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THE PSYCHOLOGY OF LANGUAGE I: A THEORETICAL ANALYSIS OF 'MEANING'*

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I. Introduction

'Meaning' has been somehow everybody's business. Everybody, regardless of his background, seems to have his say on the subject. A study of 'meaning' is sometimes facilitated by various views thus expressed, while such a study may be attempted in direct response to the confusion thereby created.

Metalinguistically speaking, MEANING is a word which can be used in inter- and intra-individual communication just as any other word, but it has some peculiarities that we may well note. First of all, it has bewildering varieties of usage not only in lay language but in highly technical languages, while contrasting at the same time with a generic term such as 'animal' or 'fruit' which has many members as its species. Secondly, it is so commonplace and presumably so self-evident that it is invariably used without any qualification (with the exception of quotation marks), but at the same time it is so complex and elusive that no definitive treatment of the subject has ever been accomplished. The latter duality is concisely revealed in the title of a book: *The Meaning of Meaning*. Some students of the subject have reacted to the puzzling problem by taking a position so negative as to say that it is non-sense to talk about 'meaning.'

To study how the word MEANING is used is one thing, and to study what, in psycho-physiological terms, constitutes 'meaning' is another. The former is a matter of definition and only to a moderate extent helpful for the study of 'meaning.' The latter, on the other hand, is a highly complex as well as important task for psychologists, philosophers, and, in a limited way, linguists. This will naturally occupy a major part of the present paper.

The question of 'meaning' will probably be best handled by first (1) examining situations or contexts with which it is intimately related, then (2) isolating common and essential characteristics of 'meaning,' then (3) demonstrating how 'meaning' is acquired, and finally (4) relating the concept of 'meaning' to broader problems such as language, thinking, perception, etc. Limiting its scope, however, the present paper places an emphasis on (1) and (2), leaving the rest only to casual observation.

II. On the context of 'meaning':

The term MEANING, as pointed out earlier, has not only been used in various linguistic contexts in English (Ogden & Richards, 24; Lounsbury, 16) but also concep-

*The present paper is an extension of the writer's two previous papers. It is in part based on his doctoral dissertation (3) presented to Yale University Graduate School and Major Area Paper (2) submitted to Department of Psychology, Yale University.

tualized quite differently (for views and reviews, see Stevenson, 34; Morris, 22; Osgood, 25; Brown, 6). As we understand it, the former is simply a matter of definition whereas the latter is theoretical in nature.

Lounsbury (16), while trying to analyze the complex of situations in which the concept of 'meaning' is used, distinguishes four intersecting "dimensions" of difference among the varieties of 'meaning' and dichotomizes along each of these "dimensions" the entire situations to which the concept of 'meaning' is applied or related, as follows:

- 1) Situational vs. behavioral
- 2) Linguistic vs. extra-linguistic
- 3) Extra-organismic vs. intra-organismic (within the latter, cognitive vs. affective and covert linguistic)
- 4) Particular vs. generalized vs. abstracted

However different and unrelated one end of the spectrum may appear from the other end, the theory of 'meaning' ought to incorporate somehow, possibly in an hierarchical order, all the elements included in Lounsbury's analysis. This roughly adumbrates the scope and complexity of the concept of 'meaning' which is to be dealt with here. Let us examine the concept of 'meaning' in a broader context, following the clues given above.

One of the reasons why psychologists are concerned with the question of 'meaning' in the first place seems to lie in the almost-universal feeling that 'meaning' has something to do with the behavior of man, either as a stimulus or response term. The following episodes are fictitious but certainly not improbable events. We will find it not very difficult, if asked to do so, to interpret these events in terms of the meaning of the objects or events involved, or changes thereof. (a) An old farmer, on leaving the long familiar place, suddenly kneels on the ground to kiss it farewell. (b) A rat, immediately after being satiated, ignores its favorite food, but will eagerly approach toward it after being deprived of food for 24 hours. (c) Upon breaking a cup against the floor, a child would hastily collect and hide the broken pieces when alone, but would probably behave differently if his father happens to be around, staring at him disapprovingly. Here, if what one does to, or in the presence of, a stimulus-object may be taken as a legitimate index of what it *means* to him, there should be no logical ground for objection against formulating that the meaning of a stimulus-object is, in the most general terms, a function of not only the physical properties of the object itself but the past experience, both general and specific with respect to the given object, and the present motivational conditions of the person as well as the context in which the object is perceived. However complex the concept of 'meaning' is made to appear in the above analysis, it must be realized that the concept of the symbol-meaning is a matter of greater complexity as we shall see later. As a matter of fact, the object-meaning is usually disregarded or, at best, regarded as so self-evident that the students of language have hardly given any consideration to it despite the fact that the object-meaning is closely related to, and in a way the prototype of, the symbol-meaning. Further discussion on the context of 'meaning' will be given in conjunction with the discussion of the concept of 'meaning' below. In concluding this section, it

may be appropriate to isolate from the above analysis three variables with which the concept of 'meaning' is intimately related as follows: (1) the world of objects and events (physical reality), (2) non-object patterns of stimulation (signs and language), and (3) organismic variables (past experience and motivational state of the organism).

III. On the concept of 'meaning':

We have now come to the point where we can profitably proceed clarifying historical and conceptual disagreements about the concept of 'meaning,' hopefully to achieve a most adequate definition of it at the end. When we speak of a symbol *standing for* something other than itself, what is it, in psycho-physiological terms, that which is called forth in the user and recipient of the symbol? Despite its intrinsic importance, psychologists are far from reaching a complete agreement as to what constitutes the psycho-physiological basis of the meaning of the symbol. One reason for this is apparently inbedded in one of the most celebrated controversies in psychology, that is, the controversy over whether it is the stimulus or response that is learned when one learns to respond to a given pattern of stimulation in a certain manner. Another stems from the difference between two general approaches to the theory of behavior, notably between the functional approach of Skinner (30) and the mediation-process approach of Osgood (25), pertaining specifically to the study of language. Over and beyond these, we may do well to take cognizance of the nature of a scientific endeavor of theory building and testing (cf. N. E. Miller, 19). Disagreement among psychologists with regard to the conception of 'meaning' thus ought to be viewed in the light of a broader context as suggested above as well as in the historical perspective of psychology as a growing empirical science.

Morris (21) recognizes in semiosis, which is defined as "the process in which something functions as a sign," three factors, viz. the sign vehicle, the designatum, and the interpretant, the interpreter being suggested as a possible fourth factor. Ogden & Richards (24) express essentially the same notions in somewhat more familiar terms, that is, the symbol, the referent, and the thought or reference. To Morris the interpretant is "that effect on some interpreter by virtue of which the thing is a sign to the interpreter," whereas to Ogden & Richards the thought is the causal link between the symbol and the referent, or some mental state or process "which is directed and organized, ... recorded and communicated." Despite their mentalistic fallacy, the above authors have made two points clear, that is, (1) the concept of 'meaning' should not be limited to a simple dyadic relation between the symbol and the referent, and (2) there is no intrinsic connection between the two.

Previously, with the aid of Lounsbury, we were able to isolate three factors with or within which 'meaning' is thought to lie, namely, (1) physical reality, (2) language, and (3) organismic variables. These factors, incidentally, correspond roughly to the three basic factors in semiotic process raised by Ogden & Richards, i. e., referent, symbol, and reference (which form the classic *Triangle of Symbolism*) respectively.

Let us next critically review various historical conceptions of 'meaning,' both linguistic and psychological.

Linguistic concept of 'meaning': The present writer will present here what is commonly regarded as the traditional concept of 'meaning' entertained by linguists, not a behavioristic one which an increasing number of contemporary linguists hold.

Bloomfield (5) sets the tone for linguists on the subject of 'meaning.'¹ Though he gives a fair account of it in a broad context, his view is rather narrowly taken and generally accepted by linguists as to imply that the field of linguistics includes only the description and analysis of a logical syntax of language without any reference to 'meaning.' Generally the linguist's interest in 'meaning' is rather trivial, being limited to what little is involved in the classical 'same-or-different' judgment. We cannot but note here a peculiar position Bloomfield takes. He seems to have something highly specific in mind when he uses the term MEANING as he writes that it is a task of the chemist, not the linguist, to investigate "what salt means." MEANING as used here seems to refer to the specification or apprehension of the physical properties of salt in more basic terms such as molecules or atoms, or in terms of functional relationship either among these elements or between salt and other substance. Another distinct type of the concept of 'meaning' is commonly associated with the work of the semanticist or lexicographer. Two principal work methods at their disposal are the unilingual method of paraphrase and the bilingual method of translation, and the 'meaning' of a linguistic form is defined here in terms of equivalent forms. This definition is circular and, from our point of view, quite inadequate.

Psychological concepts of 'meaning': Psychologists have in the past developed many notions of 'meaning' and made many attempts to associate them with other concepts or processes in psychology. Let us review some of the representative ones next.

a) *'Meaning' as an image*: In the contemporary psychology textbooks the present topic is usually treated only in passing, and the only impression that is left with the reader is that it is off the mark and out of date. To do a full justice to the topic and its history, though worthy of effort, is beyond the scope of the present paper. It may probably be sufficient to appreciate the historical perspective of the topic here. One type of question that arose was over whether or not meaningful words or concepts could always elicit distinct corresponding images in the recipient. The British philosophers during the 17th and 18th centuries heatedly argued whether or not it is possible to have a generic image of, say, triangle. Locke (15) maintains that the idea of triangle must be neither equilateral, equicrural, nor scalenon but "all and none of these at once." Berkeley (4) flatly rejects such a possibility and maintains that all ideas (images) are particulars. The main reason why this kind of question ever arose was that there was no clear differentiation of 'meaning' from image. The question was simply whether or not to deny a person his claim to the comprehension or knowledge of something on the basis of whether or not he could create the image of it. From the psychological standpoint, the relationship between 'meaning' and image bears a greater significance. Words and other symbols are used in thinking and communication, and it is a legitimate question in this connection to ask whether or not they can properly function without arousing a series of distinct mental images. This question

1. See Whatmough (37) for a contrasting view.

is also closely related to the role of consciousness in cognitive process inasmuch as images are always conscious. To digress for a while, the Wurzburg school was primarily concerned with the above problem as we shall see below some of its studies on so-called "imageless thought." Marbe (17), for example, reports that his subjects, upon being presented with weights or tones successively, could accurately make judgment as to which one of the two was heavier or higher though they were conscious of only the second stimulus. In another study Ach (1) presented to his subjects pairs of digits and told them to multiply or add them on occasion. The subjects first had some conscious representation of the first proposition only to be lost as soon as the second proposition was presented. Yet they solved the problems whose solution presupposes the knowledge of both propositions. On the other hand, Hull (11) and Hazlitt (9), along with Heidebreder (10), Smoke (31), and many psychoanalysts, have demonstrated that some of the subjects develop the ability to name new examples without being able to say how they do it, even when the necessary formulations lie well within the limits of their vocabularies. These investigators, maintains Leeper (14), go beyond the previous ones for they indicate not merely that responses may be governed by sets of determining tendencies, which are initially established by conscious processes and later dropped from consciousness, but also that some complex guiding mechanism can be formed, retained, and used without the person's being aware of the process at any step. Moore (20) attacked the question of independence of 'meaning' from image more directly through a series of reaction-time studies. He asked his subjects to respond as soon as they were aware of the 'meaning' of words flashed on the screen in one case, and in another case to respond as soon as visual images appeared. Interestingly enough, the latter took much longer (sometimes twice as much) than the former consistently. Pillsbury & Meader (27) flatly state that "we are aware of the meanings first, and then build up theories of the presence of sensations to explain how the meaningful experience originates."

The present question, however, is by no means closed. We know very little about the relationship between the meanings and images of words presented to young children singly. It is possible that visual images constitute major portions of the meanings of words while the child's experience with these words is limited and response competition remains minimal. Following Feirabend's (7) reasoning², we would also expect that those words which have been disproportionately reinforced in highly limited contexts or those words with which intense emotional experiences are associated are more likely than others to have clear images as the components of the 'meaning' of the words. In general, it seems plausible to expect that the child's dependence upon visual images will become progressively less as he grows older. Some individuals, particularly young children, have what is called eidetic imagery and it is reasonable to expect that their experiences, linguistic and non-linguistic, will be retained and

2. Feirabend distinguishes the core from peripheral components in a given concept. She has experimentally demonstrated that it depends on the amount of reinforcement as well as the conditions under which reinforcement occurs whether a given element becomes the core or peripheral component of the concept.

utilized differently from others'. Further reference to the present topic will be made later when we discuss the 'time dimension' of 'meaning.' In concluding this section, let it be said that 'meaning' is neither to be identified with visual images nor to be regarded as dependent upon the latter. 'Meaning' may be conscious or subconscious whereas visual images are always conscious. To the extent the visual images of words influence our reaction to these words, we might say that they constitute part of the 'meaning' of the words.

b) '*Meaning as a response*: There are many distinct ways in which 'meaning' is conceived of as some sort of response. The simplest and, probably, least satisfactory one is what is referred to as 'substitution view,' proposed by Watson (35) as a straightforward application of the Pavlovian conditioning model. 'Meaning' is thought to be simply that response which transfers from referent to its name as a consequence of conditioning. To put it formally, with Osgood (25), "whenever something which is not the object evokes in an organism the same reaction evoked by the object, it is a sign of that object." The 'meaning' of the sign and object is thus the same response which may be elicited by either of the two. One commonest criticism raised against this view is that the response to the conditioned stimulus is seldom if ever identical with the response to the unconditioned stimulus. Some names, moreover, have no physical objects as the referents that may elicit the unconditioned responses. Some words acquire their 'meaning' in purely verbal contexts by either associating nonsense syllables with the meaning-responses (r_m) elicited by already meaningful words (with C. K. Staats, 33) or abstracting or deducing from the known elements with the help of logic and linguistic rules (with Werner & Kaplan, 36).

(i) '*Meaning as an implicit response: Type I*.'

Watson's view presented above belongs to this type. He substitutes implicit responses for visual images as the 'meaning' of words. In one of his well known passages he simply reduced thinking to subvocal speech. One of the few studies relevant to the present topic is that of Jacobson (13). He observed that any mental effort to imagine of doing something using parts of the body actually produced electrophysiological changes in the related muscles. There are, however, much to be desired in the methodology. Jacobson deliberately created motor conflict by instructing the subjects not to move while imagining bodily movements. The recorded reaction potentials may well have been the result of conflicting tendencies. Moreover, he used only commands which are hardly representative linguistic utterances. Brown (6) points out inadequacy of the view by saying that "any theory that equates meaning with particular muscle actions must predict that words lose their meaning when relevant muscles are immobilized. No theory is really willing to stand by that prediction."

(ii) '*Meaning as an implicit response: Type II*.'

"The meaning of a stimulus pattern," writes Sheffield (29), "is defined as the complex of perceptual responses that is aroused by the stimulus pattern because of past learning." The critical qualifications of the perceptual responses that constitute 'meaning' are that "they are implicit (not obvious movement), that they are connected to the stimulus pattern through learning, and that they function as stimulus-producing

responses having the same distinctiveness as stimuli as the original responses on which they are based." No assumption is made as to the locus of such perceptual responses: it is only assumed that "the perceptual responses that constitute meaning are implicit representations of responses to stimulations not present at the time the stimulus pattern is presented." The author in later discussion with the present writer, however, suggested strongly that the meaning responses occur within the nervous system, not the muscle system. This view is classified as a response theory of 'meaning' because the perceptual responses are assumed to be governed by the same functional laws in learning and performance that govern any other response.

(iii) *'Meaning' as an implicit response: Type III.*

Osgood (25) departs from Sheffield and others by placing the primary emphasis upon the mediating function of the meaning response. He links sign and object through partial identity of the responses elicited by the two. "Words represent things," he writes, "because they produce some replica of the actual behavior toward these things." He differentiates reactions which are dependent upon the sensory presence of the object from those which are functionally independent from it within the complex of reactions typically elicited by the very stimulus-object. And it is those responses which are relatively independent of the object, that is, the so-called "detachable reactions," that may be elicited by the sign in the absence of the stimulus-object. Such detachable reactions are further assumed, with Hull (12), to abbreviate and tend toward a minimum but remain always discriminable. Osgood states his view formally as follows: "A pattern of stimulation which is not the object is a sign of the object if it evokes in an organism a mediating reaction, this (a) being some fractional part of the total behavior elicited by the object and (b) producing distinctive self-stimulation that mediates responses which would not occur without the previous association of nonobject and object patterns of stimulation." He identifies 'meaning' of a sign with that detachable component of the total reactions typically elicited by the referent (object) of the sign which may be called forth by the sign alone. Osgood does not specify the locus of the meaning response nor does he identify it specifically with perceptual response.

A. W. Staats (32) takes a view which is very similar to those of Sheffield and Osgood. He identifies an implicit meaning response (r_m) with sensory response rather than perceptual. Being interested primarily in the problem of conditioning the connotative meaning, Staats virtually equates "sensory responses" to emotional reactions.

c) *'Meaning' as a disposition:* One apparent difficulty for some people to accept the view of 'meaning' as a response stems from the fact that response and 'meaning' seems to have so little in common. Response is commonly regarded as something observable and instrumental whereas 'meaning' is conceived of as something covert and 'mental' — some sort of process or state which either precedes or follows behavior of the organism. Be that as it may, Stevenson (34), Morris (22), and Brown (6) are notable proponents of the 'disposition theory.' "It seems to me that when one comes to understand a linguistic form," writes Brown, "his nervous system is partially rewired (in the sense of changes in synaptic resistance or neuron process growth) so that one is

disposed to behave appropriately with regard to that form... (It) has no substantial character other than the structure of the nervous system. It is not a leaning, a beginning, a miniature reaction. It is a response potential." For Stevenson the 'meaning' of a sign is not some specific psychological process that attends the sign at any time. "It is rather a dispositional property of the sign, where the response, varying with varying attendant circumstances, consists of psychological processes in a hearer, and where the stimulus is his hearing of the sign."

Unfortunately, this view has neither substantially added anything new to, nor subtracted anything unsavory from, the response theory of 'meaning.' The two theories agree fully that a sign acquires its 'meaning' through some associative process. Brown simply chose to identify 'meaning' with the Hullian 'habit,' not with a particular response that may come and go. One rather absurd consequence of taking this view seriously is that we would be obliged to admit that we can never be *aware* of the 'meaning' of a sign, for it is something which is only potential and latent. Not much needs to be said about Stevenson's view. Psychologically speaking, it is truism to say that one's response to a sign is in part determined by the context in which the sign appears, linguistic or nonlinguistic. The same sign in different contexts usually *means* different things, not because responses automatically covary with varying attendant circumstances as Stevenson seems to assume but because we typically learn, in the first place, different responses to different stimulus situations (which happen to share one common stimulus element, i. e., the sign in question) through stimulus-patterning.

d) *How should we define 'meaning'?*: What is required of us here would be better handled by reviewing some of the points already raised along with a few additional ones. Prior to proposing a new definition of 'meaning' our discussion will be concerned with the following subtopics: (1) Distinction between denotation and connotation; (2) A basic assumption that changes in the 'meaning' of a sign are mediated by behavior of the organism; (3) Distinction between object and sign 'meanings'; (4) How to handle individual and contextual variations in 'meaning.'

(1) One usually goes about distinguishing subcategories of 'meaning' by dichotomizing it into *denotative* and *connotative* components. Take FATHER for example. FATHER is a relational term which refers to a male adult with one or more offsprings. On the other hand, FATHER is said to *mean* something good, big, powerful, strict, active, etc. The former is an instance of denotative meaning of FATHER whereas the latter is an instance of its connotative meaning. Another common way of distinguishing the two is to label the former as a referential 'meaning' of a sign while labeling the latter as an emotional and privately acquired 'meaning' of the sign. Such a distinction, however, is neither absolute nor universal. Suppose, as it might be the case, that it became a fad within a given linguistic subcommunity to call a certain category of politicians TRUMPET. Would this belong to the denotative or connotative category? Would one alter the above hypothetical classification if the above subcommunity consisted of only five persons instead of 50,000 persons, or vice versa? Again would one change the above classification if the basis of using such an idiosyncratic name

was primarily sensory and emotional in nature rather than abstract and relational? In view of the apparent continuity between denotation and connotation, it seems very useful to only characterize the two ends of the continuum. The denotative end may be characterized as *referential, relational, abstract, common*, and primarily *verbal*. The connotative end, on the other hand, may be characterized as *affective, substantive, private*, and *physiological*. With regard to the mode of acquisition of both types of 'meaning,' it may generally be said that the connotative meaning of a sign is acquired through classical conditioning within linguistic or nonlinguistic contexts whereas its denotative meaning is acquired through contiguous association strictly within verbal contexts.

Psychologists have made considerable progress in theoretical and quantitative treatment of the connotative meaning of signs but they have done virtually nothing with regard to the denotative meaning. The most outstanding example of the former is the work of Osgood and his co-workers (26) in which they developed *Semantic Differential*, a measuring instrument, and the concept of *Semantic Space*, an empirical framework analogous to the three-dimensional Euclidean space defined, in this case, by three orthogonal factors, viz., *evaluation, potency, and activity*.

(2) The assumption that changes in the 'meaning' of a sign are mediated by behavior of the organism is not something that needs to be proved or disproved. Rather its validity should be determined, like that of a theory or concept, in terms of its usefulness. Granted that response covaries with stimulus conditions in a rough manner of speaking (with Stevenson, 34), it is evident that such an S-R relation is far from isomorphic, particularly in verbal behavior. It is enough to point out the nature of the phenomena of semantic generalization (Foley & Cofer, 8; Razran, 28). Then would it be in any way easier to quantify the stimulus than response term? Apparent simplicity of the former is indeed deceptive. The concept of stimulus, needless to say, subsumes stimuli, proximal and distal, extra- and intra-organismic, response-eliciting and response-produced, substantive and relational, all varying in quality and intensity. Psychologists as a matter of fact are yet to come up with an adequate operational concept of stimulus that is defined independent of response it elicits. On the other hand, we can, relatively speaking, reliably demonstrate or predict how response to a given stimulus situation varies when the motivational conditions as well as experience of the organism are manipulated without changing the stimulus condition at all. Should it be argued that the stimulus condition in the above case could not possibly remain constant due to either its intrinsic instability or the changing organismic condition, such an objection is a double-edged blade sharper toward the objection. It is superfluous to point out that stimulus so defined cannot be grasped, not to speak of quantifying it, independent of the organism's response to it. For these reasons, the original assumption concerning the organismic intervention in the question of 'meaning' will be retained.

(3) The question that confronts us here is what distinguishes the 'meaning' of the sign from that of the physical object. As Sheffield (29) points out, a stimulus-object is usually a source of a variety of stimulations, and, contrary to the common-sense view, it is only through repeated contact with the object that "the compatible

responses to all the varied stimulations possible become conditioned to any one of the varied patterns presented by the object." While *some* portion of the 'meaning' of a physical object is based on the complex of responses it elicits without prior association, whatever a sign as a mere auditory stimulation may elicit without prior association, with rare exceptions, has nothing to do with the 'meaning' of the sign. In other words, the 'meaning' of a sign is almost exclusively extrinsic, hence the connection between a sign and its referent is called 'arbitrary.' The 'meaning' of a physical object, however, is not entirely intrinsic. The stimulus-object invariably acquires additional associations depending on when, where, and how it is experienced. The 'meaning' of a physical object may be further complicated by the fact that it can be modified readily through what is called the 'sentence-conditioning' (formulated by Mowrer, 23) without being paired with anything directly. We would, for example, behave differently toward Tom after hearing the sentence "Tom is a thief" without catching Tom in the act of stealing. For that matter, we don't have to see Tom at all while hearing that sentence.

We now know that the distinction between the 'meaning' of a sign and that of its physical referent is not, contrary to the simple-minded notion, one being all extrinsic and the other all intrinsic. Such a distinction is a relative matter. There are, however, some basic differences between the two. One of them is the difference between them as pure stimulus-objects. We would naturally expect a gross difference between our responses to a sign and its physical referent. Such a difference is explicit in the definitions of 'meaning' given by Sheffield and Osgood as we have already seen. Another difference stems from the difference in context in which they are experienced. This difference would necessarily be reflected upon the associative characteristics of the two. These two kinds of difference, incidentally, correspond to differences in the intrinsic and extrinsic components of 'meaning' respectively. The third difference lies in the fact that linguistic signs are reproducible (or response-produced) whereas physical objects are not. This fact is intimately related to the second difference raised above in that response-produced stimuli, being ubiquitous, allow more frequent association with other stimuli. The fourth difference between the two is traceable in the process of acquisition of both types of 'meaning.' As we have already seen, the 'meaning' of linguistic signs is dependent exclusively upon the reinforcement contingencies provided by something other than the signs themselves whereas the 'meaning' of physical objects is largely determined by the physical properties of the objects themselves directly or indirectly. The fifth difference arises from the fact that the 'meaning' of linguistic signs is derived from that of physical objects, the latter being the prototype or basis of the former. This fact is most obvious in the acquisition of a foreign language in a place where one's mother tongue is not spoken at all.

(4) The last subtopic to be discussed is how to handle individual and contextual variations in the 'meaning.' Some people contend that the concept of 'meaning' poses a pseudoproblem because the assessment of the 'meaning' of linguistic signs presupposes an impossible task of assessing all the significant factors of which behavior of the individual is a function, such as his past experience, motivational state, the environ-

mental forces, etc. (Miller, 18). This is a wrong way of going about the problem. It is doubtlessly true that the individual's response toward a given sign (symbol) changes as a function of changes in any one of the factors that constitute the context of the sign, but it is equally true that the individual was responding not only to the sign in question but to all its context. In this sense, his response in that situation was, if you will, the 'meaning' of the context as much as it was the 'meaning' of the sign. The present discussion points to a need for a new concept to represent a more or less stable portion of the 'meaning' of a sign. It is not impossible, of course, to determine statistically relative weights of the factors which constitute the total context as well as the sign itself. It will be similarly possible to estimate the amount and kind of influence attributable solely to the sign or combination of signs, averaged over persons, over time, over situations, etc. The present writer will propose to call this the *stable core meaning* of a sign (or SCM) — that portion which is shared by "all" the speakers in a given linguistic community under "normal" condition. It is an abstraction, not any specific response or process. The concept of SCM of a sign (symbol) will help to simplify the whole problem considerably. At the same time, it gives a direct answer to the question raised at the outset of this subtopic concerning whether or not the concept of 'meaning' poses a pseudoproblem.

Then how should the concept of 'meaning' be defined? The 'meaning' of a stimulus pattern, whether a symbol or physical object, will be defined as an heirarchical organization of implicit responses, these responses being (1) capable of producing distinctive cues, covarying with signs as well as their referents because of their previous association with both of them respectively, and (2) capable of mediating other responses, instrumental or cue-producing, at various levels of behavior as the whole organization becomes gradually operative. These implicit responses have both afferent and efferent phases in the behavior system of the organism. On the afferent side, they are primarily perceptual processes whereas, on the efferent side, they are cognitive or affective processes.

It may be noted that 'meaning' is defined as some kind of heirarchical organization, implying that only part of the entire organization is operative at a time and the entire organization becomes operative over a certain span of time. A simple example will make the point clear. Take 'elephant' for example. (1) He has the elephant's memory. (2) What is the *most* conspicuous part of the elephant? (3) What is the *least* conspicuous part of the elephant? In the first example, it is highly unlikely that the word 'elephant' elicits anything even remotely similar to the animal physically, for it is a pure case of the intraverbal association and the descriptive function of the word as used here has absolutely nothing to do with the sensible properties of the animal. The third example is the other extreme. We are dealing here not only with the sensible properties of the animal but also with something which is highly improbable to be part of our intraverbal associations. We may not be able to answer quickly, but, when given time, we would try not to find an answer in the repertoire of intraverbal associations so much as to produce physical cues such as a visual image of the animal in order to find out the most satisfactory answer. The second is an intermediate case. The answers

such as 'tusk,' 'nose,' 'body size,' etc. may well fall within the readily-available repertoire of intraverbal associations, but it is just as easy to produce a visual image of the well known animal. Answers to these two questions should vary in reaction time. If an immediate answer was required, one would not be able to give a satisfactory answer to the third question. Here if one were unable to produce a visual image of the animal, he would be unable to answer to the question, at least, satisfactorily. These examples are illustrative of (a) the necessity of incorporating time dimension into the concept of 'meaning' and (b) the need of retaining imagery as part of 'meaning.'

Summary

The present paper was intended to be a limited attempt to clarify various types of misconception and confusion as regards the concept of 'meaning' with the ultimate aim of proposing a most satisfactory and comprehensive definition of 'meaning.' To do this the discussion was centered around the following two topics: (1) On the context of 'meaning,' and (2) On the concept of 'meaning.' In the former, we came to apprehend the scope and complexity of the concept of 'meaning.' We later isolated wherefrom three fundamental factors involved, viz., physical reality, signs, and organism. In the latter, various concepts of 'meaning,' both linguistic and psychological, were critically reviewed and discussed with the aim set at finding out what constitutes the psycho-physiological basis of 'meaning.' The present writer chose to identify 'meaning' with the complex of implicit responses of some sort. The functions and properties of these responses were explicitly stated.

The present paper also touched on some related subtopics. They were (1) distinction between denotation and connotation, (2) distinction between 'meanings' of physical object and sign, and (3) how to handle individual and contextual variations in 'meaning.' In connection with the last subtopic, a novel concept — the *stable core meaning* (SCM) was introduced.

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