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

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ABSTRACT

Archaeologists 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. Ethnographic 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 (Tayon, 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; Lewis-Williams 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 traveling explanation is not based on anthropological theories, but on biological or psychological theories. The work of Condy (1973) and Pfeifer (1982), whom suggest that prehistoric art is a reflection of the emergence of a self-identity consciousness and was resulted from the development of ability of human brain to receive more information which in turn needs to be recorded in signs and symbols in prehistoric art, fall into this category. Lewis-Williams and Dowson's 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 latest approach for understanding prehistoric art. The model is particularly applied to elucidate enigmatic phenomena (geometric or non-representational signs) in the prehistoric art corpus. Lewis-Williams and Dowson suggest that enigmatic phenomena are derive from perception of certain forms by people in altered states of consciousness, i.e., in trance. According to neuropsychological investigations, there are three stages in the progression of altered states of consciousness. In the first stage, people perceive enigmatic phenomena alone. In the second stage, people try to recognize what they perceive and match it against the known forms which have been derived in a normal state of consciousness. In the third stage, there is a shift from abstract or enigmatic form perception to iconic hallucinations where people perceive images as 'what they are supposed to be'. However, it is often found that the iconic form is perceived in geometric background. The enigmatic phenomena which are most common appear in altered states of consciousness comprise six types: (1) grid forms and its development in lattice forms and hexagonal; (2) parallel lines; (3) dots and short lines; (4) zig-zag lines; (5) veiled calamary curves; and (6) meander/diy lines or filigree. These forms can be performed in save general principles: replication, fragmentation, simplification, superposition, juxtaposition, and rotation (Lewis-Williams and Dowson, 1988: 210-214).

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 mammals, including human beings (Lewis-Williams and Dowson, 1988: 212). Furthermore, they claim that the model has been successfully applied to explain enigmatic phenomena in San (South Africa) and Cosa (California: Great Basin) rock art. Both San and Cosa ethnic groups practiced shamanism and trance played great role in their life. The six types of enigmatic phenomena occurred abundantly in San and Cosa rock art corpus. Therefore Lewis-Williams and Dowson are convinced that the enigmatic phenomena of San and Cosa rock art were also derived in altered states of consciousness when the artists were in trance (Lewis-Williams and Dowson, 1988: 210-213). By virtue of this strengthened model, they propose that the upper Palaeolithic enigmatic phenomena were also created by people who experienced in altered states of consciousness in shamanistic trances.

They further infer that the meanings of enigmatic phenomena are different in every rock art corpus, but it may reflect expectations and standardizations of visions and hallucinations in societies, and therefore have social implications. The occurrence 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 acquire specific enigmatic visions and hallucinations, the artists went inward to the dark part of the caves where they could generate such visions. The neuropsychological model suggests the co-occurrence of enigmatic and iconic representation is solely caused by the operation of the human nervous system in altered states of consciousness. This underscores the widely held assumption that representational or iconic forms evolve out from non-representational or enigmatic
signs, as both forms were created at the same time as result of perception in altered states of consciousness (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 neuropsychological model is the assumption that the model is applicable universally, since it is based on a universal phenomenon (Solomon, 1988). 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 is 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: 77-86). This implies that to produce output or result, the mechanism needs stimulant or input. And, the input will also determine the output. Some investigations have questioned the validity of 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 seeing stimuli 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 tribes societies, are influenced by the user's mood, mental attitude and environment (Smith, et al., 1986: 155-157).

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 unreasonable that because of their genealogy, 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 are engaged in rock art depiction. Based on this interpretation (by the present tribes), Lewis-Williams suggests that the depictions are "fixed" shaman's perceptions of altered states condition. A similar procedure was applied in Coso rock art interpretation as well. What is more, there is no "direct" ethnographic evidence in that area (Lewis-Williams and Dowson, 1989: 255). That procedure can be described as follows:

![Diagram of rock art interpretation]

I would suggest that such interpretation procedure do not really use ethnographic data, but "research ethnographic data" since the investigators (or ethnographers) 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 of altered states of consciousness in trance or not. Many scholars in ethnopsychological studies warn that written and spoken ethnographic informations are less valuable than observations of actual behaviour (Hodder, 1982: 42-46). Consequently, by virtue of the nature of the ethnographic data, the Lewis-Williams and Dowson's ethnopsychological model only gives an alternative explanation about San and Coso rock art. And, this means that the ethnopsychological 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 ethnopsychological model to explain entoptic phenomena in Upper Paleolithic 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-factor explanation model which is usually used in both archeology (Gibbons, 4)
1964) 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 enoptic phenomena can be perceived in normal states of consciousness. This is well exemplified in the rock art of Australian aborigines, as also mentioned by Faulkner (1986: 224-225).

In Arnhem Land there are abundant depictions in the rock shelter. Among them are 'X-ray' paintings which combine enoptic phenomena, such as hatchings, crosshatchings, 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 comparison to prehistoric rock art. True that depicted objects usually have great religious and mytho-totemic importance (Taçon, 1988: 5), especially the fish. However, the depictions of enoptic phenomena in iconic forms are not connected with the altered states of consciousness. Paul Taçon, who has intensively investigated the 'X-ray' paintings of Arnhem Land, suggests that hatchings (enoptic signs), in 'X-ray' flat 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 model for the artist (Taçon, 1988: 12-13). This ethnographic data attest that no occurrence of enoptic phenomena and iconic forms have nothing to do with the altered states of consciousness.

Research on the present aboriginal art of the Western Desert (Australia) also supports the view that enoptic phenomena need not come from perceptions perceived in altered states of consciousness. Bardon (1979) has worked on some aboriginal paintings which are rich of enoptic signs, and recorded what he artist 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 symbol ( enoptic 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 necessary to infer that those enoptic phenomena, such as curvilinear circles, 'U' shape, parallel lines, dots, zigzag lines, are derived from perceptions in dreaming or trance. These signs are traditional and they are simplifications of observed phenomena. For example, curvilinear circles, 'U' shape, and wavy lines represent water hole, place of seat, and smoke or fire respectively (Bardon, 1979: 16-19).

Yet another possible explanation on the occurrence of enoptic phenomena in prehistoric rock art is derived from psychological observations on human drawing ability. Cloga in his criticism to Lewis-Williams' theory (1983) of aboriginal'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 infant (Chopp, 1988: 219). This implies that skill in making art is an important factor which influences the result. Mantidale and Turner support this notion. They argue that children do not actually want to depict simple forms, including entoptic phenomena, but they cannot do so because they have no ability to do so (Mantidale, 1988: Turner, 1992). It is therefore difficult to determine whether the entoptic phenomena in Upper Palaeolithic art were made by people who entered altered states of consciousness, unskilled adults, or children. It should be noted that in Altamira Cave and Fontanon Cave, children’s foot, knee-, and hand-grips were found in the far deepest part of the caves (Dahn, 1968: 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 (Haidner, 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 \( f_1 \), \( f_2 \), \ldots \, in \, have \, been \, observed \, in \, object \, I

Feature \( f_1 \), \( f_2 \), \ldots \, in \, have \, been \, observed \, in \, object \, II.

Conclusion: \, object \, II \, also \, have \, feature \( f_1 \), \( f_2 \), \ldots

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

If \( y_1, y_2, y_3 \) \ldots \, then ASC (Lewis-Williams and Dowson, 1988: 284), where:

- \( y_1, y_2, y_3 \) \ldots \, are entoptic phenomena which are comprised of basic forms perceived in seven general ways.
- ASC is Altered States of Consciousness.

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 speckle forms, clastiforms, and textiforms, cannot be subsampled 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 interpreted forms subjectively. For example, the figure in row V of II of San painting is not compatible with the basic entoptic phenomena at all. The figures in row V and VI of Cova rock art are confusing. Why are these
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Figure 2 Entoptic phenomena in San, Coso, and Palaeolithic arts identified by Lewis-Williams and Dowson (1984)
two similar concentric circles identified as different antitopic phenomena? There are many forms in their table of identified forms from Sani, Ceno, and Upper Palaeolithic art which are questionable in terms of their similarity with the basic antitopic phenomena. These testify that to identify and determine which forms are really antitopic 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 consciousness.

Even when the archaeologist has managed to identify antitopic 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 occurrence of certain antitopic phenomena in a certain rock art corpus will not necessarily prove that they were depicted by people who had experience in altered states of consciousness or shamanistic/rituables. They could have been created by children of unskilled adults, or they could be simplifications of observed phenomena.

Although Lewis-Williams and Dowson's neuroarchaeological 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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