On the meaning of the visual: 12 theses regarding the visual and its interpretation

Twelve theses regarding the visual and its interpretation

1. Sequence and configuration are the two fundamental semiotic modes.
2. Semiotic modes are complementary.
3. Visual sign processes can imply sequential semioses without being reducible to them.
4. Parallel semiotic processing of images corresponds to their configurational nature.
5. The logic of vagueness is a necessary paradigm for the semiotics of the visual.
6. The image has a higher degree of semioticity than the word.
7. Visual codes are less restricted than those of natural language.
8. The visual is more sensitive to the semiotic surroundings than other sign systems (in particular natural language).
9. To interpret a sign sequence or configuration means to define the relation between its functions.
10. Interpretations assign meaning to the interpreted sign sequence or configuration.
11. Meaning is a sign itself hence, it is at the same time relation and function.
12. If the possible functions of the sign are representation, communication, and signification, art is a form of signification.

These prefatory theses are in fact an introduction. They take form after the research is over and synthesize the results. Of course, nothing advocates 12 and only 12 theses and not a different number with fewer implications or interpretations (if such a number exists). This study is not a procedure for proving the above theses – which despite their appearance are quite interrelated – but rather the discourse through which they were made possible (which is not the same as being necessary outside the system developed, i.e., universal). The premises of the study explain the results, and if there is a point to be made, it regards the premises. The main contribution in each system is represented by its premises; everything else is a result of consistent development, regardless of whether the discourse is formalized, or even a combination of premise and development. Before constituting a paradigm, a system is a set of assumptions, in general different from any other known. Modern semiotics, while acknowledging some fundamental paradigms, is still concerned with the problem of premise.

Although the opening theses contradict some established conceptions, or at least differ from accepted opinions, the polemic is mainly indirect. It does not regard authors, but ideas. And in order to do them justice, these ideas must be presented. (The examples given are limited by the nature of this publication and by the theme of this issue.) No example is invoked as a definitive argument, but rather to make evident the epistemological, relative nature of the perspective presented. I know of no absolute, universal semiotic instrument. Nor do I consider semiotics universal. The main, but implicit, point of this article is the need to better adapt our means of

investigation to the object investigated while not losing sight of its relations to other semiotic or non-semiotic aspects.

Some of the concepts most widely used by semioticians of linguistic or literary extraction refer to the text: pretext, context, intertext, etc. Semioticians of a different formation also use these concepts quite extensively. Since we are now aware of the influence exercised by our methods and concepts on the results of an explanatory or gnoseological approach, it should come as no surprise that a logocratically founded semiotics will end up by reaffirming that language is the paradigm of our semiotic conception. The affirmation has been frequently questioned and also proven to be dogmatic; nevertheless, the concepts deriving from a language-dominated perspective continue being used even to explain obviously nonlinguistic and nonliterary conglomerations of signs. Both Derrida's semiotic philosophy and Lotman's model expanding the cybernetic approach tried to break through language-dominated theories but succumbed to them in the end. Some of the terms changed in the attempt; Derrida launched a new methodology (deconstruction); Lotman's semiotic model focused on the generalized concept of the text and was applied loosely, and not necessarily successfully (Kloepfer 1975; Zima 1977; Gunther 1974), to some borderline cases (card-playing, film, theater) where an authentic semiotic approach, i.e., not reductionist (to language) is highly desirable. Lotman, defining culture as a collection of texts, had to declare art a secondary modeling system, i.e., a system possessing the means of self-interpretation, in order to make the semiotic approach possible. But interpretation (from both inside and outside the system) using such a paradigm is no more than a contextualizing or trans-textualizing activity, perhaps extendable to intertextuality, which is perfectly legitimate but not necessarily productive. To relate a text to others is intellectually challenging and sometimes a successful interpretive method. But there is no way to limit these relations from expanding freely (as does fiction). Moreover, although disguised, animism ('self-interpretation' is the euphemism used) of a cybernetic sort is tacitly introduced.

But something else in this approach should interest us even more: not everything is text (even in the metaphoric way Lotman uses it), since text involves sequentiality/linearity as opposed to image, in which the configuration is essential. Every *topos* is a configuration. The surroundings or environment of an image can be a context. In the case when the image is forced in a sequence (such as illustrations in a storybook, examples in an art history lecture, slides integrated in art theory argumentation, etc.), it is placed in what is meant in language as 'context' (and every derivative of text – pretext, intertext, subtext, etc. – should be understood the same way). If we perceive the surroundings together with the image, they become part of the image. Around the fiction of a novel, a poem, or a short story, there is a context: the text(s), the word(s) associated by design or accident with that novel, poem, short story. etc. Around the image, other images, blending or not in one visual continuum, constitute its co-image and influence its interpretation otherwise, it will be perceived and interpreted in respect to other images, to the *topos* acting as co-image, pre-image, inter-imagery, sub-image, etc. This is neither semantic pickiness nor hypocrisy, but rather an attempt to distinguish what is not reducible to the text model (even if this is metaphorically stretched to its expressive extremes).

Sequence and configuration are two fundamental semiotic modes, irreducible to each other. Those developments within the avant-garde through which the attempt has been made to put an image in context (Plate I) – Magritte remains the semioticians' example par *excellence* – or to

place a text in a visual configuraton (co-image), to transform it into such a configuration – concrete poetry (Plate 2a and figure 2b) is the preferred example – prove the point without difficulty.

Plate 1. Timm Ulrichs *Ceci n'est pas une pipe de Magritte*, 1968. Sequence and configuration, the two fundamental semiotic modes irreducible to each other, can be put together. Ulrichs puts Magritte's painting Ceci n'est pas une pipe in a new context where the name "Magritte" plays a precise indexical role.

Plate 2(a). Words turned into a visual configuration. Det Thomson's *Truth and Beauty*, concrete poetry.
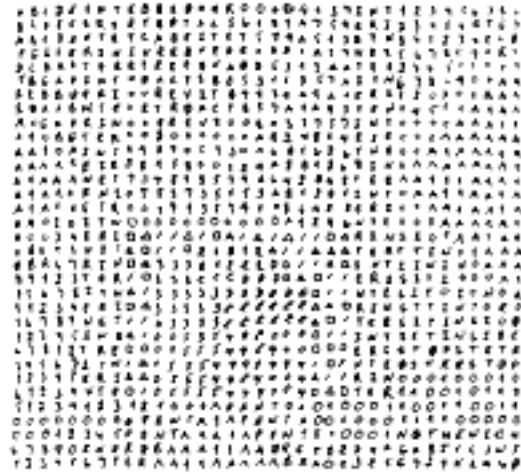
Figure 2 (b). Carl Fernbach-Flarsheim, *The Boolean Image*; Boolean image sketch from the Broadview Farm Notes (cf. Bowles and Russell, 1971).

Before semioticians and scholars from other fields remarked the distinctions, writers, painters, and other artists tried to break the barriers of the sequential and configurational modes and arrive at mixed modes (Figure 3, a,b,c).
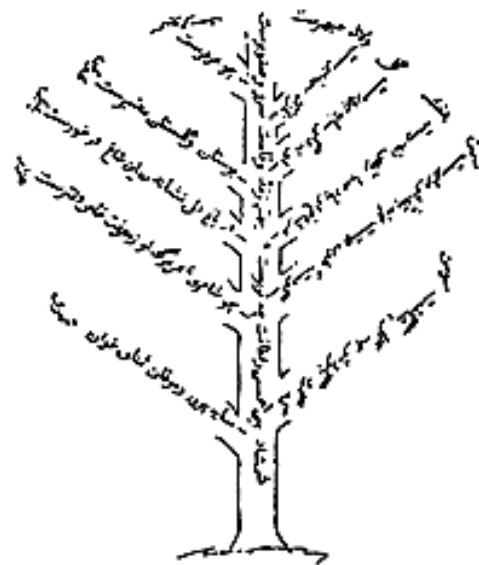

Figure 3(a).

Figure 3(b).

Fisches Nachtgesang

Night Song of the Fish

CHRISTIAN MORGENSTERN

CHRISTIAN MORGENSTERN   Translated from the German by Max Knight
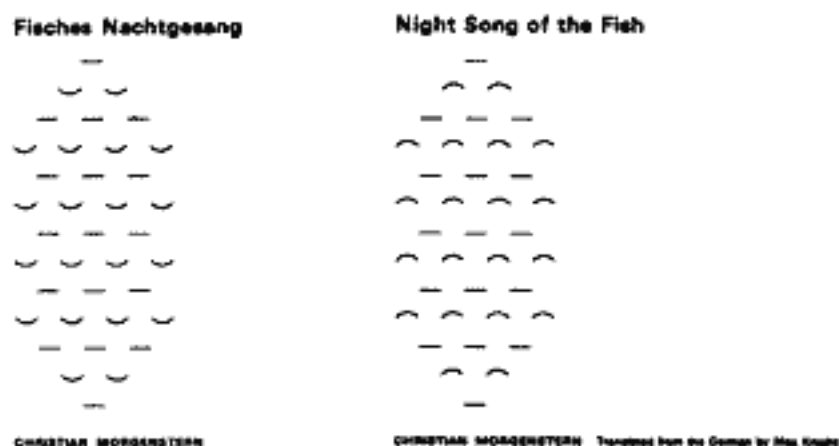
Figure 3(c).

Figure 3. Mixed modes: sequences turn into expressive configurations. (a) Simias, *Symbol of the Orphic World from which Eros Was Born* (cf. Simias, 1953). (b) Friedrich Ruchert, *Grammatik, Poetik, und Rhetorik der Perser* (1874). (c) Christian Morgenstern: the title guarding the visual configuration palys the role of a code. The ironic note generated by the 'translation' should be understood as an implicit remark concerning the relation between configuration and context.

Lotman (1969) understood the problem and ascertained that there is a similarity between the structure of space and that of language. Coming from a cybernetically oriented conception, his implies the role of models in knowledge as an explanatory device. What has not been remarked is that each model acts as a *semiotic device*, rebuilds the object of analysis in the "secondary system" of its signs, and is thus necessarily circular. The iconic principle, introduced to explain the visual character of our verbal perceptions, is a poor extension of the rather sophisticated Peircean triadic-trichotomic sign typology. The origin is not Peirce but Morris (the source of so many confusing simplifications circulated among semioticians in and outside the United States). What we encounter here is the same *adagio*: vision is mediated, concept leads; or, as it was stated in the extreme, modify language and the world will flow into it (Whorf 1956).

Whether we like it or not, the old nominalism-realism controversy comes through, this time in semiotic or semiological terms. The distinction between sequence and configuration (the latter referred to in some psychological writings as 'holistic') on which is based the critique of the use of such concepts as context, intertext, pretext, etc. goes back to both logical and psychological observations. Sequentiality in formal logic and configuration in the logic of vagueness (the name Peirce thought would better characterize semiotics), as well as the psychological model of visual information processing (the left hemisphere of the brain specialized for linear, sequential processes and the right hemisphere for configurations) should make us aware of the interaction between these two fundamental modes of organizing and perceiving information and also help us prevent a reductionist approach. Configurations cannot be reduced to sequences without altering their nature. Sequences, in turn, present a structure different from configurations. And both are interpreted through a very complex process in which the present and the absent interrelate. This is the place and moment to evoke (only evoke, not answer) a question that has obsessed anthropologists as well as semioticians: Did mytho-magical rituals (dance, first of all) arise

before language or after it? (Derrida – if interested in the sequence – would ask if they anticipate writing as origin of language or if they follow writing.) Of course, if an answer were possible, some of our statements would all of a sudden become either true or false. Since it is not the speculation involved in such a question that should interest the semiotician, let us observe that ritual is a semiotic activity in which the virtual object (fighting, fishing, hunting, procreating) is approached in its indeterminacy, its vagueness (to use the Peircean concept). As far as we can judge from the examples given by experts, the hypothetical components in ritual are quite different in content depending upon the mode of expression (verbal or nonverbal). Words are used in a conditional sense, while images (dance, mask, drawing, etc.) embody the goal.

Language is abstract and ambiguous: images, while concrete, display a different quality because their interpretation can be emphatic, i.e., participatory. Ambiguity, some will remark, is also a language concept; it applies not to images but to their visual interpretation, to their para-visual reality. Since we do not know whether ritual is a preverbal form of semiotic activity or not, we should rather take examples from other semiotic activities in which the configurationality of the visual and the sequentiality of language cannot be separated so easily. Computer image processing is an example we can utilize. True, whenever we say 'computer', we refer to the logic of *zero* and *one*, of *yes* or *no*, of *true* or *false*, while configuration relates to multivalued logic, to *vagueness*, to the continuum between zero and one. And whenever we deal with objects generated by means of computers, we deal with a language replica, one of its structural equivalents, i.e., with formal language (generic name for programming languages of a higher or lower level). And still, an artificial image (Plate 4) can be a semiotic reality to which we can hardly refer by using whatever words we know, in whatever language we speak or write or read.
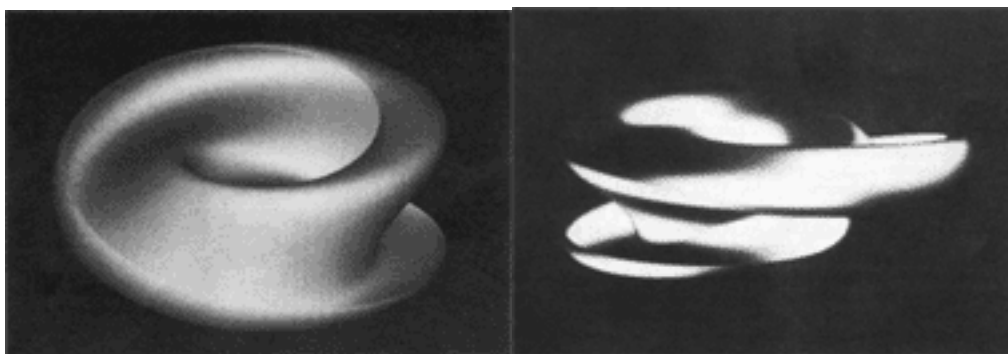

Plate 4 (a) and (b). Artificial images, the result of a semiotic activity: computer processing of instructions and data in which the language referent does not necessarily exist (preexist). After such images are generated, description in natural language usually follows the metaphorical path. A Möbius band is grown into a Klein bottle. (Courtesy of Prof. Thomas Benchoff, Brown University. A more extensive presentation can be found in DIAL: A Diagrammatic Animation Language, by S. Feiner, D. Salesin, and T. Benchoff, in *IEEE Computer Graphics and Applications*, Sept. 1982.)

Such an image is "before" language; and language has to capture its meaning either by metaphoric descriptions or by those new words that at the beginning describe one object, then a family, then differences with respect to similar objects or families of objects. The fact that

nonverbal sign systems (like mathematical or logical systems) can just as well be a paradigm for other semiotic processes (like visual or musical ones, generated with or without computers) is significant. Instead of locking ourselves in a centralized model, with language in the center as the most important thing in this semiotic universe, we are able to free ourselves and notice that although some semiotic means become, under certain circumstances, privileged and more important, in general several 'centers' are possible. Within the semiotic field, each type of sign can either determine another or be determined by another type.

Language is indeed a net – I paraphrase the poststructuralists of our days – having the curious property of getting tighter or looser, of even growing to accommodate the ever-expanding ocean of our spiritual/intellectual journeys. The parallel between ritual and synthetic, computer-generated images is meant merely as an analogy. The two are, and we are aware of this, different and refer to quite unrelated moments in the history of mankind. Their common denominator is the fact that they are trans-semiotic systems of signs while language is both a trans-semiotic and a meta-semiotic system. Let us explain this: mathematical and logical formalism is perhaps the extreme example. It can work on the object level (mathematical object) or at the *meta-level,* in which case a self-reflexive, self-describing function is implied. Synthetic images also accomplish this self-reflexive function. 'Impossible' images (the representation of a more than three-dimensional space), paradoxical perspectives (such as Escher-type drawings, Plate 5) become possible. Their presentations (here I use Derrida's [1974] convention since we speak of something presented not again but for the first time) are examples of trans-semioses that afterwards become objects of language descriptions, of interpretations of various sorts.

Plate 5. M.C. Escher, *Relativity* (Escher, 1971)
At this moment, the concept of meaning itself as applied to the visual becomes questionable, too, since its logico-linguistic origin directly affects its appropriateness to nonlinguistic/nonlogical (in the sense of nondiscrete, non-two-valued) aggregates. To pursue the discussion on the meaning of the image under these circumstances would lead to more frustrating results, in line with those produced by previous speculative attempts or pseudo-scientific paradigms. Instead, we will have to use the semiotic approach as a critical means and advance toward a more appropriate perspective of the configurational mode.

The meaning of words can be found – up to a certain point in their existence and usage – in dictionaries. Dictionaries of visual images (symbols, artworks, architecture, etc.) are usually cultural collections in which the image is put in a particular perspective or framework (history, anthropology, aesthetics, psychology, etc.). Actually, to call such collections of printed images 'dictionaries' is at least as misleading as the use of language-related concepts. In such books, reproductions are put into a context, but this helps little, if at all, in defining their meaning. As visual samples extracted from the broader framework in which they are supposed to be used or perceived as art objects, such images are turned into signs of a particular interest: historic, aesthetic, economic (in an auction catalog, for instance), political, psychoanalytical, or who knows what else.

But do we really want to see images as signs? Do we really reduce semiotics to a game of giving better labels to these signs? We should finally understand that semiotics does not study signs as such (as is often erroneously affirmed) but their functioning, the way they are used in mediating activities. It has been understood as merely the study of signs when its object is reduced to the signs of natural language, as a science of lexicons (Eco, 1971), or as a "theoretical textology" (Lotman, 1975 and Pjatigorski, 1978), that is, a modality of considering the 'sign in text'. The latter possibility has led to a distinction between grammatically oriented cultures and cultures oriented toward expression, a distinction that tries to transcend cultural models based on national or geographical criteria. These models, illustrated in the concepts and practices of Western culture or Euro-centralism, have not taken into consideration the existence of culture in paralinguistic forms and the constitutive qualities of the latter.

Semiotics, while asking general questions about signs, tried to transcend cultural and geographical borders. It went beyond the obvious differences between natural languages and posed the question of whether differences in language can explain differences in ways of thinking and behaving, or if things are the other way around. Even without clarifying these issues, semiotics has already accomplished something of crucial importance in making us aware of those constitutive qualities of our signs, be they signs of our language, science, art, ideology, etc. The explanatory models centered around the referential quality of signs were not negated, but complemented by those nonreferential, and firstly constitutive, aspects of meaning made evident by post-Peircean semiotics.

We have brought this up because as soon as we go from the signs of natural languages to other sign systems (visual, musical, kinetic, etc.), the first thing we observe is precisely the vanishing of the action of predominantly referential systems on which linguistic meaning is based and the establishment of other meaning mechanisms. The meaning of an image is only partially translatable, usually in a rather equivocal way. The quality or fidelity of translation is not so much a matter of the adequacy of an instrument for an end as it is of compatibility. Can signs of a language L_i duplicate or model the functioning of the signs of language L_j so that the interpretation, called meaning M_i in L_i and meaning M_j in L_j, be identical? Linguists, including those devoted to mathematical linguistics, are inclined to respond affirmatively, although sometimes hesitantly. They think that natural language, on whose model the structure of formal languages (an analytical instrument that has been applied often with great success) was built, offers a universal structure. The relationship between *competence* (theoretically infinite) and

performance (essentially finite) is supposed to express this structure in a plausible manner.

Meaning itself is a language accomplishment, or a family of accomplishments, within a possible infinity. Theories that consider one language irreducible to another argue against logocracy, and so does the practice of establishing/instilling meaning through the different autonomous forms of the arts or in syncretic forms like the ones that have appeared and been developed in the last few years. We shall not list them but only state that modern art has sharpened the conflict between descriptive and non-descriptive semiotic modes, between verbal explanation (representation through words, specialized or not) and nonverbal forms of interpretation or nonverbal representations (in music, dance, video art, etc.). The word itself has been integrated into new images, taken apart, segmented, cleansed of its language meaning, and assimilated into a new semiotic reality. Collage, concrete poetry, happening, are techniques used in this respect. Frege (1962) expressed in his writings (the translation of which gave rise to so much confusion) that the meaning of the whole is the synthesis of the meanings of the component elements. This logical model was illustrated by artists as well as by scientists, philosophers, and others. Today it is known that the meaning of the whole (linguistic whole or other type) marks the meaning of each sign in particular (Quine's [1960] semantic holism), a conviction that artists share and often express in their works, not in order to align themselves with a theoretical model but because they discovered this 'truth' within their works. Moreover, we are convinced that meaning comes about through both of the processes mentioned (and who knows through how many others), i.e., from component signs to the whole and from the whole to semiotic components, a procedure that semiotics has dealt with in various ways.

The contradictory unity between the communicative and significative functions of the sign (simple or compound) is an aspect of the two processes mentioned. The image, as well as our words, forms part of a semiotic field; that is, the image is produced and observed in a given spatio-temporal context and simultaneously generates its own semiotic field. The latter is understood as *unity* between the field of signification and the field of communication. Communication can be defined in terms of information theory, considering the contribution of information of each sign in particular as well as of the whole, and was explored by informational aesthetics (obtaining results that became relatively well known and described through the standards (*aesthetic measure, entropy, redundancy*, and others characteristic of the syntactic level of the aesthetic reality referred to). The field of signification has been described, without any analytical method. semiotic or otherwise, having been produced and without any specific characteristic standards having been elaborated. When it was identified with the semantic field, some analytical methods were proposed (Montague, Greimas, Katz and Fodor, Eco, etc.), even representative units (*semema,* for example); but their validity corresponds to linguistic reality.

Extending the method of generative grammars into the promising framework of visual (pictorial) grammars succeeded in bringing about some progress, but the limit in principle that this direction displays is represented, as I have shown (Nadin, 1979), by the belief that the structure of languages is universal in nature. When confronted with the reality of images, one of the most complex precisely because of the way meaning is formed and brought about, mathematicians and linguists appealed to a means of refining visual grammars, i.e., to fuzzy sets. At the beginning of this paper, I mentioned the need to transcend formal logic (the clear-cut, true-false distinction). Also, Peirce's intention to conceive semiotics as the logic of vagueness was put in the

perspective of the different qualities involved in the processing of images. It becomes necessary to remark that sequential modes, like the ones defining Western civilization, relate to formal logic. At the same time, we know that configurational modes relate to a logic of the continuum, of the vague. Finally, we understand that in reality both modes interfere, no matter if one or the other dominates. However, our logic (Frege was mentioned as a significant moment in the evolution of this type of logic) is used to explain phenomena that are by their nature not clear-cut. Fuzzy sets, applied extensively in semiotic research, (Nadin, 1981), deserve presentation here from the perspective of the meaning of the visual.

Fuzzy sets allow for dealing with "chromatic images" (as opposed to "bicolor images" that correspond to the values of "black and white" or to any other distinct pair); that is, they allow for a certain quantifying of intermediary values (as opposed to digitizing, to adapt a term from computer terminology). Of course, certain graphic images, such as contrasting compositions (sometimes cut complementarily, as in the case of Franz Marc or of Vasarely) or decorative compositions (geometric stained-glass windows, as studied by Maser [1970]) can be described mathematically and a semiotic level of reference realized, i.e., the indexical level of the image and the associated meaning (Figure 6). Any mathematical description offers such a level; but meaning cannot be established only at the indexical level. In the case of the sign system of languages, due to their self-reflexive nature (a language can "speak" about itself), the field of signification seems practically identical with the semantic field (the field of communication). In the case of some semiotic systems of another type, such as the signs of the image, things do not stand the same. But let us remain with the transition from "bicolor" to "chromatic" and with the method of digitizing.
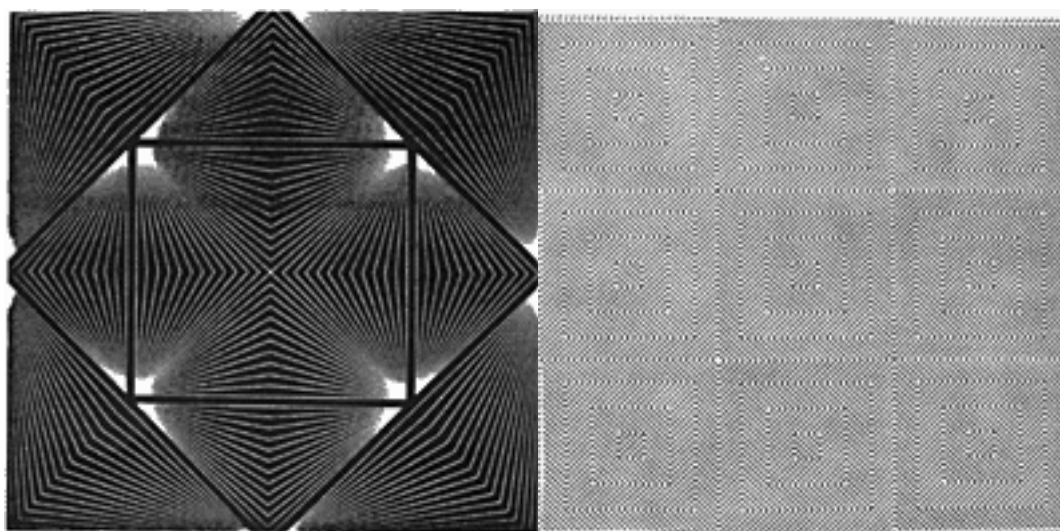

Figure 6. Richard Anuszkiewicz, *Division of Intensity* (1964, acrylic board) and Reginald Neal, *Square of Three* (1964, litho and paint on canvas). "A number of illusions can be produced by placing geometric figures in an environment composed of strong directional or spatial elements. Converging lines warp the parallel sides of contained squares" (Carraher and Thruston, 1966). Semiotic level of reference: geometric compositions with decorative qualities (optical effects in the above-given examples) that can easily be mathematically described.

An image is a surface/volume whose brightness or color can vary from one point to another. It is submitted to visual perception but involves other senses also, as well as reason. The variation of brightness or color can be represented by a description in verbal language or in mathematical language. In the first case, it involves transition from the system Σ_i of the image (signs of the alphabet can be part of it) to the system Σ_l of language. Hence, it concerns a replication (as Peirce would have called it). In the second case, the system Σ_i is represented in a symbolic system Σ_m in which the signs have, in relation to image, an indexical role: "An Index is a sign which refers to the Object that it denotes by virtue of being really affected by that Object" (2.248).

Several preliminary semiotic specifications impose themselves. The image, whatever it might be, contains indexical signs along with others (iconic, symbolic). For example (Plate 7), a portrait offers data about the person represented (sex, age, clothing, hairstyle, etc.), signs that will be identified in the field of the dynamic interpretant (see Peirce for the trichotomy of the interpretant). Among these indexical signs and the signs of mathematical description (mathematical symbolism), connections mayor may not exist. These in turn may or may not become evident. Likewise, connections may exist between the implicit symbolic signs of the image (a "portrait of power" embodied in the person represented, a "portrait of grace" or "morbidity," etc.) and the symbolic nature of mathematical signs. No matter what type of connection. the meaning of the image and the meaning (both referential and constitutive) of the mathematical description – and of any formalism that semiotics can utilize – must hold a *relation* that can be specified, otherwise the description itself is not justifiable.

Plate 7 (a). *King Alfonso Presenting a Ring to Queen Violante* (c. 1260-70), Burgos, Diocesan Museum (cf. Salvini, 1969).

Plate 7 (b). *King and Queen* by Henry Moore; bronze edition of 4 + 1; in situ at Shaw Head (cf. 1968)

Plate 7 (c). *Le roi jouant avec la reine*, Max Ernst, 1944.

From the indexical components of a representation to the symbolic relation: the implicit symbolic components of the image are related to the symbolism of the language while transcending the "literal" meaning.

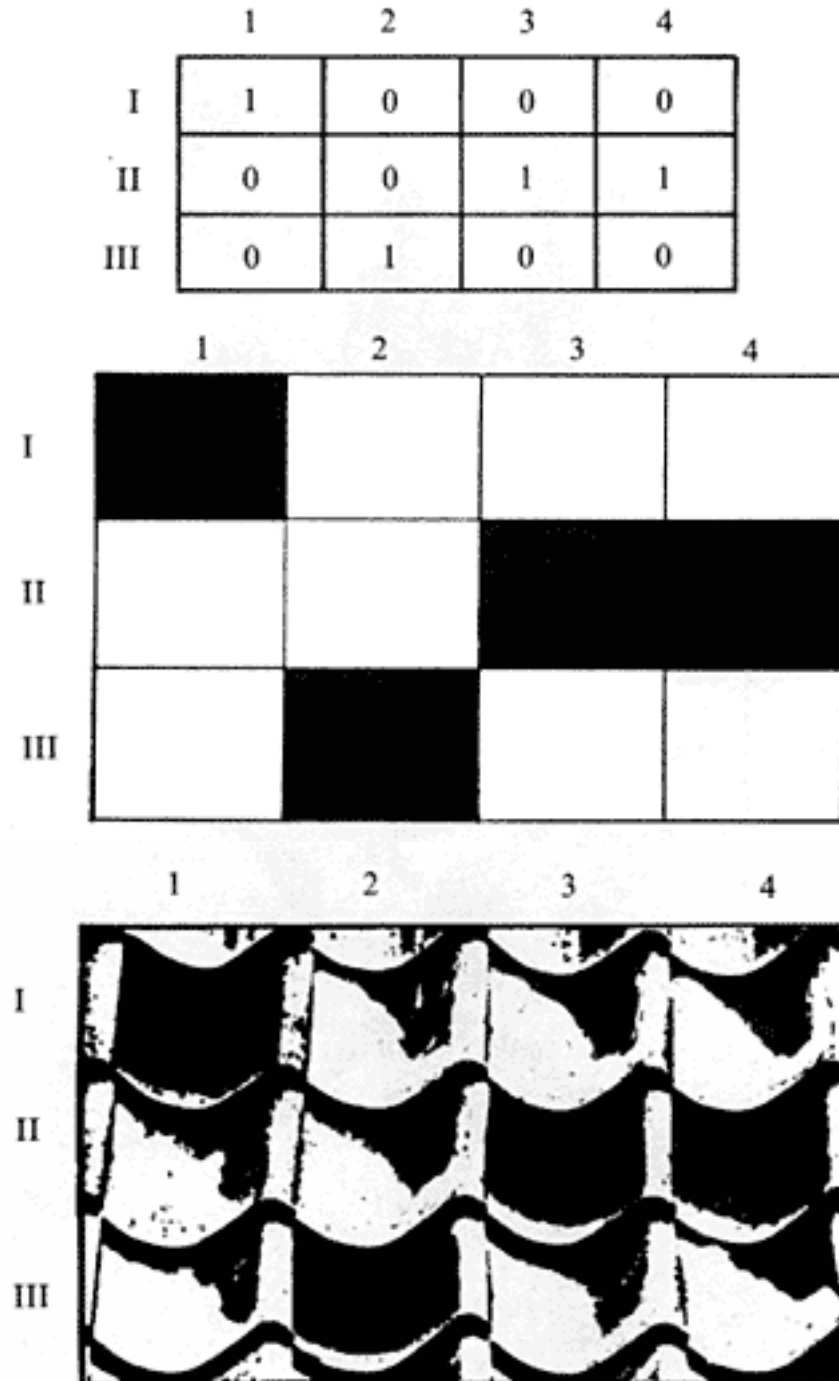|	1	2	3	4
I	1	0	0	0
II	0	0	1	1
III	0	1	0	0

Figure 8 (a, b, c). Examples of a bicolor matrix applying the grid to an image to establish the values of black and white, ignoring, at the beginning, the transition values.

The description does not duplicate the image but approximates it, models it. Certain elements are consciously ignored, some because they cannot be kept in view, others because they were not grasped. The mathematically determined semiotic meaning is representative only to the extent that it is expressed together with the initial conditions of its formalization, that is, with the

simplifications accepted. For instance, the so-called bicolor matrix, which applies a grid to an image, conventionally establishes the values of white and black through the digits 0 (corresponding to white) and 1 (corresponding to black). It can lend a sense of order, dynamics, or tension, but only in specifying that the transition values were ignored (Figure 8).

For the example in Figure 8, the message is written as:

$$M - \{1000, 0011, 0100\}$$

and can be read quite clearly knowing what type of simplification has been accepted. The representation can be completed by giving entropy, redundancy, and aesthetic measure to the image's values. It is a matter of digitizing, that is, of going from the continuum to a discrete set of numbers characteristic of the image's syntactic level. Through repeated observations, to which Gestalt psychology has contributed much (but not without some confusion), several interesting laws have been found: the law of proximity ("closely clustered entities tend to group"); *the law of good continuation* ("smooth continuation"); *the law of closure* ("closed figures tend to be seen as units"), among others, which the image currently evidences. In addition, the properties of images can be inventoried (Rozenfeld and Avinash 1976):

Brightness: black, gray, white; light, dark, uniform, shaded
Color: red, orange, etc.
Texture: smooth, grainy, mottled, striped
Size: length, area, volume, height, width, depth; large, small, tall, short, wide, narrow
Orientation: horizontal, vertical, oblique
Shape: solid, hollow, compact, ovoidal, elongated.
Not all the properties listed can be easily measured (volume and textural properties, for instance). Likewise, the question of spatial relations was approached:
Containment: part of, inside, containing, surrounding
Adjacency: touching, next to, on top of
Direction: above, behind, to the left of
Distance: near, far.
The properties become more complicated in the case of ternary relationships (between, beyond, etc.).

The open perspective of the model of fuzzy sets has the advantage of enabling us to consider the transition values (between white and black as well as between any other colors). The fuzzy set, which is a possible paradigm for representing vague logical relations, is characterized by *progressive types of membership relations*, from non-membership in a set to very weak, weak, moderate, strong, very strong membership. Thus, a qualitative aspect is introduced that explains the superior adequacy of these sets for analyzing and modelling aesthetic phenomena and objects. Such a set is formally denoted through $\chi : A \rightarrow [0, 1]$ which means that the elements of the set $A = \{a_1, a_2, \dots a_n\}$ "fuzzily" belong to the set (with membership values ranging between 0 and 1). The classic example is the one regarding the term "young" (Who is young?), hence a relative type. We can consider the fuzzy distribution of colors or of forms, the quality of the image (the term *flou* applied to these sets in French is an *immediate index* of image). The fuzzy

grid applied to the image also retains the intermediate values, so the message in the above-mentioned case becomes:

$$M = \{1 \ .32 \ .31 \ .29, \ .42 \ .39 \ 1 \ 1, \ .20 \ 1 \ .33 \ .29\}$$

We can consider as many intermediate values as we care to and we could amplify the grid in order to make it more selective (instead of the 15 numbers given above, we could list as many as we deem necessary with respect to the subject analyzed). It can be immediately seen that a better way of quantifying is possible, one more appropriate to the object we want to describe. The delicate and abrupt transition of colors and neighborhoods can be better apprehended (Plate 9a and Figure 9b). In addition, knowing the parameters of the eye's optical system, we can see what specific part of these syntactic particulars effectively participates in the determination of the meaning of the image and what are the superfluous (random) elements (knowing that in practice, too great a difference cannot exist between the eye of the one who 'creates' an image and the eye of the one perceiving it). It is necessary to repeat here that purely visual, purely auditory, or purely olfactory, etc. perceptions do not exist. We "see" with all our senses and furthermore, we "see" in our language so that language is the expression of this inter-determination, which is itself fuzzy. Peirce formulated a similar idea: "I know no facts which prove that there is never the least vagueness in the immediate sensation" (3.93). In the relative inventory of the properties of images, the values we have listed must be redefined fuzzy. This will definitely help us in adapting the semiotic "tools" we use to the qualitative values of the image and to its relation to other nonvisual signs. However, this is only one step in our attempt to redefine the semiotic characteristics of the visual and the relation between visual and nonvisual processes of sign.

	1	2	3	4
I	1	.32	.31	.29
II	.42	.39	1	1
III	.20	1	.33	.29

Plate 9(a) and Figure 9(b). Figures of transitional values of a digitized image.

Our aim from here on is to reconsider. while integrating the results already obtained, the functional model (brilliantly, but nevertheless erroneously, applied by Hintikka 1975 and to suggest that the logic of relations lead us out of the impasse in which semioticians and others

have been moving for quite a while trying to define the meaning of the visual.
Although digitizing (a functional device) has been really useful, especially in developing the technique for transmitting images over distance, progress in better understanding the way the visual is interpreted has not been exceptional. Instead, routine problems, such as restoration (some of the most interesting problems of applied semiotics, yet not frequently approached by semioticians), have been partially solved. The degradation of signs does not take place only in the ideal semiotic field but also in the material field of existence of the *representamen* (the sign as such, Saussure's *signifiant*). On the level of objective evaluation criteria, we can consider, remaining within the zone of the mathematical method of digitizing, an image *f(x,y)* and its "copy," the degraded image *g(x,y)*.

Fidelity (a semiotic index) between the original and the copy can be expressed by determining either the similarity or the difference between the original and the degraded images (for instance, $\iint |f\text{-g}|dxdy$, that is, the absolute deviation). From the same perspective, one can proceed to a formalization of the problem of restoration, that is, of that semiotic problem concerning the modification of the functioning of the image's sign system subsequent to its modification. Although research (Rozenfeld and Avinash 1976) dealt mainly with electronically registered images, a result such as the one proposing the relationship between the ideal image *f(x,y)* – a function we cannot yet exactly determine at the current level of mathematics – and the degraded image *g(x,y)* can be generalized:

$$g(x,y) = \iint h((x,y,x',y')\, f(x',y')dx'dy' + v(x,y)$$

in which *h(x, y, x', y')* is the *function of degradation* and *v(x,y)* is the random noise that might be present in the degraded image (the smoke deposited on paintings, for instance, or the action of chemical agents that can be eliminated through cleaning). The linear nature of the function is disputable. One does not need to be a mathematician to grasp that it is really a matter of a much more complex relation, a parametric relation.

However, we are not discussing a function's adequacy for the phenomenon described, but semiotic significance, in particular *the degradation of signs*. It affects interpretation; but what occurs in the restoration of the image is the reestablishment not of meaning but of the signs in their initial condition, surmised or ascertained in one way or another. This is an essential observation, since the belief that meaning is contained in the image (and in general, in signs) is quite widespread. Together with it comes the assumption that images have a unique meaning and that interpretation only uncovers it step by step. At the end of this line, one can read that interpretation can be independent of the interpreter. Similarly, others believe that the intention of the artist/designer means nothing and that visual literacy makes interpretation possible and necessary. Restoration (discussed herein mainly from a practical angle) is an example of semiosis in which we continuously participate. To restore a text (a word, sentence, paragraph, etc.), we put it in context. What is missing can be reconstituted. To restore an image, we must consider the visual configuration, the co-image. What occurs is not the *uncovering* of signs but the *generation of equivalents*. If the initial image is not available for comparison, the proof of success is the *interpretability* of the restored image as an authentic image. It is no longer the original. The success of restoration assigns the value of an original to the image; the meaning, i.e., the interpretation, should ignore the semiosis that made it possible. If this does not happen

and we interpret how successful the restoration is, we actually accept that the restored image is a pretext/preimage. The semiotics of forgery deals precisely with this subject.

It is understood that the search for initial signs is based on the belief that it leads to the rediscovery of meaning itself, therefore, that the functioning of the image's sign system is univocally specified, the modification of the syntactic level almost mechanically determining the modification of the semantic. Actually, the reciprocal influence of these two levels is much more complex. Meaning does not automatically derive from a certain syntactic structure; that is, the semantic is not ulterior, is not a 'secretion' of the syntactic (and the pragmatic is not the 'secretion' of syntactic and semantic). The three are simultaneously constituted and influence each other. Morris expanded the distinction between syntax, semantic, and pragmatic without noticing that this works only within a dual system (as in formal logic, in which two values are possible). In Peircean semiotics, this distinction cannot be sustained without altering its consistency. Thus, appears the need to approach the image in its specificity as a continuum, in its complexity, in the unity of its components, a very complicated mission, realizable, we believe, only within the framework of a logic of vagueness. Because the relationship between the parts and the whole is among the most complicated, the determination of meaning cannot be deemed ended at the moment when the type of sign represented by the whole has been identified. In a previous study of Brancusi's sculpture, this subject was extensively dealt with (Nadin 1979).

We start out from an elementary observation: The image is more concrete than the word. Even an abstract image is an immediate reality of colors and shapes that we perceive as such. It is governed by precise physical laws, as has been shown (Battro 1977; Piaget 1964). Visual space does not have a constant negative curvature. It is not a Lobacevskian space; in other words, it is not a homogeneous space. Furthermore, the concrete space of existence, the environment, is Euclidean; human vision, hence perception, is not. Any change in the object's scale (reduction, amplification, etc.) produces a change in the perceived geometry. The fact that Euclidean geometry is independent of a scale (a particular case in representation) has been known for a long time. But when Suppes (1977) showed that 'a wide variety of experiments and ordinary experience as well testify to the highly contextual character of visual space,' it followed implicitly that although we exist in the reality of a Euclidean space, we keep negating it in our representations. Hence, whatever meaning/ interpretation is attached to these visual representations, it is actually sensitive to the *topos*, which is in fact our conception of the visual, the visual as such. The images of art, especially of modern art, somehow anticipated this scientific observation. Our awareness of this paradoxical situation increased after the theoretical model was made known and tested.

The concreteness of the image renders it incapable of attaining the level of self-expression (meta-level), that is, renders the transition from trans-semioticity to meta-semioticity impossible. A ritual dance, a totem, a mask, to refer to examples mentioned, cannot be 'translated' into words but only "paralleled" by words. The sign of language removes itself as far as possible from the object, even if the latter preserves reminiscences of its motivation (especially onomatopoeic, hence iconic). The signs of the image, which in the evolution of modern art follow the same tendency, are more constrained, more directly determined by the reality in which they are produced and in which they participate in establishing interpretability, i.e., definition of meaning. Red as a word is arbitrary in comparison to the color it designates, whether that color is "natural"

or "artificial" (human-made). We can say that even the designation is quite approximate, bearing in mind that the normal eye can distinguish an enormous variety of nuances that are not necessarily paralleled by words designating them. The red in an image is a reality that can be physically tested even for those who cannot 'see' red. It can relate to other appearances of this color (sunset, flag, traffic light, hallucination, blood, flowers, etc.). That is, it can be compared to them; or it can propose an arbitrary shade, conferring on it what is called 'a certain meaning' depending upon the sign system it forms part of. Meanings culturally shared and determined – red as the color of revolution, for instance, cardinal red as a symbol of the Roman Catholic Church, or the pale red, almost pink, preferred by the *petite bourgeoisie*, etc. – and accepted through convention (social or otherwise) are forms of the "metasemiotization" of signs (when they can refer to themselves) that are, as physical properties related to light, not part of the "repertory" of language. What is called in the Pavlovian psychological model of language "the second articulation" (the memory of these signs) no longer corresponds to the connections established in the human brain but to social semiosis, assuming the aspect of social memory (in general, culturally motivated).

Encoding, i.e., adapting the message to the medium, can go as far as is feasible. But even so, the signs of the image (shapes, colors, visual rhythms, etc.) remain in reality, are part of it; this is not the case for the word, which is in reality through its material support, but not through what it denotes. Representing in language does not physically reconstruct the represented. A world in which, due to an accident of language or a decision of some sort, the word red or circle disappeared would not be a world lacking the colors we call red or the forms we call circles, but only these particular means of denoting them. Both Wittgenstein and Derrida dealt with this case from their different philosophical positions. Along Wittgenstein's line, many fell victim to what we will call here the *functional fallacy* (which after the intentional fallacy is perhaps the most representative in contemporary philosophy). This fallacy relates to the interpretive model of possible worlds that limits semiosis to the accomplishment of one or several functions. Along Derrida's line, the image and its interpretation acquire an equivalent semiotic status, which is again a functional perspective. (The function considered here differs very much from the analytical function.) The suppression of a word and so many words have disappeared from language – is not the same as the suppression of the object/reality denoted by the word. On the other hand, an image's values of red as an aspect of its lighting, or its shapes (circles or less regular forms) belong to existence as given and not only to a representation of it (in words, images, taste. touch, etc.). The word "red" can serve as a means of interpreting something that is red or different from red. But can something that is red serve as a means of interpreting the word "red"? (The same question can be posed for shapes, textures, etc.) Of course, if around the word "red" we display samples of everything we might call red, an implicit interpretation takes place. More words will become necessary to make it explicit. The referential function of the word has to be transcended; the implicit interpretation is one of the multitude of *relations* between image and word. And this is the characteristic of semiosis. We will come back to this after a necessary detour.

As implicit, relational means of interpretation, including of words, the components of the image can be applied in a constitutive way. In such cases, a certain code is established, usually verbalized and thus the interpretation is more or less predetermined. Although it programmatically refuses symbolism, modern art practices a form of symbolism that can be

called relational. Peirce remarked: "In reality, every fact is a relation. Thus, that an object is blue consists of the peculiar regular action of that object on human eyes. This is what should be understood by the "relativity of knowledge" (3.416). The relational type of symbolism is, of course, vague in nature. It cannot he approached with concepts that are essentially discrete, whether dualistic as in Saussure's tradition or as in perversions of triadic-trichotomic semiotics. In the spirit of Peirce's semiotic, we mean by symbol "a sign which refers to the Object that it denotes by virtue of a law, usually an association of general ideas which operates to cause the Symbol to be interpreted as referring to that Object" (2.249). This is more than the question of a certain type of representation whose necessity (character as law) is implicitly expressed (as an aesthetic necessity in particular). It involves relation as well. Purely pictorial representation is not necessary. Pictorial representation maintains the image alongside the thing and imposes the criterion of similarity (iconicity), although the physical laws of visual perception have a nature different from that of physical laws of man's spatial existence. Symbolic representation must be necessary, and necessity refers to quality, to the type of relation. Otherwise, symbols decline into the arbitrary and no longer fulfill even the representational function. A symbol is obviously more abstract than pictorial representation and therefore more formal. Within its framework, means of reference to reality, in the broadest sense of this reality, are continuously relativized, with the exception of those that functioned in iconic representations (naturalistic or illusionist) and had a certain tendency toward becoming stereotypes.

As argued by Hintikka (1975), analytical (descriptive) representation has in the final analysis the characteristic of presupposing a perception governed by a logic functioning as language. In addition, the representation itself is governed by this logic; it has an articulation of the type shown by any linguistic description. Synthetic global representation, abstract or not, is not descriptive. It rejects language and functions more as a logical calculus (the logic of the aesthetic). Reception is thus governed by this logic functioning as calculus and its intentionality is directed more to understanding and verification than toward feeling and acceptance or recognition. It is learned. We find ourselves before a new system of notation, of an ideatic type, in which the interrelationship of art and reality is expressed in the terms of art itself. Reference to reality is made indirectly through the intermediary of signs generating one sense or another in proportion to the level at which their rule of functioning is mastered. Representation no longer refers to what was learned about the subject (cognitive background, in a broad sense) but to what is known about the means of the representation. One can say: instead of mythology, the very myth of art (for example). In this spirit, we "learn" the image; its sense is determined by resolving the "calculus" lying at its base. Individualization (of means) is brought to the extreme, presupposing a just-as-individual realization of meaning in its generality.
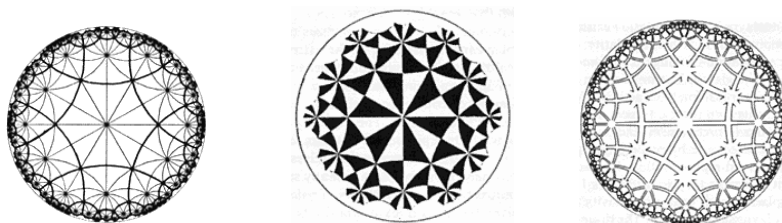
Figures 10(a, b, c). Repeating patterns. 'Unlike the Euclidean plane, the hyperbolic plane has infinitely many different kinds of repeating patterns. The Poincaré circle model of hyperbolic geometry was used by Escher to display interlocking, repeating, hyperbolic patterns' (cf. Dunham, et al, 1981).

Plates 10(d, e). Escher, from the *Circle and Limit series*.

The convention of modern representation is a convention of logical calculus and not of logical discourse (controlled in respect to its consistency) (Figure 10 a,b,c; Plate 10 d,e). The signs of this image are not imitations of the signs of the represented universe; they do not resemble something and frequently do not resemble themselves. They are invented, newly constituted precisely in order not to bear any sediment of meaning, not to function evocatively, but constitutively. To define meaning in this case means to 'solve' the image, to establish its degree of complex necessity. Interpretation turns out to be a problem-solving activity. As we know, many levels of this type of representation exist. Impressionism tried to describe sensory impressions and their regularity. Cubism imposed the convention of the representation of things as we know they are, hence not only as they appear at first glance. The implication of the gnoseological factor as a premise permits transition from art's condition of reflecting the world to art that reflects its own reality. Hence, it has an epistemological condition. The trends after Impressionism tend to liberation from appearance and concentration on essence by parenthesizing the source of error of the acts of perception and representation. Picasso expressed this very simply: "I don't paint things as they look, but as I know they are." To know means here to place oneself in the 'objectivity' of meaning and not in its 'subjectivity', as is sometimes stated. The disappearance of perspective, the imposition of other modes of illumination other than illusionist, the implication of heterogeneous means of expression are all the result of calculus (more often intuitive than not) and not the aesthetic discourse about the world. Thus, permutational modes are arrived at, relatively naturally, and extended to music, poetry, and computer art, which definitely provides our material representations of calculations (programs, algorithms) with aesthetic value or permits transition from one medium to another, that is from one type of sign to another, from one law of association to another. The intentionality of the synthesized meanings and that of receiving them have the same quality. They are the expression of an epistemologicaI optimism expressed through means characteristic of the aesthetic. Several statements had to be made within the framework of the functional perspective (statements that were in fact "prisoners" of the *functional fallacy* that were not possible within previous interpretive paradigms – referential, intentional, historic, etc.). Some are quite evocative (I do not take credit for the perspective as such, but for applying it); some are disputable, such as the suggestion of the epistemological optimism expressed in aesthetic terms. What is important at this point is the observation that understanding the functional aspect of sign processes is indeed necessary and fruitful, but not sufficient. "Not only is every fact really a relation, but your

thought of the fact *implicitly* represents it as such" (3.4l7) is the next observation Peirce made, to which I will turn my attention in what follows.

While asking, in the preliminaries of this study, how a referential type of semiotics would approach the reality of an image that is a trans-semiotic reality *par excellence*, we came near the problematic of artificial art (an extension of the concept of artificial intelligence), especially of those forms that are justified through intrinsic aesthetic values, abandoning subjectivity no matter what name it goes by (lyrical ego, poetic, etc.). This presupposes the extension of the concept of formal/artificial language and the definition of a corresponding aesthetics in which either traditional values (beauty, harmony, grace, etc.) or new ones are axiomatically defined. Some poetic aspects of formal language have been partially analyzed (Nebesky 1971), but only on the surface. Formal languages of a visual type can be considered, too. Computer technology has just started on this path. Values of rhythm, visual harmony, and counterpoint can be defined. Even forms of perspective, volume, compactness, brilliance, and others with aesthetic significance can be imagined. Interpretation must then be sought in the language and not in verbal language. Evidently, this is a matter of the way the human subject realizes the meaning of these images, their degree of necessity.

As has been said time and again, meaning is impossible to define without defining context, or more generally, the "semiotic surrounding, the field. In the case of verbal languages, defining the context leads almost automatically to defining classes of distribution, language being a relatively determined quasi-closed system. Let us here recall one of the simplest definitions of context, a definition given within the simplest semiotic representation of language, precisely to show how the situation changes when images are dealt with. Let language be defined through $L=\{\Gamma\Lambda\Phi\}$ (cf. Montague 1974), in which L is a finite set called vocabulary (a set composed of *words*) and Φ a language in L, Φ being a subset of T, which unites the set of all finite strings of words endowed with an associative and noncommutative binary operation of concatenation. The fact that the model is linguistic can be easily observed: it is sequential. The image – and this bears repeating – is not sequential. Except in very rare cases, it does not know succession. It usually presents itself as a synthetic unit, as a global reality, as a configuration. A context over Γ is defined as an ordinate pair of strings over Γ and is denoted as $<x,y>$ in which $<x \in T>$ and $<y \in T>$. A word a is permitted in a context $<x,y>$ if the string xay belongs to Φ.

And here we observe the fact of relatively strict rules, which is not the case for the image, where even associations considered impossible (colors, forms) eventually, and in a given structure, become interpretable as possible and assign meaning to such images. Denoting by $S(a)$ the set of all contexts in which a is permitted, we can determine the classes of distribution, saying that two words a and b belong to the same distributional class if $S(a) = S(b)$; that is, a and b are admitted by the same context. The study of language begins with the definition of distributional classes. The study of the image ends with them (Itten 1961 and 1975, and Albers 1969, who restrict themselves to color (Figure 11); see also the Bauhaus program or any other design conception). The sets of contexts can be found in qualitatively different relations; in particular, words admitted by a context can in distribution be defective, equipollent, complementary, or identical. In the case of the image, the relations among the constituent signs are infinitely more complicated. It can be intuitively noticed that we no longer operate with the aid of strict notions (as the class of distribution) and that we need to refer to vague representations, that is,

representations made possible by the theory of fuzzy sets. This is not to imply that natural language is a clear-cut system, but rather to observe that some progress was made in producing simplified models that are applicable to language but not to image. The arbitrary nature of language and its linear character allow for such simplified gnoseological tools, while the image, less arbitrary and non-sequential, requires means of description, knowledge, and generation adapted to its relational, intrinsic nature.
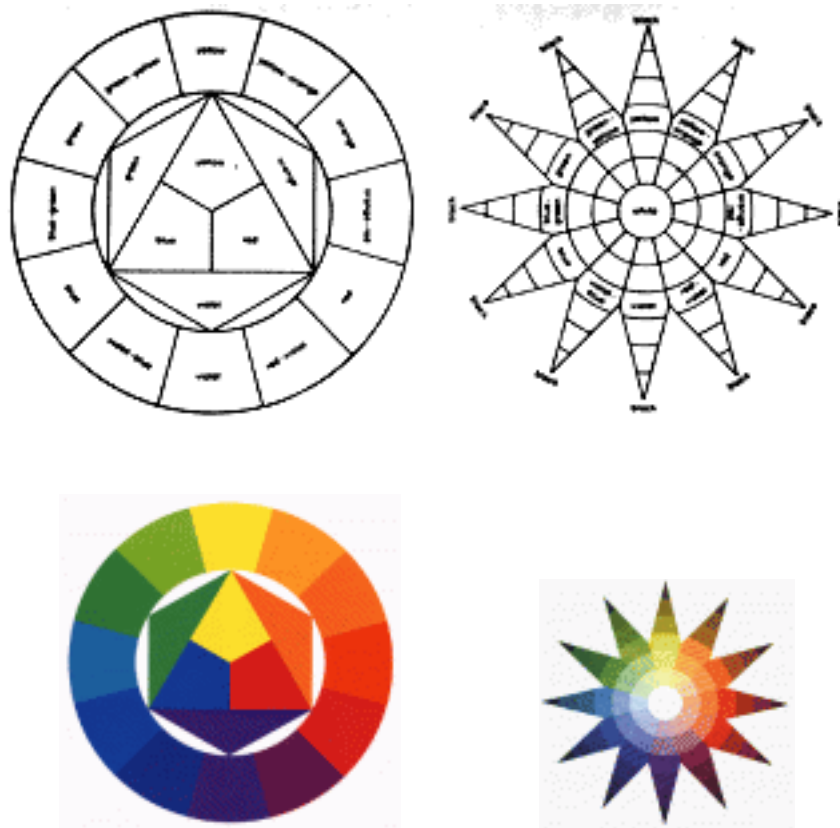

Figure 11. The color circle and the color star. "…subjective taste is not always enough to produce an objectively correct color judgment" (Itten, 1975).

So, we must solve the transition (1) from sequence or linear development to the plan or volume, development in space with two or three dimensions; (2) from relatively determined relations (membership or non-membership in a set) to vague, imprecise relations (membership in fuzzy sets; and (3) from discrete to continuum. As far as the first problem is concerned, it is possible to produce pictorial grammars, for example, that answer the question by approaching the neighborhoods (right, left, up, down, from a certain angle, etc.) that they subsequently cross sequentially and then unite, or to define the visual surroundings through interinfluence and not through admissibility (of one sign, or ensemble, alongside another, that is, through a criterion not of correctness but of consistency, of continuum/discontinuum). Given the individual character of any image, the equivalent of a distributional class (different signs admitted by the same contexts) is very hard to imagine (if at all).

The question raised intuitively concerns the relation of interdependence among the signs of the image. One possible answer, also intuitive, was that this relation can be represented by what is called a 'function' in the broadest sense of the term, perhaps close to the meaning introduced by the logic of possible worlds in its analysis of the meaning of language. Hintikka (1975) suggested the idea and since then, it has been repeatedly applied. Starting from the observation that meaning (in Frege's classical definition) includes the way in which the reference is given, he shows that the semantics of possible worlds appears when the fact is realized that the way in which the reference is given is *functional*:

> … the only reasonable way of understanding Frege's statement in the final analysis is to interpret the sense or Sinn as the function which gives us reference by means of which we as it were can find this reference. The meaning function which gives us the reference…may depend on this or that aspect of the situation or world in which the reference is located, but it cannot depend on anything more than the whole world itself.

This is the reason why semanticists of possible worlds say that meanings are functions from possible worlds to extensions or references. We have already expressed some doubts about this, but in order to arrive at the conclusion that the functional model is only partial, we will have to present it in its entirety (Plate 12).

Plate 12(a). Edouard Manet, *Déjeuner sur l'herbe*. The example of Las Meninas is discussed by Hintikka [1975]. It can be completed by Dali's series. The example given here evinces a more suitable "calculus." At the same time, the relation, as an integrative semiotic device, becomes more evident. (See plate 14.)

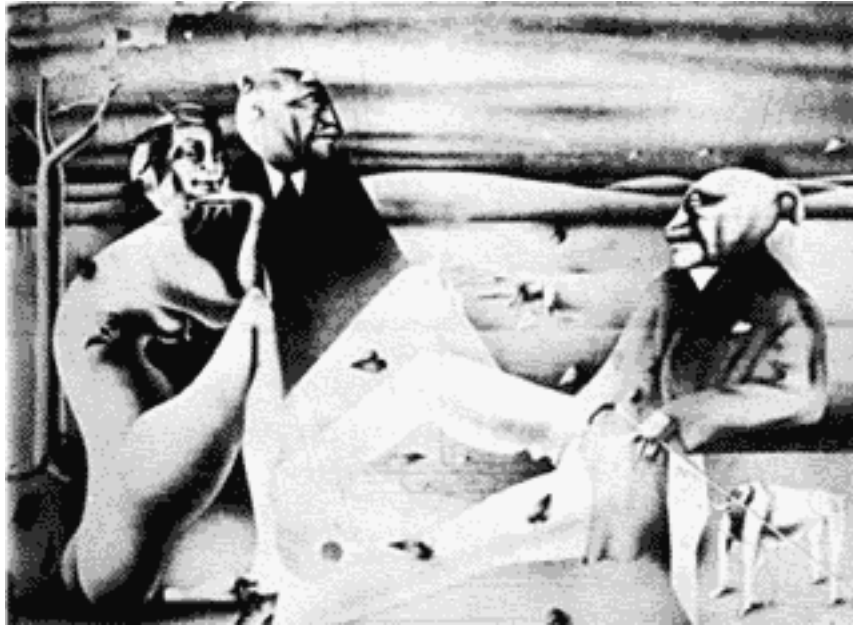Plate 12(b) *Picasso's Déjeuner sur l'herbe*

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Plate 12(c). Paul Wunderlich, *Das Frühstuck im Grünen*, Blatt 1, Litho.

The 3 examples belong to a series originating with Giorgione and Raphael and continuing in our days (for example, Peter Carer – using the image for an ecological manifesto – Alain Jacquet, and others) with inter-image variations.

The function is in general an infinite class of ordinate pairs of arguments and correlated values. As a rule, it cannot be represented directly, but only through calculations (algorithms) that allow the values corresponding to each argument to be obtained. Constant functions define one and the same object (the same individual in the different worlds possible). This is called the problem of *individuation* and lies in being able to say what an image represents in particular and what its reference is. The limitation to the referential perspective is quite obvious. In the case of modern art or of synthetic images, one can no longer speak of recognition – the representational level – not even in those instances where the object is almost photographically rendered (pop-art, hyperrealism), because interpretation is determined in the nullification of the values of resemblance or reproduction and in the recognition of the constitutional part of meaning. Such images are not representations of what is known or thought, of what is perceived critically and realized as critical meaning, but rather of what is not known, not thought. The idea of a unique and inevitable mode of visual (pictorial) representation has thus been definitely transcended. Image has been freed from the traditional sole imperative of resemblance (description) and we have won the liberty to use conventional means in a system of signs that in general the viewer does not master but that he can learn – the communication function – after which he also discovers the nature of necessity, the method behind the image, its signification.

Of course, to judge such images from the perspective of the aesthetics of description (the theories of realism) means to condemn them as uninterpretable (some will say 'lacking in meaning') or as arbitrary. The Post-lmpressionists' local decomposition of color is an example easily disputed. Locally, we deal with elementary optical calculation (the presence of complements). The whole is still submitted to laws of resemblance, but it allows for interpretations that traditional means

could not, that is, the interpretation of the new dynamics of light and, accordingly, of color. In the case of analytical Cubism, the painter proceeds as though he is segmenting the surface of the objects represented into a multitude of facets that he later brings into one and the same plan represented by the newly proposed image (Plate 13). Its convention is geometrical, but the interpretation that becomes possible, aesthetically speaking, would have been unimaginable if *re-presented* with the aid of older means.

Plate 13. Léger, *Face with Two Hands on Orange Background.*

The convention of cubism: function and relation interchange.
One proof out of the multitude possible is *Las Meninas* by Velasquez (Plate 14a), with its convention of strict representation. The new convention proposed by Picasso on August 17, 1957 replaces natural representation with a mixed type (Cubism and Graphism); the meaning produced is fundamentally different, the reference being cultural (i.e., Velasquez's painting). Finally, the variant of September 19, 1957 transposes the initial representational system into a new and even more marked conventionalism.

To give the mathematical or logical function per se is a very complicated question (Plate 14). It can be remarked that it is a matter of a meaning function from the picture's possible world to the extensions it contains (the two preceding images). Many other examples can be given along the line of the idea we pursue. Let us only recall that there are certain attempts at defining meaning function along the line of Montague's formalization (1974).

Plate 14(a). Velasquez, *Las Meninas* (The Maids of Honor).

Plate 14(b). Picasso.

Plate 14c. Dali

But what if we were able to produce a satisfactory functional description, an expression, in which something that is a function of something else is acceptably "formalized"? This is not a rhetorical question but a semiotic one. Let us imagine that we know that such a function exists. It means, actually, to accept that between the possible world of the image and that of our interpretation articulated in natural language, a sort of correspondence can be established, no matter how complicated. That such a correspondence is a proof of the logocratic conception is unimportant at this moment. What is important is the fact that in our language, consistency is the unavoidable result of the dual nature of this language, while interpretation of an image cannot be consistent since the image as such is not consistent. Language might influence our visual representations, but as such, these representations/presentations are determined by the implicit vagueness of the visual.

The concept of *topos* remains language sensitive; the image, sensitive to its visual surroundings, is less sensitive to the world than the word is to its visual surroundings. Peirce had sufficient reason to observe: "It is customary to assume that visual images are absolutely determinate in respect to color, but even this may be doubted. I know no facts which prove that there is never the least vagueness in the immediate sensation" (3.93). But while images are the object of sensation, words try to short-cut the sensory level. Not only should we deal with the relational aspects of visual semiosis, but we have to perceive it in its vagueness, which is still best introduced through fuzzy sets.

As far as the question of transition to fuzzy relations is concerned, let us keep in mind the introductory elements presented in the first part of this text as we try to present and apply visual fuzzy grammars.

If we have a language G given through its grammar (1) in which all elements are specified (cf. 2, 3, 4, and 5), then a sequence of images (in the extreme case, a "film") can be produced through calculation of the productions P. We can proceed from one "film" (a sequence of images) to the next respecting the same rule (4) of production, i.e., the same relation. Thus, for any given R_i, for instance, commuting colors in their complementarity, chromatic sequences can be obtained. To a certain extent, the series of Monet's paintings *Sunset*, or the series of Vasarely's optical designs, are the expression of such a sequence, obviously executed with another end in mind than relational analysis and moreover, with other means (but in which fuzzy elements are evident). The semiosis described above is one of several possible. However, no one should look to one or another formalization as an attempt to replace the human being, but as an attempt to understand real differences in our various ways of expressing ourselves. Certainly, artificial images can be described in detail, while other images (not only those already mentioned) can be partially re-presented. In fact, the intention is not to replicate various images in formula but to understand why we should adapt our semiotic concepts to their peculiarities, although language and image necessarily influence each other and have similarities. One important conclusion is the need to approach signs in general, and the visual in particular, from both the functional and relational-logical perspectives on which the sign perspective is founded.

This is the moment to say that the bases of the logic of relations as put down by Peirce are at the same time the bases of his semiotic theory. In a possible expansion of his definition, the sign can be understood as a functional-relational device. The relation R between signs and their interpretation, i.e., their meaning, is vague: SRM. The formula only says that meaning and signs are related, but not what this relation is. If we further this. we can consider that signs, as well as our interpretations, are of a complex nature, i.e., that signs and meanings themselves are fuzzy. One can wonder if visual *synonymy* is possible, and in general if two or more signs can have the same interpretation (what is called 'equipollence of signs' in logic or linguistics). The question, if asked correctly, is very important and brings us back to the *necessary connection* between signs and their interpretation, to the relation made possible and sometimes necessary by the human interpreter.

At this point, it becomes necessary to return to one of the main topics of this text: *the relation between the semiotic functions of representation, communication, and signification* as reflected by the dynamics of the semiotic field. The semiotic field is the field in which a system of signs is identified. It is a heterogeneous reality in which various types of signs are produced and interpreted, in which various aspects of reality are interpreted as signs, in which various sign processes take place. It is therefore the environment of axiological determinations because we identify value (the semiotic process called "identification," intuited in Saussure's concept of *identité = valeur*) and is, in the final analysis, the expression of the function fulfilled by the semiotic relation. The value of communication is established in relation to the identity, which information theory expresses quite precisely. The value of aesthetic communication in particular can be discussed only by following the identifications specific to art:

1. the relation between the sign and the object it represents, hence the content of aesthetic representation (for example, information concerning a landscape, a person or group, a natural phenomenon, or a historical event);
2. the relation of constituent signs, that is, the value of novelty in relating them among themselves (novelty of technique, of aesthetic vision, complex experiment, etc.);
3. the relation of the work's sign to other sign systems;
4. (inter-interpretivity, i.e., how one work can help in the interpretation of others.

Of course, the visionary qualities of some works of art, those intuitions socio-historical or natural phenomena that we sometimes notice, should be carefully considered. T.S. Eliot, as paraphrased by Marshall McLuhan (1972), "long ago pointed out that the camouflage function of meaning in a poem was like the juicy piece of meat carried by the burglar to distract the house-dog of the mind so that the poem could do its work." No matter what functions are assigned to art, it would be strange to look at a painting, to read a poem, to watch a television program in order to get information. This information comes with the work (author, style, material, narration, etc.) but is not the aim of the work. The news in the paper is read for its information. It does not have to be signed; on the contrary, the less affected by the "writer," the better. A poem, or a visual work, starts with the author, identified or not. The information conveyed is rather disturbing, even in those recent works in which documentation is part of the final product.

A work of art interpreted only as information is dead-end semiosis, whether in art history books or in pedantic classes in which indexical signs (when, where, how) are turned into a means in themselves despite the work and its interpretation. The function (of information, in this case) overwhelms the semiotic relation. In aesthetic semioses, communication diminishes and is stabilized in several possible interpretations, frequently resumed especially through specifying the frame of reference. Portraits are an example of this; another example is the attempt to theoretically distinguish styles and apply them as a taxonomic device.

On the other hand, the value of aesthetic signification, which corresponds to the sign's relational aspect, grows. In this case, too, we have to preserve a certain relativity, bearing in mind semioses characteristic of axiological accidents. Let us point out here that signification refers to different situations:

1. the relation between the interpretation of the image and that of the meaning of the reference object (for example, the romantic image of a landscape and the meaning newly acquired by integrating the landscape into a new context, such as industrialization);
2. the relation between the interpretation of each sign in part and interpretation of the whole, progressively constituted and reflected onto the meaning of the constituent signs. Hence the novelty of the meaning of the global supersign in relation to partial meanings;
3. the relation between the interpretation of the whole and the interpretation of other sign systems that constitute its semiotic environment; that is, the continuous modification in time and space (more precisely, in the semiotic field) of the image's interpretation under

the influence of the co-image and the influence of the given image on the coimage in which the interpretation takes place.

Let us imagine a painting viewed in the septic atmosphere of a museum, of a private collection, or in a factory, a school, or on a billboard, or in the idyllic landscape of a better-preserved part of our world. In each case, the interpretation will vary, but so will our interpretation of the background against which the painting is perceived.

We can at this point suggest how the relationship between the semiotic functions of representation, communication, and signification takes place in the realm of art. As a significant reality, aesthetic reality is defined through the continuous diminishment of transmitted information, of the function of representation and the growth of signification. In the case of accidental forms (experiments unsuccessful in an aesthetic sense), the phenomenon takes place inversely: the new meaning dominates at the beginning, then becomes banal and eventually remains the object of historic interest that still exists at the informational level (hence as an object of art history, for example) or at the level of representation.

Semiotic environment, defined in a broad sense (broader than context), includes the closeness of signs of the same nature (images in the context of images, as in museums, music, texture, dance) as well as of a different nature (signs of other forms of expression, signs of theories artistic or scientific – of philosophy, ideology, politics, economy, signs pertaining to social reality, etc.). The exact level at which interinfluence is exercised (in other words, the relational level) is difficult to establish. The fact that, to a certain extent, an image generates a 'family' of images, reproductions, descriptions, commentaries, etc., whose interpretation is realized in the generalized semiotic field of human existence and practice, should help us understand that semiotics brings us closer than previous theories to the fine structures of the image, while at the same time showing us how each time we try to understand/explain something at this level, we immediately change it.

Successful semiotic theories have so much changed the way we interpret sign processes that they seem sometimes to refer to something no longer existent. Should we then give up the hope for a semiotic theory, taking into account the fundamental condition of the sign as a relation? To answer once again through Peirce: "… the cognition of a relation is determined by previous cognitions" (5.260) is in fact within the spirit of the epistemological premises of this study. Signs are not only differentiating means of expression, but also strong integrating devices. A functional-relational semiotic theory takes both into account.

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