Visual Perception Theory and Instructional Communication[1]

KENNETH NORBERG

The subject of this paper is large, and arbitrary limits must be drawn for the sake of intelligibility and emphasis. This discussion of perception theory, as related to instructional media, will be focused upon the raw visual experience (excluding verbal and other abstract symbols) that enters into instructional communication and learning. Perception theory pertains both to communication and to learning, but sometimes the relationship to only one of these processes is made explicit, while the other is taken for granted. Information theory, for instance, affords an approach to the study of perception that emphasizes the transmission of information. Transactional psychology, on the other hand, focuses attention upon the conditions whereby perceptual behavior derives its structure and may be altered—through a process of learning. This is a gross oversimplification, but it does suggest a useful distinction. In the one instance, perception is viewed as a kind of direct appropriation of "prefabri-

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Kenneth Norberg is professor of education at Sacramento State College, Sacramento, California, and president of the Department of Audiovisual Instruction for 1966-67.

cated" content to be learned; in the other, it is regarded as one of a series of behavioral events, or transactions, out of which the content of learning is to be derived or constructed. Further implications of this rather crude distinction will be developed in the following discussion.

The subject of perception, as such, has not received much attention in educational literature—this despite the fact that many theoretical statements and research studies reflect implicit assumptions regarding the nature of the perceptual process and its bearing upon instruction/learning. In the context of instructional media, *AV Communication Review* has published a number of papers and book reviews on this subject, dating back to the first issue in 1953 (11). In the same year, this was followed by reviews of two important books and by a brief exchange of comments between J. J. Gibson and myself which highlighted the extremely sharp divergence between the psychophysical psychologists and the transactional group. In the following year, *AV Communication Review* published Gibson's paper "A Theory of Pictorial Perception" (6), which was described in the foreword by A. A. Lumsdaine and S. M. Roshal as "a first attempt to develop a systematic theory of pictorial perception," and "an important contribution both to psychological theory and to the ultimate development of a science of audio-visual instruction." Gibson's article is still a landmark in the field, and we will return to it later, briefly, as a base for discussion of variant points of view and more recent developments.

In 1962, a special issue of *AV Communication Review*, edited by this author, brought together a group of distinguished contributors who prepared articles on the general subject of "Perception Theory and AV Education" (12). These included Rudolf Arnheim, representing gestalt theory; Julian Hochberg, expressing a psychophysical point of view; Hans Toch and Malcolm MacLean, transactionalists; and Franklin Fearing, who wrote more or less from the standpoint of field theory. Since then, a number of seminal publications and research reports have appeared, but of the relatively few that bear directly upon educational media, there are two recent major studies, in my opinion, which demand attention in particular. These are James Q. Knowlton's "A Socio- and Psycho-Linguistic Theory of Pictorial Communication" (8) and Robert M. Travers' "Re-

search and Theory Related to Audiovisual Information Transmission" (15). Both are rather voluminous soft-cover volumes (in limited supply) resulting from Title VII (NDEA) research studies. An article summarizing some of the main ideas and findings of Travers' monograph appeared in the Winter 1964 issue of *AV Communication Review* (16).

PSYCHOPHYSICAL THEORY

In order to establish a baseline for further discussion, it will be necessary to review briefly Gibson's 1954 article, "A Theory of Pictorial Perception" (6).[2] In this paper, Gibson notes that perception enables us to make discriminations among features of the physical environment, and to identify objects, places, and events when we encounter them on another occasion. Frequently, people have to be trained or educated in situations other than those in which the learning will be practiced. Thus, there is a need for substitute or "surrogate" stimuli which are relatively specific to objects, places, or events not at present affecting the sense organs of the perceiving individual. An important assumption is ". . . that direct perceptions correspond to realities, or rather that they come more and more to do so as the perceiver learns. Accordingly we are primarily interested in how perceptions mediated by *surrogates* also come to correspond to realities" (6, p. 7). Thus, Gibson's focal concern in this paper is the problem of fidelity in pictorial surrogates. A faithful picture is defined as one which reflects or transmits a sheaf of light rays to a given point which is the same as would be the sheaf of rays from the original to that point. In general, a good pictorial surrogate is one which corresponds to the original with maximum fidelity. However, pictorial (replicative) surrogates may vary with respect to their degree of realism or the extent to which they actually duplicate the features of the original object. Thus, between purely replicative surrogates such as realistic pictures, on the one hand, and purely conventional surrogates such as verbal and other abstract symbols, on the other, are "mixed surrogates" which have some general features of that which is represented. As for the relative values of the several varieties of surrogates, "Pictures and models are better

[2] It should be noted, of course, that this article was written at least 12 years ago and may not reflect the author's views as he would state them at this time. (Professor Gibson has not published recently on the specific subject of pictorial perception, to my knowledge, although I understand he has a new book on the general subject of perception in preparation or in press.)

than words and symbols for learning about concrete things . . ." whereas "Words and symbols (including graphic symbols and geometrical drawings) are essential for learning about properties, variables, groups, classes, and universals . . ." and, of course, words are needed to manipulate propositions and to form new ones (6, p. 22).

The import of Gibson's 1954 analysis seems quite clear. What we perceive is what is given—what is antecedently "there" in the external world, and the function of the replicative surrogate is simply to satisfy conditions, supplying a pattern of retinal stimulation which closely approximates that which would occur in the presence of the original. The conditions are physical and can be described in mathematical terms. Just how learning results from perception is not systematically discussed in this article; after all, the article is about pictorial perception, not about learning. But the implication which seems to underlie the entire discussion is that what we learn from perception is just what we see, or what is "given" by the initial visual stimulation. The strength of this position is that it is, in a sense, undeniably true. Its weakness, if it has one, is that it leaves out of account the variability of perceptions under constant or similar conditions of retinal stimulation, and the related notion that learning typically involves some "trying out" of the information we receive from external sources. This is not to deny the importance of considering what constitutes fidelity in a pictorial surrogate, nor the obvious instructional advantages of being able to simulate objects and other environmental conditions not directly accessible to the learner, but rather to note a distinction between a psychology of replicative surrogates and a psychology of perception as related to learning. But more about this later.

In a paper published in 1962, Hochberg (7) continued the psychophysical line of analysis in his discussion of the specification of stimulus variables that control our perceptions of pictures, exploring such problems as what constitutes an edge, what makes a figure look like a solid object, or the psychophysics of represented form. This informative survey pointed out that much remained to be done in this important area of research. In the same issue of *AV Communication Review*, a transactional view of perception and audiovisual learning was outlined by

Hans Toch and Malcolm MacLean (14). This recent review of the transactional position and Hochberg's discussion from the psychophysical standpoint made it apparent that the issues discussed by Gibson and myself eight years earlier were still very much alive in 1962, as they are today and will no doubt remain for a long time to come. However, to say that the issues are "alive" is not to imply that they are prominently or frequently discussed, explicitly, in the psychological or educational research literature—quite the contrary. The issues are alive merely because some of the same underlying (often implicit) assumptions are still operative in divergent styles and interests that characterize current research and theoretical development. A good case in point is the important and challenging work recently reported by Robert M. Travers and associates to be discussed next.

AN INFORMATION THEORY APPROACH

Drawing upon the literature of experimental psychology (and to some extent upon their own research), Travers and his associates (15) have constructed a theoretical model for the "transmission of information" by audiovisual materials. In a broader sense, they offer an approach to the study of communication (and perception) in terms of information theory as applied to psychological research, drawing upon the prior work of Broadbent (4) in particular. Essentially, the proposed theory is a close adaptation of Broadbent's model of the human information-processing system which features the notion of a limited-capacity channel ("P system") fed through a selective filter from a short-term storage reservoir of sensory inputs—a concept which is fully described in Broadbent's 1958 publication, *Perception and Communication* (4). Travers' adaptation provides for a "compression" stage as information enters at the receptors and for some elaboration of the processes presumably subsumed under Broadbent's "selective filter." The central idea is that of a single-channel data utilization system which passes only one message at a time. Thus, in tracing the implications of his model for the use of audiovisual materials, Travers is particularly critical of the notion that multimedia presentations increase learning by virtue of the plurality of media involved. He holds that exactly the opposite effect may result when too much information is presented through two channels simultaneously, unless the density of information and rate of presentation is

sufficiently low to compensate for the overloading by which relevant information may be lost. For similar reasons, Travers concludes that emphasis on realism in instructional materials is the "worship of a false god" (16, p. 380). The intelligent use of information by human receivers is a highly selective process which may be impeded by the presentation of realistic and irrelevant detail.

In order to understand Travers' position, it is necessary to examine at least some of the experimental studies from which his conclusions are drawn. In one study by Van Mondfrans and Travers (15), nonsense syllables and words were presented to subjects in three different modes: visually, by sound, and by the two modalities combined. In terms of the quantity of material recalled, it was found that at lower speeds of transmission, there were no significant differences among the three modes of presentation; i.e., it didn't matter whether the syllables or words were presented visually, in spoken form, or in "AV" combination. When the information was presented at higher speeds of transmission, "a significant decrement was found in the AV presentation." The lower effectiveness of the combined audio and visual presentation, as compared with single-channel transmission, was attributed to interference of one mode of transmission with the other.

In a similar experiment involving passages from a reading text (15), it was found that AV (combined audio and visual) presentations *did* yield better results at higher speeds than single channel, but it was also observed that subjects tended to block one channel or the other. This was interpreted to mean that when dealing with meaningful reading material, some subjects do better with the visual channel, some with the auditory —so a given subject may select his favored channel and block out the other. Thus, assuming selective screening of one channel or the other, the superior overall result for the AV presentation is still consistent with the single-channel model of information transmission.

In a third experiment by Chan, Van Mondfrans, and Travers (15), a set of nonsense syllables was prepared in two forms, one with special type and in color against a decorative background, the other in plain black and white letters with no decorative background. A different set of nonsense syllables was prepared

for auditory and simultaneous presentation with the visual sets. Thus, each time a subject was exposed to a visual nonsense syllable, he heard a different (and potentially competing) nonsense syllable at the same time. One group saw the colored and decorated visual presentation, the other the black and white, each with the accompanying auditory stimuli already described. In terms of the total number of visual and auditory syllables recalled, both groups performed about the same; i.e., the difference was not statistically significant. The group that saw the colored and decorative presentation had better recall of the visually presented syllables, but at the expense of the auditory channel. The results with the other group were just the reverse.

With respect to the findings of the studies just mentioned, it is of primary importance to keep in mind the fact that they deal exclusively with verbal symbols, whereas most two-channel presentations actually used in instructional situations typically combine nonverbal signs in the visual channel with verbal auditory stimuli. It is not difficult to understand why Travers and his associates have concentrated their attention upon the relatively simplified problem of rate of transmission and interchannel interference where the sign stimuli in both channels are verbal. It is even plausible that the conclusions drawn may have general relevance and validity beyond the limits of these highly important and suggestive studies, but it is still necessary to distinguish carefully between the actual experimental findings and theoretical statements regarding nonverbal "realistic" stimuli which have not entered into the experimental work cited above. It is one thing to say that the "density" of information in stimulus materials presented to the learner may become a factor impeding efficient transmission; i.e., some presentations may be too realistic. It is something quite different to argue that "realism" is therefore "the worship of a false god" (16, p. 380). The latter conclusion really constitutes two assertions: (a) that there is somewhere a band of "worshippers" who presumably ascribe some sort of innate communicative or instructional value to "realism," as such, and (b) that the value of "realistic" presentations is illusory because they typically contain extraneous and potentially overloading information which generally ought to be eliminated by precompression of the message.

The first assertion seems to be directed primarily toward producers and designers of audiovisual materials, who do not ordinarily publish their views regarding such matters—but some of the charge spills over onto the professional audiovisual literature, where, despite some occasional extravagant claims in the past, it would be extremely difficult, I believe, to find recent published (or unpublished) statements expressing a "worshipful" or indiscriminate regard for "realistic" instructional materials in their own right. The second assertion seems to me an overgeneralization, subject to the interpretation that the same principles of compression which make it possible to speed up communication of verbally encoded information can and ought to be applied more or less across the board to any raw information of high density in the interests of efficient communication. Sometimes yes, sometimes no!

A point of interest here is that Broadbent, from whom Travers derived his model of the human information-processing system, tends to emphasize the value of auditory transmission of information by verbal symbols (even though he acknowledges that vision is the most highly developed sense) on the grounds of the unique importance of lingual communication in human behavior (4, pp. 2-3). Travers' work in this area, thus far published, also leans toward a linear, lingual model of communication (whether auditory or visual) which features measurement in terms of units of information transmitted per unit of time—an approach which, for apparent reasons, avoids the complications that would arise if the units being measured were incommensurate, or at least very difficult to equate. Or, to put it another way, one might speculate that the information theorist working in this area does not concern himself with qualitative differences among classes of sign stimuli because his focal concern is the problem of transmission. However, there is an important qualification to what has just been said. From an experimental standpoint, studies centered upon the concept of transmission tend to deal with uniform message elements, such as verbal symbols, perhaps for the sake of methodological neatness—but having identified findings which hold under such conditions, the experimenter finds nothing in his theoretical model to prevent generalizations which can be applied to a "mix" of verbal and nonverbal message components.

Essentially, the information theorist seems to be saying that what goes in one end of the communication process is what comes out of the other, except for what may be blocked, filtered, or garbled due to "noise." In terms of perception (and this has much in common with psychophysical theory), we perceive what is antecedently "there"—given suitable conditions of transmission—and what is "there" is that which is *already* classified, known, or understood, that for which we have an available response. So it doesn't make much difference whether the object of perception or item of information is a word, an object, or a picture of an object. Realism conceived primarily as "density" of information implies selection or "compression." This is a matter of great importance in human behavior and learning, and Travers' comments in this regard are timely and valuable. The danger that occurs in a discussion of realism as "density," in the context of information theory, is that it seems to lend itself to a tendency to equate the functions of various classes of signs and to reduce or transform raw iconic information into quasi-conventional symbols, such as schematic drawings, which become more or less interchangeable with their verbal equivalents. This may be most desirable in some circumstances, but exact specification of the proper (and improper) circumstances may be impeded by a model of communication and/or perception that has very little to say about classes of signs, or iconic signs in particular. Another theory, to be considered next, centers its attention upon the nature of the iconic sign as *the* central problem of pictorial communication.

A THEORY OF PICTORIAL COMMUNICATION

James Q. Knowlton has developed a theory of pictorial communication focused upon social and psycholinguistic factors (8). Starting with the assumption that further theoretical and experimental development of this area requires a unit of analysis, he describes his monograph as an effort to develop a "metalanguage for talking about pictures" (8, p. ii). The dominant linguistic orientation of Knowlton's study is indicated in the following quotation: "Whether or not a pictorial symbol signifies depends upon whether or not the intended concept has already been attained by the interpreter of the symbol; and this last is preeminently a linguistic accomplishment" (8, p. 1.1-1.2). To a large extent, the function of pictures is to aid in the development of the linguistic conceptual structure

within which they have meaning. But pictures also have certain unique functions which mark the limitations of language as a tool of thought. (Some of these will be mentioned presently.)

As a preface to his study, Knowlton undertakes a critical analysis of audiovisual research. He argues that the main trouble with this field of inquiry stems from its preoccupation with media and its lack of a suitable, carefully defined unit of analysis: specifically, the pictorial sign. Media presentations, such as sound motion pictures and television programs, typically offer a mixture of pictorial signs and verbal symbols. Thus, when an audiovisual medium is compared, as an experimental variable, with some "conventional" (say, exclusively or dominantly verbal) mode of presentation, the results must be inconclusive because there is no way to satisfactorily describe the unspecified "mix" of pictorial and verbal elements that constitute the audiovisual presentation. We don't know what behavioral results may be due to pictures, what to words, much less to unique combinations of these two classes of signs. Audiovisual research ought to be focused upon the distinctive component in audiovisual messages, which is the picture. To develop a science of audiovisual communication, we must first describe the unit for analysis—the pictorial or iconic sign. Knowlton was not the first to note this need, but he was certainly one of the first to engage in a major effort to do something about it.

In the compass of this article, it is impossible to present anything approaching a summary of Knowlton's monograph on pictorial signs, and to do justice to it. In this context, it will suffice to emphasize the fact that he would advise investigators of communication and teaching to pay attention to the qualitative differences among classes of signs. In this respect, he is in the philosophic tradition of Charles Sanders Peirce (13), who was the first modern philosopher to discuss iconic signs (which he called "icons"), and Charles Morris (10), who introduced the more recent term, "iconic sign," meaning a sign that looks like the thing it represents.

Despite their dependence upon the linguistic context of the culture, pictorial signs have important differences, limitations, and powers, as compared with speech. Knowlton underlines the fact that linguistic science has already provided important ob-

servations regarding some of these differences. For instance, speech requires little energy, a minimum displacement of other activities, depends upon the vocal-auditory channel, is independent of light, is nondirectional, and rapid-fading. A person who can interpret a language can also produce it.[3] All of these factors are different in the case of pictorial signs, some of them drastically so. Another significant difference is that pictorial signs are continuous (capable of gradual and continuous modifications of form), whereas lingual signs are discrete.

Knowlton emphasizes the fact that it will not suffice to talk about the value of pictures or iconic signs *in general,* or as an entire class. The communicative value of a given picture depends, in some important measure, upon what we wish to signify. An "identity category" (specific referent) calls for a highly iconic sign; an "equivalence category" (concept) may be signified by using a schematic drawing with little or no realistic detail. But realistic iconic signs often "say too much" and schematic symbols may become too barren. In all cases, we must remember that language is the prime technology of the human mind, the master learning set, and we should use pictures to further the learner's command of verbal processes. Pictures used improperly or in the wrong context may even interfere with the operation of logical processes inherent in language. Our initial perceptions of the world do not provide an immediate grasp of reality. What is needed is a means of operating upon perception when it is false, or going beyond it to deal with concepts. The logical system inherent in language is an indispensable tool for this task (8, p. 5.55-5.56).

On the other hand, language has its distinct limitations. There are certain kinds of special tasks for which pictures are uniquely suited or even indispensable. Pictures may lend strong dramatic impact to certain kinds of messages and thus facilitate acceptance. Pictures may be used to deal with aspects of the world that have not been encoded in language. Even more interesting is the suggestion that iconic imagery may play a critical role in the behavior of invention "where language may be of little use in first coping with fundamentally and distinctively new problems" (8, p. 6.17). Knowlton's analysis of iconic signs

[3] This statement and the preceding list of characteristics are based upon Charles Hockett's analysis of "design features" of speech.

includes not only realistic pictures but also "logical pictures" and "pictorial analogies." In a summary statement dealing with the latter types of iconic signs, he observes: "Iconic representation would seem to have a widely ignored potential for 'portraying' nonphenomenal matters, especially theories; or, more generally, for making the unfamiliar familiar through pictorial analogy or through pictorial analogy by extrapolation . . ." (8, p. 6.35).

From the standpoint of perception theory and its implications with regard to instructional media, what can be said of the recent developments represented by the work of Travers and Knowlton? Do they merely approach a large and complex problem from different angles, or have they actually started from radically different sets of assumptions? In honesty, I am not prepared to attempt a complete answer to this difficult and admittedly philosophic question, but I think the question is a pertinent one. Within the limits of this paper, I can only suggest that the answer must start with the observation that one theory seems to be relatively unconcerned with the qualitative differences between classes of signs, whereas the other considers this problem to be central. Of course, information theory has a way of dealing with iconic signs in mathematical terms as constituted of "bits" of information, which is a unit of analysis also applied to verbal symbols. One could argue that the neutrality of the "bit"—its lack of categorical, qualitative characteristics—is merely a methodological phenomenon and has nothing to do with the macroscopic aspects of signs regarded as meaningful objects of ordinary experience; but this observation settles nothing. It merely transposes the problem from terms of content to terms of method. One must still consider why one approach is satisfied with a method that ignores or swallows up qualitative differences between categories of signs, while the other begins by making such qualitative distinctions a matter of primary concern. One clue to the answer may be found in the distinction between "linear" and "nonlinear" signs proposed some time ago by Susanne Langer (9) and others.

PERCEPTION AND NONLINEAR SIGNS

While Langer used the terms "linear" and "nonlinear" to distinguish between verbal and iconic signs, it has already been noted that some theorists tend to ignore or discount this distinc-

tion, with the net result that the total communication process seems to fall into the pattern of a simple linear progression of signs (whether verbal or nonverbal, or both), each sign depositing its particular load of meaning as it arrives at the terminus of the transmission system. The point is not that pictorial or other iconic signs cannot be used in a linear fashion; within limits, they can be used this way with some help from verbal signs, but when this occurs they become quasi-verbal symbols, conventional signs that have surrendered some part of their distinctive power as iconic signs.

Nonlinear (iconic) signs have a unique function in human communication and learning. Langer's discussion of linear and nonlinear signs stresses the sequential ordering, the strung-out arrangement of linear signs in time, as opposed to the all-at-once character of the nonlinear sign or presentation. But the distinction deserves further analysis. Single pictures or more complex iconic displays may be said to be nonlinear not merely because one beholds an entire visual array, all at one time, but because what is perceived has a degree of independent meaning, or openness of meaning, by virtue of the fact that it is not constrained by its place in some grammatical structure of which it is a term or part. The beholder who encounters an iconic sign or display is, of course, not cut off from prior experience. He always relies upon a deposit of past experience—what Kenneth Boulding has described as the "image" (3)—to cope with the present. But this sort of linearity, this cumulative building of meaning which enters into all perceptions, is something quite different from the formal linearity of signs which are bound together in the grammatical structure of a lingual statement. The nonlinear sign or presentation is free of the latter control, but not of the former. However, its freedom from grammatical constraint may be an important factor in the generation of meanings which require modification of given categories or the development of new ones.

This is not to imply that iconic signs or nonlinear presentations have some exclusive magical power of their own (which is wholly independent of lingual communication) to generate new meanings. New insights cannot be instituted as meanings in the human community without lingual formulation, whether accompanied by the invention of new terms or reinterpretation

of terms already in use. And once a new idea has been formulated, the development of its widely ramifying elaborations and implications may magnify and spread the impact of new meaning through lingual means. There is no need to acknowledge the importance of the linear or lingual sign as representing the dominant mode of human communication. Language is the dominant mode of communication because the need to disseminate knowledge already gained, *and* to formulate and develop the implications of fresh experience, overshadows the little understood function of raw nonlinear elements in the communicative process. Perhaps it is because of the dominant role of language that there is a tendency in some strains of perception theory and related communication theory to ignore the distinctive nonlinear character of iconic signs and then to discount their importance because they don't serve the function of linear signs as well as lingual signs do. Of course, they don't do that and shouldn't be so employed because a picture ordinarily has no business merely "standing in" for a word, just as a word can't and shouldn't be expected merely to "stand in" for a picture or, for that matter, for a concrete object.

It has already been suggested that a model of communication which tends to describe this process primarily or exclusively in terms of "transmission" of information will also be inclined to ignore or discount the differences between iconic and verbal signs and to treat all alike as though they were merely "linear." There is much to be said for the simplicity of such a model, as well as its applicability to much of what occurs in human communication. Such an approach to communication appears to have a good deal in common with the psychophysical and other "extroverted" (2) theories of perception in that the emphasis in both instances is upon the dominant effect and uniform results of the "external" factors or "given" information that impinges upon the receiver or perceiver. Arnheim has described the "extroverted" psychologists (and philosophers) as those who believe that "... man functions under the impact of the outer world and that his ways of thinking about it and his image of it are dictated by the nature of that outer reality," whereas the "introverted" psychologists are those who "... consider the outer world amorphous" and believe that "... order, character, and lawfulness are imposed upon it by a mind stocked with

ideas which are inborn, inbuilt, or adopted from other minds" (2, p. 11). This terminological distinction is provocative and provides a way to think about theories of perception. But there is a kind of futility in arguing the relative merits of the "external" stimulus as opposed to "internal" structuring of perceptual behavior; almost everyone seems to agree that both loci of control must be taken into account. After this argument has occurred, the choice of emphasis or relative weighting of external and internal factors may provide a convenient way of classifying perceptual theories, but something more is needed, it seems, to explain why some theorists lean in one direction, some in the other.

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A great deal of human experience and communication is constituted of information which is merely passed on, or transmitted, in the sense that the receiver/perceiver has a prearranged and highly predictable response as to the sense of the item of information or the message. The predictability of response to a sign stimulus is increased when the sign occurs as a "linear" item in the grammatical context of a verbal statement. An "extroverted" theory of perception is appropriate when dealing with such experience or such aspects of communication. When dealing with iconic signs, the "extroverted" theorist is concerned with factors that make responses to such signs reliable or highly predictable. Thus, predictability of response in the case of "realistic" iconic signs is sought by contriving a "surrogate" stimulus that will reflect a sheaf of light rays to a given point which is closely similar or identical to that reflected by the original object, for which the iconic or pictorial stimulus is a surrogate. However, "realistic" signs may give rise to divergent responses. So, if we want a "univocal" or highly predictable response, it is best to strip the iconic sign of some of its realistic details and schematize it, in which case it is modified into a quasi-conventional symbol (6).

An "introverted" theory of perception is needed to deal with another large segment of human experience and communication which is constituted of meanings that are not merely given, passed on, or transmitted, but are taken, seized upon, in some part generated by the receiver/perceiver himself. In this arena

of perception and communication, the theorist is concerned with responses which are not highly reliable and not necessarily for the sake of increasing reliability of response. He may even wish to encourage *divergent* responses to the same information and thus to demonstrate that communication is not merely transmission, that perception is not just the apprehension of some meaning which is antecedently and completely "there" prior to the act of perception itself.

It would be impossible to live at the human level unless a great deal, perhaps the great preponderance, of what is perceived and/or communicated were taken for granted, as given by the source, as categorized and imbedded in the common lingual structure of the culture. It would also be impossible for man to adjust to change, to cope with the new, to expand human knowledge, to grow in understanding unless perceptual and communicative responses were in some degree spontaneous, self-oriented, and thus capable of dealing with the sporadic, the indeterminate, the ambiguous. Perception operates not only in situations that require an answer, but also in those that require the discovery of the question to be answered. The perplexing problem of perception theory is that it must account not only for that which is ordered, settled, determinate, but also that which is indeterminate and contingent.

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