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Horse head painted in black on a stalagmite, immediately above sea level. Upper Palaeolithic, Cosquer Cave, France. (Refer to article by J. Clottes, Figure 3, page 123; photograph by A. Chêné.)

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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 prehistoric cultural heritage.

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COHERENCE - A CONSTITUENT OF 'SCENES' IN ROCK ART

The transformation of linguistic analytical models for the study of rock paintings in Namibia

Tilman Lenssen-Erz

Abstract. Generations of rock art scholars have been writing about 'scenes' and 'compositions' without a convenient, widely recognised definition of what these are. This article tries to determine the differences between scenes and compositions and to define a 'scene' in order to introduce it into standardised analysis of rock art. A concept of *coherence* is developed as a constituent of scenes which can be determined through a numerical rating system. Finally a structural model for the systematic analysis of information in scenes is proposed, using the categories *theme*, *focus* and *setting*.

Introduction

In recent years concern in rock art 1) studies has changed from an interpretive view to an analytical view that tries to reveal the meaning of the rock pictures from less extrinsic viewpoints. Greatest progress in this respect, it seems to me, was made in the study of southern African rock art through a correlation of rock paintings and ethnographic documents of San mythology. This ethnographic approach produced convincing results in understanding of historical, cultural and sociological background of the artists (see e.g. Vinnicombe 1976; Lewis-Williams' writings in the 1980s). However, it relates to a particularly advantageous situation where painting and oral tradition continued until modern times. Furthermore, this model for interpreting rock art as a historical source does not cover the whole wealth of themes in rock art. As such it is inadequate for the identification of a number of scenes present in southern African rock art.

It is the purpose of this paper to present a scheme to identify and analyse rock art entities that consist of more than one figure, namely scenes, and to address the risk of establishing a scheme that may contain systematic errors. Some sections of the scheme presented here are partly based on intuition, whereas others are built on elements which can also be found in language. A number of linguists suspect these elements to be of universal character. The scheme represents one aspect of a more encompassing approach currently being developed to analyse, with the help of a computer, the large corpus of Namibian rock art recorded by the late Harald Pager.

A number of valuable contributions to the study of rock art have been made by Pager. His book '*Ndedema*' (1971) still sets a unique standard for the reproduction of rock paintings. With these outstanding reproductions he published an all-inclusive catalogue of the paintings of the Ndedema Gorge in the Drakensberg.

Harald Pager was working on the wealth of rock paintings in the Brandberg, Namibia, when he died unexpectedly in 1985. He had then documented more than 43 000 figures on several kilometres of tracing foil, and had produced almost 900 plan and elevation-drawings of all painted sites. Funded by the German Research Council DFG, part of this invaluable material was published in 1989 (Pager 1989). This first analytical catalogue is to be followed by approximately seven further ones over the next years.

The terminological problem: 'composition' vs 'scene'

Ever since rock art was studied there was a recognised problem for which hardly any solution was attempted. This problem relates to the term 'scene', attributed to groups of figures the beholder presumes belong together. However, so far there has not been a clear definition of what constitutes a 'scene' and how to include or exclude figures of a 'scene'. When Beltrán says about rock art of the Spanish Levant that it was easy to classify scenes methodologically (Beltrán 1982: 40) he perceives a clarity that does not exist. He may have generally valid concepts for the classification of scenes, but he is not explicit about how to delimit a group of figures as one scene in a panel with dozens of other figures. Moreover, his classification is more interpretive than analytical. J. D. Lewis-Williams is more aware of this problem by conceding that 'in a crowded panel it is often difficult to distinguish the limits of groups', but he continues: 'if, indeed, limits were intended by the artists' (1981: 20). This latter problem seems to be already answered by the artists: of course a limit was intended which lies exactly where an artist chose to stop painting. If an artist finishes work on a painting this does not necessarily imply that he or she expects anyone to proceed with this very work later on. Therefore one has to consider a painting on the wall to be the completed product which the artist really intended to produce and that it needs no further comment or addition to attain its intrinsic meaning.

1) I use the term 'art' expressly to distinguish it as a special class of artefacts although it must not be understood in the sense and connotations of Western art production. Art, as I would define it, is a product of perception, interpretation and shaping of the spiritual and material surroundings of man - a shaped physical utterance furnished with meaning. It is functional only in a metaphysical way and its functional effect cannot be counted or measured.

Elsewhere, Lewis-Williams deals explicitly with scenes:

> It is possible that no fixed relations, as understood by Westerners, are intended in San 'scenes': the 'scenes' may portray figures individually and even in different temporal dimensions and therefore not capture an instant in the manner of a photograph, a peculiarly Western concept. Many of the relationships which Westerners see in San rock art may be no more than optical illusions (Lewis-Williams 1986: 176).

The term scene is placed in inverted commas by Lewis-Williams because this is presumed to be a Western concept.

Notwithstanding the validity of this statement, Lewis-Williams cannot evade working with entities which one might well call scenes and the composition of which seems to follow the habits of seeing things like a 'Westerner'. As an example we may look at a reproduction of paintings from Game Pass/Kamberg (Lewis-Williams 1981: 92, Fig. 28; Lewis-Williams 1988: 6, Fig. 2; Lewis-Williams and Dowson 1989: 50-1). In all these cases Lewis-Williams displays the same panel, his copy showing an eland plus four hipedal figures; by contrast, his photographs of this panel display a good number of further figures together with the ones mentioned above, only in part being superimposed (Lewis-Williams 1983, colour photographs 59-61; see also Lee and Woodhouse 1970: 43, illustr. 51 and Willcox 1956: Fig. 44). However, the reason for omitting these figures in interpretation is neither evident nor explained by Lewis-Williams. But it appears that the choice for reproducing these very figures and no further ones as a unit was made according to features such as size, colour, and in part perhaps preservation. This intuitive selection may well be justified, but the reasons for any such choice should be made evident. 2)

A similar depiction is handled the opposite way by Lewis-Williams (1981: 11, Fig. 2). On the side of four well-preserved humans are the remains of a faded eland. Lewis-Williams comments: 'One's first reaction is to deny any relationship between the human figures and the antelope, but, in the light of the ethnographic evidence ... I believe this would be an error' (op. cit.: 10). Here figures are grouped together which evidently are not contemporaneous. Even if the hypothesis proves right for the whole composition, the single components have their own meaning - which is particularly true for the depiction that was painted first. As a self-contained painting it must have had another, autonomous meaning before further figures were added that led to the present-day interpretation.

The volume *People of the eland* by Patricia Vinnicombe (1976) is another thorough study of rock art lacking a clear definition of a scene - or 'composition', a term used synonymously (e.g. Fig. 237). From Table 2 in Appendix II, 'Human Paintings - Scene' (op. cit.: 363), one can conclude that she denominated a scene by the interaction being depicted. Her list contains the interpretive categories hunting, dancing, fighting, other, and 'uncertain'. But as she is not explicit about the analytical criteria for scenes, panels which should be addressed as 'compositions' are treated as 'scenes'. Hence in Figure 90 (op. cit.: 165), for example, all paintings present on a wall with quite a number of superimpositions seem to be subsumed under one interpretation, on a synchronic level. Yet the general impression gained from this panel is that of a number of layers of different scenes not necessarily related to one another.

Another view is conveyed by art historian H. Kühn (Obermaier and Kühn 1930), who considers the composition to be the central and basic element in the rock art of south-western Africa. Kühn is one of the few researchers who deals with compositions on an analytical level. For him individual figures have no importance other than contributing to a 'higher' compositional concept: '*Die Komposition ist der beherrschende Faktor dieser Bilder, deren Einzelformen ohne Bedeutung sind, mögen es die Gliedmassen des Körpers, mögen es die Teile des Bildaufbaus sein*' (op. cit.: 20). Yet his approach cannot be standardised. It can be an interesting practice to deconstruct a painting like that of the 'White Lady' into a number of angular and parallel lines (op. cit.: 21) but this exercise does not seem equally applicable to other paintings as it does not lead to the discovery of recurrent patterns or rules. Consequently this method was not adopted by other authors.

L. G. A. Smits expresses a clear notion of the composition-complex although he cannot offer a real solution to this problem (1983: 74):

> Most paintings do not occur in isolation but in groups. Often a number of people and animals are painted near to one another. They seem to be related to each other and form a composition or a scene. While ultimately content will have to be approached through an analysis of the themes represented in the various compositions or scenes depicted, we cannot yet properly distinguish between true and false groupings, or between assembled and intentional scenes (Smits 1971: 17). At present we still lack the criteria to allocate specific paintings to certain groups and to determine the boundaries of each set of paintings that we think belong together.

This remark fully covers the problem and is in part a verbatim quotation of what Smits himself had written in 1971. Yet in 1990 he has to concede: 'Tools are required to establish whether a particular body of rock art must be regarded as one homogeneous whole or that separate groups of paintings should be distinguished' (Smits 1990: 17). Thus he proves that almost 20 years of intensive rock art research have not brought about much progress in defining scenes. Consequently, for him his 1971 definition remains valid and, as he overtly admits, this is all but an applicable, clear-cut definition: 'INTENTIONAL SCENES: true groupings, depicting a scene that is originally conceived and purposely composed as such by the artist, and consisting of a number of paintings that really "belong together" ' (Smits 1971: 17).

The foregoing quotations show that 'scenes' and 'compositions' are apparently interchangeable concepts - which is only in part correct and useful; or that both terms are combined into 'scenic compositions' (MacCalman 1964/65: 91; Fock 1983: 72 '*szenische Kompositionen*'). Elsewhere the latter author connects scenes to narration (Fock 1969: 3), thus being in danger of explaining one unspecified term ('*Szene*') through another even more diffuse term ('*erzählendes Motiv*' = narrative motif); or he leaves the whole issue aside by using the unspecific term 'group' (Fock 1979: 84).

Fock's indicator of scenes or related groupings is spatial closeness. The same criterion is applied by Scherz, another author on Namibian rock art who uses the term scenic groupings ('*szenische Gruppierungen*', Scherz 1986: 41).

Harald Pager often produced the most strictly defined terms for the subjects he was dealing with. He expressed

2) When Ed Wilmsen showed a copy of Lewis-Williams' reproduction to his trance-experienced Zhu informants in northern Botswana, interestingly enough, most of the discussion was about the eland and its presumed horse features, whereas the human figure in distinct bent-over posture was apparently ignored (Wilmsen 1986: 353-4).

his awareness of the shortcomings in defining a scene as follows: 'In this "art without frames" there are, unfortunately, no set limits as to what might constitute a group and an error margin must be allowed for the inevitably subjective decision of any recorder' (Pager 1971: 239). However, a decision has to be taken. Therefore, in those cases where no interaction seemed detectable, he had introduced a '35 cm-rule' according to which all figures within that reach were considered to belong to one composition:

> The criteria laid down for the designation of groups are the depiction of concerted action, or the proximity of paintings executed in the same style. The term 'group' includes both premeditated compositions and sets of paintings which might be merely a scatter of figures executed by one particular artist in a particular part of the rock shelter. In the present study, distances of about 35 cm between paintings were considered the limit of 'proximity'. It is, however, possible that some large, loosely spaced groups have been arbitrarily subdivided in this way (Pager 1971: 239).

André Leroi-Gourhan expressed an even deeper insight into the question of scenes in terms of content, working on the Palaeolithic cave art of Lascaux. Regarding 'assemblages' and 'composition' (1979: 345) he speaks of '*l'impression d'un ordre conscient ... provoquée par la conjugaison de taille, l'espèce et de la direction des animaux*'. Here some features are named which tie different figures together as a whole, namely size, species and elevation and this surely shows the direction to follow.

Gisela Fischer came to a similar conclusion when analysing the Magdalenian rock engravings from Gönnersdorf (Fischer 1979). According to her, the relations of sizes as well as the walking levels are important factors for the creation of a scene, but besides this she emphasises the connection built up by an activity taking place between at least two figures (Fischer 1979: 243). This 'decisive feature' is chiefly made visible by co-ordination of movement and body posture (op. cit.: 245).

A paper by John Clegg aimed expressly to find out about universal rules in composition. It is the most elaborate article on this issue in rock art. Clegg put forth a distinctive definition of 'composition' and 'scene' using

> the word composition in its technical art sense: the distribution of the marks which make up a picture in relation to each other and the whole picture surface (the 'canvas'). One aspect of composition is the scene, where two or more elements of a picture are interacting, telling a story, etc. (Clegg 1979: 468)

He then concentrates solely on compositions, to find rules which govern the placing of important figures or marks on larger panels. In order to enhance his research Clegg made tests with several hundred students which suggested that an innate tendency in humans is to prefer the centres of the 'canvas' (op. cit. 476) and that the size of a depiction depends on the space available (op. cit. 477). His conclusion, however, that if the same rules apply to prehistoric rock art their composition is without a meaning (since it is genetically predetermined), is not based on sufficiently convincing data.

Scene vs composition - a delimitation

The terms 'scene' and 'composition' are commonly used in the description and analysis of pictorial art. But the fact that especially in rock art analysis these terms are often used synonymously even by eminent authors shows that they are not defined adequately: their meaning overlaps partly (e.g. Pager 1975: 78; Vinnicombe 1976: 335). Lewis-Williams names the problem of 'Western notions of framed compositions and scenic relationship' (1983: 55), yet he evades naming a solution in saying 'the question of where groups begin and end is relatively unimportant: the panel is rather a network of relationships' (ibid.). And again he alludes to the 'Western notions' in stating that 'the relationship is then clearly not scenic' if a depiction is what he calls a 'juxtaposition' (ibid.). This might be considered a negative definition, but one can hardly derive a standardisation from it. The way he selects scenes is rather restricted to a specific social complex (viz. 'shamanism') discernible through explicit factors such as bleeding of the nose, forward-bent posture, dying eland and so forth - for a comprehensive summary of such features see Yates et al. (1985: 72). But for scenes which unquestionably do exist, apart from the depictions of known trance metaphors, no features have yet been defined that could express the degree of connection between figures or, in other words, that constitute a coherence of figures.

The usefulness and necessity of a distinction between 'composition' and 'scene' is implicit in much writing on the history of art although it is often not expressed clearly, and explicit definitions are quite rare. A very helpful and suitable definition that is indeed applicable to the analysis of European paintings is given in the *Thésaurus Iconographique* (Garnier 1984: 44) where one can read about the term 'scenes':

> *Il recouvre toutes les compositions dans lesquelles l'être humain ou divin, seul ou non, est représenté en action ... [... Pour la description d'une scène] On se posera les questions suivantes: quelle est l'action (domaine concerné, activité particulière), qui participe à la scène (nature, nom propre du ou des personnages, fonction, nationalité...), où se passe la scène (milieu naturel, milieu aménagé ou construit, nom propre de localisation), quand a lieu la scène (période naturelle, période historique, date précise), quels éléments de la scène méritent une notation... Le contenu de la représentation permettra rarement de répondre à toutes ces questions.*

The last remark is especially true for southern African rock art (nationality, proper name of location, precise date - rock art studies would be quite advanced if these were to be known). In this definition the parameters of a scene are: action, participants, locality, and period. 3)

A definition of 'scene' not gleaned from an art history book supports the definition given above: 'Any incident or episode that may serve as the subject of a description' (*Standard dictionary of the English language* 1969: 1124), and corroborated by the accompanying elaboration, though pertaining to drama: 'a division of an act in a play; *one comprehensive event* in a play' (ibid., emphasis added). All these definitions restrict a scene to an isolated event that allows for an all-inclusive characterisation. This notion of scene receives further confirmation from linguistic research: R. W. Langacker, working on cognitive grammar, uses 'scene as a paraphrase for *situation*' (Langacker 1983 II: 23) - although one would like to have a clear definition of a 'situation' - and R. de Beaugrande provides the short formula: 'scene: visual input at one time' (de Beaugrande 1980: 348). 4)

3) The locality one might esteem to be under-represented in rock art if this was understood as the representation of landscape. Indeed, such elements can be discerned only rarely. However, it is also possible that the place of painting, i.e. the rock wall or a site, is all the artists needed to specify the locality to which the painting relates. Accordingly, for some paintings Lewis-Williams and Dowson were able to show plausible connections between depictions and features of the rock wall on which they were painted (Lewis-Williams and Dowson 1990).

4) In analysing scenes the standard theory of film has long bridged the gap with linguistics, by the equation of a scene with a sentence. This equation has been criticised on good grounds, yet an alternative definition is not provided. A scene is only limited to being shorter than a sequence (Monaco 1980: 142-3, 161).

B. Sandelowsky, who worked on southern African rock art, comes close to this concept, although she does not give an explicit definition (1983: 613): 'Paintings frequently depict a number of human figures, animals, or mythical figures and objects, all obviously related to one another and portraying some event.' However, she wants this to be valid for 'the composition of the pictures' since she does not differentiate between composition and scene.

This broad lack of definition for 'scene' and 'composition' is not a shortcoming of rock art research exclusively, since it is difficult to find a short, clear definition for these widely used terms even in art history encyclopaedias. With composition being defined as 'the most general term for structure and arrangement', as in *The Oxford companion to art* (1970: 267; see also Clegg 1985: 43), one did not get much further in delimiting the term than the classical Greek authors who saw 'a work of art as an organic whole' being a 'composition by proportion and harmony among the parts and between the parts' (Plato after *The Oxford companion to art* [1970: 267]). For M. Raphael, 'Individual form and over-all configuration are united' in a composition (1968: 234) through several steps:

> The artist first constructs for the work a sort of spinal column whose function is twofold: (1) it combines individual forms in such a way that their totality clearly discloses the content, and (2) it serves as the fundamental entity to which all other forms relate by way of preparation or derivation (Raphael 1968: 234-5).

Yet he does not claim to provide an exact definition for composition, but rather delimits the range of this term as being interrelated to the concepts of configuration and realisation (op. cit.: 209-10).

Thus a composition is made up of a number of elements placed together (i.e. com-posed) because the producer believes that they should be related to each other rather than separated from one another. There is not necessarily a thematic coherence; it is just the will and the aesthetic feeling of the artist, on the one hand, that create a composition. On the other hand, and certainly more important for rock art, concepts have to be considered - in part possibly subconscious ones - that originate in the religious and mythical beliefs of a society (cf. Pager 1975; Vinnicombe 1976; Lewis-Williams 1981). Or, as M. Raphael puts it, 'in art objects are not represented for their own sake, but as vehicles of feelings and meanings whose origins are personal, social, and religious' (Raphael 1968: 211).

A general feature of a composition seems to be that it is limited by the size of the 'canvas'. Therefore a composition can be constituted of several smaller entities, 'scenes' (cf. also Clegg 1979: 468 as quoted above), which need not necessarily be produced by one artist at one time. This is especially the case for panels with many superimpositions (Fig. 1). On these panels it becomes evident that various artists painted at one single place again and again, with periods of activity possibly separated by centuries.

A typical composition may be seen in Figure 1 (from

Figure 1. A complex composition from Site A 57, Amis Gorge, Brandberg. Scale 10 cm.

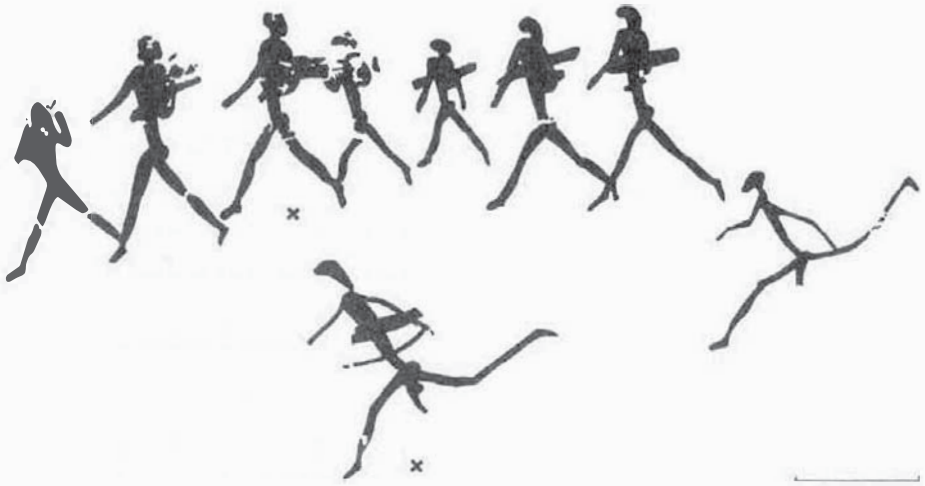


Figure 2.
A scene from Site 12 in Ga'aseb Gorge, Brandberg. Scale 10 cm.

Pager 1989) displaying a high number of figures in comparatively dense concentration. This composition is formed by at least six painting layers dominated by the two arches (the left one being an eared snake), the two tall humans and the two black animals at the bottom. The slightly diagonal order from upper left to lower right is in part predetermined by the rock surface, but the denser concentrations of figures around the head and the end of the eared snake are means of the shaping (*Gestaltung*) in the composition. The end of the snake especially seems to be the focal point of this composition since all dominant figures of this panel end or start roughly from this place. Some of the scenes within this composition are: the 'wigs' near the head of the eared snake; the two tall humans; the feline and bent-over human at the feet of the tall figures; the close-up humans and animals in the angle between the two arches.

It is because of the complexity of these larger panels, in which the structure is hard to discern (cf. Clegg 1979), that presently the largest units for systematic and standardised analysis are 'scenes', not 'compositions'.

Whatever distinction one may see between these entities, there can be no doubt that it is justified to speak of a scene for a certain group of figures and to disregard at the same time some close-by figures. What, then, makes us so sure about identifying such a scene?

It is evidently a process in the mind of the beholder that takes less than a second, in which two figures are compared as to the similarities in a number of quickly discernible features such as size, colour, 'style', body attachments, perceived action and so on. If there are sufficient similarities, a coherence between these figures is recognised. On regarding a picture the observer in most instances immediately has an intuitive certainty that specific figures belong together. Yet it would be difficult to clearly name the criteria for perceiving these figures as a group. Probably the best one could point to would be the similarity of the figures - if no direct interaction is depicted.

What, then, does similarity consist of in a depiction? Above all, it is the similarity in certain explicit features of two figures one compares in the mind. These features are assessed as to the degree of similarity, i.e. whether they are equal in both figures compared, whether they are similar or whether they are completely different. The more of the compared features are equal or at least similar, the more likely one will consider that the two figures belong together. This, of course, implies that the more elaborate two figures are painted, i.e. the more features there are for comparison, the safer is the identification of the relationship.

Using the principle of similarity as an indicator for scenic coherence naturally implies that the means for generating a scene are available for everyone by mere repetition of formal elements. A scene may thus be produced by more than one artist - which would seem plausible to me in the scene of Figure 2. The artist who painted the second group (irrespective of whether the upper one or the lower one was executed first) reproduced sufficient features from the first group as to create a coherent picture. A scene is not necessarily that which one artist depicts in a single act but rather the product of recurrent formal and thematic ingredients.

A common way to approach the question of scenes is to consider a scene as a smaller unit than a composition by its linkage to restricted events or incidents, or, as one can also put it, to action and interaction. A scene comprises one specific thing going on at a particular time with a limited number of participants. Therefore, in the absence of similar or equal features, interaction taking place in a depiction is a good indicator for the scenic connection of figures. Accordingly, a 'classical' hunting scene can, as a unit, be detected as safely as a scene of equal humans striding along (see e.g. Fig. 2). However, the pictorial content of other interactive contexts, such as highly specialised ritual procedures, may not be so readily understood, thus making the detection of scenes more difficult and open to individualistic interpretive assessments.

In a clear minimum-definition the parameters of a scene are:

- activity confined to one denominable action or interaction only;
- time span limited to one level only;
- finite number of participants present.

These parameters evidently do not suffice for rock art interpretations that rightly demand far-reaching concepts beyond the surface of mere representation. But this approach is meant to work on the level of plain analysis where one starts with no knowledge of the beliefs of the artists. To compensate for this lack of knowledge the approach utilises categories that can almost be regarded as universal (thus presumably being basic elements for the transmission of human information - e.g. the message = '*Mitteilung*' in semiotics [Bentele and Bystrina 1978:

106]). Such elements have been identified by linguists as proper names for objects (nouns) (Clark and Clark 1978: 227) and words that denote action (verbs) (Hockett 1963: 16), as well as notions of size, form and spatial orientation (adjectives, adverbs, prepositions) (Andersen 1978: 364). 5)

As to objects (i.e. nouns), P. Watzlawick explicitly closes the gap between verbal and pictorial communication (Watzlawick et al. 1982: 62) when stating that an object can be made the item of communication by either producing a drawing of it or by giving it a name - which are manifestations of the two basic (and principally different) ways of communication, viz. analogous and digital. Watzlawick further adds that it is analogous communication - painting in this instance - which has a longer phylogenetic tradition and hence a more general validity (op. cit.: 63).

In other words, the painters of southern Africa, no matter when they lived and who they were, had in all probability a notion of 'things' similar to ours. The world around us is full of 'things' and one part of them is animate while the other part is inanimate. The animate 'things', at least, are capable of acting. We can recognise activities in rock paintings provided the manner of depiction is not too alien to our own. We are thus sufficiently competent to identify activities such as 'walking', 'running', 'dragging a bow' etc. But we definitely can *not* say anything certain about the social or even metaphysical context to which these activities were assigned by the artist. These banalities are the level of interpretation one cannot escape even if one wants to remain strictly analytical.

'Coherence' - proposal of a new item for rock art analysis

The term 'coherence' has been helpful in the search for a basic element that is indispensable for the definition of what one might call a coherent scene. In the rock art literature the term coherence is not often used in connection with scenes. A. Leroi-Gourhan wrote (1971: 127): '*A Font-de-Gaume, une galerie entière, la première galerie latérale, est occupée par des figures d'animaux inachevées et incohérentes dans leur composition*'. Another quotation comes from P. Skotnes who maintained that 'in art history the coherence of a painting must be studied as part of the composition' (after Deacon 1987: 2). Lewis-Williams and Loubser use the term, too, in the context of compositions (Lewis-Williams and Loubser 1986: 271), although they almost certainly would reject a concept of coherence as it is promoted here.

But it is not because of these quotations that the term seems so suitable for rock art studies. It is rather its use in linguistics where problems related to this term have already been discussed in some depth. Linguists have examined relations among the acting participants in texts and found that they are tied together by a certain essential factor. Closer inspection of the use of 'coherence' and related terms shows that linguistics is not a far-fetched auxiliary science of rock art analysis.

The label 'coherence' is chosen here in allusion to the term 'cohesion' which is used in linguistics when a certain unit above the level of a sentence is searched for in a written or spoken text. 6) M. A. K. Halliday, a functional linguistics scholar, takes the attitude that the 'non-structural resources for discourse are what are referred to by the term COHESION' (Halliday 1985: 288). Since he understands structure as semantic structure (op. cit.: 318), his conclusion is that cohesion *means* that certain entities belong together. It is at the level of the meaning of a sentence or several sentences that the connection of elements is determined, not by grammatical means.

J. E. Grimes, another eminent linguist, sees cohesion as a formative element for 'paragraphs': 'cohesion in discourse appears to involve the further grouping of information blocks into larger units, rather like the way sentences are grouped into paragraphs in written discourse' (Grimes 1975: 276). A paragraph, again, can be specified as a section with homogeneous theme and action in a specified time setting (Howard 1978: 274) - thus a unit with general resemblance to what can be considered a scene. In other words, a paragraph - thereby resembling a scene - is 'a span of events in which members of a specific group of participants interact' (op. cit.: 275). Within this structure, 'cohesion' works on the fluent connection of setting, background information and events (ibid.) - cohesion is the glue which keeps all elements of a paragraph together. Another useful definition of coherence is to be found in R. de Beaugrande (1980) who, writing about universals of texts, makes a distinction between 'cohesion' and 'coherence'. Whereas the former is mostly concerned with grammatical items, the latter allows for easy adaptation to paintings:

> ... COHERENCE subsumes the procedures whereby elements of KNOWLEDGE are activated such that their CONCEPTUAL CONNECTIVITY is maintained and made recoverable. The means of coherence include: (1) logical relations such as causality and class inclusion; (2) knowledge of how events, actions, objects, and situations are organized; and (3) the striving for continuity in human experience. Cohesion [sic! doubtlessly must read coherence; T. L.-E.] is upheld by continual interaction of TEXT-PRESENTED KNOWLEDGE with PRIOR KNOWLEDGE OF THE WORLD ... (de Beaugrande 1980: 19).

As with the other quotations from linguists, the adaptation to the study of rock art of the means listed here is, at least partly, quite obvious. For example, class inclusion can be detected in such items as species or 'type' and possibly colour. 'Knowledge of how events, actions, objects, and situations are organized' may be represented in identical, similar or co-ordinated posture, action, or elevation. Inasmuch as a speaker needs to mark by commonly comprehensible or conventional devices how things or processes are connected to one another, a painter has to fulfil the very same obligation if he or she wants to communicate.

But as there can be no one-to-one correlation between linguistic and pictorial entities - the linguistic terms rather serve as heuristic devices by means of which certain categories of information transmission can be pinned down in an already introduced nomenclature - it is necessary to find the adequate features in paintings that constitute 'coherence' when present, and which distinguish scenes when missing.

Finding the essence of coherence promises good analytical progress because linguistic evidence suggests

5) There is no argument that all these elements are fully present in those languages which doubtless have the longest tradition in the southern part of the African continent, namely the Khoisan languages (cf. Greenberg 1966; Westphal 1971; Köhler 1975; Traill 1986).

6) This is not the place to discuss the problem of sentences, phrases, and other linguistic terms even superficially. For the present study a 'sentence' is defined as the basic set of data about an individual (person or animal); i.e. 'sentence' expresses what a living being can do at one time: e.g. a human can be walking and handling an instrument at the same time or an animal can be standing and grazing at one time.

that this is perhaps a universal feature of human communication. That is, coherence is a structural element found in any text produced by man. The concept 'text' as used here need not be restricted to language but may also include artistic representation (painting, sculpture, music, dance etc.) or even behaviour or activities (cf. Ricouer 1979; Oevermann 1986: 46-7) - a view which has always been an unspoken premise of archaeology and the philological sciences (Oevermann 1986: 51). 7)

Confinement to the latent structures of meaning must not necessarily be a disadvantage. One can also see it as an advantage and a strong impetus towards objectivity - as is the view of a school in sociological (also 'structural' or 'objective') hermeneutics (Oevermann 1986: 35 ff.). This approach even requires temporal and cultural distance because only in this way can one find unprejudiced (universal) rules. There is no necessity to fully promote this view if one is in search of latent structures. Structures are *there*, one need not induce them; and one is not dependent on a perhaps dubious field-recording situation as may be the case with ethnography. 8) Searching for structures means looking for the comprehensive number of smaller entities and concepts (smaller than, for example, a figure as a whole), the different combinations of which are capable to generate any representation recognisable on the surface. In other words, a structuralistic view of rock art has to look for the atoms of the single figure and therefore every single figure without exception is of analytical interest because it was cogently produced by some latent structures. A non-structuralist, on the other hand, works in a binary way: either a representation matches the hypothesis or it does not. If not, the depiction has to be omitted.

How to measure coherence

Now that it has been pointed out which general characteristics are generic for a scene, the way of quantifying them has to be explained. The system proposed in Figure 3 resulted from work on thousands of figures from the Brandberg and from closely inspecting, self-controlling as it were, the features given most weight when grouping figures into a scene. This latter point needs to be emphasised: the whole system is based on what one does intuitively at first glance. There is no such thing as objective measuring in it - the only advantage of the system lies in applying the very same intuition to every single depiction. There can be no doubt that this system may be completely false and erroneous, but the faults being made are systematic ones and thus rather easy to eliminate once they are detected. This 'intuitive scale' was later tested and independently corrected by further subjects.

However, this is not to say that measuring coherence is a method which anybody can apply when first viewing a corpus of rock art. Of course a certain level of competence has to be attained by becoming familiar with the fauna of the rock art region, the lifestyle and technology of the foragers, and the stylistic rules and conventions of the art (cf. Panofsky 1939: 9; and Chomsky's theory of competence in the reception of Oevermann 1986: 37 ff.). This familiarity has to be gained and is an insight into a foreign culture based on universals of perception, namely on the perception of resemblances in physical manifestations. This human ability to compare things and to build up taxonomies is the indispensable base for communication as in this way the world is given an order. R. W. Langacker writes:

> Fundamental to cognitive processing and the structuring of experience is our ability to compare one event to another and register any contrast or discrepancy between them. [...] I assume that acts of comparison in different cognitive domains and at different levels of abstraction and complexity are manifestations of the same basic capacity (or at least functionally parallel) (Langacker 1983: 4).

In this quotation Langacker uses the term event 'to designate a cognitive occurrence of any degree of complexity' (ibid.). Put simply, this means that people anywhere in the world are more likely to intuitively see things which are alike as belonging together, than things which are completely different. This human 'achievement' (Wittgenstein 1958, after Davidson and Noble 1989: 150) is the basis for the ability to depict in general. What only remains as a bone of contention is *when* in the Palaeolithic this ability developed (e.g. Davis 1986: 200; 1989: 140; Hewes 1986: 204; Davidson and Noble 1989). Therefore likeness should be a valid concept in scenes of rock paintings too.

The main consideration for the choice of the basic elements of coherence was the constant presence of these elements. This is to say that elements were sought which are represented in every figure, no matter by whom, when or where it was painted. Therefore the features assessed are measurable, hence universal. The criticism one might expect here, is that this is a typical Western, positivist, empiricist view. But it is completely refuted by the similarities and dissimilarities in any kind of rock art - e.g. the rock art of southern Africa is visibly different from the rock art of Australia. Consequently, in practice *every* rock art scholar tacitly works with this basic form of structuring the depictions he or she is dealing with.

In order to document the intuition about membership in a scene in a recoverable way, it proved most practical to express such intuition in numbers, or more precisely, in points allotted. Thus if one has to make a decision about whether or not two figures belong to one scene (see humans marked x in Fig. 2) they are compared to each other according to a given number of clearly defined features. On a scale of points, figures can score a maximum number if the feature in question (e.g. the colour) is identical in both, or none if the feature is different. After comparing eight features, all points are added and if the sum reaches or exceeds 19 points, the two figures in question are treated as belonging to one scene. In his research into universals of composition Clegg implemented a similar system wherein he assessed the criteria centrality, 'ornateness' and size (Clegg 1979: 470).

No specific scientific methodology is relied upon to allocate the number of points to the features of coherence and the value of 19 points as borderline. Such values are

7) This understanding of text must not be underestimated, since it represents the basis for this analytical model. Because of the uncertain depth of time and a rather sparse historical ethnography it seems to make sense to examine the rock paintings of the Brandberg in search of underlying rules which generate meaning. This appears to be essential as long as there is no possibility to interpret the meaning of specific items in a manner similar to the way the function of the eland was established in the rock art of the Drakensberg. For example, the eared snake and the giraffe are two conspicuous beings in the paintings of the Brandberg but the traditions of the various ethnic groups of Namibia - especially the San - offer only little interpretive help as to the status and the background of these animals (cf. e.g. Thomas 1950; Schmidt 1977/78, 1980; Arnold 1987).

8) This characterisation certainly pertains to the work of Bleek and Lloyd (1911) - notwithstanding the fact that it is an invaluable source. It is the best one can find in southern Africa, and perhaps the whole continent, concerning ethnography and interpretations of rock art derived from it.

again an expression of how one intuitively allocates things that one feels are related to each other when working on a large number of paintings in a given area. Nevertheless, more statistical work is needed on these features to establish a better base for their assessment. At the moment, as with any hypothesis, this system is a closed circle: everything that contributes to coherence is utilised for this very purpose, because of the mere presumption that it indeed seems to contribute to coherence. Only the universality of physical features is derived from an outside system - and therefore the degree of coherence which is assigned to scenes cannot claim to be objective, although it would seem plausible. At the moment the main advantage of this method is its systematic character and the possibility it offers to start an analysis of groups of figures at all.

One important point which needs to be stressed within this system of evaluation: coherence is a property of figures in a relational system in which always two figures (and only two at the same time) are assessed on the basis of their external features. The result is always a number of points which expresses the scenic or thematic closeness of two figures: the higher the score, the closer are the figures and the more coherent is the scene.

Figure 3 shows that identical features are not always given the same number of maximum points. This is because two human figures of the same type but different sizes are more likely to be related than two figures of identical size but of different type. Thus identical type is 'awarded' five points, whereas identical size only warrants four points.

Then again, since completely different sizes did not appear to be as strong a separating feature as different types, two figures with different sizes still get one point, while figures of different types get no point at all for this feature. On the table the hierarchy of features descends from left to right: most coherence is generally expressed by sameness of species and least coherence springs from identity of attributes or instruments.

To render this system accessible to other researchers and to make the framework applicable to other paintings it must be explained how identicalness, similarity and difference are being assessed in the various features. The following section establishes for every parameter in Figure 3 what is understood if features are said to be identical, or similar (corollary: sequentially altered), or different.

SPECIES

Identical. Human figure vs human figure, i.e. woman and woman, or man and man; animals: the same species.

Similar. Humans: woman vs man or unspecified human, or man vs woman or unspecified human; animals: if species are not clearly discernible, small bucks or large antelopes are considered similar.

Different. If no similarity is apparent, e.g. kudu vs zebra or human vs therianthrope.

TYPE

Identical. If both figures have the same number on the list of types (for a strict definition of the types of the Brandberg paintings see Pager 1989: 352).

Similar. If human figures have bordering numbers on the list of styles (e.g. styles 6 and 2 are 'similar' to 1, ibid.), only styles 3 and 4 (ibid.) have to be considered different although they are in neighbouring places; animals: if they have been allocated the same level (out of three levels) of closeness to nature, but are not identical as if painted by one artist.

Different. If human figures have non-bordering numbers on the list of types (e.g. 5 vs 1, ibid.); animals different; levels of closeness to nature; all figures: outline paintings vs filled-in paintings.

POSTURE

Identical. If the figures display the same posture of the body with the same position of legs and arms (maximum deviation 15°).

Similar. When posture of the body is the same (e.g. bent over) but position of legs and/or arms is different.

Different. If posture of body and position of arms and legs are different (for strict definitions see Pager 1989: 357).

ACTION

Identical. If both figures are displaying the very same basic configuration, e.g. standing vs standing, or running vs running.

Similar. Different static configurations among themselves are similar as well as different non-static configurations, e.g. squatting vs standing and walking vs running.

Different. A static action vs a non-static action, e.g. sitting vs walking.

COLOUR

Identical. If both figures have the same colour-*name* on one page in the Munsell Soil Color Chart (1975); a colour name is given to groups of one to six numeric colour tones in the Color Chart.

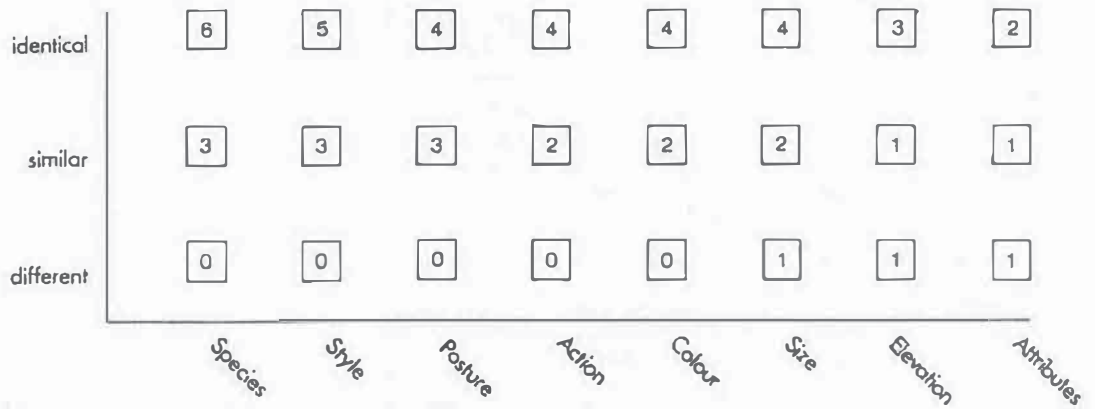


Figure 3. *Basis of calculation in the assessment of coherence. Different values of points are assigned to features on identity or similarity or dissimilarity.*

Similar. Figures with colour-names of adjoining fields in the Munsell Soil Color Chart (e.g. 10R red vs 10R weak red, ibid.).
Different. Figures with colour-names of non-adjoining fields.

SIZE
Identical. If the difference in size is less than 10%.
Similar. If the difference in size is between 10% and 20%. In case of the presence of smaller figures these can be regarded as similar if there are some intermediate figures, i.e. figures of a size between the largest and the smallest figure (sequential alteration).
Different. Differences of more than 20% without intermediate sizes.

ELEVATION
Identical. Figures that are turned in the same direction and have more or less the same (imagined) walking level (maximum difference of an arm's length of the figure).
Similar. Figures that are turned in the same direction but the (imagined) walking level differs for more than an arm's, or leg's (on animals), length of the referring figure; similarity is also given in cases of twisted positions, i.e. figures with their bodies turned in different directions but looking into the same direction.
Different. In cases of no congruence.

ATTRIBUTES
Identical. Figures displaying the same shape of heads (according to list of types in Pager 1989: 355), the same horns (for animals), the same instruments, the same body attachments and/or the very same kind of special stylistic features (e.g. disjointed body parts). If none of the figures has any special attribute at all this, too, is considered to convey identity.
Similar. If two figures for exaunple have disjointed body parts but these do not occur on the same places on their bodies; or if one figure has bow and arrows and the other only has a bow.
Different. Attributes present on one figure and absent on the other.
For a practical example see Figure 2 (Brandberg, Ga'aseb Gorge, Site 12). Probably everyone will at first sight discern two groups of humans with an inner coherence that can doubtlessly be attributed to each of them because there are strong similarities between the members of each groups. But asking whether both groups form a unity or not, whether both subgroups belong to one scene, will elicit different answers from various people.

Calculation of the coherence value for the figures marked x in Figure 2 is as follows:

both are humans = identical SPECIES	6 points
TYPES are different (upper = TYPE 1, lower = TYPE 4)	0 "
body POSTURE is equal	4 "
ACTION is similar	2 "
COLOUR is exactly the same	4 "
the SIZE is sequentially altered	2 "
ELEVATION is identical, but different walking levels	1 "
ATTRIBUTES and instruments are similar	1 "
to SUM up	20 points

This is right over the border between 18 and 19 points above which figures are considered to form one scene, irrespective of the two subgroups that are detectable here (a fact which is noted in another part of the analysis, namely the *Setting*).

Although the decision in Figure 2 might seem comparatively easy, this is probably not the case in Figure 4 (from Amis 2, see Pager 1989: 92-3). One can easily discern several groups by specific size, types and so forth, among them the tiny figures on the upper left side, and the figures possibly dancing at the bottom. However, it is not so obvious how many members are to be included in the main, diagonally arranged, group. Without arguing that this panel shows a composition where all parts are related in one way or another, there remains the problem that especially figures A, B, and C are doubtful cases of scenic grouping. The question of their inclusion in the group of women above to the right is important as this supposed inclusion would give the group a second focal stress: there would not only be the attendance to the antelope at the top but also a subgroup would seemingly be attending to the object at left (a bow ?).

Calculation of the coherence values would give the following results:

	Figures compared			
	A/B	A/C	B/C	B/D
Feature				
SPECIES	3	3	3	6
TYPE	0	0	5	3
POSTURE	3	3	4	3
ACTION	0	4	0	0
COLOUR	4	4	4	4
SIZE	2	2	4	2
ELEVATION	3	3	3	1
ATTRIBUTES	1	1	1	2
SUM	16	20	24	21

Every observer probably agrees that figures B and C are of high coherence and that their relation to figure A is uncertain. However, if figures A and C can be assigned to one scene (coherence 20 points), it follows that figures A and B also belong to one scene (in spite of a coherence of 16 points), since they are linked by figure B which has sufficient common features with both of them. To check the coherence to the group of women above (e.g. to figure D) one should choose the two figures looking most similar, in this painting figures B and D. As demonstrated above, these two figures display enough coherence to include them in one scene; would I have chosen to compare figures A and D, i.e. the ones not looking most similar, then the result would have been only 18 points and they would not have constituted a coherent scene. Choosing always the two members looking most similar out of two groups has the advantage that in case of insufficient coherence the first calculation is already decisive and final for all other figures in question.

The benefits of determining coherence

It is now necessary to discuss why this complex system for the definition and rating of scenes should be implemented - especially in view of other recent and promising approaches to the establishment of scenes (e.g. Lewis-Williams 1981: 20, 1983: 55, 1986: 176; Hammond-Tooke 1982: 73; Lewis-Williams and Loubser 1986: 271). These last approaches call for concepts of scenes which principally consist of relations of symbols and metaphors.

Figure 4. *Panel from Site A 2, Amis Gorge. The coherence of figures A - D is discussed on the previous page. Scale 10 cm.*

This may be acceptable for certain domains, but there can be no doubt that the artists still had further means available to create connections; for example, in a group of figures that are merely walking together as in Figure 5.

Here no specific hypothesis needs to be tested to establish that these figures belong together. Evident features of likeness in physical shape are creating a unitary picture. In the sample of paintings from Brandberg analysed so far (approx. 5600 figures in 499 scenes that only comprise humans) scenes of this character amount to approximately 42%. It has to be conceded that within these 42% (= 209 scenes) there is a certain number which through specific arm positions or bent-over postures may rightly be related to trance experience. However, the overwhelming number of such groups is at first sight characterised by a jointly executed activity. When J. D. Lewis-Williams stated that 'activity groups are less easy to quantify than one would suppose' (Lewis-Williams 1981: 20) he may have had such groups in mind. He furthermore maintains that 'Activity groups often provide, by the relating of elements, a valuable clue to the meaning of other enigmatic paintings and also to the significance of the plethoric eland paintings' (ibid.). His main use of the concept of activity groups is 'chiefly to clarify certain sets of puzzling

Figure 5. Walking figures at Site A 31, Amis Gorge. Scale 10 cm.

paintings and, ultimately, the significance of the dominant element of the art, the eland' (ibid.). This view about activity groups is not as explicitly expressed in his later writings, but it is a constant factor always implicit in his work.

The entity of an 'activity group' indeed makes a lot of sense when working on a large sample of rock paintings without a hypothesis as to the semantic aspect of the art, but rather undertaking an analysis which tries to implement culture-unspecific elements of human communication. This is evident from any representational depiction of living beings. They are generally dominated and visibly characterised by interaction at different levels of co-ordination. This is the case in static configurations such as standing or lying together, but not so where specialised activities are aimed against each other, as is evident in presumed fighting scenes. The statement that 'a herd of eland by themselves, for instance, do not constitute an activity group' (Lewis-Williams 1981: 20) is based on a different understanding of what has to be regarded as some kinds of activities or processes; these are detectable by being expressed through a verb. Langacker writes that the definition of 'process predications involving physical activity' [...] 'makes no reference at all to motion, either physical or abstract, so this schematic description is applicable to both static and dynamic relations' (Langacker 1983: 125). Consequently the definition of an activity group as a universal concept is not dependent on dynamic activity but is already sufficiently marked by a static relation. The term 'activity group' may therefore very well be extended to 'a herd of eland by themselves' and there is no evident reason why activity groups should only be 'almost entirely defined by the activities of human beings' (Lewis-Williams 1981: 20).

Now that the entity of an activity group is explicated, its importance within a system of communication can be demonstrated. In seeking elements that make figures appear to belong together, the first and most basic features are those which are alike - a banality which indeed was never questioned by any author. But what holds true for the physical appearance should also hold true for physical processes. As much as a common colour, for instance, makes two figures seem to be related, so an equal or similar activity basically makes them cohere stronger than if the activity was different. Thus, participation in any common activity has to be regarded as a component potentially defining activity groups. Once this is accepted, the categories and structures of activity have to be determined. Looking at the activity displayed in Figure 5, without more interpretation than is needed to call these figures 'humans' (and without culture-specific background), one can say that these figures are walking. A cliché, indeed, but it is the starting point for the analysis of any kind of action where activities are placed into structural categories without the application of ethnocentric interpretation. Accordingly, the common stride in one direction is the most obvious and elementary aspect in the activity of these groups as coherent units. The observer is guided, as it were, by the activity of the figures to the goal they are aiming at. However, a material object as a goal (other than the next group) is not visible in this instance - nor is it in most other depictions of striding people - hence the conclusion has to be that the main intent of the painter was the representation of figures that are walking without a painted goal in sight. Of course this is another platitude because every painter indeed painted that which he or she wanted to paint. But the recurrent repetition of a certain content has to be regarded as a culture-specific element, in this instance people striding along in the same direction.

It is possible to seize this very intention in a structural way by assigning to it the status of the *Focus* of the depiction. The *Focus* is an explicit means which helps the beholder to recognise the main information the artist wants to convey; it emphasises what the interest of the actors in the scene is directed at, even if it is seemingly aiming nowhere. In language communication the function of *Focus* is practically the same: it marks the new information, it is the centre of an 'information block' (Grimes 1975: 280). Halliday specifies that 'The focus functions as a signal to the listener that this is what's news, what is to be attended to' (Halliday 1981: 11). In other words, for a speaker the focus is 'that which is at the centre (or "focus") of his communicative interest' (Crystal 1980: 148). The *Focus* is used to relate something new by means of something already known. For example, everybody in a forager society knows a hunter by his or her equipment. 'Hunter' is often the *Theme* in scenes in the rock art of Namibia. But a hunter is capable of doing an endless number of things, hence *what* he or she does is the *news* which is told in a depiction, thus constituting the *Focus*. However, looking at the rock art of Namibia, hunters are not represented in an endless number of doings but in a rather small number of activities, the least of which is actual hunting. Behind this conspicuous focal selection lies a strong culture-specific mechanism which still awaits explanation.

The advantage of the category *Focus* is in its potential for the distinctive description of events at a low level of interpretation. For the denomination of the *Focus* there is no need to fantasise some social procedure depicted in the scene. Instead, activities are seen on an elementary level such as movement or application of instruments - and yet one obtains distinctive descriptions.

A number of ten *Foci* proved sufficient for a comprehensive analysis of the *Focus* of rock painting scenes. Two of these are concerned only with technical-compositional features, which is the case where more compelling features of activity are lacking, namely:

DC = 'density centre of the scene', the place where most figures are closest to each other;
EP = 'most elaborate painting', the figure which took most effort to be accomplished (for further specifications see Lenssen-Erz 1989: 360).

If either of these *Foci* applies to a scene the figure(s) as such stand in the foreground with the activity being of less importance. This compares to many depictions of animals which seem to fulfil their function by their mere presence. The remaining *Foci* are chiefly concerned with the activity displayed in a scene. Static relations are expressed by:

CDG = 'common direction of gaze';
BF = 'bi-focal', which may also occur in dynamic processes;
MF = 'multi-focal', also in dynamic processes, commonly one might call this 'disorder'; it appears only in 1.6% of the scenes analysed so far.

Another comparatively unspecific *Focus* is:

CDM = 'common direction of movement', which can be attributed to the scene in Figure 2.

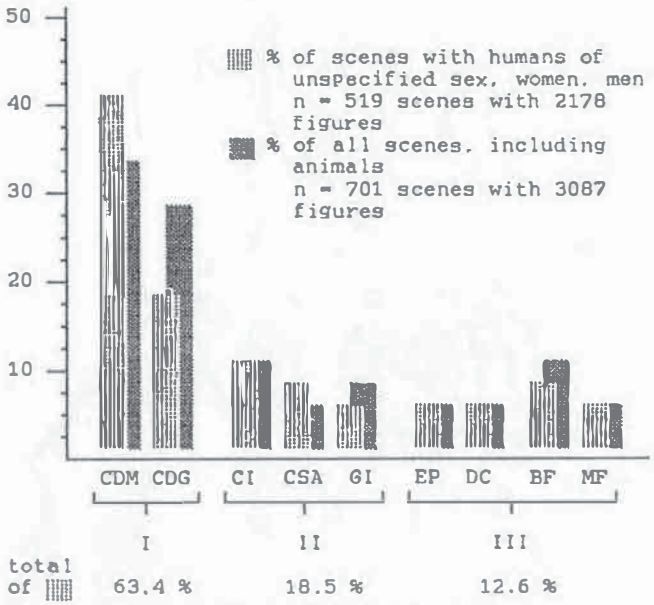
Most complex and perhaps most interesting are the *Foci*

CI = 'centre of interaction';
GI = 'goal of interaction';
CSA = 'centre of specialised action', the specialised action being in most instances a strictly defined specification of interaction (cf. Lenssen-Erz 1989: 368);
GSA = 'goal of specialised action', another specification of interaction.

The four last kinds of *Foci* are interesting insofar as specific social effects of activity may become visible without, of course, necessarily relating the meaning. At any rate, interaction is the result of social processes and in order to give 'interaction' a strong culture-specific potential for the *Focus* it was defined according to activities which require acculturation. Therefore walking in single file in a group of several people is not listed under 'interaction' here.

To give an example of certain *Foci*: in Figure 4 the uppermost scene would be assigned a GI with the antelope being the goal of interaction. In the scene at the bottom a CSA would be matching, referring to the three figures displaying a visible co-ordination in their body postures and movements (which by definition is specialised action).

Figure 6 gives an impression of the importance of different *Foci* in the Brandberg rock paintings. In this unselected sample insignificant activities are the main theme of the paintings and this statistical significance poses questions as to the meaning of the art. That the painters took the effort to use a highly developed communication system to chiefly convey most ordinary and mundane human activities gives quite some credence to the assumption that a good part of the rock art of the Brandberg is of symbolic meaning, using iconic items as opposed to metaphorical expressions of culture-specific concepts.



Group I: Themes of culturally indistinct activities.
Group II: Activities with culture-specific background.
Group III: Scenes where means of *Gestaltung* appear to dominate any activity depicted.

I: CDM = common direction of movement; CDG = common direction of gaze;
II: CI = centre of interaction; CSA = centre of specialised action; GI = goal of interaction;
III: EP = most elaborate painting; DC = density centre of composition; BF = bi-focal; MF = multi-focal.

Figure 6. Focus of scenes (main information derived from the activity displayed in a scene).

Conclusion

It has been proposed here that the *Focus* be regarded as the central entity in the informative structure of scenes as it is in language, but without doubt a scene is not characterised distinctly enough by only denominating the *Focus*. Therefore its background has to be analysed too, because with the *Focus* being concentrated on action and consequently on 'actual news', the background may - under ideal circumstances - allow a temporal and spatial specification for that activity. Accordingly everything that is detectable in a scene but does not contribute to the *Focus* is 'collected' under the heading of *Setting*. This can be all kinds of special features, objects carried, or gestures. However, this aspect of a scene has not been studied in its structure so thoroughly that a small number of categories were determined to cover all kinds of *Settings* (cf. Lenssen-Erz 1989: 349).

To conclude, a scene can be fully and distinctly described through three parameters: firstly the *Subject* or *Theme* of the scene; secondly the *Focus*; and finally the *Setting*. This treatment of rock art data enables researchers to analyse any number of rock paintings with categories that allow a direct assessment of the content of a scene - without having to resort to interpretive notions such as hunting scenes, dancing, domestic scenes and so forth. The abstraction in the *Focus* categories summarises scenes according to a social rating of the activity (interaction) displayed and not according to an imposed personal evaluation. Through the denomination of the latent structures *Focus* and *Setting* a comparison is possible between scenes which superficially may not seem to have much in common.

Acknowledgments

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COMMENTS

By SHIRLEY CHESNEY

Tilman Lenssen-Erz's paper has meant a great deal to me since I read an early draft after meeting the author at an international conference in the late eighties. I received his present article just a short time after reading Pat Vinnicombe's review of the first volume of the late Harald Pager's series on Namibian rock art, in which Lenssen-Erz's team devotedly published the work of their mentor (Vinnicombe 1991). Both the article and the review demonstrate for me the tragic-comedy in our late-twentieth century's inability to find 'coherence' in our methods and our texts.

What interested me about Lenssen-Erz's article and which I still feel is the greatest strength of his paper is the significance he grasped in making the relationships between motifs and the totality of his rock art sites explicit: raising the question of defining and differentiating 'composition' and 'scenes' in rock art, systematically. How to see the work as an encoded visual language, rather than analysing and interpreting the individual forms is the goal he set himself in this paper.

Lenssen-Erz summarises the use of the term *scene* in the literature of rock art analysis and sees it used interchangeably with the word *composition*. Some of the examples he gives of Spanish Levantine and South African rock art are mostly figurative where the distinction he makes between *scene* and *composition* might easily apply. But in the new work of documenting Upper Paleolithic superimpositions (be it through analysis of pigments by Lorblanchet at Pech Merle and Cougnac or by Clottes at Niaux, or by delineating the ambiguities of perception by Ucko, Layton and their team at Hornos de la Peña) it would be difficult to see if the variables (and their quantifications) would assist in the complex task of distinguishing subgroups, testing them for *coherence* and arriving at further information about innate structures, or the meaning of a group, much less of the composition as a whole.

The author frankly states that 'at the moment the main advantage of this method is its systematic character and the possibility it offers to start an analysis of groups of figures at all'.

Finding the essence of *coherence* in pictorial rather than linguistic terms becomes the task for which certain discernible features (size, colour, elevation, attributes) are compared in a scheme relating one figure to another to delineate quantitatively a subgroup of figures constituting a *scene*, ignoring other close-by figures, because of the admitted complexity of entire *compositions*.

Perhaps this is where I become most dissatisfied with the author's formulation. Despite several good quotations, he fails to give an adequate definition of *composition* or indicate the depth of content previous researchers have assigned to it. It is not just the totality of figurative and non-figurative markings from which a much smaller subject of related forms can be isolated which are called *scenes*. *Composition* can be seen as the structuring principle itself by which artistic mind and feelings, material means and historical context are all interrelated.

Lenssen-Erz belongs to a new generation of researchers who have benefited from the questions raised in mid-century by Raphael, Leroi-Gourhan, Laming-Emperaire and Marshack, among others, who questioned the validity of assigning meaning to prehistoric symbols through ethnographic parallels. It has always been the case, it seems, that even these researchers, after describing the formal structures of their system, somehow smuggled ethnography in by the back door to show the 'secret idea' behind the structural system.

What was liberating in their work after so many years comes back to haunt me and others in the rock art community in the formulations of Lenssen-Erz. With what measures can we evaluate his method? Can we see its adaptation and value for studying rock art outside the Brandberg of Namibia? Can these variables be adopted for the groups that made the analysis of non-iconic and non-representational systems possible in the work of Marshack, d'Errico and Bednarik?

Are there any proven universals in the terms *theme*, *focus* and *setting* defined by Lenssen-Erz that make them more efficacious than the terms *subject/object*, *centre of interest* and *context* with which we are familiar in looking at pictures?

Underlying the use of structural theory from which the author quotes is the idea that it is possible to make an analysis on the basis of 'culturally-unspecific elements of human communication'.

The author seems aware of the limitations of using 'like = like' or 'similarity' as the basis for anything more complex than a simplified group, defined as

- activity confined to one denominable action or interaction only;
- time span limited to one level only;
- finite number of participants present.

He himself comments that these parameters are insufficient for 'interpretations that rightly demand far-reaching concepts beyond the surface of mere representation'. Reaching that level of conceptual understanding he identifies as possible only with ethnographic knowledge.

Expressing intuition quantitatively returns one circularly at the end of this complex process to higher levels of familiarity and intuition - but not necessarily to conceptual understanding by the route that the champions of 'internal analysis' felt would lead them towards that goal.

Following his method for accessing coherence where comparisons between figures yield numerical values for being identical, similar or different, species difference is assigned the lowest value. Thus the relationship between Leroi-Gourhan's famous 'bison/horse' pairing can hardly be addressed. Overlapping or confronting figures in European Upper Palaeolithic panels would not be assigned the values to bring out the significance we must accord to these favoured motifs.

Is human communication possible without being embodied culture-specifically? What is the culture-specific mechanism behind the small range of activities describing the category *focus* of the *theme*, *hunter*, in the examples of the author? Lenssen-Erz feels that the use of the descriptions 'walking', 'hunting', 'dancing', 'fighting' etc. are imprecise and are imposed by the specific culture of the contemporary researcher on a prehistoric art system. But modern science has taught us that Lenssen-Erz's method, his use of his intuition and terms, must equally effect the 'signified'.

At this point I confess to being struck in my own self-doubts about how those insights I acquired from the mid-century masters of this discipline can be practised. Pat Vinnicombe expresses my feelings when she asks (cries out), 'if meaning cannot be deduced, is there any point in establishing structure?' She continues by answering her own question that the huge data base Lenssen-Erz has enlarged and the method he adopted have surely helped him deal with the thousands of figures reproduced from the Brandberg. For one who never has such an overwhelming practical task which Vinnicombe, Pager and Lenssen-Erz have carried out with such selflessness, this is a satisfying confirmation of its value. But I am unconvinced that it is suitable for the more complex symbol systems that emerge from the very beginnings and continue into contemporary indigenous practice.

Modern science is not less rational or objective by abandoning the separation of rational intuition/space/time/subject/object dichotomies for truth of integrated experience that can bring us closer to the Brandberg indigenous artists. To do this, I believe we cannot depend on linguistic theory, symbolic logic as universal terms or methods to reach such widely divergent, culturally-specific art forms as the Drakensberg prehistoric Namibia and Upper Palaeolithic Franco-Cantabrian art. But we must continue to bring from each region and each time what our best, most experienced and dedicated researchers can contribute in their own autonomous domains. In this sense, I look forward to the continuing theoretical work of Lenssen-Erz in the area of composition which I think is most important for all of us.

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By JOHN CLEGG

Lenssen-Erz's paper is a fine example of careful, detailed work. Particularly praiseworthy is the explicit use of the technique of formalising an intuition so that it may be applied objectively.

The paper is particularly welcome to me personally because it refers to detailed analysis of technical attributes of pictures, such as the relationships between figures, and various aspects of drawing.

The paper originated in work on rock art of the Brandberg. There is a large number 9) of groups of human 10) figures, often marching in step. The author calls such groups scenes. Around these groups are other human figures, which may or may not 'belong with' the groups. It is desirable to determine whether the outlying figures belong with the group, so that the data for analysis may be complete. The ultimate aim is to examine the human 'scenes' with a view to elucidating what they are about, in the context of Lewis-Williams' work on trance.

A great deal of good work has gone into the development of methods to recognise 'scenes' in this particular body of rock art, and the author generously wishes to share the work and results with the rest of us, hoping that we may find it useful. Certainly it would be interesting to recognise scenes in rock art, and to have tools to help us do so consistently.

Cross-cultural validity?

There are two questions to ask of the tools presented here for the recognition of scenes:

1. Are the methods described so clearly that they can be used by someone other than the author; do the methods contain systematic errors?
2. Does the method actually do what is claimed, namely recognise scenes?

Both questions can be investigated by trying the proposed method on other examples. If it is to be useful outside the Brandberg, it should work at least passably on pictures from other cultures.

For no remembered reason I chose the first five of the following pairs of figures from pictures which I believe are scenes (Fig. 1):

1. Kühn 1956: Fig. 54, p. 72: top large boar and man
2. Trezise 1971: Plate 11, p. 56: horse and ex-rider
3. Trezise 1971: Plate 13, p. 66: woman and orange man
4. Stanton et al. 1965: dust cover: horse and rider
5. Stanton et al. 1965: dust cover: ship and crew
6. Stanton et al. 1965: dust cover: row of horsemen
7. Stanton et al. 1965: dust cover: row of ships

I followed the directions in the paper so far as I could and attained the following results:

Pictures	1	2	3	4	5	6	7
Species	0	0	3	0	0	6	6
Type/style	0	0	3	0	0	5	5
Posture	0	3	0	3	4	4	4
Action	4	2	2	0	0	4	4
Colour	4	0	0	0	4	4	4
Size	1	0	0	0	0	4	4
Elevation	3	1	1	3	3	3	3
Attributes	1	2	1	1	1	2	2
Sum	13	8	10	7	12	32	32

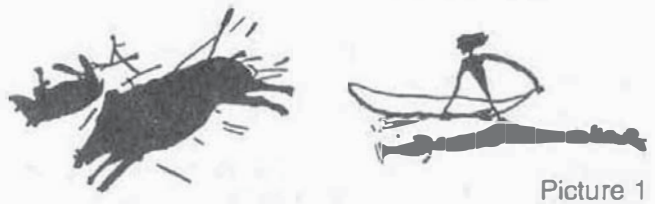
Results: description of method

I found that in general the description was clear enough for me to work from. The main difficulty was in determining *style* (Fig. 1.3) or *type* which are defined in relation to Pager's list of types to which I do not have access, and which would not be applicable anyway to the pictures I chose.

All the pairs I chose involve difference of species or sex, which had an overwhelming effect on the total. Comparing the posture of humans and other animals was difficult, for only one is of upright stance. For cross-cultural usage I find that the two attributes *style* (or *type*) and *species* are too similar, so that one characteristic could be counted twice; the same trouble came when trying to

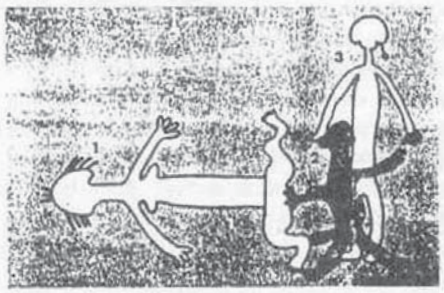
9) There are 499 scenes comprising humans only, among 5600 figures.

10) This paper clearly assumes that pictures which look like objects represent them; I would prefer a convention which made such assumptions explicit, but since the arguments I present in this Comment are unaffected by whether or not the assumptions are made, I have not troubled to insert the phrase 'pictures which look like' in the many appropriate places.



Picture 1

Picture 2



Picture 3

Pictures 4 and 6

Pictures 5 and 7

Figure 1. Pictures 1 to 7. From Kühn 1956; Trezise 1971; Stanton et al. 1965.

compare the *posture* and the *actions* of people/boat, human/boar, horse/rider. These problems are doubtless caused by my poor knowledge of the whole system, but need to be eliminated for cross-cultural use. How is size measured? I measured maximum length, but would prefer a simple measure of area, such as max L × max B. Elevation puts too much weight on facing the same direction. The whole system is biased against dissimilar things being in the same scene; it is biased in favour of homosexual human figures marching in step.

Scenes

My idea of scene is not like Lenssen-Erz's, nor are my scenes so cohesive. For instance I believe that in a fishing scene with several fish and several fisherpeople, the one angler with a fish on the end of his line 'belongs with' the fish. This example makes it seem that I do not accept the 'banality which indeed was never questioned by any author' mentioned by Lenssen-Erz. In fact I do not believe that coherence is an important element in scenes. The author refers to characteristics *generic* of a scene. In my understanding a scene is the product of a desire to make a statement about the interaction of several (two or more) elements (independent things). Every pair of elements of a scene belong together more than they belong to elements exterior to the scene 11). The problem Lenssen-Erz offers to solve is to recognise which figures in a picture belong together, and thus may be constituents of a scene.

In Australia, scenes in rock art have been sought for two hundred years; a few have been found, but in general they do not form a very important part of rock art. But we do have fairly numerous rows of motifs: people or birds or fish, often of similar size and style and facing the same way. These things would, I believe, be recognised by Lenssen-Erz as coherent 'scenes'.

But in the examples of scenes I happened to choose, the first six are not cohesive enough to be part of a 'scene', because the protagonists are of different sex or species.

Several days later I realised that 'a fleet of ships' (6) is also a scene, like its constituent 'soldiers in a boat' (4), and its constituent 'a platoon of soldiers', as 'cavalry charge' (7) may be more of a scene than its constituent 'man on a horse' (5). In the event the fleet of ships and cavalry charge both scored maximum points for coherence. When their coherence was measured (see table above) 4 and 5 (horse and rider, ship and crew) are NOT scenes, but 6 and 7 (row of horsemen, row of ships) are.

The Bayeux Tapestry experiment showed that the proposed measures are very sensitive to the scale of scene: a platoon of soldiers (in a boat) is coherent, and therefore a scene; whereas soldiers in a boat is not; a fleet of ships is a coherent scene. This puts the whole discussion into a complexity and scale where the skills of semiotics are essential. I imagine that the letters of a written word may be less coherent than the words in a sentence, which in turn may be less coherent than sentences in a paragraph. But as I write this I think of examples which disprove my suggestion. I shall thankfully leave the question to the semioticians.

A proposal

I believe that we should gratefully incorporate Lenssen-Erz's work in our tools for studying rock art, but that another name be found for the entities he is able to define so thoroughly, perhaps *coherent scene*? This would free the word *scene* for its common usage, and allow *composition* to return to its technical meaning in art works of

> Composition is the spatial relationship of the marks to each other and to the rock surface: the distribution of the marks over the surface.

My work on this concept revealed it as a powerful tool. Composition can be studied and measured more objectively than scenes, or coherence, because it does not depend on the recognition or definition of species, actions, types. Moreover, the 'message' in composition may be found. Departure from a 'normal' composition, if not

11) This formulation has the advantage that it allows scenes within scenes.

explained by shape of support, or taphonomy, implies deliberate grouping.

Lenssen-Erz's provocative paper is effectually about the semiotics of, not language, but rock art. It raises several other interesting points.

Tautology and perspective

Lenssen-Erz states:

> of course a certain level of competence has to be attained by becoming familiar with the fauna of the rock art region, the lifestyle and technology of the foragers, and the stylistic rules and conventions of the art.

Statements of this type make me very uneasy. It is certainly true that a growing understanding of any art and its environment snowballs in a positive feedback loop, making it easier to comprehend new examples of art or culture. But it is also true that such feedback is tautological, for it becomes easy to recognise what is already known, whether the knowing is correct or erroneous. And with each iteration it becomes harder to accept new ideas. The example in the proposed scheme which worries me most is the apparent assumption that perspective is not a part of this art. European Renaissance perspective allows distant and close objects to be a part of the same scene: given similar objects, the nearer one is larger, more saturated and contrasted in colour and shade, with its feet lower on the picture plane than the further (all things being equal, including that the ground is below eye-level). If this perspective were recognised as a feature of the rock art under consideration, neither elevation nor size would be so important in the diagnosis of scenes. Looking at Figure 2, I see a picture where the smaller figures, their feet higher up the page, are also more distant. The runners in the foreground who are overtaking the marching group are taking a shortcut down a valley near us. If Figure 4 is examined with the same idea of perspective, the question about how many scenes there are can be restated in terms of how many different perspectives there are.

I do not have the space to consider fully the last page or so of the paper, which seems to me a very valuable contribution to the semiology of rock art. But I am a little concerned at the remark that the focus of Figure 4 is the antelope, which looks to me probably NOT to belong to the women in front of it: species different 0, style different 0, posture similar 4, action similar 4, colour different 0 (the women have white faces, the antelope faded body), size similar 4, elevation different 0 (judging by the antelope's leg-length), attributes different 1: total 13. Let us hope I misunderstand how the system works.

I am very grateful to Lenssen-Erz for sharing his work with us and giving us the opportunity to use it as a stimulus for what I hope will be productive discussion.

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By BERNARD M. J. HUCHET

This is a very thoroughly researched article discussing a methodological problem poorly investigated in the past. The author shows an acute awareness of problems inherent in his approach to the identification and analysis of rock art scenes. As such, I merely wish to further clarify the extent to which some of these problems may reduce the methodological accuracy, and perhaps act against the universal applicability, of the scheme.

Although Lenssen-Erz makes every attempt to rely on universals using linguistic models as heuristic devices, his method can not be equally and objectively applied to various bodies of rock art. This is due to the manner in which artistic conventions used in a given region can introduce subjectivity in the variables he uses to define a scene.

Consider for instance the ways in which Lenssen-Erz's scheme is affected by artistic conventions present in the rock art of the Laura region, Australia. On the basis of my analysis of 1000 anthropomorphs, I can conclude that these conventions affect the reliability of at least two of the eight features used by the author to assess the coherence of scenes, namely *action* and *attributes*. The depiction of action appears largely governed by a regional convention whereby over 94% of humans display a lack of movement. Certain attributes of the Laura figures also reflect stylistic conventions used across the region. For example, 71.5% of the heads on anthropomorphs are round in shape and plain, lacking anatomical features except for the eyes. The second most represented head shape category includes only 6.4% of the total sample. A similar pattern is again apparent in the depiction of men's penises with 81.2% belonging to the dominant category, and the second most represented category including only 5.2% of the total sample of penises.

These regional stylistic conventions do affect the validity of the scheme. In the Laura region, the proximity of human figures sharing identical features such as head and penis shape, lack of action and other stylistic conventions, may be read by Lenssen-Erz as an art scene with his scoring system when, instead, none of the figures may have been intended as part of a scene. The scheme may thus be too premature to deal accurately with problems introduced by regional artistic conventions. However, such problems are watered down because the author relies on a relatively broad range of features to establish the presence of a scene.

A second problem I perceive in Lenssen-Erz's method is that it has not been subjected to independent testing, contrary to his assertion. In fact the approach used to develop the evaluation method is circular and the validity of the scheme remains to be tested against clusters of figures known to have been depicted as scenes from artists themselves or knowledgeable informants. Australia represents a potential field to test the author's scoring system as there are a number of Aboriginal informants who have provided information on the art. I am not aware, however, of ethnographic accounts that relate to scenes although many relate to isolated figures.

In conclusion, the author has made a major methodological contribution in his attempt to deal with the definition of scenes. While I do not query most aspects of the author's methodology and the concepts relied upon, I do have reservations in accepting that a score of 19 points will work objectively to define scenes in any rock art region, due to the presence of artistic conventions.

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REPLY

By TILMAN LENSSEN-ERZ

I thank the commentators for their Comments and the valuable hints they gave regarding my concept of a scene. I particularly appreciate the Comments of Shirley Chesney and John Clegg - authors I see as being among the few rock art researchers who have examined this issue in considerable depth in their own research.

There are, however, some points which need clarification. It appears that I did not emphasise strongly enough the importance of the essential link between events/interaction and the concept of scene. This point was somehow missed or underestimated by all three commentators. I would like to stress that my understanding of a scene is not meant to be extended beyond the apparently common, though obscure, notion of a scene. This notion somehow relates a scene to some actual event, and thus depends on some minimum degree of action and interaction. This understanding is rather narrow and perhaps conservative, but it seems better compatible to other people's unexpressed ideas of scenes.

In her Comment, Shirley Chesney doubts whether my concept of scene would help to identify scenes within compositions of Palaeolithic art in Europe. Clearly, it does not help - because I do not think that there are scenes in this art. The information conveyed by Palaeolithic European art did not, or only rarely, require the reproduction of events since the presence of the (animal) symbols served the conveyance of the message (cf. also the figurines). Chesney is certainly right that analysis of composition would seem more promising for this body of art. But her complaint about the lack of analytical devices for composition in my paper is in itself a prototypal expression of the complex problem: each of the terms she uses, such as 'structuring principles', 'artistic mind and feelings' or 'historical context', could be the starting point of an extensive scientific and philosophical discussion. And yet, as I have quoted, the progress in research on composition would seem minimal considering the attitude reported of Plato some twenty-four centuries ago. The purpose of my approach is not to find the ultimate and universal key to analyse all rock art. The main scope of my analysis of scene is to resort to hard data in the paintings (i.e. data which do not change under different theoretical perspectives) and considering the soft data, viz. interpretation, only when every depiction has provided hard data input. In view of the features of a composition proposed by Chesney I do not see how hard data could be collected for composition analysis.

From the same misunderstanding of my approach springs Chesney's demand to perhaps test the application of scene analysis on other, even non-iconic and non-representational systems. The concept of scenes I propose is a heuristic device, i.e. a tool allowing the extraction of data from rock paintings long before the whole complex system is fully understood - a point which probably will never be reached. For the Brandberg rock art this tool is applied to a body of art which is dominated by human figures depicted in elementary activities. Other bodies of art, I believe, will need very different variables for the analysis of groups and small entities other than composition. Because of this restricted application of my devices I chose, and narrowly defined, the terms theme, focus and setting which, Chesney says, duplicate the 'familiar' terms subject/object, centre of interest and context. I am not aware of any rock art literature which would elaborate on any one of these terms (except perhaps on subject - a term which I also use), which thus not only lacks universality but even some small-scale adaptation.

I totally agree with Chesney that my disposing of terms such as 'hunting', 'dancing' etc. in the description of scenes is not objective. But my terminology may prevent such circular connotations as hunting scene = hunting magic, or dance scene = trance dance etc. My terminology is based on structural features instead of random ethnological associations.

Finally, Chesney wonders whether there is any point in establishing structure if meaning cannot be deduced. Structure in communication mirrors other structures in society. For example, in the Brandberg rock art it can be demonstrated that the division of labour in the society of the painters is reproduced in the paintings by a clear patterning of female and male activities (Lenssen-Erz 1992).

John Clegg in his Comment tests the numerical system for scene analysis. This is very helpful and provides the opportunity for further clarifications. First of all, I must say that this analysis was not designed to ultimately examine scenes in the light of Lewis-Williams' trance hypothesis. For me it is only a by-product to find out that only some 20% of scenes with humans in the Brandberg art display such a degree of interaction that they might compare to 80% of those scenes which are published as demonstrating shamanic interpretations.

In his testing of the coherence analysis, Clegg has formulated the second question wrongly: 'Does the method actually do what is claimed, namely recognise scenes?' Perhaps I was not clear enough in this point, but it is my view that my method does not recognise scenes, it creates them. The way I chose the features and the arbitrary borderline I drew at 19 points can only result in an artefact. Nonetheless, this artefact matches most of the time that which in common understanding would intuitively be termed a scene.

With Clegg's choice of scenes I do not see much difficulty even though he arrives at a sufficient number of points in only two instances. In my paper, however, he seems to have missed the part where I stated: 'in the absence of similar or equal features, interaction taking place in a depiction is a good indicator for the scenic connection of figures. Accordingly, a "classical" hunting scene can, as a unit, be detected as safely as a scene of equal humans striding along'. Hence most of the groups which Clegg chose are scenes because of the interaction which is depicted (riding of a horse or use of a boat are forms of interaction). A row of ships, on the other hand, would not seem to me to be a scene, since ships cannot act and therefore do not create an event (only what is done with the ships becomes an event).

The only real problem which I see lies in the first depiction which is from the Spanish Levant. There is, of course, no similarity between the man and the boar. But there is also no obvious interaction. The only link might be juxtaposition. The meaning of this scene (if it is one) seems to lie at a level which does not imply the direct interaction that is constituted by the very act of shooting. In my opinion the - admittedly nebulous - features of

composition carry more information in this picture than the event-associated features of a scene.

This standpoint also applies to most of the Australian rock art and therefore I agree with Clegg's critique that rows of similar motifs in Australian rock art might be detected as scenes. However, the very low differentiation of activities in most of the Australian figures does not enable one to define particular events. The vast number of events or 'scenes' have the same theme, focus and setting, thus making the notion of scene superfluous. Features of composition might be more promising in the analysis of Australian rock paintings (as, for example, in European Palaeolithic art). This point is also emphasised by Clegg, but I see the same problem in his opinion as in Chesney's Comment: the concept of composition proposed here does not lead any further than Plato's concept. I doubt that with a bulk of exclusively soft data a 'more objective' study of composition would be possible. I see Clegg caught in composition in the same trap as with scenes when he speaks of 'deliberate' groupings. How can one know what is deliberate when the painter cannot be questioned? And the problem still remains that there might be an idea about what should be analysed, but there is no indication about how this should be done - a methodology is lacking.

Clegg also touches on the issue of perspective in the paintings. Clearly, I do not have the slightest difficulty in perceiving a good number of paintings as if conveying spatial depth. However, this concept still seems tentative to me and I have no idea about its possible significance, hence I do not see how to incorporate it in the analysis of rock paintings. What we perceive as spatial depth might equally well be meant to convey, for example, temporal depth.

In view of the Comment of B. Huchet I can only repeat what was said before in condensed form:

- Scenes are representations of events, therefore they are most likely to be found in art bodies which show a high differentiation in human activity (e.g. paintings of southern Africa, Sahara, Spanish Levant).
- The calculation of the coherence-rate is neither objective nor universal. It is a heuristic device shaped especially for the rock art of Namibia. What might find a broader application is the idea to begin analysis with features which are basic to human perception, viz. the physical morphology of a phenomenon.
- Interaction between subjects in a depiction is a sufficient condition to constitute a scene.
- If interaction is not very elaborate, equality and similarity of morphological features can evoke a degree of coherence which helps to perceive various figures as one scene.

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Résumé. *Plusieurs générations de savants sur l'art rupestre ont écrit à propos de 'scènes' et de 'compositions' sans définition convenable et généralement acceptée de ce qu'elles sont. Cet article essaye de déterminer les différences entre scènes et compositions et de définir le mot 'scène' de façon à l'introduire dans l'analyse standardisée de l'art rupestre. On dévelope un concept de* cohérence *comme constituant des scènes, et qui peut être déterminé à l'aide d'un système numérique d'évaluation. Finalement, on propose un modèle structural pour l'analyse systématique d'informations comprises dans les scènes, utilisant les catégories* thème, accent *et* milieu.

Zusammenfassung. *Generationen von Felsbildforschern haben mit den Begriffen 'Szene' und 'Komposition' gearbeitet, ohne eine brauchbare, gemeinhin akzeptierte Definition davon zu haben. Dieser Artikel will die Unterschiede zwischen Szenen und Kompositionen herausarbeiten und 'Szene' so definieren, daß diese in die Standardanalyse von Felskunst aufgenommen werden kann. Dazu wird ein Konzept von* Kohärenz *als Szenenkonstituente entwickelt, die in einem Punktesystem ermittelt wird. Schließlich wird ein Strukturmodell zur systematischen Informationsanalyse in Szenen vorgeschlagen, das mit den Kategorien* Thema, Focus *und* Setting *arbeitet.*

Resumen. *Generaciones de investigadores de arte rupestre han estado escribiendo acerca de 'escenas' y 'composiciones' sin una conveniente, extensivamente reconocida definición de lo que éstos son. Este artículo trata de determinar las diferencias entre escenas y composiciones y de definir una 'escena' a objeto de introducirlo en un análisis uniforme del arte rupestre. Un concepto de* coherencia *es desarrollado como un constituyente de las escenas que pueden ser determinadas por medio de un sistema numérico de clasificación. Finalmente un modelo estructural para el análisis sistemático de información sobre escenas es propuesto, usando las categorías de* tema, foco *y* montaje.

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KEYWORDS: Varnish - Cation-ratio - Calibration - Mannahill - South Australia

INVESTIGATING THE CATION-RATIO CALIBRATION CURVE: EVIDENCE FROM SOUTH AUSTRALIA

Alan Watchman

Abstract. This paper presents information on the construction of the cation-ratio calibration curve for dating varnished petroglyphs near Mannahill, South Australia. Organic matter was extracted from rock varnishes, identified as cellular fibrous plant material and radiocarbon dated. These results and their associated varnish cation ratios were plotted and compared with an existing calibration curve. Discrepancies between the two curves are discussed in terms of cation-ratio dating assumptions and possible sampling and handling errors.

Introduction

The method of cation-ratio dating rock varnishes was derived empirically in the United States of America for varnishes on potassium-argon dated basalts, and on approximately dated rock pavements on high shorelines (Dorn 1983). Those surfaces were considered ideal for developing the method because complex weathering processes did not complicate the simple aeolian fall-out model, which was proposed to explain rock varnish formation.

The fundamental premise of the cation-ratio dating method is the semi-logarithmic relationship between cation ratios in rock varnishes and their ages (Dorn 1983, 1989). Although an attempt was made to indicate cation-leaching sites in varnishes (Dorn and Krinsley 1991), the hypotheses put forward to explain the experimentally derived decreasing trend of (Ca + K) / Ti (the cation ratio) with increasing varnish age are not adequately tested.

Usually, a calibration curve is constructed for rock varnishes in an area by using the chronometric ages of dated volcanics and the cation-ratios for varnishes developed on them. Where potassium-argon and other dates are unavailable an alternative method must be used to determine the start of varnish development. Radiocarbon analyses of organic matter encapsulated in the basal parts of varnishes provide a way of estimating the onset of varnish formation (Dorn et al. 1989).

Previous investigations and assumptions

Near Mannahill, in South Australia (Figure 1), a cation-ratio calibration curve was established by Nobbs and Dorn (1988) to date varnished petroglyphs. They determined the radiocarbon ages of organic matter in the lowest parts of three varnishes from rock exposures at the base of Pepuarta Bluff. Calcium, potassium and titanium were measured for each of these varnishes by proton-induced x-ray emission and their respective cation-ratios were calculated. The cation-ratio of dust from natural rock crevices was used to estimate the 'initial ratio' for the onset of varnish formation.

The basic assumptions necessary to establish a cation-ratio calibration curve are:

(1) that varnish continually forms by accretion of dust particles and there is no physical, chemical or biological re-working of the components;
(2) varnishes at the calibration site are developed in the same way as varnishes at sites selected for cation-ratio dating;
(3) the less than 2 micron fraction of dust in rock crevices provides a measure of the regional 'initial ratio' for the onset of varnish formation;
(4) rock varnish probably starts to form about 100 years after a rock surface is exposed; and
(5) organic matter in varnishes is contemporaneous with the surrounding inorganic components.

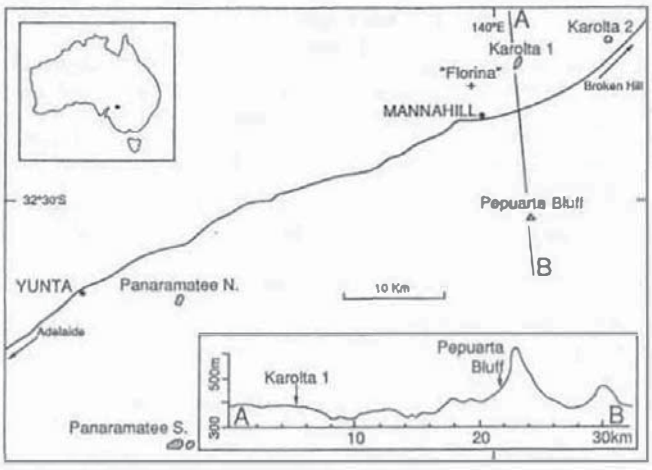

Figure 1. Map of the Mannahill area of South Australia showing the location of the calibration site at Pepuarta Bluff.

Reasons for the study and research aims

The assumptions of the cation-ratio dating method are gradually being challenged as research workers progressively find unacceptable the theoretical, statistical (Lanteigne 1989: 145-9, 1991) and practical foundations on which the method is based. For example, the concern about the extent of micro-organic changes to varnish cation-ratios (Watchman 1989) has not been dispelled. The origins and histories of varnish organic matter (Reneau and Harrington 1988) are not precisely known despite recent opportunities (Dorn 1991) to identify positively the carbonaceous substances dated by accelerator mass spectrometry (AMS). Uncertainty still exists about the contemporaneity of carbonaceous substances and inorganic components in varnishes. Recent data also suggests that the 'initial ratio' cannot be assumed to be constant over time because Ca, K and Ti are related to the major element composition of varnish (Reneau and Raymond 1991; Watchman in press).

The aims of the research reported here were to examine the assumptions of the calibration method, analyse and date rock varnishes, plot the results and compare the new data with a previous calibration curve. In practical terms, the goals were to extract, identify and date organic matter from the basal parts of rock varnishes at Pepuarta Bluff, and to measure cation ratios in the same varnishes.

Sampling and calibration methods

Rock exposures at the base of Pepuarta Bluff were sampled in order to replicate the construction of a previous calibration curve. It was acknowledged during sampling that this new data may only add to the analytical precision of the previous results, and not in itself provide an adequate number of samples to satisfy the statistical requirements for plotting a reliable curve (Lanteigne 1989: 148).

Large slabs of varnished rock were taken from four unengraved rock platforms at the base of Pepuarta Bluff, from the same localities (but not the exact varnish) chosen by Nobbs and Dorn (1988: 133, Plate 3). Petrological observations were made to ensure that the varnishes selected for analysis showed evidence of continual varnish accretion and were not affected by micro-colonial fungi and lichen.

Varnished surfaces were washed, lightly brushed and scraped in the laboratory using metal probes until only a thin veneer of varnish remained on the rock (following procedures described by Nobbs and Dorn 1988: 111-5). These thin residual coatings, representing the earliest varnish on the rock surface, were then physically removed. The powders obtained were immersed in warm 10% hydrochloric acid for an hour (to remove possible carbonate contamination) and then dissolved in hydrofluoric acid overnight. The organic residues were washed with de-ionised water, filtered and dried. Tiny fragments of organic matter were hand-picked under a binocular microscope. Only two of the four varnished rocks from the calibration site contained enough organic matter for further processing and dating - highlighting the difficulty of finding organic matter in rock varnishes. These organic extracts were oxidised to carbon dioxide in evacuated, sealed glass tubes which were heated in a furnace to 800°C. Graphite AMS targets were prepared by reducing the gas with hydrogen over heated powdered iron (Slota et al. 1987).

Inductively coupled plasma (ICP) was used to measure the amounts of Ca, K and Ti in dust and varnish samples. In the ICP method, a weighed quantity of varnish is digested in acidic solutions and then aspirated in a high temperature plasma. The plasma ionises the elements in the liquid and the abundances of Ca, K and Ti are measured simultaneously. Ratios of (Ca + K) / Ti were computed for each sample from the average of three ICP analyses.

To estimate the 'initial ratio', dust was scraped from rock crevices at Pepuarta Bluff and Karolta, sieved, and the less than 2 μm fraction analysed for Ca, K and Ti by ICP (Watchman 1991: 105). Sampling areas were chosen to minimise influences from lichen, animals and plants. Results for the two samples were averaged to estimate the 'initial ratio'.

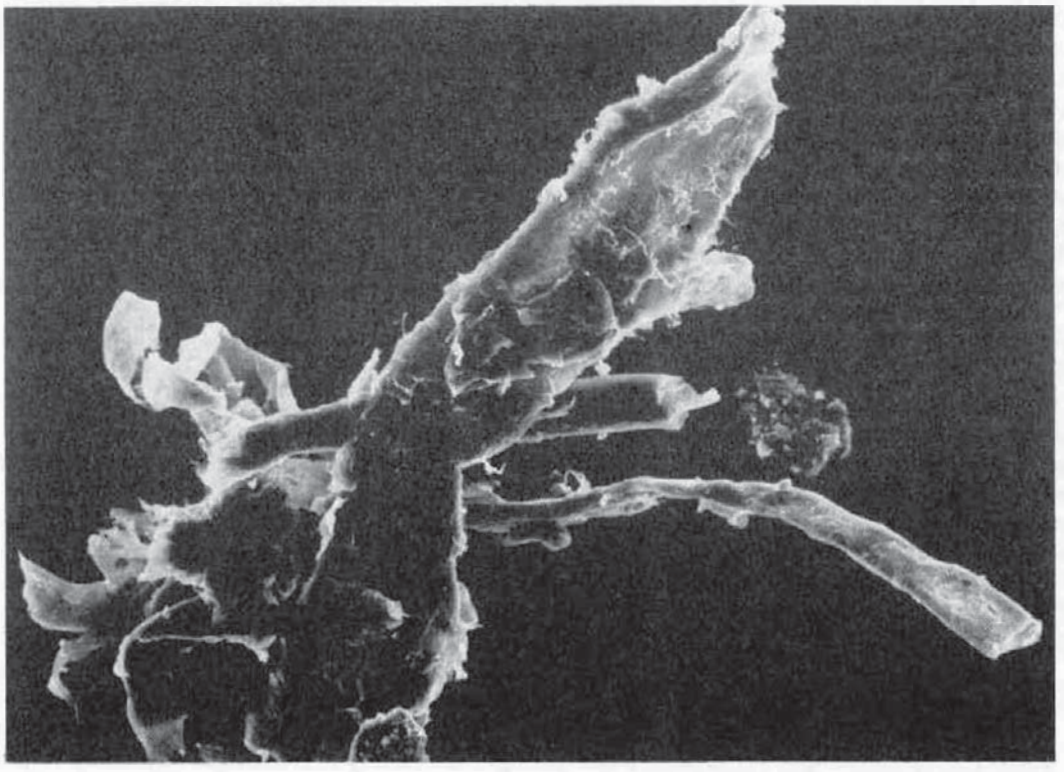

Figure 2. Plant fibres extracted from Karolta rock varnish. Similar cellular fibrous material was found in rock varnish at Pepuarta Bluff but because it was needed for AMS dating it was not photographed to eliminate possible contamination.

Results

Organic matter in Mannahill varnishes is cellular, fibrous plant material (Figure 2). Plant organic remnants were found by Dorn and DeNiro (1985) in rock varnishes in the United States. No pieces of pollen were found in the Mannahill varnishes, contrary to previous reports (Nobbs and Dorn 1989: 67; Dorn 1991: 312). Two AMS dates were obtained from the cellulosic plant material: one gave a date of 3415 ± 70 (1 sigma) years BP (AA7721) and the other 1375 ± 60 years BP (AA7722). The cation ratios for these varnishes are 4.95 ± 0.63 (1 sigma) and 5.05 ± 0.47 respectively. The 'initial ratio' obtained from two regional dust samples is 4.44 ± 0.75 (Watchman 1991: 71).

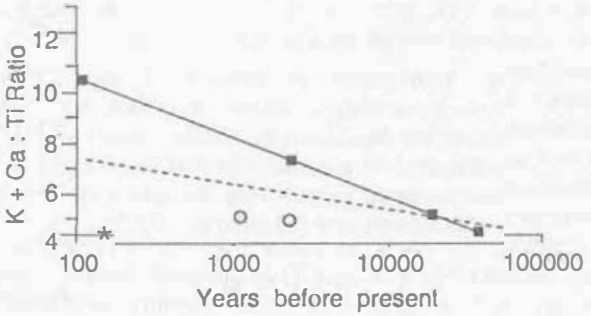

Figure 3. *Previous (solid line - from Nobbs and Dorn 1988: 115) and revised (dotted line) calibration curves for rock varnishes from Pepuarta Bluff. The 'initial ratio' (*) for the Mannahill region is not plotted at 100 years because varnish has not started to form in historical engravings of that age. The cation ratio (7.43 ± 0.18) on the previous curve may be too high because of the possible influences of lichens which are abundant on varnished rocks on the alluvial fan (Dorn and Dragovich 1990: 28).*

Discussion

A revised calibration curve can be constructed but only by using the previous data and the new results (Figure 3). Plotting only the data in this study produces an ineffective calibration graph because the line of best fit runs parallel to the X-axis.

In this study, the young ages for cellular fibrous material in varnishes seem credible because field observations support results indicating a recent exposure for the varnished tillites at Pepuarta Bluff. However, the young ages are contrary to the previous dates of 21 550 ± 240 years BP (cation-ratio of 4.93 ± 0.11) and 34 590 ± 560 years BP (cation-ratio of 4.51 ± 0.12; Nobbs and Dorn 1988: 111) for unidentified organic matter in varnishes. The Pleistocene dates are older than expected for varnishes at Pepuarta Bluff because the scree-covered, exfoliating pavements are typical of those found at the rapidly eroding heads of pediment and lower bluff-slopes in semi-arid environments (Langford-Smith and Dury 1964). Young ages for the onset of varnish are more likely because of the rapid erosion, and as a date of 2120 ± 150 years BP was previously determined for varnish on the nearby alluvial fan (Nobbs and Dorn 1988: 111). This interpretation is contrary to that proposed by Dorn and Dragovich (1990: 28).

The wide differences between the two sets of ratios, dates and graphs raise questions about sampling methods, contamination and the validity of the assumptions. Eight possible explanations are put forward to account for the significant discrepancies.

First, different varnished exposures could have been sampled at the base of the bluff. The varnishes used by Nobbs and Dorn (1988) were not re-examined in this study, but varnished rock surfaces were re-sampled at the sites clearly designated by Nobbs and Dorn (1988: 133, Plate 3). If different sites and varnishes of various ages were sampled and analysed in the same way, and the cation-ratio assumptions are true, then all the varnishes should plot on a single calibration curve. Therefore, the differences between the curves could arise either from sampling and analytical errors or from incorrect assumptions about varnish formation.

Second, varnishes could have been collected from the same exposures but the cation-ratios were measured, and the organic particles were extracted, from non-representative parts of inhomogeneous varnish (Mook 1984). This is possible where varnish formation is highly variable across surfaces. However, the cation ratios in each study are very similar, ranging from 4.51 ± 0.12 to 5.05 ± 0.47, suggesting that varnishes are not significantly different in composition. The discrepancy therefore seems to be related to the ages of the organic matter.

Third, varnishes could have been scraped and analysed differently. This is likely to lead to significantly different cation ratios (Reneau and Raymond 1991: 940), but the similar values for Pepuarta Bluff varnishes suggest that the underlying rock is not a contaminant.

Fourth, varnishes could be much more time-transgressive than predicted from petrographic observations. Lateral compositional variations may not be obvious across large areas, especially when the entire surface is not made into a continuous thin section. Textural evidence from cross-sections may indicate uniform growth of varnish over the dimensions of the section, but varnish may lack textural and chemical continuity across larger distances. For example, varnish can easily develop on part of a surface before it forms over an entire pavement (Dorn and Oberlander 1982). Organic substances of different ages may exist on the same varnished surface and this is highly possible at Pepuarta Bluff because of the non-uniform, rapid erosion of the sheet-jointed tillite.

Fifth, if varnishes started to form along sub-surface fractures and joints before they were exposed, the organic matter in the basal varnishes would be older than the exposure ages. Such a situation could explain the Pleistocene dates in the previous study, but recognising 'crack' varnishes is almost impossible because they are chemically and visually similar to other varnishes (Dorn and Dragovich 1990: 22-3).

Sixth, slightly different pre-treatment and selection processes used to extract organic matter from varnishes could account for the observed variation in ages. In the work reported by Nobbs and Dorn (1988: 114), all treatments were carried out in centrifuge tubes and the entire residues were converted into AMS targets. It is possible that the residues not only contain cellular materials but also organic chemicals tightly bonded to un-reactive iron and manganese oxides, pollen, insoluble humic acids, algal and lichen metabolic products, other refractory organic substances and trace amounts of magnesite. The approach in this study was to hand-pick the cellular fibrous materials from the residues. In this case, the AMS results are the ages of only the cellular fibres. Therefore knowing the identity, origin and history of substances containing carbon

isotopes is essential so that the AMS results can be interpreted correctly.

Seventh, the organic matter could have been contaminated with either modern or ancient carbonaceous substances during scraping, transporting or handling in the laboratory. Dating small samples of organic matter by AMS can give significantly false dates if small amounts of old carbon are accidentally mixed with the sample (Chappell 1982: 325). A misleading old date can be obtained where organic substances are re-worked into varnishes from pre-existing rock coatings, old soil, or from ancient claypans (Reneau and Harrington 1988; Reneau et al. 1991). Modern contamination from plant rootlets or during laboratory handling and processing will lead to a false, young age. Cellular fibrous materials extracted from varnishes in this study could be fragments from grass and plant rootlets.

Finally, the cation-ratio dating assumptions may not be true for varnishes at Pepuarta Bluff. Cation-ratios and ages for varnish organic matter may not plot on a single line because no positive correlation exists between these parameters.

The discrepancies between the two curves are compounded by the considerable differences between measurements of the 'initial ratio'. In this study, dust samples from Karolta and Pepuarta Bluff gave an average cation ratio of 4.44 ± 0.75. This value compares with 10.54 ± 0.77 determined by Nobbs and Dorn (1988: 111) for regional dust. One explanation for the difference is that the lower value may be more representative of stable surficial deposits from which varnishes start to form. This accumulated dust contains weathered minerals uncontaminated by soil particles (cation-ratio of 20.73, Watchman 1991: 105), whereas the higher value may be derived from unsorted, transient dust and soil.

Conclusion

Recent evidence from Hawai'i (Dorn et al. 1992) shows that the cation-ratio ages of varnishes on relatively unweathered basalts are consistent with other dating methods. However, at Pepuarta Bluff where the tillites have long, complex weathering histories, constructing a cation-ratio calibration curve is not simple. This research produced sharply contrasting results to a previous study by sampling, treating and analysing varnishes from the same rock exposures. Discrepancies between the two sets of results may be explained by the dating of different organic fractions in varnishes and by analysing components from inhomogeneous varnishes and compositionally distinct dust types.

Varnish organic matter was found to consist of cellular fibrous material from unidentified plants. If the fibres are rootlets then their ages are probably not the age of varnish formation. If they were from nearby plants and were incorporated as airborne particles into varnish then they provide reliable dates for the onset of varnish formation. Identifying carbon sources and determining the contemporaneity of the carbonaceous substances with regard to the encapsulating varnish components are major unresolved problems. I suggested to Dr Dorn in Canberra in June 1990 that selective sampling of sub-varnish organic matter by laser could be used to date the onset of varnish formation (Dorn 1991: 312; Watchman and Lessard 1992). However, burning the carbonaceous substances in situ without identifying their chemistry and source may lead to misinterpretation of the dating results.

Consistency between the results for the new 'initial ratio', varnish cation ratios, young dates for plant material and field observations at the calibration site suggest that a usable calibration curve cannot be constructed from the available data for varnishes at Pepuarta Bluff. The discrepancies between the two curves and the additional problems discovered during this study accentuate the complex nature of cation-ratio dating, and do little to ease the uncertainties about the construction of a reliable calibration curve. Resolution of these outstanding problems by measuring many more data points is essential before an acceptable calibration curve can be confidently used to date petroglyphs in the Mannahill region.

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Résumé. *Cet article présente des informations sur l'élaboration de la courbe de calibration du ratio-cation pour dater des gravures rupestre vernies près de Mannahill, dans l'Australie Méridionale. Une matière organique a été extraite de vernis de roches, identifiée comme matière de plante cellulaire fibreuse et datée au radiocarbone. Ces résultats et leurs ratios de cation du vernis ont été relevés et comparés avec une courbe de calibration actuelle. On discute les divergences entre les deux courbes en relation aux suppositions liées à la datation au ratio-cation et aux erreurs possibles de prélèvement et de manipulation.*

Zusammenfassung. *In dieser Arbeit wird Information vorgelegt über den Aufbau der Kationen-Verhältnis Kalibrierkurven für die Datierung von lacküberzogenen Petroglyphen bei Mannahill, Süd-Australien. Organische Stoffe wurden den Felslacken entzogen, als Zellen von faserigen Pflanzenmaterialien identifiziert, und Radiokarbon-datiert. Diese Ergebnisse und ihre jeweiligen Lack Kationen-Verhältnisse wurden aufgezeichnet und mit früheren Kalibrierkurven verglichen. Widersprüche zwischen den zwei Kurven werden besprochen betreffs Annahmen von Kationen-Verhältnis Datierung, möglicher Fehlerquellen in der Probenentnahme, und Radiokarbon Probleme.*

Resumen. *Este artículo presenta información sobre la construcción de la curva de calibración de la proporción de cationes para datar petroglifos barnizados cerca de Mannahill en Sud Australia. Material orgánico fue extractado de los barnices de la roca, identificado como material celular de plantas fibrosas y fechado por radio-carbono. Estos resultados y sus proporciones asociados de cationes de barniz fueron delineados y comparados con una curva de calibración existente. Discrepancias entre las dos curvas son discutidas en términos de suposiciones de datación de proporción de cationes y en los posibles errores de muestreo y de manipulación.*

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KEYWORDS: Upper Palaeolithic - Anthropomorphs - Sexual dichotomy

LA DICHOTOMIE SOCIALE SEXUELLE DANS LES FIGURATIONS HUMAINES MAGDALENIENNES

Une conception naturaliste à propos du modèle français

Jean-Pierre Duhard

Abstract. The study of human figures suggests that a division of labour, in which tasks were shared according to sex, existed during the Upper Palaeolithic. Physiologically, both in body and character, men and women have different aptitudes or functions. Due to pregnancy and the necessity to feed and carry children, women are less autonomous than men, and feel neither strong nor the need to measure themselves against the living world. Using examples, the writer shows that this sexual difference is reflected in the art: women are depicted in 'peaceful' scenes and men frequently in scenes of 'conflict.

Introduction

Nous ne sommes pas les premiers à nous intéresser aux figures humaines paléolithiques; d'éminents préhistoriens l'ont fait avant nous avec beaucoup de talent, parmi lesquels: L. Capitan et H. Breuil (1924), E. Saccasyn della Santa (1947), A. Leroi-Gourhan (1965), P. J. Ucko et A. Rosenfeld (1972), L. Pales (1976), H. Delporte (1979), J. Clottes (1989) etc. ...

De tous ces auteurs, un seul était anatomiste et médecin, le Dr Léon Pales, et pouvait être crédité d'une certaine compétence à reconnaître les humains; dans son ouvrage sur les Humains de La Marche (1976), il a exposé avec pertinence ses critères d'identification d'espèce et de genre. Outre cette première observation, une autre que l'on peut faire à propos des travaux de beaucoup est que leur étude repose généralement sur des relevés graphiques ou photographiques copiés et recopiés et plus ou moins fidèles, et non sur les oeuvres elles-mêmes, ce qui aurait parfois permis d'y voir des détails venant en modifier sensiblement le sens (voir plus loin le bâton de la Vache).

Le souci de rigueur scientifique, nous a imposé des frontières géographiques dans notre thèse (Duhard 1989a) et il en sera de même dans cet article; nous n'y parlerons que d'oeuvres examinées personnellement, les figures magdaléniennes françaises, qui se trouvent à la fois les plus nombreuses, provenir au grand Sud-Ouest et appartenir à trois musées: Antiquités Nationales, Les Eyzies et Périgueux.

Disposant d'un fond iconographique visuel assez complet de cet art figuratif humaniste, et ayant par ailleurs une certaine compétence en anatomie et physiologie humaine du fait de notre formation médicale et de notre spécialité, il ne nous a pas semblé trop téméraire ni présomptueux de mener une réflexion de synthèse sur la répartition sociale du travail au Paléolithique supérieur, telle qu'elle apparaît dans l'Art de cette époque.

En lisant la littérature, il semble que la tendance actuelle soit de ne plus considérer l'oeuvre dans ce qu'elle représente (= une image copiée sur l'environnement naturel), mais d'essayer d'y chercher un sens caché, de préférence obscur, et d'une complexité supposée telle, qu'il est de toutes façons illusoire d'essayer d'y comprendre quelque chose. Par formation et par pratique, nous avons un esprit expérimental, donc proche du réel, et il nous semble que la première nécessité devant une oeuvre figurative est de commencer par l'étudier du point de vue du réalisme avant, notamment si elle s'en écarte, d'envisager d'autres explications. Notre approche sera donc réaliste et naturaliste. Déterminer ce qui est conforme à la réalité n'est d'ailleurs qu'un premier pas, ne préjugeant pas des interprétations que l'on peut donner par la suite. Appliqué au temps préhistoriques, et particulièrement au Paléolithique supérieur, comment peut être envisagée cette réalité?

Les humains d'alors vivaient au milieu de la Nature, et en tiraient toute leur subsistance, ce qui n'inclut pas seulement l'air, la nourriture et l'eau, destinés à alimenter leur corps physique, mais aussi tout ce qui pouvait nourrir leur psychisme. Pour subvenir à leurs besoins, il fallait qu'ils possèdent une grande connaissance de leur milieu, à la fois géographique (pour s'y déplacer), minéralogique (pour extraire silex et pigments), climatique (pour s'adapter aux saisons), florale (pour distinguer les plantes comestibles des autres) et faunique (la chasse impliquant un savoir complet sur les espèces animales et leurs moeurs). Entièrement tributaires de l'environnement végétal et animal, les humains entretenaient avec lui des rapports non seulement de dépendance, mais de familiarité et l'on ne sera pas étonné d'en trouver des témoignages dans leur art. Cette grande familiarité avec l'environnement animalier notamment (ce que Delporte n'hésite pas à appeler une 'convivialité'), se manifeste dans le choix des thèmes figuratifs, les animaux y occupant la première place, loin devant les humains, les représentations végétales étant beaucoup plus rares (Delporte 1990). Avant d'exposer nos constatations, nous ferons un indispensable rappel anatomique et physiologique et parlerons brièvement des données ethnographiques.

Les données de l'anatomo-physiologie humaine

La différenciation sexuelle

Ces humains, dont nous descendons directement, étaient comme nous soumis à des impératifs physiologiques, au nombre desquels (outre les besoins fondamentaux de respirer, boire, manger et dormir), celui de se reproduire. La fonction de reproduction ne peut s'exercer qu'à la faveur d'une différenciation sexuelle extrêmement poussée, inscrite dans le patrimoine chromosomique. Celle-ci a doté l'homme et la femme de glandes génitales très différentes, à fonctionnement permanent et continu chez le premier, cyclique et temporaire chez la seconde et sécrétant, chez l'un de la testostérone, chez l'autre des oestrogènes.

Le corps humain manifeste dans sa conformation anatomique cette différence biologique fondamentale. L'équipement reproductif de la femme est plus complexe que celui de l'homme: pour assurer l'élevage utérin, la naissance et l'élevage mammaire, elle présente un abdomen plus haut, un bassin plus large et une paire de mamelles fonctionnelles. Pour assurer cette fonction, elle a bien davantage besoin d'une grande réserve adipeuse que d'une puissante musculature, et elle stocke sa graisse là où elle gêne le moins, dans la région péri-pelvienne, où son organisme pourra puiser en cas de jeûne et d'allaitement (Fig. 1).

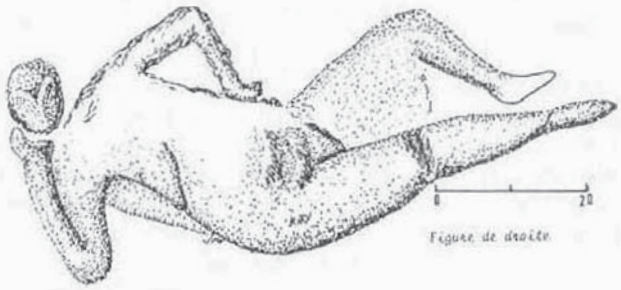


***Figure 1.** La femme de droite de la grotte de la Magdeleine (dessin Duhard).*

Non seulement la femme est dotée d'un ensemble musculaire beaucoup moins développé que celui de l'homme, mais il est remarquable de voir qu'un muscle aussi indispensable que le myomètre (ou tissu musculaire utérin, qui permet la dilatation du col et l'expulsion du foetus) ne se développe que pendant la grossesse, où il passe d'un poids de 50/70 g à près de 1 kg, avant de revenir, une fois joué son rôle, pratiquement à son volume initial. Il n'est pas moins remarquable que l'appareil reproductif de la femme subissent une inexorable et irréversible involution au moment de la ménopause, alors que rien de tel n'existe chez son compagnon. Il existe donc chez les humains une hyperspécialisation organique et fonctionnelle, que certains pourraient être tentés d'oublier devant l'apparente identité de la conformation physique, à moins que ce ne soit pour des raisons dogmatiques.

Cette différenciation est d'origine hormonale, sous la dépendance de la testostérone chez l'homme et des oestrogènes chez la femme. Elle détermine chez l'un et l'autre une constitution particulière, avec des aspects spécifiques du corps qui portent, dans les deux sexes, le nom de caractères sexuels. Les primaires sont représentés par les glandes génitales, les secondaires par les autres organes sexuels et différents aspects morphologiques du squelette et des tissus mous. Cette terminologie, qui est celle des anatomo-physiologistes, est la seule acceptable; toute autre distinction (comme celles de Saccasyn 1947, ou Ucko et Rosenfeld 1972) doit être rejetée (Duhard 1989a).

Parmi les principaux caractères sexuels de différenciation entre l'homme et la femme, nous retiendrons:

a) Une musculature plus développée chez le premier, conséquence de l'effet anabolisant de la testostérone et donnant à l'homme une plus grande force musculaire.
b) Une charpente osseuse plus solide chez l'homme, avec des os plus épais, une ceinture scapulaire plus développée, un thorax plus large, plus haut, plus volumineux, un pelvis plus étroit, une stature plus grande. Cela justifie de voir chez les humains à thorax large et pelvis étroit des sujets masculins (Fig. 2): c'est que nous appelons des '*silhouettes thoraciques*' (Duhard 1990). Au plan sportif, la comparaison des records masculins et féminins démontrerait la supériorité musculaire masculine.

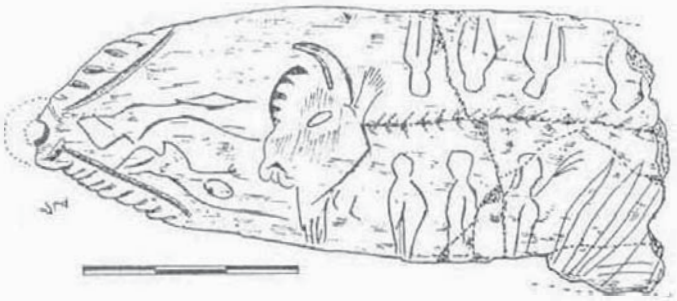


***Figure 2.** Les hommes au bison démembré de Raymonden (dessin Duhard).*

c) Une adiposité plus grande chez la femme, où la masse grasse est le double de celle de l'homme et représente le 1/3 du poids de son corps. Cette graisse est différemment répartie dans les deux sexes: dans la moitié inférieure du corps chez la femme; dans la moitié supérieure chez l'homme (Vague 1987). Cela justifie de voir chez les humains à pelvis large et fesses saillantes des sujets féminins ('*silhouettes pelviennes ou fessières*').

Chez le nouveau-né et l'enfant, hors les organes génitaux externes, rien ne permet d'identifier l'un ou l'autre sexe. On pourrait dire de l'enfant qu'il est morphologiquement indifférencié: il faut attendre la puberté pour qu'il le devienne, sous l'effet de la sécrétion d'hormones masculines ou féminines par les glandes génitales. Et l'on pourrait se demander si bon nombre d'indéterminés sexuels ne sont pas des enfants.

Exceptés ceux qui méconnaîtraient les lois de la biologie humaine, personne ne n'étonnera qu'à ces différences anatomiques et physiologiques viennent s'en ajouter d'autres, qui sont psychologiques et concernent le fonctionnement cognitif et affectif du cerveau.

Les conséquences de l'imprégnation hormonale ne se manifestent pas seulement sur la morphologie, mais encore sur le cerveau, induisant un comportement spécifique au sexe, se traduisant par des caractères sexuels dits tertiaires. Ce sont les plus difficiles à définir, car ils dépendent entièrement du psychisme lequel, s'il est grandement conditionné par le status hormonal, peut l'être aussi par le modèle culturel ou éducatif.

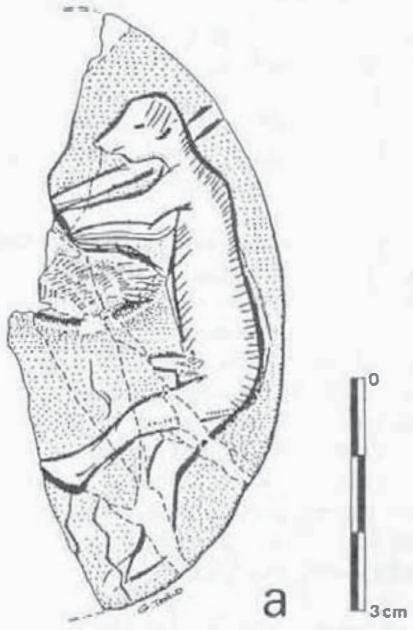


Figure 3. L'homme à l'ours du Mas d'Azil: a) recto; b) reconstitution imaginaire (dessins G. Tosello, coll. Duhard).

a) Le caractère viril (du latin 'vir', homme) d'un humain masculin se manifeste par son courage, son énergie, sa fermeté. L'homme est combatif, entreprenant, voire agressif; il a le goût de la conquête, comme celui de la lutte et de la compétition; il est actif, agressif et dominateur dans son comportement sexuel. Sa conformation physique, avec une charpente osseuse solide, un appareil musculaire bien développé et une masse grasse discrète lui assure les moyens d'exprimer ces tendances particulières. L'étude des humains paléolithiques démontrerait que seuls les hommes avérés (avec pénis) sont porteurs d'armes (Fig. 3) ou affrontés à des animaux (Duhard 1990, 1991).
b) Le caractère féminin est, schématiquement, à l'opposé, non que la femme manque d'énergie, de courage ou de détermination, mais sa constitution ne lui permet pas les mêmes ambitions et sa nature ne lui crée pas les mêmes besoins, outre qu'elle entraîne d'autres obligations, dont l'élevage utérin et mammaire de l'enfant. Aucune femme avérée (seins, vulve) ne porte d'armes ou n'est affrontée à des animaux. Rice et Paterson (1988) ont fait la même constatation et parlé de rôle actif des hommes et inactif des femmes.

Les données cliniques et expérimentales

Chez la femme, les tumeurs endocrines androgènes (comme le syndrôme surrénalo-génital) déterminent une virilisation avec: hypertrichose, raucité de la voix, hypertrophie du clitoris, augmentation de la musculature, dépôts supérieurs des graisses, atrophie mammaire, agressivité, comportement dominateur (Vague 1961); les traitements par les hormones mâles entraînent naturellement les mêmes effets. A côté de ces cas extrêmes, en existent d'autres, physiologiques, comme en reproduit la ménopause où l'on observe un virilisme à minima dû au retrait ovarien et à la disparition de l'action antagoniste des oestrogènes sur les androgènes. Les 'viragos' ne sont que des femmes ménopausées qui ont gagné en assurance ce qu'elles ont perdu en féminité.

Chez l'homme l'absence de testostérone a des effets différents selon l'âge de survenue: chez le foetus, elle est responsable d'un phénotype et d'un comportement ultérieur féminins; chez l'enfant pré-pubertaire, elle entraîne un morphotype ennuchoïde avec pilosité rare, petit pénis, adiposité sous-cutanée, faible développement musculaire, troubles que corrigera l'androgénothérapie. L'administration d'oestrogènes chez l'adulte entraîne une gynécomastie et une diminution de la libido.

On peut élever les garçons comme des filles, et les filles comme des garçons; on peut inculquer aux premiers la douceur, la tendresse, et aux secondes la combativité: tout est possible et envisageable, mais c'est contraire aux lois de physiologie et de la nature humaine.

L'exemple des chasseurs-cueilleurs actuels

'Dans tous les groupes primitifs connus vivants', écrivait Leroi-Gourhan en 1964, '*la chasse revient normalement à l'homme, la cueillette à la femme*'. Et, répondant par avance aux thèses des sociologues ou ethnologues, il ajoutait: 'Cette séparation peut être expliquée par un contexte religieux ou social mais son caractère organique est démontré par le fait que, suivant les peuples, la frontière des domaines masculin et féminin est flottante'.

Dans un 'Essai sur les fondements de la division sexuelle du travail chez les chasseurs-cueilleurs', et s'appuyant sur les constatations faites chez les contemporains, A. Testard (1986), sans remettre en cause le schéma de l'homme chasseur et de la femme cueilleuse, et sans nier tout à fait l'existence de raisons physiologiques, s'efforce de démontrer que l'origine de cette division des tâches est avant tout *idéologique* et culturelle.

Selon lui, en raison d'un tabou trouvant son fondement dans leur saignement menstruel, les femmes sont exclues de l'usage des armes tranchantes ou hémogènes, de la chasse sanglante et de l'équarrissage des animaux. S'il arrive qu'elles participent à leur chasse, pour des raisons économiques, c'est toujours dans le respect de ces interdits. Aucun sexisme ne présiderait à cette exclusion par le sang, et la femme ne serait pas pour autant considérée comme un être inférieur.

En était-il ainsi chez les préhistoriques? Si nous croyons qu'existait une division sexuelle du travail, nous sommes enclins, par contre, à douter qu'elle fût idéologique:

a) La thèse soutenue par Testard n'est pas convaincante car les exemples choisis sont très éloignés les uns des autres et parfois contradictoires.
b) La comparaison ethnographique, dont Breuil fut le promoteur a encore ses adeptes, et certains auteurs font grand cas de l'exemple des bushmen ou des aborigènes australiens. Leur étude a l'avantage d'offrir un modèle qu'evidemment nous ne pouvons trouver chez les paléolithiques disparus. Mais ce serait aller loin que de

prétendre que les populations primitives actuelles sont les conservatoires des cultures magdaléniennes, dont plus de 10 000 ans les séparent: comment concevoir que la culture préhistorique ait pu être conservée sans altérations après tant de millénaires? Nous n'en sommes pas persuadés. Ce dont nous sommes convaincus, c'est qu'existe un génie évolutif propre à l'espèce humaine ayant permis, au cours des millénaires, grâce à une sommation d'acquis technologiques, de constamment perfectionner les outils et le savoir et de sans cesse repousser les limites du connu. Nous pensons que les humains modernes sont les véritables descendants des humains préhistoriques et non les peuples primitifs actuels. Le recours ethnologique a, de plus, l'inconvénient de faire oublier objets et faits archéologiques, les seuls témoins directs de l'époque considérée.

c) Les tabous et autres interdits (idéologiques, religieux ou culturels) ont tous une origine très prosaïque, souvent oubliée de ceux qui les subissent ou les pratiquent. Ainsi l'interdit pesant sur la consommation de viande de porc chez les juifs et musulmans n'est qu'une mesure prophylactique destinée à éviter une contamination par la trichine, un parasite de cet animal, responsable d'une maladie grave, aux conséquences souvent mortelles. Les pluies de feu ou les déluges mythologiques trouvent une explication dans les phénomènes volcaniques dont le souvenir s'est effacé, alors que les conséquences terrifiantes restent encore en mémoire, mais altérées dans leur forme. De la même façon qu'existe un fondement historique à la plupart des légendes, existe un substratum physique, économique, ou autre à la plupart des coutumes. L'exclusion par le sang ne doit pas y faire exception: cette apparente idéologie n'est pour nous que la façon culturelle de justifier une différence fondamentale qui, lorsqu'elle devient contestée, doit trouver d'autres arguments que la réalité physiologique. C'est alors qu'elle devient un fait idéologique, véhiculé par la tradition, et que toute la société s'emploie à maintenir. A la relation individuelle entre homme et femme, fragile et pouvant être remise en cause, est venue se substituer la relation sociale, beaucoup plus puissante et ayant moins de chance d'être reconsidérée.

Ainsi s'instaure une tradition, protéiforme et complexe, apparemment culturelle, mais trouvant en fait son origine dans la différenciation anatomique et physiologique des humains, et reproduisant peu ou prou ce qu'offre le modèle animal.

Notre conviction est renforcée par celle de Leroi-Gourhan, déjà cité: 'L'humanisation de cet impératif biologique réside dans les modalités socio-religieuses qui en découlent pour chaque groupe humain' mais 'il n'apparaît pour le groupe primitif, pas d'autre solution organique que celle de la chasse masculine et de la cueillette féminine'.

Il n'est pas prouvé que la chasse au gros gibier, malgré l'importante masse alimentaire fournie, soit une nécessité chez les peuples chasseurs: celle au petit gibier et la cueillette des végétaux (baies, fruits, racines, tubercules), sans y consacrer un temps considérable ni y dépenser une grande énergie, peuvent être amplement suffisantes (Sahlins 1976).

Si l'homme chasse, c'est souvent moins par besoin économique que par nécessité psychologique, par goût de vaincre, de dominer, de se mesurer à plus fort que lui. La chasse est un exutoire à son agressivité et quand celle-ci ne trouvera plus de justification alimentaire, au moment où naissent l'agriculture et la domestication, elle sera remplacée par la guerre. Si la femme s'occupe des enfants c'est par déterminisme physiologique, physique et, conséquence obligée, psychique.

L'analyse des figurations humaines paléolithiques

Les figures et scènes féminines

De 1986 à 1989, nous avons effectué un travail d'analyse et de recensement des figurations féminines françaises (Duhard 1989a), généralement à partir des oeuvres originales et pensons être en mesure de proposer des conclusions fondées. Contrairement à ce que pense S. de Beaune (1986), ces représentations apportent quelque explication quant au rôle de la femme au Paléolithique.

Certains points remarquables doivent en effet être relevés, car ils vont nous permettre de définir notre appréciation sur la dichotomie sociale sexuelle:

a) Elles sont assez souvent gravides (Fig. 4), avec une proportion plus grande au Gravettien qu'au Magdalénien (encore que certaines séries, comme La Marche en montrent un grand nombre).
b) Les figures féminines semblent exprimer surtout des aspects physiologiques concernant la reproduction: partenaires sexuelles, gestantes, parturientes et nourrices (Duhard 1989a, b).
c) Dans les groupes féminins aucune agressivité réciproque ne se manifeste.
d) Les femmes ne sont jamais armées (Fig. 5).
e) Elles ne portent jamais les bois ou cornes des animaux, même si elles se vêtent parfois de leurs dépouilles.
f) Les femmes ne sont jamais affrontées à des animaux ou dans un rapport dramatique avec eux.

Les figures et scènes masculines

Les hommes sont rares au Gravettien (deux cas à Brassempouy) mais beaucoup plus fréquents au Magdalénien et, comme annoncé, nos observations concerneront cette dernière période. Le rôle de l'homme y apparaît bien différent de celui de la femme:

a) Les armes n'existent que chez les humains masculins. Les uns le sont de façon certaine, par la présence d'un pénis: nous citerons: l'homme affronté à l'ours du Mas d'Azil (Fig. 3), l'homme du puits de Lascaux, l'homme

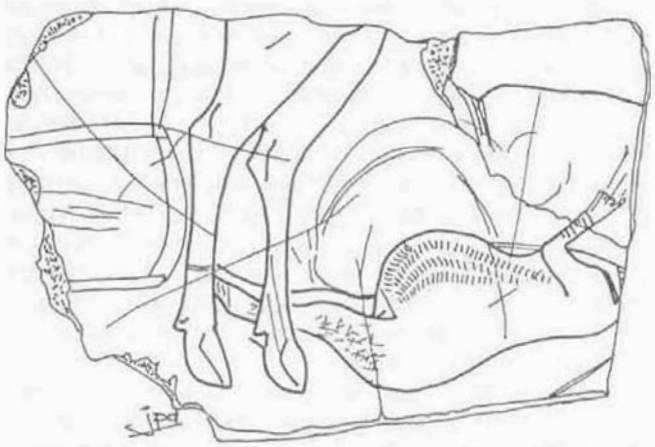


Figure 4. La femme au renne de Laugerie-Basse (dessin Duhard).

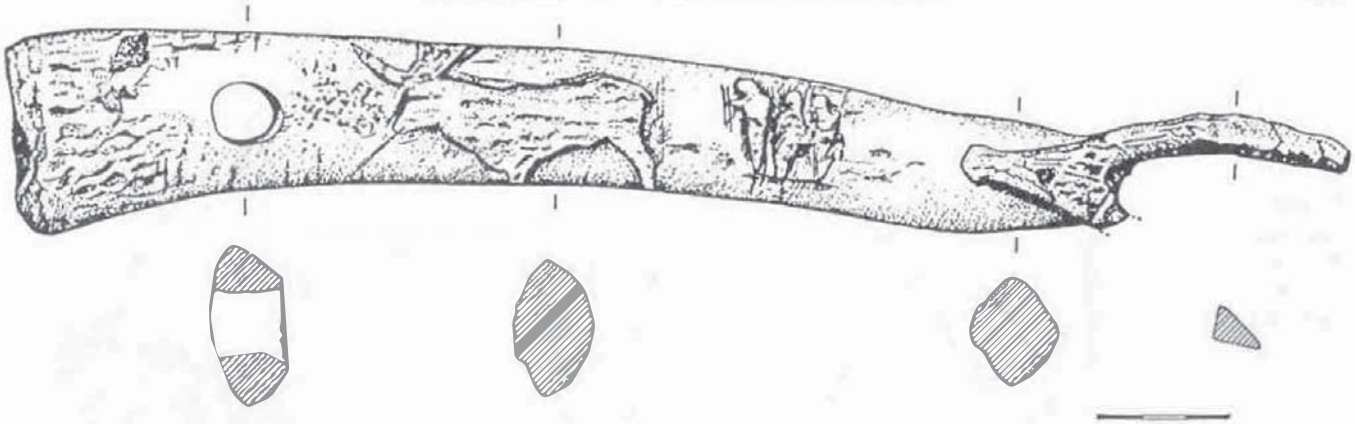


Figure 5.
Les trois chasseurs de la Vache (dessins Rougane-Buisson et Duhard).

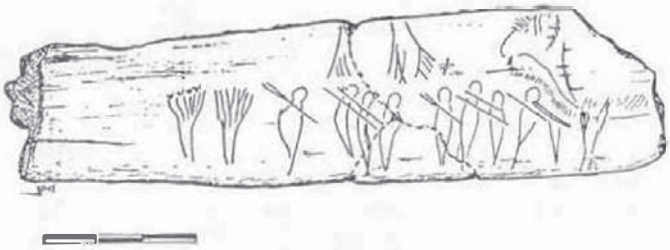
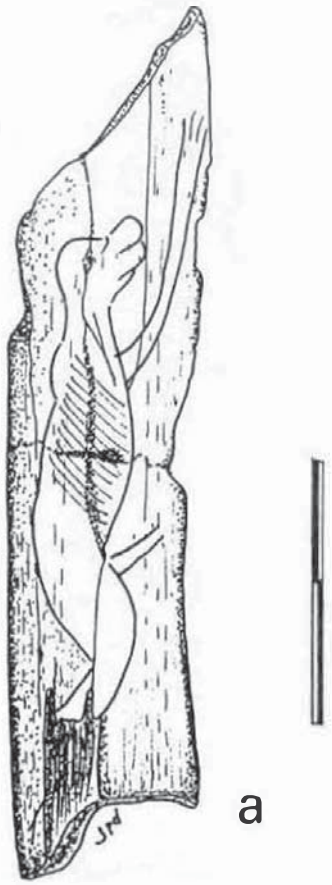


Figure 6. Les humains de l'abri du Château des Eyzies (dessin Duhard).

chassant l'aurochs de Laugerie-Basse. D'autres le sont probablement, comme les silhouettes thoraciques; ainsi à Raymonden (Fig. 2), à Gourdan et à l'abri du Château aux Eyzies (Fig. 6) et, peut-être, aux Trois-Frères (avec l'un des sorciers 'musicien' qui pourrait brandir une arme). Il est à remarquer qu'aucun homme armé au Paléolithique n'est affronté à un autre humain: il n'entretient de rapports guerriers qu'avec les animaux.

b) Quand il est figuré isolé l'homme ne porte jamais d'armes (ainsi à Gourdan ou à La Madeleine) (Fig. 7); elles n'apparaissent dans les figurations que lorsqu'il est associé à un animal (La Madeleine, Lascaux, Mas d'Azil par exemple), démontrant le fait qu'il en porte par nécessité.



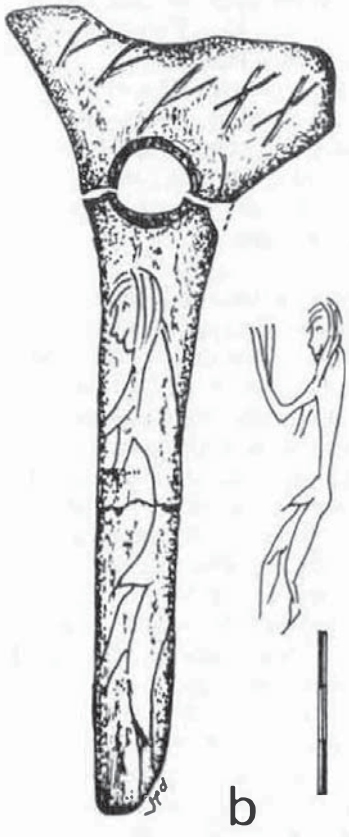


Figure 7. Les hommes ithyphalliques: a) La Madeleine; b) Gourdan (dessins Duhard).

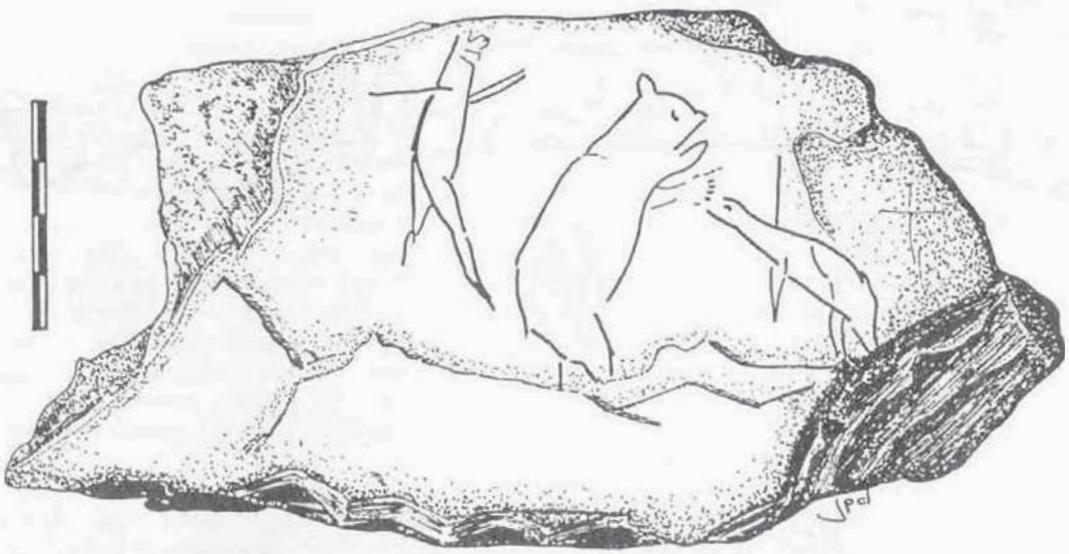


Figure 8. Plaquette de Péchialet (dessin Duhard).

c) Les hommes, parfois également porteurs de dépouilles animales, en arborent en outre les bois ou les cornes; c'est le cas des 'sorciers' ou 'personnages composites' de Lourdes ou des grottes de Gabillou et des Trois-Frères.

d) Dans l'association aux animaux l'homme est tantôt figuré en groupe, tantôt seul. Nous connaissons six scènes où l'homme est seul (Lascaux, Mas d'Azil, Laugerie-Basse, Gabillou-38, Villars, La Madeleine-2), desquelles on pourrait rapprocher le bloc solutréen 114-F du Roc-de-Sers, et six scènes où plusieurs humains figurent (Raymonden, Les Eyzies, Gourdan, La Vache, Teyjat, Péchialet). Quand il apparaît en difficulté devant l'animal, l'homme est très souvent seul (Puits de Lascaux, Roc-de-Sers, Mas d'Azil, Villars), rarement à deux (Péchialet) (Fig. 8); à l'inverse, dans les scènes à plusieurs, il ne semble jamais l'être.

e) Dans l'observation no. 60 de La Marche (Fig. 9), deux hommes (l'un avec pénis, l'autre chauve avec barbe) sont figurés dans une scène à caractère dramatique, l'un semblant vociférer et chasser l'autre. Rien de tel n'est jamais observé chez les femmes, dont le rôle semble beaucoup plus pacifique.

Les scènes associant hommes et femmes

Elles sont assez rares et considérées, assez souvent comme des scènes à caractère sexuel: grande plaquette d'Enlène, observation no. 39 de La Marche, 'couples' de Murat ou des Combarelles (no. 64). Mais il en est une de grand intérêt, jusqu'alors inédite parce que méconnue, et concernant un bois de renne de 302 mm provenant de la Grotte de la Vache (Alliat, Ariège), daté de 10 435 ans B.C. (Nougier et Robert 1975). Appartenant au M.A.N. (83364), ce bâton perforé porte une scène gravée et sculptée en bas-relief connue (Fig. 5) sous le nom de 'chasse à l'aurochs' (Delporte 1981; Cleyet-Merle in White 1988).

On reconnait à l'extrémité la plus étroite 'une tête d'animal cornu dont l'une des cornes, traitée en ronde-bosse, subsiste' (Delporte 1981). Comme nous l'a fait observer D. Buisson du M.A.N., l'animal du centre, habituellenment lu comme un aurochs, est très probablement un cervidé, avec sa queue courte et la disposition particulière de ses bois; il ne s'agit donc pas, comme le pensait L. R. Nougier, d'une 'perspective tordue', qui serait anachronique au Magdalénien terminal.

Figure 9. L'observation no. 60 de La Marche (d'après Pales 1976).

En arrière de lui, et proportionnellement plus petits, suivent trois sujets décrits par Cleyet-Merle et Nougier comme des 'chasseurs' et par Delporte comme des 'silhouettes humaines'. Nous avons examiné cette pièce en pensant y trouver trois humains masculins dans une scène de chasse, comme aux Eyzies ou à Raymonden. Qu'y voyons-nous en fait?

Les trois humains, qui se suivent en file, sont alignés derrière l'animal, orientés en profil gauche et paraissent beaucoup plus petits. La différence de taille entre animal et humains peut résulter aussi bien d'un irrespect des proportions, que d'une intention de montrer leur fragilité devant l'animal, ou leur éloignement. Nous retrouvons cette même disproportion apparente dans d'autres oeuvres: sur un os gravé provenant du même site offrant une file d'humains derrière un cheval; entre le cheval et les 'diablotins' de Teyjat, ou encore entre les humains et le bison démembré de Raymonden.

a) Les *sujets no. 1 et 3* (lus de gauche à droite) ont de larges épaules et nous ne croyons pas qu'il faille voir dans cet élargissement supérieur du thorax une 'attitude quelque peu bossue' (Nougier 1975), mais un caractère sexuel secondaire masculin du squelette. Il réalise la classique silhouette thoracique, comme chez les humains gravés sur l'os d'aigle de même provenance, ou ceux de Raymonden, de Gourdan et des Eyzies. Le no. 1 porte en outre à bout de bras deux objets linéaires pouvant être des armes; il se peut qu'il s'agisse d'un arc comme le suppose Nougier (1975) et Delporte (1990), et que l'on pourrait alors rapprocher de l'objet tenu par un sorcier des Trois-Frères, ou d'armes de jets ('des javelots'; Delporte 1981).
b) Le *sujet no. 2* est une femme caractérisée, représentée en profil gauche strict, les membres inférieurs ployés dans la meilleure tradition magdalénienne, les fesses saillantes, la jambe et la cuisse fortes, le dos cambré, la tête haute, la taille épaisse - sans que l'on puisse parler de gros ventre, et le relief mammaire indiqué - sans aucune ptose. Cette figure féminine accompagnant des hommes est la seule que nous connaissions dans une scène d'humains associés à un animal.

Chez l'animal, rien dans l'attitude ne semble indiquer un quelconque mouvement de fuite ou d'agressivité. Qu'il soit un cervidé (un renne?), plutôt qu'un aurochs comme il est coutume de le dire n'est peut-être pas indifférent: nous avons constaté que les scènes dramatiques, dont l'homme (au sens d'humain masculin) était le héros ou la victime mettaient plus souvent en cause les bovidés que les cervidés (Duhard 1991a, b). Ainsi à Lascaux, Villars, Laugerie-Basse, pour le Magdalénien, et le Roc-de-Sers, pour le Solutréen. Que le sujet immédiatement derrière l'animal soit un homme n'est également pas indifférent, non plus le fait qu'il tienne à bout de bras des armes.

Nous retiendrons de cette scène faisant co-intervenir des humains des deux sexes: a) que l'homme est au premier rang; b) que seul l'homme porte une arme; c) que la femme est interposée entre les deux hommes; d) que la femme ne porte pas d'arme.

Conclusion

A la lumière des observations offertes par l'art magdalénien, *le rôle de l'humain masculin* paraît en parfaite conformité avec sa physiologie, avec des aspects paraissant propres au Paléolithique supérieur en général:

a) Aucun homme armé n'est figuré confronté à un autre humain: la lutte armée entre humains pourrait n'être apparue qu'au néolithique, où de telles scènes ne sont pas rares, notamment dans l'art pariétal saharien et levantin espagnol.
b) Aucun humain isolé ne porte d'armes: il n'en a besoin que dans ses relations avec l'animal.
c) Quand ils sont associés aux animaux, les hommes sont assez souvent figurés à plusieurs, ce qui démontre leur caractère sociable.
d) Lorsque l'homme semble en difficulté devant un animal, il est très souvent seul (Puits de Lascaux, Mas d'Azil, Villar et Roc-de-Sers), rarement à deux (Péchialet). A l'inverse, dans les scènes à plusieurs, il n'est jamais en mauvaise posture, preuve de la force du nombre et de la nécessité du regroupement. La sociabilité des humains est non seulement un instinct, mais un besoin.

Comparée à l'homme, *la femme* semble investie d'un rôle pacifique, de partenaire sexuelle ou de reproductrice, comme nous l'avons montrer dans notre thèse (1989a). Et s'il lui arrivait de participer à des actions cynégétiques, elle n'y était ni seule, ni armée, et n'apparaissait pas dans les actes sanglants, comme le dépeçage et le démembrement des animaux.

En cherchant ailleurs que dans le Paléolithique français, on trouverait d'autres exemples rendant plus évidente cette division sexuelle du travail:

a) Dans la grotte d'Addaura, en Sicile, un panneau pariétal porte une scène complexe où l'on voit, notamment, deux humains se suivant (Graziosi 1960). Le premier est un homme, reconnaissable à ses organes génitaux externes, le second une femme, avec des seins et un gros ventre. On remarque la présence d'objets linéaires tenus par la main et portés sur l'épaule chez l'homme, et la présence d'une forme arrondie sur le dos de la femme: il semble bien s'agir chez l'un d'armes de jets ou de frappe, chez l'autre d'un fardeau.
b) A Gönnersdorf une plaquette porte la gravure de quatre sujets féminins (seins et saillie fessière) dont l'un porte également une charge sur le dos où Bosinski (1974) voit un bébé dans une sorte de hotte. Jamais nous n'avons rencontré d'humain masculin porteur de charge: ce serait l'apanage de la femme, et bien des exemples contemporains démontreraient qu'il en est toujours ainsi.

Cette division sexuelle des tâches n'est qu'un aspect de la spécialisation sociale magdalénienne apparaissant à l'étude des habitats et des aires d'activité, bien mise en évidence à Pincevent ou Etiolles, et résultant de nécessités économiques, techniques et biologiques.

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Résumé. *L'étude des figurations humaines suggère qu'une division de travail, avec une répartition des tâches selon le sexe, existait au Paléolithique supérieur. Physiologiquement, en corps et en caractère, l'homme et la femme ont des aptitudes ou des fonctions différentes. A cause de la grossesse et de la nécessité de nourrir et de porter les enfants, la femme est moins autonome que l'homme, et n'éprouve ni la force ni le besoin de se mesurer au monde vivant. A l'aide d'examples, nous montrons que l'art reflète cette différentiation sexuelle: la femme est montrée dans des scènes 'pacifiques' et l'homme fréquemment dans des scènes 'conflictuelles'.*

Zusammenfassung. *Das Studium menschlicher Figuren deutet eine Arbeitsteilung an, die während dem Oberem Paläolithikum existierte und in der die Pflichten nach Geschlecht aufgeteilt wurden. Physiologisch, in Körper wie in Charakter, haben Männer und Frauen verschiedenartige Neigungen und Funktionen. Durch Schwangerschaft und die Notwendigkeit, Kinder zu füttern und zu tragen, sind Frauen weniger autonom als Männer und fühlen sich weniger stark, noch spüren sie die Notwendigkeit, sich gegen die lebende Welt zu messen. Beispiele werden angeführt, in denen dieser geschlechtsbedingte Unterschied in der Kunst reflektiert wird: Frauen werden in 'friedlichen' Szenen dargestellt, und Männer oft in Szenen von 'Konflikt'.*

Resúmen. *El estudio de figuras humanas sugiere que la división de trabajo, en la cual las faenas eran compartidas según el sexo, existió durante el Paleolítico Superior. Fisiológicamente, tanto en cuerpo como en carácter, hombres y mujeres tienen aptitudes o fonciones diferentes. Debido al embarazo y a la necesidad de alimentar y llevar a los niños, las mujeres son menos autónomas que los hombres, y no se sienten ni fuertes ni con la necesidad de medirse contra el mundo viviente. Usando ejemplos, nosotros mostramos que esta diferencia sexual se encuentra reflejada en el arte: las mujeres son representadas en escenas 'pacíficas' y los hombres frecuentemente en escenas de 'conflicto'.*

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KEYWORDS: Digital fluting - Cave art - Papua New Guinea - Melanesia

FIRST REPORT OF DIGITAL FLUTING FROM MELANESIA

The cave art site of Kalate Egeanda, Southern Highlands Province, Papua New Guinea

Chris Ballard

Abstract. Cave art in the form of digital fluting has been identified at two sites in the Tari region of Southern Highlands Province, Papua New Guinea. Digital or finger fluting, a specific form of parietal art, has not previously been reported in Melanesia, and is known from only two other regions in the world, southern Australia and south-western Europe. This paper describes the rock art at the cave Kalate Egeanda.

The site of Kalate Egeanda

The Tari region lies on the southern slopes of the Central Range of the Papua New Guinea Highlands (Figure 1). Several major limestone ridges running parallel to one another along a north-west/south-east axis frame a series of swampy intermontane basins containing scattered limestone outcrops. The largest river in the region, the Tagali, drains through the Haeapugua basin. The presence of a number of dry caves cutting through an outcrop of low limestone hills in the north of the basin suggests that the barrier presented by the outcrop was originally breached at these points by the river. The largest of these caves, Kalate Egeanda ('ege-anda' [Huli]: 'stone-house' or cave), lies within the territory of the Arua clan, one kilometre from the Highlands Highway between the towns of Tari and Koroba.

Caves have been the focus of a range of rituals amongst the Huli, but are still regarded as inherently dangerous as the residences of often malevolent *dama* spirits. Rituals associated with cave formations were formerly performed solely by a handful of ritual specialists, who took upon themselves the dangerous task of entering caves to offer oblations in the form of pork to the *dama*. Kalate Egeanda itself is the focus of a number of local tales, the most popular being that it runs beneath the Tagali river, appearing at an undisclosed location on the north bank. Clans on the south bank of the Tagali have long suspected individuals on the north bank of using the cave to steal pigs and drive them to their own territory, unseen, beneath the river. A relatively modern myth, this tale is more an indication of the grudging respect for the courage and wiliness of the thieves, than an account of familiarity with the cave. Few, if any, older Huli could claim any knowledge of the interior of Kalate Egeanda.

However, since the establishment of administrative control over the Tari region by the colonial government in 1951, Kalate Egeanda has been extensively, if rather haphazardly, explored by non-Huli visitors. As some indication of the frequency of visits to the cave, there have been at least five trips by non-Huli groups between 1989 and 1991. The entrance to the cave is a large, dry walk-in rift, 20 m from the Tagali river. There has been no mapping of the cave, but successive visits have established that it consists of a single, largely dry, main passage, which runs parallel to the Tagali river for about 400 m. Numerous side chambers have been inspected, but have all proved to be blocked at short distances from the main chamber. The main chamber, which forks and reforms at several points, finally terminates in a maze of small passages, one of which leads to the surface via a tight chimney, 4 m in height (Dyke n.d.). Minor streams are found in some of the lower passages, and light inflows of water from the ceiling at several locations, presumably the inspiration for the stories about the cave passing beneath the Tagali river, have formed a number of small pools.

A description of the art

The art, first recognised during a visit to the cave in October 1989 but recorded later in November 1990, is located approximately 200 m from the entrance, on the wall of a dry, stranded fork. The floor directly beneath the art is in the process of collapsing into a lower chamber with an active stream, and no floor deposit could be found in the immediate vicinity of the art. A small, 100 cm-wide area of soft calcite deposit or *moonmilch*, deposited in solution from a now-dry dripline along the ceiling, appears to have been selected deliberately for the art.

The art consists largely of a single panel, 85 cm high and 45 cm wide (Figures 2 and 3), the base of which stands

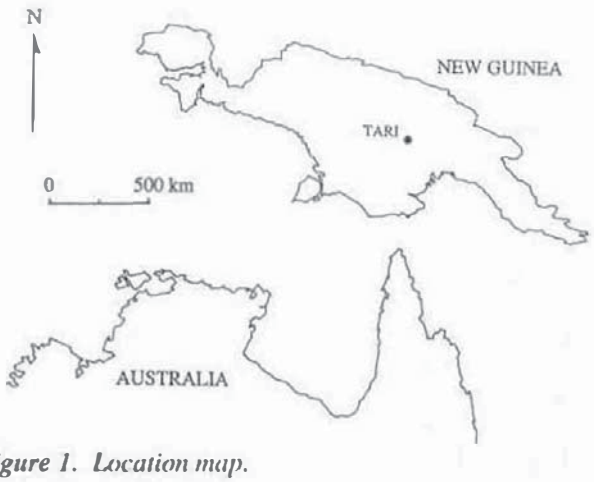

Figure 1. Location map.

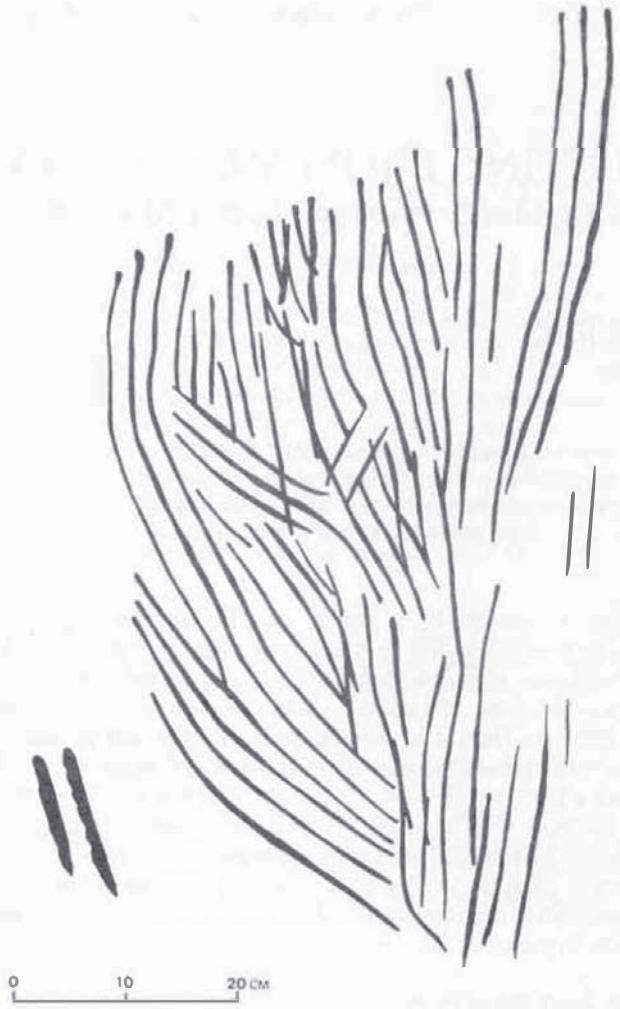

Figure 2. The main rock art panel at Kalate Egeanda, Papua New Guinea.

Figure 3. Photograph of the rock art panel at Kalate Egeanda.

approximately 110 cm from the surface of the former floor, and approximately 350 cm above the floor of the lower chamber. A further, single set of three short digital flutes running parallel to the floor beneath the main panel is not depicted in Figure 2. Linear gouges, in parallel sets of three or four, converge towards the base of the panel. Marked indentations at the top of each parallel set of gouges suggest that the fluting was performed with a downwards motion. Some superposition is evident, particularly in the centre of the panel, and variation in the weathering of these cross-cutting sets suggests that the gouges were not produced in the course of a single event.

The gouges are well-preserved, the only defacement of the panel known in 1990 being two small sets of trial impressions, in softer deposits on either side of the panel, made in 1989 (one of these is shown in the lower left corner of Figure 2). Although the deposit around the panel is fairly soft, the interline ridges created by the gouges have undergone desiccation, leading to a considerable hardening of the entire gouged area. Narrowing in the width of the original gouges is presumed to reflect the subsequent reprecipitation of carbonates over the panel's surface.

The form, length, and variation in number of the gouges correspond strongly with similar marks ascribed to human agency at the southern Australian cave art sites (Bednarik 1986a). Bednarik's (1991) critical distinctions between natural and human cave markings are acknowledged here, but no obvious non-human explanation for marks of this nature, within a limited area on the wall of a large chamber, can be found at Kalate Egeanda.

Some conclusions

Of the two forms of finger fluting described by Bednarik from the southern Australian caves (1986a: 35), the art at Kalate Egeanda conforms most closely to the earlier style, which Bednarik terms 'digital fluting'. The location of the Kalate art, 200 m from the entrance, also matches locations for similar art at sites such as Koonalda Cave, where digital fluting is found up to 300 m from the cave entrance. Given the similarities in form and relative location, some comparison between the Kalate art and that known from southern Australia may be warranted.

By 1990, a total of thirty-four cave petroglyph sites had been discovered at four locations in southern Australia: Perth (3), the Nullarbor desert (1), Buchan (1) and Mount Gambier (29) (Bednarik 1990). Although relative sequences have established that digital fluting is often the earliest style of cave petroglyph at these sites, few direct dates have yet been published for this particular style. On the basis of radiocarbon dates on torch residues from adjacent floor deposits at in Koonalda Cave, and direct

radiometric dating of later styles, Bednarik (1990) has tentatively proposed an antiquity 'well in excess of 20 000 years' for the finger fluting at Koonalda.

A comparable antiquity for the Kalate art cannot be assumed solely on the basis of formal similarity with art from the Australian sites, and will have to be demonstrated locally in the Tari region. Recent research into the vegetation history of the Tari region offers strong evidence for a major phase of human interference between 20 000 and 15 000 years ago (Haberle 1992), establishing the fact of human presence in the Tari region during the late Pleistocene. A second digital fluting site, in a valley 30 km north-west of the Haeapugua basin, was discovered in 1991. In this case, the cave contains a substantial floor deposit immediately beneath the art, and may yield a local, indirect date for cave art in the Tari region. A late Pleistocene date for the Tari region art, a period during which Australia and the island of New Guinea were linked to form the continent of Sahul, would raise the possibility of a single, continental tradition of cave art.

Digital fluting has not previously been reported from Melanesia. However, given the history of cave art discovery in southern Australia (Bednarik 1986b), this apparent absence may reflect the fact that Melanesian caves have not been systematically explored for cave art. Such a project must now be warranted.

Acknowledgments

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Résumé. *De l'art rupestre sous forme de striation digitale a été identifié à deux sites dans la région de Tari, province de Southern Highlands, en Nouvelle Guinée. La sillon digitale, qui est une forme particulière d'art pariétal, n'a pas auparavant été rapportée en Mélanésie, et se trouve seulement dans deux autres régions au monde, le sud de l'Australie et le sud-ouest de l'Europe. Cet article décrit l'art rupestre de la grotte Kalate Egeanda.*

Zusammenfassung. *Höhlenkunst in der Form von Digitaler Rillung ist an zwei Fundorten im Tari Gebiet der Southern Highlands Provinz, Papua Neu Guinea, identifiziert worden. Digitale oder Finger-Rillung, eine ausgeprägte Form von Parietalkunst, wurde bisher nicht von Melanesien berichtet, und ist nur bekannt von zwei anderen Gebieten der Welt, dem südlichen Australien und Südwest-Europa. Der Artikel beschreibt die Felskunst in der Höhle Kalate Egeanda.*

Resumen. *El arte de las cavernas en la forma de acanaladuras digitales ha sido identificado en dos sitios de la región de Tari de la provincia Southern Highlands de Papua Nueva Guinea. Acanaladuras digitales, o de dedos, una forma específica de arte parietal, no habían sido previamente referidas en Melanesia, y son solamente conocidas en otras dos regiones del mundo, en Sud Australia, y en el Sud-Oeste de Europa. Este artículo describe el arte rupestre en la cueva Kalate Egeanda.*

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KEYWORDS: **Palaeolithic art - AMS dating - Faunal depictions - Cosquer Cave**

A WELL-DATED PALAEOLITHIC CAVE: THE COSQUER CAVE AT MARSEILLE

Jean Clottes, Jean Courtin and Hélène Valladas

Abstract. A series of AMS radiocarbon dates from Cosquer Cave is reported. It includes direct dates secured from rock paintings, which are supported by dates from charcoal found on the cave floor. Two phases of cave use and parietal art are thus identifiable. The engraved and painted faunal depictions in the art are considered, and the finger flutings and hand stencils are discussed.

Introduction

This cave was discovered by Henri Cosquer, a deep-sea diver who entered it through a narrow opening 37 m below present-day sea level, after passing through a 150 m-long sloping passage that leads to an extensive chamber about 55 m in diameter (Fig. 1). This chamber has remained partly above water and the rock art was found there in July 1991.

From direct observations by Courtin in 1991 and from dozens of slides brought back then it was obvious that the paintings and engravings could not be fakes. In addition, a radiocarbon date was obtained from charcoal found in the cave. At 18 440 ± 440 BP (Ly-5558) it provided initial evidence for an Upper Palaeolithic context.

However, the art's authenticity was challenged in the media by a very few specialists once they saw the photographs published in various newspapers (concerning the polemics over the authenticity of the art, see Clottes et al. 1992a, 1992b).

The new finds

In June 1992, another series of dives took place over a period of three weeks. Numerous photographs were taken, paint samples were removed from four black paintings for radiocarbon analysis by acceleration mass spectrometry (AMS) (Fig. 2) and some others for pigment analysis. About 300 pieces of charcoal were collected from the ground where they lay scattered, the cave was explored by means of a video system (cf. *INORA* 1992, 3: 2), and the cave art was further examined and described. Pollen analyses by Michel Girard (C.N.R.S.) revealed steppe-like conditions, with Gramineae, Artemisia and a few trees, with a majority of pines and some birches, alders and junipers.

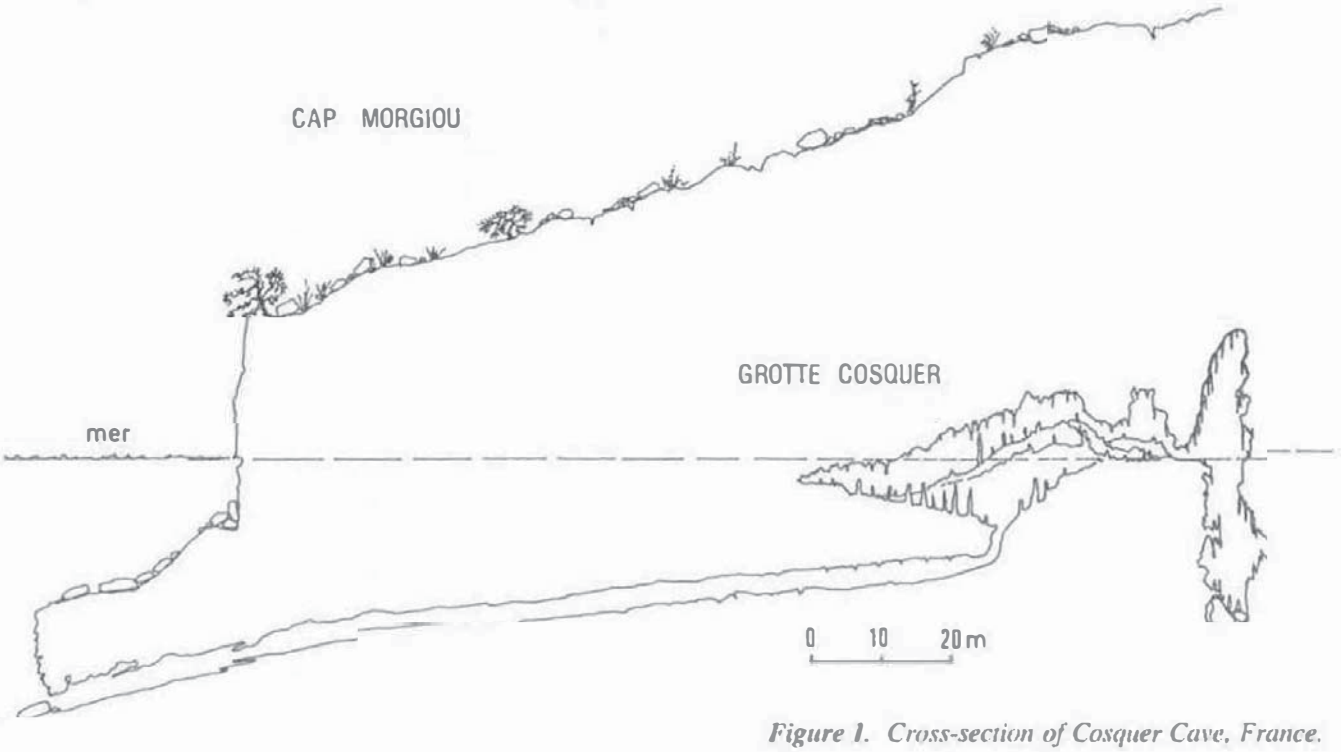

Figure 1. Cross-section of Cosquer Cave, France.

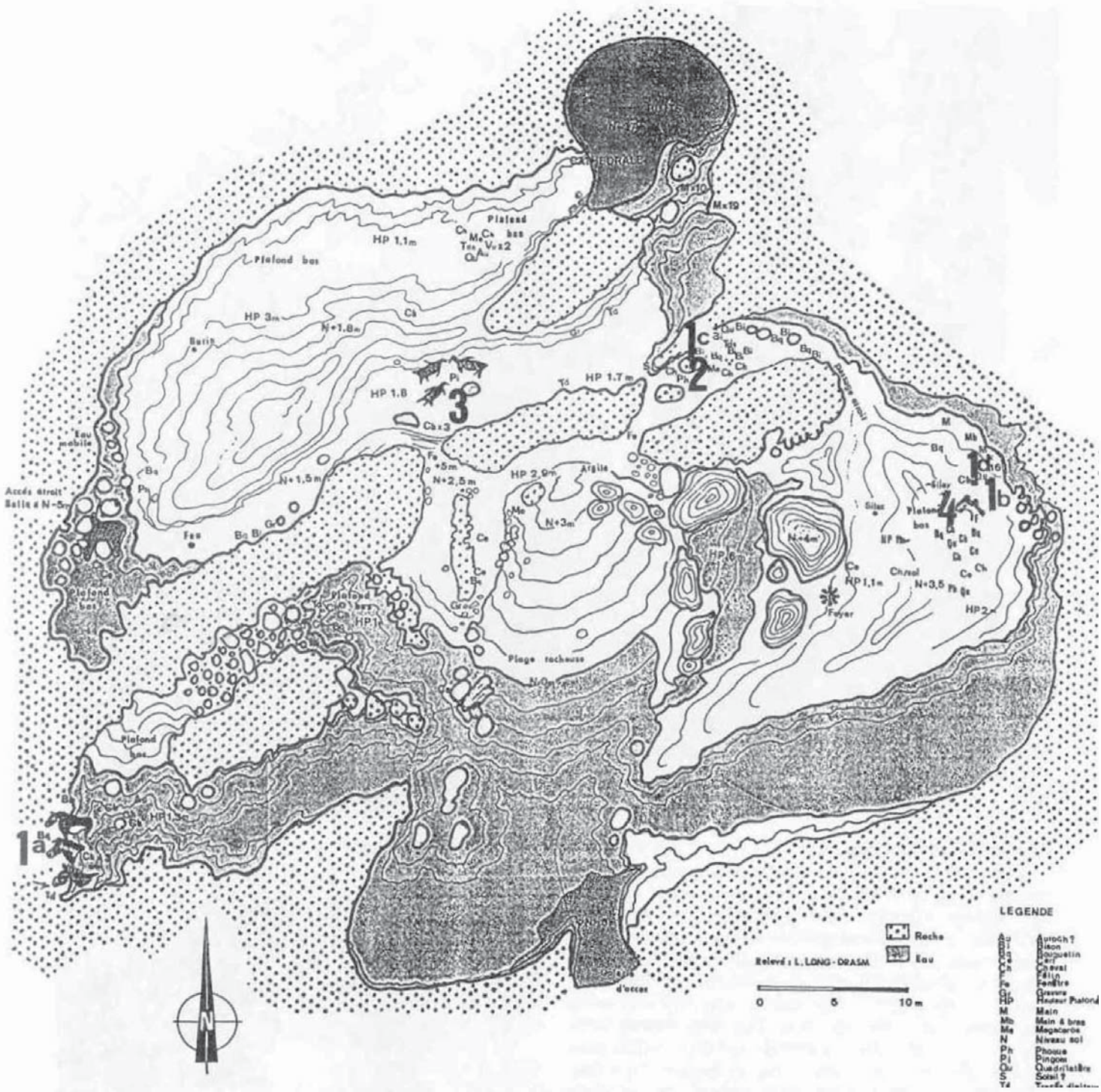

Figure 2. Map of the main chamber in Cosquer Cave, with the numbers of the charcoal samples collected.

The authenticity of the art had been firmly established (Clottes et al. 1992a, 1992b) and did not need further corroboration. However, if any doubts had remained, the observations made in June would have dispelled them: layers of calcified charcoal were found 1.5 m under water, some engravings and numerous finger markings covered with calcite were also seen beneath the sea. Charcoal was extremely abundant in all high-lying parts of the main chamber. The 300 samples of charcoal were identified by S. Thiébault (C.N.R.S.) as belonging to one species only, *Pinus silvestris*, which no longer grows in this area. All the petroglyphs were patinated, and many paintings were covered with calcite deposits.

Many more engravings and paintings (Fig. 3, located on the front cover of this issue) were discovered in June 1992. The study of the walls in the part of the main chamber preserved above the water is far from finished, but already we have recorded forty-five black or red hand stencils (Figs 4, 5), most with incomplete fingers; about one hundred painted or engraved animals; dozens of geometric designs such as dots, bars, spear- or arrow-like motifs, often barbed at one or at both extremities (Figs 6, 7; Fig. 7 is on the back cover of this issue); complex geometrical figures; wavy or zigzag lines; and innumerable finger flutings.

Figure 4. A group of nine stencilled hands with incomplete fingers (note: Fig. 3 is on front cover).

Description of the Cosquer art

These finger markings are fundamentally different from the rest of the art. They cover large expanses of the walls and ceilings wherever these were reachable and where their surface was soft enough. No animal forms have been found among them. They are generally made with several fingers, crisscrossing one another without any discernible pattern. The apparent wish of their makers was to cover as much area as possible with them. They even extend to the upper sections of walls, 5-6 m from the floor, which must have entailed either acrobatic efforts or the use of a ladder. One may wonder whether their purpose was to 'take possession' of the cavern.

Finger flutings can be found throughout the Upper Palaeolithic until the Middle Magdalenian, for example at Le Tuc d'Audoubert in France and Altamira in Spain, but they are far more numerous in earlier periods such as the Solutrean of Pech-Merle or the Gravettian of Gargas.

The forty-five hand stencils are concentrated in the east of the main chamber. At least nine of them were left on a series of calcite draperies right at the brink of a 24 m-deep vertical chasm (Fig. 4). The others are grouped nearby. They are mainly superimposed on finger flutings but in several cases the flutings cover them, which indicates that the two art forms were contemporaneous. Whenever superimpositions occur with painted or engraved animal figures they always postdate the hand stencils or, more

Figure 5. A black stencilled hand, similar to the ones in Gargas.

Figure 6. An engraved male ibex with a superimposed barbed design, and a seal. These engravings cover many finger flutings.

often, the finger flutings (Figs 6, 7; Fig. 7 is on the back cover of this issue). That is why, in an early stage of our study, we concluded that there must have been at least two separate periods: Phase 1 is represented by hand stencils and finger flutings, and Phase 2 by the animal depictions and non-iconic motifs or 'signs' (Clottes et al. 1992a, 1992b; Clottes and Courtin 1992, and in press).

We have also noted that several hands had been criss-crossed with deeply engraved lines, or even scraped. On some others red bars or dots had been painted (Fig. 4). Finally, the thinner calcite draperies bearing nine hand stencils had been broken in several places and only parts of some hands remained (Fig. 4). At least sixteen out of the forty-five hand stencils had thus been tampered with, which is most unusual. It would seem, then, that at a certain point, one or more persons decided to destroy a number of hand images and to overmark a few more. We have no evidence as to when this may have happened. Our present hypothesis is that several millennia after the execution of the stencils, when the people of Phase 2 went into the cave and found signs of ancient cultural - perhaps magical - practices they did their best to eradicate them, either by destroying them outright or by placing their own designs over them. The problem remains as to why they would have left others untouched.

The negative handprints with incomplete fingers were at first sight evocative of those at Gargas where they had been attributed to the Gravettian. Assignment to such an early culture was made more probable by the recent discovery of Fuente del Salín, in Spain, where several red hand stencils with the forearms represented as in Cosquer and Gargas could be related to an archaeological layer, radiocarbon dated to 22 340 + 510/ - 480 BP (Moure Romanillo and González Morales 1992), which contained many traces of red paint. Our hypothesis for the hand stencils and finger flutings in Cosquer Cave was then that Phase 1 could be more or less contemporaneous with Gargas and Fuente del Salín, that is, it would be a few thousand years before Phase 2.

Phase 2 included the animal paintings and engravings, as well as a large number of non-iconic motifs. At first we wondered whether the two techniques could have been used at different periods, with the black paintings being the earlier of the two, since in several instances they were covered with engravings. Then we noted that a probable megaloceros figure had been painted over some engravings and that there existed an identical engraved animal with a huge characteristic hump. The legs of the painted megaloceros were Y-shaped, exactly like those of most of the engraved animals. In addition, the male sexual organs

Figure 8. Three of the eight engraved seals in Cosquer Cave (note: Fig. 7 is on back cover).

of two horses, one painted and one engraved, and of an engraved ibex had all been depicted in an unusual way, with two lines converging in a 'V'. These details were too numerous to be mere coincidence, and so the inference drawn was that both techniques were roughly contemporaneous (Clottes et al. 1992b).

As to the dating of the animal figures, nothing about them points to a particular cultural tradition. Horses are prevalent, accounting for about one third of the total number, followed by ibex, bison, chamois and sea animals. The marine species are highly unusual, comprising three auks and several seals. In June 1992, more sea creatures were noted. From the time of their discovery, the three auks 1) have been the subject of controversy, as they were

1) These animals are auks rather than penguins, as which we had mistakenly translated the French word *pingouin* (Clottes et al. 1992b). Several colleagues have been kind enough to bring this error to our attention for which we are grateful.

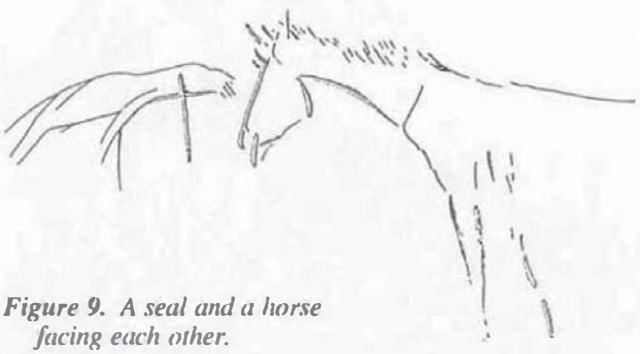

Figure 9. A seal and a horse facing each other.

the first Palaeolithic depiction of that species. Now we have ascertained that at least eight seals were engraved in the Cosquer Cave (Figs 6, 8, 9). Several of them look very similar so that they may have been drawn by the same person. Spear-like designs were engraved over all the seal figures. In addition, on some stalagmites there were painted half a dozen semi-oval black figures with multiple lines inside of a type unknown elsewhere to the best of our knowledge. These were interpreted as jellyfish or squid.

Finally, three strange depictions (Fig. 10) next to one another pose a problem. If they had been engraved vertically on a wall, one might have been identified as a female body with the breasts outlined, with wide hips and a short line for the genitals, while the other two might have been vulvae - one schematic and the other quite realistic. However, as they are situated on a ceiling it is not possible to know how they should be read. It seems more likely that they depict fish. The one on the right, reproduced in the lower part of Figure 10, with its wide tail and a short line for its mouth, recalls a fish from the cave of Ardales (Spain), attributed to the Solutrean (Muñoz et al. 1992), i.e. to the same period as Cosquer's Phase 2. The other two

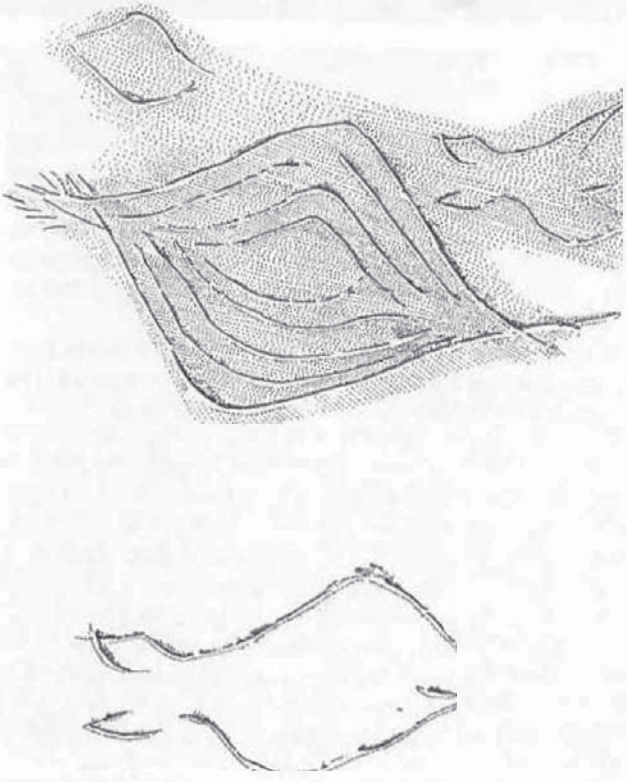

Figure 10. Fish-like engravings on a ceiling.

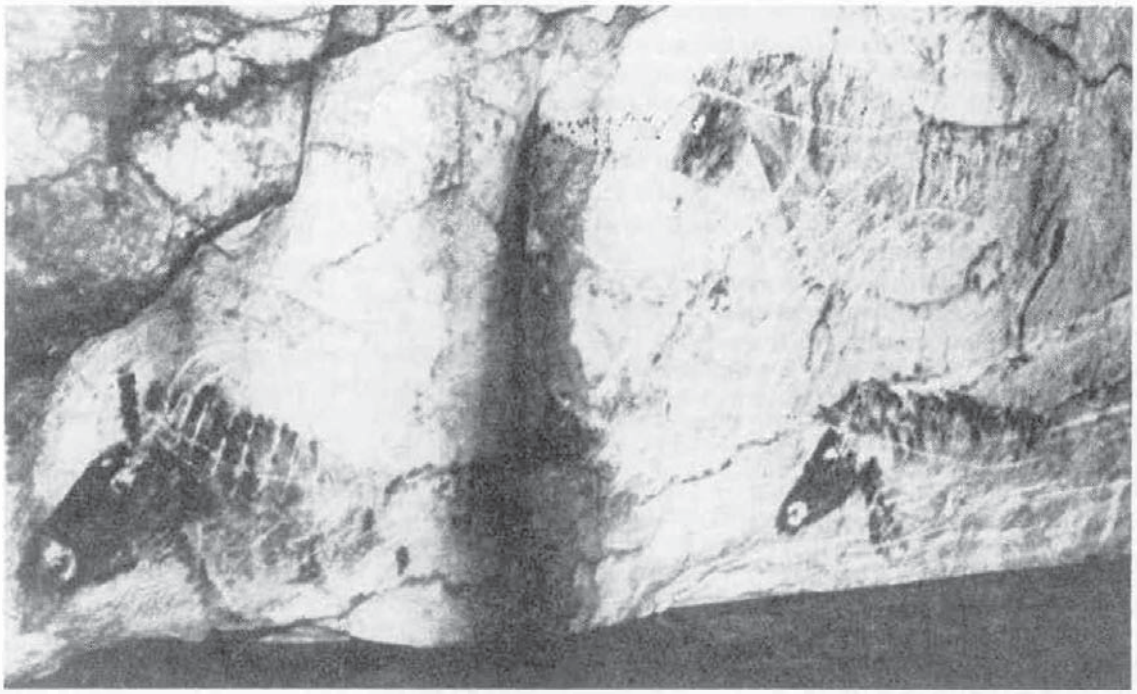

Figure 11. Four painted horses. The one on the left has been radiocarbon dated.

oval figures could be either flat fish or shells. Whatever the case, these are novel representations and we are still far from certain about their identification.

The other animals were the two above-mentioned megaloceros figures, one painted and two engraved red deer, one or two does and one feline. None of these species were definite time indicators.

Particular characteristics were found repeatedly on the animal pictures. This can mean that the art in Cosquer Cave was either done by people who worked within a relatively short time span, or else that certain conventions lasted over generations. The prevailing feeling after seeing and recording about one hundred animal figures is one of marked unity. On one of four horses painted on the same panel, the engraved ibex is superimposed (Fig. 11). It displays two of these frequently used conventions: its horns are seen from the front as are its legs, which are spindly and Y-shaped. All animals with horns or antlers are represented in the same way, i.e. in twisted perspective (Figs 6, 7). This convention did last until the Magdalenian (Les Trois-Frères) but whenever it is the only one used in a cave the art is likely to predate that of Lascaux. These stiff animals with Y-shaped legs (Fig. 6) and few anatomical details are very like others in Ebbou. The same characteristics are also found in Gabillou and on some engraved stone plaquettes from the Solutrean levels at Parpalló (Spain). As in Parpalló, Las Chimeneas, Gargas and Isturitz, one line was sometimes used in Cosquer to draw the front horn and the head, and another for the second horn and the back, leaving a blank space where the skull would be.

Dating of the Cosquer art

These details did not allow any dating of the Cosquer rock art, but they did point to a pre-Lascaux period and to a relationship with Ebbou and the Ardèche group. The first radiocarbon date we had for Cosquer charcoal fitted

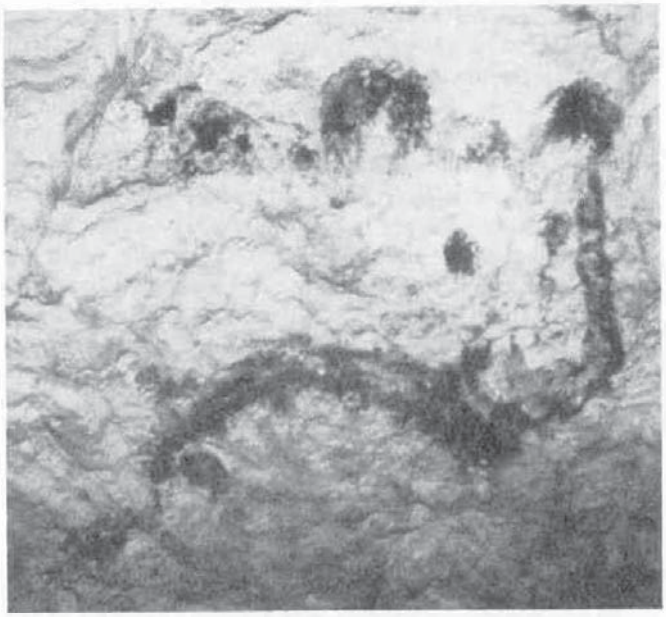

Figure 12. A painted feline head, radiocarbon dated.

Figure 13. A painted bison, radiocarbon dated.

perfectly with both the art in the cave and with what was suggested by Combier (1984) about Ebbou, that is, a late Solutrean age. However, rather than use it literally we preferred to set Phase 2 within a wide margin and suggested provisionally that this might be from 17 000 BP - which takes into account details in common with Lascaux, such as faces shown in three-quarter profile and muzzles and eyes left blank - to 19 000 BP (Clottes et al. 1992a, 1992b; Clottes and Courtin in press).

In November 1992, we received the results of eleven radiocarbon analyses by AMS, five from samples removed directly from three painted animals, two from a black hand stencil and four from charcoal lying on the ground in different places (Fig. 2). The new dates fall into two distinct groups (Fig. 14):

Group 1
No. 1d. Hand stencil (two separate analyses):
27 110 ± 390 BP (Gif A 92.409)
27 110 ± 350 BP (Gif A 92.491)
No. 4. Charcoal on the ground:
27 870 ± 430 BP (Gif A 92.350)
No. 3. Charcoal on the ground:
26 360 ± 400 BP (Gif A 92.349)

Group 2
No. 1b. Painted feline head (Fig. 12):
19 200 ± 220 BP (Gif A 92.418)
No. 1a. Painted horse (Fig. 11) (two separate analyses):
18 820 ± 310 BP (Gif A 92.417)
18 840 ± 240 BP (Gif A 92.416)
No. 1c. Painted bison (Fig. 13) (two separate analyses):
18 010 ± 190 BP (Gif A 92.419)
18 530 ± 180 BP (Gif A 92.492)
No. 2. Charcoal on the ground (two separate analyses as the charcoal was in poor condition, mixed with sediment and calcite):
20 370 ± 250 BP (Gif A 92.348)
15 570 ± 150 BP (Gif A 92.446)

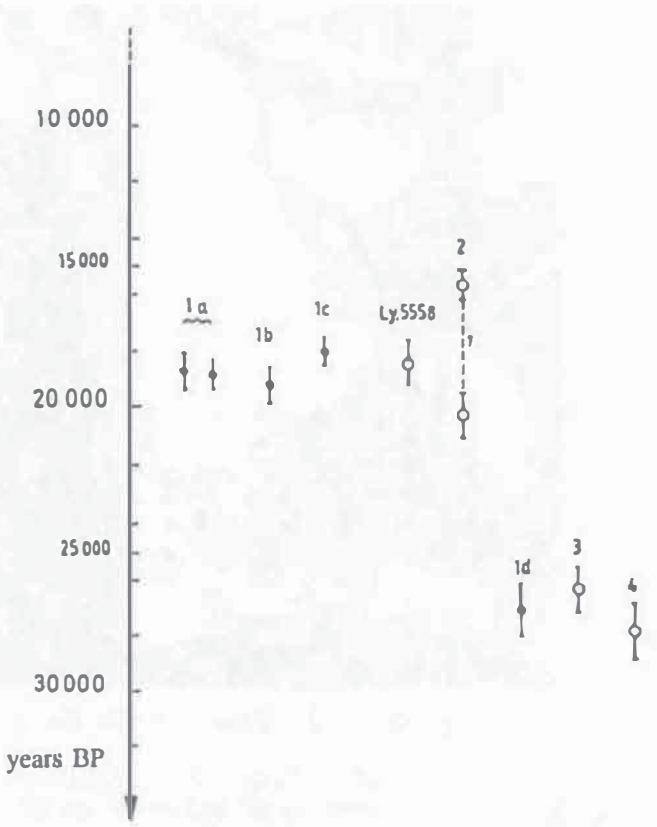

Figure 14. Table of the radiocarbon dates provided by the Centre des Faibles Radioactivités at Gif-sur-Yvette (all except Ly-5558). The margins are given at 95% chances, i.e. two sigmas. The two phases of activity are obvious.

These results confirm our hypothesis of two distinct phases in the art of Cosquer Cave (Fig. 14), one for the hand stencils and finger flutings, the other for the painted and engraved animals (Clottes, Courtin et al. 1992). The Gif AMS dates for the second phase tally very well with the one previously supplied by the Lyon laboratory (cf. *supra*, Ly-5558). Phase 1 is older than we had guessed, by several millennia, but this is the first time that hand stencils with incomplete fingers have been directly dated in Europe. Apparently, that particular phenomenon started very early.

The Cosquer date can be compared to a radiocarbon dating from Gargas, a cave which numbers about 250 hand stencils, most of them with incomplete fingers, and many finger flutings (Clottes et al. in press). Some time ago it had been noticed that in the immediate neighbourhood of some hand stencils, a few natural cracks in the wall had been filled with fragments of bones. This was reminiscent of the hundreds of bones similarly inserted into cracks in the Magdalenian cave of Enlène (Bégouën and Clottes 1990). In Gargas, the proximity of the hand stencils implied that the bones were in relation to them and that they had probably been deposited there after the hand negatives had been painted; how long after is a matter of conjecture. One of the bones was removed and dated by AMS to 26 860 ± 460 BP (Gif A 92.369). If we take the statistical margins into consideration it is obvious that the Cosquer date for the black stencilled hand and the Gargas date for the bone associated with several hand stencils fall within the same time span, which can hardly be a coincidence considering that these are the only two caves in Europe in which a great number of negative hands with incomplete fingers are to be found.

Radiocarbon dating by accelerator enables us to have more and more direct dates for Palaeolithic art (Valladas et al. 1992). This will enhance our ability to, as we have done at Cosquer and Gargas, compare dates in addition to comparing themes and styles, which is a great advance. In some cases new ^{14}C dates may come as a surprise and in the long run, if enough dates can be obtained, they will probably provide the traditional stylistic chronology with much more precision (Clottes in press) and may even introduce major changes in our outlook. For example, we know now that H. Breuil was not far wrong when he attributed the first finger flutings and stencilled hands to the Aurignacian. The new dates we have for Cosquer and Gargas are older by two or three millennia than we would have surmised, and they belong either to the late Aurignacian or to the early Gravettian.

However, this does not yet drastically change the picture of Upper Palaeolithic art. On the contrary, we may draw several conclusions from our new dates that are rather heartening for an archaeologist:

1) Direct dating must always be performed to check archaeological hypotheses and address particular problems. Aimless dating would only provide unrelated data

that would have to wait until they could be corroborated by other methods.

2) The results from Cosquer Cave, a site of extremely difficult access, show that it is possible to conduct a reliable study using slides and film, provided the research is checked out on the site and by analytical means.
3) The existence of two discrete phases in the cave art and their chronological attributions are now confirmed by a large number of dates that probably make Cosquer the best-dated rock art cave in the world. These hypotheses had been put forward earlier (Clottes et al. 1992a, 1992b) through the use of time-honoured archaeological methods such as the study of superimpositions and stylistic comparisons.

Acknowledgments

Figure 1 has been provided by J. Cosquer and J. Courtin; Figure 2 by L. Long (D.R.A.S.M.); Figures 3, 6 and 7 by A. Chêné (Centre Camille Jullian, C.N.R.S., Ministère de la Culture - Direction du Patrimoine); Figures 4, 5 and 11 by the French Navy; Figures 8, 9 and 10 by V. Feruglio. To all we give our warmest thanks.

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Résumé. *Toute une série de dates radiocarbone par AMS ont été obtenues pour la Grotte Cosquer. Elles comprennent des dates directes sur des peintures pariétales, corroborées par les dates de charbons trouvées sur le sol de la caverne. Deux phases dans l'utilisation de la grotte et dans l'art pariétal sont mises en évidence. Les représentations animales gravées et peintes sont décrites, et les tracés digitaux et les mains négatives font l'objet de discussions.*

Zusammenfassung. *Eine Serie von AMS Radiokarbon-Daten wird aus der Cosquerhöhle vorgelegt. Sie schliesst direkte, von Felsmalereien gesicherte Daten ein, die von den Daten der auf dem Höhlenboden gefundenen Holzkohle bestätigt werden. Zwei Phasen von Höhlenbenützung und Wandkunst sind auf diese Weise identifizierbar. Die gravierten und gemalten Faunadarstellungen in der Kunst werden erörtert, und die Fingerrillen und Handnegative werden besprochen.*

Resumen. *Toda una serie de fechas C14 han sido obtenidas por el sistema AMS para la Cueva Cosquer. Estas incluyen dataciones directas sobre las pinturas rupestres que han sido confirmadas por la dataciones de carbones hallados en el suelo de la cueva. Se han identificado dos fases de utilización de la cueva y de realización de las pinturas. El artículo contiene la descripción de las representaciones animalísticas grabadas y pintadas, así como el comentario sobre los trazos digitales y las manos negativas.*

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RAR 9-242

RAR DEBATES

Comment on
MICROSCOPIC AND STATISTICAL CRITERIA FOR THE IDENTIFICATION OF PREHISTORIC SYSTEMS OF NOTATION

By FRANCESCO D'ERRICO

In *Rock Art Research* 1991, Vol. 8, No. 2, pp. 83-93.

FURTHER COMMENT

The graphical presentation of statistical data for the assessment of edge angle variance of Palaeolithic 'art mobiliar' engravings

By MAURICE P. LANTEIGNE

Francesco d'Errico presents an important replicative experiment in the identification and statistical differentiation of microscopic morphological criteria for an intriguing facet of European Palaeolithic art (*RAR* 8: 83-93). While I do support some of his major theoretical understandings as to the likely correspondence between lithic cutting edge angles and resultant incision angles, and his methodology of measuring same, I also have some minor quibbles with his chosen manner of presenting the statistical data which may influence the significance of his stated conclusions.

The use of lines to join points on a graph (Figures 7, 8 and 9) is reserved specifically for the comparison of one 'continuous' variable against another, with some statisticians privately suggesting that its use be exclusively retained for 'Time Series' analyses. Disregarding the more stringent of these positions, one should never join together cases of a 'discrete' variable, e.g. 'notches', for no mathematical progressive relationship exists between them. A 'discrete' variable is one in which each event value may occur independently of the other. Their numerical representation on a graph scale is purely arbitrary, and introduces a substantive observational bias.

In d'Errico's various examples, one may suggest that there is indeed 'lineal' order, in that the notches appear sequentially along a length of bone and, therefore, that is the progression in which they should be viewed in the graphs. However, the observational bias which is introduced is the assumption that the lineal series the scientist perceives is in fact the order in which the notches were executed by the Palaeolithic 'artist'.

The implications of d'Errico's use of line graphs to illustrate the significance of his results would become readily apparent if we randomly sorted the values of Figure 7A in order to mimic the unknowable order in which the Palaeolithic 'artist' may have executed the notches. The irregularity of the new curve would be quite contrasting. Unless one were a statistician, one may be prepared to suggest that the results of the new hypothetical curve, when compared with d'Errico's Figure 7A, represented the use of different cutting edges. Although an analysis of variance would demonstrate that no statistical differentiation were evident between the two curves, because the values are exactly the same, the untrained eye may be fooled into perceiving differences, depending upon the scale of the graph employed.

Which leads me to the second point. The scale of the graphs employed by d'Errico are not visually consistent. The scale of the three graphs of Figure 7 vary by almost as much as 1:3; the two graphs of Figure 9 vary by a 2:5 ratio. Such can be misleading and should be avoided at all times. Admittedly, d'Errico's analysis is not based upon an examination of graph curves, but upon an understanding of Coefficient of Variation and Standard Deviation values. In that respect, I agree with his basic thesis - that differential angle variance is more probably indicative of dissimilar tool edges. The representation of angle variation, however, should not be according to the lineal order of the notches.

What are the implications of introducing such an innocent bias, when attempting to interpret notational systems? Recall the highly irregular curve of the Solutrean rhinoceros rib (d'Errico's Figure 9B). If the values of this curve were subjected to a Cluster analysis, we may find that only two major clusters of edge angles are present, rather than the multitude of edges as implied by d'Errico's graph. Generational revitalisation events are quite common in other mediums without any loss of cultural meaning. Why not also in mobiliary objects reflecting notational systems?

Two other points also come to mind, which d'Errico may (or may not) have addressed elsewhere. Firstly, what is the mathematical relationship between the deterioration of lithic edges and subsequent notch incision angles, a relationship apparently evident within the Placard 8 curve of Figure 9A, said by d'Errico to represent the use of a single cutting edge. In replicative use-wear analyses of a late Palaeo-Indian complex (Lanteigne 1989), I was impressed by the seemingly indestructible nature of the exclusive rhyolite material, and could only reliably identify use-wear with 40 x micro-optics in less than four per cent of the total assemblage. However, when a small sample of the assemblage was subjected to diagnostic residue analyses, 9/14 unmodified flake 'tools' were positively identified for organics, with 5/14 testing positive for blood residue (Lanteigne 1991; Newman 1990), signifying that traditional use-wear identification characteristics were not applicable for this particular complex.

In the nearby Mud Portage complex, only 6 km downslope and 2000 years later (cf. Steinbring et al. 1987), the occupants preferred more friable materials despite having a more than adequate rhyolite quarry only minutes away. In this assemblage, much of the use-wear was readily identifiable at arms-length (Lanteigne 1986).

To a lithic specialist, it is self-evident that edge deterioration is a function of the hardness of the lithic material. But the 'hardness' of lithic material is relative to the 'hardness' of the material to which it is applied. Which brings me to my next point.

Bone density ratios, hence 'hardness', will vary according to the location of the bones in the skeletal frame. Bone density ratios will also vary along the length of a particular bone. For both variables, specific bone density ratios will vary according to species, sex, age and even seasonal factors. These various features are indicative of the onset and completion spans of developmental stages in osseous growth centres, and variable osteogenesis and histological modifications in bone metabolism, resorption and synthesis; as reflected in haversian systems, periosteal deposits and other remodelling episodes. (For an expanded discussion on these features, see Dixon and Sarnat 1985, and in particular Behrents 1985; Hancox 1972; Pyle et al. 1961.)

It seems to me, therefore, that one must take into consideration not only the relative hardness of the incising lithic tool but also the characteristics of the material being incised, in order to

properly assess the effect that the rate of edge angle deterioration may have upon resultant incision angle variance (the latter characteristic being central to d'Errico's thesis).

Finally, it has been my experience when attempting to develop and test predictive models under a diversity of circumstances, that a single variable is only sufficient to establish correspondence, not correlations. That is to say, single variables are useful for 'substantiating', not 'sustaining', predictive models. Additional variables which may prove useful are: the depth of the incision, the width of the incision at the commencement of the cut, and the width of the incision at the base of the cut. Perhaps the transformed quadratic function of these variables may collectively prove to be a more conclusive diagnostic of the event relationship d'Errico is hoping to establish.

For a comparison of the procedures employed by d'Errico, readers should consider the recent work by Ebba M. During (Osteological Research Laboratory, University of Stockholm) and Lenart Nilsson (Royal Institute of Technology, Stockholm). In their examination of the topographical structure of putative 'scalping' marks on the frontal bone of a Middle Neolithic cranium from Alvastra, Sweden, During and Nilsson (1991) employed a Form Talysurf instrument by Rank Taylor Hobson Limited, United Kingdom, coupled with a PC-MATLAB computer program, supplemented by SEM analysis.

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REPLY

The study of engraved notches and their statistical analysis

By FRANCESCO D'ERRICO

I thank M. P. Lanteigne for the interest he displays in the outcomes of my researches, and for his stimulating comments on my 'manner of presenting the statistical data'.

I would like to begin my Reply by reminding the reader that, as Lanteigne himself recognises, the statistical part of my proposed model builds on variation coefficients and Standard Deviation values. The graphs presented in my article were intended to illustrate, but they were not part of the demonstration itself. Likewise, it is worth noting that the use of a more sophisticated statistical analysis brings Lanteigne to conclusions which are quite similar to mine.

Let us briefly address the subject of presenting data graphically. Each method of graphic representation has its advantages and disadvantages. Contrary to Lanteigne's claim, the representation of variations by means of a continuous line is widely used, even when not applied to 'time series' analyses. Consider for example the way sedimentological, palynological or faunal variations in a site's stratigraphy are presented. These variations are recorded along the depth of the site, in a manner that does not necessarily correspond to a continuous chronological scale. Likewise, dimensions of teeth have been published by anthropologists as a continuous curve for a number of years now, without raising undue surprise, and the same applies to cumulative diagrams in lithic typologies, etc.

So far as experimental notches are concerned, we know both the chronological order in which they were executed, and the direction of their juxtaposition on the object. Variations in the angles of those notches do not therefore constitute, as Lanteigne maintains, a 'discrete variable'. Thus there seems to be no reason why variations in their angles should not be presented in a continuous fashion.

Obviously, archaeological notches are more challenging. Nonetheless, two reasons seem to me to argue in favour of their graphic presentation as continuous lines. Firstly, there can be no doubt in the cases I have studied that this continuous presentation corresponds to the disposition of notches on the archaeological pieces. To ignore this in graphic presentation would impose an unwelcome arbitrariness, given that the disposition of these notches is an intrinsic feature that could well have been of importance for the prehistoric artisan. Secondly, my choice of continuous lines was also aimed at making it easier for the reader to compare the variations observed in the experimental and the archaeological series.

As for the variations in scale criticised by Lanteigne, their aim was to enable the reader to appreciate the small variation in the values of the angles of notches caused by the same cutting edge. Indeed, had the same scale been maintained throughout, the variations in the angles of the notches made by the same tools would not have been visible; they would have appeared as a horizontal line.

The various factors mentioned by Lanteigne (variability in the strength of the bone, in the raw material of which the tools were made etc.) were already touched upon by Bednarik in his earlier Comment (*RAR* 8: 89-91). On the basis of my experimental results it does not appear that, in the production of notches on bones, as well as on deer and reindeer antler, the anatomical provenance affects the observed microscopic character of these notches, or variation in their angle, in a significant manner. This relative independence is confirmed both by blind tests and by the analysis of archaeological material, so that the above factors do not significantly affect the proposed model. I invite Lanteigne, if he maintains his position, to test his hypotheses using my meth-

ods or those of others. It is, however, important to recall that the archaeological aim here is not to determine the very weak variations in notch morphology induced by factors related to sex, age, time of season, and stage of osteogenesis of the bone involved. It is to find out whether there has been a change of tool in the course of making a series of notches on the bone.

Lanteigne's observations regarding the wear of the tool's cutting edge may be attributed to his casual reading of my article. The angles were measured by adapting best-fit lines to the sides of the notch. This procedure allows calculation of the angle of the tool, independent of any wear occurring on the cutting edge (Fig. 1).

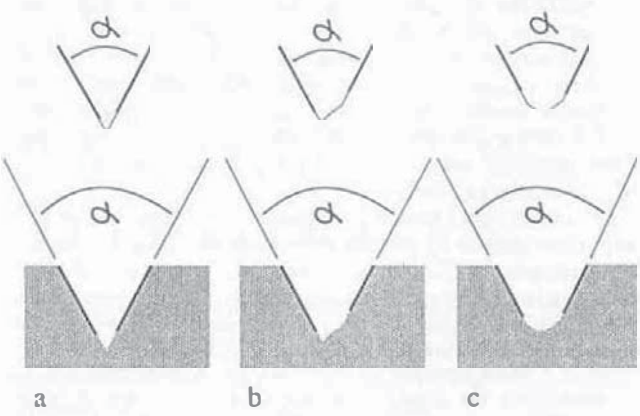

Figure 1. The measure of notch angles: adapting a best-fit line to the sides of the notch. (a) - Sharp cutting edge. (b) - Slightly damaged edge. (c) - Heavily damaged edge. The angle of the tool can be determined independent of any wear occurring on the cutting edge.

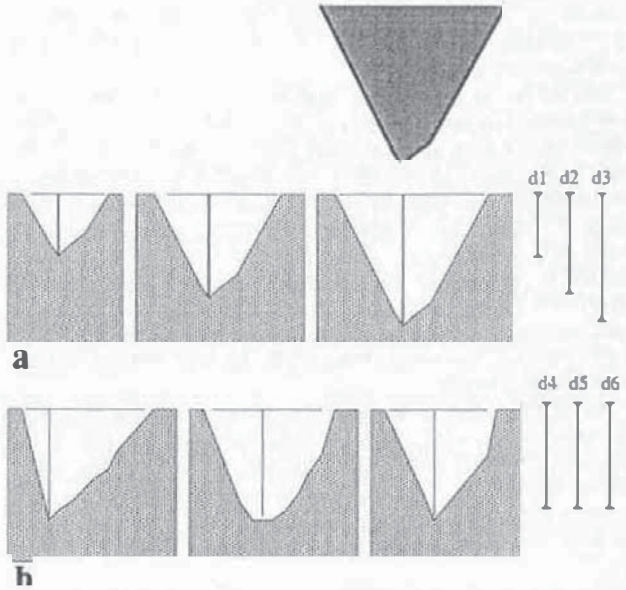

Figure 2. The depth of the notches depends on the number of to and fro movements effected with the cutting edge in creating the notch. It cannot help in differentiating notches produced by different cutting edges. (a) - The same cutting edge produced notches of different depths. (b) - Different cutting edges produced the same notch depth.

Lanteigne is surely correct to affirm that the use of several variables would be preferable to the use of a single one. The challenge, however, is to find other good variables which would relate to the questions asked. It is easy to show that the variables he proposes are of little use. The depth of the notches (Fig. 2) depends on the number of to and fro movements effected with the cutting edge while creating the notch. Given that the same cutting edge can produce notches of different depths, this criterion cannot help to differentiate notches produced by different cutting edges.

As for the other variables put forward, a better definition seems necessary to me. What exactly are the 'initiation' and the 'basis' in a notch made by a to and fro movement of a cutting edge? If the variables in question are invalid or ill-defined at the onset, it is difficult to see how their 'transformed quadratic function' would enable a 'more conclusive diagnostic'.

Before Lanteigne attempts to use such variables in complex statistical analyses, I can indicate to him other variables which I have tested and found to be without interest: the length of the notch (it depends on the morphology of the bone object itself); the width of the notch (like the depth, it depends on the number of to and fro movements made by the cutting edge); and the best-fit circle adapted to the bottom of the notch (it increases with increasing wear of the cutting edge).

In concluding, I would like to point out again that the statistical criteria I have used in my article form only a part of the method I propose, the other being based on the identification of microscopic features as recognised on experimental notches, and on the analysis of the morphology of their profile. Submitted to blind tests, these three methods have given converging results.

RAR 9-243

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Comment on
INDIGENOUS ART AND THE LIMITS OF SOCIAL SCIENCE

By KINGSLEY PALMER

In *Rock Art Research* 1991, Vol. 8, No. 2, pp. 113-18.

COMMENT

Diversity and relativity in meaning

By MICHEL LORBLANCHET

I agree entirely with the contents of Kingsley Palmer's paper. I also enjoyed the subtlety of the style of this paper which reminded me of some delightful moments spent with Kingsley right out in the Western Australian bush, sometimes with Aborigines, and on Australian and French rock art sites.

The fundamental question of the interpretation of rock art is also one of my main concerns. For an archaeologist, which is what I try to be, the relativity of meanings is fascinating; it is in fact much more interesting than if meanings were stable through time. The archaeological approach to rock art should obviously take into account the historical, cultural and social dimensions of meanings. Archaeologists should endeavour to discover the flow of meanings through time and space. Let us be more precise: it is not in fact 'the meaning' itself which should be the target of the archaeological research, but the changing use of the images through the past and the land: I am more and more convinced that the 'search for meaning' (in Leroi-Gourhan's structuralist sense

which tends to freeze and oversimplify meaning) is probably archaeologically irrelevant. The new research on Palaeolithic rock art is focusing on in-depth studies of the sites, including the systematic recording of the art - as complete and as accurate as possible - complemented by new pigment analyses, and associated with a systematic study of the archaeological context of the art (excavations of the painted caves, and study of all marks left on the ground and the walls of the cave by the prehistoric users of the place). This work provides much information about all the different activities that have taken place at the sites and that were more or less directly related to the art. We are discovering that the decorated caves have been often frequented and used for a very long time. The walls and the ground of Cougnac cave, for example, bear marks produced in a lapse of 10 000 years. The sites may have been used in many different ways: sometimes for rituals of groups of people, including children and women in certain cases, sometimes for a restricted art. It is the scope of research to try to establish which part of the society used the caves; some rituals included rock paintings, some others simple retouching of the figures or simple touching of the walls without painting; offerings are also found associated with Palaeolithic art.

To my mind, one of the most important aims of the archaeological study of prehistoric rock art is to try to understand the changing functions and uses of the walls and sites. From the work I am doing it appears that rock art has constantly been reinterpreted and that the persistence of the images through millennia did not imply the permanence of meaning. On the contrary, there is evidence of subtle adaptations of images to changing contents.

Kingsley is wrong in assuming that, to me, 'interpretation is a matter of final comment'. In fact the change of meanings was the topic of my article cited. In that paper, I tried to show how 'the pre-existing "container" formed by the outline of the previous figures had been reused and adapted to receive new contents'. I noted that 'this dynamism and fluidity of meanings have not yet drawn the attention they deserve' ... 'the Aborigines continue to interpret rock art in their own manner today, as they did in the past ... if a researcher had studied Australian rock art several centuries earlier, he would not have registered the "original meaning" of old images, but the interpretation of the moment ...' (Lorblanchet 1980: 473). I presented evidence showing that the situation was partly the same in Palaeolithic rock art.

I developed this point in several subsequent papers, for example in 1988 I wrote that

> the fluidity of meanings is also a chronological notion. One of the characteristics of Australian art is the contrast between the permanence of forms through time and the dynamism of meanings ... the modifications of the old motifs in the course of successive re-utilisation reveal an evolution or a complete change in their meaning ... The myths which are illustrated by many engravings or paintings evolve, follow one another and are superimposed just as lines are superimposed on the rock (Lorblanchet 1988: 283).

I pointed out that

> retouched figures exist in European caves; but neither here nor in Australia does the reuse of figures imply a continuity in meaning. According to L. Hourticq, who showed how images persist through civilisations, 'artistic forms are like vases that generations pass on to fill with different liquids' (Lorblanchet 1991: 10).

The diversity and relativity of the meaning of the art is really what Australian art taught me. On this point, I feel both close to and far from A. Marshack's work: this author is right to propose a more dynamic view of Palaeolithic rock art than the structuralist one, but I believe he is still simplifying rock art in proposing an interpretation of it that is too systematic. The cyclical uses and notation markings were probably not as consistent as he thinks. The attitudes to rock art appear much more varied through time; it is the archaeologist's task to check this and show such a variety.

I disagree, however, with Kingsley Palmer when he writes - in an excellent expression - that recording is just 'another version of the art'. To my mind he over-emphasises the subjectivity of the recording work.

It is true that this is partly a subjective operation, depending on the cultural and intellectual background of the researcher. But it is the same in all human sciences and I guess that an anthropologist perceives a foreign culture through the subconscious filter of his own. All sciences have limits, but it does not prevent us from trying to surpass these. Recording tends to be more and more objective today. In response to the frequent criticism of 'empiricism' of many rock art studies (including mine), I would like to point out that in the first two rooms of the Palaeolithic Pergouset cave (Lot, France), Leroi-Gourhan and Vertut spent a few hours photographing and carefully examining the walls. They discovered - without trying to record them - half a dozen engravings confirming Leroi-Gourhan's theory of cave organisation. After completing the recording of the same part of the cave in a three-year project, I recorded and listed fifty-seven engravings, and they do not at all confirm Leroi-Gourhan's theory. Working with preconceived ideas leads often to being blind to alternatives. Only recording, as complete and as objective as possible, can allow us to know exactly what we are dealing with. Nothing is more subjective in rock art research than work which is not based on recording. I would consider that a figure which has not been recorded is the equivalent to an archaeological vestige that has not been excavated: recordings are simply a corollary to excavations.

Let us look at a last example, this time in Australian rock art. At the top of Gum Tree Valley (Dampier, Western Australia), which can be reached only by a difficult walk among boulder deposits, I counted forty-five petroglyphs that can be seen without difficulty between 10 a.m. and 4 p.m., that is to say, during the time of day most researchers visit the site during the dry season (there are no visitors in the wet season). After recording the petroglyphs of the site for more than a month with a small team, 417 figures were discovered. Most of them are very faint and difficult to see, just visible at sunset or sunrise, and often only at night with an artificial light.

Whatever the empiricism and subjectivity of recording might be here, this was the only way to escape the traditionally biased approach to rock art of those passing-by archaeologists (which is certainly full of theories and new ideas) who take snap shots of petroglyphs and select just the most visible and most recent motifs. It was the only way to discover and assess the first art phase of Western Australia, certainly Pleistocene, as the artefacts associated with the petroglyphs showed: very ancient and patinated tools and a large shell were radiocarbon-dated to 18 510 ± 260 years BP (Lorblanchet 1992).

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RAR 9-244

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Comment on
THE USE OF GRAFFITI IN THE MONITORING OF COMMUNITY ATTITUDES TOWARDS ABORIGINAL ROCK ART

By M. J. MORWOOD and Y. KAISER-GLASS

In *Rock Art Research* 1991, Vol. 8, No. 2, pp. 94-98.

COMMENT

Carve your name with pride? Visitor behaviour at Blacks Palace art site complex, Central Queensland Highlands

By LUKE GODWIN

Recently, Morwood and Kaiser-Glass (*RAR* 8: 94-8) made novel use of dated graffiti in rock art sites in central Queensland and in New South Wales to study changes in community attitudes towards cultural heritage, and art sites in particular. Their data suggested that there had been a decrease in the level of graffiti/vandalism in sites since the late 1960s. This decrease apparently coincided with the introduction of legislation protecting cultural heritage sites in these states, and the emergence of a positive conservation ethic in the community.

Over the last two years, the Department of Environment and Heritage has been preparing a series of management plans for sites in the Central Queensland Highlands. This included reviewing data on visitor behaviour and graffiti/vandalism in art sites. Analysis of information contained in visitor books and dated graffiti from the Blacks Palace complex and sites in Carnarvon Gorge, along with a reappraisal of Morwood and Kaiser's raw data, confirms some of the general trends identified by Morwood and Kaiser-Glass. It also indicates, however, a more complex pattern of response towards art sites in the Central Queensland Highlands in the last 20 years.

Blacks Palace: patterns of visitation and vandalism

Blacks Palace is the largest art site in the Central Highlands of Queensland. It contains a wide range of stencils (including many composite motifs), petroglyphs and free-hand paintings, with more than 9000 separate motifs recorded. It has been the subject of considerable investigation in the past, and its significance to both the Aboriginal and scientific communities is undoubted (see Godwin 1992 for a summary). Unfortunately, it is also the most heavily vandalised site in the region (see below).

Graffiti recorded in this site shows that people have been visiting this site for at least 80 years. It is impossible to estimate the total number of visitors over that time. However, data from the visitor books placed at the site for the last 23 years provides data for this period, and may serve as a guide as to patterns of visitation over the longer term. These data are presented in Figures 1-3.

The following limitations and assumptions pertain to the use of these data. Studies in Carnarvon Gorge show that visitor use of books varies widely. On some days nearly 100% of visitors signed books, while on others the percentage was much lower. Thus, numbers of visitors shown in the book are only a very loose approximation of visitation: analysis indicates that, on average, visitor books in Carnarvon Gorge represent less than 25% of total number of visitors. However, there is no reason to suppose that there is not a random sample of visitors who choose to sign the book. That is, no one group of visitors (male/female, old/young, local/extra-regional) is more likely to sign the books than any other.

It can be seen that there have been at least 2500 visitors at the site during this time (it is impossible to be more precise as several pages are missing from the books). Applying a correction factor of four (only 25% signage) would take numbers to about 10 000, or approximately 500 people per year since 1968. However, it is possible that a higher percentage of visitors signed the book at Blacks Palace than was the case in Carnarvon Gorge, because of the more isolated nature of the former site. In this case, numbers would be substantially lower than 10 000.

The catchment for these people included both local, regional and extra-regional sources. Over the first four years, however, the greater percentage of people were drawn from the local area. These declined, as did general interest in the site, during the mid and late 1970s. Numbers of regional visitors have remained fairly constant over the 23 years. Visitors from the extra-regional catchment have increased in the last 10 years in real terms. They have also come to dominate the visitor population in percentage terms: in the first 4 years that the books were installed, 479 locals and 227 extra-regional visitors visited the site, while in the last 4 years (1986-89) the figures for visitation are 230 locals and 334 extra-regionals. A chi square test demonstrates that this shift is, statistically speaking, highly significant.

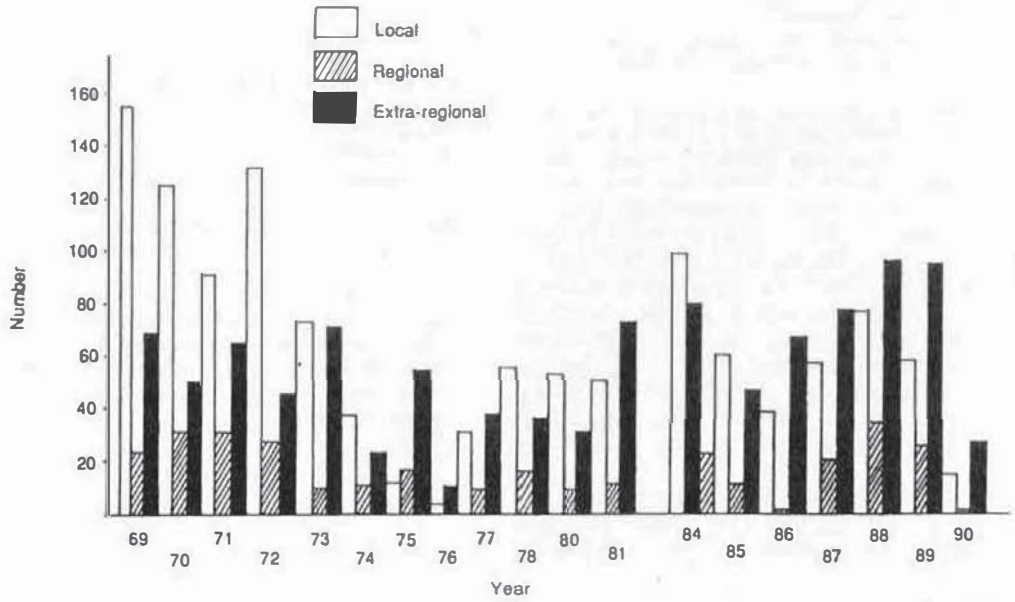

Figure 1. Blacks Palace visitor catchment, 1969-1990.

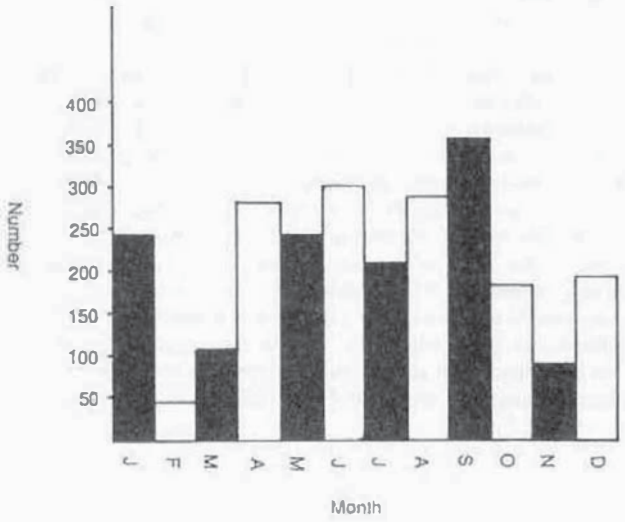

Figure 2. Blacks Palace visitor numbers by month, 1969-1990

From this it is concluded that immediately after visitor facilities at the site had been upgraded (in 1967 the local Rotary club placed a picnic shed and other facilities at the site, no doubt with some local media interest being generated by this), local people displayed some interest in the site. This has waned in recent years, although the site is well-known locally. This decrease may be due to constraints placed on access by the local land-owner: closing off of a back entrance to the property, and the need to obtain a key for a gate. The significant increase in extra-regional visitors may be due to increased tourism to the area, possibly aided by the greater availability of 4WD vehicles over this time (see below). Tourist maps produced by Sunmap include the site, which could also influence extra-regional interest. (The site is also mentioned in Flood [1990], a book aimed at a general readership).

In view of the inaccessibility of the site for those without personal transport, and the limited amount of tourism and lack of 4WD vehicles until the mid to late 1970s, it is likely that extra-regional visitation to the site was at a historical high over the last few years. Local visitation may have reached a peak during the late 1960s. However, given that the site could be reached on horse-back, or by horse-drawn vehicle, local people may always have used the site as an interesting picnic/camping location during holiday seasons such as Christmas/New Year, Easter and school breaks. This pattern of use is certainly suggested by the visitor books, which show substantial visitation at such times. Even so, numbers of local visitors may well have increased in the last 30 years.

While on the subject of visitation patterns, Figure 2 shows that visitation was lowest over the late spring and summer months, excluding January, and increased over the autumn-winter months. This probably reflects high summer temperatures and lack of water at the site, making it generally unattractive over that period. January may be aberrant because it was a traditional holiday period, particularly immediately after New Year. Dates of visits in the visitor books suggest that New Year's Day and the next few days were an especially popular time to visit the site. Upwards of 50 people have visited the site on any one day, though whether they were members of one party or several can not be determined.

The most tangible evidence of the impact of visitors on the site is the large number of names that have been carved into the soft sandstone. These date from 1907-1908 through to the present. Visitor books have proved an effective means of reducing graffiti activity at many sites, and in this Blacks Palace is possibly no different. In spite of their presence, however, people have continued to engrave names at the site, with at least ten names post-dating placement of the books. Viewed as a percentage of total visitation (based on numbers from the visitor books) 0.4% of *known* visitors have vandalised the site since 1967.

There have been other, now less obvious, but no less significant, impacts on the site as a result of frequent visits. Although burials, many in bark cylinders, were recorded at the site in early correspondence, none remain. All formal burials once present in the site have been taken or vandalised, to the point where only a few isolated skeletal remains can now be seen on the surface. There have also been attempts to souvenir the art itself through removal of sections of the art surface. A government surveyor, Drane (1918), actually did this, noting in a letter that he included a section with a hand stencil intact. Others have attempted to repeat this.

There has also been some malicious vandalism (i.e. damaging the art for no other purpose but to destroy it). In some instances, various calibre firearms have been fired at the art, quite often at strategic places (for instance to make an 'eye' in a hand stencil shape). The discharge of some very large-calibre firearms has blown some parts of the shelter walls to pieces. Various attempts to duplicate roughly some of the petroglyphs, or add to them with items of the vandals' own creation, can be seen at the site. These are easily identified as they appear very fresh, are poorly rendered, and are superimposed on the painted art, whereas the pre-Historic petroglyphs generally underlie it.

It should be noted at this point that the site (now closed) was visited by people as and when they liked, without any reference to the Archaeology Branch, D.A.I.A. This was in spite of the fact that it was a legal requirement for visitors to obtain a permit from this body before doing so.

Discussion

Morwood and Kaiser-Glass have presented data on levels of vandalism in sites in the Central Highlands. Using dated graffiti, they claim these data demonstrate a decreasing trend for graffiti/vandalism in sites, and that this might in part be due to the introduction of the Relics Protection Act in 1967 and changes in community attitudes. However, re-analysis of their raw data shows that the picture is not so simple.

Overall, there has been a near-doubling in the rate of vandalism from 1.1 acts per year from 1934 to 1968 (the year the Relics Protection Act was introduced), to 2 acts per year between 1968 and 1984 (Figure 3). This may result from greater visitation due to increased accessibility stemming from more roads, more suitable vehicles, and increased tourism levels.

Some indication of the massive increase in visitors to the region can be gained from statistics collected at Carnarvon Gorge. These show a total of 7398 campers and 3223 day visitors per year in 1976, increasing to 13 101 and 4643 respectively in 1981, and reaching 16 036 and 7057 respectively in 1987. The rate of growth in total visitor numbers between 1964 and 1976 has not been so marked but in percentage terms it was enormous. Figures show an increase of 683% in visitation during that period: Walsh (1984) quotes figures of 1200 visitors in 1964/65, climbing steadily to 8200 in 1972/73, before dropping back slightly to the 1976 figures. These data are plotted on Figure 3. Included are some estimates for the preceding 30 years, calculating back from 1964, and using progressively lower estimates of growth as we go back in time. Very conservative growth rates are used for before 1964, and these possibly represent an overestimate of visitor numbers between 1936 and 1964. (These are meant only as a heuristic device to provide an idea of possible visitor growth trajectory during that period for the region as a whole).

Both Morwood and Kaiser-Glass' raw data on graffiti across a sample of sites in the region and average annual rates of graffiti for each 10 year period, based on Morwood and Kaiser-Glass' data, have also been plotted on Figure 3. This shows a trend for an increase in graffiti through time that seems to parallel the trend for increased visitation to the region. This continues until the mid-1970s at which time the increase, while continuing, starts to flatten out and may even be dropping at a significant rate. Comparison of average amounts of graffiti for 1936-67 and 1968-

1984 does, as noted above, show an increase, but the gap between this average and the projected visitor numbers widens markedly through time. Thus, while absolute amount of graffiti is increasing, the level of graffiti to rate of visitation is clearly decreasing. Note that visitor impact before 1968 may have been greater than appears to be the case, as the visitor growth curve is conservative, and there may have been far fewer visitors before then.

This change in visitor impact may be due to a modification of visitor attitude through education, a change in visitor catchment (people from different socio-economic backgrounds, as suggested by Morwood and Kaiser-Glass) and legal developments (declaration of Acts designed to protect cultural heritage). It may also partly be the result of an expanded National Park system and decreased access to private property as land-owners become more concerned about allowing people onto their holdings.

While there may be some reason to hope that, overall, the impact of visitors on sites is fast diminishing compared with the large numbers of people visiting the region, the situation as it relates to Blacks Palace is far from comforting. There are at least 10 dated examples of vandalism at Blacks Palace in the period 1968 to 1989. Of the 32 examples of graffiti in Morwood and Kaiser-Glass' Queensland sample dated between 1968 and 1984, this site contributes over 30% of the dated graffiti recorded for this period. Averaging out the other 22 graffiti events for the remaining 11 sites indicates that they each have suffered only 2 acts of vandalism in the same time. Thus, Blacks Palace is, on average, likely to be vandalised five times more often than other sites in the Central Highlands, bearing out that this site is the most heavily vandalised in the region. It also cautions that claims that the Aboriginal Relics Protection Act (1967) and its replacement, the Cultural Record (Landscapes) Act (1987) have been 'very successful in defining appropriate visitor behaviour at sites' may be overly optimistic.

These data also show that visitor attitudes to sites vary markedly across the region. As a general observation, the minimal vandalism that sites with far higher rates of visitation in National Parks have suffered in the last 10 years suggests that incorporation of sites in Service estate, with professional development of interpretive and protective measures, and regular monitoring by park staff, is a very effective management strategy. Thus, of the thousands of people who have visited Cathedral Cave in the last 10 years (at least 50 000), only two or three have felt the need to vandalise the site. Sites not so protected would appear to be far more vulnerable despite the far lower rates of visitation to which they are subject. These less well-known sites will more likely be visited by knowledgeable locals, perhaps reinforcing the point made by others (e.g. Gale and Jacobs 1987) that such people constitute a high-risk category of visitor.

Following on from this point, the data indicate that site management programs run by the Archaeology Branch (e.g. the honorary warden and site ranger systems) for sites off Service estate were not particularly effective in affording protection. Detailed analysis is required to explicate the deficiencies of these systems. (These comments are in no way a criticism of the efforts of these committed people). It can be said, however, with regard to Blacks Palace the only direct management involvement of one warden was to call in Police to investigate vandalism he believed to be recent, but that proved (with photographic evidence) to be of some antiquity. Monitoring programs of this kind need to be carefully devised if they are to provide any meaningful protection to sites.

Conclusion

Because of the damage which has been done to the Blacks Palace complex, and its continued risk due to its isolation, the Department of Heritage has developed a comprehensive visitation plan for this site. This has been done in collaboration with relevant Aboriginal communities from the region. All access is now strictly controlled, with a permit required for any visit to this site. Permits will only be issued to bona fide researchers or accredited tour operators. Members of the public who wish to visit the site will be required to join a tour group. These steps are possible only because the site is situated on a scientific reserve and is gazetted under the Cultural Record (Landscapes) Act as a Designated Landscape Area, affording it a level of protection not available for most other sites. It also has required commitment from the appropriate authorities to implement such a policy under powers available to them in existing legislation.

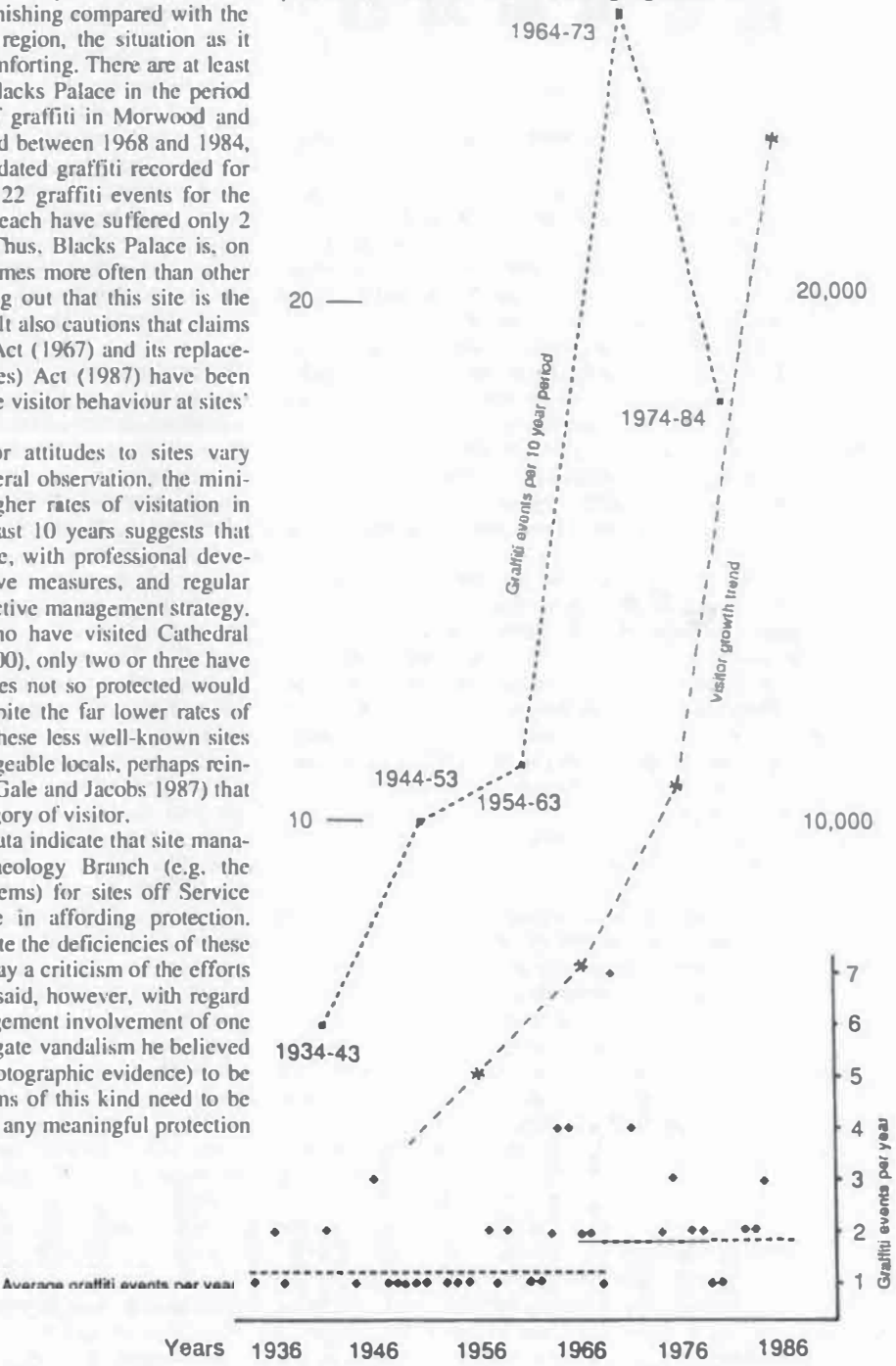

Figure 3. Dated graffiti in the Central Queensland Highlands: total amount per year, 10-year average 1934-1984, average amount per year 1936 to 1968 and 1969 to 1986, and estimated growth rate of visitation to Carnarvon Gorge over the last four decades.

Sites which have a high profile with the public almost inevitably attract the attentions of vandals. It is clear from this study that we cannot simply trust to a growing appreciation of the value of rock art by the general community. Appropriate tenure of land, provisions for policing/monitoring of sites or exclusion of visitation, and the will of the relevant government authority to exercise its legal powers, still must be invoked to effectively manage sites and combat vandalism, and will continue to be so for some time.

Acknowledgment

I thank Mike Morwood for permission to use his data and for discussing various points with me.

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Comment on
A NEW NAME FOR A NEW DISCIPLINE

By OSAGA ODAK

In *Rock Art Research* 1991, Vol. 8, No. 1, pp. 3-12.

FURTHER COMMENT

Rock art of southern Africa: an under-utilised data base

By H. C. (Bert) WOODHOUSE

Introduction

The recent exchange of views between Osaga Odak and Paul Bahn (*RAR* 8: 3-12) on the question of a name for rock art studies prompted thought, not so much on the name of the discipline, but on the use to which our rock art resources in southern Africa are put. I came to the conclusion that they are considerably under-utilised and although their study may be considered as a discipline or a sub-discipline in its own right, it is really equally important that they should be used as a data base for the amplification and illumination of other disciplines. Given below are examples of the kind of thing that I have in mind. I do not claim that what applies to the rock art of southern Africa is valid in other regions. That is for the enthusiasts in those regions to determine, possibly using my suggestions as a model, or at least as a thought-starter.

Zoology

It is reasonable to state that approximately half the individual subjects in southern African rock art are animals. Statistical studies by Maggs (1967), Pager (1971) and Vinnicombe (1976) support this broad statement. It is accepted that some animals were of special interest or significance to the artists, but almost all animals were painted somewhere, as is demonstrated in *When animals were people* (Woodhouse 1984). Used with care, rock art can make a significant contribution. A step in the right direction is made in *Historical mammal incidence in the Cape Province* (Skead 1987) and in J. D. Skinner's (pers. comm. 1991) work on springbok migrations.

Honey-gathering and beekeeping

Thanks to the initiative of Eve Crane, former director of the International Bee Research Association, this is probably the branch of knowledge and activity that has made most use of our data base. Reference to *The archaeology of beekeeping* (Crane 1983) will confirm this point, as will the list of references appended to my address to the South African Federation of Beekeepers in 1986 (Woodhouse 1987).

Cartography

A definitive work on the history of cartography, in several volumes, is being produced by the University of Chicago and some use is being made of southern African rock art. Work by Deacon (1986) is also relevant to this discipline.

Archaeoastronomy

It has yet to be established whether any of Marshack's (1972) work on the recording of lunar phases is relevant in southern Africa but there are certainly comets or fireballs recorded here (Woodhouse 1986). One, at least, is double-headed and may therefore be identifiable - particularly when we have a dating method.

Meteorology and climate

The artists' frequent depiction of rain animals may well have a contribution to make to the study of past weather patterns. This is another area in which dating will play an important role but the subject of rain as a motivating force has been recognised (Woodhouse 1991), as has the difference between light 'she rain' and heavy 'he rain'.

Trade

The identification of pigment sources could be a fruitful field for investigation, particularly as Ione Rudner (1982) has provided a firm foundation on which to build in *Khoisan pigments and paints and their relationship to rock paintings*. The 'cosmetic mine' at Bomvu Ridge in Swaziland where haematite and specularite were mined some 30 000 years ago (Dart and Beaumont 1968) and the description of the trade in these commodities are also good starting points, but the best opportunity may be in relation to the trade in iron artefacts which are illustrated so frequently.

History

The Bushmen of the Drakensberg and their interaction with blacks and whites have received detailed attention from Wright (1971) and Vinnicombe (1976) and there has been occasional use of reproductions of the art for illustrative purposes but little direct linking with historical events or trends. Motifs common to rock art and Iron Age pottery should prove a fruitful field for study, particularly in the Transvaal.

Shamanism

As a consequence of the work of Lewis-Williams, which is well known, the contribution of the art to the study of shamanism in southern Africa has been considerable and will doubtless continue to be so. It has extended to neuropsychological phenomena (Lewis-Williams and Dowson 1989) which may have an origin in common with some Ice Age art in the caves of Europe.

It seems important to differentiate between patterns derived from such phenomena, representations of unfamiliar natural objects such as honeycombs and the motifs derived from Iron Age pottery.

Botany

There are numerous botanical subjects among the paintings north of the Limpopo, not so many in the south, but sufficient to make a contribution which was noted by Reynolds (1950) in *The aloes of South Africa*.

Conclusion

This list is probably nowhere near comprehensive but, hopefully, it may give impetus and encouragement to the combining of rock art studies (or pefology) with other subjects to their mutual advantage.

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RAR 9-246

BRIEF REPORTS

An AMS date for north Queensland rock art

BRUNO DAVID

Introduction

Until recently, the dating of pre-Historic rock paintings relied exclusively on indirect determinations by their association with archaeological materials of known antiquity. Because of the fragility of ancient rock art, it had generally not been possible to extract organic matter from rock paintings because of the large amounts of carbon required for conventional carbon dating techniques. The advances in carbon dating, especially via Accelerator Mass Spectrometry (AMS), which occurred during the 1980s, enabled the dating of very small amounts of carbon. This has afforded archaeologists with new potentials for dating rock art. Such a potential has already been proven by AMS dates obtained from a number of rock art sites around the world (e.g. Lorblanchet et al. 1990; Loy et al. 1990; McDonald et al. 1990; Russ et al. 1990; Watchman 1992). This paper reports on initial AMS dates obtained from the Chillagoe region of north Queensland, Australia.

The rock art of north Queensland is highly varied (Cole and David 1992). The major painting traditions include a broad set of figurative conventions centred around the Laura sandstone belt ('Quinkan Country'), including the art of the Koolburra Plateau along its western periphery (Flood 1987; Trezise 1971). To the north, a local subregion of this figurative tradition is found at Princess Charlotte Bay and the Flinders Island group, whilst to the south a very different, non-figurative tradition is found in the Chillagoe region (see David 1990, 1991). Based on (1) investigations of superimpositions, (2) the degree and nature of weathering, (3) the presence of unstable white pigments, (4) the presence of painted dingoes, and post-contact fauna and items of material culture, and (5) their associations with dated deposits, I have argued elsewhere (David 1991, in prep.) that the great majority of paintings in all parts of north Queensland probably date to mid to late Holocene times, particularly the last 2500 years. If such an antiquity is borne out with the accumulation of direct dates which are likely to eventuate during future years, its implications are far broader than the dates themselves. The paintings which are believed to date to the last 2500 years or so are highly regionalised, a feature not evident in the petroglyphs which are believed to precede them (David 1991). The implications are that the changes observed in the art may express alterations in territorial behaviour (land management strategies), involving a regionalisation of social behaviour through space. The likelihood that major demographic changes took place at that time has already been given credence by a number of authors (e.g. Lourandos 1983; Beaton 1977) in what has come to be known as the 'intensification debate'. The dating of the paintings to the last 2500 years or so would have significant implications for this debate.

Figure 1. The painted panel, Racecourse Site (CM59). The maximum length of the bichrome painting is 57 cm.

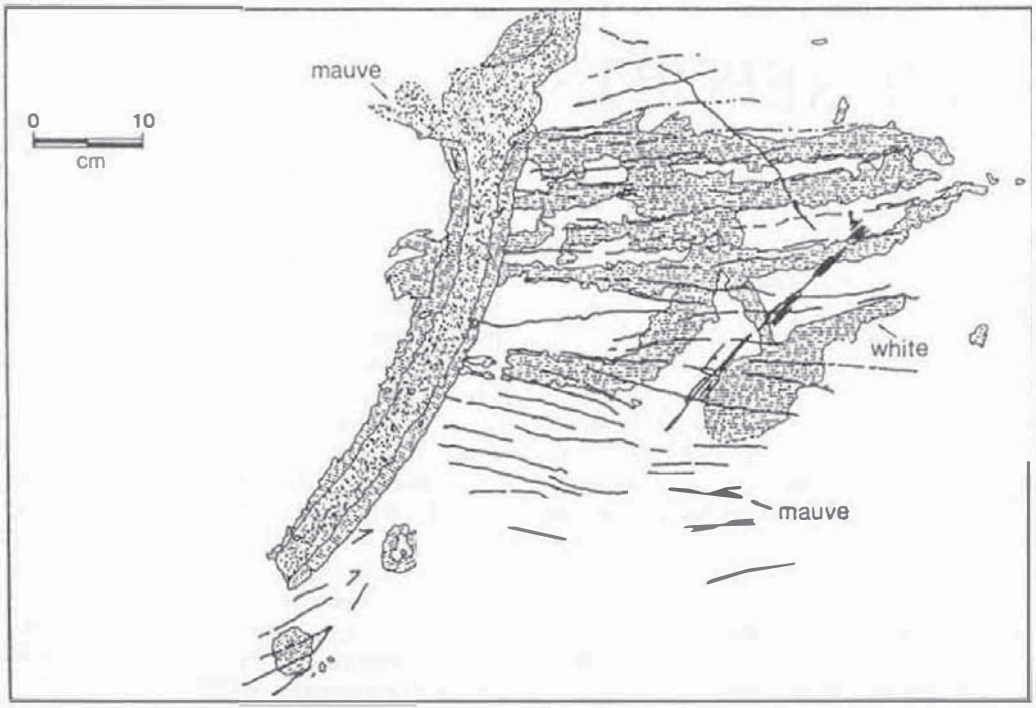

Figure 2a. Tracing of the white and red/mauve paintings and drawings from the painting panel.

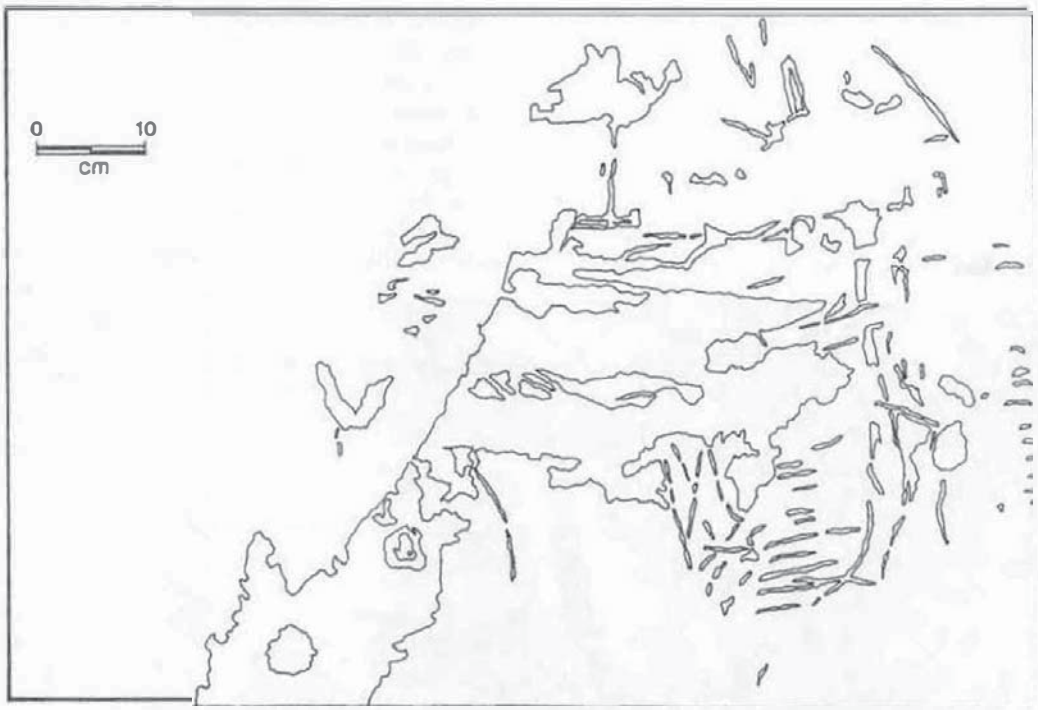

Figure 2b. Tracing of the black (charcoal) drawing underlying the drawings and paintings shown on Figure 2a. The charcoal shown here represents the charcoal which is not covered by other pigments, as well as the charcoal which can be seen underneath other pigments.

The Chillagoe region

A single AMS date was recently obtained from a charcoal drawing located in the Chillagoe limestone belt. The karst features of the Chillagoe limestones include numerous caves, many of which contain evidence of human habitation, including rock art (David and David 1988). The latter consists of a broad range of non-figurative (mainly geometric and linear) and track designs, with figurative paintings occurring in extremely low numbers. Consequently, the Chillagoe paintings are very different from those in the Laura region, located to the immediate north. The change-over from the Chillagoe to the Laura type of paintings is sudden, occurring over a narrow zone located between the Walsh and Mitchell rivers (cf. David in prep.).

The AMS determination

The AMS date obtained was from a charcoal drawing typical of the Chillagoe region. It comes from inside a

rockshelter known as the 'Racecourse Site' (my reference CM59). It is a faded black (charcoal) line drawing of indeterminate but non-figurative form. It is superimposed by a series of sub-parallel, mauve lines (drawn), white lines (painted), and a bichrome white and red, non-figurative painting (Figures 1 and 2). These drawings and paintings are typical of the site as well as of the Chillagoe area (see David and David 1988). There are, in total, 33 paintings and drawings at the site, including 7 charcoal drawings similar in form to the one dated; 21 other line drawings consisting of sets of sub-parallel lines (some of which also contain perpendicular lines forming grids), which are mainly drawn or painted in monochrome red, mauve or white; 3 bird and 1 macropod track-like forms; and 1 bichrome (white outlined, mauve infilled) non-figurative design. The site also contains 106 abraded grooves (79 single lines, 25 paired lines, 1 set of numerous parallel lines, and 1 bird track). In short, both the paintings and the abraded grooves contain a predominance of linear motifs, often containing parallel lines, as well as some rare bird and/or macropod tracks.

The dated drawing is presented in Figures 1 and 2. A small amount of charcoal was scraped with a sterile blade and immediately placed in a sterile plastic bag. There was no evidence of calcium carbonate above the charcoal. The charcoal sample was then submitted to the N. W. G. Macintosh Centre (University of Sydney) for dating, where it was sent for dating to the Institute of Geological and Nuclear Sciences, New Zealand. A radiocarbon determination of 2056 ± 81 BP (R 18075/2, NZA 2738) was obtained. $\delta^{13}C$ was -24.9‰, indicating that it is unlikely to have been contaminated by carbon from the limestone wall. There are no reasons to doubt the age obtained, and consequently it is taken the date represents the age of the painting. The paintings superimposed over it are therefore younger, although it is not known by how much. Given the similarity of the paintings and abraded grooves found within the site, it is also possible that they all date to the same general time period, although further dates would be needed to test this proposition. The obtaining of such further dates is planned for the immediate future.

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RAR 9-247

Spanish cave art proved a fake

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The Ice Age art in the cave of Zubialde, northern Spain, whose discovery was announced in March 1991, has been pronounced a fake. When colour photographs were published in newspapers, the great majority of Palaeolithic art specialists outside Spain expressed profound scepticism: even allowing for distortion of these photographs caused by the narrowness of the cave and the shape of the walls, the 102 figures painted in black manganese or red iron oxide simply did not look or 'feel' right. Unlike authentic Ice Age images, the twenty-two animal figures seemed clumsy, even ugly; and the range of motifs was positively bizarre. Apart from horses and bison, etc., there were two woolly rhinos and a mammoth, species which are extremely rare in northern Spain; and whereas abstract 'signs' have specific chronological and regional distributions in Ice Age art, this cave appeared to possess an anthology of every type plus a few never seen before.

However, subjective assessments from press photographs are no basis for a solid diagnosis, and the cave — located near Vitoria in the Spanish Basque region — therefore underwent an intensive program of analyses. Meanwhile, the local Basque authorities had rewarded the discoverer — a history student and caver named Serafin Ruiz — with ten million pesetas ($A125 000), and planned to make a replica of the cave which tourists might visit.

Almost all the figures on the cave's walls proved to contain mistakes in their proportions or anatomical details. Analysis of the pigments revealed the presence not only of insect legs, which could not have survived in the paint since the Ice Age, but also of synthetic fibres from a known type of abrasive kitchen sponge which had clearly been used to apply the paint to the walls. None of the figures was covered even partially by calcite; all seemed fresh. The clinching evidence, however, was the fact that new figures had appeared on the walls after Serafin Ruiz's first photographs had been taken in 1990, and their pigments were identical to those of the rest.

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RAR 9-248

REVIEWS & ABSTRACTS

'AURA BOOK OF THE YEAR'

Rock art in the Old World, edited by MICHEL LORBLANCHET. 1992. Papers presented in Symposium A of the First AURA Congress, Darwin 1988. IGNCA Rock Art Series 1. Indira Gandhi National Centre for the Arts, New Delhi. 570 pages, 22 colour plates, 102 monochrome plates, 176 drawings, 18 maps, 13 tables. Cloth hardcover, US$ 50.00, ISBN 81 85503 00 1.

The editorial choice for the title AURA Book of the Year has been an easy one this time. Several outstanding rock art or palaeoart books have appeared in 1992, but the crown jewel in the proceedings of the First AURA Congress was an obvious choice.

This book can boast several distinctions. To begin with, *Rock art in the Old World* is the first book addressing the subject of African, European and Asian rock art in a balanced fashion. It may even be the first book dealing with French rock art without practically ignoring its post-Palaeolithic component.

Rock art in the Old World has been launched not by one, but by two notables, on two different occasions. In New Delhi, the Prime Minister of India saw fit to launch this book, but he found himself upstaged at the Australian launching in Cairns, by Paul Bahn. The book has also established what appears to be a sales record for a rock art book: the entire stocks airlifted to the Second AURA Congress, all fifty copies of it, were sold instantly, or rather, as quickly as they could be unpacked. Thus it has become a best-seller even before it hit the streets, as they say in the trade.

The publication of this tome was beyond AURA's modest means, and was graciously undertaken by the Indira Gandhi National Centre for the Arts, which is the premier art institute of India. It marks the establishment within the Centre of a gallery entitled Ādi Dṛśya, dedicated to the palaeoart traditions of the world. Therefore it is most appropriate that this volume, a milestone in global rock art studies, should also be a milestone for the Indira Gandhi Centre - as the inaugural volume of its series of rock art publications.

Another outstanding feature of this book is the selection of contributing authors. For each region discussed, the authors are foremost rock art scholars. There is one geographical bias, predictably: Indian scholars outnumber those of any other region. But this is not without good reason, it can only benefit the discipline to shift the centre of attention away from western Europe. After all, there is a great deal more rock art in India than there is in all of Europe, and it is high time that the traditional imbalance in this discipline be redressed. Hence the geographical emphasis in this book, which reflects that of the Darwin symposium, is to be applauded.

This one intentional bias aside, the geographical coverage is rather well balanced: three papers on southern/eastern African rock art, four on the Sahara, one each on Jordan, Sri Lanka and Thailand, two each on China and Russia, three on non-Palaeolithic western Europe, four on Palaeolithic art of western Europe, compared with eleven on India. The authors of the book are from fifteen different countries. Most papers are generously illustrated, in colour where appropriate.

The sweeping scope of this substantial volume is well exemplified by the editor's 17-page Introduction. It is one of the highlights of the book, providing a broad vista of Lorblanchet's views on palaeoart studies, on their future direction, on the relationship with other disciplines, and on the role the discipline's diversity will play. He anticipates the decline of chronologies based on stylistic, i.e. archaeological, systems, and reminds us of the predictable effects of the current dating revolution in rock art studies - of which he is himself a pioneer, as *RAR* readers well know. Lorblanchet examines the question of a separate discipline and considers that only archaeology can find the answers to the two fundamental questions: what are the documents in question, and how old are they? But even if these were the fundamental issues in rock art studies, which they certainly are not, what help could archaeology be with them? For a century archaeologists have guessed in vain 'what the documents are', and they have failed to date rock art consistently and convincingly by archaeological means. Some have even sought to impede the development of non-archaeological rock art dating methods. Nevertheless, most of Lorblanchet's Introduction provides inspiring reading, for instance his vision of non-linear developments in palaeoart (even though he thinks that twenty-seven decorated caves 'have been given an objective and absolute chronology' in Europe), or his discussion of the definition of art.

The African section contains two papers on Kenya by O. Odak, two by K. H. Striedter, about different regions of the southern Sahara, and one each by L. G. A. Smits, F. Mori and A. Muzzolini. In one of his papers, Odak provides ethnographic interpretations of cupules, a most ubiquitous type of petroglyph for which no convincing explanation is available in most parts of the world. In his second paper he shows with the help of his own work the need for a separate discipline of rock art studies. The contributions by Striedter, Smits, Mori and Muzzolini are all based on extensive regional studies by these well-known specialists of African rock art. Smits analyses Lesotho rock paintings with the help of comprehensive statistical data expressing various physical variables. The cultural evolution as it is reflected in Saharan rock art is addressed by Mori, while Muzzolini revels in one of his favourite subjects, the depiction of chariots in the context of Saharan rock art chronology. As always, his argumentation is impeccable. Striedter describes two important petroglyph bodies in the Sahara, the site complex Gonou in the Tibesti, Chad, and sites in the Djado Plateau, Niger.

Ha Baraona, Lesotho (L. G. A. Smits).

The Asian section begins with the Indian contributions. M. Dubey describes rock paintings in the Pachmarhi Hills. Francfort, Klodzinski and Mascle examine archaic petroglyphs in the Himalayas, which differ significantly from other Indian art and resemble central Asian traditions from China and Siberia. Kumar, Narvare and Pancholi examine the ostrich eggshell objects from central India again, but it should be cautioned that nearly all of them bear in fact natural rather than anthropic markings. A. Sahni confirms that the objects are of ostrich eggshell. Y. Mathpal's informative history of Indian rock art research would have been better placed at the beginning of the Indian section. Mathpal divides that history into three basic phases.

Two profusely illustrated overviews follow: Austrian E. Neumayer examines the chronology of Indian rock art, and S. K. Pandey focuses on central India, considering techniques, styles, themes and dating. V. Sonawane introduces a key find, the engraved fluted core from Chandravati. The Mirzapur rock art region is examined by R. Tewari, who, like Pandey, considers technique, content and chronology. Neumayer, Pandey and Tewari agree that any chronology is tentative, and the question of a Palaeolithic component remains unresolved. G. S. Tyagi confirms that the intricate design patterns precede the dynamic paintings, but concedes also that the absolute chronology remains unknown. His paper is followed by a brief comment by J. Steinbring.

The paper by Vishnu S. Wakankar, the doyen of Indian rock art research, adds a special dimension to this volume. It appears to be the last published work of Professor Wakankar. It was one of life's ironies when he passed away in 1988, a few months before his life-long dream of an Indian school of rock art studies was realised.

Bhimbetka, India (V. S. Wakankar).

The Indian section is followed by one paper summarising the rock art of Sri Lanka, by B. D. Nandadeva, and an introduction to the little-known rock paintings of Thailand, by Australian M. Bullen. The vast body of Chinese rock art is considered in two papers, both by Chen Zhao Fu. In the first, Chen provides a brief history of rock art studies in China, where surviving written records of rock art sites are up to 1500 years old. In the second paper he examines the anthropomorphous paintings in the Zuojiang river valley. W. Jobling rounds off the Asian section with a paper about annotated petroglyphs in southern Jordan, deciphering the inscriptions found with them.

The European section of the book does commence with Palaeolithic art, but not with 'cave art'. Paul G. Bahn surveys the first known open air rock art sites of the European Palaeolithic. A review of recent developments in European rock art research follows. A. Beltrán writes of a 'crisis in traditional ideas', pointing to recent revisions concerning the separation of Palaeolithic and post-Palaeolithic art and similar problems. M. Bru considers the symbolism surrounding the bull in Historical Spain and that animal's possible mythological role in earlier times, based on depictions in rock art. One of the two major concentrations of petroglyphs in Karelia, Russia, is described by A. Faradzhev, the site complex of Zalavruga. Belgian D. Huyge re-examines the 'Venus' of Laussel and its previous interpretations, proposing that the horn it holds in the raised hand might be an idiophonic scraper.

Lorblanchet's own contribution deals with the finger markings of Pech Merle. In his chronological assessment he repeats a common error, by assuming that those writers who suggested that finger flutings are among the earliest markings meant that *all* finger flutings are early. Pech Merle contains no 'early' finger marks and therefore is not suitable for assessing whether all finger flutings are associated with figurative motifs. Lorblanchet needs to study many more of the currently known forty-nine sites, such as Cosquer, Baume Latrone or the Australian sites, where the early, purely noniconic, finger flutings he could not find in Pech Merle do occur.

Finally, there are three more papers about rock art corpora that have been consistently neglected. The first, by Czech M. Ksica, is an ambitious overview of European and Asian Russia, covering rock art from the Finnish to the Mongolian border. D. Seglie, P. Ricchiardi, M. Cinquetti, G. Nelh and G. Vicino address post-Palaeolithic rock paintings in the western Alps. C. Wagneur and J. Wagneur describe a large body of petroglyphs in the Fontainebleau Massif, just south of Paris. They and their colleagues have recorded 850 sites and published over one thousand pages on their work, yet it receives no adequate attention in the orthodox French archaeological literature. This outstanding corpus includes art of the Palaeolithic and the following periods, right through to Historical inscriptions, it has considerably more research potential than the purely Palaeolithic art in the deep limestone caves to the south. This example shows clearly enough the preoccupations of the local archaeological establishment which does not seem to see the forest for the trees.

Which brings us back to where we began this review, because therein lies the main significance of this book: it provides the first balanced overview of Old World rock art. At the current rate of progress in thi discipline parts of the book will become superseded over the years, but it will always remain a benchmark in international rock art studies. It belongs into every serious rock art library.

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RAR 9-249

Petroglyphs in the Fontainebleau Massif, France (C. and J. Wagneur).

La préhistoire, by DENIS VIALOU. 1991. Gallimard, 'L'Univers des Formes' series. 444 pages, 254 illustrations. FF710. ISBN 2 07 011218 7.

Most books contain some indication of their purpose - the gap the author is trying to fill, the message or new information being put across, the rationale behind the content. This heavy tome contains no such indication, and having read it I am none the wiser, in any sense of the term.

To be fair, it is a volume in an already established French series of glossy art books on various periods, and it is possible that many of its idiosyncrasies - the odd structure, the eclectic and disparate coverage, the patchy references and the almost total lack of acknowledgments - were dictated by the publishers. The title of the series may also be the reason why three of the five chapters have 'form' in their title.

In an earlier review (*RAR* 8: 141) I referred to the eccentric French meaning of '*préhistoire*', and this volume is in the same tradition. Despite its title, this is not a book about prehistory; it is not even about prehistoric art as such (although its preface declares it to be about '*l'art préhistorique planétaire*') but is almost entirely devoted to European Palaeolithic art, parietal and portable. However, in the course of covering a miscellany of topics within that theme, reference is made for no apparent reason to rock art in a very restricted set of other areas - mostly Brazil, India, South Africa, Algeria and northern Australia - and from a wide range of periods including historical figures from India and extremely recent images from Australia. It is hard to see the point, for instance, when after a survey of Palaeolithic ornamentation, we are shown that jewellery can also be seen in Saharan or Australian images. The photographs of exotic foreign landscapes have even less relevance.

The chapters lack a coherent structure, and it is often hard to see where the author is taking the reader, as he jumps from one topic to another: No. 1 covers ornamentation and Palaeolithic sex (with, of course, an unquestioning acceptance of various motifs as vulvae!); No. 2 covers the form of the support in shelters and caves; No. 3 concerns time and style; No. 4 the use of shapes, and of framing; and No. 5 roams from human figures and hand stencils to shamans, magic and monsters. There is no real conclusion to tie things together.

The back part of the book is more substantial, containing a short but serious survey of Palaeolithic art's content and interpretation; a survey of the layout of figures in Niaux cave which, inexplicably, omits all the new information which paint analyses over the past few years have provided about exactly how the decoration of this cave was accumulated over several phases (see *RAR* 7: 21); this is followed by brief accounts (with maps) of rock art in the same set of foreign countries, this time with the addition of North America, though its art is not mentioned at all in the main chapters.

Finally, there are bibliographies for each period or continent. These lists are shockingly partial, with strange inclusions and some notable absentees; Marshack's 1970 French monograph on notation is included, but not his 1972 *Roots of civilization*, even though the latter had a French edition. In the Palaeolithic art list, Michel Lorblanchet's work is totally ignored, but his articles comprise no less than five of the nineteen references given for Australia, a list which manages to omit Grahame Walsh's book or indeed anything by McCarthy, Mountford, Trezise, Edwards etc.

The book's strongest selling point is its photographs, some of which are magnificent (including the first large colour plate of the Galgenberg figurine, see *RAR* 6: 118). Others, however, are astonishingly poor for a book of this kind and show nothing to the eyes of the specialist, let alone the layperson at whom this kind of expensive coffee-table book is doubtless aimed: see, for example, Nos 104, 133, 184, 202. Many of the author's own photos lack sharpness, especially those of portable art, few of which approach the quality of Marshack's work. In addition, much portable art has been cut out and placed on the white page, which is often rather ugly.

Oddly, there is not a single photograph by either Jean Vertut or Norbert Aujoulat, France's two foremost photographers of cave art, and their absence is underlined by the dreadfully coloured images of Lascaux presented here. The book does contain a picture of the clay bison of Le Tuc d'Audoubert, taken recently by Robert Bégouën, which is the best ever taken of them, a photo of which Vertut himself would have been proud; but Gallimard have published it not merely in black and white, but also slightly blurred.

In conclusion, I am at a loss what to say about this book, as I don't know what purpose it will serve other than that of decorating smart Paris apartments. It is certainly not for students or rock art specialists. Its text, in very large print, concentrates on aesthetics, and consists of a descriptive stream of examples of various kinds, without any coherent message. It has some fine photographs, but perhaps not enough to warrant the price.

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RAR 9-250

Where the spirits ride the wind. Trance journeys and other ecstatic experiences, by FELICITAS O. GOODMAN. 1991. Indiana University Press, Bloomington/Indianapolis. 235 pages, 73 illustrations. Paperback, ISBN 0 253 20566 2.

With the final publication in 1991 of her ovular work 'Where the spirits ride the wind', Dr Felicitas Goodman has produced a revolutionary tool for the study of ancient shamanic practices. I use the term shamanic in its broad general sense following Eliade (1964) rather than Vajda (1959).

Goodman's research into religious ecstasy dates back to 1968 when she began her field work on speaking in tongues and ecstatic behaviour in the 'Apostolic Churches' in Yucatán. From this type of research, in which she received her Ph.D., she moved in 1976 into the area of artificially inducing trance with rattle and drum. After reading an article by the Canadian psychologist V. F. E. Emerson (1972) which connected different meditative states and belief systems to different body postures, she took the intuitive 'leap' and asked her experimental subjects to assume certain body postures taken from the ethnographic literature, from carvings, sculptures and rock art, while she induced trance states by the use of a rattle. The procedure was as follows:

1. Subjects would be asked to relax and breathe deeply for the count of fifty (p. 225).
2. Subjects were then asked to assume a fixed posture and to close their eyes. NO information was given as to the origins of the postures or the expected results (p. 256).
3. A drum or rattle was sounded at 200-210 times per minute for 15 minutes (p. 225).
4. The subjects were asked to make immediate notes of their experience.

The results were truly astonishing. Firstly, each posture mediated a different experience (p. 20) and the experiences were identical in common elements even within cross-cultural samples of subjects.

Secondly, detailed physiological tests of subjects in trance states induced by this method yielded dramatic results. The blood serum compounds indicating stress (namely adrenalin, noradrenalin and cortisol) dropped and beta endorphin, the body's natural pain killer, increased. The EEG showed theta waves at 6-7 cps, blood pressure dropped and the pulse rate increased at the same time. The brain's electrical voltage showed an astounding 1500 to 2000 microvolts, hugely above the previously maximum recorded 250 microvolts during difficult learning tasks (pp. 25-6).

The next obvious question to be raised was, were the results falsifiable? Would any randomly chosen posture generate some form of trance? The answer to this question is almost certainly no (Goodman 1986).

The next question is, are the results replicable? The answer is resoundingly affirmative. Other workers and students of Goodman, including myself, have obtained many identical results (pp. 225-6, cf. also Goodman 1986: 108), at least insofar as trance states are concerned.

From 1982 until 1987 and including an exploratory workshop in 1977, Goodman has offered a total of 80 workshops. Of the 890 participants, 592 were women and 298 were men. These figures include repeat attendances of 159 women and 68 men. Thus a total of 433 women and 230 men participated in the workshops, all reporting consistent results with the postures (p. 226). These results were also consistent in non-Indoeuropeans (three American Indians participated), and neither professional status, age or sex seemed to affect their consistency (Goodman 1986: 96).

The potential impact of these findings on rock art research is profound. Firstly, it enables the formulation of a whole new approach to rock art, which I have called 'interactive shamanism', in which the postures themselves, taken from the rock art, determine the contents of the experience and thus the meaning of the art.

Secondly, it may be possible to use the postures of some anthropomorphous depictions to experience both mythological and cultural details of the non-literate societies that produced them.

Thirdly, the postures may enable us to experience the context of elements in the surrounding art. For example, in the posture derived from that of the Palaeolithic Lascaux 'shaman', the adjacent imagery includes a 'bird on a pole', a 'bird mask' on the 'shaman' and an erect penis on the figure. Experimental subjects using this posture reported turning into birds, seeing a maypole (pp. 73-6), and 'energy rushing' through their genital region (p. 23). All this was experienced without seeing the painting, or even knowing the derivation of the posture.

Fourthly, the interactive approach may enable us to determine which of a number of different postures are in fact of trance provenance. This procedure has already eliminated one rock art posture as definably non-trance-related.

The interactive approach has been successfully applied by myself and my partner to the interpretation of some rock art in the Gariwerd (formerly Grampians), Victoria. Upon visiting Billimina Shelter (formerly Glenisla Shelter 1) we found two readily visible human postures in the rock art. Since one of them had already been identified by Goodman (p. 61-2, named 'calling the animals') and its meaning determined (pp. 1-67) we decided to experiment with the other posture. While I provided trance driving by using Aboriginal clapsticks for 15 minutes, my partner stood in the posture and closed her eyes.

The results were amazing. My partner found her body elongating and growing up towards the sky, and she felt as though a thread was pulling her up. She had no way of knowing that the experience of climbing the thread to the heavens had been reported in an ethnographic Aboriginal context: actor David Gulpilil stated to me that when the old men of Arnhem Land go on spirit journeys, they climb threads like spider webs into the clouds. Subsequent to our experiment, we obtained a copy of Coutts and Lorblanchet (1982) and found to our amazement that the shelter contained at least three now invisible elongated human figures (op. cit.: 49, 51, 55-6, cf. 58). Since the existence of these figures was not known to us at the time of the experiment, this seems to confirm the usefulness of the interactive methodology in providing insight into the meaning of certain aspects of the iconic content of the art.

Another observation should be of some interest to readers of *Rock Art Research*. In Volume 6, Number 2 (November 1989), there is an article by Jean-Pierre Duhard on the meaning of certain hand positions in Palaeolithic sculpture. He suggests that the position with the hands flat on the abdomen and separated on the navel indicates pregnancy, even when the belly is flat (Duhard 1989). Goodman, who has no knowledge of these Palaeolithic figurines (pers. comm.), has shown that the identical posture gives rise to a trance in which both males and females experience conception of pregnancy and childbirth (Goodman, p. 101-6). Thus while Goodman's research tends to support Duhard's interpretation, it places the subject in an entirely different cultural context. The posture is then not merely a 'symbolic' representation of pregnancy, but a shamanic trance key vitally linked to trance induction procedures, such as drumming, rattling or narcotics.

Perhaps the quiet researches of a softly spoken, 78-year-old anthropologist are about to challenge the paradigms and methodologies of archaeologists, anthropologists and rock art researchers. If Goodman's views are upheld, our whole concept of research method, and indeed of reality, will never be the same.

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RAR 9-251

The great art of the early Australians, by JAN JELINEK. 1989. Moravian Museum - Anthropos Institute, Brno. 527 pages, 408 figures, 5 maps, 2 tables. Hardback, ISBN 80 7028 001 8.

This is a lavishly illustrated book with hundreds of line drawings and monochrome plates. A few colour plates have also been included. One of the best features of the book is that photographs of particular paintings and galleries are presented alongside line drawings. More researchers should follow this example as it allows one to assess the accuracy of drawings and/or to more clearly see what is represented in photographs. This treatment of the illustrations is in stark contrast to the text of the book which is speculative, inaccurate and out of date. Aboriginal people would find various parts objectionable or offensive and it offers little that is of any value to the serious scholar. In the preface Jelínek states 'This publication is intended to contribute to better understanding and knowledge of Arnhem Land rock art, one of the principal rock art centres in the world'. Unfortunately the book distorts and misrepresents the art.

Jelínek made two short visits to Arnhem Land, in 1969 and 1973. During each field trip he sped through the region on what can only be described as 'whistle-stop tours', photographing and noting whatever he could in the time allowed. He then spent almost twenty years examining his photographs and notes before publishing the volume. However, he virtually ignored everything that has occurred or has been published in his field area since his visits. As a consequence the book is out of date. Furthermore, for the reader unfamiliar with the serious archaeological and rock art research conducted in Arnhem Land over the past decade, it presents a totally false picture. This needs to be pointed out before the book is used as a primary reference.

It is hard to know where to begin criticising the book. There are so many errors and instances of wild speculation that I covered over 500 of the 527 pages with pencil marks and retorts in the process of reading it. Because I have conducted field work in western Arnhem Land for over a decade and have published widely on the rock paintings of this region, some readers might think I am jealous of Jelínek's work. Far from it. I write this stern review precisely because I have spent so much time analysing the art, living with the contemporary people and recording both Aboriginal and European interpretations. It is not easy for me to do this but I owe it to those Aboriginal elders and other scholars of Arnhem Land art history who taught me so much.

The recent work cited by Jelínek is only mentioned in passing and the most significant aspects are ignored. For instance, Chaloupka's or Lewis's much more logical and better supported chronologies and arguments are not considered important and are barely mentioned in passing. Important relevant pre-1989 publications were not consulted, including works by Brandl, Morphy, Taçon, Taylor and Watchman. If they had been considered, a far superior book would have been produced. The removal of a multitude of typographical errors, spelling mistakes and grammatical misconstructions, that resulted from the translation of the book into English, also would have improved the final product.

It is pointless to list the many faults with the text or to present alternative analyses and interpretations of western Arnhem Land rock art in this forum; the reader is best directed to the original sources. Instead I will make a few general comments before focusing on some particularly problematic aspects with the text.

First of all, much of what is described is imprecise. Circular arguments are prevalent and there are many contradictions. Second, the structure of the book is not as clearly defined as it appears. For instance, the lengthy Chapter 2, which is supposed to be descriptive, also includes all of the style, chronology, subject matter and interpretation material set out in following chapters (3-6). Indeed, some sections are repeated, almost word for word, three or four times. Third, the chronology used is a jumbled mess that makes no sense of the data whatsoever. Many paintings are placed in the wrong period, styles are not adequately or accurately described and what are considered 'archaic' ancient forms are sometimes argued to have been produced quite recently. This is related to a fourth major problem with the text: outmoded, meaningless terms, such as 'Early archaic style', 'Late archaic style', 'Simple X-ray style' and 'Developed X-ray style' are used. Chaloupka, Haskovec, Lewis and Taçon have all shown the inadequacy of this way of categorising the various forms and styles of western Arnhem Land rock art. Indeed, Jelínek's analysis is not even as refined as Brandl's very preliminary breakdown. Furthermore, much of the rest of the text is nothing more than an elaboration of Brandl's early work, now considered inadequate by most specialists of Arnhem Land rock art.

A fifth problem with the text is that most of the interpretation, especially of 'social meaning', is nothing but pure and poor speculation. For instance, there is an obsession with classifying much of the art as either 'evil', 'erotic', 'mytho-totemic' or related to burial practices, often with little justification or definition. Sixth, the names of various spirit beings, such as '*Muli-muligans*' and others, are used to describe paintings from areas associated with linguistically different groups of people that do not use the same names. As well, many spirit beings are misidentified and, furthermore, paintings of human beings are often misinterpreted as spirits.

Finally, what are considered to be some of the most sacred paintings from the El Sherana area have been published against the wishes of the Jawoyn people. Of course, Jelínek was not aware of Aboriginal concerns as he has been out of touch with them for so long. This is a worry with many European researchers, such as Lommel, who present Aboriginal people and their work from a totally divorced, Eurocentric point of view.

More specific faults with the text include:

1. Jelínek argues 'today the Rainbow Serpent is mostly considered to be a male being' (p. 487). In fact most Rainbow Serpents, including the most powerful, are considered female in much of western Arnhem Land (Taçon 1989a, 1989b; Taylor 1987, 1990). Sometimes their form is shown with both male and female traits as well as parts of various species of animal, or even plant (for example, water lily).

2. Often Jelínek presumes something and later accepts it as fact. For example, on page 210 he states 'In the painting of the tortoise (No. 14) we can presume totemic-ceremonial motivation since tortoise plays an important role in the ceremony of circumcission [sic]. It has also its sexual symbolism (male sexual organ — the neck and head of the tortoise)'. On page 497 he concludes a discussion of 'Erotic scenes and symbols' with:

> To the erotic paintings belong often also the paintings of tortoises. The tortoise with its head and long neck strikingly resembles the shape of a male sexual organ and it occupied a special position in the initiation rituals of the boys and also in the erotic symbolism of the North-Australian Aborigines.

Finally, he emphatically asserts:

> The paintings of turtles played an important role in the erotic imaginations of the Aborigines. The head and neck of the turtle strongly resemble the shape of the penis. Therefore not only the paintings of mating turtles, but also of individual turtles have sometimes erotic, erotico-mythological or erotico-ritual meaning (pp. 512-13).

First of all, the Aboriginal people of much of Jelínek's study area did not practice circumcision (see Chaloupka 1985: 75). Secondly, the long-necked turtle is depicted in the rock art exactly as it appears in nature. The resemblance of the head and neck to a human penis is coincidental and the Aboriginal people I worked with found this to have no great significance. They were more interested in the turtle as a desired source of food and it was the fat and certain organs found inside the turtle that had the most symbolic significance. Indeed, these internal features are highlighted in most turtle paintings. Jelínek's 'Freudian' analysis of the rock paintings tells us more about him than it does about the artists and their families.

3. Throughout the text Jelínek describes recent 'energetic' human figures (Taçon 1987), contemporary with polychrome x-ray paintings, as dynamic figures. He also uses the term for much older paintings with a distinct, very different style, labelled 'dynamic figures' by Chaloupka. This adds much confusion to his discussion for those familiar with Chaloupka's much more precise use of terms.

4. Jelínek notes differences between depictions of human and animal figures and argues:

> While the internal anatomical details of the animals are carefully pictured, in human figures the painter limited himself usually to painting the backbone and filled the silhouette of the body often with geometric patterns. Psychologically this is very comprehensible. For painter of a hunting society [sic] the painting of animals on the one hand, and of human figures, on the other, are two completely different things. The anatomically perfectly known game and the anatomically less well known man (p. 467).

However, one year before the publication of his book this was shown to be incorrect:

> As hunter-gatherers and warriors, dealing frequently with death, Aboriginals realised that, physiologically, humans do not differ that radically from other animals. The reason for the difference in the paintings lies, instead, within the realm of spiritual belief. Evil *Namorodo* spirits, found throughout the countryside, guide the spirits of the recently departed away from their bodies ... These spirits live off the heart, intestines and other internal organs of the sick and dying for up to a week before death. If one were to depict human internal features in paintings on shelter walls, then one might attract these spirits to the camp and bring harm to the group (Taçon 1988: 23).

5. In many passages there are dubious and misleading comparisons between Arnhem Landers, New Guineans and Upper Palaeolithic Europeans. One always has to be extremely cautious with such comparisons, especially when using them to make major conclusions. For instance, Jelínek's final conclusion is:

> Different cultural traditions do not mean that there are also different mental or psychological qualities. Such views were the result of the ideology of the past centuries. The Australian Aborigines and other natural populations do not differ in this respect from the Europeans in the period when our forefathers lived as hunters and gatherers. The causes and social meaning of their artistic creation are in basic psychological qualities analogous (p. 514).

This could be interpreted in a number of different ways and is very misleading. Furthermore, a number of Aboriginal people I showed the passage to found it offensive. What, for instance, is a 'natural population'? Is it being suggested that contemporary Aboriginals are psychologically backward or equivalent to Europeans of the Ice Age? Or is it being argued that the 'artistic impulse' is the same in all cultures? Also, how does Jelínek know this? Perhaps his superficial analysis of the Aboriginal meaning of the art, with its broad generalisations and ethnocentric interpretations, led him to these conclusions. Finally, why not have an Aboriginal focus to the conclusions as it is Aboriginal, not European, rock art that the book is about.

In conclusion, this is a disappointing book. It is nice to see so many high-quality photographs and drawings but the text makes no sense of

them. As well, a significant body of research produced over the past decade that is extremely relevant to the book has been ignored. Furthermore, the interpretation sections of the book are so speculative and misleading that they tell us more about the theories of outsiders than they do about Aboriginal people. It is recommended that the book be read with all of this in mind.

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Art in the mirror of ages. The beginnings of artistic activities, by JAN JELÍNEK. 1990. 64 pages, 93 illustrations. Anthropos, Moravian Museum, Brno. ISBN 80 7028 011 5.

This booklet, published as a guide of the exhibition of the same name, is truly a pleasure to read. Here, at last, is a concise summary of the 'beginnings of artistic activities' that presents the subject in a sensible and at least reasonably balanced manner. Although still geographically limited to Europe and Siberia, this publication does make a real attempt to redress an old imbalance, by relegating the Franco-Cantabrian corpus of Pleistocene art to an almost peripheral role in the context of art origins.

The booklet lacks the ubiquitous pictures of polychrome bison from Altamira and aurochsen from Lascaux, even the Pech-Merle spotted horses are absent. And while the Willendorf No. I figurine is illustrated, it appears side by side with its rather less illustrious cousin, the Willendorf No. II figurine. The latter has been so neglected that some specialists are not even aware of its existence.

Illustrations appear on almost every page, and they are all of excellent quality, a hallmark of Jelínek's publications. More important, however, are his careful interpretations of the evidence, clearly based on much personal observation and a prodigious knowledge of the subject. Jelínek often does not share the consensus opinions of his Western colleagues, and every time he offers an alternative to the views most widely held in western Europe and North America, it is more convincing and more likely to be correct. For instance, in commenting on the engravings on the mammoth tusk tip from Kirillovskaya, he mentions no iconic features, regarding the markings as essentially nonfigurative. Having examined the specimen I have searched in vain for the waterbird, turtle and fish supposedly depicted on it. Jelínek cites Klima's suggestion that the engravings, like those on many other eastern European specimens, are a record of spatial entities, a form of map. This is a hypothesis worthy of more attention than the trivial search of Westerners for elements that *they* can recognise as being iconic.

Jelínek accepts without hesitation that bone artefacts from Bilzingsleben bear nonutilitarian markings, and his judicious assessment of such controversial finds as those from Teshik Tash, Monte Circeo or La Ferrassie is as astute as is his rejection of the model of a single explanation to account for the female sculptures of the Upper Palaeolithic.

Jelínek's comparisons of individual objects and artistic conventions of the central European and the Russian 'Gravettian' are illuminating. Jelínek juxtaposes several pairs: one of the lightly carved mammoth phalanges from Avdeevo with the similar phalanx from Předmostí; simple mammoth sculptures from the same two sites; the Moravany female sculpture with a similar one from Kostenki I (the specimen seems to be Kostenki No. 1, but the rendering is poor: the cicatrice-like lines above the breasts are missing in it, and the hands with their probable bracelets are barely depicted); and he shows the great similarity of such items as diadems from Pavlov, Avdeevo and even Mal'ta. However, it must be mentioned that such comparisons of similar material can also be misleading: there are significant differences among these assemblages also, not only similarities.

Nevertheless, there *are* underlying common denominators in the central European, Russian and Siberian art complexes, most of all in the graphic, two-dimensional art: evidence of graphic systems that are extremely complex and apparently permit no iconographic access. These systems are either poorly represented in western Europe, or their externalisations have been neglected there in favour of magnificent animal pictures that look good as decoration on the dust jackets of beautiful books extolling the aesthetic virtues of Palaeolithic art. Thus, in our study of Pleistocene art, we have been concerned mostly with trying to fit it into our own cognitive system, with subjecting it to the intellectual neo-colonialism of Western pseudo-science. We have therefore only succeeded in trivialising Pleistocene art, and its real significance remains a mystery to us. By focusing on eastern/central Europe, Jelínek takes a step in the right direction in showing the anomalous status of the art body that has so far dominated all discussions of art origins, although it is neither typical for Pleistocene art, nor the oldest art.

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RAR 9-253

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RECENT ROCK ART JOURNALS

La Pintura. Newsletter of the American Rock Art Research Association (ARARA), edited by FRANK G. BOCK. Recent issues include the following research papers:

Volume 18 (1991/92), Numbers 1-4:

GORDEN, M.: Graffiti removal at Exeter Rocky Hill site.

LEE, G.: Conservation and Protection Committee reports.

DORN, R. I.: A discussion on the ethics of sampling petroglyphs for dating.

BOCK, A. J.: ARARA 1991 recording field school documents sites on Arizona Strip, Petrified Forest National Park.

BEDNARIK, R. G.: On the motivation of rock art reuse.

Volume 19 (1992/93), Numbers 1-2:

LEE, G.: A note on management plans for petroglyph sites.

WATCHMAN, A.: Certified conservators should be retained for all graffiti removal.

STASACK, E.: AZ petroglyph with magnetic properties attracts researcher.

BEDNARIK, R. G.: Permanence of art and transience of graffiti, with response by A. Watchman.

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Rock Art Quarterly. Journal of the Rock Art Association of Canada/ Association Art Rupestre du Canada. Edited by MAURICE LANTEIGNE. A recent issue contains the following research papers:

Volume 2, Numbers 1-2 (1991):

CONSENS, M.: A theoretical approach to function, use and symbolic production: definitions and framework.

SEGLIE, D., P. RICCHIARDI and M. CINQUETTI: Prehistoric art in Italy: Palaeolithic cave art and post-Palaeolithic rock art.

QUEREJAZU LEWIS, R.: Rock art investigations in Bolivia.

McLENNAN, D. W.: The government of Ontario's commitment to Native rock art: Petroglyphs Provincial Park.

LANTEIGNE, M. P.: Congenital malformation syndrome - deterioration in developmental homeostasis: an environmental stress indicator during the Palaeo-Indian Period.

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ORIENTATION

Second AURA Congress, Cairns 1992

The Academic Keynote Address

Opening Ceremony, 30 August 1992

By the Vice President of AURA, Professor Jack Steinbring

SCIENCE, AND AESTHETICS, AND THE PROMISE OF ROCK ART

It is appropriate for the Second AURA Congress to take stock of the world-wide condition of rock art as a discipline. Introspection and self-evaluation are necessary components in the assessment of status and of direction. Thus, as we perform such an examination, we must restate or revise our goals, and review the degree to which we have met them or are likely to meet them. The impediments must be scrutinised, and the means to their resolutions clarified and implemented. Too often these impediments contradict the goals, and indeed contradict the very objectivity which is generally seen to characterise the pursuit of knowledge. Since AURA '88 enormous strides have been taken in the pure science of rock art, but the objectified processes of the discipline remain cluttered with an amalgam of personality and politics often insurmountable at a practical level. The larger world is itself dealing with this kind of problem today, and reforms almost always resolve this issue through a 'new order'. Reform is the hallmark of the advent of the 21st century. Defensive rigidity has everywhere proven futile, and democratisation with its ultimate dialogue insists upon ethical and moral regeneration in the common search for free human thought and expression. No field of inquiry more perfectly fulfils this search than that of palaeoart, and none, perhaps, more fully reflects the challenges. In this address the present status of our field is reviewed, the problems are examined, and medication for some of the deeper ills is prescribed.

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The magnitude of this assembly recalls for me my first experience before a large audience and with it my Australian connection. In the 1950s I was a teaching assistant under the well-known Australianist, C. W. M. Hart. Hart was a pre-eminent lecturer, and could probably lecture on just about anything, at any time, but he hated archaeology. One day he asked me into his office and advised me that I was to conduct his three lectures on North American archaeology to his introductory class. I worked feverishly for a week preparing for this event, knowing that if I bungled it, my career might take an early turn. The day arrived and I entered the palatial surroundings of a brand new auditorium with 500 seats, all filled. My entry was from behind some curtains, and onto a stage with a podium in the centre. I could not face the audience, and my knees were shaking. After about three minutes, I looked up at the sea of faces. Several students were reading newspapers, some were eating their lunch, two were playing some kind of game, and I think one was making a model boat. It was utter and complete defeat. After the lecture I went directly to Hart's office to report my failure and to take the consequences. Hart listened judiciously, and then eased back in his big chair, and said: 'Oh, yes, Jack, I should have warned you about that!'

One of the lingering questions about rock art is, in fact, whether or not it is art. Hart often maintained that there was no art, as the mind of urban man perceives it, among the Tiwi at all. He did this mostly for argument, asserting that the grave posts were functional, stereotyped, and were not then viewed by the community or the makers from the standpoint of aesthetic values. Much has changed since then, both in traditional societies and in the wider world. But Hart's idea has not. He was pursuing classical relativism, the philosophic protectorate of culture, to its ultimate application. Art was a Western concept, which went along with culture with a capital 'C'. He resented this domination and he fought it in everything he did. He was focused on difference. And, saying a people had no art was going as far as you could go.

At the 1988 Darwin Congress, the definition of palaeoart did not get a lot of attention. From the massive array of contributions in the event we could probably put together a consensus which served both the aesthetic and the more empirical foci on marking and graphic symboling. It is quite fair to say that the Darwin Congress served to illuminate the question, and to lead the way to the directions of current research. One of the most valuable contributions of the Darwin Congress was the fact that all facets of contending views on the fundamental nature of palaeoart were fully addressed without rupturing the integrity of the field itself. Clinical archaeology did not take it over, but it lent its services to the whole. And every participant in that Congress was surrounded at all times by a compelling array of Aboriginal art, proving forever that it is an art equal to all others in the family of man.

The participation of the Aboriginal community in the Darwin Congress set a more significant precedent than we might imagine. Nowhere else in the world is historical continuity more clear, and for anywhere near such a long span of time - over 40 000 years. At the same time, there is a stupendous body of rock art. These conditions contributed directly to the decentralisation of rock art theory. And with this, and the first organisational meeting of IFRAO, rock art preserved itself while becoming truly universal. The agenda of this meeting in Cairns, the Second AURA Congress, shows clearly that we advance directly from the base line laid at Darwin. We will probe the origins of art itself, the role of the mind in it, the factors of choice and compulsion, and the ways in which cultures put their stamp on it. Also in these meetings, the organisational rewards will be clear: from

informal discussions by ten members. IFRAO has grown to embrace dozens of nations. This growth brings both an enhanced scholarly communication, and a universal standard on conservation and ethics - something of which few other similar organisations can boast. And, at long last, the United States will host a world congress in 1994. The fuller fruits of both Darwin and Cairns will be in evidence at that time.

The persisting integrity of rock art research, despite enormous expansion and decentralisation, suggests to some that it has the qualities of a discipline. If so, we are seeing a unique relationship between incompatibles. Science and art have never mixed. However, if we become too preoccupied with this as a polarisation, rock art will lose its most valuable asset. It appears to have the capacity to incorporate and blend phenomenally diverse approaches. In this congress, we will attend presentations dealing with the molecular constitution of some forms of pigment and, at the same time, supernaturalism in the Aboriginal perceptions of their own art. In other cases, we will be seeing the furthest advances in the neurological and psychological factors in imagery and sytnbol-producing experience. And we will be paying plenty of attention to the ethics of rock art research - the necessary business of self-inspection as a normal practice of any discipline. The diversity of research in rock art reminds us of another significant stimulus provided by the Darwin Congress and its initial venue for IFRAO. Out of that came an unprecedented growth in high-quality rock art publications. Older ones were also strengthened, and a great many external journals now routinely accept rock art papers. Rock art is for the most part archaeological, and it is in the formal teaching of it that we see some lag. Four years ago, not a single textbook in archaeology gave more than a simplistic paragraph to it. Just the same, many put rock art on their covers! Right now, the picture is still not bright, not just for archaeological texts, hut for texts (and university courses) in rock art. This is an area that needs much attention. With the problem corrected, the stage will be well set for rock art to remain and grow as an integrated field of enquiry.

In societies which are psychologically and philosophically committed to immediacy, and without mechanisms to reconcile death, the past becomes irrelevant. This is the central problem facing all heritage research. A concern for the past is swept aside by the tumult of time itself. Pursuit of the past is left to only a few, and only a few of these remain to explore and protect that fragile aspect of the past which brings us together. We should not delude ourselves that the unprecedented numbers of this assembly constitute victory over the universal rage to 'progress' at any cost. While these numbers may be a wonderful result of the First AURA Congress, carrying on the many themes it strengthened and initiated, the problems of researching and preserving the diminishing rock art heritage are actually increasing. The destructive effects of unrestrained technological growth, coupled with population growth and expanding frontiers put us in a race to save the human heritage. And, the losses we face are irreplaceable. In the context of contemporary resource management terminology, they are non-renewable resources. This is a wonderfully popular term, glib, up-to-date, part of a wonderful bureaucratic vocabulary that places heritage within a socio-political/economic milieu in which there is much practical effort to solve 'real problems'. Viewing the human heritage this way is a kind of capitulation to a current historic mood. It denigrates the human heritage because it is inspired by the immediacy which dominates so much of the political dimension of our lives. The human heritage, and especially the sacred aspects of it, should form a paramount position in the hierarchy of public values. There is something demeaning in the classification and treatment of Australian, or African, or American sacred art as a non-renewable resource. It is too important to even be regarded as a resource. It is a significant part of all our lives. In some cases it is not unrealistic to suggest that at least much of cultural life may depend upon it.

The nature of thinking about cultural heritage is probably perceived by most academics as greatly influenced by their own inventions - which we often called theories or paradigms, or models, or constructs, or formulae, or hypotheses, or any of dozens of other words. All of these simply reflect ways in which some segment of the human family has put some thoughts together.

Sometimes academic ideas are perceived to come together to form 'approaches' or 'systems' or 'schools'. Over the past few decades, numbers and their intellectual treatment have cut a deep and widening channel in the conduct of heritage sciences. Computational research is growing at a frantic rate. While there probably is great good in this, there may be some danger in it as well. One danger is entrapment.

An exclusive commitment to numbers could condition entire perceptions of the world. Taken to excess, entrapments like this can ensnare our intellectuality, diverting it from 'clear, communicable centrality' we all owe, as academics, to the whole of the human race. Archaeology came very close to this isolation in recent decades. The restoration and revival of even *some* humanistic persuasion can rekindle general communication, and will favour linkage with a large component of the traditional rock art community. It will also be more understandable to those who 'feed us'.

Statistical contributions to evidential reasoning are commonly debated, but the debate becomes less and less applicable to the resolution of basic questions. There is one clear and surpassing solution to this. It is the question of: So what? If it can be answered and the answer can be linked to the broad range of enquiry in rock art research it is not lost in its own nest. To go further, the answer must directly answer the question raised by the discipline, and not those of some other discipline. This approach not only puts a runaway specialty on track, it also tends to support some growth, since AURA '88, in the view that rock art has the earmarks of a significant synthesising discipline in its own right. We must be unrelenting in our questions to researchers who advance technologies and their attendant vocabularies beyond general applicability. This does not mean that they are wrong. It means only that *full* value requires communication. There are three tests for contributory integrity. First, if the results can be verified or rejected when compared with as many other unrelated approaches as possible, we are on track. We would be off track if the comparisons were not possible. Second, if the questioning proceeds to the point where our hypothetical researcher still understands our questions and admits his work will not answer them, the person is probably honest - and this is a good finding in itself. And thirdly, if, as our questions continue, we encounter slipping and flopping, I hope we all know what to do.

Excessive and self-defeating specialisation arises from a bed of theoretical entrapments. It reminds me of one of C. W. M. Hart's little eccentricities. One day I entered his office to find him taking books from the shelves and throwing them into bushel baskets, obviously for discarding. I asked him what he was doing, and he told me he was engaged in the annual pruning of his library. This surprised me (in part, I am sure, because I was very poor), and I asked him how he could decide on what to keep and what to throw out. 'Easy', he said, 'I just throw out all the theory and keep all the facts. Theory changes every year.'

Usually a deeper knowledge and reflection on it will cure excesses. However, society as a whole is becoming less reflective, not to say non-reflective. While the causes of this are perceived to be the impact of media-induced superficiality and possibly related deteriorating education, knowing the causes may not lead immediately to cures. And the problem is made worse by the perception of a growing gap between the academic community and society at large, not to mention the ethnic gap itself. Some openly advocate the displacement of literary skill (often unequivocally fused with analytical and evidential reasoning) in order to communicate the academic to the non-academic. There are some things wrong with this view. I believe that education is the ultimate, and essential basis of humanity. It is the transmission of knowledge and ways to all. If it fails, mankind fails, and the evidences of this, from the present moment in history, are true of every other moment of past history and of history to come. In

solving this problem in communication, excesses must be avoided. An approach which advocates the abandonment of formal literacy is wrong, and an approach which advocates new grammars and vocabularies for every technical advance will only serve to isolate. One kind of answer to this dilemma lies in the strengthening of general basic education. Since education is itself the primary instrument of acculturation, it can never be coercive. Consequently it must be tailored to *respond*, not administered through absolute authority. And, with this approach, hope rises that ethnic groups will focus on heritage, with broadening knowledge and skills. In some of our recent researches in Canada, Native elders have been directly incorporated into the project administration in directoral roles. In these cases, they participate equally in all decisions pertaining to conservation and preservation, and in the planning of future research. In the cases in question, the Native participants live near the sites and have an interest in them. They know the dangers of public access, unregulated use of sites and also natural damage. While aboriginal interpretations do not always exactly coincide with 'academic' views, many of the aims of the academic approach are equally interesting to the Native community: 'When was this made? How was it done? Was it always this way? What was life like back then? How can we learn more without ruining anything?' My greatest hope, for most of my career, in fact has been that Native persons themselves become archaeologists and ethnologists and perform these inquiries into their own societies, both past and present. There are signs that this is beginning to happen.

The morality of scholarship, also in part known as academic ethics, requires some attention in all this. This is because society at large can itself see quite clearly that those given a mandate to 'learn for a living' are not always perfect. In fact, there is some pretty ugly stuff inside this often closed and elite core of intellectual 'detachment'. For some time Paul Bahn has been calling attention to the role of personalities in the history of European rock art research. The case has been made that rivalries, personality conflicts, preoccupations, manipulation, and outright deceit have led to the closure of research avenues, and to the historical perpetuation of erroneous conclusions. They have also led to failed careers and personal tragedies.

For those without much knowledge of psychology, large egos are linked to powerful intellect and aggressive striving toward contentious goals. I have lived in universities for a long time and feel confident in telling you that the reverse is usually true. Personal weaknesses and faulty, often weak, egos make up the preponderance of the most vicious strivers. And the warmth of the academic setting does much to protect and propagate the species. The most hallowed tradition of formal scholarship has it that truth is achieved through debate. For those who use academe to protect (by aggression) a weak ego, debate becomes hostile conflict - the 'academic wars'. Dispassionate reflection is displaced, and a win/lose model comes into play. Alliances are formed, 'schools' are defended and attacked, and personal conflicts arise which fundamentally contradict the very essence of scholarship itself. How often have you heard the statement 'If that so-and-so is going to be there, I am not going!'? You may be absolutely certain that this kind of conflict affects many 'learned' meetings, to include this Second AURA Congress, and the first one as well.

What can be done to correct this kind of thing and give those who view the scholarly world a correct perception of integrity? One thing we can always do, to great constructive advantage, is to seek, from our own perspective, the positive in every contribution. In reviews, at times, it may be a trial to desist from body blows when a focus on the positive seems inappropriate. It is itself highly debatable that truth is served by acidic exchange. Can a person know when reason is breached? Probably not always, but one will certainly never know if some conscious attention to the problem is not applied. This effort should be made.

The judgment that debate (in the form of argument) is the ultimate means of resolving issues is not universal. Most traditional societies (which include most of the world's population) employ consensual processes for resolving issues, and for making decisions. These processes lack stress, deny personal aggression and promote accord. When members of traditional societies try to explain their system in this, academics should listen, very carefully.

There is another form of ethical problem, probably stemming from the same basic source, which should be noted. Let's call this one media manipulation. Some promote their ideas through the media. Some of this is an honest effort to communicate findings to a wide audience, and some is in the manner of deliberate defense or of attack on a concept or finding. An incredible example within the past two years was a case in which a very senior archaeologist scathingly rejected some early rock art findings in South America. The attack was made in a glossy general magazine on archaeology. While professionals might shun it, large numbers of intelligent readers would follow it closely. The article in question gave only one side of the argument, ignoring much relevant data and the views of senior scholars who had visited and evaluated the findings in the field. The most incredible aspect of this case was the fact that the detractor had never even visited the site! This kind of thing is not only a violation of scholarly ethics, it is a violation of common sense and basic human civility. Its use of a popular magazine misleads a large and potentially supportive population. How can this kind of thing be cured? Directly, through the profession where explicit codes frequently govern such cases. As infringements grow, more use of such codes should be made, but judiciously through small, specifically formed bodies. Open arguments in the popular media will likely feature polarities, contention, stress, and not substance and technical intensity - boring and obscure to most.

And now, some thought on the matter of politicisation, something which features debate, and which is closely linked to the media. Throughout the world, traditional societies are rightfully gaining political power. In the case of heritage resources, and especially rock art, this can direct attention to the need for more sensitive Western perceptions of important aboriginal values. Practically all rock art is conceded to reflect a supernatural dimension - and thus to at least some degree is, or was, related to those forms of behaviour we call sacred. The culture may endow the object itself with spirituality or it may judge the act sacred and the object profane. This produces another dilemma. All rock art everywhere is regarded by researchers and conservators as part of the human heritage. It becomes a kind of 'sacred phenomenon' because it reflects the history of mankind and is thus of great value to all who share in a concern for it. Ideally, in Western society, all are taught to value this heritage (albeit at times far from well enough). But not all societies may see it this way. Sophisticated and elaborate sand paintings of the American Southwest, entirely comparable to the great art of the human past, are destroyed when they have served their ritual purpose! An acquisitive society has no right by superior numbers and political authority to intervene in the protection of these for 'posterity'! By the same token, the imagery produced in ritual contains the spiritual power and becomes permanent. I have been warned by elders anxious to protect me, to avoid some rock painting sites (or specific paintings) because I might be hurt by their power. In some of these cases, the paintings in question were made thousands of years ago and have no demonstrable connection to living human groups. This does not matter. It is clear that they are aboriginal, and that they have been incorporated into the values and beliefs of the resident populations. No one else can specifically claim them, and the relationship to them is essentially aboriginal, as strengthened by contemporary political growth. But all humanity shares in the general past and all have some claim upon the works of mankind. The resolution of degree must be achieved by the joint assessment of goals, and the implementation of procedures to achieve them. My own experience has been that when honest, well-meaning discussion on mutual concerns is undertaken without anger and goal-focused stress (of the win or lose mode), solutions are not only probable, they are inevitable.

There has been a certain risk in the way some of the various ideas in this address have been presented. To 'electric minds',

much of it may seem to be in the form of utter banalities, bromides, platitudes. The recommendation that we exercise restraint and work toward civil exchange may harbour on one's national anthem, or fond thoughts of our mothers. If I am right that some may be thinking this way, then this address has been an absolute success. The 'electric minds' who judge what I have said to be a rude affront to their intellectual sensibilities are a very fundamental part of the problems we face. An arrogant elitism which denies morality should be the crowning shame of scholarship. The isolation it creates both within and without the academic world starves us all from a clear and better understanding.

The vast array of findings to be paraded before us in this congress will treat every current interest in rock art. Some will have a direct bearing on the resolution of common heritage problems. Some will be just about totally incomprehensible to most. History will judge them all.

From a personal point of view the symposium *Indigenous experiences and perceptions* may well be the most important for Australia, and something to be reviewed by all nations in which there is a traditional culture with ties to the rock art. Rock art is not an academic invention, however much the various scientific presentations may make that seem to be the case. Rock art is a tangible reflection of a former cultural life. In some cases, as especially in Australia, that life is continuous into the present. It should be unthinkable that direct Aboriginal involvement were not a premier element in these proceedings, and in all other similar ones from now on.

In the course of these proceedings, the promise of rock art will emerge in its unique capacity to bring together the most diverse practices and opinions regarding all aspects of rock art. We have learned already that nothing is absolute when it comes to things human. Rock art is a thing human. In fact, the time will come when theorists will tie the 'permanent' markings of mankind to the impermanent ones which historically preceded them and proclaim these acts and their remains to be the delicate difference between human beings and their progenitors. Thus rock art can become the venue for explaining ultimate human origins, and its capacity to invoke all possible directions in these explorations will remain a legacy of the Darwin Congress and the means by which the science and art of rock art will remain together.

Acknowledgments

First of all, I would like to bring you greetings from the government and people of Canada. I would like to thank the Social Science and Humanities Research Council of Canada for arranging my attendance here. I would like to thank Robert G. Bednarik and the AURA Executive for their support, and my own university for its many helping efforts too.

Jack Steinbring
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RAR 9-254

THE SECOND AURA CONGRESS: A SUMMARY

The Second AURA Congress, the largest conference in the world addressing the scientific discipline of palaeoart studies, cognitive archaeology or rock art studies, was held from 30 August to 4 September 1992, at the conference centre of the Hilton, Cairns, Australia. It was preceded and followed by numerous field trips and excursions, beginning with the Grand Tour on 1 August, and ending with the Queensland Tour on 22 September. A total of 171 academic papers or specialist lectures were given, including several public lectures, mostly in Cairns. Numerous papers were submitted for presentation and could not be accommodated, the congress organisers apologise to the authors concerned.

The Cairns Congress was attended by 267 fully registered delegates, 69 non-registered delegates (members of official parties such as a Minister's and the French Embassy's, non-member congress volunteers, subsidised delegates, and delegates of the media), 40 delegates with day registrations, and 78 members of the public who attended public lectures in the actual conference lecture halls. This gives a total of 454. We have inadequate records of the attendance numbers of non-delegates of the various other congress events, including public lectures and seminars in Cairns, Townsville and Sydney, social events of the Congress. Kelvin Smibert's exhibition *Out of the dark* (replicas of Australian cave art) in the Cairns Regional Art Gallery, and the congress poster exhibition in the Hilton basement. Our conservative estimate of these attendance numbers is 600-650 people other than congress delegates. The Congress has met or partially subsidised the attendance costs of 52 delegates.

In summary, well over a thousand people have attended events of the Second AURA Congress, of which 376 were actual delegates. Moreover, the Congress achieved very considerable media attention, locally, nationally and internationally. This included attendance by representatives of journals of popular science and other orientations, and coverage in newspapers, numerous radio stations, and local and international television networks.

Eight of the eleven Cairns symposia will result in published proceedings. It is anticipated that four volumes will be published in Australia, two in India and two in Britain. Suitable papers from the remaining three symposia will appear in selected rock art journals.

The academic symposia

The subjects of the eleven Darwin symposia suggested that, in 1988, the discipline was still engaged in formulating priorities and directions, in establishing its scope. Most of the subjects were not particularly specific, four were simply defined by geography, and only three were designed to break new thematic ground. Four years later, in Cairns, most of the (again) eleven symposia addressed very specific subjects, and they did so in a distinctly forward-looking way. For instance, Symposium A, chaired by Michel Lorblanchet and Paul Bahn, addressed the future direction of the discipline quite directly: *The post-stylistic era: where do we go from here?* It offered a collection of innovative, trailblazing ideas, with the kind of flair we have come to expect from its chair persons.

Then there was Symposium B (Claire Smith and Betty Meehan, with Mike Morwood as discussant), with a star-studded cast. Together with the eventual proceedings of this session, *Rock art and information exchange* will become a monument to the dedication and perseverance of its young architect, Claire Smith.

Symposium C, *Rock art studies as a curriculum for teaching* (Giriraj Kumar and Osaga Odak) certainly was a forward-looking session, taking a long-term view of the discipline, and emphasising the endeavours of establishing it in several countries.

Another trailblazer symposium was chaired by Paul Faulstich and Paul Taçon: *Spatial considerations in rock art*, a distinctive subject on which contributors from six continents presented papers. And again, the program was bristling with the names of famous scholars.

One of the most important areas in the emergence of a scientific discipline of palaeoart studies is that of rock art dating, a

subject in which more progress has been made in the four years since the Darwin congress than in all of scientific history before. No symposium had ever been held on rock art dating, and the proceedings of Symposium F, *The dating of rock art* (hopefully the first to be published among the Cairns proceedings) will be a landmark in this discipline. Unfortunately Alan Watchman could not attend the Congress, and Marvin W. Rowe graciously accepted the role of Jack Steinbring's co-chairperson.

Symposium G, *Preservation of rock art*, followed the successful formula established by Colin Pearson in Darwin. It was co-chaired by Andrew Thorn and Jacques Brunet, two of the foremost practitioners in rock art conservation, and comprised a succession of solid papers on theoretical, deontological and practical aspects of rock art preservation and conservation.

The session on the *Management of rock imagery* (H), chaired by Graeme K. Ward, was distinguished by its most significant component of contributions by Aboriginal scholars and site managers. This provided much-needed indigenous perspectives on a subject that is of immediate concern to Australian Aboriginal people, as the formal return of site control proceeds in various parts of the country.

Despite its brevity, Symposium I, *Rock art of north Queensland*, comprised some exceptionally important papers. Chaired by Mike Morwood and Noelene Cole, this session was intended primarily as an information source for delegates visiting the rock art sites in the wider Cairns region. Yet it comprised significant papers presenting spectacular new results.

The ethics of rock art research was the theme of Symposium J. One of the co-chairs, Mario Consens, had been unable to attend, and a prominent Aboriginal leader, John Ah Kit, kindly agreed to co-chair with Robert G. Bednarik. This was most appropriate as this session, too, was dominated by Aboriginal presentations. It included also some fine papers by non-indigenes.

The *General session* K was chaired by Jarl Nordbladh and Ellen Hickman. As was to be expected, it covered a wide range of topics, including several papers from northern Australia, but also excellent presentations on very diverse subjects from many parts of the world.

Symposium L consisted of four separate workshops on site management, entitled *Indigenous experiences and perceptions*. Some parts of them were closed to non-indigenes, and it is notable that this was the only symposium that produced a set of recommendations (see pp. 155-6, this issue). The workshops were convened by Nola James, Natalie Franklin and Michael Rowland, with a keynote address by Theo Saunders.

Robert G. Bednarik

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Above: Josephine McDonald, Dr Paul G. Bahn (AURA Vice-President elect), Natalie Franklin and María Mercedes Podestá during a tea break at the Second AURA Congress, 3 September 1992.

At left: a flashback of another tea break: First AURA Congress, Darwin 1988 (see cover of RAR 5[2]).

LIST OF CONGRESS PARTICIPANTS

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Mr John AH KIT, Katherine, Northern Territory, Australia
Mr AKIMOTO, Kitakyushu-city, Japan
Mr M. ALDERON, Australian National Parks and Wildlife Service, Jabiru, Northern Territory, Australia
Mr Allan ANDERSON, Thamoore, N.S.W., Australia
Ms Karina ARIFIN, Jakarta, Indonesia
Dr Paul G. BAHN, Hull, United Kingdom
Mrs Shona M. BALLANTYNE, Cairns, Queensland, Australia
Mr Lenny BANJO, Laura, Queensland, Australia
Mrs Elfriede K. BEDNARIK, Elsternwick, Victoria, Australia
Mr Robert G. BEDNARIK, Elsternwick, Victoria, Australia
Dr Friedrich BERGER, Essen, Germany
Dr Ulf BERTILSSON, Central Board of National Antiquities, Archaeological Heritage Register, Stockholm, Sweden
Ms Amanda L. BIGELOW, Wet Tropics Management Agency, Cairns, Queensland, Australia
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Mr Ross BROWN, Cairns, Queensland, Australia
Prof. Margarita BRU, Madrid, Spain
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Mrs Inge DIETHELM-LOCH, Riehen, Switzerland
Mr Andres DIEZ, Madrid, Spain
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Mr Kelvin OFFICER, Macquarie, A.C.T., Australia
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Mrs Kim SALES, Greenmount, Western Australia, Australia
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Mr Joe SCHMIECHEN, Forestville, South Australia, Australia
Ms Marcelle SCOTT, Townsville, Queensland, Australia
Ms Michelle T. SEIGNIOR, Armidale, N.S.W., Australia
Mrs Caryll SEFTON, Woonona, N.S.W., Australia
Ms Kath SHURCLIFF, Premier's Department Brisbane, Cairns, Queensland, Australia
Mr Kelvin S. SMIBERT, Mount Gambier, South Australia, Australia
Ms Claire SMITH, Booragul, N.S.W., Australia
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Mrs Paulina M. Th. SMITS, Ellecom, Netherlands
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Mr Andrew THORN, Hawthorn, Victoria, Australia
Mr Des TOWNE, Dapto, N.S.W., Australia
Dr Alice M. TRATEBAS, Newcastle, Wyoming, U.S.A.
Mrs Beverly TREZISE, Cairns, Queensland, Australia
Mr Percy J. TREZISE, Cairns, Queensland, Australia
Mr Stephen R. TREZISE, Cairns, Queensland, Australia
Mr Nick TUPARA, Wellington, New Zealand
Ms Beata TWOREK, Australian National Gallery, Parkes, A.C.T., Australia
One unnamed delegate, Australian National Parks and Wildlife Service, Canberra, A.C.T., Australia
Dr Patricia J. VINNICOMBE, Dept Aboriginal Sites, Perth, Western Australia, Australia
Prof. Jean VOUVÉ, Centre d'Hydrogéologie, Talence Cedex, France
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Dr Stephen J. WALLER, Newark, Denver, U.S.A.
Mr Grahame L. WALSH, Takarakka Rock Art Research Centre, Carnarvon Gorge, Queensland, Australia
Dr Graeme K. WARD, Australian Institute of Aborigines and Torres Strait Islander Studies, Canberra, A.C.T., Australia
Dr Charles WARNER, Yanderra, N.S.W., Australia
Dr David M. WELCH, Darwin, Northern Territory, Australia
Mrs Margot WELLMANN, New York, U.S.A.
Mr Bruce W. WHITE, Cairns, Queensland, Australia
Ms Lilly WILLIKA, Katherine, Northern Territory, Australia
Mr Les WILTON, Quorn, South Australia, Australia

Two delegates of the Second AURA Congress with good reasons to smile: Dr Michel Lorblanchet, editor of the successful **Rock Art in the Old World**, *and Professor B. N. Saraswati who represents the Indira Gandhi National Centre for the Arts, the publishers of the book. Several other notable scholars are visible in the picture: on the left, with hat, Neale Draper, and immediately to the right of Dr Lorblanchet, with back to camera, Dr Jean Clottes. Next to him, barely visible, David Mowaljarlai, and to the right of Professor Saraswati, Christopher Chippindale, Dr Mike Morwood, next to him, seems to be scratching his head, as if he had a premonition of being elected President of AURA on the following day. Photograph by Paul Bahn, 3 September 1992.*

Ms Phyllis WIYONJORTJA, Katherine, Northern Territory, Australia
Prof. H. Martin WOBST, Anthropology, University of Massachusetts, Amherst, Massachusetts, U.S.A.
Mr Frank WOERLE, Conservation Commission of the Northern Territory, Alice Springs, N.T., Australia
Mr YAMAMOTO, Kitakyushu-city, Japan
Mr Nobuhiro YOSHIDA, Kitakyushu-city, Japan
Mrs YOSHIDA, Kitakyushu-city, Japan
Dr Larry J. ZIMMERMANN, Social Behaviour, University of South Dakota, Vermillion, South Dakota, U.S.A.

In addition to these 267 registered full delegates, there were 69 non-registered delegates: members of official parties and keynote speakers, non-member congress volunteers, some subsidised delegates, interpreters, and delegates of the media.

Day Registrations

The following 40 delegates registered for less than the full five days of the academic proceedings of the Congress:

Mr ARLIDGE, Ms Melanie BARBER, Mr BAZARBASSIS, Mrs D. BURTON, Mr L. BURTON, Mr BUTTERWORTH, Mr Arthur COLE, V. COURTNEY, Mrs P. DARRINGTON, Ms DARROCH, Ms Yvonne DUNCAN, Mr ETTIR, Mr P. HANSLER, Ms HUDSON, Mr T. HAWKS, Ms Linda LEFTWICH, Mr LI Hong Fu (People's Republic of China), Ms Lana LITTLE, Mr T. McGREEN, Ms MARTON, Ms J. A. MARTYN, Mr I. MENZIES, Ms Barbara MILLER, Ms MORGAN, Mr Tom MOSBY, Mr L. ROSENDALE, Mr Fred SIMPSON, Mr Guy SMITH, Mr Henrik SORENSEN, Mr Barry STRUBER, Mr THOMPSON, Mrs THOMPSON, Mrs Janelle TREZISE, Mrs Jo TREZISE, Mr Matthew TREZISE, Ms WATSON, Mr M. WEBB, Mr D. WIENERS, Mr R. WILLIAMS, Mr Mike WOOD. (With one exception, all day registrations by Australians.)

*

The participants of the post-congress Queensland Tour wish to thank those who contributed to the tour's success, particularly Dr Nicky Horsfall, Percy, Beverley and Matthew Trezise, Wally O'Grady, Bruno David, David Flett at Chillagoe, and Grahame L. Walsh at Carnarvon Gorge. They also thank Professor John Campbell and Elizabeth Hatte, who guided them to a series of fascinating rock art sites in the Townsville region. Special thanks also to Steve Sutton (Townsville) and Artie Jacobson (Airlie Beach) of the Queensland Department of Environment and Heritage, who arranged for the vessel of the Department to be made available to the tour participants, and to the crew of the boat, Bob McKay (Skipper) and Robert Stewart, who took the group to the Whitsunday Islands.

R. G. Bednarik, Tour Leader

THE CAIRNS DECLARATION

by the Aboriginal and Torres Strait Islander Australians

Preamble

The Second AURA Congress has been held in Cairns from the 30 August to 4 September 1992. In August 1990, the Aboriginal and Torres Strait Islander Involvement in Natural Resource Management Workshop was conducted under the auspices of the Council of Nature Conservation Ministers. Both meetings resulted in similar recommendations, which require action by the Australian government.

Amendments to the original 'Cairns Declaration' have been made as a result of the non-existence of CONCOM. Delegates of the Second AURA Congress have recommended that the 'Cairns Declaration' be supported as a recommendation of this Congress.

The Cairns Declaration of the rights of Aboriginal and Torres Strait Islander Australians in regard to Nature Conservation and Cultural Heritage Management

We, the delegates of the Cairns Aboriginal and Torres Strait Islander Involvement in Natural Resource Management Workshop, and the Second International Congress on Rock Art [i.e. the Second AURA Congress] declare that the strategic goals adopted by the Workshop and the Congress are:

1. The development of a national system of:
- Aboriginal and Torres Strait Islander ownership of land in inalienable freehold title or other title as appropriate.
- Tradeable rights for all resources, including cultural and natural resources, for land, sea and air held by Aboriginal and Torres Strait Islander people in either inalienable freehold title, or which occur within a defined community economic zone.
- Aboriginal and Torres Strait Islander people's rights of natural resource access for hunting, gathering and utilisation, extending to protected areas through amended legislation to achieve meaningful joint management arrangements, employment, training and consultation.
- Protected areas which conserve, for all Australians, the cultural and biological landscape diversity of Australia.

2. The development of a national strategy for:
- The presentation of Aboriginal and Torres Strait Islander cultural beliefs, values and practices to non-Aboriginal or Torres Strait Islander people.
- The development of national legislation and amendments to relevant federal/state/territory/local government acts, for the protection of Aboriginal and Torres Strait Islander religious integrity.
- The protection and ownership of all sites of Aboriginal and Torres Strait Islander cultural significance.

The Cairns Aboriginal and Torres Strait Islander Involvement in Natural Resource Management Workshop and the Second AURA Congress call on the Nature Conservation and Cultural Heritage Ministers and the Minister for Aboriginal and Torres Strait Islander Affairs to adopt, as a group and individually, this declaration as a course of action for the involvement in nature conservation and cultural heritage management of Australia.

The Recommendations from the Indigenous Delegates of the Second AURA Congress

1. That the Recommendations and the 'Cairns Declaration' be presented to the General Meeting of AURA on 4 September 1992 for discussion and adoption.
2. That the Recommendations and the 'Cairns Declaration' be presented to the relevant Nature Conservation and Cultural Heritage Ministers and the Minister for Aboriginal and Torres

Strait Islander Affairs for adoption, and be placed on the government agenda.

3. That there be indigenous representation on the AURA committee.
4. That in conservation of Aboriginal and Torres Strait Islander cultural sites, the AURA members adopt the following Code of Ethics:
   (a) That the members of AURA carry out scientific, technical and other research through the appropriate protocol with the relevant Aboriginal and Torres Strait Islander communities and custodians.
   (b) That all information be recorded or documented with an holistic approach, expressing background, invasion and adaptation information which recognises the living culture, to give a true perspective of the changes in the rock art sites etc.
   (c) That members of AURA accept that the control of the research development, implementation and monitoring will be at the discretion of the appropriate Aboriginal and Torres Strait Islander community or custodians.
   (d) That all materials and documentation are the property of the appropriate Aboriginal and Torres Strait Islander community or custodians and that copyright will be determined by agreement between the Aboriginal and Torres Strait Islander community/custodian and researcher etc.
5. That a National Aboriginal and Torres Strait Islander Cultural Heritage Council be formed to ensure that the recommendations from the Congress meetings are implemented. This body will consist of one Aboriginal representative of each state and territory and one Torres Strait Islander person.
6. That the Commonwealth of Australia set in place a donations trust from those sources with interests in creating growth industries on and about rock art sites.
7. That AURA and its indigenous delegates call upon the United Nations and the World Council of Indigenous Peoples to visit Australia and New Zealand during the International Year of the Indigenous People to see that the recommendations from the Second AURA Congress are adhered to by the Commonwealth.
8. Subject to a National Aboriginal and Torres Strait Islander Cultural Heritage Council becoming incorporated and constituted, the indigenous delegates of the Congress call upon AURA to support the nomination of an Aboriginal or Torres Strait Islander person being appointed to IFRAO.
9. The Aboriginal participants of the Second AURA Congress request that AURA provides financial assistance for an interim co-ordinator to implement the formation of the National Aboriginal and Torres Strait Islander Cultural Heritage Council.
10. That there be Aboriginal and Torres Strait Islander involvement in the development and facilitation of the next AURA Congress, to ensure that it is conducive to Aboriginal and Torres Strait Islander learning styles and that the competitive stream be eliminated so that all members have the opportunity to be involved in the Aboriginal and Torres Strait Islander experiences, as well as the technical and scientific information.

*

These recommendations were presented to the General AURA Meeting, and they were debated as requested in Recommendation 1. After debate it was decided that the recommendations be made available to the entire membership by publishing them in *Rock Art Research*, and that they be voted upon, after deliberation, by the full membership. Any constructive commentary is invited from readers, to facilitate informed voting by members in due course.

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Forthcoming conferences

GARIWERD ROCK ART WEEKEND SEMINAR by the Archaeological and Anthropological Society of Victoria, 20-21 February 1993 in Halls Gap, Victoria, Australia.

TWENTIETH ANNUAL ARARA SYMPOSIUM by the American Rock Art Research Association, 5-7 June 1993 in Reno, Nevada, U.S.A.

THE HUMAN USE OF CAVES by the Department of Archaeology, University of Newcastle, July 1993 in Newcastle upon Tyne, United Kingdom.

MELBOURNE DATING SYMPOSIUM by the Archaeological and Anthropological Society of Victoria, 3-4 July 1993 in Melbourne, Australia.

FOUR MILLION YEARS OF HOMINID EVOLUTION IN AFRICA, an international conference in honour of Dr Mary D. Leakey, 8-14 August 1993 in Arusha, Tanzania.

ARCHAEOASTRONOMY AND ROCK ART at the Astronomical Observatory and Planetarium of Stara Zagora, 22-29 August 1993 in Stara Zagora, Bulgaria.

TENTH TRIENNIAL MEETING, ICOM COMMITTEE FOR CONSERVATION by the International Council of Museums Committee for Conservation, 22-27 August 1993 in Washington, DC, U.S.A.

1993 CHACMOOL CONFERENCE: CULTURAL COMPLEXITY IN ARCHAEOLOGY by the Department of Archaeology, University of Calgary, 11-14 November 1993 in Calgary, Canada.

GLOBAL SPECIALISTS CONFERENCE ON ROCK ART by the Indira Gandhi National Centre for the Arts, November 1993 in New Delhi, India. Includes 1993 IFRAO Meeting. See *IFRAO Report No. 9* on pp. 161-2, this issue.

INTERNATIONAL ROCK ART CONGRESS by the American Rock Art Research Association, 30 May to 4 June 1994 in Flagstaff, Arizona, U.S.A. Includes 1994 IFRAO Meeting. See *IFRAO Report No. 9* on page 162 of this issue.

New AURA members

We have welcomed the following new members in 1992:

Professor Paul A. R. Bouissac, Victoria University, Toronto, Ontario, Canada
Dr María Francia Galiana, *Revista Lvcentvm*, Universidad de Alicante, San Vicente del Raspeig, Spain
Prof. Dr. Ellen Hickmann, Hannover 1, Germany
Professor Richard Bradley, Archaeology, University of Reading, Reading, United Kingdom
Professor Henri F. Chauvelon, Reze, France
Mr Phillip Purcell, Lane Cove, New South Wales
Cambridge University Library, Cambridge, United Kingdom
Ms Susan Faulkner, Wavell Heights, Queensland
Ms Janice M. Wilson, Gidley, New South Wales
Mrs Maria M. Cotter, Booval, Queensland
Ms Kristin Ellis, Armidale, New South Wales
Ms Michelle Seignior, University of New England, Armidale, New South Wales
Mr Maurice J. Austin, Oak Park, Victoria
Ms Heather Burke, Archaeology and Palaeoanthropology, University of New England, Armidale, New South Wales

Ms Jacqueline Lomath-Bird, Armidale, New South Wales
Dr Marina Lupacciolu, Roma, Italy
Ms Estelle Orrelle, Archaeology, University of Tel Aviv, Tel Aviv, Israel
Dr Alice M. Tratebas, Newcastle, Wyoming, U.S.A.
Ms Rosemary A. Goodall, Carindale, Queensland
Professor J. M. Coles, Thorverton, Devon, United Kingdom
Dr Luke Godwin, Department of Environment and Heritage, Rockhampton, Queensland
Professor Virgile Ghinea, La Garenne - Colombes, France
F. H. Jansen, Condon, Queensland
Ms Julie A. Guy, Binna Burra, New South Wales
Ms Alexandra G. Rivers, Education, University of Sydney, New South Wales
Ms Catherine G. Palmer, Woollahra, New South Wales
Ang-Gnarra Aboriginal Corporation, Laura, Queensland
Professor Margaret W. Conkey, Anthropology, University of California, Berkeley, CA, U.S.A.
Dr Elizabeth A. Morris, Tucson, AZ, U.S.A.
Dr Jeannette H. Hope, Marrickville, New South Wales
Mr Neale Draper, Dept of Environment and Planning, Norwood, South Australia
Mrs Hilary Cairns, Double Bay, New South Wales
Ms Inge Diethelm-Loch, Riehen, Switzerland
Mr Heinz Diethelm, Riehen, Switzerland
Mr Philip Pentecost, Anthropology and Archaeology, James Cook University, Townsville, Queensland
Mr Theo Saunders, Port Adelaide, South Australia
Mr Ross R. Rudge, South Townsville, Queensland
Dr Jeffrey L. Eighmy, Mareeba, Queensland
Ms Helene Hayes, Richmond, New South Wales
Mr Li Hong-pu, Lian Yun Gang City, Jiang Su Province, China
Ms Patsy Coverdale, Greensborough, Victoria
Miss Elda Coretti, Southdown, Bath, United Kingdom
Mr Charles R. McCracken, Mossman, Queensland
Ms Marcelle Scott, Townsville, Queensland
Dr Nicky Horsfall, Dept of Environment and Heritage, Cairns, Queensland
Mr Des Towne, Dapto, New South Wales
Ms Diane Hamann, Lemon Grove, CA, U.S.A.
Dr Roger L. Cribb, Mooroobool, Cairns, Queensland
Dr Roy L. Carlson, Archaeology, Simon Fraser University, Burnaby, B.C., Canada
Mrs C. Fletcher, Fannie Bay, Northern Territory
Mr John Moger, Malindela, Bulawayo, Zimbabwe
Access, Blackheath, New South Wales
Dr Olga Gostin, School of Aboriginal and Islander Administration, University of S.A., Adelaide, South Australia
Mr John Greer, Columbia, MO, U.S.A.
Association pour le Rayonnement de l'Art Pariétal Européen, Foix, France
East African Rock Art Research Association, Archaeology, University of Dar Es Salam, Dar Es Salam, Tanzania
Kuku Djungan Aboriginal Corporation, Mareeba, Queensland
Professor William C. Strange, Eugene, OR, U.S.A.
Dr Ian McNiven, Archaeology, La Trobe University, Bundoora, Victoria
Professor Andrea Stone, Art History, University of Wisconsin-Milwaukee, Milwaukee, Wisc., U.S.A.
Jawoyn Association, Katherine, Northern Territory
Mrs P. M. Th. Smits, Ellecom, Netherlands
Mr R. Paul Firnhaber, Estes Park, CO, U.S.A.
Ms Jennifer Galindo, Missoula, MO, U.S.A.
Mr Brett J. Galt-Smith, Alice Springs, Northern Territory
Mrs Malyn Booth, St Ives, New South Wales
Ms Joanne Jordan, Viewbank, Victoria
University of South Australia, Underdale, South Australia
James Bennett, Collaroy, New South Wales
Mr John Rae, Eungai Creek, New South Wales
Ms Ursula Frederick, Nedlands, Western Australia
A. Price, Dubbo, New South Wales
Mr Eugene K. Dayton, Humanities, University of Central Queensland, Rockhampton, Queensland
Mr Jeff Doring, Smithfield, Cairns, Queensland
Professor Charles R. Peterson, Art Department, St Norbert College, De Pere, Wisc., U.S.A.
Mr John Kane, Applied Science, University of Canberra, Belconnen, A.C.T.
Ms Maree Beek, Casino, New South Wales
Mr Nicholas X. Smith, St Kilda, Victoria
C. Baker, Cairns, Queensland
Dr Erica Bolle, Munro, Argentina
Professor Knut Helskog, Tromsø Museum, University of Tromsø, Tromsø, Norway
Dr Ulf Bertilsson, Central Board of National Antiquities, Stockholm, Sweden
Dr James Chiarelli, Center for Field Research, Watertown, Mass., U.S.A.
Dr Neil L. Thomas, Mount Waverley, Victoria
Ms M. A. Karina Arifin, Jakarta, Indonesia
Mrs Patricia Darrington, St Lucia, Brisbane, Queensland
Maurice P. Lanteigne, Winnipeg, Manitoba, Canada
Professor H. Martin Wobst, Anthropology, University of Massachusetts, Amherst, MA, U.S.A.
Dr Maria Isabel Hernandez-Llosas, Buenos Aires, Argentina
Dr Jannie Loubser, National Museum, Bloemfontein, South Africa
Dr Chris Reid, Division of Botany and Zoology, A.N.U., Canberra, A.C.T.
Professor H. E. Hallam, York, Western Australia
Mr Tom Byra Mixie Mosby, National Gallery of Victoria, Melbourne, Victoria
Professor Howard Morphy, Pitt Rivers Museum, Oxford, United Kingdom
Mrs Barbara Miller, Manunda, Cairns, Queensland
Mrs Jo Trezise, Edge Hill, Cairns, Queensland
Mr Raymond W. Burdekin, Bohle, Townsville, Queensland
Mr Bruce W. White, Cairns, Queensland
Mr David Flett, Chillagoe, Queensland
Professor Carlos Alberto Aschero, Universidad Nacional de Tucumán, Tucuman, Argentina
Lic. Alex Horsey, Provincia de Buenos Aires, Argentina
Lic. Liliana Manzi, Provincia de Buenos Aires, Argentina
Ms Dorothy Hogenbirk, Raleigh, New South Wales
B. Hazlett, Leichhardt, New South Wales
Dr Andres Diez, Madrid, Spain
Mr James Taylor, Mt Isa, Queensland
Dr John Morieson, Arts Faculty, Swinbourne University, Hawthorn, Victoria
Mrs Pam Pallette, Desert Hot Springs, CA, U.S.A.
Mr Michael J. Costelloe, Carnarvon Gorge National Park Queensland
Mr Hugh F. Stevenson, Stanmore, New South Wales
Mr Ronald L. Myers, Kahibah, New South Wales
James Cook University of North Queensland, Townsville, Queensland
The Editor, *Cambridge Archaeological Journal*, Cambridge, United Kingdom
Mr W. Rudolph Reinbacher, Palo Alto, CA, U.S.A.
Ms Christl A. Reinbacher, Palo Alto, CA, U.S.A.
Mr Bulu Imam, Hazaribagh, Bihar, India
Centro Studi Archeologia Africana, Milano, Italy
Dr Michael A. Smith, Department of Prehistory, R.S.Pac.S., A.N.U., Canberra, A.C.T.
Mr Barry Struber, White Rocks, Queensland
Mr Robert G. Theunissen, Everton Hills, Brisbane, Queensland
Comite de Investigación del Arte Rupestre, Buenos Aires, Argentina

IFRAO Report No. 9

MINUTES OF THE SECOND BUSINESS MEETING OF IFRAO
Cathedral Peak, Natal, South Africa

The Second Business Meeting of the International Federation of Rock Art Organisations (IFRAO) was held on 31 August 1991 at Cathedral Peak, South Africa. The meeting was called to order at 14.40 by Acting Chairperson, Neil Lee (SARARA).

PRESENT:
Dr Hugh Cairns, Australia (AURA); Mario Consens, Uruguay (CIARU); Mary Gorden, U.S.A. (ARARA); Maurice Lanteigne, Canada (RAAC); Shirley-Ann Pager, South Africa (SARARA); Professor Ben Swartz, U.S.A. (ACASPP).

1. APOLOGIES:
Japan Petrograph Society.

2. MINUTES:
Minutes of the 1988 IFRAO Meeting had been read by all attending members and were accepted.

3. MATTERS ARISING:
Additional matters arising from the 1988 Minutes are reported regularly in the journal *Rock Art Research*.

4. NEW BUSINESS:

4.1 Motion tendered by M. Lanteigne:
A motion was tendered by Maurice Lanteigne and seconded by Shirley-Ann Pager that international non-members of IFRAO attending the conference be allowed to participate as observers at this meeting. In the ensuing discussion surrounding this motion it became apparent that the lack of a formal constitution made it difficult to accommodate such contingencies as the motion proposed, since there were no guide-lines which could be followed in this or any other such matters which could arise in the course of such meetings. It was suggested that the motion be postponed for future discussion. However, this motion was subsequently re-tendered for consideration. The following discussion revealed that one of the primary aims of IFRAO was to encourage international co-operation among all rock art researchers, therefore closed sessions should be avoided. Since the east African members present had already indicated in informal discussion with S.-A. Pager that they wished to form either an East African Chapter of SARARA, as Namibian researchers had done, or to form the East African Rock Art Research Association, it was decided to grant these African members observer status, along with Namibia and the representative of CAR, Professor Lucas Smits. The motion was resolved and carried.

5. CONSTITUTIONAL PROCESS:

5.1 Motion tendered by H. Cairns, seconded by M. Lanteigne:
Due to the difficulties experienced in the course of discussions concerning correct procedure, it was realised that IFRAO should have a formal constitution to provide guide-lines by which to conduct its activities and affairs. M. Gorden noted that Item 1 of the Minutes of the 1988 Meeting states '... unless the need for any such features or structures is perceived ...', and the meeting perceiving that there is a need for a formal structure recommends that a constitution be drawn up.

5.2 B. Swartz was nominated to draw up a draft constitution (presented below). He said he would go through the published Minutes of the first IFRAO Meeting, together with matters coming out of the present meeting to put together, in a formal structure, suggestions which would be sent out for comment. The motion was resolved and carried unanimously.

The meeting was recessed at 15.25 so that a formal invitation could be extended to the persons nominated to attend the meeting. The following members were introduced and welcomed:
Dr Yusuf Juwayeyi, Malawi; Dr Fidelis Masao, Tanzania; Professor Osaga Odak, Kenya; Gerdis Stadtherr, Namibia; Professor Lucas Smits, Holland (representing CAR).

6. REPORTS FROM INTERNAT. ORGANISATIONS:

6.1 *SARARA (Southern African Rock Art Research Association)*
S.-A. Pager advised that much time had been spent during the previous year organising the conference as well as pre- and post-conference field trips and she recorded her gratitude to N. Lee for his support in her endeavours. She thanked all participants in the conference and the IFRAO Representatives for their support. She expressed her regret that some people had chosen not to attend for various reasons.
SARARA holds meetings at regular intervals throughout each year, inviting different speakers to talk on various aspects of rock art. There are also field trips in which members participate. This year there was a visit to petroglyph sites in the Magaliesberg to assess damage through natural and unnatural causes, as well as to discover if there had been any unauthorised removals. Comments and suggestions were invited.

6.2 B. Swartz noted that S.-A. Pager was to be commended in organising SARARA in the first place, and having it develop into the thriving organisation that it is today. M. Lanteigne added that her assistant organisers had also done a superb job in assisting her with the organisation of the conference. H. Cairns commented that the field trips have been very, very important and absolutely superb. B. Swartz proposed a motion of the Executive Board to commend Pager and thank her for her efforts. The motion was carried unanimously.

6.3 *ACASPP (American Committee to Advance the Study of Petroglyphs and Pictographs)*
B. Swartz reported that there had been an international meeting back in 1984 at Little Rock, for which, he believed, money had been made available by the Arkansas Archaeological Survey. The Executive Secretary of ACASPP, Joseph Snyder, is editing a series of papers for publication. There are currently between 150 and 200 members. Comments, suggestions and queries were called for.
S.-A. Pager enquired about the proposed international meeting planned for Las Vegas in 1994. B. Swartz explained that ACASPP would be affiliated with ARARA for this meeting. ARARA had sent out the formal proposals for the organisation and the initial scheduling would be done by ARARA. However, he (Swartz) was on the planning committee. Referring to the enquiry about the Las Vegas venue, M. Gorden stated that the venue had not yet been established.

6.4 *ARARA (American Rock Art Research Association)*

M. Gorden informed the meeting that ARARA's thrust is in two areas - conservation and education. Because membership of ARARA is scattered throughout the U.S.A., ARARA has in the last year established a Co-Chairperson for both educational and conservation committees. There are also a regional Co-Chairperson and individual members of the committee. This assisted in co-ordinating efforts throughout the United States in both areas of interest. This had been quite an organisational task but currently there had been communication from most States in regard to both education and conservation. Particularly with education there was co-operation with the National Archaeological Society, which also has an education committee. A package was being put together for each State and then there are more breakdowns which will combine both the archaeology and the rock art.

It was proposed that ARARA's bid for an international conference and IFRAO Meeting should be moved to Item 9 on the agenda. This was agreed.

6.5 *RAAC (Rock Art Association of Canada)*

M. Lanteigne reported that the first general meeting of RAAC was held on 9 May 1990 in Whitehorse, Yukon. There are six officials, of which Lanteigne is President, Professor Jack Steinbring is First Vice President, Stan Copp is Second Vice President. A constitution was drawn up and passed. On 9 August 1990, RAAC was incorporated and has a non-profit status. In September, affiliation was requested with IFRAO and was subsequently ratified by members of RAAC in November 1990.

The Second Annual Business Meeting was held on 13 May 1992 at St Johns in Newfoundland. RAAC currently distributes its journal *Rock Art Quarterly* to all IFRAO members. RAAC has established three committees: education, conservation and Native relations. There is currently a major national dilemma in that there is no consistent national policy in Canada. M. Lanteigne requests the participation of international organisations similarly engaged in planning policy legislation standards in these areas.

6.6 *CIARU (Centro de Investigación de Arte Rupestre del Uruguay)*

M. Consens stated that in the last two years, principal efforts had been made in field research. The second priority lay in the location and specialisation of rock art research. The National Heritage Committee had obtained the declaration of rock art sites as National Monuments. Unfortunately some 20% of rock art sites have been destroyed or severely damaged over the past five years due to industrial and commercial activities. M. Consens requests the assistance of IFRAO members to help combat the problem.

CIARU has three international projects that are being developed. The aims of the Centro are to develop closer ties with other centres in South America with the same concerns. CIARU also works in areas that have not yet developed their own centres and is very proud of the support it can give them.

6.7 *AURA (Australian Rock Art Research Association)*

H. Cairns reports that two national meetings were held since the First AURA Congress in 1988: in Sydney (1989) and in the Grampians mountains (1991). Both included a seminar and field trips. In general, there had been an emphasis on scholarship and research, with special attention given to the development of rock art dating techniques. The main emphasis was on the planning of the Cairns Congress which will be taking place at the end of August 1992. The venue would be the Hilton in Cairns. A summary was presented of the Congress, which would include the next IFRAO Business Meeting.

AURA produces the major scientific journal *Rock Art Research* (received by all IFRAO members), the *AURA Newsletter*, and a series of substantial occasional publications. Volume 4 of the latter appeared a few months ago, two more volumes will be published mid-1992. Nearly all of the proceedings of the First AURA Congress have appeared or are in print, totalling close to 200 research papers.

7. MATTERS FOR CONSIDERATION:

7.1 *Australia: Standard scale for photography*

The use of a standard colour scale for rock art research was presented in IFRAO Report No. 6 (in *Rock Art Research* 8: 78-9). The pros and cons for using a colour scale were discussed at length and it was thought that the availability of a standard colour scale for documentation purposes would be critical for future assessment of pigment deterioration, but no proposal was made. However, it was recommended that AURA prepare a guide-line for consideration at the IFRAO Business Meeting in Cairns.

7.2 *Bolivia: Assistance for specific research and conservation/protection for rock art projects*

SIARB (Sociedad de Investigación del Arte Rupestre de Bolivia, not represented at the meeting) stated its urgent need for international participation in research projects focused on the conservation/protection of their rock art sites. It was obvious that such funding is outside the capabilities of IFRAO and it is suggested that Bolivia seek assistance from UNESCO. B. Swartz notes the statement in the Minutes of the 1988 IFRAO Meeting: 'It is believed that an international federation can approach funding agencies far more effectively than national or regional organisations and it is envisaged that a major function of the Federation will be to endorse projects supported by member organisations'. There was a general reluctance to support the wording that we would be willing to 'endorse' projects supported by member organisations. Swartz proposed a motion to amend the wording '... that will be to endorse projects ...' to '... will be supported by member organisations.' This motion was seconded by M. Gorden. After further discussion it was decided to use the word 'encourage' rather than 'support'. The proposal was amended to read as follows: 'A major function of the Federation will be to encourage projects supported by member organisations.' B. Swartz accepted this alternative wording and it was again seconded by M. Gorden. It was unanimously carried.

7.3 *Canada: Development of a decentralised data-sharing international archival network*

This matter was discussed at the 1988 IFRAO Meeting. Various other suggestions have since been put forward. However, there are problems involved which need to be resolved before any archival network system can be achieved. M. Lanteigne proposed a motion that IFRAO be informed of individual members, their capacities and capabilities for supporting an archival network system. This was seconded by H. Cairns.

7.4 *Canada: Journal exchange network, status of network, protocol for use of non-copyright material, editor's reports on respective publications, circulation, membership, DTP publishing*

It was noted that one of the main contributions that IFRAO could make is by assisting in the establishment and upgrading of international publication standards in rock art research. It was recommended that IFRAO prepare a preliminary report on the current journal exchange network.

7.5 *India: Pefology, a proposed new name for rock art studies*

A name was proposed for the discipline, as defining the internal relationship of humans and their environment, cognitive development and the process of humanisation through the study of petroglyphs, petrographs, engraving on any surface, figurines and ornamental objects produced by humans at different stages. The proposal was put forward by O. Odak. It was proposed by M. Gorden that IFRAO circulate this as a document to all member organisations for consideration at the next IFRAO Meeting, and seconded by M. Consens.

7.6 *Italy: International project for the standardisation of keywords for rock art publications*

Professor Dario Seglie of CeSMAP (Centro Studi e Museo d'Arte Preistorica) has developed a system of keywords which it has been recommended that all member organisations follow.

This was acknowledged by all present but no comments or discussion ensued.

7.7 *South Africa: Rubbings and tracings - do they accelerate the deterioration process?*

It was reported by the delegate representing the South African National Monuments Council in the course of the conference proceedings that the South African government is presently considering legitimising the techniques of rubbing and tracing as acceptable recording standards for rock art. It is also intending to give permits to professional researchers who regularly carry out these techniques as a means of recording the rock art. Rubbing and tracing are widely used, and some researchers still use the latex casting of petroglyphs, disregarding the proven damage caused by such practices. In the opinion of member organisations present, a statement condemning these practices should be submitted for inclusion in the proposed 'code of ethics' to be drafted by IFRAO.

7.8 *Uruguay: An appeal to IFRAO for support for action against rock art destruction*

It was reported by M. Consens that of the fifty known sites in his research area, fifteen have been destroyed or have suffered severe damage over the last five years due to industrial or commercial activity. It was unanimously agreed that IFRAO should prepare a statement declaring its support for CIARU, to be submitted to the appropriate government department responsible for heritage management in Uruguay.

8. THE CAIRNS CONGRESS:

In 1988, AURA gave notice of its intent to host an IFRAO Business Meeting in conjunction with the Second AURA Congress. This request was unanimously accepted by postal ballot in 1989. The ensuing discussion brought out that there should be an agreed frequency for IFRAO Executive Meetings. A general agreement was that one every four years would be appropriate. Section 9 of the Minutes of the 1988 IFRAO Meeting explicitly states that one of the aims of IFRAO Meetings is to increase the international attendance of the host events. The proposed rock art exhibition, which was planned for the 1992 Cairns Congress, has been postponed.

9. VENUES FOR FURTHER INTERNATIONAL CONFERENCES:

M. Gorden confirmed the request that ARARA host an IFRAO Executive Meeting at the proposed international congress in 1994. It was proposed that a letter of intent be submitted to all members not attending this meeting so that they may have the opportunity of ratifying this proposal. The proposed letter was subsequently sent out to all member organisations by SARARA's President, S.-A. Pager. The letter stated that no replies would be taken as acceptances. No notifications of dissent were received, therefore it was taken as being unanimously accepted (cf. *Rock Art Research* 8: 155).

10. OTHER BUSINESS:

10.1 *National and international Native organisations: the need to establish formal consultative networks*

The meeting was advised by H. Cairns that Australia has a Cultural Heritage Rights Bill which recognises site usage as an indigenous right. AURA supports the right of indigenous peoples to control access to rock art sites and works with the Institute of Aboriginal and Torres Strait Islander Studies on these issues. M. Lanteigne stated that he would like IFRAO to acknowledge the implicit inalienable rights of indigenous peoples to have access to and control over their cultural heritage, which would include rock art sites.

It was decided that a general statement of intent of purpose go into the proposed constitution of IFRAO, which will indicate to the world at large that IFRAO recognises that part of the cultural heritage is vested in the indigenous peoples and it must be protected. B. Swartz agreed to insert a clause into the draft constitution that would deal specifically with this matter.

10.2 *Standardised conservation and protection advisory strategies*

It was agreed that this item should be combined with Section 11 of these Minutes, which also encompasses Section 7.7.

11. CODE OF ETHICS:

Standards for: (a) Recording, and (b) sample removal for dating and geoenvironmental or pigment analyses

R. G. Bednarik initiated the proposal for drafting the code of ethics for sample removal (*Rock Art Research* 8: 79-90). It was resolved that both items be considered when drafting the proposed code of ethics for the carrying out of scientific research of rock art.

12. GENERAL:

In the course of this meeting it became apparent that the variety and complexity of the subject matter on the agenda was such that future meetings should perhaps be conducted over several hours per day throughout the duration of the conference. This would allow for more detailed information on the various subjects and allow more in-depth discussion on the various matters raised. Some members felt that some of the proposals discussed could have been handled through correspondence. Others agreed that direct and personal contact has greater impact and is important in establishing and maintaining international unity of purpose and motivation.

13. ADJOURNMENT:

The meeting of the International Federation of Rock Art Organisations was adjourned at 23.35.

Shirley-Ann Pager
President, SARARA

RAR 9-256

In accordance with Minute 5.2 above, Professor Ben Swartz (ACASPP) has drawn up a draft constitution for IFRAO, which is presented here for comment. Readers are reminded that IFRAO is not an organisation of individuals, so individual suggestions and criticisms should be submitted preferably through the executive of the national or regional rock art organisation the author is a member of. Proposals submitted by IFRAO Representatives to the Convener will be circulated among member organisations for consideration.

IFRAO DRAFT CONSTITUTION

ARTICLE I: NAME

The name of the entity shall be the International Federation of Rock Art Organisations (IFRAO).

ARTICLE II: OBJECTIVES

IFRAO shall:

Section 1 - provide guide-lines for standards of rock art conservation, recording and inventorying (documenting and assessing);

Section 2 - serve as a clearing house for the dissemination of rock art data;

Section 3 - encourage intellectual and monetary support of rock art projects endorsed by IFRAO;

Section 4 - promote high scholarly standards of rock art research and publication;

Section 5 - undertake educational programs with the public to help ensure maximal appreciation and protection of rock art resources;

Section 6 - promote the inalienable rights of indigenous peoples to have access to, and control over, their rock art heritage; and

Section 7 - promulgate the values expressed by *IFRAO's Code of Ethics* [or *Statement of Principles*; this document to be drafted after the Cairns AURA Congress, and might also include Sections 5 and 6 above].

ARTICLE III: MEMBERSHIP

Section 1. Members of IFRAO are organisations, not individuals. Application for membership will be by written request of the organisation's head to the IFRAO Convener.

Section 2. Organisations applying for membership should have professional standing and be corporate entities or have official recognition of their country's cultural authority.

Section 3. An organisation will be admitted into IFRAO by a majority vote of existing affiliated organisations conducted by the Convener. The vote may be cast at an authorised IFRAO meeting or by mail.

ARTICLE IV: PUBLICATIONS

Section 1. Exchange of information and copyright options of IFRAO periodicals shall be encouraged within an integrated network unless it infringes upon individual producers.

Section 2. Information about rock art-related subjects, such as deontology and rock art conservation, will be regularly issued.

Section 3. Reports and bulletins announcing recent discoveries, current news and other developments of concern or interest to the discipline shall be released on a regular basis by IFRAO.

ARTICLE V: OFFICERS

Section 1. IFRAO shall be administered by a Convener or caretaker organiser elected by a majority of votes of the organisational representatives. Term of office is indefinite.

Section 2. The Convener may appoint his/her successor, subject to a confirmation vote of two-thirds of the member organisations.

Section 3. The Convener serves at the pleasure of former IFRAO Conveners, authorised IFRAO Conference Chairpersons, and member organisation's present and past IFRAO Representatives.

Section 4. The business of IFRAO will be conducted at meetings presided over by the Chairperson. The Chairperson shall be the host organisation's representative at an authorised international meeting.

Section 5. If the Convener cannot attend an authorised IFRAO meeting he/she may delegate the Chairperson to act on his/her behalf.

Section 6. If the Chairperson cannot conduct a meeting he/she may delegate responsibilities to an official IFRAO Representative in attendance, subject to the unanimous approval of the delegates present.

ARTICLE VI: MEETINGS

Section 1. An authorised meeting of IFRAO representatives shall be convened no later than four years from the previous meeting.

Section 2. A majority of votes of organisational Representatives of IFRAO is required to sanction an upcoming meeting.

Section 3. A year's notice must be given to convene an authorised meeting.

Section 4. Each organisation of IFRAO is allowed representation by one voting delegate.

Section 5. A delegate may represent more than one IFRAO organisation and may cast votes for each organisation the delegate represents.

Section 6. Each organisation may select a delegate to participate at an authorised IFRAO meeting by whatever internal process it chooses. The name of the delegate is then sent to the Chairperson with a copy to the Convener. If the organisation does not notify the Chairperson prior to the meeting of the identity of its authorised delegate, the head of that affiliated organisation may serve as its Representative. If the head is not present, the chief executive officer of the organisation may serve as its Representative. If neither are present, an officer of the organisation or a trustee of the organisation's board of directors may serve as the organisation's Representative.

Section 7. Agenda items to be considered at an authorised IFRAO meeting are to be submitted to the Chairperson with a copy to the Convener.

Section 8. - The invitation of observers at an authorised IFRAO Business Meeting must be by prior mutual consent of official Representatives.

Section 9. The preparation and distribution of the minutes of an authorised IFRAO meeting is the responsibility of the Chairperson. Minutes will be mailed to all member organisations of IFRAO no later than one year from termination of the meeting.

ARTICLE VII: PROCEDURES

Any questions of procedure not covered within this constitution shall be controlled by the current edition of Robert's Rules of Order.

ARTICLE VIII: OFFICE

The office of IFRAO shall be the current address of the Convener.

ARTICLE IX: STATUS

IFRAO shall be unincorporated. It is not a financial entity and shall not deal with corporate funds nor make a profit.

ARTICLE X: AMENDMENTS

This constitution may be amended, repealed or expanded by a two-thirds vote of a quorum of representatives from constituent affiliated organisations of IFRAO at an authorised meeting. Written proposals for such changes must be submitted by mail to all constituent organisations and must bear a postmark at least forty-five days prior to the first announced day of the meeting. Editorial revisions and clerical alterations of submitted proposed changes can be considered and approved at the meeting.

Draft by Ben Swartz, Jr
President, ACASPP

RAR 9-257

IFRAO BUSINESS MEETING 1992

This meeting was held in September 1992, during the Second AURA Congress in Cairns, Australia. A report and the minutes of this meeting will appear in the next issue of *RAR*.

IFRAO BUSINESS MEETING 1993

The proposal by the Indira Gandhi National Centre for the Arts and the Rock Art Society of India, to nominate the following conference as an authorised IFRAO meeting has been accepted by the IFRAO Representatives in Cairns. In view of the incomplete coverage of the substantial agenda at Cairns, it is proposed that all uncompleted business from the Cairns meeting be attended to at the 1993 meeting in New Delhi. The host event will be the Global Specialists Conference on Rock Art.

Global Specialists Conference on Rock Art November 1993, New Delhi, India

The rock art scholars of the world are invited to attend this international conference, to be held in New Delhi under the aegis of UNESCO. The actual dates will be announced shortly.

The Conference aims to: create an awareness of the intrinsic value of palaeoart as the cultural heritage of humanity; evolve strategies of rock art site management, conservation and computerised documentation; re-formulate methods of cross-cultural

comparison and standardise rock art terminology; develop specialist systems in rock art studies; and finalise the conceptual plan of the IGNCA World Galleries of Rock Art.

The sessions of the Conference will be based on pre-circulated papers, so that the five days of meetings in New Delhi may be devoted to discussion. The major themes of the Conference will be:

1. Understanding rock art in a universal frame.
2. Rock art site management, conservation and documentation.
3. Cross-cultural comparison and standardisation in rock art terminology.
4. Artificial intelligence and rock art research.
5. World galleries of rock art.

Enquiries should be directed to:
Professor B. N. Saraswati
Indira Gandhi National
Centre for the Arts
Janpath, New Delhi 110 001
India

IFRAO BUSINESS MEETING 1994
International Rock Art Congress
Flagstaff, U.S.A., 30 May - 4 June 1994

Preparations for this major event are in full progress, with some changes to the committee. *La Pintura* (Fall 1992) reports the details of a Planning Committee meeting held in Flagstaff on 10 October 1992. The Call for Papers is imminent, and further details should be available soon.

The meetings will be held on the campus of Northern Arizona University in the DuBois Conference Center. Flagstaff is situated in Arizona, an area of abundant and spectacular rock art and archaeology. There will be five days of academic sessions, covering a wide range of topics relevant to all aspects of rock art research. Informal sessions with rock art films and videos are planned. Space will also be available for research abstracts to be presented in poster format. All papers suitable for publication will appear in post-congress volumes.

Preliminary estimates of registration fees are US$125.00 for early registration (prior to 1 May 1994), US$150.00 full registration fee. Lodging rates begin around US$30.00/night for single accommodation and range upward. Field trips ranging from one day trips to week-long expeditions will be offered.

This is an advance announcement and further details will become available in the course of 1993. However, further information may also be obtained from:
ARARA
P.O. Box 65
San Miguel, CA 93451
U.S.A.

IFRAO BUSINESS MEETING 1995
International Rock Art Congress in Italy
Pinerolo-Torino, August/September 1995

Professor Dario Seglie, IFRAO Representative of CeSMAP (Centro Studi e Museo d'Arte Preistorica) has proposed that the following event be considered as the venue of an authorised IFRAO meeting in 1995:

The proposal nominates five days of academic sessions comprising ten to twelve symposia, debates, films and displays, exhibition (Alpine rock art, Saharan rock art), cocktail party and farewell dinner. Field trips will cover rock art of post-Palaeolithic sites in the western Alps, and there will be tours also to various prehistoric, ethnographic and historic destinations in Italy. The following provisional symposium titles are announced:

A - Rock art studies: a new approach
B - Rock art: semiotics, signs and symbols
C - Rock art: recording and computer science
D - Rock art and the mass media
E - Rock art and the Mediterranean Sea
F - Rock art of the Sahara
G - Rock art of the Arctic circle
H - Rock art and museology-museography
I - Rock art and archaeological excavation
J - The ethics of rock art research
K - Preservation and management of rock art

FURTHER IFRAO BUSINESS MEETINGS

The following further proposals are at hand for nomination of planned international events as IFRAO meetings:

1996: The Third AURA Congress, either in Sydney or in Adelaide, Australia, in August/September.
1997: IVth International SIARB Symposium, planned for Sucre, Bolivia.
1998: RASI Conference, to be held in India.

If these proposals are accepted there will be an IFRAO meeting every year from 1991 to 1998, and these events will be well spread over the continents: Africa (1991), Australia (1992, 1996), Asia (1993, 1998), North America (1994), Europe (1995), South America (1997). Once bids for IFRAO meetings are accepted, IFRAO members are asked to refrain from organising competing major conferences, and to plan their own internal event calendars to avoid clashes with these major international events. It is a significant benefit of having an international federation that planning of this type can be conducted in an orderly, sensible fashion, evenly distributing the workload of conducting conferences, while at the same time spreading the benefits that are certainly conferred on organisations willing to tackle such engrossing projects.

TWO NEW MEMBERS OF IFRAO

The East African Rock Art Research Association (EARARA) has been recently incorporated in Dar Es Salam. Its principal office holders, Dr Fidelis T. Masao and Professor Osaga Odak, had announced their intentions to form either a chapter of SARARA, or to form a new rock art organisation covering east Africa, at the SARARA rock art conference, Cathedral Peak, Natal, in August 1991. The intention to seek affiliation with IFRAO was later conveyed to the IFRAO Convener, and soon after incorporation Professor Odak attended the Cairns IFRAO meeting as the nominated delegate of SARARA. He presented the request of EARARA to the IFRAO Business Meeting and the Representatives confirmed EARARA's acceptance as the twentieth member of IFRAO.

The new member fits well into the existing IFRAO membership, being modelled on existing members in terms of objectives, organisational structure and research orientation. It intends to cover the region of east Africa, essentially north of the region served by SARARA, as far north as Kenya. This region includes

several rock art regions, some of which have been the subject of scientific publications in the international literature of recent years. The office of EARARA will be at the University of Dar Es Salam.

The contact address of EARARA is:

East African Rock Art Research Association
Dr Fidelis T. Masao (Chairperson)
Archaeology Unit
University of Dar Es Salam
P.O. Box 35050
Dar Es Salam
Tanzania

The Comite de Investigación del Arte Rupestre de la Sociedad Argentina de Antropología (CIAR-SAA) was recently created within the Argentine Anthropological Society. This Committee brings together researchers interested in developing and promoting studies in rock art.

The Society is a non-profit scientific organisation, has no restrictive membership rules, and is governed by an elected executive. Its main aim is to 'encourage anthropological investigation within the country and to co-ordinate the work done by those who today study that subject'. It has some 200 members, and publishes a scientific magazine, *Relaciones*. It was within this institutional framework that, in March 1992, a group of investigators saw a need of forming a specific committee to study rock art, reflecting (1) the characteristics of this particular archaeological heritage, which requires the development of specific methods in order to study it; (2) the special protection and conservation requirements, given the nature of its exposure; (3) the need to promote the inclusion of rock art study in archaeological projects and investigation as a whole; (4) the need to support efforts aimed at giving value to those national cultural assets, by informing the public about them. The general objectives of CIAR-SAA are:

1. To promote scientific research of rock art applying specific methods.
2. To promote the documentation of rock art sites.
3. To encourage the protection and conservation of rock art sites.
4. To develop ways of publishing and disseminating research findings.
5. To lobby for creating legislation according to these aims.

Specific objectives are:

1. To promote the inclusion of rock art as a subject in archaeology in seminars and courses at university level.
2. To promote close ties with both national and international institutions.
3. To organise academic and public events on this subject (conferences, courses, study tours etc.).
4. To facilitate the availability of professional advice on the subject, to researchers, institutions and other interested parties.
5. To publish a newsletter on the CIAR-SAA activities.
6. To promote the exchange of specialists and encourage a first-rate professional extracurricular organisation.

The Executive Committee of the CIAR-SAA consists of: Carlos J. Gradin (President), María Mercedes Podestá (Secretary), Juan Schobinger, Carlos A. Aschero, María Isabel Hernandez Llosas (Committee Members).

M. M. Podestá represented SIARB at the Cairns IFRAO meeting (she is SIARB's official Argentine representative), at which opportunity she placed the CIAR-SAA request before the business meeting. The nomination was unanimously accepted by the IFRAO Representatives, and CIAR-SAA thus becomes the Federation's twenty-first member.

The contact address of the new member is:

Comite de Investigación del Arte Rupestre de la Sociedad Argentina de Antropología
Lic. María Mercedes Podestá (Secretary)
Av. Santa Fe 983, 4 piso A
1059 Buenos Aires
Argentina

RARAC FORGES AHEAD IN CHINA

Until 1984, the rock art specialists of Western countries were not only unaware that rock art research was being conducted in China, they did not even know of the existence of rock art there. Yet the beginnings of rock art studies date back much further in China than in any other country, as noted by Bednarik and Li in 1991 (Rock art dating in China. *The Artefact* 14: 25). There have been several improvements in the field of rock art studies in China. Sites of rock art are found throughout the country and information about it is available in archaeological journals, newspapers and magazines, and several rock art books have been published recently. Meetings have taken place from time to time. The Rock Art Research Association of China was formed on 12 March 1991, and in the same year held an international conference in Yinchuan, north-west China. This was the first international conference on rock art which was held in China. Its main objective was to establish a world-wide awareness of the significance of Chinese rock art.

As a scientific discipline, rock art research is still new in China, and there are many things to be done. As the Chinese 'open policy' proceeds, the government and the scholars of China welcome co-operation with foreign organisations, especially with IFRAO.

The agenda of rock art research in China affords priority to education, to the training of rock art researchers, managers and conservators, and to public awareness as well. There has never been any formal training in rock art before in China. It is planned to conduct a rock art course in the Central Institute for Nationalities in Beijing, and RARAC requests the co-operation of IFRAO with this project. We hope that IFRAO members can provide one or two teachers for the course, who will be accommodated while in China.

In order to promote the communication between Chinese scholars and their foreign colleagues, a newsletter is necessary. It will be published in two languages, Chinese and English. Subject to the availability of funds, the establishment of a rock art study centre would also be of significant benefit.

Destruction, obliteration and fading of rock art proceed everywhere, at various rates. Such deterioration often takes place before proper documentation of the images has been possible. Therefore an urgent item on our agenda is also to prevent the destruction of rock art sites.

Professor Chen Zhao Fu
President, RARAC

RAR 9-258

RASI ROCK ART FESTIVAL IN INDIA

In order to improve public awareness of Indian rock art, the Rock Art Society of India (RASI) conducted the Dr V. S. Wakankar Smriti Purakala Samaroh in Agra on 30 November and 1 December 1992. It was attended by thirty delegates and an audience of nearly 220. The program consisted of three basic components: the RASI exhibition *Rock art and us people*; a workshop on public awareness of the Indian rock art heritage; and a series of three

lectures, given by R. K. Pancholi, V. S. Srivastava and Giriraj Kumar. Professor B. P. Kamboj from Lalitkala Academy and Mrs Lakshmi Wakankar were special guests of the event.

As a public event, the rock art festival received good attention in the electronic and printed media. All India Radio recorded the entire proceedings and broadcast a special 20-minutes program.

The principal subjects emphasised in the proceedings were the inclusion of rock art in teaching curricula, and the launching of public awareness programs. The establishment of an autonomous national centre for palaeoart and culture was discussed and advocated, and it was suggested that the Rock Art Institute of Ujjain could play its role initially. Methods and strategies of improving public awareness were discussed, particularly the means of encouraging interest in young people.

Dr Giriraj Kumar
Secretary, RASI
RAR 9-259

SIARB EDUCATION CAMPAIGN

The Sociedad de Investigación del Arte Rupestre de Bolivia (SIARB) is making good progress with its educational program. It has just printed 15 000 copies of a brochure aimed at children which will be distributed through the schools of the Department of Cochabamba. We are attempting to secure institutional sponsors for another edition of this publication which is to be distributed in the La Paz region. In addition, the text has been translated into the two major indigenous languages of Bolivia, Aymara and Quechua, and SIARB intends to initiate a campaign among the rural population of the country.

During 1992, SIARB has published the third volume of its monograph series, *Contribuciones al Estudio del Arte Rupestre Sudamericano*. Consisting of 230 pages, this volume deals with the rock art of the recent periods of Bolivia and neighbouring countries, the Colonial and the Republican Periods. The volume was edited by SIARB President Roy Querejazu Lewis and is entitled *Arte rupestre Colonial y Republicano de Bolivia y paises vecinos*.

Matthias Strecker
Secretary, SIARB
RAR 9-260

BUSY YEAR FOR AURA

1992 has been a busy year for the Australian Rock Art Research Association (AURA). The Second AURA Congress has been a major factor in this, and much of my time during the first half of this year was occupied with organising the full or partial subsidisation of the participation costs of 52 congress delegates. Significant aspects of the Congress were the participation of a large number of indigenous people, especially Australian Aborigines, and an equally impressive high participation of public and academic luminaries of the highest rank. Media participation, too, was excellent and productive, including during the lead-up period. The drawcard of the Congress, however, was without doubt its high academic profile. Its 171 papers and lectures introduced the best work that has been produced in the discipline in recent years.

During this year, AURA has also produced the remaining two volumes of the Darwin proceedings we had undertaken to publish, besides the *Cairns congress handbook* and the usual issues of the journal *Rock Art Research* and the *AURA Newsletter*. In all, AURA has published close to 600 000 words in the course of 1992.

Robert G. Bednarik
Secretary, AURA
RAR 9-261

THE FOUNDING OF IFRAO

This composite photograph consists of two of the only three photographs taken at the founding meeting of IFRAO in Darwin. They were all taken by Jack Steinbring on 3 September 1988, in the boardroom of the Beaufort Convention Centre in Darwin, Australia. The founders of IFRAO are, from left: Professor Chen Zhao Fu, China (later President of RARAC); Robert G. Bednarik, Australia (Secretary of AURA); Dr Donald E. Weaver, U.S.A. (then Vice President of ARARA); Professor Ben K. Swartz, U.S.A. (President of ACASPP); Dr S. K. Pandey, India (later President of IRA); Roy Querejazu Lewis, Bolivia (President of SIARB); Shirley-Ann Pager, South Africa (President of SARARA); Ken Hedges, U.S.A. (then Immediate Past President of ARARA); and Dr Michel Lorblanchet, France (President of the Groupe de réflexion sur les méthodes d'étude de l'art pariétal paléolithique). The photographs were taken by Professor Jack Steinbring, Canada (President of RAAM).

NOTES FOR CONTRIBUTORS

Manuscripts of major research papers should preferably be from 4000 to 8000 words. Longer articles will be considered on the basis of merit. Submissions should comprise the original together with one copy, typed in double-space, with a wide margin on one side of each page. Underline words to be italicised and identify each page by number and author's surname. The preferred method of submission is on a 5.25 inch double-sided, double density (DS-DD) diskette written in *MS Word*, together with a hard copy. The content of the paper should be outlined by three to five keywords (e.g. 'Petroglyphs - patination - ethnography - Pilbara') placed above the title. The manuscript must include an abstract of 50 to 100 words, summarising the article.

Spelling and punctuation in this journal follow the *Style manual for authors, editors and printers of Australian government publications* and the *Macquarie dictionary*; where the two disagree the former has precedence. Footnotes should not be used. The bibliography and references in the text should follow the style indicated in this issue.

If line drawings are included they must be larger than the intended published size (preferably by a factor of 1.5 to 2) and line thicknesses, stippling, lettering sizes etc. must be selected accordingly. Photographs should be black and white gloss prints of high contrast. Photographs of rock art which were obtained by physical enhancement or other interference will be categorically rejected. In regions where traditional indigenous rock art custodians exist, their approval must be obtained before submission of any illustrations of rock art, and where copyright applies the author must obtain the appropriate consent. Captions (on a separate sheet) are required for all illustrative material, together with an indication in the text as to where they, and any tables and schedules, are to be placed.

Announcements intended for a specific issue of this journal ought to be available at least two months before the month of intended publication. Galley proofs are issued of all articles and must be returned promptly after correction by the author(s). Each author or group of authors receive thirty free copies of their article, additional reprints are available at cost.

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An engraved ibex or chamois, marked with a barbed sign. Upper Palaeolithic, Cosquer Cave, France. (Refer to article by J. Clottes, Figure 7, page 123; photograph by A. Chêné.)