



THE ARCHAEOLOGY OF THE METOLONG DAM, LESOTHO

Peter Mitchell and Charles Arthur

Most readers of *The Digging Stick* will be familiar with the dams (two are already operational, another is about to begin construction) that form part of the Lesotho Highlands Water Project. Dam building is not, however, confined to Lesotho's highlands and since

Early explorations of Lesotho's archaeology located Middle Stone Age (MSA) artefacts downstream of our research area, as well as the rich Bushman rock paintings at Ha Baroana, but the first serious research along the Phuthiatsana River came with Lucas Smits'

(1983) *Analysis of Rock Art in Lesotho* (ARAL) Project, which recorded 27 rock art sites within the Metolong Dam's catchment in 1979. These records are now available via the SARADA database of the Rock Art Research Institute, University of the Witwatersrand (www.sarada.co.za).

A decade later one of us tested the two largest rock shelters in the Metolong Catchment as part of a broader research project in western Lesotho (Mitchell 1994). This showed that both Ha Makotoko and Ntloana Tsoana contained important Later Stone Age (LSA) sequen-



Fig. 1: Ntloana Tsoana at the close of excavations in 2010
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2008 we have been engaged in fieldwork to mitigate the impact of the Metolong Dam, which will shortly inundate a 14 km long stretch of the Phuthiatsana River upstream of Thaba Bosiu some 30 km northeast of Maseru (Fig. 2 – see page 2); Arthur & Mitchell 2010; Mitchell & Arthur 2010). Systematic archaeological research ahead of such major projects is still not the norm in much of Africa. However, in this case recognition of the area's archaeological importance combined with funding from the World Bank and real support from the government agency charged with oversight of the project, the Metolong Authority, makes Metolong an exception.

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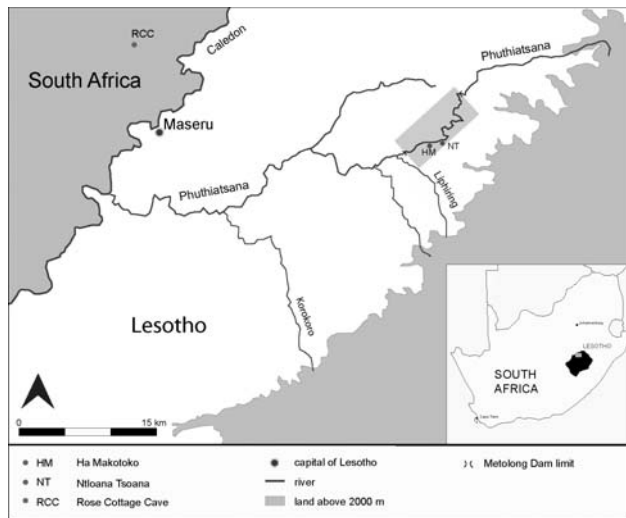


Fig. 2: Site of the Metolong Dam catchment

ces dating to the Pleistocene/Holocene transition (Mitchell 1993), with Ntloana Tsoana also preserving MSA assemblages of Howiesons Poort and post-Howiesons Poort affiliation (Mitchell & Steinberg 1992). Optically Stimulated Luminescence (OSL) dating now fixes its initial occupation at around 61 000 years ago (Jacobs et al. 2008). Across the Caledon River near Ladybrand only Rose Cottage Cave (Wadley 1997) provides a comparably detailed set of observations for southern Africa's central interior, while the very closeness of Ntloana Tsoana to Ha Makotoko (they are just 2 km apart) provides a unique opportunity for examining cultural responses to environmental change across the Pleistocene/Holocene boundary at the local level. On the basis of previous work in the area and following our own enquiries about the measures the Lesotho authorities intended to take to mitigate the dam's impact on the archaeological record, we were asked to initiate the Metolong Cultural Resource Management (MCRM) Project.

Preliminary investigations

As no further research had been undertaken in the Metolong area since 1990, establishing the full scale of the area's archaeological resources was central to Phase 1 of our work in 2008/09. This involved extensive field-walking of both the reservoir catchment and the area identified for construction of the associated Water Treatment Works. All rock shelters within these areas were visited, including the 27 rock art sites previously recorded by ARAL, for each of which a detailed digital photographic record was made and an assessment of its current state of preservation undertaken. As a result of this fieldwork two further rock art sites and 23 open-air artefact scatters were located. Test excavations were also undertaken at three smaller rock shelters thought to be threatened with inundation, and conservation measures put in place at Ha Makoanyane, an abandoned late 19th to 20th century Basotho village. Following these preliminary efforts, which included drawing up detailed recom-

mendations for the sustainable, long-term development of archaeological heritage structures in Lesotho, we were asked to carry out much more detailed investigations.

Ntloana Tsoana and Ha Makotoko

Most of that fieldwork took place in 2009/10 and focused on the two largest rock shelters, Ntloana Tsoana (280 m²) and Ha Makotoko (820 m²), both of which lie on the south side of the Phuthiatsana River (Figs 1 and 3). Further excavations, this time funded independently of the Metolong Authority, took place at Ntloana Tsoana in 2011 and others are scheduled there and at Ha Makotoko for early 2012. Excavation began by removing the archaeologically almost wholly sterile complexes of silt, clay and sand deposits overlying the sites' early Holocene levels. At Ntloana Tsoana excavation has focused within a single area toward the western edge of the site, while at Ha Makotoko several excavation areas have been opened up, the largest and most productive of them being close to the 1989 trench.

Our excavation policy has had the objective of recording the sites' stratigraphies in as much detail as possible, while also empowering individual excavators as part of a broader effort to train local people in archaeological fieldwork techniques (an article by Charles Arthur on this aspect will appear in the August 2012 issue). Excavation has been carried out in 0,25 m² quadrats within 1 m² squares, with all excavated contexts recorded, planned and photographed in detail using the single context recording technique that is standard procedure in British contract archaeology. At Ntloana Tsoana the sediments' high clay fraction and moisture content necessitated wet sieving all excavated archaeological deposits through a 2 mm mesh, but at Ha Makotoko, where the deposit is much finer and drier, dry sieving sufficed. Finds were sorted into basic analytical categories (flaked stone, bone, charcoal, etc.) on-site, or back at the National University of Lesotho, and samples were regularly taken for specialist analyses of macrobotanical remains, particle size and phytoliths, etc. Sections have also been systematically sampled for palaeoenvironmental analyses and dating, both radiocarbon and OSL.

All told, over 700 stratigraphically separate contexts have so far been removed at Ntloana Tsoana, along with a further 229 at Ha Makotoko. Building on the radiocarbon dates obtained from the 1989 excavations, a further 16 Accelerator Mass Spectrometry (AMS) dates have now been secured, with others being planned. Detailed analyses of the stone, bone, shell and ceramic artefacts, faunal remains, sediment samples and botanical specimens retrieved are now underway and involve collaboration with colleagues in Britain, Canada and South Africa. Unusually, in the southern African cultural resource management (CRM) context, the project has provided two years of

funding for these post-excavation analyses.

One of the most exciting discoveries to date is the recognition of previously unanticipated periods of occupation at the two sites. At Ntloana Tsoana, for instance, where the Phuthiatsana River has eroded away much of the upper sediments, a small post-classic Wilton assemblage dating to the 14th century was found at the very rear of the shelter. Much further down, the site's LSA sequence has been amplified by the discovery of multiple occupations characterised by small bladelet cores and numerous bladelets. This is the first time that the late Pleistocene Robberg Industry has been recovered from a datable context in western Lesotho. Associated dates suggest that this occupation falls around 13000 to 12000 BC.

Turning to Ha Makotoko, immediately below the dust covering the surface of the site, we encountered the remains of a small stone structure, tentatively interpreted as a livestock pen because of the presence of both animal hair and dung. This structure may document an early (18th to early 19th century?) Sotho use of the site, although historical research undertaken by our colleagues Stephen Gill and Thabo Nthoana of Morija Museum and Archives suggests that the first permanent villages in the Metolong area were only established in the 1860s. A complete small pot found near this stone structure may possibly suggest that early Sotho settlers also used Ha Makotoko as a rainmaking site. Finally, and again contrary to our expectations, Ha Makotoko delivered in situ MSA deposits for which we have thus far just one date, an AMS determination of 40100 ± 230 BP that fits our preliminary assessment that the stone artefacts found are of post-Howiesons Poort character, the formal part of which is dominated by unifacial points. Lebo Mohapi and Marlize Lombard (University of Johannesburg) are currently studying these artefacts, along with the MSA artefacts from Ntloana Tsoana, in ways that will include selective residue and macrofracture analyses.

The principal contribution Ntloana Tsoana and Ha Makotoko make to understanding how hunter-gatherers used the Metolong landscape nevertheless falls across the Pleistocene/Holocene transition, roughly 13000 to 7500 BC. This was a period of extensive environmental and climatic change across southern Africa as the region shared in the global experience of moving from much colder conditions at the tail end of the Last Glaciation to a climate much more similar to today's. The extraordinarily complex and fine-grained nature of our sites' stratigraphies for this period, especially at Ntloana Tsoana (Fig. 4), should provide insights into how the local ecology evolved and how people adapted to changing conditions at a level of detail without parallel in southern Africa. That Ntloana Tsoana was periodically flooded during the Holocene suggests that its sedimentary record, in particular, may be a sensitive gauge of past environmental conditions.

By excavating on a large scale we can also identify discrete, well-preserved spatial patterning of features, flaked stone artefacts and bone, as well as possible changes in site use over time. For example, significant differences in the kinds of fires built (and the activities undertaken near them?) are evident at Ntloana Tsoana, with some hearths being placed in small pits while other spread over areas of up to 2 m across. At Ha Makotoko, too, our excavations point to different uses of different areas of this very large rock shelter: small, discrete hearths in our principal excavation compared to the much more extensive ashy horizons found only a few metres away in 1989. In the western part of the site, hearths are associated with surprisingly few artefacts.

The smaller rock shelters

Although Ha Makotoko and Ntloana Tsoana have consumed most of our energies, other rock shelters have also been investigated. Lehaha Fateng Tsa Pholo, a painted site still used today by male initiation schools, preserves, for example, an early Wilton industry dated to about 6000 to 5800 BC that combines small convex scrapers and occasional backed microliths with the 'Woodlot' scrapers (steep end-scrapers with adze-like retouch along one or both lateral margins) typical of the later phase of the early Holocene Oakhurst complex. Nearby, a second rock shelter (2927BD3) also produced a few Woodlot scrapers, but this time from a clearly disturbed and largely geological deposit. Of greater interest, downstream of Ha Makotoko, a painted site recorded by Smits (1983) as ARAL172 produced ceramics, most likely of Sotho manufacture, in association with a post-classic Wilton lithic assemblage rich in small scrapers. Dates for this site have still to be obtained, but it may document a very recent survival of hunter-gatherers in the Metolong area.

The broader landscape

Of the many open-air artefacts scatters located in Phase 1 of our project, most are purely MSA in content, although in some cases LSA artefacts were recorded and, in one instance, an Early Stone Age (ESA) hand-axe. Although most of these sites do not preserve in situ occupation, in three instances artefact density was high enough to warrant collection for further study. We have also explored the local landscape for the sources of the raw materials used to make the stone artefacts found at Ha Makotoko and Ntloana Tsoana, and are integrating these results into our analysis of the lithic assemblages from the sites.

In addition, Adrian Parker and Mike Morley from Britain's Oxford Brookes University have located and sampled palaeoenvironmentally informative geological sequences along the Phuthiatsana River and are linking observations from these sites into their analyses of the geoarchaeology, soil micromorphology and phytolith sequences of Ha Makotoko and Ntloana Tsoana. Other important palaeoenvironmental/diet-

ary collaborations are those of Genevieve Dewar (University of Toronto), who is analysing the faunal remains from both sites, and Patrick Roberts (University of Oxford) who, with the help of Julia Lee Thorp, has analysed the stable carbon isotope signatures of the sites' sediments as a proxy record of changes in vegetation over time. We plan to extend the latter technique to offsite sediment sequences and onsite faunal remains in due course.

Rock art and living heritage

Before our project began, none of the Metolong Catchment's paintings had been traced. To produce a permanent record of them before they are flooded we therefore instituted a comprehensive programme of digital photography (by Jess Meyer) and tracing (by Lara Mallen, University of Oxford). While most paintings belong to the fine-line tradition of San rock art, other traditions – including some linked to contemporary Basotho initiation rituals – are also present. As well as planning to remove some of the best preserved panels for safekeeping and eventual display early in 2012, we are also facilitating a programme of dating and pigment analysis (by Adeline Bonneau, University of Quebec-Montréal) that we hope will help define a sound chronological context for San rock art.

That some of the painted sites in the Metolong Catchment and some of their paintings retain relevance for the area's contemporary inhabitants underlines the importance of the living heritage component of today's landscape. Most of the work relating to this is being carried out by colleagues from the National University of Lesotho, but one of our students (Larissa Snow) has made an important contribution by researching the beliefs held by local people about water snakes thought to live in pools within the Phuthiatsana and having associations with rainmaking practices.

Ha Makoanyane: a recent Basotho village

Previous archaeological research in Lesotho has largely failed to include sites linked to its present population and their immediate Iron Age ancestors (though see Dreyer 1996). As well as noting relevant material culture (especially ceramics), stonewalling or rock art in rock shelters within the area, we therefore seized the opportunity provided by road construction near the abandoned village of Ha Makoanyane to explore the archaeology of this late 19th to early 20th century rural community (Fig. 5). Attempting to ensure that no further damage was done to the site by road-building and deliberately avoiding the associated cemetery and middens where burials were thought to be located, we excavated surviving midden deposits in the oldest part of the village in July 2010. Contrary to oral testimonies, this fieldwork documented at least two phases of building activity and retrieved a significant quantity of glass beads and pottery, now being examined by Gavin Whitelaw (Natal Museum). Earlier archaeological projects in Lesotho, including



Fig. 3: Ha Makotoko at the close of excavations in 2010 (copyright Jess Meyer)

those associated with the Lesotho Highlands Water Project and the Maloti-Drakensberg Transfrontier Conservation Area, paid little attention to involving local communities and left little legacy by way of sustainable capacity in archaeology and cultural heritage. In contrast, both themes have been and remain central to our work, which has provided fieldwork opportunities for students of Lesotho's National University, as well as a significant level of training in excavation, survey and site recording techniques to senior Basotho members of our field team, many of whom have also presented our fieldwork and wider



Fig. 4: Detailed view of the north-facing section through the LSA and MSA deposits at Ntloana Tsoana (copyright Jess Meyer)

heritage issues to visitors, school groups and national print and television media. Over the remainder of the MCRM Project, including a final season of excavation in 2012 before the impoundment of the Metolong Dam begins, we intend to continue these efforts. At the same time, we are seeking other ways through which to enhance knowledge of and Basotho participation in recovering the millennia-long history of southern Africa's mountain kingdom.

Acknowledgements


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Fig. 5: Ha Makoanyane, 12th December 2009, as seen from a helicopter looking south-west across the lower ruins showing the new road and the location of Trench 1



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MOKHALI CAVE REVISITED

Dinosaur rock art in Lesotho

Charles Helm, Kevin Crause and Richard McCrea

'One day, as the missionaries were going up to the outcrop, they noticed a massive boulder, which attracted their attention because of its unusual markings. This boulder was noticeable because it appeared to have cracks like those of drying mud, while on one side were clearly visible footprints of a large bird of a kind not found today but which would be more than twice the size of an ostrich. ... The feet of the bird trod just once on this mud, and yet it is seen today, and will be visible in the years to come.'

These words, written in Sesotho in the local newspaper in 1885, form the first published record of dinosaur footprints in sub-Saharan Africa (Dieterlen 1885, quoted and translated in Ambrose 1991, 4-9). They refer to a site in Lesotho above the town of Morija, famous in the country's annals of missionary work, printing and education.

The footprints were probably 'discovered' in 1881 and sketched by another missionary, the artist Frédéric Christol (Christol 1897). Yet Lesotho had been inhabited for centuries by the Basotho and their Nguni or Sesotho-speaking predecessors, and for millennia by the San. Lesotho has one of the highest concentrations of dinosaur footprints in the world and many dinosaur bones. To what extent, before they were recorded by Europeans, were these phenomena known to the regional inhabitants? And if they knew of them, did they leave a record?

The San were the finest trackers the world has known, apparently able to interpret the characteristics of a track-maker from its prints alone (Lockley 1999). Before they disappeared from the region in the early 19th century, how could they not have known of such larger tracks in stone? And were they aware of the bones that occasionally were visible in the rock? San paintings are common in Lesotho and are prolific in the Cave Sandstone layer, which is particularly rich in dinosaur footprints and skeletons. The people that replaced the San in these mountain foothills also produced rock art, in a different style. Could a painted record of such knowledge have been left on cave walls?

The answers to these questions are affirmative, yet the chain of events that permits this knowledge is tenuous. It involves an intriguing story, involving not

just palaeontology and rock art, but missionary history and a unique family. A wonderful conclusion emerges, involving images of dinosaurs and a spectacular dinosaur footprint on a canvas of rock.

To understand this we begin with a name, Ellenberger, which in Lesotho is still mentioned in reverent whispers, and a three-generation missionary dynasty. Swiss-born D Frédéric Ellenberger (1835-1910) came to Lesotho in 1861. He spent the next 44 years in this work, first in Morija and then in Masitise, where he created temporary accommodation by building a stone wall in front of a massive rock overhang. He lived with his family in this Cave House for 13 years (Fig. 1). Five of his children were born within it. He printed much of the Bible and related works in Sesotho. After retiring, he and his wife Emma spent 15 years compiling *History of the Basuto: ancient and modern* (Ellenberger 1912). Thus he transcribed an oral history stretching back 32 generations to the 10th century (Gill 2003).



Fig. 1: Cave House at Masitise in which Paul Ellenberger's father Victor was born

Victor Ellenberger (1879-1972) was born in the Cave House while a war raged outside. He excelled as a student and went to France for his secondary education, then worked as a minister from 1917 to 1934 in Lesotho (mainly at Leribe) and then in Paris. He became an expert on Lesotho's flowering plants, changing environmental conditions and the tragic end of the San, and published books on these topics. With the help of his son Paul he copied over 400 San paintings. He extensively translated Sesotho into French. Victor married Évangéline Christol, the daughter of Frédéric Christol, the artist missionary.

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Paul Ellenberger (1918 -) was born in France while his parents were on leave. He spent much of his childhood in Lesotho, attending primary school in Leribe before going to France for his secondary education. As a child he helped his father copy San paintings. He returned to Lesotho with his wife Annette in 1953, working as a minister for 17 years, inter alia in Leribe, and Masitise. He and his brother François made tape recordings of traditional music and developed a preoccupation with Lesotho's distant past. François gravitated to geology and Paul to palaeontology. In 1956 the brothers co-founded the Morija Museum and Archives (Gill 1995).

Lesotho's abundant dinosaur bones and footprints provided a wealth of material and Paul set a new standard for depicting the prints. Altogether he described 58 footprint-bearing slabs, 170 different types of fossil trackways and over 150 ichnospecies. One of these was on the ceiling of the Cave House. He refined the understanding of Lesotho's stratigraphy. In 1970 he returned to France (University of Montpellier), whence most of his publications emanated, yielding diplomas and a doctorate (Ellenberger 1974). Later Paul was criticised for creating too many ichnospecies, and for not aligning his findings sufficiently with North American and European tracks of the same age. Nonetheless, he stands supreme as a pioneer ichnologist in Africa, and for publicising Lesotho's prodigious dinosaur heritage (Ambrose 1991, 11-14, 17-21).

'His worldview reflects his close affinity to nature and the land in his formative years. He is one of that rare breed of naturalists who communed with nature so wholeheartedly that he grew to love it not only with the intellectual passion of an inquisitive and active mind but also with a depth of heart and soul feeling that comes from being immersed in it throughout childhood' (Lockley 1999, 95).

For the Ellenbergers, faith, science, history and culture blended into a glorious whole: *'This one family of talented individuals has accomplished more than any other single family to promote, and to make important contributions towards, the study of Lesotho's history, palaeontology, rock art, literature and culture'* (Gill 2003, 28).

Armed with this knowledge of the Ellenbergers, we can imagine a 1930 visit to a rock overhang 10 km north-east of Leribe (Hlotse) known as Mokhali Cave. Victor was the minister in Leribe and likely the orchestrator. Present were Victor's father-in-law, the artist Christol, and 12-year-old Paul, who was given the task of tracing the paintings (Fig. 2).

While his grandfather sketched the cave (Christol 1930), Paul traced the wonderful images, which were unlike anything he or his father had seen before. Beside a painting in red ochre of a three-toed dinosaur footprint, there were three graceful figures of the imagined track-maker. In a rock outside the cave

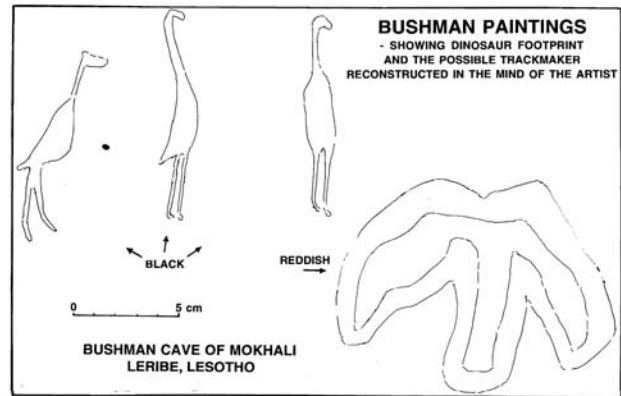


Fig. 2: 1930 tracing by Paul Ellenberger
(image courtesy David Mossman)

could be seen the bones of a dinosaur. Mossman (1990) and Mayor & Sarjeant (2001 151) refer briefly to this art, but 75 years after the initial discovery Paul was the senior author of a research article interpreting the paintings published in *Ichnos* (Ellenberger et al. 2005).

How had this come about? The tracings had languished in obscurity in Lesotho and then in Montpellier. But in 1989 David Mossman, a Canadian palaeontologist on sabbatical in France, met Ellenberger and learned about them. In 2004 he lectured in South Africa and visited Mokhali Cave with his son Alex. They located it after an exhaustive two-day search, finally identifying it with the use of a copy of Christol's sketch. Unfortunately the paintings had faded badly – the footprint (resembling that of an ornithopod) was just discernible, but the track-maker images were no longer visible. Ellenberger and the Mossmans then collaborated with renowned ichnologist Martin Lockley in submitting the article to *Ichnos*.

Describing the images, Ellenberger et al. concluded:

'Most striking is the upright bipedal stance. This shows astute perception on the part of these Paleolithic artists. The reconstruction can be compared with the cumbersome and unconvincing model of a quadrupedal ornithopod assembled for public display at Crystal Palace in London by Sir Richard Owen in the latter half of the 19th century.'

'One can make the case that the artistic portrayals represent a remarkably modern or realistic view of dinosaurs as elegant, erect, bird-like creatures, which contrasts with the rather sluggish, tail-dragging animals depicted in most western scientific literature until the early 1960s.'

'The prehistoric Bushmen sang about the early times, and about the monsters that made the beast-footed trackways in the red rock. Petrified bones of dinosaurs, so numerous in Lesotho, made a big impression on them. One ought not to be astonished that these grand connoisseurs of nature were interested and knowledgeable about dinosaurs. They would

have had vivid impressions of giant footprints left by wandering dinosaurs, an experience that confers very strong dynamic images of dinosaurs as living, moving creatures.'

The San had spoken and sung of a lethal prehistoric monster called //Khwai-hemm (Bleek & Lloyd 1911).

Ellenberger et al. continued:

'There was, then, an authentic Bushmen paleontology - //Khwai-hemm had held primacy over all the creatures which were living on earth during the far old beginnings. The only things now visible are its tracks, or bones transformed into stone. By carefully observing the various Jurassic tracks the artist could reconstruct pictures of specific trackmakers, in effect bringing //Khwai-hemm and contemporary creatures back to life. The resulting delicate pictorial record, and the surviving songs and stories about dinosaur footprints and their makers, illustrate the perspicacity and genius of Bushmen trackers, hunters, and artists. Their interpretations were at least as convincing as those of 19th and early 20th century paleontologists.'

The claim by Ellenberger et al. that the track-maker images predate European attempts was based on the estimated latest possible occupation of Mokhali Cave by the San (1810-20), before it was occupied by the son of the Basotho king and before the San were killed or driven from the region. Implicit in such an estimate is the possibility that they may have been made even earlier. This claim assumes that the San were the artists.

New technology at Mokhali Cave

Employing technologies developed in astronomy, forensics and medicine, and applying them specifically to rock art, Kevin Crause has developed the CPED Toolset – Capture, Processing, Enhancement, Display. After obtaining high-resolution images, data is colour-balanced and processed to remove lens distortion. Designed enhancement algorithms resolve imagery details that cannot be resolved under normal light conditions as perceived by the human visual system. By using this technology, images often result of rock art that are no longer visible to the naked eye. We wondered what the CPED Toolset could offer regarding the faded footprint and track-maker images.

Kevin and Charles Helm revisited Mokhali Cave to test this in 2011. The cave, which we found without difficulty thanks to excellent directions from the Mossmans, is 75 m wide, 10 m high and 5 m deep (Fig. 3). It provides a magnificent north-facing view over the Caledon Valley and its level floor is wide and deep enough to encourage habitation, as in Christol's sketch, which depicts three Basotho huts. However, it is exposed to the elements. Northerly winds, winter snow and freeze-thaw events damage the paintings on its walls, which are prone to flaking off. The chances of rock art surviving seemed remote. However, the footprint, 2 m from the eastern end of the

cave (Fig. 4), was recognisable. Midway along the floor were the remains of a circular hut.

In addition to analysing the footprint and surrounding area, all promising surfaces in the cave were photographed. This yielded a few images of so-called Late White paintings by Bantu-speaking agriculturalists (Lewis-Williams 2006), likely representing Basotho rock art, but also suggesting the possibility of Basotho artists creating the dinosaur images. Rock art shelters 200 m further east yielded numerous San paintings. In the valley of the Subeng Stream below, 3 km from Mokhali Cave, we visited a dinosaur tracksite that was recorded by Ellenberger in the 1950s. From here Mokhali Cave was visible.

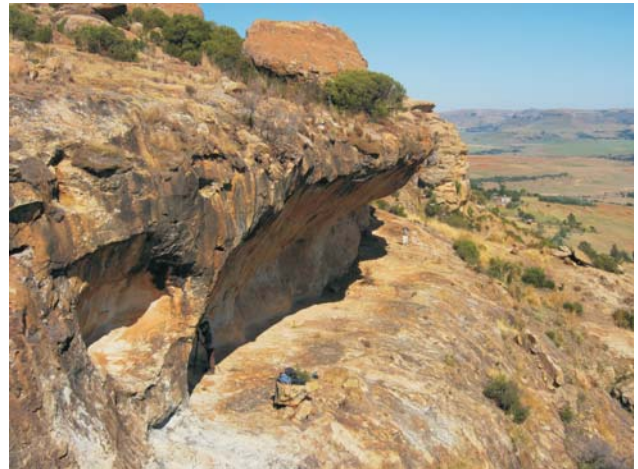


Fig. 3: Mokhali Cave. Kevin Crause can be seen at the bottom left of the shaded area, photographing the footprint painting



Fig. 4: The Mokhali Cave dinosaur footprint in normal light

The CPED Toolset allowed the faded footprint to morph into something striking (Fig. 5). It attests to the tracing accuracy of Paul Ellenberger. Where two of the track-maker images were recorded, there are vertical lines, but the quality is not sufficient to recognise a specific image. The third track-maker image is not visible. Here the surface may have flaked off since 1930. The CPED technology is improving and perhaps a future visit to Mokhali Cave will reveal

more of the images. However, erosion continues, and they may be forever beyond reach.

Placing Mokhali Cave in a global context

Ancient dinosaur-related art, history and legend have become part of the new discipline of geom mythology (Mayor 2000). Curiously, the track-maker is often depicted or imagined as bird-like. Here are some examples:

- A convincing case has been made that the griffin of classical Greek and Roman art and mythology represents the ceratopsian dinosaur *Protoceratops* (Mayor 2000, 15-53).
- In Utah a dinosaur footprint painting dated to 1000-1200 AD adorns a cave wall, close to dinosaur trackways (Lockley et al. 2006). On the same panel are images of bird-like creatures (Mayor & Sarjeant 2001, 151).
- Petroglyphs of dinosaur footprints occur in Arizona and Wyoming.
- Arabic legends of a colossal bird relate to tracks of Cretaceous dinosaurs in Algeria (Mayor & Sarjeant 2001, 150-151).
- In Australia the similarity of theropod footprints to emu tracks led to the legend of Marella, the emu-man, aided by the belief that seed-fern fossils in nearby rocks represented its feathers (Mayor & Sarjeant 2001, 159).
- In Poland the proximity of a dinosaur footprint to an ancient sacred site with petroglyphs suggests that the footprint inspired shamans to choose the site for rock art (Gierlinski et al. 2006, 217-220).

Mokhali Cave, with its unique juxtaposition of track and track-maker is a worthy member of this fascinating list. The 'discovery' of dinosaurs in Europe and North America in the 19th century is thus placed in perspective.

Conclusions

The oldest-known dinosaur images do not occur in England, as was once thought, but in earlier cultures. Mokhali Cave represents an outstanding African example. It is the only known such site in Africa.

Computer programs have enhanced the image quality at this site, confirming the accuracy of Paul Ellenberger's 1930 tracing and the relation of the footprint to the track-maker images. However, for details on the track-maker images, the efforts over 80 years ago of a remarkable pre-teenager remain the sole source.

Future work is required to resolve the origin of this rock art and, if possible, its age.


Acknowledgements

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Fig. 5: The Mokhali Cave dinosaur footprint employing the CPED Toolset. Width 10 cm, length 7 cm, total divarication 100°. The vertical dark lines at top left are some of the remains of the track-maker images.

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Neanderthals used ochre pigment 250 000 ya

A new study has indicated that Neanderthals may have used iron oxide pigments much earlier than thought. Ancient humans used it generally in Europe about 40 000 to 60 000 years ago, in West Asia as long ago as 100 000 years and in Africa 200 000 to 250 000 years ago. Now, a new study suggests that Neanderthals were also using it in the present day Netherlands as far back as 200 000 to 250 000 years ago, if not earlier.

The study, conducted by a team of scientists led by W Roebroeks of Leiden University, examined and analysed a sample of red material retrieved from excavations originally conducted during the 1980s at the Maastricht-Belvédère Neanderthal site. The site exposed scatterings of well-preserved flint and bone artefacts that were produced in a river valley during the Middle Pleistocene full interglacial period. Within soil collected there were traces of a reddish material. Analysis identified the reddish material as hematite.

Roebroeks has hypothesised that the best explanation for its occurrence is that the fine material was originally concentrated in a liquid solution and that blobs of this ochre-rich substance became embedded in the sediments during its use and spillage. To test this interpretation, the team performed an experiment to observe the impact of drops of a hematite-rich liquid on the site sediment. Despite the limitations of this experiment, the similarity of the experimentally produced concentrates remarkably similar to the archaeological concentrates at both macroscopic and microscopic levels. The study further found that the nearest source of hematite for the red ochre pigment was 40 km from the site. The liquified red ochre may have been used for body decoration, to make glue for adhering stone points to wooden shafts, or to soften animal hides.

Proceedings of the National Academy of Sciences, 23/01/12

Complete Denisovan genome

From the fragment of a finger bone found in a Siberian cave, researchers have created the most accurate genetic map yet of an extinct human relative that before 2010 was not known to exist. Thanks to innovations in gene-sequencing technology, molecular geneticist Svante Pääbo at the Max Planck Institute of Evolutionary Anthropology in Leipzig, Germany, has improved the genetic picture of the Denisovans, mapping every position of the genome 30 times over, with an unprecedented level of resolution. 'Now we can look at variation,' says Pääbo. 'We have a complete catalogue of what makes a fully modern human.' The researchers have released the complete DNA sequence online in the hopes that the scientific community will start to answer some of the many

questions raised by the discovery of this mysterious hominid.

Named after the cave in which the fragment was found, the Denisovans inhabited Asia at least 30 000 years ago, leaving behind no more than a tiny piece of finger and a wisdom tooth. But from those scant remains researchers have been able to map the entire genome. In 2010, the Leipzig team presented their first-draft genome, suggesting that the Denisovans are distinct from the Neanderthals and early modern humans in Eurasia. But where the preliminary sequence raised a host of questions, the newly released data may begin to provide some answers about who the Denisovans were. The improved resolution allows researchers to spot the differences between gene copies inherited from the mother and from the father.

<http://blogs.nature.com>, 08/02/12

Neanderthal cave paintings in Spain?

Cave paintings in Malaga, Spain, could be the oldest yet found and the first to have been created by Neanderthals. Looking oddly akin to the DNA double helix, the images in fact depict the seals that the locals would have eaten, says José Luis Sanchidrián of the University of Cordoba. They have 'no parallel in Palaeolithic art', he adds. His team say that charcoal remains found beside six of the paintings – preserved in Spain's Nerja caves – have been radiocarbon dated to between 43 500 and 42 300 years old.

The next step is to date the paint pigments. If they are confirmed as being of similar age, this raises the real possibility that the paintings were the handiwork of Neanderthals, which would be an 'academic bombshell' as all other cave paintings are thought to have been produced by modern humans. Neanderthals are thought to have remained in the south and west of the Iberian peninsula until about 37 000 years ago, 5 000 years after they had been replaced or assimilated by modern humans elsewhere in their European heartland. Until recently, Neanderthals were thought to have been incapable of creating artistic works. That picture is changing thanks to the discovery of a number of decorated stone and shell objects, although no permanent cave art has previously been attributed to our extinct cousins.

The finding 'is potentially fascinating', says Paul Pettitt of the University of Sheffield, but cautions that the dating of cave art is fraught with potential problems. 'Even some sites we think we understand very well, such as Chauvet in France are very problematic in terms of how old they are,' he says. Even if the age is confirmed, the paintings could still have been the work of modern humans as there is no absolute certainty that *Homo sapiens* were not in the south of Spain at this time, Pettitt said.

New Scientist, 10/02/2012

Three issues in San rock art research: a series of short contributions

Part 2: THE ROAD TO UNDERSTANDING

David Lewis-Williams

In the 1950s two new sources of information became accessible to rock art researchers. They led eventually to much of the research being done today, but also to debates about exactly what constitute 'San beliefs and rituals', and to confusion over the little word 'pan'. The first new source of information was colour photography, which became more viable for amateur use in the post-war period. The colour photographs in Alex Willcox's *Rock paintings of the Drakensberg* (1956) and in a series of books by Neil Lee and Bert Woodhouse opened the eyes of many readers to the beauty and variety of San rock art. These publications began to fulfil Wilhelm Bleek's prescient hope expressed as early as 1874: 'Where photography is available, its help would be very desirable, as the general public is sceptical, and not unfrequently [sic] believes that the drawings are too good not to have been vastly improved in copying, thereby doing scant justice to Bushman art.'

To explain the intricacy of the painted art that photography revealed, researchers initially turned to the published portions of the 1870s southern San |Xam ethnography that Bleek and Lucy Lloyd had compiled, to George William Stow's overwhelmingly second-hand compendium *The native races of South Africa* (1905), and to Isaac Schapera's more scholarly survey of 19th and early 20th century research, *The Khoisan peoples of South Africa* (1930). Apart from fragmentary reports by early travellers, there was little else.

The second source of information helped to fill this gap, though not without creating new disputes. Starting in the 1950s, the Marshall family undertook a series of expeditions to the Jul'hoansi San in the northern Kalahari. Numerous anthropologists followed. As a result, the second half of the 20th century saw an explosion of knowledge about the San, and they became one of the best known hunter-gatherer peoples in the world.

Because all this new work was systematic and formally driven by anthropological method and theory, it was more comprehensible than the verbatim, often somewhat muddled, Bleek and Lloyd phonetic |Xam texts. Specifically, the more recent work helped researchers to spot sections of the Bleek and Lloyd Collection that potentially pertained to an understanding of San rock art – even though the Kalahari San

did not themselves make rock art. The Kalahari ethnography also enlarged on areas of belief and ritual that were sketchily covered in the 19th century records. But was it legitimate to link the two sets of ethnography?

At first I was reluctant to use the Kalahari material. It seemed too remote in time and space from the southern rock paintings; moreover, the climate and terrain were different and the groups spoke mutually unintelligible languages. But after discussions with the anthropologist Megan Biesele, who is thoroughly familiar with the northern Kalahari Jul'hoansi, it was clear to both of us that *some* key beliefs and rituals were common to the Kalahari San and the 19th century southern |Xam. Careful, point by point comparisons unequivocally showed that certain hunting rituals, the activities of 'medicine people', components of girls' puberty rites and general cosmological beliefs were widespread. Patricia Vinnicombe, too, detected parallels between the two sets of ethnography. This was a revelation. To be sure, there were differences, but it was the parallels that were unexpected, striking and undeniable.

Later, another anthropologist, Alan Barnard, concurred: '[R]eligion is far more uniform throughout Bushman and even Khoisan southern Africa than are material aspects of culture and society' (Barnard 2007: 96). Thus it was that a set of beliefs and rituals came to be labelled 'pan-San', a phrase coined by Daniel McCall (as 'pan-Bushman'), who had earlier identified a widespread equivalence in San thought between hunting and mating. The (perhaps misleading) phrase 'pan-San' does not mean that all San linguistic groups are identical in every respect, as some writers have mistakenly supposed, only that certain specific beliefs and rituals are common to all, or virtually all, groups.

The next step on the road to understanding concerned the 'fit' between pan-San beliefs and rock art images. Writers who have little first-hand familiarity with San rock art sometimes imply that almost any interpretation can be thrust upon the images. Anyone's guess, they seem to say, is as good as anyone else's. But, unlike some other rock art around the world, San images are far too precise, explicit and distinctive to be susceptible to just any interpretation.

That is why it eventually became apparent that only *some* of the full range of pan-San rituals and beliefs are plainly evident in the art. They include distinctive dance postures (such as bending forward acutely and

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holding the arms in a backward position), nasal bleeding, a hand held to the nose, dance rattles and fly-whisks. To these may be added features seen by trance dancers only, the so-called 'threads of light', lines emanating from the top of the head and transformations into animals or birds. In addition, images are often painted so that they interact with and appear to emerge from the rock face, behind which the San believed the spirit realm lay. All these features are indicative of the medicine or trance dance, though, especially in the north, there are additional images that point to girls' puberty rituals.

Importantly, these key features are found from the Cederberg in the west to the Drakensberg in the east. Indeed, the beliefs and rituals dovetail so well with the painted images as to point to the fundamental, *but nevertheless multi-component* context of San rock art: interaction between the material and spiritual realms. Within this context, other 'meanings', such as personal relationships, were played out.

All this should not have come as a surprise. Mathias Guenther, who works with the Naro San, wrote that the trance dance 'is the central ritual of the Bushman religion and its defining institution' (Guenther 1999: 181). And Megan Biesele concluded: 'Though dreams may happen at any time, the central religious experiences of Jul'hoan life are consciously and, as a matter of course, approached through the avenue of trance.

The trancers ... mediate to the community not only healing power but also information about how things are in the other world and how people in this world would do best to relate to them. ... Contact with the beyond is regularly made, and all who come to the dance experience an uplifting energy which they feel to be a necessary part of their lives' (Biesele 1993: 70, 74).

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The Cape Gallery deals in fine art work by SA artists and stocks a selection of paintings depicting South African rock art.

On limpets, their height and how to get them on the plate A response to Gareth Angelbeck

Jayson Orton, Antonieta Jerardino and Dave Halkett

In the August 2011 issue of *The Digging Stick*, Gareth Angelbeck (2011) discussed the manner in which shellfish were collected in prehistoric times along the Eastern Cape coast. He makes particular reference to harvesting tools and the shell damage that might be caused as a result. He rightly states that little is known of prehistoric shellfish harvesting and any tools that may have been used, and points out that the flat iron bars used by the modern amaXhosa make a useful analogy. We thank Mr Angelbeck for making us reflect on a topic that needs closer attention in current research and we wish to offer alternative views to his ideas based on our experience on the west coast of South Africa.

Angelbeck begins by citing Parkington (2006), who notes the general lack of 'systematic damage' on shells excavated from prehistoric shell middens, an observation with which we agree, although post-depositional breakage makes quantification difficult. However, the statement that limpets were 'removed from the rocks by a swift sideways jolt, probably with the hand or foot or a wooden stick' (Parkington 2006: 33) seems, to us, for the most part, an untested assumption. Limpets have a muscle in their foot and cling to the rocks with the force of five times the atmospheric pressure by producing glue and stiffening and tightening the foot against the rock surface. Limpets do not suck, which would require only one atmospheric pressure of force for removal. Successful collection relies on breaking the contact between foot and rock extremely rapidly, preferably when the animal is moving and air penetrates between foot and rock. Although some taller profile species, such as *Scutellastra granularis* and *S. argenvillei*, may be detachable in certain instances in the manner suggested by Parkington, this method would not have worked with lower profile species (e.g. *Cymbula granatina*, *C. oculus*, *C. miniata*, *S. tabularis*) unless the shell is crushed before removal.

Angelbeck assumes that the difficulty in harvesting south-east coast limpets arises from their lower profile compared to west coast shellfish. While a small proportion of west coast limpet species do grow taller than usual because of overcrowding, we suggest that

the more likely reason for flatter shells on the east coast is the result of natural shape differences. Note that limpet overcrowding is an ecological phenomenon observed mostly along the Namaqualand coast. South of the Olifants River mouth *Choromytilus meridionalis* mussels dominated open rocky shores until very recently (now replaced in the intertidal only by the alien mussel *Mytilus galloprovincialis* (Branch & Stefani 2004). Namaqualand shell middens are strongly dominated by three species, namely *S. granularis*, *C. granatina* and *S. argenvillei* (Dewar 2008), while the first two species were collected in variable frequencies further south in Lamberts Bay and Elands Bay (e.g. Jerardino et al 2009). *S. granularis* and *S. argenvillei* in the past also occurred on the south coast (Kyriacou 2009) and continue to do so today, with *C. granatina* doing so in moderately large quantities during the Middle Pleistocene as represented in the Klasies River Mouth caves (Voigt 1982), although it now no longer occurs there (Steyn & Lussi 1998).

C. oculus has a similar shell shape to *C. granatina* and partially replaces the latter along much of the south coast and completely on the east coast. According to Angelbeck, *C. miniata* and *C. oculus*, both flatter species, are more frequent on the east coast. That is obvious for *C. oculus* as it does not occur north of Table Bay, except for small pockets around the Vredenburg Peninsula (Branch et al 2010; Jerardino pers. obs. 1995). Moreover, *C. miniata* and *S. cochlear* occur and are equally flat on both coasts, countering Angelbeck's argument that the nutrient-rich west coast waters support mostly taller species. The 'apples-and-oranges' visual comparison between *S. granularis* and *C. oculus* (Angelbeck 2011: Fig. 2) is thus invalid. Moreover, that *C. miniata* and *S. cochlear* are found more often on east coast archaeological sites is likely to be the result of foraging strategies rather than differences in extractive technology. Both of these species are low intertidal to high sub-tidal species (Branch et al 2010) and the best way to access them is to schedule their collection during low spring tides.

We note that Angelbeck's (2011: Fig. 1) shells with 'systematic damage' are *S. tabularis*, the largest limpet species found in South African waters. This species lives in the very low intertidal but is most frequent in the sub-tidal zone (Branch et al 2010). Collection of this species would require diving or walking deep into the sea during low spring tides. Added to this, they are also difficult to dislodge because of their large feet. The damage shown by Angelbeck is con-

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sistent with our observations at Noetzie, near Knysna (Orton & Halkett 2007), where this species was very frequently damaged in a similar manner. This damage may well have been the result of the use of a strong tool to dislodge the animal from the rock, but we have not yet tested this experimentally. Whether this damage is 'systematic' is open to debate.

S. granularis and *C. granatina* shells are perhaps too fragile to reliably document damaged edges as trampling could easily result in similar breakage. However, in Namaqualand the very robust *S. argenvillei* shells are sometimes found nearly whole and with systematic edge damage to one or other side of the anterior or posterior margin (see figure) (Orton & Halkett 2006). The scars reflect an impact from the outside and perhaps suggest the use of a tool in their harvesting. It should be emphasised that only a small proportion of all *S. argenvillei* shells are so damaged and this, we suppose, is because harvesting, with whatever tool was used, was normally done swiftly before the animal had time to cling tightly on the rock. The damaged shells may represent those not removed quickly enough, for which further prising was required.

The use of stone flakes to harvest limpets is an interesting thought, but whether they were in fact useful in prising shellfish off the rocks seems unlikely. A large flake with a very small edge-angle would be required for good leverage and to get under the shell. Such flakes are very rarely found. However, where we see some applicability for stone artefacts is in exactly the species shown by Angelbeck: *S. tabularis*. Being so large and strong, it may be necessary more often than not to actually break a part of the shell, perhaps with a stone, in order to insert some other sort of tool in between animal and rock or, maybe more likely, into the flesh of the animal. With the space so created one might wiggle the second tool in such a way as to loosen the animal from the rock. We suspect that this sort of action would be consistent with the damage reported by Angelbeck and seen by us at Noetzie.

Finally, Angelbeck suggests that large flakes could have been used to remove mussels, presumably brown mussels (*Perna perna*), from the Eastern Cape rocks. It is easy to collect large *P. perna* mussels (or large *C. meridionalis*, for that matter) by hand because they form clumps of about 10 to 40 individuals in the low intertidal zone. However, if the tide is high or only small mussels are present, a tool would be needed as small mussels form large compact beds in the mid-intertidal and it would be very difficult to get them off the rock with bare fingers (Branch et al 1981: plate 27). Moreover, massive middens of black mussels (*C. meridionalis*) occur on the west coast (Jerardino 2011), but artefacts of the size presented by Angelbeck are absent there. The lithic industries on either coast are entirely different and without any direct evidence it thus seems difficult to link large flakes to mussel harvesting.

Angelbeck's proposed examination of stone artefacts

for shell residues seems unlikely to be helpful given that artefacts in shell middens are in constant contact with shells and would pick up considerable shell residue through trampling and during excavation and sieving. We agree, however, that replication and experimental studies would likely yield more useful results and are perhaps the key to a better understanding of prehistoric shellfish harvesting strategies. It would also be interesting to extend the study to other types of tools, perhaps of bone, and compare differences between the east, south and west coast harvesting strategies.

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Scutellastra argenvillei shells from MB2006/016 near the Spoeg River mouth with marginal edge damage indicated by arrows (scale in cm)

THE LOTSANE RUINS IN EASTERN BOTSWANA

Rob S Burrett and Mark Berry

In north-eastern Botswana there is a pair of small, but in their time perhaps regionally important Zimbabwe-type ruins near the confluence of the Limpopo and Lotsane (formally spelt Lotsani) rivers (Fig. 1). Built in close proximity, the two separate ruins probably represent temporary distinct structures. Each consists of an arc of dry-stone walling with rounded doorways and internal compartments (Fig. 2). They are built of blocks of the local gneiss and are typical of the stonewalled structures built in the Shona States that once dominated southern central Africa.

The Lotsane sites have not been excavated, so it is difficult to provide definitive dates. In the literature there is disagreement amongst experts as to their affiliation and age. Van Waarden (1998: 126-127) places them in the Zimbabwe Period (AD 1300 to 1450), while Huffman and Hanisch (1987) advocate a later date, suggesting that they belong to the Khami Period (AD 1450 to 1600). The characteristic free-standing walls at Lotsane would seem to support the former suggestion, although the presence of some huts constructed on low stone platforms (most especially at the larger Lotsane Ruin A), as well as a single sherd decorated with polychrome lines seen by us during a visit in January 2005, would favour the latter. Unfortunately this small sherd is not truly diagnostic and it could just as easily be assigned to the Letsibogo facies of the Moloko Branch of the Urewe Tradition (Huffman 2007) and be unassociated, indicating later reuse of the site. Until there is a full investigation we must leave this matter in abeyance.

The purpose of this article is twofold. Firstly, it brings together some of early misplaced historical commentary on these ruins; all too often analyses of the so-called 'Zimbabwe Debate' focus on Great Zimbabwe alone. Secondly, it considers several photographic pairs that permit us to see the extent of structural failure in these ruins over a period of 115 years.

Historical commentary

The Lotsane Ruins were, after Great Zimbabwe, one of the first Zimbabwe-type structures regularly commented upon by European travellers in the 19th century. As with Great Zimbabwe there was contestation as to their origin. Most Europeans advocated an exotic derivation, citing various affiliations according to personal preference, knowledge and/or what others had said. These erroneous conclusions reflected the general colonial ethos that rejected African



Fig. 1: Location of the Lotsane Ruins

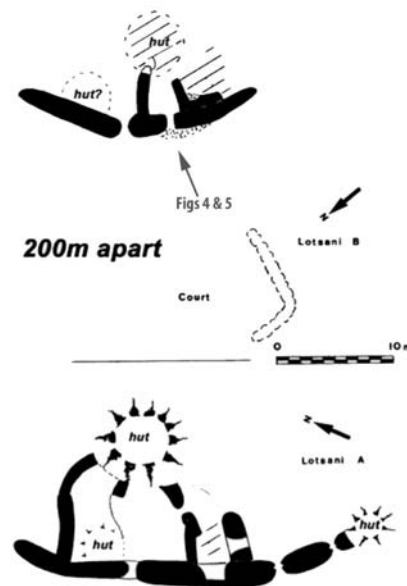


Fig. 2: Recent plans of the Lotsane ruins, modified after Huffman and Hanisch (1987)

ability and heritage.

The earliest of the Lotsane reports were those of Rhodes' Pioneer Column. These men encountered these strange structures during their march north to occupy Mashonaland in 1890. The following are diary entries made at the time, which can be found in the Historical Manuscripts Collection, National Archives of Zimbabwe, Harare:

1. 'We are now temporarily about 200 yards from an ancient fort which is not even known by the natives as

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to the origin. It is supposed to have been erected by some old Matabele as his monument' (NAZ – MISC WA 6/1). The 'natives' mentioned by JP Walker were a band of local 'bushmen' who were living nearby at the time. It is likely that they were totally at a loss as to what to say to this group of domineering European soldiers, and their reference to the Ndebele (Matabele) reflects contemporary concerns rather than any real knowledge about the origins of the ruins. It is interesting that Walker suggests an African origin – colonial interpretations were not always hegemonic and dismissive as some post-colonial historians may imply.

2. 'There are the ruins of an old fort – said to be Portuguese but look Moorish to me. There are a good number of graves about' (NAZ-BI 3/1/1). The author was an educated, widely travelled ex-member of the Royal Navy (see also Tyndale-Biscoe 2006). With his background he was probably aware of early Portuguese activities in southern Africa. We are uncertain as to what he meant by graves; possibly he was referring to nearby scattered stone piles, accumulations of suitable building material or field clearance rather than actual graves.

3. 'It was here that I examined my first ancient, dry-stone walled ruin, further examples of which we were to discover at other places along our route. The flat, grey granite (sic) blocks, squared off to approximately the size of an ordinary brick, though wider and flatter, were laid in level courses without the aid of mortar. They were obviously very old, though no one really knew how old, or what their origin was. For my own part I originally thought that they were probably Moorish, although I accepted they may possibly have been Phoenician. One school of thought expressed the belief that they were Portuguese, but having seen many old Portuguese buildings in Moçambique, which were all built with mortar, I could not subscribe to this view. ... Among the ruins we found some pieces of broken pottery which we kept. We were very proud of our finds until the experts told us that they were probably only pieces of pots left there by natives who had been camping on the site' (Davies 1977:35-36). Like the previous author this diarist, HF Hoste or 'Skipper' Hoste was an educated naval man. It is likely that he had extensive discussions with Tyndale-Biscoe as they were close friends. That obvious artefactual evidence was dismissed in favour of pre-conceived interpretations that exclude any African involvement is telling. It would be interesting to know how these sherds were recovered. Did they excavate at the sites and, if so, where?

4. 'At one place we came to three ruined forts, built by some ancient inhabitants of the country, probably Arabs' (Brown 1899:70). A collector for various American institutions, 'Curio' Brown was an officer in the Pioneer Column of the British South Africa Company (BSACO). It is interesting that he refers to *three* ruined stone forts. There is indeed a third structure in the

area, although some distance apart.¹ Like the other authors there is an automatic assumption that these were defensive positions, drawing from an Eurocentric perspective. His reference to Arab builders rather than 'moors' reflects his American background.

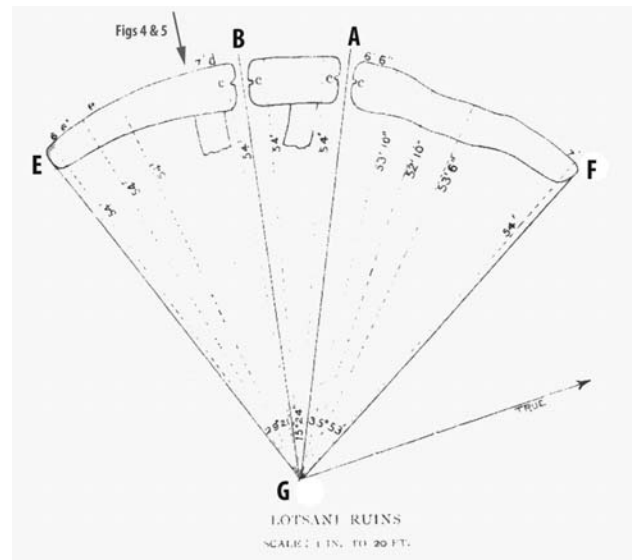


Fig. 3: The smaller Lotsane Ruin after Swan (1897, Plate 1)

A short time later the same structures were investigated and mapped by RMW Swan, a British antiquarian. He first came to the region as part of party led by Theodore Bent that was invited by Cecil Rhodes and was sponsored by the BSACO, the Royal Geographical Society and the British Association for the Advancement of Science (Bent 1892:4). His map of the smaller Lotsane (Ruin B in Fig. 2) appears in Fig. 3. '... about 800 yds from the left bank of the Lostani river its confluence of the Limpopo river. These ruins stand on two little Knolls of diorite, which presents a rough broken surface; and they are about 200 yds apart. Like Zimbabwe they are built of little blocks of granite which are laid in level courses. I was unable to make a plan of both of them, as one was much overgrown by bush, so I devoted the few hours at my disposal to making a careful plan of No. 1. As will be seen at a glance at the plan the outer wall consists of a single curve, and this curve is most carefully executed on the outer face of the wall. ... The ends of the wall at E and F are rounded and well finished, and there is no evidence that it ever extended beyond these points; the extremely rocky nature of the ground behind G renders it almost certain that the temple was never a complete enclosure' (Swan 1897: 2-3)

Swan, following the conclusions of his former leader, JT Bent (1892:228), suggested that the ruins were

¹ A local resident, Mr Roy Young, remembers once seeing a small section of walling called 'Tuli Ruins' on a neighbouring farm (pers. comm. 23/1/2005).

traces of some lost Near Eastern civilisation, being of Semitic origin from the Arabian Peninsula although he rejected any associations with the biblical Queen of Sheba and King Solomon.

Shortly after Swan's account, Hall & Neal (1904) published their detailed account of all the known Zimbabwe-type stone ruins in the region. Although their interpretations are wrong, their facts as to location and features are generally sound and in many cases the best we have before later treasure hunters looking for gold artefacts wrought havoc at the sites. Their entry, which draws fully on that of Swan, reads: '*Near the junction of Lotsani and Limpopo Rivers. These ruins comprise two distinct sets of buildings. Messrs Bent and Swan state that both these ruins are orientated towards the setting sun. All the characteristics of the first Zimbabwe period architecture are present here, including the battering back on both sides of main walls, which have rounded ends and are built in very regular courses. The holes in side walls of the doorways, similar to those at Zimbabwe, are now thought to have been made during a later period. These ruins are mentioned by Mr Bent, and are described by early pioneers*' (Hall & Neal 1904:329).

We cite these early historical commentaries not because we believe they are correct, but to encourage researchers and academics to consider ruins other than Great Zimbabwe when analysing the so-called 'Zimbabwe Debate'. The early European travellers exhibited a diverse range of reactions when faced with the ruined structures. To them they were mysterious features, seemingly remote in the heart of the African bush – they had to be exotic despite all obvious signs to the contrary. Most were simply unable to credit it to local African initiative so they did not bother to ask. This mirrored the arrogance and racial stereotyping of the period. It also justified their own activities. The creation of the myth was not something devised by those in ultimate power; conspiratorial efforts of the likes of Cecil Rhodes, as some have tended to suggest. It is true that Rhodes may well have perpetuated the stories, but he alone cannot be fingered as the source.

Also, not all Europeans held to these falsehoods. Some accepted an African origin, but their voices were soon drowned out. The monolithic conspiracy theory that has come to dominate the nationalist and revisionist histories of Zimbabwean archaeology under the guise of 'Patriotic History' (Ranger 2004) is simplistic. There was no single white, Rhodes-inspired plan to subvert history for immediate economic gain. This fable is easily created and beaten. Rather, we call for a more nuanced approach that analyses individual reaction to the ruins. Yes, the majority of these early writers and those that have followed were wrong, but we need to analyse the reasons behind what they said. By so doing we may also achieve greater understanding of similar dis-



Fig. 4: The smaller Lotsane Ruin 1890 after Fry (1891)

agreements in contemporary interpretations, both public and academic. These equally reflect personal, national, ethnic, gender and class-based bias.

A century of decay

Figs 4 and 5 show the same scene 115 years apart. The older photo was taken by William Ellerton Fry (1891), the official photographer for Rhodes' Pioneer Column in 1890. This photo shows the smaller Lotsane B ruin from the west. The more recent photograph was taken in 2005. You will excuse our efforts to re-enact the human postures!



Fig. 5: The smaller Lotsane Ruin in 2005 from about the same position as the photo taken by Fry

The prevailing vegetation, dominated by acacia species, is not much different. Possibly there is a little more small scrub and a lot less grass with more exposed surfaces. This bush encroachment probably reflects the greater cattle grazing pressure that prevails today. As regards the structure, the walls are a little lower today, the upper courses having fallen or been thrown off. At the point marked with an arrow possibly five courses of stones appear to have gone. This may be attributed to foraging animals, especially the much blamed baboon, but is also likely to reflect human action. Certainly at the larger Lotsane A ruin

the deposit has been dug over and large sections of wall have been destroyed.

We believe that this reflects the close proximity of these ruins to the old Pioneer trail, as well as more recent visitors still seeking treasure. Inherent structural weak points, especially at the entrances, have also continued to collapse, reducing the remaining section of walling further. Whether we should intervene and reconstruct the walls using the old photograph, or let nature take its toll is a debatable point. Have we the right, what would be the purpose and should visitors be encouraged? Thankfully we are not the designated heritage managers so are not responsible for such decisions. Our only hope is that the site will not be destroyed completely with time as it would be a shame to lose these two ruins that are some of the most southerly known in the Zimbabwe Culture.

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ARCHAEOLOGY IN AFRICA

Ash traces at Wonderwerk cave one million years old

There is now evidence at Wonderwerk cave in the Northern Cape that hominins first began controlling fire at least a million years ago. If correct, the Wonderwerk discovery would push the earliest indisputable controlled use of fire back by about 300 000 years. The research is reported in the *Proceedings of the National Academy of Sciences*.

Fire is difficult to pin down in the archaeological record. According to Michael Chazan of the University of Toronto, the oldest obvious hearths are just 400 000 years old, although the remains of burned wood, stones and food at an Israeli site suggests that hominins were using fire 790 000 years ago. Some researchers claim that changes to early hominin anatomy hint that they began using fire to cook even earlier than this, though the evidence is hotly contested. Molars shrank and skulls grew around 1,9 million years ago, which according to Richard Wrangham of Harvard University reflects the moment that hominins began cooking their food. As this requires less chewing and digesting, the theory goes, it freed up energy to sustain a larger brain. But according to Chazan, there is a huge discrepancy between the timing of these changes in hominin anatomy and the archaeological record of fire.

There are no obvious hearths in Wonderwerk cave, but when Chazan and Boston University's Francesco Berna and Paul Goldberg used microscopic analysis

to study the sediments on the cave floor, they found evidence of ash and burnt bone in layers that formed a million years ago. The burnt remains are 30 m from the present entrance to the cave. According to Chazan, it is likely that hominins – probably *Homo erectus*, because of the stone tools found at the cave – carried fire into the cave. 'There's no evidence to suggest they were creating fire. I think they were making occasional and opportunistic use of natural wildfires.' The burnt bone fragments, including bits of tortoise bone, suggest but do not prove that *H. erectus* was cooking food, he adds.

The new study is not final proof of Wrangham's cooking hypothesis, though. Chazan points out that the tiny traces of fire in the cave stand in contrast to the extensive ash deposits from fire found in much later sites of human occupation. That suggests *H. erectus* was not using fire regularly, or routinely cooking food, despite its small teeth and large brains.

New Scientist, 02 April 2012

City older than Troy found in Dardanelles

Scientists from Canakkale (Dardanelles) University have found traces of a lost city buried under the waters of the Dardanelles Strait. The discovery of ceramics and pottery led to a 7 000-year-old city on the sea floor at the Aegean entrance of the strait near the European shore. It is believed that the civilizations on the shores of the Dardanelles and Bosphorus straits were buried under water. *nationalturk.com*, 26/09/11

A STUDENT EXCHANGE PROJECT BETWEEN FRANCE AND SOUTH AFRICA

Aurore Val

France and South Africa share a long history of collaboration in the field of archaeology, palaeontology and palaeoanthropology, ranging from as far back as the early 20th century when the Abbé Breuil was visiting his South African colleagues till today's major collaborative works at several palaeontological (Swartkrans, Sterkfontein and Bolt's Farm in the Cradle of Humankind) and archaeological sites (Blombos, Sibudu and Diepkloof, just to mention a few). This collaboration has yielded important papers in both South African and international journals (Backwell & d'Errico 2003; d'Errico et al. 2001; d'Errico & Henshilwood 2007; Gommery et al. 2008a, 2008b; Henshilwood et al. 2002a, 2002b, 2009; Mourre et al. 2010; Porraz et al. 2008; Texier et al. 2010; Villa et al. 2005).

With this long tradition in mind we decided to instigate a modest student exchange project between South Africa and France in 2010. The main objective would be to allow students from Wits and Cape Town universities to discover aspects of research conducted in France, as well as gaining insight into the rich archaeological and palaeontological heritage of south-west France. The project also had the aim of providing French students with a glimpse into some of the research conducted in South Africa. Ultimately, we hoped that this project would help to weave links between the students of both countries to facilitate further scientific discussion, exchange and collaboration.

Project sequence

The first part of the project was an exchange between French and South African delegates in the form of oral presentations and discussions at the Departement Préhistoire, Paléoenvironnement et Patrimoine (PPP) at the University of Bordeaux. The South African group consisted of eight students, three MSC and four PhD students from Wits' Bernard Price Institute of Palaeontological Research and one MSC student from the Department of Archaeology at the University of Cape Town, and a researcher from Wits' Institute of Human Evolution (Dr Job Kibii).

Each of us gave an oral presentation about our research project and six PhD students from Bordeaux did the same. Researchers from the PPP, including Dr Anne Delagnes, Prof. Francesco d'Errico, Dr Jacques

Jaubert, Dr Arnaud Lenoble, Dr Michel Lenoir, Dr Pierre-Jean Texier and Dr Anne-Marie Tillier, also presented their research and talked about how their research in palaeontology, archaeology and palaeoanthropology is conducted. The talks tackled various disciplines, including palaeontology, taphonomy, geology, palaeobotany, palaeoecology, stone tool industries, rock art, funerary practices, functional anthropology and palaeoanthropology. The South African delegates toured the facilities of the PPP, including the laboratories that host state-of-the-art equipment, including a luminescence and isotopic dating laboratories, optical microscopy, etc.

Michel Lenoir of the PPP Department, University of Bordeaux, showing some stone tool knapping on local flint



The second half of the project was undertaken in the Dordogne Valley in and around the town of Eyzies-de-Tayac. Dr Alain Turc, curator of cultural heritage and assistant head of the National Museum of Prehistory opened the doors of two of the key-sites for understanding the Middle and Upper Palaeolithic in south-west France, the rock shelters of Moustier and Ferrassie. They gave us an overview of the historical background and archaeological significance of the sites. We visited the National Museum of Prehistory and the Rouffignac and Fond-de-Gaume rock art cave sites.

Benefits and future perspectives

The symposium permitted people from both countries working on similar research questions to interact and start a constructive scientific relationship, and allowed students to expand their horizons and look towards forming collaborations with foreign researchers. One potential post-doc project involving a PhD student from the BPI and a researcher in Bordeaux is currently

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under discussion. Two other PhD students have also met researchers from Bordeaux who were interested in further collaboration. The student from Cape Town was already in touch with a PhD student in Bordeaux before this project took place, and the meeting gave them an opportunity to discuss their common research questions and plan a joint paper .

Given the feedback we received from those we met it seems that the project had very positive outcomes, both in terms of personal experience and professional interest. We would like to repeat the experience in 2013, but this time with students from University of Bordeaux visiting South Africa. The project would be organized in the same way.



South African participants in front of the Font-de-Gaume cave

Acknowledgements

This project was supported financially by the Trans-Vaal Branch of the SA Archaeological Society, the French Embassy in South Africa, the University of the Witwatersrand and the FSDIE (Fonds de solidarité et de développement des initiatives étudiantes) at the University of Bordeaux. Thank you to Brigette Cohen for her precious help during the writing up of this paper.

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The South African participants at the University of Bordeaux: (fltr) Job Kibii, Aurore Val, Mickael Day, Brigette Cohen, Joseph Chikumbirike, Joy Malaza, Cuan Hahndiek, Philip Taru, Alexandra Bountalis and Kimberley Houghton

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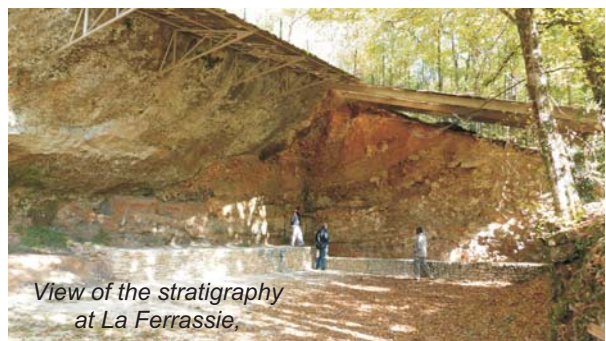
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View of the stratigraphy at La Ferrassie,

ROCK ART STAMP EXHIBITION IN KWAZULU-NATAL

Elwyn Jenkins

An exhibition of South Africa's rock art on stamps was on display at the Howick Museum from March to September 2011. Titled 'South African rock art on stamps: showcasing our cultural heritage', it was aimed at school children, tourists and casual visitors as an initiative to feature the region's local heritage.

The Howick Museum is situated close to the Howick Falls, which are a popular tourist destination and the town is the hub of the KwaZulu-Natal Midlands, an area that includes the foothills of the Drakensberg and is therefore a gateway to the rock art of the Drakensberg, including the public sites at Giant's Castle and Kamberg. The exhibition took account of the needs of the large numbers of school groups that visit the small museum. South African stamps featuring rock art and the archaeological subjects of Mapungubwe and the Lydenburg Heads have close connections with various national symbols, which are part of the primary school curriculum. Rock art also forms part of the high school visual arts syllabus and the exhibition provided teachers with material in this regard. The captions to the exhibition were translated into Zulu and made available as notes for teachers.

The exhibition was mounted by printing large colour reproductions of stamps, other postal materials and illustrations on A1 sheets, which is more effective than displaying the small stamps themselves. To contextualise the stamps, the displays showed pictures of the original art in situ, explained how rock paintings and engravings are copied using various techniques, and pointed out features of the final design of the stamps. The captions stressed the importance of protecting rock art and the legal controls that are in place.

The illustrations included portraits of San people and rock art scholars who have contributed to our understanding of the art, and pointed out how the art reproduced on some of the stamps had been selected to illustrate aspects of interpretation. One panel showed the use of rock art in the logos of SA sports teams and on stamps commemorating South Africa's participation in international events (Fig. 1). Another illustrated how paintings on the Linton Panel have been used both on stamps and on the national coat of arms (Fig. 2). Unusual items included two stamps of South African rock art issued by Guinea Bissau, a 'flyttkort' (change-of-address postcard) featuring SA art issued by the Swedish post office, and Telkom telephone cards with copies of paintings made by Harald Pager. Some rock art stamps from neighbouring countries were also included for comparative purposes.

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Fig. 1 (right): Miniature sheet issued to mark South Africa's participation in the World Philatelic Exhibition in China in 1999

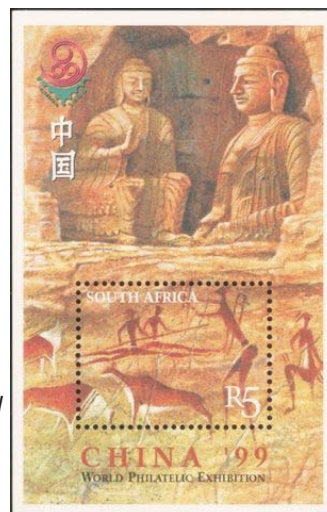


Fig. 2 (below): Figures from the Linton Panel on a stamp issued in 2006. The one on the left is the one that was incorporated in the new South African coat of arms in 2000.



The exhibition was opened by archaeologist Gavin Whitelaw of the KwaZulu-Natal Museum in Pietermaritzburg. Shortly after it had opened, the KwaZulu-Natal Provincial Museums Service requested a duplicate of the entire exhibition for installation at the Fort Amiel Museum in Newcastle as part of the Museums Service's International Museums Day activities in June. The original exhibition was moved to another hall to become a semi-permanent exhibition in the Howick Museum. In March 2012 it was borrowed by the KwaZulu-Natal Museum as a temporary exhibition to accompany a presentation that I gave to the Friends of the Museum.

I curated the exhibition using stamps and other postal materials from my collection that is kept in the Rock Art Research Institute at the University of the Witwatersrand. The exhibition panels were designed by Greg Moore of the uMngeni Municipality. I am grateful to the Curator of the Howick Museum, Claire Adderley, for her support. A paper on the subject matter of the exhibition will be published in the journal *Critical Arts* in September 2012.

2012 subscriptions

Subscriptions for existing members were due on 31 March 2012. If you have not yet renewed, please do so now.

Individuals		Institutes	
Ordinary (Single)	R245	South African	R480
Joint (Family)	R255	African	R480
Junior Member	R190	Overseas*	R950
African Ordinary	R270		
Overseas Ordinary	R480*		

*Plus R100 for bank charges

Payments should be made to the Cape Town head office. See panel on page 24.

ASAPA members please note

Members of ASAPA are reminded that they are eligible for a substantial discount on their ASAPA membership if they also enrol as a member of the SA Archaeological Society.

WORLD ARCHAEOLOGY

Seafaring in the Aegean: new dates

Seafaring before the Neolithic, circa 7th millennium BC, is a controversial issue in the Mediterranean. However, evidence from different parts of the Aegean is gradually changing this. The site of Ouriakos on the island of Lemnos tentatively dates to the end of the Pleistocene and possibly the beginning of the Holocene, circa 10 000 BC. A team from the Laboratory of Archaeometry, University of the Aegean on Rhodes, and the Ephorate of Palaeo-anthropology and Speleology of Southern Greece suggests that obsidian sources on the island of Melos in the Cyclades could also have been exploited earlier. Studies of material from Franchthi cave in the Argolid indicate Melos as its origin. Obsidian has been a preferred material for stone tools. It absorbs water vapour when exposed to air, such as when a tool is shaped, and absolute or relative dates can be determined for that event by measuring the depth of water penetration

Two routes for the obsidian found at Franchthi have been considered: a direct one of around 120 km with islets in between and another one through Attica, which includes crossings of 15 to 20 km between islands. The presence of obsidian in mainland and island sites indicates that these voyages included successful return journeys. Sites in Ikaria, Sporades, and on Kythnos demonstrate that during the Mesolithic a well established system of obsidian exploitation and circulation existed, a phenomenon that has its routes even earlier, as dates from sites in Attica indicate. Furthermore, obsidian artefacts have recently been found in two other Mesolithic sites in Greece, one in the island of Naxos and the other one

THE DIGGING STICK

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The Digging Stick appears three times a year in April, August and December. In recent years its size has increased to 24 pages, its content has improved significantly and colour has been introduced. Apart from featuring short and readable articles on new archaeological finds and advances in southern Africa, it also carries brief notes on major archaeological developments around the world.

The Digging Stick is the pre-eminent magazine for those who have an interest in South Africa's pre-history and historic development. Its readership is influential, knowledge-seeking and well-travelled. The magazine is circulated to over 1 000 members of the Society, around 90 per cent of whom reside in South Africa; the remainder are individuals and institutions located in Africa and overseas. Generally readers fall in the 40 to 70-year age group.

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in the small island of Halki. Exchange systems therefore brought obsidian to the eastern and the north-west Aegean, and even reached coastal inland sites of mainland Greece such as Attica. Obsidian was also brought to the Peloponnese.

Journal of Archaeological Science, Volume 38 (9), 2011

Vast find of ancient Buddha statues in China.

Some 2 895 ancient Buddha statues have been unearthed in China's Hebei province, highlighting the Buddhism's popularity since it spread from India over 2 000 years ago. The statues and fragments dating back to the Eastern Wei and Northern Qi period (534-577) were found at historic Yecheng, Linzhang. They are made of white marble and blue stone and some are painted or gilded. Their sizes range from 20 cm long to the actual height of a person. *First Post, 05/03/12*

Ancient dinosaur nursery found

A 190-million-year-old dinosaur nesting site has been found in sedimentary rocks from the Early Jurassic Period in the Golden Gate Highlands National Park in the Free State. Canadian palaeontologist at the University of Toronto, Professor of biology Robert Reisz led a study entitled *Oldest known dinosaurian nesting site and reproductive biology of the Early Jurassic sauropodomorph Massospondylus*, published in *Proceedings of the National Academy of Sciences*. Dr Adam Yates of the Bernard Price Institute (BPI) for Palaeontological Research at Wits co-authored the study with Drs Hans-Dieter Sues (Smithsonian Institute, USA) and Eric Roberts (James Cook University).

The study reveals clutches of eggs, many with embryos, as well as tiny dinosaur footprints that, provide the oldest-known evidence that the hatchlings remained at the nesting site long enough to at least double in size. BPI director, Professor Bruce Rubidge, commented that the research project, which had been ongoing since 2005, continued to produce groundbreaking results. 'First it was the oldest dinosaur eggs and embryos, now it is the oldest evidence of dinosaur nesting behaviour.'

According to the authors, the dinosaur nesting ground is more than 100 million years older than previously known nesting sites. At least ten nests have been discovered at several levels at this site, each with up to 34 round eggs in tightly clustered clutches. The distribution of the nests in the sediments indicates that these early dinosaurs returned repeatedly to this site and likely assembled in groups to lay their eggs, the oldest known evidence of nesting site fidelity and colonial nesting behaviour in the fossil record.

The large size of the mother (6 m in length), the small size of the eggs (about 6 to 7 cm in diameter) and the highly organised nature of the nest suggests that the mother may have arranged them carefully after she laid them. 'The eggs, embryos and nests come from the rocks of a nearly vertical road cut only 25 m long,' says Reisz. 'Even so, we found ten nests, suggesting that there are a lot more nests in the cliff, still covered by tons of rock. We predict that many more nests will be eroded out in time.'

The site has previously yielded the oldest known embryos belonging to *Massospondylus*, a relative of the giant, long-necked sauropods of the Jurassic and Cretaceous periods. 'Even though the fossil record of dinosaurs is extensive, we actually have very little fossil information about their reproductive biology, particularly for early dinosaurs,' said David Evans, curator of Vertebrate Palaeontology at the Royal Ontario Museum. 'This amazing series of 190-million-year-old nests gives us the first detailed look at

dinosaur reproduction early in their evolutionary history, and documents the antiquity of nesting strategies that are only known much later in the dinosaur record.'

Wits Communications, 09/02/2012

Klasies cave engraving may be oldest art

An ochre pebble bearing a sequence of linear incisions dating back to about 100 000 years recovered from Klasies River Cave on the Cape south coast may be the world's oldest engraving. The object is described in the April issue of the *Journal of Archaeology*. 'Associated human remains indicate that the engraved piece was made by *Homo sapiens*,' said co-author Riaan Rifkin of Wits' Institute for Human Evolution. Rifkin and colleagues Francesco d'Errico and Renata Garcia Moreno performed extensive non-invasive analyses of the object and conclude that humans intentionally made the sub-parallel linear incisions on pebble.

'Upon engraving the piece with a sharp lithic implement, it is likely to have produced a markedly bright and dark red-maroon powder,' Rifkin said. 'The design may therefore have been strikingly visible shortly after it was produced.' The pebble measures about 75 mm in length and contains a series of seven deep, broad engraved lines and about 16 narrower and somewhat shallower linear features. 'The fragment is a remnant of a formerly semi-circular ochre pebble that likely contained a much more extensive engraved design on its surface,' Rifkin said. Of particular interest now is whether or not the engraver made the design with symbolic intent. Both linear and crosshatch engraved patterns may have been common thousands of years ago. Similar designs appear on engraved ochres from Blombos Cave and on ostrich eggshell fragments found in the Diepkloof rock shelter on the west coast.

Discovery News, 23/03/12

Twenty million-year-old ancestor

Ugandan and French scientists have discovered the partial skull of a tree-climbing ape dated to around 20 million years ago in Uganda's Karamoja region. It is the first time a skull of a *Ugandapithecus Major*, a species named in 1950, has been found.

What makes this particular discovery special, Dr Martin Pickford, a palaeontologist from the College de France in Paris, said '(was) its age, completeness, dimensions, excellent preservation of the teeth ...' Preliminary studies of the fossil showed that the herbivore had a head the size of a chimpanzee's but a brain the size of a baboon's. The skull was found within volcanic ash that erupted between 19 and 20 million years ago.

www.pasthorizon.com, 24/08/11

ARCHAEOLOGY IN BRIEF

Acropolis of forgotten kingdom uncovered. Archaeological excavations are underway at a huge site in southern Cappadocia, Turkey, to uncover the ancient but forgotten kingdom of Tuwana known until now only from hieroglyphic texts and several sources from the Assyrian Empire. It was a small buffer state between the Phrygian kingdom and the Assyrian Empire. The site being excavated is known as Kinik Hoyuk. It dates to the beginning of the first millennium BC and spans at least 24 ha. Southern Cappadocia was important as it controlled the Cilician Gates on the route between Europe and Asia, one of the most important junctions in the world during that period. Excavations were begun last year by the University of Pavia in Italy and New York University in collaboration with Turkish universities. Geomagnetic surveys in 2010 revealed particularly significant remains of an acropolis wall and buildings at the centre of the acropolis itself. The monumental walls have been excavated to a depth of 6 m and are in an outstanding state of preservation. Original plaster has been found on the walls. *ANSAméd, 10/02/12*

Oldest animal discovered. Microscopic, sponge-like African fossils could be the earliest known animals and possibly our earliest evolutionary ancestors. The creature, *Otavia antiqua*, was found in 760-million-year-old rock in Namibia. 'The fossils are about the size of a grain of sand and we have found many hundreds of them,' said study leader Anthony Prave, a geologist at the University of St Andrews in the UK. 'In fact, when we look at thin sections of the rocks, certain samples would likely yield thousands of specimens. Thus, it is possible that the organisms, possibly the first multi-cellular animal, were very abundant.'

Prior to the new discovery, the previous earliest known 'metazoan' animals with cells differentiated into tissues and organs was another primitive sponge dated to about 650 million years ago. Based on where the new fossils were found, Prave thinks *Otavia* lived in calm waters, including lagoons and other shallow environments, feeding on algae and bacteria that were drawn through pores on its tube-like body. As reported in the *South African Journal of Science* the fossil record indicates *Otavia* survived at least two long-term, severe cold periods known as 'snowball Earth' events. The organism did not evolve much in its roughly 200 million years of existence.

National Geographic News, 07/02/12

World's oldest wood. Two 400-million-year-old fossil plants, small herbs from France and Canada, are the oldest known examples of wood found to date. Both fossils date from the early Devonian period, by which time simple plants had long colonised the land and begun diversifying. Trees did not evolve until ±385 million years ago. *Science 333 (August 2011), 837*

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

Subscription rates for 2012 are as follows: Individuals: Single – R245; Joint/Family – R255; Junior membership – R190; Africa ordinary – R270; Overseas ordinary – R480*. Institutions: Local and African – R480; Overseas – R950*. [* Plus R100 bank charges]

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