

The Integrating Function of the Sign in Peirce's Semiotic

Peirce expressed the fact that a sign does not exist *as such* except through its function. And since it results from the triadic relation that fundamentally defines the sign, this function is integrating. According to this view, the sign is not merely something that represents something else--in which case it would be reduced to a symbolic function--but it is that unity between ground, object, and interpretant that is its condition for existence. To integrate means to put into a relationship of reciprocal determination, that is, to transcend, in the case of a general theory of signs, the notion that they are arbitrary in relation to the object and interpretant.

Among the definitions of a sign given by Peirce, there is one that directly expresses its integrating function:

“I will say that a sign is anything of whatsoever mode of being which mediates between an object and an interpretant, since it is both determined by the object relatively to the interpretant and determines the interpretant in reference to the object, in such wise as to cause the interpretant to be determined by the object through the mediation of this sign” (MS 318).

As is known, in Peirce's philosophical system, reality--whatever it may be, from the level of thoughts to the level of the universe [1]--has the nature of a sign. Moreover, man himself, during the thought process, likewise appears as a sign (5.285). This affirmation can be read from its conclusion to the premise. If “no sign can function as such, except so far as it is interpreted in another sign” (8.225), and “it is absolutely essential to a sign that it should effect another sign” (8.225), it follows that the integrated destiny of human existence--which is the object of so many post-Peircean philosophies- stems from the fact that human existence has the nature of a sign in its characteristic manifestation, which is expressed through the formula *homo sapiens = zoon semiotikon*.

The integrating function is basically the expression of the indestructible nature of the triadic relation through which the sign is defined and through which, in fact, it exists. Doubt can be expressed, especially if we consider the fact that Peirce, in his attempt to divide semiotic, put pure grammar (“what must be true of the representamen”) and logic proper (“what is quasi-necessarily true of the representamina”) alongside pure rhetoric: “Its task is to ascertain the laws by which in every scientific intelligence, one sign gives birth to another, and especially one thought brings forth another” (2.229). Morris' analysis of the “dimensions of semiotic” (*Foundations of the Theory of Signs*, 1938) followed another line of thought and, basically, placed the question of the sign's integrating function at the level of the relationship among the three dimensions; that is, in meta-semiotics. It is instructive to point out that each time the validity of the syntactic-semantic-pragmatic trichotomy is placed in doubt, the construction of the sign as a triadic unity is not automatically questioned.

In this paper, I shall examine the aspects of the sign's integrating function in Peirce's view and the manner in which operational models, developed on the basis of the sign's triadic relation, retain this function and permit practical applications.

The architecture of Peirce's philosophy is founded on the triadic relation. The sign's definition--as the basic element in the whole construction--and the table of categories stand in the relation of method to system. Semiotic is the method; categories make up the system. This is why certain judgments are, repeated in their formulation, from the qualitative level (generality of the possible), to the existential level (in its singularity), to the level of meditative thought (instrumental generality), expressing the unique quality of the relation, that of integration. Therefore, any attempt at formalization must take into account the question of an invariant.

The sign's integrating function is exercised intensively as well as extensively. At its extreme, it is confused with the cognitive act, the coincidence, according to Peirce, between semiotic and the theory of knowledge [2] leading to the idea that “whatsoever holds of signs in general must hold for all experience”

[3] Knowledge itself is doubly articulated: as processuality (“The whole process of representation never reaches a completion” [1.873]), and continuity (“Continuity governs the whole domain of experience in every element of it” [7.566]), its axiom being synechism.[4]. Basically, synechism, which derives from the sign’s triadic nature and structure, considered in a dynamic sense, becomes the measure of integration. All knowledge deepens the reciprocal relationship of the constituent elements; that is, it lowers their degree of independence and arbitrariness. Continuity is “the absence of ultimate parts in that which is divisible” (6.173); that is, it eliminates the possibility of the elements *per se*, postulating their multiple connection, their conditioning, and interconditioning. Raised from the level of relationship where the sign is constituted, to the level where it becomes part of the representations of thoughts—therefore, of the conditions for truth—the integrating function in fact determines the maxim of pragmatism. This is because, essentially, the conditional nature is the reflection of the integrated nature, and the representation of the future as a conditional is the same as the acceptance of progressive action (intensive and extensive) of integration. Peirce affirmed this very clearly: “Every assertion transcends actual existence” (7.361). Moreover, “Thought is rational only so far as it recommends itself to a possible future thought” (CP 7.361). And finally, “No cognition is such or has an intellectual significance for what it is in itself, but only for what it is in its effects upon other thoughts” (7.357).

The reciprocal relation of the sign's constituent elements is preserved as a relationship and extended to the whole system of Peirce's philosophy. Returning now to the sign proper, we can observe that it contains an internal, self-adjusting system, introducing itself as a unit with a cybernetic nature (see Figure 1) [5].

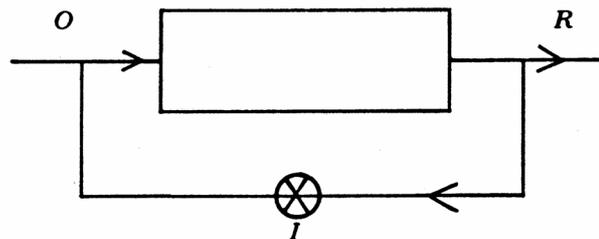


Fig. 1. Cybernetic Model of the Sign

Before referring to the representation of the triadic relation in set-theoretic terminology—which we shall likewise discuss shortly—let us observe that the sign has the structure of a cybernetic process in the sense defined by Wiener [6] and that, without explicitly pointing out this fact as such, Peirce intuited it, obtaining for himself the merit of a forerunner in this domain as well. The integrating function is clearly distinguished from later attempts [7] at an analogy between the definition of a sign in terms of the three nonempty sets R , O , I (representamina, objects, interpretants) and the two operations o , i (designation, signification) on them, and the definition of abstract automata. Without entering into detail, let us observe only that we are thus situated in reality at the level of the sign integrated in a finite grammar, which does not wholly correspond to Peirce's original vision. However, the analogy preserves the integrating function, not by chance, but because it is a structural datum of the system represented by the sign.

Recalling here applications in set theory, let us observe that Peirce put to himself the problem of the representation of the continuum through discrete signs—a problem that is eventually one of integration. He introduced the concept of potential collection (6.187), “indeterminate, yet capable of determination as well as the concept of vague” (6.186) [8], through which he anticipated fuzzy sets [9] or *flo* sets [10], which have become an established part of modern mathematics in the last ten years. We even have reason to believe, given the contributions already known—we refer here to what he called the *primipostnumerical multitude* (4.211)—that other notes evidencing his abovementioned foresight will be found. But even with what is already known, it is evident that the treatment of the sign in terms of fuzzy set theory corresponds to its nature as defined by Peirce.

The formalization of a sign's operation in terms of fuzzy set theory (after it has been reproduced in graphic representations or in matricial calculus) has the advantage of proposing a link between semiotic as a method of analysis (analytical semiotic), and synthetic semiotic, thereby contributing to the extrication

of a suitable model of generative semiotic.

If a sign is considered as an element of the fuzzy set S , and if we consider S a given nonempty set (signs in a domain, therefore, a type of applied semiotic), in which $C \subset S_N$ and C is a field of criteria—in Peirce's case, the criteria of relating the sign to the three elements that define it—then $n = 3$ —then an analytical semiotic is endowed with the functions $S_A: S \rightarrow C$; that is, S_A is defined on the fuzzy set S with values in the field of criteria C .

It can be seen that through the criteria of relating the sign with the constituent elements of the sign function, Peirce imposed a type of semiotic (S_P); but in fact, he did not exhaust all the types of semiotic. The fact that the sign is a rule (of the relation) confirms the idea that semiotic is a deductive system. It can be shown that the function S_A is reversible (bijective); that is, in this case, the application $S_E: S \rightarrow C$ also exists, and $S_E = S_A$, corresponding to the attachment of a coordinate in the space of criteria of one or more signs ("classes," in Peirce's terminology). This takes us back to the possibility of the synthesis of a sign (or a group of signs) with prescribed properties; that is, achieving a pre-established integration of the elements. Analytical semiotic is univocal. Synthetic semiotics is equivocal; that is, a certain type of integrating function can be carried out, as Peirce showed when he referred to thought as having the nature of a sign in several ways (5.553). The equivocal nature of synthesis reflects the principle of synechism.

It must be observed, considering the different types of semiotic affirmed (Saussure, based on a dyadic relation of structure meaning; Klaus, introducing the sigmatic aspect; Eco, multiplying sign criteria to infinity), that the power of the set of criteria is a measure of the sign's integrating function. At one extreme, when the power of the set of criteria equals the power of the set of signs, every sign ceases to exist. At the other extreme, the signs become less and less determined. The sign, in Peirce's view, presents a balanced, inner structure, and appears, as a result of its self-adjusting nature, as a stable system [11]. Furthermore, the sign, in Peirce's terminology, integrates direct experience and logic, projecting a law of rationality onto reality an existence. Basically, the sign's integrating function, extended further as a structural law of Peirce's whole system, is none other than the form taken by the dialectic itself, raised from the abstraction of post-Kantian, German philosophy to the stage of concrete logic.

NOTES

1. "Now thought is of the nature of a sign" (5.5531); the universe is "a vast representamen (5.119): the concept of existence is therefore "the concept of a sign" (5.294).
2. "Every species of actual cognition is of the nature of a sign" (7 355).
3. Murray G. Murphey. *The Development of Peirce's Philosophy* (Cambridge: Harvard University Press, 1961, p. 90).
4. "Synechism is that tendency of philosophical thought which insists upon the idea of continuity as of prime importance in philosophy" (6.169).
5. "The object of representation can be nothing but a representation of which the first representation is the interpretant.... So there is an infinite regression here. Finally, the interpretant is nothing but another representation to which the torch of truth is handed along; and as representation, it has its interpretant again. Lo, another infinite series" (1.359).
6. N. Wiener, *Cybernetics*. Paris: Hermann, 1948.
7. See Max Bense, *Zeichen und Design*. Baden-Baden: Agis Verlag, 1971, pp. 42-45.
8. "It is vague, but yet with such a vagueness as permits of its accurate determination in regard to any particular object proposed for examination" (6.186).
9. L.A. Zadeh, *Fuzzy Sets, Information and Control* 8, June 1965, pp. 338-353.
10. Y. Gentilhomme. Les ensembles flous en linguistique, *Cahiers du linguistique théorique et appliquée* 5, 1968, pp. 47-65.
11. Postscript 1980: Results of the research carried out on the same topics after the C.S. Peirce Bicentennial International Congress can be found in Mihai Nadin, *On the Semiotic Nature of Value, Ars Semeiotica* 3, 1978, pp. 33-49; *The Relevance of Peirce, The Monist*, 1980; *Zeichen und Wert* (Tuebingen: G. Narr Verlag, 1980).