The Materiality of Rock Art and Quartz: a Case Study from Mpumalanga Province, South Africa

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A San rock-art site in northeastern South Africa includes several intriguing features, including rubbed patches of pigment and a red line painted on top of a quartz vein. This article interrogates the relationships between hunter-gatherer beliefs, materiality and rock paintings, and suggests that San painters and viewers engaged with the unique Mpumalangan site for specific ritualistic purposes.

How can we detect hunter-gatherer ontological understandings of the world in the archaeological record? Many rock-art researchers speak of bodies of rock art, or indeed 'the art' of a particular region, without linking their explanations to actual images or the materiality of rock-art sites. By analysing a unique San rock-art panel in Mpumalanga Province, South Africa, I consider problems raised by unique (or very rare) images and by other evidence for unusual painting practices that field researchers discover from time to time — problems that challenge the limits of normal research methods.[1] The benefits of focusing on one rock-art site, or, further, one panel within a site, are apparent from other studies of individual paintings and engravings that balance more general assessments of the art (e.g. in South Africa: Hollmann 2001; 2002; Hampson *et al.* 2002; Lewis-Williams & Pearce 2004; 2008; Hampson 2011; Challis 2012; e.g. in North America: Whitley *et al.* 1999; Keyser & Whitley 2006; Loubser 2010; Whitley & Whitley 2012; e.g. in Australia: McDonald 2005; McDonald & Veth 2006; Taçon 2008; May *et al.* 2010). As a result of this sort of focused work — connecting data and theory while standing in a specific rock shelter, and referring to specific images, and to relationships among specific images and the materiality of the site — we are now able to move beyond a vague and slippery notion of 'the art' and tackle specific questions in specific contexts (cf. Skotnes 1994; Yates *et al.* 1994; Solomon 2008; Whitley 2009; see also Tilley 2004).

Adopting this methodological approach, alongside evidence for the importance of quartz to several specific hunter-gatherer groups worldwide, I interrogate the relationships between San beliefs, materiality and rock paintings. This discussion is an example of how hunter-gatherer worldviews can be teased out of the archaeological record. In the same way that excavations in a series of sites can build up an understanding of, say, a stone industry, so work at a rock-art site — or in a series of rock-art sites — contributes to an understanding of the principles on which San rock painters constructed the considerably more complex panoramas of images that, one suspects, had an overwhelming impact on their makers and viewers. Before turning to the Mpumalangan site, I consider recent work on materiality and the importance of quartz.

Quartz, ethnography and belief

The intertwining of archaeological and ethnographic evidence has shown that, for many hunter-gatherer rock artists, not just the San, the rock face was not a neutral 'canvas' or meaningless support (Lewis-Williams & Dowson 1990; Whitley 2000; Hampson 2010; 2011; 2013). In many rock-art corpuses, artists incorporated ledges, holes and other inequalities in the rock surface into their rock art (Lewis-Williams & Dowson 1990; Helskog 1999; Bradley *et al.* 2002; Arsenault 2004; Lewis-Williams & Challis 2011; Veth *et al.* 2011; Lemaitre 2012; Hampson 2013).

An important feature of some rock surfaces that researchers in southern Africa and elsewhere have often overlooked is the presence of quartz veins. These

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mineral intrusions were important not only because they penetrated the rock surface 'veil' between this and the spirit world (a primary concern of San ritual specialists, for example), but also because quartz itself was considered an important animistic agent in the sense that quartz *did* and *does* things — in many hunter-gatherer worldviews, quartz was and is considered to be potent and alive (Reichel-Dolmatoff 1987, 10; 1997, 256; Pearson 2002, 142; Harvey 2006, 18; Reynolds 2009).[2]

Of a George William Stow copy of a rock-art panel in the Maloti Mountains in South Africa, for instance, a San /Xam informant said 'The rain with white quartz which has hail' (Stow & Bleek 1930, caption to pl. 17). Here, the word 'has' implies that the /Xam informant was referring to the notion of */ki*, to have or to possess. San ritual specialists were said to */ki* certain animals — they controlled their movements and derived potency from them — and it is possible that quartz had similar powers over hail and thunderstorms (Lewis-Williams & Pearce 2004, 143). Ritual specialists who owned quartz crystals might thereby have possessed power over hail and rain. Marshall's (1999, 167) work with the Ju/'hoansi explicates that San ritual specialists also use fulgurite — sand vitrified by lightning — in rain-medicine rituals. Indeed, ritual specialists place what they call 'rain teeth' or 'lightning teeth' (i.e. the fulgurite) in a rain-making horn dubbed by Marshall (1999, 167) as a 'vestige of rainmaking … from the distant past'.

Quartz crystals are also found in burials. At Oakhurst Cave on the southern Cape coast of South Africa, for example, a large, broken quartz crystal was discovered in the left eye socket of an infant skeleton (Goodwin 1938, 253; Wadley 1992, 127–8). Intriguingly, it seems that the crystal was deliberately placed so that the faceted end was over the eye, and exposed. I discuss the connection between quartz and eyes below.

The San were not alone in attaching importance to quartz; many other groups with animistic ontologies or modes of being did so too. Appropriate comparisons with and analogies from other countries suggest (but obviously do not 'prove') further beliefs that the San may have held (*sensu* Wylie 1988; 1989). This is an empirical observation that I support by offering several examples. For the Cubeo of the northwest Amazon, for instance, one of the key processes in becoming a ritual specialist was (and still is) the insertion of quartz crystals into the neophyte's stomach; later, these crystals were and are often used as shamanic weapons (Goldman 1963, 264; see also Pearson 2002, 142). Taking care to avoid James Frazer's (1890) often naïve methodological approaches (cf. Layton 1992; 2001; Sundstrom 2000; 2006; 2012; Whitley 2007), Vitebsky (1995, 82) makes clear that 'Crystals are used by shamans from America to Borneo.' Similarly, Harner (1982, 139) states that 'The quartz crystal is considered the strongest power object of all among such widely separated people as the Jívaro in South America and the tribes of Australia.' In the Western Desert of Australia, for example, Veth *et al.* (2011) show that some engraved figures, especially anthropomorphs, are executed so as to position quartz inclusions in the location of the stomach (see also Veth & McDonald 2011, fig. 1). These figures are said by *Martu* custodians to be *mabarn*, that is embodied with magical and medicinal powers.

Ethnographic accounts also show that crystals are associated with shamanistic or otherworldly vision worldwide (Rose 1957, 95; Berndt & Berndt 1992, 308–9; Ripinsky-Naxon 1993, 123–4; Elkin 1994, 138–9; Reichel-Dolmatoff 1997, 54–5; see also Robinson 2006; Hampson 2011). Desana ritual specialists in Amazonian South America, for instance, refer to quartz crystals as vehicles that enable communication with both humans and non-humans, and with both living and non-living things (Reichel-Dolmatoff 1997, 54–5). In altered states of consciousness, Desana ritual specialists imagine themselves standing inside a large crystal that enables them to see through forests, mountains, and walls: each crystal face is said to turn into a screen upon which ritual specialists watch not only humans and their actions, but also their interactions with animals, plants, and non-humans (Reichel-Dolmatoff 1997, 54–5; see also Reynolds 2009, 159).

Quartz is believed to contain power to break down rigid but rarely scrutinized Western dualistic divisions such as animate:inanimate and nature:culture (e.g. Pearson 2002, 142; Harvey 2006, 18; Reynolds 2009; see also Latour 1993; 2000; Bird-David 1999, 67; Ingold 2006, 9, 97; 2007; Dowson 2009). Many hunter-gatherer groups and their ritual specialists (often *but not always* shamans) consider quartz to be a 'living' rock (e.g. Reichel-Dolmatoff 1987, 10; 1997, 256; Pearson 2002, 142). Working in Mexico with the Huichol, for example, Lumholtz (1900, 63) encountered rock crystals called *te'vali* (pl. *te'valir*) 'produced by the shamans' and thought to be 'dead or even living people.' These *te'valir* were often produced at the sacred *hi'kuli* (peyote cactus) feast, when ritual specialists or 'doctors' ingested peyote in order to access the spirit world (Lumholtz 1900; Boyd 1998; 2003).

In Brittany (France), Chris Scarre (2002, 164) notes that many of the monuments on the Grée de Cojoux are made from quartz blocks moved from the lowlands to the hills, implying that quartz 'held some special value or meaning'. In addition, quartz veins run through the schist bedrock of the site; perhaps

the placement of the quartz blocks on the bedrock emphasized a 'natural' and largely hidden feature (Scarre 2002, 165).

Turning to rock art, at Sally's Rock Shelter in California quartz was used as a hammerstone to make engravings, despite the fact that from a technical point of view quartz is extremely difficult to control and shape (Whitley *et al.* 1999). As Whitley shows, the choice of quartz for hammerstones was not accidental. When quartz breaks and is rubbed, because of its piezoelectric crystal structure, bright light in the form known as triboluminescence is released — and this light is frequently interpreted as 'spiritual power' (Whitley *et al.* 1999, 236; Whitley 2000). Drawing on Numic ethnography, Whitley and his colleagues demonstrate that rock art in this region was made by ritual specialists as part of their vision quests. Also present at Sally's Rock Shelter were quartz crystals wedged in cracks, perhaps placed to penetrate the membrane between this world and the next (Whitley *et al.* 1999, 234; see below).

The engraving site of Revheim in Norway is characterized not by small quartz crystals but by prominent veins of quartz running through the rock face. Bradley *et al.* (2002, 117) argue that engravings of ships — some of which seem to temporarily disappear into the rock via a spiral motif, and then emerge with their prows embellished with animal heads — 'followed a course defined by the veins of quartz in the rock face'. The horizontal quartz veins can be seen as a kind of datum point for those creating the engravings, and the site as a whole as an indicator of transformation (Bradley *et al.* 2002).

Similarly, in Canada, Lemaitre (2012) notes that there is a widespread association between rock-art sites, quartz, *manitou* (spirits) and Thunderbirds, the guardian spirits and animal helpers of many ritual specialists. The Kennedy Island (Ontario) site, for instance, features a Thunderbird formed by the addition of wings to quartz veins in the rock face (Lemaitre 2012, fig. 2). According to the Cree, Thunderbirds fire lightning bolts out of their eyes in order to kill mythical Horned Snakes; if the bolts miss the target, they form quartz veins that run through cliffs (Conway 1993, 89). In other rock-art panels in Ontario, quartz veins act as points of reference for the artists; at Wizard Lake, for example, a quartz vein cuts through the head of a Horned Snake, and, continuing on another facet of the rock, terminates at the claws of a large bird (Lemaitre 2012, fig. 5). Lemaitre (2012, 24) concludes that 'it is therefore possible that this crystalline particularity possesses an intrinsic value and implies the presence of a celestial Manitou', as suggested by ethnographic investigations (e.g. Conway 1993, 89).

In Arnhem Land (northern Australia), there is a wide-ranging link between certain stone tools and 'Ancestral Power': quartz and quartz tools at times 'shimmer with bright reflected light or are almost iridescent' (Taçon 1991, 198). This symbolic use of stone again challenges the purely functionalist explanation for choices in raw materials (Tilley 1999; 2004). Taçon (1991, 205) notes that the adoption of quartz and quartzite (metamorphosed sandstone) spear points about 6000 years ago in Arnhem Land corresponds with 'the development of polychrome paintings at sandstone and quartzite sites, and with an increasing interest in the intrinsic properties of substances, objects, creatures and Beings that shimmer, are "bright" or exhibit iridescence'. Here is the notion of 'magpie … aesthetics' (Gamble 1991, 608) — but we can go beyond this rather vague notion and consider something more intrinsic to human neurology, something that underpins social relations and symbolism.

Ethnographic accounts show not only that crystals are associated with shamanistic sight — and that the glitter of crystal is associated with the glitter of moist eyes — but also that glittering crystals and otherworldly vision are associated with altered states of consciousness experienced by ritual specialists (e.g. Rose 1957, 95; Eliade 1972, 138; Reichel-Dolmatoff 1978; 1979; 1985; 1988, 22; 1997; Berndt & Berndt 1992, 308–9; Elkin 1994). In certain circumstances, the refraction of light produced by crystals and shiny stones initiates a neurological event that, *if nurtured and encouraged by the subject,* leads to altered states of consciousness (Lewis-Williams & Pearce 2004, 19–20).

Moreover, many groups believe that quartz is not only potent and alive, but also that it has 'culturally emergent' properties (Ingold 2000, 97, 99; Reynolds 2009, 164). Like all materials in an animistic framework, quartz possesses potential meanings and relationships that are interlinked with other persons and things in the cosmos. Again, like these other material things and persons, quartz as an agent is seen not as static, but rather in a process of becoming or re-generating. In what is now the state of Arizona, in a Pima creation story (Dutton & Olin 1998; original parenthesis) when Earthmaker made the stars

> he took water in his mouth and spurted it up into the sky. But the first night his stars did not give light enough. So he took the doctor-stone (a crystal or quartz pebble) and smashed it up, and took the pieces and threw them into the sky to mix with the water in the stars, and then there was enough light.

Reynolds (2009, 164) makes clear that because the environment of which an object is part involves a

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'network of past experiences and future expectations which are not part of our direct sensory fields … the invisible aspects of quartz are as essential to its meaning and significance as those that are visible'. This brings to mind Aristotle's maxim: 'The aim of art is to represent not the outward appearance of things but their inward significance.'

Site WP and its conceptual context

The site dubbed WP is close to the southwest corner of Kruger National Park in Mpumalanga Province, South Africa (Fig. 1). In accordance with measures to preserve sites, its precise location is not revealed. The WP 'fine-line' San rock art (as distinct from the 'Late White' images made by Bantu-speakers largely in the northern parts of South Africa) at this site is painted on a granite boulder. The panel comprises 12 human figures and three patches of red paint (Fig. 2). Like most rock-art panels, some of the figures at WP are in a better state of preservation than others. All the pigment is red or light red. As is usually the case, it is not possible to determine how many image-makers contributed to the panel or the ages of the images (on the dates of other San rock art see Mazel & Watchman 2003; Mazel 2009; Bonneau *et al.* 2011; 2012).

Before addressing the unusual and enigmatic components of the panel, it is necessary to situate the images within the San cognitive world. Direct links between postures and other features documented in the San ethnographic record clearly articulate with the images and form the basis for further understandings.

At least eight diagnostic features point to the San ritual variously known as the medicine, curing or trance dance. This is the central and most frequently performed San ritual (Marshall 1969; 1999; Katz 1982; Biesele 1993). During it, ritual specialists enter an altered state of consciousness to heal the sick, visit the spirit realm, fight off marauding spirits of the dead, make rain and find out how distant friends and relatives are faring. Most distinctively, the male anthropomorph numbered 11 in Figure 2 has its arms held backward behind its body in a posture adopted when a ritual specialist is asking god for more supernatural potency (Lewis-Williams 1981, 88–9, fig. 33). Another male figure (3) bends forward sharply at the waist, as his stomach muscles contract as he enters trance. Both postures are common in the medicine dance and are commonly painted throughout southern Africa (Lewis-Williams & Pearce 2004). The male anthropomorph numbered 11 also has what is probably blood around the nose and mouth, another common physiological phenomenon experienced by people in altered states of consciousness

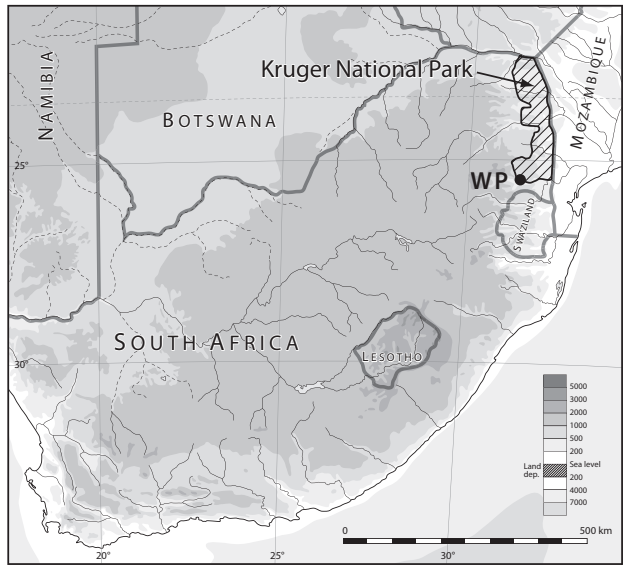

Figure 1. *Map showing location of site WP.*

and frequently painted (Lewis-Williams 1981, 78ff.; Lewis-Williams & Dowson 1999, 40). It also has horn-like emanations from the top of its head, probably a metaphorical reference to supernatural potency and somatic sensations experienced in altered states. The San interpret these sensations as the spirit leaving the body on extra-corporeal travel (Lewis-Williams 1981, 95; Lewis-Williams & Dowson 1999, 70).

Two of the human figures have unusually shortened, zigzag arms. This non-real combination of the geometric, visual percepts experienced in altered states of consciousness and distorted body parts constitutes another reference to the experiences of San medicine dancers (Lewis-Williams & Dowson 1999, 66, figs. 27b, 29). The figure numbered 3 also has a line emanating from the back of its head — again, this is probably connected with extra-corporeal travel (Lewis-Williams 1981, 95; Lewis-Williams & Dowson 1999, 70). The other anthropomorphic figure with zigzag arms (10) has an unusual curled leg with no distinct foot, and, in place of a second leg, two parallel emanations that sweep backward in a manner akin to other enigmatic sinuous lines found attached to idiosyncratic 'nested trail' figures in sites close by (Hampson *et al.* 2002, 28). The full significance of these figures remains elusive, but it is important to note that here are human figures coupled with nested catenary curves, entoptic phenomena commonly seen in the second stage of altered states of consciousness (Lewis-Williams & Dowson 1990; see also Hampson *et al.* 2002, 28, fig. 11; Hampson 2011).

The large male figure (5) has a line emanating from the back of his head. He is associated with what are probably flywhisks, one attached to his

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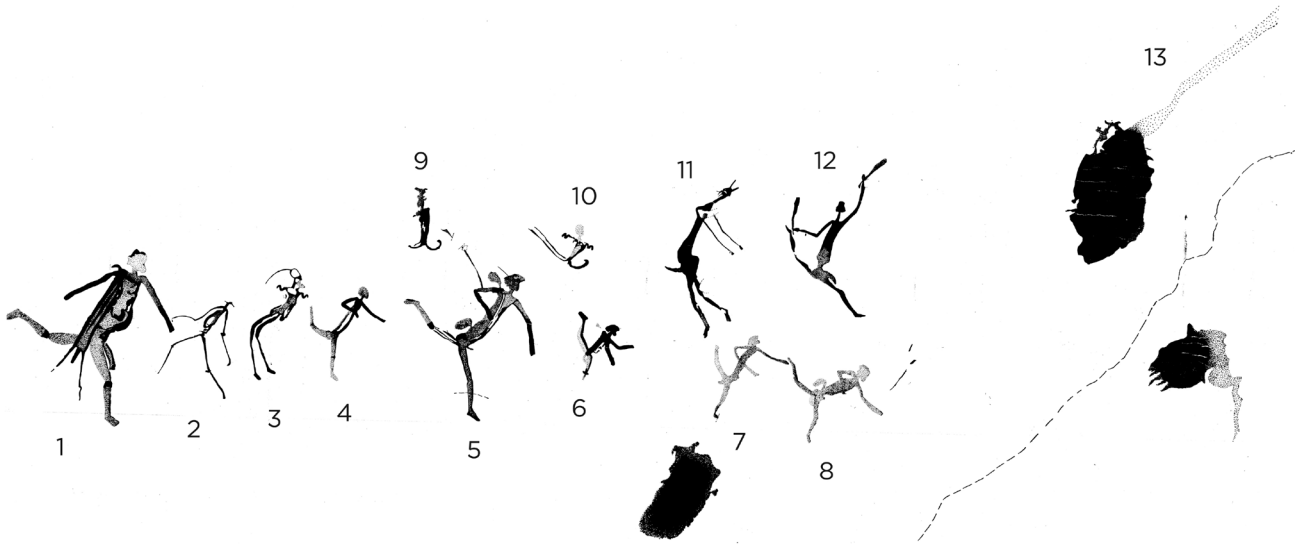

Figure 2. *Twelve human figures (numbered 1–12) and three patches or 'palettes' at WP. The painted quartz vein is labelled 13. Black indicates red pigment and stipple indicates light red pigment.*

lower back, the other to his shoulder. Another figure (8) is also associated with what may be flywhisks. David Pearce (2009, 338–9, fig. 5) discusses strikingly similar depictions of flywhisks, also associated with the shoulders and lower back, in the rock art of the Malilangwe region of Zimbabwe, *c.* 400 km north of WP. He points out that because flywhisks are ritual accoutrements, their inclusion in the paintings is 'meaningful and their placement likely to be significant and not necessarily literal' (Pearce 2009, 339). During the medicine dance, San ritual specialists use flywhisks to deflect supernatural arrows of sickness that malevolent ritual specialists (and spirits of the dead) are believed to shoot into people (Lee 1967; Marshall 1969; Lewis-Williams 1995a, 14; Lewis-Williams & Dowson 1999, 43). Flywhisks are also used during the dance to expel sickness from patients' bodies (Low 2004, 215). Twentieth-century ethnography shows that flywhisks were not used in any contexts other than the medicine dance (Lee 1967, 31; Marshall 1969, 358; Lewis-Williams & Pearce 2004, 88).

Although the positioning in both the Malilangwe and Mpumalanga paintings may simply illustrate flywhisks attached to waistbands or placed in (unseen) bags, it is more likely that, given the clearly depicted overall ritual context of the images, their placement is related to concepts of supernatural potency and somatic experiences (Pearce 2009, 339; see also Eastwood 1999). For the San, the lower back and the belly — both of which are 'penetrated' by flywhisks in numerous paintings — are important parts of the body during the dance: supernatural potency enters the dancers' bodies through their backs (Lee 1967, 31), and, as the dancers approach a climactic altered state and metaphorical 'death', potency boils in their bellies and rises up their spines to their heads where it 'explodes' (Lee 1967, 31).

It is the multiple and precise nature of the 'fit' between San ethnography and imagery that gives confidence in interpretations based on it: the 'fit' is no accident. Wilhelm Bleek was right to claim that 'Both collections [the ethnography and the rock art] will serve to illustrate each other, and to contribute *jointly*' (Bleek 1874, 28; emphasis added) to our understanding of San thought. Building on this ethnographic foundation, I now consider the three patches of red paint at WP and what, at the present stage of research, is the unique treatment of the quartz mineral vein in the rock face. The 'fit' between San ethnography and imagery outlined above provides a plausible reading for the panel at site WP.

Quartz veins, painted 'palettes', and 'threads of light'

The three patches of paint at WP are similar to those found in the Cederberg mountains of the Western Cape Province (Fig. 1), where they have been termed palettes (Yates *et al.* 1990). The term palette, however, is misleading: these patches of paint are sometimes found on the ceilings of rock shelters, a location that suggests they were not used for mixing paint (Yates *et al.* 1990). They also occur in the central Limpopo basin in the north of South Africa (Eastwood pers. comm.). Along with those in at least seven other sites close to WP (de Rosner pers. comm.), the WP patches are some of the first to be found outside of the Western Cape

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Province and the central Limpopo basin. As in those two regions, the Mpumalanga patches are juxtaposed with — and sometimes superimposed upon — other images, usually of the same colour or colours used throughout the rest of the panel (Hampson *et al.* 2002, 26, fig. 9; Hampson 2011).

San ethnography and historical records demonstrate that substances used in the preparation of paint, such as blood and fat, were considered to be potent in their own right (Lewis-Williams & Dowson 1999; Blundell 2004; Lewis-Williams & Pearce 2004). It has been convincingly argued that supernaturally charged paint was sometimes believed to facilitate entrance into and exit from the spirit world that lay behind the rock face (Lewis-Williams & Blundell 1997; Lewis-Williams & Pearce 2008, 430). This notion is implied by painted lines and other images that often appear to protrude from the patches of pigment. The line emanating from the uppermost patch at WP is an example (Fig. 2). These lines and images are most probably connected with the fact that parts of, or entire, antelope — particularly eland — often appear to emerge from steps, cracks and patches of paint on rock surfaces throughout southern Africa (Lewis-Williams 1990; Lewis-Williams *et al.* 2000).

This connection is supported by the image-context of the pigment patches at WP and elsewhere. Such patches of paint are frequently found in association with dancing or clapping figures that are clearly engaged in a performance of the medicine dance. Importantly, many of the Mpumalanga patches of paint — including the three at WP — have also been rubbed, as have those in the Western Cape Province (Yates *et al.* 1990; Hampson *et al.* 2002, 26). In some cases this rubbing has resulted in a lightly polished surface. The rubbing is isolated and specific to the patches so that there can be little doubt that such an action was deliberate. The touching and rubbing of paint on the rock face, a 'veil' between this and the spirit world, would have been important *after* the paint had been applied (Lewis-Williams 1995b; Lewis-Williams & Blundell 1997). It seems that certain rock-art images were made to be touched, perhaps in some form of ritual. This finding emphasizes the *materiality* of the images. They were not simply 'pictures', but rather powerful 'things in themselves' — embodied beliefs made material.

Uniquely, the red line that emanates from the uppermost red patch at WP is painted on top of a quartz vein that runs parallel to a ledge on the rock surface. Although there are several examples of rock paintings and engravings close to quartz veins in southern Africa and in other regions (e.g. Robinson 2006, 238; Hampson & de Rosner 2009; Reynolds 2009, fig. 4; Hampson 2010; 2011; 2013), the placing of pigment directly on top of a quartz vein is, to my knowledge, and at least in South Africa, unique. On the other hand, red lines, often fringed with white dots, are common in San rock art; they depict the 'threads of light' that trance dancers routinely report seeing and that lead them into the spirit realm (Lewis-Williams *et al.* 2000). The quartz vein is therefore linked to transition between realms by the addition of the painted 'thread of light'.

The unity of what might, to Western eyes at least, at first glance appear to be a disparate scatter of images is becoming clearer, but the intrinsic significance of the highlighted quartz vein remains to be explained.

Quartz and transition

Detailed analysis of rock-art motifs and site materiality, of San beliefs about quartz, and also of ethnography from further afield, together suggest that the direct juxtaposition of the uppermost patch of paint next to a vein of quartz at WP, and the painting of a red line on the quartz, were not accidental: *both* paint and quartz were considered powerful.

A question remains: what did this combination of paint and quartz at WP mean exactly for the San? I suggest that, with the application of pigment, a ritual specialist harnessed the inherent power in the quartz vein to facilitate entrance into and exit from the spirit world that he or she believed lay behind the rock face. The very act of painting was a means of penetrating the membranous rock: 'people were "painting their way" into another dimension' (Lewis-Williams & Pearce 2008, 430). I argue that the pigment on top of the quartz vein at WP highlighted, or opened up, an entrance into the spirit world behind the rock face.

By following the method I advocate — that is linking theory and data at specific sites — we are able to use a unique site like WP to enlarge our understanding of the many diverse ways in which San image-makers harnessed beliefs, *along with their specific material surroundings*, to facilitate contact with the spirit realm. In this sense, the employment of material engagement theory shows us 'what people actually do, in the course of actions that are meaningful and purposive. Their purposes as knowledgeable agents are the result of social motivations that arise in relation to their world-view' (Renfrew 2008, 123).

As the research trajectory from Bleek and Lloyd's work in South Africa in the 1870s (Bleek 1875; Lloyd 1889) to the present day shows, it was principally the two interacting resources of ethnography and art that were and are at the centre of enquiries into the reasons why the San painted and engraved and what they themselves understood by the images. Did the images

merely 'illustrate', or 'reflect', beliefs or, as eventually became apparent, were they more integrally and actively involved in the San belief system? In the second half of the twentieth century, further sources of evidence, such as ethology and neuropsychology, opened up, but the ethnographic record and the rock paintings remained central. Southern Africa became a testing ground for widely applicable methodological principles (Hampson 2011; 2013).

Although Wilhelm Bleek died in 1875, Lucy Lloyd had access to more copies of San rock paintings that had been contributed by numerous researchers working in a number of South African sites. Rightly, she realized that 'the work of each collector materially helped in elucidating that of the rest' (Lloyd 1889, 28). That is how the specificity of the WP site takes us into the world of San image-makers and the different ways in which they manipulated, materialized, contested and sometimes added to their common belief system. I urge researchers to look for further examples of juxtaposed paintings and quartz veins, or painted quartz veins; such discoveries will shed light on this preliminary discussion and allow us to continue elucidating the connections between hunter-gatherer ontologies and rock art.

Notes

1. By using the word 'San', I am not suggesting that all San groups were identical in all places and at all times (see, e.g. Kent 1996; Barham & Mitchell 2008).
2. For recent discussions on rock art and animism, see Dowson 2009 and Porr & Bell 2012.

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