THE DIGGING STICK

Volume 28, No 3 ISSN 1013-7521 December 2011

WHY ARE SO FEW PLANTS DEPICTED IN ROCK ART?

Helmke Hennig and Frances le Clus

The Iziko exhibition, 'Made in Translation: Images from and of the Landscape', curated by Pippa Skotnes and Petro Keene, provided a rare treat. It included copies from several rock painting sites in southern Africa depicting plants (see figure on page 4).

Rock art painting from the Linton panel, Maclear District, Eastern Cape (image courtesy Iziko Museums Social History Collections Department)

In South Africa there are approximately 15 000 official records of rock art sites. Of these, only perhaps 20 sites (Ouzman 2011) have some form of plant depicted. Such a low percentage of plant representations in rock art is also the norm in the rest of the world's known rock art sites, and there are no depictions of plants at all in south-western European rock art (Sainz 2002). This raises the question: why are there so very few depictions of plants in rock art?

Wilcox (1955) saw the answer as 'plants usually fell in the domain of women, so it is presumed that the authors of these paintings were men. However, many female figures and images of 'women's work', such as gathering, and figures with digging sticks are depicted, so the argument lacks some credibility. Similarly, according to Woodhouse (1969), clues are given as to who worked on the rock art by the subjects that are chosen. Lewis-Williams (1996) gives a summary of

Helmke Hennig is with AquaKnowledge, Cape Town. aquaknowledge@gmx.net
Frances le Clus is an independent researcher in Cape Town. fleclus@gmail.com

OTHER FEATURES IN THIS ISSUE

the different eland representational ideas and ends: 'As the *Last Supper* [painting], San art justifies male domination'. This in spite of repeated documentation by Marshal (1976) and Biesele (1993) on the egalitarianism and cross-over roles in the San cultures they studied. South-western European rock art depicts only animals, except for the odd 'sorcerer', but sculptures of females are of great importance there. Perhaps rock art is only made by males. For example, the Bleek informant |han?kass'o had first-hand knowledge of rock art painting materials, but that is not evidence that only males painted.

It can be shown that the religious content of rock art has very deep roots in the human psyche. It may even be hard-wired as indicated by functional magnetic resonance imaging (MRI) scanner studies. The answer to the high number of animals, humans and 'sorcerers' depicted and the scarcity of plant depictions may rest on two human phenomena: physiology and nutrition.

Physiology

This point is best illustrated with an account from an independent source. Trying to avoid internment during the Second World War, Henno Martin, a German geologist, and his friend Hermann Korn lived for two years in the Namib Desert. Here is the relevant quote from his diary (Martin 1957):

'It was about this time [after two years] that we noticed a change in the subjects of our dreams. Animals began to play an increasing part in them and the distinction between human beings and animals became blurred. There seemed no particular mystery about this; after all, for a couple of years now our whole life had revolved around them; they were our only fellow beings and our existence depended largely on them. Supposing we had led such a life not merely for a couple of years, but from childhood onwards! How natural such dreams would be! Perhaps this was the origin of mythology – to be found in the heritage of all peoples – in which human beings and animals mingle and merge into each other. Was it too much to suppose that it developed quite naturally from the chase?'

There are two important concepts here, namely dreams and the blurring of distinction between human and animal (anthropomorphism and zoomorphism).

Dreams

Dreams are defined as the successions of images, ideas, emotions and sensations occurring involuntarily in the mind during certain stages of sleep. Physiologically they are a response to neural processes during sleep, and psychologically they are reflections of the subconscious. In a spiritual sense, they are often also seen as spiritual messages from a god, the deceased or from the soul, or predictions of the future. Individual dreams have been socially explored for 'clues' they may provide to the structure of the greater Dreaming or other world (Biesele 1993).

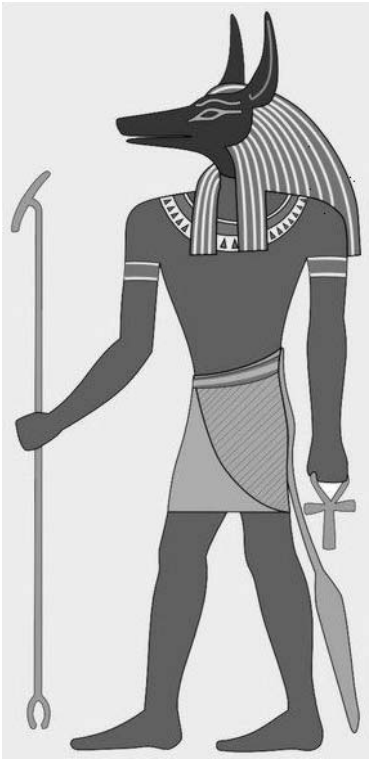
Throughout history people have sought meaning in dreams or divination through dreams (Lewis 1964). In ancient Egypt people believed that the gods showed themselves in dreams. The ancient Hebrews connected their dreams heavily with their religion; they were the voice of one god alone. Christians mostly shared that belief. They thought that dreams were of the supernatural element since the Old Testament included frequent stories of dreams with divine inspiration.

Anthropomorphism

In these dreams the god, or gods, were humanised. There is an ingrained trait of men to humanise their gods and mythic figures. Anthropomorphism has appeared throughout human history and is rampant in all cultures. One of the oldest-known anthropomorphic depictions is an ivory sculpture, the Lion Man of Hohlenstein Stadel from Germany (image below). This human-shaped figurine with a lion's head is about 32 000 years old. A similar animal-headed human-body engraved figure is the well-documented example of the Sorcerer from the Trois-Frères Cave, Ariège, France. Ancient Egypt had animal-headed human-bodied gods (Thoth ibis-headed, Khumn ram-headed and Anubis jackal-headed – image opposite). Ancient Greek culture had human-headed animal-bodied gods (Pan goat-bodied, Centaurs horse-bodied) and a mixture of animals like the Furies (dog-headed, bat-winged). In Christianity the Holy Spirit is commonly represented as a dove and the apostle Mark as a lion. In San culture god was represented by an eland (see Linton panel, page 1) and perhaps even by other animals such as rhino, elephant, kudu and giraffe, as in Namibia (Hay 2009).

Lion Man of Hohlenstein Stadel, Germany

With the aid of a functional MRI scanner, Epley et al (2009) revealed how and why human brains are compelled to anthropomorphise. They found that humans tend to think egocentrically, in other words humans use their own preferences to predict how someone else will react.



The ancient Egyptian jackal-headed deity Anubis
(image courtesy Oracle Education Foundation)

The mind is also a starting point for divining the 'thoughts' of non-humans and deities. It was found that the brain-scan activity was similar when subjects considered their own compared with another human's views, but the closest resemblance came when the subjects thought about God's views. The subjects considered their own beliefs to be much closer to those of God's than to those of other humans. So, the less evidence there is of what God thinks and of His/Her beliefs, the more likely we are to project our own beliefs into that void.

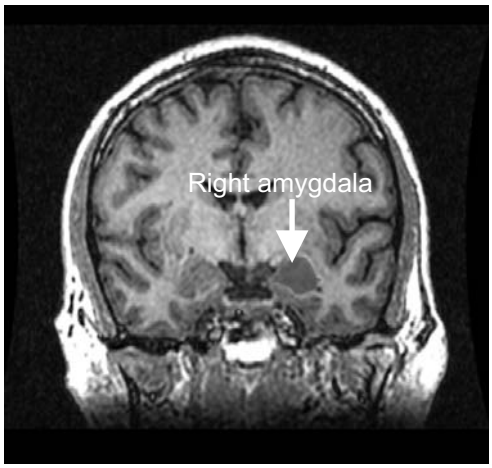
Further functional MRI scan evidence (Keysers and Gazzola 2010) showed that the same neural processes are used to understand the behaviour and minds of humans, and the believed behaviour and minds of anthropomorphic entities. The scans showed activation of the 'mirror neuron system' in the premotor and somatosensory cortices, the brain areas that respond to action by other humans and help with interacting socially. Very recent research (Mormann et al 2011) has indicated that neurons in the human right-amygdala specifically respond to images of animals, but not to pictures of people, landmarks and objects (image opposite).

Hence it appears that, in humans, the neural processes for animals are hard-wired. Therefore, in the rock art artist's landscape the people will anthropomorphise their dream animals and then 'mirror' them in their deity and religion. Plants do not appear to be part of a hungry human's dreams, which could be due to the constituents of their nutritional value.

Nutritional value of plants

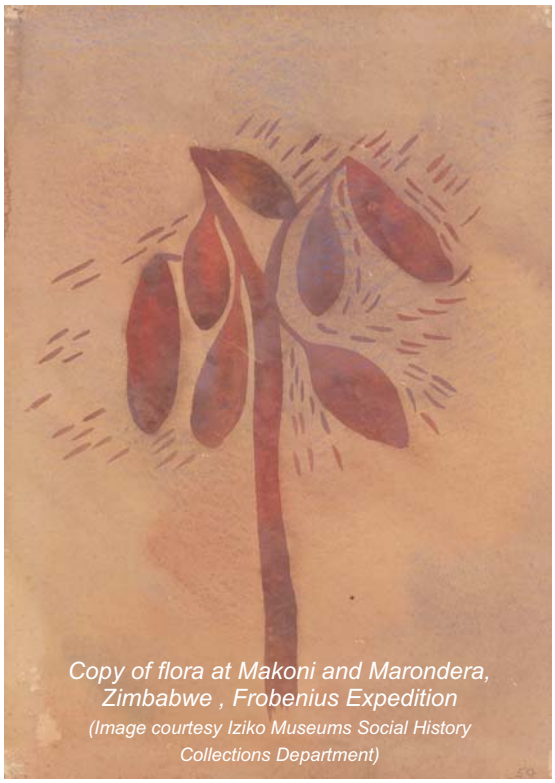
Proteins are made of amino acids. Eight of the 22 amino acids are considered 'essential' as they cannot be manufactured in the human body and must be obtained from food. The human body needs these building blocks in specific ratios: one unit of tryptophan must be present with 3,2 units of lysine and 4,3 units of leucine, and so on. Meat and dairy products most closely duplicate the amino-acid pattern needed by humans, and are often referred to as complete proteins.

Plants also contain protein of equal quality to meat, but virtually all are short in one or two of the essential amino acids, with the result that not all of the amino acids can be utilised. If a food has only half a unit of tryptophan, then the body can use only 1,5 units of isoleucine and two units of leucine, regardless of how much isoleucine or leucine is present. The extra amino acids cannot be stored for a long period of time and so they are burned in the catabolic cycle. If another plant rich in tryptophan were eaten before the leucine was burned off, it could supply the missing amino acid and increase the usable protein. By matching the amino acid strengths and weaknesses of various plants it is possible to produce a protein pattern similar to that needed by man.



MRI scan of the category-specific response to God and animals in the right human amygdala

For instance, mongongo nuts (*Schinziophyton rautanenii*) have been utilised by the |Kung people for at least 7 000 years (Robbins and Campbell 1990). They have been and still are the main plant food in the western Kalahari region, but the nuts are deficient in lysine. Fortunately the foundation of the |Kung subsistence comprises over 100 species of edible plants in their diet (Lee and De Vore 1976), This includes the lysine-rich small white, grey or black seeds of grain amaranths (*Amaranthus hybridus*), commonly known



Copy of flora at Makoni and Marondera, Zimbabwe , Frobenius Expedition
(Image courtesy Iziko Museums Social History Collections Department)

as 'marog' (van Wyk and Gericke 2000). However, all these plants are only available seasonally.

For humans it is therefore difficult to anthropomorphise an assemblage of plants and to incorporate plants into a belief system or religion. Plants just do not pack the same nutritional punch as meat does. You can test that yourself: when you are hungry do you dream of a nice juicy streak or a nice juicy turnip?

Conclusion

The unbalanced nutritional value of plants in conjunction with the anthropomorphic hard-wired brain of modern humans can explain the lack of plant depictions in rock art. Hence one could deduce that the few depictions of plants in rock art are not part of the artists' religion or belief system.

Acknowledgements
We are grateful to Gillian Hawke, Sven Ouzman, Yvonne Viljoen, Andrew Winks and the Iziko Museums Social History Collections Department.

References

Biesele, M. 1993. *Women like meat: the folklore and foraging ideology of the Kalahari Ju/'hoan.* Johannesburg: Witwatersrand University Press.

Epley, N, Converse, BA, Delbosc, A, Monteleone, G, & Cacioppo, J. 2009. Believers' estimates of God's beliefs are more egocentric than estimates of other people's beliefs. *Proceedings of the National Academy of Sciences* 106: 21533

Hay. J. 2009. African rock art and painting. Http://factsanddetails.com/world.php?itemid=1464&catid=56&subcatid=361.

Keysers, C, & Gazzola, V. 2010 Social neuroscience: mirror neurons recorded in humans. *Current Biology* 20: 8.

Lee, RB, & De Vore, I. 1976. *Kalahari hunter-gatherers: studies of the !Kung San and their neighbours.* Cambridge, Mass.: Harvard University Press.

Lewis, CS. 1964. *The discarded image.* Cambridge: Cambridge University Press.

Lewis-Williams, JD. 1996. *Discovering South African rock art*. Cape Town: David Phillip Publishers.

Marshal. L. 1976, *The !Kung of Nyae Nyae.* Cambridge, Mass.: Harvard University Press.

Martin, H. 1957. *The sheltering desert.* London, William Kimber & Co. Ltd.

Mormann, F, Dubois, J, Kornblith, S, Milosavljevic, M, Cerf, M, Ison, M, Tsuchiya, N, Kraskov, A, Quiroga, RQ, Adolphs, R, Fried, I, & Koch, C. 2011. A category-specific response to animals in the right human amygdala. *Nature Neuroscience,* doi:10.1038/ nn.2899.

Ouzman S. 2011. Pretty Potent Plants – San rock paintings of flora and their gendered, medicinal and symbolic importance. Lecture to the South African Archaeological Society, Western Cape Branch, 14 June 2011.

Robbins, LH, and Campbell, AC. 1990. Prehistory of mongongo nut exploitation in the Western Kalahari Desert, Botswana: *Botswana Notes & Records* 22: 37-42.

Sainz, CG. 2002. Main characteristics of Paleolithic cave art in SW Europe. Muse Digital Archiving Frontiers. www.muse.or.jp/spain/eng/caveart3.html

Van Wyk, H-E, and Gericke, N. 2000. *People's plants: a guide to useful plants of Southern Africa.* Pretoria: Briza Publications.

Willcox, AR. 1955. Australian and South African rock-art compared. *South African Archaeological Bulletin*. 14: 97-98.

Woodhouse, HC. 1969. Rock paintings of Southern Africa. *African Arts* 2(3): 47.

ARCHAEOLOGY IN BRIEF

Ice Age painting found in Germany. The University of Tübingen has produced new evidence for an early painting tradition in Central Europe at Hohle Fels Cave in the Swabian Jura of south-western Germany. Dated to about 15 000 years ago, the period is referred to as the Magdalenian. Three of the new paintings show double rows of red dots on limestone cobbles. The paintings are the first examples of painted rocks recovered in Germany since 1998 when Prof. Nicholas Conard's team working at Hohle Fels discovered a single painted rock. Finds of ochre and haematite that were used to make pigments have also been recovered. Although Ice Age cave paintings are well documented in Western Europe, particularly in France and Spain, wall paintings were unknown in central Europe. The painted cobbles from Hohle Fels show very similar motifs. *www.pasthorizonspr.com,10/11/11*

8 500-year-old remains unearthed in Turkey. Researchers excavating in Yesilova Höyügü, the oldest known area of human settlement in Izmir, have discovered fingerprints on clay pots dating back to the Neolithic age. They are thought to belong to children and women. Many other artefacts of this agricultural community are being found, including oil lamps made from animal skins. A bull figure discovered on artefacts is believed to be a cult or patriarchal figure symbolising man. *Anatolia News Agency, 05/09/2011*

ANCIENT PLANT BEDDING FROM SIBUDU, KWAZULU-NATAL

Burning strategies for site maintenance and the first known use of insect-repelling plants

Lyn Wadley

New archaeological finds from the Sibudu rock shelter in KwaZulu-Natal have recently been published (9 December 2011) in the prestigious journal *Science* by me, Christine Sievers, Marion Bamford, Paul Goldberg, Francesco Berna and Christopher Miller. Sibudu is situated 40 km north of Durban and 15 km inland. I have conducted excavations there since 1998. The site has revealed a sequence of Middle Stone Age (MSA) layers preserved within 3 m deep sediments. Single grain optically stimulated luminescence (OSL) ages range from about 77 000 to 38 000 years ago. Artefacts at the site from between 71 000 and 62 000 years ago include deliberately perforated seashells that were probably beads, and a wide variety of bone tools amongst which are awls for working leather and points that may have been arrowheads.

Sibudu excavations in 2011 (Photo: Lyn Wadley)

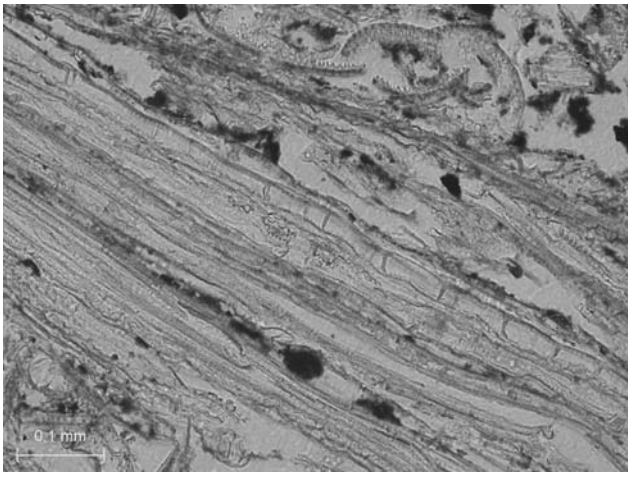
From about 77 000 years ago people living in Sibudu constructed plant floor coverings from sedges and grasses, and topped these with aromatic leaves containing insecticidal and larvicidal chemicals. Plant layers, usually deliberately laid between ancient fireplaces, are called 'bedding' by archaeologists, but they were probably used as both working and sleeping areas. Stone tools and crushed, burnt bone found within the plant layers indicate that several activities took place there. Sedge sleeping mats are woven and used in KwaZulu-Natal even today, but the ancient ones at Sibudu were not woven; they were simply sheaves of sedges and grasses placed directly on the ground. Viewed under the microscope, thin sections of sediment with bedding in them each contain multiple plant layers, with a subsurface of crushed bone and stone, implying that the bedding was regularly refurbished with fresh stems and leaves. In thin section, the finely laminated plant layers seem compressed, probably the result of repeated trampling.

Sibudu's earliest plant bedding predates records of bedding elsewhere in the world by about 50 000 years. At Strathalan B Cave, South Africa, grass bedding is dated between 29 000 and 26 000 years ago, while in Israel at Ohalo II bedding is dated to 23 000 years ago. Most Sibudu bedding layers extend horizontally for at least 1 m, though sometimes up to 3 m across the excavated area. At least 15 plant bedding horizons have been sampled by the geoarchaeologists Christopher Miller from Tübingen University, Germany, and Paul Goldberg who is associated with both Tübingen University and Boston University, USA. Blocks of sediment were cut from the section walls after being secured in gypsum plaster bandages. The blocks were embedded with resin, dried and then cut into thin sections to enable microscopy.

Sibudu sediments showing evidence for the burning of plants (Photo: Lyn Wadley)

Lyn Wadley is with the School of Geography, Archaeology and Environmental Studies and the Institute for Human Evolution, University of the Witwatersrand. Lyn.Wadley@wits.ac.za

Identification of the bedding plants from tangled, broken stems and leaves is not often possible, although the stem of a *Cladium* sp. sedge has been recognised. Grass phytoliths (silica bodies) have been detected in some layers. Christine Sievers of Wits University was able to identify more than 600 charred fruits of sedges, mostly from *Cladium mariscus*. Sedges are wet habitat plants and would not naturally occur inside the extremely dry rock shelter. Nodules of baked riverine clay were recovered within the bedding layers, suggesting that the plants, with clay still adhering to them, were collected by the occupants from the river valley below the rock shelter. Several of these clay fragments contain clear leaf or stem impressions of monocotyledons, e.g. sedges, rushes or grasses. The evidence for bedding at Sibudu is thus multi-stranded and compelling.



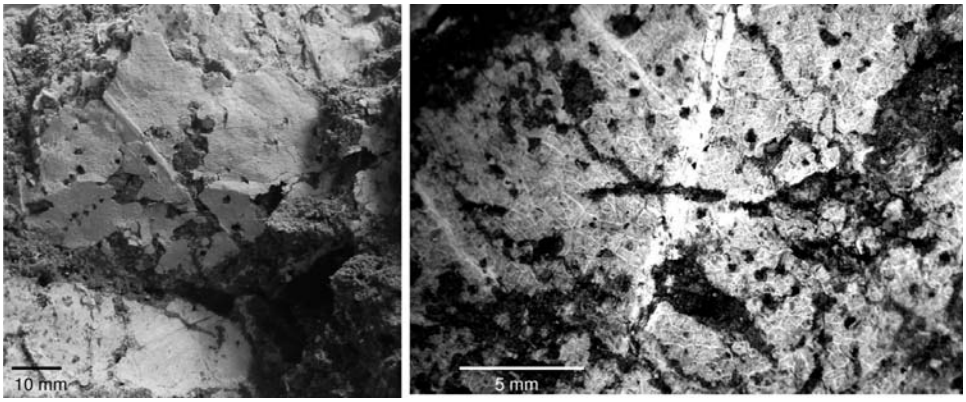
A microscope view of a 77 000–year-old fossil plant from bedding in thin section (Photo: Christopher Miller)

The oldest Sibudu bedding covers an area of about 1 m by 2 m, but it may extend beyond the excavation grid. It includes an unburned, tissue-paper-thin layer of white fossil leaves overlying a thicker layer of grass and sedge leaves and stems. The leaves were excavated from the bedding unit using a surgical scalpel to expose the leaves. Small areas of sediment containing leaf matter were cut so that the leaves were exposed on top of sediment platforms. Gypsum bandages were wrapped around the platforms to form jackets. The platforms were then undercut and the bases of the excised blocks were carefully wrapped with gypsum bandages. Chemical preservatives were not used as these would have masked the anatomical features of the leaves.

Fourier Transform Infrared Spectroscopy (FTIR) performed by Francesco Berna of the University of Boston shows that the leaf tissues were not burned, but were impregnated with opal as a form of fossilisation. The leaves perfectly preserve their original anatomical structures so that they could be identified by Marion Bamford, a palaeobotanist of Wits University. The leaves are all from a single species of tree, *Cryptocarya woodii,* commonly known as Cape wild quince, bastard camphor tree, rooikweper or isililandangulube. Today this tree occurs in forest, woodland, ravines and along streams. Many woody plants grew near Sibudu in the past, as established through charcoal analysis by Lucy Allott of the University College of London and seed identifications by Christine Sievers. It is thus highly unlikely that the *Cryptocarya* leaves represent single-taxon windborne leaf litter. If the wind had blown leaves on top of the sedge bedding, we should expect that many tree species would have been represented there.

Cryptocarya trees are used extensively for traditional medicines. Although *C. woodii* is not as toxic as other South African *Cryptocarya* species, its crushed leaves are aromatic and contain traces of chemicals that have insecticidal and larvicidal properties against, for example, mosquitoes. Mosquito-borne diseases are endemic to many parts of Africa and rural communities still use indigenous plants to repel mosquitoes. No evidence for herbal medicine in the MSA has previously been uncovered, but medicinal plants would have provided advantages for early human health.

The use of insect-repelling plants adds a new dimension to our understanding of behaviour 77 000 years ago. We think that the use of the aromatic *Cryptocarya* leaves repelled insects from this riverine site, thereby helping to prevent disease. Even when mosquitoes are not malaria vectors, their bites can cause infection, and common house flies also cause disease. The protection of small children from biting



Cryptocarya woodii *leaf fragments*
(Photo: Lyn Wadley)

insects would have been especially important for reducing child mortality. The Sibudu finds at such an early period suggest that people used herbal medicines as a form of primary health care, even that long ago.

Beginning at 73 000 years ago, Sibudu's plant bedding was burned, presumably for site maintenance. Burning resulted in carbonisation of the fibrous plant material and the burnt plant layers are easily recognised in sediments and geological thin sections. Bedding, which incorporated food waste because people ate on their beds, would have attracted pests of many kinds – insects and probably rodents – and burning the plant material would have been a quick and effective way of cleaning up decaying organic material, killing pests and preparing the shelter for re-occupation.

A geological thin section from Sibudu *(Photo: Christopher Miller)*

Hunter-gatherer sites are normally abandoned, rather than cleaned, when they become fusty. The implication of burning bedding together with its accumulated garbage is that people wanted to re-use Sibudu

Modern sedges being reaped on the uThongathi River near Sibudu. The sedges will be used to make sleeping mats *(Photo: Lyn Wadley)*

regularly, indeed, more often and with less delay than would have been allowed by the natural processes of decay. Burning bedding would have enabled people to re-use the site almost immediately. This may be one of the reasons for the site being heavily occupied at 58 000 years ago; people could stay on at the site by cleaning it quickly with fire.

By 58 000 years ago bedding construction, burning, and other forms of site use and maintenance intensified, suggesting that people's settlement strategies in the area changed. Intensified occupation at 58 000 years ago may have resulted from longer visits, more visits or visits by larger groups than previously. While we cannot confidently adjudicate between these possibilities, population fluctuations are known to have occurred in Africa during the periods when Sibudu was occupied. Both genetic and phenotypic (skull) data indicate that at some time after 80 000 years ago human populations went through bottlenecks (severe population reductions), isolations and subsequent expansions within and out of Africa. One such expansion occurred at about 58 000 years ago, and this seems to be supported by the archaeological evidence from Sibudu.

WORLD ARCHAEOLOGY

15 000-year-old rock art discovered in Egypt

Belgian scientists working with Yale University have discovered the oldest petroglyphs in Egypt and the earliest-known rock art in North Africa. Using optically stimulated luminescence, the team has demonstrated that the petroglyphs are at least 15 000 years old. The site is situated near Qurta, about 40 km south of Edfu. The rock art is essentially characterised by hammered and incised naturalistic-style images of aurochs and other wild animals. On the basis of their intrinsic characteristics, patination and degree of weathering, as well as the archaeological and geomorphological context, these petroglyphs have been attributed to the Late Pleistocene, specifically to the Late Palaeolithic Period (roughly 23 000 to 11 000 years ago).

Since the rock art of Qurta is stylistically so similar to what is discerned in Ice Age Europe at about the same time, the researchers considered whether a direct influence or cultural exchange over such a distance was possible. Finds of Pleistocene rock art in southern Italy and Sicily bear analogies to the Egyptian rock art and at a coastal cave in Libya similar naturalistic images of aurochs have been found. Since the level of the Mediterranean Sea at the time was at least 100 m lower than it is today, it could be possible that Palaeolithic people established an intercontinental exchange of iconographic and symbolic concepts. *Antiquity, December 2011*

IDENTIFYING THE REMAINS OF BEEHIVE HOUSES AFTER A FIRE
Examples from KoBulawayo, Zimbabwe

Paul Hubbard and Rob Burrett

KoBulawayo, or Old Bulawayo, was one of Ndebele King Lobengula Khumalo's most important royal towns. Built in 1870, the core area of the site was over 500 m in diameter and was at certain times of the year home to a large population. It was burnt down on Lobengula's orders in 1881.

Between 1996 and 2000, an extensive research and restoration programme was initiated by National Museums and Monuments of Zimbabwe (NMMZ) and the University of Birmingham with a view to developing the site as a cultural centre and tourist attraction. Several traditional beehive houses were built, the original wagon shed was restored and the king's house was rebuilt. All of this was based on an informed combination of archaeological, historical and ethnographic evidence to ensure authenticity (Muringaniza 1998).

Within Zimbabwe the knowledge of building beehive houses was extinct and specialists were brought in from KwaZulu-Natal in South Africa to instruct and train NMMZ employees and members of the local community in the necessary techniques so that any future building or repair could be done locally (Muringaniza 1998).

Fig. 1: The reconstructed beehive houses at KoBulawayo in better days

Fig. 2: The gradual decay of the beehive houses. Note the missing thatching grass lower down caused by cattle grazing.

Fig. 3: The circular pile of ash just after the fire

The remains

In total eight beehive houses were built (Fig. 1), some covering original clay floors found during geophysical surveys and later exposed through excavation (Hughes 2005). The materials used to build the houses included partially treated wattle sapling withies sourced from Zimbabwe's Eastern Highlands for the framework, local thatching grass, and wound grass (*uswenyana*) and bark ropes (*amajilo*) for tying the thatching grass to the framework. As the structures aged, the roofs of some of the larger houses began to sag, and in several cases additional eucalyptus poles were inserted at their centres for support. Over the years the site suffered from unfortunate institutional neglect and the ravages of time thus took their toll – natural decay, insect attack and damage by cattle. By August 2010 most of the beehive houses were in a dilapidated state (Fig. 2).

In that month a massive bush fire swept through the area surrounding the site, eventually burning out a 300 km^2 area (pers. obs.). Despite firebreaks having been burnt around the restored koBulawayo site and attempts by the resident custodians at fire fighting, the strong winds carried burning embers into the very heart of the site, igniting the structures (*The Chronicle*, 26 August 2010, 3). The resulting blaze was fierce and hot and the houses and most other structures at the site were reduced to ashes within minutes.

Initially, each burnt beehive house site was marked by a circular pile of ash, higher at the outer edges than in the middle (Fig. 3). Subsequent rain, wind and animal

Paul Hubbard is an independent researcher in Bulawayo, Zimbabwe. hubcapzw@gmail.com
Rob Burrett is an environmental and heritage consultant in Bulawayo, Zimbabwe. projects@khami.co.zw

movements scattered the ashes, leaving behind very little evidence of the existence of the structures.

On a visit to the site in March 2011, we noticed something that may prove to be of benefit to researchers struggling to identify the locations of usually ephemeral burnt-down grass and pole built structures. These pseudofacts seemed to be unusual clay features lying on top of the clay floors. Several long clay tubes, pitted and crumbling, were present (Fig. 4). It is clear that they represent the work of termites that, before the fire had worked its way into the withies of the framework, were eating their way steadily up the inside of each pole, replacing the woody tissue with soil. When the devastating fire swept through the site it baked the soil in the withies, hardening it and leaving behind these unusual tubes clustered around the original outer perimeter of the structures.

It was informative to see how the larger, central support poles were also termite–eaten, but in these cases the clay formed broader, less dense and more crumbly pseudofacts (Fig. 5). Most of these had already fragmented at the time of our visit so they are unlikely to remain present for any period of time.

Fig. 4: The baked remains of the clay interior of the wattle withie framework

Discussion

The presence of these pseudofacts is, we believe, a useful indicator of typical beehive houses. They are markedly different from the well-documented pole-impressed daga fragments that result from the destruction of the more common clay cylinder-type traditional houses. For archaeologists, grass structures are more ephemeral since they leave little behind. We hope that this observation will prove useful in a current study of Ndebele archaeology, including changes in traditional architecture, being pursued by the first author. We wish to share this observation with other researchers investigating similar structures.

References

Hughes, G (ed.). 2005. Survey and excavation at KoBulawayo 1996-2000. Unpublished report, Birmingham University Field Archaeology Unit, Birmingham University, Birmingham.

Muringaniza, SJ. 1998. Community participation in archaeological heritage management in Zimbabwe: a case study. Unpublished MPhil thesis, University of Cambridge.

Fig. 5: The baked clay remains of a central supporting pole showing the difference to that of the wattle withies

WORLD ARCHAEOLOGY

Arabian find may rewrite Out of Africa theory

Newfound stone artefacts suggest that humans left Africa by travelling through the Arabian Peninsula instead of hugging its coast.

As reported in *PLoS ONE*, stone artefacts at least 100 000 years old from the Arabian Desert hint that modern humans might have begun their march across the globe earlier than once suspected. More than 100 newly discovered sites in the Dhofar Mountains of Oman apparently confirm that modern humans left Africa long before genetic evidence suggests. These sites are located far inland, away from the coasts.

The artefacts are of Nubian Middle Stone Age style, dating back 74 000 to 128 000 years. This is the first time such tools have been found outside Africa. From optically stimulated luminescence dating the artefacts are estimate at about 106 000 years old. When these tools were made, Arabia was very wet and rich in resources – large game, plentiful fresh water and high-quality flint for stone tool production.

It remains a mystery how early modern humans from Africa crossed the Red Sea, since they did not appear to enter the Arabian Peninsula through the Sinai Peninsula. *Live Science, 30/11/2011*

DISCUSSION

MEGAMIDDENS AND MEGAMYTHS

John Parkington

In the August 2011 edition of *The Digging Stick* 28(2) Antonieta Jerardino described one of a series of very large shell middens along a particular part of the Cape west coast. Such 'megamiddens' are situated almost exclusively between Elands Bay and Lamberts Bay. Rightly she noted that these middens are remarkably large by any standards and in several cases probably comprise some 10 000 m^3 of fairly dense shell midden. Almost always, they lie opposite rocky mussel-rich localities. There are about ten of them, well dated to the short period between about 3 200 and 1 800 years ago. Two points in her introductory paragraph, however, are misinformed and misleading. I would like here to correct these views.

She wrote: 'The coming about of these unique sites have (sic) recently been explained by rising human population densities, longer residential permanence after 3500 years BP and successive reformulations of hunter-gatherer subsistence choices'. This is followed by: 'For instance, isotopic studies conducted on West Coast human skeletal remains and zooarchaeological analyses strongly suggest that a substantial amount of forager diet was at this time derived from marine resources'. Neither of these statements can be justified.

If the megamiddens evince but a part of the dietary intake of foragers at the time, do they reflect any level of permanence and do they indicate higher (than before and after) population densities? Megamiddens contain such low densities of stone tools and animal bones that it is hard not to believe they were essentially shellfish processing stations strategically placed next to rich mussel-bearing intertidal platforms. The high levels of ash and charcoal surely reflect the fire-based drying of mussel flesh for storage and transport inland.

The massive deposits in megamiddens are so different from the unquestionably residential residues in contemporary cave occupations and in earlier and later middens both in caves and in the open that it is parsimonious to regard them as essentially processing waste. In the megamiddens there are few, if any, domestic fireplaces, extremely low densities of food waste or artefactual debris and no signs of domestic site structure. Is it because they are so large that they imply 'rising population densities' and 'longer residential permanence'? As I show here, they are *not* explained this way.

The megamiddens are impressively large, but cannot reflect the diet of the seven people (see below) buried along the adjacent coastline while they were forming. If they are the debris of logistical visits sited and timed to collect, dry and transport black mussel flesh, the large size simply reflects the size of the resource obtained rather than signifying anything about population size or the permanence of local residence. Residential permanence among hunting and gathering people is known, but is ethnographically almost always marked by the presence of storage facilities, housing structures, specialised artefacts and other social and burial associations, all of which are completely undocumented at megamidden sites.

As Jerardino has herself reported, the megamiddens are composed of about 95 per cent black mussel shell with very few animal bones, those found being largely from marine forms. Nearby contemporary cave deposits (at Steenbokfontein, Elands Bay Cave and Panchos Kitchen Midden) have higher faunal and artefactual densities, but are extremely small in volume by comparison, never amounting to more than 50 m^3. There are as many megamiddens as there are very small cave deposits in this particular space and time frame.

The implication of this pattern appears to indicate that some 90 per cent or more of dietary residue in the megamidden period results from marine food consumption. Apart from reflecting an unusually monotonous diet, this level of marine food consumption is (contra Jerardino) completely at odds with the isotope readings on contemporary human skeletal remains. Because stable carbon isotope readings on bone collagen reflect protein intake, a diet consisting of 90 per cent marine shellfish, seals, fish and birds should result in extremely enriched per mille values. The seven readings available between 1 800 and 3 200 years ago from the coastal stretch where megamiddens occur range between -11,9 and -16,6 per mille with an average of -13,7, reflecting a mean terrestrial protein intake of between 35 per cent and 45 per cent. This pattern is completely at odds with the content of the contemporary archaeological record and must indicate a considerable intake of terrestrial protein not reflected in coastal sites. It appears inescapable that this was obtained whilst people were away from the coast. Isotope studies do *not* 'strongly suggest that a substantial amount of forager diet was at this time derived from marine resources'.

In an analogy with the Kalahari San, the gathering and consumption of mongongo nuts, as described by

Professor John Parkington is with the Archaeology Department, University of Cape Town. john.parkington@uct.ac.za

Continued on page 14

INTERACTION STUDIES
A rich field for san rock art research

Pieter Jolly

In the last 35 years or so there has been a revolution in rock art studies stemming largely from the work of researchers such as Harald Pager, Patricia Vinnicombe and David Lewis-Williams. To understand the symbolism of the art, these researchers drew on ethnographic material derived from studies of the mythologies, religious beliefs and rites of the most geographically and culturally isolated Kalahari San groups, as well as on texts that recorded these aspects in 19th century San groups from the Northern Cape and Maloti. This was an immensely fruitful exercise and rendered deep insights into the worldviews of the artists and their paintings. We now know that the art is essentially religious in nature, inspired largely by the dream and trance experiences of San shamans.

Working within a paradigm based on ethnographic analogy, researchers were able to demonstrate parallels between many of the religious beliefs and rites of existing and extinct San groups, such as the 20th century Kalahari groups studied by anthropologists such as Megan Biesele, Richard Katz, Richard Lee, Matthias Guenther and others, and 19th century groups whose testimonies were recorded by Wilhelm Bleek, Lucy Lloyd and Joseph Orpen. This strongly suggested that a 'pan-San' religious complex existed amongst many, very probably most, San groups. Although separated from each other both in space and time, these groups were nevertheless shown to hold certain core religious beliefs and rites in common. With this established, researchers were able to use ethnographic material from San informants in the northern Cape and the Kalahari, despite the fact that the San had little or no memory of the rock art tradition, to decode the symbolism of San paintings in areas as distant from the informants as the south-eastern mountains and the south-western Cape.

However, if there was a weakness associated with this method it was that it drew almost exclusively on the ethnography of San groups that not only had no knowledge of the painting tradition, but also were or were believed to be culturally isolated from other non-San groups and could therefore not have been influenced culturally or otherwise by such groups. The dominant paradigm, therefore, was based on the premise that societies and cultures of San artists, and societies and cultures of the northern Cape, Kalahari and Maloti San whose ethnography was used to elucidate the symbolism of the art, were essentially alike in their 'San-ness' and had remained largely unchanged over time. The corollary to this is that regional differences in San societies and belief systems, because of the variable impact of other groups and their cultures on those of the San, were not taken into account when studying the symbolism of the art.

This begged the question as to whether it would be viable to draw on the ethnography of culturally isolated San groups to interpret the symbolism of paintings produced by San who had experienced intensive contact with other groups, and whose cultures had changed as a result of the adoption and/or syncretisation of aspects of the belief systems and rites of immigrant groups. How similar, for example, was the worldview of a Kalahari San or far-northern Cape informant who had had minimal (often antagonistic) contact with other cultural groups to the worldview of a south-eastern San painter whose group had traded, raided and intermarried with Nguni and Sotho peoples? Could the testimony of the former be used to interpret the religious symbolism of paintings produced by the latter? In the view of some researchers this seemed to be problematic.

Even though the consensus was, and remains, that most of the art was produced by San whose beliefs and rites had been largely, or almost totally, unaffected by other groups, there still remained a substantial corpus of art that was produced in the contact period and whose production could well have been affected by interaction between the San and other peoples. Importantly, included in these paintings was at least one that had been commented on by Qing, a 19th century San man who had had extensive contact with the Phuthi, an Nguni-Sotho group.

Fig. 1: People depicted with dress and weaponry typical of Nguni people capture a mythical rain animal while in trance. After Vinnicombe (1976: Fig. 240).

Pieter Jolly is an Honorary Research Associate, Department of Archaeology, University of Cape Town. pjolly@xsinet.co.za

Fig. 2: A rock painting from Lesotho, commented upon by Qing, that appears to depict Sotho or Sotho-San people. Note their knobbed headdresses, almost certainly the inflated gall bladders of animals, that are also worn by most of the people depicted in Fig. 1 and by the Sotho warrior depicted in Fig. 3. After Lewis-Williams (1981: Fig. 9d).

Fig. 3: Sotho warrior with characteristic shield and with knobbed headdress

Qing's testimony to Joseph Orpen has been widely used to interpret many paintings in the south-eastern mountains and adjacent areas. For a long period it was assumed by researchers working within the existing paradigm that all Qing's remarks on the symbolism of San paintings were, like the art itself, characteristic of the expression of San religious concepts. Was this in fact the case, or had Qing and some of the San artists in the contact period been exposed to the cultures of non-San groups? If so, had some of the religious beliefs and rites of Qing and other painters changed in response to their exposure to Nguni and Sotho rites and beliefs?

We needed to know whether some or most of the paintings produced by the contact-period artists expressed a religious symbolism that was in essence characteristically San, or whether they expressed in whole or part Nguni and Sotho beliefs and rites, syncretised in some cases with existing San beliefs.

The challenge was to understand the more diverse and fractured history of contact between San and non-San groups, in particular the long history of contact between San and the Nguni/Sotho. Social and cultural change would have occurred within San groups over time without cultural contact, but change would have accelerated greatly when the San began to interact with new groups. It was particularly important to research more fully the history of contact between the San painters of the south-eastern mountains and adjacent areas in order to establish the kinds of relationships that came to be established between the San and other groups, and the impact of symbiotic relationships on the religious rites and beliefs of some of the later San painters in particular. For cultural transmission to have occurred from the San to the Nguni/Sotho and vice versa, close symbiotic relationships need to have existed between the groups since one is unlikely to find cultural transmission between groups that are in a state of conflict.

Interaction studies in other parts of Africa and the world have indicated that there was usually a two-way flow of religious ideas and practices between hunter-gatherers and immigrant agropastoralists or pastoralists that were in symbiotic contact with each other. Almost invariably, however, it was shown that the flow was stronger from the farmers' cultures to those of the hunter-gatherers. Unlike the situation in larger groups with institutionalised, hierarchical religious structures that were protected against change by those who held power within these structures, less-hierarchical, smaller hunter-gatherer groups like the San were always open to change and many freely incorporated elements of other groups' rites and beliefs into their own, either in whole or in part.

What was not known, however, before the onset of studies that focused expressly on interaction between the south-eastern San and southern Nguni and Sotho communities, was the full extent of the symbiotic relationships that were established between these groups. John Wright's and Patricia Vinnicombe's valuable and detailed studies have shown that close relationships based on the raiding of livestock certainly had been established between these groups in the 19th century, but the general belief that conflict dominated such interaction remained. The focus of Wright's 1971 research, for example, was on the later San's conflict with stock-keeping peoples, rather than on the many bonds that they forged with some of these groups.

In fact, what was discovered when these relationships, which went back much further than the 19th century, were investigated in depth was that, aside from many conflictual relationships, numerous close and symbiotic relationships were established between Nguni and Sotho groups and the south-east-

ern San. Some groups like the Mpondomise intermarried with the San for hundreds of years and many Sotho and Nguni chiefs had San wives who produced San-Sotho/Nguni children, thus creating blood ties. As suggested by archaeological data, trading relationships were established at early dates. The movement of European farmers and their livestock into the areas occupied by the San, Nguni and Sotho also resulted in the formation of many close relationships based on joint raiding expeditions on the new settlers although the San had probably co-operated with individual Nguni and Sotho chiefs in raids on the cattle of other chiefs for a very long time before the arrival of European farmers.

There are even records of San 'regiments' allying themselves with Sotho groups in battles against fellow Sotho groups. And most later San groups of the Maloti-Drakensberg and adjacent areas were multi-ethnic with a San core, or appear to have forged entirely new, multi-cultural identities. All these factors would have created the conditions for cultural transmission between the San and Nguni/Sotho groups, as well as fostering the formation of mixed, creolised San/Nguni/Sotho groups with hybrid cultures that combined and re-formed elements of the cultures of the mother groups.

What these insights meant was that a fresh look needed to be taken at the cosmologies of those later San painters whose groups had been in close cultural contact with Nguni and Sotho farmers in order to assess whether and how the rites and beliefs of these painters had changed as a result of this interaction. Since some San and Nguni/Sotho were documented as having lived together in mixed groups, either within territories largely occupied by the Nguni or Sotho, or in territories largely occupied by the San, it seemed worthwhile focusing on the processes of creolisation and religious syncretisation that we would expect to result from these situations.

Were some of the paintings produced by San heavily influenced by Nguni/Sotho religious beliefs and rites, or by Nguni or Sotho people living within San societies but retaining strong Nguni/Sotho beliefs, or by people of mixed San/Nguni/Sotho descent whose cultures represented a 'blend' of different cultural beliefs and rites and who had formed new ethnic identities? Were the domestic animals introduced by Nguni and Sotho groups, like cattle, in some cases substituted for traditional animal symbols of power, like the eland, in San art? Did some of these new animals depicted in the art express the religious (ancestral) symbolism associated with them in Nguni and Sotho societies? And were certain elements in the art that resonated with the cultures of both the San and Bantu-speakers, such as serpents and rain-animals, given greater emphasis in the contact period?

Other questions related to contact, but unrelated or less directly related to cultural transmission, also needed to be explored. What was the impact, for example, on relations within San groups, and the art itself, of the rise of the political power of shamans within the contact period? Were the changes in San society as creolisation progressed expressed in changes in the body form of some of the individuals depicted in the art? Were some of the last rock paintings to be produced done by groups that had little or no connection with the San and the older tradition?

These are just some of the questions that researchers have sought to answer with regard to cultural interaction over the last 20 years or so, quite apart from the many questions relating to the symbolism of the numerous paintings produced by San artists who were unaffected by contact. Researchers such as Simon Hall, Colin Campbell, Francis Thackeray, Frans Prins, Jannie Loubser, Thomas Dowson, Sven Ouzman, Geoff Blundell, Lara Mallen, Sam Challis, Leila Henry and myself have all looked at the rock art of the south-eastern mountains within the context of this new paradigm. It has become an important and fruitful area of research.

While different approaches have often been followed, and while a few researchers have taken the extreme line of arguing that cultural flow was entirely from San to Nguni/Sotho groups, almost all agree that symbiotic interaction between San and Nguni/Sotho was far more extensive than was previously thought. This would have brought about changes in the membership and cultures of San societies, as well as in the overt and underlying symbolism of some of the contact period art. The challenge is to build on this realisation and investigate the multiple ways in which the establishment of these symbiotic relationships would have affected the rock art tradition of the south-eastern San.

Suggested reading

Blundell, G. 2004. *Nqabayo's Nomansland: San rock art and the somatic past*. Uppsala: Department of Archaeology and Ancient History, Uppsala University.

Botha, LJ, and Thackeray, JF. 1987. A note on southern Africa rock art, medicine men and Nguni diviners. *South African Archaeological Bulletin* 42: 71-73.

Campbell, C. 1987. Art in crisis: contact period rock art in the south-eastern mountains of southern Africa. MSc. Thesis. University of the Wiwatersrand.

Challis, W. 2008. The impact of the horse on the Amatola 'Bushmen': new identity in the Maloti-Drakensberg mountains of southern Africa. PhD Thesis. University of Oxford.

Dowson, TA. 1994. Reading art, writing history: rock art and social change in southern Africa. *World Archaeology* 25(3): 332-345.

Hall, SL. 1994. Images of interaction: rock art and sequence in the eastern Cape. In Dowson, TA, and Lewis-Williams, JD (eds), *Contested images: diversity in southern African rock art research*. Johannesburg: Witwatersrand University Press, 61-82.

Henry, L. 2010. Rock art and the contested landscape of the north-eastern Cape, South Africa. MA Thesis. University of the Witwatersrand.

Jolly, P. 1994. Strangers to brothers: interaction between south-eastern San and southern Nguni/Sotho communities. MA Thesis. University of Cape Town.

Jolly, P. 1996. Symbiotic interaction between Black farmers and south-eastern San: implications for southern African rock art studies, ethnographic analogy and hunter-gatherer cultural identity. *Current Anthropology* 37(2): 277-305.

Jolly, P. 2007. Before farming? Cattle kept and painted by the south-eastern San. *Before Farming* (online version) 4, article 2.

Lewis-Williams, JD. 1981. *Believing and seeing: symbolic meanings in southern San rock paintings*. London: Academic Press.

Loubser, J, and Laurens, G. 1994. Depictions of domestic ungulates and shields: hunter/gatherers and agropastoralists in the Caledon River valley area. In Dowson, TA, and Lewis-Williams, JD (eds), *Contested images: diversity in southern African rock art research*. Johannesburg: Witwatersrand University Press: 83-118.

Mallen, L. 2008. Rock art and identity in the north-eastern Cape Province. MA Thesis. University of the Witwatersrand.

Manhire, AH, Parkington, JE, Mazel, AD, and Maggs, TMO'C. 1986. Cattle, sheep and horses: a review of domestic animals in the rock art of southern Africa. *South African Archaeological Society Goodwin Series* 5: 22-30.

Ouzman, S. 1995. Spiritual and political uses of a rock engraving site and its imagery by San and Tswana-speakers. *South African Archaeological Bulletin* 50: 55-67.

Ouzman, S. 2003. Indigenous images of a colonial exotic: imaginings from Bushman southern Africa. *Before Farming* 2003: 239-256.

Prins, FE. 1990. Southern Bushman descendants in the Transkei: rock art and rainmaking. *South African Journal of Ethnology* 3: 110-116.

Prins, FE. 1994. Living in two worlds: the manipulation of power relations, identity and ideology by the last San rock artist in Tsolo, Transkei, South Africa. *Natal Museum Journal of Humanities* 6: 179-193.

Thackeray, JF. 1993. New directions in the study of southern African rock art. *Critical Arts* 26(1): 74-75.

Vinnicombe, P. 1976. *People of the eland: rock paintings of the Drakensberg Bushmen as a reflection of their life and thought*. Pietermaritzburg: University of Natal Press.

Wright, JB. 1971. *Bushman raiders of the Drakensberg 1840-1870: a history of their conflict with stock-keeping peoples in Natal*. Pietermaritzburg: University of Natal Press.

MEGAMIDDENS AND MEGAMYTHS

(Continued from page 10)

Richard Lee, I have suggested that mussel extraction along the West Coast at this time was a logistical behaviour embedded in an essentially residential settlement strategy. Kalahari people gather mongongo nuts in the groves and transport them elsewhere where they share and consume them with their relatives and neighbours. No one would assume, if we had an isotopic mongongo nut consumption indicator, that a high value would imply 'longer residential permanence', but simply a high consumption, wherever that took place. Extraction, processing, consumption and discard do not always take place at the same location. Neither very large shell middens, nor very enriched isotope readings have any necessary connection to long-term coastal residence. It's about time that we all recognised this.

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

Part 1: REAL OR NON-REAL?

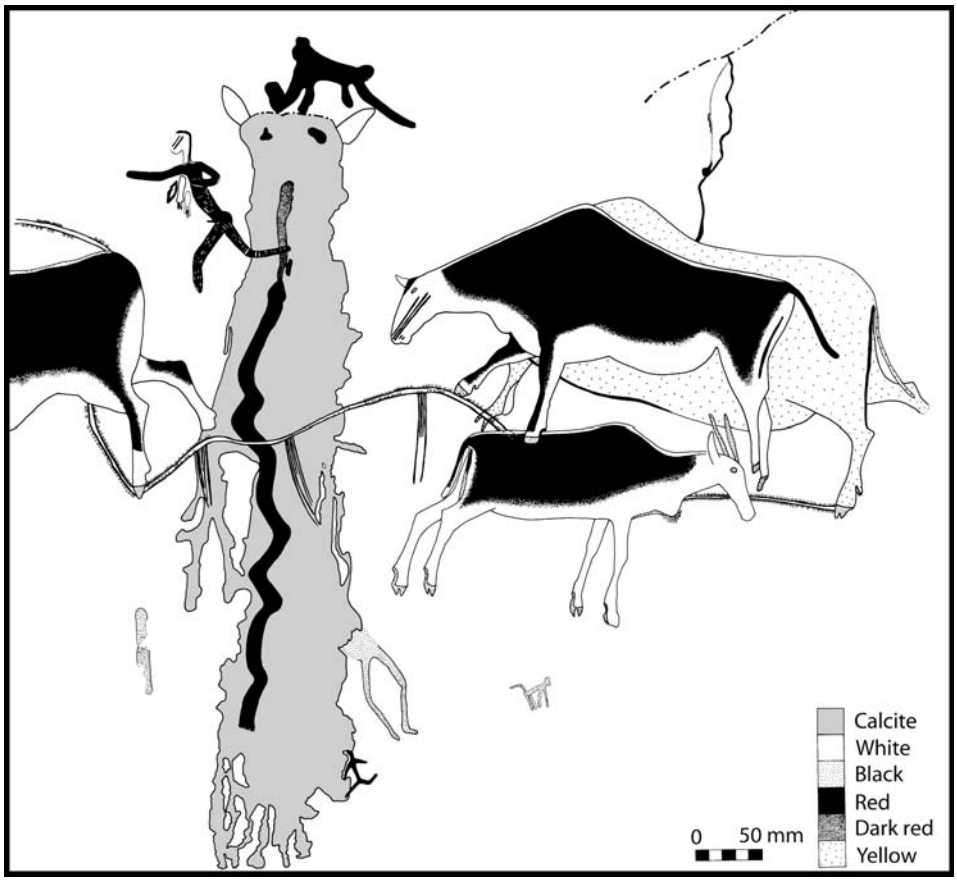
David Lewis-Williams

It has long been recognized that some San rock art images depict non-real creatures and beings. Among the best known are 'rain-animals' and the antelope-headed human figures that frequently have hoofs instead of feet. At the same time, many images appear to be completely realistic. These include the beautiful depictions of antelope that do not seem to be in any way distorted or unreal. It is hard for many Westerners today not to assume that the 'bottom line' of any set of images is that they are simply pictures of real things – unless they are in some way strange or distorted. As a result of this assumption some researchers have concluded that a comparatively small percentage of San images depict 'spiritual' beings, while the rest are merely pictures of daily life observable in the veld or camp.

This conclusion is logically flawed and can, moreover, be shown to be wrong by simple observation. Logically, it is necessary only to point out that there is no reason why depictions of spiritual beings should not appear to be utterly realistic. Indeed, they often are in Western art.

More interesting are the readily observable ways in which the San linked non-real images to realistic images. One of the most striking of these links involves the depiction of 'threads of light' – the 'ropes to God' that San ritual specialists report seeing when participating in a trance dance. In southern San art, painted 'threads', often fringed with white dots, wind their way through expanses of images. In some instances, apparently realistic people are shown dancing, walking or gliding along these 'threads' or – even within the same group – holding them as if they were ropes. Importantly, the painted 'threads' enter and leave otherwise completely realistic depictions of antelope or connect them in other ways, such as by wrapping around their legs. These 'threads' imply that the antelope, despite their apparent reality, are in fact in a spiritual context.

In numerous instances, a 'thread of light' penetrates a realistic antelope, while immediately next to it other – equally realistic – antelope are not connected to the 'thread'. Are we to assume that only the one penetrated antelope is spiritual, while the others, though clearly part of the same painted group, are merely animals walking in the veld? *(Continued on page 19)*



In this portion of an Eastern Cape panel (±21 m x 2,2 m), apparently realistic eland are associated with a 'thread of light'. Above the superimposed eland on the right a thin red line extends up and into a ledge in the rock face. On the left a natural white calcite run that emerges from a crack in the rock has been transformed by the addition of white ears, red eyes and a long red, partially zigzag line: the 'face' looks out of the rock. Both the man in the upper left and the eland on the right have 'blood lines' on their faces and the 'thread' also appears to bleed. For a fuller analysis see Lewis-Williams & Pearce (2009).

Professor Emeritus David Lewis-Williams is a former director of the Rock Art Research Institute at Wits University and is now a mentor in that institute. david@rockart.wits.ac.za

NEW PERSPECTIVES ON STONE-WALLED TIDAL FISH TRAPS ALONG THE SOUTH-WEST CAPE COAST

Phillip Hine

Stone-walled tidal fish traps are a well-known feature along the southern Cape coast and are thought to be of considerable age. They mainly occur between Hermanus and Mossel Bay (Fig. 1), with the highest densities recorded at Cape Agulhas, Arniston/Skipskop and Still Bay, where they are still being maintained and used for fishing. These structures consist of stone-walled enclosures that are submerged at high tide, enabling fish to swim into them. The catch is then corralled when the tide recedes and is gathered by netting or spearing.

Goodwin (1946) was the first archaeologist to propose that fish traps may have been used by pre-colonial Khoe-San. This suggestion was based on his observation that mid-Holocene occupational layers at the Oakhurst Rock Shelter contained more fish bones than earlier layers, and he speculated that perhaps these fish had been caught in tidal traps. More recently, archaeologists Avery (1975) and Poggenpoel (1996) suggested a pre-colonial age for the traps, but this was mostly based on relatively imprecise evidence such as sea-level data and a loose interpretation of the fish assemblage from Nelson Bay Cave. The idea that the traps are 'ancient' was further popularised by a well-illustrated Marine and Coastal Management information board that depicts fish trapping as part of traditional Khoe-San life. The South African Heritage Resources Agency (SAHRA) also displayed some of the south coast fish traps in its 2007 annual calendar, and reflected on its long history.

In recent years researchers have mapped the distribution of fish traps and recorded the numbers and species of fish caught. Up to 8 000 haarders have been reported in a single trapping event (Haddad 2003).The age of the traps is more difficult to establish since the stone walls cannot be dated directly. I therefore excavated a number of shell middens situated in close proximity to fish traps, hoping to find fish bone from species frequently caught in this way. Radiocarbon dating of this bone would, I had hoped, help to establish when the traps were first used (Hine 2008; Hine et al. 2010).

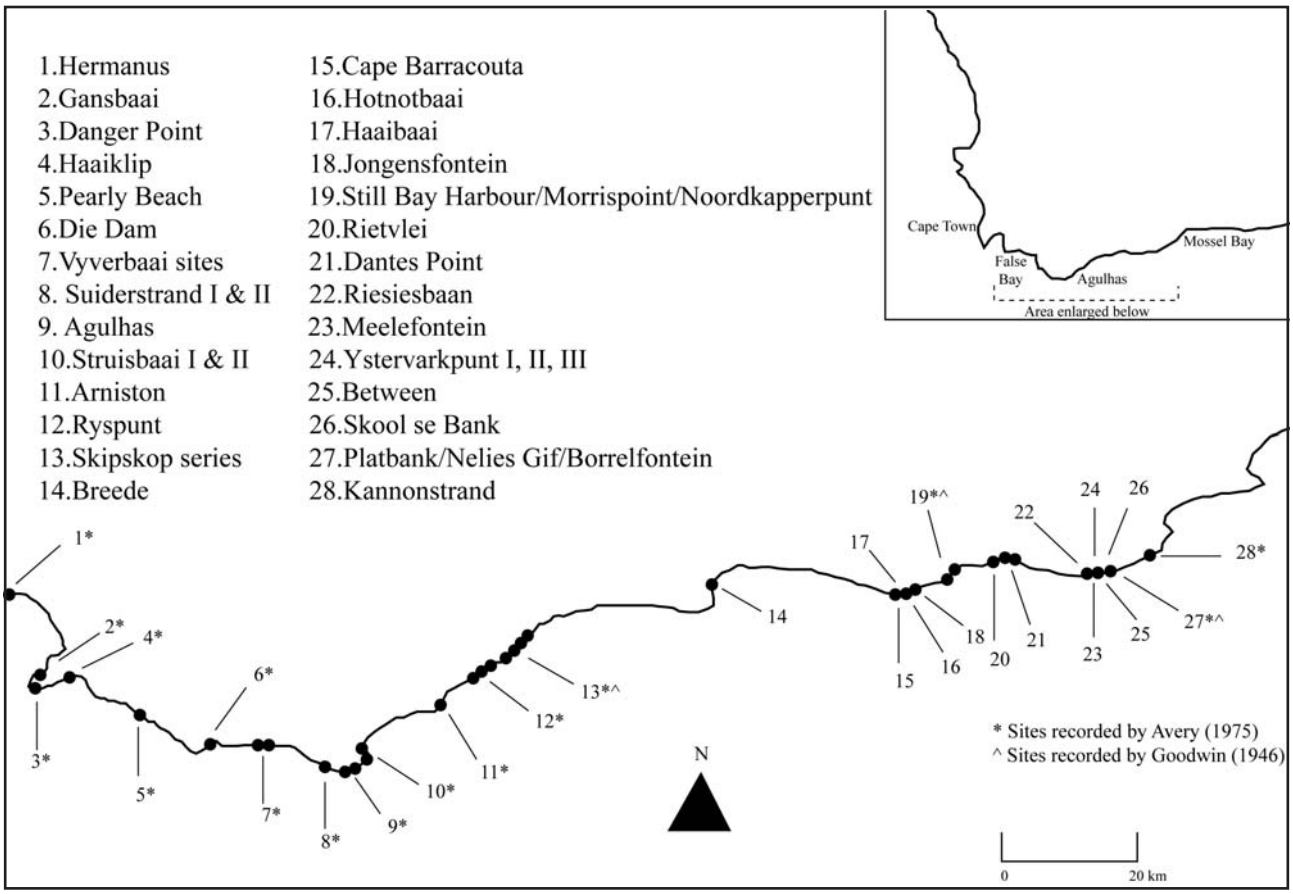


Fig. 1: The distribution of fish traps along the south coast of South Africa

Phillip Hine is with the South African Heritage Resources Agency in Cape Town. phine@sahra.org.za

Fig. 2: An aerial view of stone-walled fish traps at Noordkapperpunt, Still Bay

A range of fish species can be caught in fish traps, but the traps are mainly geared towards shoaling species of the Mugilidae family, in particular the southern mullet and flathead mullet, locally known as haarders. These species are usually found around coastal rocky points and sandy beaches, and can attain sizes of between 400 mm to 800 mm (Van der Elst & King 2006). Both species are known to enter estuaries. In the Western Cape, the southern mullet is a traditional delicacy that is normally salted, dried and sold as *bokkoms*. This is a good way of preserving the large quantities of fish where a whole shoal enters a trap. During historical times the minimum period for the sun-and-wind drying of fish in the southern Cape was between four to five days in good weather conditions (Tothill 1899). Today the process of making *bokkoms,* including salting and drying, can take up to two weeks (Anon 2005).

Research area

The areas that were chosen for archaeological investigation are famous for their well-preserved fish traps. The first, Vyverbaai, which forms part of the farm Paapkuil Fontein 281 near Cape Agulhas, is known to have been used for fishing during the haarder season in the late 19th and early 20th centuries. The English translation of Vyverbaai is Fish Trap Bay. The second area was Still Bay, which is famous for its complex and well-preserved fish traps at Noordkapperpunt (Fig. 2). These traps are still being actively fished by the Still Bay locals. Marine and Coastal Management have recently tried to regulate the practice since they believe that people regularly take out species that are currently being overfished.

Both areas have well-preserved shell middens, located in close proximity to the fish traps, providing the perfect opportunity to explore this issue. Four shell middens, chosen because of their proximity to fish traps and good site preservation, were excavated at Vyverbaai. A wide area was surveyed adjacent to the Noordkapperpunt fish traps for potential shell midden sites that could be excavated. However, those identified had shallow surface deposits with no visible fish bone. The contents of two previously excavated middens were therefore analysed. These were located above the Still Bay harbour, close to the harbour fish traps and the mouth of the Goukou River.

Results from archaeological excavation

Radiocarbon dates were obtained for all the sites excavated at Paapkuilfontein. They all date to within the last 5 000 years. Shellfish was the major component of the excavated material, mainly alikreukel, perlemoen and various limpet species. The range of shell fish and the pattern of exploitation were similar at the two Still Bay sites and at other areas along the south coast, such as at Garcia State Forest (Henshilwood 1996). Stone artefacts were rare at both the Paapkuilfontein and Still Bay sites. The assemblage was dominated by large quartzite manuports. Retouched artefacts were extremely rare, with only four quartz miscellaneous retouched pieces (MRPs) identified at Paapkuilfontein. At Still Bay, manuports were the only category of stone tool identified.

The faunal remains at Paapkuilfontein were fragmented, making identification difficult. With the

Fig. 3: Fish traps at Noordkapperpunt, Still Bay, at low tide

exception of a single incomplete fish vertebra at Paapkuilfontein 4, no other fish bone was identified at the sites. Ninety-four fish bones were found at Still Bay 2, representing three individuals: two Cape Stumpnose and one Black Musselcracker. The fish were small (likely juvenile), measuring about 120 mm in length, and were probably taken from the mouth of the Goukou River less than 1 km away. The Cape Stumpnose normally spawns in the winter and is frequently found in estuaries. The low densities of fish bone were incompatible with the use of fish traps, which can yield very large catches indeed.

Archival evidence

During the late 19th and early 20th centuries, fish traps played an important role in the economic and political lives of those who were dependent on them. Areas such as Arniston/Skipskop and Still Bay stand out as being particularly significant during this time. Fish traps were generally located adjacent to historic farms that were often subdivided and leased by several farmers. The evidence to date suggests that the fish traps were mainly built and used by farmers and the poorer underclass; individuals or groups who did not have the means to acquiring boats or nets to harvest sufficient quantities of fish to feed themselves and their families.

Because the Cape Government was of the opinion that fish traps resulted in overfishing, their use was banned by proclamation in the colony in 1893, but this ban was fairly short-lived, as by 1904 the Riversdale magistrate advised the administrator of the Cape that many of the poor in his district were suffering because they could not make use of fish traps. It was also during this time that the Fishery Officer for the Riversdale District inspected the Still Bay fish traps and noted that in the 11 years since their construction and use had been banned, many of the walls had been washed away and the traps themselves were largely covered in sand.

The limited use of fish traps was therefore reinstated, but this was difficult to monitor. In 1908 the authorities again concluded that fishermen were using the traps excessively and banned the practice once more. After lobbying by several farmers in the Still Bay area, the use of traps was allowed once again in 1911, only to be withdrawn in 1913. This time mounted police were dispatched to demolish the fish traps along the Arniston and Still Bay coastline. By the mid-1920s, however, the use of fish traps was considered to be less of a threat by the provincial government and the practice was legalised. According to the Fishery Officer, Dr C van Bonde, who visited the area in 1931, this had resulted in a proliferation of traps along the entire coastline between Cape Agulhas and Still Bay.

Throughout this period, but particularly between 1904 and 1911, the use and ownership of fish traps became highly politicised and caused considerable friction between fishermen and farmers. Fishermen were unhappy about the granting of permits to farmers, whom they viewed as outsiders as they lived some distance from the coast. A petition from local fishermen in the Arniston/Waenhuiskrans area failed to convince the authorities to award them sole use of fish traps, although many of these fishermen claimed that they had originally operated and maintained fish traps.

A hundred years have now passed since fish traps became a controversial topic in the Cape and it appears that some of the same issues are now being revisited, with Marine and Coastal Management trying to enforce tighter regulations in areas where they are still actively used, such as at Arniston and Still Bay.

Discussion

It is clear from the historical record that fish traps are highly dynamic structures. In the late 19th and early 20th centuries they were constantly being altered, demolished and rebuilt, partly in response to changing legislation, but also because constant maintenance and rebuilding is required to keep them in good working order. Interviews with fishermen who still use fish traps have emphasised this point. Very high tides and storms regularly disturb the stone walls and once these are breached the traps are no longer effective. It is, therefore, extremely unlikely that the fish traps still visible along our coastline today are ancient structures.

As indicated, there has been a great deal of argument over the use of fish traps because of their effectiveness. Whole shoals of fish were regularly trapped and the authorities feared this would deplete fish stocks. It is therefore all the more remarkable how rare fish remains were in the Paapkuilfontein and Still Bay shell middens. The people who left these middens did not obtain anything like the quantities of fish one would expect had they used tidal fish traps.

Perhaps these were simply the wrong middens to excavate? It is, of course, possible that archaeologists may yet find middens containing the remains of large quantities of haarders and other frequently trapped fish species. It should be noted, though, that examination of other pre-colonial open-air shell middens at many localities along the south and west coasts has yet to turn up a single site densely packed with fish bone. In contrast to this, just such a situation was exposed at a kitchen refuse dump outside a historical fisherman's house at Hotagterklip, Struisbaai, where the community is known to have used fish traps. Thanks to this excavation, we know what the archaeological signature of fishing with tidal traps looks like, but it has been found only in a historic context.

Could it be that pre-colonial people caught fish in tidal fish traps but processed them somewhere other than on or close to a midden? This is unlikely, for if signifi-

cant quantities of fish had in fact been caught they would have had to be preserved immediately to minimise spoilage. Considering the length it takes to sun and wind dry fish, where would people have camped during this time, if not at a shell midden? Surely they would have eaten some of the fish and left the bones for us to find.

The occurrence of fishing during pre-colonial times is not in question. There are many Later Stone Age (LSA) sites throughout South Africa that have yielded significant quantities of fish remains. Many of these sites are not close to tidal fish traps. Some of the fish recovered could have been netted or speared, while others are likely to have been caught by hook and line. We know that LSA people were proficient fishermen. But despite a concerted search, there is simply no evidence at pre-colonial archaeological sites for the quantities of fish one would expect from trapping, nor for the species profiles likely to result from this fishing method.

All the hard evidence therefore points to a likelihood that tidal fish traps were first built and used during historical times. This would also explain why traps are best known from stretches of coastline close to historic fishing villages.

Given the results of this study, future work on fish traps should be undertaken. We know, for example, that fish traps were widely used in Europe and elsewhere in the world. How was this method of fishing introduced to the Cape? Was it imported by immigrant settlers, or by slaves? Why is there such a high density of fish traps between Hermanus and Mossel Bay? What were the historical processes that led to their development and proliferation along this particular stretch of coastline? Many fascinating questions remain to be answered.

Acknowledgments

I would like to thank Judith Sealy for her valuable comments and recommendations on an earlier draft of this paper. I would also like to acknowledge all the individuals who participated during the fieldwork. Funding was provided by the National Research Foundation (NRF) and the Wenner Gren Foundation.

References

Anon. 2005. About bokkoms (consulted February 2009).

Avery, G. 1975. Discussion on the age and use of tidal fish-traps (visvywers). *South African Archaeological Bulletin* 30: 105-113.

Goodwin, AJH. 1938. Archaeology of the Oakhurst Shelter, George. *Transactions of the Royal Society of South Africa* 25: 229-324.

Haddad, D. 2003. Fishing the Khoisan way. *Good Taste,* September/October.

Henshilwood, CS. 1995. Holocene archaeology of the coastal Garcia State Forest, southern Cape, South Africa. Unpublished PhD thesis. Cambridge: Cambridge University.

Hine, P, Sealy, J, Halkett, D & Hart, T. 2010. Antiquity of stone-walled tidal fish traps on the Cape coast, South Africa. *South African Archaeological Bulletin* 65: 35-44.

Hine, PJ. 2008. Stone-walled tidal fish traps: an archaeological and archival investigation. Unpublished MPhil thesis, Department of Archaeology, University of Cape Town.

Poggenpoel, CA. 1996. The exploitation of fish during the Holocene in the south-western Cape, South Africa. Unpublished MA thesis. Cape Town: University of Cape Town. 102–106.

Tothill, F. 1899. Reports of the Select Committee. SCR on Fishing Industry. Cape of Good Hope. House of Assembly. Second Session of Parliament, G.52-1899.

Van der Elst, R, & King, D. 2006. A photographic guide to the sea fishes of southern Africa. Cape Town: Struik Publishers, 2006.

REAL OR NON-REAL?

(Continued from page 15)

The non-reality of what appear to be real images is implied in another way as well. In some cases, animals, especially eland, are partially depicted so as to suggest that they are entering or emerging from the rock face, often via cracks or steps. An otherwise realistic eland shown partially 'hidden' but apparently walking out from behind the rock may be preceded by a 'procession' of completely realistic eland. The implication is that *all* these seemingly real animals are coming from the spirit realm that the San believed lay behind the rock face, a 'veil' between this world and the spirit realm. We can go further. Even though most images may not be explicitly emerging through this meaningful 'veil', their very presence on it, no matter how real they may appear to us, implies that they are elements in *spiritual* panoramas.

Many expanses of images thus imply that we should not take San depictions at face value – or at what we may erroneously think is face value. The ways in which images are placed relative to one another and to the meaningful rock 'veil' suggest that we are looking at complex blends of (apparent) reality and (indisputable) non-reality.

(Part 2 will appear in the April 2012 issue.)

Further reading

Lewis-Williams, JD, & Challis, S. 2011. *Deciphering ancient minds: the mystery of San Bushman rock art*. London/New York: Thames & Hudson.

Lewis-Williams, JD, & Pearce, DG. 2004. *San spirituality: roots, expressions and social consequences*. Cape Town: Double Storey; Walnut Creek, CA: AltaMira.

Lewis-Williams, JD, & Pearce, DG. 2009. Constructing spiritual panoramas: order and chaos in southern African San rock art panels. *Southern African Humanities* 21, 41–61.

ARCHAEOLOGY IN BRIEF

170 000-year-old skull unearthed in France. A fraction of a *Homo erectus* skull, believed to be 170 000 years old, has been unearthed in a cave near Nice. Archaeologists have been searching this site for 50 years, unveiling more than 20 000 bone fragments from prehistoric animals. Occupation layers of the cave dating to 186 000 to 127 000 years ago have been excavated. *Riviera Times, 28/08/2011*

TREASURE SHIP A WORLD LEGACY

The Oranjemund shipwreck in Namibia

Bruno Werz

During the months of April and May 2008 the international media were abuzz with news of the discovery of an historic shipwreck in Oranjemund, Namibia. Respected dailies like *The Times* and the *Washington Post*, but also broadcasters such as the BBC and CNN devoted news slots to this find which made historians and archaeologists all over the world sit up and pay attention. The find was spectacular in a number of ways. Not only did it become clear that it concerned the oldest shipwreck ever to be discovered in sub-Saharan Africa, but the hoard of gold and silver coins recovered soon after discovery immediately gave the site a special status. With the exception of the Valley of the Kings in Egypt, nowhere else in Africa had such a treasure ever been found.

The find was made by Tate Kapaandu Shatika, an employee of the diamond mining company Namdeb while removing overburden in a coastal mining area. Although Shatika reported finding odd pieces of wood and metal, his supervisor did not take the matter further. Fortunately, some geologists were in the vicinity and they decided to have a closer look. After finding some 'copper pipes' that later turned out to be bronze cannon, as well as some half-round metal spheres that could subsequently be identified as copper ingots, they called in Namdeb's contract archaeologist Dr Dieter Noli. After inspecting the site he contacted me and in the subsequent intensive telephone contact he described his observations and I followed up on these by providing advice and collecting more information.

Upon securing a permit to investigate further, Noli started a rescue excavation. Assisted by Namdeb personnel under supervision of Johan Weber, a number of artefacts were recovered that assisted in establishing the wreck's origin and approximate age. The discovery of more than 2 000 gold and silver coins were of great significance as this provided me with sufficient information to date and identify the wreck's origin. I concluded that it was a Portuguese merchantman that met its demise during the second quarter of the 16th century (Werz 2008, 2009b, 2010, 2011).

Towards the end of this first campaign, I was brought on board and implemented a survey of the site with the invaluable assistance of Namdeb's Survey Section under Anthony Goosen and also advised on emergency conservation measures. As the time frame, manpower and finance for this first phase was extremely limited, the work could not be completed. It was therefore decided to recover a comparative sample of material and to leave the remainder *in situ*, including the wooden structural parts of the hull that had been observed. The site was then reburied provisionally (Werz 2008, 2009b).

Fragments of the hull structure as seen towards the end of the excavations when all other material had been removed. Visible are part of the rocky outcrop against which the ship probably foundered (top left), hull planking (top centre) and fragments of ground futtocks and underlying hull planking.

Soon thereafter the Namibian government through its Ministry of Youth, National Service, Sport and Culture, under Permanent Secretary Dr P Shipoh, took over the project. In the months that followed an orientation process was undertaken to decide on the best way forward. This resulted in a stakeholders meeting in Oranjemund attended by representatives of Namibia, Portugal, Spain, the United States and South Africa. The international response was overwhelming and much valued assistance was offered. A decision was taken to excavate the site fully and record and study the shipwreck, to conserve its material culture and to plan for a dedicated museum to display the wreck and its contents. I was appointed principal investigator of the excavation and head of future research (Werz 2008).

Although some initial newspaper reports had speculated that the wreck might have been that of Bartholomew Diaz, the first European to circumnavigate the southern tip of Africa in an earlier voyage, this myth could soon be laid to rest. What could be established,

Bruno Werz holds a DLitt in Maritime Archaeology and is Research Cooperator with the Department of Historical and Heritage Studies, University of Pretoria, as well as Director of the Southern African Institute of Maritime Archaeology (SAIMA). bruno.werz@telkomsa.net

however, was that the wreck represented the oldest find of its kind in sub-Saharan Africa. The fact that the wreck was located in a high-security diamond mining area had ensured that this maritime heritage remained protected from interference by treasure hunters and others.

The second-phase rescue excavation by an international team lasted from 8 September to 10 October 2008. Even though this phase was carried out under immense pressure because of the limited time available, technical problems and most excavators' inexperience with maritime archaeology, the objectives of this phase were met satisfactorily. The site was excavated in total and extensive surveys were carried out before, during and after finds were recovered. This included aerial photography and the application of differential GPS, Total Station theodolite and laser scan surveys (Werz 2008, 2009b).

Most of the material is today still kept in temporary storage at the mine while awaiting urgently required further conservation. Fragments of the hull, such as outer hull planking and parts of ground futtocks of the lower hull section, are stored underwater in a special basin. The fascinating collection of over 2000 coins, most of which are of Spanish and Portuguese origin, but also include Venetian, Hungarian and even some Arabic coins, are being kept at the National Bank of Namibia in Windhoek.

Watercolour from Manuel Fernandez' 1616 treatise on ship construction, Livro de tracas de carpintaria*. Although the Oranjemund shipwreck is about 80 years older, the drawing gives an impression of the merchant ships of the period.*

The initial identification of the wreck as a Portuguese merchantman that foundered on the outward-bound voyage to Asia during the second quarter of the 16th century has been confirmed by Portuguese historian Dr Paulo Monteiro. His archival research has revealed one likely candidate, namely the merchantman *náo Bom Jesus* under the command of Francisco de Noronha. The *Bom Jesus* was one of a fleet of seven vessels that left Portugal for India in 1533. In that same year it was reported lost somewhere off the Cape of Good Hope. The causes for its demise were probably adverse weather and sea conditions, as is implied by a temporary account (Werz 2009a, 2009b, 2010). Besides the coins, the ship carried a variety of products, including copper and tin ingots, and elephant tusks that were intended to be exchanged for Asian products, probably in an Indian port (Werz 2009b, 2010).

When excavating the 16 m by 18 m site, it was for the larger part covered by hundreds of copper ingots. Many ingots were stamped with the trident mark of the Fugger's – a Bavarian family of merchants and bankers who resided in Augsburg.

Although the exact circumstances surrounding the ship's demise will probably never be known, the Oranjemund shipwreck can be regarded as a significant part of the world's underwater cultural heritage.

References

Werz, BEJS. 2008. *The Oranjemund Shipwreck Project: Phase 2 Excavation Report.* Windhoek: National Heritage Council of Namibia.

Werz, BEJS. 2009a. Ship in the desert: the Namibian treasure wreck. *Salon. Journal of the Society of Antiquaries of London* 5(2009**)**, 1-7.

Werz, BEJS. 2009b. The Oranjemund shipwreck, Namibia: the excavation of sub-Saharan Africa's oldest discovered wreck'. *Journal of Namibian Studies* 6(2009), 81-106.

Werz, BEJS. 2010. Sub-Saharan oldest Shipwreck: historical-archaeological research of an early modern era Portuguese merchantman on the Namibian coast. *The Mariner's Mirror* 96(2010), 430-442.

Werz, BEJS. 2011. Southern African shipwreck archaeology. In A Catsambis, B Ford & DL Hamilton (eds), *The Oxford Handbook of Maritime Archaeology*, Oxford/New York: Oxford University Press, 473-494.

ARCHAEOLOGY IN BRIEF

Evidence of earliest mass production in Israel. Archaeologists have found a stone-tool factory between 200 000 and 400 000 years old in the Qassem Cave in the Samarian foothills outside Tel Aviv. The tools are of high quality. The inhabitants were part of the Acheulo-Yabrudian cultural complex. Little is known of these tool makers, who were an early forerunner to *Homo Sapiens.* *The Jerusalem Post, 04/10/2011*

SOUTH AFRICAN ARCHAEOLOGICAL SOCIETY NOTICES

2012 subscription rates

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 through Cape Town head office. See panel on page 24.

Annual General Meeting

Notice is hereby given in terms of section 8(a)(i) and (ii) of the Constitution that the Annual General Meeting of the South African Archaeological Society will be hosted by the Trans-Vaal Branch at 20:00 on Thursday 17 May 2012 in the auditorium, Roedean School, 35 Princess of Wales Terrace, Parktown, Johannesburg.

The meeting will be preceded by the Annual General Meeting of the Trans-Vaal Branch at 19:30 and will be followed by a lecture by Paul Hubbard of Bulawayo, Zimbabwe, on 'The state of archaeological research in Zimbabwe' at 20:30.

Members should submit items for the Agenda of the national AGM in writing to the Secretary, PO Box 15700, Vlaeberg, 8018, or to archsoc@iziko.org.za, before 1 March 2012. Proposals must state in specific terms the resolution to be put to the meeting and the reasons therefor.

Janette Deacon
Honorary Secretary
5 January 2012

Applications for Research Grants from the Kent Bequest

The late Dr Leslie Kent, a long-time member of the South African Archaeological Society in Johannesburg, left a generous bequest to the Society in 1992. The terms of this bequest are that the proceeds must be invested and the income, which will amount to approximately R9 000 per annum at current interest rates, will be distributed from time to time at the discretion of the Society for the following purposes only:

1. Financing of field work or expeditions to undertake research according to guidelines laid down by the Society.
2. Grants to individuals or groups of individuals engaged upon research, the subject of such research to be approved by the Society.
3. Publishing or supporting the publication of the results of research whether or not the research has been financed by the Kent Bequest.
4. Awarding prizes for meritorious work in archaeology, especially by young researchers.

The Society has appointed a Kent Bequest Committee and invites applications in 2012 for awards in all categories. The members of the Committee are Dr J Deacon (Secretary), Mr Reinoud Boers, Professor TN Huffman, Dr T Maggs, Professor I Pikirayi and Mrs L Wynne. Please read the following guidelines and instructions carefully before completing the application form.

Guidelines

- The work must be conducted in South Africa.
- The subject matter may include archaeological work of any kind that enhances our knowledge of the lifestyle of humankind in southern Africa, such as excavation, rock art recording, site recording, artefact or faunal analysis, identification of plant or animal remains, dating, surveys, physical anthropology, analysis of archaeological collections in museums, experimental archaeology, archival or bibliographic work.
- Proposals may also include publications for public education and community awareness projects that popularise archaeology.
- The Kent Bequest will contribute fieldwork or printing expenses only, not costs involved in analysing results, or writing or editing reports, or publications.
- Applications for publication must be accompanied by two quotations from printers.
- Preference will be given to researchers domiciled in southern Africa.
- Preference will be given to researchers who are starting a career in archaeology.
- Successful applicants will be required to donate one copy of reports or publications to the Society's library, one copy to the *South African Archaeological Bulletin* for review and, in the case of publications, one copy to each of the Society's five regional branches.
- All applications will be refereed by specialists and referees' reports will be evaluated by members of the Kent Bequest Committee.

The closing date for applications is 30 April 2012 and the successful applicant/s will be notified by 30 June 2012.

Application forms are available from The Secretary, South African Archaeological Society, PO Box 15700, Vlaeberg, 8018, tel. (021) 712 3629, e-mail archsoc@iziko.org.za, or may be downloaded from the Society's website: www.archaeologysa.org.za.

ARCHAEOLOGY IN AFRICA

Oldest 'Art Studio' found at Blombos

A coating of bright red powder on the insides of a pair of 100 000-year-old abalone shells is evidence of the oldest known art workshop, according to study leader Christopher Henshilwood of the , Norway, and the . The powder was found inside two shells in Blombos Cave near . The substance is the dried remains of a primitive form of paint made by combining ochre, crushed seal bones, charcoal, quartzite chips and a liquid, such as water. A round stone, bright red underneath, covered the opening of one of the shells. Also found were grindstones, hammer stones, the remains of a small fire pit and animal bones used for transferring small amounts of the paint.

This abalone shell was found with an ochre-covered grindstone on its lip. Photograph courtesy Science/AAAS

Blombos Cave has been inhabited off and on by humans for at least 140 000 years, but the ochre-paint studio seems to have been active about 100 000 years ago. Prior to the new discovery, the earliest known ochre-making workshop was dated to 60 000 years, Henshilwood said. The discovery was proof that early humans were capable of long-term planning and had at least a rudimentary knowledge of chemistry. 'They seemed to know that seal bone is really rich in oil and fat, which is a critical component in making a paint-like substance. They also knew to add charcoal to the mixture to bind and stabilise it, and a little bit of fluid.'

While relatively few ingredients were used in the ancient paint, each item had to be individually prepared before everything could be combined inside the shells. For example, the ochre pieces had to be crushed and ground into a powder, the bones had to be heated to release their oils and then crushed, and wood had to be burned to create charcoal. 'The mixture was very gently stirred, and you can see the traces of the stirring [done by fingers] on the bottom surface of the abalone shell,' Henshilwood said.

It is not clear what the ochre paint was later used for, but Henshilwood said it was easy to imagine early humans using the substance to decorate their bodies or cave walls. The final product would have been a bright red paint. There is even evidence that the early artists purposely adjusted the colour of their pigments. 'In one [of the shells], there was a tiny piece of a yellow mineral called goethite, which may have been added to change the colour slightly.'

National Geographic News, 13/10/11

A. sediba best candidate for the genus *Homo*

A series of five papers based on new evidence pertaining to various aspects of the anatomy of the species *Australopithecus sediba* announced in April 2010 by Wits Professor Lee Berger and his team were published in *Science* on 9 September 2011. Aside from team leader Berger, three of the five lead authors of the papers are from Wits University – a coup indeed for the university and South Africa, clearly demonstrating our country's world-class expertise in exploring the origins of humankind.

The papers revealed new, important elements attributed to the two type skeletons, namely:

- An analysis of the most complete hand ever described in an early hominin (Dr Tracy Kivell, Max Planck Institute, Germany).
- The most complete undistorted pelvis (hip bone) ever discovered (Dr Job Kibii, Wits University).
- The highest resolution and most accurate scan of an early human ancestor's brain ever made (Dr Kristian Carlson, Wits University).
- New pieces of the foot and ankle skeleton (Dr Bernhard Zipfel, Wits University).
- One of the most accurate, if not the most accurate dates ever achieved for an early hominin site in Africa (Dr Robyn Pickering and Prof. Paul Dirks, former Wits academics now in Australia).

According to Berger, Reader in Evolution at the Institute for Human Evolution, *A. sediba* demonstrates a surprisingly unique combination of features, never before seen in an early human ancestor. 'The fossils demonstrate a surprisingly advanced but small brain, a very evolved hand with a long thumb like a human's, a very modern pelvis, but a foot and ankle shape never seen in any hominin species that combines features of both apes and humans in one anatomical package. The many very advanced features found in the brain and body, and the earlier date, make it possibly the best candidate ancestor for our genus *Homo*, more so than previous discoveries such as *Homo habilis*,' Berger said.

Since its discovery in August 2008, the Malapa site in the Cradle of Humankind has yielded well over 220 bones of early hominins, representing more than five individuals, including the remains of babies, juveniles and adults. Given the open access policy of the team, *sediba* is already one of the best studied hominin species yet discovered. The team is one of the largest

ever assembled in the history of archaeology or palaeontology. With more than 80 scientists, students and technicians from across the globe involved in the study, the team's expertise range from geologists, computer specialists, functional morphologists and anatomists to physicists.

Wits University press release, 08/09/2011

Human genomes and early human history

Cornell University researchers are utilising the complete genome sequences of people alive today to shed light on events at the dawn of human history. They studied the genomes of people from East Asian, European, and western and southern African descent and discovered that the San diverged from other human populations earlier than previously thought – about 130 000 years ago. In comparison, the ancestors of modern Eurasian populations migrated from Africa only about 50 000 years ago, which is consistent with findings using other methods. Previous studies of human demography have primarily relied on mitochondrial DNA from the maternal line, or Y-chromosomal DNA passed from father to son. The Cornell study's use of the full genome provides a more complete picture of human evolution. *Eurekalert, 21/09/11*

Laetoli footprints not those of a 'family'

The famous trail of 3,6 million year old footprints discovered in the 1970s by researchers led by Mary Leakey and thought to have been left behind by a family of three human ancestors may have actually been made by four individuals travelling at different times. In a new examination of Laetoli in northern Tanzania, where the *Australopithecus aferensis* tracks are preserved, researchers now argue that the classic understanding of this site is mistaken. Preserved at Laetoli are two lines of hominid prints. The site is the earliest example of an upright, human-like gait in our ancestors. Early analysis had suggested the tracks were laid down by three individuals, one walking next to another, while a third, smaller individual trailed behind, stepping in the tracks of one of the larger individuals.

Researchers speculated that the three Australopithecus walkers were a male, female and juvenile. But US Bureau of Land Management palaeontologist Brent Breithaupt says in new high-resolution photographs the multiple footprint impressions appear to contain not two sets of toe prints, but three, and all the individuals who walked through the plain had the same-sized feet. 'So instead of having three individuals of different sizes, with the sizes related to different ages, there are probably four individuals of the same size moving through this area,' Breithaupt said The new three-dimensional data has revealed an extra set of toe-prints in the multiple-footprint impressions. *LiveScience, 04/11/2011*

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.

Cape Town head office: PO Box 15700, Vlaeberg, 8018. Tel: +27 (0)21 481 3886. Fax: +27 (0)21 481 3993. Archsoc@iziko.org.za. www.archaeologysa.co.za.

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

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

KwaZulu-Natal Branch: c/o Natal Museum, P/Bag 9070, Pietermaritzburg, 3200
Secretary: Ms Christine Sievers
031 563 8659
christine.sievers@gmail.com

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

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 2011 are as follows: Individuals: Single – R230; Joint/Family – R245; Junior membership – R160; Africa ordinary – R250; Overseas ordinary – R450*. Institutions: Local and African – R450; Overseas – R900*. [* Plus R100 bank charges]

The Digging Stick

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