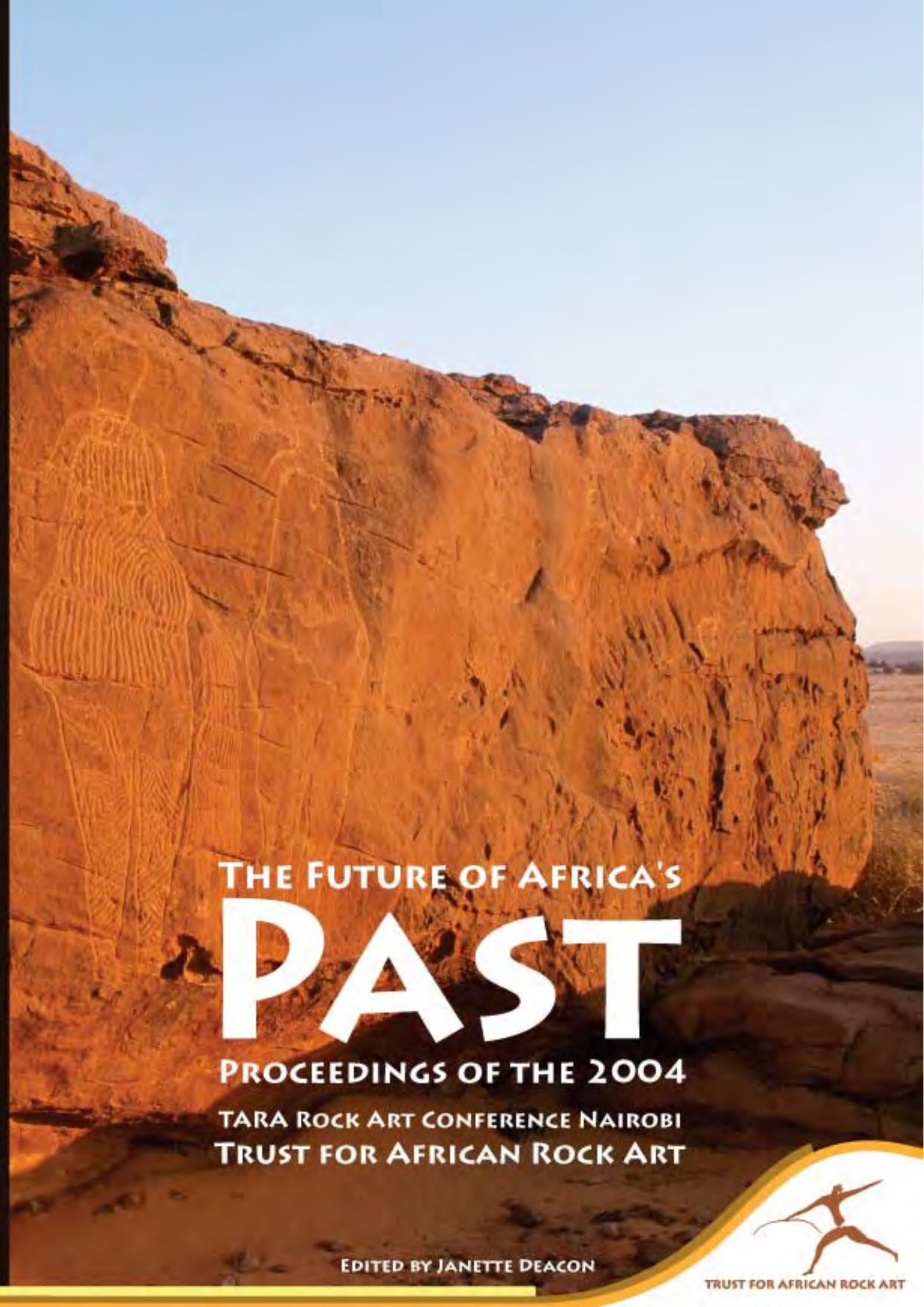

The Future of Africa's PAST

Proceedings of the 2004 TARA Rock Art Conference Nairobi Trust for African Rock Art

Edited by Janette Deacon

Trust for African Rock Art

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About TARA

TARA, a Nairobi based non-governmental not-for-profit organization, is committed to promoting the awareness and preservation of Africa's unique rock art heritage. Its mission is to "create greater global awareness of the importance and endangered state of Africa's rock art; survey sites; monitor status; be an information resource and archive; and promote and support rock art conservation measures".

The Trust for African Rock Art (TARA) was founded in 1996 by international photographer David Coulson with the support of palaeontologist Mary Leakey. The goals of TARA are to create a permanent visual archive of Africa's rock art before it is too late, share this priceless archive with the world community, and, to the extent possible, preserve today's most threatened rock art sites, however remote, across the African continent.

Since 1996 TARA has recorded rock art in over 16 African countries; created an archive of over 20,000 rock art photographs; produced a major illustrated book, African Rock Art, Paintings and Engravings on Stone, by David Coulson and Alec Campbell; published articles in National Geographic Magazine, Time Magazine, USA Today, London Times and other international publications; worked with the Government of Niger to conserve that country's rock art; helped to prevent destruction of 10,000 year old rock engravings by oil prospectors, hosted an international rock art conference in Nairobi (2004); staged East African rock art awareness exhibitions in Nairobi, Dar es Salaam and Zanzibar; made videos; conducted lecture tours and generally promoted the conservation of African rock art round the world.

The Editor would like to thank the TARA Board of Trustees and the TARA staff for organising the November 2004 conference in Nairobi at which the papers in this volume were presented. It was made possible by a generous grant from the Ford Foundation to whom we are most grateful for their continuing interest and assistance. As this collection of papers shows, the conference was a milestone in African rock art studies and provided a valuable meeting-ground for specialists and interested members of the public from all corners of the continent. TARA's Chief Operations Officer, Amolo Ng'weno, was the driving force behind the organising team and has also carried many of the post-conference initiatives through to completion. These included overseeing the production of the Proceedings and moving the exhibition that opened in Nairobi to Dar-es-Salaam, Kampala, Kisumu and other regional museums. She was ably assisted by Kaye Makuku-McIlwaine as the conference organizer and Bridget McGraw as the exhibition organizer. The conference preparation committee included Dr Mzalendo Kibunjia of the National Museums of Kenya, Dr Paul Lane of the British Institute in Eastern Africa, Judy Ogana of the Kuona Trust, Gladys Nyasuna-Wanga and Amolo Ng'weno of TARA, TARA Board directors Dr George Abungu, Alec Campbell and David Coulson; and TARA's Kenyan trustees Rupert Watson and Rick Anderson. Other sponsors of the conference, for whose support TARA is extremely grateful, included the Giraffe Manor, the Australian Embassy in Nairobi and the Heritage Insurance Company Ltd.

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International Conference

At the start of November, 2004 TARA hosted an international conference on African rock art here in Nairobi. The conference was officially opened November 1st by Kenya's Minister for National Heritage, Mr. Najib Balala and was attended by over 80 delegates from 20 different countries, including 17 African nations. In his speech the Minister pledged his strong support for the preservation of Kenya's rock art heritage and underlined the uniqueness and vulnerability of these early cultural records.

Overall the conference was judged an enormous success and participants have requested that TARA enhance its role as an information resource and database on African rock art projects and sites, thus validating TARA's mission.

The conference concluded that the African rock art fraternity:

- Acknowledges the significant progress that has been made by many communities in the past decade to safeguard Africa's greatest and least known art;
- Expresses concern about the future protection of the estimated 100,000 sites throughout Africa due to the increased vandalism and theft of Africa's art;
- Recognises the importance of engaging with local communities in drawing up any development plans for local and national benefits;
- Calls on Governments of all African nations to assist in the long-term protection, management and sustainable development of Africa's rock art heritage;
- Recognises the need to use the latest digital technology for the benefit of rock art preservation;
- Calls on the world community to outlaw all trade in rock art immediately.

Temporary Museum Exhibition of African Rock Art

A temporary exhibition of African rock art opened at the

WHAT THE PARTICIPANTS SAID

"Africa's greatest asset is its cultural heritage and the foundation stone of this is rock art. This was a terrific conference..." *Prof. Wilmot James, Human Sciences Research Council, South Africa.*

"It was helpful, educative and interesting. I and my fellow students have learnt so much." *Habiba Chirchir, Anthropology student, University of Nairobi.*

"Very interesting and challenging... will in time to come be considered a watershed event". *Dr. Aron Mazel, world authority on rock art dating, University of Newcastle, U.K.*

"I commend TARA for bringing us all together, and... was impressed by the commitment shown by the Minister for National Heritage towards rock art preservation in Kenya." *Dr. Benjamin Smith, Director of the Rock Art Research Institute in South Africa.*

"I have enormously enjoyed the conference which was outstanding in all ways. Not only was it brilliantly organised, it was academically challenging, with diverse views, and was truly international with so many African nations attending." *Nigel, Winser, Royal Geographical Society, London.*

"It was extremely useful... well organised and provided me with a lot of new information." *Dr. Esmond Bradley Martin, World Rhino Authority and Geographer, Kenya.*

Fig. 1

Fig. 1: TARA Board Members and other conference participants pose for a photo with Kenya's Minister for National Heritage. Left to right: Alec Campbell (TARA); Dr. Ben Smith, Director Rock Art Research Institute, South Africa; Dr. Paul Taçon, rock art research specialist, Australia; Tom Hill (TARA); David Coulson (TARA); Mr. Najib Balala, Hon. Minister for National Heritage, Kenya; Prof Wilmot James, Human Sciences Research Council, South Africa; Prof. Jean Clottes, International Committee of Rock Art; Sidi Mohamed-Ilies, President Anigourane, Niger; Robert Burnet, Ford Foundation (East Africa); and Simon Gatheru, Principal Curator National Museum, Nairobi.

Fig. 3

Fig. 2: Prof Wilmot James delivers the keynote address at the conference.

Fig. 3: Huge banner in Nairobi Museum stairwell

Fig. 4: Dr Idle Farah, Director-General of the National Museums of Kenya, officially opens the exhibition (David Coulson looking on).

Fig. 5: Guests in the rock art picture gallery during the Opening of the exhibition

Fig. 6: Work under way creating the reconstruction of the Kakapel rock shelter

Nairobi museum on November 1st 2004. Combining a reconstructed rock shelter, a photo gallery and multimedia exhibits, the exhibition has been hailed as one of the most creative and interesting to be shown at the Nairobi museum in recent years.

After its four month run at the Nairobi Museum, the exhibition was also shown in Dar es Salaam and Kampala in 2005.

The opening cocktail for the exhibition was attended by a capacity crowd of about 300 Ambassadors, CEOs, museum administrators, academics and other interested people, with speeches by the Director of the National Museums of Kenya, Dr Idle Farah, the General Manager of Safaricom, Michael Joseph, and by David Coulson, Chairman of TARA. At this event, it was announced that the Safaricom Foundation has given about $15,000 towards an interpretive center and restoration of vandalism damage at the Kakapel rock shelter in western Kenya.


Fig. 2


Fig. 4


Fig. 6


Fig. 5

An exceptional painted cave in the Ardeche (France): the Chauvet Cave

Public Lecture – Jean Clottes[1]

Three cave explorers, Jean-Marie Chauvet, Eliette Brunel-Deschamps and Christian Hillaire, discovered a painted cave in the Ardèche valley, in the South-East of France, in December 1994. The cave is extensive, about 500 m long, with vast chambers and passages.

The paintings and engravings are scattered all over the cave, with congregations on several important panels. Many remain to be found: the animals recorded up to now number 427.

The works of art so far registered include: numerous geometric signs, in particular panels of big red dots and a few original signs; several red stencilled hands and handprints; a composite creature, half-bison and half-human next to the lower body of a woman; 427 animals painted in red or black or engraved, including many rhinoceroses and lions, mammoths, horses, bison, bears, indeterminate animals, reindeer, aurochs, ibex, in addition to several megaceros deer, two musk-oxen, one red deer, one panther, one possible hyena, one owl. The latter three are unique in Paleolithic art.

The animals in the cave are naturalistic and vivid, with well-depicted postures. Sophisticated unusual techniques have been used: many animals are seen in perspective, as if three or more were side by side; at times, part of the walls and the outlines of some animals have been scraped in order to enhance the paintings; often the insides of the heads and bodies have been filled by stump drawing to give them more relief.

From a preliminary study, all the paintings and engravings look homogeneous, with a repetition of conventions and even the recurrence of tiny details such as the peculiar way of depicting the ears of the rhinos. However, they were not all done at the same time: superimpositions occur and in particular some torch marks were made on top of calcited paintings. From the stylistic conventions used, they seemed to be older than the famed Lascaux paintings. Radiocarbon datings of several painted animals have given dates between 30,300 and 32,400 BP, which makes them the oldest paintings ever dated in the world.

The scientific work in the cave, which started in 1998, has been conducted by a multidisciplinary professional team. This is probably the first time that a major rock art site has been studied from the start - with the necessary funding (French Ministry of Culture) - by a team entirely consisting of professionals.

The work is carried on in three main directions by specialists who work closely together: - the environmental context, by geologists, climatologists, palynologists, etc; - the archaeological context, i.e. the study of the traces and remains left by humans and animals on the ground; - the art on the walls.

About the latter, we work in two main ways, intensively and extensively. The intensive work is the tracing of one panel after the other. This is done from digital photographs which are then worked upon on the computer with the appropriate software; then the printed photos are brought back to the cave covered with a thin transparent film which is used to realize a tracing directly in front of the paintings and engravings. The extensive work is meant to know more or less exactly what has been represented on the walls, the techniques used and the locations.

A majority of animal traces on the grounds and walls (scratches) are due to the activities of cave bears in the cave. Nearly 200 cave bear skulls and thousands of bones lie on the ground. From the work done so far we know that cave bears hibernated in the cave for very long periods before people went into it and that some came to the cave afterwards as a few paintings have been damaged by their scratches.

On several occasions some cave bear bones have been handled and used by the Paleolithic visitors : one cave bear skull was deposited on a big stone in the middle of a huge chamber, two cave bear humerus were forcibly stuck into the ground not far from the original entrance, several bones were deposited in nooks of the walls.

Forty thousand years ago or more, cave bears frequently used the Chauvet Cave to hibernate in it. Then, between 30,000 and 32,000 years ago (in radiocarbon years, which means that probably another 4,000 or 5,000 years should be added in order to have real calendar years), some people – including a very great artist -went into the cave for their ceremonies and did most of the

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INORA
France

paintings and engravings. In one visit ? In several visits spaced over many years ? We do not know.

Some more people visited the cave between 25,000 and 27,000 BP, left torch marks and probably some drawings (many ? few ?). Cave bears came later into the cave again. Then, the scree in front of the entrance finally blocked it entirely and nobody went in anymore until December 1994 when spelunkers took it into their heads to check whether there could really be something to the draught that had been noticed behind a heap of stones…


Fig. 1

Fig. 1: One of the rhinos drawn in the Chauvet Cave (France). Notice how the artist has drawn the image in a neutral hollow which doesn't only frame the animal but gives it dimension and strength. Photo Jean Clottes.

Fig. 2: Chauvet Cave (France). A pride of lions hunting. Photo Jean Clottes.


Fig. 2

African Rock Art

David Coulson[1]

Every continent apart from Antarctica has rock art but Africa has the greatest variety as well as some of the oldest art. As former South African President Nelson Mandela has said, "Africa's rock art is the common heritage of all Africans but it is more than that. It is the common heritage of humanity".

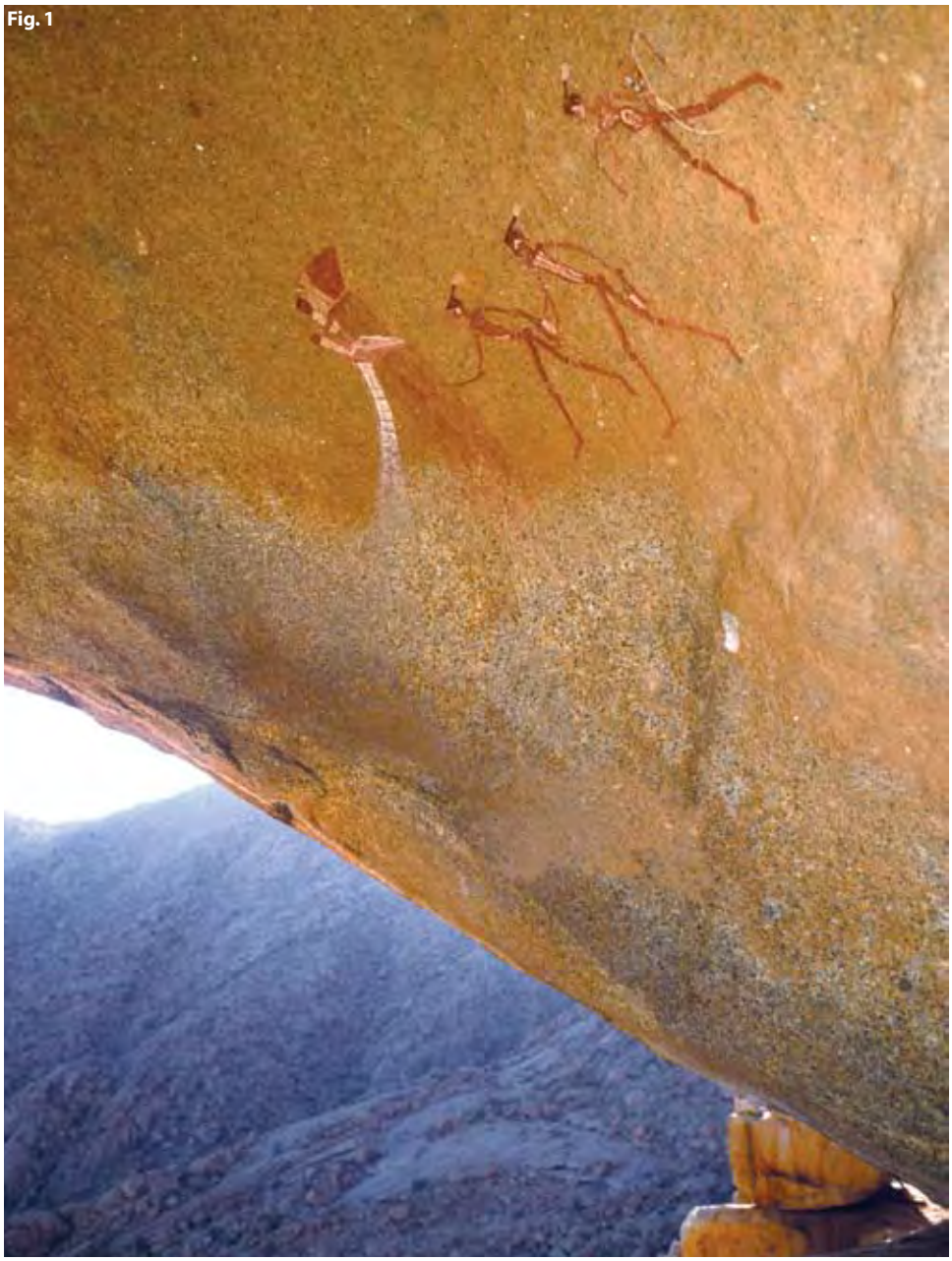
Rock art occurs in more than 30 different African countries and sites with over 100 images are fairly common. Several sites in southern Africa have over 1,000 individual images and a few number many more. There may be more than 100,000 sites in the Sahara alone; thus, the total number of images in Africa could be run to many millions.
Although most rock art in Africa is probably less than 10,000 years old, paintings of animals excavated in a Namibian shelter have been dated to 18,000 and 28,000 years ago. Cross-hatch designs engraved into two pieces of ochre found in a cave in South Africa have been dated to perhaps 77,000 years ago and, while they cannot be construed as "art", suggest abstract thought and the ability to convey this visually.

Meanwhile, as U.N. Secretary-General Kofi Annan said earlier this year, "Africa's rock art is severely threatened and its future uncertain". Here, therefore, are some of the issues that now face rock art conservation in Africa. Although Africa is often poorly equipped to protect its rock art heritage, laws dating back to colonial times still exist in most African countries. The problem is that most African governments are usually fairly unaware of these with the result that they are not implemented. Many of these laws also need updating.

The art is fragile and endangered. Its very age and exposure on rock faces open to sun, wind and rain seriously affect its stability. Organised theft of engravings in Morocco, defacement by target shooting in Chad, graffiti almost everywhere the art occurs, and misuse by religious fraternities have seriously endangered its future. Just touching a painted surface can damage an image and walking in boots over engravings can cause irreparable harm.

The art represents some of the earliest remaining expressions of humankind's visual communications and previously unrecognised artistic abilities. It has enormous value. To quote Kofi Annan again, 'The (art) is a cultural gift from our ancestors that can bring divers populations

Fig. 1



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Chairman
Trust for African Rock Art
Kenya

Fig. 1: San rock paintings high on Namibia's Brandberg.

Fig. 2: Rock paintings at Kakapel Shelter in Kenya.

Fig. 3: Fighting Cats, Libya.

together, with pride and a common commitment to share and preserve it'.

Today, the art still offers windows onto vanished worlds and gives us glimpses of our early ancestors' beliefs and visions of reality, and opportunities to ponder the roots of religious thought. The art is perhaps the oldest and most extensive record of human thought and as such is a priceless treasure.

In the past, many archaeologists considered rock art studies to be unscientific and of little purpose; thus, the art's value to world heritage has only been recognized during the last 50 years. Archaeologists' earlier failures to bring the art's importance to government and public attention has resulted frequently in lack of national interest, delayed updating of colonial heritage laws and a need for their more rigorous implementation

For the art, time is running out. Lack of government and public appreciation of the art's value, expanding rural populations, new infrastructures and land-use projects, and rapidly increasing and often poorly-controlled tourism are, and will, take their toll.

Unfortunately, with urgent commitments in other fields–education, health and poverty alleviation–governments give heritage conservation low priority. Governments must recognize that failure to increase their commitment to the art's future will be fatal, and will lead to their heritage becoming depleted.

There is urgent need for recognition at all levels that this world heritage is endangered, that conservation of the art for enjoyment and study by future generations is therefore jeopardised, and that its potential worth to tourism and local communities is fast diminishing. UNESCO is anxious to support countries in their efforts to preserve their art, but the Organisation can do little without national commitment coming first.

Urgent needs are:

(a) greater national commitment through increased funding for heritage conservation,
(b) knowing where and what art exists in any country by national systematic site recording,
(c) implementing national education programmes,
(d) involving the interest and help of local communities,
(e) planning for tourism expansion by preparing management plans for sites 'opened' to tourists, and

(f) getting management and conservation staff trained, in the office, in the laboratory, and in the field.

It is time for States to take initiatives through greater regional cooperation, by setting an African standard of commitment and conservation, and through regional training schemes and policing.

Much remains to be done, and to be done urgently, if rock art is to survive for future generations. As President Nelson Mandela wrote for TARA, "For our children's children to experience, study, and contribute further to the knowledge of our distant past, Africa's rock art must be preserved and protected". It is for African States and for Africans to ensure that this happens.

David Coulson

David Coulson

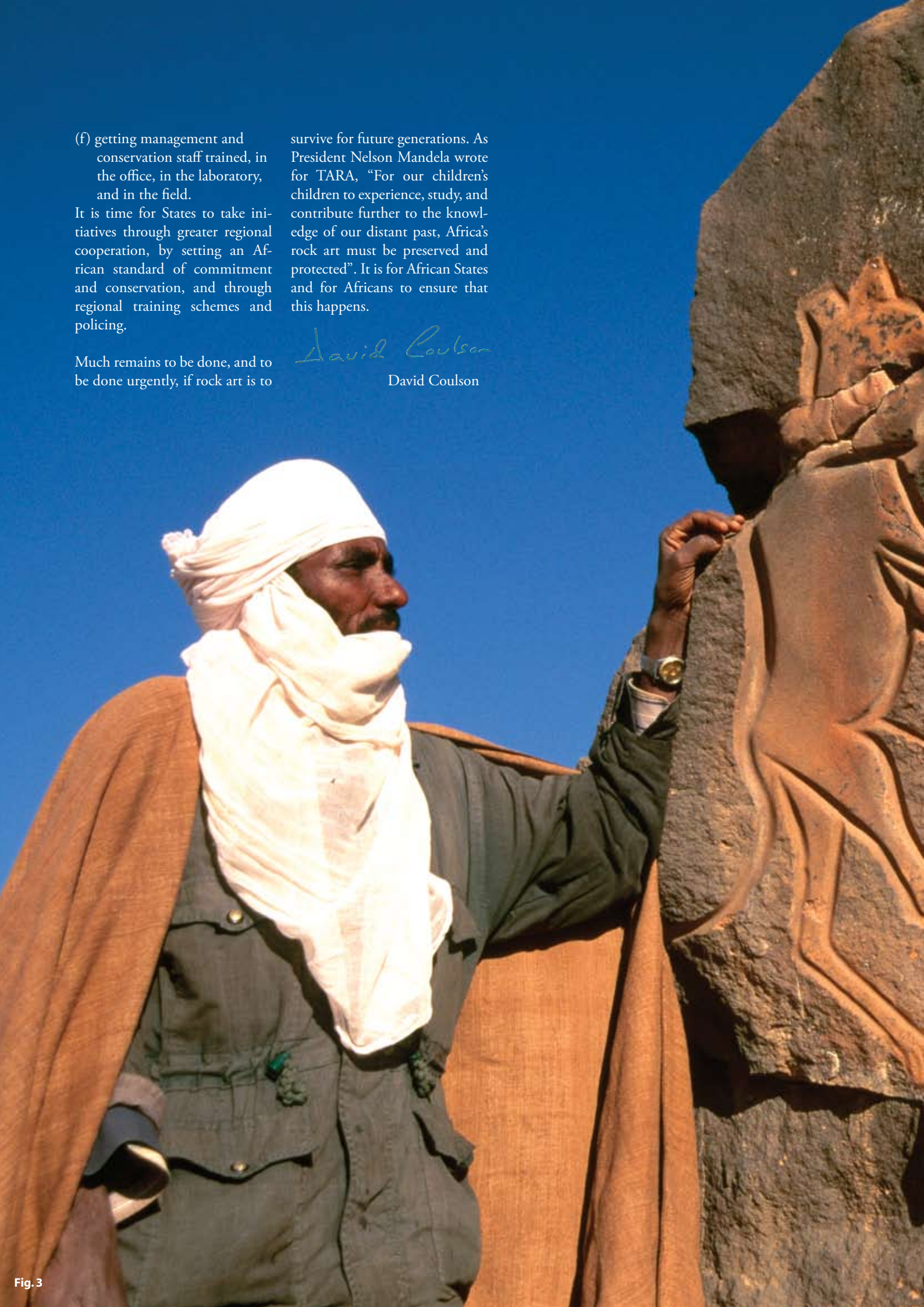

Fig. 3

Rock art and the evolution of human imagination

Wilmot James[1] – Keynote Speaker

L'ART RUPESTRE ET L'ÉVOLUTION DE L'IMAGINATION HUMAINE

Les discussions portant sur les origines de l'art rupestre en Afrique englobent le concept de migration humaine, de modèles de colonisation, de biologie moléculaire et de l'ADN mitochondriale ainsi que les corrélations neurales de la conscience. Le défi est de faire correspondre les dossiers biologiques et archéologiques, et trois hypothèses sont proposées : L'hypothèse d'un 'apprentissage culturel lent', l'hypothèse 'du bois pourri' et enfin l'hypothèse du 'sursaut du cerveau '.

ABSTRACT

The origins of rock art in Africa are discussed in the broad context of human migrations and settlement patterns, molecular biology and mitochondrial DNA and the neural correlates of consciousness. The challenge is to match the biological and archaeological records and three possible hypotheses are proposed: the 'slow cultural learning hypothesis'; the 'rotting wood hypothesis' and the 'spurting brain hypothesis'.

I

My late maternal uncle Neville Hartel had a seaside home close to an area on South Africa's southern coastline known as Still Bay and, though a keen amateur historian and remarkable teacher who believed powerfully in the one-ness or singularity of humanity, a 'genuine non-racialist' as he called himself, he only had but an inkling of the significance of what laid buried in the Middle Stone Age deposits of a cliff that, in a spectacular southern Cape setting, overlooks the Indian Ocean, about 20 km from a place he had come to adore for its peace and to love for its angling potential.

Though he was not a chauvinist by any stretch of the imagination, indeed quite the opposite as he loathed even the slightest hint of ethnic or nationalist pride, he would have been pleased to know that the fossils of Still Bay were of his ancestors dated by modern luminescence methods to be at least 77,000 years of age and that they point to a mode of life equal to if not more advanced than any other population, to our knowledge, living here or elsewhere, at the time.

In a country like colonial and apartheid South Africa, where ancestral populations were habitually diminished for their apparent racial inferiority and cultural vulgarity and where the racism and genocidal behaviour of individuals drawn from dominant populations were excused and justified on the basis that they –our ancestors–were incapable of ordinary human achievement as a consequence of their not being quite human, such a story becomes a powerful point of validation that is, therefore, no trivial or ephemeral a thing, which is partly why Nelson Mandela, one of very few modern leaders who understands the importance of human dignity in development, is the Patron of the *Blombos Cave Project at Still Day*.

Neville Hartel's ancestors - and as it turns out Nelson Mandela's too - were those human beings whom today are collectively and somewhat awkwardly and uncomfortably grouped as the Khoe and the San, in what precise measure we cannot of course be sure, populations who were first conquered and absorbed by the migrating Bantu-speaking people from the Niger Congo and the Great Lakes area starting about 2 000 years ago, crossing the Limpopo River as recently as 200 AD, and then by the guns (as, occasionally, a weekend pastime in genocide) by smallpox, European in origin, of the settlers who came during the 17th century, regarding the Khoe and the San as little more than vermin speaking a click language they could not understand.

As with Native Americans, the lack of adaptive immunity against viral or bacterial or parasitic disease made them as vulnerable as they were against the technological power of weapons of war.

The artistic work of these ancient of ancient ancestors, writes Jean Clottes in his book *World Rock Art*, was a legacy of rock art which, when first 'faced with the undeniable aesthetic accomplishment of a true artist… caused early European researchers to often assume that the rock art they had discovered was the work of western travellers rather than the indigenous peoples of Africa, Australia, and the Americas who had actually created it' (Clottes 2001:12).

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Chairperson
Immigration Advisory Board
South Africa

That was then and there is little question today that among the artefacts left near the Still Bay area, by what must have been ancestral Khoe and San people, are two pieces of decorated ochre, a form of iron oxide. The cave where they were found is named after the *blombos* (flower-bush in Afrikaans), an odd linguistic construction, part of the vocabulary used to describe the indigenous flora known as *fynbos* (fine-bush), to be found only here, in all of its splendid variety and age.

Christopher Henshilwood of the State University of Bergen, the archaeologist digging at this site, describes the red ochre as 'measuring two and three inches long', 'first scraped and ground smooth to create flat surfaces', and 'then marked with cross hatches and lines to create a consistent complex geometric motif' (Highfield 2004). What these markings mean is open to debate. One interpretation, cautious in tone, is that these are 'tally marks', 'making them the oldest form of recorded counting ever found' (Highfield 2004).

Fig. 1: Engraved design on hasmatite from Blombos Cave, South Africa, dated to over 70,000 years ago.

The other, behaviourally more daring, takes the marked ochre as finally demonstrating an unprecedented ancestral hominid modernity in tool-making, diet, weaponry, use of cave space and, of course, art: 'Archaeological evidence of abstract or depicted images indicates modern behaviour. The Blombos Cave engravings are intentional images' Henshilwood is quoted as saying. 'At Blombos there is evidence for fishing, manufacture of very finely crafted bone tools, sophisticated manufacture of bifacial bone tools, symbolic use of ochre possibly for body decoration and now the production of engraved objects'.

It is, of course, one thing to date human migration and settlement patterns based on modern radiocarbon and luminescence methods. It is quite another to infer or reconstruct the behavioural repertoire of the people who lived a very long time ago. All such efforts, says Richard Lewontin, author of *Human Diversity*, are speculative, derivations of the possible, interesting certainly, likely perhaps, but in the end, speculative (Lewontin 1995). Still, a date of 77,000 years ago for a system of 'tally marks', possibly 'counting' predates the accounting systems for early agriculture developed in the fertile crescent of the middle east, as Jared Diamond points out in his *Guns, Germs & Steel: The Fates of Human Societies*; and if it is art, the marked ochre predates by about 40,000 years the extraordinary rock art that remains all over Africa, from the Cape to the Libyan Sahara, and indeed as documented by Clottes in his book *World Rock Art* which as the title suggests, surveys the entire globe (Diamond 1999; Clottes 2002).David Coulson and Alec Campbell in their book *African Rock Art* give a certain date of 12,000 years and speculative one of 29,000 years ago for the oldest rock art to be found in Africa (Coulson & Campbell 2001).All this work, ironically, produced by a people who were considered uncivilised and animal-like, inferior, exterminated in the name of colonial perversion, with their 'haunting memory' pervading the 'desolate landscape' of Africa, as President Thabo Mbeki described in a series of passages that are special in their literary beauty and powerful in the political validation of a past of soon to be extinct people (Mbeki 1996).

The more recent find in the same Blombos cave of 41 tiny shells, strung as beads, raise the question about the evolution of the human imagination with even more poignancy. Dated at 75,000 years old, they are likely 30,000 years older than any other reliably dated personal ornaments.

A daring interpretation would cast the beads as ancient jewellery, orange and black in colour, decorative tokens of 'prehistoric vanity that are the forerunners of hip-hop bangles and all the cultured glitter of Tiffany's and Cartier' writes Robert Lee Hotz of the *Los Angeles Times* (Hotz 2004:1).

vHe cites the view of the archaeologist Sally McBrearty of the University of Connecticut, who viewed the beads as screaming out 'symbolic behavior … the expression of identity, of selfhood, of aesthetics' (Hotz 2004:A15).

Further still, Hotz suggests that once the beads have been scientifically validated by specialists in the history of human origins, the interpretation of their being the oldest evidence of human abstract thought and the symbolic rendition of metaphor might indeed become compelling. Controversy over dating and interpretation is


Fig. 2


Fig. 3


Fig. 4

creativity and complex behaviour evolved first in Africa, not in Europe as many scientists have long believed' (Hotz 2004:A15) Others are much more cautious. Whichever the way it will go, it raises the question of the evolution of human imagination.

II

In October 2002 I had the privilege of being taken by David Coulson and Alec Campbell of the Trust for African Rock Art (TARA) to look at East Africa's major rock art sites and, in addition, spent some time at the Lake Turkana and Olduvai Gorge archaeological sites excavated by various, successive members, of the Leakey dynasty. We went via Mount Kilimanjaro to central Tanzania's painting sites first recorded by the Leakeys in the 1950s, where the oldest could have been produced about 2,000 years ago by the ancestors of people today called the Sandawe. We had a look at some newly reported rock paintings and engravings in the Lake Eyasi area which is near the huge Ngorongoro Crater, which were then photographed by Coulson and Campbell to add to the archival and digital records of TARA, some of which appear in their published works (Coulson & Campbell 2001).

In the Serengeti we looked at the rock gongs and paintings of the Masai. In Kenya we went to the Mfangano Island in Lake Victoria area, where paintings of geometric style and orientation, associated with Bantu-speaking populations coming from the Niger Congo into East Africa and marking a striking difference to the realist renditions of animals and human beings usually depicted by the ancestors to the hunter-gatherer artists of their day. A major rock-painting site south of Mt. Elgon showed how vulnerable rock art was to vandals, tourists and the politics of populations trying to vie over control of access to something that now is clearly recognised as of great value and importance.

We went to the forbidding crocodile infested but archeologically rich Lake Turkana, to look at an engraving site three miles from the lake shore, and to visit the remarkable Louise Leakey, a lone young woman who continues with path-breaking archaeological work in the best tradition of the Leakey family.

On the way we spent time in the timeless Olduvai Gorge, famed for its ancestral australopithecine and other hominid fossils, and ended perhaps appropriately at a place near a spring in the Chalbi desert of northern Kenya, close

Fig. 2: Sandawe woman, Tanzania.

Fig. 3: Engravings of elephant, giraffes and men, southern Lake Turkana, Kenya.

Fig. 4: Lake Turkana, Kenya.

to the border of Ethiopia, where camels appear to come from nowhere and out of nothing. For this is a watering hole in the middle of nowhere in particular, desolate and hot, with an unusual light quality.

Our interest was to appreciate and gain better insight into the extraordinary range of African rock art in East Africa, for Africa is, as Jean Clottes puts it, 'the ultimate continent for rock art, with more than one hundred thousand known sites, and probably twice that number' (Clottes 2002:12). The sites are bountiful, and rich; southern Africa, and especially Namibia, the western Cape and Drakensberg of South Africa, Lesotho and Zimbabwe are full of these assets; northern Africa and then especially the Sahara stretching from north to south, east to west, has some extraordinary work; and then of course East Africa, the place where we were, also regarded as the cradle of modern humanity, the one and only spot with the most unbroken record of hominid evolution.

Coulson and Campbell cite a figure of about 2 million known paintings and engravings for the African continent, and probably at least twice that number of unknown, perished or disappeared works. Botswana alone has 400 sites with 4,000 documented works of quite powerful imagery. Rock art, therefore, provides a rich layer of human history on a continent where the written word is very old in the north, but young everywhere else.

Anybody that takes seriously African history must grasp and master what it is rock art tells us about the human past. And still, this is not just about Africa and the story is not simply a continentally parochial narrative. Its importance and relevance is universal and reflective of the aesthetic impulse shared by all human brings regardless of where they found themselves, even in isolated pockets over thousands of years where there was no chance of, and technology for, communication, of style, form or artistic content. Then there is the sad fact that this is a wasting treasure, eroded by the forces of nature about which we can do little, vandalised by those who do not care for human artistic heritage about which we can, however, this time, do something. It is therefore a very good thing that TARA is creating a digitised archive of African rock art, seeks to find strategies to preserve what we have, and persuade those governments and institutions that need persuading about the importance of a workable and lasting conservation policy. And then finally there is the tragic fact that this is a wasting treasure made by a disappearing people lost to the greed of others, a tragic end to tens of thousands of lives whose sophistication is only now becoming clear.

There was, on our part, another interest, to see whether the modern techniques of molecular biology could have any bearing on the dating of the rock art, adding value to the already sophisticated radiocarbon and luminescence dating methods in use. Dating methods developed over the last 50 or so years have vastly improved, write Coulson and Campbell, making for better and more accurate assessments of the age of the rock paintings and engravings first thought to be about 2,000 to 3,000 years old: 'radio-carbon dating has revealed that the oldest known frescoes, in France's Chauvet Cave, were painted about 32,000 years ago' and that the 'earliest art still visible on Africa's rocks is probably about 12,000 years or a little older', but adding, importantly, 'that new finds of buried portable art and new dating methods may extend this period back by many, many millennia' (Coulson & Campbell 2001:74).

There are direct methods for dating paintings and engravings, by biochemical analysis of pigments and other organic materials, and indirect methods by the archaeological analysis of materials left at the art sites. And then even more indirect methods of associating the styles of art with what is known about the periods in which such styles may or may not have flourished. The *Marvin Rowe Research Group* claims to have the 'only general technique currently available for dating pictographs' that range from 'scanning electron microscopy, electron microprobe analysis, isotope mass spectrometry, plasma chemical reactions and polymerise chain reactions (PCR) and phylogenetic analysis of DNA.'

Still, Coulson concludes that 'unless techniques are available to enable us to extract human genetic material from paint that has been applied with the fingers or a handprint, or that contains human blood or other bodily fluid as an ingredient, we cannot hope to link rock paintings to genetically distinct populations. The possibility of identifying the artists who did rock engravings is even more remote.'

Based on all available evidence and methods, Coulson and Campbell put the 'earliest incontestable date for African rock art' as '10,200 years' old, for the 'deepest and oldest engraved stones excavated by Francis and Anne Thackeray and Peter Beaumont in the Wonderwerk cave of South Africa'.

The 'earliest date obtained for African rock art, between 19,000 and 27,000 years ago, relates to small plaquettes bearing paintings of animals excavated by Eric Wendt in the Apollo 11 Cave in southern Namibia.' In terms of time, between the certain and uncertain lies 16,800 or so years, or 672 generations if one generation is taken to be 25 years.

Fig. 5

Fig. 6

Then there is the question of populations from which the artists or painters were drawn, and whether the field of population genetics, and in particular its ability to decipher genetic inheritance patterns among human populations, can at the very least help locate the time and place where populations existed and for how long. Particularly useful is the use of mitochondrial DNA to trace lineages along maternal lines of genetic inheritance and Sarah Tischkoff for East Africa and Himla Soodyall for Southern Africa have made great progress here, though the work of linking populations to art more precisely is in its infancy. Identifying the authors remains, therefore, a formidable challenge.

III

Presumably one needs three things in order to paint: hand talent, visual acuity and the ability to dream. Exceptional artists I suppose have an abundance of these qualities. Hand talent of course presumes having free hands and a limb structure that makes for fine control. Visual acuity presumes having the eyes of a predator, forward-facing with binocular vision. Though we often think of our eyes as wise seers, what they do is gather light, and it is the brain that gives it all meaning, for here resides the neurological apparatus for recognition, memory, in short the cellular basis for imagination and therefore dreams. The state of the current science of the human brain is best put in the recent book written by Christof Koch titled *The Quest for Consciousness* where he talks about progress in efforts to link imagination with the neural correlates of consciousness (Koch 2004).

Understanding which many, many genes in the human genome code the cellular construction of the brain is, though, a huge mystery to be solved no doubt over a long time. But we do know that neurological activity must be geared to receive visual information, give it meaning and significance and commit it to memory.

Our hands were ready-made for art when we took our first steps as *Homo sapiens*, as were our eyes, somewhere between 100,000-150,000 years ago. But about our brains, we are not quite sure. Some say that evolution stopped as soon as we emerged, others like John Eccles in his book the *Evolution of the Brain*, talks about evolutionary refinements (Eccles 1989). And finally, there is Richard Klein and Dawn Edgar in the *Dawn of Human Culture* who

Fig. 5: Apollo 11 Cave, southern Namibia.

Fig. 6: Painting of a predator on plaquette excavated in Apollo 11 Cave and dated to between 19,000 and 27,000 years ago.

Fig. 7: Painting from xxxxxx, South Africa of wagons and colonials, probably about 200 years old.

Fig. 7

develop the hypothesis of a radical spurt in brain development about 60,000 years ago.

Understanding brain size and neurology are one part of the answer, but of course the final answer comes with applying the molecular clock to the DNA sequences in those regions of the genome responsible for the biological engineering of the brain and especially what is known as area TE of the temporal lobe, but there are other areas of the brain to worry about too.

The problem of course is the match between the biological and archaeological record. (I will not say anything here about the palaeontologists, who would have a great deal of difficulty with the 100,000-150,000 year date for modern human origins). The archaeological record of modern human art springs to life about 60,000 years ago, in Europe that is. The Blombos find pushes the date back to about 77,000 years. Who knows what else will pop up and push the date back even further! There is therefore, for now, one, or perhaps a combination of three, possibilities (i) we had the biological apparatus for art-making at the outset but we took a long time to figure out how to do it – lets call this the 'slow cultural learning hypothesis'; (ii) we had the apparatus, made art, but used materials like wood which is rarely fossilised – the 'rotting wood hypothesis' and (iii) we had the hand and eye apparatus but not the full neurological apparatus, which further evolved and brought art-making alive by about 80,000 or so years ago – the 'spurting brain hypothesis'. Which is the right one depends on both further archaeological and molecular and evolutionary biology research, and how interesting it all is!

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Rock art and the public

Jean Clottes[1]

L'ART RUPESTRE ET LE PUBLIC

Il existe environ un demi million de sites d'art rupestre dans le monde, ce qui constitue le plus grand ''musée" d'art en plein air jamais connu. mais malheureusement ces pétroglyphes et pictographies d'une immense valeur patrimoniale sont menacés par la destruction naturelle mais également et surtout par les activités humaines. En tant que spécialistes d'art rupestre, nous devons fournir des informations au public et protéger cet art, quelles que soient les conditions environnementales qui varient grandement d'un pays à l'autre.

ABSTRACT

Nearly half a million rock art sites exist all over the world, constituting the largest open air art "museum" ever known. Until very recent times, rock art kept being created and renewed. Now, petroglyphs and pictographs are an extremely valuable heritage under threat of destruction, not only by nature alone but mostly from human activities. As rock art specialists we must provide information to the public and help protect the art itself, whatever the environmental conditions which vary greatly from one country to the next.

World distribution of rock art

Contrary to widespread public opinion, rock art can be found all over the world and Europe is the continent with the least sites. For the past twenty or thirty years, a considerable increase and improvement in rock art research has led to a spate of new discoveries.

Europe is the continent where the art is the most famous because of ancient painted caves such as Lascaux, Chauvet and Altamira. Palaeolithic art, however, is found at relatively few sites, with a total of about 350 from the tip of the Iberian Peninsula (caves in Andalucia) to the Urals in Russia (Kapovaya and Ignatievskaya). About half are deep caves, the others being shelters or even open air sites (Foz Côa in Portugal, Siega Verde, Domingo Garcia and others in Spain). Four other major groups of European rock art sites date to the Holocene and, all in all, might number around 10,000 sites.

In Scandinavia, thousands of petroglyphs were made by the first Neolithic settlers and then by their successors of the Bronze and Iron Ages on rocks polished by the glaciers. Roughly during the same period, an art with quite different themes flourished in the Alps. The great sites of Valcamonica in northern Italy and of Mont Bego in south-east France, with their tens of thousands (Bego) and hundreds of thousands (Valcamonica) of petroglyphs belong to this Alpine art. In Spain, the art of the Levant consists mostly of paintings found in nearly one thousand shelters from north to south, not far from the Mediterranean. It closely follows Ice Age art and lasts until the beginning of the Metal Ages. It is then replaced by a more schematic kind of art, known all over the Iberian Peninsula and around the Mediterranean. More than one thousand sites with petroglyphs, also post-Palaeolithic, are to be found in the Fontainebleau Forest, close to Paris.

Africa is probably the continent with most sites. The exact number is unknown but it likely exceeds two hundred thousand. The majority belong to recent periods. Roughly, one can distinguish two huge areas, that of the Sahara and neighbouring regions on the one hand, and that of southern Africa on the other. In central Africa rock art is certainly to be found in a number of places but it is significantly rarer.

Asia is less well known and its rock art is mostly undated. On that vast continent there probably are more than 50,000 sites, with possibly one fifth in China, but it is not yet possible to make an evaluation, however approximate. One can distinguish five main areas with rock art : the Middle East, Central Asia, India, China and Indonesia.

Paintings and petroglyphs are present all over Oceania, with important sites in Hawaii and on Easter Island. The most important country in the world for rock art is no doubt Australia, where there could be as many as 100,000 painted or engraved sites. The Cape York peninsula, Arnhem Land, the Kimberleys, and the Pilbarra are regions with innumerable and often extremely spectacular rock art sites. Also, Australia is – so far - the place with the longest uninterrupted art tradition, from at least 30,000 years BP (and probably much earlier) until the present.

American rock art is not known well enough, even if research has greatly intensified from north to south in the past fifteen years or so. Tens of thousands of sites exist from Canada to the south of Patagonia. They are very varied, from the gigantic ghostly figures

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Fig. 1: Sebayene Shelter, South Africa.

Fig. 2: Painting of mythological figures, Utah, USA.

of the Barrier Canyon Style in the American South-West and rather similar ones in Baja California, to the shamanic representations of the Pecos River in Texas and Mexico and the many thousands of petroglyphs of the Coso Range in California. In South America, they range from the profusion of colourful geometric figures in the jungles of Peruaçu to the vivid scenes with minute humans in the Serra da Capivara in Brazil (Clottes 2002). The (re)discovery of the abundance and spectacular interest of rock art all over the world has had, and is having, three main effects:

- it may have a positive effect in sensitizing decision-makers about the protection of the art in cases of development and attendant destruction. For example, the Foz Côa dam, in Portugal, was stopped in 1995 in order to protect the art;

- it also has negative effects because of direct and indirect vandalism. As more and more people go to the sites, the incidence of graffiti has increased dramatically. Amateur photographers are sometimes tempted to enhance the art by wetting faded paintings or by outlining petroglyphs, thus damaging them. Casts done by non-professionals may also cause irreparable harm. The archaeological context is often destroyed (in the Sahara, for instance) by irresponsible collectors who pick up the artefacts; and

- finally, the public want more and more information about rock art and this places the onus upon us, the rock art specialists, to provide it.

Providing information to the public

Providing information to the public can be done mainly by three different means, through the media at our disposal, by providing documentation on the sites themselves and also by displaying substitutes, i.e. replicas of the most vulnerable sites either *in situ* or in specialized museums and documentation centers.

The traditional media, books and journals, are becoming more and more devoted to rock art. In France, a special collection unique

of its kind, called 'Arts rupestres', has so far published sixteen well-illustrated large format volumes on important painted caves (Lascaux, Cosquer, Niaux, Altamira, Rouffignac, Chauvet (2)), on the art of particular areas (the Basque country, the Sahara, California, the Yemen, the Drakensberg, the Messak in Libya, the American Great Plains), plus one on world rock art and another one on the interpretation of Palaeolithic art (Editions du Seuil, Paris). What makes this collection special is that it is aimed at the general public which means that the texts – while providing the best and most complete information available - are readable by all and that the illustrations are plentiful and of high quality.

Among the journals dealing with world rock art, and not only with the rock art of a particular area, however large (like *La Pintura* about American rock art), one (*Rock Art Research*) is regularly published in Australia[2] with extensive papers and accounts of ongoing research worldwide, while the *International Newsletter on Rock Art* appears three times a year (each issue is 32 pages, all items being both in French and in English).[3]

CDs, DVDs and websites on rock art[4] are becoming more numerous every day, so that it is impossible to keep up with them. This is a problem in itself, both as concerns their access and the evaluation of their worth and interest. Without any doubt they will continue to develop and will provide a huge mass of easily accessible information in the near future. Information on the sites themselves is made available in documentation centers and/or explanatory panels next to the works of art. Excellent examples can be found everywhere, on all continents, whether in the National Park of Kakadu (Northern Territory, Australia), at Alta in northern Norway, at Petroglyph National Park near Albuquerque or again at the Serra da Capivara documentation center in Brazil.


Fig. 3

Fig. 3: Head of "The Big Giraffe", A ï r Mountains, Niger.

Excellent substitutes of vulnerable rock art sites can and have been made. The replica of Lascaux, called Lascaux II, that opened to the public more than two decades ago, is visited by more than 200,000 persons a year. In Spain, the replica of Altamira, set within a museum on the Palaeolithic, is enjoying enormous popular success.

The Pyrenean Park of Prehistoric Art at Tarascon-sur-Ariège, in the French Pyrenees, which opened in 1995, is an original concept of very high quality. The first aim was to interest and please the layman and also to offer a quality product that would be accessible to everyone while rigorously keeping within the bounds of our knowledge of the prehistoric evidence.

The Grand Atelier, the centrepiece of the Park, is visited using headsets that provide a commentary in several languages – with even a special children's soundtrack. The atmosphere of a cave is suggested by the absence of lighting: the floors are signposted with myriads of small lights that enable the visitor to move around without difficulty. A large scale slide show gives a panoramic view of rock art world-wide. The mound with the footprints from the Réseau Clastres (20m long) is accurately restored and given added effect with cunningly staged lighting. The facsimile reconstruction of the Salon Noir of Niaux and the areas surrounding it are the "star turn" in the Grand Atelier. Of course one should always visit Niaux, which has remained open

[2] Rock Art Research, P.O. Box 216, Caulfield South, Vic. 3162 (Australia). 21 volumes published.
[3] INORA, 11 rue du Fourcat, 09000 Foix (France). 41 issues published (3 per year).
[4] See, for instance www.bradshawfoundation.com

to the public, but the replica offers a rare opportunity to be in close proximity to the Magdalenian paintings. The observer can not only come very close to them, which is not possible in the real cave, but can also discover the animals from Niaux as the Magdalenians painted them. They have been faithfully reconstructed from photographs of the originals under ultra-violet light, with the result that many more details can be seen at the Park than on the "real" drawings.

Other projects are ongoing, like the one about the Chauvet Cave in the Ardèche (south-east of France), and a very ambitious Museum/Documentation center at Teverga, near Oviedo (Spain) about Upper Paleolithic rock art in Europe.

Protecting the art itself

The environmental, geographical and cultural conditions of rock art are so varied that there cannot be any fixed intagible rules that would apply to all. It is easy to make well-meaning pronouncements. It is far less easy to find the best type of solution for a particular complex problem.

For example, when, in 1997, we came upon the Dabous giraffes in the Aïr (Niger), they were indisputably in serious danger. The Tuareg rebellion was just finished and tourism was starting again. The spectacular giraffes carved on the rocks were less than three hours away from Agadez, the main town in the north of the country and a few miles from the only tarred road in the north of Niger. Already, some pieces of those extraordinary carvings were missing. The chances were they were soon going to be severely degraded. Now, making casts is generally looked down upon, as it affects the rock surface both chemically and physically. In this case, however, we felt that it was the best solution, provided strict precautions were taken. The specialists brought to the place would consolidate the carvings previous to casting them. If the worst came to the worst and they got vandalized later on, the replicas made from the mould would enable the the originals to be restored with perfect accuracy. In addition, the operation would draw considerable attention to these works of art and facilitate their protection. This is exactly what happened. Months before making the casts, the specialists were brought to the spot and experimented on similar but non-engraved rocks in the same environment in order to choose the right products and to make sure that absolutely no damage would be done to the engravings. The operation was approved at government level and two Cabinet ministers came to visit us while it was in progress. After it was over, the preservation of the originals was better than it had ever been, as the loose pieces, cracks and fissures had been consolidated. We left several wide patches uncast by protecting them, so that if analyses of the varnish, for example, were necessitated in the future, they could still be carried out. One replica was given to the town of Agadez and set up at the airport. Another is at the National Geographic Society in Washington D.C.[5]. After the operation was over, two guards were paid by TARA to watch over the giraffes and guide people at the site.

Therefore, in this particular case, we can say with hindsight after a number of years that the project was a success, both from the point of view of preserving the site and also as regards the sensitization of the public, of local populations and of decision-makers to the importance of protecting Niger rock art. This example shows that with due precautions it may be possible to use unconventional methods when necessity calls and that it is far better to do so than to resign oneself to foreseeable destruction.

Fortunately, many cases are less complex and a variety of solutions has been implemented whether for painted caves and shelters in Europe, for wide areas in the world where the art is to be found in numerous places, or for individual sites themselves.

The Palaeolithic painted caves of France, Spain and Italy are fairly easy to deal with, even if many errors were committed in the course of the 20th century. Nearly all the sites are closed with stout railings or doors and access is thus severely restricted. In several regions, rangers see to it that they remain protected and in special circumstances may take scientists for visits. About twenty painted caves in France and as many in Spain are open to the public who can satisfy their curiosity and interest for the original art in its natural surroundings. After decades of limitless visits in the most famous caves (Altamira, Lascaux) and the degradations they entailed, those caves have been closed to the public and strict regulations have been set for the ones which remained accessible: basically, the microclimate is monitored and the numbers of visitors reduced. Two main dangers must be avoided: first graffiti and vandalism, but also changing the microclimate (temperature, CO^2, humidity, micro-draughts, etc.) which could result in unforeseen consequences. So many parameters are involved that the main rule of thumb is to keep the conditions as they are, because we know that under those circumstances the art has been preserved for many millennia. Any changes – however well-intentioned – could be detrimental to conservation.

When rock art sites are found in their hundreds in a fairly extensive area, it has sometimes been possible to protect the whole area rather than individual sites. Five

examples come to mind. The first four are on the World Heritage List of UNESCO not only because of the excellence of the art but also because of the efficiency of its preservation. In north-eastern Brazil (state of Piaui), the Serra da Capivara National Park has more than 500 painted and/or engraved shelters, including Pedra Furada. The whole park is fenced and access is restricted to entrances monitored by guards. The environment (flora and fauna included) is as well preserved as the art itself. In Baja California (Mexico), the Sierra de San Francisco spectacular sites can only be visited with a special permit from the INAH (Instituto Nacional de Antropologia e Historia) and with official local guides who accompany the tourists down the deep canyons where most of the art is located and see to it that regulations are applied and no harm is done. In northern Australia, Kakadu National Park extends over a very extensive part of Arnhem Land and some of its sites (Ubirr, Nourlanghie Rock, Nanguluwur) are world famous. The main ones are monitored by rangers. Many other rock art parks, open to the public, are efficiently managed. One may also quote Foz Côa in Portugal, with thousands of petroglyphs strewn on rocks along both banks of the river Côa, which are watched over by guards and can only be visited by appointment with guides provided by the local Documentation Center. The Mont Bego sites, in the extreme south-east of France, are part of the National Park of Mercantour, a natural reservation high up in the mountains and only accessible from June to September.

Whether inside a park with hundreds of others or isolated, all rock art sites likely to be regularly visited are in danger of direct or indirect vandalism. When they cannot be physically protected as the painted caves are, or watched over by rangers or guards, one must on the one hand appeal to the visitors' better feelings and their sense of responsibility and, on the other hand, take whatever measures may diminish the risks of vandalism. Paths, or even symbolic protection like ropes between poles, are efficiently used all over the world to contain visitors, to prevent them from getting dangerously close to the art and from trampling a fragile archaeological surface. Information panels can explain all that in a positive way with much better results. Geoff Blundell at Les Eyzies Symposium, in 2000, showed how this could be done by emphasizing the value of the art ('You would not touch a Rembrandt, would you?') rather than by giving curt orders ('Do not touch the art!'). Panels with information on the art, its chronology, themes and meaning(s) are naturally welcome and appreciated. Sometimes, when the art is not immediately visible or understandable, tracings can be exhibited to make the visitors better understand what is there before their eyes and respect it.

In Scandinavia, a particular method has been used to prevent vandalism. As the art is scattered over thousands of sites and anybody can have access to them, only a very small percentage are indicated, posted and provided with information panels. The weather in those northern latitudes being overcast most of the time, it is not often that the petroglyphs stand out, can be seen by laymen and photographed. To avoid having them enhanced – generally by rubbing them with a stone or with chalk – which is very destructive to the surfaces, it was decided a long time ago that the petroglyphs in the most visited places would be painted in a bright color (red, yellow or white) using biodegradable paint. They would thus become highly visible. That method may at first seem shocking because it changes petroglyphs into pictographs and because it runs counter to the sacred principle of never touching the art. It has thus been much criticized and it has been abandoned in various regions. This has led to a new spate of degradation, for example by people who have trampled the art with heavy shoes, without seeing it, leaving striations all over it (Bardal, Trondelag, Norway).

Visiting unprotected sites

The great majority of sites are entirely unprotected and vulnerable to the ever-increasing flood of visitors. They cannot all be fenced in, provided with panels and paths or even watched over. Under such circumstances, furthering our aim to protect rock art and its environment is fraught with difficulties. How can one prevent irresponsible tourists or ignorant local people from making graffiti, enhancing barely visible figures, trampling petroglyphs, taking artefacts away and sometimes even stealing engraved rocks in order to sell them, most often after prying them loose and damaging them and their neighbours?

Relentless public education is one of the answers (see above), as well as bringing pressure upon governments to provide adequate legislation for the protection of the art. Special efforts, though, should be made with tour operators and guides, as well as with local communities. The obvious argument about the cultural value of a heritage to be proud of will be strongly reinforced by pointing out that all destruction and degradation lessens the touristic appeal of a resource upon which they all depend.

Serious cases of harm done to the rock art and/or its environment should be reported with

5 National Geographic were one of the sponsors. The operation was however mostly funded by the Bradshaw Foundation. The expedition was led by David Coulson, of TARA, with the help of Alec Campbell and Jean Clottes. Sidi Mohamed Iliès was in charge of the local logistics.

Fig. 4: Tuareg, nomad of Niger, beside large engraved sandstone panel, A ï r Mountains.

Fig. 4

Fig. 5: Dr Abdellah Salih demonstrating the results of attempted theft, Morocco.

all relevant details to the local or regional rock art organizations, such as GIPRI for South America, TARA for Africa, ARARA for the United States, RASI for India, AURA for Australia, and also to international organizations, like the International Committee on Rock Art (CAR-ICOMOS), the International Federation of Rock Art Organizations (IFRAO), the International Newsletter on Rock Art (INORA), etc. They in turn can help by advising the governments and/or the regional authorities of the facts, stress the importance and value of the art and offer advice. If necessary they can launch a letter and e-mail campaign to the people in charge.

This, in the past, has proved to be effective in a number of cases either by preventing the repetition of harmful actions or by avoiding destruction of rock art sites by development, quarries or road building. Lamenting the degradation of our rock art heritage is certainly not enough: we can and we must act and we have some means to do so.

Conclusion

We are confronted with a great variety of local conditions for rock art in the world. Everywhere, rock art researchers and enthusiasts are concerned with its continuing preservation both for its intrinsic value as a cultural resource and for the possibility of future studies. The increasing interest it now arouses in the general public is not likely to abate soon. This a hard fact, the consequences of which must be faced as best we can. We can make use of it to improve the situation by furthering a better knowledge of the art, of its importance and significance at all levels, with the public, with the local people near the sites, with governments and authorities, and also with international organizations, for example by working to have more major rock art sites put on the World Heritage List of UNESCO (Clottes 1997).

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Challenges of rock art conservation in Africa

Alec Campbell[1]

LES DÉFIS DE LA CONSERVATION DE L'ART RUPESTRE EN AFRIQUE

Je m'intéresse davantage aux besoins identifiés et aux défis lancés par TARA (Trust for African Rock Art) plutôt qu'm'arrêter à ce que l'Afrique essaie de faire ou n'arrive pas à faire. Mis à part l'Afrique du sud et dans une certaine mesure l'Afrique de l'est, nous ne savons pas si les autres pays ont des politiques relatives à la conservation de l'art rupestre et comment elles sont appliquées.

ABSTRACT

I look primarily at those challenges that the Trust for African Rock Art (TARA) has identified and tackled, rather than offer a broad view of what Africa is attempting or failing to do. Apart from southern Africa and, to some extent, eastern Africa there is much that we still do not know about, whether countries have written rock art policies or how their governments may administer them. Although we believe that the importance of rock art as our heritage is intrinsic and should not depend only on national economic factors, we recognise that the real guarantee to the art's long-term survival will be when local communities and national actors gain economic benefits through rock art tourism. For this reason, TARA's plans see rock art conservation and tourism going hand-in-hand.

The background

In 1950, only enthusiasts saw value in rock art; governments of some 40 countries, many with vast rock art heritages promulgated laws protecting the art and then did virtually nothing to conserve it. For the most part, the art was thought to be 'primitive' and was largely disdained.

The last few decades have seen governments taking more interest in their heritages, but rock art's priorities remain low and proper management funds are tight. Rock art conservation is a late starter and expanding populations, infrastructural developments, mining and pollution, and increasing tourism threaten the art, itself already delicate with age. In our travels, David Coulson and I have noted few on-the-ground protective measures taken, few interpretative notice boards or literature provided, very few custodians and a fair amount of damage. Licensed guides usually prove disappointing.

These are the problems David Coulson faced in the early 1990s when he discussed with Dr Mary Leakey the possibility of establishing a trust for the preservation of Africa's rock art and subsequently decided to publicise this heritage in a well illustrated book, African Rock Art: Paintings and Engravings on Stone (Coulson & Campbell 2001). The Trust was officially registered in 1996 and the book published internationally in 2001.

The changing scene

For many thousands of people, the public conception of rock art has changed. More and more well-illustrated books, magazine articles and rock art trivia are

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Botswana

having considerable effect. We are pleased that TARA is playing a role in this exciting process of change. It will, however, take many more years for its full impact to reach Africa's remoter areas where much of the rock art is located and, almost certainly, where local site-management is most needed.

Nobody underestimates the challenges involved in implementing these changes yet, most importantly, the process has begun. Governments are starting to nominate sites for World Heritage status; parks and reserves have been established over a few rock art areas; sites are being gazetted as monuments; a few custodians are being appointed; and, in some countries, local people act as informants to protect their art. This is a beginning; TARA believes better management could and should be developed in almost every country visited.

The first challenge

The Trust for African Rock Art is a young organisation. The ten years spent establishing the Trust have been an exciting if not always an easy time. The greatest challenge has been met: demonstrating the Trust's value to rock art conservation and thereby getting it established. I say this because major Foundations have expressed faith in the Trust by sponsoring its activities.

TARA's aims

TARA's aims seek to ensure the art's survival through surveys and recording of sites, creating a greater global awareness of the art's importance and delicate state, keeping an eye on its welfare, providing an information centre and supporting rock art conservation. The Trust is not a research organisation; however, I touch on dating and discuss some research only because of their significance in establishing the art's importance and world value, and thus emphasising national and

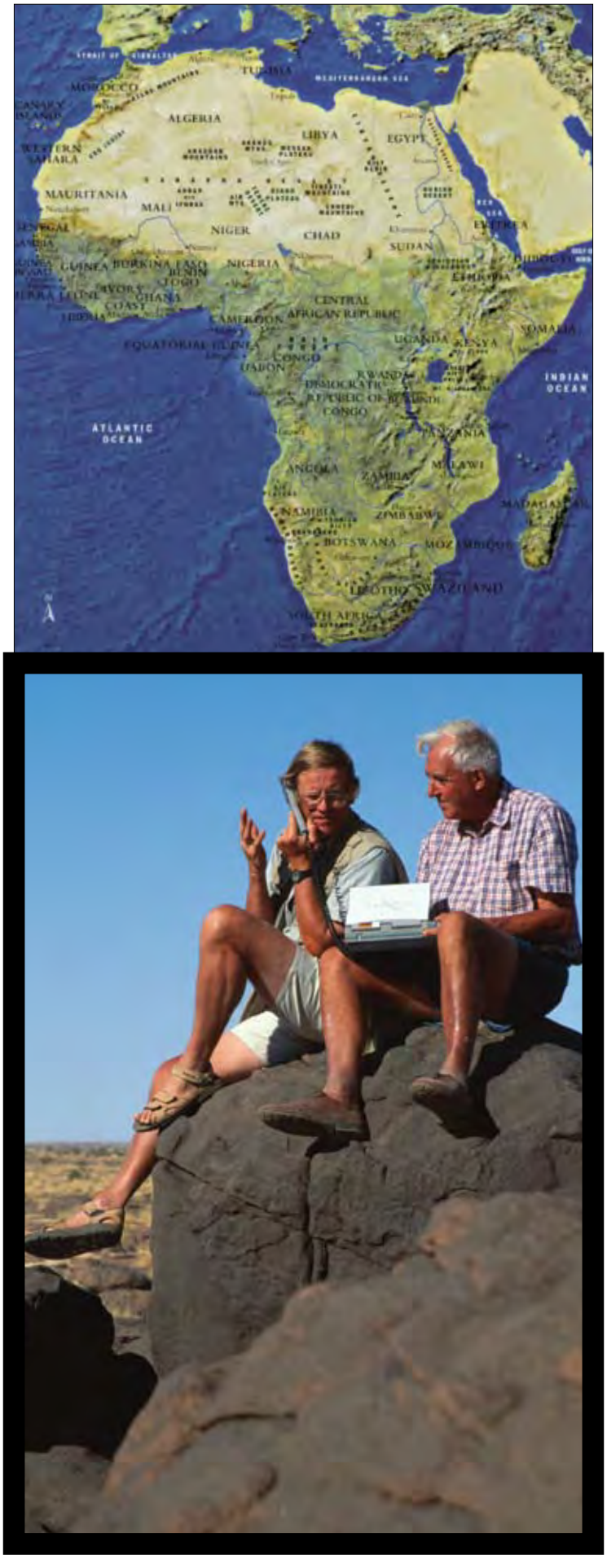

Fig. 1: Distribution of rock art in Africa

international obligations to protect it.

Dating

Obtaining true dates for rock art is important in establishing the art's value. A considerable percentage of the Elgin Marbles' value lies in their age, about 2500 years; how much more valuable are magnificent engravings, three or even four times as old as they are? While not involving itself in chronometric dating techniques, TARA strongly supports the efforts of those qualified to develop and use them, and encourages relevant institutions to undertake more dating work in Africa because of the urgent need for this type of data.

Understanding the art

Some archaeologists reject the possibility of interpreting rock art saying meanings ascribed to it can never be proven; others take more positive approaches to penetrating the art's meaning (Whitley 2001). TARA fully recognises the importance of understanding the art, but believes that too few serious attempts to interpret 'meaning' have been made, particularly in areas north of the equator. Our experiences suggest that local people still have a wealth of information, particularly for understanding the younger art. I look at a few interpretations already proffered and then record some of our own experiences.

Some North African interpretations have included:

- recognising the art as ancient universal symbols of religion: Earth Mother, gods of the sky, vegetation cults and so on (Le Quellec1993);
- believing some early Algerian paintings reflect modern Fulani myth (Hampate-Ba and Dieterlen 1966); and
- seeing a large Saharan painting of mainly herded cattle as a serial depiction of the pastoral lifestyle that was used to educate and initiate youths into a cattle cult (Holl 2004).

More recent Central and East African paintings (and some engravings) have been described as involved in rainmaking and fecundity, as images used by secret societies, and images used during rites of passage ceremonies (Smith 1997). Some researchers of Saharan art are being tempted by the work of southern African researchers to see aspects of altered states of consciousness depicted in the Saharan images (Muzzolini 2001).

Our own experiences suggest that, behind Islam, much remains of ancient beliefs and practices that could help elucidate at least the more recent art. We witnessed two Tuareg playing a rock gong and describing how the sounds emitted are still interpreted.

We learned that Tuareg women attain altered states of consciousness, become possessed by spirits and perform curing dances; that hills, boulders and water contain spirits; that evil spirits abound; and that an engraving in Niger brings serendipitous gifts when painted. Engravings and handprints in an Egyptian cave strongly suggest a rainmaking site. A Maasai explained how young men were strengthened at painted meat-feasting sites.

It is now so long since the earlier art was made, perhaps 5 000 years and more, that modern ethnographies and local knowledge

can offer little help with interpretation.

However, collective studies of Africa's traditional beliefs about animals and their cosmic status, cattle cults, initiation, rainmaking and fecundity may suggest possible meanings behind the earlier images. While we may never be certain why the art was made, we may begin to understand what the images represent. TARA believes that more time should be devoted to these studies, particularly in northern and East Africa.

Surveys and recording

Many rock art sites are yet to be 'discovered' and recorded. During TARA's recent surveys in the Sahara, for example, we have located, made notes on and photographed at least 25 unrecorded sites (Niger, Algeria and Mauritania) and learned of the existence of many others that, to our knowledge, have never been recorded. In Mauritania, we learned that sites exist just over the border in Senegal (Fig. 1). During the last nine years, TARA has surveyed sites in sixteen countries, logged GPS locations; taken more than 70 000 slides and made some 500 ink reproductions; built and equipped an archive and is currently digitising slides for the Andrew Mellon Foundation's website, ArtSTOR. Our archive and database offer new possibilities for research, education and appreciation of the art's magnificence.

The development of new recording methods, photogrammetry and laser scanning, extend conventional photography and has prompted the Trust to branch tentatively into these fields. In 2002 in a river bed in Algeria, we successfully recorded by photogrammetry an upward-facing, eroded, 110 square-metre engraving of huge giraffes first recorded by Henri Lhote (Lhote 1975, 1976). Professor Heinz Ruther undertook the work at that site. Currently, we intend to record by laser-scanning two large and crumbling engravings, perhaps 8 000 years old, in southern Libya. Using the results obtained, models can be made of the engravings both as permanent records and for purposes of display. Although both methods of reproduction, photogrammetry and modelling from laser-scanned imagery are expensive, we believe the high costs are well worth the results.

Raising greater global awareness

TARA's first major attempt to raise public awareness was the book in English covering the art of the whole continent (Coulson & Campbell 2001). An enormous undertaking, this involved endless fundraising and travel to sixteen African countries. Lavishly illustrated and aimed at the art-loving public, the book is now the layperson's standard work on the subject. Launched in New York, Nairobi, Cape Town, Johannesburg and Gaborone and promoted in two lecture tours, the book has been translated into German and sold over 10 000 copies. We have prepared another book on the rock art of Dabous and the Aïr Mountains in Niger as the result of recording, mapping and studying the 830 engravings at Dabous and visiting over 50 other sites in Aïr. We have lined up a French publisher and are hopeful of soon finding an English language publisher.

Since its inception, TARA has promoted African rock art to the public through articles in *National Geographic, Time, Archaeology, Natural History, People, Travel Africa* and other magazines aimed at a wide audience. TARA has also published in scientific journals such as *INORA* and *Sahara.*

Given the broad public and specialist readership involved, several million people must already have been exposed to African rock art through these efforts. The readership of *National Geographic* alone is estimated at 50 million. The impact of these publications also has a more specific importance in bringing critical issues to the attention of those who will define the field and educate a larger public.

In 1999 and with the help of the Bradshaw Foundation and of Jean Clottes, TARA arranged for a life-size mould of the Dabous Giraffes, a huge engraving in Niger (Fig. 2), first noted by us in

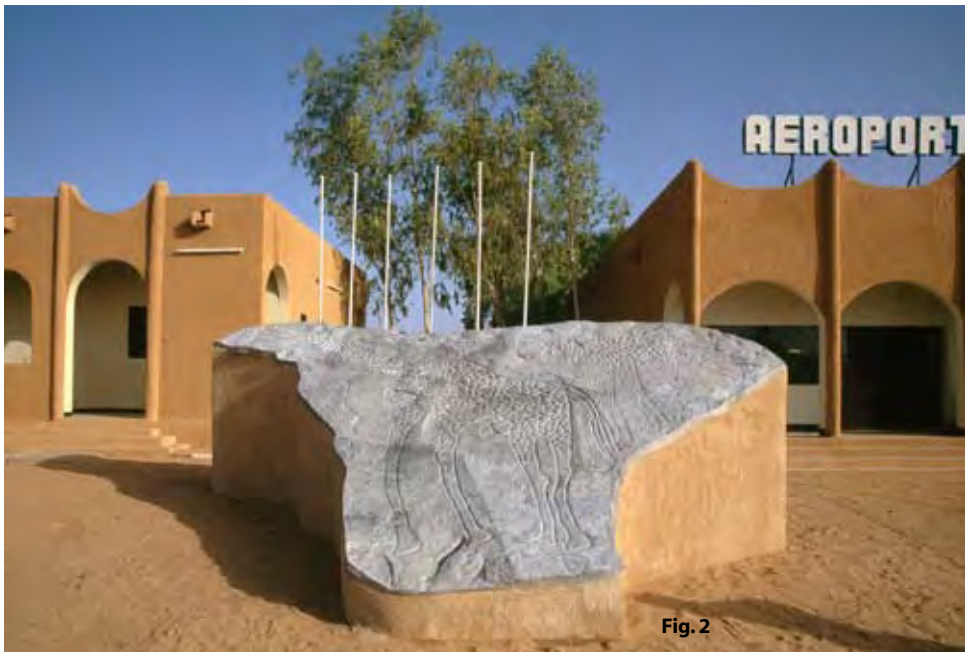

Fig. 2. The engraved giraffes at Dabous, Niger.

1997 during a survey expedition sponsored by the National Geographic Society. Two Ministers, the *Prefet* of Northern Niger, the Sultan of Agadez and other dignitaries attended the presentation of the cast to the Niger Government and installation outside the VIP lounge on Agadez International Airport. Meanwhile, other casts have been exhibited in London, Washington and Cologne, and one is permanently installed in the National Geographic Society's Sculpture Garden in Washington DC. TARA is currently developing a broader range of ways to reach the global public. For instance, we are developing a documentary film, to be shown on international television in 2006 and an international travelling exhibition that will open in world capitals the following year.

We have initiated a TARA website, www.africanrockart.org, which we continuously upgrade. At a local level, TARA, has mounted an African Rock Art exhibit in Zanzibar in 2002 as part of the Zanzibar Film and Cultural Festival, seen by thousands of people. A much larger exhibition opened at the National Museum, Nairobi during the TARA conference in November 2004 and some 150 000 people were expected to visit it during the four months it was open. In support of these exhibitions, we have produced a short video in English and Kiswahili. The video is in modular form and can be replicated for other African countries.

Networking/Co-operation

Notwithstanding our efforts to create global awareness, TARA is extremely conscious that the long-term success of rock art conservation must depend on recognition by national governments and local communities of the art's value and management needs. Thus, we try to develop ties with local institutions wherever we work. TARA has discussed and approved in principle an 'Agreement of Understanding' with the Government of Niger, is affiliated with the National Museums of Kenya, and is developing closer links with universities and antiquities departments in Botswana, Niger, South Africa, and other countries. Although institutions are important, TARA believes its work with local communities is perhaps even more important. First, at Dabous in Niger and now at Kakapel in Kenya, TARA is working with local communities to support the development of responsible and sustainable tourism. I return to this later.

Education

In the long term, TARA believes the citizens and communities of Africa represent the real future for rock art. Our programmes aim at adults, students and tourists. For Niger, where we found no information available to the public and no protective measures taken, we have produced basic rock art brochures on the Dabous site, the Aïr Mountains and a more general pamphlet on the Sahara. We have also produced for local use a booklet on the rock art of East Africa. In addition, we have devised and printed a *Code of Conduct* for rock art safari operators. Particularly important are today's children in ensuring that future generations are able to value, enjoy and study the art. Currently, we are beginning to work with curriculum development and textbook designers investigating the possibility of including greater emphasis on rock art in East African schools' curricula and their use of a travelling exhibition and video.

We believe that encouraging students' interest in rock art will result in greater numbers studying the art at post-graduate level. TARA has sponsored a Tanzanian student at the University of the Witwatersrand Rock Art Research Institute, South Africa, and hopes to work with institutions to increase the opportunities for African students to study and research in rock art related fields.

Archive and Information Centre

The Andrew Mellon Foundation has sponsored a climate-controlled digital archive and a database, now built and in operation at TARA's Headquarters in Karen, Nairobi. Archive equipment provides for scanning, specialised digital imaging and specialised large-format printing. Currently,

TARA's photographic records, some 60 000 slides, are being scanned and digitised and entered into a database. A selection of these will be made available to researchers and subscribers on the Andrew Mellon website, ArtSTOR. While the archive makes possible the supply of more specific information on Africa's rock art, TARA is establishing a rock art library and accumulating data eventually to provide a source of general information to both researchers and the public.

Protection

Rock art tourism is expanding and, whether we like it or not, numerous sites little visited today will become major tourist attractions in the future. Today's preparations prepare for tomorrow's flood. TARA has been particularly involved with two main sites, Dabous in Niger and Kakapelii in Kenya.

Dabous, Niger

Since the Tuareg Rebellion ended in 1995, tourism has greatly increased in Northern Niger with almost every tourist visiting one or more rock art sites. Recognising that the art was receiving no protection, TARA consulted the local community and encouraged the formation of a local NGO, *Anigourane*, to help conserve and promote Niger's rock art heritage.We noted an urgent need to protect a particular and truly magnificent engraved site close to the main road, the 'Big Giraffes' at Dabous. In 1997, TARA appointed and commenced paying two custodians to protect the site. With US Embassy help, TARA improved and aligned the access tracks, defined a parking area away from the site, dug a well, erected an information board and printed brochures.

TARA also applied for and saw the site listed in the *World Monument Fund* 2000 Watchlist of the World's Hundred Most Endangered Sites, the first rock art site to be so listed. A TARA photograph of the engravings appeared on the cover of the WMF 2000 printed catalogue and in all *World Monument Fund* promotional material. In addition, WMF awarded TARA US$25 000 to prepare a conservation and management plan for the site. TARA continues to support the custodians and their local supervisor.

Kakapel, Kenya

Kakapel, in the foothills of Mt Elgon and easily accessible by road, is Kenya's little-known but foremost rock painting site. Working with the National Museums of Kenya and the local community, TARA has arranged purchase of the site and adjacent land and has seen the site gazetted by law as a 'monument'. TARA is now working with the National Museum and local community to design a management plan, remove graffiti and ensure proper future protection. At the same time, TARA is working with the National Museums of Kenya and donors to develop and protect those other sites in Kenya likely to be affected by tourism in the near future.

Monitoring

TARA has noted and reported on three incipient problems, theft of engravings in Morocco, prospecting for oil and potential mining in a rock art area in southern Libya, and graffiti scratched into the paintings at Kakapel. On a visit to Morocco, Dr Abdellah Salih showed us numerous engravings broken by thieves when they tried and failed to load these onto their vehicles, and holes from which the thieves had managed to remove engraved boulders. He said the stolen engravings are taken to Europe where, he understands, collectors and even a museum have bought them. Salih estimates 30 per cent of engravings in one area have been stolen and a greater number broken during attempted thefts. TARA brought to public attention these thefts in an article in *INORA.*

We saw that LASMO, an oil exploration company, while prospecting on Libya's Messak Plateau, scored a huge grid of kilometre-squares into one of the world's richest rock art areas and, through friction created by heavy machinery, threatened damage to numerous engravings some of which may be over 8 000 years old. Recommendations made to the oil company were subsequently published in *INORA* and discussion about the need for pre-development impact assessments was held with representatives of Libya's Government.
Fresh graffiti found at Kakapel was brought to the attention of the National Museums of Kenya, thus aiding the process of gazetting the site as a 'monument' and purchasing the land TARA is planning GIS/Mapping/Survey to eventually cover the whole continent. Obviously, this will be a huge and costly undertaking and be spread over a number of years. Hopefully, other institutions and national governments will become involved.

Conclusion

Financing rock art conservation is expensive in Africa, a huge continent with vast numbers of sites often found in remote areas difficult of access and sometimes requiring long treks on foot or by camel. Think about finding the funds to operate in a vast and empty land such as Northern Niger.

Our current and most important challenge is combating the general lack of knowledge and understanding of the issues in countries that are usually poor and in which culture and heritage have taken a backseat in the face of more pressing economic health and social issues.
However, this is possible and here I quote the Southern African Rock Art Project (SARAP), relatively cheap for what it achieved, that brought rock art personnel from

Southern African Development Community (SADC) countries together in a common aim: to nominate sites in their countries to World Heritage status. Not only did the project provide some training, but it also engendered a sense of pride in countries that have seen their sites listed.

Although we believe that the importance of rock art as our heritage is intrinsic and should not depend only on national economic factors, we recognise that the real guarantee to the art's long-term survival will be when local communities and national actors gain economic benefits through rock art tourism. For this reason, TARA's plans see rock art conservation and tourism going hand-in-hand.

Apart from raising the priority of tourism at individual and national levels, the most pressing problem is shortage of funds. We believe our campaigns are important in raising the art's profile in national agendas and budgets, but recognise the severe limitations to the availability of public funding. We see our major challenge as seeking and obtaining philanthropic funding, official development assistance and private tourism resources to develop and sustain rock art in the public interest in Africa.

Acknowledgements

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The meaning of rock art: ethnography, comparison, metaphor

Megan Biesele[1]

LA SIGNIFICATION DE L'ART RUPESTRE: L'ETHNOGRAPHIE, LA COMPARAISON, LES MÉTAPHORES

Une approche comparative sémiotique, dans laquelle une tradition orale joue un rôle central, est proposée dans l'enquête sur la signification de l'art rupestre. L'art rupestre et le folklore sont considérés comme étant des parties d'un système de communication primitive qui partagent les processus basiques de signification et de transmission. L'art verbal et visuel, y compris le folklore et le rituel animé, peut être clarifié par des idées utiles socialement, des attitudes, des valeurs et des accords partagés. Ils permettent aux sociétés de fonctionner dans leurs environnements et d'avoir le potentiel de mettre en lumière l'art rupestre. Plutôt que d'implorer simplement pour la conservation de l'art rupestre, nous devrions célébrer le dynamisme positif qui peut être créé grâce à un développement adéquat du patrimoine moderne.

ABSTRACT

A comparative semiotic approach, in which oral tradition plays a central role, is suggested for the investigation of the meaning of rock art. Both rock art and folklore are regarded as parts of a system of non-literate communication that share basic processes of signification and transmission. Verbal and visual art, including folklore and animate ritual, can be clarified by socially useful ideas, attitudes, values, and shared agreements. They keep societies functioning in their environments and have the potential to illuminate rock art. Rather than plead simply for conservation of rock art, we should celebrate the positive dynamism that may be created with appropriate modern heritage development.

The interpretation of rock art is as hotly debated as is that of other cultural symbolism-- perhaps even more so. Its makers, after all, are mostly gone and their descendants, until recently, have been mostly voiceless in world dialogues. In many cases, those descendants have also been left clueless as to the meanings of the rock art of their ancestors, except where oral tradition has preserved metaphorical links.

But where oral tradition has been interrupted, often by colonial forces, descendants of the painters must fall back on the same tools as we use - tools like ethnography, comparative study, and a scientific approach to symbolic information. This combination is a way, as Wilmot James put it in his 2004 conference presentation, to "give a human face" to the makers of ancient rock art. Or as I like to put it, detailed scientific attention to archaeological metaphors is a good way to humanize the past. This approach is of course semiotic: it depends on the science of signs. My paper outlines a semiotic, scientific approach to the meaning of rock art. I emphasize at the outset that where resonant metaphors are involved, scientists are as prone to subjectivism as anyone else, and must constantly fight it.

I also emphasize that indigenous descendants of the prehistoric artists are themselves not immune from subjectivism. Symbolism is inherently attractive to human beings: it engages the ancient human capacity for aesthetic appreciation. These observations point up the central role of oral tradition for everyone who is asking about the meaning of rock art.

I am not an archaeologist, but a folklorist and ethnographer. I work in documenting an endangered language and an oral literature, those of the Ju/'hoan San (Biesele 1993). I address the challenging subject of meaning in rock art from the point of view known in anthropology and folklore studies as 'the ethnography of speaking' (or in this case, of painting and engraving). In addition to my emphasis on signs, languages, and texts, I like to situate the actions of painters socially and within history as far as possible, using ethnographic sources and other cultural media for clues to the symbolism of ancient rock art.

In all this I take a comparative perspective, noting similarities

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among many hunter-gatherer and some pastoralist societies of the world, past and present. I treat the bodies of rock art in areas with which I am familiar, such as southern Africa and west Texas, as 'literatures' with interrelating metaphors made increasingly resonant with differential repetition.

Both rock art and folklore can be fruitfully seen as parts of a system of non-literate communication. They share basic processes of signification and transmission. In southern Africa we are fortunate to have pockets of surviving oral tradition with direct relevance to much of the rock art.

We even, now, have the beginning of a cultural renaissance in which young San ('Bushman') people are taking an interest in the past traditions that may illuminate their rock art. I shall say more about this renaissance as my paper continues.

Immensely important work has been done, as many archaeologists know, linking the paintings of South Africa, Botswana, Namibia, and Zimbabwe to oral tradition collected in the nineteenth and early twentieth centuries by Bleek and Lloyd. Some of the authors of this work attended the first TARA conference in Nairobi in November, 2004: they included Geoff Blundell, Janette Deacon, Aron Mazel, John Parkington, and Ben Smith.

In very recent years, the Bleek and Lloyd Collection at the University of Cape Town has been digitized and made available to scholars, some of whom will be following the leads of Thomas Dowson, Mathias Guenther, Jeremy Hollman, David Lewis-Williams, Sigrid Schmidt, Anne Solomon, and Patricia Vinnicombe, as well as the scholars mentioned above, in linking oral traditions of the /Xam to the southern African paintings.
Emulating Bleek and Lloyd in small ways, I myself try to provide useful oral material from Ju/'hoan San traditions in Namibia and Botswana. I am currently engaged in digitizing my own collection of Ju/'hoan folklore texts and making it available in authoritative transcriptions and translations for use by scholars and by Ju/'hoan communities for archives and curricula. I like to think of this work as 'working myself out of a job' as young San people take over the preparation and interpretation of their own authoritative texts. I regard my work and that of the colleagues I've mentioned as a meaningful but time-limited contribution to recent decades of African cultural documentation. It has been a kind of 'holding action,' a conservation of records until now, when a new generation of San

descendants, some of them literate and finally finding access to secondary and even tertiary education, is interrogating its own traditions.

I am thinking of new indigenous scholars such as Laetitia Peterson, from Upington, South Africa, working with the Bleek and Lloyd Collection; John Parkington's trainees at Clanwilliam in the Cederberg; my own Ju/'hoan trainees Dahm Kim Dabe and Kaqece Kallie N!ani in Nyae Nyae, Namibia; and people in a growing number of other heritage projects around southern Africa. I am thinking of new publications such as *Voices of the San* (Le Roux & White 2004), just published by Kwela Books and launched the month of this writing (December, 2004) in the Northern Cape, Western Cape and in London.

I am thinking, too, of new ecotourism and heritage conservation projects benefiting local people in the region, such as the Brandberg, Twyfelfontein, and Spitzkoppe in Namibia. I am pointing these out hoping for success in other projects in southern Africa where local scholars could be trained, and where local people could benefit from heritage tourism, such as Liphofung in the Muela area of Lesotho and the Maluti-Drakensberg Transfrontier Conservation Area in South Africa/Lesotho. I believe, with many of the speakers at the TARA conference, that the conservation of rock art (and oral tradition) cannot in future be divorced from tourism.

Most of my own work has centered on hunter-gatherer ethnography and how it can illuminate, and be illuminated by, both folklore and rock art. I am most interested in how both of these cultural media participate in the historical success of hunter-gatherer communication systems, systems that have long supported these longest-tenured of human societies. Too often, both folklore and rock art studies are seen as 'stepchildren' of anthropology and archaeology. They have been regarded as frosting on the cake of the serious business of understanding culture through kinship, economy, and social organisation. But this view is changing: more importance is now given to understanding the knowledge required to make a cultural system work over time, and to how that knowledge is codified, stored, and shared. Non-written expressive forms, partly because they are dramatic and memorable, help to do these three things in culture. I have come to see verbal and visual art as parts of the 'engine' that keeps a culture functioning in a specific environment.

The very longevity of the hunting-gathering cultures of the world makes it imperative that we look at how integrated the 'frosting' is with the 'cake'. Since 1966 there has been a long series of conferences on hunter-gatherers (Man the Hunter, and CHAGS I –IX); the international comparisons have been most instructive. Of course we should not look at hunter-gatherers exclusively when thinking about the meaning of rock art: much of it, such as in North Africa, was produced, and is still used, by pastoralists. But understanding and comparing the ethnography and traditions of hunter-gatherers can be instructive for a portion of the world's rock art, and the approach is potentially generalisable.

The main comparative work in rock art that I have had a chance to be involved in has focused on southern Africa (my research area) and my home area of Texas. I work in these two areas with archaeologists David Lewis-Williams and Carolyn Boyd (2003), respectively. Parallels between the approaches of these two researchers are striking, and have led me and Carolyn Boyd to establish in Texas a centre for the cross-cultural comparison of rock art.

The centre is called SHUMLA, both the name of the ranch on which it is located and our acronym for Studying the Human Use of Materials, Land, and Art. The centre, which emphasises public education for all ages as well as research and scholarship, has ties to TARA in that David Coulson and Alec Campbell have agreed to join our advisory board, along with Jean Clottes and other international rock art specialists.

SHUMLA and TARA both embrace an ethnographic, non-subjective approach to the meaning of rock art. Comparative hunter-gatherer studies play a major role in this approach. For instance, from these comparative studies, what may be called a 'foraging style' characterising these societies has emerged. I shall list some of its facets as they are reflected in social arrangements and expressive forms:

- seasonal economic patterns are deeply etched
- marriage and residential arrangements are salient
- there is division of labour and social domains by sex and age only
- hunting is opposed symbolically not to gathering but to reproduction (e.g. first-kill rites vs. menarcheal rites)
- there is sympathetic identification of hunters with prey, and/or of their wives with prey
- there are Lord of the Animals figures, and propitiation to them
- food animals function as helpers
- meat-sharing is socially and symbolically elaborate

- healing and altered states (transformation in general) are valued and flexible ideas

- there is immense concentration on sharing, reciprocity, and social levelling.

Both folklore and rock art represent, refract, and endlessly examine these themes. I think of both media as great 'literary' traditions that continually interrogate themselves. This process of interrogation is how they continually and creatively move forward.

In the course of my fieldwork with the Ju/'hoan San, I found that to study how cultural experience and symbolism mutually reinforce each other, I had to study *everything*. Gathering, hunting, the name of every species and how to use it, social standards of giving and receiving both physically and verbally — all this was grist for the mill of understanding cultural media. Instead of focusing all my attention on texts, I took the opportunity to work as an old-time ethnographer. In my writing since, however, I present information differently from old-time ethnography: expressive culture is there from chapter one on, and is not relegated to an obligatory last, or 'frosting' chapter.

I also found it useful to take a figure-and-ground approach to Ju/'hoan 'folk concepts', precisely because they were highly visible to me due to their difference from my own culture. This approach was one of many attempts to minimize the danger of subjectivity. Folk concepts are hinged on powerful metaphors that gather strength with incremental repetition in different media. I found Ju/'hoan problem-solving metaphors that had no equivalents I was aware of in Western culture to be particularly widespread and potent for understanding the art. I shall list four that illuminated the folklore for me and, I believe, may begin to illuminate San rock art as well:

- *!aia*, trance

- *n!om*, spiritual energy

- *n!au*, powers of the spine linking control of prey, weather, and childbirth

- *!uig!oq*, magical escape from carnivores.

I have also been much interested in the dual symbolism of arrows in Ju/'hoan healing. Just as arrow symbols in our own society may mean a variety of things known only by convention, arrows in Ju/'hoan society may signify both healing power and illness. To use this information to inform rock art study, we need detailed verbal access to the conventions of Ju/'hoan healing ideology — i.e.

through ethnography and oral tradition.

Janette Deacon (1992:1) well expressed the necessity of understanding such conventions when she wrote that "An arrow is an artefact of the mind as much as it is an artefact of technology." The late Patricia Vinnicombe (1976: 304) similarly voiced the duality between the ordinary and the (always potentially changing) ritual and symbolic weight of the activity of hunting, which is "not merely a technical act concerned with obtaining food, but a ritual performance in which were embodied certain symbolic and expressive elements…their significance is not immediately apparent to the outsider (and even the participants) can rarely express their understanding verbally."

This last comment shows why both ethnography and textual analysis contain healthy doses of sleuth-work, sometimes requiring years of listening to indirect statements and poring through texts for clues to the meaningful conventions of culture. These studies can be seen, in fact, as a kind of 'forensic archaeology of thought', hopefully leading to genuine 'Aha!' experiences of cross-cultural understanding.

I suggest that all such symbolism can and should be studied in multiple media within a culture. Studied scientifically through symbolism, the great ideological themes can be seen to spangle the folklore, animate ritual, and potentially illuminate rock art. In answering questions about the meaning of rock art, a good mode of operation is to clarify the penetration of both verbal and visual art by ritually and socially useful ideas. In the long run, it is social ideas, attitudes, values, and shared agreements that keep societies functioning in their environments.

Today, of course, as always, these ideas and their expressions are in flux. Among factors affecting the meaning of rock art today must be counted issues of cultural identity among indigenous people who may or may not be the descendants of the painters. Rapidly changing, too, is the state of these peoples' ownership of rock art in both physical and political senses. Rather than plead for simple conservation of the threatened rock art of Africa and the world, the implication of my paper is a celebration of the positive dynamism that may be created with appropriate modern heritage development.

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Dating of rock art in Africa

Aron Mazel[1]

LA DATATION DE L'ART RUPESTRE EN AFRIQUE

Cette vue d'ensemble de la datation de l'art rupestre sur le continent africain prend en compte les méthodologies qui ont été utilisées pour dater cet art et la compréhension actuelle des séquences et des cadres temporels de l'art rupestre. Alors qu'il pourrait être daté d'au moins 70 000 ans, la plupart des oeuvres datent d'il y a 10 000 ans et peut-être même sur les 6000 dernières années. En général, notre connaissance de la datation de cet art à travers le continent est morcelée et certaines datations sont contestées. Etablir une base de connaissances chronologique détaillée et sérieuse représente un défi essentiel pour les chercheurs travaillant en Afrique, qui désirent expressément explorer les circonstances socio-économiques spécifiques qui alimentent sa production. Il y a un besoin urgent pour une recherche plus intensive concernant la datation relative et absolue des peintures et des gravures rupestres africaines.

ABSTRACT

This overview of the dating of rock art on the African continent considers the methodologies that have been used to date African rock art and the current understanding of the rock art sequences and timeframes. It would appear that while African rock art dates from at least 70 000 years ago the majority of rock art dates back to the last 10 000 years, and perhaps even to the last 6000 years. Overall, our knowledge of rock art dating through the continent is patchy and some is contested. Establishing a firm and detailed chronological knowledge base for rock art represents a key challenge facing researchers working in Africa who desire to meaningfully explore the specific socio-economic circumstances that informed its production. There is an urgent need for increased research into the relative and absolute dating of Africa's rock paintings and engravings.

Introduction

In Africa, as in other parts of the world, the age of rock art has been of interest to researchers and yet chronology has seldom dominated research projects on the continent except in North Africa where it has steered research for at least 70 years. It is likely that the paucity of chronological research largely reflects our inability to directly date the rock art and place it in secure historical trajectories. This has, in turn, inhibited research into how the large corpus of rock art produced by Africa's hunter-gatherers, agriculturalists and pastoralists was embedded in the social, economic, and intellectual fabric of these societies. Improving understanding of these factors requires greater integration of rock art data with excavated data to construct socio-economic archaeological knowledge. This will need to be underpinned by substantial advances in our understanding of relative and absolute rock art chronologies. The predicament of having two rich datasets which were difficult to integrate was recognised by Inskeep (1971:102) several decades ago: `We are in the embarrassing position of having a rich source of documents on a phase of prehistory which often we can read (in part at least), but which we cannot arrange in groups, or in chronological order. The situation is somewhat akin to that in the great 'cabinets' of Europe before Thomsen proposed his Three Age System.'

While there is an urgent need for an increased commitment to the dating of African rock art, it is nonetheless evident that substantial progress has been made in our understanding of relative and absolute rock art chronologies since the 1970s and these advances form the basis of the paper. Indeed, Africa commands a special place in the history of rock art dating in that the first direct C14 date (500±140 BP[2]) was obtained on a black human figure finger-painting from the Western Cape in South Africa (Van der Merwe et al. 1987).

This paper is an overview of the dating of rock art on the African continent according to three broad regions. I deal with North and Southern Africa first before considering Central Africa. The conclusion considers some of the challenges facing the dating of African rock art.

North Africa

North Africa is the only region where dating has been central to rock art research for an

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[2] All radiocarbon dates quoted in this paper are uncalibrated

extended period and has been the subject of considerable ongoing disagreement. In 1974 Mori (1974:87) commented: 'It is well known that there is no consensus of opinion about the absolute chronology of the various phases of the rock-art of the Sahara and North Africa.' These debates persist in the discussions of rock art dating, which have been dominated by Mori, Lhote and Muzzolini. This section will briefly consider some of the methodologies that have been used to date North African rock art before investigating the current understanding of the rock art sequences and timeframes.

The construction of North African rock art chronologies has been hindered by:

(1) the absence of painted and engraved portable stones and slabs in dated archaeological contexts;

(2) the paucity of excavated ochre-stained palettes; and

(3) until recently, the discovery of sufficient superimpositioning of the art in a site to generate a sequence.

Dating has tended to revolve around patination, archaeological and climatic associations, and the portrayal of datable subjects.

In terms of superimpositioning, which according to Keyser (2001) represents the oldest and most commonly used technique for sequencing rock art, a recent paper by Zboray (2003) has provided the first indication of the role that relative dating may play in North African rock art. Zboray (2003) identified at least five, and possibly up to eight layers, of paintings in a small rock shelter in the central Libyan Desert. According to him (2003:125), 'The bovids of layers 2-7 are sufficiently similar in style to assume that they belong to a development of the same culture, within an indefinite time frame.'

The earliest paintings are small human figures and giraffes and they clearly predate the 'bovidian' phase which Zboray (2003) believes confirms the stratigraphic relationship that was long thought to exist. This discovery is a significant development, provides optimism that other similar sites may be located and raises the possibility that inferences drawn from the sequencing of paintings may, in time, be extended to the study of the engravings.

No painted stones have been recovered and ochre-stained palettes are extremely rare, an exception being the recovery at Toulkine Shelter (Morocco) of an ochre-stained palette from a stratified archaeological deposit (Glory 1955), which is probably associated with the Neolithic period. Charcoal from Glory's excavations produced a C14 date of 2380±60 BP (Bayle des Hermens et al. 1984), but thermoluminescence dating of three potsherds from this site has yielded dates between 4000-4400 BP (Ousmoi 1989) which, according to Sbihi Alaoui & Searight (1997:91), resonate with Neolithic dates elsewhere on the Atlantic coast. The possibility exists, of course, that the ochre processed on the palette was not used for rock paintings.

The use of patination for dating engravings represents the most problematic and the most contested of the dating techniques used in North Africa. Mori (1974) submitted that patina cannot be regarded as an infallible guide to the relative chronology of Saharan engravings because variations, often unrelated to age of engravings (such as the composition, situation, angle, and the degree of porosity of the

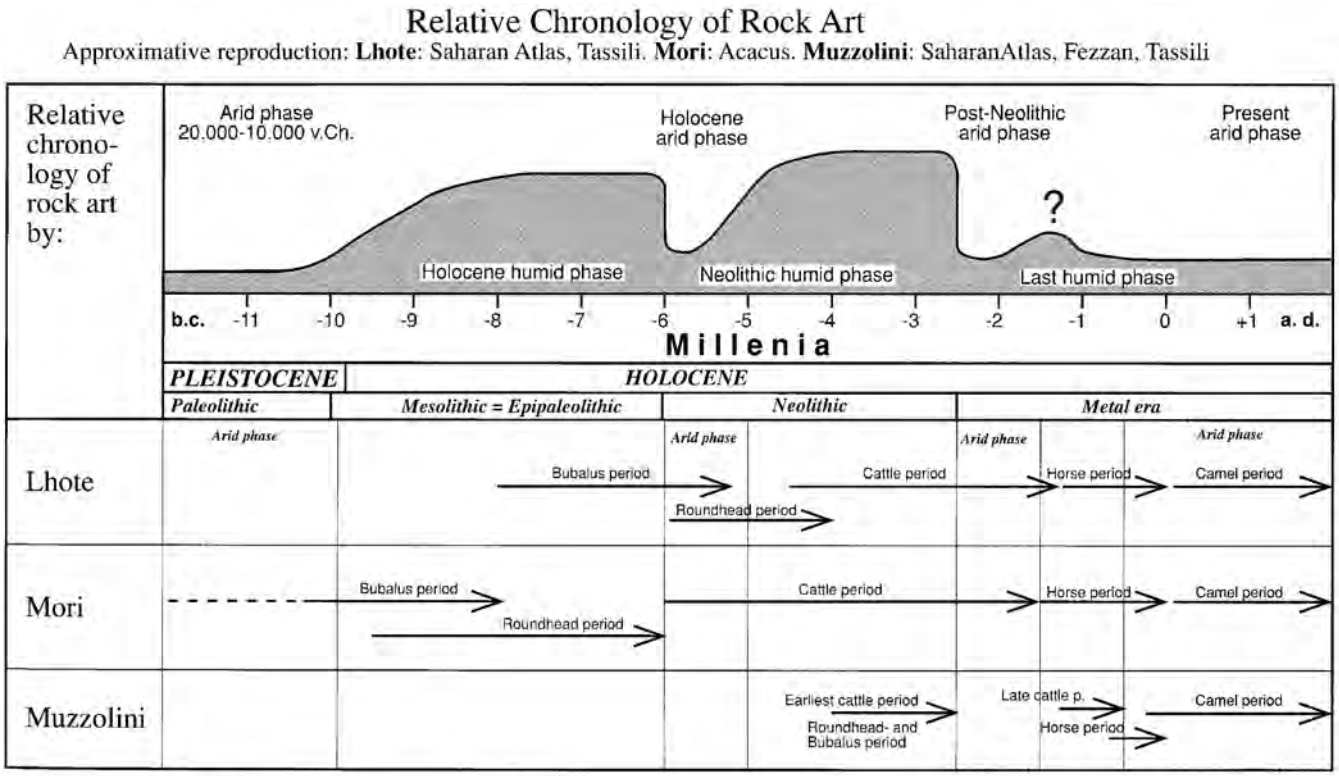

Fig. 1: A synthesis for the chronologies proposed by Lhote, Mori and Muzzolini for North Africa (from Lutz & Lutz 1995).

rock) would have influenced the degree of patination experienced by engravings. Yet, in the same paper, Mori (1974) uses patination to argue for a Palaeolithic age for the earliest art. Additional problems associated with using patination to date and sequence the engravings include water flow, ponding dynamics, corrosion, presence/absence of organisms, surface roughness and proximity to the soil. It is for these reasons that schemes informed by the degrees and colouring of patina even in restricted geographical regions, and representing limited time frames, must be treated with caution.

One such study relates to Holl's (2002) identification of multiple classes of patination in the Dhar Tichitt engravings - broadly grouped into Dark Patina (DP) and Light Patina (LP) - which he believes date to 4000-2500 BP According to Holl (2002: 116) the LP images might have been used as 'road maps' in the Saharan landscape while the DP images are associated with Late Stone Age agropastoralists. Confirmation of Holl's divisions and dates will require secure absolute dating of the engravings.

The last decade has witnessed the emergence of AMS C14 rock art dating projects in Egypt and Libya. The first of these projects was undertaken by Hobbs & Goodman (1995) in the Northern Eastern Desert, Egypt. Two AMS C14 dates were obtained: 4970±70 BP from a red sample, taken from a painted dot surrounding a leopard, and 4750±70 BP from a black sample, from a black line which forms part of an enclosure. No chemical analyses were done of the dated samples and therefore it is not known exactly what was dated other than Hobbs & Goodman's (1995:9) comment that the 'paint contained some organic material from time of deposition' and their suggestion that the red might relate to organic material derived from the binder, and the black from either organic material in the binder or from charcoal.

The second AMS C14 dating project relates to a rock painting from the Tradrart Acacus (southwest Libya). Using a specimen supplied by Mori, Sinobaldi et al. (1996) obtained a date of 6175±70 BP on what they believed to be a binding medium, but there is no mention of the type of painting that the date was done on or its archaeological context.

The third, and most extensive, AMS C14 dating project was undertaken in the El-Hosh area (Upper Egypt) where Huyge et al. (2001) targeted archaic looking engraved curvilinear designs ('fish traps') from three sites. Four dates were obtained on plant fibre trapped in patina: 6690 ± 270 BP; 3740 ± 300 BP; 2450± 320 BP; and 2280± 320 BP. According to Huyge et

al. (2001) the dates probably represent minimum ages and it is likely ('but, admittedly, nothing more than that' (Huyge et al. 2001:72)) that the 'fish traps' date back to between 13/12 000 and 7000 BP and therefore represent the oldest rock art in the Nile Valley. Whitley & Simon (2002a, b) have expressed doubt about the reliability of C14 patina dating and questioned the efficacy of the El-Hosh dates. In particular, they point to the irregularities in the atmospheric production of C14 isotopes and their differential absorption in the biosphere. They also argue that the organics within the rock varnish might be 'heterogeneous in nature, age and therefore origin' and yield spurious dates.

Watchman (2002) and Huyge (2002) disagree with Whitley & Simon (2002 a, b) but it is beyond the scope of this paper to elaborate on this debate, suffice to say that the final word has yet to be heard.

The overarching chronologies proposed by Lhote, Mori and Muzzolini for North Africa have been summarised by Lutz & Lutz (1995; Fig. 1). This Figure shows that there is general agreement regarding the dating of the (later) Camel and Horse periods, while disagreements revolve around the (earlier) Cattle and Bubalus/ Roundhead periods. While both Lhote and Muzzolini consider the bovid period to have begun around 6000 years ago, Mori has it originating around 8000 years ago. According to Smith (2004:44) 'no one disputes that by c.7500 BP, domestic stock existed in the Sahara' and therefore it is feasible that the cattle paintings may date back to around 8000 years ago. Differences of opinion also characterise the dating of the end of the Cattle phase. Lhote and Mori place it between 3000 and 4000 years ago and Muzzolini about 1000 years later. However, the greatest variation in the ages of the different periods relate to the beginning and end of the (engraved) Bubalus and (painted) Roundhead periods, where vastly different chronologies have been presented by Lhote, Mori and Muzzolini (Fig. 1).

The most extreme example of these differences relates to the beginning of the Bubalus period. Mori believes that this period originated during the Palaeolithic, before 12 000 years ago, while Muzzolini has it starting some 6000 year later. Resolving these substantial differences in dating will require new methodologies and new lines of reasoning. No doubt the successful application of AMS C14 dating will be central to this.

The emergence of C14 direct dating of rock art represents a major breakthrough even though some of the dates have not been published in adequate detail and some of the dates have been contested. The implications of these dates for the chronology of North African rock art are unclear as they have yet to be linked with the periods that have been identified.

Southern Africa

Rock art dating in Southern Africa differs in several respects from that of North Africa: no unifying thematic chronologies extending back thousands of years have been identified; the dating of rock art has generally not guided research, with the exception of the geomorphological age estimates of rock engravings in the Northern Cape (Butzer et al. 1979) and subsequent work on

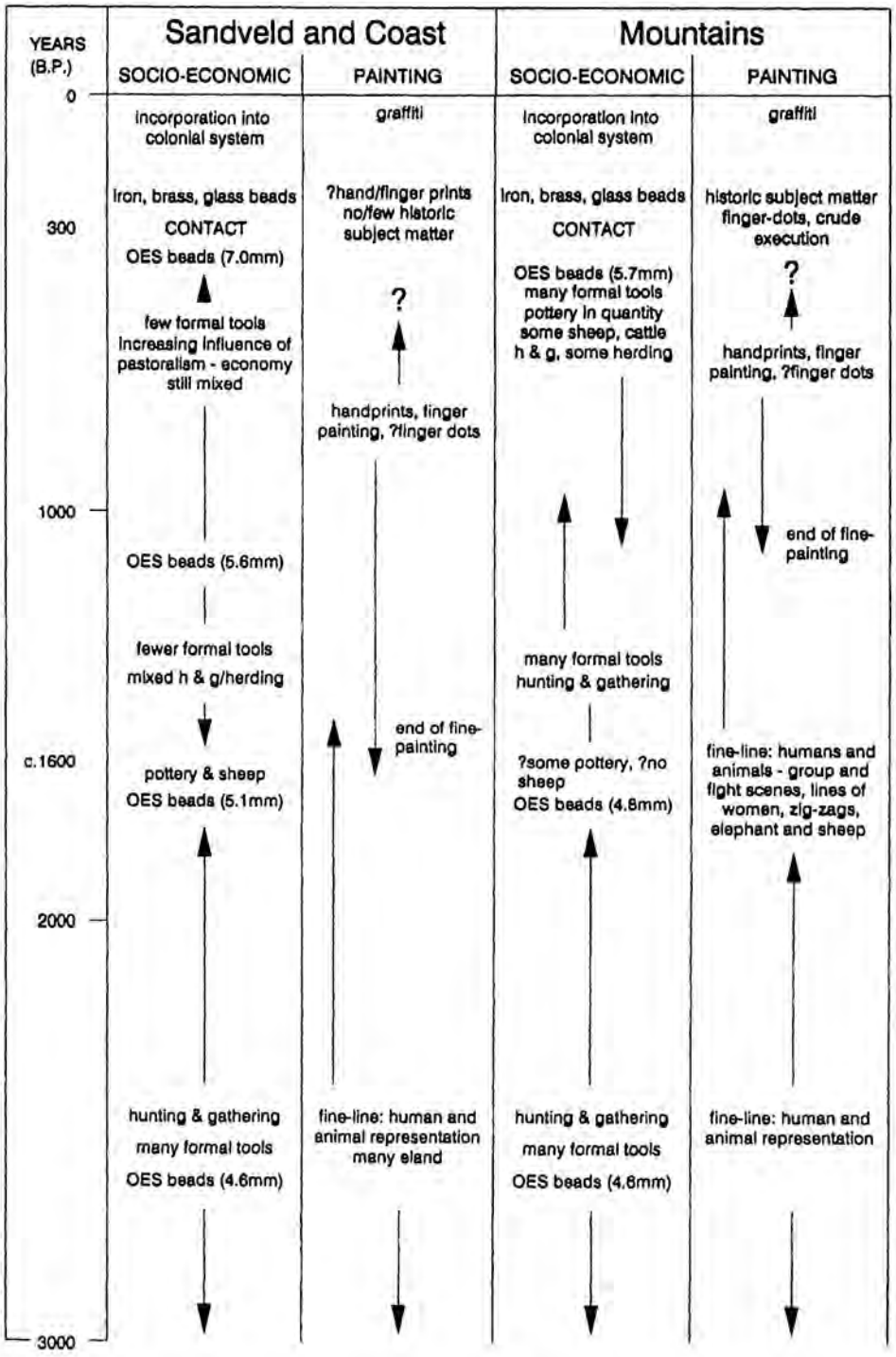

Fig. 2: A synthesis of the relationship between paintings and excavation in the Western Cape (from Yates et al. 1994).

the archaeological associations of the engravings (e.g. Beaumont & Vogel 1989; Morris 1988), and the AMS C14 dating projects in the Western Cape and uKhahlamba-Drakensberg (Van der Merwe et al. 1987; Mazel & Watchman 1997, 2003); and the fact that portable painted and engraved rocks and slabs and ochre-stained palettes have been recovered from excavated dated deposits. Considering the continent as a whole, it would appear that excavated painted and engraved slabs and cobbles (some of which is portable art and associated with burials) have been reported only from Southern Africa. No obvious explanation exists for this, although it is unlikely that it is primarily due to the greater number of rock shelter excavations in southern Africa.

Until recently the recovery of painted and engraved slabs and cobbles from stratified excavations, along with variations in style and subject matter have provided the primary source of information about the age of Southern African rock art. The last decade has, however, witnessed a number of proactive initiatives to date the art, including:

(1) the relative dating through careful study of superimposed images in the eastern Free State (Loubser 1997), the Western Cape (Anderson 1996, Mguni 1997), the uKhahlamba-Drakensberg (King 1998; Russell 1997, 2000; Swart 2004), and the Eastern Cape (Pearce 2002);

(2) the direct dating AMS C14 dating of paintings in the uKhahlamba-Drakensberg (Mazel & Watchman 1997, 2003); and

(3) the cation-ratio dating of engravings in the Northern Cape (Whitley & Annegarn 1994).

The relative dating of rock paintings using superimpositioning has relied on the Harris Matrix, a methodological tool which

Site	Date	Description	Reference
Blombos Cave	>70 000	Engraved ochre	Henshilwood et al. 2002
Apollo 11 Cave	25 - 27000	Painted stones	Wendt 1976
Cave of Bees	10 500	Painted spall	Walker 1995
Wonderwerk Cave	10 200	Engraved stone	Thackeray 1983
Pomongwe Cave	9520	Painted spall	Walker 1995
Bambata Cave	9000	Engraved stone	Walker 1995
Matjes River Shelter	7750 - 5400	Painted stone	Rudner 1971
Boomplaas Cave	6400	Painted stone	Deacon et al. 1976
Wonderwerk Cave	5200-4000	Engraved stone	Thackeray 1983
Pomongwe Cave	5000 -4000	Painted spalls	Walker 1995
Springbokoog 1	4630	Engraved stone	Morris 1988
Klasies River Cave 5	3900	Painted slab	Binneman & Hall 1993
Steenbokfontein Cave	3600	Painted slabs	Jerardino & Swanepoel 1999
Amis 10	2750	Painted slab	Breuning 1989
Springbokoog 13	2710, 2520	Engraved cobbles	Morris 1988
Klasies River Cave 5	2285	Painted stone	Singer & Wymer 1969

Table 1: List of the painted and engraved stones that have been recovered from Southern Africa predating 2000 years ago. A selection of the known painted and engraved stones from the last 5000 years has been presented.

was originally developed to understand complex excavation stratigraphies. In its application to rock art, each image is considered to be a visible unit of stratification and, as Russell (1997:22) noted, the Harris Matrix is 'built up from observations of superimpositions of the painted images without any reference to the subject or style of the paintings.' The Harris Matrix sequences have mostly been developed using single sites, but Pearce (2002) studied the position of eland and human figures in three rock shelters in the Eastern Cape. Swart (2004) sequenced paintings from a site in each of the northern and southern uKhahlamba-Drakensberg and included Russell's (1997, 2000) results from Main Caves North in the central reaches in her regional synthesis, which is the first of its kind in Southern Africa. Of particular interest, is Swart's (2004; see also Mazel & Watchman 2003) correlation of her results with the available C14 dates for uKhahlamba-Drakensberg rock paintings which has led to the proposed chronological link between imagery at Ngwagwane 8 and the C14 dates. Discussion of the veracity of Swart's connections are beyond the scope the paper, but the process of linking these relative and absolute rock art data represents a significant advance in Southern African rock art research.

In terms of the direct dating of engravings, Whitley & Annegarn's (1994) cation-ratio dating of engravings in the Northern Cape has yielded dates of 5700 BP (range: modern to 8400 years) 7500 BP (range: 2100 to 10 000 years) and 7000 (range1200 to 9400 years). However, they believe that the "age-assignments based on [the cation-leaching curve] should be considered maximum-limiting ages...[and that]…because only two calibration points were used in this study, the cation-leaching curve (and the numerical ages on engravings calculated therefrom) should be considered preliminary" (Whitley & Annegarn 1994:193, see Morris 2002, for further comments).

As mentioned in the Introduction, the first AMS C14 date on a rock painting was obtained on a black human figure finger-painted on top of an eland in the Western Cape (500±140 BP, Van der Merwe et al. 1987). No further C14 work has been undertaken in this area, but the AMS C14 dating of rock paintings has been pursued in the uKhahlamba-Drakensberg and the eastern Biggarsberg (KwaZulu-Natal) by Mazel & Watchman (1997, 2003). This project has yielded a direct date of 330±90 BP on an eland painting from Esikolweni Shelter and eight dates on carbon in the salt-rich crusts that underlie and overlie the paintings.

The carbon in four crusts overlying the paintings at Main Caves North and Highmoor 1

dates to 2300-2900 years ago (maximum age), while the carbon in a crust underlying a painting at White Elephant Shelter dates back to 1930 years ago (minimum age). The time lapse between formation of the crusts and the painting is not known, but it is likely to be hundreds rather than thousands of years. This suggests that parietal art in the area predates 2000 years and may date back to at least between 2500 to 3000 years ago because the C14 dates do not derive from the oldest identified paint layers.

The dating of the uKhahlamba-Drakensberg paintings enables us to begin making connections between the paintings and information derived from dating excavated deposits; for example, both datasets support the conclusion that hunter-gatherers abandoned the uKhahlamba-Drakensberg between 1600 and 600 years ago. Additional dating of the art should allow for more nuanced connections to be made between these datasets and stimulate further insights regarding rock art and socio-economic development, as has been developed in the Western Cape using relative dating of the rock art (Fig. 2, from Yates et al. 1994).

To look at the dating in Southern Africa as a whole, Table 1 provides a selected list of the painted and engraved stones (predating 2000 years ago) that have been recovered from rock shelter and open-air excavations, indicating the great antiquity of Southern African rock art, with engraved ochre at Blombos predating 70 000 years (Henshilwood et al. 2002) and the painted stones from Apollo 11 around 25 000 years ago (Wendt 1976). Of some concern, however, are the large gaps in the sequence, particularly the 15 000 gap between the Apollo 11 painted rocks and the painted and engraved slabs that cluster around 10 000 years ago. This gap may represent a sampling problem reflecting the paucity of rock shelter deposits that have been dated back to that time or alternatively it could be that little or no art was done during that period. The increased number of painted and engraved stones and slabs during the Holocene, and especially during the last 5000 years, suggest an increase in artistic expression by hunter-gatherers. As mentioned before, no unifying chronological-thematic patterning is evident in the Southern African imagery as is reflected in the rock art of North Africa.

The painted spalls from Cave of Bees, Pomongwe and Bambata in the Matobos (Zimbabwe) originate from the walls of the rock shelters and therefore represent the earliest known parietal art in Southern Africa and indeed in Africa as a whole. According to Walker (1995:140) the figures on the small spalls are usually indistinct except for one piece from Pomongwe which has a 'probable human limb.' Younger in date (minimum - 3600 BP), but with considerably clearer (human) images are the painted slabs in Steenbokfontein Cave in the Western Cape (Jerardino & Swanepoel 1999). According to them (1999:545-6), the presence of white paint indicates that it is unlikely that the images were painted long before the slabs collapsed because white paint 'is well known to be fugitive within the greater corpus of Western Cape rock art and elsewhere.' Finally, unique in Africa is a painted slab recovered from excavated deposits dated back to 2750 BP at Amis 10 in

Namibia which fits back onto the wall (Breunig 1989:35).

While the rock art for the period before 2000 BP was made exclusively by hunter-gatherers the rock art in the following period art was produced by hunter-gatherers, pastoralists and agriculturalists. The art produced by the hunter-gatherers shows both continuity in subject matter and the incorporation of new subjects, such as domestic animals and colonial imagery, which allow for approximate dates to be given to the art. Based on subject matter and archaeological associations the agriculturist paintings and engravings would appear to postdate AD 1000 (see Maggs 1995; Prins & Hall 1994). Paintings and engravings done by pastoralists belong in the last 2000 years, and Smith & Ouzman (2004:512) have commented that 'At least some Khoekhoen rock art in northern and South Africa is more than 1000 years old.'

Central Africa

Central Africa has the weakest relative and absolute rock art chronologies of the three broad regions covered in this paper, which reflects the comparative lack of rock art studies when compared to other regions. Encouragingly, AMS C14 dates have begun to be reported from Angola. Three dates have been reported from one painting (a pre-treated sample dated to 2340 ±50 BP, untreated samples dated to 1880±100 BP and 900±60 BP (Rowe 2001)) and Guitierrez (1996) reports a date of 1980±100 BP. Unfortunately there is scant contextual information associated with these dates and nothing further can be said about them.

An interesting study has been undertaken on the chronology of Iron Age engravings in Gabon, where Oslisly (1996) has linked engravings to agriculturist material culture and settlement. According to Oslisly (1996), the engravings were made with metal tools and there are two styles of execution which predate 1400 BP as there was no agriculturist occupation in the area containing the engravings between 1400 BP and 700 BP. He has related the engravings to two phases: Okanda (2300-1850 BP, Style A engravings with linked punctuation pecking) and Otoumbi (1900-1400 BP, Style B engravings with linked pecking).

In terms of the region as a whole, relative chronologies have been suggested for Tanzania (Masao 1979) and Zambia (Phillipson 1976; Smith 1997). According to Masao (1979) the rock art of central Tanzania may be grouped into four phases, none of which contain fine-line naturalistic images. Masao (1979:269) believes that the rock art represents the 'artistic expressions of different Late Stone Age/Iron Age cultures' and concludes that (1979:272) 'dating the rock art of central Tanzania by association with datable archaeological deposits, has not proved entirely successful. The ochre pencils that have been referred to and the rubbing stones tinted with pigment would suggest that the rock art of central Tanzania is at least 3000 years old, but some may be as late as 200 years old.' In eastern Zambia Phillipson (1976) has also recognised four stylistic phases, but unlike the situation in Tanzania, the earliest phase comprises naturalistic representations, which he (1976:186) believes to be the 'work of stone-tool-using peoples'… [but]… with no knowledge of when the rock art tradition began.' The other paint layers are associated with agriculturalists and date back to the last ca. 2000 years. In a similar vein, Smith (1997) has recognized four traditions in Zambian rock art with two later white painted traditions done by agriculturists during the last 1500 years and the earlier red painted traditions done by Twa hunter-gatherers generally before AD 1000, but 'some red paintings can survive 5000 years if well protected and the possibility exists that heavily weathered engravings may be greater that 10 000 years old' (Smith 1997:21) although no additional support is offered for these dates.

Conclusion

The engraved pieces of ochre from Blombos (>70 000 BP) and the painted stones from Apollo 11 (ca. 25 000) indicate that rock art has a great antiquity on the African continent, but it would appear that the majority of rock art dates back to the last 10 000 years, and perhaps even to the last 6000 years. Overall, however, our knowledge of rock art dating through the continent is patchy and some is contested, especially in North Africa. This state is reflected in Rowe's (2001) statistics of rock art radiocarbon dates worldwide, which shows that of the ca. 100 direct dates less than ten were from Africa. This is inadequate when considering that the first direct date was obtained from the Western Cape.

One of the problems associated with weak relative and absolute rock art dating is that it downplays the variety in rock art expression and historical meaning in favour of generalised social and economic understandings. To deepen our knowledge of the specific socio-economic contexts in which rock art was produced we need to integrate knowledge from rock art with excavated cultural and subsistence remains through linking chronologically informed patterns extrapolated from rock art with interpretations drawn from excavated material. Clearly, there is an urgent need for increased research into the relative and absolute dating of Africa's rock paintings and engravings. However, when developing projects we must be mindful of the caveat issued by

Clottes et al. (1992) that 'Direct dating must always be performed to check archaeological hypotheses and address particular problems. Aimless dating would only provide unrelated data that would have to wait until they could be corroborated by other methods.'

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State-of-the-art-technologies in heritage documentation: the giraffe engravings of Oued Djerat

Heinz Rüther[1]

L'ÉTAT DE L'ART- LES TECHNOLOGIES DANS LA DOCUMENTATION DU PATRIMOINE: LES GRAVURES DES GIRAFES DE L'OUED DJERAT

Les développements en Photogrammétrie, *laser scanning* et d'algorithmes de visualisation ainsi que certains programme informatiques ont rendu possible l'enregistrement spatial et digital et la documentation de sites d'héritage, qu'ils soient architecturaux, rupestres ou des paysages culturels. Cet article décrit l'application de photogrammétrie de proximité pour enregistrer un site d'art rupestre situé dans les montagnes du Tassili N'Ajer au Sud de l'Algérie. Des exemples de cette technologie de *laser scanning* seront apportés.

ABSTRACT

The paper discusses documentation methods for the recording of rock art sites and uses the example of a site in Oued Djerat in the Tassili N'Ajjer Mountain Range in southern Algeria to demonstrate the use of photogrammetry as a documentation tool. Laser scanning is briefly discussed as an alternative to photogrammetric recording.

Introduction

Traditionally, archaeological and heritage sites have been recorded and documented by means of photographic images, written descriptions, drawings, diagrams and, in the case of rock art, tracings.

Later, photogrammetric documentation was added to create 3D representations in which not only the paintings or engravings are recorded, but also the shape of the underlying rock surface. Laser scanning has now emerged as the newest addition to the range of documentation tools and recording methods. These tools can be used in a variety of combinations and at various degrees of sophistication, resolution and accuracy.

This paper will attempt to provide a brief overview of the possible approaches to rock art documentation from a perspective of geometric accuracy and reliability.

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Qualitative versus Quantitative Documentation

Drawings, descriptions and tracing are qualitative methods relying to a large extent on personal interpretation, while photography is restricted to two-dimensional representations, largely ignoring the third dimension. All these approaches have a significant subjective component and are generally metrically inaccurate. Although this type of recording is essential, the author believes that it should not be the only way to document rock art and that a quantitative approach should be added as a recording method. In quantitative recording, data capture and representation should be

- objective and non-interpretative;
- metrically correct; and
- true in colour and surface texture.

Colour can be included here as a quantitative criterion as it can be measured in the field and represented by digital numbers. Metric correctness is a relative criterion,

depending on the required accuracy and the physical extent of a specific site, and will have to be decided from case to case. In the author's opinion as a Geomatician, the value of quantitative recording, as defined above, with its objectivity and accuracy, lies in its permanent record for present and future researchers, while the qualitative approach informs and feeds ongoing discussion and generates understanding.

Choice of Quantitative Documentation Model

A representation of a three-dimensional surface on a

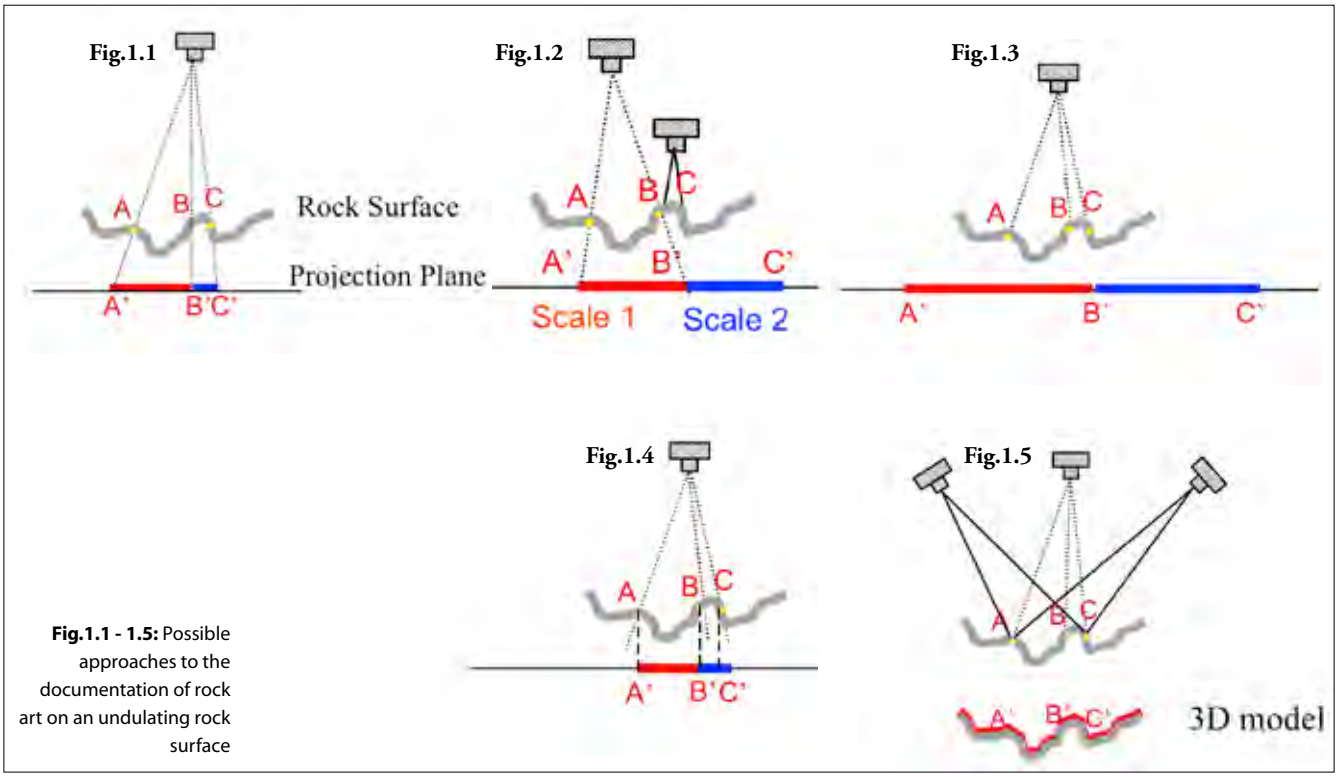

Fig.1.1 - 1.5: Possible approaches to the documentation of rock art on an undulating rock surface

two-dimensional plane without distortions is impossible, unless the surface is perfectly flat and, in the case of photographic recording, the camera axis is at right angles to the surface.

Just as it is impossible to flatten out the skin of an orange without breaking or distorting it, it is impossible to represent an undulating rock surface on a sheet of paper or as a two-dimensional model on a computer screen without distortions. For the recording and presentation of the Giraffe rock engraving panel, reported in this paper, a minimum distortion model was required in the interests of optimal documentation. In principle the following quantitative options are available.

Unmodified single photograph (Fig 1.1)

A photograph or digital image is a central projection with the perspective centre in the objective lens of the camera. Any depth variation in the surface of the recorded object will result in a radial displacement of imaged points, and in turn in a distortion of distances between points. For example, in Fig. 1.1 the distance between points A and B cannot be derived from measurements between their respective images A' and B', as the radial displacement of the two points varies with changing height differences and camera positions. Of the possible ways of recording a rock surface, the single photo is least accurate in respect of metric correctness.

Unmodified multiple photographs (Fig. 1.2)

As distortions of a single photograph increase with distance from the image centre and with the angle of the imaged surface, it is often advantageous to take a number of separate images, especially in cases where the surface displays significant changes of elevation or depth.

Although an improvement on the single photo approach, this technique has the disadvantage that each image has its own scale and it is impossible to create an edge matched mosaic. Even if identical scales for all images could be generated, the orange peel effect would still make it impossible to generate a fully matched 2D mosaic.

Rubber sheeting (Fig 1.3)

'Rubber sheeting' is a process adopted from satellite remote sensing, in which the digital photographic image/s is/are stretched and modified to fit a number of points, the coordinates of which are known in x, y and z , typically in a local coordinate system. The coordinates of these control points can be established by conventional survey methods prior to or after the photography.

Rubber sheeting, often incorrectly referred to as 'rectification' or more appropriately as geo-referencing, removes some of the distortion caused by the central perspective projection of a photograph. It does, however, not fully correct the effects of the projection and is especially inadequate for undulating surfaces, as they occur typically on rock surfaces and in shelters. Distortion removal improves with an increased number of control points and mathematical rubber sheeting models with larger numbers of parameters. It must be noted though, that high order polynomials, offered in many software applications for this process, can reflect over-optimistic error

budgets and lead to significant new distortions in areas between control points.

Ortho images (Fig 1. 4)

Ortho image generation is a mathematical process used by photogrammetrists to change the central perspective projection to an orthogonal projection, i.e. the projection used in mapping of the earth's surface. While this approach provides distortion-free maps on which measurements can be taken, its use in rock art documentation is limited, as it projects all points and thus distances onto a single plane. In mapping of the earth's surface, this plane is typically the horizontal plane at sea level, making it possible to measure horizontal distances. For rock art documentation a single reference plane is less, if at all, desirable. This becomes obvious when considering the extreme case of a multi-faceted surface with facets of this surface parallel to the direction of photography. In an orthogonal projection such surfaces would appear as single lines, facets with orientations in between the two extremes (parallel and orthogonal) suffer different degrees of foreshortening. One can change the orientation of the reference plane, but it is obviously not possible to find a single orientation rectangular to all facets. A compromise can be achieved by projecting different surface facets onto planes of different orientation, but again the orange peel phenomenon will make it impossible to create a single plane mosaic out of the separate surfaces.

An important technical aspect of the ortho photo generation is

the need for a three-dimensional surface model as well as the orientation parameters of the control points, both of which are derived from control points using well established photogrammetric algorithms.

Three-dimensional surface model (Fig. 1.5)

The last and best approach is the generation of a three-dimensional surface model with the photographic images draped over the surface. The surface model consists of a point cloud of surface points with known x,y,z positions. Such points can be derived through analytical or digital photogrammetry or by laser scanning. The point density depends on the required accuracy for the final model and the complexity of the modeled surface. The need for a surface model, or point cloud, is not unique to this approach, as mentioned above it is also required for the generation of ortho photos. What differs is the availability of depth which is not part of the ortho image and which makes it possible to view the surface from any desired direction, thus giving the user the opportunity to choose the best view point for each facet. It also provides information about the artist's use of rock surface characteristics to, for example, emphasise body parts of a portrayed animal.

For the Tassili Giraffe panel the 3D model generated by photogrammetry was chosen as the most suitable method. The following describes the 3D modeling process, both photogrammetrically and by laser scanning, in greater detail

Generation of surface models - photogrammetry versus laser scanning

The creation of a distortion-free digital 3D representation of a rock art site comprises, in principle, two steps:

- creation of a 3D computer model of the rock surface containing the painting or engraving. This model has no photographic or other texture and merely describes the surface shape; and
- 'draping' digital images of the surface over the 3D model. This is a non-trivial process which can be achieved by a variety of algorithms and methods from photogrammetry or computer vision.

Modeling the surface is typically achieved by determining the 3D coordinates of densely spaced points distributed over the surface. Such a point cover, known as a point cloud, can be generated by photogrammetric methods, laser scanning or with a reflectorless electronic theodolite.

Photogrammetric modeling

In the photogrammetric approach, stereo or, preferably, multiple digital images of the rock surface are taken. One of these images is then automatically searched for interest points, i.e. points where the image changes appearance, and in a subsequent step, corresponding (conjugate) points are found on the other images of the same surface section. This process is known as image matching (Baltsavias 1991). Once a point position has been located on more than one image, its 3D position can be determined by means of standard photogrammetric algorithms. This process relies on the use of mechanically stable calibrated cameras and the availability of specialised photogrammetric software.

The efficiency of the photogrammetric approach depends to a large extent on surface appearance, with a perfectly homogeneous surface providing no points at all and best results being

achieved for surfaces with a high level of variation in appearance.

For example, when recording the Laetoli footprints (Ruther 1998), point clouds of up to twenty-thousand surface points for each footprint were generated photogrammetrically over areas of 20 by 10 cm, while the homogenous surface of a white wall of a Cape Dutch building provided only a few hundred points over an area of 10 m^2. Point clouds derived in this way are irregular, emphasizing differences in surface appearance as opposed to the regular grid patterns of laser scanners.

The irregular photogrammetric pattern has the advantage over grids of providing point information along engraved lines or outlines of areas of different colour, which becomes relevant when extracting these features for subsequent analysis. An alternative to image matching is the determination of individual points by manual on-screen measurement.

The accuracy of photogrammetrically derived points varies from sub-millimetre to centimetre depending on factors such as image geometry, distance from the surface, quality of camera and resolution and quality of the images.

Laser Scanning

Laser scanners determine 3D point positions by measuring distances, as well as horizontal and vertical angles, to surface points in a grid pattern. In the time-of-flight method a laser pulse is transmitted from the scanner to the surface, reflected back to the scanner and the distance is derived from the time elapsed between transmission and reception of the reflected signal.

An alternative method uses phase shift measurements for the determination of distances. In both methods a surface covering point cloud is produced by scanning the surface by means of two oscillating or rotating mirrors, one moving vertically and one horizontally, or by a combination of a horizontal instrument-rotation and a vertical mirror-rotation.

Laser scan-derived point clouds cover the surface in regular patterns, independent of the appearance or texture of the surface. It must be noted though, that different surface texture and colour can lead to inaccuracies and outliers. Accuracy varies between a few microns to a few mm or cm, increasing with distance.

The principal advantages of laser scanning over close-range photogrammetry emerging from previous work of the documentation of the Great Mosque and Geresa at Kilwa (Ruther 2003) in Tanzania are:

- laser scanning provides direct and immediate access to the scan data making it possible to visually inspect the point cloud *in situ* and identify possible problem areas in the data sets in the field;

- the point cloud is obtained without any additional processing. Post-processing is similar to that for photogrammetry; and
- only one set-up is required for each surface. This saves significantly on planning and execution time and is especially advantageous for complex

Fig. 2: View of Oued Djerat with the approximate position of the Giraffe site indicated by a white box. There is no vantage point on any of the surrounding rock faces close enough to view the engraved lines

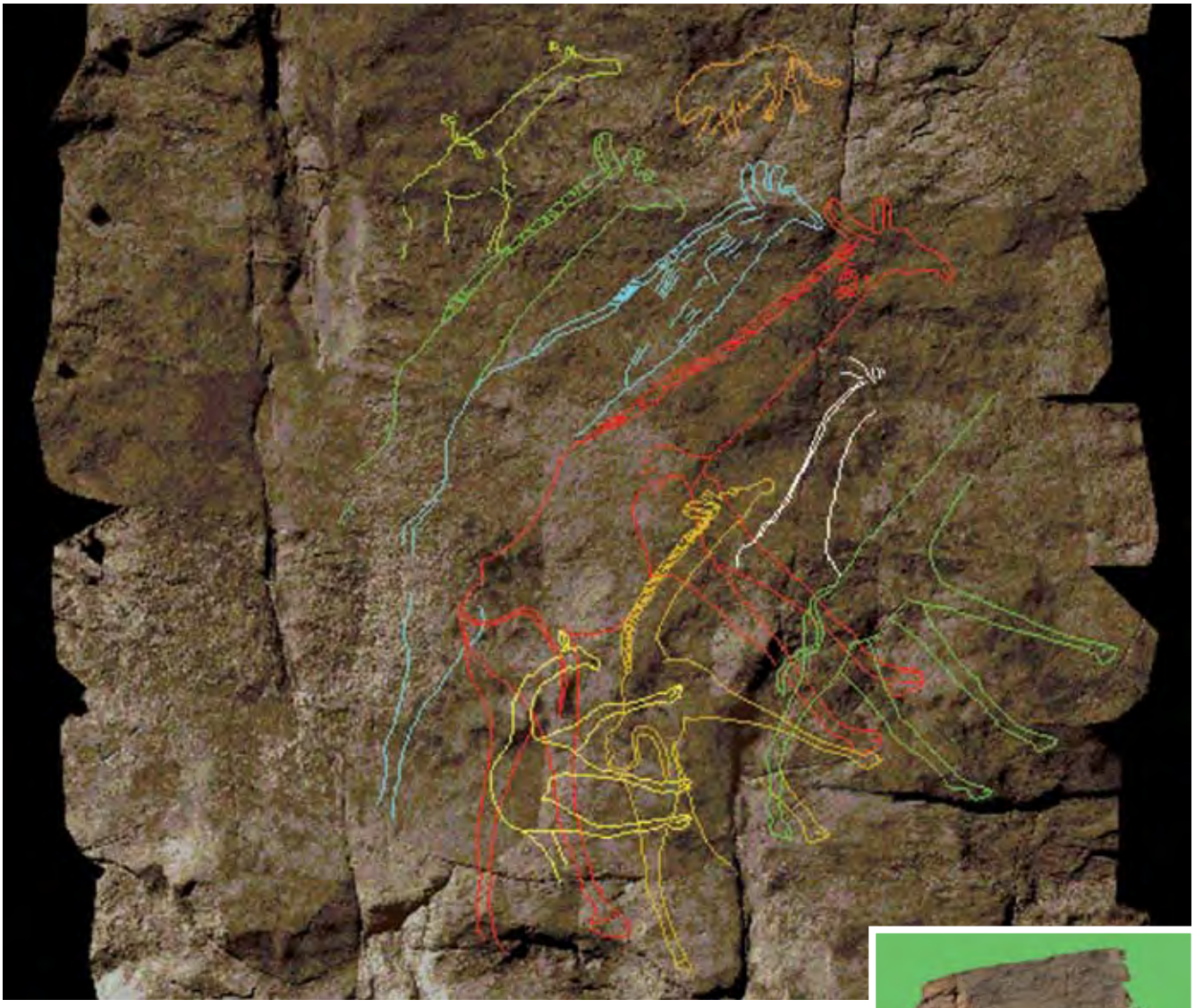

Fig. 3: The final 3D model of the giraffe panel in Ouet Djerat. The model covers an area of 15 by 15 m and is represented by about 5000 by 5000 pixels of 3 by 3millimeters each. The coloured lines, indicating the giraffes, the lion and the rider were drawn manually by on-screen digitizing of the engraved lines. The image is displayed here at a resolution of about 500 b 500 pixels (or 1 % of its original size).

Fig. 4: A rotated image of the same panel, showing the 3D nature of the model

Fig. 5

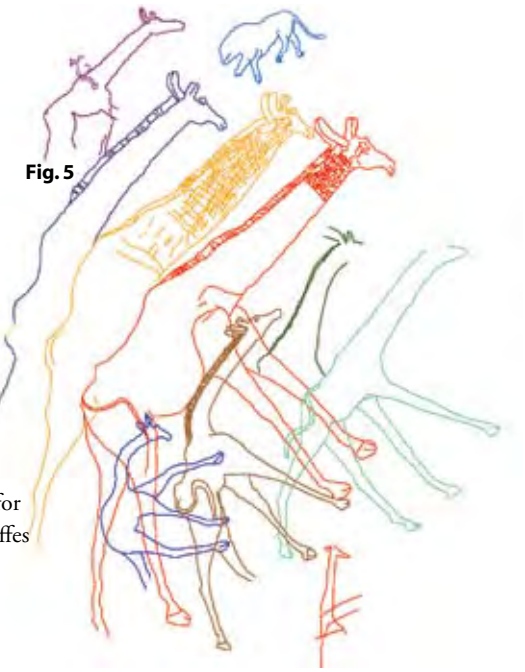

Fig. 5: Line drawings of giraffes in GIS format with separate layers for each of the giraffes

Fig. 6: Individual giraffe on a separate GIS layer

interior rooms.

Close-range photogrammetry on the other hand appeared superior to laser scanning in the following aspects:

- close range photogrammetry provides texture related and, if required, user selected points. Vector data, edges, corners and decorative detail can be identified and extracted more readily from images than is possible for a point cloud. When using a laser scanner, this can be partly overcome by high-resolution sub-scans of relevant detail;

- photogrammetric point position accuracy is typically higher for targeted natural points at short distances (5 m to 15 m), unless special high accuracy lasers are employed. At larger distances the accuracy of photogrammetry and laser scanning becomes similar and at distances approaching 100 m laser scanning provides slightly higher accuracy;

- cameras are significantly lighter, easier to transport and mechanically more robust than laser scanners;

- photogrammetrically acquired photography provides permanent records, allowing originally unplanned measurements of detail at a later stage, while high-resolution scans of detail can obviously not be done without having the instrument on site; and

- for highly textured surfaces, point clouds can be generated at higher densities than laser scans. In laser scanning this can however be overcome by multiple scans with slightly changed orientation.

Recent developments in laser scanning equipment allow for a combination of scans with imagery captured by a built-in camera.

It is also possible to use an external camera and relate the digital image to the scan by appropriate mathematical procedures, thus making it possible to drape the image over the surface. A number of software applications, either provided with the scanner or developed separately, allow for this approach.

The final decision whether to use a laser scanner or photogrammetry depends on a variety of factors such as availability of equipment, software and expertise, accuracy requirements, site conditions and location of site. In the author's opinion, at present the hybrid photogrammetry- laser scanning approach would appear to be the best solution.

Once the point cloud has been produced by photogrammetry or laser scanning, a surface TIN (Triangulated Irregular Network) is calculated. A TIN algorithm connects neighbouring surface points to form triangles covering the entire surface.

Depending on the complexity, the number of triangles of a TIN can vary between a few hundred and a few million.

In the next step, corresponding image parts (practically micro ortho image) are allocated to each of the triangles, thus creating a 3D computer model with a realistic photo texture. The model can be converted to VRML format and readily inspected with a VRML viewer.

The Oued Djerat Giraffe Site

The site, a near horizontal, slightly undulating rock surface of about 11 m by 8 m in extent, contains a group of engraved giraffes and a lion. The outlines of eight of the giraffes are either complete or nearly complete, while for others only fragments of outlines remain. One of the giraffes carries a small rider, probably a later, but not necessarily recent, graffiti addition. The largest of the giraffes measures some 8 m from the hoof of the rear leg to the furthest point on its head. The engraved lines are between a few tenths of a mm and 2 mm deep and vary in width from 2 to about 8 mm.

As the rock panel is located at the bottom of the Oued Djerat (Fig. 2) there is no vantage point from which the thin engraved lines can be seen as a total image, while an observer standing immediately next to or on the site can only view the giraffes at a very oblique angle making it impossible to gain an impression of the giraffes as complete figures. It was one of the objectives of the documentation to create a distortion free image of the site as a whole, allowing a total bird's eye view of the engravings.

This is reminiscent of the Nasca-Palpa lines in Peru, which were documented photogrammetrically using aerial photography (Gruen 2000).

The overall objectives of the documentation were to:

- provide a permanent digital record of the site;
- generate a metrically correct image allowing for accurate measurements; and
- produce a single overall image of the engravings

Fieldwork

The field campaign was led by David Coulson, Trust for African Rock Art (TARA, Nairobi) accompanied by Alec Campbell, Victoria Waldock, ten Tuareg guides and the author. The field team entered Algeria in Tamanrasset, from where a three-day drive by 4x4 vehicles, past dramatic scenery and spectacular rock art sites, brought the group to Djanet. In Djanet, equipment and luggage were transferred to camel saddles and the expedition continued on camel back into the Oued Djerat and to the Giraffe site.

As it was impossible to find a position from where the panel could be captured with a single photograph, it was necessary to use a 3 m high ladder, especially constructed for the project, from which photographs could be taken. The camera used was a Nikon D100 digital camera with a CCD imaging array of 3008 by 2000 pixels over a chip area of 23.7 by 15.6 mm.The rock panel was covered by moving the ladder in a grid pattern to 49 (7 by 7) positions. On each ladder set up, four images were taken, one vertical and three oblique, with the camera pointed left right and ahead of the ladder.

This was necessary to cover each of the 49 sub-areas of the site with more than one image. It must be noted here that digital photogrammetry makes use of multiple images, as opposed to traditional analogue or analytical photogrammetry where stereo pairs are employed.

The camera was calibrated on site, an approach deemed necessary to determine any changes of the camera parameters due to the transport of the equipment over rough terrain. The images were taken over periods of 2 to 3 hours in the early morning and late afternoon under optimal light conditions. Although this minimized variations in brightness, some differences in appearance were unavoidable. As the engraved lines were not deep, different shadows did not cause any significant difficulties. In order to provide scale and orientation, sixteen control point positions, distributed over the site, were determined using a theodolite.

Data Processing

In a first step, the images were adjusted for differences in brightness using standard image processing routines to produce a uniform appearance for the final mosaicing into a single image.

Next, the camera (image) positions and orientations, as well as the xyz coordinates of some 600 surface points were determined using an algorithm known in photogrammetry as 'bundle adjustment'. This low resolution point cloud was derived by measuring identical points on each of the sets of the four images of the same surface area. This method was chosen in favour of generating a high density point cloud by image matching algorithms, as described above.

The low resolution option was acceptable because of the relative flatness of the rock surface. It had the advantage over the high density image matching approach of resulting in considerably smaller, and thus more manageable, datasets. This is especially relevant for subsequent visualisations on a computer screen.

In the next processing step, the points were connected to form a TIN surface model and finally the 49 vertical images were segmented and draped over the surface facets of the TIN. The final result of this processing sequence was a single three-dimensional surface model of the rock panel covered with segmented vertical images.
The final image (Fig. 3) draped over the surface was formed by approximately 5000 by 5000 pixels covering 3 by 3 mm of rock surface each. When shown from above, the appearance of the model is identical to that of an ortho photo (Fig.3), when rotated (Fig. 4) the three-dimensional nature of the model is visible.

Extraction of Giraffe Images

When inspecting the final surface model it became obvious that, because of the thinness of the engraved lines, it would be impossible to see the lines while viewing the full rock surface on a computer screen.

This meant that the original objective of the documentation project, which was making the giraffe engravings visible in their entirety, was not satisfied. It was therefore decided to screen-digitize the engraved lines under large magnification and represent them as coloured lines.

This was achieved by employing Geographic Information System (GIS) software in which each giraffe as well as a lion and the rider were digitised on a separate layer (coverage). GIS software capability makes it possible to display the coverages in any combination, such as all engravings together with the image (Fig 3), all engravings without the image as a back drop (Fig.5) or any of the giraffes on its own (Fig.6).

Conclusion

The paper suggested that metrically accurate, quantitative documentation should be adopted in addition to the conventional recording methods for the documentation of rock art sites.

The photogrammetric approach, as employed for the Tassili giraffes, is generally suitable for the quantitative documentation of rock art sites. It provides a permanent, accurate and objective three dimensional record as well as a means to visually present the data on a computer screen for inspection.

Laser scanning offers an alternative to photogrammetry, provided a high-resolution camera is integrated into the scanner, and the equipment is robust and easily portable. In the case of engravings it is essential that the scanner is precise enough to detect the engraved lines.

Acknowledgements

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Rock art research, conservation and social transformation

John Parkington[1]

LA RECHERCHE, LA CONSERVATION ET LA TRANSFORMATION SOCIALE

Cet article démontre que dans le domaine de l'art rupestre, la recherche, la conservation et la création d'emplois sont liés de façon inextricable et génèrent un potentiel et des avantages tant au niveau archéologique qu'au niveau social. J'appuie ma thèse en décrivant le cas dans le nord de Cederberg et le projet de création d'emplois dans le périmètre, le Clanwilliam Living Landscape Project. La conservation est un objectif important de la recherche et un résultat possible de la transformation sociale, fournissant le moyen de consolider les deux aspects.

ABSTRACT

This paper argues that in the field of rock art, research, conservation and job creation are inextricably linked in a web of potential that has advantages both to archaeology and society in general. I make the case by describing field research into the rock art of the northern Cederberg and a job creation project, the Clanwilliam Living Landscape Project, in the same area. Conservation is an important objective of research and a potential outcome of social transformation, providing the glue that attaches the two together.

Southern African rock art research has been transformed in the past 30 years largely through the recognition by David Lewis-Williams and Patricia Vinnicombe of the crucial significance of the Wilhelm Bleek and Lucy Lloyd archive housed in the University of Cape Town library. A second archive exists in the form of more recent San Kalahari ethnographies. Bluntly, staring hard at details on the rock face is a necessary but not sufficient activity for the researcher to understand the imagery.

The combination of detailed recording and reference to the historic and ethnographic literature on how San people see (and saw) the world and their place in it has made it possible for archaeologists to generate narratives about the paintings and engravings that are both interesting and credible. Earlier, and some more recent, versions of the meaning of the art might have been entertaining, certainly responded to contemporary notions of motive, but were not anchored in sound scholarship.

My point here is that we, as rock art researchers, can tell stories of great significance about the rock art, stories that form an invaluable resource for cultural tourism projects. I illustrate this with reference to some well-known images from the northern Cederberg. First, it is important to note that some 25 years of systematic field survey, built on many earlier years of work by pioneering non-professionals, has resulted in a massive archive of knowledge and familiarity with the images from caves and rock shelters of the Western Cape (Fig. 1). This archive contains several thousand site records, tens of thousands of photographic images, site locational details and search records. Journal articles and books have appeared, supported by the generalisations this archive makes possible.

The excellently preserved 'Veg en Vlug' or fight and flight scene from Sevilla in the Pakhuis region is a good example of a painting that with careful scrutiny and appropriate reference to ethnographies of the San, the likely painters, can generate an almost endless stream of interesting and credible stories. It also illustrates clearly the mix of literal and metaphorical significance incorporated by painters into their compositions. I first describe the imagery in broad terms, then deal with the stories that emerge from a closer scrutiny. The fight element is created by painting around a small recess in the rock surface (Fig. 2) to give the impression of a small cave from which a group of humans peer, one of them shooting arrows. A second group of humans, arranged as a procession and depicted apparently moving along a pair of

Fig. 1: Location of rock art and archaeological sites recorded by the University of Cape Town in the Western Cape, and the position of the study area in relation to the African continent.

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Fig. 2: Rock painting known as 'Veg en Vlug' (Fight and Flight) where a small recess in the rock surface has been used as a 'cave'.

Fig. 3: Double red lines join people in the Veg en Vlug panel.

Fig. 4: Veg en Vlug group approaching the 'cave'.

red lines, face the cave occupants and also shoot arrows. From the 'cave' several people, most of them male, flee along more pairs of red parallel lines. One human figure, clearly lying prone is connected by these same lines to a strange seated figure holding the end of the lines, neither of them directly connected with the cave itself. From the neck of the strange seated figure a single red line leads to another small figure with upraised arms. This bald, but reasonably literal description gives no hint of the intriguing and enigmatic details that impart a deeper, but still obscure meaning to this apparently unified composition.


Fig. 2


Fig. 3


Fig. 4

Take the double red lines for example. They cannot, as might appear at first glance, be footprints or a path, because they connect the feet of those in the procession to the bow of one of the cave occupants (Fig. 3) and emerge from the bowstring to enter the mouth (or face) of the bow and arrow-wielding figure. The strange figure reeling in the lines from the feet of the prone, perhaps dead, figure cannot be manipulating footprints or a path in any literal way. It is likely that the double, parallel red lines are painted to illustrate some connectedness between people that is intangible but central to the meaning of the composition. The attachments to feet, hands, equipment and mouth probably indicate the nature of the connection but are not explicit enough to provide a definitive narrative.

Close inspection of the human figures reveals that some of them (all those in the cave, all those fleeing and the prone figure) are 'normal' in the sense that they resemble many other finely executed human figures in the local painted record. The group approaching the cave and the seated figure reeling in the double red lines are, however, far from normal and have an assortment of horns, tusks and other odd physiological features (Fig. 4). Many, but not all, of these features are produced by superimposing white painted details over the red bodies. The painter has gone to some trouble to distinguish the attacked from the attackers by adding grotesque elements to almost all of the latter figures. The effect of this is to give some content to the opposition generated by the structure of the composition.

Visible among the figures approaching the 'cave' are a series of white linear shapes that arguably represent arrows of some kind (Fig. 5). They are more or less horizontal white lines, nocked at the right hand end and all placed so as to touch the grotesque figures with their left hand end. Near the nock end all have a small red painted detail.

We have found more of these tiny red details near the figure with upraised arms and suspect that there were originally white lines carrying them too. It is noticeable that all of these white 'arrows' strike grotesque figures and none of them appear to have been despatched from recognisable bows. By contrast there are two persuasive red arrows depicted in mid-air and plausibly shot from the two clearly depicted red bows being used. Again the painter has organised these details to make a contrast between arrows that more or less reinforces the difference between 'normal' and 'grotesque' figures.

It should be obvious from these descriptions that even the informed perceptions of rock art researchers fail to reveal the meaning of the details or the intentions of the painter(s). We can make some, admittedly limited, progress by incorporating the comments of Bleek and Lloyd informants, as well as those reported by later Kalahari ethnographers, though these were made in contexts far from the rock face. The double parallel lines, for example, recall the use of the term (translated by Bleek and Lloyd as) 'strings' in the archive. //Kabbo, for example, used the string metaphor to express the connections of his thoughts, his thinking strings, and to the attachment he felt to the land he lived in and used regularly. The

/Xam used this kind of metaphor to invoke connectedness and to refer to intangible connections between people and land. They also spoke about the power of ritual specialists to influence the behaviour or impact the well-being of others at a distance. Kalahari informants also referred to 'shimmering white arrows of misfortune' that can harm people when shot at them by malevolent antagonists. Both archives refer to the habit of malevolent ritual specialists of transforming into other forms and harming innocent rivals.

Despite the attractiveness of these stories and the beauty of the paintings, we regularly encounter terrible acts of vandalism (Fig. 6). Ironically, and tragically, some of these graffiti have probably been daubed by descendants of the painters themselves. Nonetheless, the question is how to defend the thousands of painted caves and rock shelters from the actions of graffitists.

We obviously cannot fence every one, nor will our excellent legislation effectively protect sites that are scattered across the landscape, impossible to police and dramatically vulnerable to the malicious of intent. Nor, as in the past, can archaeologists and landowners hope to protect sites by not revealing their locations to the public. Clearly the rock paintings are a national asset, not the private domain of archaeologists, nor the owners. If fencing, legislation and the secrecy of researchers will not do the job, what will? Surely the only effective long-term fence around our rock paintings is education, the committed attention of the public. To this end we have established the Clanwilliam Living Landscape Project.

Living Landscape is a community based heritage and education project aimed at returning the archaeological archive to the Clanwilliam area as material for curriculum development and job creation. With funding from the University of Cape Town, the Canadian International Development Agency, Anglo American Chairman's Fund, the National Research Foundation, the National Lottery Distribution Fund, and the South African Ministries of Arts and Culture and Environmental Affairs and Tourism, we have established a set of teaching curricula for local and visiting school groups, and a job creation programme designed to generate sustainable small businesses built around the local archaeological record.

Professor Njabulo Ndebele, Vice Chancellor of the University of Cape Town, is the Patron of the Clanwilliam Living Landscape Project. In the job creation initiative, 20 members of the local community have been employed as trainee craftspeople, guides and caterers. Training (Fig. 7) has included instruction in computer skills, heritage, crafts, life skills, first aid, entrepreneurship, book-keeping, guiding, expression and customer care, catering and nature conservation.

This programme is administered through the Krakadouw Trust, established with funds from the Department of Environmental Affairs and Tourism, and run from the property adjacent to the UCT Field School in Park Street (Fig. 8). The garages of this property have been converted into a workshop and craft outlet that serve as the focal point for craft sales, catering and guided tours of local rock paintings. Two written texts, *The Mantis, the Eland and the Hunter* and *Cederberg Rock Paintings*, as well as a *Mantis* CD have been produced to enrich the rock painting tours offered by our guides.

The project realised its first income in the form of sales of books, tours and crafts during the August and September 2002 spring flower season and by early 2005 generated about R15 000 (about US$2500) monthly turnover.

Underlying this initiative is the intention to celebrate the achievements of pre-colonial


Fig. 5


Fig. 6

Fig. 5: White 'arrows' in the Veg and Vlug painting.

Fig. 6: Vandalism at a rock painting site in the Clanwilliam area.

people, to recognise the survival of pre-colonial landscape names, to involve communities actively in heritage planning, and to make use of local knowledge and local cosmologies, such as those in the Bleek and Lloyd archive, in place of colonially imposed versions. This attempt to reclaim the past has been recognised and endorsed by a wide spectrum of the local community in the form of enthusiastic participation in events organized by Jazzart and the Magnet Theatre through the Living Landscape Project such as the annual Spring Lantern Parade in which hundreds of local children participate (Fig. 9). The CLLP has also received the 2002-3 Entrepreneurship Award from the Clanwilliam Chamber of Commerce for developing new business for the town. As part of the initiative, we have proposed a twinning relationship between the municipality of Cederberg and the French Dordogne town of Les Eyzies de Tayac, which prides itself as the 'World Capital of Prehistory'. The mayor of Les Eyzies visited Clanwilliam in November 2002 and 2004.

The intention is to build archaeology and heritage as a strong pillar of the regional Cederberg economy, as it is in the Dordogne and many other parts of Europe. Building on a strong reserve of community support, the next phase of the Living Landscape Project is to develop a Heritage Park at the southern edge of the Clanwilliam municipal area . This involves the rehabilitation of the town rubbish dump, the reclaiming of the wetland area that has been impacted by waste disposal, the eradication of alien vegetation along the Jan Dissels River and the development of archaeological sites along the river banks. This area is close to the town of Clanwilliam and contains a rich complex of geological, botanical, archaeological and historical localities set in a magnificent Cederberg landscape. Establishing and maintaining this Living Landscape Heritage Park will generate sustainable jobs for many Clanwilliam residents and extend the tourist potential of the region.


Fig. 7


Fig. 8


Fig. 9

Fig. 7: Trainees at the Clanwilliam Living Landscape Project.

Fig. 8: The Krakadouw Trust property in Clanwilliam.

Fig. 9: Participants in the Spring Lantern Parade at the Living Landscape Project.

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For whom the bell tolls: rescue recording of petroglyphs and rock gongs in the Merowe Dam Reservoir area of the Fourth Nile Cataract (Sudan)

Cornelia Kleinitz[1]

POUR QUI SONNE LE GLAS: MISSION DE SAUVETAGE DES PÉTROGLYPHES ET DES ROCHES QUI RÉSONNENT (ROCK GONGS) DU LAC DE RETENUE DE LA QUATRIÈME CATARACTE DU NIL (SOUDAN)

Un défi important pour la recherche et la gestion du patrimoine est de contrecarrer les effets du développement économique et des infrastructures qui détruisent un nombre substantiel de peintures et de gravures rupestres. L'art menacé doit être répertorié efficacement et bien que certains sites fassent l'objet d'attentions articulières, le centre d'intérêt tend à se limiter à ses caractéristiques visuelles. Cependant, les aspects non visuels de l'art rupestre, tels que le son ou le toucher, peuvent également avoir jouer un rôle important. L'exemple de ce paysage intriguant sur l'île Ishashi dans le périmètre de la quatrième cataracte au Soudan, qui sera noyé par l'extension du barrage Merowe en 2007, est présenté comme un exemple de la façon dont l'appréciation publique et scientifique peut être renforcée grâce au son et au film. Un site multimédia accessible gratuitement se met en place pour garantir la survie et l'accessibilité de l'art rupestre et les aspects non visuels tels que les roches qui résonnent (rock gongs) et les célébrations, au moins dans un sens virtuel.

ABSTRACT

A major challenge for rock art research and heritage management is to counteract the effects of economic and infrastructure development that destroy substantial numbers of rock paintings and engravings. Threatened rock art must be recorded adequately but although the rock art and the landscape setting of sites is receiving some attention, the focus tends to be on its visual characteristics only. Non-visual aspects of rock art, such as sound or touch, may also have played an important role, however. The intriguing rock art landscape on Ishashi Island in the area of the Fourth Nile Cataract in Sudan that will be flooded by the Merowe Dam extension in 2008, is presented as an example of how research and public appreciation can be enhanced with sound and film. A freely accessible multi-media online archive is being developed to ensure the survival and accessibility of rock art and related non-visual aspects such as rock gongs and performance, at least in a virtual sense.

Introduction

Infrastructure and economic development will pose a major challenge for rock art research and heritage management on the African continent in the 21st century. Large-scale building projects, such as the construction of oil pipelines and dams, may destroy substantial numbers of pictographs and petroglyphs. Rock art rescue recording will thus play a significant role in providing information about the symbolic universes of past African peoples. Faced with time and/or funding restrictions, how can rock art be recorded adequately under rescue conditions, which often only allow one site visit? Indeed, which aspects of the rock art resource are recorded? While increasingly gathering information on the landscape setting of rock art sites and panels, documentation methodologies have tended to focus on recording visual characteristics of rock art only. Non-visual aspects of rock art, such as sound or touch, are often not considered although they may have played important roles both when making and using rock art (e.g. Ouzman 2001).

The Fourth Nile Cataract region in northern Sudan, which will be flooded to a large extent after the completion of the Merowe Dam in 2008, serves as a current example of some of the challenges faced by rock art research (Fig. 1). The Fourth Cataract region is characterised by extensive rock outcrops on both banks of the Nile and on its numerous river islands, many of which contain often extensive petroglyph sites. Large numbers of zoomorphs, most commonly cattle and camel forms, birds and giraffes, some anthropomorphs, boats, as well as various geometric motifs, such as crosses, were recorded during

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recent rescue campaigns. Diffuse non-figurative zones of percussion marks and/or cup marks which were also encountered, however, were often not documented; these marks were only recently recognised to be visual traces of sound making (Kleinitz 2004) (Fig. 2). Rocks from which a metallic bell-like sound emanates when struck, so-called 'rock gongs', have since been recorded at numerous rock art sites in the Fourth Cataract region, thus demonstrating a strong non-visual aspect (Kleinitz and Olsson 2005). Rock gongs have been reported from various parts of the African continent, especially during the 1950s and 1960s (see Fagg 1997 for a gazetteer). Yet, interest appears to have faded since these early reports, with the result that evidence for sound making is still infrequently recognised and recorded today. The current recording campaigns of the Fourth Nile Cataract are providing an opportunity to define and study acoustic phenomena in rock art and to investigate their interplay with visual aspects of Nilotic rock art landscapes.

Fig. 1

Fig. 1: Location of the proposed Merowe Dam and reservoir in the Sudanese Nile valley (after Ahmed 2004, fig. 194).


Fig. 2

Fig. 2: White percussion zones on a rock gong complex overlooking the Dar el-Arab region (site 3-Q-123).

Drowned rock art in the Nile valley: the Aswan and Merowe Dam projects

The building of the Aswan High Dam in Lower Nubia in the 1960s resulted in the flooding of a large part of the Nile valley between the First and Second Cataracts, submerging an ancient cultural landscape containing not only numerous temples and tombs, but also thousands of rock art panels, thought to date from the Predynastic to the Medieval periods (Červiček 1974, 1982). Various international missions documented petroglyphs (Almagro Basch and Almagro Gorbea 1968; Hellström & Langballe 1970; Verner 1973; Curto et al. 1987; Otto & Buschendorff-Otto 1993; Váhala & Červiček 1999) and, more rarely, pictographs (Bietak & Engelmayer 1963) in the region. Most of the rock art is now submerged in Lake Nasser, and thus lost for further study.

At the beginning of the 21st century another - and probably not the last - dam is being constructed on the Nubian Nile. The Merowe Dam in Upper Nubia is located in the Fourth Nile Cataract region upstream from the ancient monuments of Gebel Barkal, Sanam and Nuri, and the modern towns of Kareima and Merowe (see Fig. 1). After completion of the dam project a lake approximately 170 km long, up to 4 km wide and with a maximum water level of between 290 and 300 m above sea level is expected to inundate the fertile Nile valley between the Fourth and Fifth Cataracts (Ahmed 2004). The hydroelectric power generated by the dam is hoped to double the Republic of the Sudan's energy output and to allow development of many sectors of the national economy.

In contrast to the Aswan High Dam campaigns, the effect of the Merowe Dam on the cultural landscape of the Fourth Cataract and its people has hitherto received only limited international attention. In addition to the human impact of the dam project - about 48 000 local farmers of the Manassir tribe are to be moved to several re-settlement areas, often great distances from their former homes - a largely unexplored archaeological landscape is being threatened. While some impact assessments were carried out in the area in the late 1980s (e.g. Leclant 1993; Montluçon 1994), large-scale surveys and excavations with international participation have only been undertaken since the late 1990s, and especially since 2003, as part of the Merowe Dam Archaeological Salvage Project (MDASP) (e.g. Paner 2003a and b; Welsby 2003; Ahmed 2004; Fuller 2004; Wolf 2004). Although the current rescue efforts are of a smaller scale than those of the UNESCO Nubian Campaign of the First Cataract region in the early 1960s, it is hoped that the momentum

created by the Merowe Dam project will result in a similarly detailed archaeological map of the Fourth Nile Cataract region.

Rock art in the Merowe Dam reservoir area

Already the first impact assessments pointed to the presence of a rich body of petroglyphs in the Fourth Nile Cataract region (e.g. Leclant 1993; Montluçon 1994). Since then surveys in the respective national and international concessions have encountered numerous rock art sites in the area (e.g. Mohammed & Hussein 1999; Paner 2003a and b; Welsby 2003; Kleinitz 2004; Wolf 2004). As most documentation is carried out as part of larger archaeological surveys, rock art sites are usually mapped in relation to other archaeological sites and to landscape features, providing valuable data for landscape studies. However, due to the sheer number of rock art sites, such maps are often incomplete, giving an inaccurate impression of the distribution of sites and motifs. Also, documentation tends to focus on larger, especially interesting and/or easily recognisable sites and motif types. Studies dedicated specifically to rock art are rare, and little in-depth research on Fourth Cataract rock art has hitherto been undertaken (Kleinitz 2004; Kleinitz & Olsson 2005).

In early 2004 an intensive survey of Ishashi, a river island in the concession of the Sudan Archaeological Research Society (SARS), was undertaken, with the intention of creating a full rock art record of this insular landscape. At 33 sites more than 350 boulders with rock art were identified, with panels primarily containing cattle motifs. Additionally, 25 slabs or boulders with between one and eight zones of percussion marks, and 17 groups of up to seven boulders with often with multiple zones of percussion marks, were recorded (Kleinitz 2004) (Fig. 3). The Ishashi island rock art survey demonstrated the potential of detailed studies of confined rock art landscapes in the Fourth Cataract, documenting all human-made marks on natural rock surfaces within a defined area, for gaining a better understanding of visual and non-visual aspects of making and using Nubian rock art over time. The recording methodology was developed in response to past rescue projects in the Nile valley undertaken during the construction of the Aswan High Dam, while also taking into account recent developments in rock art research.

Rock art rescue recording in the Fourth Nile Cataract

Rock art rescue recording poses specific challenges, as often large areas with numerous rock art localities are surveyed under extreme time pressure, and re-visiting and re-recording rock art sites to answer new research questions is frequently impossible. While no recording effort can be exhaustive, rescue documentation should ideally provide as broad a data base as possible. Such data sets are shaped by current research interests. The Lower Nubian rock art rescue campaigns of the 1960s, for example, published data sets primarily restricted to selections of individual or small groups of motifs, often removed from their panel contexts. Information on the landscape setting of the sites and panels, or on the spatial relationship of panels or motifs to each other was minimal, permitting motif-based studies only. Recent theoretical concerns about the landscape contexts of rock art, or non-visual aspects of making and using pictographs or petroglyphs, require a much broader context-based approach. Extensive descriptions and graphic recordings of sites, panels and motifs, of view sheds and environments, are time-and labour-intensive, however.

The conflict between using fast but superficial, or more accurate but time-intensive recording methods is central to rescue recording efforts, and a compromise needs to be found between breadth and depth of recording. In the case of the Fourth Cataract surveys, a general overview of the rock art of the survey areas was at the main objective, with some case studies focusing on a selection of sub-regions, such as insular landscapes, wadi systems, etc. These were documented in great detail, with pedestrian surveys undertaken to identify all rock art sites in a given area (Kleinitz 2004; Kleinitz & Olsson 2005). Detailed written and photographic information on sites, panels and motifs were recorded, including the documentation of other archaeological remains at rock art localities. Sites, panels and motifs were photographed in relation to each other. As photographic recording frequently cannot adequately represent superimpositions on panels or deeply patinated petroglyphs, some panels were traced on plastic sheets, others drawn to scale (Fig. 4). Digital video recording was employed in documenting the relation of sites and panels to each other, as well as view sheds from sites and panels. It was also used to record the sounds that emanated from rock gongs when struck. The development of digital technology, such as high resolution digital photography or digital video, offers new opportunities for recording and making large data sets accessible. Photographs no longer need to be confined to single panel or motif shots. Location contexts can be easily and cheaply filmed or photographed. Virtual archives and online presentations, which are being developed for the Fourth Nile Cataract rock art

Fig. 3: Rock gong with multiple percussion zones and a small percussion stone on its surface (site 3-J-048 on Ishashi Island).

Fig. 4: Tracing of a group of giraffes in situ at site 3-O-031 on Ishashi Island.

corpus, are able to store large collections of digital data. These can be made accessible cheaply and freely for research, for both the local communities and interested public within and beyond the African continent.

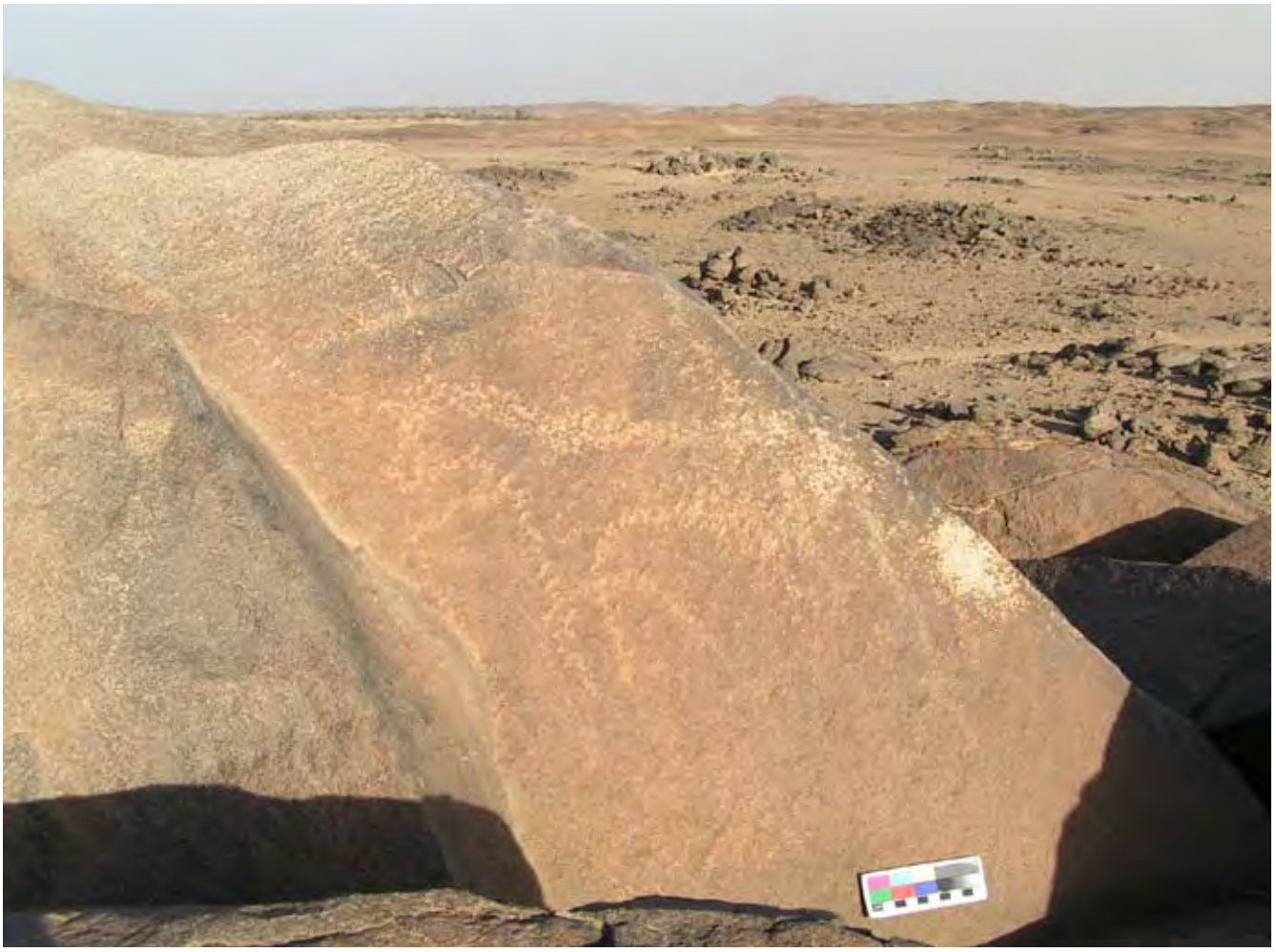
While time pressure is one of the negative aspects of rescue recording, it must be stressed that rescue documentation also offers opportunities to study rock art landscapes that would not normally arise. A large area - in the case of the Fourth Nile Cataract region an area that had not before attracted much interest - is surveyed within a relatively short period of time. Detailed data sets on topography and on archaeological sites in a given landscape usually become available; these are of utmost value for the construction of past symbolic landscapes. Rescue recording also offers the option of using more intrusive recording methods than is usually recommended in rock art research. For example, after their initial documentation, digital video recording of rock gong phenomena in the Fourth Cataract region involved the beating of the marked rock surfaces with small rocks and resulted in white percussion marks. This intrusive method could not have been implemented if the preservation of the integrity of the rock gongs had been of paramount importance. Valuable information on the tonal range of these instruments and their use would have been lost. Rescue contexts may thus repeatedly pose the dilemma of having to choose between gaining important information on a vanishing resource, or adhering to rock art recording ethics propagating non-intrusive recording methods.

Auditory aspects of rock art landscapes

"The visual primacy of rock art imagery can sometimes blind the researchers to equally important but less obvious, non-visual aspects of rock art."
Ouzman 2001:237

Within its rich collection of thousands of petroglyphs, the rock art landscape of the Fourth Nile Cataract region contains a strong acoustic component in the form of numerous rock gongs and rock gong complexes. Rock gongs are percussion idiophones, self-sounding instruments producing sounds when struck with a hard object. They have been defined by Fagg (1997:2) as "naturally situated and naturally tuned rocks, boulders, exfoliations, stalactites and stalagmites which resonate when struck and show evidence of human use as idiophones…They seem to be of any shape or size; some may have been repositioned slightly and very occasionally stone wedges have been added … Several different notes can usually be obtained from a single boulder ... and resulting from percussion an abraded area may show on the edge of a rock; alternatively hollows or 'cupmarks' are formed". While rock gongs have been encountered in different types of rock, they are frequent in granite (Fagg 1997:5). According to Fagg (1997:6) it is a combination of "physical texture of the rock, together with its shape, size and position" which determines if a rock resonates or not, and its tonal range.

Phenomena included in Fagg's above definition are elsewhere referred to as 'sounding stones', 'ringing rocks', 'bell rocks', 'lithophones', 'rock chimes' and others. The term 'rock gong' is



now well established, although the use of the term 'gong' for describing unworked resonant slabs or boulders has been criticised (e.g. Montagu 1965).

In order to distinguish between the various rock gong phenomena, they can be described according to the number of slabs or boulders apparently forming one percussion instrument. Single slabs or boulders are termed 'rock gong', while 'rock gong complexes' comprise two or more slabs or boulders.

The slabs or boulders themselves can be distinguished according to the number and types of percussion zones present, more or less dense and deep zones of peck marks resulting from striking the resonant rock surfaces (Kleinitz 2004).

While rock gongs have been found in many parts of the world, they have been reported most frequently from the African continent, where they were used recently as signalling devices (Fagg 1956; Davidson 1959; Conant 1960), in a variety of ritual contexts, such as fertility rituals (Fagg 1956; Morton-Williams 1957), rain making (Lanning 1958), circumcision and other initiation rites (Fagg 1956; Conant 1960; Vaughan 1962), as well as for entertainment.

In some instances rock gongs have been found in close proximity to additive or subtractive rock art, such as in Nigeria (Fagg 1956, Morton-Williams 1957; Vaughan 1962), Tanzania (Soper 1968) or Uganda (Lanning 1958; Jackson et al. 1965), and in these instances their use may have been closely related to that of the pictographs or petroglyphs. Vaughan (1962), for example, discussed the interrelationship between rock gongs and rock art, and their role in the *mba* pre-marriage ritual, among the Marghi people of Nigeria.

Rock gongs and petroglyphs and in the Fourth Nile Cataract region

The existence of rock gongs in the Sudanese Nile valley was reported at the Sixth (Fagg 1997) and the Third Cataracts (Edwards & Osman 2000; Jalal & Bell 2000). Rock gong phenomena are now being recognised in great numbers among the granite hills and outcrops of the Fourth Cataract region, where they are most commonly found in close proximity to petroglyphs, offering an opportunity to study the relationship between visual and non-visual aspects of rock art making and use (Kleinitz 2004). On Ishashi island cattle motifs are often found in the vicinity of or even on resonant slabs or boulders, pointing to a close conceptual relationship between

sound making and cattle forms. Where cattle petroglyphs were placed on resonant rock surfaces their creation would have been accompanied by bell-like sounds. In some cases non-figurative percussion zones overlie cattle motifs, post-dating them (Fig. 5), while in other cases they are roughly contemporary, judging from similarities in patination. The date of cattle petroglyphs and related rock gong phenomena is as yet unresolved, as the chronology of Upper Nubian rock art still requires in-depth research. While cattle motifs in Nilotic rock art have been dated to the Third and Second millennia BC (e.g. Červiček 1974, 1982; Allard-Huard 2000), it seems that they persist well into the Medieval period in the Fourth Nile Cataract corpus.

Intra-regional differences in motifs and the association of petroglyphs and rock gongs were revealed by surveys in late 2004 and early 2005 in the Dar el-Arab and et-Tereif regions on the left (eastern) bank of the Nile, as well as on the large river island Umm Deras in the SARS concession (Kleinitz & Olsson 2005) and on the large island Us in the concession of the Humboldt University Nubian Expedition (HUNE). In these regions rock gongs are usually found in close proximity to camel and cross motifs, indicating that they may have been used during the Christian Medieval period (c. 6th-15th centuries AD). Crosses are even found on the surfaces of some rock gongs (Fig. 6).

The function(s) of these instruments remain(s) elusive. In some cases they may have played a role in Christian faith. In neighbouring Ethiopia, for example, resonating rocks are still used today as church bells (Fagg 1997:8). Detailed investigations into these instruments and their location during the current rescue campaigns will hopefully provide information on audiences and possible use contexts.

The origin of rock gong traditions may date far back in time and it is possible that older traditions were adapted. This is indicated by older cattle imagery underlying younger camel and cross motifs in the vicinity of or on rock gongs (Fig. 7). While some rock gongs, usually those located some distance from modern settlements, are well patinated, dating their use back in time, others were used relatively recently, judging from the lack of percussion zone patination. Locally, when referring to rock gongs, the term *nugara* (drum) is used, giving some indication as to the recent use of these percussion instruments. According to local informants, today rock gongs are used for children's entertainment only.

Percussionists and audiences in the Fourth Nile Cataract

Rock gongs are found in a variety of locales: in the vicinity of the fertile belt along the banks of the Nile as well as in the wadi systems and in the relatively hostile environment of extensive zones of rubble and boulders. Varying in their landscape situation, they also differ in their size, conspicuousness,

Fig. 5: Percussion zones overlying older cattle motifs and an anthropomorph (site 3-O-030, Ishashi Island).

Fig. 6: Rock gong complex with a wheel-cross and two Latin crosses on the main slab (site 3-O-076, et-Tereif region).

accessibility and intensity of use. This diversity indicates that activities at the various rock gong sites may have differed in type, in motivation and in the audiences they were directed at. In the Fourth Nile Cataract region rock gong phenomena range from small and inconspicuous boulders with only a few percussion marks to large and prominent groups of slabs or boulders with multiple percussion zones (Fig. 8).

Rock gongs and rock gong complexes with heavily worn percussion zones are all found in locations offering space for larger gatherings of people in their immediate vicinity. Reports from other parts of the African continent give an impression of the performance aspects of rock gong use. Fagg (1956:35) reported initiation songs that were accompanied by rock gongs in Nigeria: "…the rock gongs appear to be used rather like drums, as a rhythmic accompaniment for singing…". Lanning (1959) described dancing accompanied by rock gong music in Uganda. Spontaneous demonstrations of rock gongs in the Fourth Nile Cataract region by local people involved both singing and dancing accompanied by rock gongs using a few notes.

The percussion zone positioning on the rock gongs contains important information about how these instruments were played in the past. Rock gongs and rock gong complexes are known to have been used as ensemble instruments played by several individuals. Conant (1960), for example, reports five rock gongs played by two drummers each at Lir, Nigeria. To evaluate the possible number of individuals involved in playing a rock gong or rock gong complexes in the Fourth Cataract region, 'percussion foci' were defined.

These are groups of percussion zones on one or several slabs and/or boulders that can be reached from one position, and thus could have been played by a single person at any time without re-positioning. Several percussion foci could have been used by as many individuals at the same time or one after the other by a single person.

Digital video recording of experimental rock gong play took note, for example, of percussion foci, of possible combinations of tones, of likely body positions while playing, and of the number of individuals possibly present at any time at individual rock gongs and rock gong complexes.

Tonal ranges and percussion tools

A wide range of tones is produced by rock gongs in the Fourth Cataract region. While metallic bell-like sounds similar to xylophones emanate from some, others produce hollow thud-like sounds. In most cases more than one percussion zone is present. Percussion zones within individual percussion foci usually show a range of tones indicating that proper melodies may have been played, contrasting with modern demonstrations by locals. In some cases slabs or boulders were re-positioned, possibly to artificially tune these idiophones.

The partial removal of the percussion edges was observed in numerous cases and may have served a similar purpose. While some rock gongs show signs of use only once or in very few instances, others seem to have been played over long periods of time, judging from the formation of deep cup marks (see Fig. 8). Signs of intensive use were found on rock gongs with greatly varying tonal ranges, indicating that at least in some instances the sound quality was not decisive in the choice and popularity of rock gongs.

Little is known about the tools used to strike rock gongs. Hammer or percussion stones, small rocks or pebbles with percussion marks along their edges, are sometimes mentioned in the literature. They have been

Fig. 9: Percussion stone from Ishashi Island.

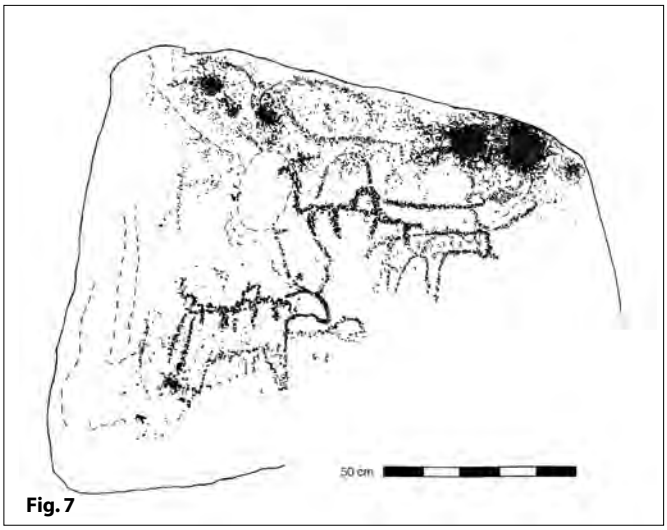


Fig. 7

Fig. 8

Fig. 7: Camel images overlying cattle petroglyphs on a rock gong surface at site 3-O-055 in the et-Tereif region.

Fig. 8: Rock gong complex consisting of two large slabs and a smaller slab with multiple percussion zones and numerous deep cup marks (site Us-101, Us Island).

observed in the vicinity of rock gongs in various parts of the African continent, for example, in Nigeria (Fagg 1997; Vaughan 1962), Tanzania (Soper 1968) and Uganda (Lanning 1959; Jackson et al. 1965). In the Fourth Cataract region, especially on Ishashi island and in the Dar el-Arab region, pebbles and small rocks with percussion marks were frequently encountered in close proximity to rock gongs (Kleinitz 2004).

Experimental studies showed that the percussion marks could indeed have resulted from beating rock surfaces. The small size of the percussion marks on the round-edged stones speaks against their use in creating the relatively crudely and deeply pecked figurative petroglyphs. Judging from comparative data gathered during experimental rock gong play, most of the documented percussion stones were only used for a few minutes of play and then discarded. Only a few of the stones show extensive percussion marks and appear to have served for longer play or may have been re-used (Fig. 9).

Conclusions

Rock art is among the most durable signs of human symbolic behaviour in the landscape. It is, however, increasingly threatened by a variety of human-caused factors, among them a growing number of dam projects. In the region of the projected Merowe Dam reservoir above the Fourth Nile Cataract numerous rescue missions are undertaking archaeological surveys, including the recording of thousands of petroglyphs. While few in-depth studies of rock art are scheduled in this region due to time pressure and limitations in funding, some investigations have shown that this rock art landscape has a strong acoustic component in the form of rock gongs and rock gong complexes. As rock art is considered primarily a visual phenomenon, the often inconspicuous and usually non-figurative percussion zones are easily overlooked in rock art research. In addition to more or less extensive percussion zones, some of which contain cup marks, visible traces of sound making also include percussion stones, which are usually found in the vicinity of rock gongs. Investigations of these idiophones, their location in the landscape, their accessibility for percussionists and possible audiences, their proximity to petroglyphs or pictographs and to other archaeological sites, and the location and depth of the percussion zones, all inform about non-visual and performance aspects of making and using Nilotic rock art, allowing more complete reconstructions of past symbolic landscapes. Rock art rescue recording methodologies thus need to take into account both visual and non-visual aspects of rock art landscapes. The irretrievable loss of the intriguing rock art landscape of the Fourth Nile Cataract for research and public appreciation will hopefully be countered by the development of a freely accessible multi-media online archive, thus ensuring the survival and accessibility of this body of rock art at least in a virtual sense.

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Saharan rock art, a vanishing heritage: government and community cooperation in Niger

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L'ART RUPESTRE SAHARIEN, UN PATRIMOINE QUI DISPARAÎT: LA COOPÉRATION COMMUNAUTAIRE ET GOUVERNEMENTAL AU NIGER

L'art rupestre du Sahara peut être comparé à une bibliothèque ancienne, archivant les pensées et les sentiments des gens qui ont vécu et traversé le désert sur un millénaire. Les légendes des Touaregs, appelées Anigourane dans le langage Temacheq, disent *Anou nin anou zagrenne, assawadinne sardoque itranne,* ce qui veut dire « mon puits est très profond et ma vue peut voir à travers les étoiles ». La longue histoire des premiers peuples du Sahara, à bien des égards, a résisté aux plus modernes influences de l'extérieur. L'art rupestre et les écritures Tifinagh qui accompagnent souvent cet art, reflètent la perception de ces peuples anciens envers le monde, leur habitat et les créatures qui le peuplaient ainsi que les influences des autres peuples et des autres cultures. Les menaces variées auxquelles est exposé l'art rupestre, sont analysées dans cet article et des stratégies pour minimiser les menaces y sont suggérées. Des incitations économiques pour la conservation de l'art rupestre ont besoin d'être développées en intégrant aussi des objectifs socio-économiques.

ABSTRACT

The rock art of the Sahara can be compared to an ancient library, recording the thoughts and feelings of people who have lived and passed through the desert over millennia. The legends of the Tuareg, called Anigourane in the Temacheq language, state *Anou nin anou Zagrenne, Assawadinne sardoque itranne*, which means "My well is very deep and my vision reads across the stars". The long history of early Saharan people has, in many respects, withstood many of the more modern influences from outside. The rock art, and Tifinagh writings that often accompany that art, represent much of how these ancient people perceived the world, their habitat and the creatures that inhabited it as well as the influences of other peoples and cultures. The threats of various kinds to which the rock art is exposed are analysed in this paper and threat abatement strategies are suggested. Economic incentives for conserving rock art need to be developed to integrate socio-economic and rock art conservation objectives.

Sites where the rocks have been scratched, engraved or painted by the people who dwelled in the desert riddle the Sahara. In northern Niger, the Aïr Mountains and Ténéré desert border with Algeria, Libya and Chad.

The Tuareg inhabitants of this region know many of the rock art sites and still understand much of the writing that accompanies the art. It isn't clear who the people are in much of the older art and many of them could have pre-dated the Tuareg who are now the majority population in northern Niger. The Tuareg, however, claim that the art is their ancestry and their interpretations of the art are often very different from those of other observers. Over the years, many scientists and rock-art enthusiasts from the West have come to the Sahara to document the rock art sites. They are perceived by the Tuareg as having an interest primarily in interpreting the art to contribute to their understanding of African history and culture. For many Tuareg, however, the art is a part of their lives and their culture and expresses much of their way of seeing the world. For the older generation, the art is considered sacred and has been protected from damage and carefully preserved over many generations and thousands of years. Recent

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changes and pressures, often from outside, however, have led to a breakdown in this respect for the ancient art. The consequence has been vandalism and some of the art has been broken for sale in a growing commercial market.

The Tuareg of the Aïr and Ténéré

The Tuareg are nomadic people, living a primarily pastoral lifestyle. In northern Niger, the population of about 380 000 people is distributed over an area of about 670 000 km2[3]. Population growth has been rapid over the past few years, doubling since the 1977 population census. This population is clustered around the principal mining areas of Tchirozérine and Arlit (three quarters of the population are found in these two areas), where uranium and other minerals are mined for commercial purposes. Urbanisation in the area is approximately 6% per year, and almost 24% of the population lives in urban areas. The people in the region are principally pastoralists, despite the fact that only 3% of the area can be exploited in this manner. Their pastoral lifestyle is practised through both a nomadic lifestyle and transhumance.

The population of the Agadez region of northern Niger is primarily Tuareg, with some other groups (Arap, Peul, Haussa, etc). In a Livelihood Security Survey conducted in Agadez (CARE International, January 2000), it was estimated that in the Department of Agadez, 63.5% of the population are classified as extremely vulnerable, 24.9% as vulnerable and only 11.6% as less vulnerable. Most of the extremely vulnerable families are found in the Irhazer and Aïr zones. Much of the rock art surveyed in recent years by David Coulson and Alec Campbell, is in these two zones.

Most children do not have access to schools. The proportion of illiterate males is 58.4%, and

females 85%. Much of the reason for this extremely poor literacy rate is distance to schools, rather than presence of schools. The distance, given poor infrastructure, is too great to permit access for children in rural areas.

The department has 28 health centres, but coverage in rural areas is estimated at only 24%. Problems linked to access to health care have been attributed to poor quality of health care, difficulty of access (distance) or cost. Most people can get to a health centre, but cannot afford the care available there. Cultural problems are also relevant, due to lack of understanding and awareness. For the pastoral people of Niger, animal husbandry is the principal livelihood strategy. Farming is extremely limited and other forms of income are rare and unreliable. An analysis of subsistence livelihoods and governance in the region shows that the principal factors limiting development in this region can be listed as:

- Absence of organised and operational infrastructure
- Absence of professions able to launch activities, and inexperience in management
- Lack of investment capital (micro-credit facilities)
- Lack of provisioning structures
- Difficulties in dispersal of products (especially artisanal and food products)
- Need to utilise funds for other needs linked to primary survival
- Lack of information on prices and opportunities (especially tourism)
- Lack of access due to infrastructure (roads) and resulting competition between producers all trying to sell their products at the same time on the same market

In essence, the primary problem facing the poor rural communities in the Sahara is that they have no alternatives to their harsh, nomadic and pastoral lifestyles, and there are few alternative means to supplement their incomes. Infrastructure and development in the region is very limited and people exist in a cycle of poverty that it is almost impossible to break.

Threat abatement and conservation

The field of environmental conservation has developed approaches which can be effectively adapted and applied to help in understanding how rock art sites can best be protected with the participation and for the benefit of local communities.

Key conservation targets are identified, which in this case are specific rock art sites threatened by human or non-human activity. The threats to those conservation targets are then analysed, with both direct and underlying causes identified. The strategies to be implemented are strategies that can abate those threats and thereby reduce their impact on the rock art sites[4]. Threat abatement is one of the different approaches applied by wildlife conservation programmes throughout the world, to enable wild lands and wildlife communities and species to thrive and to minimize the negative impact of human behaviour on the world's remaining wilderness. Applying the threat abatement logic to the preservation of vulnerable rock art sites enables key actions to be developed that can address direct and underlying causes of threat. In most cases, the underlying causes of the threat are lack of understanding, poverty and poor governance and community participation. It is for this reason that the emphasis of all conservation action must be focused on involving local people, including leaders, local government and both nomadic and sedentary populations.

Tables 1 – 4 describe the threats

[3] CARE International, January 2000. Evaluation de la Sécurité des Conditions de Vie dans le Département d'Agadez

analysis and threat abatement logic, and make a very preliminary start at identifying appropriate conservation action. Not all the threats are listed and there are many site specific factors which must also be taken into consideration when developing specific strategies. The threats analysis does, however, illustrate the logic to be applied, and outlines the approach to be applied in developing conservation strategies for preserving rock art and rock art sites.

Threats Analysis for African Rock Art

All Threat Abatement strategies require Survey & Mapping to identify key sites for protection or conservation interventions.

The integration of rock art conservation and socio-economic objectives

The development of economic incentives for conserving rock art is one of the most obvious strategies integrating socio-economic and rock art conservation objectives. Tourism is one of the most effective means of achieving these objectives, given the increasing numbers of tourists travelling to and through the Sahara and the growing interest in 'adventure tourism'. Few alternative income-generating industries exist in this very poor and harsh region. Yet the limited capacity to effectively manage tourism at local level and the threats posed by uncontrolled tourism lead it to also figure as one of the high-

[4] AWF Threat Abatement and Heartland Conservation Planning; www.awf.org WWF Ecoregion planning; www.wwf.org

Table 1: Threats from humans: Local communities

Proximate Threat & preliminary ranking	Rationale	Category of Threat	Stress	Source of Threat	Threat abatement strategy
Scraping of paint at rock art sites	Traditional medicine for local people for *sacred powers*	**Human: Local communities**	Destruction of actual art work	Traditional Healers and Providers for Traditional healers/Medicine men	Raise awareness at local level Protect key sites
Deliberate destruction: Graffiti / defacement **1st ranking**	Wanton vandalism or creative enjoyment (incl. pornographic defacement)		Destruction of artwork	Local people living in proximity of rock art sites	Protect key sites Continued isolation from people
Unknowing destruction	Construction of shelter, cooking place, cattle herding, etc		Destruction of artwork	Farmers / pastoralists / nomads / hunter-gatherers living in rock art sites	Raise awareness of local people Protect key sites;
Collection of artefacts for sale **2nd ranking**	Value of rock art for sale as curios to collectors and tourists		Removal of art and destruction of art work	Local people in contact with urban centres or tourist / market routes	International awareness International policy and controls in trade Survey, mapping Protect key sites
Religious vandalism	Destruction of art as a pagan threat to established religions (e.g. Islam)		Destruction	Religious leaders and local people living near sites who carry out instructions	Survey, mapping Raise awareness at local level
Deliberate destruction for sabotage	Jealousies (e.g. Mt Elgon) and wilful sabotage of resources valuable to others		Destruction	Local people living near rock art sites who do not participate in any perceived benefits	Protect key sites Raise awareness at local level

Table 2: Threats from humans: Government and Corporate

Proximate Threat & preliminary ranking	**Rationale**	**Category of Threat**	**Stress**	**Source of Threat**	**Threat abatement strategy**
Destruction of rock art sites for mineral exploitation	Concessions for exploitation of oil, granite, other minerals	**Human: Government and Corporate**	Destruction of sites, with rock art as an uninten-tional cost	Mining companies exploiting sites, leading to vibrations, blasting and direct destruction of sites	Raise awareness at inter- & national level (corporate HQ) Inter- & national advocacy and Codes of Conduct Media / Publications (inter- & national) Survey & Mapping
Destruction of sites for infrastructure development	Hydro-electric dam construction, road and infrastructure development		Covering up by water, destroyed from heavy machinery, tarmac, etc; opening up of isolated areas to human habitation	Governments and companies developing roads, dams, etc.	Survey & Mapping National advocacy and Codes of Conduct Media and publications for National awareness
Collection of specimens for museums, collections or trade **2nd ranking**	Valuable resource for sale or prestigious gifts/ assets		Destruction of sites and removal of key works	Government authorities who are not concerned about *in situ* preservation of the national heritage	Survey and mapping National legislation and enforcement on trade National advocacy and Codes of Conduct International policy and controls in trade Media/ Publications

Table 3: Threats from humans: International community

Proximate Threat & preliminary ranking	**Rationale**	**Category of Threat**	**Stress**	**Source of Threat**	**Threat abatement strategy**
Illegal making of archaeological moulds and other reproductions	Scientific value, publishing pressure and lack of respect of history and value	**Human: International (including scientific community, tourists, etc)**	Scratching, water and rubbing, contact with abrasive surfaces, etc	Scientific or amateur community wanting to record sites for own career development	Protection of key sites Survey & mapping Inter- & National level codes of conduct
Wilful graffiti	Vandalism		Destruction of artwork	Tourists/visitors not understanding or respecting value and history of rock art sites	Continued isolation Guardians/protection Tourism Codes of Conduct/ regulations Continued isolation
Illegal collection of souvenirs **2nd ranking**	Value of rock art for collectors and tourists		Removal of artwork and destruction of art work	Collectors (eg. Tourists or scientists) valuing the sites and wanting ownership of pieces. In part exacerbated by Media and Information.	Guardians/ protection Legislation and enforcement in trade Awareness & Codes of Conduct
Organised trade in artefacts **2nd ranking**	Value of rock art for sale as curios to collectors worldwide		Removal and destruction of art work	Perceived or real financial value of rock art : e.g. sale in France, Belgium, Spain, etc. In part exacerbated by Media and information	Survey and mapping National legislation and enforcement on trade National advocacy and tourism Codes of Conduct; International policy and controls in trade; Media/ Publications
Unknowing destruction by visitors to rock art sites	People valuing rock art but not knowing about vulnerability and how to preserve		Water, light, abrasion (walking over carvings), etc, destroying art	Lack of knowledge and understanding of fragility and unwitting damage	Survey & Mapping key sites Protection Awareness & Codes of Conduct

Table 4: Threats from natural elements

Proximate Threat & preliminary ranking	**Rationale**	**Category of Threat**	**Stress**	**Source of Threat**	**Threat abatement strategy**
Growth of lichen/moss	Natural	**Plant**	Destruction and obliteration	Natural plant growth and lack of maintenance	Survey & mapping to ID key sites Protection & maintenance of key sites
Cattle rubbing against rock art/ trampling	Natural	**Animal**	Abrasion, rubbing, trampling	Presence of pastoralists/ nomads near sites; opening up of remote areas for people (expansion of human population)	Survey & mapping to ID key sites Protect & maintain key sites Raise awareness of local people
Chemical leaching from pollutants	Natural	**Physical**	Chemical destruction of paint or rock	Proximity or influence of human industrialisation/ acid rain, etc.	Prevention of contact with chemicals Shelter
Mineral/chemical leaching from soil **3rd ranking**			Destruction of paint or rock	Salts, minerals and other chemicals in soil slowly deface the art work	Drip control Prevent contact
Water erosion			Drip, flow, etc.	Changes in water flow or slow erosion from water over time	Deviation of water courses
Sand/wind erosion			Blasting of the art work from wind/ sand	Weather	Shelters/ protection
Sand covering up rock art sites			Sand movement, especially in desert	Movement of the dunes over time, covering (and uncovering) sites	Removal??

est threats to fragile rock art sites. There is an enormous risk that tourism will lead to degradation of sites but also the fragile environment in which the sites are located if it is not carefully controlled and managed. This is very similar to the situation with ecotourism in wildlife sites, yet it has been shown to work, when managed and controlled carefully.

The Sahara is an open air museum in archaeology, palaeontology and rock art, protected by a clement climate. Many areas are accessible to all-terrain vehicles. There is a great variety and wealth of rock art throughout this region. Sites have been preserved for thousands of years by the local people due to their isolation from frequented tourist routes and are now being discovered by the tourists. Awakened interest in rock art is forming a demand. Although this demand is one of the most significant threats to rock art today, it equally presents a unique opportunity to use the conservation of rock art, through tourism development, as a tool for both education and economic development of this region.

Tourism is the fastest growing industry world-wide and will inevitably lead people to explore the remotest corners of the world. It is inevitable that tourism in the Sahara will grow over time. Unless it is managed by local people and contributes to their livelihood, it will never be sustainable, nor will the sites be protected by local people. Managing tourism is an unavoidable priority for rock art conservation that will need to be controlled to ensure that it contributes in some measure to people's livelihoods.
In 1991, the United Nations Education, Scientific and Cultural Organisation (UNESCO) created a World Heritage Site for Humanity for the Natural Reserve of Aïr and Ténéré, due in large part to its exceptional rock art sites. The sites, however, are not effectively protected and in some cases, vandalism and degradation are already evident. Effective preservation of these sites is urgent and essential. Knowing about these sites carries with it the shared and global responsibility of conserving them.

As described above, Niger is an extremely poor country. The Department of Agadez (northern Niger), covering almost half of the country, is the poorest region, with few alternative livelihood opportunities. It represents the extreme limit of ecological zones inhabitable by man. Population density is low and most people have limited ability to access their basic survival needs. Education, healthcare and economic opportunities are limited.

By forming a mechanism for collaboration and coordination between the different stakeholders in the tourism industry, and developing a few key pilot sites, tourism in the region can improve considerably, thus having immediate impact on the economy. In addition, by ensuring that linkages are made with rural development programmes (CARE and Africare) and focusing key development activities in areas where small amounts of tourism revenue can be generated, the benefits of tourism can flow directly into the poor rural communities. Tourism revenue can form the basis for resolving some of the key constraints to improving income generating activities.

For example, tourism revenue (together with some initial inputs) can finance the running costs of some of the rural development activities that have been identified as critical by development agencies.

Maintenance of wells, payment of some of the costs of a dispensary or school, provision of materials for an irrigation and household garden project, or making small sums of micro-credit available are all options that can be explored.

At present, revenues from tourism in the region are primarily channelled to foreign companies, and few of the benefits remain in the country. Some local operators are involved in the tourism sector, but they are dependent on the foreign companies and vulnerable infrastructure in the country. Overland tourists (the bulk of the market) do not pay any levies or fees to visit the region. Very little income flows back into the local economy.

By organising and assisting the local associations, such as the Syndicat du Tourisme based in Agadez, and the Association ANIGOURANE, to organise themselves and establish mechanisms for attracting and sharing revenue, and by developing model projects that can be copied and adapted to other sites, the style and role of tourism can change dramatically.

The Trust for African Rock Art (TARA)6 started working in Niger in 1996 and has worked with Tuareg in the region to support the Syndicat du Tourisme and the Association ANIGOURANE for the conservation, protection and promotion of Niger's rock art. By raising awareness, TARA and its partners have raised funding and awareness for rock art conservation activities in the Aïr and Ténéré region of the Sahara.

It is essential to ensure that the political sensitivities of the people in the region, as well as their historical relationships and potential competition, are taken into consideration in developing projects to link conservation, tourism and development. The success of rock art conservation in Africa depends on the integration of scientific knowledge and interest with the local understanding in the interpretation of rock art. It depends on effectively bringing together the socio-economic and cultural context of the region into conservation approaches and ensuring that local communities lead and benefit from conservation activities.

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[5] ANIGOURANE is a local association for the conservation and promotion of Niger's rock art heritage.

[6] TARA was registered in 2000 as a non profit foundation in the USA and in Kenya as a charitable trust. P.O. Box 24122, Nairobi 00502, Kenya.

Rock art patrimony of Morocco: an endangered cultural property

Abdellah Salih[1]

L'HÉRITAGE RUPESTRE DU MAROC: UN BIEN CULTUREL EN DANGER

Au cours des travaux d'inventaire que nous avons mené dans les aires de l'art rupestres marocaines, nous avons constaté la disparition systématique des blocs gravés. Ces aires rupestres sont soumises à des dangers permanents, comme le vol et le vandalisme, ainsi qu'aux effets dégradants des agents naturels atmosphériques et érosifs. Des mesures de protection ont été prises. Mais, malheureusement elles restent insuffisantes. Ceci est dû principalement à la grande extension des sites, à leur situation topographique dans plusieurs zones géographiques et bioclimatiques difficiles à contrôler, ainsi qu'à leur proximité des régions en voie d'urbanisation rapide.

ABSTRACT

During the inventory work that we have undertaken at Moroccan rock art sites, we have noticed the systematic disappearance of engraved blocks. These rock art sites are subjected to permanent danger such as theft and vandalism, in addition to the degrading effects of atmospheric and erosive natural agents. Protective measures have been taken, but they are unfortunately insufficient. This is due, mainly, to the extent of the sites, to their topographic location in several geographic and bioclimatic zones that is difficult to control, and also to their proximity to regions in the process of rapid urbanisation.

Introduction

Morocco is one of the most important rock art regions in Africa, and even in the world. It falls within three major geographic and bioclimatic zones, namely the mountain ranges of the Atlas and the Rif, the Saharan steppe margins or Pre-Sahara, and the Sahara. The immensity and extent of the region that is spread over several latitudinal zones must have had an impact on the human communities who produced the rock art, both engraved and painted.

The themes, styles and techniques used for their production are varied, and the works of art are found mostly at open air sites that are in effect unknown museums of which, unfortunately, the broader public is unaware.

Some of these sites have been the object of study and publication but the majority are neither totally inventoried, nor documented, studied or classified. The deterioration which the Moroccan rock art sites undergo is intensifying day by day as people, through direct or indirect actions, extend their range of activities. These activities are brought about and developed by the wave of interest shown in adventure tourism. The physical beauty of the places where rock art is located, and the fact that there is no charge for visiting them, largely contributes to the growing tourist rush towards these regions.

Factors leading to degradation of the Atlas sites

The high Atlas Mountains, where three large rock art sites are situated at more than 2500 m above sea level, receive thousands of tourists each year.

Mountain tourism at cultural and natural sites in these high places is on the increase. Although this new activity has provided rational financial income adequate enough to meet the basic needs of the population, it has had a negative impact on the social structure of the population and also on the preservation of the engraved surfaces and their natural setting.

Moreover, none of the Atlas rock art sites, with the exception of the Oukaimeden area, offer any infrastructure to receive visitors and ensure management of the growing interest in tourism.

Visits to the Atlas sites allowed us to understand the problems of their degradation and to observe two types of factors affecting the rock art: natural and entropic.

1. Natural deterioration results from the situation of rock engravings in open areas at high altitude where they are permanently exposed to natural elements, amongst which are sudden changes of temperature, rain, water runoff, wind, frost, thaw, cold and heat, as well as other atmospheric factors which alter the rock surfaces and consequently the engravings.

2. There are several elements of entropic degradation or inadvertent vandalism (Clottes 1995-6) at Atlas rock art sites:

   - Urbanisation in fact concerns only the rock art sites in the vicinity of the winter sports station in the Oukaimeden where, in the course

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of building many chalets, a significant number of engravings have been destroyed. Other sites are not accessible to either the public or scholars, yet their natural context has been irreversibly changed. The rocks of the Oukaimeden have been removed by chalet building companies that use them at the same site or transport them to Marrakech or even to Casablanca where they are intended for the interior architecture of villas or houses.

- The agro-pastoralists of the valleys of the Ourika, Zat and Riraïa, use the engraving areas for pasture at summer time, and have begun, for economic reasons, to consolidate the *Azibs* or enclosures situated throughout the area. This leads them to use the engraved slabs as building stones. Moreover, this summer transhumance brings hundreds of sheep, goats and cattle that stand and move about everyday near the engraved surfaces and thus contribute to their degradation.

- During the development of mountain tourism, we have noticed that three rock engraving sites are much visited and undergo damage which does not necessarily stem from the bad intentions of tourists. For example, they walk with mountaineering boots; and they outline the engraving with chalk, paint, stone or sharp objects in order to enhance them and to obtain better visibility for photography.

- Theft and vandalism have occurred in several places, mainly at the rock art site of Yagour because it is located at a high latitude, 2700m, is difficult to access and has no guard. It was difficult for us to control these activities or to watch over those who frequently visited the site.

Degradation factors at Pre-Saharan and Saharan rock art sites

The Pre-Sahara and the Sahara contain several hundred major rock art sites in addition to pre- and proto-historical archaeological sites. Natural degradation factors are mostly limited to aeolian erosion and to the nocturnal and diurnal temperature differences.

On the other hand, the most fatal factors are of an entropic nature. Indeed, since the 1970s this zone has witnessed an unprecedented number of visits by tourists. This phenomenon has been accentuated as desert tourism amateurs, who were used to going to the Algerian and Libyan deserts, flocked to Morocco because of the UN embargo on Libya and security related problems in Algeria. The singularity of these sites lies in the fact that the movable archaeological objects appear at ground level because of aeolian erosion which moves dunes and exposes large surfaces strewn with upper and lower grindstones, polished axes, arrowheads, Atérian points, etc., as well as rock engravings. The growing demand that has arisen as a result of the tourist rush and the interest shown by the amateurs and collectors in these kinds of objects has incited dealers and bazaar traders specialising in fossils in the region to order them from the nomads.

Once the demand became important and the profit possibilities increased, national and international networks formed and the engravings and other cultural objects with ethnographic value became more expensive and in demand. The consequences of this illicit traffic on a large-scale have been catastrophic for the cultural heritage of the region, and particularly for rock art.

In addition to the illicit traffic and the trade in engravings, a large majority of the sites have been emptied and devastated, often unconsciously, by truck drivers and contractors in the region. The most exposed rock art sites are those situated near inhabited

Fig. 1: Vandalism and theft: Tazarine, pre-Sahara. Marks created in the course of cutting up an engraved block.

Fig. 2: Vandalism and theft: Tazarine, pre-Sahara. This engraved block was lightened and modified into a rectangular shape for transportation.

Fig. 3: Vandalism and theft: Tazarine, pre-Sahara. Remnants of an engraved block, after a failed attempt to cut out the engravings.

Fig. 4: Vandalism and theft: Tazarine, pre-Sahara. Fragments of engravings abandoned by the thieves.

Fig. 5: Vandalism and theft: Tazarine, pre-Sahara. Marks created by a failed attempt at retrieving an engraving.

areas. Population increases and the expansion of small villages into urban centres have exposed rock art sites and the funeral monuments that surround them to danger through their conversion into quarries. The engraved slabs that form the tumuli (burial mounds) have been used as building material.

Two main factors have largely contributed to the systematic destruction of rock engraving sites. The first has a natural aspect; it is linked to floods that occurred in the pre-Saharan zones in the 1990s and led to the destruction of several earthen houses. Since stones are used for rebuilding these houses, it is easier and less expensive for village inhabitants to get them directly from the sandstone ridges containing engravings located in areas neighbouring on the villages. The second is related to the process of settling the nomads who have converted to agriculture. This necessitates the building of houses, mostly of stone, as well as enclosures for their gardens and for their animals. Unfortunately, these people, out of ignorance, don't distinguish ordinary stones from the engraved ones. Elsewhere, rock art sites that are far from urban centres are also not secure from vandals because the distance makes it impossible to implement any kind of control or monitoring.

Furthermore, the fact that some sites stretch over several kilometres has encouraged thieves in their nasty job. They have no problem in cutting through engraved slabs or engraved surfaces using a power saw, pick or crowbar. The movable and lighter engraved slabs are often the first that pay the price of this deliberate vandalism. When the demand is great, the damage is serious. Actually, it is mainly the sites with engravings on immovable slabs of bedrock that suffer real haemorrhage. The thief destroys many individual engravings before succeeding in cutting out one image (Figs. 1, 2, 3, 4, and 5).

The investigations we have led among nomads in Dra Valley helped us to discover well-structured networks whose customers are essentially foreigners. These networks work with nationals, including nomads and bazaar traders, to systematically exploit archaeological sites.

In July 2004, an engraved slab was confiscated at the office of a Spanish resident who was the manager of a tourist agency in Warzazate. An investigation is in progress to trace the network. Another case, one I personally witnessed in June 2004, took place during a prospecting mission in the Sahara on the outskirts of the Anti-Atlas. The settled nomads took me for a bazaar merchant looking for objects to buy. I played the game and to my great surprise they presented me with goods consisting mainly of engraved movable slabs.Another kind of vandalism is the work of clandestine amateurs and sometimes, unfortunately, of authorized research groups who don't respect the terms of signed contracts. This concerns taking moulds of engravings with products that turn out to be harmful to the supporting rock.

Protective Measures and Conservation Legal measures: Moroccan legislation

Morocco, like most countries of the world, took legislative measures to protect its cultural heritage. These legal measures are found mainly in the following three texts that prohibit destruction, distortion or dislocation of art objects without written permission from the competent authorities:

- The Dahir (Royal Decree) of February 13th 1914, relates to the preservation of historical monuments, art and antiquity inscriptions and objects of the Cherifian Empire, and the protection of the places surrounding them;

- The Dahir (Royal Decree) of July 21st 1945 relates to the preservation of historical monuments, art and antiquity inscriptions and objects and to the protection of ancient cities and regional architecture;

- The Dahir (Royal Decree) of December 25th 1980 deals with the promulgation of the law 22-80 currently in force that relates to the preservation of historical monuments, of art and antiquity inscriptions and objects, and its application decree n° 2-80-25, dated October 22nd 1981.

Law, 22-80, allows for a number of measures designed to protect the cultural heritage. For example, articles 42-44 strictly

prohibit vandalism and trade in movable cultural property.

They stipulate that it is prohibited to "destroy, distort or export all objects and movable antiquity that represents for Morocco a historical, archaeological or anthropological interest or that are interesting to past science and human sciences in general" (Mammar 1997; Touri 1998).

Unfortunately, juridical and administrative difficulties do not facilitate the application of this law. Proposals for revision are being studied (Hatim 1998).

Process of Preventive Action

In preparation for establishing a pro-active preservation system, we have first collected information on the current state of affairs and have used it to set up an inventory. With the exception of a file of listed sites by Simoneau, not a single archive has been developed on the ground. Indeed, most of the established documentation on rock art in Morocco is the private property of foreign amateurs who showed an interest in the country.

This situation drove us to form a team of researchers and curators to plan a way forward, starting from 1994. Field projects have been established to inventory rock art heritage sites, taking into account their natural and cultural context.

Visits to the sites during fieldwork missions allowed us to understand the problems faced when addressing the rapid degradation of Atlas pre-Saharan and Saharan rock art sites, and to develop a series of protection measures adapted for individual situations (Salih 1994, 1998).

The most important operations we have undertaken to preserve rock art sites and sustain the fight against this blight are the following:

- An awareness campaign has been launched among local authorities, mainly focused on governors and presidents of provincial authorities on whom rock art sites depend administratively.

- The Royal Gendarmes have been mobilized to assist.

- Awareness has been fostered among local populations and regional associations about the interest of this heritage for their cultural identity, and also the economic contribution that these sites might generate once their value is enhanced. In comparison with elected officials, the associative network was more cooperative, and more aware of the value of rock art and of the necessity of safeguarding it. In addition, thanks to the work of the Regional Association for the Development of Dra Valley, of which I am a member, and to other local associations, we have been able to locate one of the two slabs that recently disappeared from the site of Foum Chenna. It is the same slab mentioned above that was found with the Spaniard in Warzazate.

- A security system has been installed by recruiting guards and assigning them to the threatened sites. To avoid problems caused by illegal tourist guides, every guard has been equipped with a uniform and a badge indicating his name, his function and the logo of the Ministry of Culture.

- Information panels have been installed at the entrance to some major sites, especially in the Middle Dra in the province of Tata.

- Expositions and conferences have been organised at schools for the benefit of students and teachers, to make them more aware of the scientific and aesthetic importance of the rock art heritage.

- The international community has been involved in the preservation of Moroccan rock art areas, including major institutions and specialized organisations known all over the world for their work in promoting awareness and conservation, in particular the Trust for African Rock Art (TARA).

Despite the great will of the people and institutions involved, these measures are of a limited scope. The geographic and topographic situation of sites within the mountain and desert zones, and also the wide spatial distribution of rock art over many kilometres, has made all attempts at permanent control a vain hope. This has in turn made the task easier for illicit traders, vandals and thieves who carry out their dirty job without fear of being arrested or prosecuted.

Conclusion

The soil and stones of Morocco shelter millennia of historical memory. In order to be able to tell this history, it is crucial to mobilize energy and other means to stop the rapidly increasing phenomenon of destruction and damage observed at rock art sites. Thousands of engravings were destroyed before we started to be interested in this component of our cultural heritage. The extent of the task awaiting us is indeed huge.

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Management strategies for African rock art

Janette Deacon[1]

LES STRATÉGIES DE GESTION POUR L'ART RUPESTRE AFRICAIN

D'une manière idéal, le processus de développement d'un plan de gestion de l'art rupestre devrait impliqué les communautés locales et les propriétaires de la terre et tenir compte des protections légales et de la gestion durable pour identifier les problématiques et mettre au point puis en place les stratégies. Les stratégies de gestion utilisées en ce moment pour répondre aux problématiques de conservation de l'art rupestre peuvent être regroupée en trois catégories principales. Elles ont été misest au point pour contrôler l'accès, l'érosion naturelle ou le comportement des visiteurs et dispenser une connaissance. Celles qui ont connues le plus de succès sont celles qui préservent le sens de l'endroit en combinant les trois. Du fait que chaque site est différent, il n'y a pas de solution simple. Les problématiques doivent être identifiées avec soin de manière à ce que les stratégies s'adaptent aux cas individuelles et soient suffisamment flexibles pour s'adapter aux inévitables changements.

ABSTRACT

Ideally, management plans for rock art sites should be developed by heritage specialists in consultation with local communities and land owners. After assessing the significance of the place, issues that affect the rock art should be identified and appropriate legal protections considered. Strategies are then proposed and implemented to address the issues. Management strategies currently used to address conservation issues at rock art sites in Africa can be grouped into three broad categories. These categories are designed to control either access, natural weathering or on-site visitor behaviour and knowledge. The most successful are those that maintain the significance of the place by addressing all three. As each site is different, there is no easy solution. Issues must be carefully assessed so that the strategies suit the individual situation and are flexible enough to adapt to inevitable change.

A brief history of rock art management strategies in Southern Africa

This paper draws on the strategies used for rock art site management that have been discussed over the past 8 years at meetings of the Southern African Rock Art Project (SARAP) (Deacon 2004). It does not pretend to know all the answers, but highlights lessons learned in the African context that need to be taken into account if rock art sites are to be conserved with integrity for future generations.

For hundreds and even thousands of years the descendants of the people who made rock paintings and engravings in Africa drew power and inspiration from them. Some of the rock art became naturally weathered, and some was altered or added to by new generations of artists. There was no collective strategy required to conserve the art beyond upholding respect for it and the beliefs that created it. During the scramble for Africa between the late 1600s and early 1900s, the art in some areas was regarded by colonial immigrants as the work of pagans and was targeted by foreign visitors who deliberately damaged the images that offended them or wrote their names over the art to assert their own identity.

In the late 19th and early 20th century, rock art came to be regarded as a curiosity worth collecting. Movable rock engravings, particularly from South Africa, Namibia, Morocco and Algeria, were shipped to museums and universities in Europe and within the Southern African region.

Legislation was introduced from as early as 1911 in South Africa and neighbouring countries to control export of antiquities, and by the late 1930s all the countries in the region had instituted some form of blanket protection that required a permit to destroy, damage, alter, remove or export rock art. By the time of independence in the latter half of the century, several countries had identified rock art sites for declaration as national monuments.

Along with increasing public awareness and interest, a small number of rock art sites have been developed specifically for tourism. These include places on private property, in national and provincial parks, and on communal land. They are traditionally managed by park managers trained as natural scientists and are often ignored in park management plans, or receive only cursory attention.

The gradual insistence by the World Heritage Committee that all World Heritage sites must

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have management plans has made a significant difference in some countries. However it has been of help to rock art sites only when the rock art is specifically mentioned as one of the values of the site.

The first African site with rock art to be placed on the World Heritage list was Tassili n'Ajjer in Algeria, followed by Tadrarrt Acacus in Libya in 1985.

Since 1999, four rock art sites in Southern Africa have been inscribed on the World Heritage list and two more have been nominated. Their nomination has raised the profile of rock art in the sub-continent and has made a positive contribution towards the development of rock art site management plans, although implementation has often lagged behind.

In summary, the main issues that management strategies have tried to address over the past century were the protection of rock paintings and engravings from natural and human agencies, and the promotion of public awareness, including tourism.

Training of conservators, researchers and site managers has been less enthusiastically promoted. Despite legal protections, the 1900s probably saw more removals and *in situ* damage to rock art by people than at any other time in history, yet convictions for transgressing the law were few and far between.

A Classification of Rock Art Management Strategies

For the past decade, management plans for Southern Africa rock art sites have followed a process that is guided by principles introduced in courses sponsored by the Getty Conservation Institute and set out in publications by Sharon Sullivan, former Director of Australian Heritage, and others (Pearson & Sullivan 1995; Loubser 2001).

For the purposes of a broad overview, the most commonly used management strategies for rock art sites in Africa could be divided into three major categories that focus primarily on controlling:

- access to the site;
- natural weathering; and/or
- visitor behaviour and knowledge

The vast majority of strategies fall into the first category, with fewer in the second and third. The success of each of these strategies has unfortunately to be measured against the proportion of sites at which the strategy has failed and the art has been damaged through neglect or deliberate vandalism.

There are no official figures for damage, but in general it seems to me that as long as rock art sites remain on land where access is restricted, land use does not change and ownership is not disputed, little deliberate damage is done. Once the land changes hands or there is conflict within the community and the power relations shift, the art becomes a potential target for those who do not understand its significance and/or choose to denigrate it or manipulate the significance to their own advantage.

In the following review of case studies, I address only sites where strategies have been formally implemented by a governmental or commercial management authority. Of course this eliminates at least 90% of the rock art sites in Africa because they are on communal or private land. These sites are managed incidentally rather than by formal planning and rely mainly on controlling access and not encouraging visitors. In both pre- and post-colonial times, this type of informal and incidental management that involves no interventions and no expectations of financial reward, does not seem to have done as much

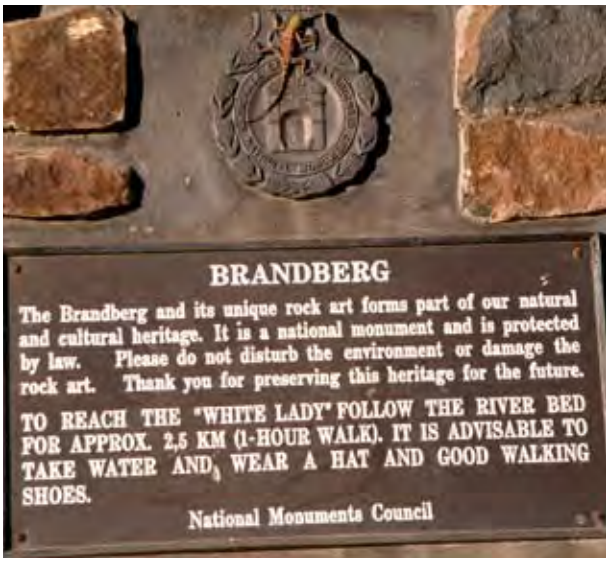
damage as officialdom, new immigrants and tourists. It has been particularly successful where local chiefs, headmen, community leaders or private land owners who respect the rock art, maintain sufficient control over their community and visitors to prevent or limit access to the sites.

Strategies for controlling access

The strategies that have been implemented to control access to rock art sites include:

- making agreements with land owners, chiefs and headmen who respect the rock art and maintain sufficient control over their community and visitors to limit access;
- declaring sites as national or provincial monuments and implementing rules, guidelines or management plans regarding access;
- allowing access only in the company of officially appointed guides;
- appointing custodians from neighbouring communities;
- identifying a few 'sacrifice' sites that are easily accessible and directing roads and paths away from the majority of sites where no facilities are offered;
- installing gates or fences to block off no-go areas; and
- installing 'psychological' barriers or boardwalks to prevent visitors coming too close to painted or engraved surfaces.

These strategies are most commonly compromised when land ownership or land use is disputed. At Kasama in Zambia, for example, there are hundreds of rock art sites that were protected within a sacred forest for rainmaking and initiation for many generations. The first disaster occurred when foreign workers were brought in to build the Tanzam railway line and quarried away entire hills for stone. David Phillipson managed to call a halt to quarrying, but much damage had already been done. Within the last 10-15 years, refugees from the Democratic Republic of Congo, who were desperate to earn a living, disregarded the beliefs of the local community and chopped down the trees for charcoal and cut up the stone – including entire painted rock shelters – for sale as building material. The residual memory of the sacredness of the area has added to the problems because Christian groups have appropriated certain rock art areas and have painted biblical texts there. There are many other examples of individual land owners bulldozing rock engravings or even rock paintings away to extend agricultural land, of road builders quarrying away painted shelters for road works, and commercial



forestry operations improving access to rock art through their own network of roads and fire breaks.

In South Africa, the Historical Monuments Commission, and its successor after 1969, the National Monuments Council, implemented a variation on the access strategy from the late 1950s.

Alarmed at the increase in graffiti and vandalism at sites close to public roads and amenities, and unwilling or unable to bear the cost of paying custodians, they began a policy of not publicising protected rock art sites and refusing to give directions to tourism organisations. In effect, this placed decision-making about access to sites in the hands of individual property owners. While in the short-term it may have limited the numbers of visitors to sites, in the long term it led to yet another generation of people who were ignorant of the value and meaning of the rock art.

It is difficult to judge which is worse. Certainly the protected sites that were marked on national maps and that have no custodian have incurred heavy damage from graffiti artists who were ignorant of the significance of the art.
In general, physical interventions such as fences and boardwalks spoil the integrity of a rock art site. Where they have been installed, they have usually been stolen or vandalised and within 10 years are no longer effective. They are perhaps justified only when more than 1000 visitors a year are expected and they are combined with regular monitoring or a guide or custodian.

It is essential, however, that guides and custodians are trained. In Lesotho, for example, children and adults from the neighbouring community accompanied visitors to rock paintings and not only allowed tourists to put water onto paintings to bring out the colours, but also did so themselves. Traditional management has also been detrimental in cases such as the southern Drakensberg where the paint is believed to have special properties and is scraped off by sangomas for medicinal purposes. At Modderpoort in the eastern Free State province in South Africa, for example, people write their names in charcoal over and next to rock paintings at a rock art site that has acquired new significance because of its proximity to a Christian shrine and former mission station. By writing their names on the rocks it is believed that their prayers will be answered.

Strategies against natural weathering and graffiti

This category involves intervention that it is believed will improve the chances of survival of rock art threatened by natural weathering processes. A permit is usually required and the work should be done by a professional conservator. The absence until very recently of trained rock art conservators in Africa has severely hampered all aspects of rock art protection. There are few training opportunities, little or no research has been done, no funding has been allocated for the work, and the long time lapse between intervention and visible results has made assessment of strategies difficult.
The category includes the following strategies:

- installation of drip lines;
- coating of paintings with sealants;
- graffiti removal;
- removal of paintings and engravings from their original setting; and
- regular monitoring to remove vegetation or insect activity that is a threat to the rock art.

Following the lead of Australian conservators in the 1970s, drip lines were installed at several sites in South Africa and neighbouring countries (Loubser & Van Aardt 1979; Rudner 1989).

To my knowledge, there has been no publication of the results, but

judging from comments made by visitors, some drip lines have been partially successful in reducing the amount of water running over rock paintings but others are said to have made no visible difference. All experiments with sealants or coatings, on the other hand, have failed. Linseed oil applied to paintings in Pomongwe Cave in the Matobo Hills, Zimbabwe, is gradually flaking off after nearly half a century.

The original paintings are faintly visible underneath the oil coating, but all detail has vanished. Silicone coating applied to paintings in the Kruger National Park in South Africa during a series of experiments conducted by the

Council for Scientific and Industrial Research in the 1970s, has darkened the rock so dramatically that paintings alongside that were not coated are more visible.

The removal of charcoal graffiti, mainly at sites in the Western Cape Province in South Africa, has been partially successful in that the majority of the 35 sites that were cleaned during the 1990s have not attracted new graffiti (Deacon 1995). However certain sites have been repeatedly targeted again. In each case, the section of the community responsible for the graffiti – in one case the local teenagers who camp in the area, and in another a group of Rastafarians – has returned because they regard the site as 'theirs'.

Painted panels have been cut out of rock shelters to 'save' the art from natural weathering and from what people perceived to be inevitable damage by visitors and neighbouring communities. They have also been removed before dams have been built in order to save them from drowning. In some cases – such as the Linton panel in the Iziko South African Museum in Cape Town – the removal strategy has been very successful because the paintings in the museum are noticeably better preserved than those left at the original site. The original site and the remaining paintings, on the other hand, have been irreparably damaged by this action. In other cases – for example a collection of rock engravings placed in the Johannesburg Zoo – the polluted air of the city has damaged them beyond repair.

The strategy most commonly recommended in management plans for national and provincial parks is monitoring sites to control vegetation and insects. Trees and shrubs should be pruned if they brush against painted surfaces, or if they present a potential hazard in the case of a bush fire. The roots of wild fig trees often follow cracks in the walls of rock shelters and can cause blocks to detach. Wasps build nests and termites leave trails across painted rock surfaces and their termitaria sometimes cover painted surfaces if they are built next to shelter walls. Strategies in such cases involve botanists and entomologists who can advise on the best ways to control the plants and insects.

Some rock shelters have been badly damaged by domestic livestock brushing against the painted walls when the sites have been used as kraals. In such cases, fencing is the only option.

Strategies to control visitor behaviour and knowledge

Apart from the access strategies mentioned above, the purpose of controlling visitor behaviour is not just to protect the rock art and its surroundings. It is equally important to give the visitor a positive and enjoyable experience (Mazel 1982; Loubser 2001). It is therefore vital that information and knowledge about the site is presented in an interesting way to encourage the visitor to conserve the art and appreciate its value.

The strategies commonly used include:

- visitors' books;
- notice boards at or near rock art sites;
- guide books, brochures and leaflets;
- information centres;
- trained guides;
- videos and films; and
- portable audio equipment.

The general lack of public awareness and interest in rock art in many Southern African countries has meant that few sites have been developed specifically to generate income from this resource.

Public rock art sites that encourage visitors tend to be in parks or reserves that offer several other

attractions as well. When visitors have to pay an entrance fee to the park and then another fee to visit a rock art site, such as in the Matobo National Park in Zimbabwe, and the Kruger National Park and the Ukhahlamba Drakensberg Park in South Africa, however, only a small percentage of people entering the park will pay the extra.

Such places need a strategy to encourage visitors to believe that

they will have a meaningful and enriching experience. Interest can be generated by word of mouth and by attractive advertising, but is sustained only if the product is good. Excellent facilities are offered at the Kamberg rock art centre in the Ukhahlamba Drakensberg Park and at Wildebeestkuil in the Northern Cape province in South Africa where the guided experience is carefully constructed in the form of a metaphorical pilgrimage (Blundell 1996). There are also visitor centres at Tsodilo in Botswana and Matobo Hills in Zimbabwe, but as yet none are fully self-supporting. Reserves that offer a visit to a rock art site as part of a package of attractions fare better because income from overnight facilities and restaurants helps to cover the costs and the risk is spread.

Because rock art has not built up

a reputation as a major tourist attraction, we have few successful models to work from and are still very much in an experimental stage. In a survey of Southern African rock art databases conducted in the mid-1990s (Deacon 1997:31), 15 rock art sites open to the public in the region from Tanzania southwards to South Africa, attracted a total of only 22 230 visitors a year.

We therefore cannot yet answer the question 'Can rock art tourism be sustainable?' nor can we predict with any certainty whether a rock art site on its own can generate sufficient income to pay staff and maintain a modest infrastructure.

For example, the rock art information centre at Didima in the Ukhahlamba Drakensberg World Heritage Site opened in 2003 and was attracting about 800 visitors a month in the peak season and 400-600 a month at other times. Income was not sufficient to maintain staff salaries and water and electricity bills, but when the entrance fee was raised, the visitor numbers dropped and the income remained largely unchanged (Ndukuyakhe Ndlovu, pers. comm.)

In my own experience in South Africa, the most successful and sustainable rock art tourism sites have been those on private property where there is minimal intervention at the site, capital outlay is focused on off-site facilities, the guides or custodians live nearby, there is a visitors' book or system of recording the names of visitors, and information is provided in take-away form to help the visitor understand how the site fits into the broader picture of rock art in the region.

A full answer to questions about sustainability can only be obtained through purposeful research on visitor behaviour and the effect of knowledge in controlling behaviour patterns (for example, Gale & Jacobs 1986, 1987). Some of the following anecdotal lessons might be helpful in designing such a research project.

Lessons we have learned

The Site calls the Shots

There is no 'One size fits all' solution to the management of rock art sites, either in Africa or elsewhere, and there is no 'quick fix'. Each site is different and its characteristics must be identified and assessed before the aims and objectives of management can be formulated and strategies proposed and implemented.

What makes a site significant and therefore attractive for visitors is not simply its rock art, but its setting in relation to the landscape and other sites, and its significance to the people who live nearby or who use it. Those people are part of the site and cannot be separated from it. They will call the shots whether they are formally invited to do so or not.

Know what it is you are managing

Identify and record all the rock art at a site before opening it to the public. Good and reliable information on changes in the condition of rock art and the surrounding landscape, and the possible causes of these changes, is essential for conservation management planning. The first step is a condition report that establishes a baseline against which changes can be measured. Regular monitoring should up-date the condition report at least annually.

Every step of the management planning process must be followed

Developing and implementing a rock art site management plan is a bit like bringing up a child. There are certain milestones that must be met if it is to mature.

One of the most important stages in this process is the identification of all stakeholders, and meaningful engagement with them. This should be done at an early stage in tandem with thorough research into the significance of the site.

The identification and involvement particularly of local stakeholders, is mentioned but not stressed in earlier publications (e.g. Pearson & Sullivan 1994), but experience in Aus-

tralia and Southern Africa has shown how fundamental it is to the assessment of significance and formulation of strategies to retain this significance. The case of Domboshava in Zimbabwe is an excellent example (see Taruvinga, this volume).

You cannot manage without a manager

It seems to me that the proliferation of regulations that require management plans, conservation management plans and site management plans often benefits only the consultants who produce the plans. The system works best if a manager with appropriate rock art or heritage conservation experience is appointed first and is given the task of developing the management plan and implementing it. It is equally short-sighted to develop a management plan without budgeting for the salary of a manager.

Rock art lasts longer than people or interventions

Interventions intrude on the authenticity and integrity of rock art sites and almost all the materials used (wood, metal, synthetic products) will not last as long as ochre-based paint or engraved surfaces. Fences, boardwalks and other interventions should therefore be as low-key as possible, they must be removable and fireproof, and they must not detract from the visitor's experience of rock art in its original setting.

Money cannot buy protection

Expensive interventions do not necessarily provide the most effective protection. Stone gathered from the surrounding hillside might provide a more effective floor covering to reduce dust in a rock shelter than a boardwalk. A tarred road and large parking lot near a rock art site will attract unwanted visitors unless access is controlled.

Tourism does not guarantee sustainable income

Business plans for rock art tourism sites should not be thumb-sucked, but must be based on careful and relevant research. The scale of operations will depend on the number of visitors expected. For example, money spent on a state-of-the-art information center that requires electricity 24 hours a day, running water and maintenance staff might be better spent on training guides and producing guidebooks if visitor numbers are likely to be low initially. The facilities can always be added later if they are indeed needed.

Visitor numbers at existing tourist attractions in the vicinity must be carefully analysed before the potential income from a rock art site is estimated. Tour operators who arrange package tours provide the most reliable source of visitors, but they need facilities such as clean toilets, bus access and other visitor experiences in the vicinity to make it worth their while to come to a rock art site.

We can learn from each other's mistakes

Conferences such as the one organised by TARA provide a useful forum for the exchange of ideas and experiences. Publication of the results spreads the word even wider. All those working towards sustaining the significance of rock art in Africa are therefore encouraged to share both good and bad strategies for rock art conservation so that we can minimise repetition of the same mistakes.

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Rock-art research for the 21st century: bringing art, science and people together

Paul S.C. Taçon[1]

LA RECHERCHE POUR LE 21ÈME SIÈCLE: METTRE EN CONTACT L'ART, LA SCIENCE ET LES GENS

Les problèmes principaux soulevés pendant la conférence de TARA sont résumés afin d'illustrer les attentes de cette profession et les stratégies qui sont en train d'être mises en place pour étudier, répertorier, analyser, conserver, protéger et fournir un accès à cette ressource patrimoniale énorme et étendue. Les sujets de discussion qui reviennent lors de chaque manifestation englobent à la fois l'importance des fouilles archéologiques et celle des conteurs, et les problèmes associés à l'ouverture des sites aux touristes. Les thèmes clefs qui doivent être développés comprennent la datation de l'art, une étude et une documentation détaillées, la relation entre les différentes formes de l'art et leur emplacement à la fois dans les sites et dans le paysage, l'importance cruciale de travailler avec la population indigène dont les ancêtres ont créé ces œuvres, une planification judicieuse concernant la conservation et le tourisme, le besoin de porter cet art dans l'arène politique afin de faire connaître son potentiel international et encourager la coopération et le partage de l'information et de l'expertise. Des exemples provenant d'un nombre de localités africaines et australiennes sont utilisés pour démontrer que les problèmes sont communs sur ces deux continents et qu'en travaillant ensemble, nous pouvons avancer efficacement vers la connaissance et la pratique.

ABSTRACT

The major issues and concerns raised during the TARA conference are summarised to illustrate the commonalities faced in rock art research and the strategies that are being implemented to study, record, analyse, conserve, protect and provide access to this huge and widespread heritage resource. The ideas that rock art records, the importance of both archaeological excavations and story telling, and the problems associated with opening sites for tourism were the focus in many presentations. Key themes that should be taken forward include dating of the art; surveying and detailed documentation; the relationship between different forms of art and their location both within sites and within the landscape; the crucial importance of working with indigenous people whose ancestors created the art; sensible planning for conservation and tourism; and the need to bring rock art into the political arena to raise the international profile and encourage co-operation and the sharing of information and expertise. Examples from a range of African and Australian localities are used to illustrate that these rock art issues are common for both continents and that by working together we can better advance both knowledge and practice.

Introduction

In this paper the intention is to summarize some of the main points raised by 2004 Nairobi TARA International Conference participants, both in the papers they presented (this volume) and in the many discussions that took place. As well, both African and Australian perspectives are woven together in order to illustrate the common nature of the issues we all face in rock-art research today. Africa has more sites than any other continent, with at least 200,000 – 250,000 individual rock-art localities according to Jean Clottes. Australia has more sites than any other country, with at least 100,000 (Flood 1997) and perhaps as many as 125,000 sites. Each year anywhere from dozens to hundreds of previously unknown sites are 'rediscovered' for the modern world across both Africa and Australia. This creates all sorts of research and management problems, the most basic of which is how do we adequately study, record, analyse, conserve, protect and provide access to such an enormous heritage resource? Indeed this was the crux of the Nairobi meeting, the key umbrella question in all of our minds. But before attempting to answer such a daunting question it is important to remember some of the reasons why rock art is important.

First of all, the world rock-art record consists of the bulk of surviving visual art/imagery made by modern humans in prehistoric times. Many millions of images are scattered across rocky landscapes as diverse as deserts, mountain tops, tropical rainforest, arctic tundra, open grassland, acacia, eucalypt and coniferous forest and even modern cityscapes such as sandstone-rich Sydney.

Rock shelters, caves, cliff faces, boulders, rock platforms and small, portable rocks were painted, engraved, stenciled, drawn

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upon and otherwise marked with both individual and group expressions of experience and identity. Working in various parts of Australia I have found that in most regions the average number of motifs per site is 8-15, commonly about 10. Although there are some very large sites with hundreds of marks and images there are also many more small ones, sometimes with just a single hand stencil, human figure, depiction of some animal or some other design. This means, that if we use an average of 10, there may be as many as 3.75 million surviving rock-art motifs in Africa and Australia alone, perhaps even more. Prof. Wilmot James, in his opening address, suggested there are about two million known paintings just in Africa, and about twice that either unknown or perished.

But rock-art is not just important because of its frequency and persistence. Rock-art gives us insight into what a given group of people were thinking about, the species of animals and plants important for economic and symbolic reasons, various forms of individual experience, glimpses of shared history, how people represented the supernatural, the nature of aesthetics and many other aspects of how people conceived and perceived their worlds. Contact with other groups of people, warfare, ritual, environmental change and new technologies are all illustrated in explicit detail in the rock art of Africa and Australia, as well as many other parts of the world. These are pictures that in the first instance should be treated as that, pictures (Chippindale 2001; and see Coulson & Campbell 2001 for breathtaking illustrations). Indeed, it is through rock-art that we can flesh out the skeletal structure of the past provided from other forms of investigation, such as archaeological excavation. This is because excavations and studies of stone tools give us only a small amount of information while rock-art is information rich (e.g. Chaloupka 1993; Lewis-Williams 1981; Vinnicombe 1976). On the other hand, excavations and related studies can give us lots of secure dates and stratified sequences we have confidence in while reliable dates are rare for rock-art. Additionally, rock-art research is ideally suited for broad landscape studies while excavations give other details of place and space. Thus the challenge is to build better bridges between the two bodies of evidence of past human presence – the archaeology in the ground with that on walls and ceilings.

Rock-art is also important because it is intimately related to stories, story telling and narrative, as John Parkington's and Megan Biesele's separate papers emphasize. Elaborate story telling is one of the key things that differentiates humans from other species. It helps convey important information and experience, it has a sense of history and it expresses and reaffirms relationships and identity. Story telling no doubt gave early humans much greater chances of survival and may be one of the things that helped archaic modern humans leave Africa to colonize such faraway places as Australia. But language, song, oral history and stories conveyed by word of mouth do not preserve in the archaeological record. Rock-art images do and whenever anyone has consulted with traditional groups of Indigenous peoples in Africa and Australia the result has been that people have said the art on the walls is all about stories. Images were sometimes made while telling stories but more often they were later used to teach, to illustrate experience and to remind one of past events, whether these be changes brought about in the ancient eras of the Australian and African Dreamtimes (e.g. Taçon & Ouzman 2004; Walker 1997) or those associated with recent periods of the European colonization of both continents.

Fig. 1: This depiction of a creature with a kangaroo-like head and human-like body was recently found with over two-hundred other drawings and stencils in a remote, rugged and wild part of Wollemi National Park, near Sydney, Australia. Composite figures such as this are more common in the rock-art of northern Australia and southern Africa but occur worldwide. They continue today in a vast array of media, especially film and digital video productions, highlighting their cross-cultural and universal significance (© Paul S.C. Taçon/Australian Museum).

Europeans have been fascinated with rock art for thousands of years and the production of rock-art over 30,000 years ago might well reflect the social network advantages they had that helped them out-compete the Neanderthal. In recent times, European interest rose with the 1879 discovery of painted

Fig. 2: Two rhinos painted like engravings at Tsodilo Hills, Botswana, appear to head for a crack in the rock surface and obviously were deliberately placed (© Paul S.C. Taçon/Australian Museum).

bison at Altamira, Spain by a young girl, Maria Sanz de Sautuola, while her father excavated nearby. Since then rock-art has excited European imagination at a growing pace. One of the early consequences was investigations of rock-art in other parts of the world, especially Africa, Australia and North America, with many early 'discoveries' and descriptions dating to the late 1800s for each continent. However, this 'foreign' rock-art was initially treated more as a curiosity until much later, with rock-art studies outside Europe not really gaining serious widespread scientific attention and acceptance until the late 1900s. This is in contrast to the ways in which the Indigenous peoples associated with African, Australian and North American rock-art viewed their rock-art heritage, wherever possible maintaining to the present its significance and importance for their people. Today rock-art remains a key part of the culture of some contemporary indigenous peoples, but the general public across the world is also fascinated with new discoveries and insights. The major news outlets trip over each other to get exclusives or new detail about rock art and tourist industries have sprung up across the globe to take people to sites. In some cases, this provides badly needed funds for research and conservation but too much interest also threatens sites with both inadvertent and deliberate destruction.

This is now a major concern and a key issue debated at archaeology and rock-art conferences annually. It also featured at the 2004 TARA Nairobi meeting, with much formal and informal discussion returning to this central question: how do we best promote interest and attract funding to study, interpret and preserve the world's rock-art while at the same time doing it justice in terms of display and interpretation and ensuring some sites are not doomed to a death of over-visitation and vandalism? To address this and other issues raised above it is worthwhile reviewing some of the major themes of the conference.

Rewriting or fleshing out the past 20,000 years?

Charting change over time and the challenges of rock-art dating

Rock art research will likely not dramatically rewrite the past 20,000 years in either Africa or Australia but it certainly will greatly flesh out many key periods as most surviving rock-art is less than 10,000 years of age, with the bulk of it is less than 6,000 years old in both Africa, as Aron Mazel pointed out, and Australia. There are both taphonomic (Bednarik 1994) and cultural reasons for this. However, rare Pleistocene art has been found and reliably dated in both continents and these key puzzle pieces will increasingly be relied on to flesh out the more ancient past. The danger is that they easily can be misinterpreted or over-interpreted. Without ethnographic information or analogy we must rely on formal methods to give us insight into ancient rock-art and these need to be used carefully and consistently (see Taçon & Chippindale 1998).

The widespread reliable and accurate dating of rock-art is one of the biggest challenges in Africa in the 21st Century, as well as in other parts of the world. Dating is always expensive and many techniques need specialists who also may be expensive.

Some techniques, such as AMS radio-carbon, are fairly well known and can be very reliable, while others such as OSL (e.g. Roberts et al. 1997) are experimental. The key issues are having something associated with the art event that one can reliably date, ensuring both accuracy and reliability and the ways in which we use and interpret the number (or 'date') we obtain.

Repeatability is crucial but usually there are not enough funds for multiple samples from the same panel, let alone the same image. Another concern is that we strictly minimize damage to images and surfaces when we take samples for dating. In most cases we will not be able to precisely date rock-art, ending up with minimum and/or maximum ages instead. However, dating is crucial for comparing rock-art sequences (see Joané Swart's paper). One of the best examples of the widespread accurate and reliable dating of a form of rock-art in Australia occurred with images made of beeswax, a substance particularly suitable for AMS radiocarbon and one very closely

Fig. 3: Engraved rhinos at Thaba Sione, South Africa. One is infilled like most paintings while the other is in outline form as is common with other engravings and some Tsodilo Hills paintings (© Paul S.C. Taçon/ Australian Museum).

associated with rock-art production events (Nelson 2000; Taçon et al. 2004).

Documenting sites in detail and continuing surveys

In order to flesh out the past one of the most important things rock-art researchers can do is to document sites in detail. There are always time and funding constraints but we should strive to at least fully document key sites important because of size, location, ethnographic significance, types of depictions, threat of destruction and so forth. We should use conventional photography (colour slides still produce the best results, as David Coulson's, Jean Clottes and, daresay, my own presentations attested), digital still and video photography, scientific and artistic drawings, photogrammetry, non- or minimally destructive forms of tracing and any other minimally obtrusive method at our disposal. Extensive note-taking, especially in regard to image placement, should accompany the other records and all data should be linked via site numbers, dates and other codes.

Harris matrices may be combined with on-site inspections and drawings to accurately deduce sequence in highly stratified rock-art sites (e.g. Chippindale & Taçon 1993). It is important to store and make use of the records generated in the best possible environment, one suitable for long-term preservation. Examples include the TARA archive facilities, Nairobi, and the University of Witwatersrand Rock Art Research Institute, Johannesburg. Australia is still in need of a comprehensive facility but many individual researchers and some institutions (e.g. national park organisations) have idiosyncratic but fairly good storage conditions.

Of course, in order to more fully understand particular rock-art sites, areas or regions comprehensive rock-art survey has to take place. As well, there are many areas we still know little about as is evidenced by the very recent results of survey by TARA team members in Mauratania and Niger (Alec Campbell's paper), in Kenya (Emmanuel Ndiema's paper) and by a team of archaeologists, bushwalkers and Aboriginal community members in Wollemi National Park, New South Wales, Australia. Hundreds of previously unknown sites are coming to light, some with fantastic imagery (see Figure 1, http://www.livingharbour.net/partners/wollemi.htm). Even in well surveyed and highly populated areas new sites can sometimes be found as was recently the case for me in Mosman, one of Sydney's exclusive inner suburbs.

Relationships between different forms of art and different locations

In both Africa and Australia, as well as elsewhere, a fresh perspective on the past can be obtained by better understand the relationship between paintings, drawings, engravings, stencils and other forms of rock-art (e.g. in Eritrea as Zelalem Teka's paper illustrates). In some cases different techniques, such as paintings/ drawings versus engravings, were used for different purposes or had varying meaning (e.g. see McDonald 2000 for a good Australian example). In others they were interchangeable. Indeed, at some locations paintings were even made like engravings (see Campbell et al. 1994 and compare Figures 2 and 3).

Of course, the nature of the rock surface sometimes dictated the type of technique employed (e.g. open sites were usually covered with petroglyphs) but at some locations marks made with differ-

ent techniques occur side-by-side or over one another (Figure 4). Were they made by the same people or different ones? Do they vastly differ in age or content? Does placement within a shelter differ from one technique to another? Are some techniques, such as stencils and prints, more individual expressions of identity while others, such as paintings and engravings, are more indicative of group concerns? These are just some of the questions that can be explored. However, as Nancy Stone pointed out, most methods of recording lack the means of relating glyphs to each other.

Furthermore, the relationship of rock-art to portable art should also be investigated, whether it be prehistoric pieces such as is found in Europe and South Africa or the ethnographic material culture of related peoples. For instance, carved San walking sticks with figurative images in South Africa, wooden objects with figurative images from southeast Australia (Taçon et al. 2003) and early bark paintings from northern Australia (e.g. Tacon & Davies 2004) can be particularly informative.

Fig. 4: Hundreds of images and other marks cover the lengthy shelter of Yuwunggayai in Deaf Adder Gorge, Northern Territory, Australia. Importantly, the painted art covers much earlier cupule engravings. Furthermore, the cupules were deliberately positioned up to where there is a slight change in the slope of the wall surface while the paintings continue over and above to make full use of the surface. At other sites in both northern Australia and southern Africa the same phenomenon can be observed (Taçon & Ouzman 2004) (Paul S.C. Taçon).

Exploration of relationships between individual rock-art sites and the larger landscapes they are a part of is also very fashionable at the moment but as with all rock-art research we should be very cautious about not imposing our own conceptions and perceptions onto images, sites and landscapes (see Smith & Blundell 2004). And as Cornelia Kleintz illustrated at the TARA Conference, it is very important to wherever possible investigate the relationship between sites, rock markings, sound and performance (see also Ouzman 1996, 1998 and Figure 5).

Many varied forms of multivariate statistical and other types of formal analysis should be employed wherever possible in order to explore new relationships between and within art forms, landscapes and so forth. New techniques should also be developed but whenever analyzing rock-art data it is crucial to spend time carefully formulating and framing the sorts of questions ones wants to ask of the data. Cross-cultural comparisons can be illuminating, especially when looking at near universal features, such as the depiction and interpretation of animal-headed human-like beings and other composites (Taçon & Chippindale 2001; Figure 1), but these should be approached cautiously and one should avoid over-extending particular theories of explanation.

Working in partnership with Indigenous peoples

Finally, in order to flesh out the recent past in terms of rock-art or more generally, wherever possible, we should work in partnership with local communities and especially the Indigenous peoples whose heritages we study. Not only is this an ethical requirement of many archaeological and rock-art associations, such as TARA, the Australian Rock Art Research Association, the International Federation of Rock Art Organisations (IFRAO), the Australian Archaeological Association and the World Archaeological Congress, but also it can be particularly fruitful. Local people can guide one to sites, provide paid labour, food and other resources but, most importantly, those connected to sites with recent images can contribute to their greater understanding as Alec Campbell, David Coulson, Pascall Taruvinga and others have long argued for Africa. Cornelia Kleintz's conference examples are particularly outstanding in this regard. In Australia, Aboriginal and Torres Strait Islander people are routinely involved in rock-art research programs, from initial consultation and negotiation through fieldwork and analysis to the joint publication of results. One of the consequences is that many new research opportunities develop rather than doors being closed. Sometimes, however, local people continue rock-art traditions in unexpected ways, generating much debate as to what is a traditional rock-art activity (see Ward 1992 and Figure 6). Even more disturbingly, in both Australia and in Africa local artists have worked with the film industry to produce new rock-art sites or to enhance old ones (e.g. *Quiggly Downunder* in Australia and an episode of the *Young Indiana Jones* in Kenya; see Ambrose and Muia in this volume for the latter). But what do you do when none of the contemporary communities identify with rock-art in their area? This is the challenge Mzalendo Kibunjia addressed in his TARA paper, with sustainable tourism for the benefit of local communities and residents part of a possible solution package. However, Janette

Deacon pointed out that it is difficult for rock-art tourism to be sustainable.

Increased awareness: conservation versus tourism

Many papers and discussions at the TARA Conference emphasized the need for increasing awareness of the importance of rock-art, especially sites or areas under threat. The basic premise is that when both local people and outsiders realize what's there and why it is significant funding can be generated for new research, conservation and protection measures. However, this comes at a cost with increased threats of vandalism, especially graffiti and the physical removal of rock-art motifs (e.g. Abdellah Salih's and Sidi Mohammed Llies and Annette Lanjouw's paper's). As well, tourist pressure can open up pristine sites to public view, with the resulting changes to local environments hastening their inadvertent destruction. Modern maps, GPS equipment and the exchange of information about the exact location of sites is of great concern. In Africa and Australia there is a prohibition on the publication of grid references, GPS readings and other details of unprotected sites but there is no way to police the exchange of such information between members of the general public who have found rock-art locations. Often the reason they found sites is because they were not given enough access to comparable places. Thus the common dilemma is how to give people some of the access they desire without harming the sites. Should some sites be sacrificed to the public in order to better protect the rest by keeping their whereabouts unknown?

In recent years there has been much attention paid to virtual access with the reproduction of entire sites, such as Lascaux, in Europe and significant panels in Africa, Australia and elsewhere. Heritage parks, on site museums and a vast array of interpretive services, both obtrusive and subtle, are now offered. Rock-art exhibitions such as TARA's at the National Museum of Kenya in late 2004 also allow an alternative form of access and education. A range of digital experiences has recently been developed or is being trialed. For instance, there has been a very recent explosion in rock-art websites but also digital libraries are being built, films and shorter DVDs are being produced and a range of 3D digital reproductions are being experimented with as Heinz Ruther and others informed us. In the not too distant future it may be possible to have a futuristic life size 3D rock-art experience, with what was once science fiction recreating both the present and various past states of rock-art sites.

When actual site visitation is encouraged it is important to protect places without destroying them in the process. Previous experiments with fences, cages and other hard barriers have been disastrous in both Africa and Australia, failing to fully protect rock-art and alienating visitors in the process. In some cases their unsightliness has even encouraged vandalism. They also have cut off sites from larger landscapes they are intimately a part of, destroyed the aesthetics of places and in some cases increased deterioration by changing microclimates. As Ben Smith said in his paper, most barriers do not work. The recent removal and careful redevelopment of caged sites in places such as Namibia shows how some places can be significantly improved without increasing the threat of vandalism or inadvertent damage.

When sites have physical barriers removed or new areas are opened up for visitation there is always the problem of unsupervised visits. Soft and symbolic barriers have proved successful in keeping people away from decorated rock surfaces in both continents while at the same time giving visitors an intimate experience.

Specially designed walkways, boardwalks (fire retardant if possible), steps, low fences and so forth are combined with signs, visitor books or boards (where people can leave their own marks and comments behind), Indigenous guides, pamphlets, on-site lectures and other things to keep people a reasonable distance from the art. Another more general solution includes developing education programs for schools, creating employment opportunities and more generally involving both local people and others in the preservation, interpretation and management of sites. Janette Deacon's and Pascall Taruvinga's papers profile many innovative examples, some at relatively low cost.

Besides getting local people, tourists, developers and others to better respect rock-art sites, many TARA Conference participants emphasized the need to get important people to sites.

Fig. 5: Sven Ouzman demonstrating how the rock gong at Keurfontein, South Africa was used. Sound was a very important part of many rock-art sites but until recently researchers paid little attention to this component (Paul S.C. Taçon/Australian Museum) [34.tif].

Fig. 6: Engraved, painted, stencilled, drawn and even beeswax rock-art continues in various parts of Australia and Africa on a sporadic basis. Most often it is made by young descendents of earlier generations of rock-artists or other local people associated with land. But is it true 'rock-art'? This BMW from Tshiungani, near the Limpopo River, is South Africa's best dated engraving with the artist incising '1997' nearby (© Paul S.C. Taçon/Australian Museum)

These include government officials, village elders, UNESCO representatives, development and planning officials, philanthropists, the heads of universities and schools and senior management of industries that might impact on sites or might contribute to their protection with cash or in-kind services.

Conclusion: rock art world cooperation

There are many things one can conclude from this brief discussion and overview of the TARA Conference and the varied papers of this volume. Most importantly, however, is the essential need to share knowledge between those involved in the study, conservation and management of rock-art sites. This is especially true across Africa where many people have long worked in relative isolation. As well, unique African solutions can be developed that might be more practical and viable while at the same time less costly than those offered by First World countries such as those of Europe or North America (e.g. see Alec Campbell's concluding section). Similar problems of scale and distance, the involvement of Indigenous peoples, the vast number of sites and a dramatic increase in tourist pressure might be better attacked by sharing knowledge between African countries and Australia. Sharing knowledge with those working in other disciplines, including chemists, physicists, geochronologists, art historians and so forth is important in order to develop new techniques of analysis or preservation, new theories and practical solutions to particular problems.

Besides a general willingness to share information across the rock art world, we should strive to open many more channels of dialogue. Meetings and conferences are important but more generally keeping in touch is essential. Of course, email makes this affordable, fast and easy but we need to also look at other ways of keeping people connected. Certainly, joint publications such as this volume are good for both bonding and sharing knowledge. Other forms of joint venture could also be developed, including staff exchanges between institutions, the creation of opportunities for people working in different areas to participate on research, management and conservation oriented rock-art projects outside their usual precincts and the development of truly collaborative studies, between different countries or regions of Africa and between African institutions and their counterparts in places such as Australia (for an example see Taçon & Ouzman 2004).

But before any of this can happen we need to create a better atmosphere of respect for cultural differences, varying experience and each other. We need to respect local conditions, concerns and solutions. We need to work closely with academic, local and Indigenous communities and realize they will all have differing agendas. In effect, rock-art researchers of the 21st Century need to be ambassadors and diplomats opening up channels of dialogue and inter-cultural exchange. In order to best protect and interpret the world's rock-art heritage we need to better respect each other. Among other things, this means dispensing with some of the political, personal and egotistic agendas that have obscured rock-art and related studies of the past. Our rock-art resource is far too precious to squander. We owe it to the people who left this wonderful world of imagery, history and meaning behind that we do everything feasible to pass their and our shared heritage on to future generations. This means working hard to get things right, including our relationships with each other.

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Rock art, cultural tourism and the indigenous peoples of Southern Africa

Robert K. Hitchcock[1]

L'ART RUPESTRE, LE TOURISME CULTUREL ET LES POPULATIONS INDIGÈNES DE L'AFRIQUE DU SUD

L'art est un symbole important et très visible pour les San (les bushmen Basarwa) et pour les peuples indigènes du sud de l'Afrique. L'expression artistique est représentée par un ensemble de talents que beaucoup de San ou autres peuples indigènes possédaient et grâce auxquels ils ont pu s'exprimer. L'art permettait des liaisons entre les jeunes et les vieux, entre les hommes et les femmes et entre ceux qui vivent à la ferme et à la ville et ceux qui demeurent dans le bush. La vente de l'art, y compris les biens tels que les œufs d'autruche décorés, les peintures, et les objets en bois sculptés, est un moyen de générer un revenu vital pour les San mais également un moyen d'exprimer une série d'identités dont les San sont assez fiers. Cet article cite les dossiers du Botswana et du Lesotho, deux exemples où le tourisme culturel et l'écotourisme représentent des sources importantes de revenus pour les économies locales, nationales et régionales du sud de l'Afrique d'aujourd'hui.

ABSTRACT

Art is a very visible and important symbol of the San (Basarwa Bushmen) and other indigenous peoples in southern Africa. Artistic expression represented a set of skills that many San and other indigenous peoples possessed and which they could build upon. Art provided a connection between young and old, between males and females, and between those living on farms, cattle posts, and towns and those remaining in the bush. The sale of art, including goods such as decorated (etched) ostrich eggshells, paintings, and carved wooden items such as plaques, is a means of generating much-needed income for San individuals and households as well as a means of expressing a set of identities about which many San are quite proud. This paper presents case studies from Botswana and Lesotho to demonstrate ways in which cultural tourism and ecotourism represent important sources of income for local, national, and regional economies in Southern Africa today.

The sale of art, including goods such as decorated (etched) ostrich eggshells, paintings, and carved wooden items such as plaques, is a means of generating much-needed income for San individuals and households as well as a means of expressing a set of identities about which many San are quite proud. Art is considered highly valuable by the San. In many ways, it is a central focus of San existence.

Crucial aspects of San lifestyles are recorded in art, especially the art on the rocks of southern Africa. The rock art of Angola, Botswana, Lesotho, Namibia, Mozambique, South Africa, Swaziland, Zambia and Zimbabwe has served as a stimulus for San who today wish to adopt some of the motifs for contemporary purposes, as seen, for example, in the case of the Kuru artists of D'Kar in western Botswana, as will be described in this paper.

Rock art also features in culturally-oriented tourism in southern Africa. Tourists visit rock art sites in places as diverse as the Matobo Hills of Zimbabwe, the Brandberg in Namibia, and the Drakensberg-Maluti Mountains region of South Africa and Lesotho. Some tourists have been known to travel to western Botswana in order to visit with some of the artists living there whose paintings resemble rock art. Rock art representations are popular in safari lodges and hotels and in tourism brochures.

In recent years, since the 1980s in Zimbabwe and the 1990s in Botswana, Namibia and South Africa, San and other peoples have been able to benefit from community-based natural resource management projects (CBNRMPs) that have tourism as a component. Some of this tourism is *ecotourism*, defined by the IUCN (International Union for the Conservation of Nature) as 'environmentally responsible travel and visitation to relatively undisturbed natural areas in order to enjoy and appreciate nature and any accompanying cultural features, both past and present that promotes conservation, has low visitor impacts, and provides for beneficially active involvement of local populations.' There is also *cultural tourism*, tourism aimed at allowing visitors to experience on-going societies and their cultural traditions, practices and heritage.

In Botswana, there has been debate over time as to whether or not it is appropriate for tourists to 'see Bushmen' or to go to 'model villages' because such activities are seen by some as exploitative and demeaning (Hitchcock 1997, 2004). Some San say, on the other hand, that they want to have

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the opportunity to interact with tourists, not only because they hope to profit economically from the experience but also because they have something to learn from the guests in their communities. A problem for the San and other indigenous peoples is that in spite of the rhetoric about public participation and the benefits of tourism that are supposed to accrue to local populations, sometimes ecotourism and cultural tourism serve to dispossess poor local people and have only limited social and economic benefits – and some significant risks – for them. The purpose of this paper is to examine cases where issues have been raised concerning rock art, cultural tourism, and the roles and responsibilities of indigenous peoples in dealing with rock art and cultural tourism.

The Tsodilo Hills of Botswana

A good example of a locality where issues have arisen about the relationships among local people, rock art, and tourism is the Tsodilo Hills of north western Botswana. Now a World Heritage Site, the Tsodilo Hills originally came to broad public attention through the work of Laurens van der Post, who visited Tsodilo in the 1950s and who wrote about the hills and the people who lived there in his book *Lost World of the Kalahari*, published in 1958. The rock art sites in the hills have long held a fascination for people from southern Africa and from other places. The German geologist Siegfried Passarge visited Tsodilo at the end of the 19th century (see Wilmsen 1997).

In the latter part of the 1970s, the National Museum and Art Gallery of Botswana began an extensive rock art and archaeological site recording effort (Campbell, Hitchcock, and Bryan 1980; Campbell and Coulson 1988; Campbell, Denbow and Wilmsen 1994).

Tsodilo has the largest concentration of rock art sites in the country. The paintings and engravings in the Tsodilo Hills include a variety of different kinds of images. Some of the paintings are geometric or schematic in nature, while others are realistic paintings of animals, both wild and domestic. The paintings and engravings (petroglyphs) in the Tsodilo Hills have served to stimulate visitors to do art of their own, including San from other areas in southern Africa.

Over the past several decades, the Tsodilo Hills have witnessed efforts by development workers to assist local people. These include workers from the Government of Botswana such as the Remote Area Development Program of the North West District Council and the National Museum and Art Gallery and from non-governmental organizations such as the Trust for Okavango Cultural and Development Initiatives (TOCaDI). Their goals have been to enhance the capacity of the communities to manage the natural and cultural resources in the Tsodilo Hills National Monument and to expand income and employment opportunities.

Today, between 8 000 – 10 000 people a year visit the Tsodilo Hills, and the number is expected to increase thanks to the World Heritage Site status it received in 2001 and the improvements to the roads to the hills. As Campbell (personal communication, 2005) has pointed out, discussions about what should be done

to help the people in the Hills and what kinds of conservation and development programs that might be implemented there were not hurried; rather, they lasted for years. The discussions organized by National Museum and Art Gallery personnel, the North West District Council and various consultants and development workers involved extensive local participation in which a variety of ideas and approaches were considered.

An important objective of both the Mbukushu and the Ju/'hoansi San residents of the Hills was to maintain a diversified set of economic activities including serving as tourist guides, manufacturing and selling craft products, keeping livestock and doing a limited amount of agriculture, and engaging in foraging primarily as a means of buffering their subsistence. The government of Botswana does provide a certain amount of food to local people including those defined as destitutes, that is, ones whose incomes are below a certain minimum level, and people engaging in labour-based relief and development projects such as road clearing.

Individuals from the Ju/'hoansi San and Mbukushu communities have taken part in tourist guiding activities, and they have also worked as assistants in some of the archaeological activities that have taken place in the Hills (Campbell and Robbins 1988, 1990). The amounts of money made by individuals vary tremendously; some of them receive upwards of P100-P200 per day for their work, while others make only between P15-P20 per craft item sold, many of them being ostrich eggshell bead bracelets and necklaces. Local products are used in the manufacture of craft items.

Table 1 presents data on the kinds of crafts produced by Ju/'hoansi in north western Botswana and north eastern Namibia. Tourists thus provide funds to local people both directly and indirectly, and the residents of the Hills have been able to get value added for the products that they produce.

In 1995, a small community of Ju/'hoansi who had lived in the hills for generations were moved to a new settlement locality several kilometers to the south of the hills. When I visited the Hills on August 12-13, 1999, the Ju/'hoansi were having difficulties because the well near their village was no longer yielding water. The consequence was that the Ju/'hoansi were having to walk several kilometers in order to get water from a borehole next to the new museum site adjacent to the Female Hill. While there were complaints about the borehole not being fixed, Government officials said that they would attend to it even though it was designated as a community water point.

Cash payments were made to people as compensation for the loss of their homes and assets in 1995. The amounts paid were, according to some Ju/'hoansi,

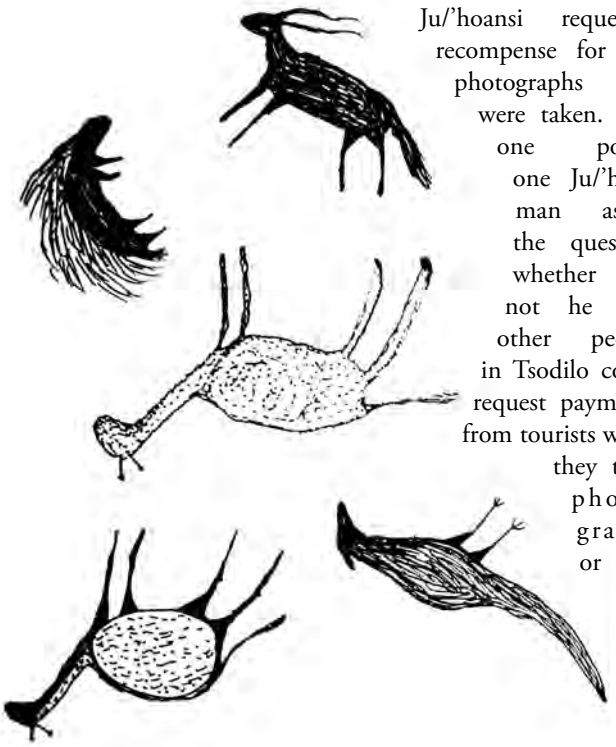
Table 1. Natural Resources Used for Craft Production by Ju/'hoansi San in the Northwestern Kalahari Desert Region, Botswana and Namibia

SCIENTIFIC NAME	JU/'HOAN (!KUNG) NAME	PART UTILIZED	PRODUCTS MADE
Acacia tortilis	/aqri	root	quivers
Boscia albitrunca	zaqn	stem	animal/human figurines, spoons
Burkea africana	!ku	stem	drums, thumb piano bases
Colophospermum mopane	mophane	stem	bracelets, rings, walking sticks, animals
Combretum apiculatum	//aqean	stem	etched plaques
Combretum imberbe	/'o	stem	figurines, spoons
Commiphora spp.	mokomoto or seroka depending on species	stem	animals, figurines, drums
Gardenia resiniflua	morala	stem	spoons, bowls
Grewia flava	n/ang	branch	bows, digging sticks
Kirkia acuminata	modumela	stem	figurines, candle holders, toy chairs
Lonchocarpus nelsii	//'haoh	stem	figurines, spoons
Phragmites australis	//'ang/'o	branch	arrows
Pterocarpus angolensis	n/hang	stem	drums, thumb piano bases, plaques
Ricinodendron rautanenii	g//kaa	stem (trunk)	stools
Sansevieria scabrifolia	g!oma	leaves	snares, mats, bow strings
Sclerocarya caffra	kaqe, marula	stem (trunk)	bowls, pestles, plaques
Terminalia sericea	za'o	stem	etched plaques

Note: Data obtained from Marshall (1976:144-152, 414-415); Yellen (1977:137-143); Lee (1979:119-157); Dickens (1994:341-349); and fieldwork by R. Hitchcock and M. Biesele

relatively generous, around, P17,500 per household. There was extensive discussion about the possibility of relocation and its implications over a number of years prior to the move of the Ju/'hoan village in 1995. It was agreed that residents should retain the right to use natural resources in the protected area. They could not, however, keep their livestock inside the fenced portion of the protected zone. A borehole was provided at the new Ju/'hoan village site some 5 km south of the hills. The population of Tsodilo rose from 81 in 1980, 110 in 1991, 140 in 1999, and 172 in 2003 (Botswana government census data; see also Bollig *et al* 2000).

The Ju/'hoansi, like the neighbors, the Mbukushu, are benefiting from tourism and development in the Hills. One concern that they Ju/'hoansi expressed was whether their location away from the hills reduced their chances of interacting with tourists. Some tourists who have visited Tsodilo said that they made a special point of visiting the Ju/'hoan village for purposes of obtaining crafts and getting some photographs of people going about their daily activities. Sometimes the Ju/'hoansi requested recompense for the photographs that were taken. At one point, one Ju/'hoan man asked the question whether or not he and other people in Tsodilo could request payments from tourists when they took photographs or did drawings of what they felt to be their cultural heritage – the paintings and engravings of Tsodilo.



A crucial point of discussion in Tsodilo was rock art conservation. Local people in Tsodilo were aware that the rock art there was a major reason for tourists coming to visit the Hills. There appears to have been a change over time in attitudes about rock art conservation, with at least some of the residents of the hills exhibiting greater awareness of the importance of the paintings and engravings. One person said in 1999 that he understood the reason for the relocation of the village and the construction of a fence between the village and the Hills because, as he put it, 'It kept the cattle from destroying the rock paintings." He said he had seen cattle rubbing against the rock in places where there were paintings and he was concerned that this action could potentially have negative impacts on the rock art. He went on to say, "We must preserve the rock art because the art brings tourists, and tourists bring money.'

One of the goals of the people of Tsodilo is to establish a Tsodilo Community Development Trust in order to enhance local-level development, to enable them to gain access to outside funds and technical assistance, and to explore questions relating to heritage rights and intellectual property rights. Some San want to use the funds generated from rock art related tourism to invest in social and physical infrastructure such as the establishment of new water points and the construction of community centers.

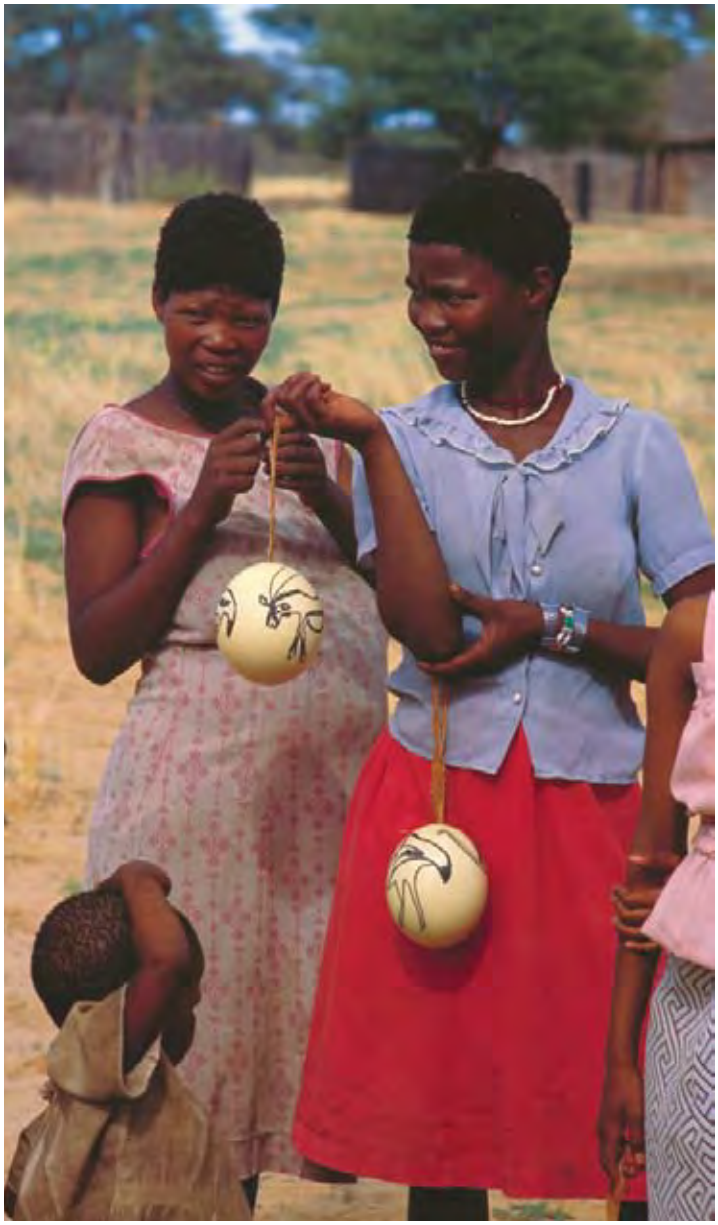
A clinic was built at Tsodilo by the Botswana Government and various district health and development personnel visit the Hills on a regular basis. The Ju/'hoansi and Mbukushu would like to have a school built in the Hills and have more job opportunities, but given budget constraints in the North West District Council and the small population size, it is unlikely that additional infrastructure will be provided, at least in the foreseeable future. There is hope on the horizon, however, with the possibility of a much-expanded non-government organization development effort spearheaded by the Trust for Okavango Cultural and Development Initiatives beginning in 2005. The critical question facing the Ju/'hoansi and Mbukushu of Tsodilo is to what degree they will have a say over the kinds of conservation and development projects carried out at Tsodilo.

The D'Kar Artists' Program in Western Botswana

It was a visit to the Tsodilo Hills in December, 1989 that stimulated the Nharo San of the village of D'Kar in Ghanzi District to undertake artistic activities. The Nharo San of D"Kar were able to see art of high quality, and they shared their observations with people at home in their village. It was partly this activity that helped lead to the founding of the Kuru Arts Project of Kuru Development Trust (now part of the Kuru Family of Organizations), which was established in Ghanzi District in 1986. What became known as the Kuru Arts Project began in 1990. Activities of the project included training of San artists in various media such as oil and watercolour painting, lithography, etching, and print making. The paintings and other products of the artists were exhibited at museums and art galleries as far afield as Gaborone, Windhoek, Namibia, Johannesburg and Durban, South Africa, Harare and Bulawayo, Zimbabwe, London, United Kingdom, Amsterdam, the Netherlands, Tromso, Norway, and Albuquerque, New Mexico, USA. There have been positive reactions to the Kuru artists' work, and the demand

for San art has increased significantly.

Some of the San artists have gained a world wide reputation; the painting of one artist (Cg'ose Ntcox'o) was even chosen in an international competition to decorate the tail of a British Airways jet liner. In 2000, there were 14 artists in the Kuru Arts Project, 5 of whom were women and 9 of whom were men. The ages of the artists ranged from early 20s to 75, with the average age being around 35. The women were Coe'xae Qgam (Dada), Coex'ae Bob (Coexae), Ncg'abe Taase (Nxabe), Cg'oise Ntcox'o (Cgoise), and X'aga. The men were Thamae Setshogo, Thamae Kaashe, Sobe Sobe, Qaetcao Moses (also known as Olebogeng and who signs his work Qaeqhao), Xgaoc'o X'are (Qhaqhoo), Xgaiga Qhomatca (Xaiga Qom), Gamnxoa (Gamnqoa), Q'oex'oa, and Qgam. The last four of these artists were new to the project in 2000. The coordination of the Kuru Art Project and training was done in 1999-2000 for Kuru Development Trust by Maudi Brown, a fine artist in her own right. There were also two San art project assistants. A new artists' workshop was completed in 1999, allowing the artists sufficient space to do their work, house their equipment, and store their products. The D'Kar Farm, where the artists work, is a freehold farm that is owned by the Dutch Reformed Church of Botswana and has been in church hands since 1989.



The artists of the Kuru Art Project are not the only artists in D'kar. They do, however, reflect a cross-section of the people involved in producing art of high quality. The San artists build on their own symbols in their art, and they draw on images and symbols of other indigenous groups, including Australian Aborigines and American Indians. Besides humans, plants, clouds with rain and other symbolic shapes, the artists paint a fairly sizable number of animals. Interestingly, they often like to paint small animals, birds, and insects, like scorpions, praying mantises, dung beetles, spiders, and tortoises, and the like. They also paint larger animals, including kudu, eland, giraffe, elephant, rhinoceros, some of which they may never have seen (rhino and elephant, for example). Some of these animals exist in the D'Kar area, including antelopes, hyenas, leopards, and ostrich, while others, such as rock rabbits (hyraxes) are found only in rocky places far from D'Kar.

The Kuru artists sometimes travel to the Dqae Qare Game Farm, 11 km north of Ghanzi Township, another part of Kuru Development Trust's project activities, where they can see hartebeest, steenbok, duiker, and wildebeest. There were 24 people working at Dqae Qare, where they not only engage in dances but also help in maintaining the farm and its facilities. Dqae Qare personnel take tourists out from the fine old Afrikaaner farm house at the game farm to see wildlife (by truck and on foot), and to show tourists things like game tracks and how to locate wild edible and medicinal plants. The funds generated by Dqae Qare are either re-invested in the program or are provided to the D'Kar Trust. Some Nharo San from

D'Kar asked the question about whether or not the funds generated by Dqae Qare should be provided to people in the form of household benefits for the people of D'Kar.

Some if not most of the Kuru artists generate substantial incomes, especially as compared to people in other Ghanzi District communities. In the case of Cg'oise Ntcox'o, who did the art work that was selected for use on the British Airways jet liner, the payment was around US $15,000. The provision of that amount of money to an individual had a number of impacts. Basically, Cg'oise bought some livestock, gave some away to relatives and friends, and saved some for herself.

But the money was not easy to hang on to, a constant issue for people in egalitarian societies like the Nharo San.

While some of the artists have been able to set aside some of their funds, many of them have felt it necessary to purchase goods or food, which they then make available to their relatives and friends. In a sense, the artists can be seen as central nodes in a wide-ranging network of reciprocal exchange. While the individual artist herself or himself may not become wealthy in a material sense, she or he does manage to incur some obligations on the part of other people who they can then call upon in time of need.

The Kuru artists have been able to generate income not just from the direct sale of their products but also from the licensing of the materials they produce. In line with the efforts of indigenous peoples worldwide to protect their intellectual property rights (IPR), the San of western Botswana have sought to ensure that they get economic returns for the use of their images and symbols. Kuru has assisted the San artists in getting copyrights for their work. When Professor Mathias Guenther of Wilfrid Laurier University in Waterloo, Ontario, Canada, published a book on San religion, he paid a commission for the right to reproduce a painting of a giraffe dance by Thamae Kaashe on the book's cover. Kuru has done an admirable job of helping not only to protect the intellectual property rights of its members, but it has also facilitated the process whereby individuals and groups can gain additional benefits from their work.

The Kuru Arts Project has undertaken a variety of activities, ranging from training of artists from other communities (e.g. ones from the village of /Xai/Xai in western Ngamiland) to helping the artists with the pricing and sale of their products. As was the case with some of the other people at D'Kar, the artists sometimes found it difficult to understand the ways in which pricing and marketing was done. The Kuru arts coordinator worked closely with the artists in the setting of the prices, and people were highly appreciative of her efforts. Meetings were held on Fridays to discuss issues with which the artists were concerned and to make plans for future activities.

The Business Department of Kuru Development Trust provided feedback to the Arts Project on sales. Having data on the sales of specific artists and the prices paid for their work was very useful because it provided project personnel and artists themselves with insights on patterns and trends, which in turn could be used to facilitate planning and financial management.

The commission that Kuru took from the artists' returns at the time of the Kuru Development Trust project evaluation was 40%. The artists have an additional 5% of the balance in a private savings account with Kuru, which is part of the savings and loan program. Out of this commission, Kuru pays some of the costs of the project, such as materials, exhibition and marketing costs, studio space, tuition, salaries for project staff, and project overheads. Internally, the Arts Project had set up a system whereby the artists had 17% of the returns devoted to purchase of materials, 5% of the returns went into the savings program, and the balance went to the artist.

Kuru has held a number of workshops on money management and pricing policies which were useful in helping build the capacity of the artists and helped make them more comfortable with the ways in which they could deal with their returns.

A hand-printed artists' book, *Quaqua*, was produced by the Artists' Press of Johannesburg in collaboration with the Kuru Art Project. The book is bound in goatskin which was tanned by D'Kar leather workers using special roots that were prepared carefully.

This book is printed in both English and Nharo, the pre-

dominant language of the northern Ghanzi District. The collaboration between the Kuru artists, Kuru Development Trust personnel, and the linguists working at D'Kar, Cobi and Hessel Visser (Summer Institute of Linguistics), has been invaluable. Some of the art work has been displayed in the small cultural museum at the Kuru Development Center at D'Kar along with exhibits on rock art, crafts, tools and other items used by San, and discussions of San lifestyles.

The impacts of the Arts Project on Kuru and on the San generally cannot be overestimated. Returns on investment by Kuru in the project have been substantial, especially given the fact that the art has come to symbolize Kuru as an organization and the San as a people who value their environment and their social relations greatly and who are highly sophisticated both aesthetically and spiritually. Kuru art is seen on post cards, stationery, and T-shirts. The fine calendars produced by Kuru Development Trust that display the work of Kuru artists are purchased by people from all over the world. Clearly, the art produced by the Kuru artists is far more than a means of generating income for a small number of people. It is an important part of the lives of the San, and it serves to connect them to each other, to their ancestors, and to all other organisms and spiritual forces, past and present.

A Cultural Center Associated with Rock Art in Lesotho

In Lesotho, there is a 4.5 ha cultural site known as Liphofung, which is a rock shelter containing rock art and archaeological remains. Located in the 'Muela area, Liphofung now has a small cultural museum and a trail down into the shelter where the paintings and other features such as rock walls and small kraals for livestock can be seen.

The site is important historically to the Basotho because Moshoeshoe I, the king of Lesotho, took refuge there along with some of his people during the time of the *mfecane* ('the time of troubles') in the early 19th century. The rock art in the shelter is attributed to San peoples who had lived in the area in the 19th century. In Sesotho, the term used for San is Moroa. There were reportedly some San who were still engaged in painting in the vicinity of some of the mission stations in Lesotho in historic times (How 1962:8, 15).

Today, Liphofung is designated as a Nature Reserve and has been developed by the Lesotho Highland Development Authority through a private company that built the museum and trail system. Management of the site is done in association with a Community Conservation Forum (CCF) made up of local people. Some members of the community forum work at the museum and sell crafts in the shop there. Data on the numbers of visitors to the site over time show an increase, from 4,907 in 2001 to 8,693 in 2002 and 16,979 as of October, 2003. A sizable proportion of the visitors to the site are school children.

People in the community conservation forum have discussed

ways in which they can improve the exhibits at the museum and provide more information to visitors. One point made in the discussions is that people in the Liphofung community conservation forum could take part in demonstration visits to the Tsodilo Hills and to the Kuru Family of Organizations development center at D'Kar so that they can see the museums in the two locations.

They also want to talk to local people in Tsodilo and D'Kar about the kinds of approaches that might be employed in rock art conservation, arts and crafts production, distribution, and sale, and local level development.

Conclusions

In southern Africa today, cultural tourism and ecotourism represent important sources of income for local, national, and regional economies. Local people are seeking to benefit both directly and indirectly from the tourism and the tremendous interest in San art. What is interesting about all three of these cases is that local residents, some of whom are San, have been able to benefit from the existence of rock art. In all three places, there are museums that have exhibits of rock art and that provide information on the lifestyles of indigenous peoples in the area.

Discussions with San in Tsodilo and D'Kar reveal that there is significant interest in rock art and its origins. In Tsodilo, some Ju/'hoansi informants claimed that the paintings were done by God and not by them; there were also claims that the paintings were done by them but that their hands were guided by God. It is interesting to note that over time (from 1976 and 1978 to 1999) there appears to have been an increase in the degree to which the Ju/'hoansi of Tsodilo claim both the red and white paintings as their own. When asked why this was the case, one man replied that he felt that the art was indeed theirs, and he went on to say that if they claimed the art themselves, it would provide them with a more substantial right to the land on which the art was found.

In a number of places in southern Africa, indigenous peoples and others have sought to claim rights over blocks of land (Hitchcock 2003, 2005; Hitchcock and Vinding 2004). In some cases they have cited the presence of 'sacred sites,' including graves of their ancestors and places containing rock art. San in Namibia have claimed that they should have rights over sites such as Twyfelfontein and Spitzkoppe. Tyua San in the Tsholotsho District in Matabeleland North Province in Zimbabwe have said that it was their ancestors who did some of the paintings in the Matobos and that they therefore should be able to get some of the funds from the gate receipts from the national park to use for development.

One of the issues that has arisen in the discussion about the relationships among rock art, cultural tourism, and indigenous peoples is whether or not the indigenous peoples should have a 'prior claim' or customary rights to the sites where the rock art is found. There are other groups besides the San living in or near rock art localities, as seen, for example, with the Mbukushu in Tsodilo, the Bakgalagadi in the area of Mamuno, a set of rock engravings in western Ghanzi District,

the Damara at Twyfelfontein, and the Ndebele, Kalanga, and Banyubi in the Matopos area of Zimbabwe.

Some of these groups have themselves put forth claims to the rock art. In the case of Twyfelfontein, trained Damara guides take visitors to the engravings, and more recently, a private company established a safari lodge at Twyfeltontein without much in the way of discussion with local people in the area. Working out agreements among the indigenous and other peoples in rock art areas is very important, as is coming to agreements between local people, private companies, and local, district, and national government authorities.

Local people can and have in a number of cases served as guides to the rock art. Discussions with tourists who have gone to see the art with the local guides reveals that some of the guides know relatively little about the origins, history, or significance of the rock art. As one tourist in Twyfelfontein suggested in the 1990s, this argues for more training of local guides by knowledgeable individuals or organizations. There is a role for San organizations such as the Working Group of Indigenous Minorities in Southern Africa (WIMSA), the South African San Institute (SASI), and the various Kuru Family of Organizations units (e.g. the Trust for Okavango Cultural and Development Initiatives) in working with local communities on capacity building, conflict management, and training on cultural and natural resource management. Governments, both local and national, also play crucial roles in the conservation and management of rock art and tourism. As some San have argued, in order to ensure better conservation and equitable development, a participatory approach to decision-making, planning, and management of rock art sites will go a long way toward ensuring that rock art sites and portable art benefit both the visitors and the hosts.

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Schematic rock art in Benishangul (Western Ethiopia): a preliminary report

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L'ART RUPESTRE SCHÉMATIQUE AU BENISHANGUL (ETHIOPIE DE L'OUEST) : UN RAPPORT PRÉLIMINAIRE

Les résultats des fouilles effectuées durant 2001-2003 sur deux abris rocheux possédant des peintures rouges schématiques (Bel Bembesh et Bela Sharafu au Benishangul, en Ethiopie de l'ouest) sont résumés brièvement. Des preuves provenant des poteries, la datation au radiocarbone et les données historiques suggèrent que les peintures rupestres datent probablement entre le 16ème et le 17ème siècle après Jésus christ et peuvent avoir une relation avec l'arrivée du peuple Berta provenant du Soudan. Les informateurs locaux et les chercheurs ont proposé un éventail d'explications au sujet de ces peintures. Certaines suggéraient une connexion hypothétique avec les rituels des faiseurs de pluie alors que d'autres, pas du tout. Cependant, l'art rupestre renforce la valeur de ces sites aux yeux du peuple d'aujourd'hui même s'il n'est pas l'auteur de ces œuvres.

ABSTRACT

The results of excavations in 2001-2003 at two rock shelters with red schematic paintings, Bel Bembesh and Bela Sharafu in Benishangul, Western Ethiopia, are summarised briefly. Evidence from the pottery sequence, radiocarbon dates and historical data suggests that the rock paintings probably date to the 16th or 17th century AD and may be related to the arrival from Sudan of the Berta people. Local informants and researchers have offered a variety of explanations for the paintings. Some suggest they might have been connected to rain-making rituals while others do not. Rock art nevertheless enhances the value of the sites to modern people even when they were not responsible for its production.

During an archaeological research survey by the Universidad Complutense de Madrid in Benishangul (Western Ethiopia) which took place in 2001-2003, two rock shelters with red schematic paintings were discovered near the village of Menge, the administrative centre of Menge *woreda*, situated approximately 50 km north of Assosa, the capital of the Benishangul-Gumuz regional State (Fig. 1). The shelter with more paintings, Bel Bembesh ("red rock" in the local Berta language), is widely known by the local population and its location was reported to us by Menge elders contacted through the *woreda* mayor, Osman Muhammad Musa (UTM 0692267/1143188; the place is marked "Bel megoha" in the 1:50.000 map) (Fig. 2). The other shelter, with fewer drawings, was discovered in the survey and is located one km west of the previous one, near the small village of Obora. It is locally known as Bela Sharafu, the first word means rock and the second one is related to the Arabic word *Sharif*, ("illustrious", "descendant of the Prophet"), according to local informants (UTM 0691117/1143426).

A small test-pit excavated under the Bel Bembesh paintings produced no significant finds, just a few undiagnostic flakes and blades in white quartz and some small Berta pottery sherds. At Bela Sharafu the paintings were made on the western rock of a bigger granite outcrop with several other rocks. In a narrow shelter under two of these that lean against each other, a test-excavation discovered an archaeological level with pottery sherds and lithic tools. The lithics included several rough side scrapers, denticulates and some end scrapers, all in white quartz as is usual in the area. Pottery was mostly undecorated and poorly preserved, although one sherd was found decorated with a wide groove. A charcoal sample from this level, 75 cm deep, was radiocarbon dated at the Uppsala University laboratory using the AMS method, to 275 $\pm$ 30 BP (Ua-21633), calibrated at 1520-1670 AD. Another test-pit made under the paintings outside the outcrop produced some lithic waste with an end-scraper and a handful of undecorated pottery sherds, of the same fabric and surface appearance as those in the inner shelter. All this evidence suggests that the drawings were probably completed during the 16th or 17th centuries AD.

The pottery found at Bela Sharafu shelters belongs to the same general type that has been also recorded during the survey at other rock shelters excavated on the Ethiopian escarpment near Assosa (Ts'alenger) and Bambasi (Kunda Damo) (hereafter called Bambasi pottery and period).One bone sample from

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the lower level of Kunda Damo was radiocarbon dated to 1985 ± 40 BP (Ua-24132). Bambasi ware is characterized by mineral temper, well burnished and dark slipped outer surfaces and decoration types that include impression, incision and grooving. Comb impression appears to be typical of the initial phases of the Bambasi period, thus connecting with the previous stage in which pottery is decorated only with the comb rocker impression technique (including Dotted Wavy Line type) that most probably originated in the neighbouring Neolithic Sudan. According to four radiocarbon dates from the Bel K'urk'umu rockshelter in Assosa, the rocker-impression period lasted from 5000/4500 BP to 2000/1000 BP. Incision and grooving decoration seems typical of the later phases of the Bambasi period (Upper Kunda Damo, Bela Sharafu), their general patterns being similar to decorated wares known at Tiya and other sites in Central Ethiopia, dated to 750 BP (Joussaume 1995, figs 101, 311-2) and, to a lesser extent, to some wares of Southern Sudan dated to the later part of the first millennium AD (Robertshaw & Siiriäinen 1985: figs. 19, 32). The grooved decoration of Kunda Damo and Bela Sharafu is also reminiscent of that found on the Turkwell tradition of the Turkana region of north-western Kenya, dated to 870-950 BP at Lopoy and associated with eastern Nilotic speakers (Lynch & Robbins 1979).

The Benishangul sequence, in which comb-impressed pottery appears to be replaced through time by pottery decorated with grooves, together with other patterns, seems to be similar in many respects to that observed in the region of Eastern Equatoria in Southeast Sudan (Robertshaw 1987:183-4). Though the archaeological evidence is scarce, our impression after the survey is that the Bambasi style faded away at the time or shortly after the rock art sites were painted. Historical data both from the Funj kingdom of Sinnar in Sudan and the Christian kingdom of Abyssinia suggest a date in the 17th century AD for the arrival from Sudan of the Berta people (Triulzi 1981:21-5).

Berta pottery types very similar to those currently used today in Benishangul were found on the surface – yet never in an archaeological level - at many rock shelters and abandoned villages during the survey. Current Berta pots have close historical parallels in Sudan, for example during the Funj period (1504-1821) (Crawford & Addison 1951). The survival of some of the motifs found in the Bambasi ware, namely finger impressions, in the pottery of the Gumuz ethnic group (as it was observed in Sirba Abay, a Gumuz enclave south of the Blue Nile) seems to confirm the historical and linguistic evidence for the greater antiquity of the Gumuz and other Nilo-Saharan groups (Komo, Mao) in the region.

The geometric motifs represented both at Bel Bembesh (Fig. 3) and Bela Sharafu (Fig. 4) show very little variation. The most abundant is the quadrilateral drawing, filled with a grid pattern (25 cases), only with vertical lines (9) or empty (5). Single vertical and curved lines also occur, as well as one circle at Bel Bembesh and two possible 'solar' symbols, one at each site. The paintings extend over a surface of 440 (h) x 260 (v) cm in Bel Bembesh, and 230 x 200 cm at Bela Sharafu. They begin at about 145 cm above the ground in Bel Bembesh, and about 80 cm above the current top soil at Bela Sharafu.

The quadrilateral grid motif (Fig. 5) strongly recalls a kind of facial scarification which is very abundant among some ethnic groups in the region. Interestingly enough, the pattern seems to be far more abundant amongst the Gumuz than in the Berta, and it was also observed in several Nilotic Mebaan people, refugees from the neighbouring areas of Sudan in the Kubrhamsa-Sherqole camp north of Assosa (Fig. 6). Correla-

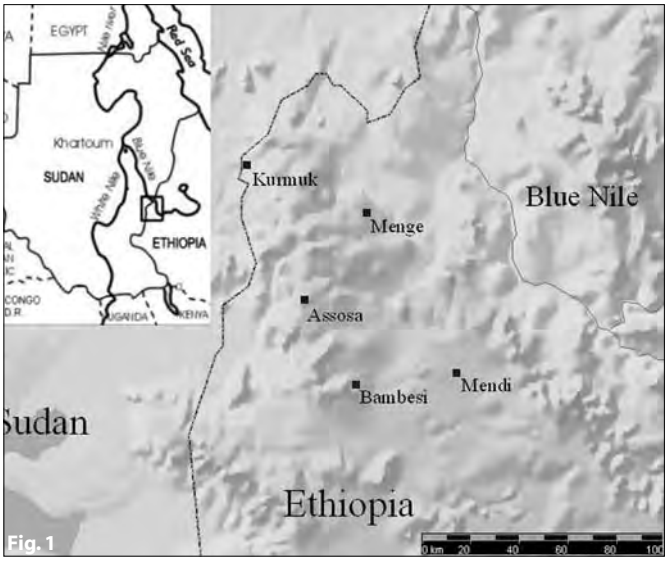

Fig. 1: Map of the Benishangul region in Western Ethiopia.

Fig. 2: Bel Bembesh rock shelter (Menge, Benishangul). The red schematic paintings are visible on the vertical granite rock. The pottery incense burner hanging from the tree is used in the Islamic rituals at the site.

tion of some rock art signs and tribal marks was suggested long ago by J.D. Clark referring to engraved parallel lines, double "T" and Arabic letters adopted by some groups in Somalia; "tectiform" signs similar to the grids in our sites were interpreted as game boards (Clark 1954:pl. 28).

Generally speaking, the schematic patterns in the Benishangul sites are similar to those found in many East African sites from Uganda to Zambia (Coulson & Campbell 2001:142-3), but not to those known in the rest of Ethiopia and other countries of the Horn. In the latter region the schematic signs are abundant but most often they are associated with schematic animals or humans; rock art assemblages consisting only of geometric symbols seem to be unusual (e.g. Joussaume 1981; Calegari 1999). Many schematic red paintings in Eastern Africa are associated with rain-making ceremonies, known ethnographically or ethnohistorically, e.g. in Zambia (Phillipson 1972:320), Tanzania (Culwick 1931:35-6) or Uganda (Sassoon 1971:5).

The local elders from the nearby Menge village (Mubarak Ashafi and Al Fadul Babiker) informed us that the Bel Bembesh paintings were made by God in the time of Creation. A similar idea has been recorded in other rock art sites of Eastern Africa (Wayland 1938:252; Shorter 1967:49; Bower 1973:138). Bel Bembesh was used in the recent past as a Muslim hermitage and is consequently seen today as a sacred place, where ritual gatherings, often involving sacrificing and eating a cow or a sheep, are attended during Islamic feasts such as Ramadan, and also when droughts affect the region. The foundations of a small mosque (14 x 7 m), facing east as do the paintings on the shelter walls, are still visible as crude alignments of stones on the ground. We could not confirm previous information by Culture Bureau officials in Assosa about the practice of pre-Islamic Berta rituals at the site, some of which were recorded in the 1970s by A. Triulzi as being still alive in far-off areas of Benishangul. The Berta, as other people in the Sudanese Upper Blue Nile area, the "Dar Funj" (Hamaj, Uduk, Burun, etc.), used to worship sacred rainstones (Triulzi 1981:28-30), and in Benishangul there are still some rituals associated with a rounded stone ("the rock of Shangul", *Belā Shangul*), allegedly brought from Sudan by the first Berta settlers (we were not allowed to visit the sacred place in 2001). Menge informants, however, rejected the idea of a religious use of Bel Bembesh before the arrival of Islam in the area a few centuries ago. A member of our research team, Alfredo González-Ruibal, interviewed a medicine-man (□*eri*) from the nearby village of Keshaf, 5 km to the east of the rock paintings. He knew how to do rain-making ceremonies using calabashes and tree branches, and he had heard about rain rituals in caves performed by other □*eris*, but was unaware of those held at

Fig. 3: Red paintings from Bel Bembesh; scale 50 cm.

Fig. 4: Red paintings from Bela Sharafu; scale 50 cm.

Bel Bembesh.

The local informants also denied any connection between rock paintings, tribal marks and facial scarification. For them the drawings are mainly a primitive, pre-Arabic form of Koranic writing from the time of Creation. They also referred to some miracles and signs associated with the red rock, particularly intense lights that are seen at night on some especial occasions, e.g. during Ramadan, and are interpreted as good omens for the whole community. The connection of rock art with supernatural powers and miraculous events has been also recorded in Mfangano island on Lake Victoria by J.H. Chaplin (1974:19). The adoption of prehistoric symbols by historic monotheist religion is known in other parts of Africa, for instance in Eritrea where the sculpted bas-relief of Ba'atti Màriam is interpreted as the Holy Virgin and the saints (Calegari 1999:38-40). Here, as in other parts of Africa, "rock art enhances the value of the site to modern people and thus plays a part in their sociocultural lives, even though they do not appear to have been responsible for its production" (Odak 1992:69).

Fig. 5: Red grid from Bela Sharafu (height 35 cm).

Fig. 6: Mebaan woman from Sudan (Sherqole camp, Benishangul).

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Ancient rock art sites in Eritrea: distribution, classification and current status

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L'ART RUPESTRE ANTIQUE EN ERYTHRÉE: DISTRIBUTION, CLASSIFICATION ET LA SITUATION ACTUELLE

On trouve des sites d'art rupestre à travers l'Erythrée, avec une concentration principale de peintures et de gravures dans le voisinage d'Addi Keyih dans le sud (répertorié en 2001). De petits sites se situent dans l'ouest autour d'Haicota et la vallée de la rivière Barka, puis au nord autour de Karora et Rora. De plus, trois grands sites regroupant des gravures ont été répertoriés dans la partie centrale du pays. Bien que l'art rupestre varie radicalement selon l'échelle, la composition et la technique, une seule classification formelle et stylistique est utilisée afin d'organiser l'art rupestre en catégories culturelles concrètes. Les deux catégories de style sont (a) : Les peintures et les gravures réalistes, (b) : Les peintures et gravures abstraites et géométriques. Alors que les facteurs naturels et humains contribuent à la détérioration de cet art en Erythrée, l'importance d'inclure les communautés locales dans le processus de gestion a été largement ignorée et une stratégie de gestion doit être urgemment élaborée.

ABSTRACT

Rock art sites are found throughout Eritrea with a major concentration of paintings and engravings in the vicinity of Addi Keyih in the south that was recorded in 2001. Other clusters are found in the west around Haicota and the valley of the Barka River, and in the north around Karora and Rora. Furthermore, three major engraving sites have been documented in the central part of the country. Although the rock art varies widely in scale, composition, and technique, a single formal, stylistic classification has been developed to organize the rock art into culturally meaningful categories. The two style categories are (a) Realistic paintings and engravings; and (b) Abstract and geometric paintings and engravings. Although natural and human-induced factors are contributing to the deterioration of the rock art in Eritrea, the importance of including local communities in the management process has been largely ignored and a management strategy is urgently needed.

Distribution of ancient rock art sites in Eritrea

Although the sizes and distributions are not the same, ancient rock art sites in Eritrea are found throughout the country. Large concentrations of paintings and engravings are found in the Southern Region of the country particularly in the vicinity of the town of Addi Keyih. This is an area well known for its dense archaeological remains from the later prehistoric, protohistoric and historic periods. In the year 2001 a team of surveyors documented and recorded large numbers of paintings and a few engravings from this particular area. Researchers have also documented rock art sites from some areas in the western lowlands specifically from the area around the town of Haicota and the valley of the Barka River. In the northern section of the country some rock art sites have also been documented from areas such as Karora and Rora. Compared to paintings, the central part of the country is well known for large numbers of engravings. A few kilometers away from the town of Thio in the eastern lowlands, some engravings have also been documented.

Classification of rock art types in Eritrea

In Eritrea, rock art styles in general constitute both representational and nonrepresentational elements. In addition, the rock art panels vary widely in scale, composition, and technique. The motifs include animals, humans, simple grooves and paintings of straight lines, zigzags, grids, and lines with diagonal branches. There are also non-geometric scattered groups of lines; some humans carrying sticks; V-shouldered human figures with a strong emphasis on genital motifs; T-bodied humans; and numerous geometric designs. All these depictions are either painted or engraved on rock surfaces. It is not clear whether the painted and engraved depictions share a similarity of style and whether or not they were produced at the same time. Many of the painted and engraved panels in a given area are found within a radius of 3 to 4 kilometers. Therefore, it is very likely that they were produced by a single cultural entity around the same time.

In classifying the rock art types I have employed a single formal, stylistic classification to organize the rock art into culturally meaningful categories. This approach is akin to the ones used by North American and British archaeologists such as Layton (1991a),

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Fig. 1: Realistic painting from Sullum Ba'atti

Schaafsma (1980), Shapiro (1953), and Sundstrom (1990).

Realistic paintings and engravings

In Eritrea, this style is characterized by the images of animals, humans, and ancient weapons. Both animals and humans are depicted singly or in groups. Pastoral scenes constitute the principal theme. Most depictions show anatomical details, such as humps and horns. Furthermore, panels range in size and complexity from small ones with 10 or 12 figures to large panels with dozens of figures composing a scene. The Realistic Paintings and Engravings seem to be the product of two slightly different techniques.

With respect to the paintings, the figures were either directly painted onto the rock or stamped after outlining the figure on other material (such as wood). These show a preference for large, smooth cliff faces with black or dark-brown patinas through which carvings are made. In addition, the engraved designs are produced either by carefully pecking away the rock surface or by first incising an outline and then pecking out the interior space through indirect percussion or a combination of indirect and direct percussion techniques. Identifiable animals include humped and humpless bovids, ovicaprids (goats and sheep), and camels.

Abstract and geometric paintings and engravings

In Eritrea, there are two forms of nonrepresentational painted and engraved rock art styles: Geometric and Abstract Paintings and Engravings. Neither of them has anything in common with the Realistic Painting and Engraving style, except the medium.

The Geometric Painting and Engraving style incorporates individual designs that combine arches, circles, and straight and wavy lines painted or engraved in outline that are highly symmetrical. Each depiction (either individual or in groups) is generally distributed evenly across the panel. In addition, individual designs or clusters of designs are generally centered on a panel and enclosed by the natural boundaries of the rock exposures.

On some panels there is a vacant space between and around figures. Though there seem to be no intentional superimpositions, some sites depict more than one colour. Moreover, these representations show a preference for smooth and open exposures of rocks, usually in major canyons or along rivers. Compared to the Realistic Paintings and Engravings, the Geometric Paintings and Engravings are more variable and yet quite homogeneous. A few depictions can be considered as intermediate between Geo-

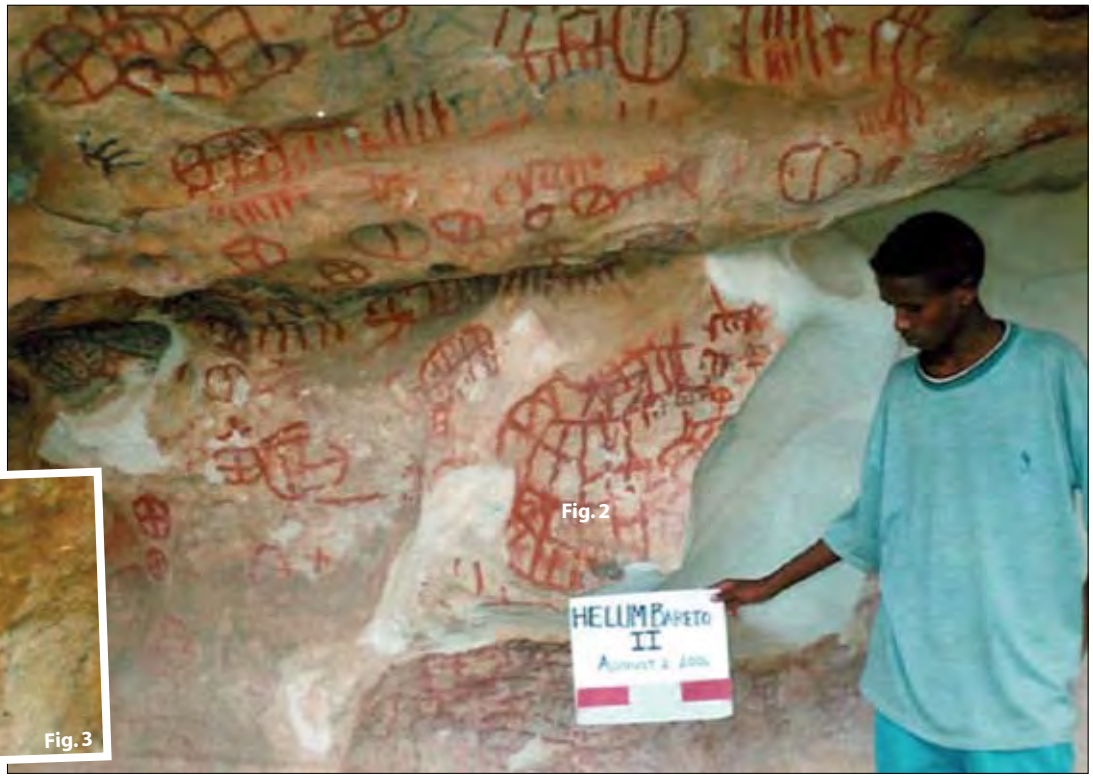

Fig. 2: Geometric and abstract painting from Helum Bareto I

Fig. 3: Abstract painting from Helum Bareto II

metric and Abstract Paintings and Engravings.

The Abstract Painting and Engraving style consists of meandering lines, crosses, asterisk-like figures, spirals, straight lines, wavy lines, and curved lines. Occasionally, there are rows of dots, but no representational motifs. At some sites the images are connected by one or more horizontal lines and generally with a horizontal orientation. Compared to other painting and engraving styles, this style shows a high degree of variation in size and the overall appearance of individual elements. Most panels show no sense of symmetry. In addition, designs extend around the corners or run entirely off the naturally exposed rock enclosures. Furthermore, individual designs are not always centered within the natural space and most panels contain relatively little unfilled space. Like Geometric Paintings and Engravings, there are no deliberate superimpositions, though the application of more than one color (particularly red and black) is quite obvious. Interestingly, these depictions are found in variable geographical settings, ranging from large open cliffs to low horizontal rock outcrops and small rock shelters. However, these show a higher frequency on hill slopes and cliffs that are extremely difficult to reach.

Threats and Challenges for Conservation and Management

Like other archaeological resources within the country, the rock art sites in Eritrea have been and continue to be destroyed by nature (due to fading and other forms of weathering) and humans (deposition of soot and grime). In some areas the current inhabitants emblazon their names over the ancient rock art. Some art is in such an advanced state of deterioration that it is not possible to obtain clear photographs showing the rock art. This constitutes a real challenge for the researcher and recorder. Their preservation will not be possible unless people are made to understand the cultural significance of this art and its value to local communities. After independence, Eritrea failed to capitalize on the value of its past for nation building. Although this situation is changing, and heritage management has come to play a part in Eritrea, it has tended to ignore the importance of incorporating local communities in the management process. The National Museum and the Department of Anthropology and Archaeology of the University of Asmara are not adequately funded to preserve these irreplaceable heritage resources. There is an immediate need to devise a management strategy to prevent damage and destruction of these sites.

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New perspectives on rock art from Mt. Elgon, Trans-Nzoia and Kara-Pokot: a preliminary report

Emmanuel K. Ndiema

LES NOUVELLES PERSPECTIVES DE L'ART RUPESTRE CONCERNANT LE MONT ELGON, TRANS-NZOIA ET KARA-POKOT: UN RAPPORT PRÉLIMINAIRE

Plusieurs chercheurs du 20ème siècle ont publié leurs travaux sur les descriptions des peintures rupestres trouvées dans la région du Mont Elgon au Kenya. La plus récente étude, commencée en June 2002, a répertorié de nombreux nouveaux sites qui, pour la plupart, embrassent des peintures de bestiaux. Sur le site de Kiboyi, le bétail est peint avec des cornes modifiées, une caractéristique culturelle toujours pratiquée par les Karamojongs dans le nord est de l' Ouganda. Lors de l'examen des abris rocheux, deux traditions de poterie ont pu être dénombrées mais aucune trace d'une quelconque utilisation du fer.

ABSTRACT

Several 20th century researchers have published descriptions of rock paintings in the Mt Elgon region of Kenya. The most recent survey, undertaken in June 2003, revealed a number of new sites, most of which include paintings of cattle. At Kiboyi the cattle are depicted with altered horn profiles, a cultural feature still practised by the Karamojong in north-east Uganda. Two pottery traditions were noted in the rock shelters examined, but there was no evidence of iron technology.

Introduction

A survey of rock art sites took place between 4 and 14 June 2003 in the districts of Mt Elgon, Trans-Nzoia and Kara- Pokot with the following objectives:

- to prospect for new rock art sites; and
- to record new sites.

Because of the large size of the region, the survey focused on sub-regions on the north-west flank of Mt Elgon, and around Koitobos, Kacheliba and Kong'alai.

Notwithstanding the extent of the area, and the limitations of time and funds, the expedition revealed previously unknown rock art and other significant archaeological sites.

Methodology

In order to achieve the aforementioned objectives, and bearing in mind that few previous archaeological programmes had been undertaken in the specific environment that prevails in the research area, a pragmatic survey strategy was adopted focusing on rock shelters, caves and cliffs. The knowledge of the local inhabitants was also put to use. Headlamps and flashlights were used to examine the dark interior of caves. Datable materials were collected and brought back for analysis.

Sites around Mt Elgon

It is common knowledge that Mt Elgon is riddled with caves, many of which have sheltered humans

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in the past (Weatherby & Wilson 1962). In an effort to find Mrs Tweedie's cave discovered in the 1960s (Cole 1963) within the larger Kimothon forest reserve, a new site with rock art was revealed at Chemarich cave after a long and winding prospecting trip in the contiguous area.

Here, in a cliff of about 50 m in length, were paintings of what looked like a headless humpless bull inscribed at the entrance. The ones higher up done in red are apparently domestic cattle. There are also other naturalistic paintings analogous to those found at a site at Kiboy, reported to the National Museums of Kenya (NMK), and the British Institute in Eastern Africa (BIEA), and recorded by the Trust for African Rock Art (TARA). It is, however, sad to note that the clearing of vegetation brought about by the shamba system has resulted in surface run-off down the face of the cliff that is destroying the art in the process. From a cursory examination of the site, the following factors emerged. Being the only site in the locality with paintings of animals, it must have been important to the early inhabitants. There is evidence of fire as seen from the abundant charcoal and ash scattered on the floor. It was also established that present day inhabitants light fires when guarding their crops from wild animals.

Fig. 1: Headless humpless cattle at Chemarich cave, Mt Elgon

In the cave adjacent to the shelter, there was abundant evidence of fire that has unfortunately blackened the walls to the extent that no art is visible. The early occupation of Chemarich cave by what I believe to be a pastoralist group is in evidence everywhere as seen from the deposits of dung, pieces of sewn leather and broken gourds that litter the floor. The floor level is recognizable on examination of the cultural deposits whose stratigraphic arrangement has been damaged at the entrance due to the amount of water flowing in. Other cultural materials on the floor demonstrate that the cave, which is about 20 m long, had early occupants. Among the artefacts recovered were bone pounders, weathered wood and fist–sized perforated stones whose use and significance is not documented in the archaeological and ethno-archaeological literature of the region. Weatherby (1965), Wilson (1972) and Odak (1977) have described similar stones. However, what they are and the purpose they served still remain a mystery. Surface collections yielded a number of undecorated potsherds.

Kiptogot Cave

This cave is located at 010.07'.37.7" N and 034.45' .15.4" E. Based on my own observations Kiptogot cave seems to be what other scholars such as Wright (1961) and Odak (1977) have referred to as Mrs Tweedie's cave. The cliff extends for about 50 m in length and is about 10 m high. Though badly damaged by surface run-off down the cliff, traces of rock art done with red paint cannot be mistaken for anything else. Though difficult to zero down to the actual representations, there are depictions of what must be domestic cattle. The remaining mosaic of art cannot be identified due the destruction caused by water, the whole scenario speaking of the need to preserve the site before it is completely destroyed. The adjacent cave extending for 34.5 m gives evidence of early occupation. A section revealed abundant evidence of pastoralist occupation. There are huge deposits of dung. A bamboo and wood enclosure measuring about 8 m in diameter is sub-divided and a smaller structure measuring about 3.5 m in diameter is smeared with dung and still stands intact. Weatherby & Wilson (1962) report this tradition of enclosures in caves in Eastern Uganda. The deposits on the surface are fairly deep measuring about 40 cm. Since the enclosure is protected from the surface run-off that has found its way onto the rock art, it is a promising site for excavation that could shed light on the identity of its early inhabitants.

Ten meters north of the enclosure is a pile of lithic artefacts made of obsidian, basalt and chalcedony. There was also a red substance that appeared to be like red ochre or haematite. Examination of the floor revealed that the cultural materials are not deep but a number of potsherds were recovered with the twisted cord roulette technique predominating. These potsherds account for 90 per cent of the surface collections with the rest being represented by sherds with plaited or grooved line decorations.

Other caves that were surveyed, though no rock art was discovered, were Kashareber, Suam, Tobo and Kologey. However, Kapsetaa (010.03'.50.8"N and 034.48.01.1"E) at the foot of Kaitobos cliff deserves a brief mention. Pottery recovered from this cave exhibited the same twisted-cord roulette technique. Local inhabitants talked of the cave occupants being buried alive inside the cave when the roof caved in.

Human skulls and animal bones recovered from the quarrying activities going on at the site further support this view. There is also a unique variety of tobacco (*Nicotiana tabacum)* growing at the site despite the fact that no cultivation takes place at the locality at present.

Having completed the survey at Mt Elgon, the team now focused on the Kara-Pokot area of Kacheliba and Kong'olai. Here the terrain is dotted with outcrops of granite, sandstone and gneiss. A number of sites were revealed.

Sites around Kara-Pokot

Sabaa

This is a boulder at (010.30'.08.6 N and 035.00'.37.5' E') though not far from other rock shelters which bore no art. Sabaa, which has rock art, measures about 5 m long and 5 m high, and has depictions of badly faded cattle superimposed on concentric circles done in red. At the northern end were depictions of cattle, the profile and style of which is difficult to determine, as the paintings are badly faded. The base of the shelter was apparently occupied as evidenced by the surface occurrence of microlithic artefacts made of obsidian, quartz and chalcedony. A finely retouched obsidian blade measuring 35 mm was also recovered. Pottery decorated with the roulette technique with twisted cord similar to that reported at Mt Elgon was recovered.

Koding

Further east, about 15 km from the Kacheliba police lines, stands Koding Hill that is basically an outcrop of granite and gneiss with a south-east orientation. On a cliff were concentric circles done in red on a background of white/yellow paint. The art is concentrated over a 3 sq m section. Adjacent to the main painting is a small extension that bites into the main rock to a depth of about 2 m that also has concentric circles. The diameter of these circles varies from 11.5 to 25 cm.

The intervals between the successive circles are maintained at about 2 cm. Three metres from the main painting are depictions of what looks like a female human figure holding a child. Although faded, they seem to have maintained the same tradition of red paint on a background of yellow/white.

The concentric circle with a central dot motif identifies with those in eastern Uganda at a site known as Lokapeleth (Wilson pers comm.). It is sad to report that the paintings are threatened by flaking and exfoliation of the main rock. Baboons that now nest at the site further worsen the situation. The pottery recovered at the site exhibits the roulette technique mentioned earlier. Fifty metres north-west of the main painting is a concentration of microliths in what would be termed as a "factory site" in some quarters.

The predominant raw materials are quartz, chalcedony and obsidian. There is a burial mound 300 m north of the shelter. A perfunctory examination of the


Fig. 2


Fig. 3

Fig. 2: Cattle paintings superimposed on concentric circles

Fig. 3: Concentric circles and a central dot

site convinced me that excavation might yield important results, as the deposits at the shelter appear to be *in situ*.

Simatwa

This granite outcrop contains images that might have been rock paintings but are now badly faded. Surface collection yielded pottery with a riveted rim, decorated with incised lines. It is worth noting that a rim with roulette technique was found next to the site.

What looks like a burial mound is located 60 m away. It is also important to note that 45 m north of the cliff is a half-built "tumulus like" walled structure whose use is difficult to tie in with the rock shelter. There is a need therefore for a systematic study in this area with a view to shedding light on the feature.

Discussion

One of the most striking results of this investigation was that although we did not find a very complex record of rock art and ceramic traditions, the pottery recovered falls into two distinct groups. In one the twisted roulette decoration predominates, and in the other the incised line technique predominates.

The former appears to be indistinguishable from modern luyia pottery. In terms of rock art, two patterns also emerge, one in which livestock predominates and the other in which concentric circles are most common.

Thorough exploration of these sites, including excavation, is strongly recommended to further our knowledge about the geographical extent and cultural identity of the inhabitants. The paintings at Kiboyi are of particular interest to us in that cattle depicted with altered horn profiles is a cultural feature that is still being perpetuated by present day Karamojong in north-east Uganda as reported by Wilson (1972:65, fig. 2). Koding and Kiptogot cave in particular require further investigation.

The information obtained from this survey is consistent with that from other caves and rock shelters that do not show much variation over time. No evidence of iron technology or Neolithic settlement was noted so one can hypothesise that the area is unlikely to have figured prominently in the early stages of the introduction of food producing economies. It is also doubtful whether the archaeological record of this area can provide a basis for a detailed critique of this hypothesis.

Nevertheless, the sites I have discussed offer numerous inducements for intensive investigation, such as the prospect of shedding light on the Sirikwa phenomenon, and the possibility of documenting changes in settlement patterns in response to population influxes.

The data collected here will have broader implications beyond setting up a base for the study of rock art sites in the area. For one, it will provide information on the spatial distribution and land use and subsistence context of rock art sites.

This survey has therefore shown that the north rift corridor is rich in rock art and other related archaeological sites, some of which still await discovery and study.

Acknowledgements

I am grateful to John Wilson of Treasures of Africa Museum who had the energy and the time to climb the rugged terrain to show me some of the sites. David Braun deserves special mention for encouragement and technical support. I am also indebted to the British Institute in Eastern Africa, the Trust for African Rock Art and the Treasures of Africa Museum for logistical and financial support.

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Recent Alterations to Rock Art Panel At Lukenya Hill, Kenya

Stanley H. Ambrose[1]

INFORMATIONS SUR LA TRANSFORMATION D'UN PANNEAU RUPESTRE N° GVJM16 LUKENYA HILL, AU KENYA

Archivages effectués sur une période de plus de 20 ans du site GvJm16, Lukenya Hill, Kenya. De fausses peintures produites entre 1988 et 1995 ont été identifiées.

ABSTRACT

A large rock panel in a granite shelter on private land at Lukenya Hill, site GvJm16, protected by the laws of Kenya, is well known to East African prehistorians for its diverse and well-preserved paintings. Images recorded in the 1970s include a very faded red herd of small bovids, and well-preserved barred circles, resembling geometric motifs at sites in the Lake Victoria region, and relatively fresh white and red lines, dots and smears, attributed to the Masai. Then, between the late 1980s and early 1990s, several new images appeared, including a white dotted giraffe, and a white human image resembling streaky-style figures from central Tanzania, a herd of yellow hartebeest, death poses and a yellow feline. The original red circles observed before 1995 were nearly obliterated by a wash of white paint. The human and two of the hartebeest are portrayed in poses resembling images from southern African San rock art sites of individuals in trance positions and two Kudu drinking from pools are also inspired by southern African paintings. At the same time the recent artist must also have been familiar with Tanzanian (Kondoa) rock art imagery which clearly inspired other images! If these images had not been recognized as modern forgeries they could have been used as evidence for a dramatic revision of the prehistory and geographical distribution of Khoisan-speaking peoples and their belief system. The origin of these "forgeries" is in fact known to TARA, the Trust for African Rock Art in Nairobi. During the stated period (1989?) a U.S. film company was in Kenya making a TV series ("Young Indiana Jones") and hired a well-known local artist to paint some rock art images at Lukenya when they wanted to shoot part of the film. According to the local artist no-one appeared to know that this was an authentic/original rock art site and certainly no-one told the artist it was a site. TARA has reason to believe that at least one researcher has been "fooled" by these "forgeries".

Introduction

Prehistoric Kenyan rock art is poorly documented in comparison with that of other regions of Africa. Inadequate documentation reflects the relative scarcity of ancient paintings throughout this region. Lukenya Hill is an isolated elongated inselberg ridge of ancient metamorphic rock that rises above the Athi-Kapiti Plains a few km south of the Athi River, about 30 km southeast of Nairobi. Lukenya is unusual for the relative diversity and richness of its prehistoric and proto-historic paintings. It contains numerous rock shelters that contain archaeological evidence of Stone Age and recent human occupations (Gramly 1975a; Gramly 1975b; Merrick 1975). Many shelters contain well-preserved white, red and black geometric and curved line motifs attributed to Masai warriors, who used the shelters as meat-feasting sites.

Faded red and white paintings of antelope, an elephant and geometric motifs such as spirals and

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Fig. 1: View at one of the mazes Lukenya Rock shelter. Photo by David Coulson/TARA.

Fig. 2: Whole main panel of the rear wall of GvJm16 rock shelter (1977). A series of very faint red circles and ovals may appear below and right of the main group of red circles. Photo by Stanley Ambrose.

barred circles may date to the Later Stone Age (LSA).

The largest and best-preserved rock art panel forms the rear wall of the rock shelter numbered GvJm16 in the Standard African Site Enumeration System (Nelson 1971, ref. fig. 1 page 134). The indigenous paintings at GvJm16 documented by tracings in the 1970s have been partly overlain by more recent paintings that appeared after 1988 and before 1995, some of which resemble the indigenous ancient painting of the Kondoa region of central Tanzania (Leakey 1983). This paper describes the original and new paintings, and the damage to the early paintings by the new ones.

Rock Art Research at Lukenya Hill

R. Michael Gramly (1975a) documented several painted rock shelters in his dissertation research on the Later Stone Age and Neolithic of Lukenya Hill. James and Debba Swan conducted a comprehensive survey of the painted sites at Lukenya Hill as part of the University of Massachusetts at Boston archaeological expedition in 1977-1978, and recorded over 50 painted sites. The results of this survey remain unpublished, but Swan's systematic field notes with sketches of the major sites are stored in the Archaeology Division of the National Museums of Kenya in Nairobi.

Site GvJm16 contains the largest rock art panel at Lukenya Hill. Figure 1 shows an overview of the site taken in 1977. A large slab detached from the roof forms the present floor of the main shelter and this slab forms the low roof of a lower shelter. Harry Merrick (1975) conducted archaeological excavations in the upper and lower shelters. The upper shelter contains LSA deposits dating as old as 27000 BP. The lower shelter contains Middle Stone Age (MSA) deposits likely to be older than 50000 BP, and Neolithic-era archaeological deposits dating younger than 3000 BP.

The rear wall of the upper shelter contains a diverse range of paintings. Life size tracings of the art of the entire panel were made in 1970 by J. Ochieng, C, Jones, A. Jones, H. Curtain and K. Forde. They are stored in the Archae-

ology Division of the National Museum in Nairobi. These tracings, along with photographs of this panel taken between 1975 and 1977, provide a baseline for identifying the new paintings on this panel that were first recognized during a visit to this site in 1995.

Fig. 2 shows the entire main panel, and Figs 3 and 4 show close-ups of the left and right halves, respectively. The motifs of the left side (Fig. 3) are predominantly white curved lines and circles resembling Masai cattle brands. A small circle and an elongated black semi-oval, which may be part of a Masai shield design, are painted with black pigment. A large area of red paint underlies a part of the panel naturally stained white by water-borne minerals. Several curved red lines lie to the right of this stained area.

The motifs of the right side of the main panel (Fig. 4) include a row of four red circles, with a fifth beneath them. The fifth circle may be part of another row of circles that have almost faded completely. They are most clearly seen in Fig. 2. Three of

Fig. 3: Left side of the main panel of GvJm16 rock shelter (1977), showing red, white and black paintings attributable to the Masai. Photo by David Coulson/TARA.

Fig. 4: Middle of the main panel of GvJm16 rock shelter (1977), showing red circles and rows and clusters of red dots. Photo by Stanley Ambrose.

Fig. 5: White dotted giraffe, and white streaky-style human figure, bent over at the waist (1995). This pose is similar to that of the figures from central Tanzania, and those from Southern Africa that are interpreted as healers entering a trance state. These images, and the extensive white overlay that now obscures the red circles, were not present before 1988 (see Figs 2 and 4). Photo by David Coulson/TARA.

Fig. 6: Faded yellow antelope painted for a film by a local artist around 1989. Photo by David Coulson/TARA.

the five aforementioned circles have a bisecting vertical line. Two circles contain several nearly horizontal lines. The faded circle on the right end of the top row encloses an indistinct set of three or four circles resembling a cloverleaf type of motif. These circles are best known from sites in the Lake Victoria basin (Odak 1977). Clusters of dozens of red dots occur to the left, right and above the five circles. This panel also contains small very faded red images of several antelope (Fig. 5).

Photographs of the section of the panel with the red circles taken in 1995 show several remarkable changes and additions. The red circles are almost completely obscured by a white wash, and only two remain visible (Fig. 6). A giraffe painted in white outline, filled with white dots, occupies the upper right of Fig. 6, and a "streaky style" (Leakey 1983) human figure bent over at the waist in a pose resembling a trance position (Lewis-Williams 1986) occurs to the right of the giraffe. The human figure differs slightly from those in the Kondoa region of Tanzania because it is wearing a belt at the waist. Otherwise both figures closely resemble those of Kondoa. Other new additions on the far lower right side of the main panel include at least four yellow kongoni (hartebeest), one of which has white outlined legs, and black zigzag barred lines across its face (Fig. 7).

Two are kneeling with their faces bent toward circles with short barred lines around the circle perimeters. A yellow feline with white outlines, possibly a female lion (Fig. 8), lies below and right of the group of kongoni, and appears to be stalking them from the curved underhang of the lower right corner of the panel.

Importance of the site

GvJm16 and nearby sites at Lukenya Hill are important for rock art research because this is one of the only localities in the Kenya highlands east of the Lake Victoria Basin that contains recognizably ancient prehistoric images. They have not been subjected to rigorous comparative analysis with the imagery from other regions, but this may no longer be possible because the paintings that appeared after 1988 seem to have obscured these rare and sometimes enigmatic images.

Is it possible to restore the original paintings, or will attempts at restoration lead to further losses of the original paintings? Perhaps the Hippocratic oath should ap-

Fig. 7: Three scratched human figures recently added to the original panel. Photo by David Coulson/TARA.

ply to this rock face: do no harm especially since the post-1988 paintings are now so faded that most are difficult to see. Until a proper assessment, followed by a careful and rigorous program of testing of cleaning methods can be conducted, the bogus images that obscured the indigenous ones should remain undisturbed.

Although the original paintings at GvJm16 remain undated, it is likely that some have considerable antiquity. The red antelope at this site, and a large spiral and an elephant (?) at site GvJm6, located nearby, suggest connections with the imagery of the Kondoa region of Tanzania (Leakey 1983; Masao 1979). The paintings from the Kondoa region of Tanzania clearly share strong structural and symbolic similarities with those of southern Africa. However, the authentic images at GvJm16 and other parts of Kenya do not share these similarities. The images that appeared at GvJm16 after 1988 seem to have been painted by someone who is familiar with the styles and possibly the symbolism of the images painted by Khoisan-speaking hunter-gatherers such as the Sandawe of the Kondoa region of Tanzania and the San of southern Africa (Lewis-Williams 1986). If documentation of the images present before 1988 did not exist, then it is likely that this site would have been erroneously touted as evidence for the northward extension of Khoisan-speakers and their system of imagery of symbolic metaphors of shamanistic practices.

Acknowledgements

I sincerely thank the Honorable Kasanga Jack Mulwa and Mrs Martha Mulwa for permission to visit and study the painted sites, and for their hospitality to the many archaeologists that have conducted research on their property at Lukenya Hill.

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Tara conference excursion to Lukenya Hill

Alec Campbell and Janette Deacon[1]

EXCURSION À LUKENYA HILL DANS LE CADRE DE LA CONFÉRENCE DE TARA

Le rajout de fausses peintures sur le site GvJm16, Lukenya Hill, Kenya, pendant le tournage d'un film démontrent que des lignes de conduite doivent être clairement définies et respectées pour éviter ce genre de dégradation et contribuer à la conservation de l'art rupestre en Afrique.

ABSTRACT

The addition of fake paintings at site GvJm16, Lukenya Hill, Kenya, during the making of a movie suggests that guidelines for best practice when dealing with interventions of this kind would be appropriate for rock art conservation in Africa.

During the TARA conference in November 2004, a field trip was arranged to rock art sites at Lukenya Hill about 40 km from Nairobi. We were accompanied by Dr Stanley Ambrose who undertook archaeological excavations there in the 1980s, and by Mulu Muia and other staff members of the National Museums of Kenya who are responsible for the conservation and management of this and many other rock art sites in Kenya.

A BBC television team interviewed them both and the clip was broadcast world-wide. The visit gave conference participants an opportunity to see first-hand the range of rock painting styles commonly found in Kenya, as well as sites that have been excavated over the years and that record the presence of both Stone Age and Iron Age peoples. It also provoked some interesting discussion about rock art conservation and interpretation.

The excavations at several sites on Lukenya Hill record Middle and Later Stone Age occupation over the past 100 000 years or more, as well as the presence of Iron Age peoples at both open sites and in rock shelters (Bower et al. 1977:140-141; Gramly 1976; Miller 1977). The rock art includes a few examples of hunter-gatherer paintings, but dates primarily to the Iron Age with schematic finger paintings probably related to Masai meat feasting (Gramly 1975; Coulson & Campbell 2001). There is some isolated damage to painted surfaces by scratches and charcoal.

From a rock art conservation point of view, one of the most interesting sites was GvJm16 (see note by Ambrose and Muia below). This large shelter includes a number of paintings that are very similar in style and content to those found in the Kondoa region of Tanzania, yet are surprising in the sense that there are no other similar paintings in Kenya, nor indeed north of Kondoa. They are in fact recent fakes, painted in the shelter by an artist who was hired to do them by the makers of a television series (see Ambrose & Muia below). They look so genuine, now that they have faded, that they were recorded without comment by a team of students from the USA in the 1990s. There is no known record of what type of paint was used.

This type of vandalism – what could perhaps be termed 'realistic fakes' – raised a number of eyebrows. It was not clear whether a valid permit had been issued for the rock wall to be painted, nor whether, if there had, any conditions were attached regarding subsequent removal of the paintings. It would certainly be difficult to remove the fake paint without leaving negative shadows on the rock face, and the result might be as intrusive as the fakes. Because some of the fake paint seems to overlie earlier, genuine paintings, removal would also impact on some of the originals. One of the images was scratched into the rock surface before being painted.

The discussions that ensued could form the basis for guidelines for best practice when dealing with interventions of this kind in Kenya and other African countries. There are arguments for and against allowing modern copies to be made in rock shelters. San (Bushman) descendants in KwaZulu Natal in South Africa have requested permission to paint images in rock shelters without older paintings and have been allowed to do so. Copies have also been done without permits in the Eastern Cape and Free State in South Africa, but as they were in

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shelters without other paintings they unfortunately fall outside the range of activities requiring a permit in terms of the National Heritage Resources Act.

The following guidelines that take the basic tenets of the Burra Charter accepted by ICOMOS and the World Heritage Committee into account, could form the basis for best practice:

- there must be a careful assessment of every site by a professional archaeologist or rock art expert before permission is given for fakes to be applied;
- fakes must be removable, must not impact on the original fabric or materials, must use materials that are easily recognizable as 'modern', and must be recorded in detail before and after the intervention;
- rock art may be added only to sites without existing paintings or engravings, or the fakes must be added electronically or on transparent surfaces that will not affect the original rock surface;
- regardless of any existing legislation, permits should be mandatory;
- permits must be issued with conditions that oblige the applicant to remove the fake paintings immediately after filming with heavy penalties for non-compliance;
- the site must be inspected before the filmmakers leave to ensure that the conditions have been met;
- if permission is given for fake paintings to be applied and left at a site, for example if there is a good reason for creating a copy of an original for purposes of education and tourism, there must be a public notice that draws attention to the fact that these are not originals.

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Community participation and rock art management in Zimbabwe

Pascall Taruvinga[1]

LA PARTICIPATION COMMUNAUTAIRE ET LA GESTION DE L'ART RUPESTRE AU ZIMBABWE

Le Zimbabwe est un des pays d'Afrique Austral riche d'une multitude de peintures rupestres datant de 12,000 à 2000 avant nos jours. Cependant, la gestion de ces sites rupestres à posé plusieurs défis et dans certains cas à amener à des expériences désastreuses telles que le vandalisme qui prit place au monument national de Domboshava. Cet article s'interroge sur la manière dont les Musées et Monuments Nationaux du Zimbabwe ont deliberement pris l'initiative de confier la gestion de l'art rupestre aux communauté locales pour prévenir certains des risques posé par l'Homme. Parmi les stratégies employées, la reconnaissance de la valeur accordées par les communautés locales aux sites, l'adoption d'un programme pour le site, l'emploi de locaux en tant que gardiens, la promotion de projets de tourisme durable, le captage du savoir local (indigène) et la création d'un dialogue avec l'autorité traditionnelle. Cette approche, malgré les problèmes qu'elle pose, à resituer l'héritage culturel biaisé où les propriétaires étaient laissés pour compte et considérés comme de simples observateurs. Cet article considère les communautés locales comme partie intégrante, et en tant que gestionnaires du patrimoine indigène de l'héritage rupestre. Ainsi, le futur de l'art rupestre sous tend une transformation de l'identité de la communauté au travers d'une approche du peuple, qui habilite tout les antagonistes vers la promotion et l'utilisation durable d'une ressource culturel à la valeur inestimable et non remplaçable.

ABSTRACT

Zimbabwe is one of the Southern African states endowed with rich and diverse rock paintings dating between 12 000 and 2 000 years ago. However management of these rock art sites has posed several challenges, and in other instances has led to disastrous experiences such as the vandalism at Domboshava cave. This paper discusses how National Museums and Monuments of Zimbabwe has deliberately moved towards community participation in rock art management to avert some of the human induced problems. This is beyond the scope of the current National Museums and Monuments of Zimbabwe Act: 25/11. Among the strategies being employed are recognizing values placed on sites by local communities, the adopt-a-site programme, employing local people as site custodians, promoting sustainable tourism projects, tapping of traditional (indigenous) conservation knowledge, developing integrated management plans and creating dialogue with traditional leadership. This participatory approach, though with its own problems, has managed to deal with the biased colonial heritage management approach in which the owners of the sites were sidelined, and always considered as observers. Thus the future of rock art lies in transforming the identities of the community through a multi-faceted grass roots approach which empowers them to promote sustainable utilization of non-replaceable and priceless rock art resources.

Heritage Management and Communities

Heritage management is an exceptionally crisis driven pursuit, swamped by manifold urgent issues, overwhelmed by imminent threats to fabric or integrity, and driven by successive emergencies (Lowenthal 2003). Management decisions relating to heritage places are dependent on a wide range of factors, including degree of significance, management opportunities and constraints. From the above synopsis, heritage management is a complex and diverse issue in that a wide range of expectations and perceptions of all stakeholders have to be met, but above all, the significance of the heritage place has to be sustained. Heritage places include archaeological and historical places, cultural landscapes, rock art sites and sites associated with intangible values. Consequently, the applicable legislation, the role of stakeholders and the influence of national politics have to be considered in developing ways of caring for the heritage.

Heritage Management is born out of the concept of Cultural Resources Management (CRM) (Deacon 1995). Over the last few years the definition of CRM has been broadened to include documentation, protection and management of cultural resources, thereby bringing out the complexity of heritage man-

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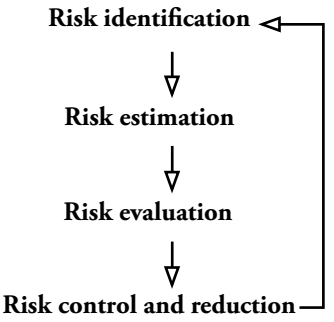
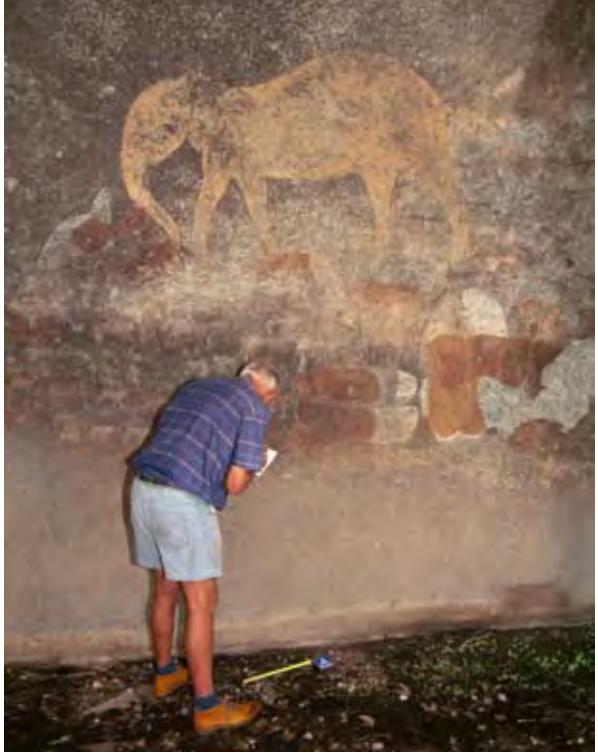
agement. Irrespective of which term one uses to refer to heritage management, the management of cultural resources has become important. Heritage legislation is therefore being used in protecting sites and creating a platform for both public and private initiatives that are integral to the identification, documentation, presentation, and management of sites. Heritage Management thus takes place within a legal and administrative framework established by governments (Pearson & Sullivan 1998). Heritage management is a continuous process whose ultimate goal is promoting sustainable utilization of the non-replaceable and priceless cultural resources. This process goes beyond just putting up a fence around the site or presenting the site to visitors.

Contemporary heritage management philosophy has recognized that heritage places are at risk as a consequence of both human and natural factors, with the former being more devastating than the latter. Subsequently, the concept of Risk Management has become the cornerstone of heritage management throughout the world (Darvill & Fulton 1998). Risk Management revolves around four interlinked steps: risk identification, risk estimation, risk evaluation and risk control and reduction (Ndoro 2001). Risk management aptly describes what encompasses heritage management nowadays (Darvill & Fulton 1998). Risk management recognizes the link between four important steps in heritage management: identification, documentation, assessment and monitoring. It underlines the fact that heritage management is a continuous process, and not a once off event. Rock art heritage is one such non-renewable resource that requires a risk management approach, especially in the face of the fast changing world, which is witnessing increasing human activities. Thus effective rock art conservation requires proper consultations with relevant stakeholders and adherence to agreed international guidelines and conventions. It must be understood that specific protection and conservation strategies vary according to the context and values associated with each site.

It is within this context of risk management that local communities can play an important role in rock art management. Local communities are the makers of the heritage as the sites and objects hold certain values associated with their history and identity. According to Colley (2002) indigenous cultures are created and owned by a particular people with strict rules about what is appropriate and how they should be managed using traditional protection systems. Therefore, the community itself determines the significance of a place. From this perspective local communities have a right to use their cultural resources. However heritage managers usually view this as a threat to the site thereby failing to realize that usage is central to maintaining and sustaining the value of a particular site. In the contemporary world, the heritage manager's role is to bridge the gap between use and conservation.



In respect to rock art sites, local communities place several values on them. Local communities consider hills, caves and tunnels as avenues for communicating with spirits, and the location of these places and their physical features become sacred. Therefore specific elements of the landscape are integral to intangible processes and these include forests, water pools, etc. The depiction of rain making ceremonies and activities relating to the contact period (e.g. sheep, horses, ships) shows direct significance to contemporary communities. In other circumstances local communities are the creators of the rock, for example the Aborigines in Australia and the hunter-gatherers in the Kalahari Desert. Therefore, local communities are either indirectly or directly related to the rock art in their places. This includes the setting of such sites within the landscape. Though communities regard rock art sites as important, more often they do not respect the paintings themselves, leading to cases of vandalism.



However the ownership of indigenous cultures was seriously

affected by colonialism especially in Africa, Australia and other parts of the world. Colonisation in many ways institutionalised and legitimised western knowledge and traditions, and empowered non-indigenous culture and its material remains, while excluding indigenous people and devaluing their knowledge (Colley 2002:174). The colonial legislation further alienated the indigenous communities by recognising values considered to be important by the western world, thereby deliberately ignoring values important to the communities.

This also witnessed the non-recognition of the traditional protection systems that actually contribute to the sustainable management of cultural and natural resources. However a tide of change is sweeping over Africa, Australia and many parts of the world. Many nations are moving towards the recognition of values placed on sites and objects by indigenous communities, as well as the associated traditional protection systems.

This is being done through amendments of legislation to include protection of values important to local communities, empowering local communities through a multi faceted grass roots approach and international conventions such as the one on the Protection of Intangible Heritage.

Community participation in heritage management comes in different ways and many terms have been used in trying to explain this participation. Terms that have been used include collaboration, joint, mixed or multi party management, round table management, participation, involvement, and co-management (Borrini-Feyerabend 1999).

But the best definition of what should entail effective community role in heritage management is the term 'Participatory Management'. It is defined as "a situation in which two or more social actors concerned about a cultural heritage site negotiate, define and guarantee amongst themselves a fair sharing of its management functions, entitlements and responsibilities" (Borrini-Feyerabend 1999).

This approach recognizes the different values, interests and concerns of all stakeholders, thereby allowing the civil society to assume important roles and responsibilities in heritage management. It is also open to various modern and traditional types of management, therefore ensuring sustainable use of both cultural and natural resources.

Therefore this paper presents issues pertaining to the empowerment of local communities in rock art management in Zimbabwe. Emphasis will be placed on the strategies being employed. These include recognizing values placed on sites by local communities, the adopt-a-site programme, the employment of local people as site custodians, the promoting of sustainable tourism projects, the tapping of traditional (indigenous) conservation knowledge, the development of integrated management plans and the creation of dialogues with traditional leadership. The paper also discusses the problems being encountered during this empowerment process.

In this discussion, the paper argues that local communities are integral indigenous managers in rock art management. Thus the future of rock art lies in transforming the identities of the community through a multi faceted grass roots approach, which empowers them towards promoting sustainable utilization of non-replaceable and priceless rock art resources.

Rock Art of Zimbabwe

Zimbabwe has one of the greatest variety and largest number of rock art sites in Southern Africa. To date over 4 600 rock art sites have been recorded out of an estimated 30 000 sites (Fig. 2). Rock art sites probably constitute more

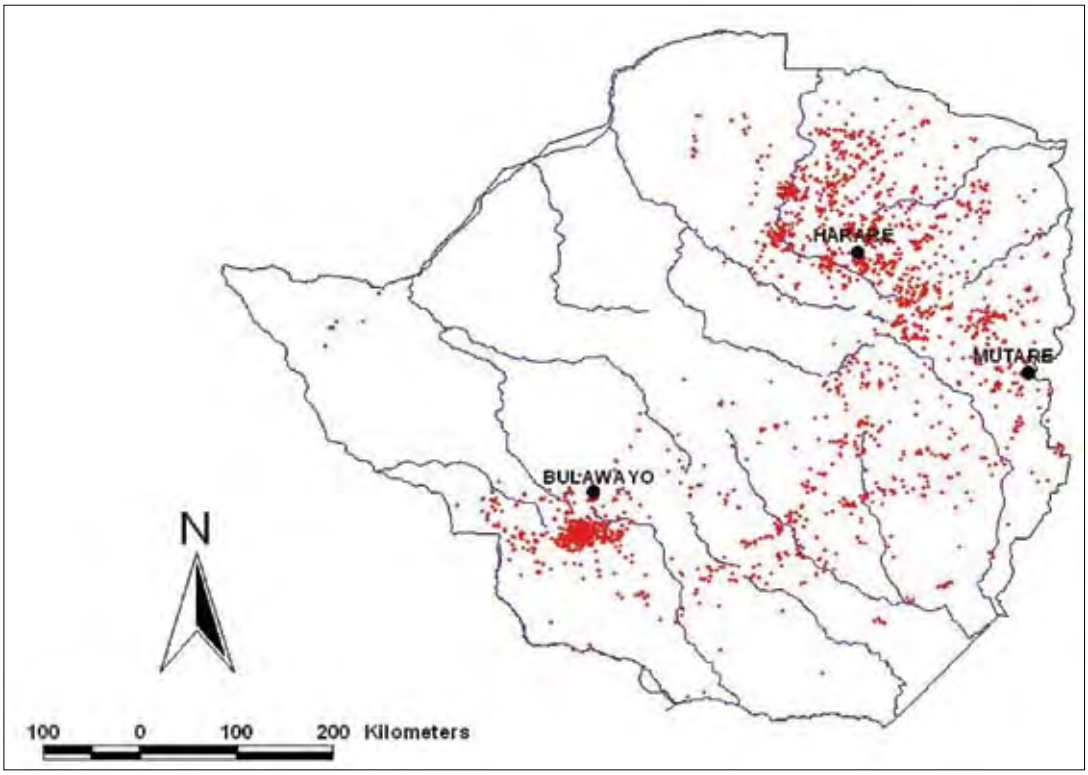


Fig. 2: Map showing the distribution of rock art sites in Zimbabwe.

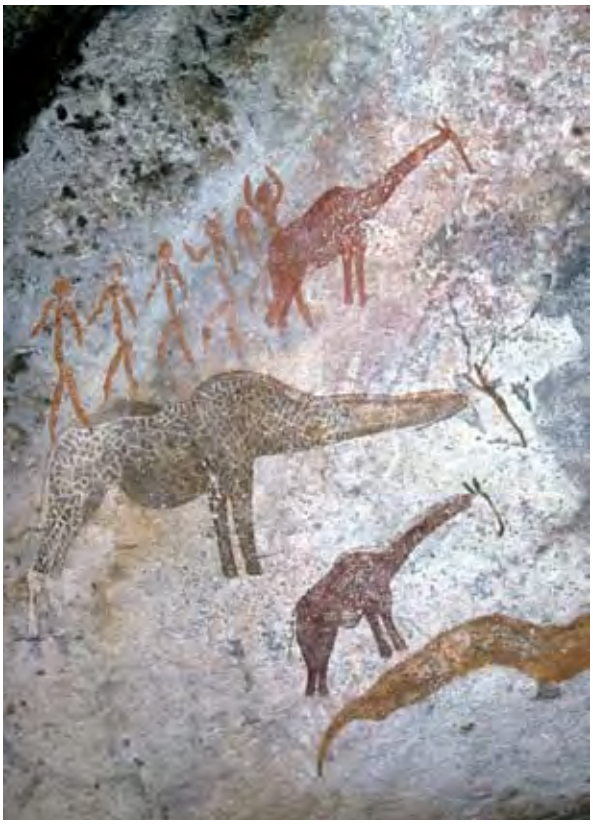
than 55% of known cultural sites in Zimbabwe. The rock art of Zimbabwe comprises rock paintings on granite and sandstone, and a few engravings confined to the south-eastern parts of the country. The paintings are mainly found in the granite belt, which stretches from the Matobo Hills (south western Zimbabwe) to Mutare (eastern Zimbabwe).

The paintings are found on cliff overhangs and individual boulders, and in caves and shelters that are usually associated with Stone Age deposits. The sites are widely distributed within communal areas, commercial farming zones, national parks and private conservancies.

The rock paintings have been researched since the 1920s, thereby creating a wealthy databank of information (Frobenius 1962; Cooke 1970; Garlake 1985, 1987, 1995; Walker 1995). The paintings have been indirectly and broadly dated to the period 10 000-2 000 years ago (Garlake 1987, 1995; Walker 1995). The rock paintings are done in different shades of red and white pigments. The red pigments were derived from iron oxides commonly known as haematite, which is readily available in the granite hills characterizing the Zimbabwean Plateau. The white pigments were extracted from kaolin clays. Generally the red rock paintings are attributed to the hunter-gatherer communities, whilst the white paintings were done by early farming communities (Garlake 1995). The paintings have distinct techniques ranging from outlines, monochromes (one colour) and bi-chromes (more than one colour). Figures are painted in every possible detail. A system of multiple view-points was adopted so that each subject is clearly visible, readily legible and easily outlined (Garlake 1995). The paintings include human and animal figures, as well as abstract motifs characterized by different geometric designs.

Significance of the rock paintings

The rock art of Zimbabwe exhibits distinctive styles and contents that are largely a result of the interaction between people and their natural environment, and the world beyond; characterised by the cosmology and beliefs of hunter-gatherer communities. Thus the rock art of Zimbabwe can be used to understand several aspects of prehistoric landscapes. These range from the relationships of the hunter gatherers with the natural environment, to their settlement patterns, their cosmology and their relationship with



other groups, especially the early farming communities within the same landscape and how it has shaped present day communities (Loubser & Laurens 1994:85).

A traditional interpretation of rock art emphasised the pleasure it gave to both the artists and the viewers (Burkitt 1928). The artist's response to his subject was so immediate, intuitive and personal that it allowed little conceptualisation. In another words it was 'art for art's sake' depicting human figures running, hunting, dancing, gathering food, animal resources available, plant resources exploitable in the landscape and so on.

However current thinking asserts that the art was deeply rooted in a particular culture, that of the San, and that it expresses, often in complex and indirect ways, the central perceptions, concepts and beliefs of the San (Garlake 1987). David Lewis Williams is credited for developing the latter approach. Rock paintings depict the socio-religious life or cosmology of hunter gather communities.

Therefore the rock art of Zimbabwe is conceptual and ritual rather than merely art for art's sake. Linkages between painted images and oral traditions of surviving hunter-gatherers have been established (Yates et al. 1994:29). The cosmology illustrated in the various panels, and how contemporary communities relate to this cosmology and to the places themselves, defines the significance of rock art sites.

Legislation and Rock Art Management

The Zimbabwe National Museums and Monuments (NMMZ) Act 25:11 provides for the establishment and administration of museums, preservation of ancient, historical, and natural monuments, relics and other objects of historical or scientific value or interest. The NMMZ Act has been the cornerstone for defining typologies of cultural heritage, as well as defining the management systems. Every monument or site is defined and managed on the basis of its scientific value, usually in the tangible form such as stone walls, rock paintings, Stone Age deposits and many others. However, the NMMZ Act is now being amended to include intangible and other associative values.
According to the NMMZ national monuments register there are 26 rock art sites designated as national monuments among other sites, and the rest are just ordinary monuments. The sites were declared between 1937 and 1976, when the colonial or eurocentric perception of tangible values was considered important.

The aesthetic value and threats posed by both natural and human factors were the cornerstones of these listings. After independence, no rock art sites have been declared as national monuments, except for Matobo Hills Area which was declared a World Heritage Site in 2003. However some of the rock art sites that were on the register were de-listed, largely because they have been vandalised. A classic example is that

of Makumbe cave which was de-registered as a national monument after all the paintings had been completely destroyed. All rock art sites were declared as national monuments on the basis of their "archaeological value", which was derived from the 'type of monument' i.e. archaeological monument.

This categorisation was derived from the typology of the sites. In other cases like Domboshava and Silozwane caves, reference was made to the fact that these sites are used for 'native rain making ceremonies' while for Bumboose ruins and engravings site reference was made to 'unspecified ceremonies that are held at the site'. This clearly shows that no deliberate attempt was made to identify all the possible values associated with the site and the degree to which the community values them.

Another interesting point relating to the management of rock paintings in Zimbabwe stems from the origin of the NMMZ Act 25/11. On its inception as the 1902 Ancient Monuments Protection Ordinance, it omitted the rock art sites in its definition (Ndoro 1996, 2001).

It was only through the Bushman Relics Ordinance of 1912 that this anomaly was rectified. It was in response to the exploitation of rock art sites in South Africa that was posing serious conservation threats to sites. It is against this background of imminent threats associated with developments that led to declaration of several rock art sites as national monuments in the 1930s.

Towards community participation in rock art management: the case of Zimbabwe

The history of rock art management in Zimbabwe tells an unfortunate story, mainly characterized by mixed successes. Whereas large strides have been made in the field of interpretation, neither documentation nor conservation has been developed to the same level. These have seriously lagged behind resulting in a lopsided rock art research development programme in Zimbabwe (Taruvinga 1995). The post-colonial heritage management system has thus not seriously departed from the colonial approach, as heritage institutions have continued to reinforce the conservation strategies borrowed from the colonial period. According to Pwiti & Ndoro (2001) heritage management in Southern Africa has thus "continued to reflect colonial discourse within which it was scientifically established".

Hence traditional protection strategies have not been fully recognized. It is only now that deliberate efforts are being made to address this colonial imbalance. The following case studies present the results of current efforts in empowering local communities in rock art management.

Domboshava rock art site: re-enactment of living traditions and tourism based projects

Domboshava cave (Fig. 3) lies 35 km north-east of Harare and was proclaimed a national monument in 1936, covering only one acre. This physical boundary of the site was further extended in 1996 to cover three hundred hectares. The proclaimed area now encloses rock paintings, Late Stone Age deposits, a geological tunnel which is associated with intangible values of the site (rain making ceremonies), a sacred forest, spectacular granite geological formations and a buffer zone for management purposes. The tangible heritage of the site, which comprises rock paintings and Stone Age deposits, give the site a scientific value. The site has more than 120 individual rock paintings executed in red and brown pigments. They are attributed to hunter gatherer communities. The shelter has scatters of Stone Age deposits attributed to hunter-gatherers.

Fig. 3: Domboshava Hill and its tunnel, considered to be sacred by the local communities

Domboshava cave has a tunnel that was formed through geological processes and which through time has acquired ritual significance. The tunnel is associated with a rain making ceremony which has been conducted at the site from historical times by the local community. The tunnel had been closed during the colonial period, probably leading to the repeated vandalism that has occurred at the site. The tunnel was however re-opened in 1998 after the local community held a traditional ceremony. In times of drought people made pilgrimages to the cave to perform rainmaking ceremonies (Cooke 1970; Chidziva 1964). The ceremony was held once every year before the rainy season under the guidance of the rain diviner or maker to ask for rains from the ancestors. The ceremony involved sacrificing a sheep and beer brewed under a Muhacha tree by old women who had reached menopause, and young girls who had not yet become sexually active. The sheep was suffocated and burnt at the entrance of the tunnel in the cave by the Rain Diviner (Cooke 1970).

The smoke from the offerings would move into the geological tunnel and emerge at the top of Domboshava Hill, as if through a chimney. The smoke was expected to come out through one of the tunnels. If the smoke issued out straight into the open skies, this signaled the imminence of rain and promise of a good harvest (Chidiziva 1964). If the smoke did not issue out, then the offerings had not been accepted, implying the ceremony had to be restarted again (Goodall 1959; Cooke 1970).

During this ceremony the rest of the community would be gathered in the Rambakurimwa forest chanting traditional songs of praise, anxiously waiting for the results. The Rambakurimwa (which literally means 'the unploughable') forest is heavily colonised by the Muzhanje (*Uapaca kirkiana*) trees. Naturally, such forests are considered to be home of the spirits in Zimbabwe. Therefore, from ancient times people have not been allowed to collect firewood from the forest or tamper with it any way, neither is any one allowed to construct any building in this area. Thus the site is now protected by taboos and myths associated with the landscape.

The same applies to Silozwane (Matobo Hills Area), Zombepata (northern Zimbabwe) and many other rock art sites, where rain making and other ceremonies are held. The intangible values should be crucial in assessing the significance of rock art sites for national monument status, as well as determining the stakeholders in terms of management. Reenactment of living traditions as in the case at Domboshava is a way of empowering and integrating traditional custodians in the management process thereby recognizing traditional protection systems.

The adopt-a-site programme is another approach that has been used at Domboshava. The strategy revolves around appointing the school in the vicinity of the site as the site custodian. The school undertakes the general maintenance of the site as well as utilizing it as an educational resource. In return the school gets free access to the site, and enjoys educational tours to other sites and museums during the routine holiday excursions. At Domboshava, Harare International School and other local schools have adopted the site, thereby creating a sense of ownership among future heritage managers. As part of empowering the schools and the local communities NMMZ has further provided US$2500 towards the electrification of the homesteads around the site under the Rural Electrification Programme. NMMZ has also introduced beekeeping projects at the site with the hope that part of the community will be trained in beekeeping in the near future, thereby avert the cutting down of trees within the general environment of the Domboshava area. .

Mutoko Cluster of rock art sites: economic empowerment and rural development

The Mutoko cluster of rock art sites is located almost 160 km north-east of Harare (the capital city of Zimbabwe). Mutoko

is probably the second largest area with a high concentration of rock art sites after Matobo World Heritage site in Zimbabwe. Several sites in this area are national monuments, and among them are Gambarimwe, Manemba, Ruchera and Charewa caves. Most of the sites are also associated with intangible values. However these sites are under serious threat from the extraction of black granite in the area. Black Granite is classified as a mineral in Zimbabwe, and the Mines and Minerals Act therefore governs its exploitation. In Zimbabwe, Rural District Councils (RDCs) in conjunction with the Mines Commissioner give permission/ and licenses to private companies to quarry black granite for export. In return the RDCs receive mining royalties on behalf of communities. The royalties are used to upgrade schools and clinics in the area, while roads are regularly maintained with the help of the quarrying companies. Creation of employment for local communities in the quarrying industry is another benefit. The sad story of this so called 'economic empowerment` is the wanton destruction of irreplaceable cultural resources in the name of developing rural areas through exploitation of natural resources. Though the RDC collects levies from all the quarrying companies, and members of the community are gainfully employed, 'scars' (as a result of the open quarrying methods used) now characterize the Mutoko cultural landscape. Many recorded and unconfirmed rock art sites, as well as Stone Age sites, have been destroyed, including the desecration of intangible values associated with several hills, and other places. The Environmental Impact Assessments (EIAs), which include Archaeological Impact Assessments (AIAs), were not enforced by the miners. In most cases the EIAs and AIAs are done when the mining is already underway. This is a case of a protracted community development strategy, accepted at political level, but negatively impacting on the cultural resources. It is a classic example of resource exploitation which has inadvertently destroyed the fabric of the cultural landscape.

Makumbe Cave: freedom of religion within landscapes and at sites

Makumbe cave is located north-east of Harare, in the Masembura-Chinamora area. It was declared a national monument because of its outstanding paintings. Christianity is one of the predominant religions in Zimbabwe, alongside traditional ones. But over the years several apostolic groups have been camping in the cave from time to time. In the process they have lighted fires to keep themselves warm and provide general lighting during prayers. The camping is reminiscent of the biblical prayers held in Mount Sinai, and the passing of the Ten Commandments. Inadvertently the entire panel was destroyed and obliterated by smoke. Regrettably the intangible values associated with modern religions have led to the progressive desecration of Makumbe cave. Today it is an empty cave, which has already been de-listed from the National Monuments Register.

Matobo Hills World Heritage Site: Integrated Management Planning approach

Matobo Hills Area was declared a world heritage site in 2003 under the category of cultural landscapes. The site has rock art, Stone Age and Iron Age sites, natural values, historical sites and intangible values. The intrinsic values of the Matobo Hills Area stem from the way the cultural beliefs of people (over many millennia) have been inspired by its rock formations and associated features, and by particular species of fauna and flora. It has been established through archaeological research that interaction between people and the landscape began at least 500 000 years ago. Within the last 10 000 years, rock paintings of outstanding beauty and intricate detail recorded how people obtained spiritual power from the landscape, trees, and animals such as the kudu, giraffe, elephant and termites (Matobo Hills Management Plan).

Strong religious beliefs fostered by the landscape continue to play

an important role in contemporary communities. Some of these beliefs date to at least 2000 years ago and they are manifested in natural features such as rock formations, pools, trees and certain animals which are considered to be important for rain-making, fertility, cleansing, burial, shielding and healing ceremonies. The Mwari religion, for example, regards the Matobo rocks as the seat of God and ancestral spirits. The intangible heritage associated with the shrines is one of the

most powerful living cultural traditions in Southern Africa and attracts pilgrims from all over the region (Matobo Hills Management Plan).

In recent times the synergy of landscape and beliefs has led to the choice of the Matobo Hills Area for the memorialization of historical figures such as King Mzilikazi, Cecil John Rhodes and Leander Starr Jameson, and events such as World War II, the Shangani battle and the Rhodes Indaba. The combination of the unique values of the Matobo Hills Area contributes to the economic empowerment of local communities. They generate income from employment opportunities in conservation, management, tourism and accommodation, and from selling curios. Mutual benefits such as cutting of grass in the Park for thatching and stock fodder create good relationships with local communities.

Prior to the establishment of the current management system, the management of the Matobo Cultural Landscape was fragmented according to boundaries and specific aspects and attributes of the landscape falling under respective institutions. As such institutional management plans were dovetailed to promote this individualistic management approach, resulting in duplication of certain activities, thereby wasting financial resources, creating conflicts among stakeholders, alienating local communities, and subsequently leading to uncoordinated marketing and developments in the landscape. Also there was no evaluation of the management strategies employed by the different stakeholders in the same landscape. This kind of individualistic approach does not augur well for the management of cultural landscapes, as they require holistic and integrated management approaches.

It is against this background that the stakeholders agreed to establish an Integrated Management Plan. Integrated management planning recognizes the different institutional structures and their statutory obligations, but facilitates a co-coordinated approach to the management of the Matobo Cultural Landscape. Thus, a technical committee evaluated all existing management plans relating to the site and held consultative meetings with the local communities towards building an integrated management plan that was produced with the blessing of all key stakeholders. It is now being operationalised.

During a stakeholders meeting held on 27 February 2004 at Maleme Rest Camp (Rhodes Matobo National Park), the Matobo World Heritage Site Management Committee (MMC) was established. The committee is comprised of key stakeholders of the Matobo Cultural Landscape namely; National Museums and Monuments of Zimbabwe (NMMZ), Zimbabwe Parks and Wildlife Management Authority (ZIPWA),

Zimbabwe Tourism Authority (ZTA), Mafela Trust (MT), Matobo Rural District Council (MRDC), Umzingwane Rural District Council (URDC), Chiefs Representative, Veterinary Services, Farmers Representatives

and Oral Traditions Association. ZIPWA chairs the Management Committee. The Management Committee draws its strength from the specialised expertise found within the member institutions. The fact that the Management Committee comprises all the major stakeholders makes it possible to shift away from a fragmented, to an integrated management approach.

Challenges in empowering communities in heritage management

In empowering local communities there are several challenges as already illustrated in the case studies. But glaring challenges from these case studies include:

- defining the manner in which the local communities should participate in the management process in view of the restrictive and non-encompassing legislation;
- defining who should constitute the local community (e.g. local residents, traditional custodians, politicians etc);
- recognising the diversity of the communities and how to balance their varying and sometimes divergent interests;
- balancing the use and subsequent destruction and desecration of irreplaceable cultural resource as in the case of Makumbe cave; and
- dealing with political processes that empower local communities through use of local resources, as the case of black granite quarrying in Mutoko which in the long term lead to destruction of sites.

On the other hand, dealing with conflicts arising from adoption of traditional protection system (such as restricted access, sacredness, marketing vs. desecration) is very difficult, including problems associated with resolving wrangles relating to ownership of sites using traditional systems.

Conclusion

In conclusion, risk management analysis of the recent history of several rock art sites open to the public in Zimbabwe has shown that a participatory and integrated approach is to be recommended for the management of rock art sites. Such an approach should recognize the historical factors that have marginalized local communities in the past, and aim at coordinating the roles of local communities, state institutions and various levels of government.

Properly implemented, the approach ensures sustainability because there is a shift from preservation to conservation, and above all the traditional protection systems are recognized. It also promotes the holistic preservation of the integrity and authenticity of the rock paintings, including their setting. Together these initiatives ensure efficient use of available human and financial resources towards one goal.

However it must be acknowledged that the continued isolation of local communities in rock art management is a risk as it provides opportunities for destruction.

Other challenges are the lack of adequate financial resources, lack of trained conservators and technicians, the adverse impact of tourism in the absence of visitor management and interpretative plans, impact of land resettlement programmes, and difficulties associated with resolving wrangles over site ownership. The biggest challenge is to integrate the roles of all stakeholders towards achieving a participatory management approach that preserves the integrity and authenticity of the rock paintings.

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Analysing and comparing rock art sequences in the uKha-hlamba-Drakensberg Park, KwaZulu-Natal, South Africa

Joané Swart[1]

ANALYSE ET COMPARAISON DES SÉQUENCES D'ART RUPESTRE DANS LE PARC UKHAHLAMBA-DRAKENSBERG PARK, KWAZULU-NATAL, AFRIQUE DU SUD

La méthode de la matrice Harris fut appliquée à la surimpression de peintures situées sur deux sites de la région de Drakensberg, KwaZulu-Natal, en Afrique du Sud, dénommés l'abri 8 Ngwangwane et la cave de l'éland. Cette méthode permet de travailler sur les continuités, les variations et les changements dans le temps et l'espace. L'analyse des motifs qui se dégageaient suggère qu'il y a des tendances générales dans les représentations et la surimpression de certains sujets et de certaines couleurs introduits graduellement, pouvant avoir une importance chronologique, est identifiée. Les deux séquences montrent, par exemple, que bien que les animaux apparaissent dans la phase la plus ancienne de peinture, aucune espèce spécifique, y compris les élands ne peuvent être clairement identifiés. D'autre part, les Rhebuck and therianthropes, sont représentés plus fréquemment dans les phases suivantes. Cela voudrait signifier des changements de rôles et d'importance dans les systèmes de croyance 'chasseur- cueilleur' à travers le temps.

ABSTRACT

The Harris Matrix method was applied to superimposed paintings at two rock art sites in the Drakensberg region of KwaZulu-Natal, South Africa, Ngwangwane 8 rock shelter and Eland Cave, as a contribution towards investigating continuities, variation and change over time and space. Analysis of the patterns that emerged suggests that there are general trends in the depiction and superimpositioning of certain subjects and colours, and that phases that might have chronological significance can be identified. Both sequences show, for example, that although animals appear in the oldest phase of painting, no specific species, including eland, could be positively identified. Rhebuck and therianthropes, on the other hand, are more frequently depicted in the later phases. This could suggest changing roles and significance in hunter-gatherer belief systems through time.

Introduction

Southern African rock art lacks a secure chronology. The main research focus in the past three decades was aimed at establishing an understanding of the meaning of the rock art. As a result, South Africa's wealth of ethnographic records has generated remarkable insights (e.g. Lewis-Williams 1981 and subsequent work).

There has, however, been only limited research into regional chronologies that may help to account for temporal and spatial relationships in the art. Southern African rock art therefore lacks information that would help to investigate change and continuities over time and space.

Various researchers (King 1998; Mason 1933; Pager 1971; Pearce 2002; Russell 2000; Vinnicombe 1976; Willcox 1956) have suggested sequences for painted sites in the Drakensberg region, which now falls within the uKhahlamba-Drakensberg Park (UDP); some of these are based on observation and some on formal methods. This study analyses and compares these sequences with two new sequences from Ngwangwane 8 in the southern UDP and Eland Cave in the northern UDP (Fig. 1). The analysis of the various sequences attempts to create a platform for investigating continuities, variation and change over time and space in the rock art of KwaZulu-Natal.

Ngwangwane 8 (Fig. 2) and Eland Cave's (Fig. 3) sequences were produced through the application of the Harris Matrix method. The Harris Matrix is a non-destructive relative dating technique designed to unravel complex stratigraphic relationships (Harris 1989). It is

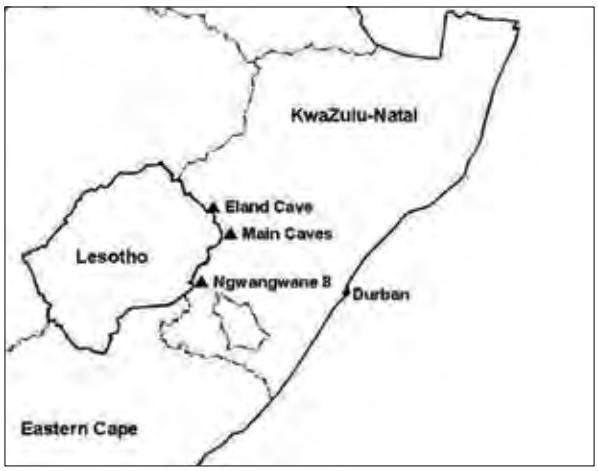

Fig. 1: Location of sites in the uKhahlamba-Drakensberg Park, KwaZulu-Natal, South Africa

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Fig. 2


Fig. 3

Fig. 2: Numbered paintings from Ngwangwane 8

Fig. 3: Numbered paintings from panel D, Eland Cave

KEY:
Subjects: human (H); animal (An); antelope (A); eland (E); therianthrope (T); hartebeest (HB); bushpig (BP); feline (F); 'winged creature' (WC); rhebuck (RH); therianthrope-rhebuck (TRH); reedbuck (RE); baboon (Ba); background (BG); stick
figure (SF).

Colours: red (R); maroon (M); black (B); white (W); red and white (RW); white and red (WR); red and fugitive white (Rfw); maroon and white (MW); white and maroon (WM); maroon and pink (MPi); orangey-red and white (oRW); orangey-red (oR); yellow and white (YW); white, maroon and red (WMR); orange and white (OW); red, orange and white (ROW); orange, red and white (ORW).

Techniques: monochrome (m); bichrome (bi); polychrome (p); blending (Bl); shading (S); foreshortening (FS).

Table 1: Suggested painting phases for Ngwangwane 8.

Phase	Subjects	Colours	**Techniques**
1	**H**,An	R, M Rfw	M ?b
2	**H**, An E	**RW**, R	b, m
	T	**MW**, MPi, RW	b, Bl
3	E (HB, RH)	RW, MW	b, S, FS
4	H	**M**, RW, MW	M B
	(E)	(RW)	B
5	RH	W, WR	m, b
6	H (E, An)	R, RW, oRW, oR (YW, WM, oR)	m, b, S
7	RH, SF	W, R	M

Table 2: Suggested painting phases for Eland Cave Z8 PB

Phase	**Subjects**		**Colours**		**Techn-iques**
1	BG, An, ?H		R		M
2	A, An		RW		B
3	A, An, BP	RH, WC	MW, R	W	b, m
4	E, H, F		WMR, MW, ROW, OW		b, p, S
5	**H**, A, E, BP		ORW, oR, RW, W, R, M		m, b, p
	H, RH		oRW, OW		B

Table 3: Suggested painting phases for Eland Cave Z8 PD.

Phase	Subjects		**Colours**		**Techn-iques**
1	H		B, M, R		M
2	E, A, An, H TRH, RE, F	RH, Ba, ?WC	**RW**, MW, R	W	m, b, Bl
3	E, A, H	WC	RW, YW, R	OW	m, b, Bl
	E, A, H		WR, YW, R		

based on the 'law of stratigraphic succession'. I use it to analyse superimposed rock art images. Each painting is viewed as the smallest stratigraphic entity and has a position in the stratigraphic sequence of a site in relation to the other units. The Harris Matrix technique produces schematic diagrams of the stratigraphic relationships of each of the images in a painted panel.

The identification of clearly defined painting phases is complicated by the degree of individual variation in the superimpositioning of images and the lack of absolute dates. The cultural, cognitive and social knowledge of individual artists influenced what images could and could not be superimposed. For example, Lewis-Williams (1974) suggested that because superimposed images from the Barkly East district followed certain rules of depiction, superimpositioning might not necessarily reflect chronological overpainting. I would nevertheless argue that although the superimpositioning reflects a chronology, it is not necessarily a chronology that can be associated with successive painting phases. There is no way of knowing how much time elapsed between painting episodes without absolute dates and some superimpositioning might have been done deliberately in the same painting phase.

The purpose of this study was to document sites with many cases of superimpositioning to see what patterns emerged. It has shown that there are general trends in the depiction and superimpositioning of certain subjects and colours, and that phases can be identified that might have chronological significance. Tables 1, 2 and 3 show the subjects, colours and techniques that have the highest frequency in each phase, or are introduced in a particular phase. Although the phases are separated by lines, it does not necessarily indicate that a subject or colour appears in one phase and disappears in the next. Subjects and colours that are particularly well-represented are shown in bold. Phase 1 in all tables represents the oldest unit painted on the rock face.

Both the Ngwangwane 8 and Eland Cave sequences show that although animals appear in the oldest phase of painting, no specific species, including eland, could be positively identified. In Tables 1 and 3 eland occur from Phase 2 onward. Rhebuck are more frequently depicted towards the end of the sequences. Therianthropes are also introduced in the later phases. This raises the question of the role played by the eland in hunter-gatherer culture during the earliest phase of the rock art tradition, and possibly suggests changing roles and significance in hunter-gatherer belief systems through time.

The colours and techniques applied at the shelters follow a similar pattern with monochrome reds and maroons being the oldest, followed by a strong introduction of red/maroon and white bichromes, ending in an array of colours and combinations with yellow and orange added to the spectrum. Shading, blending, and foreshortening techniques are applied from the middle of the sequences to the end.

All painting sequences of the UDP are similar to a certain extent. Regional sequences are based on broader observations and make integration slightly easier, but differences in categories used by various authors for the suggested sequences complicate complete integration.

The integration of rock art sequences with absolute dates is the next step towards more secure chronologies. An oxalate crust beneath a red and white eland at Main Caves in the central UDP yielded dates between 3130 and 2810 BP (one sigma) (Mazel & Watchman 2003). Since red and white eland fall into the second-oldest phase at this shelter (Russell 2000), Mazel and Watchman suggest that art in the oldest phase at least predates 2500 BP. The second-oldest phase at Eland Cave and Ngwangwane 8 also includes red and white eland.

Mazel and Watchman (2003) have other maximum dates from the central UDP associated with another red and white eland (one sigma range 2930-2810 BP), a shaded polychrome rhebuck (2410-2370 BP) and a red and white hartebeest (2390-2200BP). At Ngwangwane 8, red and white eland continue into the third-oldest phase, followed by hartebeest and rhebuck. Mazel and Watchman's dates therefore correspond well with the sequence of subject matter generated by the Harris Matrix. More site-specific absolute dating based on relative sequences is, however, necessary.

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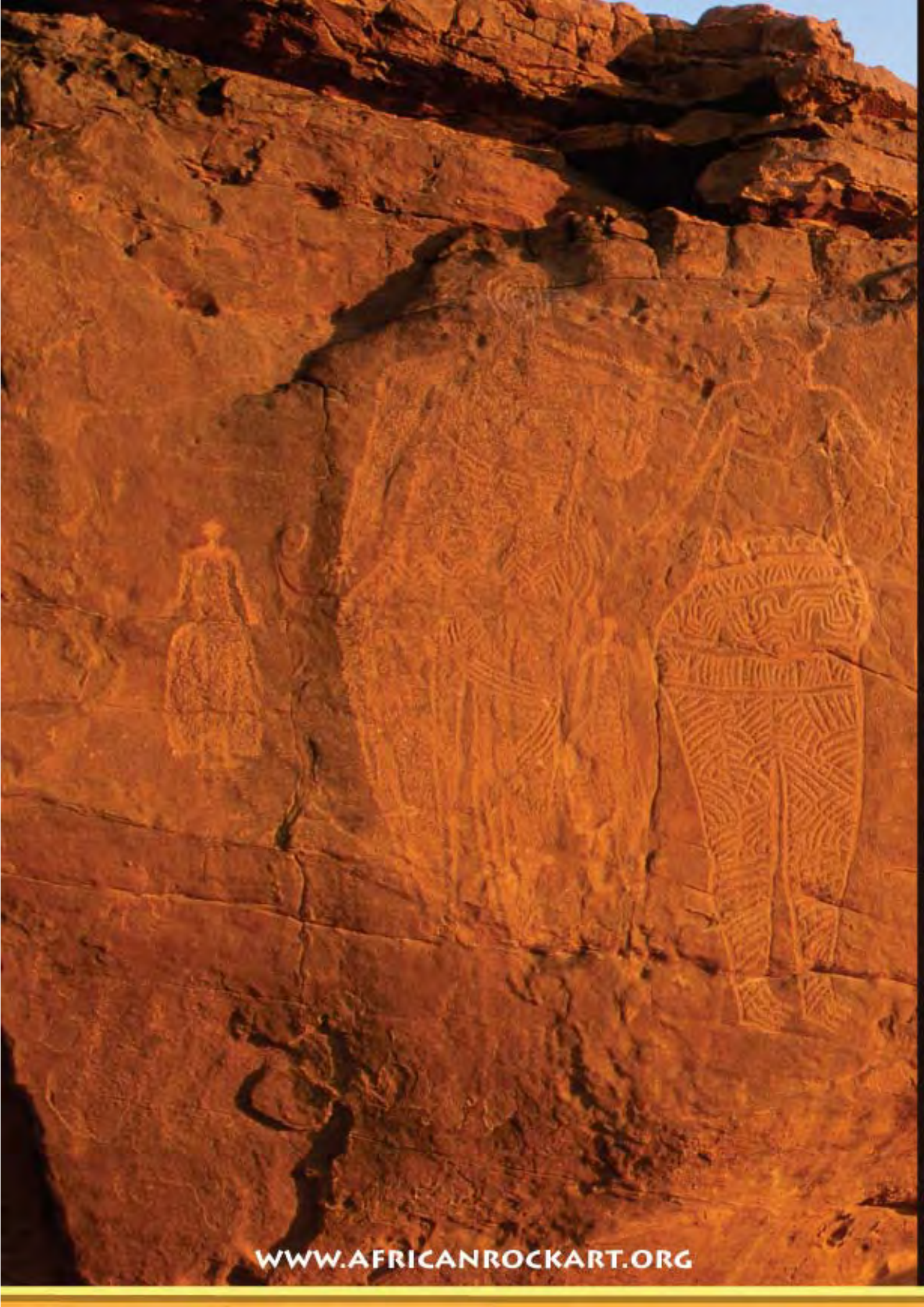

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