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Are All Signs Signs?

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DISCUSSION

ARE ALL SIGNS SIGNS?

IN THIS article we examine a problem in contemporary semiotic and outline a solution. The problem is: does the present basic concept of semiotic, the sign, allow for adequate analysis of semiosis, or does this basic concept obscure the nature of semiosis by requiring us to consider all stimulus elements in semiosis as signs. For convenience the analysis is given in terms and with notions developed by C. W. Morris in *Signs, Language and Behavior*.¹ However, the problem is of equal importance in theories which have not been developed behavioristically.

The general problem arises from the more specific problem of the status of elements like "or," "and," "!", certain adjectives and adverbs, and imperatives in the linguistic phases of semiosis. In Mr. Morris' terminology the specific problem is that of the status of formators, appraisors, and prescriptors. If formators, appraisors, and prescriptors are signs, the concept of sign is probably adequate for thorough investigation of semiosis. If they are not, the basic concept of semiotic must be revised or expanded. We will show that these elements can be regarded as signs only in virtue of critical ambiguities in the concepts of significatum and sign. Exposition and resolution of these ambiguities require and suggest the nature of alteration in the basic concept of semiotic.

I

In Mr. Morris' theory A is a sign "if A is preparatory stimulus that, in the absence of stimulus-objects initiating response-sequences of a certain behavior-family, causes in some organism a disposition to re-

¹ New York: Prentice-Hall, 1946. All quotations in this paper are from this book. Quotations are followed by page references in parentheses in the text. This paper is critical of Mr. Morris' work only for purposes of forwarding the analysis Mr. Morris has carried so far in its present direction. Every attempt is made to avoid merely terminological difficulties, but the problem is in part due to terminological imprecision.

spond by response-sequences of this behavior-family" (p. 10). The important concept of significatum (and, hence, signify) is developed in terms of this definition of sign. A *significatum* is "the conditions such that whatever meets these conditions is a denotatum of a given sign." The *denotatum* is what the sign stands for; or, technically, "anything that would permit the completion of the response-sequences to which an interpreter is disposed because of a sign" (p. 347). The *interpretant* is the response-sequences stimulated by a sign.

As *significatum* is defined and explained it is distinguished from *interpretant* and *denotatum*. "The interpretant . . . answers to the behavioral side of the behavior-environment complex; the significatum, as the set of terminal conditions under which the response-sequences to which the organism is disposed can be completed, connects with the environmental side of the complex" (p. 18). "And since with this usage a sign does not denote its significatum, the temptation is avoided to make the significatum into a special kind of thing — a temptation which seems to underlie the Platonic doctrine of ideas and various philosophic doctrines of 'subsistence'" (p. 19). The distinction between significatum and interpretant clearly follows from the definitions of these terms. The distinction between significatum and denotatum does not as clearly follow from the definitions.

It is important, therefore, to notice a preliminary difficulty with the concepts of significatum and signify which will clarify the following analysis. As initially defined the significatum is designed to allow for the occurrence of a sign without the subsequent occurrence of its denotatum. That is, when a sign acts as a preparatory stimulus, it *denotes* (has a denotatum) if the response-sequences it initiates can be completed. It *signifies* (has a significatum) if the response-sequences it initiates cannot be completed. Signs always signify, although they do not always denote. A buzzer denotes food for a dog if there is food and the dog can eat. It signifies if it starts the dog in search of food and there is no food to be eaten.

However, despite Mr. Morris' claims that "a sign cannot signify or denote its own interpretant" (p. 19), it is clear that a significatum is either the denotatum, the interpretant, or a special kind of thing. When the response-sequences stimulated by a sign can be completed, significatum and denotatum are identical, i.e., the conditions for the completion of the response-sequences. When the response-sequences cannot be completed, there is an interpretant but no denotatum. Where is the significatum in this event? It is either the interpretant or "a special kind of thing," the conditions of being a denotatum. These special kinds

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of thing are precisely the Platonic entities the concept of significatum is designed to avoid: namely, the denotatum which is not there.²

The preliminary difficulty, then, is that "significatum" is employed in two different senses, both of which are allowed by the vagueness of its definition. In sense (1) "significatum" is equivalent to "denotatum." In sense (2) "significatum" is equivalent to "interpretant." Sense (1) is required because it is characteristic of signs that they have some connection with a third thing, the denotatum. Sense (2) is required to allow signs to "signify" when the denotatum is not, nor will be present in the circumstances in which the sign occurs. Examination of Mr. Morris' treatment of formators shows that the concept of significatum has, further, more critical ambiguities.³

II

Analysis of words like "or" reveals a class of words, *formators*, which have the following properties. (1) A formator is a "stimulus added to signs which already have a plurisituational signification and which are signs in other combinations where the stimulus in question does not appear." (2) "When the new factor (the formator) is added the signification of the particular sign combination in which it appears is different from when it is absent, as is evidenced by the difference in behavior which is correlated with its appearance." (3) "*The new stimulus does not itself signify additional stimulus features of the otherwise designated situation* (that is, does not determine the characteristics of objects to which the organism is prepared to respond. . .)." (4) "The new stimulus (the formator) influences the response of the person stimulated to the signs with which it appears in a particular sign combination *by affecting the interpretants aroused by the other signs in the sign combination; only in that way does it affect the behavior of the person to the situation otherwise signified by the signs which accompany it*" (p. 87, italics mine).

Mr. Morris' example will serve as an illustration.

Suppose S₁, S₂ and S₃ are signals to a dog of food in three different places, so that the dog, when hungry, seeks food in the place signified by the stimulus presented to it. Now if a new stimulus, S₆, be combined always with two of these

² Cf. George Gentry, "Comments and Criticisms," *Journal of Philosophy*, XLIV, no. 12, in which Mr. Gentry discusses this difficulty and resolves it by making significatum and interpretant the same thing.

³ The problem in connection with which the initial ambiguity arises is easily solved by speaking of two kinds of signification, denotative and interpretive. This conforms to a common-sense distinction of two kinds of meaning.

other stimuli (as in, say, S1S6S2), and if the dog then, without preference, seeks food at one of the two places signified and at the other place if any only if food is not secured at the first place approached, then S6 would be a stimulus which has much in common with the exclusive 'or' in English. If the dog could be further trained so that the signs which appear with S6 may be appraisors and prescriptors as well as designators, the S6 and the exclusive 'or' would be behaviorally identical (p. 156).⁴

Assuming that these are all and the only properties of formators, it is contended that they are signs on the following basis. S6 affects the dog's behavior in such a way that it is possible to isolate a kind of interpretant distinctive of a formator. When S6 is presented along with S1 and S2, it stimulates a complex disposition to respond in which the interpretants of S1 and S2 are related in a certain way. "The dog is disposed to seek food at one place if food is not found at the other place, and to not seek food at one place if food is found at the other place." "The disposition to relate the interpretants of other signs in this way is the distinctive interpretant of S6, for S6 establishes this disposition regardless of what other signs it accompanies. It is a second order disposition (interpretant) since it is a disposition to relate other dispositions (interpretants) in a determinate way." "S6 is then a sign in the previous sense of the term. For the essential feature of a sign lies in its giving rise to an interpretant, and this S6 does" (p. 157).

This justification for calling formators signs is open to the following difficulties: (1) Formators only signify when in combination with other signs (pp. 157-158). The concept of sign requires no such limitation. (2) The justification requires that formators signify relations of a peculiar variety. "Or," e.g., signifies alternativity (p. 157) which apparently cannot be defined without reference to an organism. (3) The concept of signification employed in connection with formators not only involves the ambiguity in "significatum" noted above but contains a further ambiguity. We deal only with (3).

Formators are called signs because they produce an interpretant, specifically, a disposition to connect other interpretants in certain ways. In other words, "significatum" is used here in sense (2) distinguished above. Complication is introduced, however, by the fact that "*interpretant*" is used in a new sense in connection with formators. As originally defined the interpretant has a direct relation to denotata. Thus, if formators have interpretants, they must also have denotata. And this they do not have unless the denotatum of "or," say,

⁴ It is interesting to examine the use of "signify" in these paragraphs.

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is alternativity, which it cannot be since alternativity is the significatum of "or" (and denotata and significata are not the same). We conclude that, although formators are stimuli in semiosis, they do not stimulate interpretants. They stimulate a disposition to relate interpretants, which disposition is not itself an interpretant in the sense of that term required for this theory of semiosis.

Thus, it is necessary to distinguish three ways in which the terms "significatum" and "signify" are employed in Mr. Morris' theory of signs: (1) as equivalent to "denotatum," (2) as equivalent to "interpretant," and (3) as equivalent to "a response which somehow affects interpretants." The confusion between (2) and (3) allows formators to be called signs. Examination of the concept of modes of signifying reveals the important use made of this confusion and exposes an ambiguity in the use of "sign" which it requires.

III

Ostensibly the concept modes of signifying is introduced to account for the difference between "referential" and "emotive" signs (cognitive and noncognitive, etc.). Actually it furnishes the general basis for regarding formators, appraisors, and prescriptors as signs by identifying significatum and interpretant *and* implicitly redefining the latter without reference to denotatum.⁵

The concept mode of signifying involves a differentiation of signs in "terms of differences in tendencies to response" (p. 62). That is, signs are to be classified on the basis of the kind of interpretant *or* of the *differences in interpretation* they produce. Mr. Morris easily shows that words like "good" and "come" have definite effects on our interpretants in semiosis. These effects enable us to classify signs into different modes of signifying because signification always involves interpretation. "The modes of signifying will correspond to the major kinds of significata. A significatum, however, as the conditions under which something is denoted by the sign, always involves an interpretant; hence the major kinds of significata must be distinguished in terms of distinctions between interpretants, that is, in terms of differences in dispositions to respond" (pp. 64-65).

That significatum and interpretant are identified *and* that the resulting notion of interpretant does not involve denotatum are indicated by the resulting classification. Signs are either identifiers, desig-

⁵ We shall not treat the question whether the distinction between referential and emotive signs is related to the problem whether all signs are signs.

nators, appraisors, prescriptors, or formators, according to the kinds of interpretant they stimulate. Identifiers and designators dispose the interpreter to respond by response-sequences which will be completed if certain features in the environment occur: a space-time location, or some stimulus-object. They, therefore, mediate for something in the environment. In their case, "significatum" is used in sense (1), equivalent to "denotatum," if the space-time location or object occurs.

The matter is essentially different with appraisors, prescriptors, and formators. Consider, e.g., the appraisors. An appraisor disposes an interpreter to react favorably or unfavorably to something. It does not denote that something, *nor* does it denote the favorable or unfavorable response, even when the something and the response occur. If it did it would be a designator. Nor can we say an appraisor signifies anything. Strictly speaking it *signifies only in the appraisive mode*. In other words, appraisors signify in a different sense of "signify."

The interpretant of an appraisor is thus thoroughly different from the interpretant of a designator. It is not a mediated response. It is not a disposition to respond stimulated *in the absence of* stimulus-objects. It is, so to speak, a direct response. The word "signify" as used with appraisors can be replaced by "stimulate." In C. S. Peirce's terminology the interpretant of an appraisor does not involve a "third thing." Examination of prescriptors reveals that similar considerations hold for their interpretants.

The distinction between interpretants of appraisors, formators, and prescriptors and those of identifiers and designators is further indicated by the requirement that the first group of so-called signs cannot function alone. If they do they are either identifiers or designators as well as appraisors, etc. An ascriptor (roughly, a sentence) must contain identifiers or designators as well as appraisors, etc. In other words, without the identificative or designative modes of signifying it is impossible to have the appraisive, prescriptive, and formative, although it is possible to have the identificative or designative without the appraisive, formative, or prescriptive. The conditions set forth for defining a sign do not include that a sign must always function as part of a sign complex. Thus we find that, in addition to the difficulties with significatum, the definition of "sign" in Mr. Morris' system does not cover appraisors, formators, and prescriptors. There are not signs and five modes of signifying, but two essentially different kinds of signs.

IV

We have found two difficulties regarding formators, appraisors, and prescriptors as signs: (a) the critical ambiguity between two senses of "significatum" as interpretant and as a response which combines or modifies interpretants; and (b) in order to call formators, appraisors, and prescriptors signs an additional condition must be added to the list of those required of a sign: some signs can function only as parts of sign complexes. We will now show that Mr. Morris' theory can be logically extended to remove these difficulties. The required change, however, reveals a more deep-seated problem which has been responsible for and obscured by the preliminary difficulties. This crucial problem is due to the inadequacy of the sign as the basic concept of semiotic.

Difficulty (b) can be removed by adding the necessary additional condition and redefining "sign." Thus, *A* is a sign if *A* is a preparatory stimulus or part of a preparatory stimulus that, in the absence of stimulus-objects, . . . etc. We then have *signs* and *partial signs*. Formators, appraisors, and prescriptors are partial signs which, by their occurrence in a sign complex, make that sign complex function in one of the modes of signifying.

All of Mr. Morris' statements about formators, appraisors, and prescriptors as signs can by this means be reinterpreted with less of the general ambiguity of that term. However, the new definition of "sign" is inadequate on two counts. (1) It obscures the fact that formators, appraisors, and prescriptors produce a distinctive type of response which is not an interpretant; i.e., it does not resolve the critical ambiguity in "significatum."⁶ (2) If it is further modified to take this fact into account, it gives the word "sign" two essentially different meanings which make it hopelessly ambiguous and entirely vitiate its use as a scientific term. For the additionally modified definition would have to run somewhat as follows: *A* is a sign if *A* is a preparatory stimulus or part of a preparatory stimulus which modifies the response to a preparatory stimulus, that in the absence of, . . . etc.

These difficulties can be removed by a further development implied by Mr. Morris' theory. Thus we may regard formators, appraisors, and prescriptors not as signs but as elements which nevertheless function in semiosis. That is, we may, and indeed must, expand the concept of semiosis to include signs and elements which function semiotically but are not signs.

⁶ This ambiguity is made less serious by the distinction of modes of signifying, which is, however, essentially an unsuccessful effort to resolve it.

Employing Mr. Morris' terminology and concepts this can be done by introducing the concept of the *semiot*. A is a *semiot* if A stimulates an interpretant or if A stimulates some response which modifies interpretants by combining them or altering the way in which they occur. We can then describe sign-semiotics, symbol-semiotics, formative-semiotics, and so on. Formative, appraisive, and prescriptive semiotics do not produce interpretants. Responses to such semiotics modify interpretants in ways which Mr. Morris has described. The concept of the semiot resolves the ambiguities in "sign" and "significatum." It thereby makes clear that (which Mr. Morris' analysis implies) signs, and formators, appraisors, and prescriptors are different kinds of stimuli. The former are substitute or mediating stimuli; the latter are direct stimuli.⁷

That this extension lies in the direction of Mr. Morris' analysis is indicated by the fact that it does not blur that which is regarded as the essential characteristic of semiosis, that it functions by means of interpretants or responses to objects and situations without the objects and situations being present. The semiot is defined in terms of interpretants so that response in the absence of stimulus-objects remains the essential feature of semiotic behavior.

However, this extension, which is basically only terminological, reveals the serious difficulty in the present theory of semiosis which is responsible for the problems in dealing with formators, appraisors, and prescriptors. This difficulty arises from regarding *all semiotic behavior as sign behavior*. It is indicated by the fact that the present definition of semiotics, although it resolves the ambiguities in "sign" and "significatum," implies either that formators, appraisors, and prescriptors are not semiotics, or that a semiot is indistinguishable from any stimulus whatsoever. That is, the definition either does not account for formators, appraisors, and prescriptors in semiosis, or it makes semiosis indistinguishable from mere stimulus behavior.

As defined a semiot either produces an interpretant or it produces an additional response which somehow modifies an interpretant. That is, it is reasonable to suppose that the total response to $S_1S_6S_3$, e.g., where S_6 is a formative-semiot, is composed of three parts: the individual interpretants for S_1 and S_3 and the response to S_6 . The latter is not an interpretant but a response which combines interpretants. The same is true for appraisors. They produce a response, not an interpretant, which modifies the interpretant for some sign.⁸

⁷ The word "semiot" is suggested because of its etymological resemblance to "semiosis" and "semiotic."

⁸ The analysis of interpretants has been neglected in semiotics, although it ap-

If this analysis of the total response to a sign complex is correct, it is reasonable to suppose further that formative, appraisive, and prescriptive semiots should stimulate their distinctive responses whether accompanied by signs or not.⁹ Therefore, they might be used to influence or alter behavior which is not itself interpretive. Thus the response-sequences of the behavior-family of a given sign may be stimulated by the stimulus-objects for which the sign prepares a disposition in the absence of those stimulus-objects. Such a response-sequence is not an interpretant, even in its beginning stages, because it is not a response to a sign. But a formative, appraisive, or prescriptive semiot could nonetheless modify it just as these semiots can modify the interpretant by the operation of their own distinctive responses.

This may be generalized, for it is possible that a formative, appraisive, or prescriptive semiot modify any behavior-family of response-sequences whatsoever, whether the latter have constituted interpretants or not. Thus, uttering the word "good" when a person is approaching a type of food he has never seen before can influence the complete response of the person to that food and make it different from the response which would have occurred had the word not been uttered. And this without "good" being anything else than an appraisive semiot.

If it is true that formative, appraisive, and prescriptive semiots can alter any response-sequence, interpretive or otherwise, how do they differ from any stimulus occurring in the environment? It is clear that, by defining semiots as required by Mr. Morris' theory, the concept is hopelessly ambiguous. Either a semiot is a sign in the strict sense of that term or it is simply any stimulus. The only way out of this difficulty is to suppose that formative, appraisive, and prescriptive semiots

pears necessary and fruitful. For example, it is possible to distinguish motor and sensory aspects of interpretants. Water may not only make a person run, but it produces a visual sensation. The symbol "water," therefore, stimulates an interpretant with at least two parts. Analytic distinction of these parts results in distinction of two types of "meaning" which may prove useful in understanding sign behavior. Thus it seems that the sensory interpretant would be more constant for a group of individuals than the motor interpretant.

⁹ Mr. Morris' theory requires that formators, appraisors, and prescriptors always occur as parts of sign complexes to perform their distinctive functions. On the other hand, there is a common-sense suggestion, a notion about words as yet unexplored scientifically, that at least prescriptors and perhaps appraisors can perform their distinctive functions *unaccompanied* by designators or identifiers without thereby becoming in some way either, designators or identifiers. Language *seems* at times to function in a nonsign way, e.g., utterances of the single words "come" and "go," and the uses of format and type in books to produce certain effects.

are in fact nothing but signs for additional stimuli which affect a response-sequence that has already been initiated by some other stimulus-object in the environment. In the example above, "good" is simply a sign for some stimulus-object in the environment which, if present, would produce preferential behavior toward the food.

In this way we come back to Mr. Morris' theory, which in essence requires that linguistic stimuli be signs of one kind, roughly substitute stimuli.¹⁰ We see the reason for Mr. Morris' insistence that formators, appraisors, and prescriptors are signs, an insistence which results in the ambiguities we have noted. It is impossible to account for their function in language with the basic concept employed without supposing that they are signs. Since, however, this supposition is open to the difficulty that it makes formators, appraisors, and prescriptors signs when they cannot be signs, it is essential that a new approach be attempted to the problem they present. The nature of this approach is indicated by the results of Mr. Morris' analysis of formators, the difficulties to which it leads, and two further considerations.

V

(1) Formators, appraisors, and prescriptors produce a kind of response essentially different from that which is produced by other linguistic elements. On the other hand, *all* linguistic elements in semi-osis, that is, all the stimulus elements, have a property which has been noted but has not received adequate attention. As stimuli they differ from all other stimuli in that they can be *manipulated*. That is to say, they can occur in any context or environment whatsoever under conditions determined solely by the organism and independently of any special factors in the environment.

This fact has been noted in treating words as *conventional signs*. As signs they differ from natural signs in that they can be separated from that for which they are signs in a fashion in which natural signs cannot. Furthermore, any word whatsoever may become a sign for any thing whatsoever. The connection between a word and its denotatum is, therefore, essentially different from the connection between a natural sign and its denotatum. Clouds are a sign of rain (under certain circumstances), but we cannot manipulate clouds and rain as we can "clouds" and "rain." We cannot substitute "gang" for "clouds"

¹⁰ Virgil C. Aldrich arrived at the same conclusion on different grounds, i.e., from an analysis of Mr. Morris' work based on aspects of the work different from those we have considered. Cf. book review of *Signs, Language and Behavior*, by Virgil C. Aldrich, *Journal of Philosophy*, XLIV, no. 12, 327.

and "gung" for "rain" and have the new signs "gang" and "gung" function exactly as "clouds" and "rain" have. We cannot substitute grease for clouds and have it signify the same thing *unless* grease becomes a stimulus like "clouds."

By taking this conventional character into account we can revise the definition of semiots in such a way as to avoid the basic difficulty noted with the definition implied by Mr. Morris' analysis of semiosis. The revision we give is rough. It is intended as indicative, not definitive of what is required.

We propose that A is a *semiote* if A is the stimulus of an interpretant, or the conventional stimulus of responses which modify interpretants or behavior-families for which there can be interpretants. With a suitable definition of "conventional," the concepts within Mr. Morris' behavioristic account of semiosis can all be defined in terms of semiots. For example, a com-sign is a conventional stimulus of an interpretant ; A is a sign if A is a preparatory stimulus . . . , etc. ; B is a formator if B is a semiote which combines interpretants but does not itself produce an interpretant ; and so on.

The significant feature of the proposed concept of semiots is the introduction of a generalization of semiotic, i.e., of the concept of semiosis. The generalization is obtained by taking account of the fact of conventionality. Thus it is procured by analyzing semiosis from the point of view of *language behavior* rather than sign behavior. The concept of semiots inverts contemporary approaches to semiosis, all of which attempt to define language in terms of sign behavior. By defining sign behavior in terms of language behavior and incorporating in the latter both the notions of interpretant and conventionality we obtain a wider conception of semiosis as including both direct and mediating stimuli. This wider conception avoids the critical ambiguities to which contemporary semiotic is driven and promises a more fruitful analysis because of its greater generality.

(2) The proposal that semiosis includes direct as well as mediating or substitute stimuli draws attention to a problem in semiotic which has not received sufficient critical attention. This problem, however, has been of decisive importance in limiting the conception of semiosical behavior to that of sign behavior. For this reason it may form the basis of an objection to the present extension of semiotic. The problem is how a vocal stimulus can be anything else than a stimulus of merely auditory sensation without being a substitute for some other stimulus which evokes more than merely auditory sensation. Hence, it may be objected to the concept of semiots that the latter cannot influence

behavior in the ways appraisive, etc., semiots, e.g., do without being signs.¹¹

The problem arises from the fact that it is difficult to understand how the vocal sound "come," e.g., can produce a motor response unless it was originally accompanied by pulling activities on the part of the organism uttering it toward the organism hearing it. Unless "come" is regarded as a sign for these pulling activities how would it ever have produced the response of following. We are influenced in this conception of cursory examination of the way we teach children and animals to respond to vocal utterances. Thus, whenever we attempt to account for the genetic origins of words, we seem driven to employ the conditioned response theory or some modification of it. And thus it will be asked how formative, appraisive, and prescriptive semiots can function as direct stimuli without producing only an auditory sensation which would be insignificant in influencing behavior.

The objection can be answered by indicating how it is possible for vocal stimuli to evoke more than merely auditory response, i.e., how they could produce responses which would modify behavior. Generally the answer is to suppose that originally formative, appraisive, and prescriptive semiots were parts of sign complexes and that by their association with signs they obtained the function of producing more than auditory sensation without themselves thereby being signs. Formators in particular furnish an instructive example.

In the example of the dog, food, and stimuli S_1 , S_3 , S_6 , there is no reason to suppose that the dog could not have been trained to respond to S_1S_3 in a fashion precisely similar to that in which he could be trained to respond to $S_1S_6S_3$. That is, for this simple case S_6 is an

¹¹ It should be noticed that either this is also an objection to Mr. Morris' theory *or* formators, appraisors, and prescriptors are signs in exactly the same sense that identifiers and designators are. But, if the latter alternative is the case, the concept mode of signifying is entirely without reasonable basis. An appraisor functions in the appraisive mode of signifying in virtue of the fact that it does not designate or identify the preferential status which it "signifies." Either *valuatium* (the *significatum* of an appraisor) and *descriptivatum* (the *significatum* of a designator) are of precisely the same nature, in which case there is no distinction between modes of signifying, or we have the problem of explaining how a vocal stimulus can provoke a preferential response.

In dealing with this problem we must take into account the fact that it applies only to vocal and written elements in semiosis. Generally the problem does not apply in the case of signs which are not parts of a linguistic system. That is, there would be no problem of formators, appraisors, and prescriptors without language. There are no nonlinguistic formators, appraisors and prescriptors. This in itself is suggestive that formators, etc., are not signs, i.e., they cannot be substitutes for something in the environment.

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unnecessary element in the stimulus. This suggests that it has no connection with the stimulus-objects of food at place 1 and food at place 3. On the other hand, if S6 is a part of the stimulus, it *has* a connection with the interpretant of S1S6S3. It is reasonable to suppose that, if the dog were trained to go either to place 1 or to place 3 but not to both in connection with stimulus S1S6S3, it would respond to S1S6S3 but not to S1S3. In other words, S6 could become a stimulus to a particular kind of interpretant without itself being a substitute for any stimulus-object in the environment in the way S1 and S3 are. S6 would have an important relation to interpretants but no relation to the environment except in so far as it is *itself* a part of the environment in semiosical behavior.

Thus it is possible to go some distance in explaining how stimuli which are not in any sense substitute stimuli can produce a response other than auditory sensation, or an auditory sensation which affects other responses, by supposing they were originally *parts* of a *conventional* sign. It now remains to explain more complicated cases without falling into the error of supposing that a vocal stimulus can function in semiosis only if it is a sign in the strict sense of Mr. Morris' definition of sign.

VI

In summary, we have analyzed critical ambiguities in the concepts of significatum and sign in Mr. Morris' behavioristic development of semiotic. Attempts to reformulate these concepts and thereby eliminate the ambiguities showed that either all stimuli in semiosis are signs in a strict sense of substitute stimuli or semiosical behavior is reduced to ordinary stimulus behavior. If the first alternative is accepted, it is impossible to distinguish modes of signifying and, therefore, to account for the distinctive functions of formators, appraisors, and prescriptors. If the second alternative is accepted, there is no semiosical behavior.

We have resolved this difficulty by regarding the concept of sign as inadequate for thorough analysis of semiosis. By taking account of the conventional character of linguistic stimuli it is possible to generalize the notion of semiosis. This generalization is obtained by introducing the concept of *semiots* as the basic concept of semiotic and defining sign behavior in terms of semiosical behavior instead of semiosical in terms of sign behavior.

In this way the problem of formators, appraisors, and prescriptors can be successfully treated without disregarding the facts which Mr. Morris' analysis has uncovered. Furthermore, attention is directed to

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the problem of understanding how vocal stimuli can produce anything else than auditory sensation, which has been of great importance in limiting the concept of semiosis to sign behavior and thus impeding the analysis of linguistic semiosis.

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