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ARTEFACTS

Reports covering the period July to December 2011

EVENING LECTURES

Aardonyx – South Africa's new dinosaur, a link to the titans of the dinosaur world (3 February 2011)

Dr Adam Yates, Bernard Price Institute for Palaeontological Research (BPI), Wits University

Picture the scene of a typical kopje on a farm in the eastern Free State. It was to this place that Adam Yates took us in his illustrated talk on the discovery of an unusually large dinosaur that has turned out to be a significant factor in deciphering the origins of a giant sauropod. His investigations were sparked off in 2003 by a single bone found near the base of Spionkop situated on a game farm in the Senekal district. The bone, shown to him by Professor Bruce Rubidge, director of the BPI, was a vertebra featuring a ridge and triangular shapes on either side. It turned out to be the key piece in unravelling the early history of sauropods and was also the first sauropod evidence found in the Upper Elliot Formation, which dates to the Early Jurassic Period, about 190 million years ago (mya).

Dr Yates put together a small team – a Sauropod expert from the United States, a geologist and himself. Marc Blackbeard, an Honours student, was put to work on the Spionkop site. He excavated for at least 3 m – a small hole by palaeontological standards. The site was rich in fossils situated in bone beds, and nearly 400 well-preserved dinosaur bones were found at the so-called 'Marc's Quarry', including dinosaur skulls. To find dinosaur skulls was particularly good. The bones were in pretty good shape, well mineralised. Some were long bones belonging to *Massospondylus*, a common dinosaur known from many specimens, which was why the site was initially assigned low priority. But they were wrong.

'Classic' dinosaur assemblages from the middle Jurassic (175 mya) up to the end of the Cretaceous (65 mya) are usually dominated by three main groups of dinosaur: Sauropods, Ornithischians and Tetanurans. Sauropods are gigantic, small-headed, long-necked, four-legged plant-eaters. They are famous for having the longest necks of any land dwelling vertebrate, e.g. 9 m for *Mamenchisaurus*, are to 40 m in length and have a mass of 70 t. Dinosaurs had been found before in the old rocks of the Karoo basin. The Stormberg Group is the name given to the uppermost layer of the Karoo Basin, which is a large sediment-filled depression that occupies two thirds of South Africa's land surface. It was deposited between 230 and 183 million years ago, before the classic dinosaur assemblages existed. It offers an almost unparalleled view of how the three classic dinosaur groups got their start and records their rise to ecological dominance across the world's large terrestrial animal niches. Very early Sauropods were known, but not in South Africa.

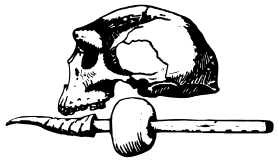
The bones they found in Marc's Quarry turned out to be from two specimens of a new species of dinosaur. Adam Yates' wife, Celeste, volunteered to help with the extraction of the bones from the rock. The bones were encased in a hard ironstone crust that was firmly welded to the bone in many places. Furthermore, the bones were stained exactly the same reddish colour as the ironstone, so preparing them for study took exceptional skill. Fortunately Celeste had that skill and she worked tirelessly in a voluntary capacity to free most of the bones from their ironstone casings.

They had enough bones to reconstruct a skull and skeleton, even though there are some gaps. With a length of more than 8 m, the new species is larger than *Massospondylus* and has more robust feet. In these respects it resembles the older *Malanorosaurus*, but it had more primitive limb bones indicating that it retained a bipedal stance and gait unlike the quadrupedal *Malanorosaurus*. Most of the bones found at the site belonged to this species and there was enough evidence to name a new species. It was named *Aardonyx celestae,* aardonyx meaning 'earth claw' (a combination of the Afrikaans word for earth and the word onyx of Greek origin meaning claw, relating to the heavily encrusted nature of the claw bones that were found). The species name honours Celeste who spent two years cleaning the bones. Even though the bigger of the two specimens found is thought to have been 8 m long, histological work done by Anasuya Chinsamy-Turan in Cape Town indicates that it was a still-growing juvenile under ten years of age when it died. It had a femur of 1,5 m and weighed nearly 15 t.

Dr Yates said that *Aardonyx*, lived during the Early Jurassic Period (±185 to 190 mya) was very important because it is an intermediate between two different dinosaur body plans, that of the prosauropod and the sauropod. Prosauropods were smaller bipeds that were relatively agile and browsed selectively on high quality plant materials with narrow snouts. Sauropods were gigantic plant eaters that moved quadrupedally on columnar limbs like elephants and bulk-browsed on lower quality plant food. In contrast, *Aardonyx* had a prosauropod-like snout, but had lost that species' cheeks, indicating that it was taking in bigger mouthfuls of browse in one go, like the cheekless, broad-mouthed sauropods. Although *Aardonyx* was bipedal, it had more columnar limbs and short broad feet indicating that it was beginning to slow down and probably could not manage to break into a run. All this made *Aardonyx* a very significant species in deciphering the origins of the gigantic sauropod body plan. It was probably the largest dinosaur that ever walked.

Dr Yates' presentation was inspiring. A few pieces of this amazing discovery can be seen in the incredible collection of the BPI museum at Wits.

Report by Felicity Eggleston



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Language: evolution and mechanisms (3 March 2011)

Jaap Earle, a neurosurgeon with interest in evolution, palaeoanthropology and archaeology

Dr Jaap Earle opened his talk by stating that the search for the origins of humankind could only succeed by scientific analysis of the convergence of three subjects: the fossil record, language and genetics. He said that he became interested in language because in a neurosurgical sense it struck him that while he was fully aware of the pathology, he knew little of the origins of language, and decided to address this defect. That very long path had still only led to glimmerings of insight, but he was pleased to share what he had understood so far. In his talk he would contribute little or no original research, but draw heavily on the ideas of the many experts, all of whom were adding knowledge to one of the most complex subjects in neurobiology.

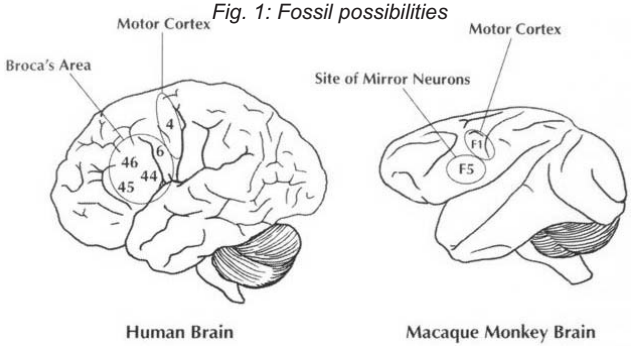
Jaap Earle went on to say that the fossil record had left little for us to confirm multiple theories of origins and mechanisms. Genetics might in time provide far better answers. However, for an understanding of language, for the present we had to resort to comparative animal studies. He went on to define concepts and explain language development.

Evolution is a descriptive term analysing those features in species that are best suited to enable continued existence. Natural selection is the process by which less enabled individuals and their offspring do not survive. This has long been scientifically established, but has repeatedly been misrepresented as a theoretical driving force aiming to preserve only the fittest. Language, like every other biological feature, conforms to this precept.

Language is best formulated by Fitch (*The Evolution of Language,* 2010) as *Complex Vocal Imitation*. This feature can be found in almost all mammals, but possibly reaches the ultimate only in man. Somehow it underlies, with all other features, the divergence of man from every other living being on earth. One must distinguish vocalisation, i.e. sound production, and language, which is entirely representational (Bickerton, *Language and Species, 1992*). Vocalisation requires the establishment of mechanical enabling features, while language results from an incredibly complex neurological basis.

The fossil record (Fig. 1): Bi- pedalism entailed an upright position and resulted in the face swinging forward on the spinal axis through 90°. It is likely that the vocal tract had to follow this movement, thereby conforming to an L-shape. The hyoid bone forms the attachment for both the laryngeal muscles and the tongue, but in both humans and Neanderthals does not contain any specific features for vocalisation. The air sac found in primates is absent in humans. Neck vertebrae are thought to have elongated to accommodate the descent of the larynx, but this has not been confirmed. Four cranial nerves, the 5th, 7th, 10th and 12th, serve the larynx and other speech-related structures. The last named, the hypoglossal, enters the base of the skull and supplies the tongue through a canal on either side. This canal was thought to be enlarged, but this is in fact not so. The central canal of the thoracic vertebrae is the only difference consistently found in humans and is thought to have become enlarged to accommodate the increased nerve supply controlling air flow and pressure variation in the lungs. The descent of the larynx has until recently been held to be the most significant change undergone by the vocal tract in speech formation. However, comparative studies (Fitch) show that many mammals from dogs to deer employ a highly mobile and well-descended larynx with all or more of the versatility found in humans.

Fig. 1: Fossil possibilities



Phases of language: Mammals *communicate* in different ways, employing a recognisably similar basic vocal tract. This communicative ability is more or less fully available at birth. However, language as we know it is an entirely *representational* system (Bickerton) deriving completely from the vast sensory input fed into the human brain from the moment of birth. It is entirely learnt by comparison and then imitating sound and other sources presented. There is no need for postulating an early innate universal grammar or divine command.

Babbling: All animals possess an innate hardwired ability for a sort of 'dummy run' to test available speech mechanisms. Deaf babies babble, but this semi-vocalisation slowly disappears to be replaced by hand movements only. Very young birds are known to sing quietly to themselves even before understanding the prospect of reward. They learn to sing from their parents and even acquire regional dialects. This is a critical phase, for should they be deafened at that point they do not sing normally or at all.

Proto-language (pidgin): This is the beginning of language vocalisation during which discernible words are formulated. All of these are acquired from the language environment in the early infant stage from about one to two years of age. There is no grammar yet. It is speculated that this may resemble the beginnings of hominid language, possibly that of *Homo ergaster,* or more likely *Homo erectus* one or two mya. There is also a lively discussion as to whether this begins in a *gestural* form*,* which is less likely because it is limited by vision and distance; a *lexical* form – early expression of words learnt; or a *musical* form, as discussed by Fitch and favoured, it seems, by Darwin.

Creole: If the environment does not provide exposure to full language, the pidgin gets organised into creole, which has a quite original grammar that begins to conform to syntactic *subject-verb-object* word-order needs.

Human language: From this point on the acquisition of regional language types develops into the myriad of tongues on earth. It was William Jones who in Delhi in 1786 first analysed language by studying Sanskrit using descriptive techniques as opposed to the prescriptive methods of the ancients. He identified the Indo-European and other language family groups that encompass most of the Western world's languages. Less well known in the West are, for instance, the Altaic-Turkic- Ugric-Finnish language family.

Sign language: Gestural communication is not to be confused with true sign language, which has long been recognised as forming its own unique grammar. Instead of vocalisation, the hands,

fingers, facial expressions and body talk are all involved in conveying meaning. It possesses all the syntactical complexities of spoken language and all the profundity of thought in any human.

Reading, writing and mathematics; art and music: Each of these derive from visual auditory and sensory inputs essentially stored and analysed in the posterior of the brain, and are produced as manual or vocal motor processes occupying anterior parts of the brain. Neither occupy a specific space that can be assessed by morphological analysis such as MRI scanning. They are best considered parasites of the entire representational process.

Mammal comparisons: Humans differ mainly because of the complex thought processes language brings to bear on the mechanics of vocalisation. Vervet monkeys and chimpanzees produce between 10 and 20 holistic vocalisations (the sound produced implies the total meaning e.g. food, snake. eagle) that are never extended or modified. They never acquire the key of recursion, the feature that enables us to modify any single concept almost without limit. They do not ask questions and have no concept of dissemblance. Concerning numeracy, chimps can be taught, after thousands of trials, Arabic or other numerals one by one. Human children can be taught a short list and by the time they reach the number four they suddenly grasp the progressive value of counting and can then build further by themselves. Whales, seals and birds produce song sounds. Birds alone are different as their voice boxes consist of a syrinx, which is a system of flat membranes situated at the bifurcation of the trachea.

How do we speak? The vocal apparatus in the entire vertebrate phylogeny, which is of evolutionary origin, shows a similar basic pattern. Respiration is made possible in deepwater aquatic fish by the gill system, but constraints on survival forced fish to shallower water and later to the surface, when they developed the primitive lung as a flotation device. Their oval shape flattened and they developed a neck of sorts (Tiktaallik), at the same time allowing the lung to take over gill function. The development of limbs allowed them to venture onto land, with the lung becoming a life-support system. Under the influence of evolutionary time, exaptation (a form of biological theft) occurred and the lungs began forming the basis of the rudimentary speech system.

The vocal tract consists of two systems. The first is the lungs, remarkably modified now to provide not only sustained high-pressure air flows but also varying pitch. Above this the trachea and the larynx form the voice box at the level of the Adam's apple, while mucosal folds draped over elongated muscle strings (the cords) allow for contraction and expansion: the glottis. The second system above this turns straight forward to complete the L. This supraglottic tract is bounded by the tongue, the cheeks and the lower teeth. Above these lie the soft palate, the hard palate and the upper teeth, all of which is completed by the upper and lower lips. Driven by the modifiable and sustained volume and power of air by the lungs, the glottis opens and closes depending on the frequency required. This is known as the *fundamental* frequency. The incredibly mobile supraglottic structures produce the *formant* frequency that is the source of our vowel/consonant sounds. MacNeilage (*The Origin of Language,* 2008) has formulated a very plausible primary sound origin: he believes it derives from universal primate behaviour that includes lip smacking, sucking, licking and chewing.

The neural basis: The developing neural tube expanded at the upper end and eventually formed the full brain. It is convenient to separate a *brainstem chassis* comprising the motor neurones and nerves that drive face, tongue, larynx and respiratory muscles and is found in all mammals. The same applies to the next level, which is formed by the *midbrain control centre* and is made up of the peri-aqueductal grey region and tegmentum, both of which aid vocalisation (Fig. 2). Finally, the *cortical systems* arise and it is here where humans differ so markedly from all other mammals. Broadly speaking, the poster part of the brain contains receptors while ant- erior parts are motor or executive drive. A crucial human attribute is that the lateral cortical control system connects directly from the frontal motor area or lateral neocortex that has important brainstem motor neurons, notably the nucleus ambiguous, which is involved in laryngeal control. A similar link exists with the frontal tongue mechanism. This is found in no primate.

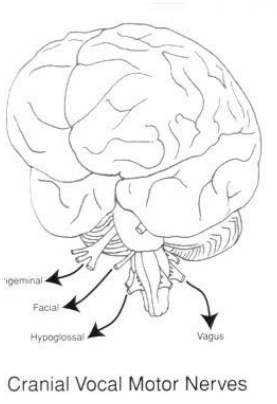


Fig. 2A: Cranial motor nerves

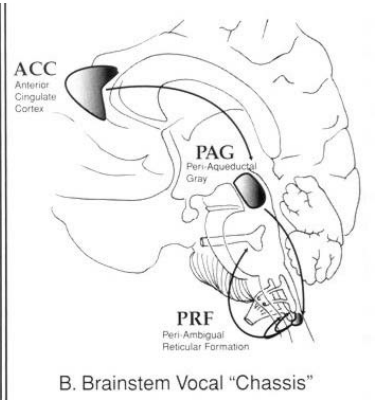


Fig. 2B: Brainstem chassis

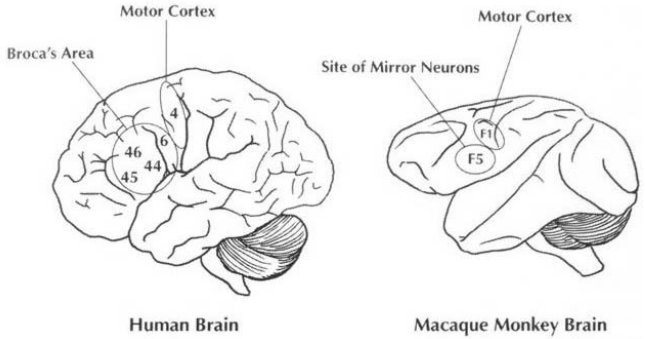


Fig. 3: Cortical areas and mirror neurons

The medial cortical control system consists of the anterior cingulate cortex and neighbouring areas, such as part of a supplementary motor area, that play a volitional role in most mammals in exciting or inhibiting vocalisation (Fig. 3). Broca's area lies in the inferior lateral portion of the left premotor cortex and controls movement of the face, jaw and tongue. In the lateral temporal region lies Wernicke's area that is concerned with the perceptive components of sound. Connecting these two areas we find the arcuate fasciculus that has been studied by using the non-invasive *diffusion tension imaging* (DTI) technique. This has shown a far more widespread projection to temporal lobe areas outside Wernicke's than previously realised. It is the region where meanings of words are analysed. It is not found in primates. Other areas involved are the limbic system and the basal ganglia, as well as *mirror neurons* that have the capacity of observing motor activities and directly reproducing these actions while completely bypassing the usual processes of learning.

Conclusions: It has not been possible to establish the means and temporal ascent of language. It can be assumed from palaeoanthropological evidence that manual dexterity, social and burial customs, etc. can only be developed in the presence of a definite language facility. Research into genetic features such as Hox gene transcription factors and the Fox P2 mutant that links directly to orofacial dystonia in certain families could eventually provide answers to the remaining absorbing questions on brain and language.

Report by Jaap Earle

Dating of hominin fossil deposits in the Cradle of Humankind and emerging patterns of climate change over the last three million years (21 July 2011)

Jan Kramers, Professor in the Geology Department, University of Johannesburg

Prof. Jan Kramers gave us an excellent and amusing talk on dating in the Sterkfontein area and the effects of climate change. He commenced his talk by outlining the time line for hominins at Sterkfontein, as follows:

Australopithecus africanus	2,6 to 2,0 million years ago (mya)
Australopithecus sediba	2,0 to 1,6 mya
Paranthropus robustus	2,2 to 1,4 mya

While dating at Sterkfontein goes back about 2,8 million years, dating in Ethiopia stretches to 6 mya. Dating in the Great Rift Valley is fairly accurate as the volcanic ash layers are easily dated, but dating in the Cradle of Humankind tends to be somewhat hit and miss.

Dolomite is soluble in water resulting in the formation of sinkholes and caves in conjunction with a network of water courses. *A. sediba* was found in one such pit. The skeletons of an adult female and a male child were found at the foot of the pit together with the faunal remains of a sabre tooth cat, dated to between 2,36 and 1,5 mya, and other extinct animals.

Prof. Kramers said that traditional dating of floral and faunal remains associated to the layers in which the *A. sediba* fossils had been found was not precise. He likened radioactive dating somewhat to a lottery and for this reason he and Robyn Pickering, who is the lead palaeontologist at Swartkrans, were involved in a project to find more accurate ways of dating fossils. Sophisticated mass spectrometry had dated the floral and faunal samples to 2,026 mya with an error margin of some 0.021 million years. Samples were also sent to the Berne and Melbourne universities for dating by the uranium-lead dating technique. Both samples were dated to two mya, which led to the conclusion that the *A. sediba* fossils had to be younger than this.

Using the palaeomagnetic analysis technique, a date of 1,95 mya ago was established. This dating technique was currently considered the most accurate form of dating. Palaeomagnetism was a broad subject which, in essence, studies the change in the earth's magnetic fields, but there was no certainty about the length of time the change in polarities from north to south took – whether, in geological time, it was quick or relatively slow. Obviously younger rocks were nearer the surface and the older rocks lower down.

Combining the findings of both the uranium-lead and palaeomagnetic dating techniques, *A. sediba* had eventually been dated to between 1,95 and 1,78 million years old.

Prof. Kramers then went on to briefly discuss emerging patters of climate change over the past three million years.

Report by Noni Vardy

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The origin and development of art: a neural approach (6 October 2011)

Dr Helen Anderson, Research Officer in the Origins of Art, Rock Art Research Institute, University of the Witwatersrand

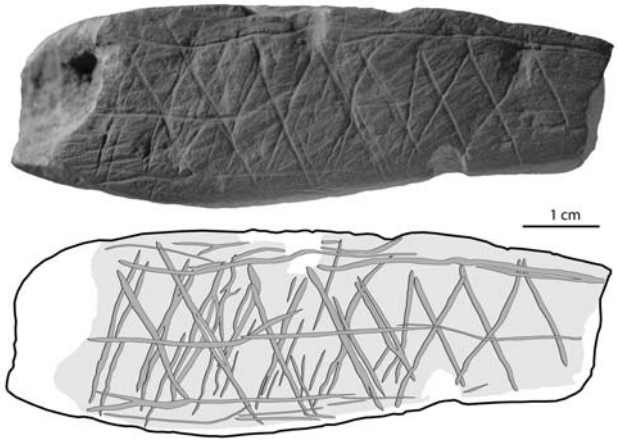
Dr Helen Anderson began her lecture by telling us how she became involved in researching the origin and development of art. She graduated from the University of East Anglia in Norwich, England with a background in archaeology, anthropology and art history. For her MA she joined the Sainsbury Centre for Visual Arts, which houses a collection of 1 200 art objects donated to the university, mainly by the Sainsbury family. The collection of no specific direction fascinated her. Subsequently, she achieved her doctorate with a thesis entitled 'The earliest art, 100 000 to 28 000 BP – a neural approach' covering early art in South Africa, Australia and Europe. The 28 000-year cut-off date was important as a different cultural period began at this time.

Dr Anderson said that particular areas of the brain determined the development of art. President George Bush and the US Congress had declared 1990 to 2000 as the Decade of the Brain, which fostered tremendous research into the functioning of the brain. Neuroscientists began applying neuroscience to art. In the forefront were University College of London's Semir Zeki and VS Ramachandan of the University of California. Zeki asked questions such as: 'How do we take in a visual stimulus' and 'What makes great art', and set up the Institute of Neuro-esthetics. Ramachandran, whose breadth was wide, extrapolated from lesions in the brain what created aesthetic experience. A lot of competing theories developed. Art historian John Onians, Helen's mentor, grappled with why art looks different, or the same, in different places and at different times. He coined the term neuro-art history to define the approach to questions historians have difficulty in answering.

An important concept is neural plasticity, which has become a really fast-moving field of study. The brain is fatty tissue with 100 billion cells and we only know a fraction of how it works. But what the 1990s research did establish is the great flexibility of the brain and how it continually alters to cope with new environments. According to Dr Anderson, if it is known what sort of environment people have experienced, a sense can be obtained of their visual approach. Object recognition and the determination of shapes, designs and motives occur in the temple node. Helen explained that we continually add to our experiences and the new inputs are stored close together so that we can recognise shapes and designs more rapidly. Neuro research could not have been done without technology, which has enabled researchers to detect those areas of the brain that are connected. In one study of neuro plasticity, London taxi drivers were found to have larger hippocampi than other people. Hippocampi play an important role in the consolidation of information from short-term to long-term memory and spatial navigation.

Addressing the relationship between influences and art, Dr Anderson said that Picasso had been influenced by African art, even though he always denied this. We did not have to be conscious of an influence. Henry Matisse's very colourful work was influenced by Spanish and Muslim art. His parents were weavers and clearly he was also influenced by the colours and textiles they worked with. The influences we pick up in our formative stage are not known to us.

Concerning the archaeology of art, she discussed the perforated marine shells found in South Africa (Blombos), north Africa and the Levant, all from around 77 000 years ago; and incised stone and bone found at Palmenhorst in Erongo, Namibia, the Klein Kliphuis shelter in the Cederberg and at Blombos cave, all of which displayed a cross-hatched pattern. Other South



Engraved ochre from Blombos Cave, c. 77 000 years BP (image courtesy of Chris Henshilwood and Francesco d'Errico (IHE, Wits University)).

African examples of art came from Wonderwork Cave (73 000 years ago) and the Middle Stone Age in the Nkomazi River valley and at Muden in KwaZulu-Natal. Diepkloof shelter in the was another place where early evidence of human symbol use was evident. Here some 270 engraved eggshell remnants representing about 25 water containers were found. Dating to around 60 000 years ago, the symbolic patterns consist of lines crossed at right angles or at oblique angles by hatching. All these examples of the early art were unrelated to reality, nor based on experience. Their creation probably needed abstract thinking ability and a fully fledged syntax.

It was also possible that incised stone and painted eggshells emulated something in the environment, but the designs used were rare to find in nature. Fish scales and the shapes found on a giraffe or a tortoise were a possibility. Or meaning had been derived from weaving, which would indicate that weaving is a much older craft than thought. With reference to the engraved stones ochre discovered at Blombos, Christopher Henshilwood speculated that the patters could have arisen from fishing nets used by the occupants, or that they had developed twine, which is known to have been used by ancient peoples 100 000 years ago. The geology of South Africa also provides possibilities, e.g. dolomites, which have staggering similarity to the cross-hatched patterns found. All these aspects would need to be considered. Archaeologists would need to tease apart how symbolic symbols work.

Report by Reinoud Boers

Painting postures: body symbolism in San rock art of the south-eastern Drakensberg (17 November 2011)

Leanne George, MSC (Archaeology) candidate, University of the Witwatersrand

The theme of Leanne George's short but informative talk was that the movement and posture of the human body is equally important during the actual ritual trance dance and the representations of the dance postures in the rock paintings. Students of rock art in southern Africa know that it is possible to detect fragments of or references to the trance dance through small indicators: paintings of flywhisks, which are only used during the dance; dance rattles around the ankles; the postures of the human body – 'arms back', 'bleeding from the nose', 'bending forward', 'pointing a finger or hand', 'pointing with a stick or bow'; therianthropic figures; and translucent white images, which Geoffrey Blundell argued represent the spirits of the dead.

David Lewis-Williams and Patricia Vinnicombe realised that rock art can be interpreted by referring to ethnographic collections of interviews with San people all over southern Africa: the Kalahari ethnography (e.g. the work by scholars like the Marshall family, Megan Biesele, Richard Katz, Richard Lee and Matthias Guenther); the Western Cape (the numerous publications resulting from interviews by Wilhelm Bleek and Lucy Lloyd with /Xam San prisoners during the 19th century); a 19th century paper by JM Orpen giving an account of stories told by his south-eastern San informant, Qing; and talks that scholars had with an old woman named Maqindi from the south-eastern Drakensberg.

Lewis-Williams famously linked the rock art with the ritual trance dance in 1981. The trance dance is still performed by San communities in the Kalahari and from his research with David Pearce we now know that the rock art depicts fragments of this dance. San shamans dance around a fire all night and enter altered states of consciousness from the exertion. As they begin to hallucinate, they believe they are entering the spirit realm to acquire /num, supernatural potency or power that will enable them to heal ill members of the community, make rain, control game for a successful hunt, etc. The painters and the viewers of the rock art must have known that the paintings were depictions of fragments of the spirit world and for them it was therefore not necessary to depict fragments of the trance dance to indicate that it is in the present. Why, then, paint certain postures over and over again?

Fig. 3: Photograph of a ritual trance dance in the Kalahari. The man being supported by the two men in the front is a shaman. Trance can be very physically taxing. (Photo: Marshall Expeditions)

Using the ethnography, Leanne George argued that certain pointing and gesturing postures, especially sets of images where two people are positioned on either side of an eland, as well as a winged human figure pointing at what seems to be a cluster of bees, represent San views on materialising this supernatural potency. In order for an idea to exist outside of our minds, we need to represent it in the material world and the San possibly used rock art to show how the shamans acquired and used this supernatural potency. The eland is an animal full of fat and it is this fat that makes it potent and a spiritually important animal. Similarly, bees and especially their honey are also considered to be full of potency. Thus, perhaps, the figures are pointing at these animals and insects to extract their potency, or to use the potency they have already acquired to control them. Leanne mentioned that older shamans paid particular attention to the dangers associated with pointing in the teaching of new or younger shamans, and instructed them never point at children. The old woman from the south-eastern mountains, Maqindi, told researchers that a shaman could freeze an animal in its tracks by pointing at it.

The geographic areas that Leanne George investigated in her MSc research were the Maclear and Barkly East Districts in the south-eastern part of the Drakensberg. The site she used as the case study, RSA MEL 7, was interesting, she said, because in addition to these pointing and gesturing figures, three cases of a phenomenon unique to this site occur. These are three rheebuck, originally painted in the classic, fine-line style that had crude, disproportionate heads added over the original, faded heads. So far, this is the only site where this phenomenon is known to occur. She said that it was possible that descendants of the original painters or a different ethnic group had added the head at a much later stage. However, it was impossible to be certain as this phenomenon has not been investigated in detail and only occurred at one known site.

Report by Graham Reeks

ANNUAL SCHOOL

Archaeology and History of the Landscape: The interaction of South Africa's people in the last 500 years

(22 October 2011)

San interactions with others in the central interior

Karim Sadr, Professor of Archaeology and Head of the Department of Geography, Archaeology and Environmental Services, University of the Witwatersrand

Prof. Karim Sadr, who has been studying southern African Later Stone Age hunter-gatherers and herders for two decades, said that the common view was that the original population of southern Africa, the San, were vanishing. Although full-time hunting and gathering was no longer a viable way of life and their languages were indeed disappearing, the San had over the centuries amalgamated into neighbouring cultures to such an extent that they could rightly be called the mothers of some of the nations not usually considered close to San. There was much evidence from historic times pointing to San women marrying into the dominant farming and herding communities around them. The Kalahari Debate in the 1960s had extended to 2000s. It was a multi-faceted ethno-archaeological debate that concerned the last hunter-gatherers. The Marshall study on the Kung in the Aha Hills in Botswana was followed in the 1960s by the research of many Harvard students, such as Richard Lee and John Yellen. Some of this research centred on the question: 'Does the hunter-gatherer way of life terminate at contact?'

Case studies were presented by Prof. Sadr to indicate the extent of San amalgamation with neighbouring peoples. An overview of south-eastern Botswana before and after farmer contact was followed by a study of San communities in the Upper Karoo in the 19th century and in other areas of South Africa. In Botswana, two sites near Thamaga, 40 km from Gaborone in the Metsemathaba River basin, were focused on, namely Radipolong and Ostrich Shelter, both of which were situated near iron age villages. At the older Radepolong San village the objective of archaeological research was to look at what happens in a contact situation: before contact, at contact and after contact. The cultural signatures included pots, stone tools and bones. Potsherds occurred in the later layers while many stone tools occurred in the early layers, demonstrating an inverse correlation between stone tools and pottery. Earlier layers included many bladelets and segments that were used for arrow heads, as well as ostrich eggshells and ostrich eggshell beads. Fewer of these items occurred in the later layers. Specularite as well as some exotics such as fossil wood and stone crystals also occurred in the early contact phase, while non-traditional exotics only occurred in the top layers.

In the early contact phase lots of activity suggests a period of high productivity and stimulation, with the inputs being for exchange and interaction. This changes in the late contact phase when there is a drop in traditional items. The research showed a change in diet towards greater protein intake. Many wild animal bones occurred in the older layers and included largely animals that could be trapped. There were no obvious rules about sharing meat or the associated symbolic value. The younger layers included cattle and sheep bones, along with some of wild animals, and new material items were introduced.

The next case study related to the Seacow Valley in the Upper Karoo in the 19th century where Garth Sampson did his research and where domesticated stock was introduced from the Sneeuberg in the 1770s. The Seacow Valley joins the Orange River and thus lies on a river route from the sea. Movement of stock farmers into the area intensified in the 1820s and especially in the 1840s when a policy to establish tracts of Crown Land between settler and Xhosa farmers was introduced in an attempt to reduce tension over grazing. The area was finally put under full settler control between 1860 and 1875 when wire fences were erected. Seventy-five years of confrontation thus ended with the destruction of the indigenous economy. The livelihood of the San based on an open landscape and game was decimated by hunters and farmers. A period of severe hardship followed and marginalised communities moved to small towns such as Richmond and Hanover. Archaeological signatures of food remains from San camps reflect a dominance of less desirable animal parts, such as heads and feet, reflecting what was happening in the communities. Although the hunter-gatherer way of life was resilient, it could not survive when game was removed from the equation.

Prof. Sadr also referred to more recent projects in the Soutpansberg, such as at Soutpan, by Simon Hall and others, as published in the 2000 *Goodwin Series* volume, and the Limpopo research of Bronwyn van Doornen. He also mentioned research on the spatial aspects of artefacts being undertaken in Botswana, to Johnny van Schalkwyk's Makgabeng research and expressed appreciation for the valuable contribution made by the Eastwoods in the latter area. The work done in the 1960s by Matthias Guenther concerning change and continuity, and the current research being undertaken at Holkrans shelter in the Vredefort dome by Wits University also fell into this category of study.

The talk underlined the interdependence of the hunter-gatherer life and landscape. Without access to the landscape that played such a formative role the hunter-gatherer way of life could not continue. He concluded that in southern African, contact between hunter-gatherers and farmers continued until quite recently and oral tradition and linguistic sources could therefore still be accessed, which was not possible anywhere else in the world.

Report by Anna Batchelor-Steyn

The nature of Tswana entities before and after the upheavals of the early 19th century

Fred Morton, Professor of History, University of Botswana

Using Prof. Shapiro's late research and the reports of Dutch reformed church missionaries, Prof. Frank Morton, author of *When rustling became an art* (2010), traced the choices and responses of Tswana people in the Rustenburg and Pilansberg areas to regional circumstances during the rising conflict prior to the *Difecane/Mfecane* between 100 to 150 years ago. Frank Morton's research entailed plotting a series of Tswana settlements using GIS mapping software, such as the comprehensive AGIS atlas and Google Earth. His aim was to answer the following questions: where were the settlements? Why were they there? who were at these settlements? and what dictated their choices of settlement during this time? His research established that the locations of settlements seemed to be crucial.

Prof. Morton found that people prioritised certain conditions when it came to choosing where to establish their communities' settlements. Conditions such as the quality of the soil, the terrain, the quantity of water available and grazing were found to be important. For example, Kolontwane, a settlement that had early Hurutshe, Phiring, Lete, Tlokwa and Hurutshe boMokgatla occupants during the late 18th century, is near the two tributaries making their way down to Madikwe. The soil and terrain in this area is good, with sufficient elevation, nearby grazing fields and a plentiful water supply. Other such sites include Lotlhakane and Mmamogwe, which all have excellent soils, terrain, grazing and water supply. According to Frank Morton, the site choice by Tswana communities at least from the 17th century to the early 19th century was not dependent on the diamond mining opportunities, as was postulated previously, but rather on an understanding of resources in that area.

Report by Louise Mackechnie

Land and cattle: collaboration and conflict in the 17th/18th century Cape

Antonia Malan, Research Associate, Department of Archaeology, University of Cape Town

The original purpose of the Dutch settlement at the Cape of Good Hope by the Dutch East India Company was to establish a refreshment station to provision passing ships and facilitate trade. It was company policy that the local people who came to trade were not to be provoked in any way. They were to be paid for their labour if they wanted to work, but they were not to be enslaved. As early as 1629, Autshumato or Harry the Strandloper, a leader, had been taken to Java by the British to learn English and he also picked up some Dutch. Back at the Cape in 1632 he was entrusted with the duty of handling the mail of passing ships from Robben Island and also handled liaison with the Khoisan. Upon the establishment of the settlement in 1652 he worked to create between the Khoi and the Dutch.

In 1662 it was reported that some free burghers had made reasonable progress on their farms, but that the rest of the colonists were lazy, indolent fellows. Stock-keeping now became more popular than agriculture. The reason for this is not difficult to understand considering the Cape's aridity. More profitable than grain, animals transported themselves to market and less physical labour was involved. The Khoesan's prior knowledge of pastoralism suited the economy exceptionally well. They were excellent stockmen and were familiar with grazing areas and water sources as well.

Restrictions on interaction, hunting and exploration, illegal trade and marriage were put in place, but for the most part the colonists ignored the ordinances and did as they pleased. By the 1670s land was being taken by force and coercion from the Khoesan – an uneven exchange as the latter did not understand the concept of the private land possession. Once landless and powerless, they were little better off than slaves while vast numbers of company livestock were sent off to graze on their rich pastures. To escape poverty, many resorted to working as herders or part time harvesters and by the 18th century the pattern of migrant labour was already established. The great moment of transformation came about in 1713 with the outbreak of the smallpox epidemic, which decimated the indigenous people, many of whom now migrated into the interior to save their livestock from an unusually virulent livestock sickness prevalent at the same time.

The stock farming industry now began to change. With the cattle trade slow sheep farming became more successful, with the Dutch learning that a hybrid between imported and indigenous breeds produced a larger, meatier product. This proved to be a boon for their ship provisioning activities. By the mid-18th century, a European population of about 5 000 had so markedly modified the landscape that wild fauna within 180 km of the Castle was rare. The Steenberg pastures were so degraded by the 1780s that company grazing land was sold off and converted to vineyards. Overgrazing in the Roggeveld between 1740 and 1800 changed the veld so much that this area was no longer able to sustain cattle and farmers turned to sheep farming.

Ploughing is crucial to a good crop and needy farmers became reliant on Khoesan communities for the supply of labour and sometimes even spans of 26 oxen during the ploughing season. Gang labour was popular, with skilled labourers travelling from farm to farm during the harvest. So frontiersmen of all origins all became part of the Cape's pastoralist society. It was principally through the dynamics of pastoralism that they absorbed or transformed each others cultures while exploiting, serving or cooperating with each other. New traditions emerged from synthesis. The Khoesan tradition of making portable reed-mat houses was adopted by trekboers and where this tradition did not exist families lived for years in tents. A shortage of good building materials was not always the principal reason for poor housing; primarily the reason was the nomadic lifestyle of the early farmers in search of good pasturage.

Miscegenation and the growing number of frontier fugitives were helping to create new groups that came into existence alongside other frontier societies. The word *Bastaard* came into use. The offspring of Khoesan and slaves were known as Bastaard Hottentots and such children were often required to remain in servitude to their masters. The offspring of Europeans and Khoesan were ostensibly free Most were born out of Christian wedlock, but many of them were christened and became 'gedoopte Bastaards', with their status depending on family background, district, etc. according to a report by Swellengrebel in 1776, the colonists living in and nearby principal towns were in general not very industrious, but those living further afield were even less so and these people adopted fully the character of cattle herders and game hunters. The Bastaards had higher status and respect on the frontier and their children were acknowledged. As a result of their insecurity over land ownership, many groups like the Koks, Barends and others moved away to the interior. By the beginning of the 19th century, their inferior social and political status and their distinct racial identity were closely interwoven.

Establishing archaeological evidence from the 17th and 18th centuries was a difficult process, Antonia Malan said. Decoding residues in complex and long-lived structures such as the Castle was a long and arduous process. Simpler, more intelligible patterns became apparent in more isolated sites that had had short-term occupation. Such sites were to be found on distant farms or

outposts strung across the advancing frontier, but those in favourable locations have been overlain by later buildings or have suffered from destructive actions. Only in the 19th century did glass and ceramic materials become visible markers of that contact period. ***Report by Anita Arnott***

The mining migrants: white, black and yellow (1886-1910)

Karen Harris, Professor of History, Department of Historical and Heritage Studies, University of Pretoria

Prof. Karen Harris opened her lecture with a quote from *De Kiewiet* stating that 'since 1886 the history of South Africa is the story of gold', although in so far as the interrelationships between white, black and yellow was concerned, they evolved from the origins of labour management in the diamond mining industry in Kimberley. The South African mining revolution at the end of the 19th century drew an unprecedented number of immigrants from Europe, Africa and China to the Witwatersrand gold mines. Boer and British authorities, foreign magnates, skilled white labour and black and Chinese unskilled workforces were thrust together for the prospect of wealth. Within a burgeoning multi-cultural and predominantly male worker environment, lines were drawn and perceptions were forged that lay the foundation of what would ultimately evolve into a deeply fractured social kaleidoscope.

The start of diamond mining in the 1860s created an insatiable demand for cheap unskilled labour and this could only be satisfied by enticing black men from the rural areas on relatively short contracts. However, because of the nature of the product that was valuable and easily concealable, the owners created a 'sealed' compound system – even to the extent of monitoring body functions! By 'housing' and 'feeding' black employees, mining magnates were able to justify low wages and avoid widespread unrest. This control, both within the mining area and on the routes to tribal homelands, in time became the progenitor of the dreaded 'pass' system under the apartheid regime.

With the discovery of gold, the Witwatersrand became the world's new 'Eldorado'. The dramatic changes this brought to the landscape resulted in alarm among the Boer people, whose simple lives evolved around the ox wagon that had brought them to the Transvaal. Milner is quoted as saying that 'a wholly antagonistic system was created where a mediaeval rural oligarchy and a modern industrial state came together'. The Transvaal's European population rose from 1 500 in 1880 to 120 000 in 1890!

The gold mines' demand for unskilled labour far exceeded that of the diamond mining industry. A sophisticated recruiting system was created because of the reluctance of the majority of the local indigenous population to work on the mines. South African gold was generally more difficult to extract than elsewhere in the world. The mining magnates had a proven working system for black labour inherited from the diamond mines and this was implemented on a grander scale. Despite the mining magnates efforts to recruit black labour from surrounding countries they could not get enough low-cost unskilled labour. The answer came with the recruitment of 63 659 Chinese labourers on a three-year indentureship basis, where after they were to return to China. It was a popular misconception, Prof. Harris said, that South Africa's current Chinese population stems from that migration. In fact, they are they descendants of earlier mid-19th century merchants. These Chinese were not only discriminated against under apartheid, but also suffering under the current regime since there was initial reluctance to recognise them as a 'previously disadvantaged people'.

In accordance with the entrenched mining system, the Chinese labourers were housed in separate compounds from those of the black labourers. However, immigrant white workers were not herded into compounds. The factors reinforced separation perceptions between races. Over time the white skilled workers inevitably saw their situation as superior and furthermore actively protected their privileged status by blocking the promotion of blacks to 'killed' work categories. Thus the shibboleth evolved that it was demeaning for whites to do menial work. Many strikes to protect this cadre status culminated in the major strike of 1922.

Because of the enforced separation and control on movement in the diamond mines and subsequently the gold mines, it could be hypothesised that South Africa evolved a dramatically heightened sense of racial differentiation and prejudice, Prof. Harris concluded.

Report by John McManus

FIELD EXCURSIONS AND OUTINGS

Outing to Vredefort Dome: Late Stone Age and Iron Age archaeology at Buffelskloof, and the geology of the impact structure (24 July 2011)

Led by Professor Karim Sadr, Head of Wit's School of Geography, Archaeology and Environmental Studies, Mr Patrick Byrne, MSc student (Archaeology), Wits University, and Professor Frans Waanders, Head of the School of Chemical and Minerals Engineering, North West University, Potchefstroom

The group travelled by coach via Parys, where we were joined by Professor Frans Waanders and then continued to the Vredefort area about 120 km south of Johannesburg. Arriving at the Thabela Thabeng conference centre, we were met by Prof. Karim Sadr and his MSc student Patrick Byrne. Here Prof. Sadr gave the group a presentation on the Late Stone Age (LSA) archaeology of the area and the development of the excavations at the shelter. Patrick Byrne followed with an illustrated presentation on the work he had been doing in the area. Building on the previous work by Mike Taylor, Patrick has expanded the excavation and has come to realise that the original three types of walled site that were identified as Group 1 – 1500 AD LSA Sotho; Group 2 – 1700 to 1800 AD Tswana (Rolong); and Group 3 – similar dates to Group 2, but with pottery related to both Group 1 and 2, could be subdivided into sub-groups related to the main groups. Patrick's research was initially based on aerial and satellite images, but he discovered that the thick vegetation often hid sites or provided false images. He explained how with GPS he had been able to map many of the false images. The preliminary results indicated a far more complex system of hill sites with the Group 1 type being sub-divisible into three further types of walled site. He discussed two previously undiagnosed types and the fact that the results also appeared to indicate that the sites were more defensive than had been thought previously.

After the talks we walked to the shelter site. Karim Sadr stated that the shelter had probably not been occupied all year round and had only been used by a family or a small extended family. Wits had conducted trial excavations at the site, but only a full excavation would reveal the

occupation levels. It was thought that the low wall at the mouth of the cave had been built by early Trekboers and that the outer wall was possibly of LSA origin. Two trial pits had shown different occupation sequences and Prof. Sadr indicated that there was a possibility of there being a Middle Stone Age level at a much lower level. It seemed that this was the only rock shelter on the farm. No rock paintings or Early Iron Age pottery had been found in the area. Apparently there was plenty of good clay near to the Thabela Thabeng centre.

Karim Sadr talking in front of the shelter

After walking a short distance up the gorge the group was shown some more walling, but as this was very overgrown it was difficult to discern a shape. We returned to the conference centre where after a picnic lunch we were given a talk on the geology of the Vredefort Dome by Prof. Waanders. He explained how 2 025 ± 5 million years ago (mya) a 10 km diameter rock slammed into the earth at 70 000 km/h. It created an impact crater 15 km deep and overturned the rock strata on the crater rim. The resultant melting of the rock and rebound of the impact crater created a mountain 10 km to 15 km high. The Vredefort dome, which in fact no longer really exists, is the eroded remains of the rebound mountain. The original crater was most probably 250 km to 300 km in diameter with the transient or initial impact crater being some 70 km in diameter. The magnitude of the impact is really beyond our comprehension. It has been estimated that the excavated volume of original crust was ± 70 000 km^3 and that the energy released had the explosive power of 87 000 million tons of TNT. Much of the ejecta would have been vaporised and blasted into outer space, but that which fell back covered an area approximately 700 km in diameter. The transient crater filled up with a mixture of molten rock and collapsing crater rim to form a special breccia type of rock. The shock of the impact would have been felt all over the earth, but the event happened when the only life on earth was bacteria and microbial colonies. The whole event of impact, crater formation and rebound probably took no more than four to five minutes, but the resulting world-wide destruction and environmental impact probably lasted for hundreds of years.

The Vrederfort structure is the oldest, largest and best preserved asteroid impact crater in the world. Two other impact craters of significant size are known. The Sudbury crater in Canada dates from 1 850 mya and the Chicxulub crater in Mexico at 65 mya, only part of which can be found on the Yucatan peninsula as the rest is undersea. Frans Waanders showed us some of the rock types associated with the impact site. One of the most impressive and a positive indicator for an impact was the shatter cones. These are literally the remains of highly stressed rock once the shock waves of the impact have passed through the rocks of the earth's crust. They define the axial orientation of the direction of impact.

After the talk we boarded the coach and drove through along the ridges of the western rim of the crater. We stopped at the Vaal River, which has cut a way through the centre of the area, and saw first-hand what happens when a municipality (Parys) allows it sewerage treatment system to break down and pumps sewerage straight into the river. The river is highly polluted at this point, as indicated by the white deposits of waste precipitants on the rocks. Prof. Wanders pointed out the white rocks of the Hospital Hill quartzites, which at this point have been uplifted and tilted by the impact. He also showed us the U-shaped valleys between the ridges of harder rocks, explaining that this was indicative of glacial erosion of the softer shales and mudstones between the harder quartzites at the time when South Africa was covered in thick ice sheets during a glacial period 430 mya.

We stopped at a decommissioned quarry of architectural stone that was cut into slabs for the facings of buildings and for floors. The stone found here is called pseudotachylite as it contains tachylite or glass-like intrusions, which was fashionable some years back. In reality it is not a true glass such as obsidian, which is a true volcanic glass and was favoured for the making of superb stone tools and arrow heads. Pseudotachylite forms from the sudden compaction and thermal alteration of ejecta dust, and is only found at impact sites. From the quarry we returned to Johannesburg after an interesting day of archaeology and geology. ***Report by Graham Reeks***

Outing to Melville Koppies (14 August 2011)

Led by Professor Revil Mason, Head of the Archaeological Research Unit at Wits University from 1962 to 1989

Melville Koppies provide a panoramic view of the Johannesburg Botanical Gardens and Emmarentia Dam. The area covers 60 ha and is roughly divided into three areas. The East Koppie, which has a very pleasant lecture hut, is where we met Prof. Revil Mason and heard his interesting and well-illustrated talk. This koppie is home to a number of archaeological sites and a reconstructed stone wall, dating from the Iron Age (IA). Melville Koppies Central, bounded by Judith Road and Beyers Naude Drive, is the home of interesting flora, fauna, birds and geology, while Melville Koppies West is the large area bordered by Beyers Naude Drive and the West Park Cemetery.

Prof. Mason outlined the archaeological sites situated on the East and Central Melville Koppies, which included Stone Age camps believed to be 250 000 and 100 00 years old respectively, a Tswana iron-smelting furnace dating to 500 years ago, a Tswana hut floor and 300-year-old pottery. In 1823 a Mzilikazi impi had swept through the Batswana camp, only to be driven away in turn by trekkers. Braamfontein farm, as it was then called, was bought in 1830 by one Bezuidenhout. Gold prospecting had occurred on the koppies in the second half of the 18th century and in 1900 the British had placed defensive guns on the top of Melville Koppie. Later the area was subjected to quarrying. In 1934 Braamfontein farm was bought by Johannesburg and the land was subdivided into residential areas and various open spaces. Melville Koppies West was declared a nature reserve in 1959 and in 1978 the Melville Koppies were listed as a National Heritage Site. It is carefully maintained by the City Council and the Melville Koppies Management Committee, who preserve not only the flora, fauna and geology, but its history for the people of Johannesburg.

The furnace and a hut floor were uncovered in 1963 at a depth of about 50 cm. The 100 000-

year-old Stone Age camp lay at a depth of a metre and a 250 000-year-old camp at about 2 m. The furnace and small parts of the older living floors are preserved under glass. During excavation, the researchers came across the top rim of the furnace. The symmetry suggested a man-made structure and further excavation revealed the whole furnace. They noted that the slag had been scattered by termites. About 1,5 m down, a Middle Stone Age site dating to about 400 000 years ago was found and further down hand axes and other Stone Age remains were exposed. The remains of an IA stone wall and lots of rubble are still visible. The outer wall facing eastward had a forge linked to a furnace where pottery was discovered. Further digging revealed spearheads and a hafted projectile. In 1850 pioneer farmers had removed rocks from the upper part of the settlement. In another area a fragmented hut floor was found, while the lower levels revealed pottery sherds.

Melville Koppies West is significant for a small cave that is not much more than an overhanging rock. Rev Mason told us that it was excavated in 1964 and 1965. Its size belied the richness of the archaeological content. It had two levels, the upper one containing pottery similar to that found in the Free State and at Olifantspoort, which suggested that the shelter was used by travellers between the two areas. Stone Age fragments and broken poison arrows suggested that the San had also used the shelter. Other sites in Johannesburg with similar artefacts were to be found in the Klipriviersberg.

Prof. Mason described the first part of his lecture as 'technical archaeology' where artefacts were connected with the people's daily lives and needs. The second part of his lecture was on 'non-technical archaeology', which was connected to Boholoholo: 'Things that belong to the other world'. When the area known as Bruma was being prepared for building, Prof. Mason did some excavating and found an accumulation of goat and cattle bones, dated to about 1610. He reasoned that the site had been an Eastern Sotho ancestral shrine, a sacrificial site where people venerated and made food offerings to the ancestors. This custom was still in place today. Another interesting 'non-technical site' was Tafelkop alongside Hartebeestpoort Dam. On a ledge high up on the slope of a conical hill a pile of decorated pottery and grind stones were found in the 1940s. The belief was that the ancestors lived in the mountains and the pottery, which could contain food and drink, was left there in recognition of the dead. A third such site that had been identified lay at the western end of Broederstroom. This had huge boulders covering smaller boulders, which raised the question: 'What do these boulders mean?'

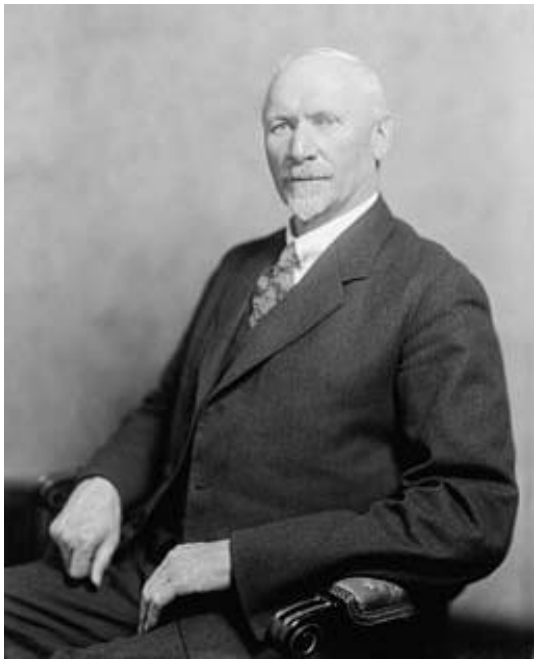
Blessed by warm sunshine and a cooling breeze we were able to enjoy this most interesting and thought-provoking talk and visit. In his *A Guide to Archaeological Sites: Johannesburg* (1989, Occasional Paper 23, Archaeological Research Unit, University of the Witwatersrand), Prof. Mason wrote: '… archaeology is not limited to the distant past but recorded wherever human action leaves its mark on the landscape'.

Report by Gerry Gallow

Excursion to Doornkloof, the home of Jan Christian Smuts (20 November 2011)

Our year-end outing visited the home of Jan Smuts, statesman, military leader and philosopher, which has been preserved as a museum. The outing included a special lunch. The chairman of the General Smuts Foundation, Adrian Toms, went out of his way to make our visit a real highlight and extras were included that made the visit a wonderful one. One of these was an excellent 90-minute talk on General Smuts by former Jan Smuts House curator and guide, Arina Kok.

Jan Christiaan Smuts was born to a farming family in Riebeeck West in the Malmesbury district on 24 May 1870. While his elder brother, Andreas, was being groomed for the ministry, Jan, who was considered by his father to be a bit slow, was being trained to work on the farm. While looking after the sheep he developed his interest in nature and botany, which was to be one of his lifetime directions. In fact, when on a later occasion he was late for parliament, his excuse was that he had been 'botanising' – pouring over plates of plants in his office. When Andreas died at the age of 12, it was decided that Jan should study for the ministry after all. Although the boy had never attended school, he had been taught basic arithmetic by his mother and could read the Bible in High Dutch. He was now sent to 'Die Ark' school in Riebeeck West for his basic education and to learn English. He passed through school in six years and went on to Stellenbosch University to study for theology. For this he needed Greek, which he taught himself, coming first in Greek in the Cape Colony. Then, still in his teens, his education took him to Christ College, Cambridge, on a scholarship. He changed direction, deciding to read law. On completing his honours degree he was rated the most outstanding student of his year. Next he studied philosophy in Germany.



General Jan Smuts (Image: Wikipedia)

On his return to South Africa he became involved in politics. He was shocked by the Jameson Raid in 1896 and left the Cape for the Transvaal Republic where Kruger appointed him to the high post of State Attorney in 1898. Later he took up arms in the Anglo-Boer War, leading a daring raid into the Cape Colony and also becoming known for the regrouping of forces at Modderfontein. After the war, Smuts decided to work for a united and self-governing South Africa, which came about in 1910. [It is interesting to note that the centenary anniversary of this event passed by last year with little mention in official circles.] Encouraged by his life long friend, Louis Botha, who shared his ideal of a united South Africa, Smuts went to England, met Churchill and Prime Minister Campbell Bannerman, to whom Smuts posed the question: 'Do you want friends or enemies?' He followed with a brilliant speech in the British Parliament. In 1906 and 1907 respectively the Transvaal and the Orange Free State obtained self-government, both as part of a self-governing British colony with Smuts as Prime Minister. But not all his countrymen were pleased with this outcome; many felt that Smuts had betrayed his own people by making friends with Britain. In fact, James Hertzog, the leader of the opposing Nationalist party, defeated Smuts in 1924.

After the First World War Smuts and Botha became involved in the formation of the League of Nations in Paris in 1918, but did not become signatories as they were uncomfortable with the treatment meted out to the Germans. Sadly, shortly after their return from Paris, Louis Botha died

in 1919. Smuts dedicated himself and his South African Party to bringing the British and Afrikaners together. The Nationalist party under Hertzog wanted greater independence from Britain and this was achieved with the Statute of Winchester in 1933. With the adversity of the economic depression as an added factor, Smuts and Hertzog nevertheless came together and formed the United Party. Smuts graciously accepted Hertzog as the leader. However, in 1939 the party split, divided on the one hand by the desire to remain neutral in the Second World War and on the other the wish to join in the war on the side of Britain. Parliament voted in favour of Jan Smuts and he became Prime Minister, a post he held until 1948. While his was an international name, he is considered in today's analysis in South Africa to be the father of racial division.

Smuts was not only a statesman, but also a soldier and is generally known as General Smuts or Field Marshall Smuts (King George made him a Field Marshall in 1941). He was involved in both world wars and the Anglo-Boer War, and his statesmanlike qualities were evident in the peace that followed each of them. In both world wars he was a member of the British War Cabinet. At the end of the Second World War he was concerned with human rights issues and wrote the preamble to and became one of the first signatories of the United Nations Charter. As an erudite man, Smuts also wrote many scholarly works. Best remembered is his book, *Holism and Evolution*, in which he evolved the concept of holism. Smuts was also a great botanist and a lover of nature, and was concerned with what we would today consider ecology. When a companion drew his attention to a beautiful flower while climbing Table Mountain, he replied: 'Worship, and pass on'.

Smuts married Sybella Margaretha Krige, known always as Issie. She was the daughter of a prominent local wine and dairy farmer and, a little ahead of her time, received a good education. She read Greek and was an intellectual as well as an independent thinker. Unusually for the time, she retained her family name and was known as Issie Krige Smuts. Her illustrious South African family included her brother Uys Krige, a niece who was married to Abraham Fischer, Pieter Dirk Uys and Tessa Uys. Life was not always easy for Issie as they moved around different homes, and with her husband away so often she had to bear the deaths of her twins and another child alone. She and Smuts had five children and an adopted a daughter as well. In 1908 they bought the farm Doornkloof. Issie ran a simple and practical home. She abhorred waste and idleness, and was an indefatigable knitter and sewer. On one occasion, having been persuaded to go to Parliament, she pulled her knitting from her bag. But the Speaker frowned on this Madame Defarge-like activity and she had to put it away. Despite her keen intellectualism Issie had a great liking for Mills and Boon-type books and cowboy movies, which she got hired from the Capital Theatre in Pretoria and were delivered by courier to Smuts' office in the Union Buildings. Issie was without any kind of affectation or grandeur and was content to live peacefully at Doornkloof. When she overcame her anti-British feelings she was a leading force for the care of South African troops.

After lunch Arina Kok took us round the Big House, as it is also known. The house had been an English officers' mess and the corrugated iron structure is largely unchanged today. Entering through part of the extensive porch we came to a portion off the kitchen where special visitors were received. Here stands a sewing machine and a spinning wheel, part of the accessories needed by Ouma Smuts' 'sewing for charity' practices. Issie's bedroom next door is a simple room with an iron bedstead and a wall adorned with pictures of her brothers and other family members. A few learned books and a picture of Christ in Chile completes the decor. The large dining room could be regarded as the 'hub' of the house. It has two large tables, which Smuts referred to as the 'adultery' and the 'brattery', i.e. the adults table and the children's. Up to 30 people can be seated and it was here that lively debates took place. The walls are lined with family photos and there is a wireless where people listened attentively to the news.

The main entrance has many pictures of the Cabinet and also the secret documents the Smuts hid in a curtain rail during the Anglo-Boer War and never found by the British. The sitting room contains the original furniture, including a piano played by Issie. Here are found many photos, mostly signed, of the Royal Family. The passageway to the library is lined with books, many of great historical interest and including Smuts' own works. The library was arranged by Smuts himself in appropriate categories. Strangely, there are no Dutch or Afrikaans books. The library was at one timed housed at Jan Smuts House at Wits University, but was later returned to Doornkloof. We passed a bedroom known as the 'donker kamer' as it has no natural light, or as the Reitz room. One guest told Issie the morning after he had slept there that he had seen a ghost that looked like Kruger. She admonished him: 'And why didn't you ask him where he has hidden his millions!' Like Issie's, Smuts bedroom was spartan and he slept most of the year on the verandah outside. In later years he had to forgo this nocturnal arrangement as it was considered a security risk. Other rooms include 'Ouma's passage' and the War Room where is found a letter from Queen Mary, pictures of Churchill and a letter from Emily Hobhouse.

When Smuts died in 1950 his family declined a State funeral, opting for a military funeral instead. Many of us remembered seeing the procession through the streets with the black horse carrying the saddle with the stirrups reversed. Different from the norm, Smuts was cremated and his ashes are buried in the graveyard at the top of the hill on Doornkloof. Issie died soon after Smuts, also peacefully in her own bed on her beloved Doornkloof

Arina Kok led us through the interesting Smuts history in the most fascinating and informative way. The tour of the house makes one want to come back and have another, quieter look. Doornkloof leaves one with a great sense of peace and tranquillity. One is moved by the greatness unadorned by riches and opulence, and by people more interested in serving than enriching themselves.

Report by Gerry Gallow