The Origins of Art: An Archaeological or a Philosophical Problem?

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Abstract

During our century the demarcation lines between art and non-art have become vague to the extent that the continuation of art as a valuable component of culture is questionable. The history of art and aesthetics has so far failed to delineate clearly those demarcation lines. Hence, an understanding of the origins of art is needed now more than ever because it may reveal the most important attributes of art in its very beginnings. This essay examines three theories which attempt to explain the origins of art from very different epistemological points of view: a naive empiricist point of view (H. Breuil), a rather simplistic cognitive point of view (E.H. Gombrich) and an extreme behaviourist point of view (W. Davis), the analysis and refutation of which comprise the major part of this essay. The analysis of these approaches to the problem shows that none offers an adequate explanation of the origins of art, mainly because each disregards either empirical or epistemological considerations or both. The behaviourist rejects all epistemological factors, but this hardly makes them immaterial; it only conceals them as implied and inevitable assumptions. An interdisciplinary approach is called for in order to elucidate the problem of the origins of art.

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The Problem: A Paradigmatic Crisis in Art

At the beginning of the last century figurative art arrived, after 400 centuries of fertile activity, at a paradigmatic crisis, which actually puts in doubt the continued existence of pictorial art as a domain of value in our culture. In contrast to science, where a paradigm has never been abandoned until another was discovered to replace it, in the realm of art the only true paradigm that had ever existed was abandoned without the creation of another to replace it. Instead of one paradigm from which many styles could be derived, in the last century some 200 supposedly artistically relevant styles have been created, albeit nobody can say with authority what art is. The unavoidable consequence of this situation is that the demarcation lines between art and non-art have been lost completely, and anything, including nothing, may be accepted as a work of art. But if anything can be a work of art, then there is no criterion for distinguishing between entities that are included in this domain and those that are not, and therefore the category "art" is somewhat nebulous. In the light of this confused state of affairs, a way must be found of explicitly characterizing the most essential attributes of art, that have made possible its continued existence for tens of thousands of years. For if no such way is found, clearly art can be regarded as a closed chapter in our culture as the Dadaists maintained at the beginning of the last century, and as various scholars maintain today with varying degrees of incisiveness[1]. It will be of no avail to appeal to the history of art and aesthetics, for these fields have never succeeded in characterizing the demarcation lines of art, being content with characterizations that reduce art to one aspect or another of it. In the light of today's crisis in art, the need to investigate the origins of art is thus of the highest importance, and is probably even a prerequisite for its existence.

The discovery of the origins of art may reveal at the embryonic stage, its latent and most basic attributes and

characteristics, before they became blurred and distorted with use at the hands of so many civilizations in the course of tens of thousands of years. In these first stages, art received its main characteristics through the totality of conditions that generated it, or enabled it to come into existence. Such an investigation is likely to have wide-reaching implications on several planes:

Firstly, it may serve as the starting point for a far deeper understanding of art from its beginning, so that we may in this way understand better the qualities that single out art from other fields. Such understanding may clarify for us the roots of the crisis and perplexity of art today, and may to a great extent guide the expectations and searches of artists and theoreticians with regard to the art of tomorrow.

Secondly, a deeper understanding of the remote foundations of art may clarify the special role that art played in the evolution of civilization, and also show in what ways art was a preliminary and perhaps essential stage in the emergence of other fields of culture such as philosophy and science.

Thirdly, an understanding of the cognitive capacities entailed in the emergence of art may also clarify some of the most basic attributes of human intelligence in all of its manifestations. That is to say, an investigation of the origins of art might contribute to a clarification of both the connection and the relations between art and science by uncovering the sources common to the two fields, which are in the last resort different products of the same intelligence. It is therefore possible that the exploration of hypothetical evolutionary processes that preceded and led to prehistoric art may help where the history of art and aesthetics has failed. The question is whether the existing theories, which have tried to explain the origins of art, are likely to answer the following questions: do these theories really explain the graphical origins of art? Do they explain the cognitive origins of art, which is the complementary aspect of the same problem? Do they explain any of the attributes of art? Are they capable of explaining the common cognitive ground of art and other cultural domains? However, before we inquire whether the existing theories answer these questions, we shall first review two completely different and fundamental points of departure regarding the problem of the origins of art.

The Origins of Art: Empiricist vs. Cognitive or Idealist Points of View[2]

We shall probably never have an unequivocal solution to the problem of the origins of art, not only because we are dealing with a phenomenon that came into being tens of thousands of years ago, but mainly because key terms such as: "origins", "art", "image making" and "representation", can be understood in completely different ways, according to the professional bias of the scholars concerned with the problem, and especially their epistemological point of departure. Almost all of the research so far done on the origins of art has been carried out from the archaeological-anthropological-historical viewpoint. Some of it also takes into consideration the cognitive perspective, but from the viewpoint of specific and rather limited psychological theories. But the approach to the problem from the cognitive-epistemological angle has so far been only marginal or nonexistent. However, its absence from the research scene does not mean that it is irrelevant. A close examination of the literature on this subject reveals the amazing fact that archaeologists who suggested theories of the origins of art were not aware of the fact that they tend to assume implicitly many groundless philosophical assumptions and therefore no matter how rich their data is, their interpretations of it as evidence for the validity of their theories regarding the origins of art are questionable. Actually, as we shall see in the following, the theories of Breuil and Davis collapse under analysis, not because of empirical drawbacks but because they were completely unaware of the epistemological implications of their theories. That is, often archaeologists

tend to shun a "speculative" approach, but the analysis of their theories shows most clearly, especially in Davis' case, that although he strongly rejects the cognitive approach he implicitly and inevitably assumes more than a full bag of cognitive or rationalist assumptions. Thus, at least within the context of the archaeological research of the origins of art, ignoring epistemological considerations not always make them vanish or superfluous. Rather, they become hidden cracks within the theories, which at best weaken the theories, and more often lead eventually to their break down as soon as they are discovered. That is, the lesson according to an Arab saying is that one should kiss the hand one cannot bite.

The question of the origins of art is in many ways similar to the more familiar question regarding the origins of knowledge and the *a priori* conditions for its possibility, which has been the central theme of the history of philosophy. The main difference between the two problems is, that philosophy was concerned exclusively with the origins of knowledge in its conceptual sense, whereas the question of the origins of art is also directly or indirectly a question concerning the origins of visual knowledge and the *a priori* conditions for its possibility. Visual thinking or knowledge preceded conceptual knowledge by millions of years and was in many ways its forerunner. This being so, it is not surprising that the solutions put forward regarding the origins of art belong in most cases, explicitly or implicitly, to one of the two main epistemological schools that in their original context were intended to explain the origins of conceptual knowledge: empiricism and idealism, each of which encompasses a very wide range of opinions. Each of these two approaches determines an entirely different understanding of the concept "origins" since they propose opposed conceptions with regard to the crucial question: is the origin of the pictorial representation strictly empirical, purely mental, or perhaps in a Kantian merging of the two poles? In what follows we shall analyse three examples of theories that attempted to provide answers to the question of the origins of art; from these it can be seen that archaeologists tend to propose solutions to this problem that have an empiricist, and even behaviourist character. As against this, scholars with a philosophical orientation tend to propose solutions having an cognitive character. This difference is self-evident since their starting points are utterly different: the one believes himself to set out from the empirical world, and the other believes that the only possible starting point is always the mind, and thus each anchors the origin of art to his own point of departure.

Empiricism, at least in the post-Kantian era, usually recognizes to one degree or another the necessity of some cognitive constituent as a condition for the possibility of knowledge. But behaviourism, which is the extreme and less sophisticated variety of empiricism, claims to reject the cognitive constituent entirely as a condition for knowledge. Thus, the image we see in our mind's eye is for the behaviourist not a precondition for our ability to draw as the cognitivist argues, but on the contrary, we make the painting first, and only afterwards have an image of the picture we have made. Thus for the behaviourist it is self-evident that his point of departure is the empirical finding. But more sophisticated archaeologists too, who understand that as scientists their point of departure is in the theory itself and the expectations derived from it, when discussing the origins of art address mainly the earliest prehistoric paintings and various graphic scratches and marks, some of which are contemporaneous with the earliest paintings known today, and some of which preceded prehistoric painting by far, but it is impossible to determine with certainty that these are connected with the beginning of prehistoric painting (Marshack, 1972, 1976). Their point of departure is then mainly the understanding of the graphic evolution of prehistoric painting and the

classification of the empirical findings, which they discover in the course of attempts at constructing hypotheses concerning their significance within the cultural context of their time. Thus, they mean by the word "origins" chiefly the earliest findings likely to explain the evolution of painting from the graphic point of view. That is to say, according to this conception "the origins" is used to a large extent in the sense of "the beginning" and in this explanation time and dating are therefore of crucial importance. In this sense, the findings that are considered "origins" are likely to change in the light of the discovery of earlier findings, and with improvements in dating methods. At the same time, even extreme empiricists understand that it is not enough to point out the earliest cases of the graphic evolution of pictorial symbols in order to explain convincingly how pictorial symbolization emerged. They are therefore obliged to propose one psychological mechanism or another as well, such as the "need for imitation" (Breuil, 1981), or the "confusion between mark and object" (Davis, 1986a), which will be discussed extensively below, in order nevertheless to anchor their theory to some extent in certain qualities and attributes of those who created painting and not only in the paintings themselves. The great advantage of the empiricist explanation of the origins of art lies in its ability to provide explanations that are relevant to the origins of pictorial symbols from a graphic point of view. This explanation is also essential to the understanding of the evolution of painting from its beginning, through all the transformations it has undergone, including the invention of writing. As against this, it is no accident that the shortcoming of this explanation lies in its feeble attempts at anchoring its interpretation in cognitive attributes, the existence of which some empiricists would prefer to deny or at least to ignore as far as possible. However, as we shall see, the fact that the behaviourist twists and turns painfully in his attempts to deny cognitive qualities that are *a priori* to the actual making of the representation or drawing, does not mean that he does not assume them implicitly. On the other hand, the great advantage of the cognitive explanation lies in its ability to anchor the origins of art thoroughly to the nature of human intelligence; but its great disadvantage is, that it is not constructed so as to explain either the origins of pictorial symbols from the graphic point of view, or their evolution.

Indeed, it is possible that the most significant difference between the behaviourist and the cognitivist or idealist is mainly that the latter makes explicitly the same assumptions as the behaviourist makes implicitly and unwittingly. From the cognitive point of view, it is impossible to draw a picture without a preconception, which is in this case an image, just as it is impossible to carry out a scientific observation without an hypothesis or some expectation of what we are supposed to see[3]. Furthermore, not only is the image a precondition for the drawing, but the idealist or cognitivist also assumes the existence of attributes or metastructures of the mind that determine to one degree or another the structure and characteristics of the image and also of the object itself. In the history of philosophy these metastructures are given different meanings, characterizations and names: ideas, categories, schematization etc. That is to say, the idealist starts out from mind and argues that the empirical world, including prehistoric painting, is to one degree or another a construct of the mind, and therefore for him the origin of art too, must be connected with attributes of the mind on two levels: at the level of the image, and at the level of the cognitive attributes that determine the attributes of the image itself. Thus, from the idealist point of view, which is in the last resort a structuralist conception, certain structuring capacities of the mind are in the end the most important origins of art and they must be reflected to one degree or

another in every true work of art. According to such a view, every figurative work of art, prehistoric or contemporary, involves unique organizational principles of mind such as connectivity, symmetry, hierarchy, open endedness, recursiveness, transformation, complementarity, comparison and others (Avital, 1997b, 1997c). These are basic mind tools, which we apply, in every mental activity but at different levels of complexity and elaboration. This being so, an explanation of this kind is likely to disclose very basic attributes of the work of art and thereby to provide firm criteria for distinguishing art from non-art. As against this, a behaviourist explanation that focuses mainly upon the graphic aspect of pictorial symbols, is not likely to contribute anything to our understanding of the basic characteristics of the work of art, and is therefore also unlikely to provide us with any criteria for the problem of demarcation in art. When the cognitivist looks at the earliest painting found (assuming for the moment that there is agreement about this), the question that occupies him is not "Does there exist an earlier painting that has not yet been discovered?" or "From what paintings or marks did this painting evolve?", but rather "What are the cognitive attributes without which this person could not have painted this picture?" In other words, his question transfers the question of the origin from the archaeological domain to the epistemological domain, since for him the earliest possible origin of painting cannot itself be an empirical fact, but must be a cognitive one. This being so, in this conception cognitive evolution conditions the graphic evolution of the paintings and not the contrary, as the behaviourist argues. This is to say, the problem of the origins of art is an archaeological and historical one only up to a certain limit: the limit at which the stage that preceded it is not some empirical fact, but rather the cognitive qualities which were realized in that empirical fact and which are not time dependent. From this it is clear why every cognitivist theory that tries to explain the origins of art is in any case one kind of "projection theory" or another. As we shall see, the difference between these theories is only with regard to the question of what is projected: an image which is visual content; or perhaps our projection of the image also includes basic cognitive structures that are much more profound and basic than the image itself. It is only natural that research into the origins of art which, as mentioned, is mainly empiricist, has not been concerned at all with these cognitive structures. However, as we shall see, the fact that the empiricists did not deal with these structures does not mean that the origins of art can be truly understood without them.

We shall now present three theories which have had a particularly prominent influence in the world of art, aesthetics and archaeology, and which were devised by Breuil, Gombrich and Davis. These theories will be examined in the light of the following chief requirements, which in my view, a theory of the origins of art should provide:

a. An adequate theory of the origins of art must include an evolutionary component of the graphical and cognitive aspects of art, for it is not possible that art was created overnight without preliminary and long drawn out stages.

b. Such a theory must include a probable link between the origins of art and its most basic properties in its embryonic stages, so that the uncovering of these properties may help us to trace, however roughly, the demarcation lines between art and non-art.

c. An adequate explanation of the origins of art must throw light upon art in a wide enough context to reveal as well the common ground of art and other areas of culture such as science, since the same intelligence created all areas of culture.

The question is, which theory, if any, is more coherent from the logical and factual point of view; which of the theories provides us with the more insights regarding the origins of art, and regarding the understanding of art itself, which is perhaps a much more important matter than the discovery of its origins.

a. **The Imitation Theory: The Naive Empiricist's View.**

It seems that the most popular explanation regarding the origins of art, especially among artists and art historians, is the view of Abbé Henri Breuil, according to which art began about forty thousand years ago, and that the hunters who created it did so because they had a deep psychological need to imitate nature (Breuil, 1981). Breuil's explanation is obviously a crude combination of Plato's mimesis theory, and Tolstoy's expression theory, but the great simplicity of this psychological explanation lends it strong appeal and it therefore deserves close examination. Basically, this view seems at most to explain the philosophical leanings of the scholars, and the motives they attribute to the hunters who created prehistoric art, while doing nothing to explain the main point: how was art created? It is in fact not very hard to disprove the imitation theory of Breuil, since two fundamental problems arise here to which this theory is not likely to supply an answer:

Firstly, how could art have been created out of nothing - overnight, in evolutionary terms - while millions of years were required for the evolution of stone implements? Is it possible that a system of interconnected graphical symbols, immeasurably more abstract and complex than stone implements, had no previous evolution? The question is especially pertinent since for the development of stone implements - objects between which there are no necessary interconnections, an evolutionary process of millions of years was required. But if the development of tools required such a long evolutionary process, the emergence of the symbols of figurative art must have been preceded by an even more lengthy evolutionary process, and must have been at least partially shared and concurrent with that of tools. Obviously this overlapping could not have been on the practical level of the production of tools and pictures, but only on the cognitive level underlying both areas. After all, the toolmaker and the artist, who is a symbol maker or notator, occupy important common ground: the starting point for both is the mental image. But the toolmaker makes an object according to this image, whereas the artist draws the image and thereby produces a graphic symbol. That is to say, the evolution of visual thinking that served the making of tools was also a preliminary stage and necessary condition for the crystallization of the capacity for visual thinking which, at a much later stage, also made possible the emergence of the symbol system of art. Nevertheless it is not to be concluded from this that tool making is the source of art, for the directions of thinking in the two cases are opposite: the tool maker sets out from an image and descends to the level of the object. By contrast, while the artist sets out from images, he does not descend to the level of objects, but remains on the level of symbols and elaborates them. In other words, the toolmaker makes a concretization of symbols and ordering relationships, whereas the artist makes an abstraction of the concrete and invents ordering relationships. The one makes an extension of the hand while the other makes an extension of the brain, and it is therefore unlikely that tool making is the source of art, even though there is also no doubt that the visual thinking involved in tool making facilitated the advance towards visual thinking at the higher level necessary for the invention of art (Avital, 1992).

Secondly, if art was created because of a deep need to imitate nature, how is it possible that basically the same representational system appeared among all hunting societies, including societies between which time

and place could have allowed no possibility of communication? Can the imitation theory really explain the fact that hunters in the South of France tens of thousands of years ago, Indians in North and South America, Australian Aborigines, nomads in the Sinai Desert, hunters in New Guinea and Bushmen in South Africa drew similar motifs using similar methods such as contours or silhouettes? Since all imitation is dependent upon viewpoint, interpretation, motivation, and selection, and since the significance of the object supposedly imitated depends upon the worldview of the imitator, is it possible that all people who drew at any time or place, would imitate the same objects in a similar way, even though they lived in such different worlds? Such a conclusion could only be drawn by scholars who still believed in the naive empiricist world view of the 17th century as formulated by John Locke, which maintains that reality is entirely independent of our consciousness, and that it imprints itself upon our consciousness just as it is. But this type of *tabula rasa* epistemology was refuted more than two hundred years ago by Immanuel Kant in his Critique of Pure Reason, refuted anew by the physicists at the beginning of our century when they established the principle of observer as participator, and disproved very thoroughly by modern psychology. It is thus not possible to observe reality as it is, still less to imitate it, whether it be an electron or a bison. The imitation theory therefore cannot explain the origins of art, since imitation is dependent upon a preconception that we have about what we are proposing to imitate (Goodman, 1968).

It is thus clear that Breuil's imitation theory does not meet any of the requirements that we have posited for a theory that claims to explain the origins of art. It does not provide any explanation of either the graphical or of the cognitive aspect of the evolutionary origins of art; it does not help us to an understanding of any attribute of art, nor does it explain any of the properties and capacities that might have characterized the intelligence of those who created image making, and this theory is therefore not adequate as a theory that should explain the origins of art.

b. The Projection Theory: The Naïve Idealist View.

According to the view of the naive empiricist, the picture is "projected" from the empirical world onto our consciousness, and only then is its image generated in our brain. This view is a survival from the archaic epistemology of Democritos (fourth century B.C.), and it dominated the history of philosophy until the Kantian revolution at the end of the eighteenth century. As against this, according to the Idealist view - at least in one of its simpler formulations - the process is the contrary: we generate the picture in the light of the image we have in our consciousness. That is, the image is "projected" from the consciousness into the empirical world. According to this, the projecting mechanism is integral to the filing system of our mind, and is thus not peculiar to the image making process alone, but is rather a basic cognitive mechanism for our perception in every situation. According to this, perception is a constructive process and not a passive one. Our seeing is always seeing-as: that is, interpretative and classificatory, and not seeing the thing as it supposedly is, as is maintained by the naive empiricist. This matter has received very firm support over the last two hundred years in philosophy and psychology, and there is no need to expand its discussion; rather shall we content ourselves with a single example: Whether we see in a Rorschach blot a butterfly, a continent or a juicy steak, is much more dependent upon the state of mind of the beholder than upon the properties of the blot, which serve only as a trigger for the predispositions, motivations and preconceptions with which we approach the blot. The same principle was also present, according to this theory, when prehistoric hunters viewed the natural configurations on

the walls of the caves. Smudges, protrusions, depressions and cracks in the wall served as a trigger for the images which they projected and painted upon these configurations, integrating them in the picture as components of it. The outstanding proponent of the projection theory as one of the origins of art is Gombrich, but he points out that this view had already been put forward in the 15th century by Leon Battista Alberti. According to this view,

> in a state of tension primitive man must have been as prone as we are to project his fears and his hopes into any shape which remotely permitted such identification... Once the animal shape had been discovered somewhere in a rock, ...it should have proved easier to transfer and adjust it till the tribe or the caste of medicine men engaged in some magic ritual acquired a specialized skill in the making of such images. (Gombrich, 1962, pp. 91-2).

One of the clear advantages of the projection theory is that in a certain sense this is an imitation theory, but without the Lockean fallacies of the naive empiricists. That is, in this view it is not claimed that an external object can be copied without any interpretation, but rather does it maintain that the artist generates his work through the projection of an image the source of which is mental. In a certain sense, the projection can be interpreted as a copying or transfer of the image from the mental to the empirical world. Since the image transferred to reality is in itself the product of some interpretation on the part of its maker, it is evidently impossible to bring against the projection theory the epistemological arguments that can be brought against the imitation theory of the naive empiricists. But this explanation of the origins of art too, suffers from a number of drawbacks, some of which we have already observed in the imitation theory; furthermore, it has specific drawbacks of its own which we shall expound below, so that in the end this theory is not really capable of explaining how art was created. Firstly, as in the imitation theory, in the projection theory too it is assumed that the capacity for depiction was created suddenly, out of nowhere, at some point in the history of man, without any previous evolution - neither cognitive nor graphical. However, as we have already seen, this assumption does not stand up to examination. Secondly, like the imitation theory, the projection theory does nothing to explain any attribute of the work of art itself, so that neither of the two theories is likely to provide us with any tools for the understanding of art, nor with tools for laying down demarcation lines between those entities that belong to art and those that do not. Thirdly, Gombrich notes that the human brain that invented image making and his mode of thinking were not different from our own, and that it is therefore to be assumed that the mechanism of projection was immanent to his thinking, as it is to ours. Furthermore, he remarks that the projection mechanism played a part mainly in the first stages of the invention of pictorial symbols, and that at later stages these symbols were made with great and fully controlled skill, and not necessarily on the basis of projection. I see no reason for not accepting Gombrich's assumption that the mechanism of the construction of visual images and their projection by the first producers of depiction was like our own. However, if the projection mechanism played a part mainly in the first stages of the invention of pictorial symbols, it might have been expected that the earliest paintings to be discovered would be significantly similar to the images we normally have of the objects depicted in those paintings. In fact, however, the earliest pictures so far discovered are only to a small extent similar to the images we have of the objects represented in them, and they are mainly pictures in negative form of hands, and pictures of complete animals or of parts of animals, represented by means of their contours

alone. As against this, it is only relatively late prehistoric paintings, of the Magdalenian period - such as those that can be seen in the caves of Lascaux, Peche-Merle and other caves of that period (ca. 15,000 B.C.), which were created some ten thousand years after the contour drawings - that do indeed resemble images that we might have of the objects represented in them. Thus the projection theory is more likely to explain the mechanism of the creation of the late pictures than the origin of the first pictures - something that is the exact opposite of Gombrich's own assumptions.

The projection theory is especially unacceptable to behaviourists, since it sets out from assumptions opposite to their own. Whitney Davis, a particularly extreme behaviourist, did his best to refute this theory, and for this purpose raised three very credible objections: Firstly, that if the projection argument were correct, then a great variety of subjects could have been expected in the cave paintings; whereas over the course of more than ten thousand years only a few themes are found to repeat themselves. Secondly, the prehistoric draughtsmen had to take account of attributes and given properties of the surface of the walls upon which they painted. For this reason, the fact that in certain cases they integrated existing features in their paintings - something that occurred mainly in later periods - is not evidence for the projection theory. Thirdly, it is not possible to prove that these draughtsmen were unable to paint the images they made without the marks, bulges and cracks that supposedly suggested the projection of their images onto the cave wall. It is a fact that at the beginning of image making, the surfaces chosen for that purpose were in most cases relatively smooth (Davis 1986a, p.199). Contrary to Davis, I do not disagree in the least with Gombrich regarding the theory of projection as a cognitive mechanism, but I agree with Davis that this mechanism is not likely to explain the invention of prehistoric painting. Nevertheless, I fear that the alternative theory proposed by Davis for the explanation of the origins of art is even less credible than that of Gombrich.

c. The Oops! Effect Theory: A Behaviourist's View[4]

The presentation of Davis' theory is by no means an easy matter, not so much because of the complexity of his ideas, as because these ideas are presented in rather vague language. However, despite the difficulty involved, I believe that there are good reasons that justify the effort required in order to penetrate the conceptual and theoretical mist.

Firstly, it is probably the most elaborate theory so far presented regarding the origins of art, and it is hardly worthwhile for anyone to introduce an alternative one, unless it is shown to be inadequate.

Secondly, even if this theory has no influence among aestheticians, it has influence among archaeologists with regard to the issue of the origins of art. In general, the elimination of mistaken theories is part of the search for a theory that bears more enlightenment and it is therefore important to shake off the illusion that this theory provides an explanation for the origins of art.

Thirdly, here stands a more basic question of principle: is the behaviourist theory, which claims to deny the existence of cognitive abilities as a precondition for the emergence of symbolization, likely to be at all relevant to understanding the origins of art? Moreover, can the behaviourist theory explain the origins of image making without implicitly assuming the *a priori* existence of all the cognitive abilities the existence of which it explicitly denies? And more generally, can a theory that carries out a reduction of the mind to certain parts of the body (brain, eye and hand), and reduces art to the actual physical activity involved in its making, independently of cognitive abilities, do anything to explain the emergence of any aspect of human culture whatsoever? A thoroughgoing epistemological discussion of the

theory of Davis would require a much wider canvas than is possible within the bounds of this essay, and I shall therefore discuss here only the main ideas of his theory, as faithfully as I can, while on the other hand doing my best to refute it.

It may at once be said to Davis' credit, that unlike Breuil, Gombrich and others, he emphasizes the impossibility of the idea that the capacity for image making was acquired *ex nihilo,* but rather must it be assumed that this capacity was generated as a late stage in the evolution of experience in markings, both natural and man-made. Of course I agree with this opinion, but the question is, what markings are under discussion, and in what way was their influence crucial for the beginnings of pictorial representation? From the point of view of the *tabula rasa* epistemology of Davis, it is not possible that representation arose from any *a priori* cognitive capacities whatsoever, since

> ... it would be misleading to believe that some deeper faculty or competence of the mind - a 'symboling' faculty - really exists, uniquely characterizing H. sapiens, and accounts for the evolution of the various modes [of symbolization] (ibid., p.196).

The emphasis is his. From this he concludes that the capacity for image making must have arisen from some empirical experience. An experience of this kind would on the one hand have to be capable of explaining how human beings learned to connect between a mark and an object resembling it, and would on the other hand also have to explain how they learned to differentiate between the mark and the object, and to use the mark that resembled the object as a referential means of denoting it. In other words, according to Davis the problem of the origins of art is another name for a more general problem: that of how human beings learned that a mark can stand for something else, or how pictorial symbolization was born. Davis' solution to this complex problem includes two components: the one involves discovery, and the other involves learning:

> In my view, image making originated in the discovery of the representational capacity of lines, marks, or blots of colour which need not and often do not have a representational status. (Ibid., 194.)

The emphases are his. And how did human beings arrive at this important discovery? He suggests a solution based upon learning, and this is also the central component in his theory.

According to Davis' supposition, human beings made marks for hundreds of thousands of years before the emergence of image making, and in the course of this they learned to recognize different levels of similarity up to the level of "perceptual identity" both between the marks themselves, and also between things. However, in particularly ambiguous conditions of visibility in which we are uncertain as to whether we are seeing a mark or a thing, we tend to transfer the similarity between marks and the similarity between things, to similarity between marks and things. As a result of this we tend to see certain marks as certain things, as for instance when "a blot is taken for a hole"; and in his opinion it is possible to imagine hundreds of other examples in which we confuse marks and things (ibid., 199-200). However, and this is the main point:

> Usually almost immediately, the visual system detects that it has failed to resolve ambiguity correctly... However, although the 'illusion' vanishes, and ambiguity is resolved, one has already learned that the nearby surface mark can stand for the distant thing or quality. (ibid., 201).

That is to say, in certain circumstances we confuse a mark with a thing, and in recognizing our mistake

we learn that a mark may stand for a thing. In other words, we learn from this malfunction of our visual system how a mark can symbolize a thing. Because of the instant recognition of our mistake and the lesson we learn from it in this situation, I have called this theory "The Oops! Effect Theory". The simplicity of the theory is likely to mislead, and indeed has misled many, because attention was not paid to the many assumptions and problems implicit in it, and two in particular.

Firstly, do we really confuse marks and things? And secondly, if indeed this confusion exists, can it explain the origins of pictorial symbolization? If we suppose for a moment that in certain conditions we tend to confuse a mark with a thing as Davis maintains, several conclusions follow which conflict with his rejection of the projection theory, on account of its "idealistic" fallacies as he calls them:

1. If it is possible to confuse a mark with a thing, then it is also possible to confuse the same mark with a second and a third thing, and so on. Furthermore, it is clear that different people are likely to confuse the same mark with different things, and from all of this it follows that the thing we see depends more upon us than upon the mark. But such an argument is no different in principle from the projection argument of Gombrich which Davis took so much trouble to refute, and indeed several of Davis' critics note that his theory is compatible with the projection theory of Gombrich. Thus, for example, the chief advantage seen by Bednarik in Davis' theory is in that it can explain why the first paintings were concerned with certain animals (ibid., 202). But the explanation that he attributes to the theory of Davis is entirely in terms of the projection theory: the things that humans saw evoked in them mental images that were connected with their "fears and desires". Others of his critics, such as Maynard, point out explicitly that Davis' theory is compatible with the projection theory that he rejects; Muller argues against him that he only transferred the projection theory from natural things to man-made marks (ibid., 206-7), and from Hudson's analysis it follows that the very confusion of mark with thing is possible only thanks to the exploitation of our projection powers (ibid., 205). On the other hand, Faris argues that if Davis' theory is not interpreted as a projection theory, then it is not possible to understand from it why human beings first painted certain large animals and not objects, plants and small animals (ibid, 203-4). From all that has been said, it emerges that Davis' theory is caught in a dilemma: for, insofar as this theory explains anything, it does so only if it is interpreted as another version of the projection theory which Davis for many reasons denies. On the other hand, if the theory is not interpreted as a projection theory, then it explains nothing. Here, and in several other matters, we shall see that Davis cannot live with cognitive assumptions, but neither can he survive without them.

2. Davis has justly argued against Gombrich, that if the projection theory were the explanation of the origin of representation, a great profusion of subjects could be expected at the beginnings of representation, but in fact we find only a very few subjects, which recur with great consistency over thousands of years. This argument could also be directed in the same way towards Davis himself, who argues that in the early Aurignacian (ca. 32,000 - 26,000 B.C.) when image making began, the main subjects were contour drawings of parts of animals. However, if indeed the confusion between mark and thing was the origin of representation, an abundance of subjects might have been

expected, and not only pictures that according to him mainly depicted parts of animals. Furthermore, if the confusion between mark and thing is the origin of representation, it is very odd to argue that human beings confused smudges and cracks mainly with parts of animals and not with complete animals.

3. It may be assumed with a very high degree of probability that the visual system of humans in the early Aurignacian was not different from that of the people who preceded them by tens, or perhaps even hundreds of thousands of years. It may furthermore be supposed with a very high degree of probability, that the people who preceded the prehistoric draftsmen naturally experienced confusions between marks and things. From this the question arises: if in fact the confusion of marks and things is the origin of representation, why did image making not emerge before the early Aurignacian? Implicitly, Davis has an answer to this question, but it is extremely strange:

> The 'conceptual logic' of representation requires only the perception of identities and similarities between marks and marks and between things and things... However, in addition the probability of seeing marks as things varies directly with the quantity of available marks. (ibid., 200).

The emphasis is his. According to this, as the marks multiply, so does the probability of confusion of marks with things increase and, according to him, in the Aurignacian period just enough marks were generated so that people would begin to see and interpret clusters of marks as animals or parts of animals. In this matter even his archaeologist colleagues express open doubts. Randall asks:

> If evocative patterns in random marking are at the base of image-making origins, where are all these marks prior to 40,000 years ago? ...We do not find the barrage of markings implied by Davis in pre-Upper Palaeolithic contexts. But even if we did, this would only address the issue of how image making began, not why. (Ibid., 208.)

Furthermore, if his argument was correct, that with the multiplication of marks the probability of confusion increased, then in our time, when the world is more sated with marks of all kinds than at any other period in the history of mankind, we should have been in a more or less permanent state of confusion of marks with things. But the reality indicates precisely the opposite state of affairs: today the differentiation between marks and things is clearer than ever, since as marks become more numerous, so is there more clarity not only regarding those properties that differentiate between groups of marks and groups of things, but also regarding the properties that differentiate between the different groups of marks themselves. A piquant example will clarify the matter: when the first forgeries of Vermeer by the counterfeiter Hans van Meergeren appeared in the thirties, even experts on Vermeer did not suspect them to be forgeries. But today when it is possible to see together all of van Meergeren's forgeries, even a raw student of art distinguishes them as such. This fact does not mean that today's student is more sophisticated than the expert of sixty years ago, but that because of the possibility of comparing the set of original works with the set of forgeries it is much easier to see the differences between the two. That is to say, if there was a multiplication of marks in the

Aurignacian period at all, this does not explain why image making began in that period and as we shall see, the Oops! Effect Theory, which assumes a multiplication of marks with the beginnings of representation, is not likely to explain the origins of representation.

4. It is also possible to bring against the theory of confusion of marks with things, an argument which I have already mentioned against the imitation theory: if the confusion of marks with things is indeed the origin of representation, how is it possible to explain the universality of figurative painting, with regard both to its production and to its readability? In other words, how is it possible to explain the fact that highly similar systems of representation appear all over the world, including also its presence in societies between which there could not have been any contact? Is it reasonable to assume that human beings confuse only a specific set of marks with a specific set of animals, and that they do so in a similar way regardless of place, time and culture, and that they therefore generated similar systems of representation? This is of course absurd.

5. If we assume that it does indeed happen that we confuse marks with things, then such a phenomenon can explain how our visual imagination is enriched by images, since in such a situation we are likely to see a specific phenomenon in different ways. However, do we also learn as a result of this that the mark can serve as a symbol for the thing? Maynard argues with justice that from similarity between marks, between things, and between marks and things, conclusions can be drawn only concerning similarity and not concerning the depiction of things by marks (ibid., 207). Here, two more reservations should be mentioned. Firstly, unlike the identity relation, which is always transitive, the relation of similarity is not always transitive, excepting only when a very high level of similarity is present between the similar entities. In fact, this transitivity is only present in those cases which Davis mistakenly calls "perceptually identical", by which he means "perceptually indistinguishable", two expressions that are not equivalent at all. Thus for example, a genuine diamond and a paste diamond, equal in size, shape and polishing, are likely to appear to the layman to be perceptually identical, but a diamond expert will instantly identify one of them as the false diamond. In any case, no measure of similarity necessarily entails a relation of reference between a mark and a thing that is similar to it (Goodman, 1968). It follows that in the end Davis' theory does not explain how the relation of reference is generated, which is the most important point that it was intended to explain, but rather does it assume it. That is to say, Davis is obliged to assume that the subject who creates a relation of reference between a mark and a thing, which he perceives as similar, has previous knowledge of the relation of reference, by virtue of previous experience of another type of symbol such as natural language, which preceded pictorial symbolization by far.

Secondly, high similarity such as that which is characteristic of identical twins may cause us to confuse who is who, so that as a result we are liable to accept one of them as a substitute for the other; but in no case will we think that the one is a symbol for the other. A certain similarity between a pictorial symbol and the things that it depicts, is almost certainly a necessary condition for pictorial (figurative) representation, but not a sufficient condition. History provides us with many examples of the fact that similarity is liable to

generate equivalence or even substitution but not necessarily symbolization or reference. Thus for example, when the first emperor of China, Qin Huang Shi Di (d. 210 B.C.), was buried in Xian together with thousands of clay warriors and horses, nobody thought of these effigies as representations of warriors and horses, but they were assumed to be equivalents or substitutes for real warriors and horses which in the next world would act on their emperor's behalf exactly like flesh and blood warriors. The same thing is true of the burial of the pharaohs of Egypt together with effigies and painted images; and the same thing is true of the customary offering of food and incense to effigies of important personages in Mesopotamia. In certain primitive cultures, a man's shadow, which is in most cases similar to its owner, was not seen as a representation of the person, but as an integral part of his, or as a substitute of equal value to himself. An instructive example from our own time is that of the priests in the temples of Mizo Ko in Japan, in which hundreds of effigies of girls and boys are dressed and offered food and drink as if they were living children, as a sorry substitute for children whose mothers have been obliged to undergo abortion. Here again, these effigies are not by way of being representations or symbols of the unborn children, but are substitutes for them, and substitutes are not necessarily symbols. That is to say, similarity between a mark and a thing is not sufficient for the mark to be a representation of the thing. The reason for this resides in the fact that symbols are never on the same level as the things that they denote. A picture depicting a bull is not on the same level as the bulls, but is a class-name for the bulls and therefore as a symbol is by at least one level higher than the class of bulls themselves. In the language of logic, it may be said that the bulls and the pictures depicting them do not belong to the same logical type, and that the relation between the picture and the bull is a relation between type and token. In certain conditions of visibility it may be possible to confuse a patch in a field with a bull; but even if we repeat this confusion many times, the patch and the bull will remain on the same level since again and again we shall see the patch as a bull and not as a symbol for a bull. The repetition of a confusion between mark and thing is liable to bring out again and again the fact that it is possible to see something as something else, but no degree of repetition of this confusion is likely to explain how the same patch becomes a symbol or class-name for all bulls. Similarity may create common visual ground between a mark and a thing, so that the one can be a substitute for the other, but substitution does not automatically create an ascent to the level of symbol. For the same common visual ground to function as a symbol or representation too, an additional cognitive act is required, and this is abstraction, which raises the figurative common ground that holds between a mark and a thing to the level of a class-name for all other things that resemble the first thing. Davis, however, denies that we have the capacity for abstraction at all, or that such a cognitive attribute is at all necessary in order to generate representation. As we shall see in what follows, the fact that he denies the need for abstraction does not mean that he does not assume it implicitly, and together with it many other cognitive attributes of which he is completely unaware.

6. The language of Davis' essay is that of a declared behaviourist, but the content of the essay is of a particularly deplorable speculative

type, both because he only claims to reject any speculative approach, and also because his speculation lacks the strong logical coherence that should characterize a speculative approach worthy of its name. Already at the beginning of the essay he declares with regard to the origins of art:

> An account of its origins does not require speculative or transcendental psychological, anthropological, or aesthetic assumptions about 'cognitive evolution' or 'artistic sensibility' that have no hope of being tested experimentally or confirmed archaeologically. (ibid., 193.)

In this declaration two large claims are already enfolded, which lack any foundation in the body of the essay. Firstly, he assumes that his theory is open to experimental testing and archaeological confirmation. Secondly, he supposes that his theory is exempt from the contemptible need for speculative assumptions that cannot be empirically tested. But Muller justly remarks that it is not at all clear how Davis' theory can be experimentally tested, nor how it can be confirmed archaeologically in the light of present knowledge in that field (ibid., 207). The fact that Davis denies a speculative approach does not automatically make his theory non-speculative. I have nothing against an empirical theory, so long as that is what it really is. But I fear that in the case of the problem of the origins of art, there is no escaping a speculative approach, since all empirical knowledge connected with the beginnings of image making is lost forever, and also because whether we like it or not, we cannot escape making certain assumptions about the intelligence of the prehistoric fathers of pictorial representation.

Davis argues that for the purpose of his theory all he requires is "only" that human beings were capable of recognizing different levels of similarity up to the level of "perceptual identity" of mark with mark and thing with thing, and that he has no need for further assumptions regarding other cognitive capacities since "My paper is precisely about not assuming but explaining such 'capacities'." (Ibid., 211.) The emphases are his. Superficially it does indeed seem that he makes very few assumptions, but only until one examines what is really included in this apparently minimalistic assumption. Davis did not realize that if he assumes that hundreds of thousands of years before the beginning of image making hominids were already capable of recognizing different levels of similarity up to identity between marks, between things, and between marks and things, then he is obliged also to assume many more cognitive capabilities without which those hominids could not have recognized the said similarity:

a. He has to assume that they were able to connect and distinguish between things, between marks, and between marks and things.

b. He has to assume that they had the capacity for comparing marks, things, and marks and things, for otherwise they would not have been able to establish that any entities at all were similar, nor to what degree.

c. He has to assume that in the light of this comparison they were able to deny or affirm the similarity or the identity of the entities they compared.

d. He has to assume that these hominids had the capacity for hypothetical thinking since not only does all perception entail the

assumption of hypotheses about what is seen, but every comparison of a mark with a mark, a thing with a thing, or a mark with a thing, as to similarity or identity between them, is actually an act of examination of the hypothesis that they are equivalent or different. But hypothetical thinking is an expression of a broader cognitive capacity, connected with creativity, metaphorisization, induction or extrapolation of connections from the past and the present to the future. In other words, hypothetical thinking is an expression of the open-endedness of our intelligence, but in Davis' behaviouristic theory there is no place for any one of these capacities and therefore, so far as he is concerned, they do not exist.

e. If these hominids were able to compare patterns or marks with things in regard to the measure of their similarity and identity, he is also obliged to assume that they had the capacity for thinking in terms of symmetry and asymmetry and that their level of pattern recognition was highly developed.

f. If these hominids were able to compare entities with regard to their similarity, it is necessary to assume that they had the capacity for thinking in terms of relations between figure and ground or complementarity, otherwise they would have been able neither to distinguish marks nor to understand the gestalt of the mark upon the material.

g. These hominids would not have been capable of comparing marks and things etc. at all unless they had, at least latently, some kind of preconceived theory, however modest, concerning the different kinds of objects and marks; otherwise they would not have been capable of seeing the things as things, and the marks as marks. That is to say, Davis too is obliged to assume that some previous knowledge is a condition for perception, and it is not true that human beings identify "automatically", as he maintains (ibid., 201). Furthermore, some kind of preconceived theory is not only a condition for perception in general, but is also a condition for the perception of whatever similarity we see between things. The perception of similarity between things is not an "automatic" phenomenon like a conditioned reflex, but is a kind of interpretation of what we see. Similarity is a relative matter, inasmuch as it is mainly dependent upon the context, point of view, motivation and kind of knowledge that the subject brings to the situation of the perception. This prior knowledge determines the way in which we classify things in our hierarchy of concepts, and it therefore also determines the type and degree of similarity that we see between them. In some circumstances previous knowledge is likely to enhance our perception of similarity between things, while sometimes it is likely to lead us to an exclusion of similarity between things. Thus, for example, a biologist is likely to see great similarity between a mouse and an elephant because he is very familiar with their "family resemblances" as mammals. The layman, by contrast, would be rather hard put to discover any similarity between a mouse and an elephant since he does not tend to refer to the higher level categories that include them both, but usually refers to the specific attributes of these animals. Another example demonstrates the relativism of similarity in a contrary sense: almost all

parents are surprised from time to time to hear that two of their children are perceived by strangers to be very much alike, whereas to them they are not similar in the least. This discrepancy regarding similarity between the children arises from the fact that the stranger compares the children's faces with regard to only a few external aspects in which they are apparently alike, whereas the parents, who in the nature of things know their children very intimately, compare their children with regard to many more aspects in relation to most of which they differ, and for them their children are therefore likely to be perceived as not similar. From all that has been said, it is clear that Davis' behaviouristic theory cannot explain the perception of similarity which is the key concept of his theory, without tacitly assuming a very unbehaviouristic assumption regarding the need for some kind of preconceived knowledge regarding things that a person perceives as similar or as different.

h. These hominids could not compare marks with things etc., with regard to the similarity between them, without the capacity for understanding, at least latently and minimally, the idea of transformation and invariance. However, as Lenneberg maintains, the capacity for transformation is a precondition for the perception of similarity.

> We can see similarities whenever we can transform two or more physically given patterns into the same, common abstract schema. In this terminology, similarities are due to transformations from the physically given (surface) to abstract (deep) schemata. Thus all similarities involve transformational processes... The need for such an assumption is a universal one, relevant to all fields of pattern recognition, and it is not confined to theories on human perception. (Lenneberg, 1967, 298-9).

He points out the fact that the capacity for transformation is innate not only in humans but in animals as well, for it has been proven in many experiments that animals are able to identify similarity. This capacity gradually becomes manifest concurrently with the differentiation of different types of transformation, and at higher and higher levels of elaboration, from the visual domain and up to the most abstract levels of transformation. Lenneberg of course rejects the assumption "...that transformation as a general type of process for organization is "suddenly learned" ". (Ibid., 301). Actually, in order to see similarity, Davis has to assume not only an *a priori* capacity for transformation as Lenneberg argues, but is obliged to assume a far more complex capability: a dialectic of transformation and invariance, since transformation can be identified only against the background comprehension of invariance, and vice versa. Without such comprehension of transformation and invariance, hominids would not have been able to comprehend the connections between marks and the things that caused them. Furthermore, they must have had at least a latent understanding of causality, temporal and spatial orders; otherwise they would not have been able to correctly connect marks and things etc. A similar argument was Kant's central argument against naive empiricism, and it is true in this context as well.

Davis has to assume that these hominids had not only the capacities for associating and disassociating marks etc., but he has also to assume that they had the ability to classify things and marks, since the very confusion of mark and thing means that they classified what they saw in different ways. But every classification assumes some interpretation, for classification is a way of grouping according to preconceived categories. If they could classify marks and things this means that they were also capable of analysing and synthesizing, generalizing and performing abstraction.

i. Muller argues against Davis that he cannot deny that the people who began image making had the capability of abstraction, for two reasons. Firstly, because the people who created pictorial representation in the Aurignacian times already had a verbal language, and there is no language without abstraction. Secondly, "Indeed, a capacity for abstraction is required by Davis' own theory when he suggests that accidental confusion of mark and thing may have led to the abstraction of representation." (Ibid., 207.) Delluc and Delluc raise the same objection from a slightly different angle: "The Aurignacians seem frequently to have represented the part for the whole, giving evidence of a capacity for abstraction. From the beginning, then, it seems certain that the concept preceded the image." (Delluc and Delluc, 1986, 371.) These scholars are certainly right in their argument against Davis, since image formation is no different from concept formation inasmuch as in both cases abstraction is an essential cognitive mechanism. But if it is essential to assume that those people who created pictorial representation had no mean capacity for abstraction, it must also be assumed that they had systemic-hierarchic thinking, since the significance of abstraction is, among other things, the ascent on the steep slope of our conceptual or pictorial holonarchy. And indeed, in the very earliest pictures evidence can already be seen, of the fact that those prehistoric draftsmen had at least a latent understanding of the stratified nature of reality and thought, since there is no prehistoric picture that is not constructed as a hierarchic system, even if albeit a very shallow one.

7. In Davis' opinion, one of the advantages of his theory is that "we avoid the idealist tautology of supposing that the Mind somehow knew what it wanted to represent before it learned to represent..." (Ibid., 201.) This argument has greatly impressed several of his colleagues, and it is therefore worthy of attention. Randall has already maintained that there is no tautology at all, but he has not satisfactorily explained his reservations (Ibid., 207). I shall therefore try to investigate this argument from a number of angles not discussed by Davis' critics.

Firstly, Davis simply does not use the term "tautology" correctly: it should be remarked that a tautology in the strict sense, as in mathematics or logic, indicates identity of the two sides of the equation, and in other fields it indicates a repetition of the same thing even if not necessarily in precisely the same words. However, in his argument against Idealism, Davis uses the term "represent" twice, but in completely different senses. In the first instance he uses this term when his intention is a "representation" that we have in our brain, and in fact he means an "image" that exists only in our imagination. As against this, in the second instance he means a

representation, which we actively construct in the light of the image in our imagination. In the first case he means a cognitive phenomenon and in the second case a phenomenal event and there is thus no tautology here. Indeed, the image and the representation produced on the basis of the image are likely to be similar to one degree or another, but they are in principle never identical, for otherwise there would have been no possibility at all of pictorial symbolization.

Secondly, in the light of the analysis of Davis' theory as presented so far, it is clear that like the Idealist (or the cognitivist), he does indeed assume very many cognitive skills, and also the possibility of *a priori* knowledge of one kind or another as a precondition for perception, although he does not admit this. For the behaviourist, any kind of knowledge that is *a priori* to experience is like a bone in the throat that can be neither swallowed nor coughed up, and he therefore makes every effort to deny its existence even at the cost of repudiating the vast body of knowledge that has accumulated over the past 200 years in the fields of philosophy, psychology, linguistics and brain studies with regard to the nature of language. In a final attempt to deny this kind of knowledge, Davis proposes to turn the Idealist thesis on its head: instead of seeing marks as images as the Idealists maintain, he proposes that we should see the marks as things. Again, he assumes that we are capable of understanding marks as things with no need for an image or any preconceived knowledge, and that the visual system supplies us with this decoding "automatically"! (Ibid., 201.) Of this strange proposal it must be said that on the one hand it can be shown that seeing marks as things leads to many absurdities, among them the abrogation of thought itself, but I will not discuss that matter further. On the other hand, the idea that our visual system is capable of "automatically" decoding the meaning of marks as things confirms anew, in two ways, the need for the Idealist assumptions that he is so interested in avoiding. Firstly, the very proposal to see marks as things assumes that the observer is an interpreter who must have previous knowledge in order to construct his interpretation regarding what he sees. Secondly, both in the mechanical or robotic context, and in the biological context too, the term "automatic" does not indicate spontaneous, random and blind activity, but activity which is carried out in the light of previous programming at the hands of a human being or of Nature. That is to say, this solution too fails to invalidate the need to assume one kind or another of previous knowledge, but only pushes back that knowledge into the unconscious. In other words he does not abolish the need for a "ghost in the machine", to use for this purpose Arthur Koestler's well known title, but only degrades it to the inferior status of an unconscious automaton.

Despite the harsh criticism presented here against Davis' behaviourist view, it must be noted in his favour that he has a very strong argument against Idealism which not one of his critics has refuted, and it is very doubtful whether it can be refuted unambiguously as can his other arguments. According to this argument (which resembles Aristotle's famous argument against Plato's theory of Ideas), if we assume the need for a certain *a priori* knowledge as a precondition for perception, as maintained by the idealists, the rationalists, and the various Cognitivists, then another *a priori* knowledge must be assumed too, as a condition for the first, and a

third *a priori* knowledge as a condition for the second, and so on *ad infinitum* (Ibid., 201). Robert Layton proposed a very wise and pragmatic answer to the problem posed by Davis: "Rather than become involved in chicken-and-egg arguments about whether signified or signifier comes first, one might think perhaps in terms of an evolving system of relationships in which each new unit of meaning influences those already incorporated into the system." (Ibid., 205.) However, this reply does not really solve the enigma[5].

8. Out of a desire to be very rigorous, Davis presents the theory of confusion of mark and thing with the aid of a formal model as well. But the reader need not be a logical wizard to see that this model is pseudo-formal and therefore contributes nothing to his theory, but rather the opposite. Firstly, Davis uses logical symbols metaphorically, but draws conclusions from the model as if he had used these symbols in their literal logical sense. Thus for example his use of the symbol for identity "=", does not at all match the law of identity. When he writes: mark=mark or mark=thing or thing=thing, he does not mean logical identity but rather "perceptually identical". However, as I have already remarked, what appears identical from the perceptual point of view in one person's eyes is liable not to appear identical in the eyes of another, something that is not possible in the case of a logical identity such as 1=1. The logical relation of identity is reflexive, symmetrical and transitive, but the relation "perceptual identity" has not necessarily any of these logical properties. Secondly, as Maynard has pointed out, Davis uses the symbol "/" for "similarity" but in the model there is no explication or definition of this symbol, and it is therefore a highly ambiguous if not meaningless symbol within the model (Ibid., 207). This ambiguity is quite costly to his model because contrary to the identity relation, in which the principle of all-or-nothing holds (and there is no possibility of a little or a lot of identity), in the relation of similarity the number of degrees of freedom is as the number of aspects possessed by the things being compared with regard to the measure of similarity between them. That is to say, in the relation of similarity there exists the possibility of a very little, a little, or much similarity; and in accordance with this, the logical properties of similarity too will be determined from the point of view of symmetry and transitivity, for example. If the symbol "/" is used with no explication or definition of it whatsoever, then it is impossible to know what measure of similarity is being talked about and the symbol is therefore meaningless. Thirdly, in his model he uses the symbol "+" in two different meanings. When he writes "mark1 + mark2 + mark3 = thing1 + thing2 +thing3", the meaning of the symbol "+" on the right-hand side of the equation is completely different from the meaning of the same symbol on the left-hand side, since things and marks are not additive in the same sense. Thus, if ten pebbles are put together, we then have a set of ten pebbles. But if ten marks are put together we do not obtain a set of ten marks but a single complex gestalt, one mark. Fourthly, there is room for wonder at Davis' supposed laws of logical entailment, as when he argues:

> My account requires only the following four simple terms:
> (1) mark = mark (one mark is perceptually identical to another);
> (2) mark / mark (one mark is similar to but not identical with another);

(3) thing = thing (perceptual identity);
(4) thing / thing (perceptual similarity).
Because of the unpredictable possibility that information in the structure of the light array presented to the eye is ambiguous, a mark is taken for a thing:
(5) mark = thing. (Ibid., 199-200).

Here Davis does not notice the fact that (5) which is the key proposition in his model, does not follow from the preceding arguments because of the laws of logical entailment, but rather, if at all, because of his explanation regarding the malfunction of our visual system. In the light of this analysis, not only does his formal model fail to serve his theory, but it even reveals its weaknesses more forcefully.

9. In the replies to his critics, Davis somewhat revises his theory to more modest dimensions than in the body of his essay. Firstly, he here explicitly admits that the conditions under which we tend to confuse a mark with a thing are "probably quite restricted". But then it must be asked, how is it possible that a phenomenon that is quite rare should be the origin of one of the main properties of our intelligence? Similarly, if the confusion of mark and thing is the origin of pictorial symbolization, is it not reasonable to argue that linguistic symbolization too was created from some kind, more general, of confusion between sounds and things? If this is so, Davis does not mention it. Secondly, he admits here that many different origins of art were possible, since his theory is only one possible model for one of these origins (Davis, 1986b, 515-6). I acknowledge that when this reservation is made, the behaviouristic devil appears less threatening.

In the light of the analysis presented here with regard to Davis' theory, it is sufficiently clear that the behaviouristic theory is not able to explain the origins of art since it implicitly makes the epistemological assumptions that it explicitly rejects. We have seen that Davis' attempt at making do with supposedly few cognitive assumptions, does not alter the simple fact of life, that if the lady is a little pregnant, then pregnant she is! His extreme anti-idealistic standpoint is revealed as unfounded because he is obliged to make implicitly all the assumptions that an idealist makes explicitly from the outset. The failure of the three theories that have been presented to explain the origins of art is perhaps inevitable, since on the one hand archaeologists do not usually appreciate the possible relevance of the cognitive approach, especially the theory of knowledge, to the understanding of art as visual knowledge. On the other hand, philosophers tend to ignore entirely the possible theoretical implications that archaeological facts and findings may have in relation to aesthetics. The compartmentalization of knowledge has not helped much towards understanding the complexity of reality, and it certainly does not help towards the understanding of art, which is one of the earliest and most complex products of human culture. For the understanding of art, many more viewpoints will be necessary than those of philosophy and archaeology, integrated in a truly interdisciplinary approach.

Summary and conclusion:

This essay posited three stringent requirements that an adequate theory of the origins of art must meet:

1. It must indicate the evolutionary stages that constituted a preparatory stage for art from the cognitive and from the graphical point of view, since art could not have been created *ex nihilo*.

2. It must indicate the most important attributes of art that already followed from the stages, which preceded it and made possible its emergence.

3. It must present these attributes within a context broad enough to show that these attributes are basic attributes of human intelligence, and therefore not special to art alone, but also present at the foundations of other fields of culture, such as science. The essay examined three out of the leading theories of the origins of art that have been proposed during the second half of this century, and shown that none of them meets the requirements mentioned, and that therefore none of them is adequate as a theory of the origins of art. Evidently, there is justification for such a thorough critique and refutation of current theories regarding the origins of art as applied here only if one can propose an alternative and more coherent theory. Indeed, in another essay: *Footprints Literacy: The Origins of Art and Prelude to Science,* (1997b), I proposed an alternative theory to those that have been discussed above. This theory argues that a generalization of footprints literacy, which seems to have preceded prehistoric art by millions of years, is the most probable origin of art. The central idea of this theory is an exposition of a set of unique double-edged attributes which are structuring principles of mind, and have the character of epistemological and ontological oxymorons which I have called "mind prints" (Avital, 1997c). Like the Yin-Yang concept, most of the mind prints are complementary pairs such as: Connectivity / Disconnectivity, Symmetry / Asymmetry, Hierarchy / Randomness, Open-endedness / Closed-endedness, Recursiveness / Singularity, Negation / Double Negation, Transformation / Invariance, Mutual Inclusiveness / Mutual Exclusiveness, Comparison / Imparison, and Determinism / Indeterminism. These attributes seem to be common to footprints literacy, to figurative art from its beginnings and to modern science, but at different levels of abstraction and generalization. The hypothesis of footprints literacy as the origin of art, reasonably explains both the graphical and cognitive origins of art. It can be shown that the above mentioned cognitive metastructures or mind prints do appear in all works of figurative art at all times, but they are either absent in so called "non-representational" art, or they appear there in a distorted form. Hence, the idea of mind prints may provide a new kind of criteria for delineating the demarcation lines between art and non-art, which might be the most crucial problem of art today and in the foreseeable future. This theory points out the common cognitive properties shared by art and science and thus anchors all branches of culture in the nature of mind or in the nature of human intelligence. Shown in this light, art can be seen as just one of the manifestations of a grand structural symmetry imposed by mind on all aspects of being.

Notes

1. See for example: Appleyard, 1984; Avital, 1966,1997a; Belting, 1987; Gablik, 1984; Habermas, 1985; Lang, 1984; Wolf, 1975.

2. Davis uses the term "idealist" to describe all approaches, which assume any cognitive capacities independently of experience. In most cases I will prefer to use the term "cognitive" which is somewhat less loaded than "idealist".

3. See Popper, 1969; Gregory, 1980; Austin, 1962; Swartz, 1965; Wittgenstein, 1963; to name just a few - including Kantian philosophy and all of its numerous derivatives.

4. Davis has read an early draft of this article, and his reaction is a exemplary instance of academic open mindedness. Despite the severe criticism put forward in the article with regard to his theory, he has been good enough to indicate that it is the most thorough - going, impressive, and - to my way of thinking at this point - compelling response I've seen. (Personal communication). On the other hand, in his letter he strongly objected to my having dealt with his theory in the light of only one article, and that I did not mention his later writings, in which he altered and refined his behaviourist approach. I would like to emphasize the fact that the principal point of my article is an attempt to show that the

known theories regarding the origins of art do not really explain the origins of art. I have chosen Breuil's theory, Gombrich's and Davis' 1986 article as a sample of theories based on very different epistemologies. The theory of Davis deserved most of my attention because it is probably the best example of a behaviourist approach to the problem at hand and because it is the most elaborate of the three. However, my aim was not to deal with Davis' theory in all of its transformations and developments, but to deal with a behaviouristic approach to the problem as such. Hence I made no attempt to deal with Davis' other writings, and the same is true regarding Breuil's and Gombrich's other writings which are not mentioned at all in my article. I wish to emphasize that in my opinion behaviourism as an approach is, in principle, wrong not only philosophically but also ethically, especially since it is a form of dehumanization. I believe it is immaterial whether a moderate or an extreme behaviourism is under consideration, and it therefore makes no difference if in later articles Davis moderated and refined his behaviourism. At the same time, it is right and proper to suggest to readers interested in the development of Davis' approach that they should study his recent book (Davis, 1996), which among other things presents the development of his thoughts on this subject.

5. I cannot refute this argument of Davis without broadening the discussion beyond what is possible here. I have proposed my solution to this enigma in my essay "Footprints Literacy: The Origins of Art and the Prelude to Science" (1997b), where I present a solution in a Popperian spirit which hopefully does not necessarily lead to an infinite regression.

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