Is Figurative Representation Arbitrary? A Re-examination of the Conventionalist View of Art and its Implications for Non-figurative Art.

Tsion Avital, tsionavital@bezeqint.net

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Abstract

This essay attempts to refute the conventionalist aspect of Nelson Goodman's theory of representation that is still one of the most influential theories of aesthetics in our time. However, the primary aim of this essay is not to summarize the long ongoing debate between the conventionalist and the opposed views of art, but rather to re-examine in its wider context the conventionalist view and its implications for twentieth century art. This re-examination will be carried out from vantage points such as paleoanthropology, prehistoric art, hierarchy theory, empirical findings of psychology, relations theory (logic) and other fields, thus bridging between empirical and philosophical contributions to the elucidation of this problem. A central argument of this essay is that the conventionalist view is not only mistaken but that it has destructive implications for art as a symbolic activity. This follows from the fact that this view reduces the artistic to the perceptual and to the habitual, and thereby abets the complete blurring of the **lines of demarcation between art and non-art**, which is perhaps the main problem of art in the present century and in the foreseeable future.

Is Figurative Representation Arbitrary? A Re-examination of the Conventionalist View of Art and its Implications for Non-figurative Art

In contrast to science, which in this century has been in perpetual transformation, and to the world of art which has been in perpetual turmoil, the world of aesthetics has in this century witnessed only very few outstanding events. One of them was Nelson Goodman's book, Languages of Art, which has important implications for both aesthetics and for art (Goodman, 1968). The book deals with three particularly important ideas which are not presented here in the same order as in the book: the denotative function of art; the symptoms of the aesthetic, and the conventionalist character of the symbols of figurative art. Goodman admittedly did a considerable service to aesthetics by vigorously shaking this field out of its somnolence. His stressing of the denotative function of art, which is the connectivity function of art, is probably his greatest contribution to aesthetics. In this regard Goodman's great contribution to aesthetics and art cannot be underestimated. On the other hand, the idea regarding the symptoms of the aesthetic, is hardly enlightening, because although it highlights some of the differences between the aesthetic and non-

aesthetic, it does not help us at all towards drawing the demarcation lines between art and non-art, which is perhaps the most crucial problem of art today. However, this essay will not address the denotative function of art, nor the symptoms of the aesthetic but rather the third idea: that all pictorial symbols are merely conventions.

To some readers, the controversy between Goodman and Gombrich (1962) and his other opponents such as J. J. Gibson (1971)[1] perhaps seems somewhat tedious, and it is therefore worth mentioning already at this point that the primary aim of this essay is not to summarize the long ongoing debate between the conventionalist and the opposed views of art, but rather to re-examine in its wider context the conventionalist view and its implications for the twentieth century art. This re-examination will be carried out from vantage points such as paleoanthropology, prehistoric art, empirical studies of art in psychology, hierarchy theory, relations theory (logic) and other fields, which to the best of my knowledge have not heretofore been invoked for this purpose.

This essay in fact comprises two parts. In the first, an attempt is made to present the conventionalist view in a broad context, and its implications for contemporary art; it has also been attempted in this part to examine the plausibility of this view in the light of several aspects of the origins of art in prehistoric times. It is only against this background that the six counter arguments to conventionalism, which constitute the second part, receive their full effect. Furthermore, it should be pointed out immediately that the chief aim of this essay is not merely the refutation of the conventionalist view for its own sake, but rather that this refutation is intended to serve a much more important goal: that of limiting or negating the theoretical and practical implications which this view has for the legitimization of non-figurative art as art, and especially of its foremost stream, known as abstract art.

In no other universe of discourse are the most basic concepts so ambiguous as in that of art. Hence, in order to reduce room for misunderstanding on the part of the reader as much as possible, I shall try to clarify briefly the way I shall be using in this essay certain concepts that are particularly problematic, and the more so because my use of these concepts do not necessarily comply with the orthodox one. Firstly, I would emphasize that everything I maintain in relation to art in this essay, applies to the art of painting alone, and conclusions should not be drawn from these arguments to other arts. Similarly, I do not think that one can draw self-evident conclusions from other arts regarding painting, merely because these activities are, rightly or wrongly, called "art". Secondly, by the concept "figurative art" I mean any picture or photograph that contains any recognizable images of objects. As we shall see in the following, these representations are readable because in figurative art there is a non-arbitrary connection between the representation and its subject[2]. Obviously, there are different levels of readability; thus, a Cubist painting such as Picasso's portrait of Kahanweiler presents more or less the limits of such readability, and therefore it shows also the limit of what can be considered as figurative art. It should be emphasized that this characterization of figurative art serves only to indicate some preconditions for a representation to belong to the category of figurative art, and not its artistic value which depends on far more parameters than readability. This is true just as every word, even one denoting the most trivial matter, is part of the language no less than is a word from the highest peak of the hierarchy of concepts[3]. Throughout the discussion in this essay, I assume that figurative art is the only pictorial art that has been created so far. However, this does not mean that a different art is not possible in the future (for example, one with a systemic-

structural character), which is not figurative but nevertheless possesses properties that justify its inclusion as art. But these are highly complex matters, with which I shall deal in other essays.

Thirdly, by "abstract art" I mean all pictures that do not meet the criteria I have indicated for a figurative painting, without regard to the number of colors or the character of the composition in which they appear: whether the picture contains only one color as in monochrome paintings, or an enormous number of colors as in a typical work of "abstract expressionism", or contains any number of colors in a geometrical configuration as in the paintings of Mondrian, Malevich and the like. With regard to the first and second kinds, there is no meaning at all in speaking of readability since each person is likely to see whatever comes to his mind, and the latter kind does not represent rectangles or other geometrical shapes; these pictures display specific cases of rectangles or other geometrical shapes. When use is made of the term "abstract art", what is in most cases intended is really "nonfigurative art". But the fact that something is nonfigurative art does not mean that it is abstract, and even less that it is art. With regard to all kinds of "abstract art", both laymen and many scholars are mistaken in calling it "abstract art", since in this art - if it is an art - there is no abstraction in any of the meanings attributed to that concept throughout the whole history of philosophy, logic and science. Skepticism concerning the character of abstract art is one of the central issues in this essay, and it is therefore very important to clarify the concept, however briefly.

The concept of abstraction was imported by people of the art world from the world of philosophy, without really understanding it. Unlike the concept of art, which is ambiguous in the extreme, the concept of abstraction is not in principle ambiguous, but is rather far more complex than appears from the literal meaning of the word "abstraction". The reason for this confusion is mainly philological and historical. It seems that the first to coin the term 'abstractio' was the Roman philosopher Boethius (480-524). Aristotle's Greek terms aphairesis (to diminish, to take away from a thing), and korismos (to separate, to divide), were translated by Boethius into the Latin abstractio from which the term was adopted in other European languages. This fact has led many, especially in the world of art, to think that abstraction is only separation. However, abstraction is not produced only by separation of the 'form' (from an empirical source, as the empiricists maintained, or from a transcendent source, as the various kinds of Idealists maintained); but it also requires a synthesis and ascent to a higher level of generalization than that of the entities regarding which we make the abstraction. Thus when we draw a bull, we ignore most of its visual aspects, or eliminate most of its figurative and color characteristics, and will probably to make do with its contour alone. The final result of the abstraction is this contour, and not our elimination of most of its visual properties. The contour serves in this case as the visual common denominator of all the bulls that have been, are, or will be in the future, and is thus a pictorial class-name for all bulls. In other words, abstraction comprises two contrary but complementary trends: those of analysis and synthesis together. However, the main aspect of abstraction is not the analytic, but rather the synthetic or unifying aspect, for this is the aspect, which enables us to ascend in the conceptual hierarchy. But this aspect is not expressed at all by the word 'abstraction' - neither in its Greek origins, nor in Latin, nor in the other European languages that adopted the concept from the Latin root. It is worth emphasizing that throughout the history of philosophy there have been bitter arguments about the nature of abstraction, but the main issue in the

argument between the chief currents, the empirical and the ideist, was not about the dual analytic and synthetic character of abstraction, but rather about the origin of form. The empiricists argued that form is in things, and is obtained by means of a process of separation and induction, whereas the ideists argued that form is not in things but exists a priori and is derived from the transcendental world (Ideas, God, Reason and the like). It is now easier to understand that the painting called in the present century "abstract art" is not abstract at all, but concrete! For in no case does it display a higher level of generalization in relation to any entities whatsoever, but rather the contrary: it descends to the world of objects, since it reduces the pictorial symbol to its perceptual components. So-called "abstract painting" is neither painting nor abstract, but rather an arbitrary combination of colors and shapes. Similarly, the common expression "pure abstractions" which is supposed to indicate "abstract works" as opposed to figurative works which are supposedly not abstract, now appears even more absurd. On the other hand, figurative painting is the only painting that is really abstract, even if in principle it is abstraction at a far lower level than can be obtained in conceptual or formal abstraction. Nevertheless, despite the explicit and implicit misgivings expressed in this essay towards abstract art, it should in no way be concluded from this that I suggest a return to figurative art, for the latter is a cultural fossil that has long since exhausted all of its creative and metaphorical potential; rather should a serious search be initiated for a new option for art. In this respect, the main contribution of abstract art is in its having utterly destroyed the structures of figurative art, and filled a necessary intermediate stage between the art that was, and the art that must come in the future.

Conventionalism as justification for the license of any thing as a work of art

As we shall see, Goodman's nominalist-conventionalist view is not only mistaken but even encourages a destructive approach to art, mainly because in principle it grants legitimacy for anything whatsoever to pass as a work of art, because it basically reduces art to the aesthetic (or perceptual), and entrenchment. It is perhaps worth emphasizing that in his theory of representation Goodman deals only with figurative art. However, while it is questionable whether it explains the nature of figurative representation, it is clear that it can rather serve for others as the justification for non-figurative art as art. Thus Goodman's theory advocates the blurring of the demarcation lines between art and non-art, and thereby eventually sustains the disintegration of art as symbolic activity. However, it must be stressed that the refutation of the conventionalist view does not provide a basis for the delegitimization of any form of non-figurative art as art, but only undermines the conventionalist's implied argument that although non-figurative art is arbitrary, it is legitimate as art because figurative art too is arbitrary. Hopefully, this essay shows convincingly that it is not. Since art has clearly reached a dead end, a radical and most thorough re-examination of twentieth century art is overdue and inevitable. Such re-examination will have to be in the light of a far more comprehensive theory of aesthetics than the theories we have at present. The probable outcome of such re-examination would be the delegitimization of nonfigurative art as we know it, and a revolutionary paradigm for art without which the future of art is distinctly dubious. This is a mission of colossal order and is not the subject of the present essay.

The assumption that there is some inherent connection between figurative art and the objects it depicts is obvious to most people, ingenuous and sophisticated alike, and especially to figurative painters of every generation (Avital, 1966). This linkage can be expressed in terms of iconicity, symmetry, homomorphism, isomorphism,

similarity, and the like. However, this assumption is not accepted by all aestheticians. Some maintain that there is no inherent connection or similarity between the symbol and the thing symbolized, since the choice of symbols is fundamentally arbitrary. The outstanding representative of this conventionalist approach is Goodman, and I shall therefore deal only with his arguments. According to this view, the resemblance that we perceive between an apple and a painting depicting an apple, is a result of habit, entrenchment and the like, and not the result of any inherent attributes common to the representation of the apple and the apple it depicts. This argument seems to be highly persuasive especially since most of the entities depicted by representations are fictitious, and therefore similarity between the symbol and the thing symbolized is irrelevant. On the strength of this and other logically sophisticated arguments, Goodman concluded that realism is based upon convention and habit alone, and that therefore any thing can symbolize any other thing, provided that we reach an agreement upon it. Goodman's argument is obviously true of verbal symbols in natural and artificial languages, and certainly of the works of non-figurative art, but does it really hold with regard to figurative representation? If this controversy were of only academic importance, I would very gladly ignore it, for it is an especially treacherous quagmire. However, the problem confronting us is unfortunately not merely academic. In the end such a theory provides a highly sophisticated theoretical justification for abstract art, as if it were of precisely equal value with figurative art. This is a problematic matter, for it can be proven beyond all doubt that not one of the dozens of important attributes found in every figurative work, is present in works of abstract art; and there is thus room for doubt as to whether the latter should be classified as art at all. In fact, the only relevant attribute also present in "abstract" works is the trivial fact that these works too are perceptible. However, the fact that something is perceptible is only a necessary condition, but not a sufficient condition, for it to constitute a work of art.

In other essays, I shall discuss fully and in great detail, the considerations that justify the total delegitimization of abstract art as art (Avital, 1997a, 1997c). But at this stage I find it important to refute, or at least to challenge, the argument that figurative representation is arbitrary, not so much because of the mistakes it hides, as in order to prevent it from serving as the basis for creating any common ground for figurative art and abstract art as art. So long as Goodman's theory has not been completely disproved, it prolongs unnecessarily the paralyzed state of art, for it provides a watertight alibi for many people who make things of questionable meaning and value, maintaining that their works may yet be understood in the future, but who want to cash their full alleged value in the present. This view supports those who are for diverse reasons concerned to prevent or at least delay the growth of a recognition that art is at an utterly dead end. At the same time it must be borne in mind that the refutation of the conventionalist thesis is only a very small part of the enormous work of clearing up required in order to pave the way to a serious search for a new and fruitful paradigm for the art of the future. We return, then, to the problem before us: are figurative symbols indeed arbitrary?

Conventionalism in prehistoric perspective

The greatest difficulty with this question lies in the deceptive simplicity of its formulation. The enormous complexity concealed within this question is immeasurably greater than could be supposed at first thought. On second and third thought, we gradually discover that it is a question that cannot be seriously discussed without taking into account other problems, which are much more far-reaching and fundamental than

the one under discussion. Firstly, the discussion surrounding the question whether pictorial representation is arbitrary or not, is a distant echo of the much wider ancient philosophical problem, as to whether we perceive reality as it is, as in the view of naive realism; or whether we have only a construction of reality which is completely dependent upon our consciousness, as in the view of idealism; or whether there is perhaps some integration of extremes as in the Kantian synthesis? Explicit and implicit parallels to these three approaches are also present in the theory and practice of art, and therefore the position adopted towards the question whether representation is merely a convention or not, is to a great extent an integral part of the epistemological starting point from which one proceeds prior to asking this question. More specifically, the problem confronting us is inseparable from the issue of seeing and seeing-as. This fact alone requires a far more wide-ranging discussion than is possible within the bounds of this essay.

Secondly, in order to be able to decide with some certainty the question whether or not the symbols of figurative art are arbitrary, it is essential that we investigate the origins of these symbols in the depths of prehistory. How were these symbols created? What graphical evolution led to their invention or rather – discovery[4] (Kennedy, 1975)? What cognitive evolution was a precondition for their creation? Strange as it may seem, there is still no reasonable explanation for any of these basic questions (Avital, 1997b). There are those who have reservations about the idea that the origins of a thing are capable of explaining its later metamorphoses. These reservations are doubtless correct in contexts of a mechanistic character, but not in evolutionary contexts, whether biological or cognitive. Thus for example, the properties of a metal such as iron cannot explain the properties and functions of an engine made of iron. By contrast, the understanding of the skeletal structure of the crossopterygians which, some 350 million years ago, were the first kind of fish to adapt to life on dry land, indicates not only the common origin of the reptiles, but also of the mammals. That is to say, we are likely to understand important properties of things, if they arise from an evolutionary, biological or cognitive development of its origins. On the other hand, if a thing is only a specific transformation of some other thing, as is the case with a raw material and some industrial product, the origin will not necessarily explain the product. Among evolutionary connections there exists a considerable continuity of structures, organization and functions in the course of time, whereas in mechanistic and even social transformations such continuity is not necessarily preserved. In the last-mentioned essay, I have also provided arguments why it is impossible to assume that prehistoric painting arose ex nihilo, but that it must rather be assumed that it arose from a different but at the same time similar type of visual literacy which preceded it. This being so, as in biological evolution, the origins of art may certainly explain many of its essential aspects, including the question as to whether figurative painting was from its beginning arbitrary, or not.

Without a profound understanding of the context within which the figurative symbols came into being, how can we argue that they are, or are not, mere conventions? Even if we maintain that today these symbols appear to us to be arbitrary - something I do not accept at all - does it follow from this that at their origin they were arbitrary? I tried in another article to show that the most likely origins of the symbols of figurative art are the transformation, elaboration and generalization of footprints literacy, and that therefore at least at their origins, the symbols of figurative art were not arbitrary (Avital, 1997b, 1997c). I believe that reasonable grounds were provided for this hypothesis in

the essay mentioned, and I shall therefore indicate here only a few of the most important points relevant to the clarification of the problem before us:

(a) Footprints literacy is clearly a far more archaic visual literacy than the earliest prehistoric drawings, and not only do both share common graphical characteristics, as will be shown in the following, but far more important is the fact that all of the cognitive attributes that are necessary for footprints literacy are also necessary for image making but not vice versa, because image making is a higher level symbolic activity in the same kind of visual thinking. For example, in both of these kinds of cognitive activity the following attributes or "mindprints" are necessary: connectivity, discrimination, abstraction, classification and generalization. In both one must be able to think in terms of symmetry–asymmetry, inclusion–exclusion, open-endedness–closed endedness, hierarchy–randomness, transformation–invariance, complementarity of ground and figure, hypothetical thinking, comparison-imparison and others (Avital, 1997c). Both activities are impossible without some understanding of the reference relation between a mark and the thing it indicates or represents. As could be expected, there are also quite a few attributes that exist in a developed form only in image making and not in footprints literacy: stratification, open-endedness, metaphorization, creativity and elaboration, syntax and semantics and other attributes that need not concern us here.
(b) Unlike words, which are truly conventions and have no formal or acoustic link with the objects they denote, footprints have an inherent connection regarding the objects they indicate, since the form of the footprint arises of necessity from the shape of the foot that created it. That is, a footprint necessarily preserves a specific symmetry in relation to the foot that created it because the form of the footprint is a reflective transformation of the form of the foot. Footprints are therefore probably the proto-paintings or proto-symbols that prehistoric draughtsmen improved and extended into what we call "figurative painting". From all that has been said, it is clear that humans indeed learned to draw or to "write" pictorially only 35,000 - 40,000 years ago, but it is probable that even Australopithecines were capable of reading "natural pictures" or footprints millions of years before that. Such a possibility can be inferred with some confidence from one of the most important findings of paleoanthropology of all times: the uncovering of the earliest hominid footprints hitherto discovered, by Mary Leakey and her team, in Laetoli in northern Tanzania. In the light of the special characteristics of this track created by three hominids some 3.8 million years ago, Leaky and her team reached very impressive conclusions as to the physiological structure and gait of these hominids. (Leakey, 1987). However, I believe that it is also possible to reach, from the unique pattern and characteristics of the same footprints, several important conclusions as to the cognitive attributes of these creatures, most of which are precisely those that are necessary for footprints literacy or the reading of visual patterns similar to the earliest drawings and paintings.
(c) There exists among scholars of prehistoric art a considerable consensus that paintings of hands or handprints are among the earliest paintings ever created (Breuil, 1981). These handprints were created by spraying black or red paint from a blowpipe, usually over a hand placed on the wall of the cave or rock shelter. The great majority of these paintings depict the hand in precisely the same way that footprints show the foot: by showing the negative image of the hand. Footprints and handprints made by spraying depict their subjects mainly by means of contour or outline. Paintings of feet and even small animals such as lizards and fish can also be seen at some sites in the world, that were created by exactly the same spraying method as the handprints. In other words, it seems that the prehistoric painters transferred footprints from the ground

to the cave wall. Afterwards they improved, extended and generalized the principle of footprints, to the more complete and detailed depiction of animals and humans. Even someone who does not care to accept the supposition briefly presented here, that a generalization of footprints is one of the major origins of figurative painting, cannot deny a number of facts: Firstly, that the paintings of hands were among the earliest paintings made. Secondly, that the handprints made by spraying is isomorphic, symmetrical or similar to the hand (See figures 1 and 2). Thirdly, that the animals depicted in the earliest stages of prehistoric art were represented by the contour of only part of the animal and at later stages by its full contour (Leroi-Gourhan, undated; Delluc and Delluc, 1981,1984; Davis, 1986). According to the same logic of representation, the draughtsmen would represent animals both by a full and by a partial drawing or engraving of the footprints of animals, which were in the past interpreted as female marks (Delluc and Delluc, 1985).

Fig. 1. Negative handprint , Chauvet Cave. The precise dating of this handprint and that of the horses below is yet unknown but analysis of three out of about 300 paintings in this cave have shown a dating of about 31.000 BP (BP = before present). This indicates the possibility of their great antiquity. (Chauvet, Deschamps and Hillaire, 1996). Since the outline of the handprint was done by spraying of pigments on the hand flattened against the wall, it is impossible to deny the symmetry between hand and its pictorial representation. Photo: by courtesy of French Ministry of Culture and Communication, Regional Direction for Cultural Affairs - Rhône-Alpes region - Regional department of archaeology

Fig. 2. Panel of the horses, Chauvet Cave. It cannot be denied that the contour of an animal is isomorphic or symmetrical with a certain section or projection of the animal, and therefore the symbol that depicts the animal is not arbitrary. Had the representation of these horses been arbitrary could we read it after about 30.000 years while we cannot read an abstract painting done in our time? Photo: by courtesy of French Ministry of Culture and Communication, Regional Direction for Cultural Affairs - Rhône-Alpes region - Regional department of archaeology.

If depiction of animals by means of their contours is a generalization of the depiction of the hand by means of its contour as in footprints, and if a contour or outline of the animal is not arbitrary, then there are no grounds for the argument that these pictures of animals are arbitrary or mere convention. Even today, tens of thousands of years after the animals were painted, we have no difficulty at all in recognizing the objects these prehistoric paintings were supposed to denote: mare, bison, mammoth or fish. It cannot be denied that the contour of an animal is isomorphic or symmetrical with a certain section or projection of the animal, and therefore the symbol that depicts the animal is not arbitrary. At most it can be maintained that there is some degree of arbitrariness in the choice of the section or projection by which we choose to depict the animal, but this does not mean that the symbol is arbitrary. I believe that the considerations indicated above are sufficient for us to argue that it is more than likely that at least in their origin, figurative symbols were not created arbitrarily, but contained an inherent connection between symbol and symbolized. However, even one who does not accept this explanation of the origins of art, or does not accept the relevance of prehistoric evidence to the conventionalist issue, is still obliged to consider the following six counter arguments to the view according to which figurative symbols are arbitrary.

Six counter arguments to the conventionalist view of art

1. Figurative representation is basically universal

If the symbols of figurative art are indeed arbitrary, as Goodman claims, how can one account for the fact that very similar methods of representation appears in different parts of the world between which there was no contact at all? We find basically the same method of representation in many different parts of Africa, Australia, Europe, Asia and also in North and South America; in most cases, the object is represented by its contour. How could this similar principle of representation have developed in such distant and isolated places unless some innate mechanisms or common origins, or both, are involved? There is a further aspect to this question: if indeed the symbols of figurative art are arbitrary, how does one account for the fact that we have no difficulty whatever in reading the pictures that were created tens of thousands of years ago by hunters whose civilization was so different from our own? As opposed to this, no really arbitrary "abstract painting" is comprehensible to us, whether it was made before our very eyes or has already existed and been well known for decades. Among prehistoric paintings there are those that can easily be classified into one or other category of abstract art, but the fact of their existence for tens of thousands of years does not make them more comprehensible than those made today.

It is customary to call spoken language "natural language". If there is a justification for this, there is a far stronger justification for calling figurative art "natural language", since this is indeed a basically universal language beyond place and time. A Bushman does not necessarily know French, and a Paris taxi driver does not necessarily know the language of the Bushman, but both can easily identify the objects depicted in pictures from Altamira, Lascaux, Sahara or Natal, even though they are unable to exchange a single word. Human beings from all cultures can easily understand a prehistoric painting of a hand, but not the word "hand" in all languages. However, while we identify the objects depicted, we have no way of knowing the meaning these objects had for those who depicted them. If the symbols of figurative art were merely the fruit of conventions and habits, could this art have been, to a large extent, universal beyond place and time, on the level of production and also on the level of readability? By contrast, this century has seen the creation of many dozens of currents of abstract art, and not only is there no tendency towards agreement upon any universal "abstract" style that might with its entrenchment begin to be comprehensible, but the prevailing tendency in the twentieth century is precisely the opposite - one of unbridled pluralism: every artist strives towards an individual style of his own. Goodman entirely ignores the situation of the non-representational art he wishes to rescue at the price of an unsuccessful attempt to reduce figurative symbols to arbitrary compositions like "abstract paintings". To bolster his theory, Goodman quotes studies from the forties, according to which primitive tribes failed to identify familiar objects and people shown in photographs, so that the implication was, that the reading of a photograph or of a figurative painting is a matter of learning as is the case with all other conventional symbols. In an extensive review of the field of pictorial perception Hagen and Jones (1978) mention studies both earlier and later than those upon which Goodman relies, which also used black and white photographs, and nevertheless found that people who had never before seen photographs were able to read them. They likewise point out very many later studies which confirm in different ways the fact that people who have never seen black and white or colored pictures, films, slides, or outline drawings, are

able to read them, albeit not with the same ease. Kennedy and Ross (1975) found that the Songe of Papua, who do decorative work but no drawing of any kind, are able to identify very easily human forms, and familiar or unfamiliar objects and animals shown to them in outline drawings. One of the most interesting findings in this context is perhaps the fact that those of the Songe people over 40 years old who understood outline drawings had more difficulty in understanding black and white photographs! The main point here is the very fact of the existence of an unlearned capacity for reading pictorial representations. In a study highly unusual in its methods, Hochberg and Brooks (1962) showed that an infant of 19 months is capable of reading simple and complex outline drawings and also photographs of objects, even though they did their best to limit the child's exposure to pictures of any kind prior to the experiment. Their conclusion is that "...we must infer that there is an unlearned propensity to respond to certain formal features of lines-on-paper in the same ways as one has learned to respond to the same features when displayed by edges of surfaces." (p. 628)[5]. A similar conclusion may also be reached in a more convincing manner in the light of an experiment by Kennedy (1975) and other workers with congenitally blind subjects who were given a raised line drawing to handle. They found that some of these blind subjects were able to identify as many simple line drawings as blindfolded sighted people, even though they had never before encountered outline drawings before. If the conventionalist theory were correct, would it be possible for an infant or for these blind people to be able to read the drawings with which they were presented?

(b) Another argument customarily raised in this context is, that often people of primitive cultures do not recognize themselves in a photograph. A tragi-comic episode reported some time in 1992 by "Haaretz" newspaper in Israel provides the answer to this curious finding. Among Jewish immigrants then being brought from Ethiopia, many had lived all their lives in remote country areas in which there was hardly any contact with modern civilization. On one of the flights a young girl came out of the toilet in a state of hysteria, claiming that her sister was inside, whereas she knew for a certainty that she had remained in Ethiopia! A brief investigation revealed that in the toilet she had simply seen herself in the mirror, something she had never seen before. One who has never seen herself in a mirror does not know what she looks like and it is thus not surprising that she should not recognize herself in a mirror or a photograph. It was also noted in the same article, that those Ethiopians who had never seen photographs before they came to Israel, could recognize in photographs people they knew but could not recognize themselves, for the reason I have already mentioned. To sum up, the argument that some primitive people do not recognize familiar objects and people in photographs seems to be groundless and it can therefore not be used as evidence for the conventionalist view.

2. Hierarchies are not arbitrary structures

One of the deepest differences between figurative art and abstract art is that all figurative works are pictorial hierarchic systems, while abstract works are not. This is manifested in the degree of stratification or levels of hierarchy typical of the organization of the aesthetic elements in works belonging to these two kinds of art. It is a highly instructive fact that works of abstract art which were certainly created on an arbitrary basis are also completely lacking in stratification, or have the most minimal stratification possible. By contrast, every figurative painting is conspicuous in having quite rich stratification. If the symbols of figurative art are indeed fundamentally

arbitrary, as maintained by Goodman and others, how can it be that these symbols are always organized into hierarchic systems rich in strata while works of abstract art are so poorly stratified?

In order to clarify this by no means obvious point, we shall take by way of example three easily imagined paintings: first, let the reader imagine a monochrome painting typical of Yves Klein or Barnett Newman. Syntactically, the complexity of such a painting is exactly zero. In a homogeneous painting of this sort there is no organization at all, since for the creation of a minimum of organization, duality of some kind is required. Since in a painting of this sort there is only one color, it contains no organization, and no levels of organization; and therefore all works of this kind are completely lacking in stratification. Secondly, let the reader imagine a typical "abstract expressionist" painting such as one by Willem De Kooning, Jackson Pollock or Karel Appel. In contrast to the monochrome paintings, a great abundance of colors appear in these. The syntactic complexity in these paintings is indeed enormous, but the fact that the complexity is so great is no reason for rejoicing, since (a) intelligibility is in inverse proportion to complexity, and (b) Complexity does not in any way ensure that the many elements which create that complexity are organized in several levels of order or in an hierarchical manner.

Thus for example, the analysis of a typical painting of De Kooning's kind will show that in the whole painting there is only one organization, and that it is of the first (lowest) level of order. In systems language this would be called an elementary system or elementary holon[6] (Koestler, 1967, 1978; Stamps, 1980). A holon is a systemic entity that functions simultaneously both as part and as whole. In a sense, a holon is like a Russian matrushka doll that contains within itself more matrushkas that diminish in size as their number increases, and is at the same time included in larger matrushkas. The difference is that a matrushka doll is composed of only one doll at each level, while in physical, biological or symbolic systems there are always numerous holons at each level of the system. A holon is structured in such a way that it always contains holons of lower levels of order, at the same time being itself a holon (of a lower level of order), of another holon which is of a higher level of order. From this, it is also clear why elements that are indivisible are not holons but parts. A painting of the "abstract expressionist" type is very much like a huge pile of gravel that is composed of numerous parts but no holons and therefore contains only one organizational stratum, or only one level of organization. It may be said in very indulgent terms, that such a painting is a system which has a very wide base, since it contains an enormous number of elements or parts in the base class; but the height of this system is infinitesimal since it possesses only one organizational level. The ironic conclusion here is, that a very great difference in the number of visual elements in the painting creates only a negligible difference in the amount of stratification. For the measure of stratification in the painting is not so much dependent upon the number of colors it contains but rather upon the attributes of the organization of those colors. The lesson that may be gleaned from this, is that complex abstract paintings are made of parts which at best make a single and elementary holon, while figurative paintings are always constructed of a few or many holons, and not parts. The important implications and relevance of this difference to our subject will immediately become clear. Thirdly, let the reader now imagine the portrait of an old woman with a mantilla on her head, as in Rembrandt's portrait of his mother. Such a painting, like every figurative painting without exception, is an hierarchic system of symbols organized on several levels of order. The number of

levels of order in a pictorial system, or the measure of stratification of the hierarchy of symbols that constitute the painting, is determined by the amount of detail in that painting. The more detailed a picture, so does it contain symbols from a greater number of levels of order. In other words, the painting depicting the old woman is a super-symbol or cardinal holon of that pictorial system. This system contains many other holons or symbols on lower levels of order. This super-symbol includes sub-symbols of a lower level for the mantilla, hair, wrinkled forehead, eyebrows, eyes, nose, sunken and wrinkled cheeks, mouth, and so on. Each of these sub-symbols contains sub-symbols of a lower level of order. So, for example, the sub-symbol for the eye is contained within the sub-symbol for the eyelids and lashes, and contains sub-symbols of a lower level than its own for the sclera, cornea, iris, and sometimes the indication of dampness. The sub-symbol for the sclera is likely to contain sub-symbols of an even lower level for the various blood vessels and such, to the extent of detail with which the eye is painted. This hierarchic structure is present in all of the other sub-symbols that constitute the portrait. Thus, in a figurative painting we find that every symbol is so structured that it contains certain sub-symbols of a lower level than its own, and is itself a sub-symbol of another symbol of a higher level of order. The exceptions to this are of course the simplest sub-symbols, which do not contain other sub-symbols; and the super-symbol or picture as a single whole, which contains all of the sub-symbols in the picture and is not a sub-symbol of any other symbol in it. However, the super-symbol in every given picture can be a sub-symbol in another picture. Thus for example in a painting depicting the figure of an old woman at a table, reading a book, the symbol for the head is only one of the sub-symbols within the whole picture.

From the foregoing it is clear that unlike "abstract paintings" which are constructed as an arbitrary assemblage of parts that happen to be colors and forms, every figurative painting is a system of interconnected pictorial holons. Every pictorial holon of every level of order, is directly or indirectly connected to all of the other holons in the painting, and to all other symbols of the language of figurative painting. That is, the outstanding attribute here is that of interconnectedness and interrelatedness arising from the systemic or holonomic structure, of all figurative symbols. If every figurative symbol taken separately is indeed an arbitrarily created convention, how is it that every figurative symbol is connected to all other figurative symbols? How is it that these symbols function only in a hierarchic manner, even though they were created throughout 40,000 years by people of such different cultures, locations and times? This enormous connectivity and coherence would have been completely impossible if the symbols had been arbitrary. Furthermore, Goodman and those who share his opinion did not notice the astounding fact that hierarchic order, which constitutes the most basic and deepest syntax of figurative art, is only a special case of the most general and basic order to be found in the entire universe: on both macro and micro levels, in the physical, botanical, biological, social and noetic worlds. The hierarchic order of art is not the result of the arbitrary brush-stroke of a gifted artist, but rather the fruit of an evolution as old as the universe itself. This matter is too awesome and far-reaching for cursory examination, and I shall discuss it thoroughly in another essay. In the meantime I hope that the little I have said here will suffice to refute Goodman's argument that the symbols of art are mere conventions. For had this been true, they could not have constituted a visual language with a completely hierarchic or holonomic structure.

3. Pictures are not painted words

According to Goodman, the most important attribute of representation is its denotative function, and it is from him that I learned this important idea. But it seems to me that Goodman here falls into a difficult dilemma, and that we are not obliged to accept his solution to it. Because of the real or imagined inherent connection that everyone sees between a figurative painting and the object it depicts, it is obvious that every figurative painting has a denotative or symbolic function, and there is therefore no doubt that every figurative painting is a representation. It is thus also obvious that every figurative painting is a work of art. But in the case of abstract art in which the representation of objects and phenomena is renounced, nobody can know whether the "picture" is intended to denote any thing at all; and if it is intended to symbolize anything, we have no way of knowing what this might be. If so, the ominous question arises: can an "abstract painting" which is an arbitrary composition have any denotative function? But if it cannot symbolize anything then it is not a representation at all. That is, the embarrassing conclusion likely to follow from this, is that an "abstract picture" is not a picture, or more simply, is not a work of art! For those who accept Goodman's theory, the problem is then how to rescue abstract art from this harsh conclusion. Goodman might agree that non-figurative art does not represent but that it symbolizes through metaphorical exemplification, or expression. I believe that this argument too can be thoroughly refuted, but I shall do this in another article, contenting myself here with merely indicating a few points:

Firstly, it is questionable if exemplification can be metaphorical because metaphor involves, among other things, the recycling of old connections created by symbols in the past, and their extension into new or poorly connected but open-ended territory. Exemplifications are not symbols and therefore they do not connect, but rather they are connected by the predicates we apply to them. Secondly, for similar reasons, it is questionable if non-figurative art that has no symbol system, can be metaphorical. Thirdly, it is questionable if there can be expression without some conventionalized means of expression such as words, figurative symbols, dance movements, mimicry etc. Such means of expression must also have a well-established and public coding-decoding system without which the expression will be impossible or incomprehensible.

As I have said, the Achilles' heel of abstract art is the total absence of an inherent connection between the work and its meaning. By contrast, it appears that the most important attribute of figurative art is exactly the attribute not possessed by abstract art, namely the inherent connection between symbol and symbolized. It appears to me that Goodman attempted to solve the deficiency of abstract art by relinquishing the advantage of figurative art. That is to say, in his view figurative representation too is arbitrary in its origin and only became comprehensible because its prolonged use transformed it into a convention known and understood by all. From this one may conclude that with the passage of time any scribble might appear to us as "realistic". On this score Zemach (1975) criticizes Goodman harshly: "For the last seventy years enthusiastic aestheticians (including Goodman: cf. Languages of Art, p.33) have assured us that once we become used to the new style in painting, Picasso's women will look to us just as natural and life-like as Vermeer's. Alas, the miracle has not happened." (p. 577)[7]. If this miracle has not occurred after 80 years with regard to paintings that are still within the bounds of figurative art, how can one expect that it will occur with regard to completely non-figurative works?

According to Goodman words and pictures are modes of description; the one verbal, and the other pictorial. Although he argues that pictures differ from words because they are syntactically and semantically dense and relatively replete, it appears that he nevertheless deduces attributes of pictures from attributes of words. That is, as a word is an arbitrary collection of sounds which is transformed with the passage of time into a conventional symbol that denotes something, so too is a picture an arbitrary collection of colors and shapes that is transformed with the passage of time into a conventional symbol that denotes something. But by this analogical judgment Goodman imposes the attributes of verbal thinking upon the products of visual thinking, and in doing so actually demolishes the profound differences that exist between words and pictures. On this point Zemach criticizes him pertinently, especially in the Hebrew version of the essay already quoted, in which he maintains that by ignoring the difference between figurative painting and non-representational painting, Goodman reaches the position of not being able to explain what a painting is at all; nor can he any longer differentiate between a word and a picture describing the same object; as for example, between the picture of an apple and the word "apple". Zemach justifiably reaches this conclusion from Goodman's definition of a picture, in which the main difference between verbal description and depiction lies in the pictorial symbol's denoting its object by means of its pictorial properties alone (Goodman, 1968, pp. 41-42). However, Zemach shows that this definition of Goodman's is not sufficient:

> But this cannot be right. The pictorial properties of a picture determine whether it is, e.g., a bulldog-picture or a man-picture. But Goodman has insisted that a bulldog-picture need not denote a bulldog; it may denote a man (i.e., be a picture of a man). Thus, to consider solely the pictorial properties of the picture D is to consider not what D denotes but what denotes it, i.e., what kind of picture it is (1975, p. 568. The emphases are in the original).

Thus, blurring the differences between words and pictures does not help us to a better understanding of what pictures are. Mitchell (1986) too, who explicitly associates himself with Goodman's theory, criticizes him in the matter of the blurring of the differences between images and texts (pp. 63-74). The perception of language as the model for every symbol system, or the linguistical imperialism of which Goodman is one of the outstanding representatives, does not really blur the differences between images and texts. The common denominator between words and pictures is that both are modes of connection, but words and pictures connect the subjects that they connect by using utterly different ways and means (Avital, 1997a.) Moreover, to blur the difference between images and words is to ignore completely the enormous difference in the origins of their evolution: images are the product of an evolution as lengthy as that of visual thinking, which developed in the course of some 600 million years at least. Compared with this, verbal language is a completely new constituent in human evolution, which according to the most extreme estimates is less than two million years, and it is therefore difficult to understand how the properties of pictures can be reduced to those of words.

4. The confusion between the relations of similarity and identity

Goodman's central, or at least most impressive, argument against resemblance as a condition for representation, runs approximately thus: since resemblance is a reflexive and symmetrical relation, whereas representation is irreflexive and asymmetrical, how

can the relation of resemblance, which has the contrary logical attributes, be a condition for representation? I shall try to explain this argument and challenge it, making a minimal use of logical terms and explaining as simply as possible those I am obliged to employ. It is true that resemblance is a reflexive relation: that is, everything is similar to itself. It does not teach us much, but the claim is logically correct. Another example of a reflexive relation is that of identity: everything is identical or equal to itself. Goodman also maintains that resemblance is also symmetrical: that is, if x is similar to y, then it necessarily follows that y is similar to x. Other examples of symmetrical relations are: the relation of friendship; or the relation of "being married to". If Rubi is married to Janet, it follows that Janet is married to Rubi. As against this, Goodman maintains, representation is not a reflexive relation: that is, nothing can represent itself. Everything can represent any other thing, but not itself. Another example of an irreflexive relation is that of "being bigger than". Nothing is bigger than itself. The relation of representation is also asymmetrical: that is, if x is a representation of y, it follows that y is not a representation of x. If the self-portrait of Van Gogh represents the man, Van Gogh, then the man Van Gogh does not represent the painting. Another example of an asymmetrical relation is that of "being the son of". If David is the son of Gerry, it follows that Gerry is not the son of David. In short, Goodman's argument is thus: since the relation of resemblance is reflexive and symmetrical, whereas the relation of representation is irreflexive and asymmetrical, resemblance cannot be a condition for representation since its logical attributes are opposite to those of representation. Goodman's argument seems irrefutable, but only until one investigates his use of the word "resemblance".

The question that has to be addressed is: Is the relation of resemblance indeed symmetrical? Is it always valid to assert that: if x is similar to y then y is similar to x? I suspect that Goodman uses the concept of resemblance as equivalent to the concept of identity. The concept of identity is indeed reflexive: for every x there is always x=x; and the relation of identity is always symmetrical: for every x and y, if x=y, then y=x. But the relation of resemblance is very different from the relation of identity in one very important respect: the relation of identity has no degrees of freedom at all; x and y are either identical or not identical, and there can be no third possibility such as: "x and y are to a certain extent identical", or: "x and y are very identical". In contrast, the language game of the concept of resemblance is completely different. Each of any pair of things we choose to compare with regard to their resemblance possesses very many aspects. For this reason two things can be similar in only one respect, in several respects, in many, or even in all respects - in which case, at least for practical purposes, they will be considered identical. Of course the possibility exists, that the two things are not similar in any respect. That is, unlike the relation of identity, which functions according to the principle of "all or nothing" and has therefore no degree of freedom, in the case of the relation of resemblance, very many degrees of freedom are possible. In fact, the number of degrees of freedom is as the number of aspects we can count in each of the things we are comparing in respect of the measure of resemblance between them. That is, the measure of resemblance between the things has to be taken into account, and the measure of resemblance is not a constant magnitude, but can receive any value from zero to infinity, according to the number of aspects we are concerned to compare in the two things. Also, the number of these aspects and their character is not an obvious datum; the aspects we choose to compare with regard to resemblance depend mainly upon ourselves. In other words, the resemblance that we finally see is not only dependent upon the information we have regarding these things, but also upon

motivation, habits, interests, our mood at the time, etc. For this reason, what seems similar at one time may not seem similar at another.

From this it is clear that the relation of resemblance is not always symmetrical, but only in those cases in which the resemblance between two things is of such a high degree that they can be said to be identical. But that is the most extreme case of resemblance; in most cases things are similar, if at all, in certain respects only; or similar in some respects but very different in many others. When things are similar in only one or a few aspects, then it will not be correct to say that the relation of resemblance at the level present between them is symmetrical. For example, take a situation that every parent has experienced: when my youngest son was born, my wife's mother claimed that he greatly resembled my wife. As might be guessed, my own mother claimed that the baby greatly resembled me. It should be noted that neither of the grandmothers claimed that her daughter or son resembled the baby! It is not to be supposed that both of the grandmothers were confused, but each of them saw a certain aspect of the gestalt of the baby's face which appeared to her as homomorphic with a certain aspect of the gestalt of her daughter's or son's face at some distant stage of their life. As can be seen in this example and many others, the relation of resemblance is not necessarily symmetrical. Moreover, in cases of non-literal or metaphorical similarity, as in similes, the probability of asymmetry of similarity is even higher (Ortony, 1979). It seems that Goodman generalized the attribute of symmetry, which is present only in the most extreme cases of resemblance, to the whole continuum of possibilities of resemblance; and we are not obliged to accept this. Therefore, I do not think that it is possible to dismiss the relevance of resemblance in the context of representation on the grounds of logical attributes of resemblance that are apparently contrary to those of representation.

In fact, I am not sure that Goodman himself is so absolute in his rejection of resemblance as would appear from his argument that the logical attributes of the relation of representation are opposed to those of resemblance. Although he does not say so explicitly, it may on the same grounds be concluded that there is some contradiction or at least incompatibility, in involving resemblance in representation at all, since it has attributes opposite to those of representation. But in another place Goodman says: "...resemblance, while no sufficient condition for representation, is just the feature that distinguishes representation from denotation of other kinds." (pp. 5-6.). That is to say, although he maintains that representation and resemblance possess contrary attributes, he does not by any means dismiss the possibility that there may be resemblance between a representation and its object. According to the logic of his first claim, it would have been more reasonable if he were to argue that no resemblance is possible between a representation and its object, unless he employed two completely different meanings of "resemblance" in the two cases. It is possible that in the original argument he was using "resemblance" in the maximalistic sense of "identity", while in the last argument he was employing "resemblance" in the relative sense I have already pointed out. Similarly, if there is no contradiction and no incompatibility in the involvement of resemblance in representation, this strengthens the doubt as to the validity of his first argument. As we have seen, the attributes of resemblance and representation are not so unambiguously contradictory as he maintains, and therefore I do not think that the argument of contradiction of the attributes of resemblance and representation really refutes the presence of resemblance in figurative representation. Furthermore, in what follows we

shall see that there are many aspects in which it is impossible to deny that resemblance exists between a representation and the entities it depicts.

5. The depiction of convention is not necessarily conventional

Even after all of the arguments we have brought against the opinion that figurative symbols are mere conventions, a stubborn supporter of this opinion is likely to produce another, seemingly strong argument: "Even if we agree that figurative paintings depicting known objects do indeed preserve some symmetry or isomorphism in relation to the object, what symmetry is possible regarding a painting depicting 'sadness', when sadness possesses no figurative aspect? After all, 'sadness' is not an object!" If we admit that there is no object called "sadness", and that there is no figurative symmetry between "sadness" as content and the painting that depicts it, then we shall also be obliged to admit that the pictorial symbols, at least in this painting, are necessarily conventions that we use in order to denote "sadness". When that has been admitted, it will be quite easy for the pursuer of this argument to generalize and argue that all paintings are mere conventions.

Our first mistake is to admit that a painting can depict "sadness" at all. A painting does not depict "sadness" but a sad face, person, dog, or landscape. This is not semantic contrivance: for the route of escape from the stranglehold of the arguer lies precisely here. If we have before us a painting or pictorial symbol system depicting a "sad face", it will be easy to show that this symbol system possesses sub-symbols with the attributes needed for them to depict a sad face. Firstly, we shall find that there is a symbol or pictorial class-name for a human face, and as such it has at least partial isomorphism with every human face. Secondly, we shall find that the same symbol has the special characteristics required in order to denote or symbolize the face of a man or woman, boy or girl, their approximate age, fair or dark skin, and many other characteristics, among them also sub-symbols, the task of which is to symbolize or denote the fact that the painting is intended to depict a happy, sad, or some other kind of person. All these symbolic characteristics of the painting are not arbitrary, and are not conventions, but rather denote figurative patterns characteristic of real faces with specific attributes. A pictorial symbol depicting a sad or happy face has a configuration that is at least partially isomorphic with figurative characteristics typical for a sad or happy person of the same culture. It is true that the special expression seen on the face of a person when he is happy, jovial and so forth, is to a certain extent culture dependent, and it is therefore definitely possible that, for instance, a Japanese painting depicting a sad face, comprehensible to anybody in Japan, would not be understood as such in a Western culture. It does not follow from this that the means of symbolizing are a matter of convention, but that the facial expression itself depicted by the symbols, is a cultural convention. Because the facial expression that denotes sadness is somewhat different in Japan and in the West, we do not understand that a given symbolization of a facial expression is supposed to convey sadness; but we all understand without the slightest difficulty that the painting denotes, for example, a human face. Similarly, we have no difficulty in understanding whether the symbol is intended to denote a man or a woman, an adult, youngster, child or baby. It is easy to identify, according to the patterns symbolizing the eyes, for example, that the picture is intended to represent a typical Japanese or Oriental person and not a European, African or Indian. In general, we have no difficulty in understanding the symbols intended to depict physique since the bodily structure of all humans is more or less similar. Our

only difficulty relates to the symbols intended to depict facial expression, which is at least to a certain extent culture dependent. Summing up, it must be reiterated that the reason for our failure to understand that a particular Japanese picture is intended to depict a sad person, is not so much because the manner of symbolizing is a cultural convention, but because we are not familiar with the cultural convention that tells us how a sad person's face is supposed to look in a foreign culture. A member of that culture, who knows how a sad person should look, will have no difficulty at all in understanding the painting. For the sake of analogy, let us imagine a painting or even a photograph, of an exotic fruit with which we are not familiar. Will we say on this account that the picture of the fruit is a convention? Most probably we shall be able to identify it incorrectly as some other similar fruit or vegetable with which we are familiar. Thus for example, a painting depicting kiwi fruit may seem to a person unfamiliar with that fruit to be a painting depicting small potatoes (always assuming that he is familiar with potatoes). However, from the moment that we show him a kiwi fruit, he will no longer make the mistake, because he will be able to compare the configuration and the symbolization of texture in the picture with the configuration and texture of that fruit, which he has stored in his memory. This reasoning exactly agrees with the finding of Kennedy and Ross (1975, p.400), according to which the Songe, who are familiar with goats but not with deer, commonly use the word "goat" to identify a drawing of a deer. In other words, the reading of a picture includes the comparison of the attributes symbolized by the picture, with the real attributes of the objects depicted. That is, the reading of a painting is chiefly the identification of certain homomorphisms or similarities in the light of comparison between figurative patterns on the one hand, and objects on the other. If we are unfamiliar with the depicted object, inevitably we shall be incapable of reading the picture correctly, and will usually draw the comparison with objects that have attributes as nearly as possible similar to those depicted in the picture. In any case, it does not follow from this that the symbols are arbitrary. The impossibility of documenting in a painting matters such as "sadness" and other non-visual contents that cannot be represented on the basis of isomorphism with some object or other, is a basic difficulty inherent in all pictographic writing, and it was one of the chief motivations for the development of alphabetographic writing systems, which represent speech sounds and are thus free of the pictorial limitations.

6. Traffic signs are not works of art

Traffic signs are divided into three main groups: signs including verbal and/or numeral text, those constructed from pictorial signs, and the chief group - those that are graphical conventions. The first type are read in the same way as any text, the second are easy to decipher because they are a schematization of figurative pictures and in this are no different from pictorial writing. The argument to be discussed in what follows will address only traffic signs of the third type, since they have clear implications with regard to Goodman's theory. It might appear possible to argue that a figurative painting could be a symbol or connector, whether it constituted a symmetry in relation to the thing symbolized, or had no such symmetry. For the presence of such symmetry or resemblance is not a necessary condition for graphic symbolization or denotation. As evidence of the validity of this argument, one can consider traffic signs, which are in most cases completely arbitrary compositions of colors and shapes that nevertheless, by force of habit or entrenchment, became conventional signs denoting objects and recognized commands for actions. It can be deduced from this that an "abstract painting" too, which is an arbitrary composition, may serve as a symbol or pictorial

connector for certain things, provided we can reach an agreement as to what they are supposed to denote.

Indeed traffic signs are an ideal example in support of Goodman's argument; these signs are in fact certainly arbitrary compositions of colors and shapes, which with the passing of time have become conventions, at least some of which are understood almost everywhere in the world. In this sense at least, the situation regarding traffic signs is infinitely better than that of abstract art, where one cannot pick out a single work that so many people understand in the same way. However, traffic signs are not displayed in museums of art even though some of them are no different from well-known "abstract" works. They are not regarded as valuable cultural property, and nobody devotes more attention to them than is strictly necessary. The number of traffic signs is indeed finite, but it is strictly illegal to create variations or combinations of them in order to create more complex statements as is done in figurative painting. Any such attempt would bring about the complete and instant destruction of their raison d'etre and catastrophic results on the roads. On the other hand, their number is too small for them to be capable of denoting anything beyond the matters most essential for the proper control of traffic on the roads. The need they were created to meet dictates that these signs be simple, few, standardized and as free as possible of stratification, and these are precisely the opposite of the attributes required in art. Moreover, although traffic signs have been in use for dozens of years, and they number only about two hundred, their meaning is not self-evident; every driver has to learn them by rote, at least until he obtains his driving license. After that, the majority of drivers quickly forget the meaning of most of the signs, even though they see them on the roads nearly every day of their lives. Although we learn the traffic signs, both because it is a necessary condition for receiving a driving license, and because our life is likely to depend upon our understanding them, and also because we encounter them on the roads almost every day, nevertheless only a very small part of these signs really becomes well entrenched. If so, how can anyone expect us ever to succeed in learning to understand works of abstract art when our motivation for learning to understand these works, if that is at all possible, is marginal? We have to add to this difficulty the fact that we are exposed to these works with the lowest possible frequency, compared to the frequency with which we are exposed to traffic signs. As we shall see, the situation in this field is in many respects infinitely more complicated than in that of traffic signs.

(a) In the case of traffic signs we have a small and definitely finite class of public signs the significance of which is well defined, and since 1951 there has been an international agreement sponsored by the United Nations regarding the way they are to be used. By contrast, in abstract art we have no real signs at all, because there is no way of knowing the connection between a "sign" and the signed even if the artist intended to create such a connection. Likewise, there is not and cannot be any agreement regarding the significance of these "signs" when every artist creates for himself his own private class of "signs". As a result of this dynamic, the total number of these pseudo-signs is astronomical by comparison with the number of traffic signs, and they undergo continuous change in contrast with traffic signs, which are more or less permanent. Of course the context in which we encounter traffic signs is entirely different from the artistic context, and because of this, among other things, their cost is only a few dollars and not thousands or millions. The difference of context of these two phenomena only explains why art dealers do not hunt traffic signs as well; but there are further, much more significant differences.

(b) Traffic signs are not figurative paintings and not "abstract paintings", but graphic conventions that serve as an efficient substitute for written directives. In the crowding and speed typical of modern traffic, it is much easier to understand a single sign showing an arrow bent to the right, than to read a sign on which are written the two words "turn right", which involves the deciphering of many signs and their specific integration. By contrast, a figurative painting is not a graphic convention serving as a substitute for written words, but the only channel of visual communication of our visual images, and also the means of their documentation. True, it is also possible to make a report of these images in words, but this will be a verbal description of visual phenomenon, and not a visual description of visual phenomenon. That is to say, a picture of a goat is not a substitute for the word "goat", but a pictorial symbol for the image we have for the animal called "goat" in verbal language. It is clear then, that traffic signs are not figurative paintings; but they are also not abstract paintings. In fact it is easy to show that most of the attributes of traffic signs are the opposite of those of "abstract paintings": in traffic signs the most important aspect is simplicity and ease of communication. In abstract art there is no true communication at all, and everyone can understand the picture as he wishes. The expressive and subjective aspect has no relevance whatsoever to traffic signs, whereas in the majority of "abstract paintings" this is the most important, or even only, aspect. Traffic signs are genuine signs; the meaning of some of them is easy to learn. The "vocabulary" is limited and more or less permanent, and agreed upon by all who use it. By contrast, in abstract art there is an infinite class of pseudo-signs whose meaning it is impossible to learn, and which tend to proliferate like viruses. In the domain of traffic signs there is no room at all for creativity, metaphorization of signs, or for non-conformism. In abstract art on the other hand, creativity, idiosyncrasy and non-conformism are the leading watchword. The only thing common to traffic signs and abstract art is that both are based upon arbitrary compositions of colors and shapes. But in the field of traffic signs they have long since become graphic conventions that can be understood, at least in principle, whereas in abstract art they have not become comprehensible conventions and never will. It is clear from all of the foregoing that traffic signs, which are perhaps the only example of compositions of colors and shapes that meet Goodman's definitions for pictorial representation, are not works of art at all. As we have seen, these signs are not a special case of abstract art, and are even less a special case of figurative art. In the light of the analysis so far presented, it appears that the principle of the entrenchment of arbitrary signs is valid and quite sufficient as the basis for a symbol system in verbal language, but not in visual language.

Back to square one?

Even after all of the objections brought here against the view that the symbols of realism are arbitrary, a particularly stubborn supporter of that opinion may produce his last card, arguing: "Suppose that every figurative painting does indeed preserve, directly or indirectly, a certain symmetry in relation to the object it represents. But since every object can be viewed from very many angles, there are thus endless different sections or projections of every object, and there are correspondingly endless symmetries or isomorphisms by which the object can be depicted. Likewise, the projection by which the object is represented differs from culture to culture and also within the same culture in different places and at different times! Since every symmetry chosen is only one out of an infinity of possibilities, it follows that the symmetries we are accustomed to

choose for the purpose of representing the objects are again a matter of habits, conventions and arbitrariness!" The stubborn contender will have to admit that each of the possible symmetries has, directly or indirectly, an immanent connection with the object; however, the choice among them for the purposes of representation is a matter of arbitrariness, convention and entrenchment. No very profound analysis is required in order to show that the presenter of these arguments is confusing subjectivism and relativism, and his arguments can therefore be refuted.

The question is, whether we have come full circle in this discussion? I hope not. It seems that at this stage the situation is more like that in which the jaws of two tenacious dogs are locked onto the two ends of the same bone of contention; the one objecting to Conventionalism has a distinct advantage over the other, but not enough to gain complete possession of the bone. I believe that this essay refutes the conventionalist aspect of Goodman's theory of representation, but it does not provide an alternative explanation of the nature of figurative representation. This has been done in another essay, entitled "Symmetry: the Connectivity Principle of Art". (Avital, 1996). Only there is the battle between our two dogs finally decided. At any rate, it is clear that the arguments against the arbitrariness of figurative symbols put forward here, are enough to prevent us from attributing legitimacy to abstract art on the basis of the view that the symbols of figurative painting too are supposedly conventions.

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Notes

1. I agree with some of Gibson's criticism of Goodman's theory, but it is impossible to discuss his criticism without commenting upon its shortcomings, which cannot be discussed here. I shall only mention that his proposed alternative has shortcomings to some extent similar to those of the epistemology of Democritus in the fourth century BC, and of John Locke in the seventeenth century; and I suspect that he also entirely ignores the revolutionary implications Kantian philosophy and its derivatives have brought to this realm in the course of the last two hundred years.

2. For a comprehensive discussion of the significance of the connection between an object and its representation in figurative art, see: Avital, T. (1996).

3. I am aware that this point is liable to arouse the disagreement of some readers, but a justification cannot be given here without broadening the discussion somewhat beyond the bounds of this essay.

4. In the context of the beginning of prehistoric art, the two terms "invention" and "discovery" are not precise, inasmuch as the term "invention" has the connotation of the construction of some new thing that did not previously exist, while the term "discovery" has the connotation of finding something that existed but which no-one had previously found. In the emergence of image making, both processes were involved: on the one hand there was the discovery of the representational function of lines, which apparently

stems from inborn properties of the perceptual mechanism; and on the other hand, there was an invention, namely the actual application of the discovery regarding these properties of lines, to the invention of a pictorial symbol system.

5. One may have reservations regarding the use of a child for the purpose of such an experiment, even if in this case the child was probably not harmed and was the researchers' own; but it is hard to argue with the results of the experiment.

6. This is an indispensable conceptual tool for understanding the profound differences between the systemic-holistic and the mechanistic-fragmentalistic worldviews and their profound implications for all kinds of symbolic activity including art and aesthetics.

7. In this and another essay (1986), Zemach also criticizes some other specific aspects of Goodman's approach, which need not be discussed here.

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