To preserve the collection, it is necessary to understand that bones and ivory degrade over time like all organics, and that their condition and deterioration relate to modifications, prior or post-depositional, by changes in environmental factors, or by handling or storage conditions (Cronyn 1990).

Sian Tiley-Nel is the Chief Curator of University of Pretoria Museums. She specialises in the curation and conservation of the Mapungubwe archaeological collection, and currently serves as project manager of the Bone Tool and Ivory Preservation Project. sian.tiley@up.ac.za

Essentially, the effects of collections management and excavation processes on the bone tool and ivory assemblages are factors that influence any conservation decisions. Because of the significance of the bone tool and ivory assemblages and sensitivity of this particular collection, preventive conservation is the most effective course of action.

Temporary working storage of K2 ivory

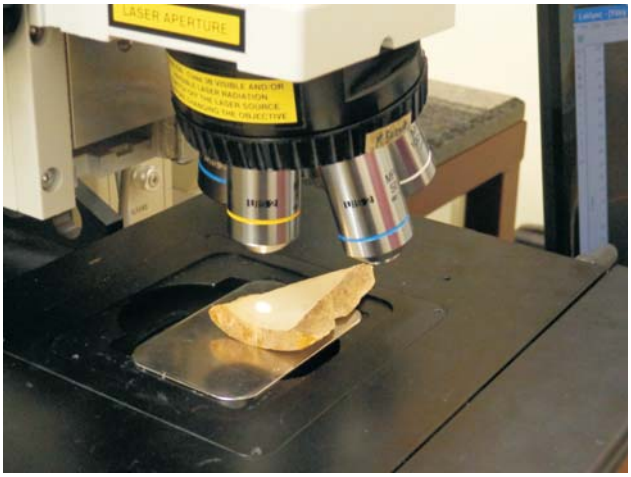
Bearing in mind the importance of the bone tools and rarity of elephant ivory in the archaeological record, three main conservation principals will be followed during the project. The first will be to improve the physical condition of the deteriorating and fragile organics by applying methods of minimum intervention and developing appropriate controlled storage conditions. The second is to document the analytical and preservation process in detail. Archive material such as photographs, documents, excavation information and field reports will be digitised and stored for better research accessibility. The third principle will be to revisit the interpretation of the bone tools and ivory artefacts, which will hopefully lead to new research ideas and set a good example for other archaeological preservation efforts.

An imperative aspect of the project is the re-assessment and revised analysis of the entire bone tool and ivory assemblage. These results will enhance the efforts of curatorial care and preservation required. Annie Antonites, a specialist archaeozoologist affiliated to UP will conduct the bone tool analysis, the focus of which will be on the macroscopic and morphological characteristics of the bone tools, and their relationship to technology and function. This will provide understanding of the relationship between natural and manufacturing processes that result in bone fracture and use-wear. Voigt's (1983) typology will also be re-evaluated and a new classification system devised to address any shortcomings and revise interpretations. The re-analysis will expand our understanding of ivory and bone tool manufacture, production processes and use at K2 and Mapungubwe.

The challenge

Preservation of our fragile archaeological heritage has sadly reached a critical point. While much attention has been focused on the preservation of archaeological sites, the care, conservation practices and sound curatorial procedures for dealing with archaeological collections have been underrepresented and underfunded. Unsound field practices, such as consolidating bone with improper materials and unprofessional collections management, continue without consultation with conservators. The storage conditions for archaeological organics are also less than desirable. Funding for the care of collections, and proper storage and conservation needs are often overlooked in research applications. Sound preservation from field to storage is rarely addressed. There is a dire need for the acceptance of active responsibility, the adherence to sound archaeological collections management practices, and accountability of heritage repositories to undertake adequate conservation and curation measures. Serious action is required to improve the situation and concerted efforts have to be made to address the curation crisis.

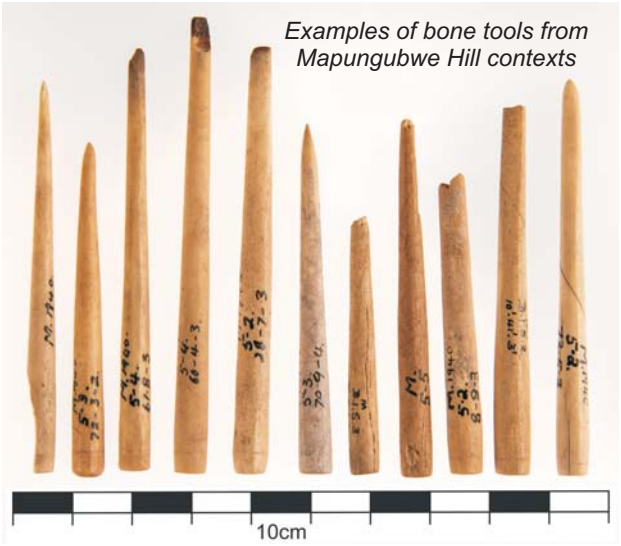
Sorting tray for bone-tool typology



Exploratory Raman analysis of K2 ivory fragment

Conclusion

The care for, protection and technical understanding of the objects in University of Pretoria Museum collections is a fundamental need. Following Paterakis (1996), the only way to achieve minimal intervention is by means of achieving preventive conservation that inhibits deterioration through the use of proper storage and the treatment of objects. Intervention will certainly help to preserve the intrinsic nature and integrity of the K2 and Mapungubwe ivory and bone tool assemblages for future endeavours. The generous assistance of the AFCP and the support of the US Embassy ensure the long-term preservation of a unique archaeological and cultural resource for generations of students and researchers. It also supports the museum's duty to protect and conserve southern African cultural heritage.



Examples of bone tools from Mapungubwe Hill contexts

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ARCHSOC TRANS-VAAL BRANCH

CALL FOR 2015 FUNDING PROPOSALS

The Trans-Vaal Branch of the SA Archaeological Society invites applications for funding by researchers and educators in the field of archaeology for 2015. South African archaeological research projects and educational programmes that promote knowledge about and an understanding of archaeology will be considered.

The deadline for applications is 31 August 2014.

Funding by the Trans-Vaal Branch may be split over more than one project and the branch committee's awards decision will be final.

Information to be included with applications:

1. The archaeological research or education proposal and the anticipated results or benefits, the project implementation schedule, the total budget estimate and the grant amount being applied for.
2. Should the project or programme for which funding is being requested form part of a larger project, information on how the part that needs to be funded relates to the whole.
3. Resources and facilities available for implementing the project or programme.
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5. Biographical details of the applicant(s), including professional qualifications and experience.
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Successful applicants will be required to provide six-monthly progress reports and a final project report.

On completion of the project, an article on the project that has been funded may be requested for publication in *The Digging Stick*.

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Roman Britons after 410

Martin Henig

The 'story' of Roman Britain as told to generations of schoolchildren is a very simple one: AD 43, the Roman legions march in; AD 410, they march out again. Barbarity beforehand, barbarity afterwards, civilisation in between. But the 'end of Roman Britain' is a myth. Roman culture survived right through the Anglo-Saxon period. Recently I suggested that the Roman 'conquest' of AD 43 was not all that it seemed to be, and that Britain's southern rulers were Romanised before the invasion, welcomed the invasion and profited from it afterwards. It was not a case of 'barbarity beforehand'. Some archaeologists are now beginning to see that it was not 'barbarity afterwards' either. The Roman cultural legacy survived far more profoundly, more extensively and for much longer in Britain than is usually realised.

The ending of Roman Britain is traditionally ascribed to AD 410, when Rome withdrew her legions, but the real point at which Britain ceased to be a province of the empire is much harder to pin down. There were in fact four provinces in Late Roman Britain and the Roman army was no longer organised as legions. The 'army' that left Britain under the command of the pretender Constantine III, probably some time between 402 and 411, in an attempt to seize the empire, was in fact a dangerous gaggle of Constantine's henchmen, which the ruling classes of Britain were surely glad to be rid of.

At this time the city of Rome was menaced (and eventually sacked) by the Goths, so the forces of Emperor Honorius could do nothing about Constantine's insurrection and were in no position to stabilise the situation in Britain. The famous date of 410 is provided by the text of an imperial edict of Honorius recorded by the late 5th century Greek writer Zosimus, which orders a number of places to defend themselves. One of these is 'Brettia', generally taken to be Britain, but as the other places in the list are towns in Italy it seems much more likely that the name is a textual error that should be emended to Bruttium, a town in southern Italy.

That said, it is clear that some time in the 5th century the Britons broke away at last from Roman central authority. Zosimus declares that the Britons were at his time living under the rule of local kings. But this breaking away did not mean that Britain had ceased to be culturally Roman. What had ended was an official connection of salaried officials and troops appointed from the centre, and with them the regular issues of coinage. As a general rule, no new coins were imported. This had serious consequences in that it was no longer easy to pay for buildings in stone, mosaics and luxury services. The lack of coins also means that it is hard to date 5th and 6th century activities in what used to be called the 'Dark Ages'.

But it is clear from documentary sources that such material considerations were not central to the way many Britons thought and behaved, or defined their identity. For example, St Patrick, writing in the 5th century, never mentions the lack of coinage. There were clearly other ways to continue economic life. The primary, defining features of Roman culture were not, after all, money but the Latin language coupled with Christianity; and it is clear from the work of the medieval Latinist David Howlett and others, using the evidence of both documents and inscriptions, that the elite preserved the language in a remarkably pure form. A witness to surviving material culture is to be seen in an account of the visit of St Germanus of Auxerre to the shrine of Alban in 429, which found the magistrates and citizens splendidly apparelled. Later hints of Roman magnificence are apparent from documentary sources of Aurelius Ambrosianus, the southern British chieftain often equated with King Arthur, who claimed imperial ancestry around AD 500 – as did, later, the ruling house of Gwynedd in North Wales.

Purity of Latin had its origin in the fact that the language was kept for best. It is clear from their texts that Patrick and the 6th century writer Gildas lived in societies where Celtic had been spoken for centuries alongside Latin. I believe that Aurelius, victor of the battle of Mons Badonicus, in which the British are supposed to have defeated the Anglo-Saxons, was probably known in Celtic as Artos (i.e. Arthur), 'the Bear', because he wore a bearskin as a general's cloak. Late Roman soldiers often wore animal skins and this kind of designation is what the Roman military would have called a signum, a nickname. Moreover, this bilingual society is well known in Devon and Cornwall, Wales and south-west Scotland from monumental inscriptions that are either bilingual or in Latin but contain Celtic names. The convoluted syntax and erudite play with letters and words in these inscriptions argues the continuity of Roman educational methods in places like Llantwit Major in the Vale of Glamorgan.

The other obvious feature of continuity was Christianity. This oriental cult had taken the empire by storm, though it may not have ousted paganism from conservative Britain until the end of the 4th or the 5th century. Cow bones from very late Roman layers at

Dr Matin Henig is an Honorary Professor at the Institute of Archaeology at University College, London, a Supernumerary Fellow of Wolfson College, Oxford, and was until recently Visiting Lecturer in Roman Art and Culture at the Institute of Archaeology, University of Oxford.

the temple in Bath, for example, show that worshippers were still sacrificing to the goddess Sulis after coins had ceased circulating; while the very late Roman treasure from Thetford in Norfolk was dedicated to the classical god Faunus. Nevertheless, from the 5th century onwards, Christianity was in the ascendant. We have 5th century Christian cemeteries, such as the one at Dorchester in Dorset, and a mass of early post-Roman inscriptions with Christian symbols (but no inscriptions that were definitely pagan). Gildas writes in the 6th century that paganism had been eradicated. One reason for the success of Christianity may have been that it provided the reassurance of continuing order in a world where secular authority was becoming weak.

East and west

The survival of Roman culture in western Britain and of the Celtic church is well known. Here was not only a society that spoke Latin and was Christian but whose rulers – like the kings who ruled from Tintagel, Dinas Powys and South Cadbury – drank wine from Mediterranean pottery, paid for, no doubt, by valuable exports such as tin. Eastern Britain is less often considered as part of this world because the conventional wisdom is that it fell to the Anglo-Saxons. The creation of this myth can be laid in part at the doors of Gildas (the Briton) and Bede (the Anglo-Saxon). Both were Christians and took their lead from the Old Testament. For Gildas, God chastised his people, the Britons, for sexual backsliding. For Bede, the English were the new Israelites corning in to the Promised Land. As in all stories, there are elements of truth in this traditional tale. But there is plenty of evidence that Anglo-Saxon Britain consisted of mixed populations, with settlers from across the North Sea mixed with people who had always been here.

This is apparent from what little we know of dynastic origins. We know from Wessex king-lists, for example, that the 'West Saxons' of the Middle Thames, known for most of the Saxon period as the Gewissae, were founded by a man with the Celtic name Cerdic (i.e. Caradoc). It is not surprising that metalwork associated with them has a mixed character incorporating late Roman, Celtic and Germanic styles. In fact, the Roman art historian coming upon early Anglo-Saxon art will be struck by a great deal of admixture beginning with the animal ornament on bracelets, including gold examples in the Hoxne treasure from Suffolk; on rings like silver examples from Amesbury, Wiltshire; and on brooches such as the silver brooch from Sarre, Kent, all of which date from the late 4th to the late 5th century. Equally intriguing is the discovery of pewter pendants inset with glass found with very late Roman material, mainly from Ickham in Kent, which seem to prefigure later jewelled Kentish disk brooches and pendants

The prize exhibits for the continuity of insular Romano-British art in southern Britain during the 6th and 7th centuries are hanging bowls with openwork escutcheons sometimes in Roman style with supporting dolphins, but generally with enamelled escutcheons ornamented in Celtic style. Similar influences are to be seen on a mount on a bag from a woman's grave excavated at Swallowcliffe Down, Wiltshire, where Celtic and Germanic ornament are used together. We are only now beginning to see how much survived of Roman and Celtic culture in the early medieval period.

The evidence that the Christian church continued to thrive in eastern Britain is, again, far stronger than many historians have grown accustomed to believe. It includes the construction and continuity of church buildings such as St Paul in the Bail, Lincoln (perhaps 5th or 6th century), St Martin's in Canterbury and, most exciting of all, the evident continuity of St Albans with its martyr cult. In addition there are the remains of the dead. The big 5th and 6th century Christian cemetery at Queenford Farm, outside Dorchester in Oxfordshire, only begins in the 5th century. From the near vicinity, there is a small beaker in Romano-British style from a grave at Little Wittenham, embellished with scenes depicting episodes in the life of Christ. In another cemetery at Highdown at Worthing in Sussex, grave goods including a glass vessel with Christian inscription may also have been buried in the 5th or 6th centuries.

If there was some continuity in population and religion, why does Bede tell us that St Augustine had to reimport Roman culture to Britain in the late 6th century, especially Christianity? As so often, the reason for Augustine's mission was political. Records make it clear Pope Gregory I was not so worried about paganism; he was far more concerned about a flourishing Celtic church that appeared to take little heed of Rome – even if this liberty mainly manifested itself in a heretical tonsure and a wrong date for Easter!

Christians in Kent

No doubt Augustine did expect he would meet barbarians, but in the event he encountered well-educated ecclesiastics. The questions that Augustine reports they fired back at the Pope concerned erudite matters to do with ritual purity, evidently important still to British Christians, and emphatically not the kind of questions one would expect from a group of heathens. Apart from anything else, Bede makes it clear that Bertha, the queen of Kent, already had her own Christian church to worship in. She did not need Augustine to provide her with one.

The so-called 'darkness' of the period between 400 and 600 in southern and eastern Britain is the result partly of archaeological neglect, partly of a long tradition of scholarship looking only for Germanic elements in the culture of the period. This is now changing. Metalwork, for example, is at long last being studied by scholars who appreciate the styles of the late Roman period as well as Germanic ornament.

The physical origins of populations will also become clearer as further work is carried out on burials. It is not satisfactory to describe, for example, the warrior buried at Lowbury Hill in Oxfordshire as an Anglo-Saxon simply because he possessed a shield and a spear. His iron spear was enamelled, most unusually, in a Celtic style, and he was buried with a hanging bowl also in Celtic style. It looks rather as if he wanted to make it clear that he was British. The evidence for houses and town survival also needs to be looked at again. One problem is that apart from continued reuse of Roman structures, new building was of wood. Archaeological evidence for such buildings – typically the blackish stain left by decomposed sleeper beams laid directly on the soil – is extremely fragile and hard to detect, and unfortunately most Roman sites have not been excavated with the meticulous care that will yield results.

At Wroxeter, the abandoned Roman city in Shropshire, large Roman-style halls in timber have been excavated dating to the post-Roman period. It seems quite possible that there were buildings like this in Verulamium/St Albans, London, Silchester, Dorchester in Oxfordshire and elsewhere. Scholars often repeat, glibly, the old view that towns were abandoned in this period. The very fact that most of them survived to the present day makes this inherently implausible. The problems in finding and evaluating such evidence is immense, however, for urban populations had shrunk and in what part of a large town should one look for continuity? And have those parts been already denuded of their late levels by insensitive excavation or by later buildings? Even so, outside in the countryside, again and again, the datable pollen evidence suggests that the fields were still ploughed in the 5th and 6th centuries.

There is a tendency nowadays to want our history to be violent, presumably to accord with the horrors of our news broadcasts. However, what is remarkable is the way in which Britons interacted with Irishmen from the 5th century, and both eventually converted Anglo-Saxon society, largely through the medium of Latin. The 7th and 8th centuries can still be regarded as culturally late Roman, e.g. Roman church architecture or dress ornaments exhibiting Roman styles. And it was in these centuries that the art and culture of Britain came to impress itself even on the continent.

And when the crisis really did come, with the advent of the Vikings a couple of hundred years later, awareness of the Roman past was never stronger. Towns of the Age of Alfred (9th century) like Oxford and Wareham in Dorset had regular grids of streets, reminiscent of Roman towns although not of direct Roman origin. Works of art like the Alfred Jewel portray classical concepts. But above all it was Latin and the translation of Latin into a new vernacular, such as Alfred's translation of Boethius into English, that preserved the true spirit of the past.

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Cape Town head office: PO Box 15700, Vlaeberg, 8018. Tel: +27 (0)21 712 3629. Fax: +27 (0)866 155 874. archsoc@iziko.org.za. www.archaeologysa.co.za.

Trans-Vaal Branch: PO Box 41050, Craighall, 2024
Membership Secretary: Mrs Pamela Küstner
012 365 3608
pmkustner@mweb.co.za
www.archaeology.org.za

Western Cape Branch: PO Box 426, Muizenberg, 7950
Chairperson: Ms Yvonne Viljoen
021 788 5620
yv3@mweb.co.za

KwaZulu-Natal Branch: c/o Natal Museum, P/Bag 9070, Pietermaritzburg, 3200
Secretary: Ms Barbara Dunn
031 209 1281
dunn@camsol.net

Trans-!Gariep Branch: David Morris
053 839 2706
dmorris@museumsnc.co.za

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Editor and advertising: Reinoud Boers
PO Box 2196, Rivonia, 2128
Tel/fax: 011 803 2681
Cell: 082 566 6295
fox@boers.org.za
Layout: Marion Boers
Printer: TVaal Johannesburg