Sign

Although there is a general if only implicit agreement in modern linguistics that natural languages are a specific kind of sign system, there is hardly any mention of the notion of 'sign' in contemporary theoretical and philosophical linguistic literature. It is absent from modern grammatical and phonological theory, even from semantics. Saussure (see *Saussure, Ferdinand(-Mongin) de*) represented an old tradition in saying that 'Language is a system of signs expressing ideas' (1922: 33). He even invisaged a universal theory of the use of signs in societies, a 'semiology,' of which linguistics would be a part. But linguistics, as it subsequently developed, did not become a branch of such a semiology. On the contrary, the sign was quietly dropped from linguistic theory. Only in the collection of approaches falling under the name of semiotics was Saussure's suggestion of a universal semiology followed up. But semiotics, it is fair to say, falls outside linguistics proper, having a literary rather than a linguistic orientation (see *Semiotics*). Given the central importance of the notion of sign in earlier linguistic theorizing, its eclipse in twentieth-century linguistics calls for an explanation. A closer look at the history of the philosophy of signs and the definitional and notional problems involved will reveal why modern linguistics, in particular formal semantics, feels ill at ease with this notion. It will also show that there is a price to pay for its neglect.

From classical antiquity till quite recently, the notion of sign played an important role in both religious and philosophical thinking. In philosophy, two main traditions can be distinguished in the way this notion has been approached through the centuries. The first, which here is termed the 'associative tradition,' goes back to Aristotle (see *Aristotle*) and takes the defining characteristic of a sign to be its property of 'standing' for something else. The second has its origins in ancient Stoic thinking and sees a sign primarily as a perceptible object or event from which something else can be 'inferred' in virtue of the perceiver's inductive, empirical world knowledge. This is termed the 'inferential tradition.' These two traditions were, though clearly distinct, not totally separated: they kept influencing each other through the ages.

The former, associative, tradition led to a concept of sign that was so general as to lose relevance, while the latter, though relevant and specific, involved notions and perspectives that found no place in the intellectual climate of either behaviorist linguistics or model-theoretic semantics. One would expect the cognitive turn taken in psychology after 1960 to have made at least the inferential tradition respectable again, but, in spite of the psychologists' beckoning, theoretical linguistics became increasingly formalistic and inward-looking, while formal semantics simply remained uninterested in the cognitive dimension of language.

1. The Associative Tradition

The associative tradition originates with Aristotle, who says:

> Sounds are tokens ('sýmbola') of the experiences of the soul, and so are letters of sounds. And just as not everybody uses the same letters, sounds are also used differently. However, what those are primarily signs ('sēmeîa') of are the same experiences of the soul for everybody, and the things ('prágmata') of which these are likenesses ('homoiōmata') are likewise the same for all.
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> (*De Interpretatione*: 1, 16a4)

Thus, sounds 'symbolize' thoughts and graphemes 'symbolize' sounds; both 'signify' thoughts and concepts, which in turn 'represent' the objectual world; sounds and graphemes vary cross-linguistically, but thoughts and objects do not.

It is important to realize that Aristotle had to improvise terminologically. The terms *sýmbolon*, *sēmeîon*, and *homóiōma* still lacked any standardized philosophical meanings. Accordingly, it was necessary to improvise likewise in the English translation, choosing the approximate equivalents 'token,' 'sign,' and 'likeness,' respectively. In any case, Aristotle's followers and interpreters have tended to take these terms as largely synonymous, the common denominator being the relation of *standing for*. Ockham, commenting on this Aristotelian passage, uses one pair of terms only, 'signum' and 'signify,' and, no doubt correctly, extends Aristotle's analysis with an element of 'subordination':

> I shall not speak of the sign in such a general way. We say that sounds are signs that are subordinated to intentional concepts, not because the sounds primarily signify, in the proper sense of the word 'signum', the concepts, but because sounds are used to signify precisely those things which are signified by the mental concepts.
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> (*Summa Totius Logicae*: 1, 1 ,4)

Locke in his *Essay Concerning Human Understanding* elaborates Ockham's idea further:

> The use, then, of words, is to be sensible marks of ideas; and the ideas they stand for are their proper and immediate signification. . . . Words, in their primary or immediate signification, stand for nothing but *the ideas in the mind of him that uses them*, how imperfectly soever or carelessly those ideas are collected from the things which they are supposed to represent. . . . But though words, as they are used by men, can properly and immediately signify nothing but the ideas that are in the mind of the speaker; yet they in their thoughts give them a secret reference to two other things. First, *They suppose their words to be marks of the ideas in the minds also of other men, with whom they communicate*: for else they should talk in vain, and could not be understood. . . . Secondly, Because men would not be thought to talk barely of their own imagination, but of things as really they are: therefore they often suppose the *words to stand also for the reality of things*. (italics original)
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> (Locke, Book III: ch. 2)

Locke's terminology is clear and virtually modern. Words are perceptible forms that 'stand for' or are 'marks of' ideas and nothing but ideas, i.e., concepts and propositions, which are nonperceptible. These in turn may stand for whatever is in the real world, and the latter property is often functionally primary. What the relation of standing for amounts to is largely left open.

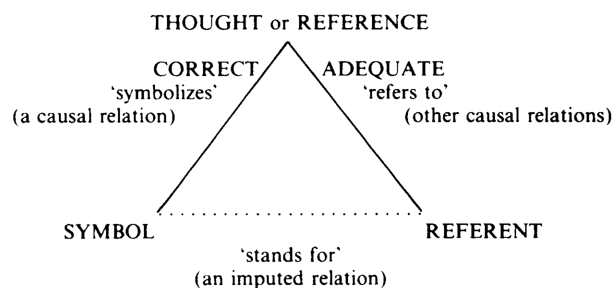

Figure 1.

C. S. Peirce carries this through to its logical conclusion. Taking over Locke's lack of specificity regarding the relation of standing for, Peirce presents the following definition, or description, of what constitutes a sign:

> A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its *object*. It stands for that object not in all respects, but in reference to a sort of idea, which I have sometimes called the *ground* of the representamen. 'Idea' is here to be understood in a sort of Platonic sense, very familiar in everyday talk. (italics original)
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> (Hartshorne and Weiss 1931, vol. II: 135)

In his article 'Sign' in *The Encyclopedia of Philosophy* (1967), Alston comments (p. 438) that Peirce's definition can be summarized as '*x* stands for *y* (for a person *P*).' This, he says, can be taken in an 'ideational sense': 'When *P* becomes aware of *x*, it calls *y* to mind,' or in a 'behavioral sense': 'When *P* perceives *x*, he is led to make some behavioral response appropriate to *y*.' Both interpretations are associative: no notion of rule-governed inference is involved. The latter interpretation is obviously behaviorist, well-known, for example, from chapter 2 in Bloomfield's *Language* (1933). The former interpretation, in terms of associative psychology, is found in the famous triangle (Fig. 1) presented by Ogden and Richards (1923: 11), which is, in principle, a summing up of Locke's analysis.

On both interpretations, however, Alston observes (p. 438), 'there are grave difficulties.' The ideational account is so general that it risks being weakened 'to the point that anything becomes a sign of anything.' The behavioral account is, says Alston, even less adequate. For example, 'It would be very odd for one to respond to a diagram of a high compression engine in anything like the way he responds to the engine itself,' though, clearly, the diagram *stands for* the engine. One is thus led 'to ask whether there is any interesting single sense in which one thing stands for another,' which makes it doubtful whether any useful notion of sign will come about when this associative line of analysis is pursued. Alston, who rests heavily on Peirce's approach, thus appears to admit to some skepticism about the usefulness of a notion of sign thus explicated.

2. The Inferential Tradition

Perhaps surprisingly, however, Alston fails to mention the inferential tradition in the philosophy of signs, which started with the Stoics (see *Aristotle and the Stoics on Language*). The crucial difference with the associative tradition is that the relation of standing for is replaced, and thereby specified, by the relation of 'providing knowledge of the reality of.' On this account, a sign is a perceptible form or event *S* whose perception enables the perceiver *P* to make a reliable inference about some nonperceptible state of affairs or event *N* in the actual world beyond the immediate inference of the reality of *S*. *N* here is perceived as the 'significate' of *S* (more or less the '*signifié*' in Saussure's definition of the linguistic sign). The 'meaning' of S is its property of allowing for the reliable inference of the reality of the significate.

P's inference is justified by his inductively acquired knowledge of systematic co-occurrences, in particular causes and effects, in the world. The theory of signs is thus part of epistemology. When the inference to *N* is certain, there is then a sign in the full sense. When the inference is merely probabilistic and needs further confirmation (for example when S is part of a syndrome), there is a 'symptom.'

As Kneale and Kneale report (1962: 140–41), the Stoics developed their notion of sign in connection with their investigations into the nature of the logical form of the conditional: 'if A then B.' In normal usage, conditionals involve an element of epistemic necessity in that the consequent is taken to be somehow necessitated by, or follow from, its antecedent. Suppose there is a sound conditional, i.e., a conditional grounded in sound induction. Let the antecedent A describe a perceptible and the consequent B a nonperceptible state of affairs or event. Then, if A is true, B follows, and one can say that A describes a sign *S* and B its significate *N*. Clearly, the inference is made, i.e., the sign is interpreted, only if *P* recognizes the conditional as sound. If *P* lacks the knowledge required for the inference from *S* to its significate, he will fail to understand *S*. The logical form of the epistemically grounded conditional thus describes the nature and the functioning of the sign.

A conditional like 'If it is day it is light' therefore cannot describe the working of a sign since the consequent clause describes a state of affairs which is necessarily perceptible whenever the state of affairs described by the antecedent clause is (Kneale and Kneale 1962). But a conditional like 'If he shouts he is angry' will, if sound, describe a sign whenever the antecedent is perceptibly true, since though the consequent will also be true it will not be true in virtue of direct perception.

The significate, moreover, must be part of present reality. That is, it must be a fact of the present or the past. Whenever the significate's description refers to a future fact, the significate must be taken to be a present state of affairs that will inevitably lead to the effect described. For example, when a cloud is correctly interpreted as a sign of impending rain, the significate must be taken to be the present state of the atmosphere, which is such that rain will inevitably follow, even though the conditional is of the form 'If there is a cloud it will rain.'

The main propagator of the Stoic analysis of the sign has been St Augustine, in whose theology signs were a central element. The definition and analysis of this notion is a recurrent theme in his numerous writings, for example, 'A sign is something which shows itself to the senses and beyond itself something else to the knowing mind' (*Dialectica*: ch. 5).

It may be observed, at this point, that Augustine's analysis of the sign, like that developed in the Stoa (in so far as it can be reconstructed from the mainly secondary sources), does not distinguish between cases where the nonperceptible fact, the 'something else,' causes (or motivates) the perceptible fact and those where the perceptible fact causes the nonperceptible 'something else.' When the former relation holds it is perfectly natural to speak of the perceptible element as a sign. But when the perceptible fact is itself the cause of the something else, so that perception of the cause induces certain knowledge (prediction) of the effect to come, it seems less natural to speak of a sign, even though the Stoic-Augustinian analysis allows for it. For example, on seeing a man jump from the roof of a tall building, one knows that he will die. Yet, it seems inappropriate, or anyway less appropriate, to say that the man's jump is a sign of his imminent death. It is, therefore, perhaps useful to add the following criterion to the analysis of the sign: if a causal relation is involved between a perceptible and a nonperceptible fact, then, for the perceptible fact to function as a sign it must be caused by the imperceptible fact, and not vice versa. Mere systematic co-occurrence seems insufficient as a criterion.

3. Signs: Natural and Conventional

Augustine amply discusses the Stoic distinction between *natural* and *conventional signs* (e.g., in *De Doctrina Christiana*, Book II: chs. 1–4). It is mainly through the enormous influence of his writings that this distinction became commonplace through the ages. It amounts to the following. Natural signs result from world knowledge. They need not be learned separately, as signs: factual knowledge suffices. For anyone who knows that smoke cannot come about unless as a result of combustion, smoke is a sign of (signifies) fire. Analogously, footprints signify the past passing of an animal or person, and the distant hum of aircraft may, in certain contexts, be a sign of a state of affairs that will soon lead to bombing. Or the presence of a limousine adorned with white flowers signifies, in certain cultures, that a wedding is being celebrated.

A conventional sign, on the other hand, results from a convention to produce a given form with the intention of making it known to an informed perceiver that the producer takes a particular stance with regard to a particular thought. Thus, the producer of a conventional sign can make it known that he commits himself to the truth of the thought expressed, or wishes it to be made true, or wants to be informed about its truth-value, etc. (see *Speech Act Theory—An Overview*; *Speech Acts and Grammar*). Emotions usually find a natural, nonconventional expression, but articulated, i.e., propositional, thoughts cannot, on the whole, be read off the body of the person thinking. Since it is often important that others know of a person that he entertains a particular thought in a particular mode (as an assertion, a wish, an order, a question, etc.), communities select certain forms that cannot easily occur unless as a result of a conscious decision to produce them. These forms are then assigned to certain thoughts, including their mode of entertainment, so that the members of the community in question know with reasonable certainty that when someone produces a form S, he entertains the thought T conventionally associated with S. The inference is certain to the extent that it is certain that S cannot have been produced other than by conscious decision, barring possible errors or random processes.

4. A Language as a Conventional Sign System

Comprehension of a conventional sign S consists in the reconstruction of S's significate, the underlying thought, by the perceiver. A system of forms allowing for structural articulations that map onto articulated, propositional thoughts in regular ways is a (natural or artificial) language. For a language to bring about a regular correspondence between forms and thoughts it must have well-defined 'building blocks' (lexical words, that is), which can be combined into full signs (sentences) and correspond regularly with structural parts of thoughts, in particular 'predicates' (in the sense of bundles of satisfaction conditions). It is customary to speak of conventional signs not only when referring to full sentences but also in the case of lexical words.

To be able to interpret a conventional sign one must know the convention according to which its mental significate, whether full thought or predicate, has been fixed. In the case of a language, this 'convention' consists of a rule system or 'grammar' mapping sentences and thought schemata onto each other, in combination with a 'lexicon,' which lists the words to be used in the sentences of the language. Although it is widely accepted nowadays that world knowledge is a necessary prerequisite for the adequate comprehension of sentences, there still is a fundamental difference between world knowledge and linguistic knowledge. The former is about facts irrespective of conventional sign systems. The latter is specifically about conventional linguistic sign systems.

5. The Referential Aspect

Thoughts are by their very nature intentional, i.e., about something. This may be termed their 'referential aspect.' It follows that the reconstruction of a given thought by a perceiving subject necessarily involves a copying of its referential aspect. In fact, in most speech situations the perceiver will not be primarily interested in the speaker's thought but rather in what the thought is about, i.e., its referential aspect. The transfer of thought is often only a means towards the end of organizing the actual world. This is what made Ockham introduce his notion of subordination, the fact that, as Locke said, men 'often suppose the words to stand also for the reality of things,' as seen above. The referential aspect, though primarily a property of thoughts (and their predicates), thus automatically carries over to sentences and words. But it must be remembered, as Locke keeps stressing, that linguistic forms possess their referential aspect only as a derived property, mediated by the thoughts and their predicates (ideas), which carry the referential aspect as their primary property.

An adequate analysis of the notion of sign helps to see language and language use in their proper ecological setting. When language is used the listener (reader) makes a mental reconstruction of the thought process expressed by the speaker (writer), including the latter's commitment or stance ('mode of entertainment') with regard to what is referred to. In principle, the certainty systematically

induced by the occurrence of a linguistic sign in virtue of the conventional sign system at hand extends primarily only to the presence of the thought process concerned. Any relation to the real world is mediated by the thought processes, and any certainty about real world conditions induced by a linguistic message depends on external factors such as the speaker's reliability, not on the linguistic system in terms of which the message is presented.

6. The Price for Neglecting the Notion of Sign

This obvious and important fact has, however, not always been recognized. There is a tradition, which originated with Descartes (see *Descartes, René*) and has had something of a career in the philosophy of perception, where conventional linguistic signs are taken as prototypical of, or at least parallel to, the physical sense data impinging on the senses. At the beginning of his essay 'The world, or essay on light,' Descartes argues, in the wider context of his rationalist theory of innate ideas, that physical sense data have nothing in common with the mental sensations or ideas evoked by them. Hence, he concludes, the mental sensations must have an independent source, besides the physical stimuli, which determines their qualities. This independent source is a set of innate principles and ideas. In setting up his argument he draws a parallel with words:

> You know well that words, which bear no resemblance to the things they signify, nevertheless succeed in making us aware of them, often even without our paying attention to the sounds or syllables. Whence it may happen that having heard a stretch of speech whose meaning we understood full well, we cannot say in what language it was pronounced. Now, if words, which signify nothing except by human convention, suffice to make us aware of things to which they bear no resemblance, why could not Nature also have established a certain sign that makes us have the sensation of light even though this sign has nothing in itself resembling this sensation? Is this not also how she has established laughs and tears, to let us read joy and sadness on the faces of men? (author's translation)
>
> (Adam and Tannery, vol. xi: 4)

This parallel between linguistic signs on the one hand and sense data on the other is, of course, entirely spurious and confused. Descartes himself seems somewhat unconvinced by it as well. He continues to say that some might object that in the case of speech sounds the parallel is not the awareness of things but rather the 'acoustic image' that corresponds to the sound. Even so, he says, it all happens in the mind, and he cuts the argument short not wishing 'to lose time over this point.'

Nevertheless, 'this analogy will make quite a career in seventeenth and eighteenth century theories of perception (e.g., those of Berkeley and Reid) and, with new theoretical implications, it will also figure prominently in Helmholtz's cognitive theory of perception' (Meijering 1981: 113). Quite recently it was seen cropping up again in Fodor's book *The Modularity of Mind*:

> Now about language: Just as patterns of visual energy arriving at the retina are correlated, in a complicated but regular way, with certain properties of distal layouts, so too are the patterns of auditory energy that excite the tympanic membrane in speech exchanges. With, of course, this vital difference: What underwrites the correlation between visual stimulations and distal layouts are (roughly) the laws of light reflectance. Whereas, what underwrites the correlation between token utterances and distal layouts is (roughly) a convention of truth-telling. ... Because that convention holds, it is possible to infer from what one hears said to the way the world is.
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> (1983: 45)

This analogy is clearly misguided. It rests on the false parallel between 'distal layouts' in the case of visual perception and the things, states of affairs, or events talked about in the use of language. What underwrites the correlation between token utterances and distal layouts is the laws of propagation and impingement of sound. In the auditory case the 'distal layouts' are nothing but the organisms or mechanisms through or with which the sounds in question are produced, not the reference objects, states of affairs, or events referred to (cp. Seuren 1985: 53–54). While Descartes confused world facts with mental representations, Fodor confuses them, more in the behaviorist vein, with the physical source of sense data. Closer reflection on the nature of the sign would have kept these authors from such aberrations.

It would also have had a beneficial effect on formal semantics (see *Formal Semantics*) and philosophy of language (see *Philosophy of Language*) as these disciplines have been practiced over the past decades. There, full attention is paid to the referential aspect of linguistic forms, at the expense of their status as signs. The vast bulk of all efforts at formalization has concentrated on model theory, the formal, and definitely not causal, relation between linguistic structures and their possible denotations in some real or hypothetical world. All of formal semantics consists of a calculus of 'extensions' in possible worlds (see *Extensionality*). Very little effort has gone into the formalization of the sign process, the way uttered sentences are reconstructed by hearers, to be integrated into any available long-term fund or store of 'encyclopedic' world knowledge on the one hand, and short-term knowledge of what has been built up in preceding discourse on the other. It is only in recent developments of discourse semantics (see *Discourse Semantics*) that attempts are being made at developing formal theories of these cognitive interpretative processes.

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