

DIFFUSION OF INNOVATION

A new perspective for South African archaeology

Karim Sadr

‘Diffusion of Innovation’ (DOI) is a theory that seeks to explain how, why and at what rate new ideas and technologies spread through social systems; in this way it helps to explain social change. The theory was developed by Everett Rogers (1962) and his eponymous book is now in its fifth edition. The theory does not come from archaeology or anthropology but from communication studies and related social sciences. Nonetheless, it is clearly relevant and can provide not only a fresh perspective on the interpretation of archaeological data but potentially also shed light on the future of archaeology in South Africa.

Innovations are new methods, ideas or products. Every man-made object we see around us began life as an innovation. It then diffused successfully and was so widely adopted that it became commonplace. Given that archaeologists deal primarily with ancient products, ideas and methods, understanding how these innovations spread is of obvious interest.

New methods, ideas and products neither diffuse randomly nor evenly. Why do they spread to some places but not to others? Why do some innovations spread faster than others? Hundreds of DOI studies have successfully addressed such questions. Although most innovations fail to diffuse, all

successful innovations diffuse in a similar pattern. It is the existence of this common pattern that makes DOI a potentially useful approach for archaeology; one that foregrounds products, ideas and methods rather than people and their cultural identity. The sequence in which an innovation is adopted, and the five main factors that facilitate its successful and rapid diffusion, are always the same. The sequence of adoption can be described by the categories of people who adopt a diffusing innovation. These are: a) the innovators, b) the early adopters, c) the early majority, d) the late majority and e) the laggards.

Each of these categories of adopters have a particular social profile. The innovators, for example, are usually outsiders. The early adopters tend to be wealthier, better educated and more open-minded than the average members of the community. The early majority is more open-minded and liberal than the late one and the laggards are among the most conservative and parochial members. Of course, some simply refuse to adopt the innovation.

The cumulative graph of a successful diffusion always shows an S-shaped curve (Fig. 1). There is

Professor Karim Sadr is the immediate past-President of the South African Archaeological Society. Born in Iran, he studied archaeology in Dallas, Texas, before coming to the University of Cape Town on a post-doctoral fellowship. After having taught for six years at the University of Botswana, he has spent the last two decades at the University of the Witwatersrand in the School of Geography, Archaeology and Environmental Studies. His research interests centre on the relatively recent past when humans began to settle down, produce their own food and create complex societies. He has always been intrigued by how ideas and objects travel from one place to the other and cause changes in social organisation. Prof. Sadr gave his Presidential Address at the virtual AGM of the Society on 11 May 2022. Karim.sadr@wits.ac.za.



OTHER FEATURES IN THIS ISSUE

- 5 Lucy Lloyd and the University of Texas – *Britt Bousman*
- 9 Birds or fish? – *Jeremy Hollmann*
- 14 Khoekhoen, scientific racism and the Fuggerei – *Andrew Smith*
- 17 First and second creation – *Andrew Paterson*
- 19 Depicting detail and movement – *Tertius Coetzee*

a slow start from the innovator and their immediate circle through a small group of early adopters before a critical mass is reached. Thereafter, the curve bends more steeply upwards with rapidly increasing numbers of adopters until the pace slackens and the curve returns to the horizontal as the laggards finally jump on the bandwagon.

All successful diffusions of innovation are influenced by the same five factors. These are:

1. Relative advantage: the degree to which an innovation is perceived as being better than the idea it supersedes.
2. Compatibility: the degree to which an innovation is perceived as being consistent with existing values and the needs of adopters.
3. Complexity: the degree to which an innovation is perceived as difficult to understand and use.
4. Trialability: the degree to which an innovation may be experimented with on a limited basis.
5. Observability: the degree to which the results of an innovation are visible to others.

American case study

A famous case study helps to illustrate these factors. Bryce Ryan and Neal Gross (1943) studied the diffusion of hybrid corn (maize) in two small communities in the US state of Iowa during the 1930s. This hybrid corn significantly increased harvest and was more drought resistant but farmers had to buy fresh seed every year. Ryan and Gross collected information on when each of the 259 farmers in the two Iowa communities adopted the hybrid corn, the communication channels that helped convince the farmers to adopt the hybrid product and how many acres each farmer planted. They also recorded the farmers' level of education, farm size, income, frequency of visits to the city, readership of farm magazines, etc. All but two of the farmers had adopted hybrid corn between 1928 and 1941.

Ryan and Gross' findings showed that the innovators were the salesmen who came from outside the two communities. The early adopter farmers had larger farms than the average, higher incomes, more formal education and were better travelled. They were presumably also more willing to take risks. Typically, although the farmers in these communities had heard of the innovation from the salesmen, it was their neighbours who were the most influential persuaders. The average farmer spent several years observing his neighbour's experiments and then trialled the hybrid corn on a small plot for three to four years before adopting the hybrid corn fully.

Significantly, hundreds of subsequent DOI studies in many other fields and different parts of the world have echoed the findings of Ryan and Gross. It has been shown again and again that once the critical mass of adopters is reached in the DOI process,

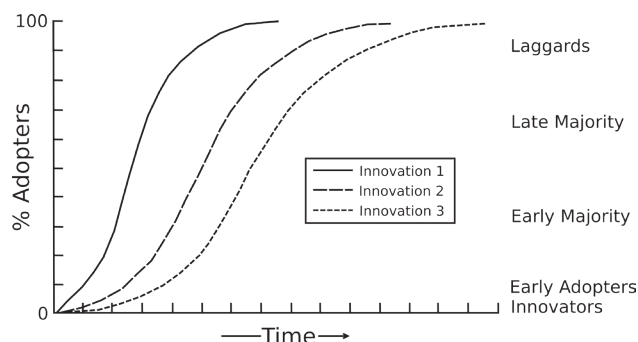


Fig. 1: The diffusion of three innovations rendered as S-curves in a cumulative graph (after Rogers 2003, Fig. 1.2)

the diffusion of the innovation cannot be halted anymore. Most importantly, although outsiders are always the introductory media, neighbours are the activating media. However, leadership in community affairs is not related to leadership in the adoption of innovations. These are important points to keep in mind when we turn our attention to archaeology in South Africa.

Most DOI studies, like Ryan and Gross's, concern the role of individuals in the DOI process. In archaeology, however, the resolution is not usually high enough to detect individuals. Fortunately, some DOI studies have focussed on a scale that is more relevant for us and have examined the diffusion of innovation among organisations. The classic case study for the diffusion of innovation among organisations is the spread of hate crime laws in the US by Grattet, Jenness and Curry (1998). They concluded that the adoption of hate crime laws was influenced by a state's internal political culture and traditions, as well as by its location relative to other adopter states. As with diffusion of innovation among individuals, the more liberal, wealthy and cosmopolitan states were the earlier adopters, and countries adopted hate crime laws once they observed their neighbours taking the innovation on board. DOI theory has already been used in South African archaeology. Alex Mackay, Brian Stewart and Brian Chase (2014) employed this perspective to understand the distribution of lithic industries during the Late Pleistocene. Elsewhere, a close relative of DOI theory known as Cultural Transmission theory has been used with some success in North American archaeology and in historical geography, especially in Scandinavia (Mackay et al. provide several useful references).

The spread of maize in Africa

I will now attempt to illustrate how DOI theory can be applied to the question of the diffusion of maize agriculture in Africa. I have chosen this topic because there is a fair bit of historical information on the spread of maize in Africa, as well as some archaeological information on its early appearance in South Africa (e.g. Miracle 1965; Boeyens 2003; Huffman 2006;

McCann 2007). The diffusion of maize in Africa has not yet ceased and we are still in the middle reaches of the S-curve. Maize is now Africa's most important cereal crop. The total harvested area of maize in Africa was around 15 million ha in 1965 and by 2020 it had nearly tripled to about 43 million ha. How did Africa's dependence on maize reach the present stage?

Let us examine maize in Africa through the DOI lens, looking back in time to see how and at what rate maize spread on this continent. Maize was originally domesticated in Mexico a few thousand years ago but the story of maize in Africa begins with its importation from Brazil by Portuguese mariners during the 16th century. In a first phase, maize was brought to several coastal areas and islands along the Atlantic and Indian Ocean rims of Africa. Around the same time, seafarers from the Indian subcontinent may have introduced the crop to northern Ethiopia. By the end of the 17th century, maize had spread far inland from the Gold Coast (present Ghana) and the Angolan coast.

In a second phase, by about 1750, maize had also diffused far inland into East Africa from Zanzibar and Pemba islands. Around that time, if not a little earlier, maize reached the Bornu kingdom (the Lake Chad region in the Sahel) from Venice via Egypt. In a third phase, by about 1800, maize had diffused farther towards central Africa from both the east and the west, while the crop had become well established in most of East Africa. Around this time, it spread successfully to the south-east coast of South Africa.

Early adoption in South Africa fails

In fact, maize had reached South Africa already in the 17th century but the two earliest adoptions of maize here were failed attempts. Jan van Riebeeck saw no maize at the Cape in 1652 and he imported it from Guinea in 1658. But the crop did not flourish in South Africa's winter rainfall zone. In the same period, Late Iron Age mining communities around today's Thabazimbi had maize grinding stones and may have obtained the crop from the Mutapa kingdom in Zimbabwe, where a Portuguese priest introduced it in 1561. This experiment was not a great success either and the Little Ice Age droughts of 1700 seem to have put an end to the early adoption of maize in the northern part of South Africa. So, here maize seems to have been an innovation that initially failed to take off, in this case for climatic and environmental reasons.

But maize made a comeback in South Africa around the turn of the 19th century. A successful early adopter phase can be recognised around 1800, when Portuguese or Arab traders introduced maize to the coastal areas of KwaZulu-Natal. Its cultivation is recorded in Nguni oral traditions, as well as in

the archaeological record. European visitors noted maize in several locations further inland, where it was used even as a medicinal plant. Mostly, maize was considered a vegetable complement to sorghum, which remained the principal grain for Late Iron Age communities. The few maize grinding stones found at Kweneng, near Johannesburg, provide archaeological evidence for its use at that Sotho-Tswana capital during the first two decades of the 19th century, but the grinding stones seem to be restricted to only a few parts of the site.

Maize started to become predominant later, during the country's transition from the mercantile to industrial age. By the mid-19th century, maize was entrenched as part of the Highveld mixed cropping system even though sorghum was still the preferred food and dominant crop. The changes in economic infrastructure, labour migration and urbanism, which were brought about by the discovery of diamonds in Kimberley in 1867, redefined maize from a garden vegetable to commodified grain. The plough opened large-scale cultivation in the so-called maize triangle by 1900 and 30 years later the New World crop had replaced sorghum as the principal grain food of South Africa. This was the early majority phase of the diffusion of maize in South Africa and we are now perhaps in the late majority phase of adoption.

More feed than food

Has the DOI perspective helped us better understand the history of maize in Africa? Three conclusions are noteworthy. First, the big picture from the last 500 or so years suggests that maize is still diffusing in Africa. Second, African communities went through a long phase of early adoption and trial, during which time the plant was used as a vegetable complement to the sorghum grain diet. All the Late Iron Age instances of maize cultivation in South Africa seem to belong to this early adopter phase. Third, throughout Africa maize first became dominant as a principal crop when it came to serve colonists as a high-energy food source for their slaves and industrial labourers; more as feed than food, from the European perspective.

In DOI-speak, the diffusion of maize in Africa was facilitated by:

Relative advantage: growing maize was often perceived as more productive and less labour intensive than African grains; it provided a crop that could be harvested long before the main grains were ready, but it was also more susceptible to drought and locust damage.

Compatibility: maize was often perceived as being consistent with existing values and needs of Africans; the plant even resembled sorghum in its early phases of growth and needed no new technology to grow.

Complexity: maize was perceived as no more difficult

to understand and use than sorghum and millet.

Trialability: maize could easily be experimented with on a limited basis and remained a vegetable subordinate of sorghum for a long time.

Observability: the benefits of growing maize would have been clearly visible to others.

What is new in all this for South African archaeology? In the past, some researchers thought that the intensive use of maize and its sensitivity to drought might explain the rise of the Zulu state and the subsequent *Difegane* civil wars. Other researchers thought that maize cultivation may explain the extensive stone walled terracing in the Bokoni settlements in today's Mpumalanga Province. In turn, I thought that maize cultivation might explain the unusual size and complexity of the Sotho-Tswana capital of Kweneng. However, our DOI exercise suggests that nowhere in South Africa during precolonial times was maize grown as the principal grain and in large enough quantities to have had such far-reaching effects. To conclude, it seems that the power of maize can help explain the rapid growth of South Africa during the industrial age but the rise of complex societies during the Iron Age was not fuelled by mealies.

DOI and black archaeologists in South Africa

As an epilogue, it is worth doing one more brief exercise based on the DOI theory to help us understand where the discipline of archaeology is heading in South Africa. Very few black South Africans have made a career of archaeology. Why so few? We can approach this question from the DOI perspective. From this angle, we can say that archaeology is an innovation introduced by scholars and academics of European origin who are essentially the outsiders, innovators and salesmen in DOI-speak. Why is the spread of this innovation slow among black South Africans?

Let us examine this question by considering the five main factors that influence the adoption of an innovation. At the outset, it should be noted that this discussion is based only on my informal observations over a 30-plus-year career of teaching archaeology to black and white students in South Africa and Botswana, as well as numerous conversations with many southern Africans, both rural and urban, black and white. A systematic and thorough DOI study of this subject would no doubt produce very interesting and useful information.

Relative advantage: black South Africans generally do not seem to perceive archaeology as a better way of understanding their past; their oral histories serve them better.

Compatibility: archaeology is not perceived as being consistent with the existing values and needs of black South Africans; rather, it is seen as a colonial import

that serves the needs of whites.

Complexity: archaeological method and theory is perceived by black South Africans as difficult to understand and use; it requires much reading of complex texts written in a foreign language.

Trialability: archaeology as a profession cannot be experimented with on a limited basis; one has to commit oneself to the discipline on faith.

Observability: with so few black role models, the benefit of archaeology as a career for black South Africans is not readily visible to the undecided.

Consequently, the diffusion of archaeology among black South Africans remains slow and the innovation is still restricted to a few early adopters. The diffusion of this innovation has not yet reached critical mass and there is still a possibility that it may fail to take off. Alas, the outsider innovators (all the white South African and expatriate archaeology professionals in South Africa) cannot help with the further diffusion of this innovation. Recall that DOI studies have repeatedly shown that the innovators are only effective in the introductory phase of the diffusion process. For the activation phase, it is the neighbours (the few black South African early adopters) who need to spread the word.

This can only be done by demonstrating the benefits of archaeology in a manner that can be appreciated by the majority of South Africans; publishing technical books and scholarly articles in local and international accredited journals will not suffice. Instead, much formal and informal outreach is required to ensure the further diffusion of our discipline in South Africa. With that thought, I will end this presidential address by extending my best wishes to the next generation of South African archaeologists.

References

- Boeyens, JCA. 2003. The Late Iron Age sequence in the Marico and early Tswana history. *The South African Archaeological Bulletin* 58: 63–78.
- Grattet, R, Jenness, J & Curry, TR. 1998. The homogenization and differentiation of hate crime law in the United States, 1978 to 1995: innovation and diffusion in the criminalization of bigotry. *American Sociological Review* 63(2): 286–307.
- Huffman, TN. 2006. Maize grindstones, Madikwe pottery and ochre mining in precolonial South Africa. *Southern African Humanities* 18(2): 51–70.
- Mackay, A, Stewart, BA & Chase, BM. 2014. Coalescence and fragmentation in the late Pleistocene archaeology of southernmost Africa. *Journal of Human Evolution* 72: 26–51.
- McCann, J. 2007. *Maize and Grace: Africa's encounter with a New World crop 1500–2000*. Boston: Harvard University Press.
- Miracle, MP. 1965. The introduction and spread of maize in Africa. *The Journal of African History* 6(1): 39–55.
- Rogers, EM. 2003. *Diffusion of Innovations* (5th edition). New York: Free Press.
- Ryan, B & Gross, NC. 1943. The diffusion of hybrid seed corn in two Iowa communities. *Rural Sociology* 8(1): 15–24.

LUCY LLOYD AND THE UNIVERSITY OF TEXAS COPY OF BLEEK'S A BRIEF ACCOUNT OF BUSHMAN FOLK-LORE AND OTHER TEXTS

Britt Bousman

In 1992 I was working at the Texas Archeological Research Laboratory at the University of Texas (UT) at Austin employed in local cultural resource management research and continuing my work on South African archaeology in my spare time. I had finished my PhD at Southern Methodist University a year before with the focus on excavations at Blydefontein and Meerkat rock shelters in the eastern Karoo and was working on a manuscript based on that research. Although my analysis concentrated primarily on Later Stone Age technological strategies, I was curious to see what the !xam Bushmen in the Northern Cape had said about hunting and collecting foods, their technology, how the environment might have played a role and how their mythologies integrated their lifeways. The Bleek and Lloyd documents were the primary source for that information. At UT I had easy access to all its libraries and a quick look at the card catalogues confirmed that they had a good collection of Bleek and Lloyd publications, mostly in the Perry Castaneda Library (PCL).

I began checking out publications one by one and had my own copy of *Specimens of Bushman Folklore*. The first book I checked out of the PCL was *Reynard the Fox*, then *The Mantis and His Friends* and *A Brief Account of Bushman Folk-lore and Other Texts* (Fig. 1). At that time, I was field director of a large crew at the Wilson-Leonard site just outside Austin and my schedule was hectic. On a Friday afternoon in July I stopped in a rush on my way home and checked out *A Brief Account of Bushman Folk-lore*. It was due back the next Monday, so I only had the weekend to read through it. My infant daughter had recently been diagnosed with leukemia and most of my time that weekend was spent with my wife trying to keep her illness under control. Luckily it is a thin report, so it did not take much time finish.

Professor Britt Bousman is with Texas State University where he established the Center for Archaeological Studies in 2000 and the Archaeological Curation Facility in 2007. He first worked in South Africa in 1976 with Pat Vinnicombe on a rock art survey in the Senqunyane Valley in Lesotho. In 1979 he began working with Garth Sampson in the Seacow River Valley. He excavated Blydefontein Rock Shelter in the eastern Karoo for his PhD research, which led to an ongoing collaboration with Louis Scott of the University of the Free State on paleoenvironment studies. Over the last two decades he has been working in the Free State collaborating with the late James Brink, Lloyd Rossouw, Andri Van Aardt and Daryl Codron through the National Museum and UFS. He has been a research associate of GAES at the University of the Witwatersrand and is a member of the Editorial Advisory Board for Southern African Field Archaeology. bousman@txstate.edu.

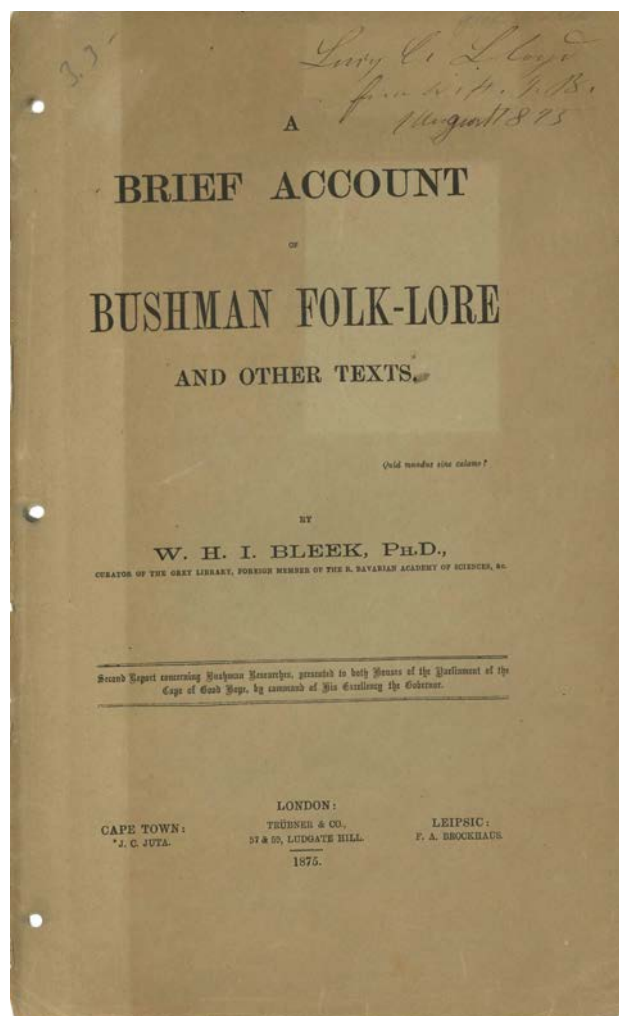


Fig. 1: Original inscribed cover

As I was returning the book to the circulation desk, I noticed an inscription on the outside of the original weathered brown paper cover (Fig. 2). The library had bound the original report with a more durable but simple cardboard cover that hid the inscription from ready view. I did not take the time to look carefully but nevertheless noticed that the top line written in elegant cursive handwriting spelled out the words 'Lucy C. Lloyd'. My jaw dropped but as I was in a hurry, I handed it over. A month or so later I returned to the library to make sure I had not imagined the inscription. There it was: Lucy Lloyd's signature in what I assumed was her personal copy in the open stacks of the PCL. Again, time was short, and I returned it as soon as I had looked at it, but I told the student clerk at the circulation desk that this should

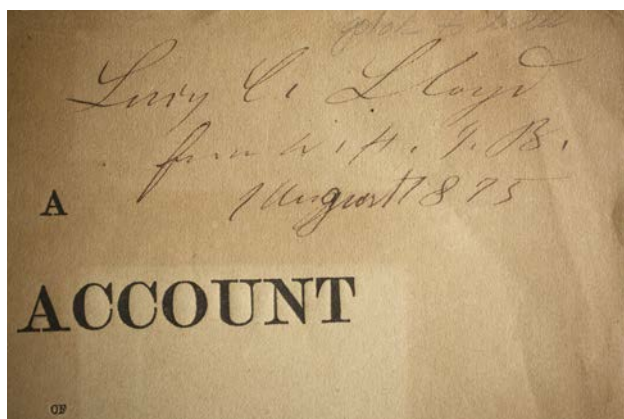


Fig. 2: Close up of inscription on front cover: 'Lucy C. Lloyd, from W.H.I.B., 1 August 1875'

not be in the open stacks because of its historical significance.

But how in the world did it come to be in a UT library? Perhaps it was sold to the university after Dorothea Bleek passed away in 1948, but the records did not indicate that (Scott-Deetz 2007). Perhaps Otto Spohr, the South African author, editor and translator, had played a role in its disposition after his retirement when he was selling Africana books to American universities, although it is difficult to imagine that he would sell Lucy Lloyd's original copy as he had placed such value in the collection that he worked so hard to help create at the University of Cape Town (Weintroub 2006:135). The other Bleek and Lloyd books at UT did not have any indication of being the personal copies of Wilhelm Bleek, Lucy Lloyd or Dorothea Bleek, and some were later printings. How the Lloyd copy got to the PCL is a complete mystery. But that is not the only mystery.

In early 1993, David Lewis-Williams and Thomas Dowson were giving a lecture at UT (Dowson, pers. comm. 2022), which I took off work to attend. I told Tom about the copy and we both walked briskly to the library eager to confirm it was Lucy Lloyd's personal copy. When we went to the stacks to find it, the report was gone but it had not been checked out. Later I had them do a search, but to no avail; it truly was missing. I felt a bit of a fool for dragging Tom all the way across campus to see a missing report. I had no idea what had happened to it. Over the next year I occasionally looked in the stacks to see if it had reappeared, but to no avail. I left UT for a job in San Antonio in late 1994 and all but forgot about it.

When in late March this year Tom Huffman passed away, I received the announcement of his memorial by email. I noticed Janette Deacon's address in the list and as I had not talked to her in years, I sent her a brief hello message. Tom always did have a knack for bringing people together. In a series of email conversations discussing EJ Dunn's travels in the Northern Cape, Janette kindly sent me a copy of

a recent paper entitled *A map from the memory of the world* published by her. Reading this reminded me of the presumably still-lost Bleek report. So, I pulled up the PCL online card catalogue and did a quick search. The report was listed as present and available for interlibrary loan! I submitted a loan request immediately and it was at my library a few days later. I rushed over to see if it was the same copy and to my great surprise it was!

This time I was not rushed and looked more carefully at the inscription on the cover; it seemed to be bona fide. The inscription reads:

Lucy C. Lloyd
from W. H. I. B.
1 August 1875

My mind instantly questioned the veracity of what I was seeing. But if someone was going to forge the inscription, they would not then put it in the open stacks at the PCL. Obviously 'W.H.I.B.' were Wilhelm Bleek's initials. I do not know if it was a gift from Wilhelm Bleek to Lucy Lloyd, or simply her copy that she inscribed. As she had such a pivotal role in its publication, it could be either. It certainly seems to have been written by her hand. Another point is that the date is only 16 days before the death of Wilhelm Bleek (Skotnes 2007: 281-287). Above her name are two penciled notes. The first says 'Go to k to drill', which is probably an instruction for attaching the external cardboard cover at the PCL. The second says '3.3 -but I have no idea what that refers to. On the title page someone completed Wilhelm's name by adding 'ilhelm' in pencil; this is common in books at the PCL and seems to have been added by a librarian. A single penciled line was added on page 13 and two ink markings were written on page 15. Again, no meaning, if any, can be offered.

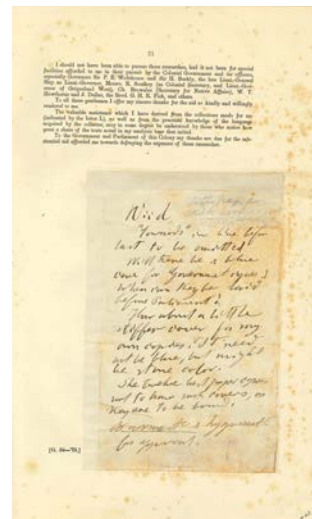


Fig. 3: Note glued to final page

Other than those also discovered by me, a handwritten note on a small sheet of paper pasted to a larger sheet that was glued at the top to the inside last page of the report (Fig. 3). The note (Fig. 4) reads:

Need

"Forwards" in line before last to be omitted
Will there be a blue cover for Government copies?
When can they be laid before Parliament?
How about a little stiffer cover for my own copies?
It need not be blue, but might be stone color.

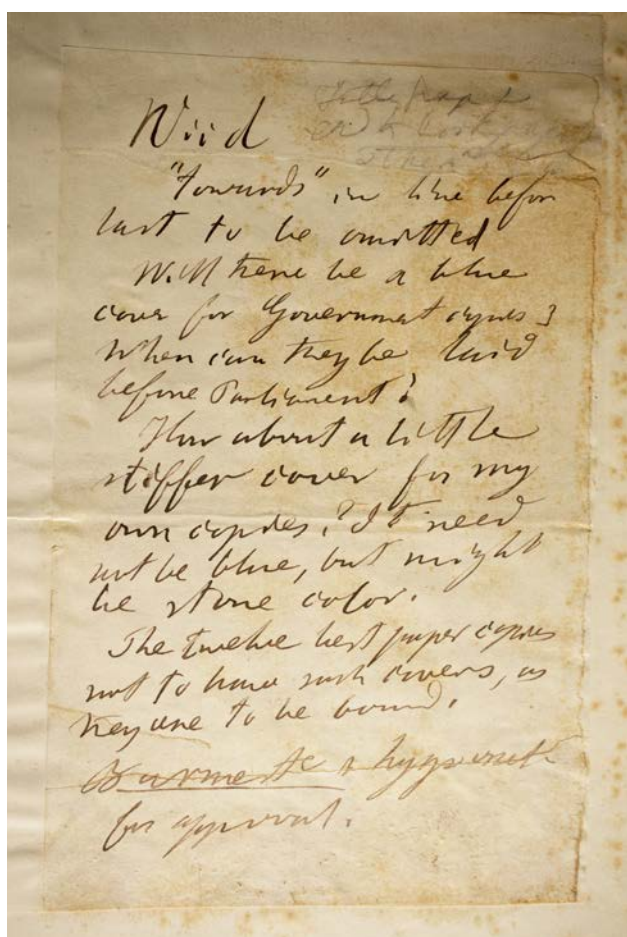


Fig. 4: Close up of note

*The twelve best paper copies not to have such covers, as they are to be bound.
Brownlee signature (sic) for approval.*

This page also had in small caps near the lower right corner the letters 'NLS', but I can offer no hint as to the meaning. There is critical evidence that the note is in Wilhelm Bleek's handwriting. When a word starts with the small letter 'c' it is immediately followed by an apostrophe that initiates near the top of the 'c' and curves back to the right (Fig. 5). The remarkable Digital Bleek and Lloyd Archives at UCT (Skotnes 2007) now allows the handwriting styles of both Bleek and Lloyd

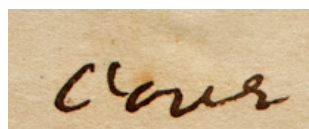


Fig. 5: The word 'cover' with the distinctive 'c', as written by Wilhelm Bleek

to be compared easily. This same writing style is visible in Bleek's section on Book BC 151 A1 4 001 (page 2) in the archives (http://lloydbleekcollection.cs.uct.ac.za/books/BC_151_A1_4_001/A1_4_1_00002.html). A review of the handwriting shows that Lucy Lloyd's writing style does not display this stylistic feature but is very similar to the writing on the front cover (<http://lloydbleekcollection.cs.uct.ac.za/books/>

BC_151_A2_1_001/A2_1_1_INFRT.html).

The last comment at the bottom of the note is difficult to read but in The Bleek Collection catalogue is an entry that indicates that C. L. (sic) Brownlee was the Secretary for Native Affairs (Table 1) and that he was given the galley proofs of this second report for correction before it was printed and submitted to Parliament. Also, that the introductory letter to the report (pages 1–3) is addressed to 'The Hon. Ch. Brownlee, Sq., Secretary for Native Affairs'. In the last two paragraphs of this letter there is a request for more funding for Bleek's linguistic projects. Thus, it seems obvious that it would be his approval that was needed for the report and even future funding. Brownlee was an interesting figure in his own right. He was raised in a missionary family in the Eastern Cape, spoke both English and Xhosa and was sympathetic to the native peoples of southern Africa (Brownlee 1896).

Table 1: Catalogue entry for the second report, *A Brief Account of Bushman Folk-Lore and other Texts**

Catalogue No.	Description	Quantity
D1.14.1	Galley proof of the covering letter to his second report, by W H I Bleek, addressed to C L Brownlee**, Secretary for Native Affairs, February 1875. Corrected in ink.	1

* (https://www2.lib.uct.ac.za/mss/existing/Finding%20Aids/bc_151_the_bleek_collection.htm)

** Actually, Brownlee's initials were CP

Above this ink inscription is a faint note written in pencil: *Title Page for er to look at ?? & then check.* This may not have been written at the same time as the inked note. In the penciled note, 'er' is perhaps a person, but that is not definite either.

Obviously, this note was an instruction for the printing, binding and dispersal of the published copies written by Wilhelm Bleek, presumably to Lucy Lloyd. It is not dated or signed but it was clearly written before the report was printed and probably after the galley proofs were corrected. It was then retained and inserted in Lucy Lloyd's copy after printing. It may be one of the last surviving handwritten texts composed by Wilhelm Bleek before he died. It provides an important glimpse of the care and concern taken in the production and printing of these government reports that now have attained a legendary status well beyond their original intent.

Fig. 6 shows the PCL checkout stamps. According to these, I was the last person to check out the report in 1992. Was it mis-shelved, re-discovered and then correctly shelved? I hope that is the true situation. How did the UT get it in the first place? We may never know. There is evidence in other Bleek publications

at American university libraries that the UCT Library participated in an exchange programme, perhaps trading one publication for another. In any case, this entire narrative supports Weintroub's (2006: 138) re-telling of Stoler's characterisation of an 'archive as a process rather than a place', and clearly the PCL copy is part of the Bleek and Lloyd archive.

The South Africa component of this archive is now listed on UNESCO's Memory of the World register (<https://en.unesco.org/programme/mow/register>) and no reason

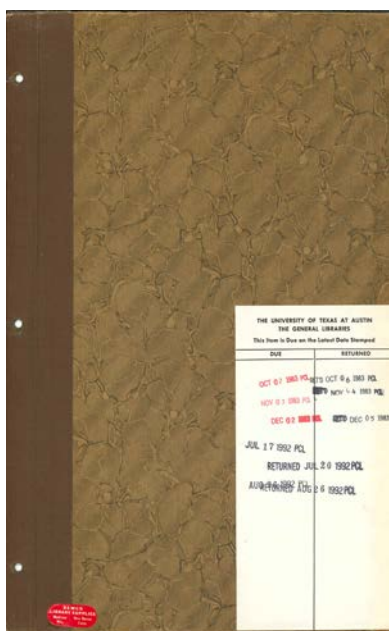


Fig. 6: Check-out stamps

exists for not including the UT copy of Bleek's second report. The PCL has agreed to take it out of general circulation.

Acknowledgements

I would like to thank Janette Deacon for rekindling my memory of the UT copy. The PCL staff, especially Susan Macicak and Margaret Alvarado, have been very helpful in providing access and additional information on the UT copy of Bleek's report. Kent Reilly, Texas State University, and Meg Hacker, retired Archives Director, National Archives at Fort Worth, assisted with the interpretation of handwriting.

References

- Brownlee, CP. 1896. *Reminiscences of Kafir Life and History and Other Papers: With a brief memoir by Mrs Brownlee, and other articles*. London: Lovedale Mission Press.
- Deacon, J. 2021. A map from the memory of the world. The Rock Art Network, https://www.bradshawfoundation.com/rockartnetwork/a_map_from_the_memory_of_the_world.php.
- Scott-Deetz, P. 2007. *Catalog of the Bleek-Lloyd Collection in the Scott Family Archive*. Deetz Ventures, Inc., Williamsburg, VA: <http://www.histarch.illinois.edu/plymouth/BleekLloydCatalog.pdf>.
- Skotnes, P (ed.). 2007. *Claim to the Country: The archive of Wilhelm Bleek and Lucy Lloyd*. Johannesburg: Jacana Press; Athens: Ohio University Press.
- Weintroub, Jill. 2006. 'Some sort of mani': Otto Hartung Spohr and the making of the Bleek Collection. *Kronos* 32:114-138.

The Cape Gallery, 60 Church Street, Cape Town

seeks to expose fine art that
is rooted in the South African
tradition: work which carries
the unique cultural stamp
of our continent.

Rotating exhibitions add to the
diverse and often eclectic mix of
work on show.

THE CAPE GALLERY



Gallery Hours: Mon - Fri: 09h30 - 17h00
Sat: 10h00 - 14h00
tel: +27 21 423 5309 **fax:** +27 21 424 9063
e-mail: cgallery@mweb.co.za
web: www.capegallery.co.za



'Honeymoon (Sleeping Lion & Lioness)' by Peter Gray

Oil on Belgian linen 87 x 127 cm

Born in Zimbabwe in 1950, Peter sold his first painting at age 12. He graduated from the University of Cape Town's Michaelis School of Fine Art. Further studies led him into the fields of gemmology, jewellery design, copper plate and seal engraving. After participating in several exhibitions in England, he opened a studio in Kent. In 1983, he relocated back to Zimbabwe where he opened a workshop and foundry producing bronze and silver sculpture. He currently resides in Cape Town.

BIRDS OR FISH?

Rock paintings from the Western and Eastern Cape Province

Jeremy Hollmann

Rock paintings with human heads, elongated upper limbs and shorter, tapered lower limbs in the Western Cape Province's Klein Karoo and in the Eastern Cape Province have long fascinated people (Fig. 1). They are widely believed to depict 'watermeide' and/or 'meermynne' (mermaids) that live in the water (see Hollmann 2005b:24 for discussion). These paintings are said to incorporate human and fish characteristics. In this article I will not discuss these 'folk' interpretations further, but in my opinion these interpretations are subsequent construals of what was formerly a hunter-gatherer (San/Bushman) motif of human-bird beings (Hollmann 2005b).

Over the years I have documented many of these paintings (Hollmann 2003; 2005a; 2005b). Currently, at least 25 rock art sites have been recorded. I show how knowledge of animal behaviour plays a decisive role in their identification and interpretation. Miss these details and you miss references vital to understanding the paintings. I use traced and redrawn copies of the images here so that the details can be clearly seen.

Aquatic models proposed for the motif include dugongs (Willcox 1959), seals (Peringuey 1911; Woodhouse 1974) and fish (Maggs 1998; Rust 2021). Others have suggested that the motif combines characteristics of human and bird (Van der Riet & Bleek 1940; Rudner and Rudner 1970; Lewis-Williams 1990; Lewis-Williams et al. 1993). Some argue for the existence of both bird and fish motifs (Rudner and Rudner 1970; Rust 2021:21), whilst Stevenson (1995) suggests that there is a single motif that straddles both categories.

There are thus two broad schools of thought: one that sees the motif as aquatically inspired, the other that links the motif to flight. The question is: can one home in any closer to the affinities of this motif?

Image-makers are known to have painted fish at a site within the area (Table 1a), so it seems possible that the intriguing bird/fish images could incorporate features of fish. For example, the tail fins of fish could provide the model for their tails, although individual fish paintings appear to have asymmetrical tail fins.

The upper limbs of the image would be analogous to the dorsal and ventral fins of fish. To create such

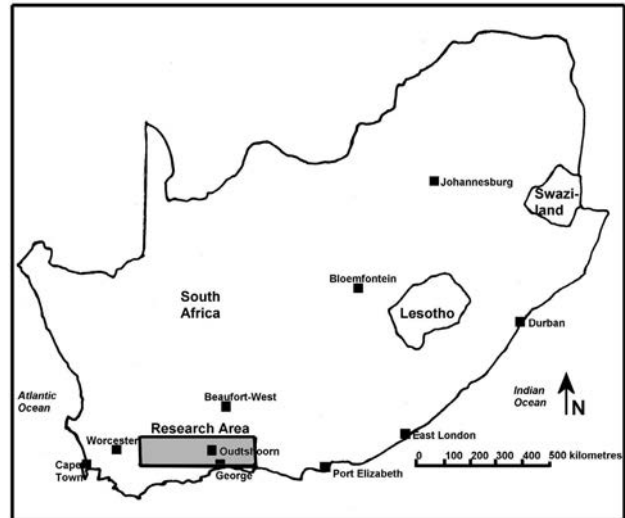


Fig. 1: Map showing the distribution of sites featuring the bird/fish motif. These have a restricted distribution from the Anysberg in the west to the Baviaanskloof and the Groot Winterhoek mountains in the east.

a creature, however, the painter must alter certain attributes of the fish model (Table 1b). Paintings of fish show that their dorsal and ventral fins are not arranged exactly opposite to each other. Fish fins are also considerably shorter than the upper limbs of the images. Furthermore, some fish paintings include an anal fin, a feature wholly absent from the paintings. Image-makers would therefore have had to resize and reposition the dorsal and ventral fins and exclude the anal fin entirely. Fish are thus a possible but not ideal model.

What about the possibility that the motif incorporates avian features? At certain sites the images have upper limbs that curve sharply backward from the shoulders and extend beyond the tips of the far shorter lower limbs, far too long to be naturalistic depictions of fish fins or mammal flippers (Table 1c – e). It is hard to interpret these appendages as anything other than bird's wings.

Those who have proposed an aquatic model have tended to base their interpretation on images with shorter, arm-length upper limbs (Table 1f and h), while those who see an affiliation with birds refer to those sites where the images' upper limbs stretch to and beyond the extremities of the lower limbs. We have thus reached an apparent impasse because morphology alone is not sufficient to settle the identification of the motif.

Jeremy C Hollmann is an Honorary Research Associate of the Rock Art Research Institute, University of the Witwatersrand. jeremy.hollmann@gmail.com

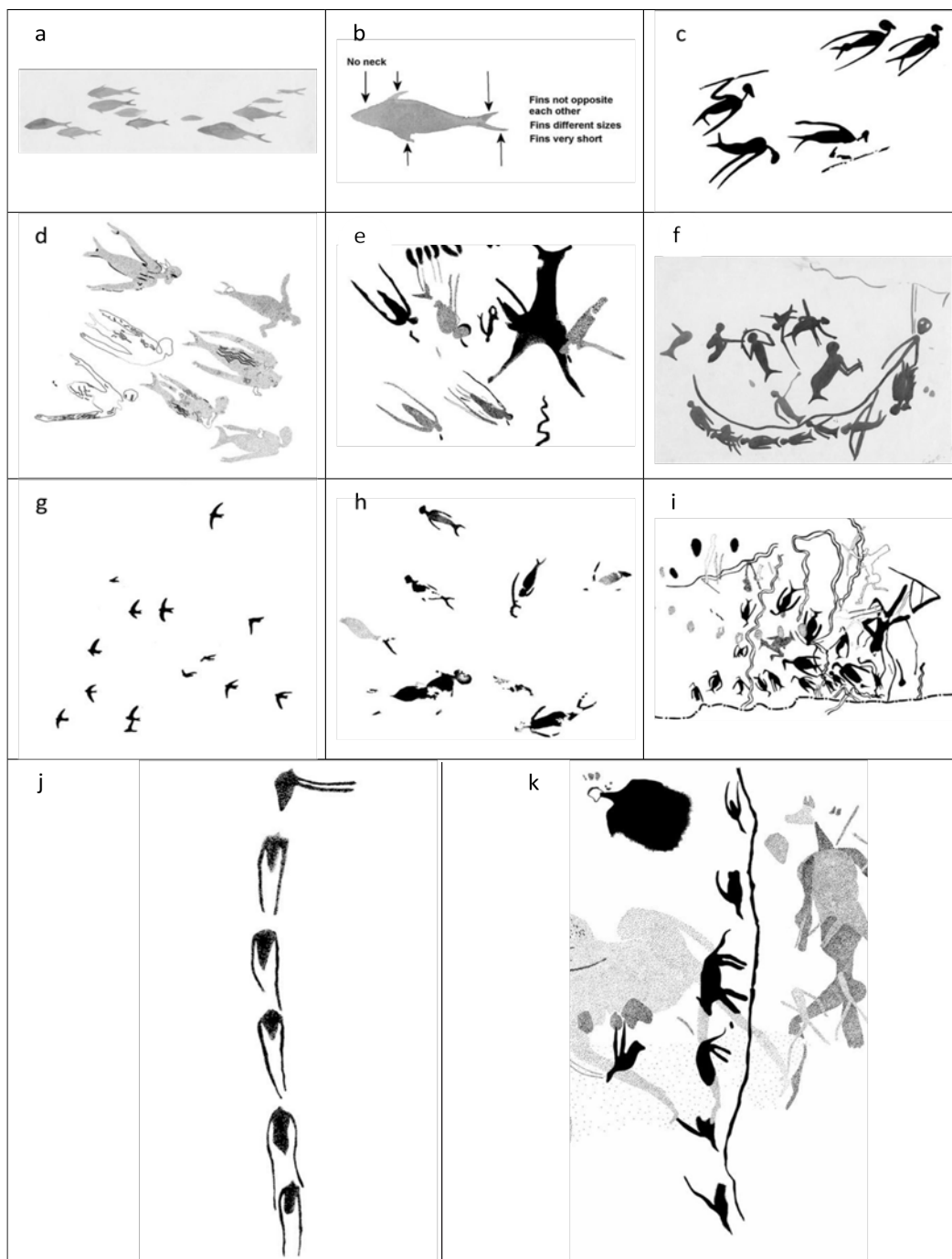


Table 1:
Arrangements of
bird/fish motifs
that model swift
behaviour

- a. Paintings of fish from Misgund, near Uniondale. Watercolour copy by NM Rowley. G 3. 3. 124 in: BLC 151, UCT Libraries.
- b. Problems with fish as a natural model for the images. Adapted from copy by NM Rowley.
- c. An upper group of two bird/fish figures and a lower group of three, two of which hold sticks. Painted in red. Site 7, Oudtshoorn. Copy by JC Hollmann.
- d. Seven elaborately decorated bird/fish images. Black represents red, stippled areas are yellow, areas enclosed with a line are white. Site 11, George. Copy by FE de Villiers.
- e. Paintings of bird/fish motifs together with anthropomorphs and a front-view of a superimposed antelope. Black represents red, stippled areas are yellow. Site 11, George. Copy by JC Hollmann and FE de Villiers.
- f. A convex, semi-circular procession of images below the long, right-facing figure. Their head-to-tail arrangement may model circling. Painted in red. Site 10, George. Watercolour by J. Eddie. In BLC 151 (G3.3), UCT Libraries.
- g. Copy of a photograph of circling common swifts (*Apus apus*). After Lack (1973).
- h. Bird/fish images arranged to resemble moments in the circling of swifts. Painted in red. Site 4, Attaquaskloof. Copy by JC Hollmann and FE de Villiers.
- i. Circling behaviour of swifts. Painted in red. Site 12, George. Copy by JC Hollmann.
- j. Vertical arrangement of bird/fish motifs that could depict circling. Painted in red. Site 11, George. Copy by JC Hollmann and FE de Villiers.
- k. Vertical arrangement of bird/fish motifs that could depict circling. Painted in red. Site 15, Kouga. Copy by JC Hollmann and FE de Villiers.

There are indeed several correspondences between postures and arrangements of the paintings and swift behaviour.

The behaviour of swifts

Swifts spend most of their lives on the wing (Lack 1973; Fry 1988; Chantler 1999). They fly at high speeds and excel at split-second manoeuvring as they hunt airborne insects or chase after each other (Chantler 1999).

Certain species nest in rock crevices in vertical surfaces or attached to rock overhangs, locations that allow enough of a drop for ease of access and departure since the birds cannot take off horizontally (Steyn 1996). Observers have commented on the way swifts approach and enter a nest: the bird arrives at the nest at high speed, checks adroitly and instantaneously vanishes into the narrow entrance with wings fully closed. Its passage is so smooth that it appears to fly in (Fry 1988). If the imagery is based on swifts, then it seems likely that amongst the reasons that image-makers selected these birds as a model was because they epitomised the mastery of flight and, possibly too, because of their association with krantzes (Hollmann 2005a & b).

There are several groupings of these images that could represent swifts on the wing. At these sites, painters arranged them in clusters of up to seven images (Table 1d). Individuals in these painted groupings all face the same way and their upper limbs curve backwards from the shoulder and extend to the tips of their lower limbs. The length of the upper limbs suggests that they represent wings, not fins or flippers. The arrangement of the paintings also looks very similar to groupings of flying swifts.

However, convincing as these correspondences may be, we cannot yet be sure that the painters did indeed draw on swifts and the power of flight as their model, rather than fish and their capacity to swim. To argue the case convincingly for swifts as a model, one must be able to point out further close correspondences between swift behaviour as documented by natural historians and those postures and arrangements used repeatedly by image-makers. If such a correspondence can be demonstrated, the argument that these images model swift behaviour becomes the best explanation.

Wing-clapping and circussing swifts







Earlier I mentioned two postures, one in which

both upper limbs are held above the body at an acute angle and the other in which both upper limbs are held below the body in a similar position. These postures may be linked to wing-clapping, in which the wings meet above and below to create a clapping sound (Fry 1988; Chantler 1999). The painters were apparently well acquainted with this behaviour and incorporated it into the imagery (Table 2). The painted posture is probably symbolically significant (Hollmann 2005b). Painters arranged these images in two distinctive yet, I suggest, conceptually similar patterns at various sites. The first groups the images in close proximity, while the individual images face in different directions and are placed in varying orientations. This arrangement is repeated at two different sites at least 150 km apart (Table 1h and i). In the second type of arrangement the images follow each other in a single row or procession (Table 1f, j and k).

Both arrangements could have their counterpart in circussing or 'screaming parties' (Table 1g). A single bird initiates this display by flying, screaming, towards the nesting colony (Fry 1988; Chantler 1999). Other birds join in and they wheel around in the sky. 'Parties' are often held at dusk; pairs with eggs or chicks return to their nests, while the younger birds make a 'night ascent' and spend the entire night aloft (Lack 1973; Chantler 1999). Little is known about circussing although certain researchers have suggested that it plays a role in social cohesion (Lack 1973; Fry 1988); swifts hold 'screaming parties' more frequently shortly before migration (Lack 1973).

The paintings at Site 4 (Table 1h) are perhaps the most naturalistic version of circussing. At least seven of the images are juxtaposed on the rock face. They are placed in different orientations and face in various directions, yet their proximity to each other suggests that they form a whole and are engaged in some coordinated activity. Comparison of a photograph of circussing swifts (Table 1g) with the images from Site 4 illustrates the similarity between these two configurations. In both instances the creatures soar with wings widespread. Their close proximity to each other and their differing orientations show that they

Table 2: Modelling of swift wing-clapping behaviour

Site 7	Site 11	Site 12	Site 14	Site 11	Site 11
					

Some bird/fish images are portrayed in two distinctive postures. The first four images have upper limbs painted below their bodies. The upper limbs of the remaining two images are above their bodies. The images may have been modelled on the wing-clapping behaviour of swifts. Black represents red paint. Light stipple is yellow. Images are depicted at varying scales.

are flying at high speed and are simultaneously manoeuvring sharply to avoid collision.

The paintings at Site 12 (Table 1i) are also arranged in this manner, although it is less easy to see this as they are juxtaposed with sets of zigzag lines. Careful inspection, though, suggests these follow similar conventions as at Site 4 (Table 1h). The images are within a few centimetres of each other and face in different directions.

The semi-circular arrangement of the figures at Site 10 (Table 1f) is the pattern that most clearly captures the wheeling movement of a group of circling swifts. Their head-to-tail arrangement and the convex conformation of the whole suggest that these images were intended to be seen as moving in a circular direction, in a pattern similar to the wheeling of circling swifts. The orientation of the rows themselves varies from site to site. At Site 10 (Table 1f) the row is semi-circular and concave, at Site 11 (Table 1j) it is vertical with the images facing upward, while at Site 15 (Table 1k) it is vertical with the images facing downwards.

Such vertical and strongly directional arrangements of the motifs could reflect characteristic formations associated with swifts' circling. In addition, the configurations may also allude to aspects of hunter-gatherer rituals such as the healing dance, in which dance participants organise themselves into single file (Hollmann 2005b). There are therefore similarities between swift behaviour during screaming parties and the ways in which image-makers arranged the motif in rows.

Swift mating behaviour

There is another correspondence between the ways that painters arranged the images and how swifts behave, namely mating behaviour. Swifts engage in various aerial displays that include steep dives, rapid ascents and chases in which the female often leads the male (Lack 1973; Chantler 1999). Some observers report that swifts can copulate in mid-flight

(Lack 1973) but others are sceptical about this claim (Chantler 1999). One natural historian has observed that at the beginning of the summer mating season, Chimney Swifts form loose associations of four to seven individuals from which pairs of swifts would fly off (Fischer 1958 in Chantler 1999). Later in the season, the swifts begin 'trio-flying', a behaviour in which two males pursue a rapidly flying female (Chantler 1999). These distinctive behaviours are characteristic of several swift species (Chantler 1999).

We may see these behaviours modelled at certain sites. At Site 11 (Table 3 - left) the topmost of a pair of images has a large head and holds its arms backwards in a V position. This wing posture may recall what observers of swifts call V-ing, a behaviour that is part of the swifts' repertoire of courtship acrobatics (Chantler 1999). Elsewhere image-makers placed a pair 300 mm above a grouping of about 15 images (Table 3, Site 12). The arrangement could depict a group of circling swifts from which a pair has split off. At Site 10 (Table 1f), a line of images incorporates a distinct and separate pair of images at the far right. Again, given what we know of swift behaviour, it seems unlikely that this association between pairs and larger groupings of images is coincidental.

Painters did not always juxtapose pairs of these images with larger groupings, however. At Site 13 (Table 3), a pair appears without any accompanying images. This pair too may model aspects of courtship acrobatics.

Other paintings reinforce the link between the arrangement of the images and swift mating behaviour. At Site 7 (Table 1c), painters arranged five images in two groups: a lower group of three images and an upper group of two. The trio of images at Site 7 (Table 3) suggests the trio-flying I mentioned earlier, in which two males compete for a single female, while the topmost pair model the characteristic swift couples just discussed. At Site 11 (Table 3 - right), groupings of three images were also depicted. Again, there appear

to be similar patterns in the way image-makers arranged the images at different sites. It thus appears that in certain cases the painters of the images used duos and trios of mating swifts as their models.

Implications

I have argued that the painters of these images based their form and arrangement on certain swift behaviours, some







Site 7	Site 11	Site 12	Site 13	Site 7	Site 11
					

Table 3: Images of bird/fish arranged in pairs and trios may be modelled on swift mating behaviour. Black represents red paint. Light stipple is yellow. Images are depicted at varying scales.

of which are unique to this group of birds. The behaviours are wing-clapping, circussing and mating behaviour.

These empirically verifiable behavioural features enable us to interpret potentially equivocal morphological characteristics of the motifs, such as the shape of their upper and lower limbs. It appears that these features refer to the wings and tails of swifts and not to fish fins or to the appendages of any other aquatic model. These are swift-people, not mermaids or fish-people. The identification of these behaviour patterns has made it possible to unpack a range of phenomena that can more easily be pinned to specific ethnographic accounts and thus facilitate interpretation of the imagery (Hollmann 2005b).

The swift-people show the extent to which painters from this area incorporated not only morphology but also behaviour into their images. As we pay more attention to the identification of behavioural patterns in southern African hunter-gatherer imagery, it is likely that we will find that this use of natural modelling is systematic and widespread throughout the subcontinent.

Acknowledgements

I gratefully acknowledge the support of the National Research Foundation (NRF) and the University of the Witwatersrand Research Office for fieldwork funding. Janette Deacon shared information regarding sites. I thank everybody who guided me to swift-people sites. These include John Begg, the Du Preez family, Paul Gray, Justus Grebe, the Hestermanns, Judy Maguire, Antoinette Pienaar, Renee Rust, Rodger Smith, the Terblanches, staff at Anysberg, Ladismith, and Uniondale Nature Conservation. Franda de Villiers, Justine Olofsson and Letitia Petersen helped with fieldwork. Renee Rust discussed her work on images of swift-people in the Anysberg. I am indebted to ornithologist Alan Kemp for putting me on to the swifts. Comments and suggestions on earlier drafts by the late Ed Eastwood and by Siyakha Mguni greatly improved the final product. Finally, I thank Marthina Mössmer for her help, support and patience during my many bouts of fieldwork.

References

- Chantler, P. 1999. Order *Apodiformes*. In J del Hoyo, A Elliott & J Sargatal (eds), *Handbook of the Birds of the world*, Vol. 5: Barn-owls to Hummingbirds, 388–417. Barcelona: Lynx Edicions.
- Fry, HC. 1988. *Apodidae*: Genus *Apus* Scopoli. In Fry, HC, Keith, S & Urban, EK (eds), *The Birds of Africa*, Vol 3, 212–229. London: Academic Press.
- Hollmann, JC. 2003. Indigenous knowledge and paintings of human-animal combinations: ostriches, swifts and religion in Bushman rock art, Western Cape Province, South Africa. MA dissertation. Johannesburg: University of the Witwatersrand.
- Hollmann, JC. 2005a. Using behavioural postures and morphology to identify hunter-gatherer rock paintings of therianthropes in the Western and Eastern Cape Provinces, South Africa. *South African Archaeological Bulletin* 60: 84–95.
- Hollmann, JC. 2005b. 'Swift-People': therianthropes and bird symbolism in hunter-gatherer rock-paintings, Western and Eastern Cape Provinces, South Africa. *South African Archaeological Society Goodwin Series* 9: 12–24.
- Lack, D. 1973. *Swifts in a tower*. London: Chapman and Hall.
- Lewis-Williams, JD. 1990. *Discovering Southern African Rock Art*. Cape Town: David Philip.

Lewis-Williams, JD, Dowson, TA, Deacon, J. 1993. Rock art and changing perceptions of southern Africa's past: Ezeljagdspoor reviewed. *Antiquity* 67: 273–291.

Maggs, T. 1998. Cover picture. *South African Archaeological Bulletin* 53:3.

Peringuey, L. 1911. The stone ages of South Africa. *Annals of the South African Museum* 8:1–218.

Rudner, J & Rudner, I. 1970. *The Hunter and His Art: A survey of rock art in southern Africa*. Cape Town: C Struik.

Rust, R. 2021. Another look at the Ezeljagdspoor San paintings of the Klein Karoo, Western Cape. *The Digging Stick* 38(3):18–23.

Stevenson, J. 1995. Man-the-shaman: is it the whole story? A feminist perspective on the San rock art of southern Africa. MA dissertation. Johannesburg: University of the Witwatersrand.

Steyn, P. 1996. *Nesting Birds: The breeding habits of southern African birds*. Vlaeberg: Fernwood Press.

Van der Riet, J, Van der Riet, M & Bleek, DF. 1940. *More Rock-paintings in South Africa: From the coastal belt between Albany and Piquetberg*. London: Methuen & Co.

Willcox, AR. 1959. Famous rock-paintings in the Karoo. *South African Archaeological Bulletin* 14(54):56.

Woodhouse, HC. 1974. Creatures with both human and animal physical features depicted in the rock paintings of southern Africa. *South African Journal of Science* 70:13–17.

ARCHAEOLOGY IN BRIEF

The Black Death not as deadly as thought

Flea-ridden rats in crowded medieval cities were the primary cause of Black Death infections in the 14th century, which historians believe killed off nearly half of Europe's population. However, research based on pollen samples shows the plague may not have been as deadly as thought. Researchers from the Max Planck Institute for the Science of Human History published their findings in the journal *Nature Ecology*. The team assessed samples from 261 sites in 19 European countries to examine topographical changes between 1250 and 1450. If, indeed, half of Europe's population had died, the researchers would expect to see a change from agricultural pollen grains to those of trees and shrubs as fields were left fallow as farmers died off. While some areas like southern Sweden, central Italy and Greece fit this pattern, other areas like Catalonia and Czechia showed no change in agricultural presence, according to study author Adam Izdebski. Areas like Poland, the Baltic countries and central Spain experienced an increase in agricultural expansion. A regionally variable Black Death also fits with what modern scientists know about the spread of plagues. The discrepancies between the findings of historians and the new research could be due in part to the sources dating from that time. These come largely from state or church officials in urban areas that would have been impacted more heavily by the plague.

New York Times, 28/02/2022

WORLD ARCHAEOLOGY

Shimao challenges roots of Chinese civilisation

For decades, villagers in the dust-blown hills of China's Loess Plateau in Shaanxi Province believed that the crumbling rock walls near their homes were part of the Great Wall, which zigzags through this arid region inside the northern loop of the Yellow River. But then they began finding non-indigenous pieces of jade, some fashioned into discs and blades and sceptres. When Chinese archaeologists came to investigate, they found that the stones were the ruins of a magnificent fortress city. The ongoing dig has revealed almost 10 km of protective walls surrounding a 77 m high pyramid and an inner sanctum with painted murals, jade artefacts and evidence of human sacrifice. Seventy stunning relief sculptures in stone were uncovered – serpents, monsters and half-human beasts that resemble later Bronze Age iconography in China. Even more astonishing: carbon-dating determined that parts of the Shimao site date back 4 300 years, 500 years before Chinese civilisation took root on the Central Plains. Shimao flourished in this seemingly remote region for nearly 500 years, from around 2300 BC to 1800 BC.

None of the ancient texts that have helped guide Chinese archaeology mention an ancient city so far north of the so-called cradle of Chinese civilization, much less one of such size, complexity and intense interaction with outside cultures. Covering 400 ha, Shimao is now the largest known Stone Age settlement in China. Together with recent discoveries at other prehistoric sites, Shimao is forcing historians to rethink the beginnings of Chinese civilisations.

The first impression of Shimao is of a city designed to face constant danger. The city was built in a conflict zone, a borderland dominated for thousands of years by warfare between herders of the northern steppe and farmers of the central plains. The Shimao elites modelled an oblong 20-tiered pyramid on a high hill. It is about half the height of Egypt's Great Pyramid at Giza, which was built around the same time (2250 BC). But its base is four times larger, and the elites protected themselves further by inhabiting the top tier, which included an 8 ha palatial complex with its own water reservoir and craft workshops.

Radiating out from the central pyramid were kilometres of inner and outer perimeter walls, 2.6 m thick. The walls alone required 125 000 m³ of stone, a huge undertaking in a Neolithic society whose population likely ranged between 10 000 and 20 000. More than 70 stone towns from the same Neolithic era, known

as the Longshan period, have now been unearthed in northern Shaanxi province. Ten of them are in the Tuwei River basin, where Shimao is located, and together they laid a solid social foundation for the early state formation. Hsiao's fortifications are astonishing not just for their size but also for their ingenuity. The defensive system included barbicans, one-way baffle gates and bastions, even a 'mamian' structure whose angles drew attackers into an area where defenders could pummel them from three sides. Inside the stone walls, wooden beams were used as reinforcing. Carbon-dated to 2300 BC, the still-intact cypress beams represented a method of construction that was previously thought to have begun only in the Han Dynasty more than 2 000 years later.

Underneath the city's eastern wall, 80 human skulls were found clustered in six pits. The skulls' number and placement suggest a ritual beheading and is the earliest known example of human sacrifice in Chinese history. Almost all the victims were young girls. Several stone blocks in the high terrace walls were carved with lozenge designs, making them appear like enormous eyes gazing down. Wedged into the walls at regular intervals were thousands of pieces of black and dark green jade, shimmering ornaments that served both to ward off evil and to project the power of Shimao elites.

'What is significant is that Shimao, along with many other areas, shows that China's civilisation has many roots and does not emerge just from growth in the Central Plains,' says Jessica Rawson, a professor of Chinese Art and Archaeology at the University of Oxford. Many artifacts found at Shimao could only have come from distant lands. Besides the jade, archaeologists also found the remains of alligator skins. Another discovery flummoxed Sun and his team: 20 identical pieces of bone, thin, smooth and curved. A musical scholar deduced that the bones were the earliest examples of a primitive reed instrument, the mouth reed.

There are some clues to why Shimao was abandoned after 500 years. It was neither earthquake, flood nor plague but rather climate change that forced the population to move. Historical records show that from a relatively warm and wet climate there was a rapid shift from 2000 BC to 1700 BC to a drier and cooler climate. Lakes dried up, forests disappeared and deserts encroached.

Brook Larmer, 06/08/2020

KHOEKHOEN, SCIENTIFIC RACISM AND THE FUGGEREI

Andrew Smith

In 1506, Balthasar Springer led the expedition that took Francisco de Almeida to the Indies to take up his position as Viceroy. The report of this journey was published in 1509 (Smith and Pasche 1997). It included several woodcut depictions by Hans Burgkmair, which are the first-known pictures of the Khoekhoen. One of these, showing a Khoe family (Fig. 1), resembles Albrecht Dürer's famous 1504 drawing of Adam and Eve in the Garden of Eden. There should be no surprise at this, since Dürer and Burgkmair were members of the same artists' club in Augsburg, Germany. However, what is remarkable about the Burgkmair pictures is that the Khoekhoen are shown as natural human beings, unlike many of the illustrations that followed in the 16th and 17th centuries (Smith 1993; Smith and Pheiffer 1993).

A study of Burgkmair's drawings has been done by Leitch (2009), who has noted how realistic and humane his depictions are. She argues that they significantly show the various cultural groups, not the fantastic creatures and monstrous people like those Europeans had been told existed beyond the then known world of the circum-Mediterranean basin by Herodotus (5th century BC), Pliny the Elder (4th century AD) and Mandeville (14th century AD). Illustrated as real people, the pictures underpinned ideas of the existence of different cultures and would later lead to the study of ethnology.

This was in sharp contrast to the 'bestiality' or 'savagery' of the Khoekhoen described by other authors, which Hudson (2004) said needed to be rationalised by the European audience and in so doing laid the basis of modern 'race' and 'racism'. He outlines three phases of the growth of racism in European thought: 1) the 'bestiality' phase of the 15th to early 17th centuries, which emphasised how close they were to monstrous creatures, such as 'Anthropophages' (man-eaters); 2) an 'enlightenment' phase of the late 17th and the 18th centuries where colonists and travellers, like Robert Jacob Gordon (Cullinan 1992), who had close contact with different groups, meant challenging the original assumptions; and 3) a 'scientific' phase of the 19th century where ideas of evolutionary development and the origin of species led to Social Darwinism and the imperial mindset that allowed the division of Africa by European colonial powers.

Start of a socio-economic hierarchy

The African focus of this evolutionary scheme

Andrew B Smith is Professor Emeritus at the Department of Archaeology, University of Cape Town. andrew.smith@uct.ac.za



Fig. 1: Depiction of a Khoekhoe family by Hans Burgkmair, 1509

outlined by Hudson (2004) places the Khoekhoen firmly at the centre, but we must also recognise that colonisation of the New World occurred at the same time. Columbus had already made two voyages to the Caribbean, the second with 1 500 men, before Vasco da Gama had reached the Indian Ocean in 1497. By the time of Columbus' fourth journey (1502–1504), a number of Spanish settlements had already been set up in the Caribbean, resulting in mixed-race groups, and a socio-economic hierarchy started with different names used to classify people (Estes 2013).

Physical differences were important, although economic means usually gave them force and emphasis. Would these not also be racial? Perhaps the natives of the New World were easier to fit into preconceived ideas of the European settlers since they were quite sophisticated in their social organisation and culture. Certainly, having valuable materials such as gold, would have made them acceptable within the European social hierarchy, albeit one that had no problem enslaving them and using their labour, which already was being carried out from their West African entrepôts. In fact, West African slaves were imported into the Caribbean early in the 16th century. They were needed because labour was becoming short owing to

epidemics from diseases for which local people had no immunity.

The earliest visitors considered the Khoekhoen to be living in a Garden of Eden, so unspoiled they seemed to be without the ills that affected Europe of the 16th century. This did not last long, however. On his voyage back to Europe at the end of his tenure as Viceroy of India in 1510, de Almeida's ships made a call at Table Bay to replenish their water supplies, the result of which was an incident that had serious effect on Portuguese travel to Africa. Initial goodwill between the local Khoekhoen and the travellers went sour when some of the sailors kidnapped some children to force the Khoe to trade livestock. The Khoe went ballistic.

As Axelson (1973: 111–113) describes it: the general feeling of Portuguese arrogance against 'uppity' natives, along with a lack of communication among crew members, allowed de Almeida and some of his men, who were on the shore, to become separated from their ships when conditions made it necessary to move them away from the beach. The Portuguese were unable to adequately defend themselves when the Khoekhoen attacked with stones and spears. The result was the death of de Almeida and a number of his soldiers. This was seen as a massive blow to Portuguese self-esteem. The consequence was that the authorities in Portugal gave instructions that no ships were to call at the South African coast. That this rule was followed appears correct as there is only one reference to a landing in Raven-Hart (1967: 13) other than the wreck of the *Sao Gonçalo* at Plettenberg Bay in 1630. The absence of landings may also have been due to a lack of information since many Portuguese documents were lost in the tragic 1755 fire in Lisbon.

Modern dispute keeps alive Khoekhoen history

Even though this story has been well-documented by Eric Axelson (1973), there is a dispute over where the fight actually took place. Axelson says the Portuguese vessels were moored at Woodstock Beach. Getting fresh water probably meant sending smaller craft up the Salt River to the Liesbeeck River but this does not tell us exactly where the two sides came to blows. The issue has been raised recently by the claim that it happened where Amazon has been building its new South African headquarters at the River Club in Cape Town. The opponents of this project claim historic Khoekhoen rights over the land and want it preserved as a pristine site (Mellet 2022). The issue has become highly politicised with one side seeing historic Khoekhoen needs being pushed aside and the other arguing for employment and being willing to acknowledge the historic space with appropriate visible monuments to Khoekhoen history.

With all the current noise, the voice of one of the historic players has been completely forgotten,

namely the Fugger family. The Fuggers were bankers in Augsburg where Dürer and Burgkmair had their artists' studio. They were very rich, and probably had a near monopoly of the copper trade in Europe. They were the funders of the Springer Expedition that took de Almeida to the Indies in 1506. Their legacy still exists in Bavaria in the form of the Fuggerei in Augsburg, which claims to be the world's oldest social housing project built to house some of the city's poorer residents. This year the scheme celebrated its 500th anniversary. The celebrations included the visit of Ursula von der Leyen, the European Commission president, who will suggest such a project to President Volodymyr Zelensky when it comes time to rebuild Ukraine (Miller 2022).

In the 16th century, the Fuggers had no idea that their altruism to support the less fortunate would still be felt in the 21st century, nor that their funding of the Springer Expedition and the ultimate fate of de Almeida would echo down the centuries and help keep alive the history of the Khoekhoen, which has tended to be forgotten (Smith 2022).

Was there a difference in how Europeans viewed the native peoples of the Caribbean from how the Khoekhoen were seen? And was the colonisation process any different in the two areas? The fact that 150 years separated the colonial settlement of the two areas, and Portugal avoiding the Cape, must have played a significant role in how Africans at the end of the continent were perceived (and feared). The Khoekhoen were probably also compared with the natives of the New World that was being exploited for all its riches. The Cape was only convenient for access to fresh water and trade in meat until the Dutch set up their 'refreshment station' in 1652.

References

- Axelson, E. 1973. *Portuguese in South-East Africa 1488-1600*. Cape Town: Struik.
- Cullinan, P. 1992. *Robert Jacob Gordon, 1743–1795: The man and his travels*. Cape Town: Struik Winchester.
- Estes, R. 2013. Las Castas-Spanish racial classifications. Native Heritage Project. Google.
- Hudson, N. 2004. 'Hottentots' and the evolution of European racism. *Journal of European Studies* 34(4):308–332.
- Leitch, S. 2009. Burgkmair's peoples of Africa and India (1508) and the origins of ethnography in print. *The Art Bulletin* 91(2):134–159.
- Mellet, PT. 2022. Two Rivers Urban Park. www.facebook.com/561597506/posts.
- Miller, J. 2022. Once upon a time in Bavaria. *Financial Times Weekly* 18–19 June.
- Raven-Hart, R. 1967. *Before van Riebeeck*. Cape Town: Struik.
- Smith, A. 2022. *First People: The Lost History of the Khoisan*. Cape Town: Jonathan Ball Publishers.
- Smith, AB. 1993. Different facets of the crystal: early images of the Khoikhoi at the Cape, South Africa. In Hall, M & Markell, A (eds), *Historical Archaeology in the Western Cape, South Africa*, South African Archaeological Society, *Goodwin Series* 7:8–20.
- Smith AB & Pasche, WE. 1997. Balthasar Springer at the Cape (1506). *Quarterly Bulletin of the South African Library* 51:93–98.
- Smith, AB & Pfeiffer, RH. 1993. *The Khoikhoi at the Cape of Good Hope: Seventeenth-century drawings in the South African Library*. Cape Town: South African Library.

FIRST AND SECOND CREATION

The transformation experience during San male initiation

Andrew Paterson

In two articles, namely 'Elephantropes of the Cederberg' and 'San male initiation paintings in the rock art of the Cederberg', published in issues of *The Digging Stick* 36(2) (August 2019) and 37(3) (December 2020) respectively, I described two paintings of San male initiation ceremonies, known as the *Tshoma* rite (Marshall 1999). The paintings are located at Sevilla and the Groot Hexrivier respectively (Fig. 1). Since the publication of these articles, two more paintings have been found in Sevilla Trail area on the properties Kleinfontein and Salmanslaagte (Fig 2). The new paintings have the same basic composition as the one at the Sevilla site.

The composition of these four San male initiation paintings can be described as a procession of male figures facing and moving in the same direction. The processions usually comprise around 15 to 35 figures. Each procession is split into two distinct, yet connected, groups of figures. The rear groups, highlighted in black in Figs 1 & 2, are either standing or walking figures, frequently wearing eland kaross cloaks. Sometimes they carry hunting gear or sticks. The front group, highlighted in red in Figs 1 & 2, comprise naked male figures tightly packed together who are either lying down, dancing and squatting or are bent over or falling backwards. The body gestures of each front group suggests that they are in a state of exhaustion or altered state of consciousness. This group is considered to be sub-adult San male initiates, normally 10 to 15 years old, undergoing an initiation ceremony.

Ethnographic research

According to Marshall (1999), the San *Tshoma* rite brings the boys into manhood. The *Tshxai !Go* (Men's Dance) is in every way the most important part of the *Tshoma* rite of passage. Every night the initiates dance the whole night through. It is at the dance that the boys receive and become the owners of the *Tshoma n/om*. The San concept of *n/om* is considered the vibrant energy connecting and animating all living entities. It comes from God the Creator and is the source of all inspired energy (Keeney and Keeney 2015).

The *Tshoma* rites are directed at survival, specifically

towards the protection of health and protection from starvation. This is followed by the teaching of social rules and rites for success in the hunt. It is not so much the fear of death that inspires many San survival rites but rather an ardent clinging to life (Marshall (1999).

According to Keeney and Keeney (2013), the Ju/'hoan origin myth is depicted as providing a contextual frame that orchestrates and gives meaning to their puberty rights, storytelling and the healing dance. These performances depict a re-entry from Second into First Creation, the latter an imagined time when the original people could change into animals, communicate with all living forms and have eternal life without sickness. Here *n/om*, or the San's presumed vitality of life, change and creation, is infused into the community.

The empowerment provided by adolescent passage into adulthood, renewal of mythological potency, enhancement of community relations and the healing of sickness take place inside the performances and dramatise re-entry into First Creation. This recurrent passage between First Creation and Second Creation sets the stage for the Bushman transformative experience.

Armstrong (2005) held that initiation ceremonies were central to the religion of the ancient world and remain crucial in traditional societies today. Adolescent boys are torn away from their mothers, separated from the community and forced to undergo an ordeal designed to transform them into men. The childhood of the boys has to die as they enter the world of adult responsibilities. They are subjected to intense physical pain. The experience is so intense and traumatic that the initiates are changed forever. At the end of the ordeal, the boys have learned that death is a new beginning. They return to their people with a man's body and soul.

In this regard, a most interesting body of research has recently been published by Waring and Wood (2021). It concerns long-term gene-culture co-evolution and human evolutionary transition. They propose that group-oriented culture has influenced human survival and evolution for millennia. The combination of culture and genes has fuelled several key adaptations in humans, such as reduced aggression, cooperative inclinations, collaborative abilities and a capacity for social learning. This cultural development has helped people to adjust to their environment and meet the challenges of survival and reproduction.

Andrew Paterson has studied the San rock art of the Cederberg with Prof. John Parkington of the University of Cape Town and the eCRAG rock art group of the South African Archaeological Society under the leadership of Prof. Janette Deacon for the past 17 years. andypat@iafrica.com.

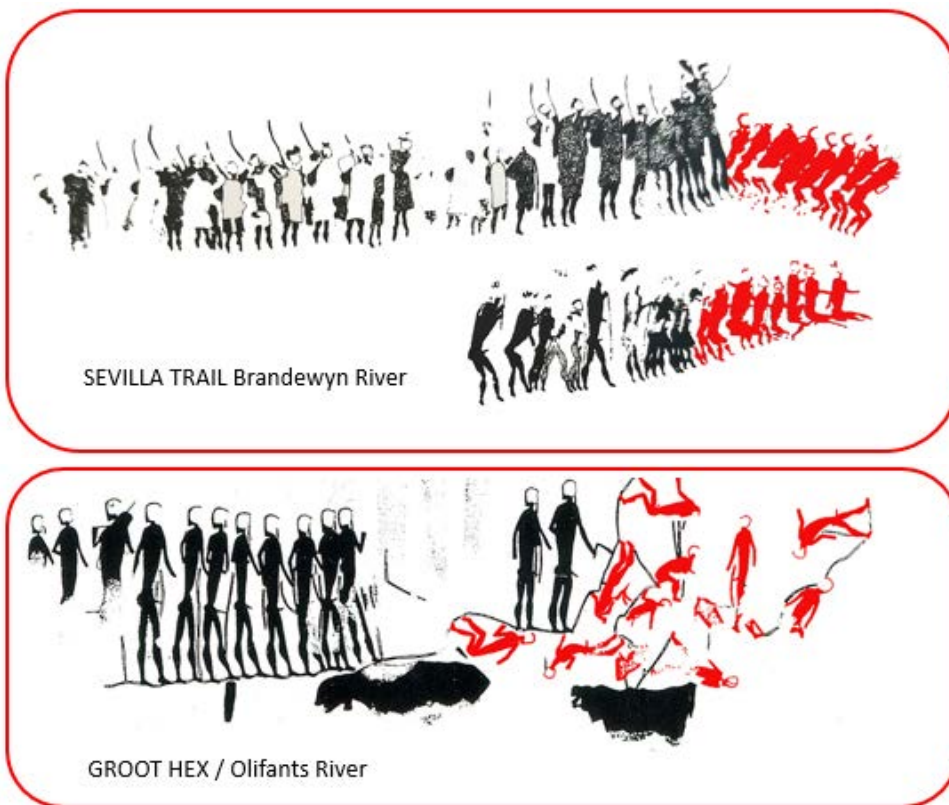


Fig. 1: San male initiation ceremonies at Sevilla and Groot Hexrivier. Tracings by Royden Yates with red enhancement by Andrew Paterson.

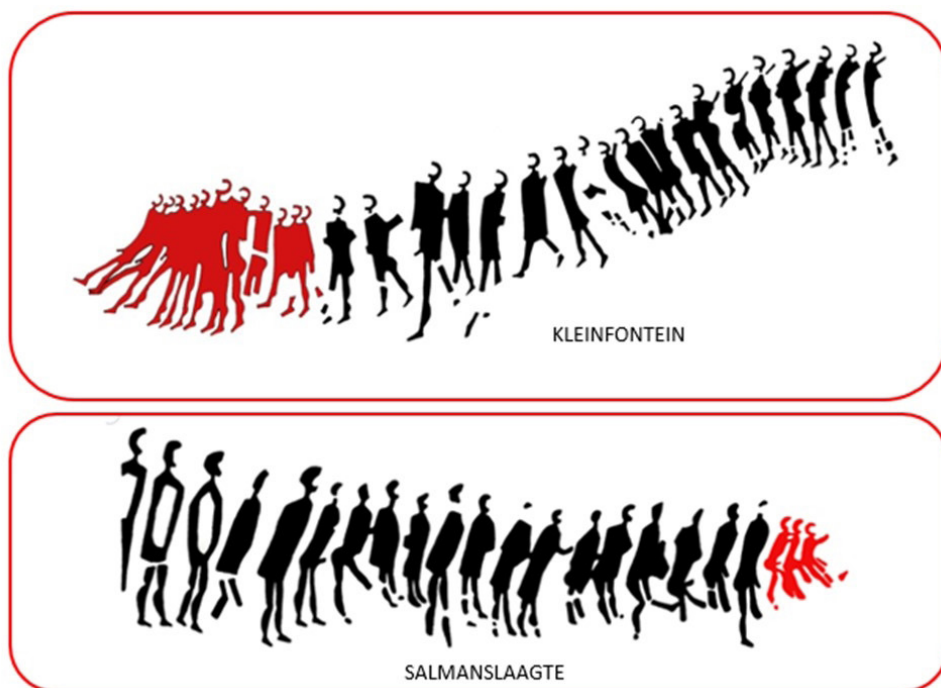


Fig. 2: Two paintings of San male initiation ceremonies at Kleinfontein and Salmanslaagte. Tracing and red enhancement by Andrew Paterson.

Conclusions

I believe that the processions in Figs1 and 2 are illustrations of San males performing the most important part of the Tshoma rite of passage, namely

the *Tshxai !Go* dance during which the adolescent San male initiates become owners of the *Tshoma n/om*.

Further, I believe that the figures illustrated at the front of the processions shown in these paintings are depictions of male transformation experiences during their puberty rites ceremonies. The young initiates have been painted as entering the First Creation during adolescent passage into adulthood.

In my view, the paintings of these San ceremonies are examples of group-oriented cultural activities aimed at safeguarding the San's survival and procreation.

Finally, I believe that the First Creation could be construed as the San people's collective cultural *subconscious* and the Second Creation as the San's collective *conscious* reality.

References

- Armstrong, K. 2005. *A Short History of Myth*. Edinburgh: Canongate Books.
- Keeney, B & Keeney, H. 2013. Re-entry into First Creation: a contextual frame for the Ju/'hoan Bushman performance of puberty rites, storytelling and healing dance. *Journal of Anthropological Research* 69.
- Keeney, B & Keeney, H. 2015. *Way of the Bushman as Told by the Tribal Elders: Spiritual teachings and practices of the Kalahari Ju/'hoansi*. Toronto: Bear & Company.
- Marshall, L. 1999. *Nyae Nyae !Kung: Beliefs and rites*. Cambridge, MA: Harvard University Press.
- Waring, F & Wood, Z. 2021. Long-term gene-culture coevolution and human evolutionary transition. *Proceedings of the Royal Society B: Biological Sciences* 10. DOI1098/rspb.2021.0538.

DEPICTING DETAIL AND MOVEMENT

The rock art in Elephant Cave

Tertius Coetzee

Elephant Cave is a well-known overhang located close to the south-eastern route used to climb Cockscomb, the highest peak in the Groot Winterhoek range. The main photograph accompanying Andrew Paterson's article on the central San paintings in the overhang, which appeared in the December 2021 edition of *The Digging Stick*, is wonderfully clear and allows one to take a closer look at the depiction of the single elephant and a flock of birds painted at this site.

The striking ochre-coloured paintings of an elephant and adjacent birds in flight are partially stylised but are also a sufficiently accurate portrayal that leads one to recognise what has been painted and to infer possible behaviour and movement, in addition to the spiritual context of the paintings. Elephants are animate creatures, and one is able to read body language, posture, mood and intent from the manner in which the head, trunk, ears, legs and tail are held and displayed. Western and Asian depictions of elephants often accentuate and focus on the posture of the head, trunk and ears. San depictions in contrast are almost exclusively of complete animals as viewed from a distance.

Individual elephants, as well as herds, historically frequented the open landscape around the Groot Winterhoek Mountains and the San would have been familiar with them. The painting of the elephant in Elephant Cave certainly contains recognisable features to substantiate this. Various overhangs in the Groot Winterhoek range feature paintings of single elephants, in contrast to the paintings of groups of elephants found at sites in the Cederberg. These have been recorded and analysed by Andrew Paterson and John Parkington (2016) in their article in the journal *Paleo*.

Remarkable painting of an elephant

The painting in Elephant Cave is that of a passive, solitary elephant facing left and standing with its trunk in a close-to-normal, undisturbed, neutral or feeding position. The head, trunk and tusk are well proportioned. The normally large, visible ears are not depicted, perhaps because when an elephant is in a relaxed position they lose their prominence when



The central panel in Elephant Cave in the Groot Winterhoek mountains of the Eastern Cape

the animal is viewed side on. Based on the length of the tusk, the elephant is most likely a male (female African elephants also carry tusks but these are for the most part shorter than what is depicted here). The purpose of the unusual hollow back and elongated torso is not known but some viewers see the body as being lion-like.

The rump, together with the front legs, are all clearly that of an elephant standing still or pausing in an unhurried manner. However, the position of the tail is of particular interest as it is depicted in a horizontal, aware or purposeful position, rather than in the more normal relaxed or hanging state. Despite a number of faint handprints nearby (possibly of earlier origin), other ochre colouration in the immediate vicinity of the elephant and the partial super-positioning/overpainting of the image on a flock of flying birds, it is a remarkably striking and clear image.

Vultures, or perhaps swifts?

The portrayal of the flock of flying birds in Elephant Cave is thought to be unique. Their proximity to the elephant creates the impression that the two subjects are directly related to each other. This leads one to conclude that they represent large birds, generally thought to be vultures as seen from below, gliding slowly as a group from right to left, high above the landscape with wings spread. If, however, the paintings of the elephant and the flock of birds, as

Tertius Coetzee obtained a MA in Anthropology at the University of Port Elizabeth (Nelson Mandela University) in 1979. As a member of the Mountain Club Of South Africa he has visited and recorded rock art in the folded mountains of the south-eastern Cape and surrounds for more than 45 years. ctj@telkomsa.net

well as the handprints were painted at different times, with the only association between them being that they were painted in close proximity to each other, the possibility arises that the flock represents something different.

It is well known that vultures are wide-ranging and fly at altitude in search of food on the veld. They generally frequent the skies above open and rolling landscapes where larger mammals, their food source, occur. Vulture colonies have very specific roosting and nesting requirements that only occur in a few places on the landscape. These include sites that contain sufficient ledges on cliff faces to house the whole colony and are inaccessible to predators. The Groot Winterhoek Mountain range is not suitable terrain for large mammals and would provide slim pickings for carrion feeders such as vultures. Because of that and also due to a lack of suitable roosting sites, vultures have historically not frequented this range. If the birds are in fact vultures, the depiction may well have been inspired by a rare occurrence in the vicinity.

An alternate view, based on the slender wings and the fact that the wing tip feathers are not spread in the manner normally observed when large birds such as vultures fly overhead, is that the paintings may be of smaller birds such as Black or Common Swifts. These do frequent the upper slopes of Cockscomb

in the summer months and may be seen flashing past overhangs, singly or in groups, at a speed that produces a whishing sound. This activity of these small birds would certainly have been observed by the San visiting the rock overhangs high up on the Cockscomb.

To visualise this possibility, one needs to separate the image of the elephant from that of the birds and see the depicted birds as being small and flying extremely fast from left to right, at the same height or slightly above the viewer.

Whichever way one looks at these paintings in Elephant Cave, the mastery and skill of the San artists is reflected in their ability to capture the essence of the animals they painted. The inclusion of tiny details, as well as an impression of movement, leaves the viewer with more to look at than is initially apparent. One can only wish to have been there at the time they were painted so as to have been privy to the circumstances that led to their creation.

References

- Paterson, A & Parkington, J. 2016. Observing and painting elephants: a symbiotic, symbolic and spiritual relationship. Hommage a Norbet Aujoulat, *Paleo*, numero hors serie.
- Paterson, A. 2021. The elephant and vulture site in the Groot Winterhoek Mountains of the Eastern Cape. *The Digging Stick* 38(3):1–6.

SA ARCHAEOLOGICAL SOCIETY

Call for 2023 Northern Branch Grant Applications

The Northern Branch of the South African Archaeological Society invites applications for funding for 2023 by researchers and educators in the field of archaeology. South African archaeological research projects and educational programmes that promote knowledge and an understanding of archaeology will be given consideration. Awards may be split over more than one project. The deadline for applications is **30 November 2022**.

Applications must include the following details:

1. An outline of the research or education proposal, anticipated project results or benefits, the project implementation schedule, the total budget estimate and the grant amount being applied for.
2. Should the project or programme to be funded form part of a larger project, details of how the funded part relates to the whole.
3. The resources and facilities available for implementing the project or programme.

4. A breakdown of the amount applied for into discrete expenditure categories to permit an award to be made for specific cost items.
5. Biographical details of the applicant(s), including professional qualifications and experience.
6. Two references attesting to the quality and success of previous archaeological or educational project work.
7. Plans to publish the research results.

Successful applicants will be required to provide six-monthly progress reports and a final project report. On completion of the project, an article on the project must be supplied for publication in *The Digging Stick*.

Applications and enquiries should be directed to the Grants Committee, c/o Prof. John Wright at johnbwright99@gmail.com.

The successful applicant/s will be notified by the end of December 2022.

ARCHSOC PRESIDENT AND VICE-PRESIDENT, 2022 TO 2024

Dr David Morris and Dr Antonia Malan elected

At the South African Archaeological Society's Council meeting in June this year, Dr David Morris was unanimously voted in as President of the Society for the period 1 July 2022 to 30 June 2024.



Dr David Morris, President

David Morris was born in Kimberley where his early introduction to rock art and archaeology, while still at school, was through Gerhard and Dora Fock and Anthony Humphreys, and it was to Kimberley that he returned, to an archaeology post at the McGregor Museum under Peter Beaumont, after undergraduate studies at the University of Cape Town. He subsequently graduated with a Master's degree, awarded cum laude, at the University of the Western Cape, with Prof. Humphreys as his supervisor, and with a PhD in 2012. He has been a member of the Archaeological Society since 1973, joining as a junior, becoming involved from the mid-1980s in activities of what is now the Trans-!Garib branch, including talks and excursions. He served as editor of *The Digging Stick* from 1994 to 2004 and since then has represented the Trans-!Garib Branch on Council. He was Vice-President of the Society from 2002 to 2004.

David's research focus in rock art, developing 'new animist' perspectives in the interpretation of rock engravings, especially at the site of Driekopseiland, has also included work in the Karoo and other parts of the Northern Cape. From a museological angle, he has invested much effort in promoting public archaeology not only through display work and programmes at the McGregor Museum but also towards providing public access to sites such as Wonderwerk Cave, the

revamped open-air displays at Canteen Kopje and establishing the Wildebeest Kuil Rock Art Centre.

An adjunct to this has been his involvement with John Parkington, Janette Deacon and others in publications for a general readership and a drawing in of community voices, in addition to contributing more formal research articles and co-edited volumes. A concern with conserving archaeological heritage led to a campaign and legal interventions from 2016 to save Canteen Kopje from destruction by mining. Affiliated with the new Sol Plaatje University in Kimberley from 2013, he has taken part in building up academic programmes there in heritage and archaeology.

The SA Archaeological Society Council is delighted to welcome Dr Antonia Malan as Vice-President of the Society for the period 1 July 2022 to 30 June 2024.



Dr Antonia Malan, Vice-President

Born in the UK where she also did her A-levels, Antonia studied archaeology at the University of Cape Town in the 1970s and went on to graduate with an Honours degree in 1986 and a PhD in 1993. She has been a popular speaker at lectures organised over many years by the Western Cape Branch of the Archaeological Society. Members know her especially well for pioneering the use of archival inventories as a method for studying the material culture of historical archaeological sites. This has resulted in her building up considerable expertise in the study of historical records on slavery and vernacular architecture of the

Continued on next page

AUSTRALOPITHECUS AFRICANUS, A. AFARENSIS AND HOMO HABILIS

Matters arising from new dates for Sterkfontein fossils

Francis Thackeray

Darryl Granger and colleagues (2022) have obtained new dates for Plio-Pleistocene australopithecine fossils from Member 4 at the Sterkfontein Caves. Using a cosmogenic nuclide isochron method (based on isotopes of beryllium and aluminium), they obtained ages between 3,4 and 3,7 million years. This indicates that East African *Australopithecus afarensis* (the species that is represented by Lucy) and South African *A. africanus* (represented for example by Mrs Ples) were to a large extent contemporaneous. This is counter to the widely held previous view that *A. africanus* was descended from *A. afarensis*.

The new dates stimulate the question as to whether gene flow occurred between hominin populations in East and South Africa, even if just episodically. An analogy would be the blue wildebeest (*Connochaetes taurinus*) at present distributed on both East African grasslands and the South African highveld, with a barrier of miombo woodland in between. Under cooler conditions in the Pleistocene, the barrier broke down episodically, such that there was gene flow between northern and southern migrant wildebeest populations. Temperatures episodically rose and fell at intervals of more than 20 000 years, with habitats responding accordingly. Warmer and moister woodland environments alternated with cooler, drier and grassier conditions, maintaining a single blue wildebeest species. A corresponding dynamic scenario is that *A. afarensis* and *A. africanus* populations expanded and contracted episodically, associated with interbreeding, such that there was no clear boundary between the two species. This raises the problem of taxonomic nomenclature.

Phillip Tobias (1980) contended that specimens attributed to *A. africanus* and *A. afarensis* represented the same species. In terms of the International Code of Zoological Nomenclature, *A. africanus* (Dart 1925) would have priority. Tobias stated that Tanzanian australopithecines from Laetoli should be classified as *A. africanus afarensis*, whereas Hadar fossils from Ethiopia should be attributed to *A. africanus aethiopicus*.

Just as there may be no clear boundary between *A. africanus* and *A. afarensis*, so too there may not necessarily be a clear distinction between *A. africanus* and *H. habilis*. Thackeray (2015, 2018) has undertaken

morphometric analyses on hominin crania to support a suggestion that the transition relates to a chronospecies in the context of episodic expansion and contraction of habitats in East and South Africa. The dates for *A. africanus* are now older but the concepts remain the same: that *A. africanus* was the ancestor of *H. habilis*, without a clear boundary between the two taxa. That being the case, 'sigma taxonomy' has been invoked (where sigma is the Greek letter for S (Σ) for the concept of a spectrum), defined as follows: 'The classification of taxa in terms of probabilities of conspecificity, without assuming distinct boundaries between species' (Thackeray 2018).

References

1. Dart, R. 1925. *Australopithecus africanus*: the man-ape of South Africa. *Nature* 115:195–199.
2. Granger, DE, Stratford, D, Bruxelles, L, Gibbon, RJ, Clarke, RJ & Kuman, K. 2022. Cosmogenic nuclide dating of *Australopithecus* at Sterkfontein, South Africa. *Proceedings of the National Academy of Science* 119:27 e2123516119.
3. Tobias, PV. 1980. '*Australopithecus afarensis*' and *A. africanus*: critique and an alternative hypothesis. *Palaeontologia Africana* 23:1–17.
4. Thackeray, JF. 2015. *Homo habilis* and *Australopithecus africanus* in the context of a chronospecies and climatic change. In R Runge (ed.), *Changing climates, ecosystems and environments within arid southern Africa and adjoining regions, Palaeoecology of Africa* 33, Balkema), 53–58.
5. Thackeray, JF. 2018. Alpha and sigma taxonomy of *Pan* (chimpanzees) and Plio-Pleistocene hominin species. *South African Journal of Science* 114 (11/12):1–2.

PRESIDENT AND VICE-PRESIDENT

west coast and the Karoo. Her focus has culminated in a catalogue, developed together with the late Jane Klose, on the identification of Chinese and Japanese porcelain from archaeological sites in the Western Cape. This is an invaluable reference for all historical archaeologists.

Published in 2017, her book, *Grave Encounters*, written with Dave Halkett, Tim Hart and Liesbet Schietecatte, is an expertly compiled summary of the archaeology of the burial grounds disturbed by development around Prestwich Street in Green Point, Cape Town. This experience was invaluable during her term as chairperson of the Heritage Western Cape Council from 2016 to 2019, during which time she also represented the province on the South African Heritage Resources Agency (SAHRA) Council.

J Francis Thackeray is an Honorary Research Associate of the Evolutionary Studies Institute, University of the Witwatersrand, Johannesburg, South Africa. mrsples@global.co.za.

SOUTH AFRICAN ARCHAEOLOGY

Early humans thrived in a drowned SA landscape

Early humans lived in South African river valleys with deep, fertile soils filled with grasslands, floodplains, woodlands and wetlands that abounded with hippos, zebras, antelopes and other animals, some of which have now been extinct for millennia. In contrast to ice age environments elsewhere on earth, it was a lush environment with a mild climate that disappeared under rising sea levels around 11 500 years ago. An interdisciplinary, international team of scientists has now brought this pleasant cradle of humankind back to life in a special collection of articles that reconstruct the paleoecology of the Paleo-Agulhas Plain that has been high and dry during the glacial phases of the last 2 million years.

'These Pleistocene glacial periods would have presented a very different resource landscape for early modern hunter-gatherers than the landscape found in modern Cape coastal lowlands and may have been instrumental in shaping the evolution of early modern humans,' said Janet Franklin, professor of biogeography at the University of California, Riverside, and an associate member of the African Centre for Coastal Paleoscience at Nelson Mandela University. Some of the oldest anatomically modern human bones and artifacts have been found in cliff caves along the coast of South Africa but the lack of shellfish in some layers at these sites have puzzled archaeologists. Despite living near the ocean, the inhabitants apparently hunted mostly big game.

Researchers knew about a submerged landscape on the continental shelf, but it was not until recently that they realised that the coastal caves might have made up the westernmost edge of a long-lost plain. During most of the Pleistocene the caves were not located on the coast. With so much of the earth's water locked up in continent-sized glaciers, the sea level was much lower and humans could have thrived between the cliffs and a gentler coastline kilometres away.

A special issue of *Quaternary Science Reviews* presents papers that report on the use of a wide range of techniques to reconstruct the environment and ecology of the Paleo-Agulhas Plain. They reveal a verdant world rich with game, plant and coastal resources, periodically cut off from the mainland during warm spells between glacial periods when sea level rose to levels similar to those of today. Franklin used modern vegetation patterns along the Cape south coast to develop models of the expected vegetation for the various soil types, as well as the climate (especially rainfall) and fire regimes of the past glacial periods that framed most of the timeframe in which modern humans emerged. Joining her in

the research were Richard Cowling and Alastair Potts of Nelson Mandela University, Guy Midgley at Stellenbosch University, Francois Engelbrecht of the University of Witwatersrand and Curtis Marean of Arizona State University.

Vegetation was reconstructed based on a model of the ancient climate and fire patterns of these glacial phases. The group developed the vegetation model based on present-day patterns and environmental conditions, compared their model to an independently derived vegetation map to validate it and then applied it to the climate, landforms and soils reconstructed for the peak of the last ice age. The model found the paleo-landscape exposed during glacial low-sea levels added a land area the size of Ireland to the southern tip of Africa. Near the coast, it was dominated by 'limestone fynbos', a low-stature but species-rich shrubland typical of contemporary South Africa's Cape Floristic Province. The northern plains that supported the megafauna typical of glacial periods were mostly grasslands in shallow floodplains and on shale bedrock.

The Paleo-Agulhas plain had extremely high plant species diversity, as well as a greater variety of ecosystems and plant communities than currently found in the region, including shale grassland with dune fynbos-thicket mosaic on uplands and broad and shallow floodplains supporting a mosaic of woodland and grassland on fertile, alluvial soils.

Language aligns to genetic origins

A landmark Wits University study challenges the presumption that all South-eastern Bantu (SEB) speaking groups are a single genetic entity. The language family includes isiZulu, isiXhosa, siSwati, Xitsonga, Tshivenda, Sepedi, Sesotho and Setswana. Almost 80 per cent of South Africans speak one of the SEB family languages as their first language. Their origins can be traced to farmers of west-central Africa whose descendants over the past two millennia spread south of the equator and finally into southern Africa. Since then, varying degrees of sedentism, population movements and interaction with both Khoe and San communities and people speaking other SEB languages ultimately generated what are today distinct southern African languages.

Despite these linguistic differences, the groups are treated mostly as a single group in genetic studies, but consideration of genetic differences is critical to providing a reliable understanding of the genetics of complex diseases. Dr Dhriti Sengupta and Dr Ananyo Choudhury in the Sydney Brenner Institute for Molecular Bioscience were the lead authors of the paper published in *Nature Communications* on 7 April

2021. The study comprised a multidisciplinary team of geneticists, bioinformaticians, linguists, historians and archaeologists from Wits (Michèle Ramsay, Scott Hazelhurst, Shaun Aron and Gavin Whitelaw), the University of Limpopo and partners in Belgium, Sweden and Switzerland.

‘SEB speakers have a clear linguistic division, speaking more than nine distinct languages, and their geography is clear,’ said Choudhury. The study found that SEB speaking groups are too different to be treated as a single genetic unit. Genetic data from more than 5 000 participants, speaking eight different southern African languages, were analysed. The study detected major variations in genetic contribution from the Khoe and San into SEB speaking groups, ranging from about two per cent in Tsonga to more than 20 per cent in Xhosa and Tswana. The genetic data also show major differences in the history of these groups over the last millennium. Genetic exchanges were found to have occurred at different points in time, suggesting a unique journey of each group across the southern African landscape. Sengupta emphasised, however, that ethnolinguistic identities are complex and cautioned against extrapolating broad conclusions from the findings regarding genetic differences.

Wits University, 20/04/ 2021

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 Khoi and San heritage sites. The committee includes representation from the Departments of Traditional Affairs, Environmental Affairs, Fisheries and Forestry, and Tourism, and the South African Heritage Resources Agency. The project plan for the development of the route is based on a 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 also include various other project elements pertaining to Khoisan heritage (tangible and intangible), indigenous knowledge systems, language and culture. Apart from the the National Khoi and San Heritage Route, the Department of Sport, Arts and Culture will also work on two other projects: the construction of a Sarah Baartmann 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

The South African Archaeological Society

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

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

Cape Town head office: PO Box 15700, Vlaeberg, 8018.
T: +27 (0)21 762 7347, +27 (0)72 635 2815.
F: +27 (0)866 155 874. archsoc@iziko.org.za.
www.archaeology.org.za.

Northern Branch:

Membership Secretary: Louise Mackechnie
+27 (0)82 704 7585
louisem@uj.ac.za

Western Cape Branch: PO Box 426, Muizenberg, 7950

Chairperson: Yvonne Viljoen
+27 (0)82 416 0032
yv3@mweb.co.za

Trans-Gariep Branch: David Morris
+27 (0)53 839 2706
dmorris@museumsnc.co.za

KwaZulu-Natal Branch: c/o KZN Museum, P/Bag
9070, Pietermaritzburg, 3200
Secretary: Gavin Whitelaw
+27 (0)33 345 1404
gwhitelaw@msa.org.za

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.

Subscriptions for 2022: South Africa: Ordinary – R345; Joint/Family – R365; Junior members – R235. Africa ordinary – R405; Overseas ordinary – R745. Institutions: local and African – R690; Overseas – R1 525.

The Digging Stick

Editor and advertising: Reinoud Boers
PO Box 2196, Rivonia, 2128
Tel/fax: +27 (0)11 803 2681
Cell: +27 (0)82 566 6295
fox@boers.org.za

Proofreader: Anne Raeburn
Layout: Leonard Mafunga
Printer: TVaal Johannesburg