

# Milestones in the development of symbolic behaviour: a case study from Wonderwerk Cave, South Africa

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## Abstract

Wonderwerk Cave (Northern Cape Province, South Africa) is an example of a natural locality that, in the past as in the present, was imbued with meaning and symbolism. Today, local communities associate the cave with a snake spirit, while rock art adorning the cave walls attests to the special status of the cave during the Later Stone Age. In the terminal Acheulean (over 180,000 years ago), hominins introduced manuports with special sensory properties into the back of the cave, a locality with singular acoustic and visual qualities. Thus, the archaeological record of Wonderwerk Cave serves as a unique and extensive diachronic record of milestones in the development of symbolic behaviour. It provides evidence to support the position that elements of symbolic behaviour emerged long before the dispersal of modern humans out of Africa.

## Keywords

Wonderwerk Cave; Earlier Stone Age; Later Stone Age; Fauresmith; archaeology of the senses; symbolic behaviour.

*'I've come to summon the spirits,' he says again simply. 'It's like a Bushman instrument, but I've added my own variation'. . . . Sitting on the ground at the threshold of Wonderwerk Cave, this sound . . . .*

*The fire is out. Yet here where people sit at the mouth of the cave, the repetition of this sound absorbs the rhythm of our hearts, fingers plucking the single string, one sound calling up the spirits, calling into the night.*

(Martin 2008: 177–8)

## Introduction

Tourists and school groups regularly visit the archaeological site of Wonderwerk Cave in the Northern Cape Province, South Africa. During a recent archaeological field season we

met a group of visitors from a nearby township who had come for a traditional barbecue (*braai*) near the site and questioned us about our work. One person asked why there was a sign saying that visits inside the cave were taken at the visitor's risk. We explained that it was there for legal reasons in case someone got hurt during a cave visit. The group appeared not to be convinced by our explanation. A man then asked us whether there were snakes in the cave. We replied that we had seen bats and birds but no snakes. Given how intent he was on this issue, we asked him why he was so interested in snakes. He explained to us that, as in many other deep caves and water holes, a large snake lived inside this cave. People had to show the snake respect though, he assured us, it could not hurt *us* since we did not believe in it. Throughout the day, members of the group collected rain-water that dripped from fissures in the roof at the cave entrance, following a downpour the previous night. They explained to us that the water was imbued with the power of the snake. The ethnographic-archaeological record of Southern Africa documents that Khoi-San communities associated water sources with the spirit of a snake (Hoff 1997; Lewis-Williams and Pearce 2004; Mallen 2005; Morris 2002), beliefs that continue to be widespread among local communities throughout South Africa (Bernard 2003).<sup>1</sup>

Both the spirits evoked in the opening quotation and the incident of the snake spirit described above relate to Wonderwerk Cave. They provide powerful examples of the way in which beliefs have shaped human perceptions and actions *vis-à-vis* a natural location. Landscape archaeology recognizes that natural localities were often imbued by people with special significance and constituted 'components of a mythological landscape' (Bradley 2000:13). Consequently, not only the functional (calculated/rational) factors that motivated people to exploit natural locations should be considered but also their sensory features (physical and emotional) (Gosden 2001; Kus 1992; Scarre 2006; Sheets-Johnstone 1990). This approach is exemplified by Tilley in his analysis of Neolithic and Bronze Age menhirs in Brittany when he states:

they did not signify or represent anything in conventional semiotic terms and so we cannot reduce their experience to the level of language. They took on their meanings in relation to the experiences and feelings of those people who lived with them in the landscape through particular modes of encounter and engagement.

(Tilley 2004: 35)

For archaeologists, identification of such culturally significant natural features in a landscape is challenging and may rely upon one or several of the following: the presence of physical modifications, their association with iconographic, epigraphic or literary sources, the presence of deposits of symbolic artefacts or, alternatively, the use of raw material from a distinctive natural locale in the creation of symbolic artefacts (Bradley 2000). To this we would add localities that came to be imbued with meaning due to their special sensory characteristics (auditory, visual, tactile and olfactory). In all cases, there is a complex web of connections between the sensory experience of a place, the meaning of the place and the symbols that express and enhance both the sensory experience and the meaning. The literature on the relationship between perception, meaning and symbols is extensive and complex, but from structuralism to semiotics the symbol has played a paramount role in analytic frameworks (for critiques, see Hodder 1986; Ingold 2000; Preucel 2006).

In an ‘archaeology of the senses’, caves have been singled out for their specific sensory properties and have played a unique role in the development of behavioural modernity (Bruchez 2007; Clottes 2004; Hayden 2003; Helvenston and Bahn 2003, 2004; Reznikoff 2006). In this context, we track the changing perceptions, meaning and symbolism of Wonderwerk Cave. As described above, today it serves as a singular locality with clear symbolic associations for local communities, while at some point during the Later Stone Age, between *c.* 10,000 years ago and the Colonial period, the cave served as a home base *cum* ritual site. We propose that, in the terminal Acheulean, over 180,000 years ago, the back of the cave served as a natural locality of significance for early hominins. At this time, Wonderwerk Cave appears to have been part of a world imbued with meaning but without formalized symbols. This suggests that sensitivity to the sensory properties of a landscape, and to inert materials, formed an integral element in the emergence of symbolic behaviour.

### Wonderwerk Cave

Wonderwerk Cave, in the arid Northern Cape Province of South Africa ( $22^{\circ}50'45''S$ ;  $23^{\circ}33'29''E$ ) (Plate 1), is among the most impressive prehistoric sites in southern Africa (Beaumont 1990, 2004; Beaumont and Vogel 2006; Chazan et al. 2008, in press; Malan and

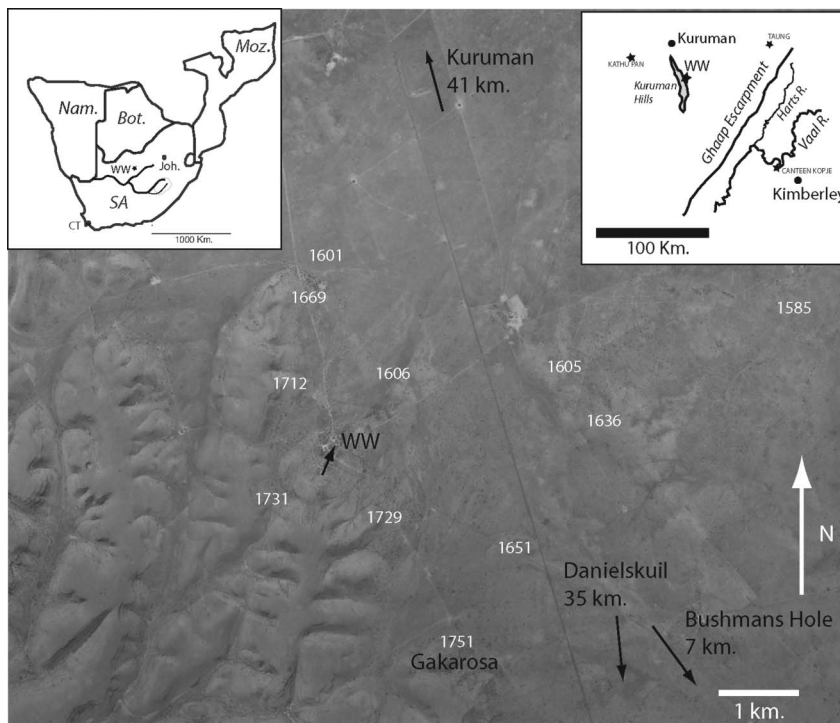
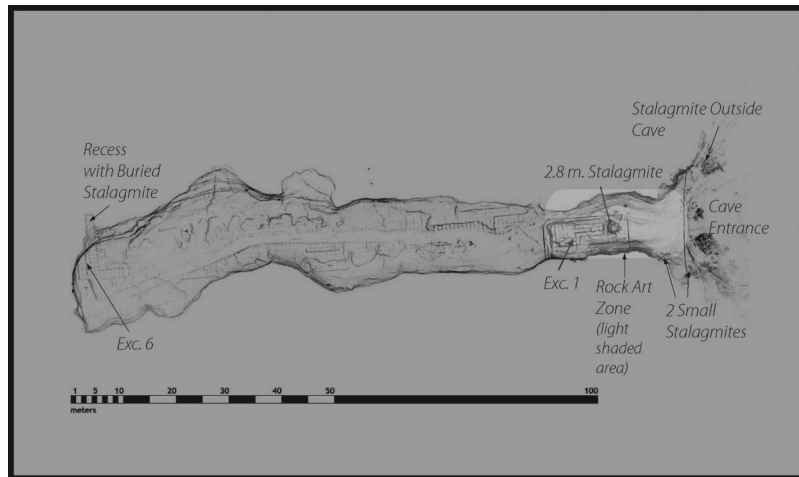
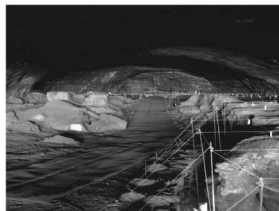


Plate 1 Aerial photograph showing the geographic setting of Wonderwerk Cave and other locations mentioned in the text. The arrow for Wonderwerk Cave indicates the orientation of the cave entrance. The white numbers are altitude above sea level.

Wells 1943; R  ther et al. 2009). Wonderwerk would have been a salient and attractive feature in the landscape for both Pleistocene and Holocene hominins. It is one of the few caves in the Kuruman Hills-Asbestos Mountains (Curnoe et al. 2006; Herries et al. 2007) and is located at a high point in the local topography. From the single entrance, 26m wide, there is an unimpeded view of the Ghaap Plateau below (Plate 1). Access to the cave is easy as it lies at the base of a hill. As illustrated in Figure 1, a prominent physical feature is the sheer scale of the cave: *c.*140m long, between 11 and 24m in width, with roof height ranging from 3 to 5.5m. The cave roof forms a shallow dome while the walls are smooth and roughly perpendicular (Fig. 1b). Especially noteworthy is a 2.8m high stalagmite situated in the middle of the cave ‘foyer’, *c.* 13m from the cave entrance (Brook et al. in press) (Fig. 1a). Two smaller stalagmites are situated alongside the cave wall in this ‘foyer’, while a third stalagmite is situated outside the present cave mouth (Fig. 1). At the very back of the cave, a fifth stalagmite lies partly buried in sediments in a recess adjacent to Excavation 6 (Beaumont and Vogel 2006) (Fig. 1). The stalagmites, together with the microfaunal and geomorphological records (Avery 1995; Butzer 1984a, 1984b), attest to greater water activity in the Pleistocene, including heavier rainfall as well as a longer rainy season than at present since current water activity in the cave is minimal (Beaumont and



a



b



c

Figure 1 (a) Plan view of Wonderwerk Cave generated from a 3-D scan (courtesy of H. R  ther). Photographs show: (b) flat, arched roof in the central portion of the cave; (c) stalagmite adjacent to cave entrance.

Vogel 2006). The cave is situated close to two perennial water sources that would have further enhanced its importance in the past: a seep some 5km to the south of the cave (on the east flank of the Gakorosa Hill), while some 15km to the south is a massive karstic sinkhole called Bushmans hole (*Boesmansgat*) that is the third deepest water-filled cave in the world (Beaumont and Vogel 2006).

The pock-marked topography of the floor of Wonderwerk Cave comprises large slabs of roof spall and deep, irregular pits dug during the early 1940s from which organic-rich sediment was removed and sold as guano for fertilizer. Following the discovery of lithic artefacts and fossil bones by the 'guano diggers', archaeological investigations and excavations ensued (Butzer 1984a, 1984b; Camp 1948; Malan and Cooke 1941; Malan and Wells 1943). From the 1970s through to the late 1990s, P. B. Beaumont (the McGregor Museum) and colleagues excavated seven areas inside the cave. These investigations yielded rich and varied lithic and organic remains spanning the Earlier Stone Age (ESA), Middle Stone Age (MSA) and Later Stone Age (LSA) (Beaumont 1982, 1990, 2004; Beaumont and Vogel 2006; Chazan et al. 2008, in press; Humphreys and Thackeray 1983; Thackeray 1984; Thackeray et al. 1981). The archaeological record indicates that there are temporal differences in the location and intensity of hominin occupation within the cave. Moreover, as proposed here, different areas within the cave may have served specific functions, related to their sensory properties, with the most striking distinction found between the front and back of the cave.

### **The front of the cave**

The stalagmite located outside the cave mouth (Fig. 1), indicates that the cave roof extended further forward in the past, although it is unclear when it collapsed. The current entrance is large and provides an unobstructed panoramic view of the surrounding area. Hence it is not surprising that the most intense ESA and LSA hominin occupation occurred in this part of the cave. Sound travels freely from outside the cave into this well-lit space. These features, as well as the low and gently angled scree slope that connects the interior of the cave to the landscape outside, recall a rock shelter more than a deep cave environment.

Excavation 1 is located *c.* 14m from the present mouth of the cave (Fig. 1). The archaeological deposits here reach a depth of *c.* 5m. The uppermost levels, *c.* 2m deep (layers 1 to 4d, and possibly also layer 5a-b), have yielded cultural remains characteristic of the LSA that are dated, by radiocarbon, to  $10,000 \pm 70$  BP to  $1,210 \pm 50$  BP (Beaumont and Vogel 2006; Humphreys and Thackeray 1983). The intensity of this occupation and the nature of the finds, including some of the oldest dated African *art mobilier* (engraved dolomite and haematite slabs) with a minimum age of 10,200 BP based on radiocarbon dating of associated finds, conforms to exploitation of the cave as a base camp (Humphreys and Thackeray 1983; Thackeray 1984; Thackeray et al. 1981). In practical terms, the cave entrance offered a vantage point for hunters onto the Ghaap plateau below, while the inner area offered a spacious, warm and dry habitation given that the cave temperature is constant (Beaumont and Vogel 2006).

The monochrome, bichrome and polychrome rock paintings that cover the walls adjacent to the cave entrance (Plate 2) indicate that, at some point during the LSA, the site was imbued with ritual as well as aesthetic significance for indigenous hunter-gatherers or pastoralists (Lewis-Williams 2002; Ouzman 2001). The images of animals as well as geometric forms refer to experiences of the ordinary world as well as to realms of the senses, imagination and beliefs (Lewis-Williams 2002; Lewis-Williams and Pearce 2004; Ouzman 2001). It is likely that the rock paintings were produced during more than one period of the LSA as both naturalistic representations of animals and geometric finger-painted figures are included (Parkington et al. 2008). This demonstrates that even in the LSA the cave was a focus of intensive, long-term ritual attention. The presence of rock paintings accentuates the special status of this site, since engravings (petroglyphs) are the prevalent rock art form in the interior of South Africa (Morris 2002; Parkington et al. 2008; Thackeray et al. 1981). It is possible that the significance of this part of the cave with its rock art lies in ritual beliefs that continue today, associating water sources with the powerful spirit of a snake or rainfall (Bernard 2003; Hoff 1997; Lewis-Williams and Pearce 2004). The large stalagmite that dominates this part of the cave has been dated by U-series to the last 35,000 years (Brook et al. in press) so it was active during at least part of the LSA occupation and was possibly associated with this belief. The fact that the rock art is confined to the first 40m in from the cave entrance offers a significant insight into the manner in which the LSA peoples viewed and related to the site, approximating a rock shelter rather than a deep cave context.

In the front of the cave, below the LSA layers, are some 3m of ESA deposits containing Acheulean artefacts dominated by handaxes (layers 6–11). The ESA levels are constrained by OSL and cosmogenic isotope burial ages on sediments to between *c.* 2.0 and 0.78 ma,



*Plate 2* View of the rock art on the east wall of Wonderwerk Cave near the back of Excavation 1: (a–c) bichrome (black and white) paintings of animals; (d–e) monochrome geometric finger-paintings; (e) is red and therefore reproduces poorly in this photo.



and are corroborated by a magnetostratigraphic sequence (from top to bottom) of: N (Bruhnes) – R (Matuyama) – N (Jaramillo) – R (Jaramillo base) – N (Olduvai) (Chazan et al. 2008, in press). The basal ESA deposit (layer 12) yielded a small lithic assemblage characterized by small flakes and cores but without bifaces. It may represent an Oldowan industry as suggested by the combined magnetostratigraphy and cosmogenic isotope burial ages obtained for this layer of *c.* 2 ma (Chazan et al. 2008). Thus, the initial occupation of this area in Wonderwerk Cave may represent the oldest evidence of intentional hominin cave use worldwide, since other southern African cave deposits of similar antiquity are thought to represent infills (Kuman and Clark 2000).

The Acheulean deposits in Excavation 1 contain few artefacts. There are no clearly defined floors and artefact density is low, ranging from one to three artefacts per square metre over a depth of 20–30cm. This represents a different form of cave exploitation from the modalities commonly found in Middle Stone Age (MSA) and LSA cave sites in South Africa such as Klasies River, Blombos, Sibudu, Rose Cottage, Die Kelders, Nelson Bay and Elands Bay (Deacon and Deacon 1999; Mitchell 2002). Such low-intensity cave use, may correspond to the ‘background noise’ that a number of researchers have predicted was scattered across the Acheulean landscape (Panger et al. 2002: 242–3), suggesting that at this time the front part of the cave was perceived as an extension or continuum of the landscape outside. This is corroborated by the absence of coeval early Acheulean deposits deeper inside the cave.

### **The back of the cave**

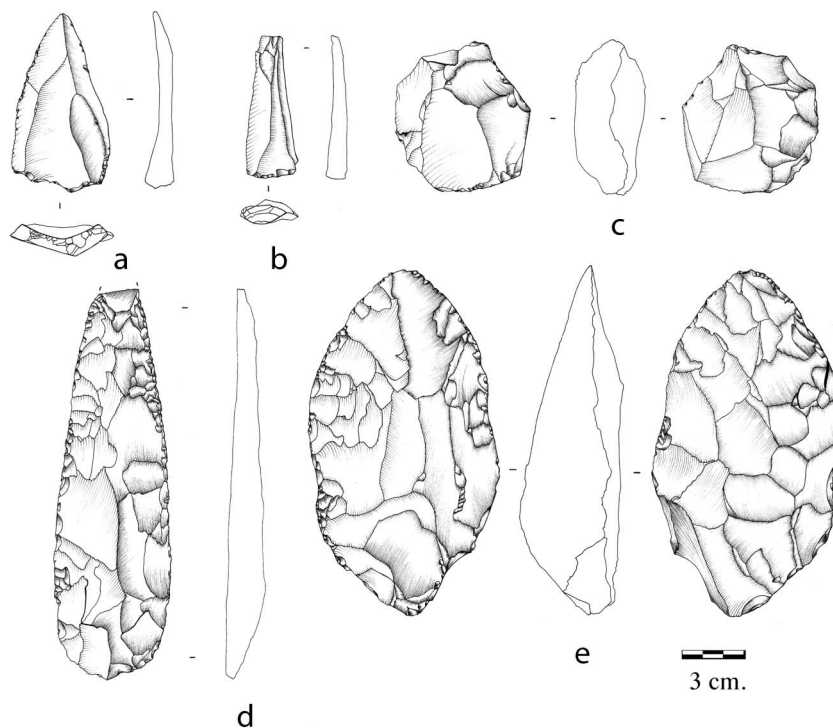
Excavation 6 at the back of the cave, located *c.* 140m within the hillside, contrasts markedly with the cave mouth (Plate 3). It is the quietest area of the cave, being sheltered from outside sound, which is muffled or extinguished by the time it reaches the back. No echo is produced here, but sound resonates. Most notably, as documented by the first excavators Malan and Wells (1943: 259), the quantity of natural light diminishes as one



*Plate 3* Photographs of Excavation 6: (a) artificial lighting; the steps of Excavation 6 are visible on the left and the recess in the lower right corner; (b) natural light showing how faint light reaches the back cave wall.

penetrates deeper into the cave. The back of the cave is a zone of darkness that is poorly illuminated by daylight from the entrance. If, as noted before, the entrance overhang projected further forward in the past, even less light would have penetrated to the back of the cave. The view from Excavation 6 towards the cave entrance is limited to a small circle of light which creates a silhouette of the entrance and the adjacent > 5m high stalagmite. Although at the back of the cave the roof is high and the cave still wide, the general ambience in this zone is one of stillness, darkness and enclosure.

Against the back wall of the cave, Beaumont undertook a stepped excavation (Excavation 6), covering an area of *c.* 25m<sup>2</sup> and just over 2m in depth (Plate 3). The uppermost deposits comprise a relatively rich lithic and faunal assemblage that Beaumont originally attributed to the terminal Acheulean, Fauresmith industry (Beaumont 1990) and more recently to the MSA (Beaumont and Vogel 2006). Preliminary analysis by one of us (MC) indicates that this assemblage is more consistent with the Fauresmith due to the co-occurrence of blades, prepared core flakes and bifaces (Fig. 2), an association that fits within the definition of this industry (Mitchell 2002: 62). There are some distinctive pieces in this assemblage, such as large unifacially flaked blades (Fig. 2d), that do not have clear parallels in other Fauresmith assemblages while the bifaces are of variable size and do not strictly conform to the small size expected under the strict definition of the Fauresmith. The archaeological deposit in Excavation 6 includes faunal and lithic remains in densities



*Figure 2* Fauresmith lithic artefacts from Wonderwerk Cave Excavation 6: (a) unretouched point (square AA150); (b) blade (square ?148); (c) core (square DD149); (d) unifacially retouched blade (square CC148); (e) biface (square AA150). Drawing by A. Sumner.



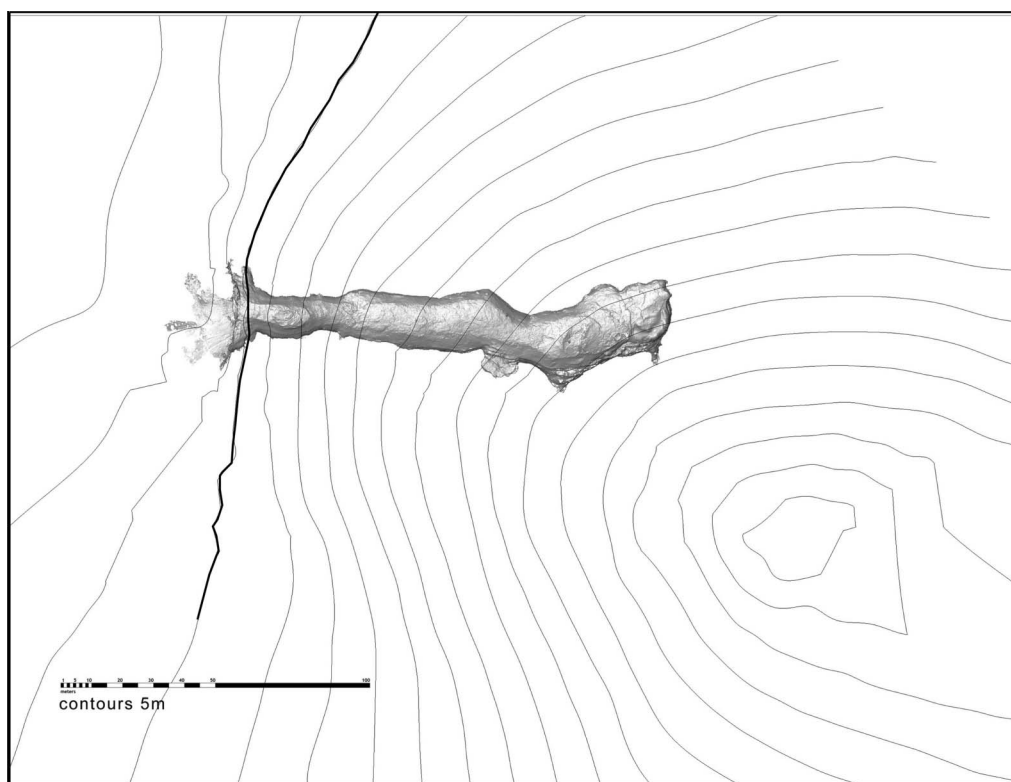
that are higher than those found in other periods and locations within the cave, with the exception of the LSA in Excavation 1 at the front of the cave.

Interestingly, the Excavation 6 lithic assemblage does not include complete knapping sequences and it is likely that the flaked tools and bifaces were produced elsewhere and introduced here. The diversity of the lithic industry raises questions about site function, suggesting that a range of activities took place. The nature of the association between lithics and faunal remains to be determined given that the taphonomic analysis of the fauna (by LKH) attests to extensive carnivore, porcupine and raptor activity.

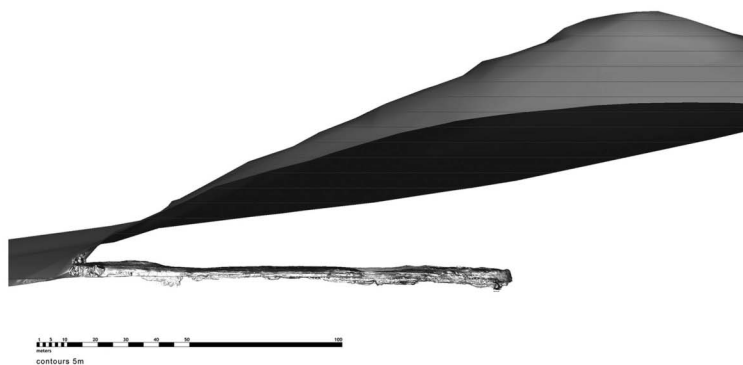
In Excavation 6, there is no evidence for underlying earlier ESA deposits. A single U/Th date on a fragment of stalagmite recovered within the Fauresmith deposits in Excavation 6 gave a minimum age of  $187,000 \pm 8\text{kyr}$  (Beaumont and Vogel 2006), while three paleomagnetic samples, one from each of the 'steps' in Excavation 6, have yielded normal signals underlain by a reverse, the latter associated with a sterile layer (Hagai Ron, unpublished data). This places the age range for hominin occupation at the back of the cave as between 0.780 and 0.187 kyr (Hagai Ron, unpublished data) the latter being the top of the Matuyama Reverse Chron (Baksi and Hoffman 2000). Given the limited quantity of light penetrating to the back of the cave, an issue that is still being addressed in our research is the use of pyrotechnology. One potential hearth has been identified in the profile of Excavation 6, but heavily burnt lithics or bones have not yet been identified in this assemblage.

Although there is clear evidence for early hominin activity at the back of Wonderwerk Cave, the question still remains as to whether it is related to a now-buried entrance in this part of the cave. Malan and Wells categorically stated that the cave 'comes to a dead end and no openings other than the front entrance were found' (1943: 258). While there is a small recess in the cave wall leading off from Excavation 6 (Fig. 1, Plate 3a), it is almost completely filled with sterile sediments with a Reverse paleomagnetic signal that predates the occupation levels in this part of the cave. In order to examine whether this recess ever served as an entrance to the back of the cave, we intercalated a 3-D model of the cave generated from a geomatic survey of the cave with a standard topographic survey of the hillside in which it sits (Rüther et al. 2009). Figure 3a situates the cave within a topographic map of the hill. The contour for the elevation of the roof of the cave is indicated as a bold line. This contour line runs roughly perpendicular to the cave mouth and demonstrates that there is no point at which the back of the cave is closer than 140 meters to the surface of the hill. Figure 3b is a cut-away view, showing the depth of the back of the cave within the hillside. There is virtually no soil accumulation on the slopes of the hill and in most places the ironstone and dolomite bedrock is exposed. Thus, there is no possibility of a massive overburden of Pleistocene sediments that has led to a reconfiguration of the hillside. The results of the topographic and geomatic surveys (Rüther et al. 2009) clearly demonstrate that the back of Wonderwerk Cave is deeply buried in the hillside so that it is unlikely that the side recess provided access to the exterior. This establishes the occupation of Excavation 6 as an intentional exploitation by hominins of this deep cave context.

The greater part of the stalagmite, as well as the sediments filling the recess adjacent to Excavation 6, pre-dates the hominin occupation of this part of the cave (Hagai Ron, unpublished data). These features would have been accessible for hominins only via a low crawl space. If the stalagmite was still forming during the time of occupation, the steady drip of water may have produced a notable aural effect in this side chamber that would



a



b

Figure 3 (a) Topographic map of the hill with showing the position of the cave. In all directions the back of the cave is well over 100 metres from the surface of the hill. The dark line indicates the contour line that correlates to the elevation of the top of the cave. (b) Cut-away view of the hill showing the position of the cave. Courtesy of H. Rüther.

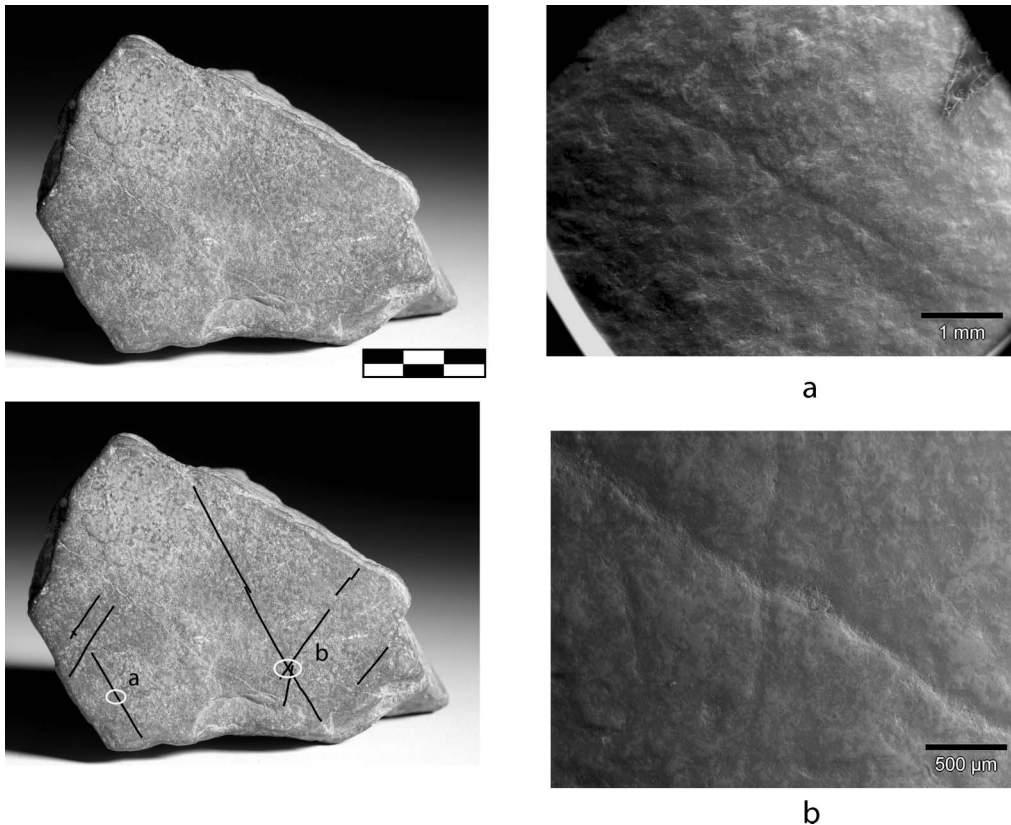
have added to the overall sensory experience of this extraordinary environment. Micromorphology of the sediments in Excavation 6 attests to the presence of standing water at the back of the cave (Paul Goldberg, unpublished data). However, given the

limited extent and possible seasonal nature of such a pool, it is improbable that it served as the primary motive defining use of this zone of the cave. What spurred terminal Acheulean hominins to penetrate more than 100 metres into the dark cave interior? One possible explanation is that, due to the distance from the cave entrance, this location offered refuge and protection. People could hide here in the dark becoming, both literally and metaphorically, invisible. This would also make it easier to ambush intruders unused to the dark. Yet those inside were unable to view the surrounding landscape and would have been trapped without a means of escape. These factors make it unlikely that Excavation 6 represents a straightforward subsistence-related occupation.

Instead, we propose that the special sensory characteristics at the back of the cave were the decisive features determining hominin use of this zone. Corroboration for this hypothesis is found in the material record. In his publications on Excavation 6, Beaumont (1990, 2004; Beaumont and Vogel 2006: 222) mentions the presence of several intriguing and non-utilitarian manuports. These comprise introduced quartz crystals (Plate 4a–d), small chalcedony pebbles (Plate 4e) and incised slabs of banded ironstone (Plates 5 and 6). Quartz crystals occur in pockets within the dolomite formation outside the cave, but rarely within the cave. Neither is there any apparent karstic process that could have led to their concentration in this part of the cave. Consequently, these natural crystals probably



*Plate 4* Quartz crystals and chalcedony pebbles from Wonderwerk Excavation 6: (a–b) small quartz crystal (b is a twinned crystal); (c–d) large quartz crystals (c is damaged, however the crystal facets are clearly visible on d; note scars possibly produced by flaking on the bottom of crystal d); (e) chalcedony pebbles.



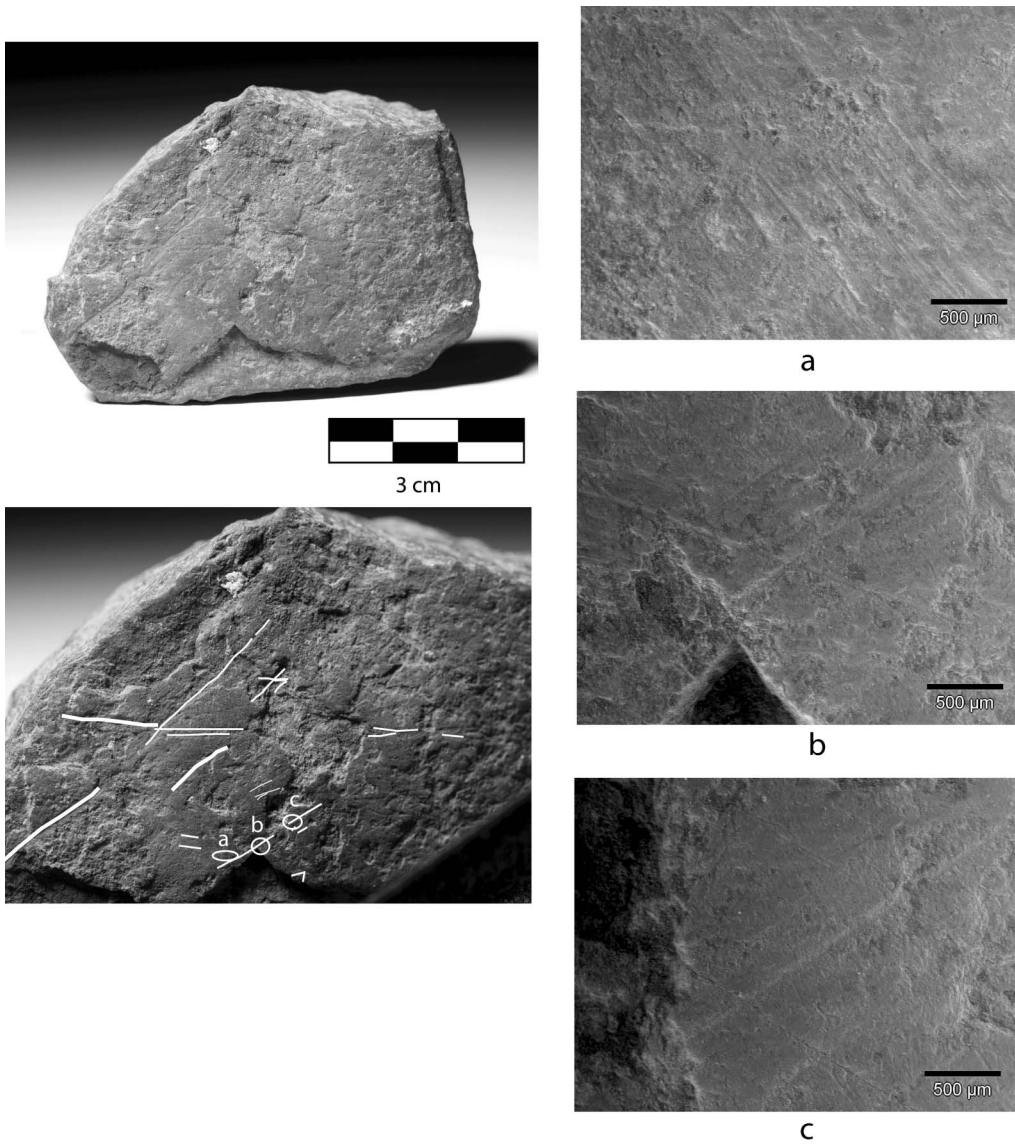
*Plate 5* Banded ironstone slab with incised lines from Wonderwerk Excavation 6. Top left: photograph of the slab (courtesy of Royal Ontario Museum); bottom left: photograph with major lines indicated. Location of SEM photos indicated by letter (a–b). (a–b) ESEM photographs showing details of lines.

originate outside the cave and were intentionally introduced into the back of the cave (cited in Bednarik (2003) as evidence of early exotic manuports). Likewise, the multi-coloured chalcedony pebbles (Plate 4e), also found in Excavation 6, are too small to have served as raw material for artefacts, but further research is needed to determine their source.

In processing the lithic material we have to date identified over twenty quartz crystals from Excavation 6. The crystals range from 1 to 5cm in size, with at least one twinned crystal (Plate 4). The crystals are often damaged or incomplete; however, only one shows indications that it might have been knapped or modified in any way for use as a tool. Damage to the largest crystals (Plate 4d) is probably the result of natural processes since there is no negative bulb. The most compelling argument against a functional explanation of the quartz crystals is that the assemblage includes pieces of small size (Plate 4a, 4b) which makes them unsuitable for knapping.

Another intriguing aspect of the Excavation 6 lithic assemblage is the high frequency of banded ironstone slabs. This raw material is readily available in the area immediately surrounding the cave (e.g. on the slopes of the hillside), but not inside the cave. Some of these slabs had been modified for use as simple cores or as core scrapers, while others were abandoned without modification. Following the identification by Beaumont of one slab





*Plate 6* Ironstone slab with incised lines from Wonderwerk Excavation 6. The surface is soft and could be classified as ochre. Top left: photograph of the slab (courtesy of Royal Ontario Museum); bottom left: photograph with major lines indicated. Location of SEM photos indicated by letter (a–c). (a–c) ESEM photographs showing details of lines.

with a series of parallel incised lines (Beaumont and Vogel 2006: fig. 6) we have paid particular attention to the surface of these pieces. When modern ironstone slabs are intentionally marked, even the shallowest incisions are clearly evident on the surface. However, when examining the archaeological specimens it is difficult to distinguish between marks caused by geological abrasion occurring before or even after the slab was introduced into the cave, marks caused by flaws or cracks in the rock, and marks that are the result of intentional abrasion or marking by hominins. We have identified six slabs



with clear incised lines on their outer surface, resembling that published by Beaumont and Vogel (2006). Examination of two of these slabs under an Environmental SEM shows a network of incised lines that is more consistent with intentional modification by hominins than with marking due to geological abrasion (Plates 5 and 6). None of the incisions on the six slabs exhibits clear patterning such as that found on rounded rock fragments from the MSA at Blombos Cave (Henshilwood et al. 2002). However, the ironstone slabs from Wonderwerk, together with the chalcedony pebbles and quartz crystals, are consistent with the emerging body of evidence for the early exploitation of minerals, such as ochre, for non-utilitarian purposes, from sites such as Blombos Cave, Klein Kliphuis and Pinnacle Point (South Africa), Twin Rivers (Zambia), Sai Island (Sudan) and Qafzeh Cave (Israel) (Barham 2002; d’Errico et al. 2003; Hovers et al. 2003; Mackay and Welz 2008; Marean et al. 2007; Van Peer et al. 2004). It is important to emphasize that this is distinct from claims for representational symbolism in the Acheulean (e.g. the Berekhat Ram and Tan Tan figurines: see Bednarik 2003), as will be discussed below. Although the bulk of the stone tools from Excavation 6 are consistent with subsistence activities, the assemblage also includes some unusual pieces, particularly a number of very long blades (Fig. 2d), that might represent a non-utilitarian component.

## **Conclusions**

The occupation of the dark zone in Excavation 6 at the back of Wonderwerk Cave is surprising given that areas closer to the cave entrance offer better illuminated, warm and dry environments. The depth and richness of the Excavation 6 deposit imply recurring visits to this locality. In the absence of a convincing economic or functional motive, the most parsimonious explanation for the occupation at the back of the cave lies in the special sensory properties of this locality, nestling deep in the hillside – darkness, a sense of enclosure, silence perhaps broken by the resonance of occasional dripping water. In contrast to the cave front with its rock art, there is no evidence for intentional modification of the natural environment at the back of the cave in order to augment its special sensory properties or have them acquire referential significance. Rather, the natural environment and the apparently non-utilitarian objects found here have as a common denominator their notable sensory properties: the quartz crystals embody properties relating to refraction of light but also to touch due to their geometric shape, while the chalcedony pebbles are multi-coloured but also rounded and smooth. Some of the introduced banded ironstone slabs have been modified – either as artefacts or apparently incised with a network of lines – but the latter lack clearly defined symbols or images that are recognizable and intelligible to us. It is possible that the observed incisions served to ‘open up’ the surface of the rock and to alter perception of the rocks’ surface rather than to create notation or representation as expected in the earliest artistic depictions (Lewis-Williams and Dowson 1988). Thus, the manuports introduced into Excavation 6 added to, or perhaps were a manifestation of, the overall sensory experience of this location. As such we interpret the occupation of the back of Wonderwerk Cave as representing a set of intentional and repeated activities relating to sensory perception (silence, darkness, touch), that were distinctive and meaningful for the hominins who used this area of the cave.

Claims for iconicity in the Lower Palaeolithic have been made by a number of authors, particularly with reference to objects identified as human figurines (Bednarik 2003; d'Errico and Nowell 2000; Goren and Pelz 1995; Marshack 1997). Here, modifications to the surface of a rock are interpreted as altering the visual properties of the object to produce a representation or icon of another object, in these cases, the human body. It is interesting that both objects identified as figurines (Tan-Tan and Berekhat Ram) have been minimally modified and might be better understood as alterations of the tactile properties of an object, perhaps as a referent to the human body, rather than as the creation of a visual icon.

Acknowledgement of the role played by sensory perceptions in motivating and determining past human behaviour has given rise to an 'archaeology of the senses'. Thus, there is a growing body of archaeological publications that refer to the visual and non-visual sensory properties of sites and material culture (for example, Bruchez 2007; Gosden 2001; Jahn and Devereaux 1996; MacGregor 1999; Mills 2005; Ouzman 2001; Waller 1993; Watson and Keating 1999). Few of these studies though relate to the sensory world of early hominins. An exception is the study of the site of Sima de los Huesos at Atapuerca, Spain (> 350kyr) where twenty-seven people (MNI count) were deposited in a deep crevice along with a single quartzite handaxe (Carbonell et al. 2003). The authors suggested that both the handaxe and the intentional deposition of bodies might be evidence of symbolic behaviour, perhaps relating to the darkness prevailing in this locality and the unusual surface texture and colour of the quartzite handaxe. At both Sima de los Huesos and Wonderwerk Cave, the sensory properties attached to a particular natural locale and to objects appear to have shaped hominin behaviour in the choice of context as well as the nature of activities undertaken there.

Excavation 6 at Wonderwerk Cave raises the likelihood that over 180,000 years ago hominins valued places with particular sensory properties – the absence of sound and light. The question remains open as to whether the evidence from Excavation 6 fits within definitions of modern human behaviour as that 'mediated by socially constructed patterns of symbolic thinking, actions and communications that allow for material and information exchange between and across generations and contemporaneous communities' (Henshilwood and Marean 2003: 635). We propose that the activities observed at the back of Wonderwerk Cave are clearly related to symbolic behaviour, supporting the view advanced by some researchers (D'Errico et al. 2003; McBrearty and Brooks 2000) that the emergence of modern human behaviour began to develop long before the dispersal of anatomically modern humans out of Africa.

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## Note

1 The python plays a central role in the San creation myth, with humans descended from this snake. In the Tsodillo Hills, Botswana, the arid stream beds around the hills are said to have been created by the python as it circled the hills searching for water. In a small cave in this area, Coulson recently discovered a rock which was shaped like a python and covered with hundreds of indentations. ‘You could see the mouth and eyes of the snake. It looked like a real python. The play of sunlight over the indentations gave them the appearance of snake skin. At night, the firelight gave one the feeling that the snake was actually moving’ (Sheila Coulson cited in ‘World’s oldest ritual discovered: worshipped the python 70,000 years ago’, *ScienceDaily* (30 Nov. 2006)).

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