



EARLY IRON AGE ARTEFACTS WITH A REMAKABLE STORY ARRIVE AT WITS UNIVERSITY

Amanda Esterhuysen and Vincent Carruthers

Two large boxes of archaeological artefacts and movie footage of archaeologists at work in the 1970s recently arrived at the Archaeological Department of the University of the Witwatersrand. They were a gift from retired Prof. Dr Arnout van Genderen of Leiden University in the Netherlands and came with a remarkable story. Near the village of Broederstroom on the southern bank of Hartbeespoort Dam lies an Early Iron Age archaeological site of considerable importance. Occupation has been dated to about AD 350 and it is one of the best-preserved farming and herding settlements from that era in South Africa. Its inhabitants were among the first proto-Bantu speaking immigrants to arrive in this region, bringing with them the linguistic and cultural roots of the great majority of today's South Africans.

Unknown to archaeology before 1970, the area had coincidentally been chosen by Leiden University to erect a small observatory called the Leiden University Southern Station in 1954. From 1972 until 1978, Arnout van Genderen was one of the resident astronomers at the station. He also happened to be a competent amateur archaeologist. He and his colleagues noticed artefacts in the Observatory garden, and when he examined the terrain more closely, he recalls: 'I was quite surprised to find decorated potsherds, grindstones with narrow grooves, iron slag and remains of hut floors'. He decided to contact Revil Mason at Wits and he vividly describes Mason's reaction when he saw the artifacts.

"Do you know what you have found?" Revil asked me. "You have found the earliest potsherds of the South African Early Iron Age. I have been looking for them for 25 years and you show me a box full of

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Arnout van Genderen studying a pot from the Broederstroom Early Iron Age site in 1972

them." Then he went to the door and called loudly to his colleagues: "Hey folks, come and have a look ...!" We were now surrounded by about half a dozen enthusiastic archaeologists. I was astounded, and the very next morning I gave them a tour through the bush. That was a most exciting event for me.'

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Van Genderen still at work in 2022

Over the next few years Revil Mason excavated the site to reveal some of the earliest known instances of iron working, animal husbandry and ceremonial burial practices in South Africa. The carbon dating of material showed that the site had been occupied some 1600 years ago. This aroused considerable press attention in both the Netherlands and South Africa because it demolished one of the pillars of apartheid which held that white and black settlement of the subcontinent had taken place more or less simultaneously.

Further excavation and interpretation were undertaken by Tom Huffman two decades later. Using pottery motifs and other means, he traced the origins of the occupants back to central west Africa and showed that the central cattle pattern of settlement layout and possibly the practice of *lobola* had been established at this very early date. Sadly, however, the site was abandoned thereafter with inadequate protection.

A recent initiative by the Magaliesberg Association of Culture and Heritage (MACH) hopes to change this. In collaboration with the Tshwane University of Technology (TUT), which owns the property, and with expert assistance from archaeologists and astronomers, the project is investigating the feasibility of restoring both the Early Iron Age site and the two Leiden telescopes that are still in place.

Van Genderen's role in the story only re-emerged in 2021 when, after reading the account of the Leiden telescopes in the book, *Cradle of Life: the story of the Magaliesberg and the Cradle of Humankind*, he contacted Vincent Carruthers. A long and friendly correspondence has followed and his information and references to work done at Broederstroom have been important contributions to the MACH-TUT project. Most of the material he collected from Broederstroom was given to Revil Mason at the time of his excavation, but Van Genderen was permitted to retain certain pieces himself and it is these that he has now repatriated to the Wits collection. They hold particular significance as the first evidence of this important site to have been discovered. With the assistance of Prof. Dr Luc Amkreutz and Dr Gerrit Dusseldorp, and with funding from the Rijksmuseum

van Oudheden (National Museum of Antiquities) in Leiden, they were shipped to South Africa in January 2023.

Van Genderen's career in astronomy is part of a wider personal interest in all natural phenomena. He was brought up on a tea plantation in the Dutch East Indies and, as a six-year-old boy, he and his family were held in a Japanese internment camp during the Second World War. Here, despite appalling treatment in the camp, he first developed his life-long passion for observing, collecting and learning about every aspect of the world around him. This

was the driving force that led to the discovery of the Broederstroom Early Iron Age site.

After the war he returned to the Netherlands to study and, while he was completing his PhD, the United States and the Soviet Union entered their intense race to conquer space. Finding himself at the cutting edge of space science, Van Genderen worked frenetically at the world-famous Leiden Observatory. It is the oldest observatory in the world and has been allied with Leiden University since 1633. 'Sometimes it was 15 °C below freezing in the dome at the old observatory, but I simply wore two pairs of trousers and two jumpers and kept up my position at the telescopes.' Together with an international team of astronomers, he continues to this day to pursue his particular specialty, the study of the variable luminosity, pulsations and eruptions of Yellow Hypergiants, a rare type of very large and massive stars.

The collection of artefacts returned to Wits spans a long period. Broederstroom has become synonymous with the Early Iron Age (EIA), or early farmer settlements, but Van Genderen's collection re-emphasises the complexity of South African sites. The objects provide evidence for a long and repeated occupation dating from the Middle Stone Age (MSA) ($\pm 300\ 000$ – $30\ 000$ BP), and of a site that was occupied and visited long after the earliest farmers had settled. While a single MSA point provides clear indication of a much earlier occupation, as Van Genderen reflected in the



Link shaft and LSA tools



Typical EIA ceramics

publication of his own excavation at the site, we have no way of knowing whether the bone link shaft and finely retouched Later Stone Age tools were used by inhabitants who predated, were incorporated by, or lived alongside the first farmers. Both Van Genderen and Revil Mason reported a large number of link shafts, bone points and finely worked stone tools from excavations at the EIA site suggesting at the very least a continuation and incorporation of hunter-gatherer technologies.



Clay beads

Material collected by Van Genderen from Broederstroom contains several pieces of typical EIA pottery with everted rims and punctate and broadline incision, and includes examples of pottery and stone discs (3–5 cm in diameter). A number of these discs was excavated by Revil Mason who never speculated about their use. However, in 1993 Gavin Whitelaw



Tuyere (a pipe through which air was blown into the iron forging furnaces). Remnants of slag can be seen on the left-hand end.

postulated that discs found at the EIA site of Nanda, in the Mngeni Valley, KwaZulu-Natal, could have been game counters or ear-lobe plugs. Two differently shaped clay beads complete the collection of clay objects. These would no doubt have been common currency prior to the introduction of glass beads to southern Africa. It is possible that the shape of a clay bead conferred different status on the wearer, as is the case amongst South Sotho women today (Riep 2014). A single iron bead forms part of a small collection of metal objects that may have been iron points, arrow shafts and arm or leg bracelets.

Other items like tuyeres, grooved stones and a grindstone provide insight into the activities at Broederstroom during the early part of first millennium, including iron forging, preparing weapons, shaping ostrich eggshell beads and grinding grain (sorghum and millet), ochre or specularite.



19th century clay pipe

In the publication of his own excavation at the site under Mason's supervision, Van Genderen identified what he believed to be personal ornaments, tortoise shell fragments, cowrie and conus shells and ivory. Lastly, however, the presence of a white-clay pipe, without a spur or foot, suggests an early 19th century European import. The pipe bowl unfortunately does not have any mold or makers marks to help trace it to its source.

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SOUTH AFRICA ARCHAEOLOGY

A new understanding of human origins in Africa

In a paper published in *Nature*, an international research team led by McGill University and the University of California-Davis suggest that, based on contemporary genomic evidence from across the continent, there were humans living in different regions of Africa, migrating from one region to another and mixing with one another over a period of hundreds of thousands of years. This view runs counter to some of the dominant theories about human origins in Africa.

One theory holds that, about 150 000 years ago, there was a single central ancestral population in Africa from which other populations diverged. Another suggests that this central ancestral population was the result of the mixing of modern humans with Neanderthal-like hominins, resulting in a leap forward in human evolution, as has been suggested took place in Eurasia.

'At different times, people who embraced the classic model of a single origin for *Homo sapiens* suggested that humans first emerged in either east or southern Africa,' says Brenna Henn, a population geneticist in the Department of Anthropology and the Genome Center at the University of California-Davis. 'But it has been difficult to reconcile these theories with the limited fossil and archaeological records of human occupation from sites as far afield as Morocco, Ethiopia and South Africa, which show that *Homo sapiens* were to be found living across the continent as far back as at least 300 000 years.'

In the first systematic test of these competing anthropological models against genetic data, the team worked backwards from contemporary genomic material of 290 individuals from four geographically and genetically diverse African groups to trace the similarities and differences between the populations over the past million years and gain insight into the genetic interconnections and human evolution across the continent. The groups were the Nama (Khoesan from South Africa), the Mende (from Sierra Leone), the Gumuz (recent descendants of a hunter-gatherer group from Ethiopia), and the Amhara and Oromo (agriculturalists from eastern Africa). The researchers also included some Eurasian genetic material to include the traces of colonial incursions and mixing in Africa.

'We used a new algorithm to rapidly test hundreds of possible scenarios. Those with gene flow back and forth between populations in various parts of the continent over the course of hundreds of thousands of years provided a much better explanation of the genetic variation we see today,' adds Simon Gravel, Associate Professor in the Department of Human Genetics at McGill University. 'We wrote this

algorithm to understand how genetic disease risk varies across populations, and it led us to this deep dive into human origins. It has been really fun to tie applied and fundamental research together in this way.' Brenna Henn. 2023. *A weakly structured stem for human origins in Africa*, *Nature*. DOI: 10.1038/s41586-023-06055-y.

New R84 million dinosaur centre in Free State

A world-class Dinosaur Interpretive Centre at the Golden Gate Highlands National Park in the Free State initiated by SANParks in 2018 is nearing completion. The cost of the centre is estimated to be almost R84 million and the design is inspired by the unique scales of dinosaurs. It has been built on the only disturbed ground in the valley next to the Glen Reenen campsite. The intervention is designed to have a minimal impact on the beautiful landscape of Golden Gate. It will feature the story of the dinosaur eggs, the oldest known dinosaur nests in the world, discovered when a road was cut through the valley. The area is filled with fossils of large dinosaurs in the sandstone rock. The centre will not only be a museum but a scientific research station to preserve the remains of a rich archaeological site.

Wonderwerk Cave occupied two mya

Archaeologists have identified Wonderwerk Cave in the Kalahari Desert as the world's oldest home. New evidence has confirmed that early humans were already occupying the site 1,8 million years ago. The dates were determined by testing the cave sediments, according to a paper in *Quaternary Science Reviews* by researchers from the University of Toronto and the Hebrew University in Jerusalem.

Wonderwerk is a key site for the Early Stone Age, but archaeologists have never found human remains there. Instead, the dating was obtained by investigating the different rock layers. The cave contains traces of basal sediment, produced by retreating glaciers, which would have to have been tracked in by early humans. Measuring the magnetic signal of these ancient clay particles in 178 samples revealed the direction of the earth's magnetic field, that changes poles every half million years or so. 'Since the exact timing of these magnetic "reversals" is globally recognised, it gave us clues to the antiquity of the entire sequence of layers in the cave,' lead author Ron Shaar explained.

The two-million-year-old findings matched the results that study team member Michael Chazan reached using cosmogenic dating in 2008. Wonderwerk Cave contains ancient stone tools and the first evidence of early humans using fire around a million years ago.

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COSMIC DIFFERENCES RESOUND IN A NEW SCIENCE, KAROO AND ASTRONOMY FILM

Neil Rusch

The real mysteries of the nature of the universe are not in the places we see light but in the dark regions between the stars and the galaxies. What is visible in the night sky is a mere four per cent of what is there because the unseen cosmos, the other 96 per cent does not register on the spectrum of human vision. Radio astronomers are interested in what we cannot see, the 'stuff' we call dark matter.



Fig. 1: The Karoo radio astronomy area, proclaimed by the Astronomy Geographic Advantage Act, Act No. 21, 2007, matches almost exactly the area of !Xam-ka !au, homeland of the !Xam-speaking San and their Afrikaans-speaking descendants. Map © Neil Rusch.

In an award-winning documentary, *!Aitsa*, the director Dane Dodds explores the intellectual background and science of the Square Kilometre Array (SKA), a radio telescope (Fig. 1) currently under construction in the Karoo (Fig. 2). When fully functional, the SKA will be by far the largest telescope ever built and will be the largest science project in the world, capable of producing 'transformational science'. The results will change our understanding of the universe irrevocably.

Five years ago, I took on the role of film advisor to *!Aitsa*, working with director Dane Dodds. I saw my task as bringing into focus the hidden assumptions that must be recognised in the encounters between knowledge traditions. On one side the SKA radio telescope generates big data made comprehensible by the techniques of empirical science, machine learning, artificial intelligence and instrumentation. On the other side there is a complex cosmology embedded in the oral tradition of the !Xam-speaking San and their descendants – Afrikaans speakers who inhabit the Karoo today. In *!Aitsa*, a big effort is made to avoid modernist dualisms – mind-matter; nature-society; science-tradition; belief-knowledge; etc. It was thus deeply satisfying when comments appeared describing *!Aitsa* 'as a journey that transcends the boundaries of tradition, science and spirituality'.

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I came to *!Aitsa* having, eight years previously, helped to create *Shared Sky*, an international exhibition currently traveling to the global group of countries participating in the SKA project. Through the lens of art, *Shared Sky* celebrates the sky wisdom of the !Xam, who first inhabited the Karoo, and the Wajarri Yamaji Aboriginal people, who live in the Murchison region in Western Australia. This connection is made because the SKA telescope is under construction at both radio-silent locations.

Shared Sky was followed by *Karoo Cosmos*, a book that I was asked to design and produce, which combines ethnographic texts, academic chapters and astronomically related stories told in Afrikaans by descendant !Xam people. It was published by the South African Astronomical Observatory. Soon thereafter, in Australia, *The First Astronomers* appeared, in which it is argued that 'These living systems of knowledge challenge conventional ideas about the nature of science and the longevity of oral tradition'. *!Aitsa*, *Shared Sky* and *Karoo Cosmos* fit into this orbit of thinking. Going further, *!Aitsa* investigates a dominant predisposition that considers mythic reasoning and animistic knowledge as inherently flawed.

A poetics of relation

What I have come to understand through my own research in the fields of archaeoacoustics, rock



Fig. 2: Astronomical instruments share the landscape with stone tools and rock engravings. Image © Dane Dodds and Med_Cine.

Progress in science and technology through the 17th and 18th centuries advanced the hegemony of the philosophy of objectification and strengthened mechanistic understanding. As a conception of the universe, this viewpoint stands aloof from sensate perceptivity and the vivifying corporeal experiences of being-in-the-world. *!Aitsa* strives to express astronomy as lived-body experience: ‘When I look up into the sky and look at how my star is positioned, and look up at the star’s direction, I know which way to walk’, and ‘So it is the Milky Way (Afrikaans: *Hemelstraat*, Heaven’s road) right at the centre of a person’s spirituality (*geestelikheid*)’.

art and oral tradition is that there is a multiplicity of connections in the indigenous knowledge of the IXam. Most assuredly, their conception of the universe is deeply inflected with star-lore. Dismissing IXam cultural expression as mythological and animistic and therefore quaint is a mistake. Oral tradition creates an interwoven narrative tapestry that integrates otherwise disparate knowledge inputs. The language of animistically informed mythology contains its own logic and generates knowledge (epistemology) that takes forms that are poetical, musical and spiritual rather than discursive.

Being a person includes the sky’s things, as the IXam would say. There is no alienating distance between inner and outer, person, stars and space because the cultural understanding of reciprocities encourages ecological and cosmic connection. Knowledge comes

Mythological and animist thinking employs the logic of association and metaphor, devices that stand in contrast to the analytical ‘yes/no’ of categorisation and (mono)logical causality. Objectified, ‘things’ are cut loose from the field of animating forces. Mythological and animist thinking will always remain recalcitrant to empirical reason but therein lie its possibilities. Hence the importance of story, song, dance, ceremony, surrender and sacrifice.



Fig. 3: Ashwill van Wyk, face-to-face with an eland. © Dane Dodds and Med_Cine.

The eland antelope that appears in *!Aitsa* is not a fantasy in a world that is enlivened by animating agencies. Instead, the eland projects a presence that compels us to consider the importance of relationship and relatedness (Fig. 3). ‘The tears run, the tears run. We must talk about this, what are the eland’s tears?’ The eland invites us to revisit our essential humanity and reconsider IXam culture in which there exists a vital ecology of reciprocating animacies: ‘The eland knew what the eland was for the people’.



Fig. 4: Land alienation, visually conveyed by depictions of fences and separation. © Dane Dodds and Med_Cine.



Fig. 5: Ashwill van Wyk gonging a dolerite rock as his ancestors did in the Karoo.
© Dane Dodds and Med_Cine.

from the wings that grow when the healing circle begins to clap and chant. Transformed, the dancer becomes physically light: 'You are no longer on Mother Earth. You begin to soar. Your mind is open (Afikaans: *Jou kop is oop*), you see everything, you understand everything. What is spoken to you, you will never forget.' There is knowledge we can feel, knowledge we can sense.

The instruments of science at best deliver facts and innovation, but there are societal entanglements and colonial dynamics in addition. These are part of the intellectual history of scientific endeavour. Notably, these issues and their trajectory are voiced by Russ Taylor, director of the Inter-university Institute for Data Intensive Astronomy (IDIA). He says in the film: 'Seventy thousand years ago some of us left Africa and now we have come back to our origins. That journey out of Africa has taken us on a different trajectory. We've come to a place where our approach to understanding the universe is an empirical one. We ask questions and we design experiments that will tell us whether our questions are correct. It is a more empirical, technologically driven approach to understanding.'

!Aitsa questions the knowledge economy and the dominant structures of knowledge creation. This line of inquiry was possible because the film was lucky to find impartial foreign funding. Financial independence allows the director to explore viewpoints free from a science-centric orientation (but does not exclude hard science). Indignant voices in the film express most forcefully the abiding exclusionary realities, amongst which are scientific inheritance, colonial legacy and land alienation. 'What are they looking for up there – Mother Mary?' and 'We were pushed down and told, this area is yours and no more. They put up fences' (Fig. 4). These sentiments could not be excluded from *!Aitsa* because present-day discourse is nothing without these voices.

What next?

In 2024 *!Aitsa* will go on a road trip, visiting remote places in the Karoo and the Cederberg where the film will be screened to audiences who do not have the means for or access to cinemas. When we find a way, the film will travel to the land of Songlines so that Aboriginal people can see, listen and connect with their counterparts in the Karoo. Nurturing a counter-narrative is paramount to survival strategies in an age that is progressively dominated by digital and automated knowledge. Endorsement for a

multiple evidence-based approach is encapsulated in Unesco's 'Memory of the World' Register for Documentary Heritage, which enshrines !Xam knowledge; knowledge that is fundamental to 'one of the longest persisting approaches to sustaining human life on the planet'. Mythology imbued with animism matters as a way of being-in-the-world because it influenced our capacity as a species to survive and prosper.

What was not possible in *Karoo Cosmos* and *Shared Sky* is the *!Aitsa* soundscape that draws on Simon Kohler's musical creativity and the archaeoacoustic research I have done on lithophones (Fig. 5). Sound is the most ephemeral and transitory of presences, but in the film it is a thread linking voices and images, past and present (Fig. 6). Sound touches, knowledge teaches, but what? The concept of 'applied history' and 'living pasts' are promising models for probing the dark places of the Karoo and are particularly applicable to addressing the issues of cultural appropriation, (mis)representation, restitution and entity. Behind applied history and living pasts stands the idea that transformation in the present can be affected by evidence from the past.



Fig. 6: Laurence Rathenham, custodian of the Nelspoort rock art site, lends a compelling voice to the film. © Dane Dodds and Med_Cine.

ARCHAEOLOGY IN BRIEF

Khoi and San heritage route team appointed

A steering committee to drive and implement the development of the National Khoi and San Heritage Route was appointed in June 2021. The route aims to identify, conserve, map and promote the heritage of the Khoi, Nama, Griekwa, Khorana and San through the identification and promotion of significant sites. The steering committee includes representation from the Departments of Traditional Affairs; Environmental Affairs, Fisheries and Forestry; and Tourism; and the South African Heritage Resources Agency. The development of the route is based on study by Eco Africa. A wide range of relevant heritage and historical, archaeological and paleontological sites were identified throughout the country and assessed. It is envisaged that the route will, besides the heritage sites, include various other project elements pertaining to Khoisan heritage (tangible and intangible), indigenous knowledge systems, language and culture. Apart from this route, the Department of Sport, Arts and Culture will also work on the construction of a Sarah Bartmann Centre of Remembrance in Hankey in the Eastern Cape and the development of policy on the repatriation and restitution of human remains and heritage objects.

SAnews.gov.za, 26/06/21

Pueblo blankets contained 11 200 turkey feathers

Indigenous Pueblo populations in the American south-west typically wove blankets, cloaks and funeral wrappings out of animal hides, furs and turkey feathers. Anthropologists at Washington State University (WSU) have determined that two ancient turkey-feather blankets required 11 500 feathers, wrapped around nearly 200 yards of yucca fibre, according to a study published in the *Journal of Archaeological Science: Reports*. The blankets date to the early 12th century. The researchers estimated how many adult turkeys would be needed to provide 11 500 or so feathers as the insulating medium. A turkey pelt typically yields a little over 2 700 feathers of which 1 200 are of the right size. The feathers of between nine and ten adult birds may thus have been needed for one blanket. The most likely practice for collecting feathers was to selectively pluck them from live birds. Turkey feathers probably began to replace strips of rabbit skin used sometime during the first two centuries BC. 'As ancestral Pueblo farming populations flourished, many thousands of feather blankets would likely have been in circulation. Reverence for turkeys and their feathers is still evident today in Pueblo dances and rituals,' said Bill Lipe, emeritus professor of anthropology at WSU.

Archeology E-Gram, USA

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'Morphic Wonder' by Robert Koch

Oil on canvas 120 cm x 91 cm

Light is Robert Koch's medium and the African landscape his canvas. Seasonal rains transform the veld bringing abundance. Looking at his paintings you can 'smell the rain' or the dust on a hot dry day or the sea on a misty morning. His knowledge of light and chiaroscuro allow viewers to share the immediacy of this experience. There is a mobile, cinematic quality to his impressionistic paintings.

THE BONNE SAISON HYPOTHESIS AND PREHISTORIC EUROPEAN ART

A preliminary study of mammoths represented at Rouffignac Cave

Francis Thackeray

In the context of Upper Palaeolithic European art, Bacon et al. (2022) propose a *Bonne Saison* Hypothesis (BSH) where the BS refers to the period after winter, towards the beginning of spring, when the landscape's productivity is restored and the urge for animals to mate is stimulated. They suggest that at the beginning of this period, prehistoric artists started to count lunar months, marking images of animals (painted or engraved) with a corresponding number of lines or dots in relation to an event such as mating. Three marks, for example, would refer to the initiation of mating three months after the start of the *bonne saison*. According to the hypothesis, there would be an expectation that 'peaks in the number of marks associated with each taxon should not be randomly distributed, but should be clearly patterned'. In the preliminary exploratory study presented here, I assess this hypothesis with regard to some of the mammoths represented at Rouffignac Cave in the Dordogne area of south-western France (c. 13 000 BP), an example of which is shown alongside. For purposes of an initial study, I refer to the catalogue numbers of a sample of mammoths studied by Barrière (1982). The lines within each body are counted for anterior, central or posterior concentrations.

Mammoth 43, 6 lines within body, central
Mammoth 44, 3 lines within body, central
Mammoth 45, 2 lines within body, anterior
Mammoth 107, 7 lines within body, central
Mammoth 107, 2 lines within body, posterior
Mammoth 122, 5 lines within body, anterior
Mammoth 123, 5 lines within body, anterior
Patriarch, 12 lines within body, central
Patriarch, 1 line within body, posterior

Conclusions

In this study, the number of lines within each mammoth is found to be randomly variable. This is inconsistent with the BSH with regard to the following expectation (Bacon et al. 2022): '*That the peaks in the number of marks associated with each taxon should not be randomly distributed, but should be clearly patterned*'.

Two mammoths (122 and 123) display five lines within each body, engraved in the same relative

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position, such that a deliberate association between the animal and marks can be inferred. If it is assumed that such lines within a mammoth do indeed reflect a deliberate association, Bacon et al. (2022) would anticipate that the five lines on mammoths 122 and 123 correspond to mating five months after the start of the year. However, the fact that the number of lines for other mammoths from Rouffignac are 1, 2, 3, 6, 7 and 12 does not support the BSH.

The question arises as to whether alternative hypotheses can be found to explain Rouffignac mammoths with lines painted or engraved within them. Perhaps at least some of them may be understood in the context of the principle of so-called 'sympathetic hunting magic' (SHM) explored by Reinach (1903) in relation to Upper Palaeolithic art in Europe (UPAE).



Mammoth 107 at Rouffignac Cave

The SHM hypothesis would typically state that images of animals were 'wounded' and 'killed' by hunters prior to a hunt, in the belief that this would promote hunting success. Lines within the bodies of animals would represent symbolic wounds. In his pioneering study, Reinach (1903) tried to use an ethnographic analogy from Australia to support his case that the principle of sympathetic magic might apply to UPAE. In an African context, there is evidence for that principle, as has been cited in the context of several examples of southern African art (Thackeray, 2005a–c, 2006, 2013, 2019a&b, 2020; Thackeray and Le Quellec, 2007). In particular, I have examined a painting of an elephant in the Congo Caves. It was seen by Henri Breuil on one of his visits to South Africa (Thackeray and Gerstner 2008). The elephant is associated with an image of a hippotragine antelope and a set of

lines apparently associated with both animals has been interpreted in the context of symbolic wounds (Thackeray 2019c).

Prehistoric art in Europe and Africa can be interpreted independently, but at least we can claim that there is strong ethnographic evidence for the principle of SHM in southern Africa (Thackeray 2005a). I recommend that (further to this study) this principle should not be discounted in the context of linear markings on animals in some prehistoric paintings and engravings, in both Europe and Africa.

Bacon et al. (2022) claim from their assessment of the *Bonne Saison* Hypothesis that it 'gives us our first specific reading of European Upper Palaeolithic communication, the first known writing in the history of *Homo sapiens*'. This bold claim can be tested using larger samples of mammoths and other animals, not only those from Rouffignac but also from elsewhere in Europe.

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WORLD'S OLDEST GLACIERS ARE BURIED UNDER SOUTH AFRICA

Beneath South Africa's north-eastern goldfields, at more than 4,8 km underground, lies a geological treasure from deep time: layers of rock that provide evidence of the earth's earliest deep freeze. According to a paper in *Geochemical Perspectives Letters*, these rocks hold multiple clues to the world's oldest glaciers, sheets of ice that covered the area 2,9 billion years ago. Today, the longest-lived glaciers in the world are found in Antarctica's dry valleys. These are around a million years old, although at least one, buried under thick sediment, may be up to eight times as old. But that old frozen water is a drop in the bucket compared to the longevity of glaciers during the Huronian, a period also called 'Snowball Earth'.

The Huronian glaciation was, until the recent South African discovery, the earth's oldest known ice age, a period beginning about 2,45 billion years ago that lasted more than 200 million years. While there were some fluctuations in climate during the Huronian, including relatively warm and humid periods, there were several global big chills that lasted 10 million years or more. The discovery in South Africa at field sites near the border of Eswatini reveals that

the earth's earliest glaciers formed about half a billion years before the Huronian. Not much is known about this period when the planet was about 1,6 billion years old but already home to microbial life forms, including some of the first multicellular organisms. More complex life would not evolve until more than a billion years later.

The researchers analysed levels of oxygen isotopes trapped in the rock strata and identified the specific geochemical signature of an icy climate. Within the layers they also documented the planet's oldest-known moraine, the debris left behind as glaciers melt and shrink. The moraine and other evidence have been preserved for nearly three billion years because they sit on the Kaapvaal Craton, one of the oldest surviving chunks of continental crust lying beneath much of South Africa. It began forming around 3,7 billion years ago and may have been part of the earth's first continent, along with Australia's Pilbara Craton. The researchers believe the area where they found the moraine may have been close to a pole and part of an ice cap before it slid to its current spot.

Gemma Tarlach, 12/07/2023

THIN RED LINES SYMBOLISING AIR, SOUND AND *N|OM* ENERGY

Andrew Paterson

Enigmatic thin red lines in southern San rock art have attracted the attention of researchers over the past 50 years. It was first suggested by David Lewis-Williams (1981) that these lines be called *!gi*: lines, which 'symbolise the elusive concept of potency that is paramount to the San religion and ritual. In reaching this conclusion I have tried to show that there is a concordance between the ethnography, properly understood, and the paintings' (Lewis-Williams 1981:13).

The concept of a potency paramount to the San religion had been proposed by Lorna Marshall 30 years earlier, in her ethnographic research among the Nyae Nyae !Kung in Botswana between 1951 and 1953. According to her, the Nyae Nyae !Kung conceive of the cosmos as having three layers: the earth as the people see and walk upon; the sky that contains the sun, moon, stars, rain, lightning and wind; and above that sky another sky, which cannot be seen from earth. The earth and sky of the sun, moon, stars belong to the natural world. The sky above the natural sky belongs to the supernatural world, which is where God and the other sky beings live (Marshall 1999:3).

One important aspect of the San's cosmos, according to Marshall, and relevant to this article, is that the natural and supernatural are one reality to the !Kung. They do not believe in an underworld; nor do they believe that supernatural beings of any kind live inside the earth (Marshall 1999:3). The strongest, clearest beliefs in the supernatural are the beliefs about *n|um* and about God. These beliefs constantly influence the daily beliefs of the Nyae Nyae !Kung (Marshall 1999: xxxvii).

Lewis-Williams (1981) recognised that the X/am notion of supernatural potency was denoted by the word *!gi*: and that the !Kung notion of supernatural potency was denoted by the word *n|um*. He concluded that X/am and !Kung beliefs about potency were very similar, and went on to describe some of the key metaphors of the potency that, he argued, the southern San artists translated into graphic symbols, such as thin red lines.

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Recent ethnographic records

In this article I will attempt to enhance our understanding of the San's thin red lines by using the research of Bradford and Hillary Keeney, who recorded and worked with the San in their research between 1991 and 2012 during 38 field trips. Their recorded San ethnography came from 13 San elders, each of whom was an acknowledged San healer or *n|om-kxao*. Their book, *Way of the Bushman as Told by the Elders* (Keeney and Keeney 2015), describes the spiritual teachings and the practices of the Ju|'hoansi Bushmen located in the Nyae Nyae area of north-eastern Namibia.

According to their introduction: 'The Bushman elders gave full permission to publish our work and acknowledged that it was not an idiosyncratic perspective on Bushman ways, but was representative of how Bushman spiritual and traditional teachings were portrayed by their parents, grandparents and other elders that they had closely known' (p. xx). 'This spiritual text is a testament to what may be the earliest form of healing and spirituality as the Bushmen of South Africa comprise the oldest living culture, and their "click" language the earliest form of language' (p. ix). There are at least 15 San paintings in the Cederberg that incorporate sets of two long thin parallel red lines called either ropes, threads or strings by the San. I will examine eight of these paintings in the context of the Keeney ethnography.

The San spirituality and *n|om*

According to the Keeney and Keeney, 'the core of San Bushman spirituality is the primary importance that they attach to the love that they have for the Sky God'. (p. xiii). 'The way of the Bushman flows top-down from the Sky God to the dance ground. Finding a rope that connects you to the Sky God enables you to receive spiritual gifts from song and dance and even guidance in the hunt. The Bushman secret is that they are guided by the pulling of their ropes.' (p. xxiv). 'Making one's rope to God strong is the most direct way to strengthening all the ropes. In this way a Bushman *n|om-kxao* awakens *n|om* to heal everything – a sick person, the whole community and the entire fabric of nature' (p. xxvi).

'*N|om* is a non-subtle vibratory life force that comes directly from God, recognised by the Bushmen to animate all living things and to be the source of all inspired energy' (p. 213). 'Bushman *n|om-kxao*

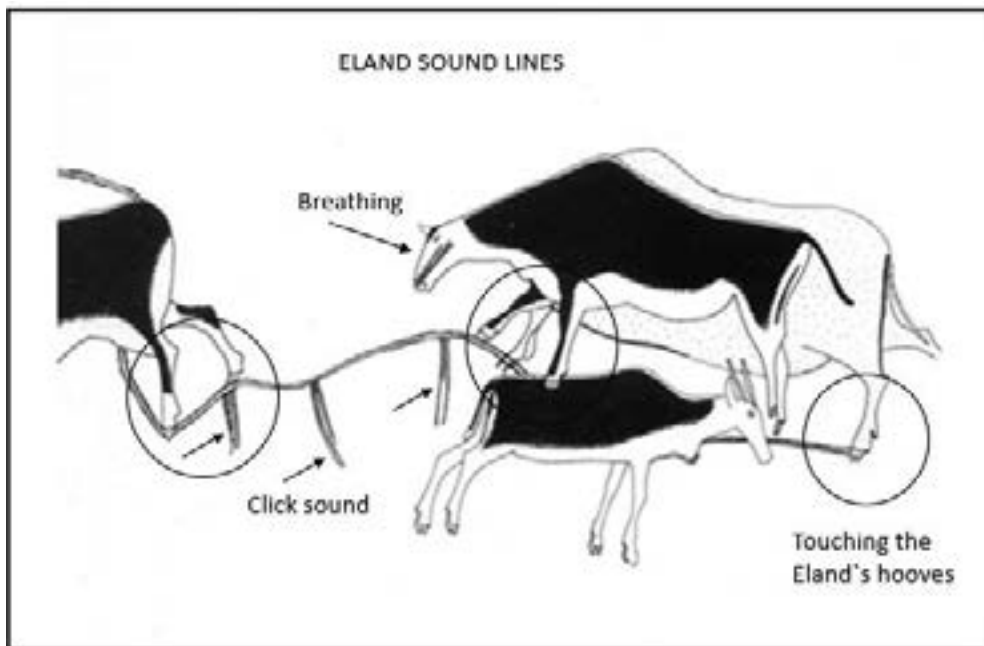


Fig. 1: Eland from an Eastern Cape panel with lines symbolising eland sound

observable ways in which the San linked non-real images to realistic images and cites a painting from an Eastern Cape panel with four eland connected by 'threads of light' (Fig. 1). 'Importantly,' he continues, 'the "threads" enter and leave otherwise completely realistic depictions of antelope or connect them in other ways, such as by wrapping around their legs. These "threads" imply that the antelope, despite their apparent reality, are in fact

become owners of the *n|om*, meaning they "own the feeling" for *n|om*, and it is the *n|om-kxaosi* who share it with others. The Bushmen's most valued form of experience, knowledge and teaching is somatically held; the movements and sensations of the body in relationship and interaction with others constitute their way of knowing and being. They are a dancing culture' (p. xxviii). 'The Bushmen teach that there is no experience of healing and spirituality without *n|om*' (p. xxi).

'To the Bushmen, nature is seen as a web of interconnected rope, strings and threads. Hunters are connected to eland and other animals by ropes, and gatherers are connected to the plants they collect by similar ropes. Furthermore, human beings are connected to one another through these ropes. For the Bushmen, the web of nature is literal, and in an awakened state a *n|om-kxao* may see the world as a giant spider web. Empowering a rope can send *n|om* throughout the entire weave and thereby contribute to the wellness of the whole ecology' (p. xxvi).

Real or non-real

The central issue regarding understanding thin red lines is the following: do the San images and symbols represent something that is real or non-real? Lewis-Williams suggests that 'Many of these San images imply that we should not take San depictions at face value – or at what we may erroneously think is face value. The ways in which images are placed relative to one another and the meaningful "veil" suggests that we are looking at complex blends of (apparent) reality and (indisputable) non-reality' (Lewis-Williams 2011:19).

Lewis-Williams also suggests that there are readily

in a spiritual context. The implication is that all these seemingly real animals are coming from the spiritual realm that the San believed lay behind the rock face, a "veil" between this world and the spirit realm' (p. 15).

I feel that it could be reasonably argued that the painting depicted in Fig. 1 could be interpreted from a completely different perspective. I accept that the eland have been drawn by the artist in a remarkably realistic manner, but the thin red lines, although symbolic, have also been drawn to represent something totally normal and realistic.

The parallel thin red lines have been drawn in such a manner that they precisely touch the hooves and connect three of the eland. The artist has also painted three short vertical sets of lines, at regular intervals, touching the longer horizontal line passing over the hooves. I feel that it is quite plausible to interpret these lines as being a symbolic rendition of a realistic 'clicking sound' that all eland make when walking. Every San hunter/gatherer/artist would have known and recognised this totally unique sound.

The importance of this eland clicking sound to the San is vividly illustrated in the ethnography of the women's ritual behaviour at the time of a young girl's first menstruation when the eland dance is performed. The people sing, dance and 'click' together the iron tips of axes, simulating the eland's clicking sound (Keeney and Keeney 2015:126).

The lines, although symbolic, as one cannot see sound, are an excellent rendition of something that existed. I would also argue that the lines emanating from the eland's nose could be the air that it is

breathing. There does not appear to be anything supernatural or spiritual about the four eland (Fig.1).

Lewis-Williams suggests that the thin red lines on the one eland's face are 'blood lines' and that the 'thread' also appears to bleed (Fig.1) (Lewis-Williams 2011:15). It is suggested that all these seemingly real animals are coming from the spirit realm that the San believed lay behind the rock face, a 'veil' between this world and the next (p.19). All these supernatural interpretations behind the rock would seem to contradict the statement by Lorna Marshall quoted above that 'The natural and supernatural are one reality to the !Kung. They do not believe in an underworld; nor do they believe that supernatural beings of any kind live inside the earth' (Marshall 1999:3).

Ropes, air, sound and oxygen

There is no doubt that air and oxygen exist in our atmosphere and that they are real. The first question is whether the San knew that air and oxygen existed, and did they regard these as real? I believe they did since they had concepts and names for air (*n|huin*) and energy (*n|om*). The second question is whether the San knew the purpose and importance of air and oxygen? Again, I believe they did. The San believed that for 'life to exist' they must have first and second creation going back and forth. They referred to this back-and-forth movement as being similar to breathing (Keeney 2015:104).

We know from their vocabulary that the San associated breathing air directly with their 'living self'. For example, they have words like *kxae |xoa* - soul (the living self with its memory); *n|huin* - spirit (breath); *n|nuin n`ang* - breathing the soul back in; *G!xa maq* - breathing out the soul. We also know that they have words describing a form of vibrant energy that equates to oxygen, called *n|om* - the vibratory life force that comes directly from God, recognised by the Bushmen to animate all living beings and to be the source of all inspired energy; and that this energy was associated with ropes, for example *tau*, which is a *n|om* string (Keeney and Keeney 2015:208-215).

I feel that we should not consider the thin red lines as being symbolic of simply supernatural ropes to God, but as symbolic of something totally natural and ubiquitous, such as air. Air is still connected to God via the atmosphere in the sky. Air allows us to connect these ropes to the vibrating sounds that the San make themselves by talking, telling stories, laughing and singing. Air connects the San to the sounds that

all the animals and birds make, as well as to other sounds in nature such as wind, rain and thunder. Most importantly, since air is made of 78 per cent nitrogen and 21 per cent oxygen, in my opinion we should consider the oxygen component in the air as the source of vibrant energy that the San call *n|om*. Oxygen makes organisms grow, reproduce and turn food into energy. Oxygen gives our cells the ability to break down food and provide the energy the San needed to paint, hunt, gather, sing, dance and survive.

Ropes and *n|om* in paintings

If what the San elders have conveyed to the Keeney's regarding ropes and *n|om* is true, and that the proposal that thin red lines could be interpreted as air, and its associated *n|om* energy, then we should be able to find evidence of these collective San cultural concepts in the more than 15 Cederberg San paintings that display two thin red parallel lines in their compositions. I have assumed that the two thin red parallel lines are symbolic of air for the simple reason that all humans and animals have two nasal passages through which the air moves during breathing.

There is a San painting, at a site called Brakfontein, with seven 'hook' heads facing in various directions, all connected by sets of thin parallel red lines (Fig. 2a). As described in the ethnography above, the San believe that all people are literally connected to one another by ropes, strings or threads, like a giant spider web, and that empowering a rope sends *n|om* through the entire web. I interpret this painting

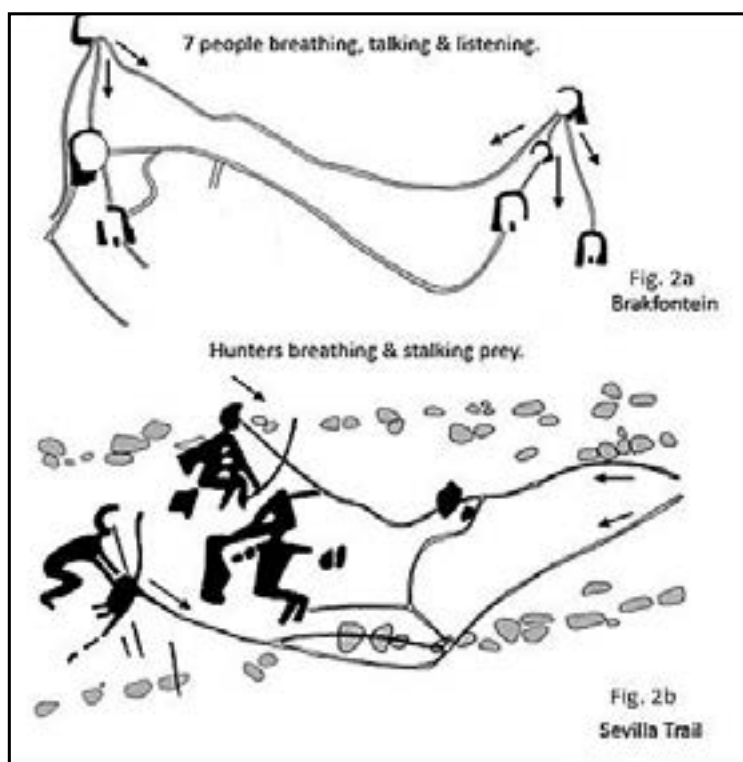


Fig. 2a: Ropes connecting the San to one another. Fig. 2b: Ropes connecting them to their prey.

to show that the group of people are communicating with one another, with sound flowing back and forth in both directions.

Speech, as we know it, occurs when air flows from the lungs and through the voice box or larynx. This causes the vocal chords to vibrate, creating sound, which is then shaped into words by the muscles controlling the soft palate, tongue and lips. The San belief that talking, storytelling, laughing and singing all produce a powerful *n|om*, suggests that *n|om* is being carried in the vibrating ropes of air connecting all the people in Fig. 2a.

Another painting at a site on the Sevilla Trail (Fig. 2b) illustrates the San's concept of connectivity to all living animals in their ecosystem. In this painting two San hunters are connected to a set of thin red parallel lines. The lower figure in the painting has a set of very delicate lines running from his face down to his hands that are holding a drawn bow. The lines run through the bow, out along the arrow and then stretch almost a meter out in front of the hunter. A similar set of delicate lines extend out from the face of the hunter above him. and these lines ultimately converge and

connect at a point in front of both of them (Fig. 2b).

We know from the ethnography quoted above that when the hunter goes looking for an eland, he sings the eland song. It helps him feel a relationship with the eland. For a strong hunter, the relationship is dreamed and later regarded as a rope connecting him to the eland. The San believe that God gives the hunters guidance in the hunt and that the secret to being a good hunter is this guidance provided by the 'pulling of their ropes'.

There are two additional and very important, and well-known paintings in the Sevilla/Bushmanskloof area of the Cederberg with thin parallel red lines. One is a conflict scene called 'Veg en Vlug' (Fight and Flight) (Fig. 3a); the other is a death scene at a site called Rooigang (Fig. 3b). In both paintings the thin red lines can also be regarded as lines of air carrying *n|om* energy. At the centre of the painting is a 'conflict scene' with a group of at least seven San figures (1) tightly packed into a shelter with their backs to the wall. Facing them directly, is another group of at least five figures (2). Both groups are shooting at one another with what is assumed to be poisoned arrows. A third group (3) is running away from the shelter,

while a single figure (4) is lying motionless on his back. There are more figures to the left of this conflict scene.

The most interesting aspect of this painting is that fine red parallel lines connect all the figures in the painting to one another. In the case of the dominant figure in the shelter (1), who has a drawn bow and is shooting arrows at the attackers, a set of lines run from his face, touch his bow and connect to a set of lines that run below the feet of the attackers. This painting shows that even in a confrontational situation the San figures are all connected by the vital energy of *n|om*. The running figures (3) could well be wounded but are still able to run away, whereas the prone figure (4)

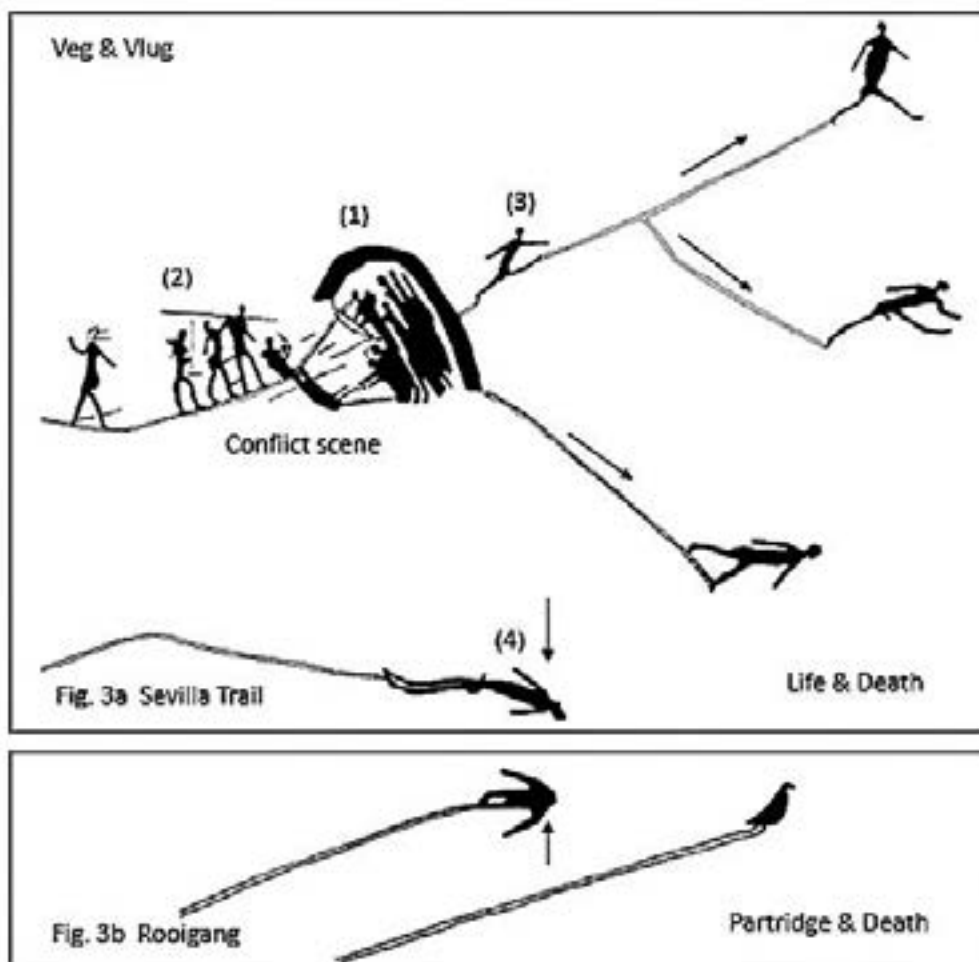


Fig. 3a: Conflict scene with fleeing and dying figures. Fig. 3b: Dead figure and live partridge.

is either dead or dying. The San would have known that any individual, being struck by a poison arrow, would have died within minutes or hours. The painting could therefore be a rendition of not only 'Fight and Flight' but also 'Life and Death'.

The other painting at a site called Rooigang, 2 km to the east of Veg en Vlug (Fig. 3b), shows a prone figure, either dying or dead, and a small running bird below it. Both figures have thin red lines touching their feet. The bird has been identified as a partridge.

According to ethnography, the San have a *n|om* song called *ka te te*, which is called the song of the redwing partridge. According to the San, the redwing partridge is most strongly tabooed as food and may never be eaten. The song was composed by a man who heard a redwing partridge making a sound in the evening and knew that the sound foretold a misfortune or death (Marshall-Thomas 1958:220).

There is a painting (Fig. 4a) associated with thin red lines at a site called Kriedouwkrans. The most interesting aspect of these lines is that they emanate from the faces of 20 sleeping San figures wrapped in karosses. The important point of this painting is that the figures are portrayed by the artist as being *alive* and breathing *air* while being *asleep*. Again, this is something that would have been totally obvious and normal to the San as they associated *n|om* with breathing and snoring.

On the other hand, the painting shown in Fig. 4b shows some 19 San figures walking, dancing and singing on a single set of thin red parallel lines at a site called Upper Biedouw. The figures are arranged in three groups. The front and back groups of figures are tightly packed together, touching one another, while the central figures are loosely arranged facing the two groups. A flow of thin red parallel lines follows the flow of the figures and is considered to be part of the same composition. Once again, the lines are

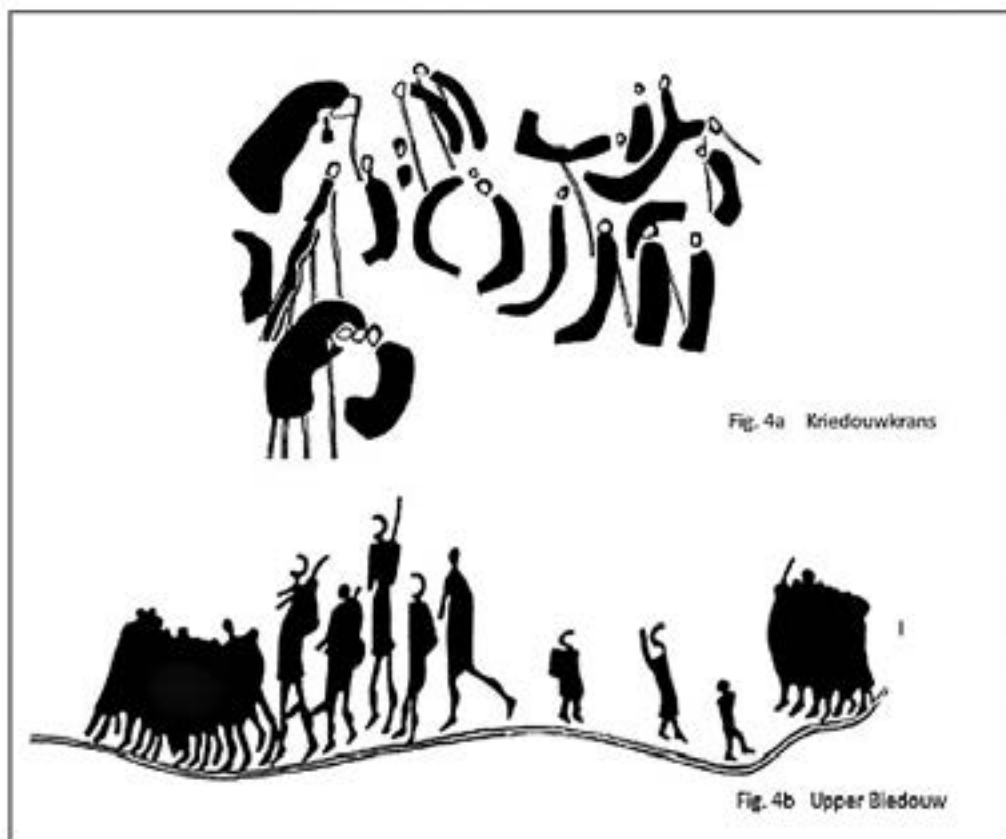


Fig.4a: Lines associated with sleeping figures. 4b: Lines associated with figures walking, singing and dancing.

thought to be 'ropes' of air connecting and energising all the participants with *n|om* energy.

Finally, there is a painting with a set of thin red parallel lines at a site on the banks of the Olifants River called Groothexrivier downstream from Citrusdal (Fig. 5). It has been suggested that this painting is of a San male *Tshoma* initiation ceremony. (Paterson 2020). The 11 dancing male figures on the left of this painting have thin red parallel lines coming down from their faces and connecting to a horizontal set of lines at their feet. These horizontal lines extend to the right and connect to the feet of two standing San mentors and a group of 11 young San male initiates lying randomly distributed on the ground in front of them. The lines connect to the hands and feet of all the male initiates lying in an altered state of consciousness or profound stupor, which is associated with their transition from boys to adult men. The lines are also connected to two eland torsos below them. The lines connecting all the figures in the painting are considered to be lines of air carrying the vibrant *n|om* energy from God, animating all San people. The artist has used the lines to illustrate that the initiates lying on the ground are still breathing.

Conclusion

In this article we have dealt with eight San paintings in the Cederberg displaying two thin red parallel lines symbolising ropes of air carrying *n|om* energy or

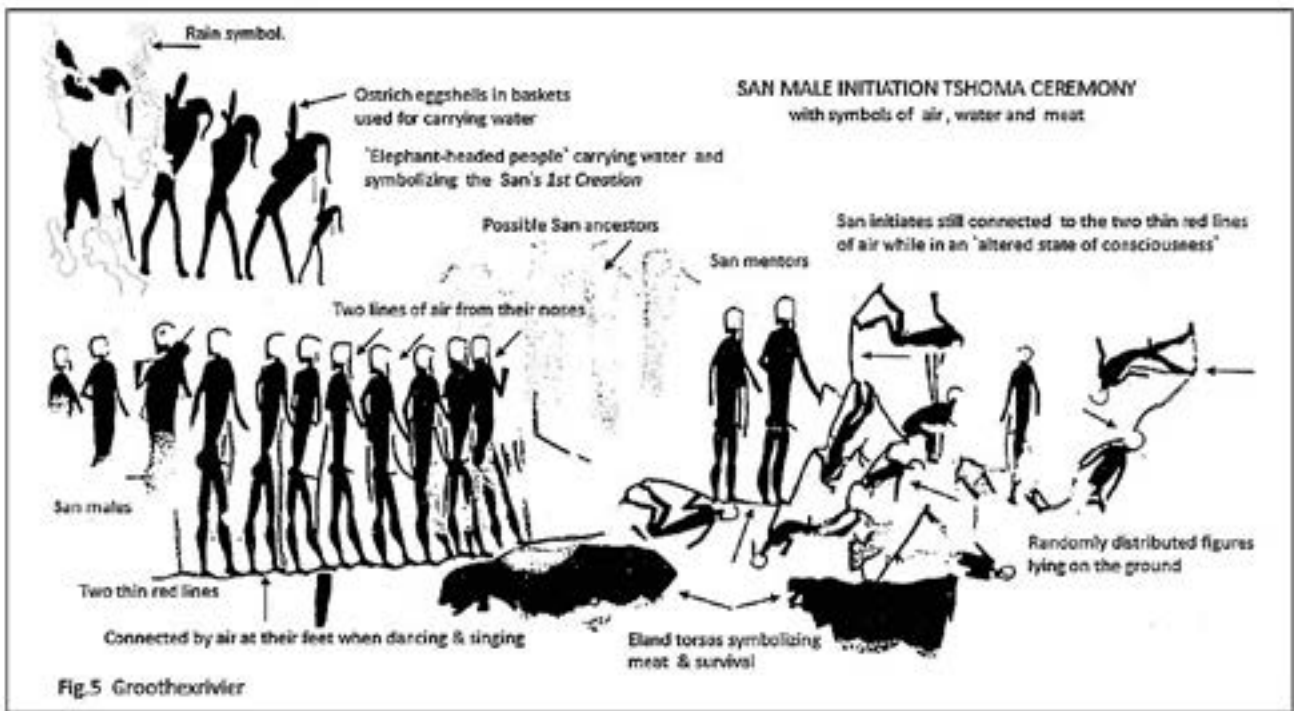


Fig. 5: Male initiation ceremony with two thin red lines of air and oxygen connecting all figures

oxygen, empowering the San's daily lives in various natural, real activities, such as talking and hunting, sleeping and walking, singing, dancing, initiation ceremonies, conflict, life and death.

I propose that the San's concepts of ropes and *n|om* need not be attributed to some 'supernatural force' beyond scientific understanding, or the laws of nature. According to Lorna Marshall 1999, the natural and supernatural are one reality to the !Kung. It would seem more reasonable to interpret the long thin red parallel lines in the rock art of the Cederberg as being ropes of air that carry sound and oxygen, the vital life force the San call *n|om*, which is necessary to produce the energy needed for their existence and survival. The ropes are not only ropes to God but they are also ropes connecting the San to all living things. I believe that a reasonable and natural alternative case can be made to the existing case of bleeding 'threads of light', the ropes to God that the San ritual specialists report seeing when participating in a trance dance. I propose that the ropes are symbolic of air (*n|huin*) that carry the heaving breathing sound made when dancing (*!|xoan*), and the vibrant life-giving energy (*n|om*).

It is difficult to ignore that other ancient cultures in the world have very similar concepts to the San. The ancient Chinese describe *qi* as 'life force'. They believed it permeated everything and linked their surroundings together. *Qi* was also linked to the flow of energy around and through the body, forming a cohesive, functioning unit. *Prana* can be translated from the Hindu Sanskrit as 'life force energy', 'vital

energy', 'breath of life' and 'spirit-energy'. This term is used as a general reference to the manifest energy of the entire universe.

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Consequences of neglecting heritage in KZN dire

KwaZulu-Natal is losing massive amounts of money in tourism revenue owing to the neglect of historic sites by provincial and local authorities. This is the dire warning from former Amafa chairperson Arthur Konigkramer. He has lamented how KZN is in danger of losing its stature as a heritage giant as monuments in most cities and towns are vandalised. He warned that this vandalism amounted to denying future generations part of history. 'It is scandalous what is happening at the moment. We are seeing buildings being stripped of their valuables and nothing is being done about it.'

Heritage Portal, 04/11/2022

WHY THE AGE OF AFRICAN AMMOGLYPHS MAY MATTER

Charles Helm, Andrew Carr, Hayley Cawthra, Jan De Vynck, Renée Rust, Willo Stear

A quarter of a century ago it was legitimately stated that ‘fossils are rare; fossilised footprints are a thousand times rarer ... fossil human footprints are so rare to the point of exception ...’ (Berger and Hilton Barber 2000:292–293). A lot has changed in the interim. Newly identified Pleistocene hominin ichnosites (a term that includes both tracks and traces) older than 70 000 years have been reported from East Africa and from South Africa’s coastline. Together, they contribute substantially to the ancient global hominin track record, but the attributes of the East African and South African sites are substantially different.

Many of the newly described East African sites are from the Early Pleistocene or early part of the Middle Pleistocene and have been attributed to australopithecines, *Homo heidelbergensis* or *H. erectus*. Altamura (2019) provided an excellent summary of the East African sites and the role of ichnology in complementing traditional archaeological studies.

In contrast, all the southern African sites are attributed to *H. sapiens* (although species such as *H. naledi* cannot be fully excluded) and are from the terminal part of the Middle or Late Pleistocene. We are now much more confident of this owing to the application of Optically Stimulated Luminescence (OSL) dating, which includes a new suite of recently published ages (Helm et al. 2023a). Among other findings, the results of this work indicate that a tracksite in the Garden Route National Park preserves the oldest known footprint attributed to our species, dated to 153 000 ± 10 000 years (Helm et al. 2023a). We refer to ‘The Great Serendipity’, in that an area where our *H. sapiens* ancestors ‘found their feet’ in the Pleistocene happens to be precisely where arguably the best-preserved trace-fossil record in the world from this time period is found.

Two global lists of hominin tracksites have previously been published. Lockley et al. (2008) described 63 sites and Bennett and Morse (2014) 44 sites. In these lists, which include sites as recent as 2 000 years old, tracksites are categorised according to substrate

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type, with most hominin tracksites reported from volcanic and cave floor deposits and lake-margin settings. The South African sites are the only ones at a global level that occur in aeolianites (cemented sand dunes) and cemented foreshore deposits. To the best of our knowledge this remains true today, despite the many hominin ichnosites that have been described since 2014.

Just as Altamura (2019) could point to the role of ichnology in complementing traditional archaeological studies in East Africa, a similar observation can be made for South Africa (Helm et al. 2023b). This builds upon the work of Baucon et al. (2008), who explored the common ground between ichnology and archaeology and introduced the term ‘ichnoarchaeology’. The hominin ichnosites can therefore augment the corpus of archaeological knowledge. Specifically, they can not only provide information of humans travelling across dune and beach surfaces, but can also provide evidence of some of the activities that they engaged in.



Fig. 1: A large circular purported ammoglyph with a central depression on exhibit in the Blombos Museum

Sand art

Hodgson and Helvenston (2007) suggested that the oldest art was likely made in sand but they expressed doubt that this would or could have been preserved. From our perspective, their first contention, that sand was a prehistoric canvas, is correct. Happily, however, their follow-up lament has been challenged through the identification of ‘ammoglyphs’, a term we coined to describe a pattern made by humans in unconsolidated sand that is now evident in rock (Helm et al. 2019). Several such sites have been

described from the Cape south coast, although our level of confidence in interpreting an anthropogenic origin varies from site to site. Included are circular, triangular, cross-hatched, fan-shaped, radial and linear patterns, and a possible sand-sculpture that is interpreted as the oldest known example of representational art of another species (Helm et al. 2019). The novel notion of ammoglyphs has clearly broadened the range of hominin traces that can be sought. To date, ammoglyphs have only been reported from the Cape south coast and given that the only hominin tracksites identified in aeolianites are also from the southern African coastline, it is possible that this is the only area in which ammoglyphs will ever be found.

Bednarik (1994) drew attention to the problem of taphonomic bias with respect to ancient palaeoart related to the different rates of decay of stone, bone, wood, pigments, etc. It is thus easier to find evidence of more recent palaeoart than truly ancient palaeoart, which might consequently seem rarer than it was in reality. 'Protoart' is thus biased towards materials that endure over time. A new, unanticipated medium (e.g. sand art), whereby ancient palaeoart can be recognised and interpreted, is thus a welcome development that can add to a hitherto sparse record.

When walking on a modern Cape coastal beach or dune surface, numerous patterns inscribed in sand (often in the form of initials and hearts) or sand sculptures can be seen. It appears that this is an atavistic activity that has been enjoyed through generations, but until now it has not been possible to determine how deep into antiquity it stretches. Thanks to the OSL dating programme, we now know that our dated samples from (or immediately adjacent to) rocks containing purported ammoglyphs are very old indeed (Helm et al. 2023a). The oldest suggested ammoglyph site, east of Still Bay, which contains large triangular patterns, is dated using luminescence methods to $139\,000 \pm 10\,000$ years, while a site in the Garden Route National Park containing a large circular pattern is dated to $136\,000 \pm 8000$ years.

A non-revolution?

Anatomically modern *H. sapiens* are reported from Africa from as far back as ~300 000 years ago (Richter et al. 2017). At what time this anatomical modernity in *H. sapiens* was accompanied by cognitive modernity has been contentious. Among the first to debunk the prevailing Eurocentric view of a relatively recent origin of cognitive modernity were McBrearty and Brooks (2000), who pointed to evidence supporting an African origin of modern human behaviour. The title of their article, 'The revolution that wasn't', was provocative. More recently, Brooks et al. (2018) reported that as far back as ~300 000 years ago humans in Kenya were transporting iron-rich rocks to obtain red pigment. Joordens et al. (2014)

reported a geometric engraving in a shell from Java, attributed to *H. erectus*, dated to around 500 000 years ago. Rodríguez-Vidal et al. (2014) and Hoffman et al. (2018) reported cave art attributed to *H. neanderthalensis* dated to more than 39 000 years and 64 800 years ago respectively. Recently Berger et al. (2023) reported cave engravings attributed to *H. naledi* that they estimated to date to between 335 000 and 241 000 years ago.

These findings suggest that the cognitive capacity required to create such works was not limited to *H. sapiens*. Furthermore, such claims support the possibility that palaeoart might have been created much earlier than previously suspected. Sand art (ammoglyphs) might provide a welcome window through which palaeoart can be viewed. Yet old ideas die hard and the Wikipedia page on Upper Palaeolithic art still begins with the statement that the art of the Upper Paleolithic represents the oldest form of prehistoric art.



Fig. 2: A large triangular purported ammoglyph, on exhibit in the Blombos Museum of Archaeology

Abundant evidence has accumulated for the presence of complex human behaviour, and hence complex cognition, on the Cape coast during the Middle Stone Age. The evidence includes the procurement of shellfish 164 000 years ago (Marean 2020), body adornment (Marean et al. 2007), jewelry making (d'Errico et al. 2005), heat treatment of stone tools (Brown et al. 2009), the development of microlithic technology (Brown et al. 2012), fashioning of bone tools (Henshilwood et al. 2001), and palaeoart. Bednarik (2013) noted how the discussion of African palaeoart tends to focus on engraved ochre from Blombos Cave, whereas there are in fact numerous other examples from this period and older. Within our study area on the Cape south coast, in addition to the Blombos Cave engraving dated to ~77 000 years ago (Henshilwood et al. 2002) and an ochre drawing dated to ~73 000 years ago (Henshilwood et al. 2018), engraved ochre has also been reported from Pinnacle

Point (Watts 2010), and engraved ostrich eggshells from Klipdrift Shelter (Henshilwood et al. 2014). In all cases the reported ages are best considered minimum ages, as they simply represent the oldest date thus far established for a particular behaviour or innovation. Wadley (2015) placed these phenomena in an African and global context and concluded (p. 202): 'Evidence for transformative technology in MSA sites implies that these early people probably had minds rather like ours'.

The African archaeological record is splendid, containing multiple complementary lines of evidence. Yet we exhibit hubris if we think it is comprehensive. A more nuanced view is that we do not really know what we do not know and that new ways of seeing (through the concept of, e.g. ammoglyphs) can fill in gaps, provide fresh insights and lead to revisions of established hypotheses.

Revolution or not, it does appear that the superb examples of Upper Palaeolithic art in Europe emerge abruptly, seemingly out of nowhere, at ~40 000 years ago. Perhaps (in at least some respects and in some areas) there was indeed something of a 'cognitive revolution' 70 000 to 30 000 years ago. Perhaps cross-pollination of ideas between *H. neanderthalensis* and the more recent arrival in Europe, *H. sapiens*, was a driver (Greenbaum et al. 2019). However, there is another possibility: what if for 100 000 years, between the registration of remarkable patterns in the sand on the Cape south coast and the appearance of magnificent cave art in western Europe, a tradition of sand art flourished and developed in Africa but is hidden from us because the sediments have not been preserved? Or perhaps a combination of such hypotheses was involved. While such concepts remain within the realm of speculation, the identification of purported ammoglyphs opens up such lines of thought.

Furthermore, although it relates to a different time period, ethnology can inform such discussion: it is reported that the San, before going out to hunt, would draw or model animals in the sand, into which they would then shoot arrows (Thackeray, 1986, 2005). Indeed, such ideas may extend far back in time through the concept of sympathetic magic, which has been suggested with respect to a therianthrope image at Apollo 11 Cave in Namibia, one of the oldest reported rock art sites in southern Africa dated to as much as 30 000 years ago. It is broken through the middle (perhaps intentionally) and has been 'pecked', with resulting cupules/puncture marks (Wendt 1976; Thackeray 2005, 2013; Beaumont and Bednarik 2012; Rifkin 2015).

Easy to draw or trace

We can reflect on how much easier it would have been to simply draw images in the sand with a stick or



Fig. 3: Rescuing the purported ammoglyph of Fig. 2 by helicopter (reproduced with permission of Richard Webb)

finger than to laboriously mine ochre or other pigment, transport it to one's home base and then etch an engraving or use it as a crayon. Clearly, ammoglyphs are more compelling when they are associated with hominin footprints or knee impressions on the same surface. Yet we know from open air archaeological sites in Cape south coast aeolianites (where Middle Stone Age lithics, bone and shells are embedded in the surfaces) that footprints are often absent. This is the case with some ammoglyph sites as well and may simply be related to the small size of the preserved rock exposure. In other cases, while a firm surface of sand might not preserve discernible footprints, lines drawn with a stick, being much deeper, may be preserved.

The concept of ancient sand art also allows for speculation on the possibility of tracing and outlining the shapes of animals (most readily of flattish creatures). Could this have formed a 'stepping stone' between the creation of abstract images in sand and images of creatures created in sand *de novo*, followed by representational rock art? The interval of ~100 000 years between the age of the oldest purported ammoglyphs in southern Africa and Upper Palaeolithic rock art in Europe, given the likelihood that *H. sapiens* migrated out of Africa into Eurasia during this interval, could have provided time for these skills to be honed in sand. 'Stencilling' in Holocene rock art has been reported from Egypt (Honoré et al. 2016) and is noted to be most consistent with the shape of a leguaan (*Varanus*) foot. This probably involves creating a negative image by blowing a pigment onto an object. Tracing an outline in sand could have been substantially easier to perform.

Plausibility, recovery and curation

In our published work on ammoglyphs (Helm et al. 2019, 2021), we explored in detail other causative agents (including modern graffiti) that potentially could account for the observed features and were

in most cases able to exclude them. As with any new field, a 'learning curve' was experienced, as identification skills were fine-tuned with the passage of each field season. It has been acknowledged that patterns that appear similar may have widely different origins. For example, in the case of 'Site D' reported by Helm et al. (2019), what was initially thought to be a possible ammoglyph has since been re-interpreted as invertebrate traces in a pattern that happened to suggest a hominin origin. Over time, increased accuracy in interpretation can be expected when assigning categories such as 'unequivocal', 'probable', 'possible' and 'unlikely'. We acknowledge that other forms of palaeoart have suffered from early misinterpretations, emphasising the need for caution.

The plausibility of ammoglyphs cannot be disputed. After all, assuming that only the tracks of humans travelling on these surfaces were preserved, to the exclusion of other activities, is untenable. What can be questioned is whether the standard of evidence we have presented is adequate, i.e. whether we have satisfactorily demonstrated a distinctive 'hominin signature' in sand art, thus addressing concerns of confirmation bias and pareidolia. An appropriate initial response to such a novel concept might be healthy skepticism.

All of the purported ammoglyphs that have been recovered are accessioned in the Blombos Museum of Archaeology in Still Bay. Here they are available for examination by fellow researchers (Fig. 1, Fig. 2). In one case, we appreciated that a purported ammoglyph exhibiting large, triangular patterns would be destroyed by tidal forces over time. It bore a resemblance to a motif that is prevalent in Upper Palaeolithic rock art in Europe. It was situated in a remote, inaccessible location. Given its importance, we pursued a rock rescue project. A helicopter was chartered and the 500 kg rock was recovered and transported to the Blombos Museum (Fig. 3) (<https://theconversation.com/rock-stars-how-a-group-of-scientists-in-south-africa-rescued-a-rare-500kg-chunk-of-human-history-192508>).

An ongoing search

A dynamic equilibrium exists along the coastline, whereby known ichnosites are eroded, become fragmented or slump into the ocean, and new potentially interpretable sites are exposed through cliff collapse. In our view, the most appropriate response to healthy skepticism is to search for and document more ammoglyphs, focussing on areas such as the cliff-lined coastal stretch east of Still Bay where particularly active erosion results in rapid turnover of ichnosites. Similar considerations apply to any new aeolianite rockfalls along the coast. Publication of new discoveries will allow them to be judged on their merits, aided by recovery and curation where feasible so that they can be directly examined.

Despite such an optimistic approach, the reality is acknowledged that ammoglyphs will probably be a rare phenomenon. We regard each new discovery with gratitude and a minor miracle of preservation. An article describing in detail a purported sand sculpture east of Still Bay is soon to be published. We are also working on dating a new discovery from 2022 in previously undated sediments, which we interpret as another ammoglyph. We hope that fellow researchers will make the pilgrimage to the Blombos Museum to examine the purported ammoglyphs in person and will critique our findings and interpretations.

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ARCHAEOLOGY IN AFRICA

Tanzanian paintings of bizarre humanoids

Archaeologists have discovered rare examples of cave art made by the ancestors of the Sandawe people in Tanzania, who are credited with having the oldest DNA lineage known to science as it can be dated back at least 87 000 years. The images show human figures, buffalos, giraffe and domesticated cattle. The paintings were discovered in 2018 in a rock overhang in what is known as the Amak'hee 4 rock shelter in the Dodoma area of central Tanzania. According to Dr Maciej Grzelczyk from the Jagiellonian University in Cracow, Poland, the cave paintings are well-preserved. They are described as centring on three primary images, but stylised buffalo heads dominate. A disturbing section of the large mural shows what appears to be a collection of small figures that seem to have been speared by horns. Another area depicts what has

been interpreted as someone crushing someone else in their mouth. The team was perplexed by the fact that 'no elements of anthropomorphisation of buffaloes, nor a belief in the possibility of transformation of people into these animals,' exists within modern Sandawe belief, although the 'simbó ritual' requires people to enter trance states. They also believe that caves harbour spirits and go there to perform rituals and shout prayers not to disturb the ghosts.

Evidence suggests the Tanzanian site was used repeatedly over many generations. It was discovered that the artists had 'intentionally respected an existing figure by not superimposing new images onto it'. Rather, the painter incorporated the pre-existing image into the new scene. This not only indicates artistic prowess but a significant degree of foresight, preplanning and logical thinking. *Sci News*

GUIDELINES FOR THE GOODWIN SERIES

June 2023

The Goodwin Series volumes are companions to the *South African Archaeological Bulletin* (SAAB) and are distributed to members of the South African Archaeological Society (SAAS) and subscribing members of the Association of Southern African Professional Archaeologists (ASAPA) as part of their subscription. The series began in 1972 in honour of the late Prof. AJH Goodwin, the first professional archaeologist in South Africa and the founder of SAAS. Each one of the 12 issues published between 1972 and 2019 has a theme relating to the study of archaeology in sub-Saharan Africa, ranging from quaternary studies to rock art and historical archaeology. Individual issues have been published at irregular intervals according to the availability of funds and interest expressed by prospective guest editors. All papers are peer reviewed.

The editing responsibility can be assumed by any individual or group approved by the SAAS Council, as long as they raise the funds for editing, printing and postage to all SAAS and ASAPA subscribers, now numbering about 650.

A decision was taken in 2013 by the South African Department of Higher Education and Training not to recognise the Goodwin Series as a journal for the purposes of research output subsidies since it is an irregular publication. Consequently, the Goodwin Series volumes will now be published as books to enable academics to receive subsidies.

How to submit a proposal for a Goodwin Series book

1. Enquiries and applications from potential editors should be addressed to the Council of SAAS (secretary@archaeology.org.za) with a full description of the proposed topic, the proposed papers to be included (with suggested abstracts), the names of the academic editors and the funding strategy.
2. The SAAS Council will refer the proposal for review to a specialist committee appointed jointly by the SAAS Council and the ASAPA Editorial Committee and Board to assess the scientific merit of the proposed publication. The reviewers will be selected for their expertise in the subject of the proposed volume.
3. Once the SAAS Council has approved the proposal, and the funding has been secured, the editors will have full control over the decision-making process for content and editing.
4. The academic editors will draw up a budget and be responsible for raising all the funding required for editing (including copy editing by the SAAB-approved copy editor), production, design, printing and electronic distribution, as well as postage to members of SAAS and ASAPA members who subscribe to the SAAB and request printed copies.
5. A contract will be drawn up between the SAAS Council and the editors to ensure that all responsibilities are clearly stated.
6. The academic editors will be responsible for deciding on the format, cover and other details, such as formatting, in consultation with the SAAS Council, and may elect to either distribute the volume electronically, in printed form, or both.

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2. Progress in Later Cenozoic Studies in Africa, HJ Deacon (ed.), 1974.
3. Iron Age Studies in Southern Africa, N van der Merwe & T Huffman (eds), 1979.
4. New Approaches to Southern African Rock Art, JD Lewis-Williams (ed.), 1983.
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6. Goodwin's Legacy, J Deacon (ed.), 1989.
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9. Further Approaches to Southern African Rock Art, G Blundell (ed.), 2005.
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11. Skeletal Identity of Past Southern African Populations: lessons from outside South Africa, M Steyn, AG Morris, GJR Maat & MN Mosothwane (eds), 2013.
12. Towards a History of Archaeology from South Africa, A Delmas & P de la Peña (eds), 2019.

WORLD ARCHAEOLOGY

Origins of enigmatic Xinjiang mummies

Since their discovery, the ancestry of hundreds of mummified bodies buried in boats in an inhospitable desert region of north-west China has puzzled and divided archaeologists. Found in the Tarim Basin in Xinjiang mostly in the 1990s, the mummies' bodies and clothes are strikingly intact despite being up to 4 000 years old. Naturally preserved by the dry desert air, their facial features and hair colour can clearly be seen. Their western look, felted and woven wool clothing and the cheese, wheat and millet found in their graves suggested they were long-distance herders from the west Asia steppe or migrating farmers from the mountains and desert oases of central Asia.

However, a new study by Chinese, European and American researchers that analysed the DNA of 13 mummies has painted a different picture. The analysis, published in *Nature*, suggests that the remains did not belong to newcomers but a local group descended from an ancient Ice Age Asian population. 'Beyond being extraordinarily preserved, they were found in a highly unusual context and they exhibit diverse and far-flung cultural elements,' said anthropology professor Christina Warinner from Harvard University and group leader of microbiome sciences at the Max Planck Institute for Evolutionary Anthropology. 'We found strong evidence that they represent a highly genetically isolated local population. In contrast to this, they seem to have openly embraced new ideas and technologies from their herder and farmer neighbours, while also developing unique cultural elements shared by no other groups,' she said.

The researchers looked at the genetic information from the oldest Tarim Basin mummies – dating from 3 700 to 4 100 years old – together with genomes sequenced from the remains of five people from the Dzungarian Basin farther north in China's Xinjiang Uyghur Autonomous Region. Dating back to between 4 800 and 5 000 years, these are the oldest human remains found in the region. The research found that the Tarim Basin mummies showed no sign of admixture with other groups. The mummies were direct descendants of a group that was once widespread during the Ice Age but had largely disappeared by around 10 000 years ago.

Called Ancient North Eurasians, traces of this hunter-gatherer population survive only fractionally in the genomes of present-day populations, with indigenous people in Siberia and the Americas having the highest known proportions. Ancient genetic samples from this region are still relatively rare and it is possible that other genetic influences from the Himalayas or Tibet are found. Although earlier work has shown the mummies lived on the shores of an oasis in the

desert, it is still unclear why they were buried in boats covered in cattle hides with oars at their head, a rare practice not seen elsewhere in the region and perhaps best associated with Vikings. CNN

17 000-year-old musical instrument

During a recent inventory at a museum of natural history in Toulouse, archaeologists re-examined a conch shell retrieved in 1931 from the Marsoulas cave in southern France. Based on its curvature and shape, it had long been believed that the shell, carbon-dated to 15000 BC, had been used as a communal or ceremonial cup by Magdalenian hunter-gatherers towards the end of the last Ice Age. After studying the shell more closely with the assistance of modern imaging technology, the researchers realised that what they held in their hands was not a ceremonial cup but a musical instrument. The shell had been reshaped and engineered to create a fully functional instrument that could produce three distinct musical notes: C, D and C sharp.

It seems that the shell's apex was deliberately removed to create room for a mouthpiece, which had been anchored inside the shell in two small holes chipped out in the shell's interior. The shell was drilled to create two openings for the entrance exit of air, enabling it to produce musical notes. Its lip had also been modified, presumably to create hand holds for the conch player. Additionally, faded red ochre pigment fingerprint markings were found on the interior of the shell, meaning the it had been decorated in the same style as the cave walls.

It is notable that the musical conch shell was discovered at an Upper Palaeolithic site that hosts an extensive display of cave paintings that are typical of those produced by the hunter-gatherers. The 100 m long gallery of red-pigment paintings includes numerous images of animals, with the bison featuring most prominently, abstract anthropomorphic figures with mask-like faces and a variety of geometric shapes.

In recent decades, establishment experts and maverick researchers alike, ranging from Mircea Eliade to Graham Hancock to David Lewis-Williams, have popularised the theory that such art is modelled after hallucinogenic imagery glimpsed by shamans or medicine men experiencing altered states of consciousness. Lewis-Williams has perhaps done the most to promote this intriguing and controversial hypothesis. According to his neuro-psychological model, the shaman would enter a trance state, either by ingesting psychoactive substances or through immersion in a musically stimulating environment, where the shaman and companions would be dancing,

drumming, singing or playing musical instruments over an extended period of time.

Once an altered state of consciousness was achieved, the shaman would experience vivid and memorable visual hallucinations, which were considered sacred and were used as inspirations for the drawings on the cave walls. The ceremonies would be held inside caves because of their association with the spiritual realms of the underworld and acoustics that were perfect for inducing expanded consciousness through immersion in a musical wall of sound. If this did inspire Upper Paleolithic cave art, it could explain why the conch shell wind instrument was created and why it was found inside the Marsoulas cave.

Science Advances 11/02/ 2021

7,2-million-year-old pre-human fossils of Europe

A new analysis of two 7,2-million-year-old fossils belonging to a hominin species nicknamed 'El Graeco' from Mediterranean Europe suggests that mankind emerged in Europe and not Africa, challenging the 'Out of Africa' theory. When a toothy lower jaw was discovered in Pyrgos Vassilissis, Greece in 1944, nobody really paid attention. In 2012, the ancient jawbone was joined by a fossilised premolar tooth uncovered in Azmaka, Bulgaria. Scientists suggest that the remains belonged to an ape-like creature, *Graecopithecus freybergi*, which is now believed to

be the oldest known pre-human. With the help of micro-computed tomography and 3D reconstructions of the roots and internal structure of the fossilised teeth, the researchers discovered distinctive features of contemporary humans and their early ancestors.

Project director Madelaine Böhme of the Senckenberg Centre for Human Evolution and Paleoenvironment at the University of Tübingen and Nikolai Spassov from the Bulgarian Academy of Sciences examined both the Pyrgos fossil and the upper premolar tooth. 'El Graeco' is the oldest known potential hominin. He is several hundred thousand years older than the oldest potential pre-human from Africa, the six-to-seven-million-year-old *Sahelanthropus* from Chad, Spassov stated.

Anthropologists refer to El Graeco as hominin or pre-human for now since the last common ancestor of modern humans and chimps retained both non-human primate and human characteristics. However, with the help of computer tomography, Böhme's team noticed that El Graeco's features were evolving into modern human-like forms. 'While great apes typically have two or three separate and diverging roots, the roots of Graecopithecus converge and are partially fused, a feature that is characteristic of modern humans, hominids and several pre-humans including Ardipithecus and Australopithecus,' Böhme said.

Sky News, 23/01/2021

The South African Archaeological Society

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

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

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The Society produces the following publications:

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

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