

Semiotic-Cognitive Processes in Image Construction and Changing Visual Literacies

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ABSTRACT

This presentation is intended to demonstrate the power of semiotics in two fundamental areas. First, it can serve as an effective critical/analytical tool for the analysis of different visual literacies as in modernism and postmodernism. Second, it can be a powerful pedagogical tool for image makers in defining the manipulations that comprise the anatomical structures of semiotic activity in pictures.

In this presentation, I discuss image-making as a semiotic process of pictorial meaning-making. I focus on syntax as the primary dimension of pictorial construction, which operates by the manipulation and placement of icons. I explore how the process of concept formation underlies image construction and design.

I use the Peircean concept of mental sign-formation as resulting from the community consensus. I also stress the groundedness of signs in the embodied experience of reality, as experienced by each and every individual and reflected in human cognitive processes. That points toward the relationship between pictorial representation and cognitive/aesthetic expectations.

I demonstrate how two different concepts of image making – modern and postmodern – are reflected in different pragmatic and syntactic characteristics of pictures. For instance, whether an icon functions to explicate and support cognitive expectations or to deconstruct or challenge them. Thus, I tie differences in approaches to image-making to shifting values and cultural patterns.

Although my examples are taken from the domain of contemporary practices in illustration, such a semiotic analysis can be applied to any domain of image-making and design. This is proposed as a general method for applying semiotics to art, illustration, and design.

PAPER

EDUCATION OF AN ILLUSTRATOR

When we do not feel well or we feel pain we are getting signals from our bodies that something is wrong. Normally, by examining the symptoms, we can distinguish between flu and a migraine headache without ever knowing the causes of our symptoms. It is the job of a doctor to diagnose causes from symptoms, in order to recommend appropriate

treatments. If we know that smoking causes impotence we can chose to avoid smoking. (Figure 1).



Figure 1. Anti-smoking poster.

If we know that smoking causes gum disease we can quit smoking to prevent periodontal problems. (Figure 2).



Figure 2. Gums severely affected by gum disease.

Similarly, when we look at images in magazines that surround us, we do not diagnostically question how we read them but take it for granted that we can. This is possible because of the skills of illustrators. (Fig. 3).

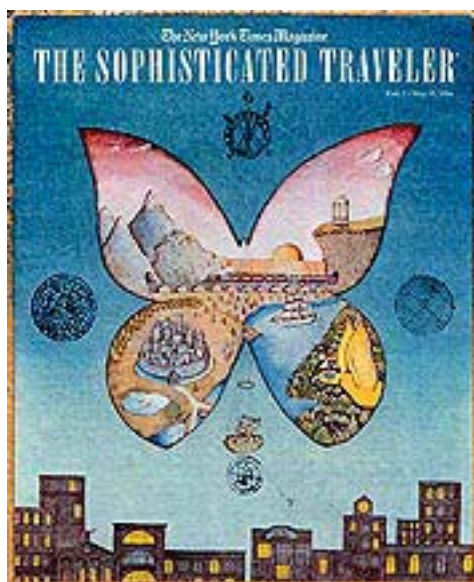


Figure 3. Cover illustration for The New York Times Magazine.

Images can be deceptively easy to understand. We do not examine the procedures and steps by which we have derived with the understanding of this image. We do not ask what intellectual process informed the development of such an image. Neither we do ask ourselves on what basis the contour of a butterfly brings in us the senses of enjoyment, wonderment, pleasure, and free travel from country to country. We do not investigate whether it is a silhouette of a butterfly itself or if, perhaps, it is the gondola in a shape of a butterfly that gives us the sense of free international travel. What makes us think that the image is about international travel anyway?

It is the role of image makers to know how to design an image to have its effects, but do they really know how to design? Do they know what processes inform their creative decision-making? Do they know which visual buttons to push to get someone's attention or why and if they can trust their skills?

Unlike medical doctors or scientists, illustrators (image-makers) do not learn on what basis their designs communicate or fail to do so. They are not aware of the processes that underlie the design of images, or their comprehension. The training in art and design, as it is understood in majority of art and design schools, is based on intuitive methods of creative trial and error, and liking. Thus, image-makers rely heavily on experimentation, guessing, and accidents. We are challenged to guide the image making process and make it an informed and comprehensive professional competence for visual communication.

When we do not understand a work of art, we assume that it is beyond our comprehension, and we pass it by, often without asking what it was intended to say. But when it comes to illustration which is image making for the needs of visual communication, clarity of communication is a requirement. The viewer is not to be left thinking that an image is above their visual literacy, it has to grab attention, communicate, support the text, instruct, or persuade.

Clients, such as art directors or editors, who commission illustrations are not interested in the creative process as such, and rightfully so. When they like an illustration and think that it communicates the intended message they publish it. But on what basis can such a client assume that "if I can get what the image is saying, the audience will get it too?" Clients do not have to know why they can read images, image makers should.

What makes an illustrator successful is 1) the ability to communicate visually to a broad audience, 2) generate successful communications on call, on time, and 3) in a style that is currently in demand. To meet those demands one has to have a good supply of creative ideas at hand. Published works are generally approved by only one viewer – an art director. Normally, we do not see images that were redone several times and deemed unsuccessful. Normally, we do not see illustration graduates who fail as illustrators. Their failure as image-makers is attributed to the innate lack of talent, or lack of luck, not the lack of a proper visual education.

Illustration students do not learn about the processes that underlie their creative decisions. Rather, it is assumed that they do not need to be well informed. There is even a lack of consensus about the importance of visual education or literacy in a culture of science

driven education. If creativity does not emerge in students by the time they graduate, they should have not entered art school in the first place. Their failure is assigned to their innate lack of creativity. But, just as there are the rules for baking cookies, there are rules inherent to visual comprehension followed by the principles of visual organization. Thus, instead of accusing unsuccessful students of lacking creativity, educators need to provide them with training informed by knowledge of the processes that are involved in the visualization process.

HOW TO MAKE A PARADIGM SHIFT?

Illustration, or in a broad sense, image making, is a domain of visual communication. Its role is to communicate rather than to test new grounds for stretching the boundaries of visual literacy. It must provide images that are understandable to many, not only to art critics or aesthetic theorists so it has to avoid aesthetic extremes. Nonetheless, illustration helps define the cultural milieu in which the images are produced, thus shifting of the boundaries of visual literacy by the popularization of certain aesthetic values through the broad distribution of works. For instance, Norman Rockwell's images shaped popular views of Americans for decades. (Fig. 4).



Figure 4: Missed: Illustration by Norman Rockwell.

When I came to teach illustration in Buffalo I was asked to update the program to produce graduates whose illustrations had a "current look." Mimicking a "look" is fairly easy, but such mimicking does not inform students about the cultural dynamics that the "look" reflects and that caused the "look" to appear in the first place. The "current look" is given legitimacy by the changing paradigms governing visual production: the ways of constructing images.

The collapse of modernism brought new aesthetics and opened tremendous opportunities for fresh visual narratives. So, I had to develop methods of instruction for image making which would enable students to communicate visually in an informed way. Namely, to provide them with intellectual tools for constructing images and understanding the processes that underlie image perception, thus, removing their sole reliance on intuition and creativity.

My pedagogical goal was to separate students from the influences of aesthetic paradigms on image construction and provide cognitive guidelines for the construction of images at the structural, anatomical level. This is a level of formal syntactic arrangements of visual

signs. The principles of visual organization at this level are separate from aesthetic paradigms and remain fairly stable by virtue of being species wide cognitive mechanisms that enable us to comprehend visual information in the first place. Thus, I developed an embodied, semiotic approach to image design that addresses those problematic issues.

EMBODIMENT AND IMAGE DESIGN

Anything we know about images originates from experience with object, events, and situations in life. We take our daily experiences for granted, and disregard them as the main source for our knowledge about the world. Yet, this is the knowledge that fuels our visual comprehension. The correspondence between icons and their objects is defined by our bodily experiences and encounters with reality. This correspondence tends to limit imaginative possibilities for new associations. Many illustrators and students of illustration alike, find themselves unable to get out of the box of associations defined by daily experiences. Image-makers frequently overlook the fact that the rules of operation for semiotic entities are different from the mechanisms governing actual objects, events, or situations.

It is helpful to start from focusing on the distinction between signs and objects, as entities functioning in separate domains. That in turn, induces the separation of "behavior" of visual signs from the "behavior" of represented objects and brings into focus structural values of pictorial composition independently from the requirements of realism. In other words, the emphasis on the structural (syntactic) dimension of an image separates formal (anatomical) aspects of icons from their semantic dimension. Such a separation frees the icon-object relation from photographic realism and opens it up for unexpected connections, challenging what we know about objects in experiential reality (see Figure 3). Consequently, image making is re-defined as the juxtaposition of concepts by means of visual relations in a non-linear way.

A SEMIOTIC VIEW ON IMAGE DESIGN

We think through thought-signs and arrange them into a network of relationships. Those interconnected thought-signs are icons of a specific type. Thought-icons "pattern the qualia of Firstness into patterns of concepts" (C. W. Spinks 1991: 446). They are not yet actualized potentialities of concepts unless they come to exist in Secondness. They are mental schemas of our conceptualizations about things. Whether logical or material, the signs, which are always iconic are models created to represent conceptualizations of an object in relation to the system of thought-signs. Mental icons form patterns of relations among thought-signs. As such, they are diagrams or mental maps of our thinking. They are visualized in the form of graphic models of our conceptualizations of objects. Depending on the degree of iconicity, graphic models vary on the scale of degrees of diagrammatic schematization. Needless to say, that schematization varies depending on the design purpose and the subject matter. They also vary in regard to the taxonomy of semiotic space in which they participate. For instance, geographic maps have a strong indexical tone as they are designated by the correspondence between proximities of actual geographic locations and their graphic signifiers. Geographic maps are embedded more in Secondness in relation to models representing scientific theories, which participate in Thirdness. "The

more the iconic model participates in Thirdness, the more the model will seek to articulate the nature of law – be it natural, logical, or whatever” (Spinks 1991: 446).

The process of image design originates from its function of reproducing mental visual imagery rather than the production of pictures resembling perceived reality. By the same token, thus, it is fueled not by the urge to copy the original, but by the urge and the need to make models. And the models are of our thought patterns, and not of a reality as of an original. If one has to relate to the notion of an original, then it is an original thought about something, which is to be actualized in a graphic medium. Thus, an original is a thought, which serves as a source of graphic representation. It is the correspondence between the thought pattern and its graphic representation that serves as a foundation for the graphic models that undertake different forms of expression, such as “pictorial, hieroglyphic, alphabetic, schematic, and ultimately algebraic” (Merrell 1991: 263).

As such, the image design process is the process of graphic actualization of thought-diagrams that takes place on two planes: on a mental plane of thought shaping and on the pictorial plane of its material counterpart. In other words, it brings to existence the mental diagram of our conceptualizations about object, including the map of the world in general. These planes constitute the two modes of the diagrammatic modeling of thought. They define the modes of semiosis, that is, the meaning-making process, which is the essence of the design process. According to C. W. Spinks, a process of portraying conceptual relations by spatial means “is ‘mapping’ in its hypothetical sense” (Spinks 1991: 446). Correspondingly, the image design process is the mapping in its actual sense. In other words, it is a process of representing conceptual relations by spatial means in a graphic medium. As such, it is a process of visualizing diagrammatic models. Graphic (pictorial) models are one sensorial mode of actualization. The correspondence between mental and pictorial diagrammatization, as mapping, is noticeable also in the construction of the pictorial plane. The pictorial plane of design is confined by the two spatial coordinates of height and width, which correspond to the mental coordinates of diagrammatic reasoning.

PATTERNS, RELATIONS, AND REPRESENTATION

By giving shape to our experiences we make sense of them. Making sense of something means understanding what it conveys. Such a comprehension is made possible by virtue of linking a new meaning with old and familiar ones. Thus, comprehension is an act of relating (comparing) the new meaning to a larger network of already understood ideas. By understanding, we organize – consciously or not – mental icons into patterns of relations, which form mental maps of our thinking. According to Peirce, interconnected patterns and relations show “the law of mind (which) is that feelings and ideas attach themselves in thought so as to form systems” (§ 7.467). The act of relating requires a decision as to where to place and how to link the new to the familiar. The process of linking implies connectivity and interconnectedness of the conceptualizations (§ 2.282). Consciousness by means of diagrammatic reasoning constructs abstracted schematic blueprints of objects. The primary focus of such a mental effort, whether embedded in the mind or actualized on paper, on the computer screen, or in any other mean of material communication “ , rests on interconnectedness not things, patterns not essences” (Merrell 1991: 252).

Interconnectedness requires the internal translatability of signs in a flow of semiotic translations. That is not to say that the translatability and interconnectedness of signs assures that a sign is identical with its substitute. It is to say that if one assumes that it is in the patterns of relations that we find the meaning, and not in signs for and in themselves, one has to acknowledge the diagrammatic nature of reasoning and its graphic actualizations as well, since patterns and relations are assumed to be the essence of diagrams (Peirce § 4.418).

In a so defined process of design, there is room for originality and creativity, which are the sensitive points of the designer's consideration. Diagrams "require a certain detachment of the representational sign from the primary artifact, which provides for a degree of arbitrariness" (Merrell 1991: 263). Thus, depending on the degree of arbitrariness, the image designer can exhibit more or less individualistic tendencies in his/her images.

In other words, illustrations provide not holistic images of objects, but condensed synopses of them with high degrees of elision to emphasize the concepts to be communicated whatever they might be. As such, designs function as graphic shortcuts through and to the meaning. Diagrams, as applied to the purposes of the development of spatial learning strategies, have been recognized as tools facilitating meaningful learning and remembering of the material (Holley and Dansereau 1984: 14). They do not provide lengthy descriptions or specifications of the object, like it is the case in linguistic explanations. Instead, they only provide pictorial cues necessary for the immediate grasping of an adequate interpretant. In other words, they provide an overview of relationships among corresponding relevant concepts. Thus, they provide schemata for comprehension of the subject matter. Consequently, diagrammatic modeling facilitates understanding and remembering of otherwise difficult to grasp conceptual structures. It does so by providing spatial models of conceptual structures. As the overviews and the schemata, diagrams provide pictorial form by showing the complex conceptual structures in a nut shell.

Image design is the actualization of mental mapping in the diagrammatic sense. Thus, it is the process of the development of the diagrammatic representations of mental models of thought-signs in respect to a given communicative objective. In other words, image design is a selection of those structural relations between thought patterns and their visual representations, which serve as fulfillment of the design objectives.

DIAGRAMS, GESTALT, AND SENSORY PERCEPTION

In sensory perception pattern recognition is fundamental to the development of meaning. It is patterns that we learn through our experiencing of ourselves in the material world. Those patterns that have already been included in our conceptual maps we recognize instantaneously as intelligible. In phenomenology some of those patterns are recognized as intuited (we grasp their meaning instantaneously, pre-logically). Other patterns require a conceptual effort to comprehend them.

Gestalt psychology of visual perception traditionally is considered as the foundation of design. The empirical nature of the design process as requiring sensory instrumentation requires linking to the theory of perception. According to Paul Bouissac, "any theory of

the sign, including design theory, explicitly or not, can only be linked to a theory of perception" (1984: 8).

The main premise of gestalt psychology is that humans have a natural tendency to organize random lines, shapes, or colors into recognizable, and thus, intelligible, visual patterns (Hanson 1965: 13). "Perceptual pattern recognition at once gives significance to elements perceived ... so also conceptual pattern recognition gives significance to the empirical elements within a theory" (Merrell 1991: 262). At the most basic level, gestalt is founded on the concept of the whole being much greater than, and thus qualitatively different from the mere sum of its elements (Berryman 1973: 8).

The experiential grounding of pictorial code is present in our responses to the placement and orientation of elements in graphic diagrams or images. Those diagrammatic images that represent our orientation in space constitute graphic maps. Their significance is revealed not only through the linguistic metaphors by which we describe pictorial elements, but also in our behavioral responses to them. Thus, the placement orientation, scale, and so forth of an object (element) induces a certain interpretation. For instance, a vertical line is linked with motion in directions up and down. The upward movement is considered as a positive and optimistic motion, in opposition to moving down; the former is linked with organic growth and advancement, the latter with organic decay and decline. A horizontal line is referred to as the ground, due to our experience of walking. As such, it is perceived as less dynamic than the vertical line. It appears that graphic diagrams are comprehended faster if the change of domains between a signifier and a signified does not take place. If the diagram, which by its nature represents conceptual relations by spatial means, deals with the objects functioning in the domain of spatial relations, it is comprehended faster than the images representing objects defined within other than spatio-temporal domain.

Existential relations determine also the degree of perceptual directness of a diagrammatic signification. For instance, if I know – based on my experience of gravity– that inanimate objects do not fly but fall down due to gravity, I immediately assume that an object visually represented as freely floating is on its way down unless it is a gondola attached to a balloon. (Fig. 3).

A PARADIGM SHIFT IN IMAGE MAKING

Much has been said about the differences between modernism and post-modernism in different genres of literary narratives, art criticism, or philosophy. Thus, in this presentation, I will not discuss the differences between paradigms of modernism and post-modernism in the broad cultural context. I will focus on showing how those paradigms affect methods of assembling illustrations. To show the effectiveness of semiotics as applied to the teaching of an illustrator I will examine some examples of images that have been created from a modernist mindset, and images that have been generated after a 2.5 year application of semiotic concepts and strategies for image construction within post-modern paradigm.

OLD PARADIGM

Figures 5 through 8 show examples of illustrations developed within the modernist paradigm. The list of characteristics of the methods of image construction applies to all images from this group.



Fig. 5



Fig. 6



Fig. 7



Fig. 8

1. Focus on manipulation of signs only at the semantic level. By means of metaphor: creative juxtaposition of icons in their semantic dimension.
2. Metaphors: the juxtaposition of signs with already given meanings through existing cultural discourses and institutions. Metaphors challenge expectations about perceivable "behaviors" of objects in reality.

3. Images rendered within a traditional range of materials & techniques: painting, pastel, acrylic, and watercolor.
4. Icons arranged within traditional one-point perspective. Only one type of perspective is used in a given image: spatial convention is coherent: realistic or "normal" spatial relations are rarely challenged.
5. Use of realistic mode of representation based solely on mimetic function of icons. Arrangements of icons are defined by the normal "behavior" of their objects to convey metaphoric meaning of images.
6. Image meaning delivered at one level of semantic relations, without framing and visual excerpts (linear method of meaning making).

NEW PARADIGM

Figures 9 through 17 show the results of the training applying the new aesthetic paradigm and the pedagogical methods of semiotics.



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1. Multi-modal communication: text & image. Mixed modes of representation: realistic with diagrammatic. Mixed media: cookies and paint. (Figure 9)
2. Meaning acquired by manipulation of signs at multiple levels of semantic and syntactic dimensions by manipulation of visual cues. (Fig. 10, 11).



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3. Meaning delivered at more than one level of semantic relations. Those levels are linked in a non-linear way. Meaning is a result of a cognitive effort of a viewer, who has to link its different levels in a non-linear way. (Fig.10 – 13)
4. Expected spatial relations challenged: different perspectives coexist in one arrangement. Usual orientation of objects is challenged. (Fig. 10 -14)
5. Icons separated from the “behaviors” of their objects. Identity of objects is challenged: it is multiple. “Normal,” conventional appearances are re-designed to convey the concept. Therefore, an established meaning of individual icons on the semantic level is changed by the changes on the syntactic level. The structure of the figure is not depicted, it is constructed anew to convey a particular meaning. Forms of icons are invented taking elements from emotional experience of conceptual and sensory reality (Fig. 12).
6. Realism mixed with abstraction. Different layers of reality coexist in one picture frame. Mimesis is not the goal, but one of the means of representation. Spatial arrangements challenge traditional one-point perspective. (Fig. 9-11).
7. Images constructed using non-traditional materials & techniques: clay, wood, textile, etc. 2-D representation mixed with 3-D one. Methods of construction of an image are mixed: analog and digital. 3-D model is turned into a 2-D digital image (Figure 13).



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8. Use of light to convey changes in the conceptual and emotional state of the process. (Fig. 14 and 15).
9. Formal relations and shapes change depending on the meaning, e.g.: different states of the process. For instance, the structure of the background indicates the changes in the emotional state of affairs. That is to say, the changes at the syntactic level of the background indicate changes at the semantic level of emotions. (Fig. 16 and 17).



Figures 16 and 17.

CONCLUSION

In this paper, I have presented an embodied, semiotic approach to image design that addresses the problematic issues of image development using principles of visual organization that are based on species wide cognitive mechanisms and separate from purely aesthetic approaches. I have demonstrated the use of this approach in the production of illustrations as methods of communication. As I conceive of image design as a method of communication which can be founded on experiential–cognitive foundation and reasoning, I view the propagation of this viewpoint as beneficial for an intelligible illustration curriculum.

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