

# ROCK ART RESEARCH

The Journal of the Australian Rock Art Research Association (AURA)  
and of the International Federation of Rock Art Organizations (IFRAO)

ISSN 0813-0426

Volume 27, Number 1

Melbourne, Australia

May 2010



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The principal objectives of the Australian Rock Art Research Association are to provide a forum for the dissemination of research findings; to promote Aboriginal custodianship of sites externalising traditional Australian culture; to co-ordinate studies concerning the significance, distribution and conservation of rock art, both nationally and with individuals and organisations abroad; and to generally promote awareness and appreciation of Australia's pre-Historic cultural heritage.

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ing Winner's observations and therefore questioning these notions is not considered; it is a neglected tessera.

The manner in which perceptions of objects and pictures by infants are studied inevitably involves presenting them with these stimuli and observing their responses. When identical responses are made to both kinds of stimulus, the percepts entertained are assumed not to differ. Probably the most inherently convincing form of response is that of grasping or attempted grasping. However, grasping is not an unambiguous response, a child may attempt to grasp an object and it may also attempt to grasp a picture; a picture is independent of what it portrays and is also an object. Yonas et al. (2005), in their ingenious experiment, show that grasping movements made by nine-months-old infants to the two types of stimuli differ, and that those made in response to pictures are appropriate to pictures as physical objects, not to the depicted objects. Pictures of objects are not therefore seen as objects. This finding questions the manner in which much of the data obtained in earlier experiments was interpreted.

The result observed by Yonas et al. was adumbrated in several earlier studies concerning older children. Thus, for example, Sigel and Cocking (1977) found that nursery children showed considerable differences in the manner in which they handled objects and pictures of objects when these served as stimuli in a Piagetian task. A child, it appears, may be able to label both an object and a picture of an object correctly and yet be unable to use it equivalently in a cognitive task. This effect, incidentally, is not found only in children. Deręgowski and Jahoda (1975) observed analogous differences in the performance of adult women, who were required to learn locations of domestic items and photographs of these items.

Another omitted tessera is that of anthropological studies. The difficulties of recognition of pictures by observers from 'non-pictorial' cultures have been noted by several anthropologists (Herskovits 1948; Barley 1986). These difficulties, as Forge (1970) found, can be rather specific, photographs of individuals in traditionally established poses being more readily recognisable than photographs of the same individuals in non-conventional poses. This suggests that an element of acquired skill is involved in pictorial recognition, a theme on which Serpell and Deręgowski (1980) dwell at some length. The need to acquire the skill of pictorial perception does not preclude the possibility that some pictorial elements may act as ethological *sign stimuli* or releasers; eye spots are likely to belong to this category. (The problem of inter-population differences in pictorial perception is examined in Deręgowski 2006.)

A tessera of conceptually convenient description of phenomena, without necessarily implying animism, is by Jahoda (1970) who provides an excellent example of this in his book on superstition: the Stein-

beck Principle. The principle which is used in connection with electric discharges in gases states that an electric charge remains at a temperature sufficient to keep itself going. The principle thus implies intentionality — the arc endeavours to keep itself alive, but the use of the principle does not imply that its users are at the third Piagetian stage of animism in which signs of movement on its own accord (not merely of movement) are taken to indicate consciousness of the moving object.

Consideration of these issues falls outwith the realm of pure perception, but is relevant to the theme of the paper.

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## *Animated animism: what does it actually tell us?*

By PAUL S. C. TAÇON

Helvenston and Hodgson's paper on the neuropsychology of animism is a fascinating exploration of the concept of 'animism' in relation to neuropsychology, ethnography, landscape and, to a certain extent, rock art. However, the particular implications for rock art research could have been better articulated and listed. Indeed, this is a problem with much research on neuropsychology in relation to rock art. There is always lots of discussion about how the human brain works and then conclusions that this explains the prevalence of such and such. In many ways human artists appear more like robots responding in set ways rather than independent agents with the freedom of choice. Neuropsychology may be able to describe the hard wiring of human brains to account for frequent occurrences of beliefs and art designs but it can have difficulty when it comes to explaining variation, subtle differences, exceptions and the impact of things like culture contact, environmental difference and change, and so forth, in relation to rock art. Often such variation and exception is dismissed or used to further support the grand theory. Of course, this also is a problem with shamanism, entoptic theories, Freudian psychology, recent out-of-Africa evolutionary models and current debates about climate change. Debate is boiled down to singular, uni-dimensional explanations. Occam's razor is used to provide the simplest explanations because simple is seen as more probable. But humans are highly complex creatures and the human story is much more convoluted than we imagine.

To their credit, from the outset Helvenston and Hodgson do not restrict themselves to purely the neuropsychological but adopt an 'ethnographic, inferential and neuropsychological approach'. Indeed, this is one of the refreshing aspects of the paper and the ways in which they have used the inferential links their work to semiotics and other areas of discourse. Their review of ethnography allows them to demonstrate that aspects of neuropsychology do have wide applicability in terms of belief, ritual and art practice, as well as responses to certain landscape features that resemble things of interest to most humans, past and present. One of their most valuable contributions is that their research may allow us a way out of the increasingly tedious shamanism debate. Animism, something with a common human neuropsychological basis but ethnographically demonstrated to be widespread, important and varied in detail, might well underlie the production of not only some belief but also some rock art previously ascribed to shamanism.

Without diverging into the shamanism debate in great detail, the crux of the matter is that some researchers have strongly argued that a classic form of shamanism was practised globally and that much of the world's rock art resulted from this practice — an Occam's razor type of explanation. But the world is more complicated and I have always argued that many factors, motivations and intentions can be found to explain the occurrence of rock art, both within particular cultures and cross-culturally. We should be careful using shamanism to explain most rock art, portable sculpture from archaeological contexts and Historic/ethnographic art of hunter-gatherers. At the very least we should make a distinction between 'shamanic' and 'shamanistic' art objects: '... the term shamanic should only be used with objects that derive from or are of or pertaining to an act of a shaman (specific) ... the term shamanistic should be used to describe those objects that pertain to or derive from the cosmology or world-view of shamanism (general)' (Taçon 1983: 56). A major problem I highlighted in 1983 was that these terms were used interchangeably and for many researchers this continues to be the case. Perhaps, following Helvenston and Hodgson, we should replace 'shamanistic' with 'animistic'. However, this still allows us to have the category 'shamanic', which is now a distinct and much more culturally and geographically restricted explanatory tool. For me, this is one of the biggest implications for rock art coming out of Helvenston and Hodgson's paper. It also does not preclude other motivations for rock art, including secular and totemic (see Sauvet et al. 2006, 2009).

A second implication is that it is very common for humans of different cultural and ethnic backgrounds to 'see' or recognise human, animal and other figures in geological features of landscapes. There is a neuropsychological basis that is well explained although

Helvenston and Hodgson's discussion would have benefited from mention of figure-ground relationships, and the importance of outline forms in terms of conveying a maximum amount of information in an expedient manner. The work of Halverson (e.g. 1992) and others could have been used to beef up their discussion as what humans are doing when they see a geological feature is reading its outline as well as its general form. Often it is first the outline that is recognised as a human face, a giant lying down or some animal form. If we were to look at Figure 4, for instance, one sees a piece of geology that resembles the head of some creature because of its outline. For the traditional Kuninjku of central Arnhem Land the geology might be read as a Rainbow Serpent head and neck turned to stone. For people of other cultural backgrounds it might be read as a fossilised dragon, a mythical eagle turned to stone (as in Celtic England) or some other culturally meaningful being. But what is really interesting follows on from this — that, as Helvenston and Hodgson emphasise, for many people things do not stop with the shape but continue with a belief that beings live inside stone, that geology is animated.

There are many globally distributed ethnographic examples of this and countless rock art sites where aspects of geology have influenced, inspired or been incorporated into rock art designs. That this needs further exploration is a key implication of Helvenston and Hodgson's paper but it has to be followed up with caution so as to not fall into the trap of explaining most rock art in this way. In this regard I think Waller's (1993b) sound reflection theory has to be taken with a dose of salt, even though some sites undoubtedly do have important acoustic components.

Finally, I wish to clarify an aspect of my own research referred to in the paper. There was a misreading of my statement about x-ray art production, perhaps because in the original I was unclear (Taçon 1989: 318). What I meant was there was a florescence in x-ray art production from at least 1500 years ago, and as much as 3000 years ago, to the 20th century rather than between 1500–3000 years ago. The x-ray art of western Arnhem Land, Australia, by its layered nature, certainly hints at hidden worlds that lie beneath surfaces, including the world of the Mimi spirits within stone, but the production of particular subjects, such as barramundi fish, emus or macropods, resulted from other motivations. The true story is a complicated one and this is likely so for most rock art worldwide.

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