DOCUMENT RESUME

ED 370 585 IR 055 038

AUTHOR	Messaris, Paul
TITLE	Analog, Not Digital: Roots of Visual Literacy and Visual Intelligence.
PUB DATE	93
NOTE	11p.; In: Visual Literacy in the Digital Age: Selected Readings from the Annual Conference of the International Visual Literacy Association (25th, Rochester, New York, October 13-17, 1993); see IR 055 055.
PUB TYPE	Information Analyses (070) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Cognitive Processes; *Communication (Thought Transfer); Editing; Film Production; Films; *Intelligence; *Symbolism; Television Viewing; Thinking Skills; Visual Learning; *Visual Literacy
IDENTIFIERS	*Analogical Imagery; *Digital Imagery

ABSTRACT

Communication theorists often make a distinction between two different ways in which a sign or a symbol can evoke meaning. In digital representation, the symbol's domain of reference is conceptually carved up into discrete units represented by purely arbitrary symbols. In analogical representation, the symbol retains a continuous correspondence with one or more dimensions of its referent. Recent scholarship has tended to emphasize the digital side, but this paper draws attention to aspects of analogical representation, arguing that the mental process through which viewers derive meaning from pictures is often based on implicit analogical thinking. Analogical thinking seems to play a major role in the evocation of meaning through abstract qualities and the control of the viewer's emotional engagement through point of view. The most obvious locus of analogical significance in film and television may be in editing. Analogical implications are central to a wide array of visual devices, and it is possible that in learning to make sense of visual communication, we also acquire an enhanced facility in analogical thinking. (Contains 38 references.) (SLD)

Analog, Not Digital: Roots of Visual Literacy and Visual Intelligence

by Paul Messaris

Annenberg School
University of Pennsylvania
3620 Walnut Street
Philadelphia, PA 19104-6220

Analog, Not Digital: Roots of Visual Literacy and Visual Intelligence

Paul Messaris

What is the cognitive basis of a viewer's ability to comprehend the meaning of a picture? Communication theorists often make a distinction between two different ways in which a sign or symbol can evoke meaning: on the one hand, digital representation, in which the symbol's domain of reference is conceptually "carved up" into discrete units which are represented by purely arbitrary symbols; and, on the other hand, analogical representation, in which the symbol retains a continuous correspondence with one or more dimensions of its referent. (A particularly lucid presentation of this distinction has been given by Bateson [1972], but variant formulations occur in a wide spectrum of theoretical writings, originating as far back as the work of Hume [1977] and Peirce [1991].)

Recent scholarship in visual communication has tended to emphasize the digital side of this distinction, focusing on technological developments in the coding of visual images for purposes of digital manipulation, storage, or transmission (e.g., see Bossen, 1985; Lasica, 1989; Mitchell, 1992; Reaves, 1989; Ritchin, 1990). This paper aims to draw attention back to certain aspects of visual communication in which analogical representation seems to play an important role. Specifically, the paper will argue that the mental process by which viewers derive meaning from pictures is often based on implicit analogical thinking.

Discussions of the analogical aspects of visual representation typically concentrate on the manifest content of images: the objects, events, or situations depicted in them. Although visual scholarship has done much to undermine the popular assumption that pictures are simply direct replicas of the appearances of real-world phenomena (see Krieger, 1984; Snyder, 1980; Wartofsky, 1984), there are, nonetheless, good reasons for believing that the recognition of manifest pictorial content is a prime example of analogical communicational processes (see Messaris, 1993, 1994).

However, the focus of this paper is not on manifest content but on the more implicit, indirect meanings of images: the tone or affect that a picture

evokes, rather than the things it represents directly. In particular, this discussion will be concerned with the analogical implications of: (1) the composition of single images; and (2) the juxtaposition of images through editing. Because the scope of this paper is necessarily limited by space constraints, the examination of these issues will seek only to illustrate some major points, rather than to provide an exhaustive catalog of forms of visual analogy.

Visual Composition

As I am using the term here, analogy refers to cases in which a symbol reproduces a distinctive feature of its referent and, by virtue of that reproduction, comes to evoke the referent's qualities. There are at least two, relatively distinct aspects of visual composition in which analogical symbolism seems to play a major role: on the one hand, the evocation of meaning through the abstract qualities of shapes; and, on the other hand, control of the viewer's emotional engagement by means of point of view.

Abstract Shapes

Systematic exploration of the affective meanings of shapes (as opposed to the actual incidents or personalities depicted in a visual image) has a considerable history, both in the area of art and in that of advertising and other forms of deliberately manipulative imagery. Among painters in the Western fine-arts tradition, an especially noteworthy investigator of these matters was Georges Seurat, who eventually developed a detailed theory concerning the evocative properties of line and color (see Homer, 1964; Lee, 1990; Weale, 1982).

The explicit basis of Seurat's theory was the assumption that viewers respond to the abstract features of visual composition on the basis of unconsciously perceived analogies to elements of real-world experience. For example, Seurat believed that a wedge-like shape pointing toward the top of the canvas would evoke both dynamism, because of the association with the properties of sharp edges in knives or other implements, and buoyancy, because of the association with upward movement in general.

Thus, in his execution of scenes in which these qualities were an appropriate part of the tone he was trying to convey, he would incorporate upward-pointing wedge shapes in the composition even in places in which a more strictly naturalistic rendition would not have called for them. This practice is clearly evident in such paintings as "Le Cirque" (1891) and "Le Chahut" (1890), in which upward-pointing tapers are added to the facial features of a circus acrobat, in the former case, and a line of high-stepping dancers, in the latter.

Since the days of Seurat's experiments, this kind of compositional device has become a regular feature in certain areas of mass-mediated image-making, most notably, perhaps, in advertising. In particular, the idea that wedge-shaped forms evoke energy or dynamism has clearly taken hold among designers of print ads for sports-related products, in which it is quite common to encounter triangular logos, triangular frames, or other triangular design

elements.

Not surprisingly, the evocative properties of these and other shapes have been tested by several researchers, with an eye not only on advertising uses but also on applications to industrial design (Espe, 1983). The work of these researchers supports the assumption that viewers respond in the expected ways to the abstract qualities of shapes even when these shapes are presented without any context. In other words, we have evidence here that analogy does indeed work.

Of course, it might be objected that the viewers in these studies are typically people with extensive prior experience of visual media and that it is this experience, rather than the real-world associations of shapes or other design elements, which has conditioned their responses to these devices. It is therefore worth noting that a major cross-cultural study of visual composition found strong evidence that certain aspects of composition -- curved vs. straight lines, for example, or symmetry vs. asymmetry -- are associated with similar connotations across a wide spectrum of unrelated cultures (Fischer, 1961; see also Hatcher, 1988).

Since these cultures did not share a common pictorial tradition, the assumption that what we are seeing here is a manifestation of the workings of analogy can perhaps be made more confidently in this case. In other words, it seems likely that these findings reflect a common response to certain basic visual dimensions in the experience of most or all human beings (cf. Bang, 1991).

Point of View

The second aspect of composition that will be examined here is point of view. The general principle here may be expressed as follows: By controlling the viewer's positioning vis-a-vis the characters, objects, or events in an image (including the image sequences of film or television), the image's producer can elicit responses which have been conditioned by the viewer's experience of equivalent interrelationships with real-life people, things, and actions.

This kind of analogical connection is probably most clearly evident in the well-worn cliche of filming someone from a low angle to make her or him appear more imposing, but the most frequent use of camera positioning as an analogical device is undoubtedly that which occurs when the distance (real or apparent) between the camera and its subject is employed as a means of modulating the viewer's identification or involvement with the characters or events on the screen.

In other words, here we are dealing with a variable which is in virtually constant use in many movies and TV programs and is, indeed, one of the principal visual means for such effects as heightening the intensity of a scene as it moves towards its climax, maintaining the viewer's sympathy with the hero and emotional distance from secondary characters, releasing the tension of a scene or of the movie as a whole following the resolution of the action, etc.

Because of the analogy between the role of camera-to-subject distance in

such instances and the function of interpersonal distance as a regulator of intimacy and involvement in real-life social relationships, Meyrowitz (1986) has labelled this aspect of visual manipulation "paraproxemics."

Although it might seem that the devices encompassed by this label, i.e., such things as dramatic close-ups, zoom-ins to a significant object, camera pull-backs as a movie ends, and so forth, must be excessively obvious to most mature viewers, in fact there is evidence that even highly educated people with an interest in visual media, but no directly-relevant education or practical experience, are generally unaware of these kinds of things (Galan, 1986). This finding suggests that the area of paraproxemics would be a suitable target in any attempt at enhancing the visual literacy of members of the general public.

Image Juxtaposition

Editing Rhythm

Perhaps the most obvious locus of analogical signification in film and television is the area of editing rhythm. Consider, for example, the following: In a notable study of the formal characteristics of TV commercials aimed at children, Welch et al. (1979) argued -- with strongly supportive empirical evidence -- that the appeal to conventional conceptions of masculinity in commercials aimed at boys should be evident in such stylistic devices as fast editing and the use of straight cuts, while commercials for girls should be characterized by slower editing and relatively greater use of fades and dissolves. Here the meanings conveyed through the visual style -- speed and abruptness vs. smoothness and a more even pace -- are mere abstractions, without any necessary embodiment in the person of a fast-moving male or a gentle female.

It might appear that the ability to perceive an analogy of this sort, with such an attenuated relationship between the image and its meaning, must be a formidable intellectual task, requiring considerable prior experience in abstract reasoning. However, in a follow-up study to the one by Welch and her colleagues, Huston et al. (1984) found that even quite young children were able to infer the gender orientation of an ad on the basis of the kinds of abstract features mentioned above.

One possible way to look at this finding is as an indication of how thoroughly experienced in the "language" of television most young children are these days. It is also conceivable, however, that the ability to perceive such visual analogies is derivative of broader cognitive skills which are not specific to any particular mode of communication, since very similar analogical processes appear to operate in at least one other mode, music (see Meyer, 1956; also Kivy, 1988).

The use of editing to evoke such aspects of gender imagery as abruptness vs. smoothness may be seen as a specific application of a more extensive and frequently-encountered category of editing devices, having to do with temporal rhythm and its associated moods. The fact that editing rhythm can, in and of itself, affect a viewer's

perceptions of the events or characters in a film or video sequence, making them appear more or less dynamic, powerful, etc., has been demonstrated systematically in comprehensive experiments by Kraft (1986) and Penn (1971); and, indeed, we should be surprised if it were otherwise, since that would mean that the innumerable editors who have used such devices have been laboring under a massive collective delusion. Although such uses of editing are extremely common, they are by no means the only forms of cinematic or video image-juxtaposition apparently based on analogy.

Analogical Juxtaposition of Images

A rather different form of analogical editing is best introduced through an example. Towards the end of Kon Ichikawa's "The Makioka Sisters" (a Japanese film made in 1983), there is a scene in which an unmarried woman, who has endured a series of disappointing attempts at third-party match-making, finally meets a suitor she finds attractive. As she faces this man for the first time, Ichikawa's camera goes from a shot of her to a shot of wind-ruffled foliage -- with red colors prominent -- in the window behind her.

By itself, this latter shot can be seen as an extension of the analogical principles discussed earlier in connection with Seurat and the composition of individual images: The shot's vibrant movement and its warm color are both fairly straightforward analogues for the emotions that this scene was presumably designed to convey. However, the presence of the editing adds an element that is absent from the case of single images. Confronted with a juxtaposition of this sort, a viewer must not only be sensitive to the analogical implications of individual images but must also be able to link two (or more) images on the basis of those implications.

In Ichikawa's film, the implied analogy is the sole focus of the juxtaposition between the two images, and a similar singularity of purpose has been characteristic of some of the better-known instances of analogy-based juxtaposition in the history of film editing -- e.g., Eisenstein's cross-cutting between striking workers being massacred by government troops and animals being butchered in a slaughterhouse (in "Strike," 1925) or Alfred Hitchcock's cross-cutting between a sex scene and exploding fireworks (in "To Catch a Thief," 1955).

Perhaps more frequently, however, analogical connections tend to be embedded less obtrusively in editing that also serves a narrative function, as is the case in two of the most-analyzed examples of this form of image juxtaposition: the direct cut from a burning match to a fiery desert sunrise, in David Lean's "Lawrence of Arabia" (1962); and the transition from a proto-human throwing a bone/axe into the air, to a space-station in orbit above the Earth, in Stanley Kubrick's "2001: A Space Odyssey" (1968).

As Clifton (1983) has argued, this kind of merging of analogical and narrative elements may make the analogy less obvious to viewers than it is in cases of purely analogical juxtaposition, and there is indeed some evidence that the ability to discern the extra-narrative implications in editing

combining analogy and narrative may require special visual-literacy skills (Messaris & Nielsen, 1989).

Editing based only on analogy, without a narrative component, has become quite rare in mainstream fiction film and television, but, as Prince (1990) has pointed out, it appears to be gaining popularity in some forms of advertising. In particular, it has become a staple of political ads and videos, such as Ronald Reagan's 1984 campaign film, "The Presidency" (see Morreale, 1991, for a detailed analysis).

Juxtaposition based on visual or conceptual analogy between two images is also very common in print advertising. For example, automotive advertisers have featured their products in association with lions (a Toyota ad emphasizing power and dominance over the competition), ice skaters (an Oldsmobile ad emphasizing smooth performance and elegant styling), jet airplanes (a Dodge ad emphasizing speed and power), eagles (a GM ad emphasizing freedom and ease of travel), and tigers (the well-known Exxon series).

Furthermore, there is another, related category of print advertising that also makes use of analogy but presents it in a distinctly different form. A case in point is a National Dairy Board ad in which a glass of milk emerges out of a peeled banana: The object is to suggest nutritional equivalence, but this analogy is suggested through a merging or blending of the two foods, rather than a side-by-side pairing. As Kaplan (1990, 1992) has suggested, this kind of blending of the two terms of the analogy can be seen as a visual equivalent of the linguistic metaphor. (By extension, the other forms of analogical juxtaposition examined here could be thought of as visual similes.)

Conclusions

We have seen that analogical implications of various kinds are central ingredients of a wide variety of visual devices, including: graphic composition in still images (shapes, lines, colors, etc.); camera placement vis-a-vis the subject of an image; rhythm in film or TV editing; and juxtapositions of visually or conceptually related images in film, television, or print. The more general point that emerges from this discussion is that the ability to discern an analogical connection between an image and its referent, or among two or more images, is an important component of the set of cognitive skills comprising a viewer's visual literacy.

This conclusion also suggests an intriguing corollary: Could it be that, in learning to make sense of visual communication, we also acquire an enhanced facility in analogical thinking (Whittock, 1990)? A parallel connection has been explored by Salomon, who examined the possibility of a causal link between visual literacy and another important area of cognition, spatial intelligence.

The empirical evidence on that specific link is contradictory and inconclusive (in addition to Salomon, 1979, see Forbes & Lonner, 1980, and Wachtel, 1984), but it is probably fair to say that Salomon's question has not yet been addressed directly, and, in any event, there appears to be no empirical research, whether direct or otherwise,

on the issue that concerns us here, i.e., the possibility of a similar causal connection between visual literacy and analogical thinking. These questions are good candidates for further investigation, and it is hoped that the present paper has contributed to suggesting some directions for research along these lines.

References

Bang, M. (1991). *Picture this: Perception and composition.* Boston: Bulfinch Press.

Bateson, G. (1972). *Steps to an ecology of mind.* New York: Ballantine Books.

Bossen, H. (1985). Zone V: Photojournalism, ethics, and the electronic age. *Studies in Visual Communication*, 11(3): 22-32.

Clifton, N. R. (1983). *The figure in film.* Newark: University of Delaware Press.

Espe, H. (1983). Affective meaning of basic shapes. Guest lecture, Annenberg School for Communication, University of Pennsylvania, February 26.

Fischer, J. L. (1961). Art styles as cultural cognitive maps. *American Anthropologist*, 63(1): 79-93.

Forbes, N. E., and Lonner, W. J. (1980). The sociocultural and cognitive effects of commercial television on previously television-naive rural Alaskan children. Final report to the National Science Foundation (Grant No. BNS-78-25687).

Galan, L. S. (1986). The use of subjective point of view in persuasive communication. M.A. Thesis, Annenberg School for Communication, University of Pennsylvania.

Hatcher, E. P. (1988). *Visual metaphors: A methodological study in visual communication.* Albuquerque: University of New Mexico Press.

Homer, W. I. (1964). *Seurat and the science of painting.* Cambridge, MA: The M.I.T. Press.

Hume, D. (1977). *An enquiry concerning human understanding: A letter from a gentleman to his friend in Edinburgh.* Ed. E. Steinberg. Indianapolis: Hackett Publishing Company.

Huston, A.; Greer, D.; Wright, J.; Welch, R.; Ross, R. (1984). Children's comprehension of televised formal features with masculine and feminine connotations. *Developmental Psychology*, 20(4): 706-716.

Kaplan, S. J. (1990). Visual metaphors in the representation of communication technology. *Critical Studies in Mass Communication*, 7(1): 37-47.

Kaplan, S. J. (1992). A conceptual analysis of form and content in visual metaphors. *Communication*, 13(3): 197-209.

Kivy, P. (1988). *Sound and semblance: Reflections on musical representation.* Ithaca, NY: Cornell University Press.

Kraft, R. N. (1986). The role of cutting in the evaluation and retention of film. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12: 155-163.

Krieger, M. (1984). The ambiguities of

representation and illusion: An E.H. Gombrich retrospective. *Critical Inquiry*, 11: 181-194.

Lasica, J. D. (1989). Photographs that lie. *Washington Journalism Review*, 11(5): 22-25.

Lee, E. W. (1990). *Seurat at Gravelines: The last landscapes.* Bloomington and Indianapolis: Indiana University Press.

Messaris, P. (1993). Perceptual bases of visual literacy. In R. A. Braden, J. Clark Baca, and D. G. Beauchamp (Eds.), *Art, science, and visual literacy: Selected readings from the 24th annual conference of the International Visual Literacy Association.* Blacksburg, VA: International Visual Literacy Association, pp. 245-251.

Messaris, P. (1994). *Visual "literacy": Image, mind, and reality.* Boulder, CO: Westview Press.

Messaris, P., and Nielsen, K. (1989). Viewers' interpretations of associational montage: The influence of visual 'literacy' and educational background. Paper presented to the Association for Education in Journalism and Mass Communication, Washington, D.C., August 12.

Meyer, L. B. (1956). *Emotion and meaning in music.* Chicago: The University of Chicago Press.

Meyrowitz, J. (1986). Television and interpersonal behavior: Codes of perception and response. In G. Gumpert and R. Cathcart (Eds.), *Inter/Media: Interpersonal communication in a media world*, 3rd ed. New York: Oxford University Press, pp. 253-272.

Mitchell, W. J. (1992). *The reconfigured eye: Visual truth in the post-photographic era.* Cambridge, MA: The MIT Press.

Morreale, J. (1991). *A new beginning: A textual frame analysis of the political campaign film.* Albany, N.Y.: State University of New York Press.

Peirce, C. S. (1991). *Peirce on signs: Writings on semiotics.* Ed. J. Hoopes. Chapel Hill: University of North Carolina Press.

Penn, R. (1971). Effects of motion and cutting rate in motion pictures. *AV Communication Review*, 19(1): 29-50.

Prince, S. (1990). Are there Bolsheviks in your breakfast cereal? In S. Thomas and W. A. Evans (Eds.), *Communication and culture: Language, performance, technology, and media.* Norwood, NJ: Ablex Publishing Corporation, pp. 180-184.

Reaves, S. (1989). Digital alteration of photographs in magazines: An examination of the ethics. Paper presented to the Association for Education in Journalism and Mass Communication, Washington, D.C.

Ritchin, F. (1990). *In our own image: The coming revolution in photography.* New York: Aperture.

Salomon, G. (1979). *Interaction of media, cognition, and learning: An exploration of how symbolic forms cultivate mentals skills and affect knowledge acquisition.* San Francisco: Jossey-Bass Publishers.

Snyder, J. (1980). Picturing vision. *Critical Inquiry,* 6(3): 499-526.

Wachtel, E. (1984). The impact of television on space conception. In S. Thomas (Ed.), *Studies in mass communication and technology: Selected Proceedings from the Fourth International Conference on Culture and Communcation.* Norwood, NJ: Ablex Publishing Corporation, pp. 168-174.

Wartofsky, M. (1984). The paradox of painting: Pictorial representation and the dimensionality of visual space. *Social Research,* 51(4): 863-883.

Weale, R. A. (1982). *Focus on vision.* Cambridge, MA: Harvard University Press.

Welch, R. L.; Huston-Stein, A.; Wright, J. C.; and Plehal, R. (1979). Subtle sex-role cues in children's commercials. *Journal of Communication,* 29(3): 202-209.

Whittock, T. (1990). *Metaphor and film.* New York: Cambridge University Press.