

WAC-6: Approaches to Rock Art – Recent Research from Around the World

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Evolutionary approaches to the archaeology of writing

Pre-final draft (not to be quoted without permission)

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1. Rock art around the world is so abundant and so evenly distributed that there might be no archaeological discipline that is confronted with so much data layered in such temporal depth. Moreover, it can be reasonably assumed that only a small fraction of it has been discovered, let alone recorded. Engravings and paintings on rocks, cliffs, cave walls, and pebbles, as well as on innumerable stone, bone or ivory artifacts, are so obviously semiotic assemblages that they immediately challenge our interpretative powers. But their diversity, ambiguity, and isolation from their original cultural contexts frustrate our capacity to decipher their meanings and functions to the extent that this archaeological record remains the object of endless controversies among specialists.
2. These controversies are usually irreconcilable because the proponents of various interpretations use a top-down approach. From the hunting magic of Henri Breuil (1952) and the shamanistic rituals of David Lewis-Williams (2002) to the autism thesis of Nicholas Humphrey (2002) and the obsessive sexualism of Emmanuel Anati (1989) or Dale Guthrie (2005), to name only a few typical examples, the explanations follow the same epistemological process. From a first impression a general theory is constructed that determines a set of categories through which information is organized and transformed into data. It is to a large extent a self-fulfilling strategy. The first impression is usually generated by some fundamental assumptions concerning the ontological nature of humans and their place in the history of the world. The approaches mentioned above have all in common that they are reductive in two respects: first, they tend to reduce the information available to the data structures they have constructed a priori; secondly, they take for granted that there must exist a cognitive gap between the mental abilities of

prehistoric populations and the intellectual resources of civilized modern humans. In so doing, they more or less implicitly reaffirm the civilizing effects of literacy and construe writing as a kind of ontological criterion.

3. At the root of such top-down approaches is the confusion between biological and cultural evolution. While there is evidence that, through what is known as the Baldwin effect (Weber and Depew 2003), cultural evolution can significantly impact biological evolution in as much as the technological environment becomes part of the selective constraints, culture and biology are best construed as independent variables that may or may not be congruent with each other. It is a delusion of the self-styled “civilized humanity” to deny full fledged cognitive competence to the “primitive” and prehistoric human populations. In this case, prehistoric specifically means “deprived of writing” impervious to the fact that illiteracy does not imply cognitive incompetence or impairment but only relative lack of fitness in literate cultures, and, moreover, carries a cost like all technological adaptations do. Excessive reliance on the written word can be shown to be ill-adaptive in many circumstances. Because of the historical fallacies created by the written record, “civilized” humans have a distorted sense of time. While one thousand years of very selectively recorded and reconstructed events are mentally experienced as a very long period of time, twenty thousands years of so-called “prehistory” is conceptually handled as an abstract notion, as if it were in another kind of time, a sort of constant present that would drastically impair the capacity of advanced thinking which the advent of writing is supposed to have made possible. Of course, there is no evidence to support such a view. Advanced scientific thinking was made possible by the recent invention of the calculus, not by the emergence of literacy some eight millennia ago. It might even be claimed that absolute reliance on written texts as ultimate sources of authority constitutes a powerful conservative limitation to cognitive development and progress.
4. But, according to the accepted wisdom of mainstream archaeologists, the advent of writing is conceived as an innovation that determines the threshold to civilization, the bridging of a virtual gap between before and after. It operates in scientific mentalities as a sort of secular creationism. Prehistorians have been

concerned from the beginnings of their discipline with discontinuities rather than continuities. They have shown a great reluctance to think in truly evolutionary terms. This is particularly true with respect to rock art. Because “primitivism” is ideologically associated with the concrete rather than the abstract, rock art studies have been focused on the identification of animals and other natural objects. Geometrical designs have been either categorized as schematic representations of such objects (e.g., vulvae, penises, traps, weapons) or graffiti devoid of any specific meaning (e.g., doodle, emotional graphic outbursts, awkward attempts at drawing something). However, any careful observation will show a remarkable ratio between iconic representations and geometric figures. It is well known for instance that the latest inventory of surviving figures in the Lascaux Cave includes 915 identifiable animals and 434 “abstract” signs. André Leroi-Gourhan (1992: 125-161) published a repertory of these distinctive geometrical designs found in the Franco-Cantabric area, and quite surprisingly remarked that if these prehistoric populations had been in possession of a writing system, these signs could certainly be considered to have phonetic or conceptual values. But, since writing had not yet been invented at the time when they were drawn, these graphic forms cannot be interpreted as scripts of any kind (Demoule 1991). The circularity of this reasoning, a typical symptom of the top-down approach, is quite astounding and demonstrates how ideology can stump scientific inquiry. It would seem that a rational approach should first attempt to devise ways of testing whether or not the clustering and distribution of these signs on bounded surfaces exhibit recurring patterns compatible with what is known of script systems, and whether they combine in any remarkable and consistent manner with the animal imagery and the way in which these animals are represented since they vary in orientation and degree of completion.

5. The reason for which several generations of palaeolithic rock art students have excluded a priori such an inquiry seems to be rooted in a mistaken view of cultural evolution which foregrounds innovations as absolute beginnings produced by inventors that are designed to meet some needs and consequently fulfill various functions. Cultural evolution, including its technological and

ideational dimensions, has been the object of intense speculations notably during the last few decades as Darwinism came of age (e.g., Basalla 1988; Boyd and Richerson 1985; Ziman 2000). Evolution occurs when small modifications increase the fitness of an organism with respect to the constraints of the particular environment within which this organism reproduces. Artifacts change over time as modifications introduced in their mode of production, material or design are selected for a variety of reasons that may be purely technological (they perform better their functions or they meet new needs) or social (they become identity or status symbols). They may improve the fitness of the organisms that adopt them by securing better vital economic resources or being a source of prestige. Inquiries into the processes through which such changes happen, often by chance, to capture human attention and spread among populations, have shown that the dynamic of cultural evolution is not a sudden and radical innovation but a cumulative series of small modifications. Contemporary memetics represents an epistemological attempt at coming to grips with this important, indeed crucial aspect of cultural evolution.

6. Let us consider now the invention of script, an artifact that allows the encoding and preservation of speech, or rather the preservation of information as it is articulated in speech. Naturally, information that is worth preserving can be encoded as images. However, the differences between images and words form a grey area for the simple reason that images represent familiar objects from the environment and that these objects can be reasonably assumed to have names in the languages of the populations (or the restricted groups) which use them. The issue of segmentation is an important one because any script presupposes an awareness of the segments into which the flow of language can be efficiently segmented in order to be represented as distinct “images”. This also raises the issue of the economy of signs that form a given script. Since the functionally distinct sounds of a language are in limited number but combine to form names that identify classes of objects, the cognitive resource that makes possible the visual encoding of sounds is likely to have been available to anatomically modern humans. There seems to be a consensus on this point among specialists. The

alphabet may indeed have been a relatively recent invention for reasons that will be considered later, but the use of scripts can be traced back much earlier in the form of syllabaries and logograms. The question is: How far back in time can we find evidence of the graphic encoding of information? This is the point at which top-down and bottom-up approaches offer different heuristic strategies.

7. The former starts from the assumption of an absolute innovation and is concerned with showing that palaeolithic graphic data cannot be considered as writing because we know when and where writing was invented; the latter starts by careful, unprejudiced examination of the data that are available. It is concerned with articulating falsifiable hypotheses and strives to develop appropriate methods of investigation. The first step must be, of course, a descriptive inventory of the data. For this, it is necessary to select a descriptive language that is adequate to conceptually handle the multiplicity of geometric forms which are found in the archaeological record. The current situation is that numerous ad hoc labels have been coined over the years by individual researchers. Such lexicons blend metaphors, neologisms and naïve geometry. For instance, a recent paper on palaeolithic “doodling behavior” – note the typical top-down strategy that starts by an ontological decision regarding the nature of the data – provides a list of motif types among which “multiple waves”, “arcs”, “organic forms”, “radial figures”, “zigzag lines”, “cross-hatching”, “amoebae”, “spiral”, and so on (Watson 2008). Another typical top-down approach, with its suggestive idiosyncratic vocabulary, is the phosphene theory which assumes that the observed patterns are attempts to reproduce those generated by endogenic optical phenomena, possibly caused by psychedelic plants. The heterogeneous nomenclature that emerged from all these endeavours makes it impossible to conceptualize, organize, and parse the available data on a large scale.
8. The first step in an epistemologically sound direction should be to use the language of topology to characterize the “abstract” painted and engraved patterns found in the palaeolithic record, (i.e., geometrical forms not immediately identifiable as natural objects). This approach would make possible the calibration of the data and the testing of hypotheses regarding their spatial organization

(distribution, collocation, diffusion, iteration, mutual exclusion, etc.). An exemplary work in this respect is the research conducted at the California Institute of Technology (Caltech) by mathematician and neuroscientist Mark Changizi who has investigated the topological properties of writing systems over human history (e.g., Changizi and Shimojo 2005). Should the method and program developed in this research, which interfaces topology and the cognitive neurosciences with the data provided by known past and present script systems, be applied to the palaeolithic record, it would become possible to engage in truly bottom-up research and reach conclusions much more interesting than the impressionistic theories fancied by archaeologists over the last two centuries. This would also allow for an inquiry based on an evolutionary approach to script systems. This approach was adumbrated by William Flinder Petrie, the British Egyptologist who authored a book on the formation of the alphabet which echoes some of the earlier remarks made by French prehistorian Edouard Piette (Bouissac forthcoming). Both noted that all the geometrical patterns that eventually were selected to form the various alphabets are found in palaeolithic art among a great variety of other patterns. Consequently, it seems to be possible to identify evolutionary genealogies through which some more economical systems emerged by selection from more complex ones. Alphabets are definitely more efficient than syllabaries which require a much larger number of signs. A plausible argument is that, since there is no obvious gap in the cultural transmission of these forms, it is possible to trace them back in the very remote human past and test whether or not their formal organization is consistent with what is known of writing scripts. This is a complex and challenging endeavour but one that is worth undertaking.

9. References

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