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NOTES ON LEWIS-WILLIAMS AND DOWSON'S NEUROPSYCHOLOGICAL MODEL IN PREHISTORIC ART ANALYSIS

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ABSTRACT

Archeologists working on prehistoric art have considered neuro-psychological model in prehistoric art and analysis introduced by Lewis-Williams and Dowson a significant contribution in the efforts to find models in elucidating the meaning of prehistoric art. However, question and objections towards Lewis-Williams and Dowson 's neuropsychological model in prehistoric analysis show that the claim of its possible universal application needs further consideration. Ethnograhic data which so far has been used to strengthen the applicability of this model is also questionable. Thus, despite the fact the neuropsychological model in prehistoric art and analysis has provided another way of viewing, understanding and interpreting prehistoric art, it seems to have some weaknesses in terms of methodology and application.

Key words : neuropsychological model - prehistoric art - universal application ethnographic data - methodology - analysis

INTRODUCTION

Understanding the meaning of art is the central aim of studying prehistoric art. The recovery of the meaning of the prehistoric art is the key to a wider study of prehistoric society. When the meaning of prehistoric art is correctly interpreted, many aspects of prehistoric life will possibly be reconstructed, because the meaning of art is closely related to purpose, motivation, form, function and many aspects of the artist or society who creates the art (Taçon, 1987: *36).* Therefore, archaeologists working on prehistoric art have strived to seek and develop models or approaches in elucidating the meaning of prehistoric art.

To date, four approaches, at least, have been applied to explain the meaning of prehistoric art. The easiest way to explain the meaning of art is to guess at what is depicted by merely 'what it looks like'. John Clegg (1985: 37) calls this approach the 'normal model'. The second approach is the ethnoarchaeological approach which tries to 'interpret' the meaning of art by way of drawing analogies between prehistoric art and that of historic or present ethnographic records (Clegg, *1985:* 37-40; Lewis-Williams and Dowson, 1988: 201; Sharer and Ashmore, 1993).The third approach is purely prehistoric. The meaning of prehistoric art is induced from the nature of the art itself by developing contextual, spatial, and quantitative analysis (Clegg, 1985: 40-42; LewisWilliams and Dowson, 1988: 201; Bahn and Vertut, 1988: *165-176;* Ucko and Rosenfeld, 1972).

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The other approach is a non-archaeological approach. In this case, the art meaning explanation is not based on archaeological theories, but on biological or psychological theories. The work of Conkey (1978) and Pfeiffer (1982), which suggest that prehistoric art is a reflection of the emergence of a self identity conciousness and was resulted from the development of ability of human brain to receive more information which in its turn needs to be recorded in signs and symbols in prehistoric art, fall into this category. Lewis-Williams and Dowson's neuropsychological model (1988) is included in this category as well.

LEWIS-WILLIAMS AND DOWSON'S MODEL

Lewis-Williams and Dowson's neuropsychological model has been called 'innovative' (Bednarik, 1988), giving 'new ways' (Clegg, 1988), and it is the newest approach for understanding prehistoric art. The model is particularly applied to elucidate entoptic phenomena (geometric or non-representational signs) in the prehistoric art corpus. Lewis-Williams and Dowson suggest that entoptic phenomena are derived from perception of certain forms by people in altered states of conciousness, i.e. in trance. According to neuropsychological investigations, there are three stages in the progression of altered states of conciousness. In the first stage, people perceive entoptic phenomena alone. In the second stage, people try to recognise what is perceived and match it against the known forms which have been derived in a normal state of conciousness. In the third stage, there is a shift from abstract or entoptic form perception to iconic hallucination where people perceive images as 'what they are appeared to be'. However, it is often found that the iconic form is perceived in geometric background. The entoptic phenomena which are most common appeared in altered states of conciousness comprise six types: (1) grid form and its development in lattice form and hexagonal, (2) parallel lines, (3) dots and short flecks, (4) zig-zag lines, (5) nested caternary curves, and (6) meandering lines or filigrees. These forms can be perceived in seven general principles: replication, fragmentation, integration, superpositioning, juxtapositioning, reduplication, and rotation (Lewis-Williams and Dowson, 1988: 203-204).

According to Lewis-Williams and Dowson, this model can be applied all the time, since the model is based on the nervous system which is universal among mammalians, including human being (Lewis-Williams and Dowson, 1988: 202). Furthermore, they claim that the model has been succesfully applied to explain entoptic phenomena in San (South Africa) and Coso (California, Great Basin) rock art. Both San and Coso ethnic groups practiced shamanism and trance played great role in their life. The six types of entoptic phenomena occured abundantly in San and Coso rock art corpus. Therefore Lewis-Williams and Dowson are convinced that the entoptic phenomena of San and Coso rock art were also derived in altered states of conciousness when the artists were in trance (Lewis-Williams and Dowson, 1988: 204-213). By virtue of this strengtened model, they propose that the Upper Palaeolithic entoptic phenomena were also created by people who experienced in altered states of conciousness in shamanistic trances.

They further infer that the meanings of entoptic phenomena are different in every rock art corpus, but it may reflect expectations and standardisations of visions and afterimages in societies, and therefore have social implications. The occurence of rock art in the dark Upper Palaeolithic caves can also be explained by this model. This rock art is evidence that in order to acquired specific entoptic visions and hallucinations the artists went inward to the dark part of the caves where they could generate such visions. The neuropsychological model suggests as well that co-occurence of entoptic and iconic representation is solely caused by the operation of the human nervous system in altered states of conciousness. This undercuts the widely held assumption that representational or iconic forms evolve out from nonrepresentational or entoptic

signs, as both forms were created at the same time as result of perception in altered states of conciousness (Lewis-Williams and Dowson, 1988: 215-217).

The neuropsychological model offered by Lewis-Williams and Dowson is in many ways very persuasive. By stating that the model is built on the universal phenomenon, that is the nervous system of a human, the model promises a wide application in interpreting prehistoric art anywhere in any culture, and even in any time (Consens, 1988: 221). However, it seems that the expectation will not easily come true. Although it is true that the model opens up a new way to explain prehistoric art and thought (Mithen, 1996; Davis, 1989), it also suffers from methodological weaknesses and difficulties in its application. This paper is addressed to discuss these matters.

QUESTIONS ON THE UNIVERSALITY OF THE MODEL

The critical point of Lewis-Williams and Dowson's neuropsycological model is the assumption that the model is applicable universally, since it is based on a universal phenomenon (Solomon, 1998). This also implies that the entoptic signs are similar from time to time, 'the sign of all times'. Bahn (1988: 217) is in the right way in questioning: '*...how well established the claim that these things are truly universal'*. It may be true that the nervous system is a human universal. However, it must be kept in mind that the nervous system is only one of mechanisms in human body which processes information (Smith, et.al., 1986: 77-96). This implies that to produce output or result, the mechanism needs stimulant or input. And, the input will also determine the output. Some investigations on dreaming have testified to such mechanism. The results of dreaming investigations suggest that people can control what they will dream by means of presleep suggestions (Smith, *et.al*., 1986: 117). In the case of entoptic creation process, Lewis-Williams and Dowson admit that in shamanism there is a training to increase the vividness of imagery. They also mention the cultivation of specific entoptic forms to sharpen the perceptions (Lewis-Williams and Dowson, 1988: 213). Both the result of dreaming investigation and observation in shamanism support the view that the output (entoptic form in rock art) which is produced by the nervous mechanism can be controlled by feeding stimulants or input which result in an expected output. This means that although the nervous system is universal, the result (output) is culturally determined by the expectations of the dreamer or the shaman. In addition, psychological investigations on the use of certain drugs suggest that the effects of hallucinogens, which are used in many tribal societies, are influenced by the user's mood, mental attitude and environment (Smith, *et.al*., 1986: 155-137).

Furthermore, it must be considered that the nervous system is only a small part of complex biological systems of human body (Smith, *et.al.*, 1986: 68). It is widely accepted that humans as biological creatures have evolved for thousands of years into many races with each specific biological characteristics. Hence, it is not improbable that because of their genetic heredity, people in certain time and place will bear different biological characteristics, including nervous system, compared to the others. Based on these reasons, it seems that Lewis-Williams and Dowson's claim on the universality of their model basis should be questioned.

PROBLEMS WITH ETHNOGRAPHIC DATA

Also the nature of ethnographic data from San and Coso which have been used to strengthen the applicability of their neuropsychological model is questionable. The interpretation of San rock art as shamanistic is mainly based on 19th and 20th century ethnographic records (Lewis-Williams and Dowson, 1988: 204). These records indicate that the present tribes in the rock art sites practice shamanism, and the rock art is interpreted by the present tribes as depictions of shamans in their trance (Lewis-Williams 1980 and 1987). However there is no

suggestion that the present tribes ever engaged in rock art depiction. Based on these interpretation (by the present tribes), Lewis-Williams suggests that the depictions are 'fixed' shaman's perceptions in altered states condition. A similar procedure was applied in Coso rock art interpretation as well. What is more, there is no 'direct ethnographic references' in that area (Lewis-Williams and Dowson, 1988: 205). That procedure can be describe as follows:

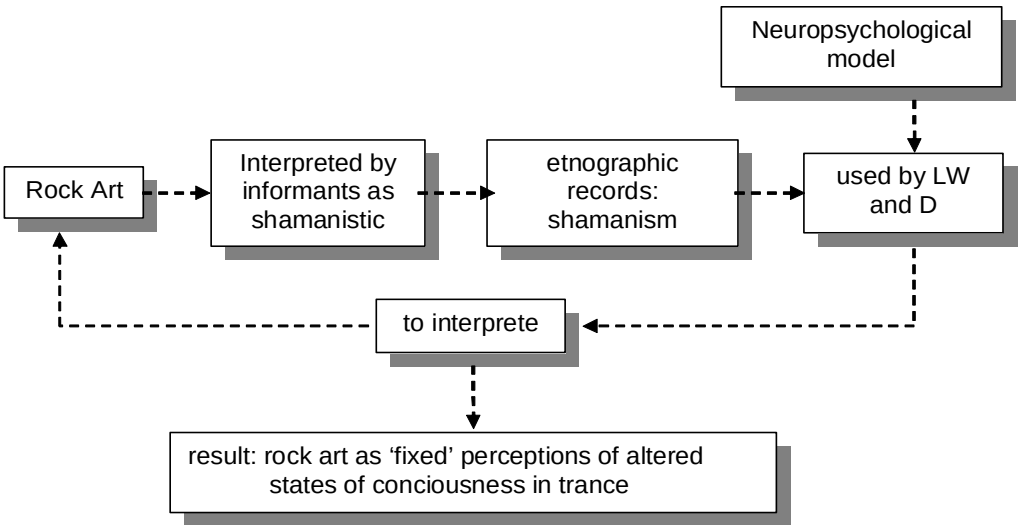

Figure 1.

I would suggest that such interpretation procedure do not really use ethnographic data, but 'pseudo ethnographic data', since the investigators (or ethnoarchaeologists) explain the phenomena (rock art) by interpreting ethnographic interpretation. This procedure indicates that the ethnoarchaeologists do not witness observed behaviour which produces the material culture. In the case of rock art, neither ethnographers nor archaeologists have primary data which come from people who practiced shamanism and depicted rock art. It therefore follows that they cannot prove whether the depictions were really perceptions in altered states of conciousness in shamanistic trance or not. Many scholars in ethnoarchaeological studies warn that written and spoken ethnographic informations are less valuable than observations of actual behaviour (Hodder, 1982: 43-46). Consequently, by virtue of the nature of the ethnographic data, the Lewis-Williams and Dowson's neuropsychological model only gives an alternative explanation about the San and Coso rock art. And, this means that the neuropsychological model is not confirmed by the applications of the model either in San and Coso rock art, because there is no empirical evidence which can prove that the depictions (especially entoptic phenomena) are derived from shamanistic trance.

When applying their neuropsychological model to explain entoptic phenomena in Upper palaeolithic art, Lewis-Williams and Dowson believe that the model is applicable to all (times) entoptic phenomena. They seem to be expecting too much to their model. They do not realise that they are applying a post-fact explanation model which is usually used in both archaeology (Gibbon,

1984) and psychology (Smith, *et.al*., 1986: 36). Using this kind of explanation, it should be borne in mind that *'it is possible to explain past events in many ways, and there is no sure way to determine which, if any, of the alternative explanations is correct'* (Smith, *et.al*., 1986: 37).

AUSTRALIAN ABORIGINAL ARTS AS COMPARATIVE CASES

The neuropsychological model is only one alternative explanation to the San and Coso rock art. On the other hand, many ethnographic data provide evidence that the entoptic phenomena can be perceived in normal states of conciousness. This is well exemplified in the rock art of Australian aborigines, as also mentioned by Faultisch (1988: 224-225).

In Arnhem Land there are abundant depictions in the rock shelter. Among them are 'X-ray' paintings which combine entoptic phenomena, such as hatching, crosshatching, dots, dashes, and diamond shape designs, and iconic forms, such as kangaroo, fish, and crocodile (Taçon, 1983; Chaloupka, 1984). Aboriginal people in this area still make such painting, so providing a good cornparison to prehistoric rock arL. It is true that depicted objects usually have great religious and mytho-totemic importance (TaVon, 1988: 5), especially the fish. However, the depictions of entoptic phenomena in iconic forms are not connected with the altered states of conciousness. Paul Taçon, who has intensively investigated the 'X-ray' paintings of Arnhem Land, suggests that hatching lines (entoptic signs) in 'x-ray' fish paintings (iconic forms) depict internal part of the fish, and that is the way all aspects of the fish (internal and external) are represented by artists. He also mentions, according to the aboriginal elders, that fish is usually painted after the catch, and the fish is used as the actual models for the artist (Taçon, 1988: 12-13). This ethnographic data attests that co-occurence of entoptic phenomena and iconic forms have nothing to do with the altered states of conciousness.

Research on the present aboriginal art of the Western Desert (Australia) also supports the view that entoptic phenomena need not come from perceptions perceived in altered states of conciousness. Bardon (1979) has worked on some aboriginal paintings which are rich of entoptic signs, and recorded what the artists meant by their signs. He finds that all the paintings depict a certain Dreaming. The Dreamings are the aboriginal myths or legends which tell about the creation of the universe, including human beings, animals, plants, and various geographical phenomena, such as mountains, hills, and waterholes. The Western desert aborigines believe that their totemic ancestors, which were half human and half animal or plant, created all those things when they wandered on the barren earth. Their spirits often stay at certain place and they will continue to create various kinds of animals and plants. In such sociocultural circumstance, it can be understood that the aborigines paint symbols (entoptic signs) which represent landscape, figures in landscape, ceremonies, myths and legends in connection with the Dreaming. Although the paintings are closely related to the Dreamings, it is not neccessary to infer that those entoptic phenomena, such as concentric circle, 'U' shape, parallel lines, dots, zig-zag lines, are derived from perceptions in dreaming or trance. These signs are traditional and they are simplifications of observed phenomena. For examples, concentric circle, 'U' shape, and wavy lines represent water hole, place of seat, and smoke or fire respectively (Bardon, 1979: 18-19).

Yet another possible explanation on the occurence of entoptic phenomena in prehistoric rock art is derived from psychological observations on human drawing ability. Clegg in his criticism to Lewis-William and Dowson's paper mentions the result of psychological observations which suggests that people who

have no academic training as artists may produce drawings which are similar to the drawings of children or the insane (Clegg, 1988: 219). This implies that skill in making art is an important factor which influences the result. Martindale and Turner II support this notion. They argue that children do not actually want to depict simple forms, including entoptic phenomena, but they can not do that because they have no ability to do so (Martindale, 1988; Turner II, 1988). It is therefore difficult to determine whether the entoptic phenomena in Upper Palaeolithic art were made by people who entered altered states of conciousness, unskilled adult, or children. It should be noted that in Aldene Cave and Fontanet Cave, children's foot-, knee-, and hand-prints were found in the far deep part of the caves (Bahn and Vertut, 1988: 13-15). This makes possible that children were also involved in cave activities and that they may have depicted the simple forms, including entoptic phenomena.

So far, it can be shown that Lewis-Williams and Dowson's neuropsychological model bears methodological weaknesses. And this will make the model impossible to be applied in every corpus of rock art. In addition, there are also some practical difficulties in applying this model to rock art generally.

ANALOGICAL REASONING

In archaeological reasoning, analogy plays the greatest role (Hodder, 1982: 12; see also Wylie, 2002). Explaining a specific case by applying a model is also generally employing analogy (Clarke, 1972: 2). The structure of logic in analogy can be formulated as follows (Salmon, 1982: 61):

Feature fi, f2, ...fn have been observed in object I

Feature fi, f2, ...fn-1 have been observed in object II

Conclusion : object II also have feature fn.

Meanwhile, the structure of logic in application of the neuropsychological model in rock art will be as follows:

If yl, y2, y3 ..... then ASC (Lewis-Williams and Dowson, 1988a: 254), where:

yl, y2, y3 ..... are entoptic phenomena which are comprised of six basic forms perceived in seven general ways.
ASC is Altered States of Conciousness.

Therefore, when the archaeologist is trying to apply the model, the archaeologist will have to find out whether the entoptic phenomena did or did not occur in the rock art corpus as the first step. And at this earliest stage the difficulties raise. One of difficulties is in determining exactly whether certain forms are entoptic phenomena or not. This problem is also faced by Lewis-Williams and Dowson. In identifying entoptic phenomena in Upper Palaeolithic art corpus, they mention that some forms, such as spearlike forms, claviforms, and tectiforms, cannot be subsumed in entoptic phenomena, since these forms may well be realistic forms. They also admit that this difficulty is caused by the model's not being mutually exclusive (Lewis-Williams and Dowson, 1988: 205). In any study where archaeologist works with models which are not mutually exclusive there is danger of subjectivity.

Lewis-Williams and Dowson fall into this subjective trap. If we examine their identified forms (Fig. 1 and 2 in their paper or Fig. 2 in this paper), it can be proved that they have interpret art forms subjectively. For example, the figure in row III of San painting is not comparable with the basic entoptic phenomena at all. The figures in row V and VI of Coso rock art are confusing. Why are these

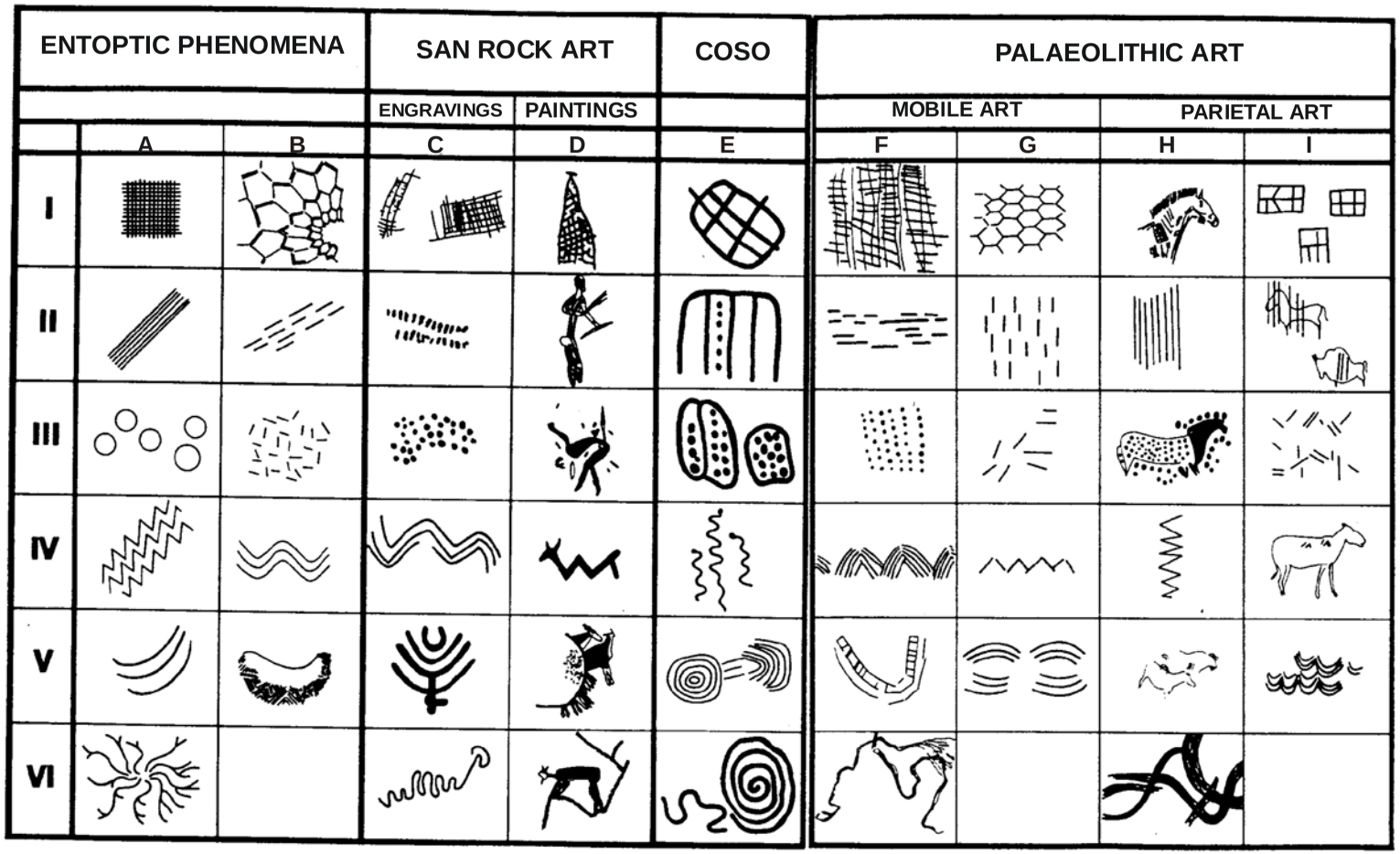

Figure 2 Entoptic phenomena in San, Coso, and Palaeolithic arts identified by Lewis-William and Dowson (1984)

two similar concentric circles identified as different entoptic phenomena ? There are many forms in their table of identified forms from San, Coso, and Upper Palaeolithic art which are questionable in terms of their similarity with the basic entoptic phenomena. These testify that to identify and determine which forms are really entoptic phenomena is difficult and subjective. Since it is difficult to identify the first premise in applying Lewis-Williams and Dowson's model in certain rock art corpus, it follows that it will also be difficult to come to the conclusion that people who depicted the rock art is in altered states of conciousness.

Even when the archaeologist has managed to identify entoptic phenomena in the rock art corpus under investigation, there is still another difficulty that may prevent the application of the model. It has been proved that Lewis-Williams and Dowson's model can be considered as only one of a number of alternative explanations. The occurence of certain entoptic phenomena in a certain rock art corpus will not consequently prove that they were depicted by people who had had experience in altered states of conciousness or shamanistic trances. They could have been created by children or unskilled adults, or they could be simplifications of observed phenomena.

Although Lewis-Williams and Dowson's neuropsychological model has opened a new perspective in understanding and interpreting prehistoric art, the model suffers from weaknesses both in its methodology and application. Where required data are provided, the model may possibly be applicable. However, it must be realized that the model is only an alternative explanation.

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